Guam Waterworks Authority
Electrical Assessment Guide to Notes

Utility Service Information

1. Transformer Pole Not Grounded or Ground Conductor Missing
2. Lighting Arrester Missing or Not Grounded
3. Transformer Service Conductor Terminations Not Installed Properly for water entry
4. Wooden Pole or Missing Anchor
5. Meter Socket Failure
6. Service Raceway Broken or Damaged
7. Non-Standard Metering Method
8. Non-Standard Transformer Connection

Building Service Information

10. Corrosion on Lugs (Power and/or Ground)
11. Corrosion of Enclosure or Equipment
12. Disconnect handle Not Operative
13. Equipment Ground Missing
14. Connection or Splice Present
15. Circuit Protection Not Sized Properly

Standby Generator Information

20. Generator and Auto Transfer Switch Down for Maintenance
21. Generator Battery Missing
22. Corrosion of Enclosure or Equipment
23. Diesel Fuel Line Building Penetration allow for Water Entry
24. Fuel Line Not Supported
25. Leaking Fluid

Pump Motor Controller

30. Pump Failure – Not in Operation
31. Corrosion of Enclosure or Equipment
32. Motor Overload Provide Limited Protection
33. Overload Protection Not Sized
34. Wiring or Connections Overheated
35. Older Model Phase Monitor used
36. Mechanism Broken or Missing
37. Wiring Not Trained or Neat

Chlorination Motor Controller

40. Corrosion on terminations
41. Corrosion of Enclosure or Equipment
42. Overload Protection Not Sized
43. Wiring or Connections Overheated
44. Phase Monitor Interlocked with Well Pump
45. Mechanism Broken or Missing

Pump Instrumentation and Controls

50. Device Missing
51. Device Corroded
52. Device May be Repairable

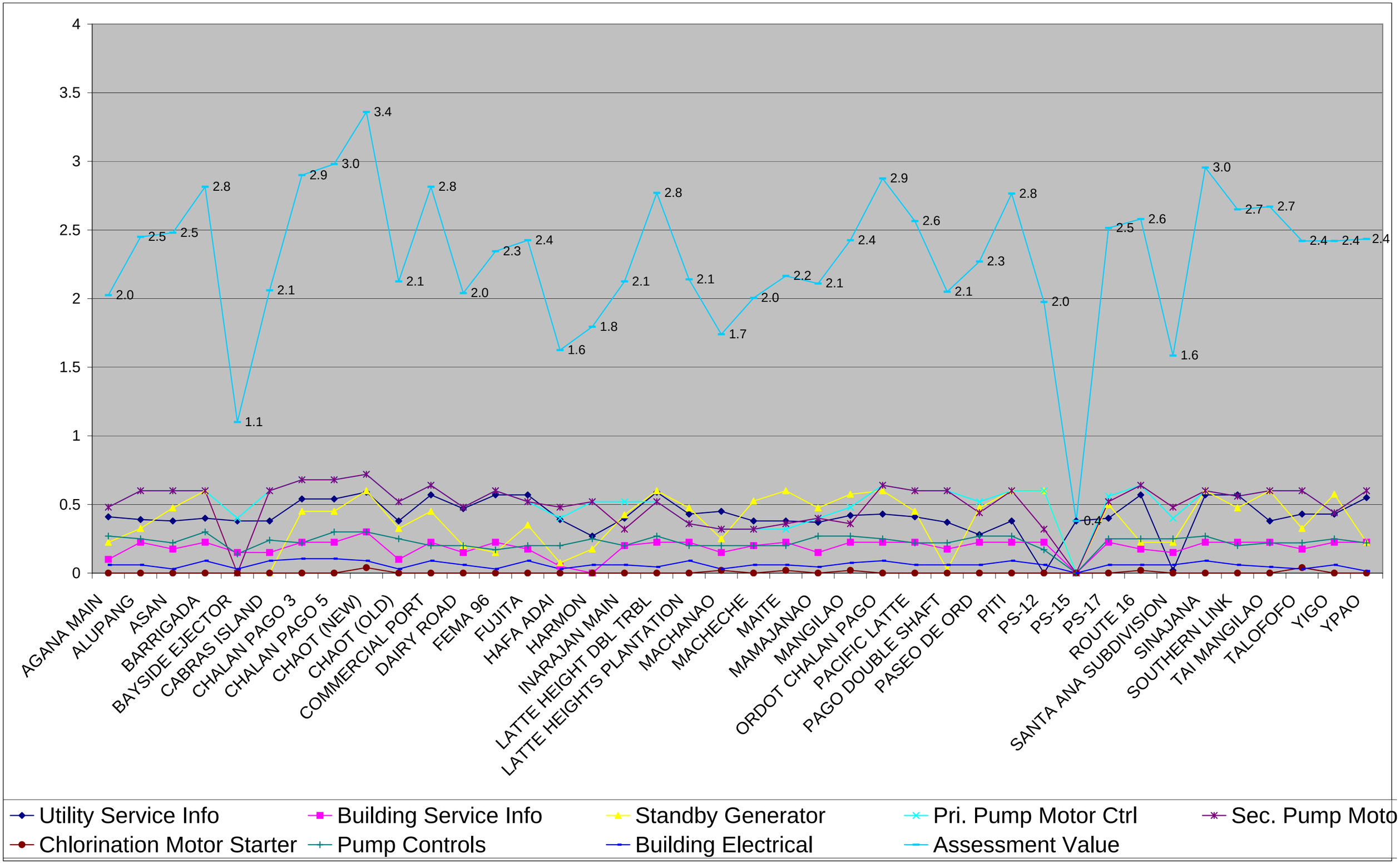
Building Electrical

60. Exterior Lighting Not Operative
61. Interior Lighting Not Operative
62. Wiring Device Not Operative
63. Auxiliary Panel Corrosion or Damaged Equipment

Appendix 1K - Electrical

Station Name	Utility Service Info	Building Service Info	Standby Generator	Pri. Pump Motor Ctrl	Sec. Pump Motor Ctrl	Chlorination Motor Starter	Pump Controls	Building Electrical	Assessment Value
AGANA MAIN	0.41	0.1	0.225	0.48	0.48	0	0.27	0.06	2.0
ALUPANG	0.39	0.225	0.325	0.6	0.6	0	0.25	0.06	2.5
ASAN	0.38	0.175	0.475	0.6	0.6	0	0.22	0.03	2.5
BARRIGADA	0.4	0.225	0.6	0.6	0.6	0	0.3	0.09	2.8
BAYSIDE EJECTOR	0.38	0.15	0	0.4	0	0	0.14	0.03	1.1
CABRAS ISLAND	0.38	0.15	0	0.6	0.6	0	0.24	0.09	2.1
CHALAN PAGO 3	0.54	0.225	0.45	0.68	0.68	0	0.22	0.105	2.9
CHALAN PAGO 5	0.54	0.225	0.45	0.68	0.68	0	0.3	0.105	3.0
CHAOT (NEW)	0.59	0.3	0.6	0.72	0.72	0.04	0.3	0.09	3.4
CHAOT (OLD)	0.38	0.1	0.325	0.52	0.52	0	0.25	0.03	2.1
COMMERCIAL PORT	0.57	0.225	0.45	0.64	0.64	0	0.2	0.09	2.8
DAIRY ROAD	0.47	0.15	0.2	0.48	0.48	0	0.2	0.06	2.0
FEMA 96	0.57	0.225	0.15	0.6	0.6	0	0.17	0.03	2.3
FUJITA	0.57	0.175	0.35	0.52	0.52	0	0.2	0.09	2.4
HAFA ADAI	0.39	0.05	0.075	0.4	0.48	0	0.2	0.03	1.6
HARMON	0.27	0	0.175	0.52	0.52	0	0.25	0.06	1.8
INARAJAN MAIN	0.4	0.2	0.425	0.52	0.32	0	0.2	0.06	2.1
LATTE HEIGHT DBL TRBL	0.59	0.225	0.6	0.52	0.52	0	0.27	0.045	2.8
LATTE HEIGHTS PLANTATION	0.43	0.225	0.475	0.36	0.36	0	0.2	0.09	2.1
MACHANAO	0.45	0.15	0.25	0.32	0.32	0.02	0.2	0.03	1.7
MACHECHE	0.38	0.2	0.525	0.32	0.32	0	0.2	0.06	2.0
MAITE	0.38	0.225	0.6	0.32	0.36	0.02	0.2	0.06	2.2
MAMAJANAO	0.37	0.15	0.475	0.4	0.4	0	0.27	0.045	2.1
MANGILAO	0.42	0.225	0.575	0.48	0.36	0.02	0.27	0.075	2.4
ORDOT CHALAN PAGO	0.43	0.225	0.6	0.64	0.64	0	0.25	0.09	2.9
PACIFIC LATTE	0.41	0.225	0.45	0.6	0.6	0	0.22	0.06	2.6
PAGO DOUBLE SHAFT	0.37	0.175	0.025	0.6	0.6	0	0.22	0.06	2.1
PASEO DE ORD	0.28	0.225	0.475	0.52	0.44	0	0.27	0.06	2.3
PITI	0.38	0.225	0.6	0.6	0.6	0	0.27	0.09	2.8
PS-12	0	0.225	0.6	0.6	0.32	0	0.17	0.06	2.0
PS-15	0.38	0	0	0	0	0	0	0	0.4
PS-17	0.4	0.225	0.5	0.56	0.52	0	0.25	0.06	2.5
ROUTE 16	0.57	0.175	0.225	0.64	0.64	0.02	0.25	0.06	2.6
SANTA ANA SUBDIVISION	0.02	0.15	0.225	0.4	0.48	0	0.25	0.06	1.6
SINAJANA	0.57	0.225	0.6	0.6	0.6	0	0.27	0.09	3.0
SOUTHERN LINK	0.57	0.225	0.475	0.56	0.56	0	0.2	0.06	2.7
TAI MANGILAO	0.38	0.225	0.6	0.6	0.6	0	0.22	0.045	2.7
TALOFOFO	0.43	0.175	0.325	0.6	0.6	0.04	0.22	0.03	2.4
YIGO	0.43	0.225	0.575	0.44	0.44	0	0.25	0.06	2.4
YPAO	0.55	0.225	0.225	0.6	0.6	0	0.22	0.015	2.4

Appendix 1K - Electrical



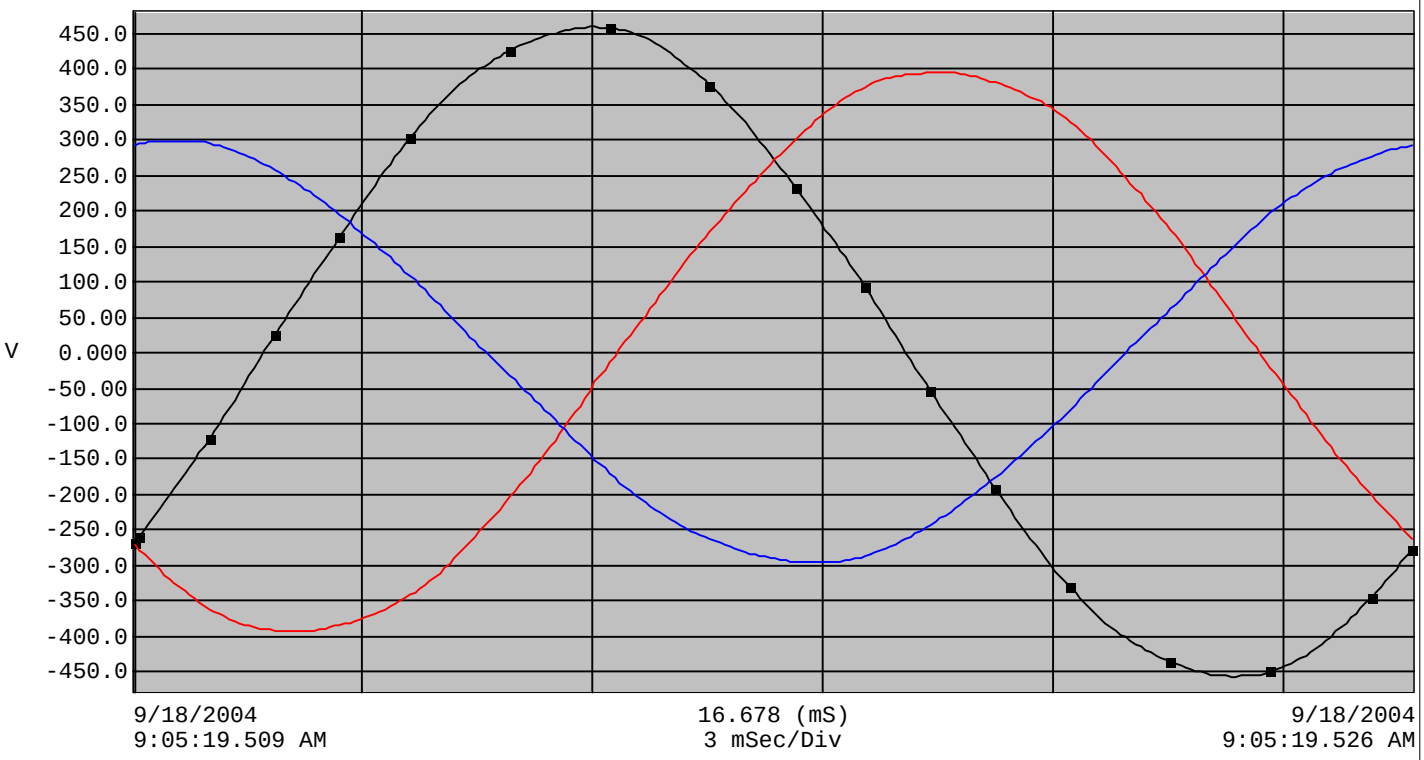
GWA Wastewater Pumping Station Assessment				
Station Name: AGANA MAIN	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/18/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.41	
Transformer Pole Condition and Grounding	2.0%	2	0.04	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.1	
Main Disconnect	5.0%	1	0.05	
Grounding	2.5%	2	0.05	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.225	
Generator Condition	10.0%	1	0.1	
Generator Battery	5.0%	1	0.05	
Diesel Fuel Line Condition	2.5%	2	0.05	
Auto Transfer Switch	2.5%	1	0.025	
Primary Pump Motor Controls	**20.0%**		0.48	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	1	0.04	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	3	0.12	
Secondary Pump Motor Controls	**20.0%**		0.48	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	1	0.04	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	3	0.12	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.27	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	
	100%	**Assessment Value**		**2.0**

Comments:

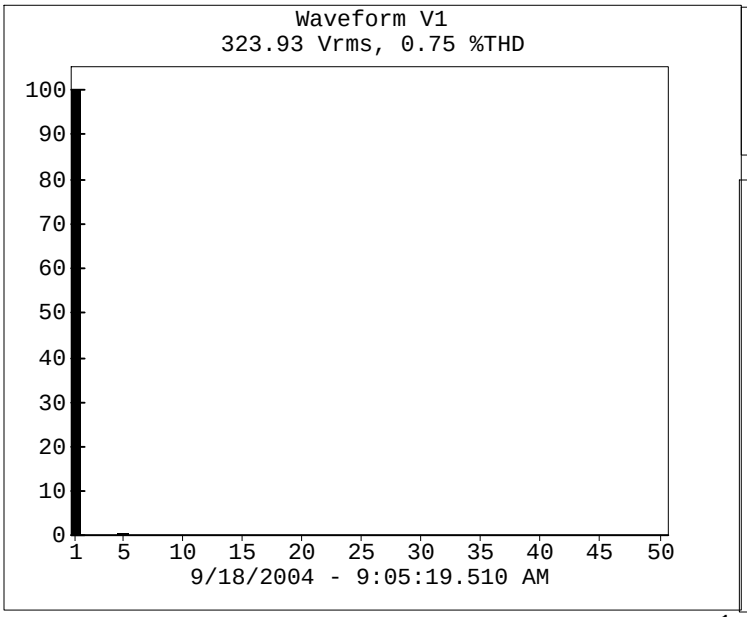
Agana Main WWPS Pump 1 Photo

Recording Start Date	9/18/2004 - 9:05:19 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/18/2004	9:05:19.509 AM	16.678	323.9	V
Waveform V2	9/18/2004	9:05:19.509 AM	16.678	281.0	V
Waveform V3	9/18/2004	9:05:19.509 AM	16.678	210.5	V



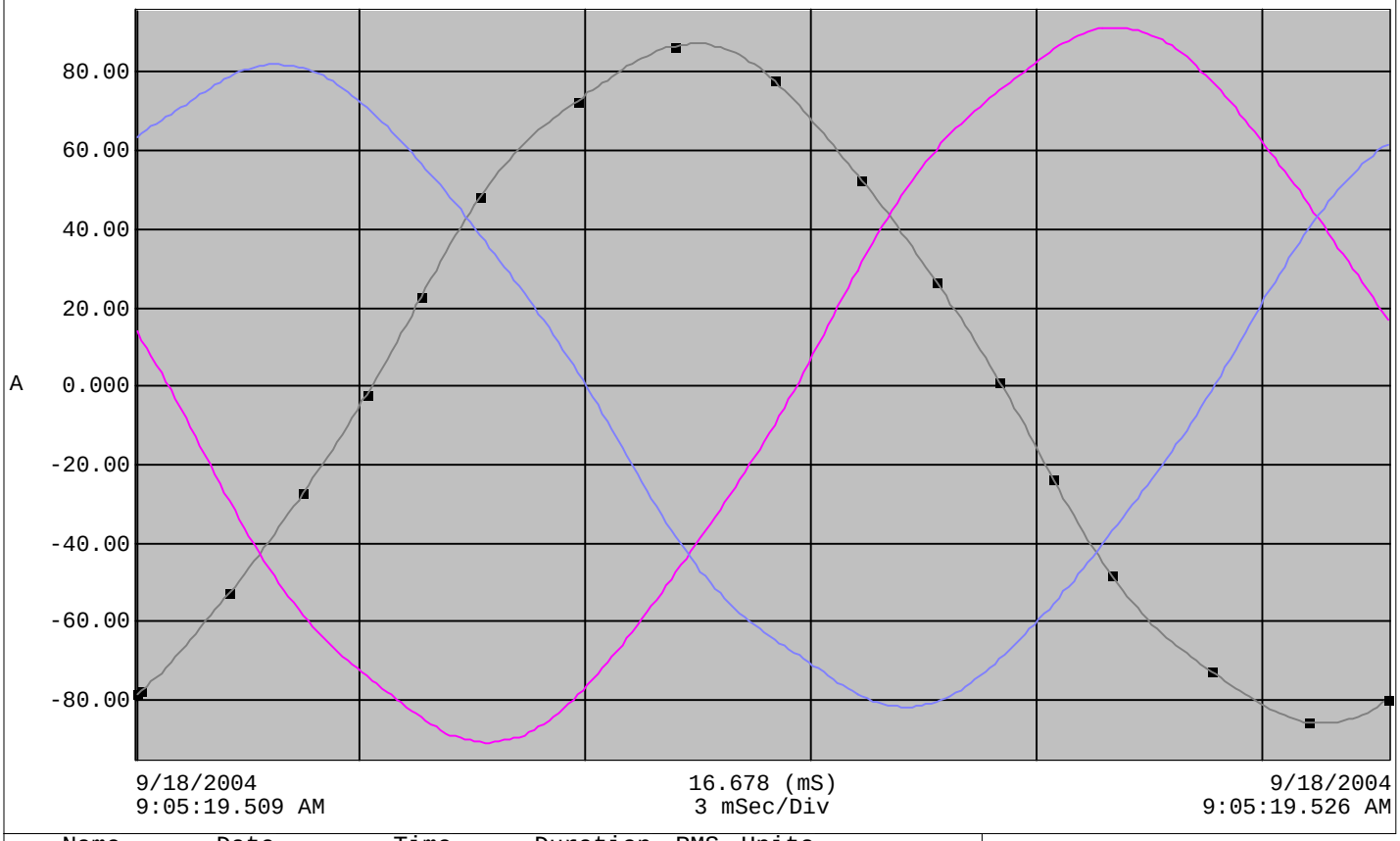
9/18/2004 - 9:05:19.000 AM

Val	
-269.3	Waveform V1
-272.2	Waveform V2
292.2	Waveform V3

Waveform V1

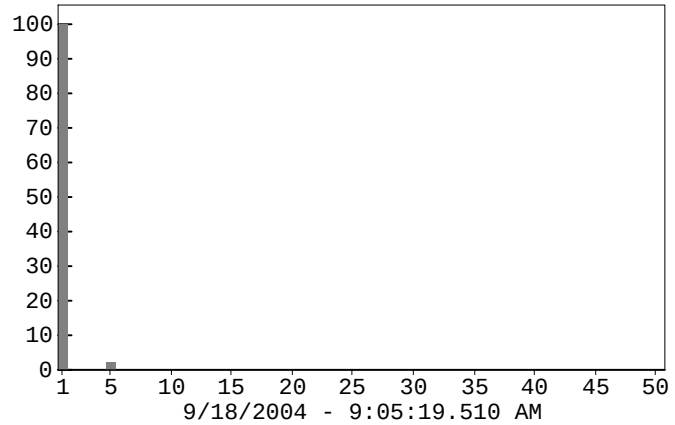
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.6	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.3	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/18/2004	9:05:19.509 AM	16.678	60.47	A
Waveform I2	9/18/2004	9:05:19.509 AM	16.678	63.37	A
Waveform I3	9/18/2004	9:05:19.509 AM	16.678	56.94	A

Waveform I1
60.47 Arms, 2.27 %THD

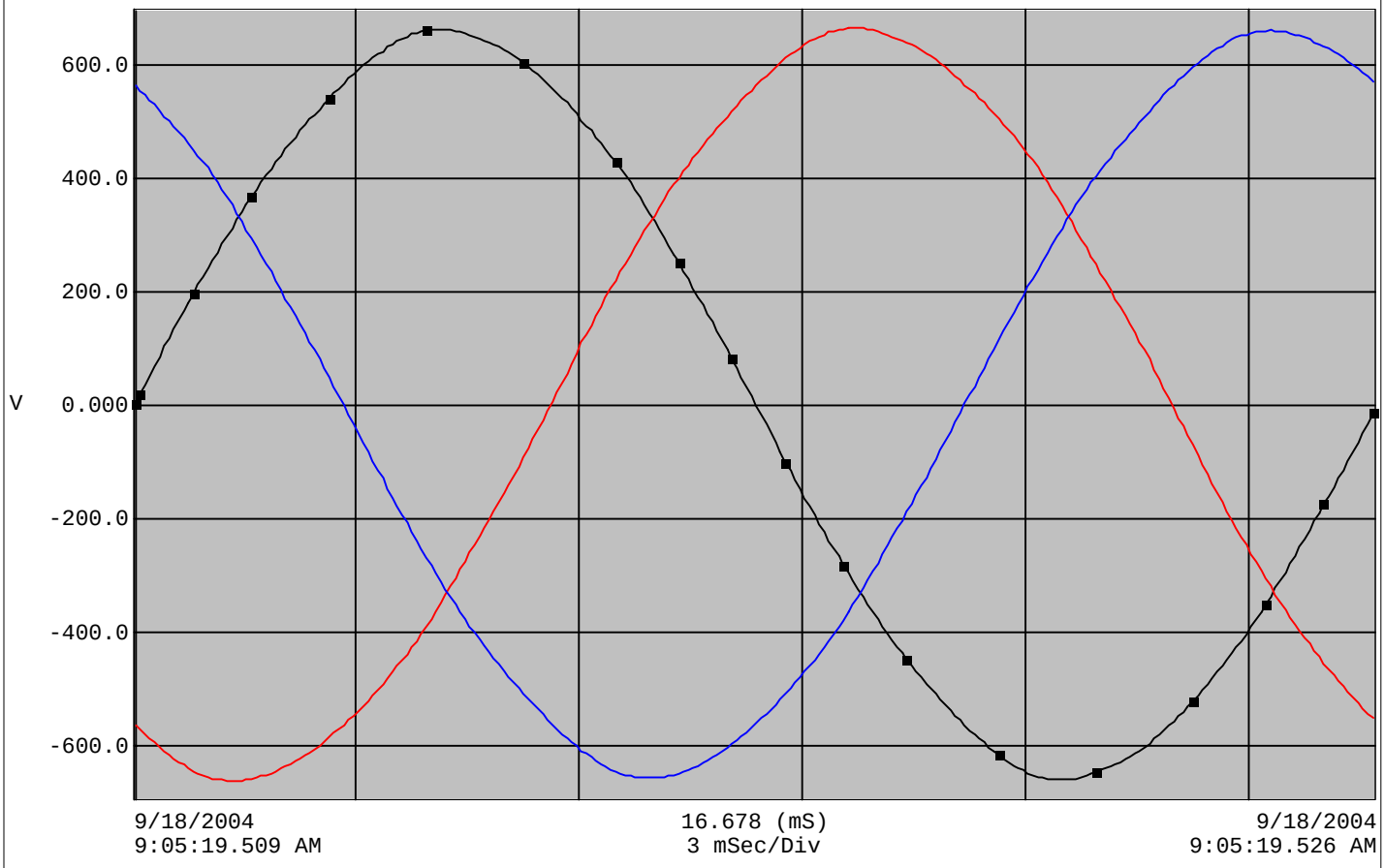


9/18/2004 - 9:05:19.000 AM
Val
-79.00 — Waveform I1
13.70 — Waveform I2
63.30 — Waveform I3

Waveform I1

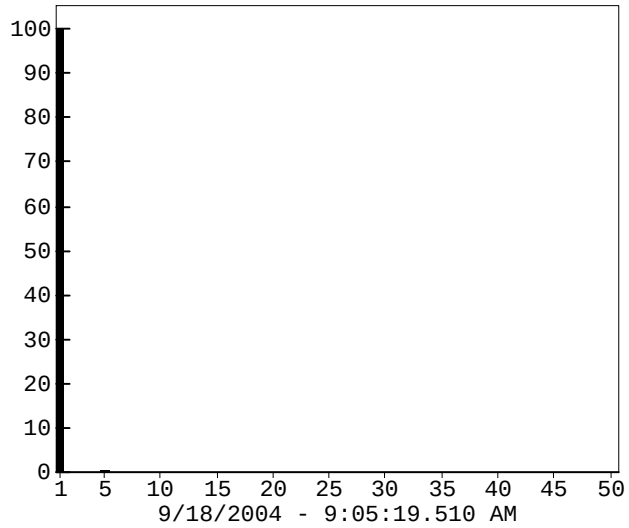
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.1
H03	0.1	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	2.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/18/2004	9:05:19.509 AM	16.678	463.6	V
Waveform U2	9/18/2004	9:05:19.509 AM	16.678	465.8	V
Waveform U3	9/18/2004	9:05:19.509 AM	16.678	461.6	V

Waveform U1
463.60 Vrms, 0.74 %THD



9/18/2004 - 9:05:19.000 AM

Val	
2.800	Waveform U1
-564.4	Waveform U2
561.6	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.6	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/18/2004
Start Time: 9:05:19 AM
Duration: 0:0.000 (M:S)
W: 16.37E+3 W
VAR: 9.832E+3 W
VA: 19.10E+3 W
Power Factor: 0.857
Displacement Power Factor: 0.858
TAN: 0.599
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Agana Main WWPS\091804 - Agana Main WWPS - Pump 1 Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Agana Main WWPS - Pump 1 Photo ,

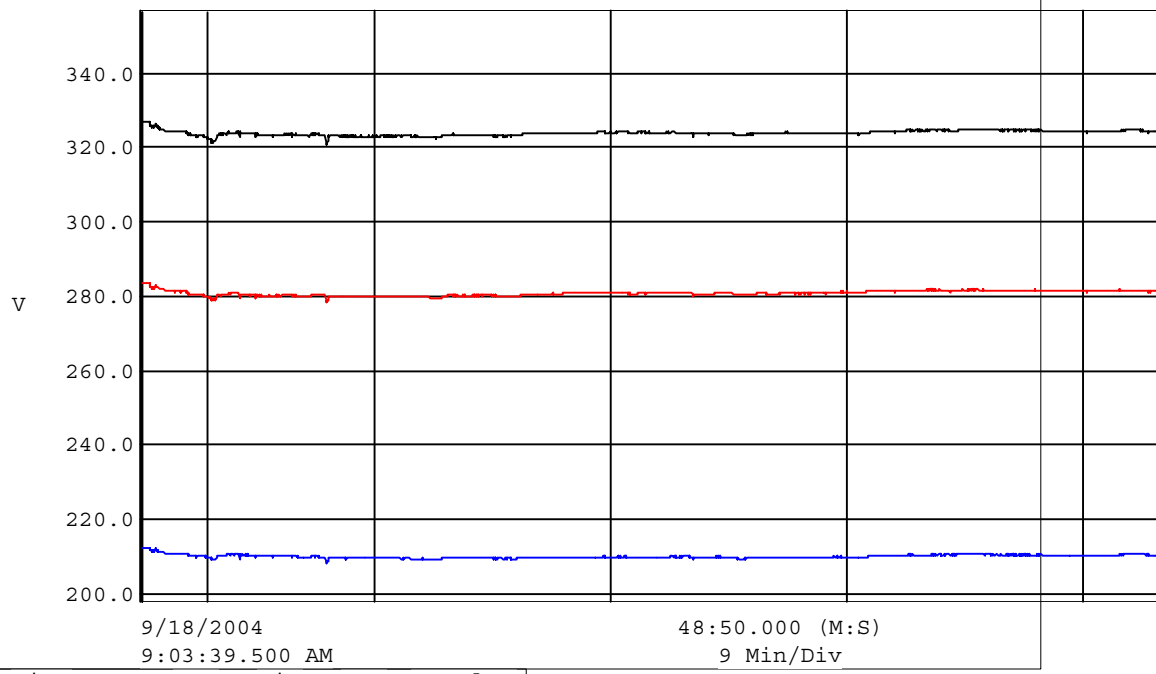
Comments

GPA Meter 01-644-845, Four 48.5 KW ABS Pumps. Electro-rod level controls.

Agana Main WWPS Pump No. 1

Recording Start Date	9/18/2004 - 9:03:39 AM
Recording Duration	48:50 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

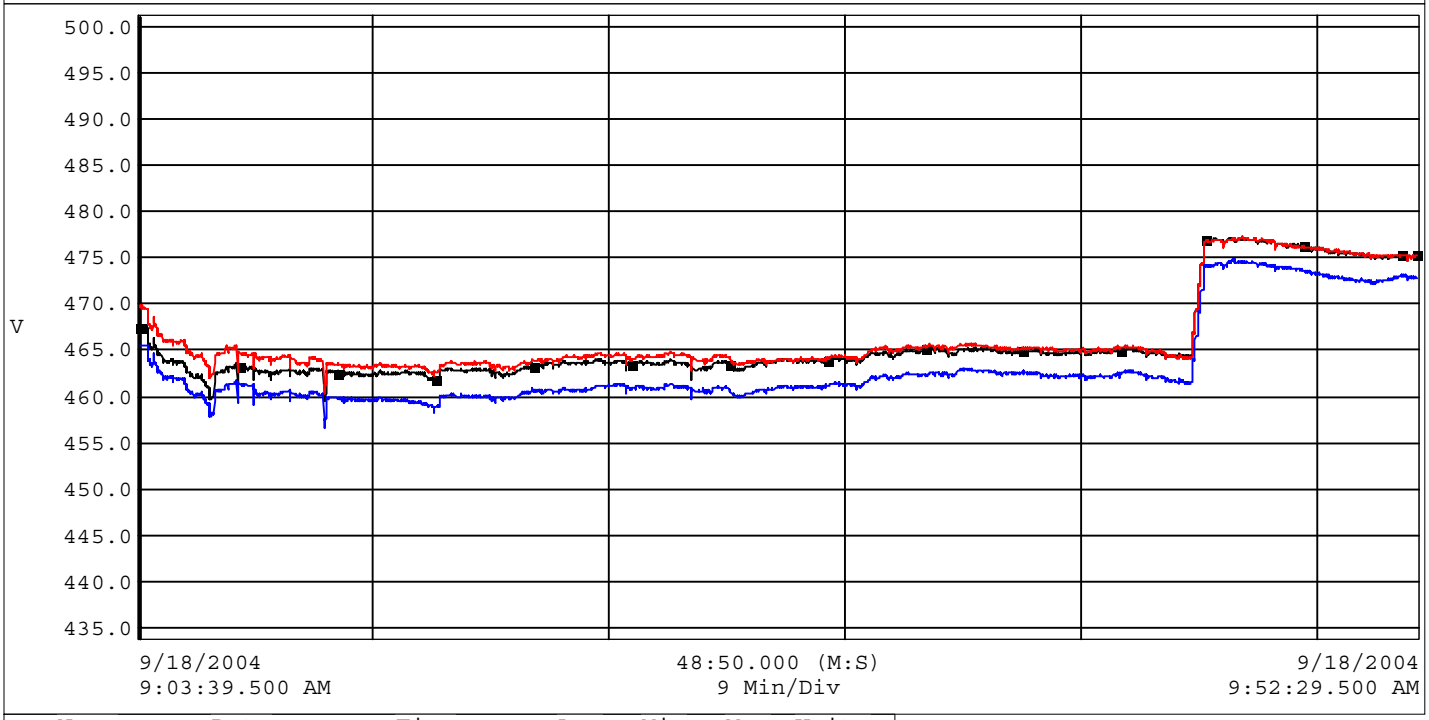
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/18/2004	9:03:39.500 AM	325.6	320.5	339.6	2931
Vrms Line2	9/18/2004	9:03:39.500 AM	281.9	277.9	288.6	2931
Vrms Line3	9/18/2004	9:03:39.500 AM	210.4	208.0	215.9	2931

9/18/2004 - 9:06:14.000 AM
Val
322.1 — Vrms Line1
279.4 — Vrms Line2
209.4 — Vrms Line3

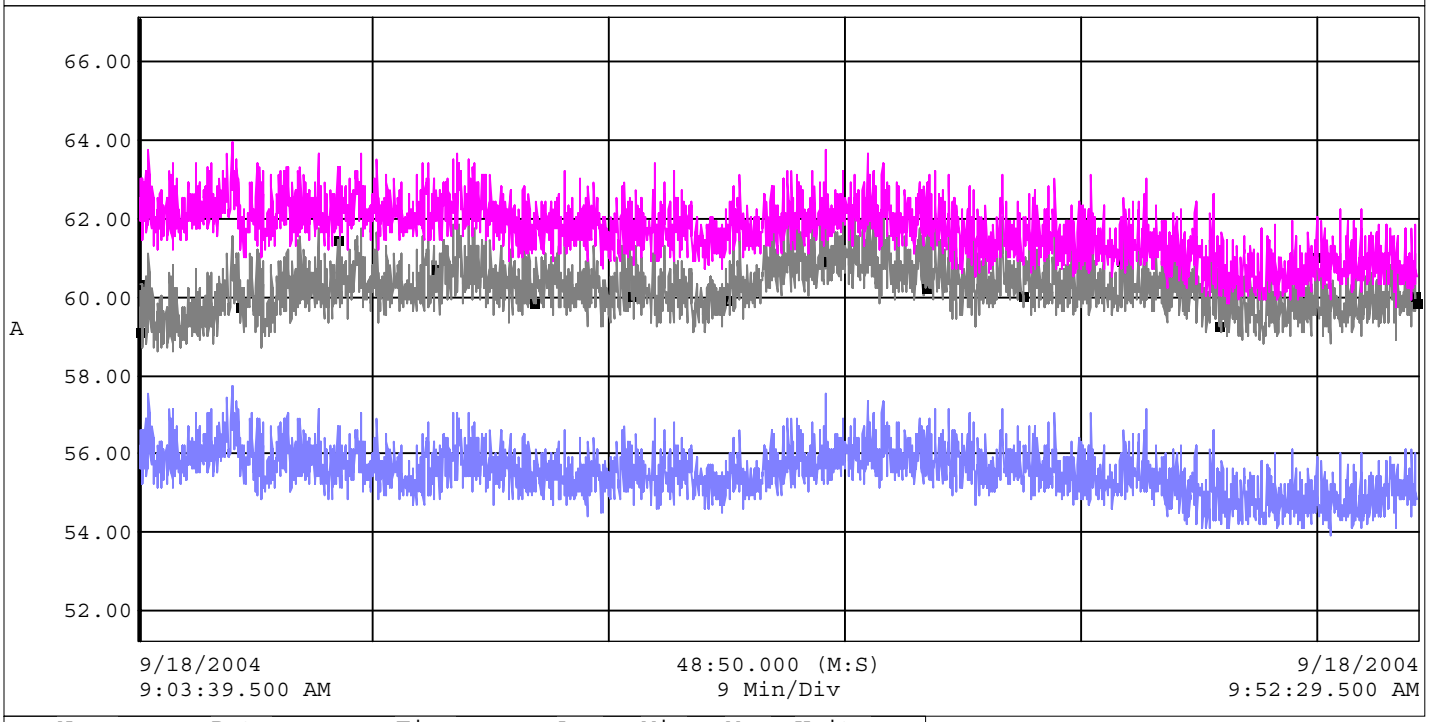
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/18/2004	9:03:39.500 AM	465.7	459.3	477.1	V
Urms Line2	9/18/2004	9:03:39.500 AM	466.3	460.2	477.2	V
Urms Line3	9/18/2004	9:03:39.500 AM	463.1	456.5	474.7	V

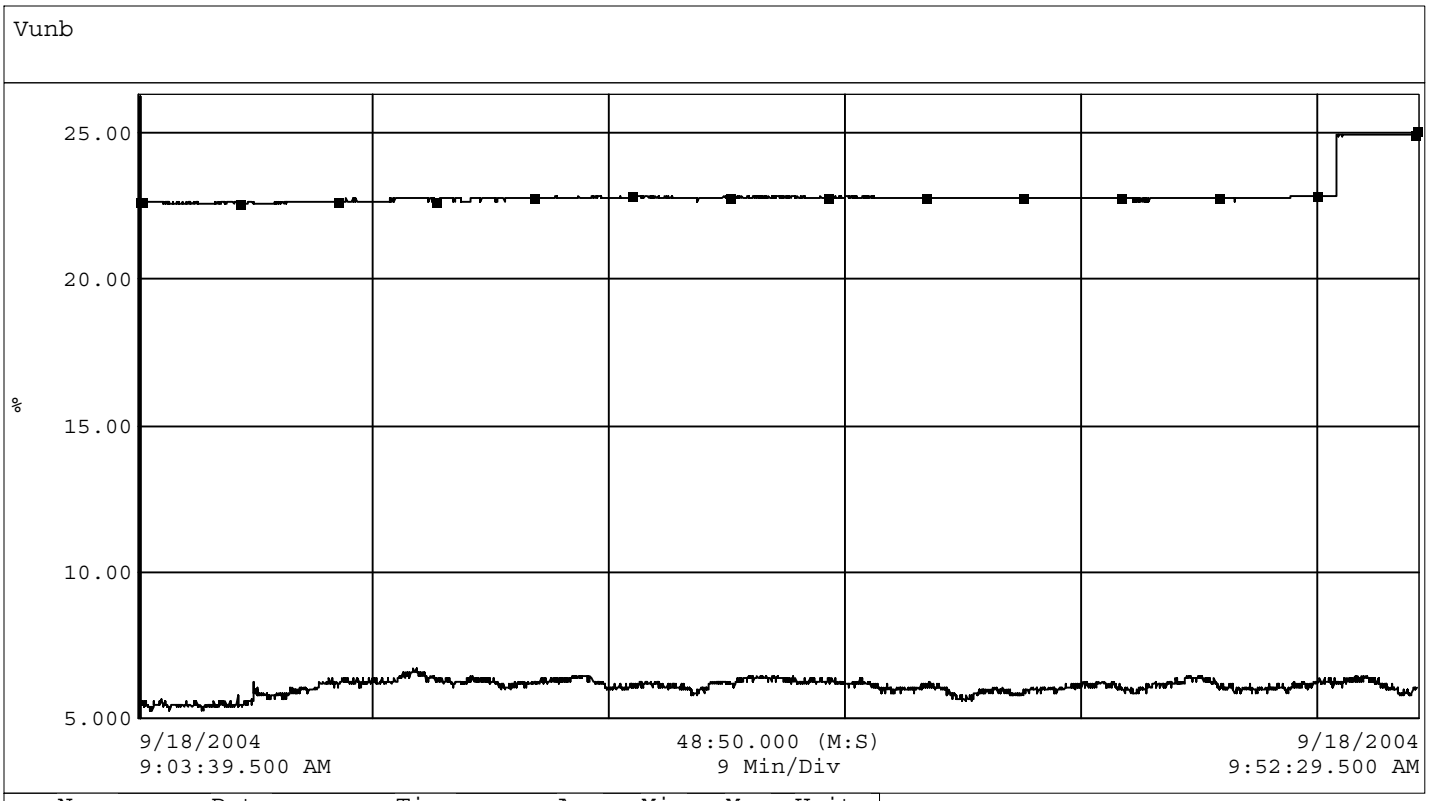
9/18/2004 - 9:03:39.000 AM
Val
467.3 — Urms Line1
469.6 — Urms Line2
465.4 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/18/2004	9:03:39.500 AM	60.22	58.60	62.80	A
Arms Line2	9/18/2004	9:03:39.500 AM	61.66	59.70	63.90	A
Arms Line3	9/18/2004	9:03:39.500 AM	55.52	53.90	57.70	A

9/18/2004 - 9:03:39.000 AM
Val
59.70 — Arms Line1
62.50 — Arms Line2
56.20 — Arms Line3

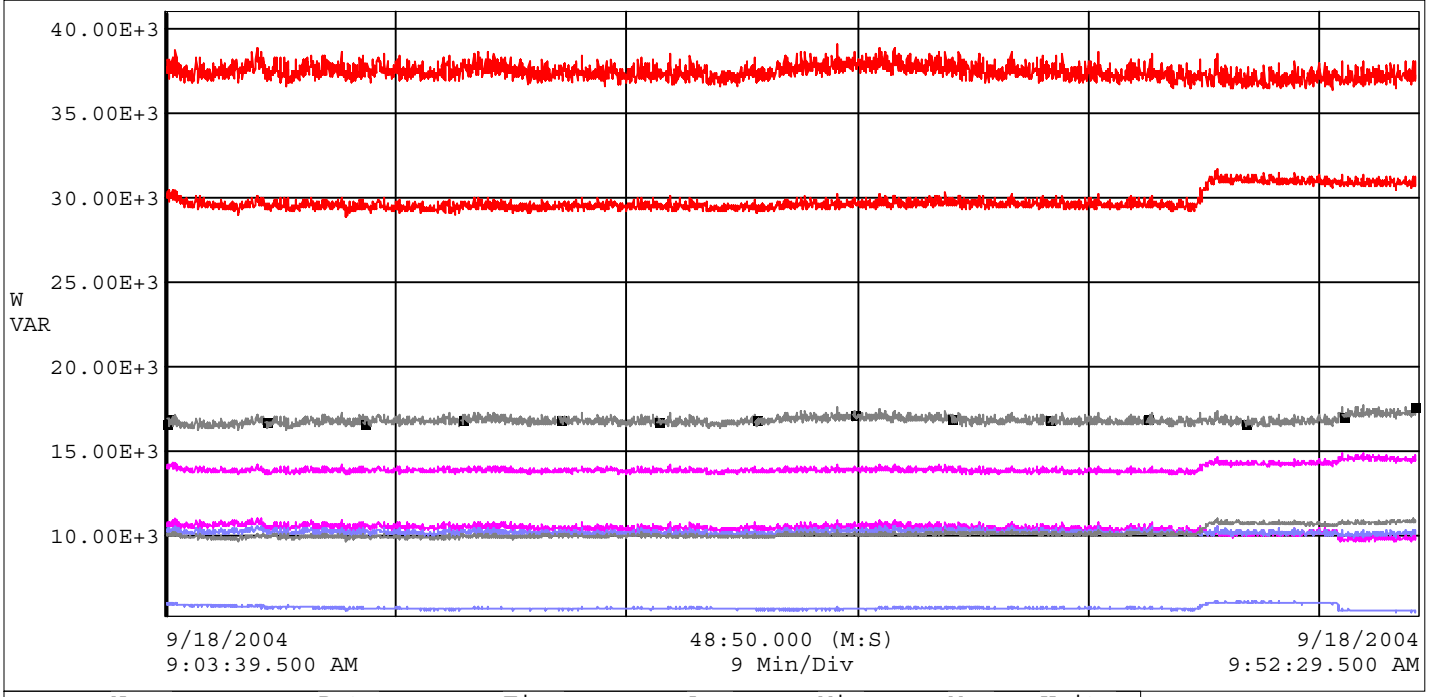


Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/18/2004	9:03:39.500 AM	22.82	22.50	25.00	%
Aunb(IEEE)	9/18/2004	9:03:39.500 AM	6.111	5.300	6.700	%

9/18/2004 - 9:03:39.000 AM
Val
22.60 ── Vunb(IEEE)
5.500 ── Aunb(IEEE)

Appendix 1K - Electrical

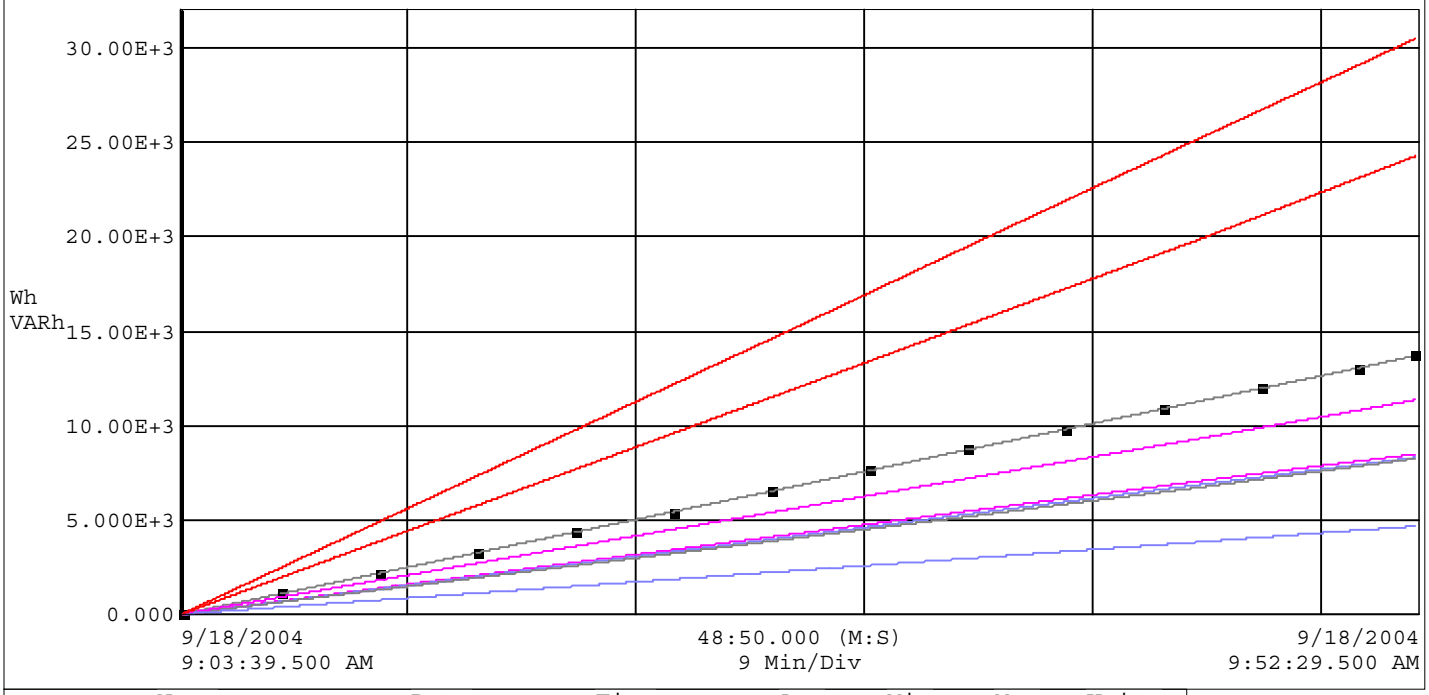
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/18/2004	9:03:39.500 AM	16.80E+3	16.26E+3	17.65E+3	W
W Line2	9/18/2004	9:03:39.500 AM	10.40E+3	9.590E+3	11.02E+3	W
W Line3	9/18/2004	9:03:39.500 AM	10.19E+3	9.903E+3	10.60E+3	W
W Sum of Phases	9/18/2004	9:03:39.500 AM	37.38E+3	36.32E+3	39.00E+3	W
VAR Line1	9/18/2004	9:03:39.500 AM	10.12E+3	9.619E+3	10.95E+3	VAR
VAR Line2	9/18/2004	9:03:39.500 AM	13.92E+3	13.57E+3	14.81E+3	VAR
VAR Line3	9/18/2004	9:03:39.500 AM	5.718E+3	5.484E+3	6.108E+3	VAR
VAR Sum of Phases	9/18/2004	9:03:39.500 AM	29.75E+3	28.82E+3	31.69E+3	VAR

9/18/2004 - 9:03:39.000 AM
Val
16.71E+3 — W Line1
10.70E+3 — W Line2
10.31E+3 — W Line3
37.71E+3 — W Sum of Phases
10.06E+3 — VAR Line1
14.10E+3 — VAR Line2
5.973E+3 — VAR Line3
30.13E+3 — VAR Sum of Phases

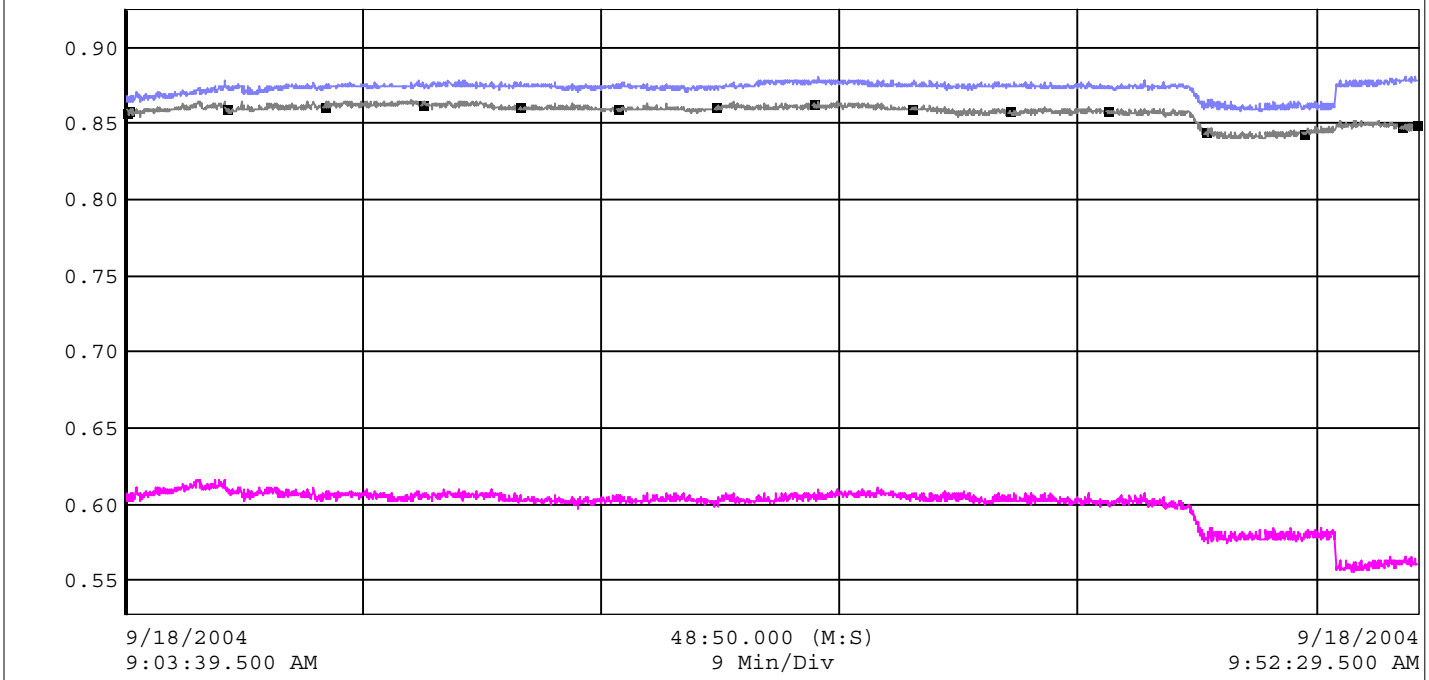
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/18/2004	9:03:39.500 AM	6.822E+3	4.591	13.67E+3	Wh
W-hours Line2	9/18/2004	9:03:39.500 AM	4.274E+3	2.843	8.468E+3	Wh
W-hours Line3	9/18/2004	9:03:39.500 AM	4.153E+3	2.784	8.293E+3	Wh
W-hours Sum of Phases	9/18/2004	9:03:39.500 AM	15.25E+3	10.22	30.44E+3	Wh
VAR-hours Line1	9/18/2004	9:03:39.500 AM	4.065E+3	2.765	8.236E+3	VARh
VAR-hours Line2	9/18/2004	9:03:39.500 AM	5.641E+3	3.805	11.33E+3	VARh
VAR-hours Line3	9/18/2004	9:03:39.500 AM	2.326E+3	1.705	4.655E+3	VARh
VAR-hours Sum of Phases	9/18/2004	9:03:39.500 AM	12.03E+3	8.133	24.23E+3	VARh

9/18/2004 - 9:03:39.000 AM
Val
4.591 — W-hours Line1
2.843 — W-hours Line2
2.784 — W-hours Line3
10.22 — W-hours Sum of Phases
2.765 — VAR-hours Line1
3.805 — VAR-hours Line2
1.705 — VAR-hours Line3
8.133 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/18/2004	9:03:39.500 AM	0.857	0.839	0.865	
PF Line2	9/18/2004	9:03:39.500 AM	0.598	0.555	0.616	
PF Line3	9/18/2004	9:03:39.500 AM	0.872	0.857	0.880	

9/18/2004 - 9:03:39.000 AM
Val
0.857 PF Line1
0.604 PF Line2
0.865 PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Agana Main WWPS\091804 - Agana Main PS - Pump 1.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Agana Main PS - Pump 1 ,

Comments
GPA Meter 01-644-845, Demand 1.61 (400/800:5 CT Ratio). Station has four 48.5 KW, ABS Submersible Pumps,

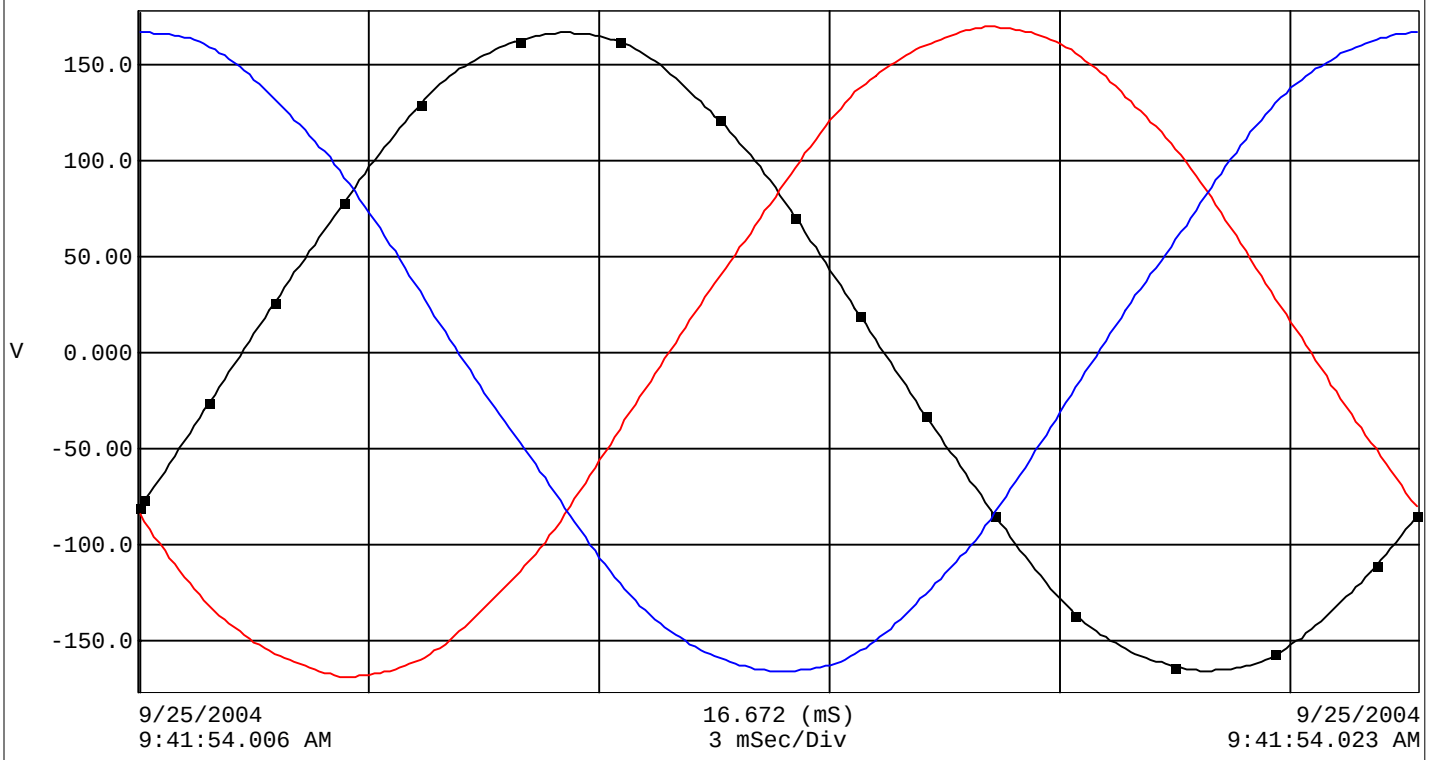
GWA Wastewater Pumping Station Assessment				
Station Name: ALUPANG	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.39	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	3	0.06	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	2	0.1	
Metering Arrangement	1.0%	2	0.02	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.325	
Generator Condition	10.0%	2	0.2	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	2	0.05	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.25	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	
	100%	**Assessment Value**		**2.5**

Comments:

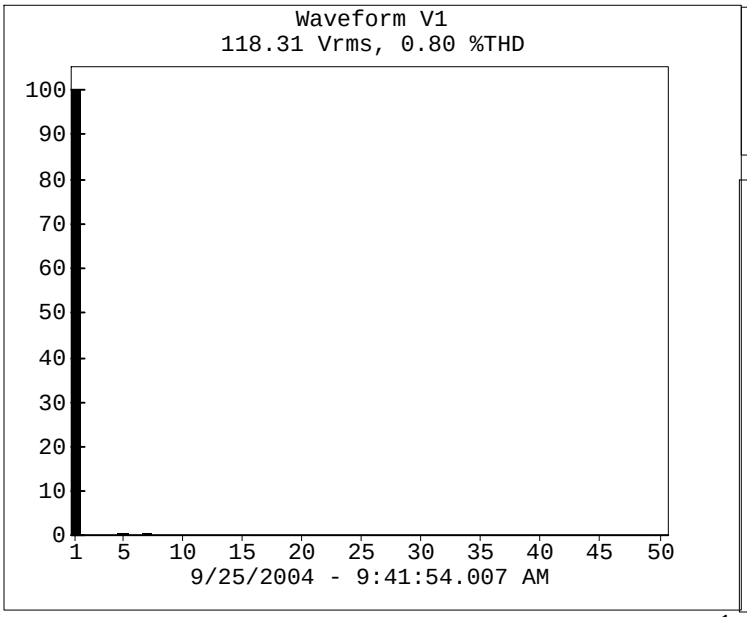
Alupang WWPS Pump 1 Photo

Recording Start Date	9/25/2004 - 9:41:54 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	9:41:54.006 AM	16.672	118.3	V
Waveform V2	9/25/2004	9:41:54.006 AM	16.672	119.9	V
Waveform V3	9/25/2004	9:41:54.006 AM	16.672	118.9	V



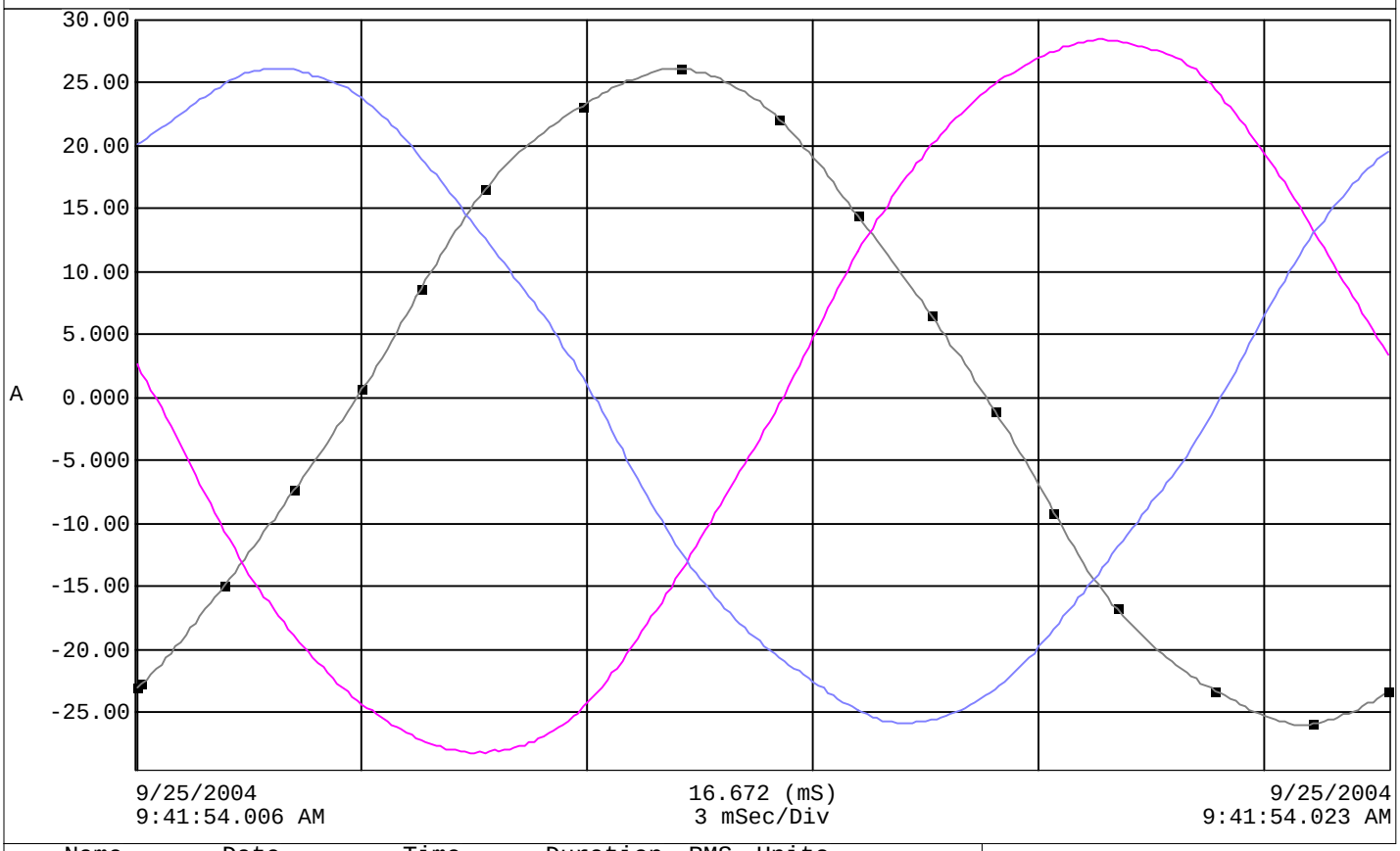
9/25/2004 - 9:41:54.000 AM

Val	
-81.90	Waveform V1
-84.80	Waveform V2
166.5	Waveform V3

Waveform V1

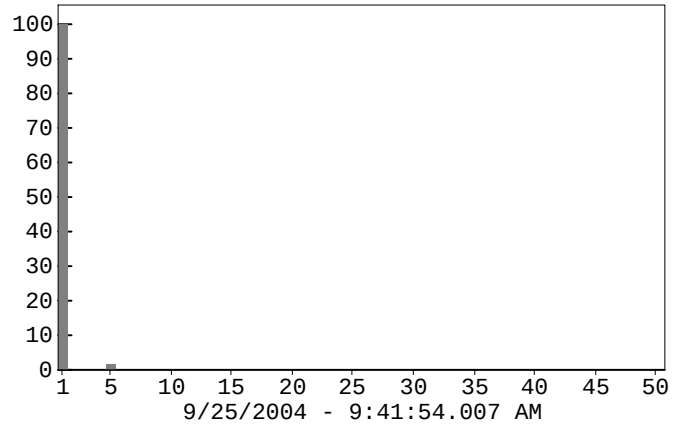
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.6	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	9:41:54.006 AM	16.672	18.29	A
Waveform I2	9/25/2004	9:41:54.006 AM	16.672	20.34	A
Waveform I3	9/25/2004	9:41:54.006 AM	16.672	18.31	A

Waveform I1
18.29 Arms, 2.06 %THD



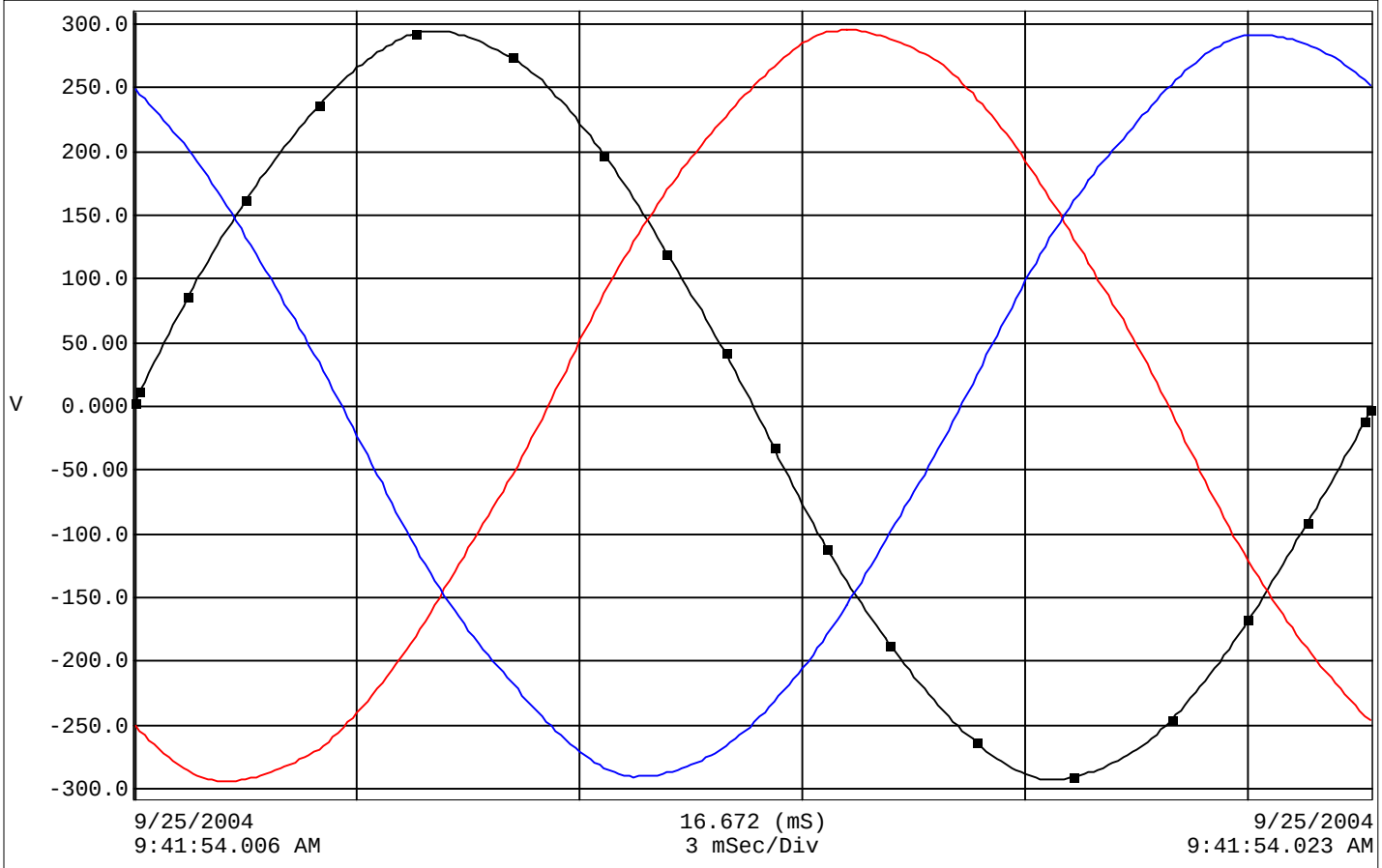
9/25/2004 - 9:41:54.000 AM

Val	
-23.10	Waveform I1
2.600	Waveform I2
20.00	Waveform I3

Waveform I1

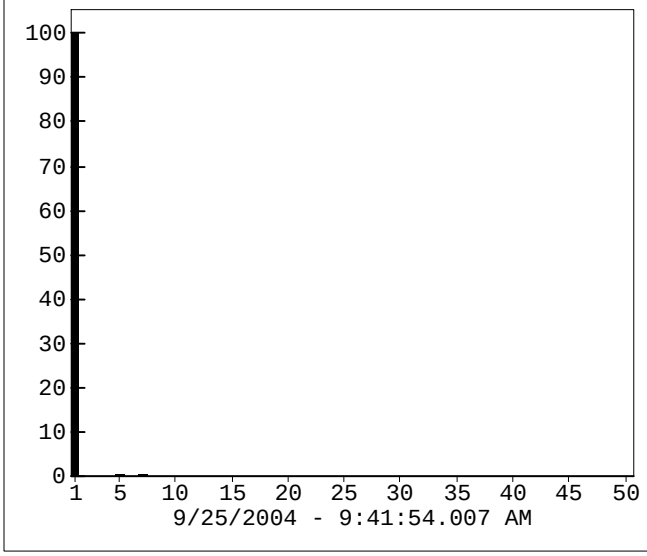
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	9:41:54.006 AM	16.672	206.4	V
Waveform U2	9/25/2004	9:41:54.006 AM	16.672	207.5	V
Waveform U3	9/25/2004	9:41:54.006 AM	16.672	204.7	V

Waveform U1
206.45 Vrms, 0.80 %THD



9/25/2004 - 9:41:54.000 AM

	Val	
—	2.900	Waveform U1
—	-251.4	Waveform U2
—	248.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 9:41:54 AM
Duration: 0:0.000 (M:S)
W: 1.813E+3 W
VAR: 1.186E+3 W
VA: 2.167E+3 W
Power Factor: 0.837
Displacement Power Factor: 0.837
TAN: 0.653
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Alupang WWPS\092504-Alupang WWPS Pump 1 Photo.dvb

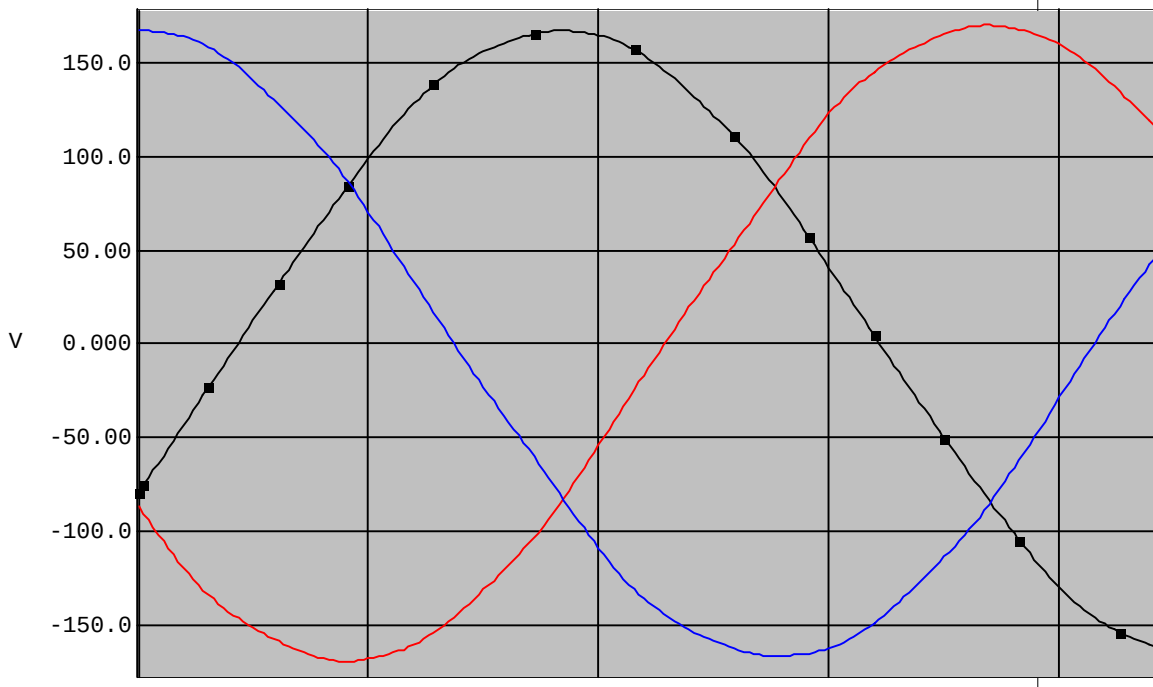
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Alupang WWPS - Pump 2 Photo ,

Comments

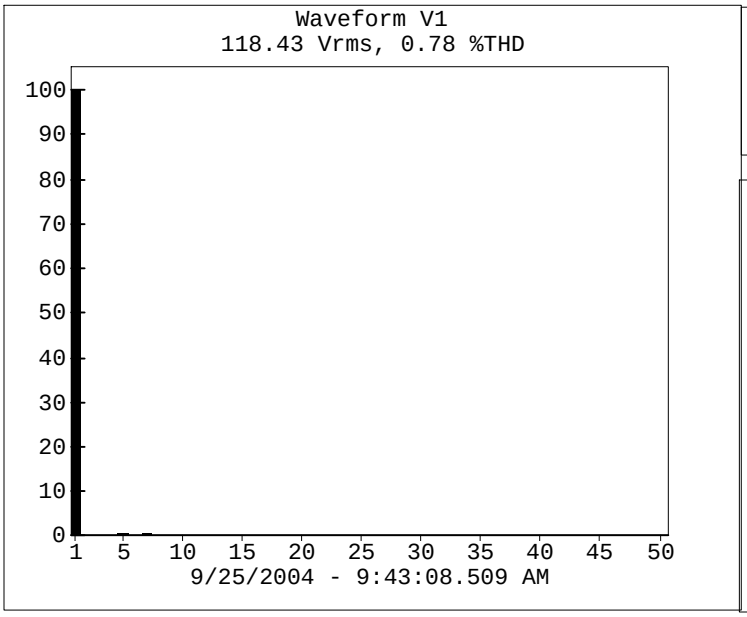
Alupang WWPS Pump 2

Recording Start Date	9/25/2004 - 9:43:08 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	9:43:08.509 AM	16.672	118.4	V
Waveform V2	9/25/2004	9:43:08.509 AM	16.672	120.0	V
Waveform V3	9/25/2004	9:43:08.509 AM	16.672	119.1	V

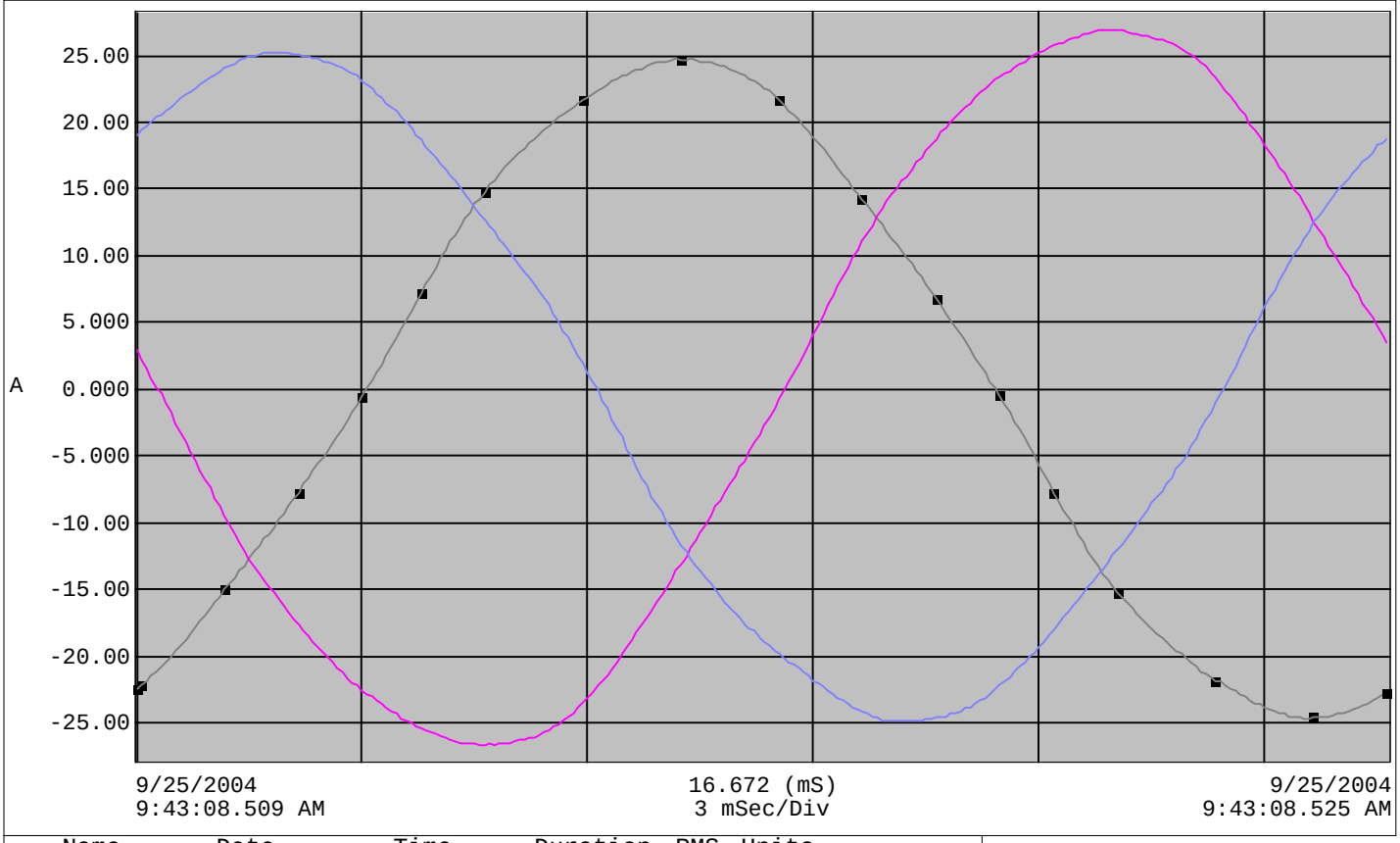


9/25/2004 - 9:43:08.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

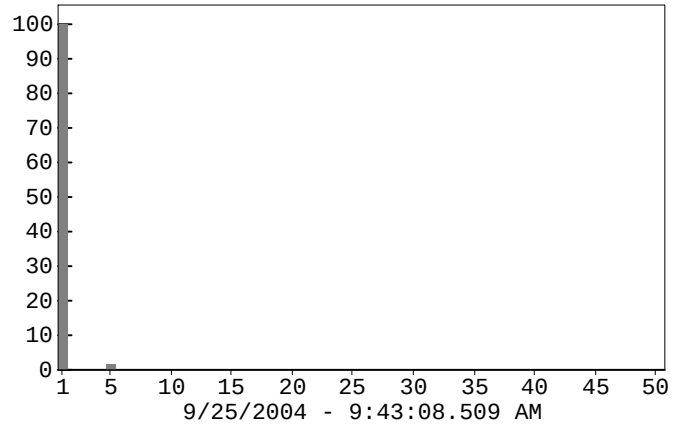
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	9:43:08.509 AM	16.672	17.38	A
Waveform I2	9/25/2004	9:43:08.509 AM	16.672	19.10	A
Waveform I3	9/25/2004	9:43:08.509 AM	16.672	17.72	A

Waveform I1
17.38 Arms, 2.02 %THD

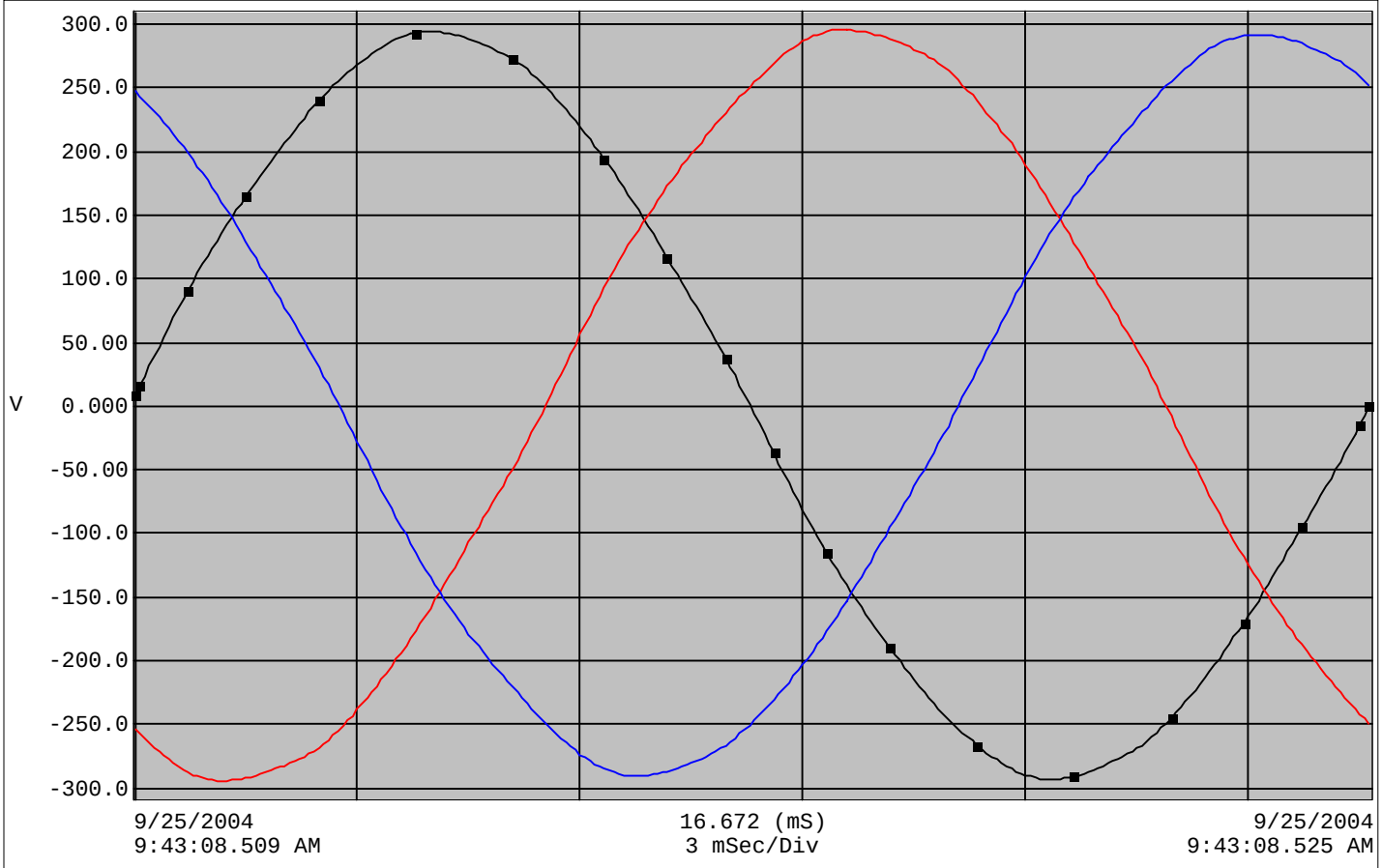


9/25/2004 - 9:43:08.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

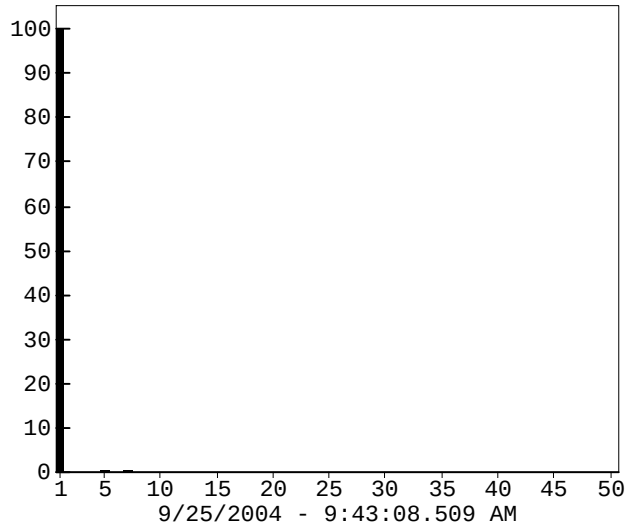
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	9:43:08.509 AM	16.672	206.7	V
Waveform U2	9/25/2004	9:43:08.509 AM	16.672	207.8	V
Waveform U3	9/25/2004	9:43:08.509 AM	16.672	204.9	V

Waveform U1
206.65 Vrms, 0.82 %THD



9/25/2004 - 9:43:08.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 9/25/2004
Start Time: 9:43:08 AM
Duration: 0:0.000 (M:S)
W: 1.670E+3 W
VAR: 1.218E+3 W
VA: 2.067E+3 W
Power Factor: 0.808
Displacement Power Factor: 0.808
TAN: 0.729
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Alupang WWPS\092504-Alupang WWPS Pump 2 Photo.dvb

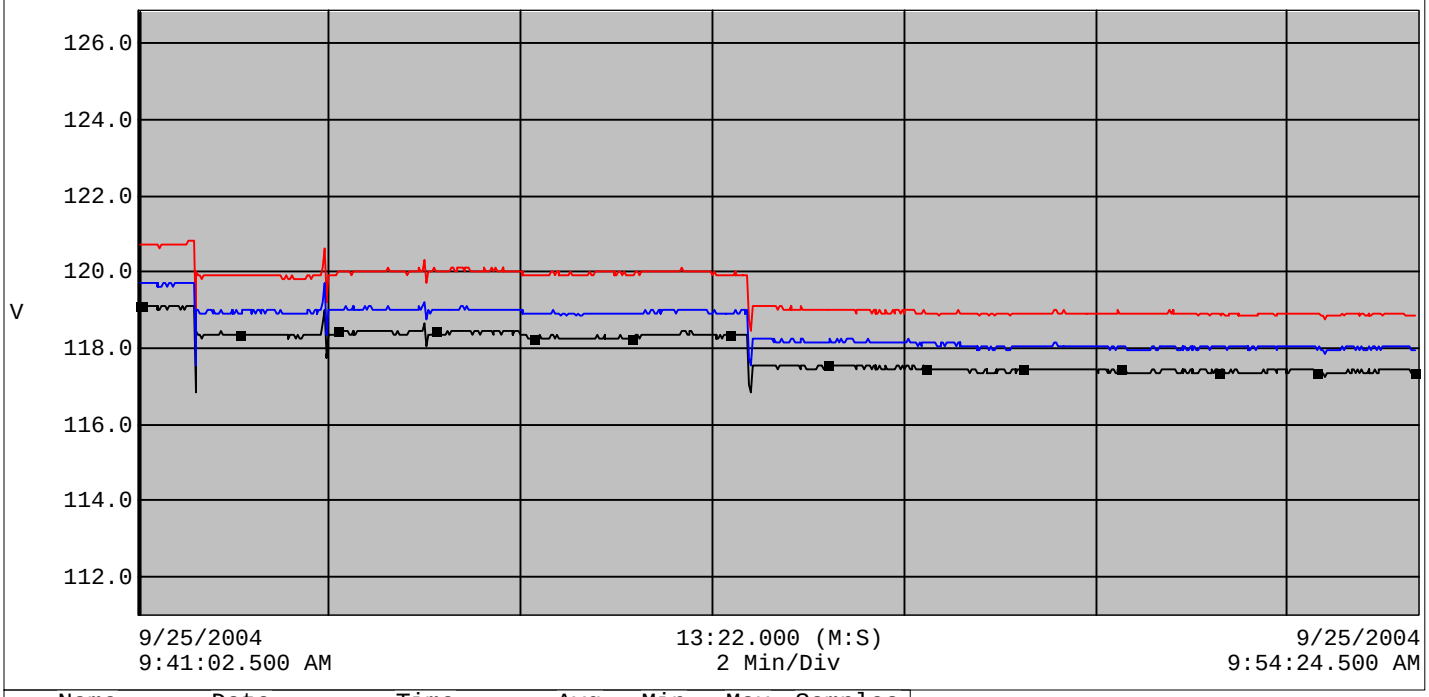
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Alugpang WWPS - Pump 2 Photo ,

Comments

Alupang WWPS Pumps 1 and 2

Recording Start Date	9/25/2004 - 9:41:02 AM
Recording Duration	13:22 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

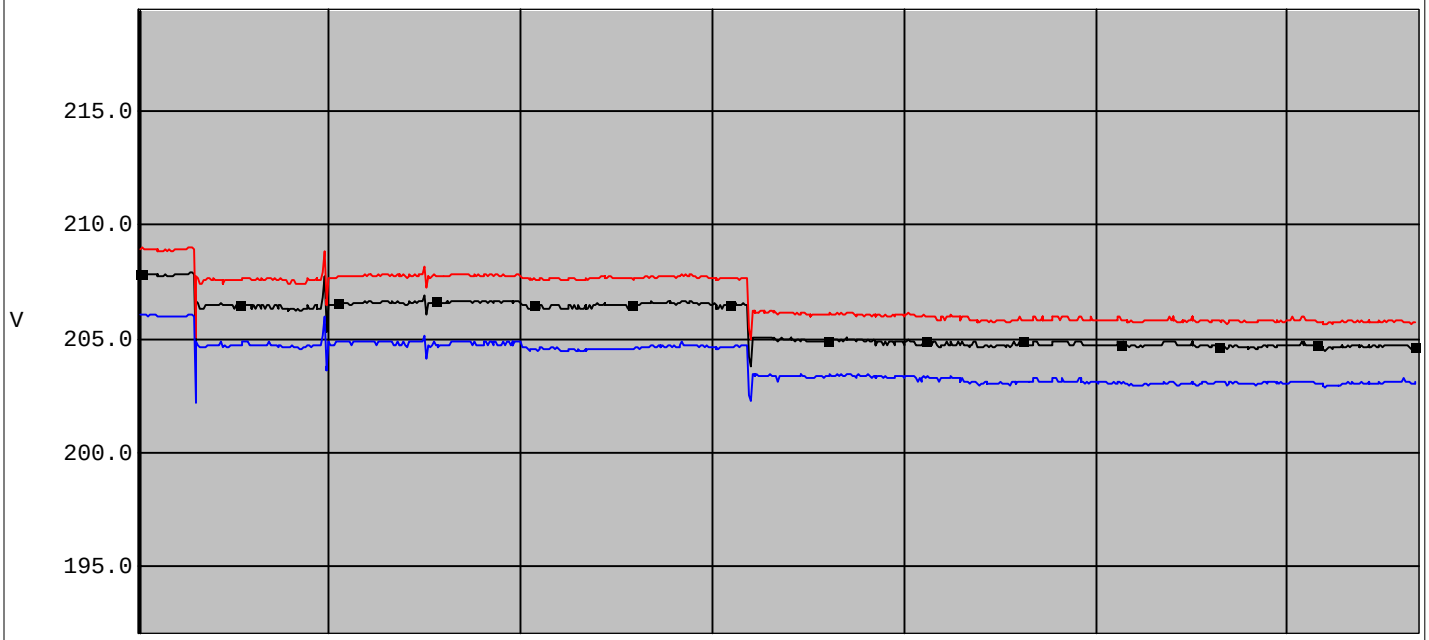
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/25/2004	9:41:02.500 AM	117.9	116.8	119.1	803
Vrms Line2	9/25/2004	9:41:02.500 AM	119.4	118.4	120.8	803
Vrms Line3	9/25/2004	9:41:02.500 AM	118.5	117.5	119.7	803

9/25/2004 - 9:41:02.000 AM
Val
119.1 — Vrms Line1
120.7 — Vrms Line2
119.7 — Vrms Line3

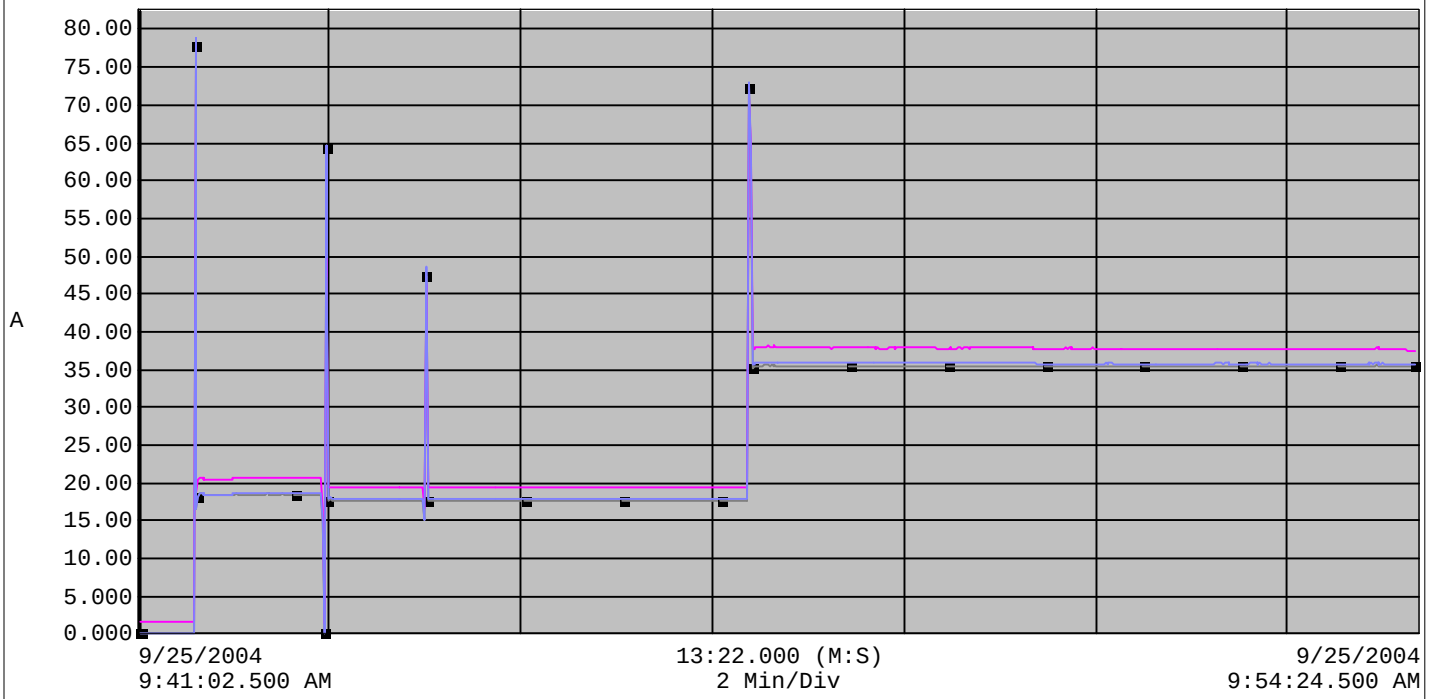
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/25/2004	9:41:02.500 AM	205.6	203.7	207.9	V
Urms Line2	9/25/2004	9:41:02.500 AM	206.7	204.9	209.0	V
Urms Line3	9/25/2004	9:41:02.500 AM	203.9	202.1	206.0	V

9/25/2004 - 9:41:02.000 AM
Val
207.8 Urms Line1
208.9 Urms Line2
206.0 Urms Line3

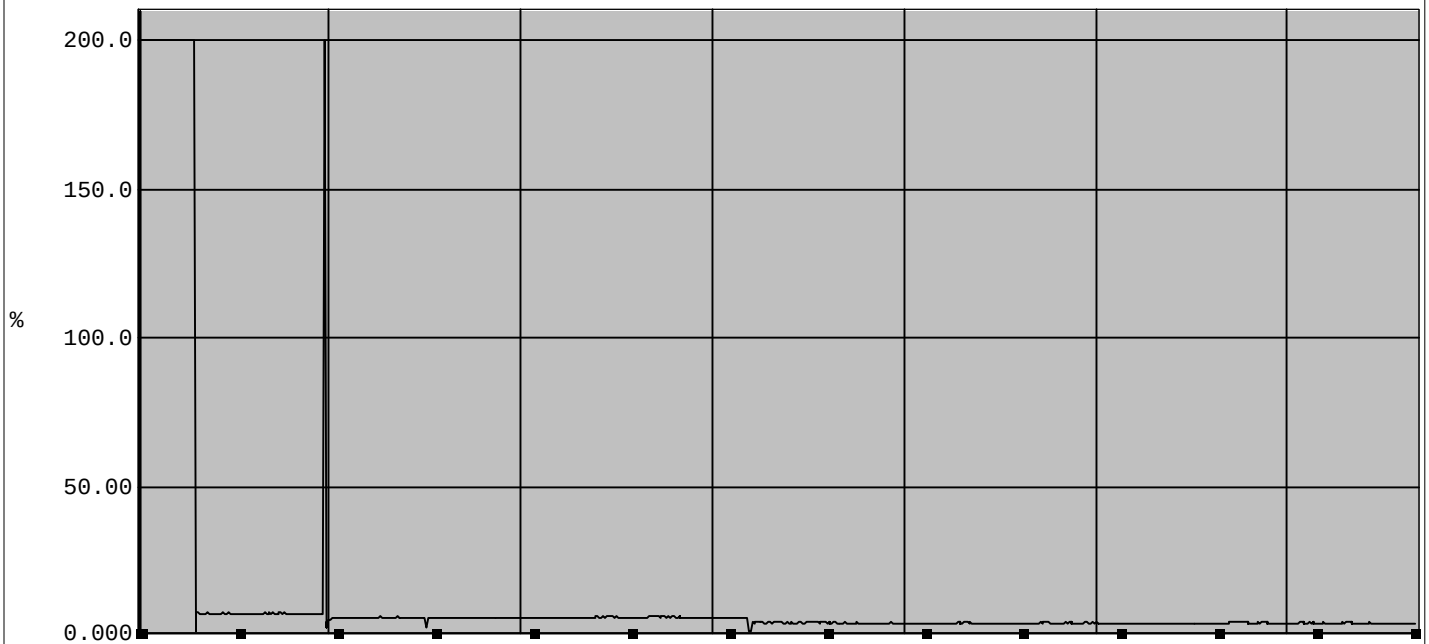
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/25/2004	9:41:02.500 AM	26.37	0.000	77.80	A
Arms Line2	9/25/2004	9:41:02.500 AM	28.48	1.300	76.70	A
Arms Line3	9/25/2004	9:41:02.500 AM	26.70	0.000	78.60	A

9/25/2004 - 9:41:02.000 AM
Val
0.000 — Arms Line1
1.400 — Arms Line2
0.000 — Arms Line3

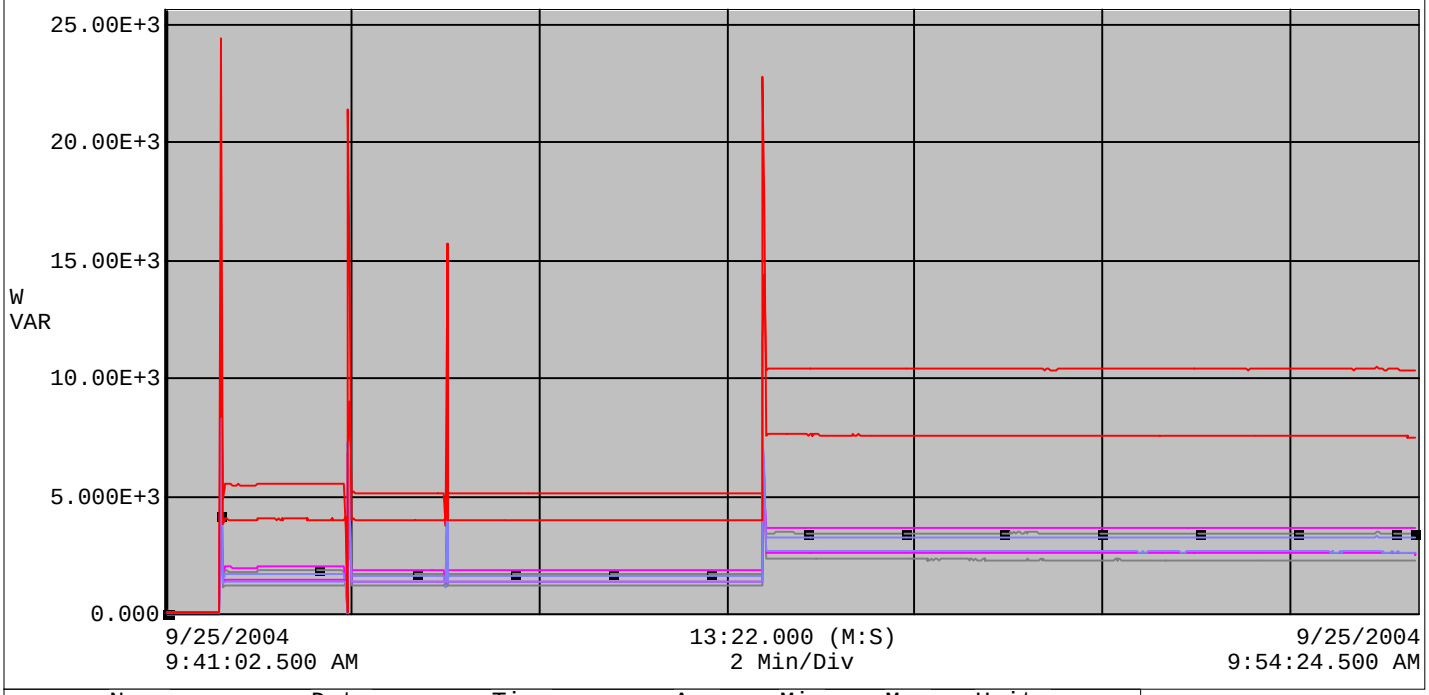
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/25/2004	9:41:02.500 AM	0.714	0.600	0.800	%
Aunb(IEEE)	9/25/2004	9:41:02.500 AM	13.76	1.200	200.0	%

9/25/2004 - 9:41:02.000 AM
Val
0.700 —— Vunb(IEEE)
200.0 —— Aunb(IEEE)

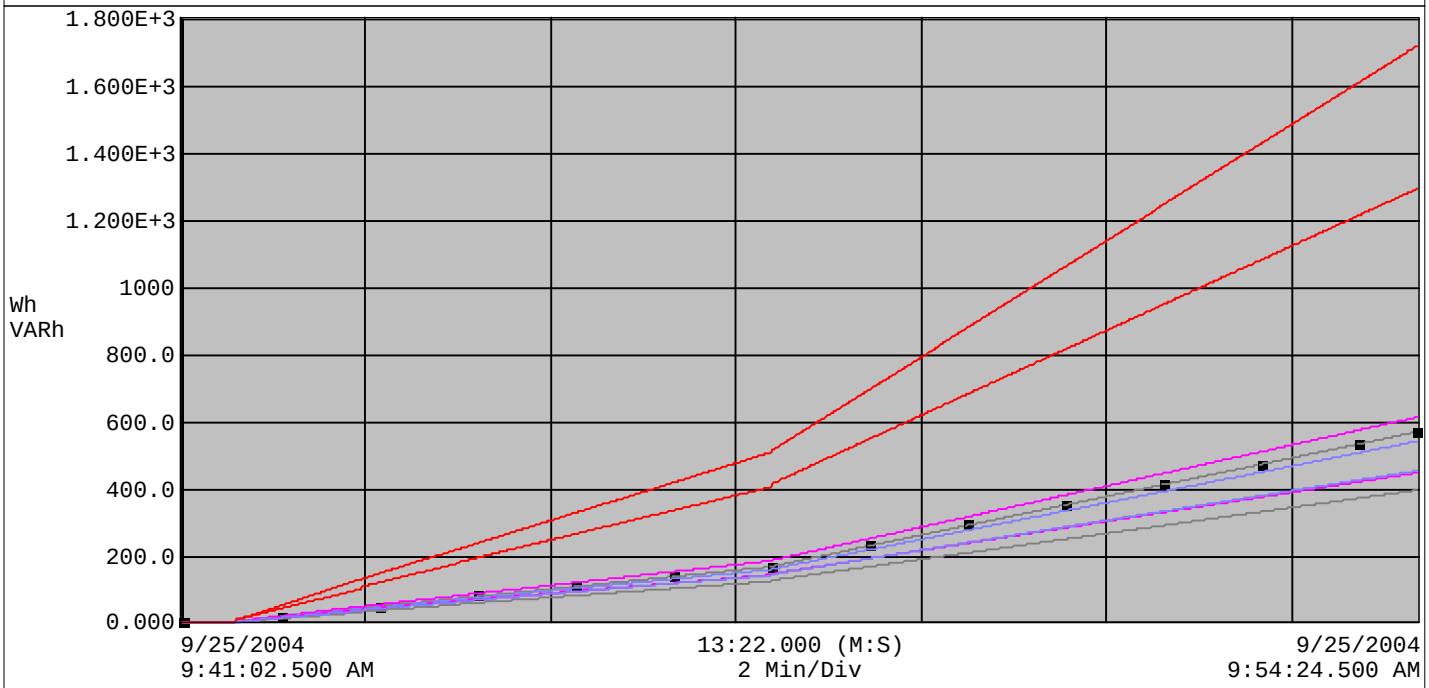
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/25/2004	9:41:02.500 AM	2.543E+3	0.000	4.770E+3	W
W Line2	9/25/2004	9:41:02.500 AM	2.738E+3	114.9	5.021E+3	W
W Line3	9/25/2004	9:41:02.500 AM	2.416E+3	0.000	4.616E+3	W
W Sum of Phases	9/25/2004	9:41:02.500 AM	7.697E+3	114.7	14.41E+3	W
VAR Line1	9/25/2004	9:41:02.500 AM	1.766E+3	0.000	8.088E+3	VAR
VAR Line2	9/25/2004	9:41:02.500 AM	1.997E+3	110.8	8.000E+3	VAR
VAR Line3	9/25/2004	9:41:02.500 AM	2.024E+3	0.000	8.267E+3	VAR
VAR Sum of Phases	9/25/2004	9:41:02.500 AM	5.787E+3	110.7	24.36E+3	VAR

9/25/2004 - 9:41:02.000 AM
Val
0.000 — W Line1
117.7 — W Line2
0.000 — W Line3
117.8 — W Sum of Phases
0.000 — VAR Line1
118.9 — VAR Line2
0.000 — VAR Line3
119.0 — VAR Sum of Phases

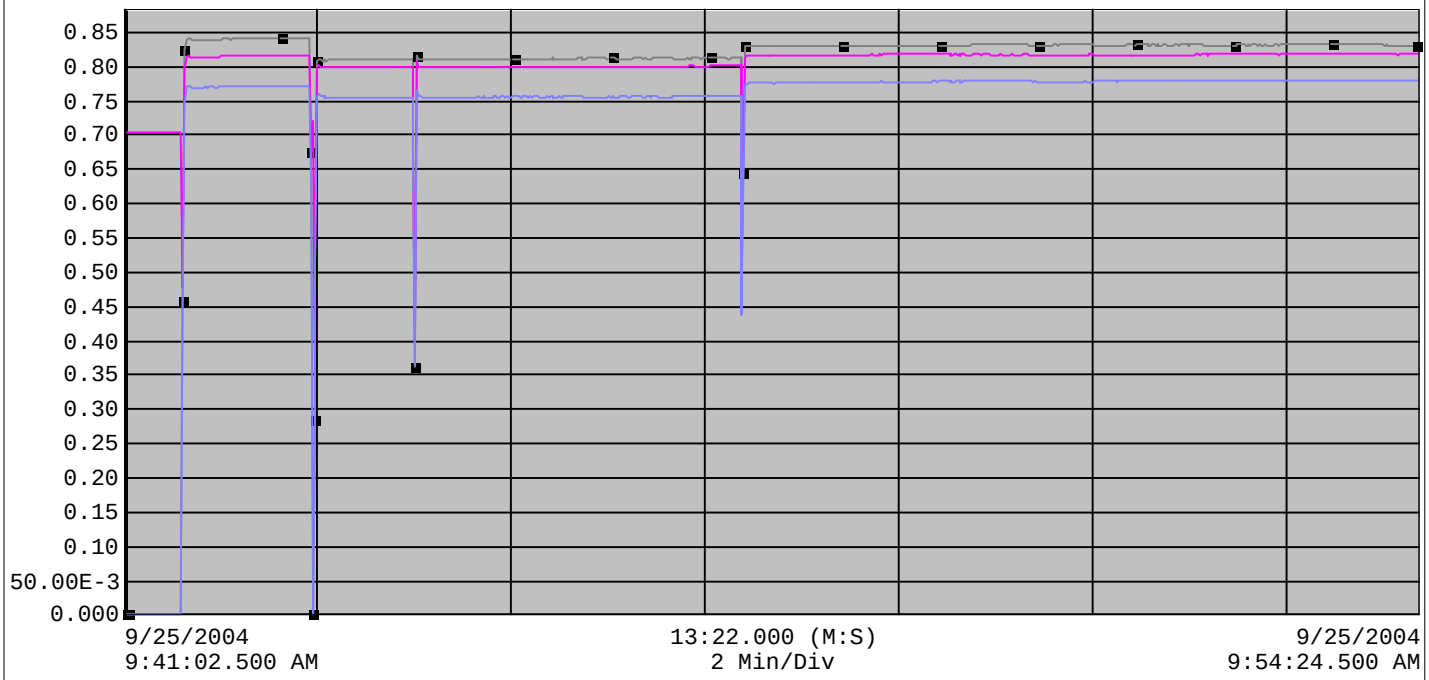
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/25/2004	9:41:02.500 AM	228.6	0.000	567.3	Wh
W-hours Line2	9/25/2004	9:41:02.500 AM	248.7	37.28E-3	610.7	Wh
W-hours Line3	9/25/2004	9:41:02.500 AM	217.0	0.000	538.9	Wh
W-hours Sum of Phases	9/25/2004	9:41:02.500 AM	694.4	52.40E-3	1.717E+3	Wh
VAR-hours Line1	9/25/2004	9:41:02.500 AM	162.9	0.000	393.9	VARh
VAR-hours Line2	9/25/2004	9:41:02.500 AM	186.1	27.20E-3	445.5	VARh
VAR-hours Line3	9/25/2004	9:41:02.500 AM	186.8	0.000	451.4	VARh
VAR-hours Sum of Phases	9/25/2004	9:41:02.500 AM	535.7	39.40E-3	1.291E+3	VARh

9/25/2004 - 9:41:02.000 AM
Val
0.000 — W-hours Line1
37.28E-3 — W-hours Line2
0.000 — W-hours Line3
52.40E-3 — W-hours Sum of Phases
0.000 — VAR-hours Line1
27.20E-3 — VAR-hours Line2
0.000 — VAR-hours Line3
39.40E-3 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/25/2004	9:41:02.500 AM	0.784	0.000	0.840	
PF Line2	9/25/2004	9:41:02.500 AM	0.802	0.310	0.818	
PF Line3	9/25/2004	9:41:02.500 AM	0.731	0.000	0.779	

9/25/2004 - 9:41:02.000 AM
Val
0.000 — PF Line1
0.704 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Alupang WWPS\092504-Alupang WWPS Pump 1 and 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Alupang WWPS - Pumps 1 and 2 ,

Comments
GPA Meter 78-285-251, Demand 1.0. Float level control. Measured at feeder to control panel.

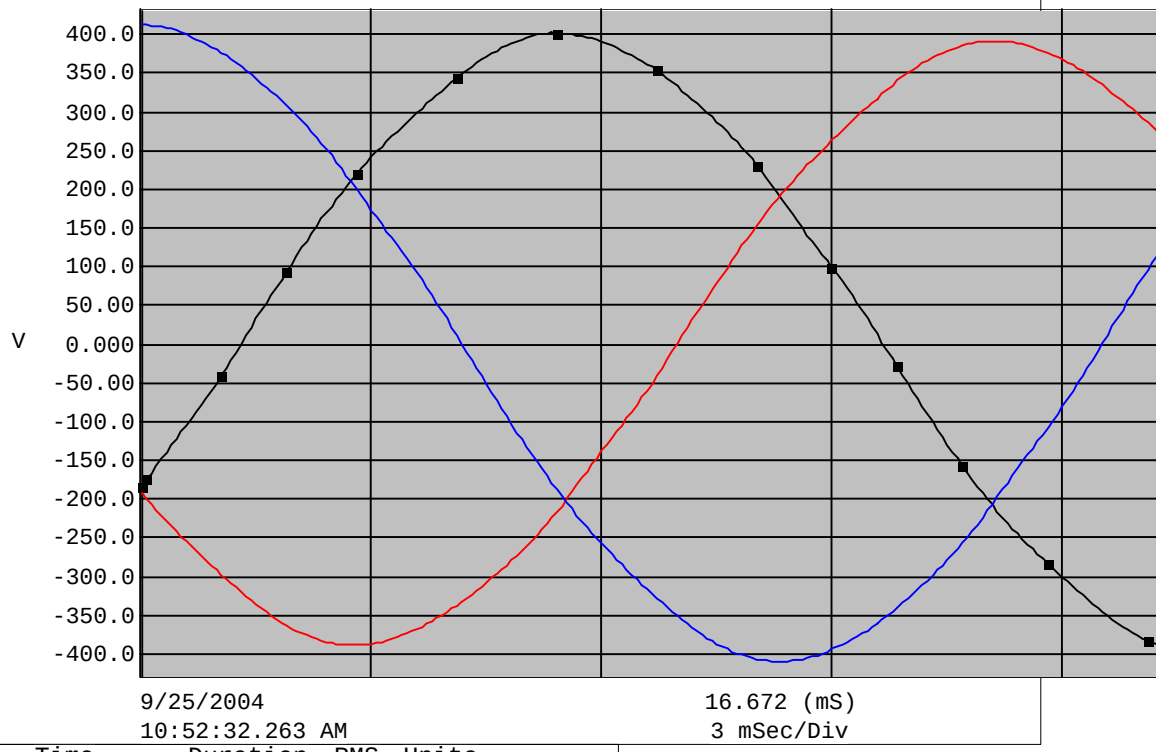
GWA Wastewater Pumping Station Assessment				
Station Name: ASAN	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.38	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	2	0.1	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.175	
Main Disconnect	5.0%	2	0.1	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.475	
Generator Condition	10.0%	2	0.2	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Secondary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.22	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.03	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	0	0	
	100%	**Assessment Value**		**2.5**

Comments:

Asan WWPS Pump 1 Photo

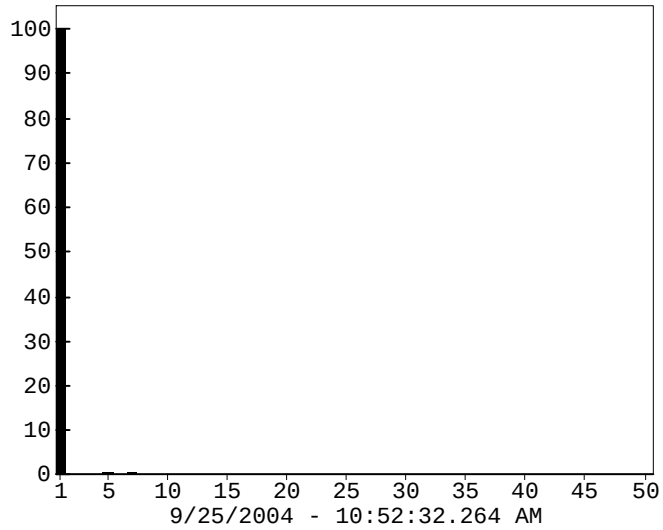
Recording Start Date	9/25/2004 - 10:52:32 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	10:52:32.263 AM	16.672	280.8	V
Waveform V2	9/25/2004	10:52:32.263 AM	16.672	273.6	V
Waveform V3	9/25/2004	10:52:32.263 AM	16.672	288.4	V

Waveform V1
280.84 Vrms, 1.11 %THD



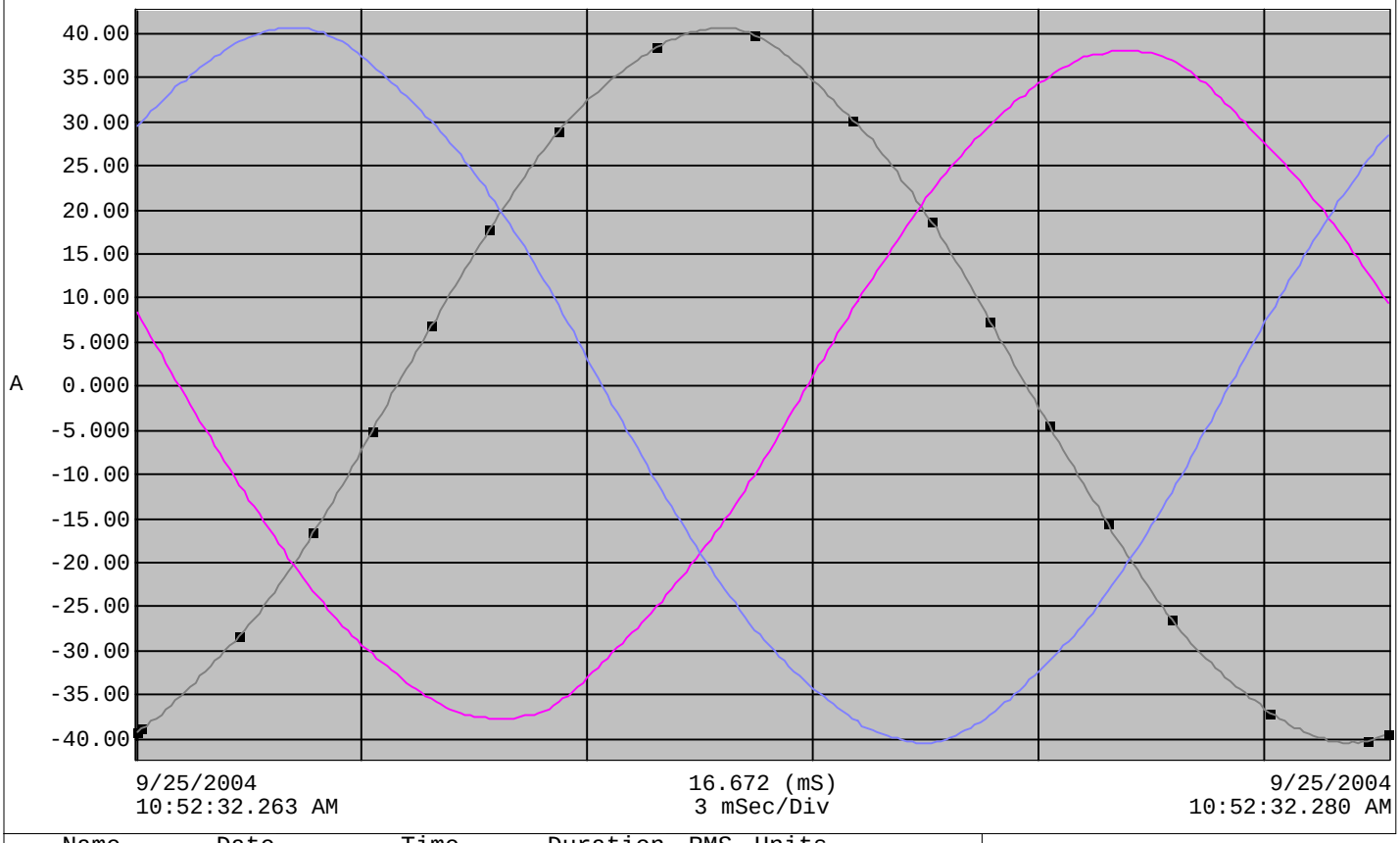
9/25/2004 - 10:52:32.000 AM

Val	
-186.0	Waveform V1
-193.6	Waveform V2
411.1	Waveform V3

Waveform V1

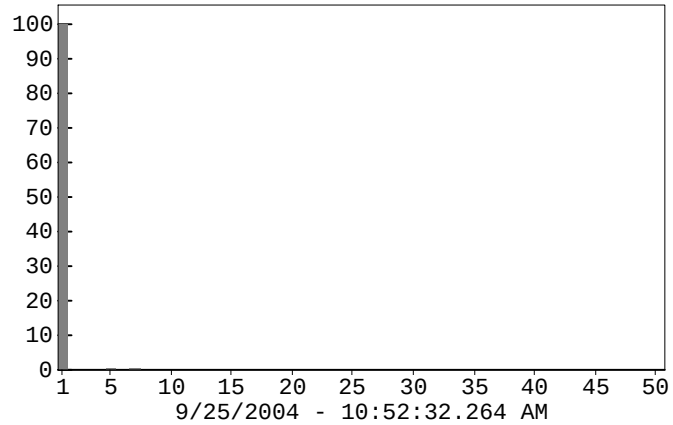
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	10:52:32.263 AM	16.672	28.29	A
Waveform I2	9/25/2004	10:52:32.263 AM	16.672	26.51	A
Waveform I3	9/25/2004	10:52:32.263 AM	16.672	28.39	A

Waveform I1
28.29 Arms, 1.08 %THD



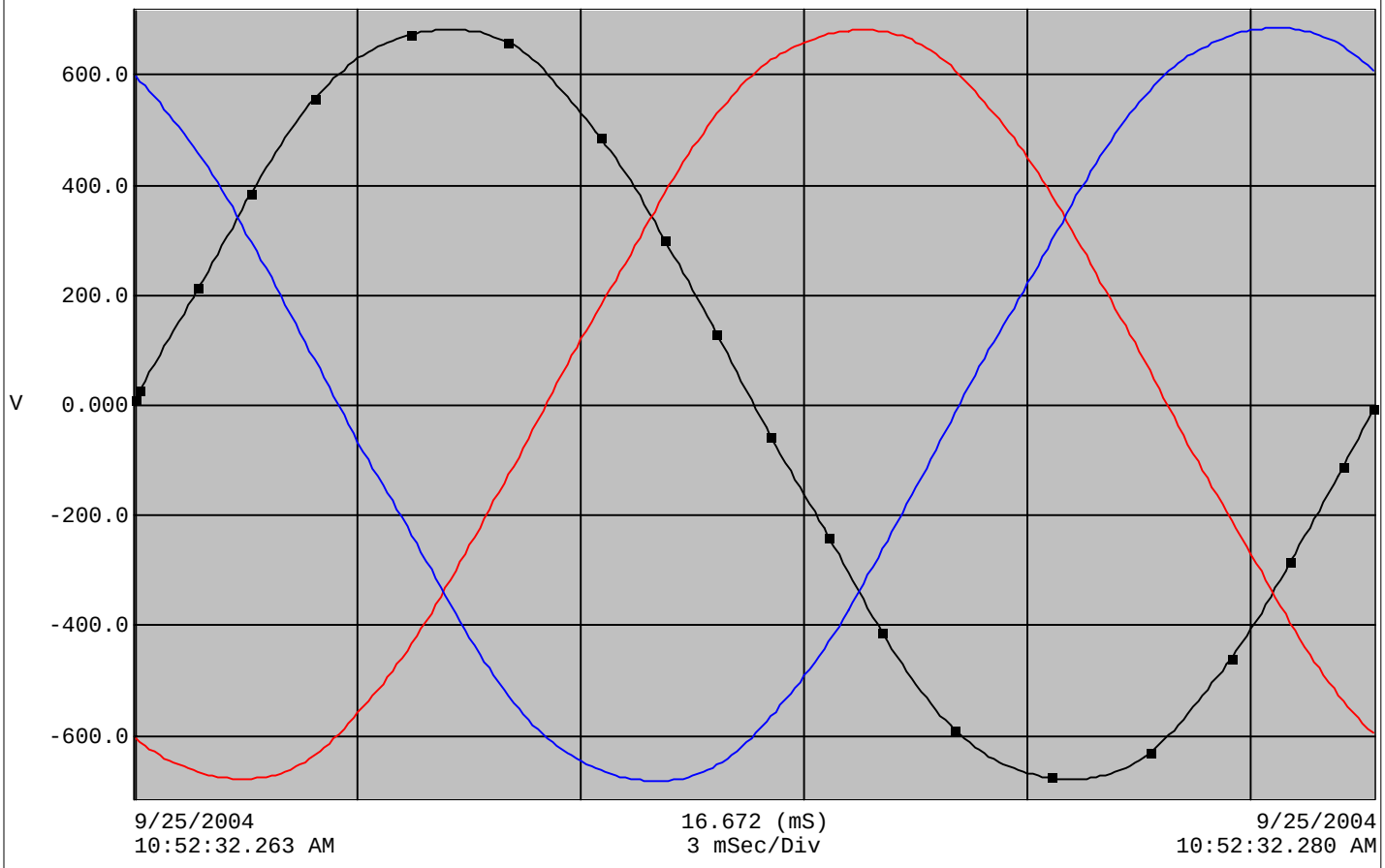
9/25/2004 - 10:52:32.000 AM

Val	
-39.30	Waveform I1
8.300	Waveform I2
29.30	Waveform I3

Waveform I1

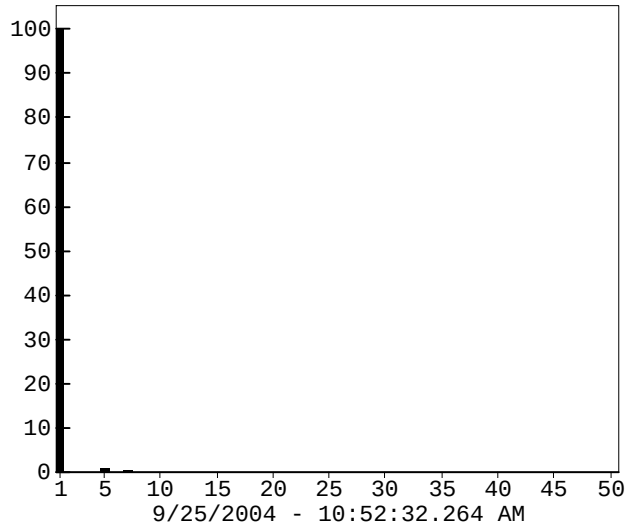
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.2	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	10:52:32.263 AM	16.672	486.5	V
Waveform U2	9/25/2004	10:52:32.263 AM	16.672	484.9	V
Waveform U3	9/25/2004	10:52:32.263 AM	16.672	488.3	V

Waveform U1
486.53 Vrms, 1.09 %THD



9/25/2004 - 10:52:32.000 AM
Val
7.600 — Waveform U1
-604.8 — Waveform U2
597.2 — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 10:52:32 AM
Duration: 0:0.000 (M:S)
W: 5.286E+3 W
VAR: 5.845E+3 W
VA: 7.880E+3 W
Power Factor: 0.671
Displacement Power Factor: 0.671
TAN: 1.105
VoltageRatio: 1.000
CurrentRatio: 1.000
```

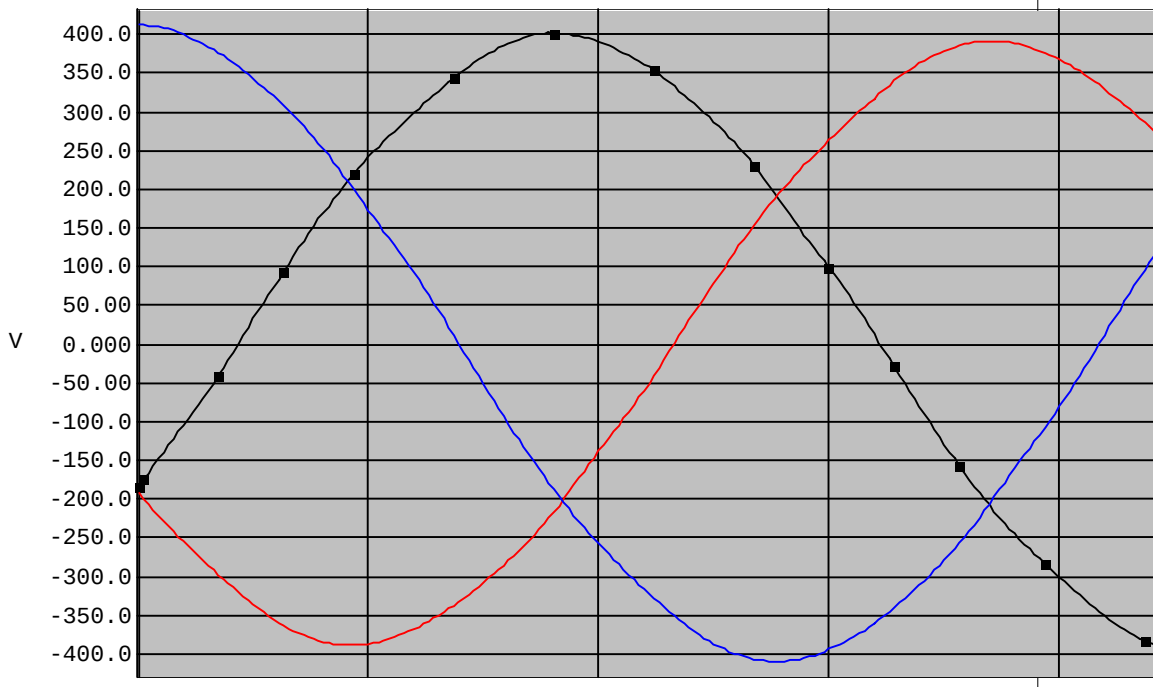
Photo Report

Database: X:\Asan WWPS\092504- Asan WWPS Pump 1 Photo.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Test Site Asan WWPS - Pump 1 Photo ,
Comments	

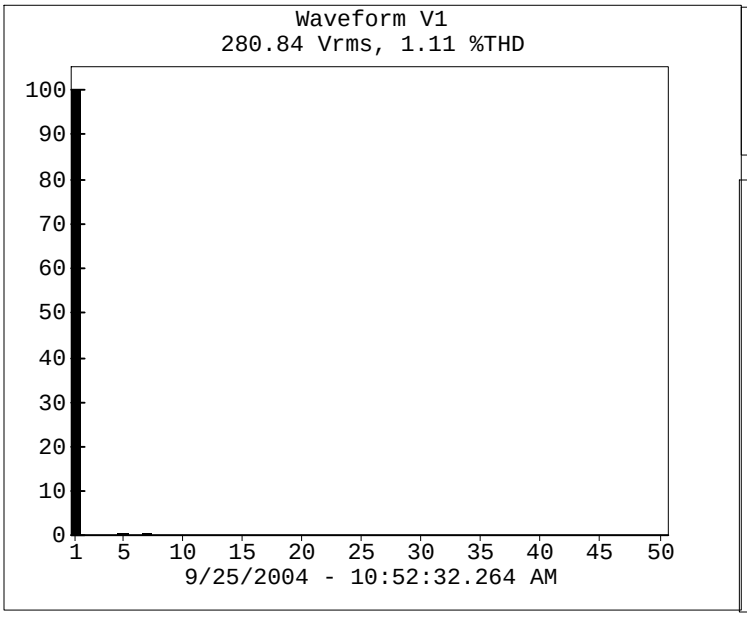
Asan WWPS Pump 2 Photo

Recording Start Date	9/25/2004 - 10:52:32 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	10:52:32.263 AM	16.672	280.8	V
Waveform V2	9/25/2004	10:52:32.263 AM	16.672	273.6	V
Waveform V3	9/25/2004	10:52:32.263 AM	16.672	288.4	V



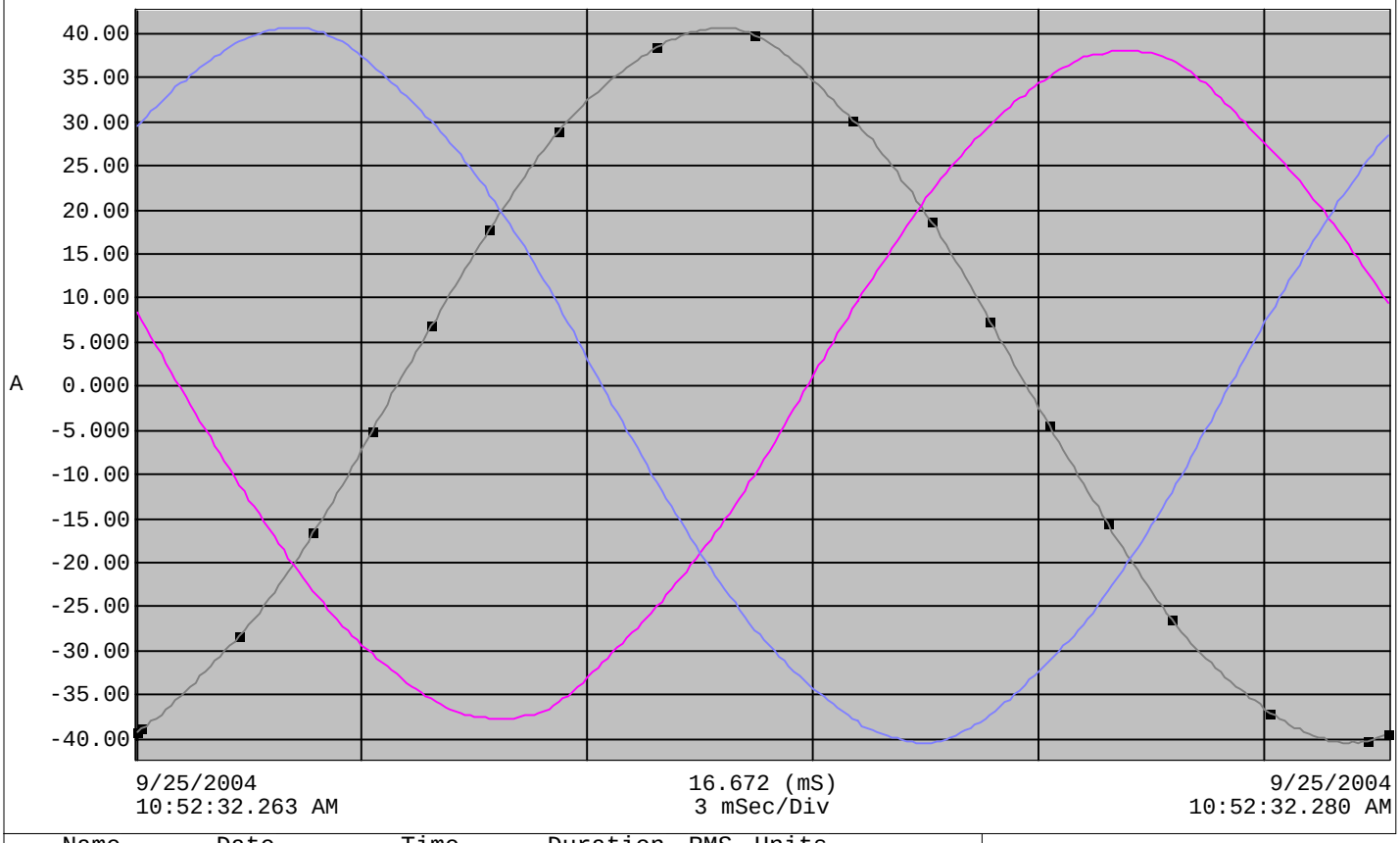
9/25/2004 - 10:52:32.000 AM

Val	
-186.0	Waveform V1
-193.6	Waveform V2
411.1	Waveform V3

Waveform V1

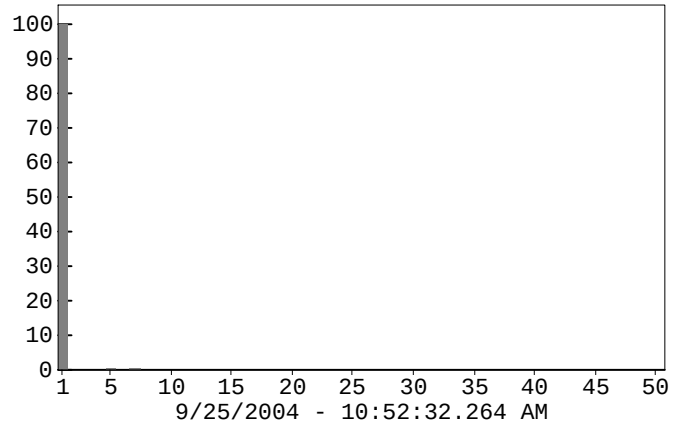
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	10:52:32.263 AM	16.672	28.29	A
Waveform I2	9/25/2004	10:52:32.263 AM	16.672	26.51	A
Waveform I3	9/25/2004	10:52:32.263 AM	16.672	28.39	A

Waveform I1
28.29 Arms, 1.08 %THD



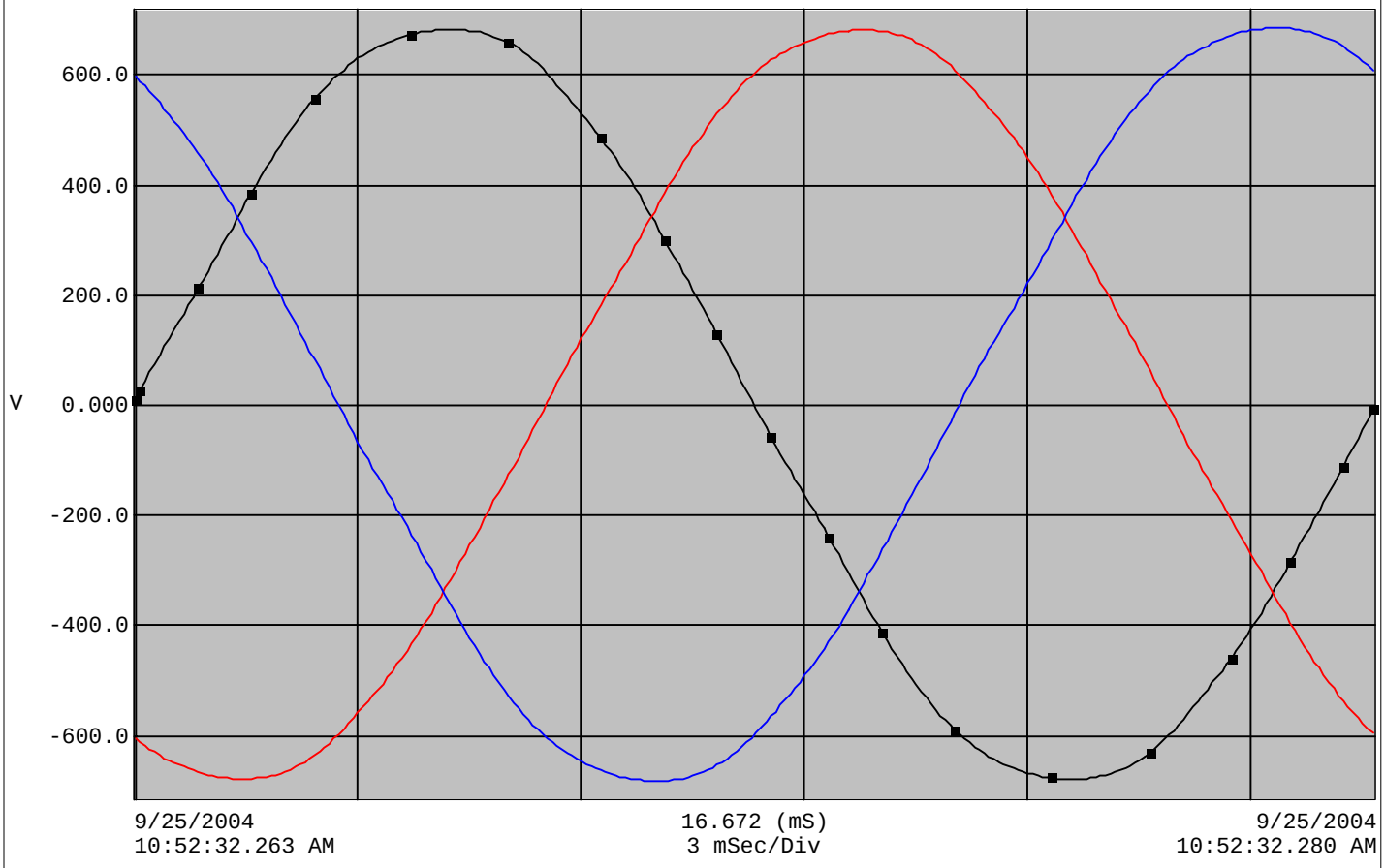
9/25/2004 - 10:52:32.000 AM

Val	
-39.30	Waveform I1
8.300	Waveform I2
29.30	Waveform I3

Waveform I1

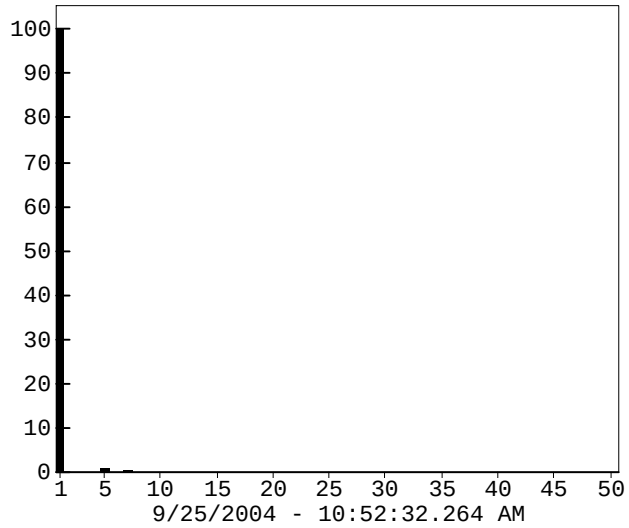
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.2	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	10:52:32.263 AM	16.672	486.5	V
Waveform U2	9/25/2004	10:52:32.263 AM	16.672	484.9	V
Waveform U3	9/25/2004	10:52:32.263 AM	16.672	488.3	V

Waveform U1
486.53 Vrms, 1.09 %THD



9/25/2004 - 10:52:32.000 AM
Val
7.600 — Waveform U1
-604.8 — Waveform U2
597.2 — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 10:52:32 AM
Duration: 0:0.000 (M:S)
W: 5.286E+3 W
VAR: 5.845E+3 W
VA: 7.880E+3 W
Power Factor: 0.671
Displacement Power Factor: 0.671
TAN: 1.105
VoltageRatio: 1.000
CurrentRatio: 1.000
```

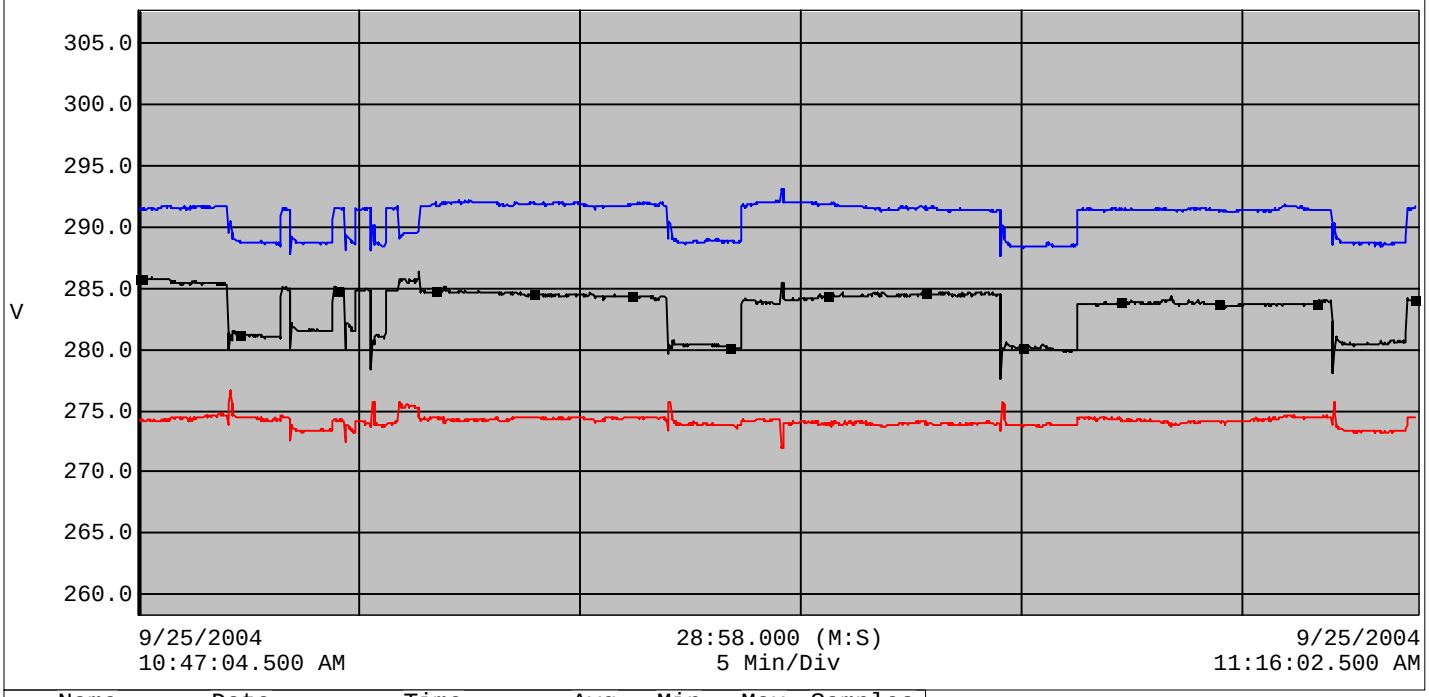
Photo Report

Database: X:\Asan WWPS\092504- Asan WWPS Pump 2 Photo.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Test Site Asan WWPS - Pump 2 Photo ,
Comments	

Asan WWPS Pump 1 and 2

Recording Start Date	9/25/2004 - 10:47:04 AM
Recording Duration	28:58 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

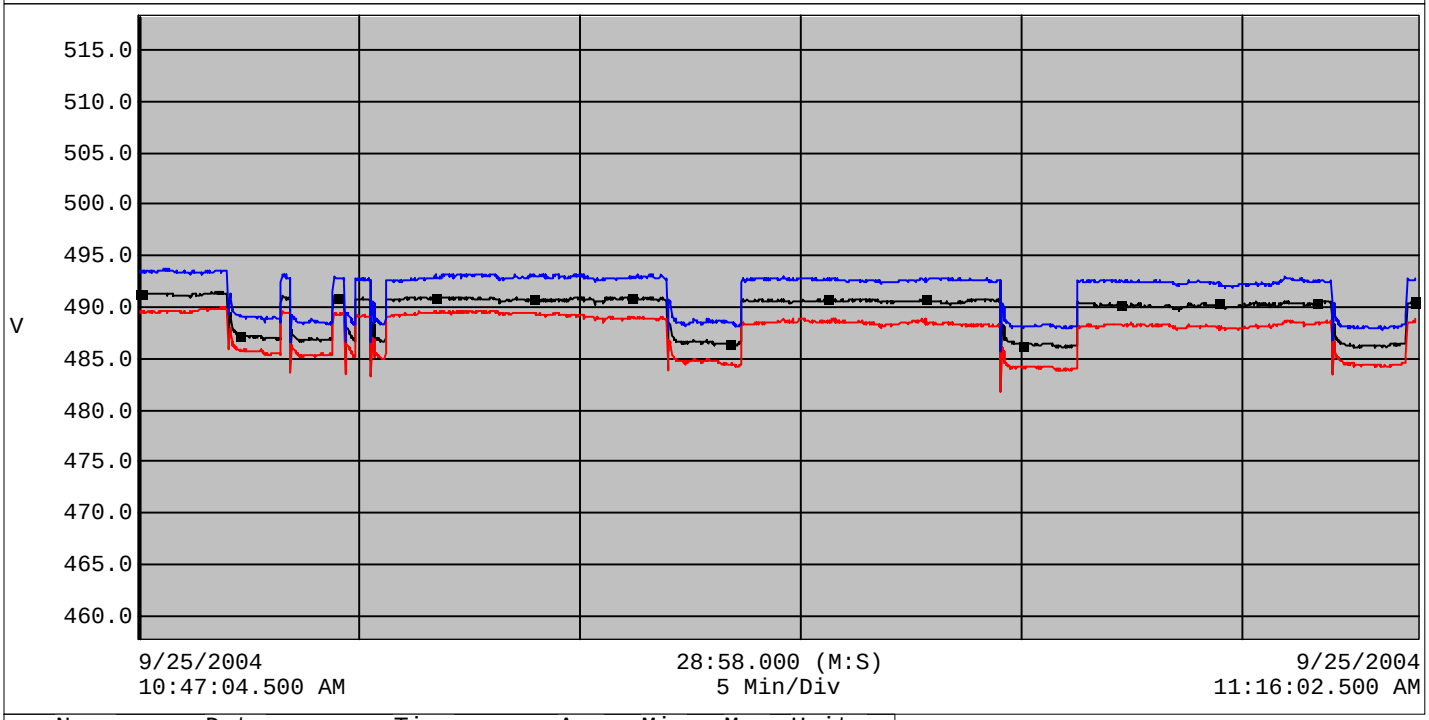
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/25/2004	10:47:04.500 AM	283.3	277.5	286.3	1739
Vrms Line2	9/25/2004	10:47:04.500 AM	274.0	271.8	276.5	1739
Vrms Line3	9/25/2004	10:47:04.500 AM	290.8	287.6	293.0	1739

9/25/2004 - 10:47:04.000 AM
Val
285.6 Vrms Line1
274.1 Vrms Line2
291.4 Vrms Line3

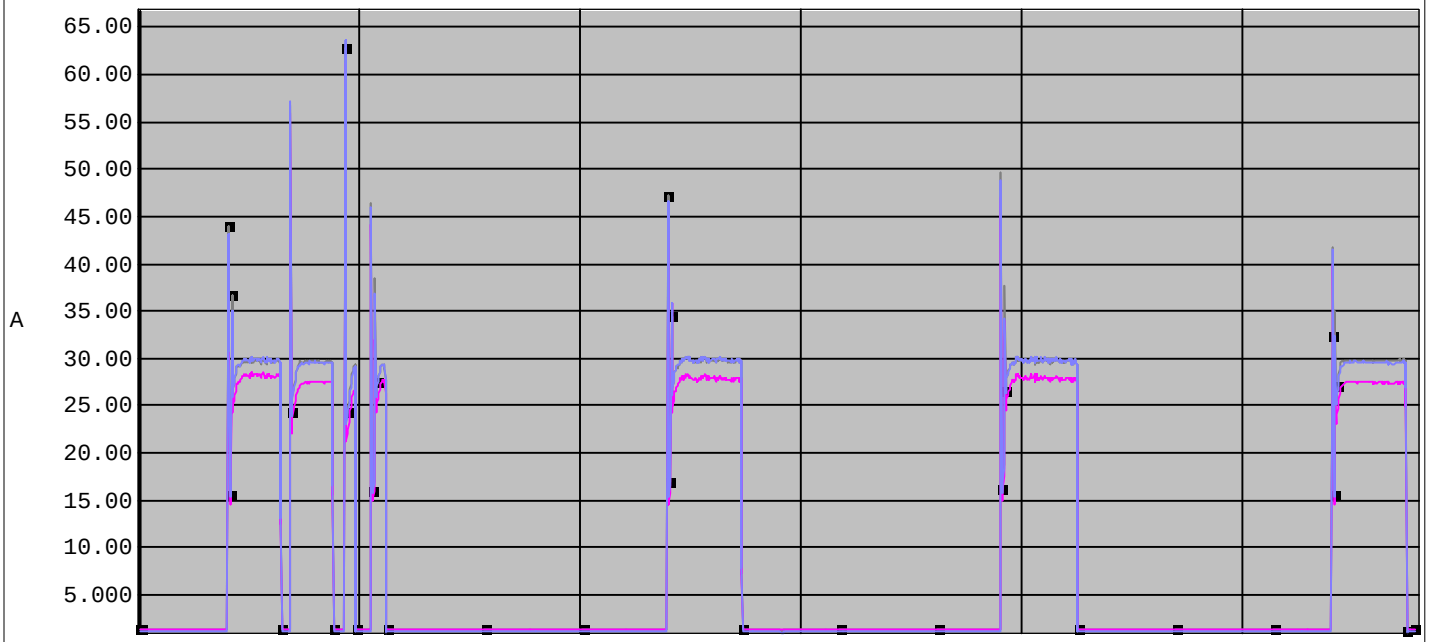
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/25/2004	10:47:04.500 AM	489.5	484.2	491.4	V
Urms Line2	9/25/2004	10:47:04.500 AM	487.6	481.7	489.9	V
Urms Line3	9/25/2004	10:47:04.500 AM	491.5	485.7	493.6	V

9/25/2004 - 10:47:04.000 AM
Val
491.2 — Urms Line1
489.4 — Urms Line2
493.3 — Urms Line3

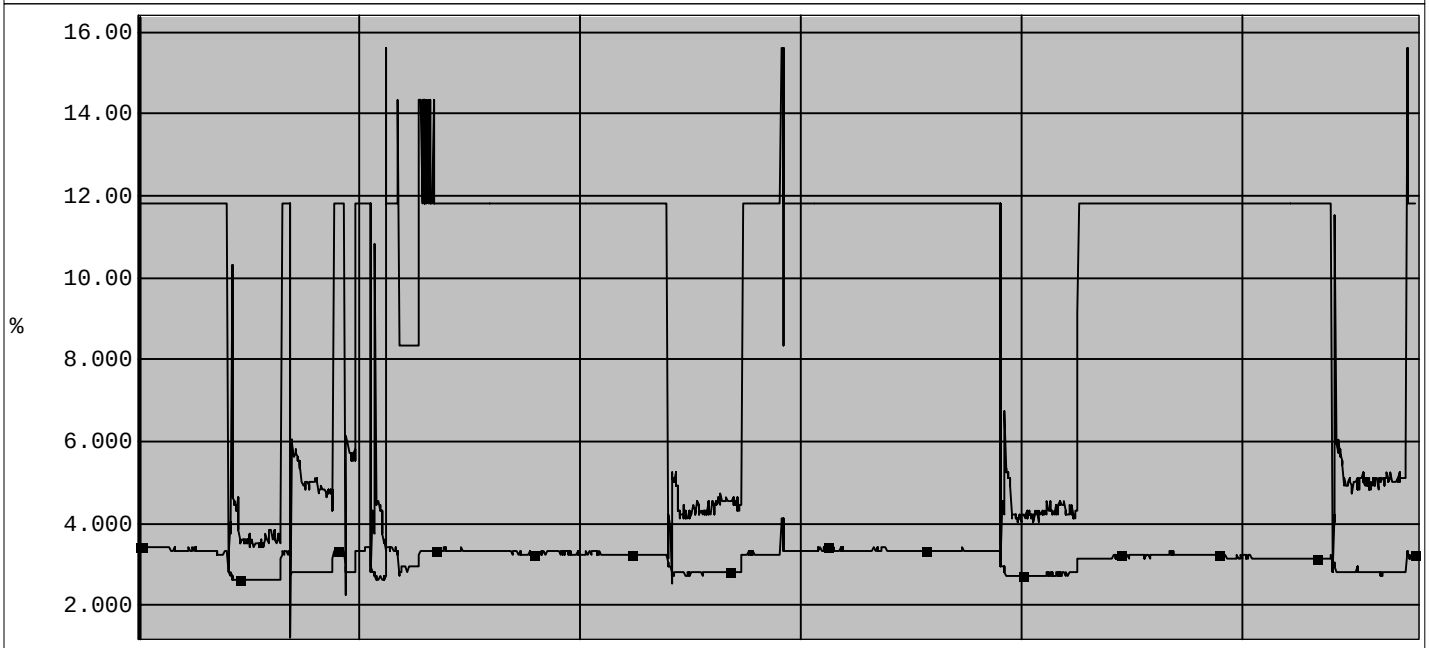
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/25/2004	10:47:04.500 AM	8.856	1.100	62.80	A
Arms Line2	9/25/2004	10:47:04.500 AM	8.321	1.200	61.10	A
Arms Line3	9/25/2004	10:47:04.500 AM	8.693	0.900	63.60	A

9/25/2004 - 10:47:04.000 AM
Val
1.200 — Arms Line1
1.200 — Arms Line2
1.000 — Arms Line3

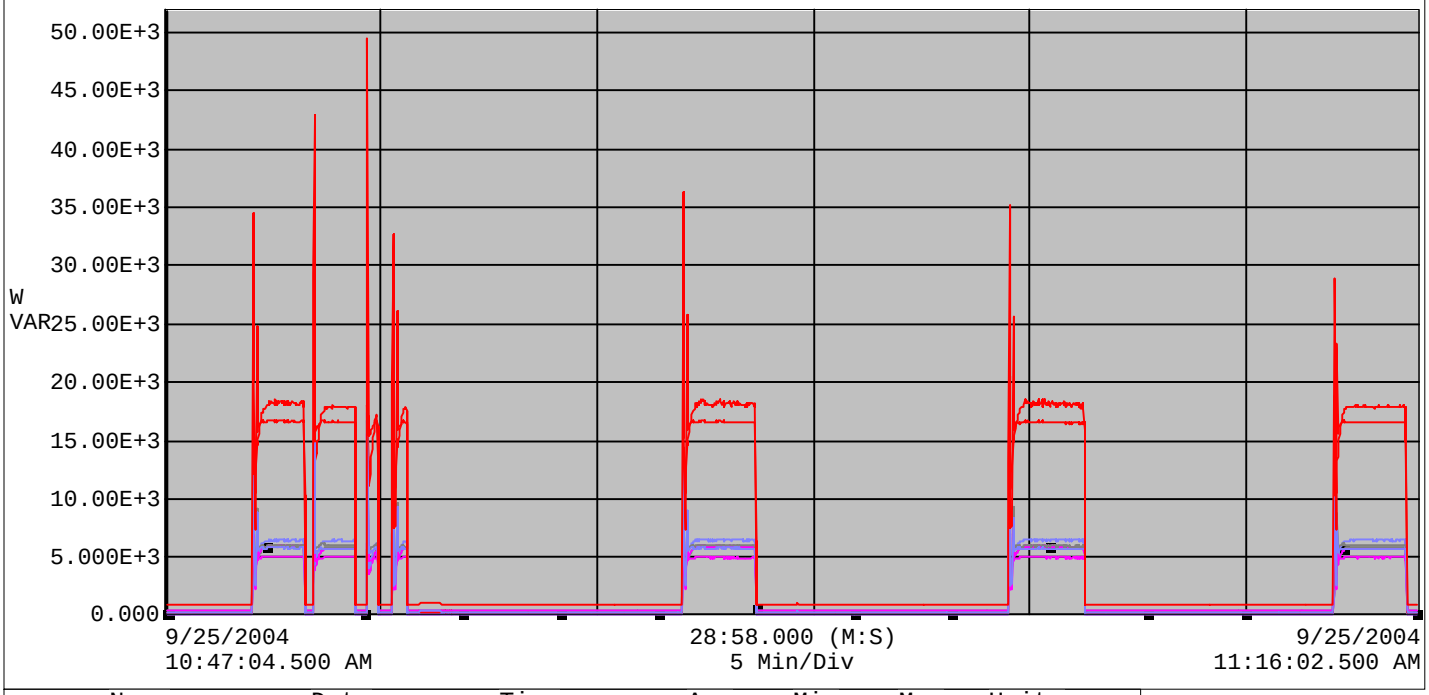
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/25/2004	10:47:04.500 AM	3.108	2.600	4.100	%
Aunb(IEEE)	9/25/2004	10:47:04.500 AM	9.776	1.200	15.60	%

9/25/2004 - 10:47:04.000 AM
Val
3.400 —— Vunb(IEEE)
11.80 —— Aunb(IEEE)

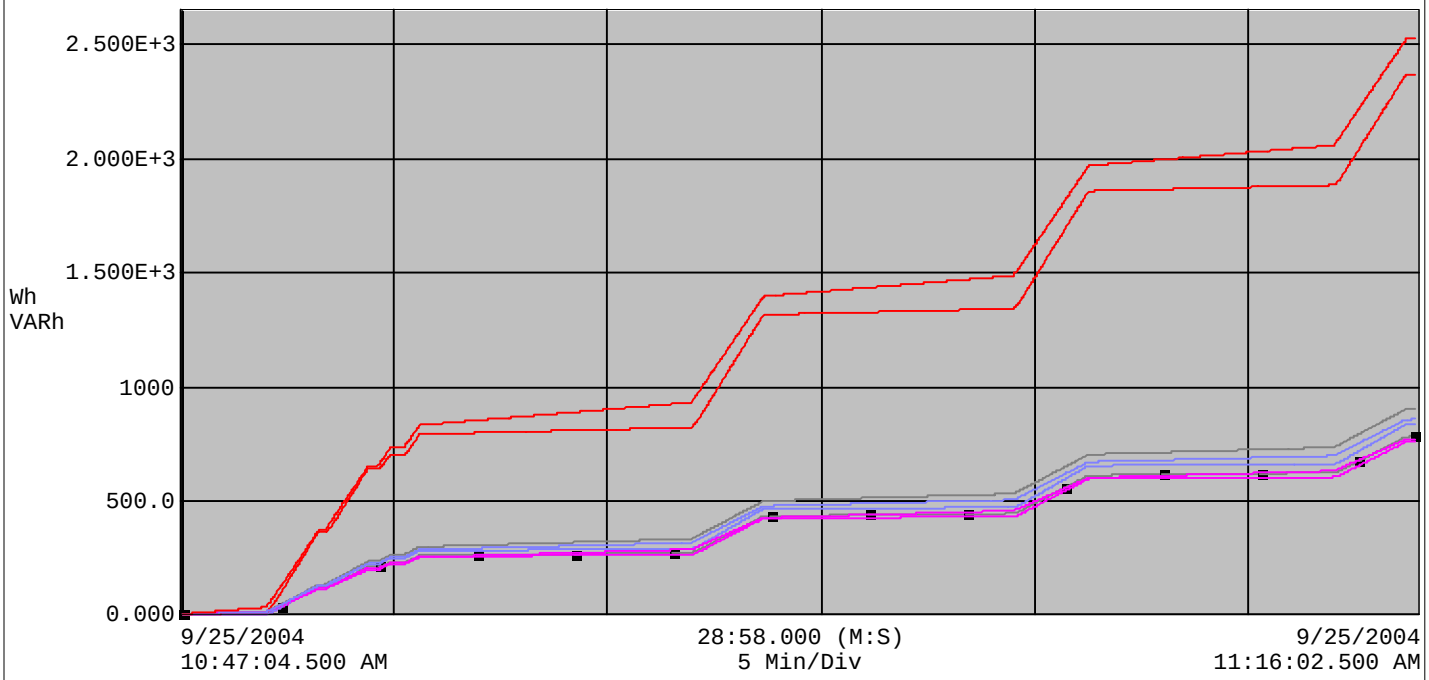
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/25/2004	10:47:04.500 AM	1.612E+3	102.9	6.626E+3	W
W Line2	9/25/2004	10:47:04.500 AM	1.566E+3	73.07	6.883E+3	W
W Line3	9/25/2004	10:47:04.500 AM	1.725E+3	44.35	7.163E+3	W
W Sum of Phases	9/25/2004	10:47:04.500 AM	4.903E+3	238.7	20.53E+3	W
VAR Line1	9/25/2004	10:47:04.500 AM	1.867E+3	294.3	16.62E+3	VAR
VAR Line2	9/25/2004	10:47:04.500 AM	1.590E+3	305.7	15.50E+3	VAR
VAR Line3	9/25/2004	10:47:04.500 AM	1.769E+3	262.0	17.27E+3	VAR
VAR Sum of Phases	9/25/2004	10:47:04.500 AM	5.226E+3	866.2	49.38E+3	VAR

9/25/2004 - 10:47:04.000 AM
Val
123.7 — W Line1
74.83 — W Line2
68.12 — W Line3
266.7 — W Sum of Phases
322.2 — VAR Line1
326.9 — VAR Line2
281.9 — VAR Line3
931.5 — VAR Sum of Phases

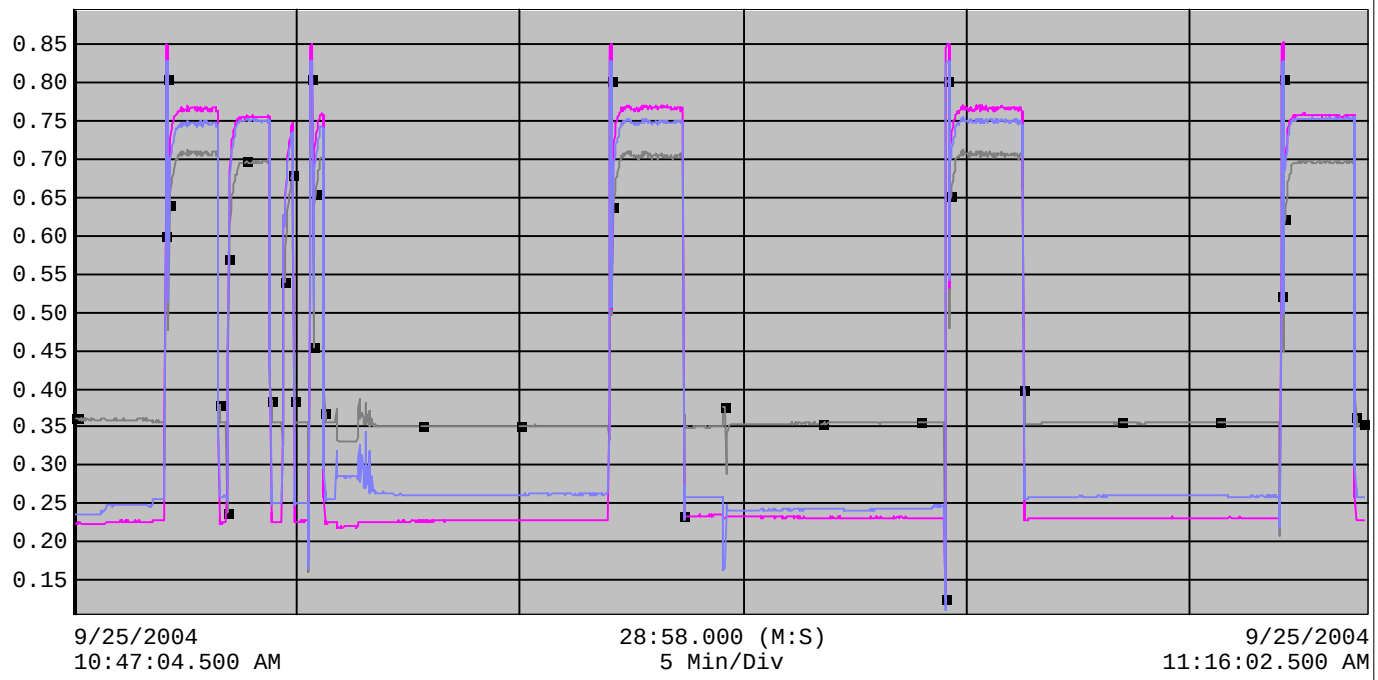
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/25/2004	10:47:04.500 AM	386.2	23.77E-3	778.8	Wh
W-hours Line2	9/25/2004	10:47:04.500 AM	375.9	23.09E-3	756.4	Wh
W-hours Line3	9/25/2004	10:47:04.500 AM	412.1	25.43E-3	833.1	Wh
W-hours Sum of Phases	9/25/2004	10:47:04.500 AM	1.174E+3	72.28E-3	2.368E+3	Wh
VAR-hours Line1	9/25/2004	10:47:04.500 AM	452.6	82.56E-3	901.6	VARh
VAR-hours Line2	9/25/2004	10:47:04.500 AM	387.1	93.80E-3	768.3	VARh
VAR-hours Line3	9/25/2004	10:47:04.500 AM	430.9	78.26E-3	854.7	VARh
VAR-hours Sum of Phases	9/25/2004	10:47:04.500 AM	1.271E+3	0.231	2.525E+3	VARh

9/25/2004 - 10:47:04.000 AM
Val
23.77E-3 — W-hours Line1
23.09E-3 — W-hours Line2
25.43E-3 — W-hours Line3
72.28E-3 — W-hours Sum of Phases
82.56E-3 — VAR-hours Line1
93.80E-3 — VAR-hours Line2
78.26E-3 — VAR-hours Line3
0.231 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/25/2004	10:47:04.500 AM	0.443	0.124	0.803	
PF Line2	9/25/2004	10:47:04.500 AM	0.369	0.127	0.851	
PF Line3	9/25/2004	10:47:04.500 AM	0.385	0.110	0.827	

9/25/2004 - 10:47:04.000 AM
Val
0.359 — PF Line1
0.223 — PF Line2
0.235 — PF Line3

Trend Summary Report

Database: X:\Asan WWPS\092504- Asan WWPS Pump 1 and 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Asan WWPS - Pumps 1 and 2 Operation ,

Comments

GPA Meter 86-404-796, Demand of 33.42 KW.

Two ABS 24.4 KW, 480 volt, 34.2 amp, 1158 RPM submersible motors in dry well. Electrorod control with ball float back-up.

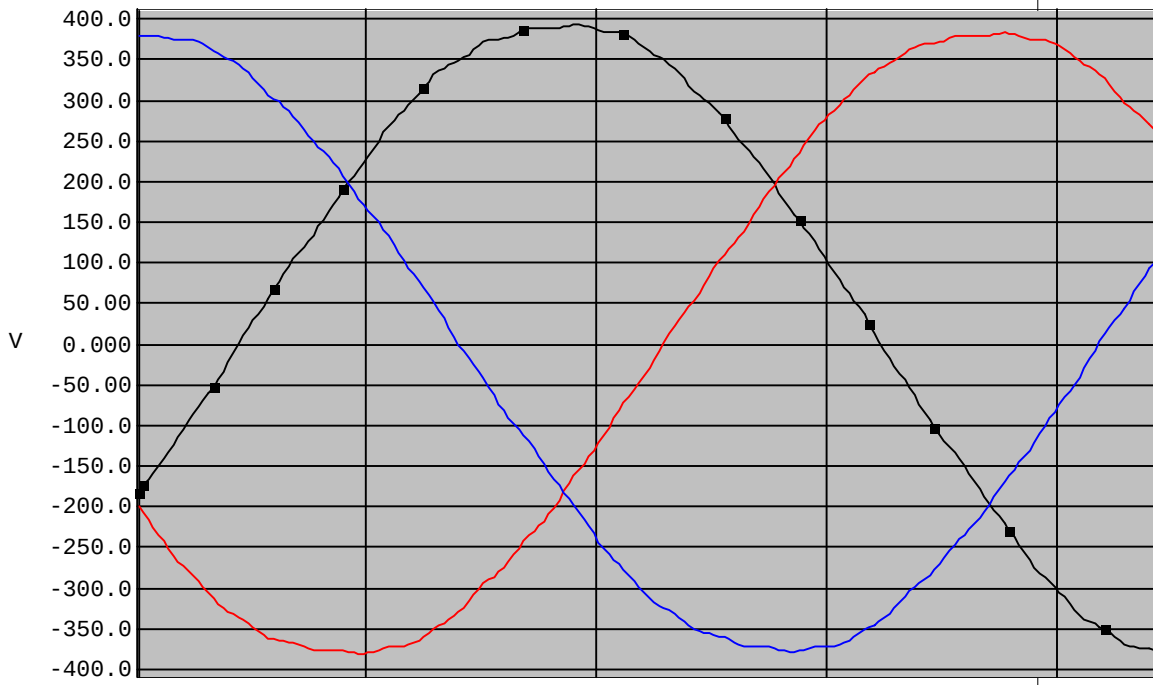
GWA Wastewater Pumping Station Assessment				
Station Name: BARRIGADA	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 10/22/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.4	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	3	0.06	
Transformer Wiring Method	5.0%	4	0.2	
Lightning Arrester Condition	5.0%	1	0.05	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.3	
Level	5.0%	3	0.15	
Alarms	3.0%	3	0.09	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.09	
Lighting and Power Devices	1.5%	3	0.045	
Sump Pump Controls	1.5%	3	0.045	
	100%	**Assessment Value**		**2.8**

Comments:

Barrigada PS Pump 1 Photo

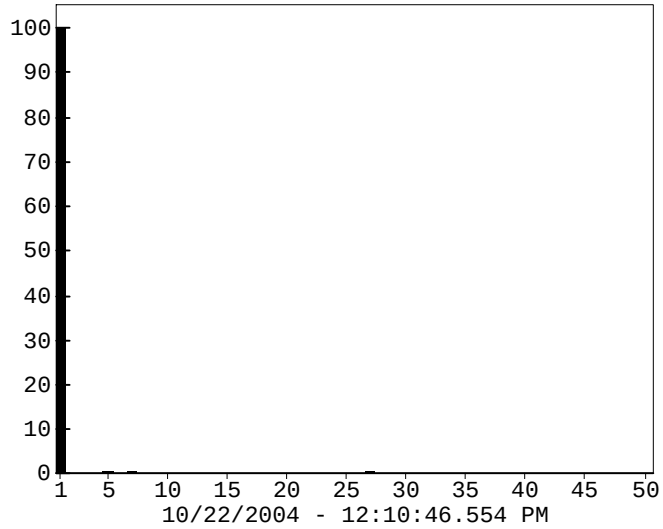
Recording Start Date	10/22/2004 - 12:10:46 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/22/2004	12:10:46.553 PM	16.686	278.9	V
Waveform V2	10/22/2004	12:10:46.553 PM	16.686	272.5	V
Waveform V3	10/22/2004	12:10:46.553 PM	16.686	270.0	V

Waveform V1
278.89 Vrms, 1.19 %THD



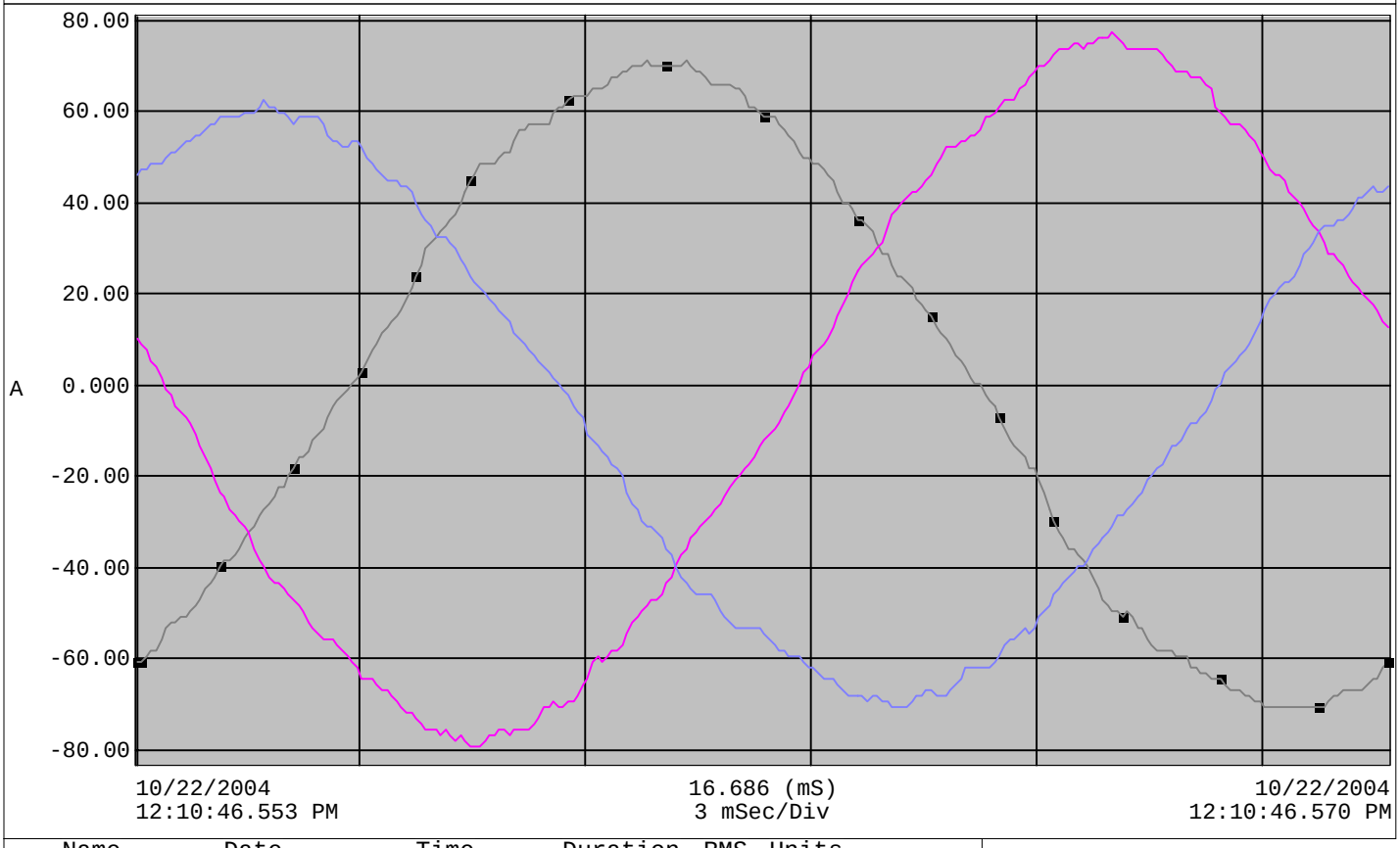
10/22/2004 - 12:10:46.000 PM

Val	
-184.6	Waveform V1
-200.8	Waveform V2
377.7	Waveform V3

Waveform V1

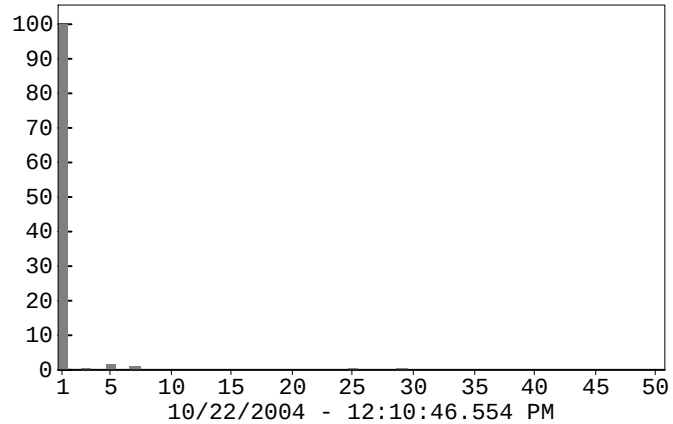
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.1	H43	0.0
H10	0.0	H27	0.5	H44	0.0
H11	0.3	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/22/2004	12:10:46.553 PM	16.686	49.67	A
Waveform I2	10/22/2004	12:10:46.553 PM	16.686	53.05	A
Waveform I3	10/22/2004	12:10:46.553 PM	16.686	45.43	A

Waveform I1
49.67 Arms, 2.91 %THD

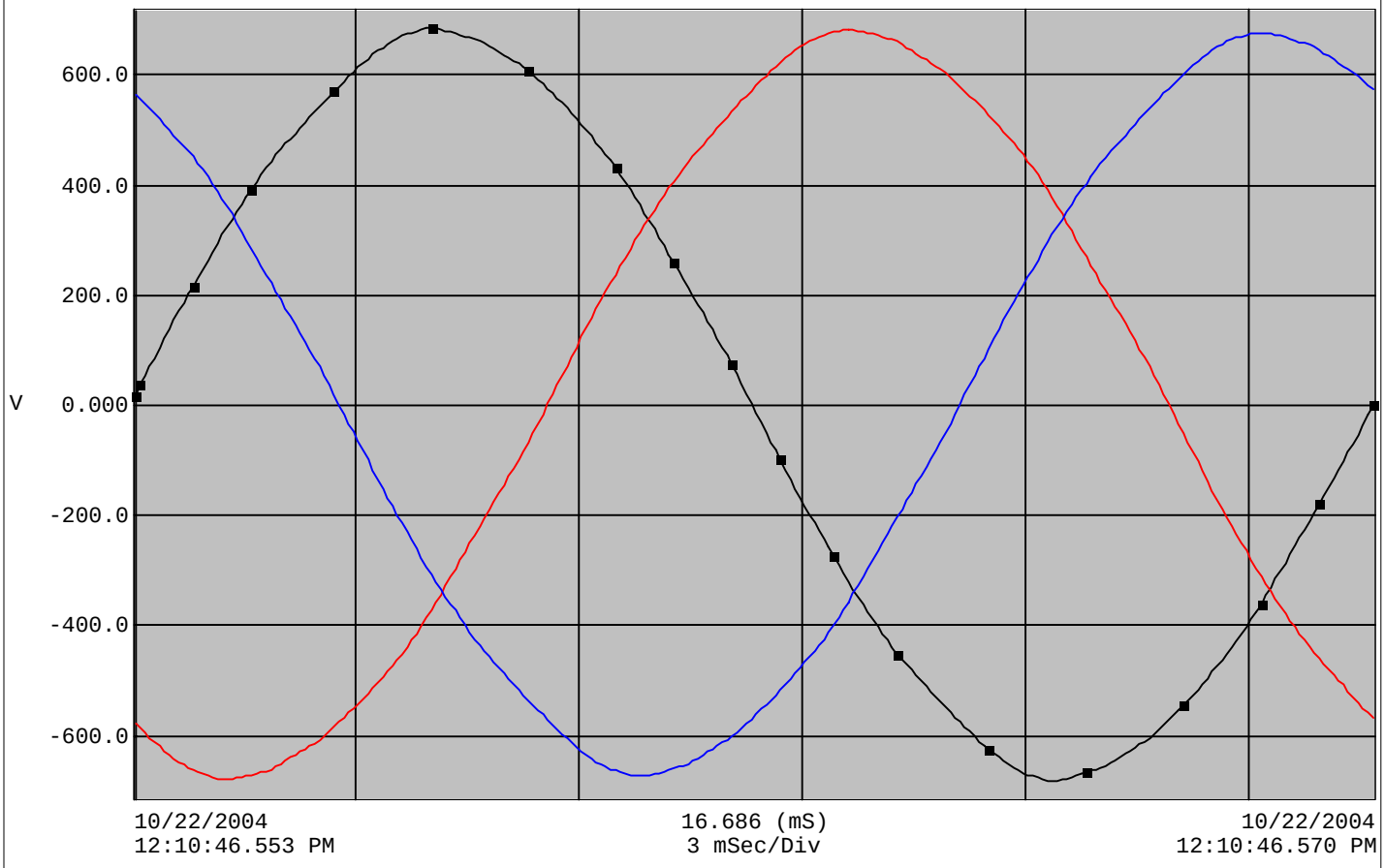


10/22/2004 - 12:10:46.000 PM
Val
-60.90 Waveform I1
9.900 Waveform I2
46.00 Waveform I3

Waveform I1

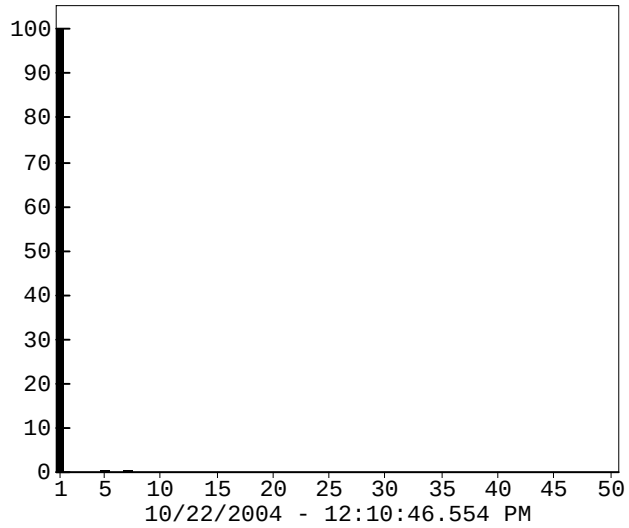
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.1
H02	0.3	H19	0.1	H36	0.1
H03	1.0	H20	0.1	H37	0.0
H04	0.1	H21	0.0	H38	0.1
H05	2.0	H22	0.1	H39	0.0
H06	0.1	H23	0.3	H40	0.0
H07	1.2	H24	0.2	H41	0.0
H08	0.1	H25	0.9	H42	0.1
H09	0.3	H26	0.1	H43	0.1
H10	0.1	H27	0.2	H44	0.1
H11	0.2	H28	0.2	H45	0.0
H12	0.1	H29	0.8	H46	0.0
H13	0.3	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.1
H15	0.1	H32	0.1	H49	0.1
H16	0.1	H33	0.1	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/22/2004	12:10:46.553 PM	16.686	476.2	V
Waveform U2	10/22/2004	12:10:46.553 PM	16.686	475.2	V
Waveform U3	10/22/2004	12:10:46.553 PM	16.686	471.0	V

Waveform U1
476.25 Vrms, 1.02 %THD



10/22/2004 - 12:10:46.000 PM

	Val	
—	16.10	Waveform U1
—	-578.6	Waveform U2
—	562.4	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/22/2004
Start Time: 12:10:46 PM
Duration: 0:0.000 (M:S)
W: 11.01E+3 W
VAR: 7.220E+3 W
VA: 13.16E+3 W
Power Factor: 0.836
Displacement Power Factor: 0.837
TAN: 0.653
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Barrigada PS\102204 - Barrigada PS Photo Pump 1.dvb

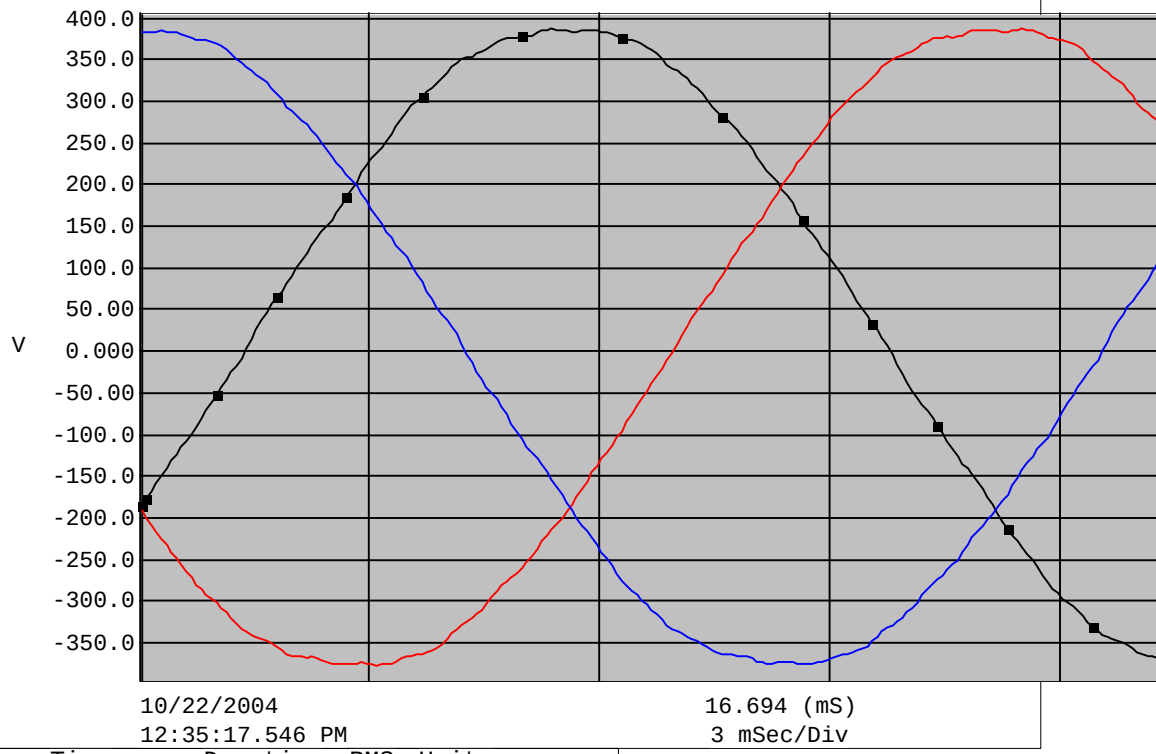
Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	GWA ,

Comments
Barriganda PS Photo Pump 1

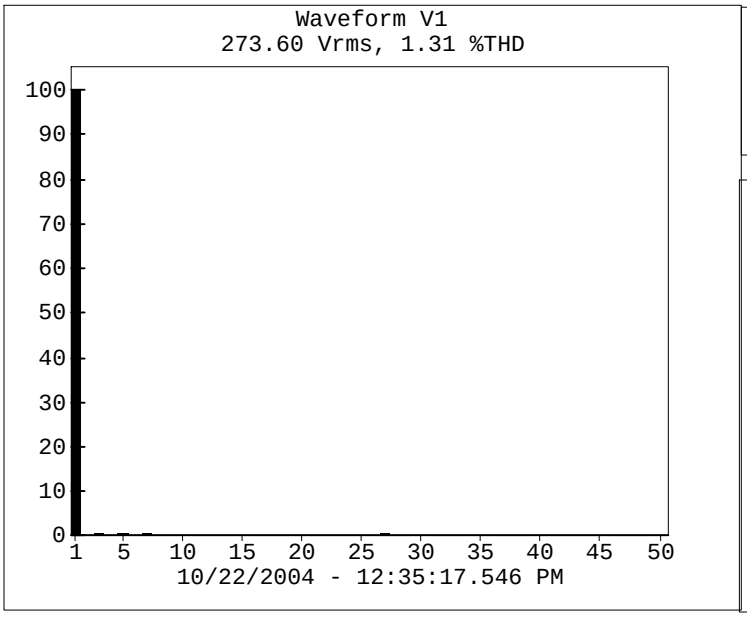
Barrigada PS Pump 2 Photo

Recording Start Date	10/22/2004 - 12:35:17 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.90 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/22/2004	12:35:17.546 PM	16.694	273.6	V
Waveform V2	10/22/2004	12:35:17.546 PM	16.694	273.7	V
Waveform V3	10/22/2004	12:35:17.546 PM	16.694	272.6	V

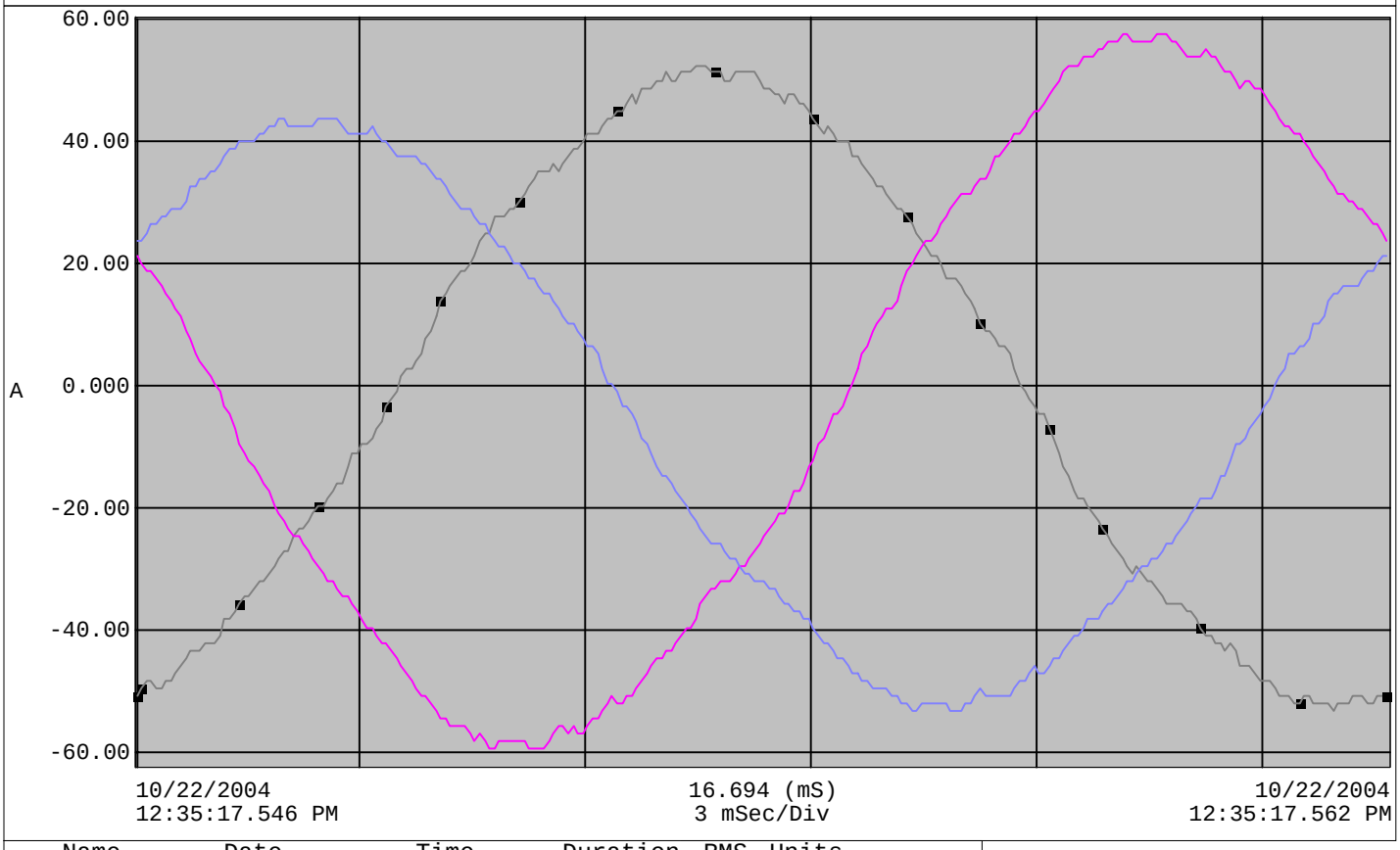


10/22/2004 - 12:35:17.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

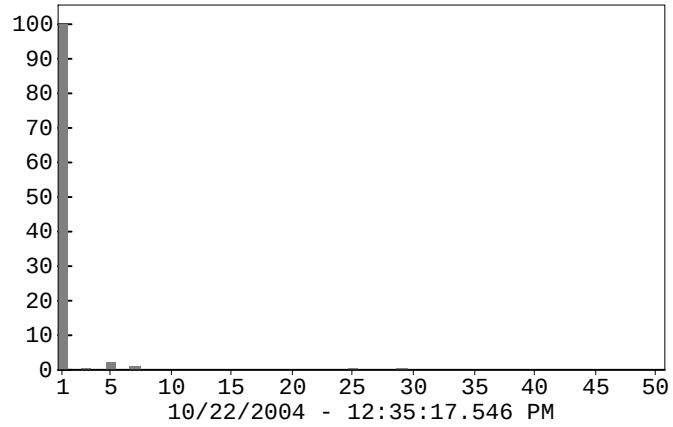
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.5	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.90 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/22/2004	12:35:17.546 PM	16.694	36.55	A
Waveform I2	10/22/2004	12:35:17.546 PM	16.694	40.34	A
Waveform I3	10/22/2004	12:35:17.546 PM	16.694	33.64	A

Waveform I1
36.55 Arms, 3.28 %THD

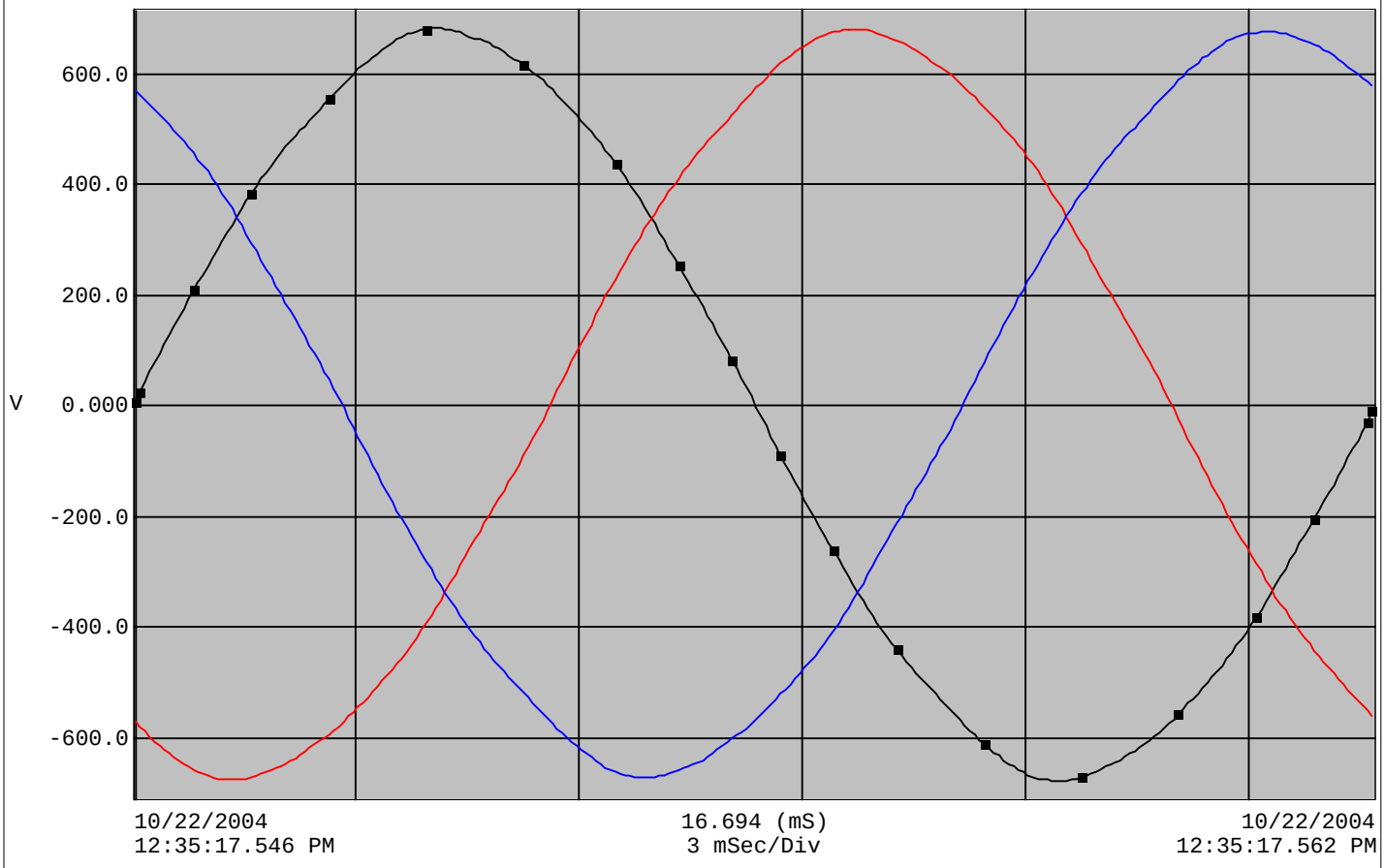


10/22/2004 - 12:35:17.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

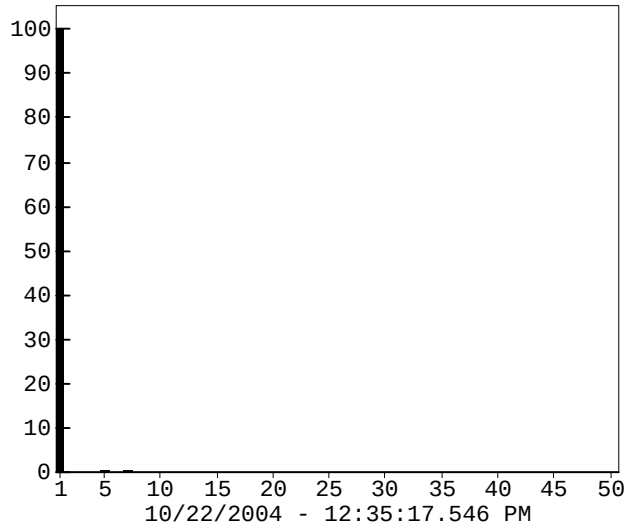
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.2
H02	0.4	H19	0.2	H36	0.1
H03	1.0	H20	0.1	H37	0.1
H04	0.2	H21	0.0	H38	0.0
H05	2.2	H22	0.1	H39	0.1
H06	0.1	H23	0.2	H40	0.0
H07	1.5	H24	0.2	H41	0.1
H08	0.2	H25	0.9	H42	0.0
H09	0.2	H26	0.0	H43	0.1
H10	0.1	H27	0.3	H44	0.1
H11	0.2	H28	0.0	H45	0.1
H12	0.1	H29	0.9	H46	0.0
H13	0.2	H30	0.1	H47	0.1
H14	0.1	H31	0.1	H48	0.2
H15	0.1	H32	0.1	H49	0.1
H16	0.1	H33	0.2	H50	0.2
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.90 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/22/2004	12:35:17.546 PM	16.694	475.1	V
Waveform U2	10/22/2004	12:35:17.546 PM	16.694	474.2	V
Waveform U3	10/22/2004	12:35:17.546 PM	16.694	470.8	V

Waveform U1
475.06 Vrms, 1.02 %THD



10/22/2004 - 12:35:17.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/22/2004
Start Time: 12:35:17 PM
Duration: 0:0.000 (M:S)
W: 7.240E+3 W
VAR: 7.113E+3 W
VA: 10.15E+3 W
Power Factor: 0.713
Displacement Power Factor: 0.715
TAN: 0.966
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Barrigada PS\102204 - Barrigada PS Photo Pump 2.dvb

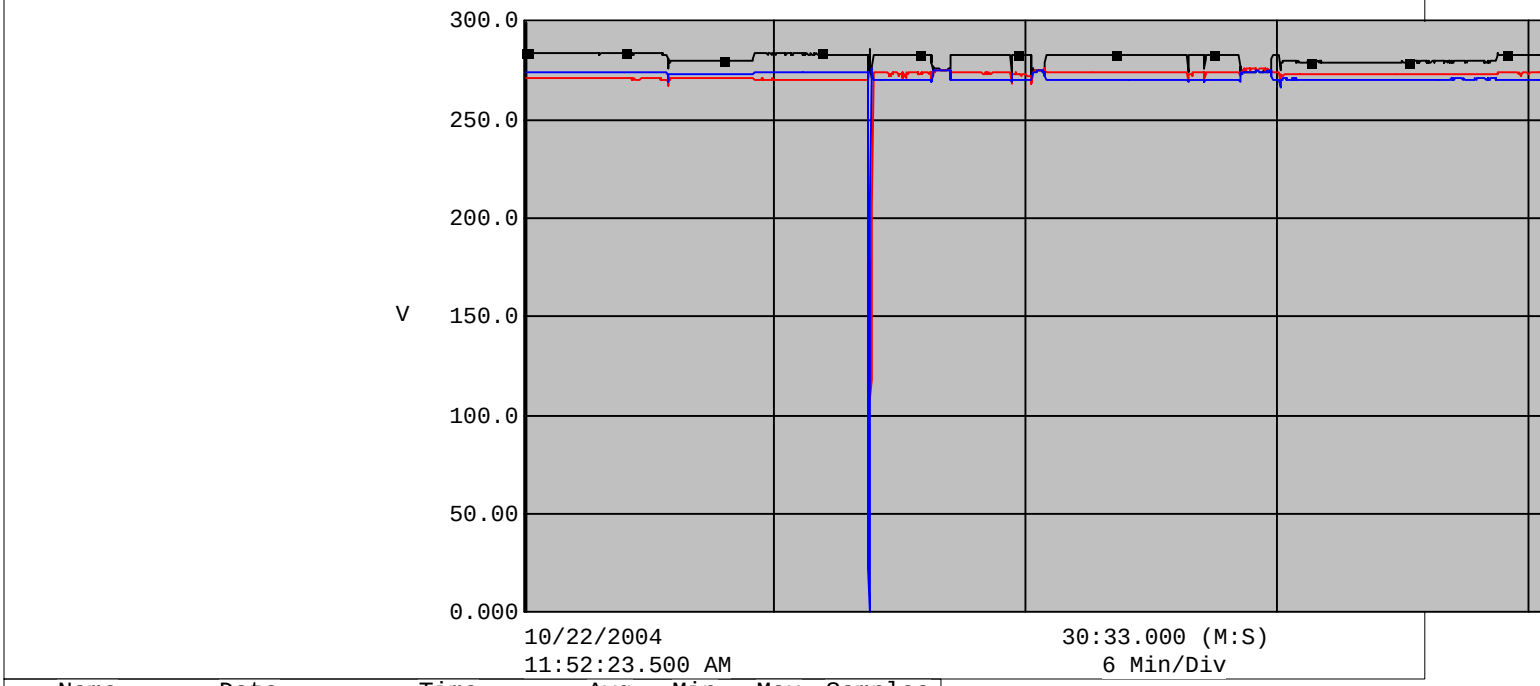
Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	GWA ,

Comments
Barrigada PS Photo Pump 2

Barrigada PS

Recording Start Date	10/22/2004 - 11:52:23 AM
Recording Duration	30:33 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

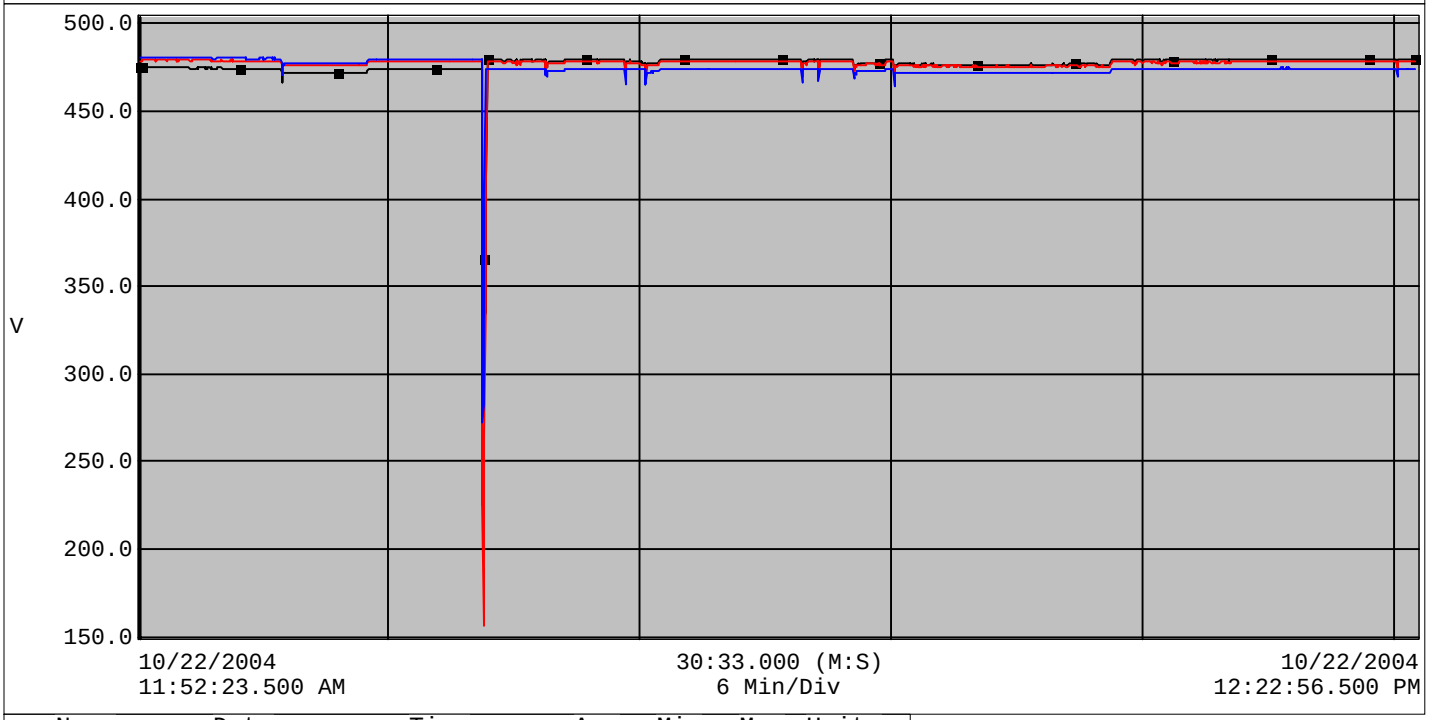
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/22/2004	11:52:23.500 AM	281.4	269.1	285.6	1834
Vrms Line2	10/22/2004	11:52:23.500 AM	272.1	108.5	275.9	1834
Vrms Line3	10/22/2004	11:52:23.500 AM	270.5	0.000	275.9	1834

10/22/2004 - 11:52:23.000 AM
Val
283.1 Vrms Line1
270.5 Vrms Line2
273.5 Vrms Line3

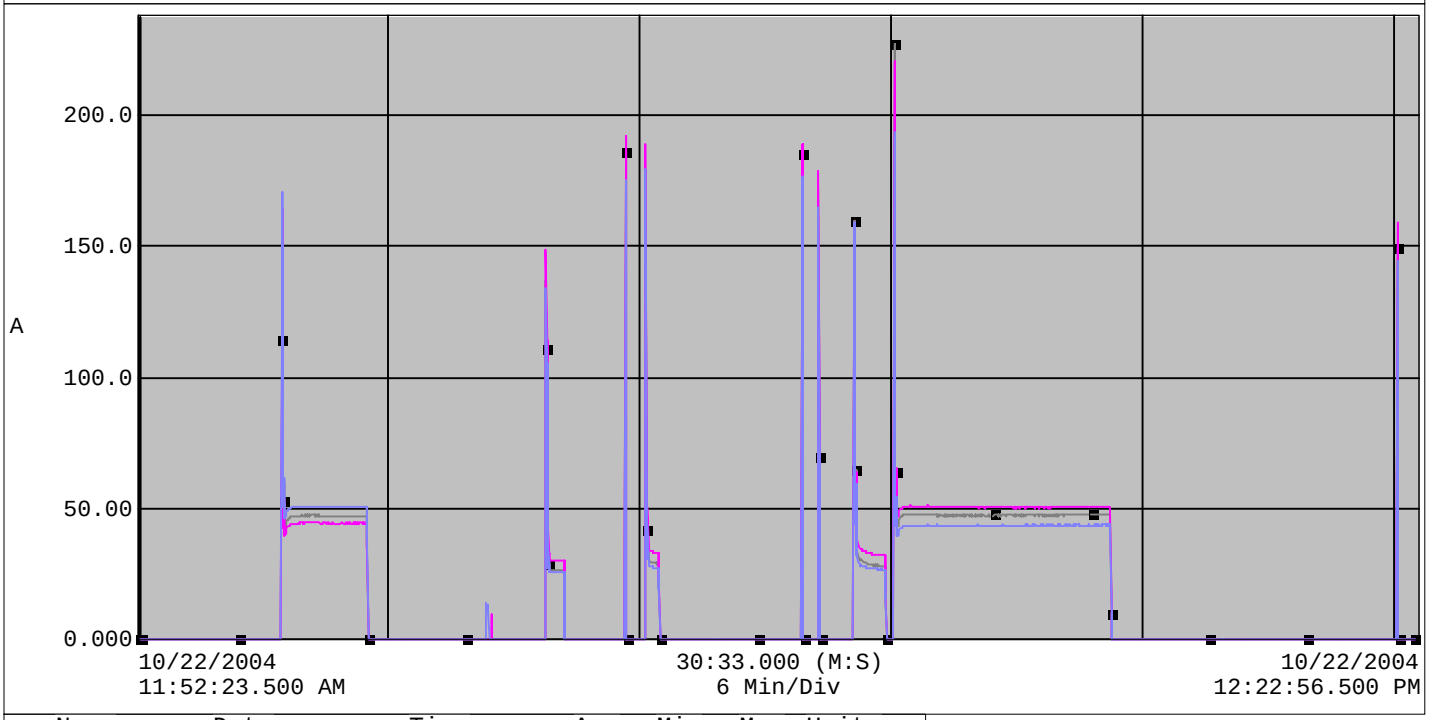
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/22/2004	11:52:23.500 AM	476.4	331.7	479.5	V
Urms Line2	10/22/2004	11:52:23.500 AM	476.4	155.7	478.7	V
Urms Line3	10/22/2004	11:52:23.500 AM	474.1	271.5	480.2	V

10/22/2004 - 11:52:23.000 AM
Val
474.2 Urms Line1
478.2 Urms Line2
479.8 Urms Line3

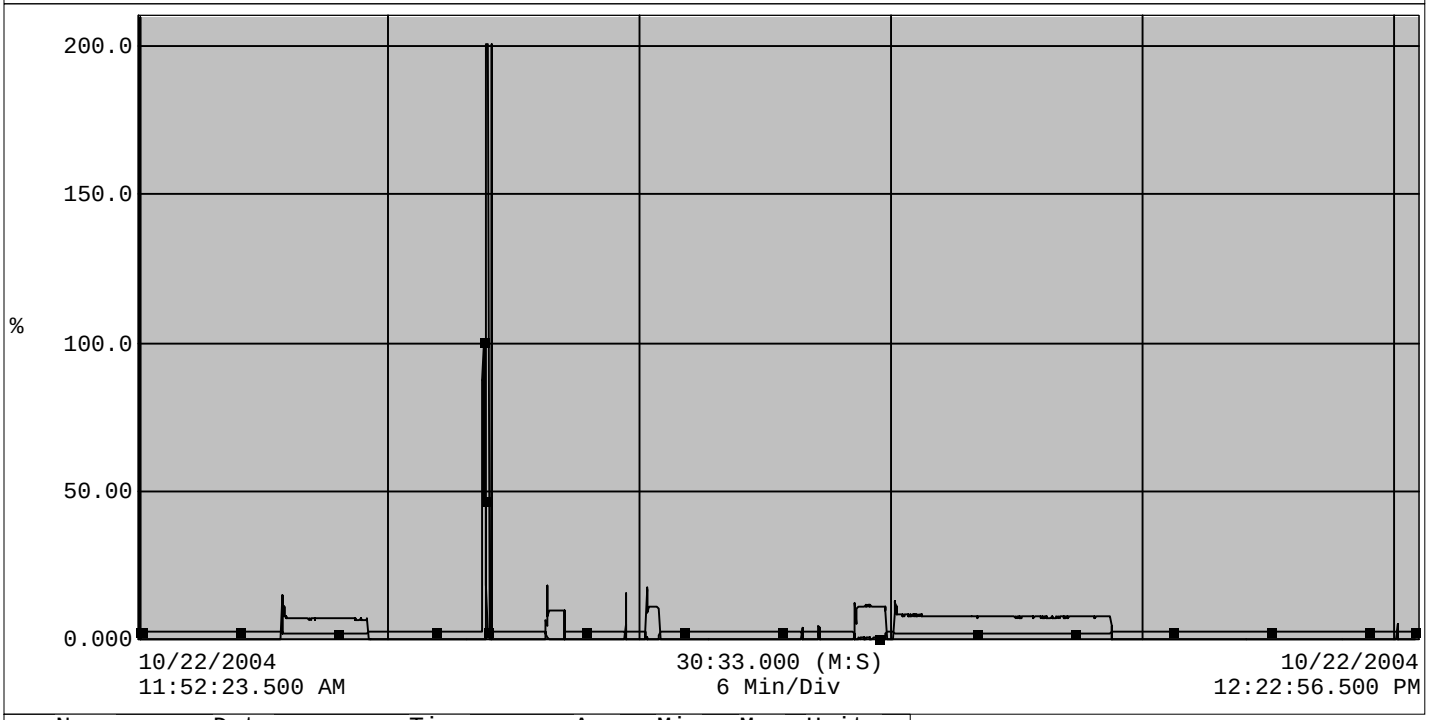
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/22/2004	11:52:23.500 AM	13.74	0.000	226.4	A
Arms Line2	10/22/2004	11:52:23.500 AM	14.30	0.000	220.0	A
Arms Line3	10/22/2004	11:52:23.500 AM	13.22	0.000	193.4	A

10/22/2004 - 11:52:23.000 AM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

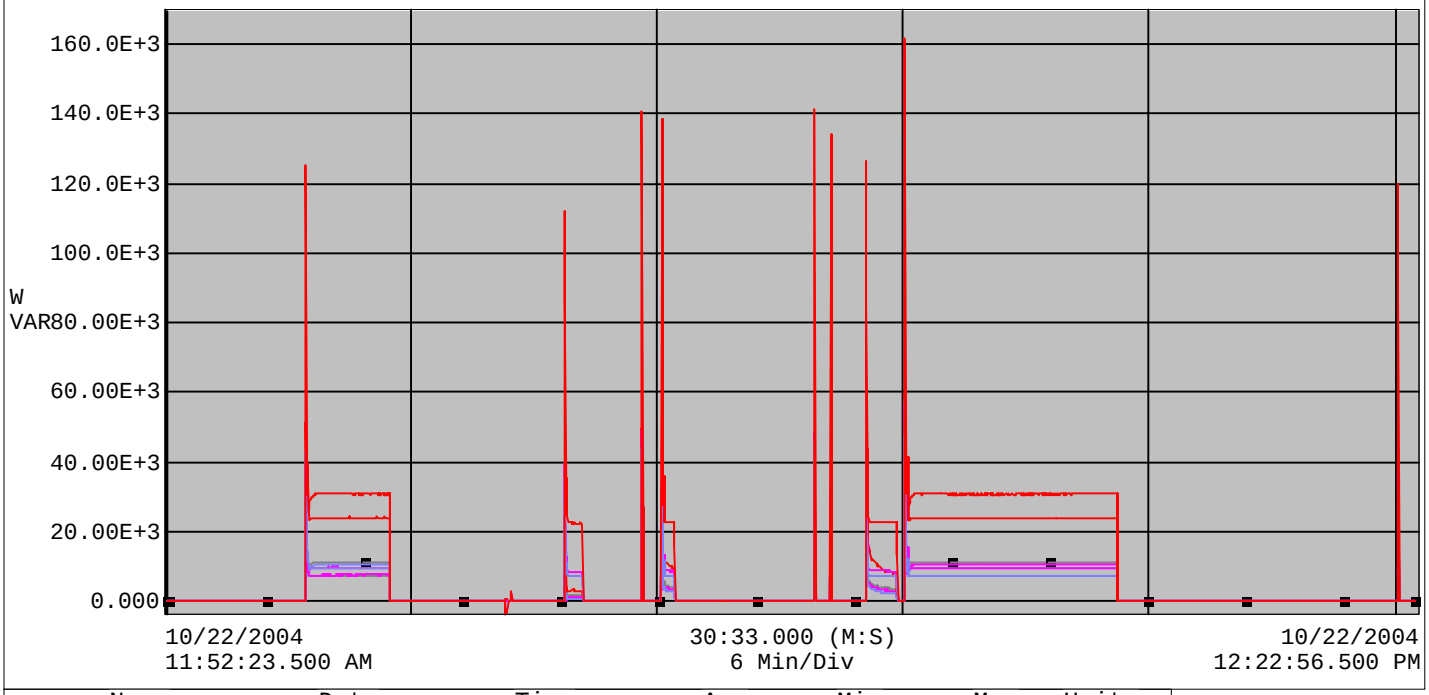
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/22/2004	11:52:23.500 AM	2.570	0.000	100.0	%
Aunb(IEEE)	10/22/2004	11:52:23.500 AM	2.900	0.000	200.0	%

10/22/2004 - 11:52:23.000 AM
Val
2.700 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

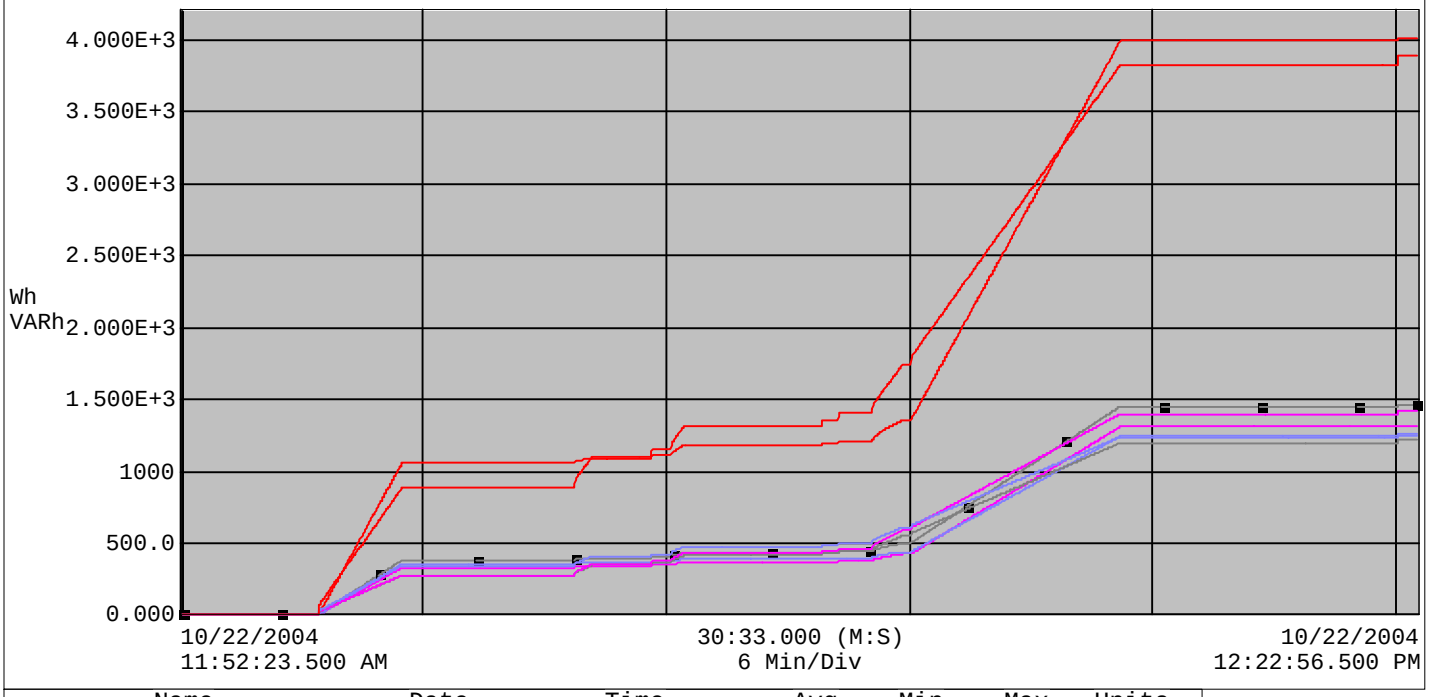
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/22/2004	11:52:23.500 AM	2.849E+3	0.000	22.22E+3	W
W Line2	10/22/2004	11:52:23.500 AM	2.571E+3	0.000	17.11E+3	W
W Line3	10/22/2004	11:52:23.500 AM	2.442E+3	0.000	20.13E+3	W
W Sum of Phases	10/22/2004	11:52:23.500 AM	7.862E+3	0.000	59.46E+3	W
VAR Line1	10/22/2004	11:52:23.500 AM	2.381E+3	0.000	57.96E+3	VAR
VAR Line2	10/22/2004	11:52:23.500 AM	2.778E+3	0.000	56.42E+3	VAR
VAR Line3	10/22/2004	11:52:23.500 AM	2.458E+3	-3.801E+3	47.30E+3	VAR
VAR Sum of Phases	10/22/2004	11:52:23.500 AM	7.618E+3	-3.797E+3	161.7E+3	VAR

10/22/2004 - 11:52:23.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

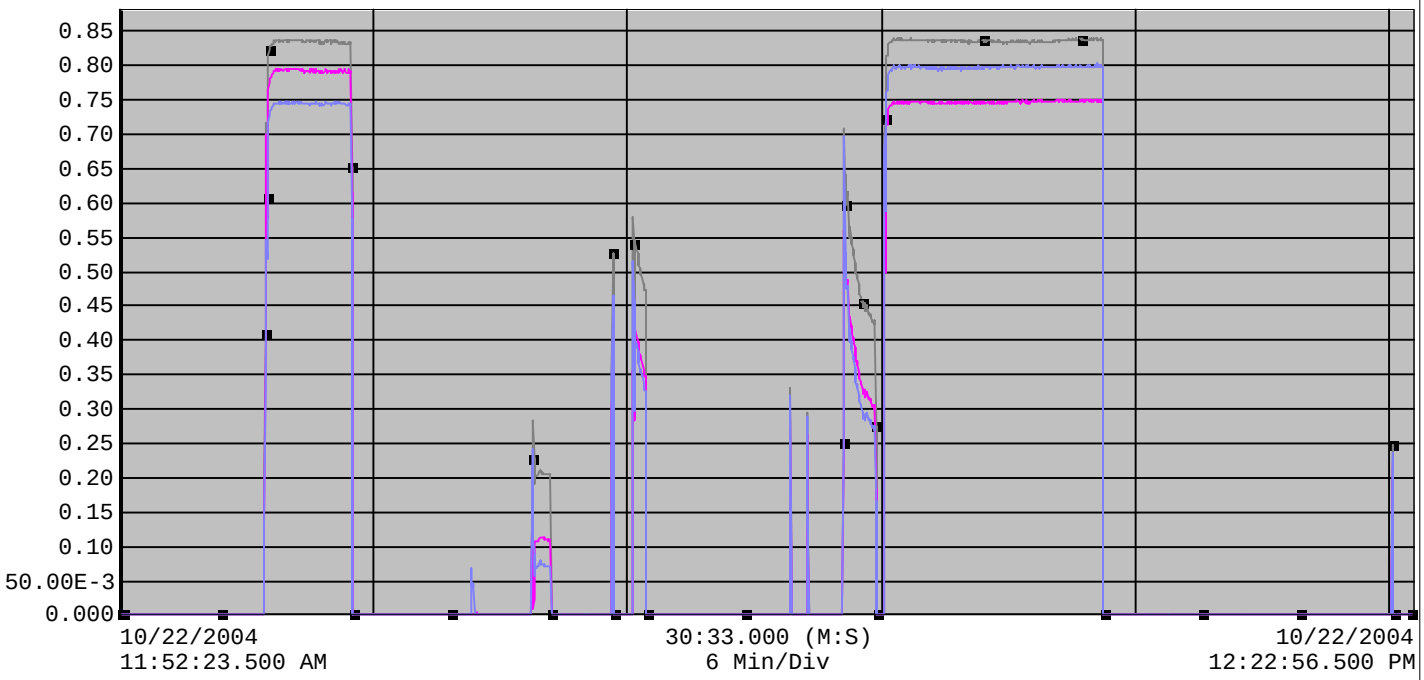
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/22/2004	11:52:23.500 AM	692.1	0.000	1.451E+3	Wh
W-hours Line2	10/22/2004	11:52:23.500 AM	613.8	0.000	1.310E+3	Wh
W-hours Line3	10/22/2004	11:52:23.500 AM	603.8	0.000	1.244E+3	Wh
W-hours Sum of Phases	10/22/2004	11:52:23.500 AM	1.910E+3	0.000	4.005E+3	Wh
VAR-hours Line1	10/22/2004	11:52:23.500 AM	592.4	0.000	1.213E+3	VARh
VAR-hours Line2	10/22/2004	11:52:23.500 AM	666.5	0.000	1.415E+3	VARh
VAR-hours Line3	10/22/2004	11:52:23.500 AM	639.0	0.000	1.252E+3	VARh
VAR-hours Sum of Phases	10/22/2004	11:52:23.500 AM	1.898E+3	0.000	3.881E+3	VARh

10/22/2004 - 11:52:23.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/22/2004	11:52:23.500 AM	0.219	0.000	0.838	
PF Line2	10/22/2004	11:52:23.500 AM	0.195	0.000	0.794	
PF Line3	10/22/2004	11:52:23.500 AM	0.199	0.000	0.801	

10/22/2004 - 11:52:23.000 AM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: X:\Barrigada PS\102204-Barrigada PS.dvb

Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	GWA ,

Comments

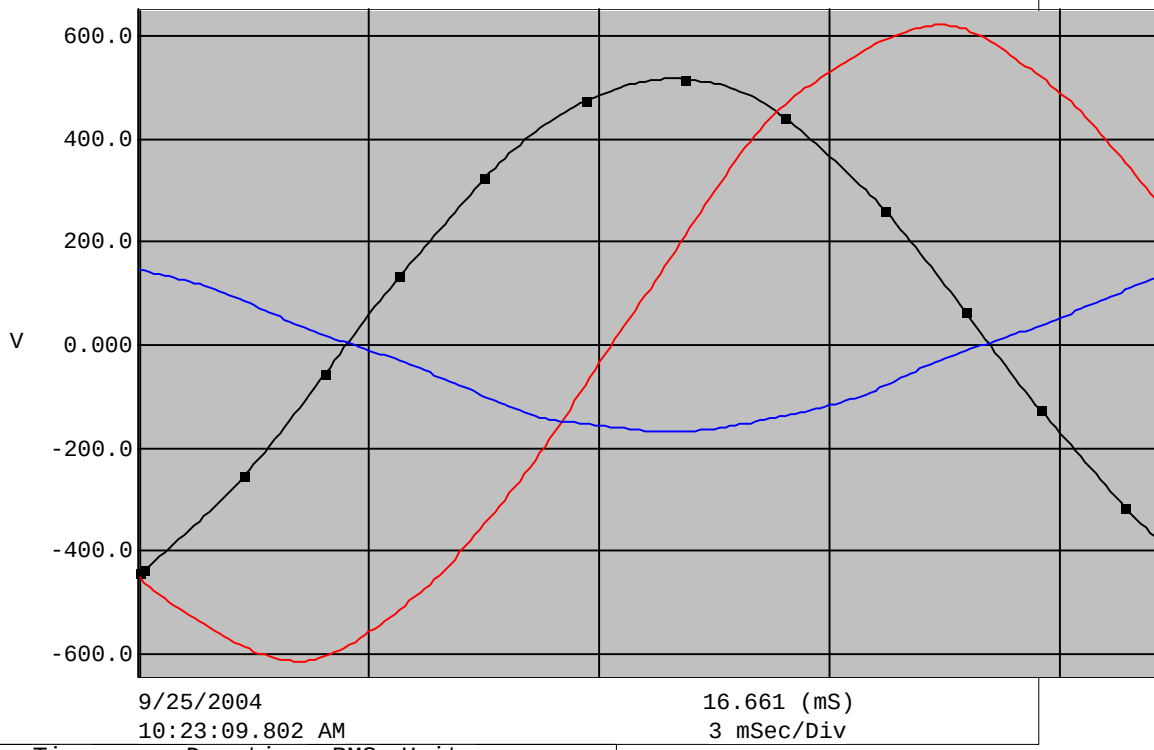
GWA Wastewater Pumping Station Assessment				
Station Name: BAYSIDE EJECTOR	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.38	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	2	0.1	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.15	
Main Disconnect	5.0%	2	0.1	
Grounding	2.5%	2	0.05	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0	
Generator Condition	10.0%	0	0	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	0	0	
Auto Transfer Switch	2.5%	0	0	
Primary Pump Motor Controls	**20.0%**		0.4	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Secondary Pump Motor Controls	**20.0%**		0	
Main Breaker	4.0%	0	0	
Motor Starter	4.0%	0	0	
Motor Protection (Overload and moisture)	4.0%	0	0	
Wiring	4.0%	0	0	
Phase Monitor	4.0%	0	0	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.14	
Level	5.0%	2	0.1	
Alarms	3.0%	0	0	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.03	
Lighting and Power Devices	1.5%	1	0.015	
Sump Pump Controls	1.5%	1	0.015	
	100%	**Assessment Value**		**1.1**

Comments:

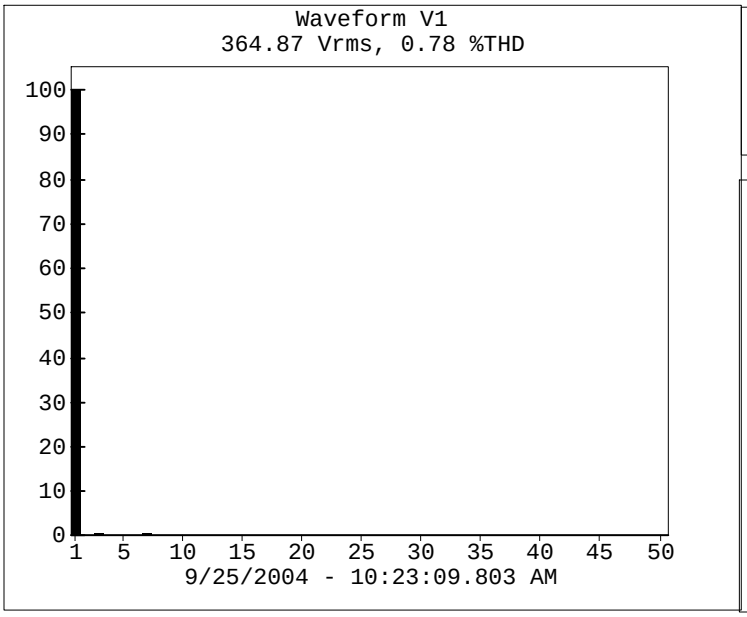
Bayside Ejector WWPS - No Load Photo

Recording Start Date	9/25/2004 - 10:23:09 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	10:23:09.802 AM	16.661	364.9	V
Waveform V2	9/25/2004	10:23:09.802 AM	16.661	430.3	V
Waveform V3	9/25/2004	10:23:09.802 AM	16.661	120.2	V



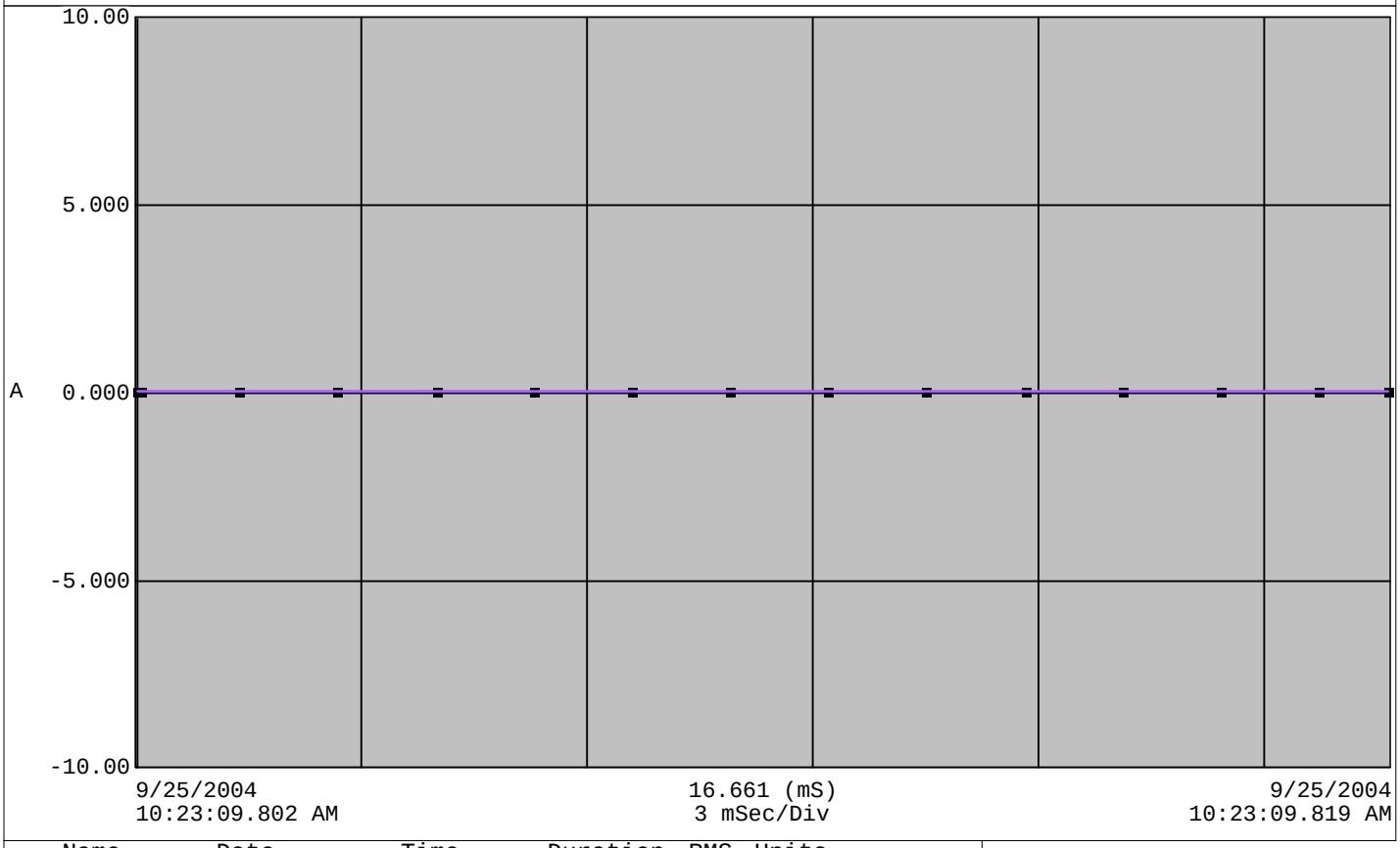
9/25/2004 - 10:23:09.000 AM

Val	
-444.4	Waveform V1
-454.3	Waveform V2
143.8	Waveform V3

Waveform V1

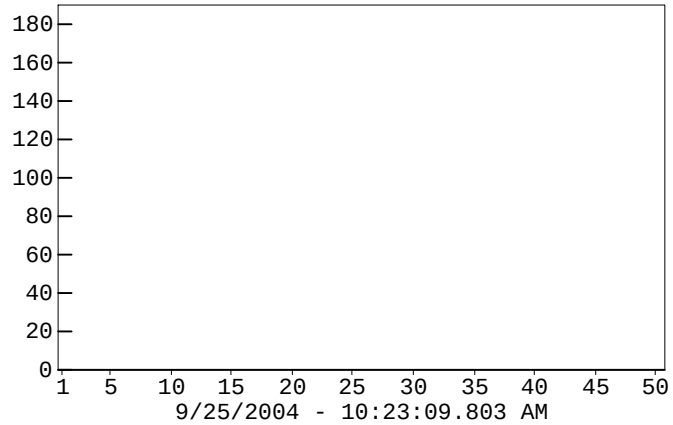
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	10:23:09.802 AM	16.661	0.000	A
Waveform I2	9/25/2004	10:23:09.802 AM	16.661	0.000	A
Waveform I3	9/25/2004	10:23:09.802 AM	16.661	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



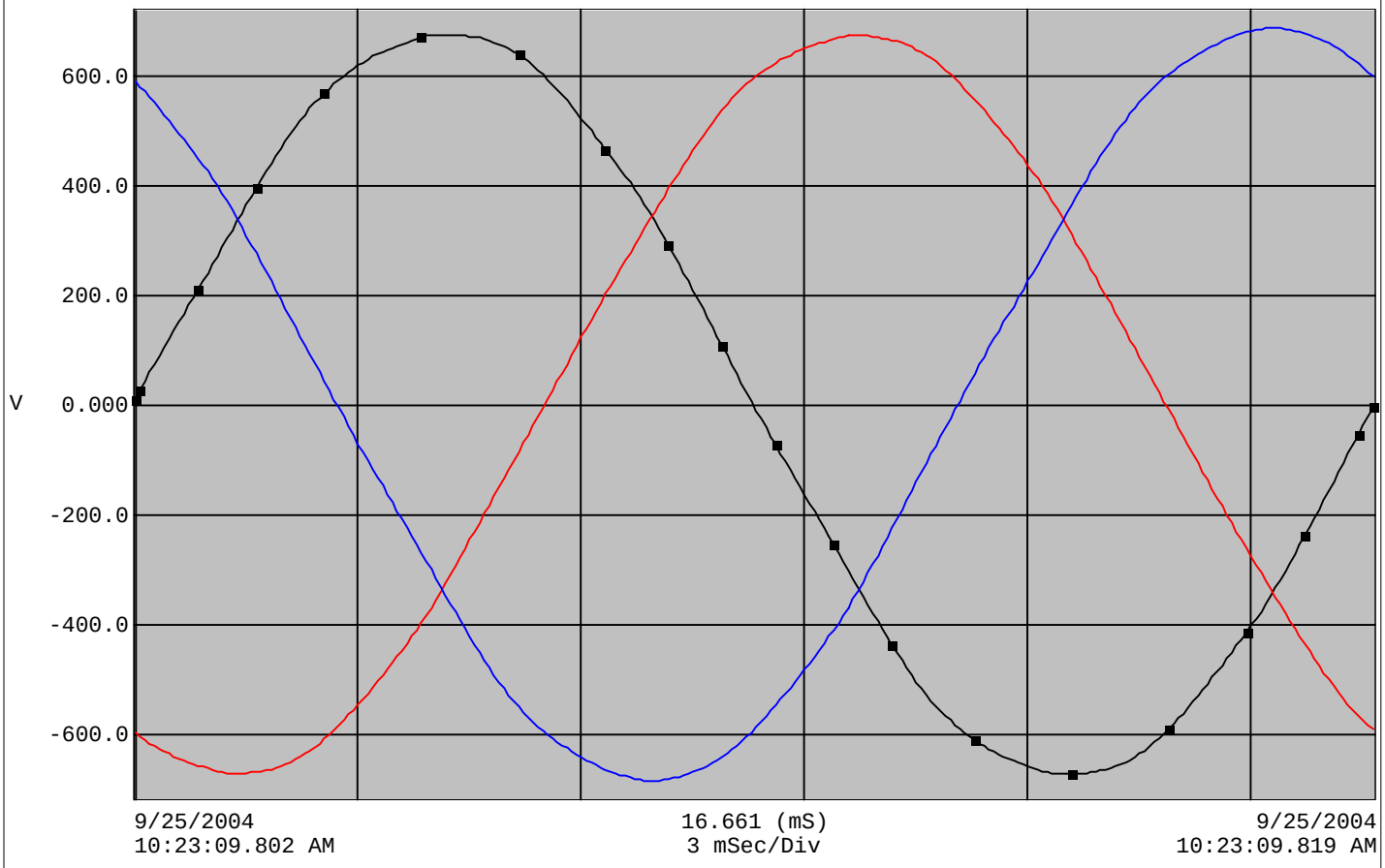
9/25/2004 - 10:23:09.000 AM

Val	
0.000	Waveform I1
0.000	Waveform I2
0.000	Waveform I3

Waveform I1

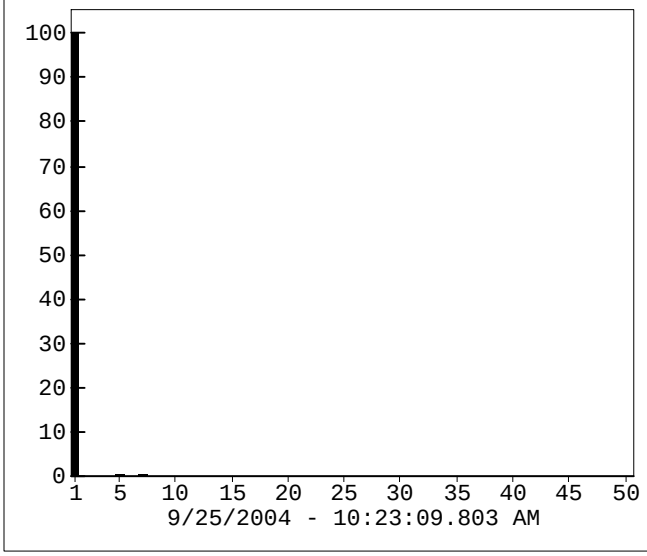
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	10:23:09.802 AM	16.661	480.5	V
Waveform U2	9/25/2004	10:23:09.802 AM	16.661	477.6	V
Waveform U3	9/25/2004	10:23:09.802 AM	16.661	485.0	V

Waveform U1
480.49 Vrms, 1.06 %THD



9/25/2004 - 10:23:09.000 AM
Val
9.900 — Waveform U1
-598.2 — Waveform U2
588.2 — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 10:23:09 AM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

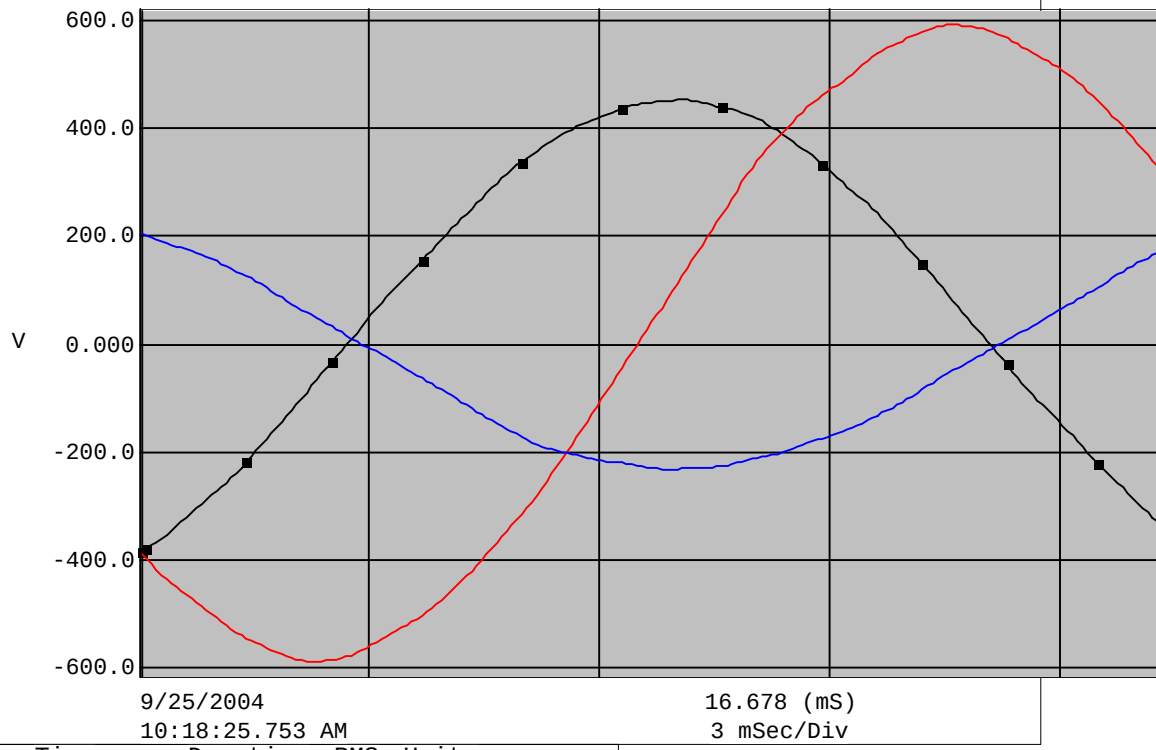
Photo Report

Database: X:\Bayside Ejector WWPS\092504 - Bayside Ejector WWPS - No Load Photo.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Test Site Bayside Ejector WWPS - No Load Photo ,
Comments	

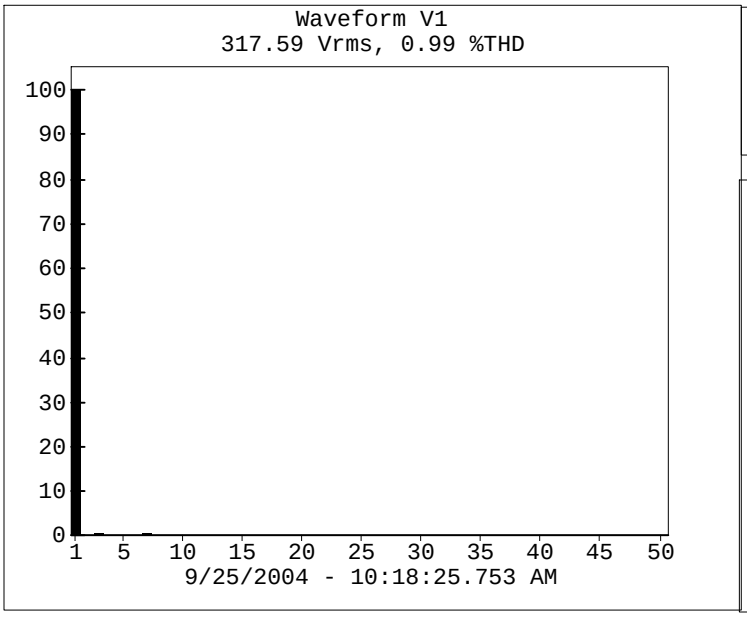
Bayside Ejector WWPS Pump Photo

Recording Start Date	9/25/2004 - 10:18:25 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	10:18:25.753 AM	16.678	317.6	V
Waveform V2	9/25/2004	10:18:25.753 AM	16.678	412.6	V
Waveform V3	9/25/2004	10:18:25.753 AM	16.678	164.8	V

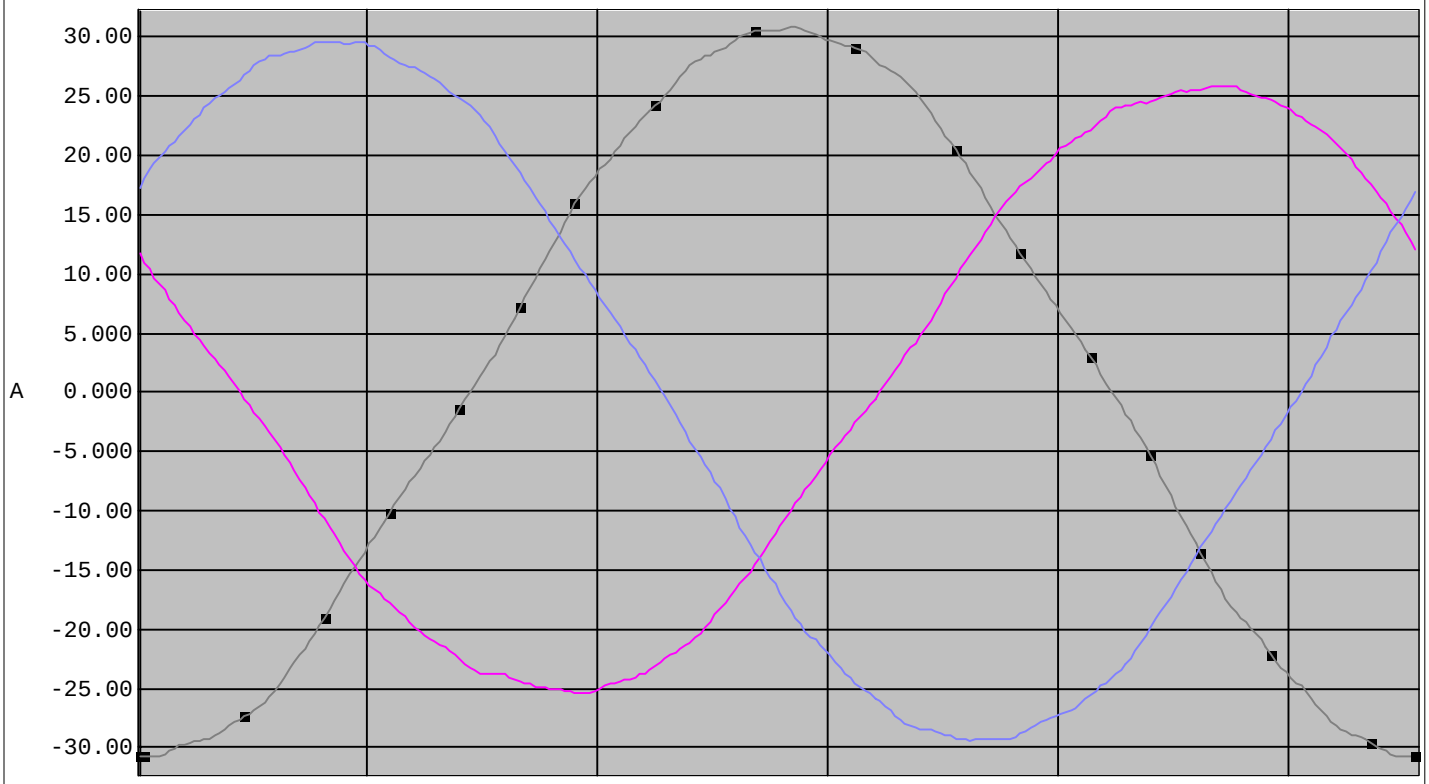


9/25/2004 - 10:18:25.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

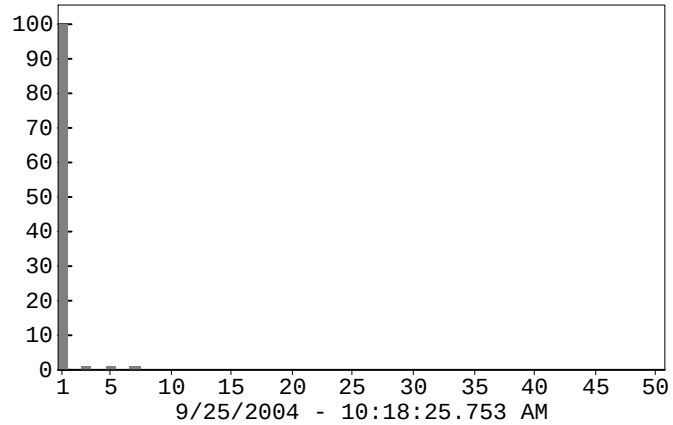
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.7	H20	0.0	H37	0.0
H04	0.0	H21	0.3	H38	0.0
H05	0.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	10:18:25.753 AM	16.678	21.64	A
Waveform I2	9/25/2004	10:18:25.753 AM	16.678	18.25	A
Waveform I3	9/25/2004	10:18:25.753 AM	16.678	20.99	A

Waveform I1
21.64 Arms, 2.40 %THD

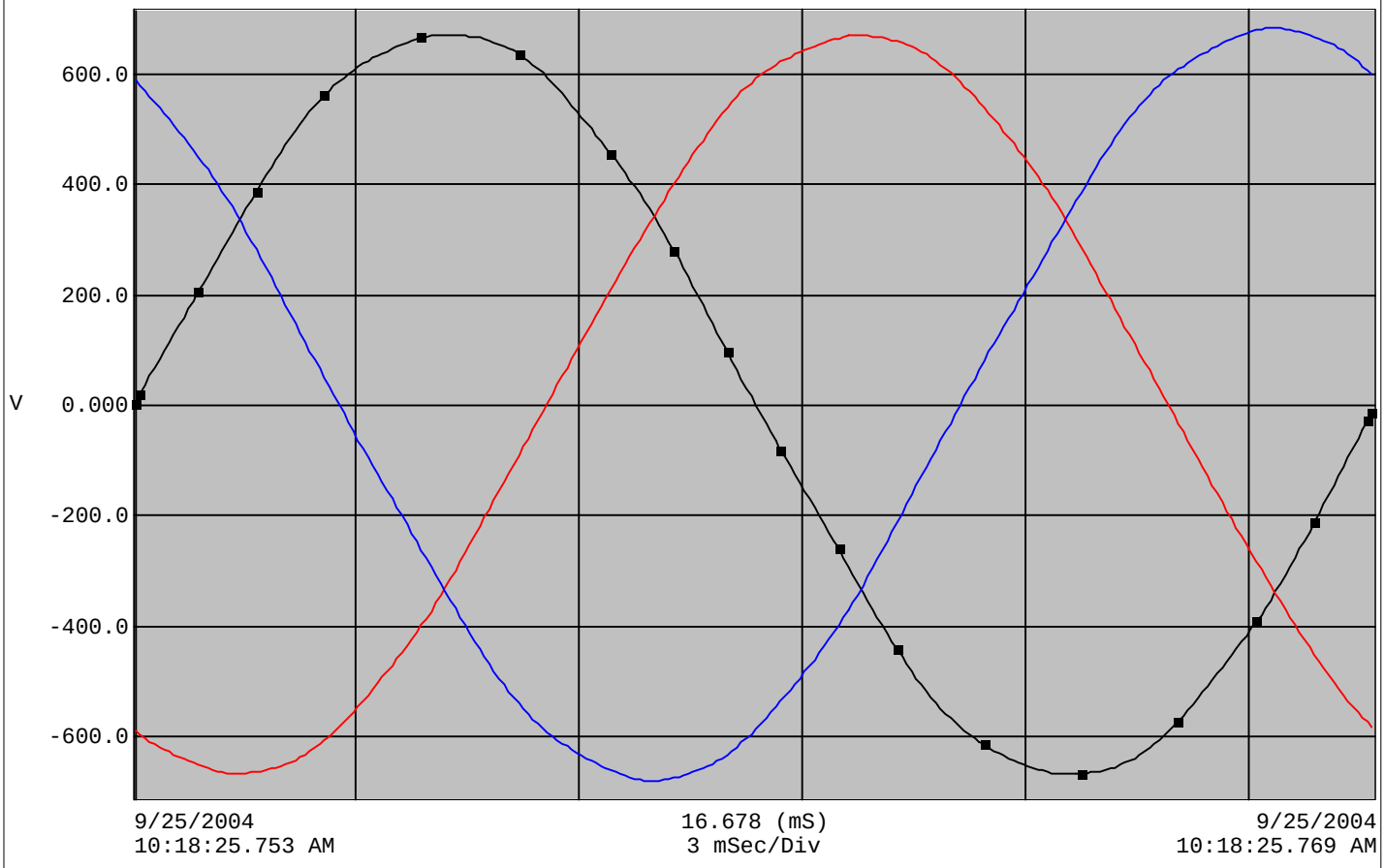


9/25/2004 - 10:18:25.015 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

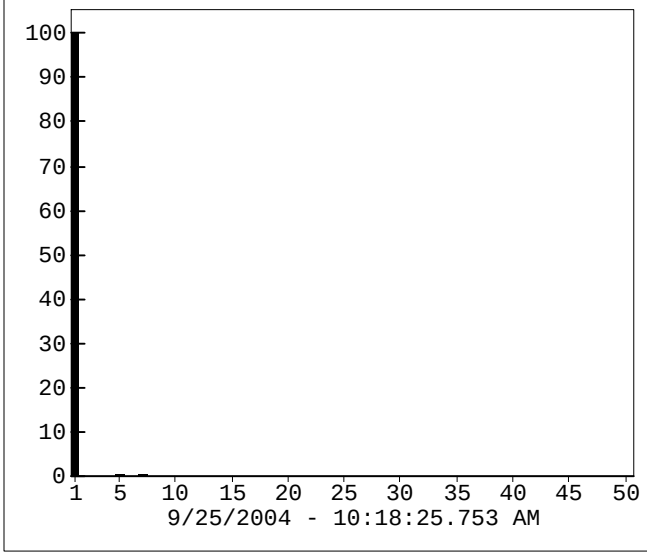
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.4	H19	0.1	H36	0.0
H03	1.2	H20	0.0	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	1.5	H22	0.1	H39	0.0
H06	0.0	H23	0.4	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	10:18:25.753 AM	16.678	478.0	V
Waveform U2	9/25/2004	10:18:25.753 AM	16.678	474.9	V
Waveform U3	9/25/2004	10:18:25.753 AM	16.678	482.3	V

Waveform U1
478.04 Vrms, 1.02 %THD



9/25/2004 - 10:18:25.015 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.6	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 10:18:25 AM
Duration: 0:0.000 (M:S)
W: 5.788E+3 W
VAR: 3.784E+3 W
VA: 6.915E+3 W
Power Factor: 0.837
Displacement Power Factor: 0.837
TAN: 0.653
VoltageRatio: 1.000
CurrentRatio: 1.000
```

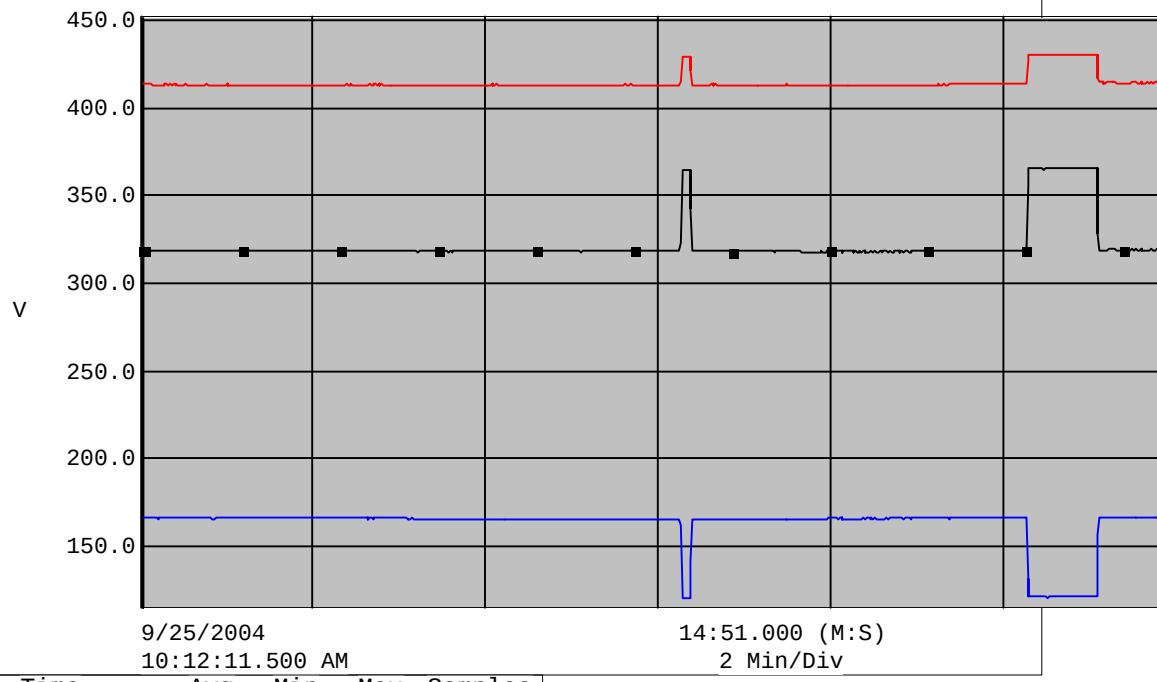
Photo Report

Database: X:\Bayside Ejector WWPS\092504 - Bayside Ejector WWPS - Pump Photo.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE andTony Capacia ,	Test Site Bayside Ejector WWPS - Pump Photo ,
Comments	

Bayside Ejector WWPS Pump Trend

Recording Start Date	9/25/2004 - 10:12:11 AM
Recording Duration	14:51 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

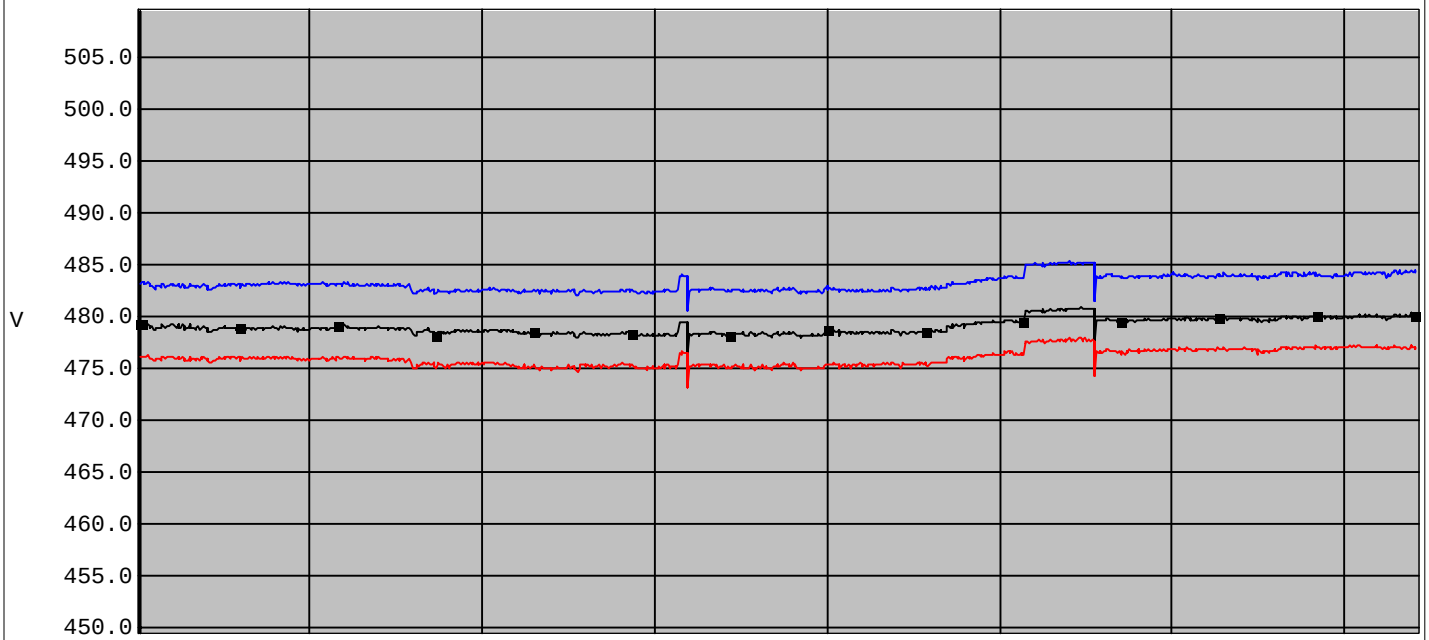
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/25/2004	10:12:11.500 AM	321.0	317.4	365.1	892
Vrms Line2	9/25/2004	10:12:11.500 AM	414.4	412.3	430.5	892
Vrms Line3	9/25/2004	10:12:11.500 AM	162.3	120.0	165.5	892

9/25/2004 - 10:12:11.000 AM
Val
318.0 Vrms Line1
413.1 Vrms Line2
165.2 Vrms Line3

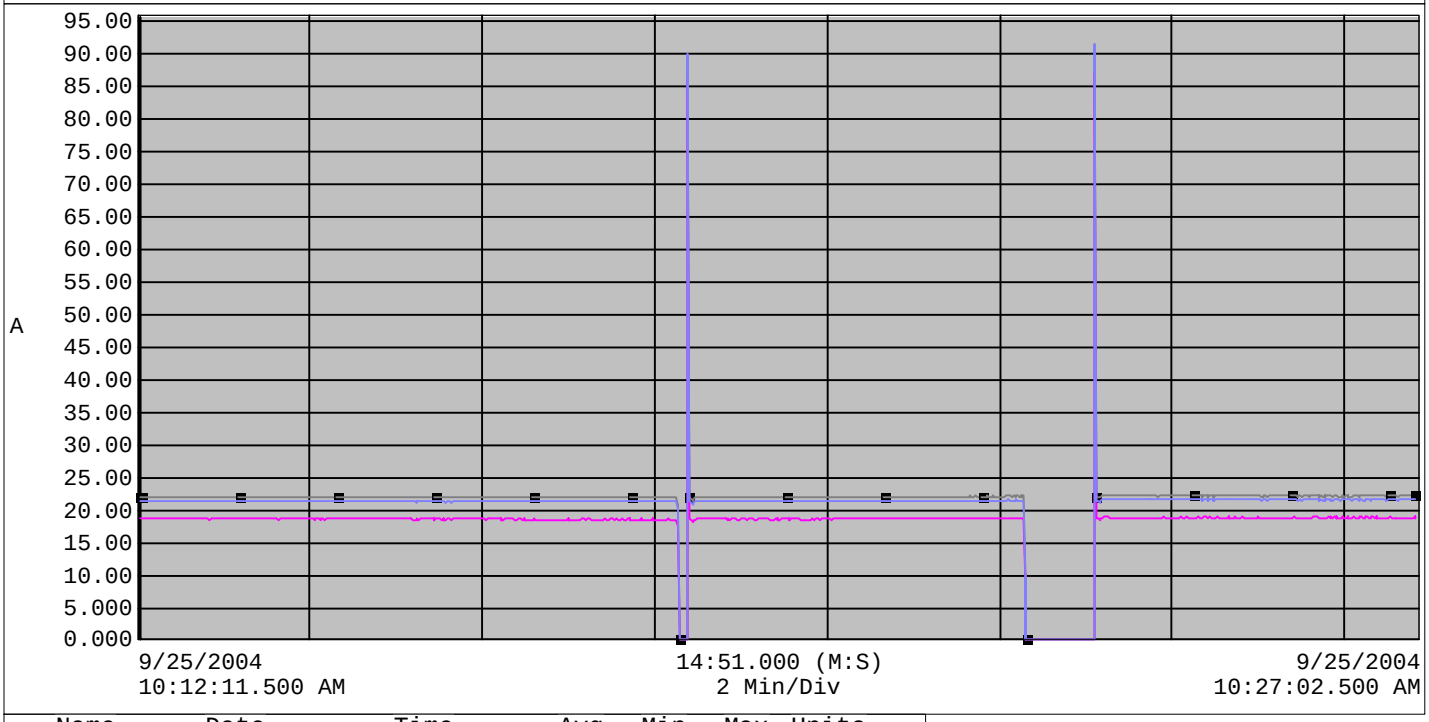
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/25/2004	10:12:11.500 AM	479.0	476.3	480.8	V
Urms Line2	9/25/2004	10:12:11.500 AM	475.9	473.0	477.9	V
Urms Line3	9/25/2004	10:12:11.500 AM	483.1	480.5	485.3	V

9/25/2004 - 10:12:11.000 AM
Val
479.1 Urms Line1
476.0 Urms Line2
483.1 Urms Line3

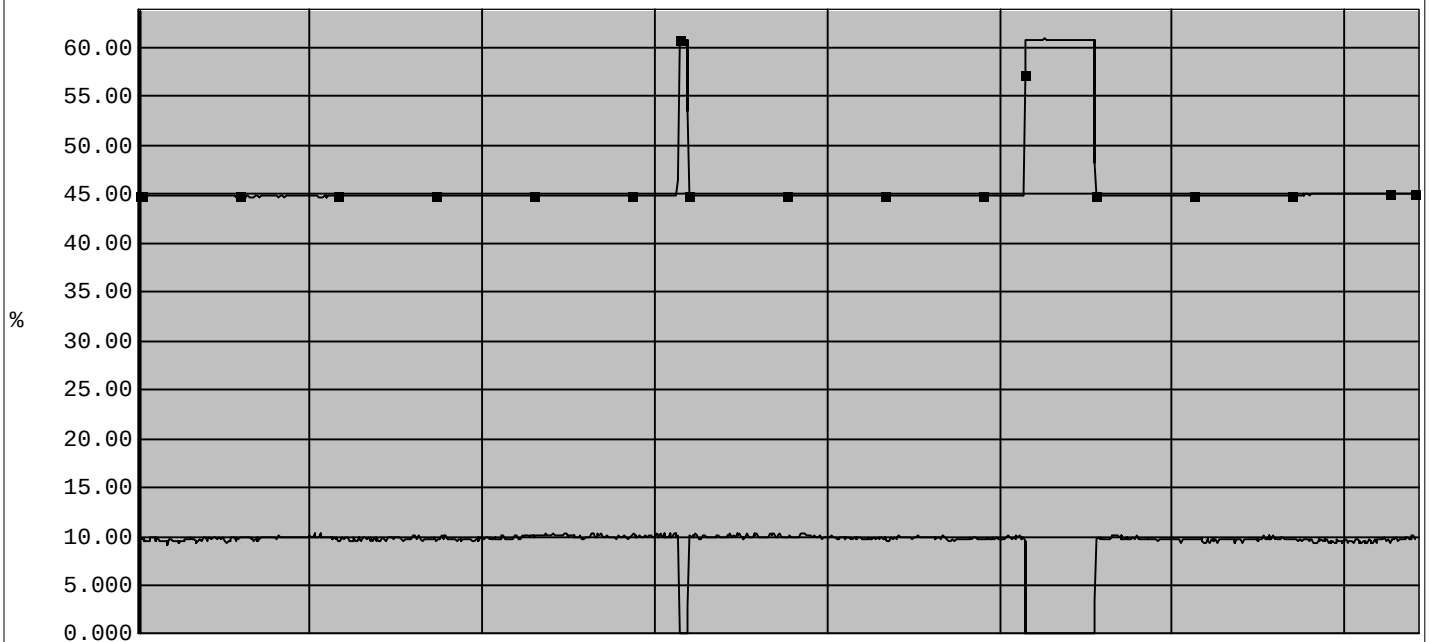
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/25/2004	10:12:11.500 AM	20.68	0.000	91.20	A
Arms Line2	9/25/2004	10:12:11.500 AM	17.57	0.000	86.80	A
Arms Line3	9/25/2004	10:12:11.500 AM	20.09	0.000	91.20	A

9/25/2004 - 10:12:11.000 AM
Val
21.80 — Arms Line1
18.50 — Arms Line2
21.10 — Arms Line3

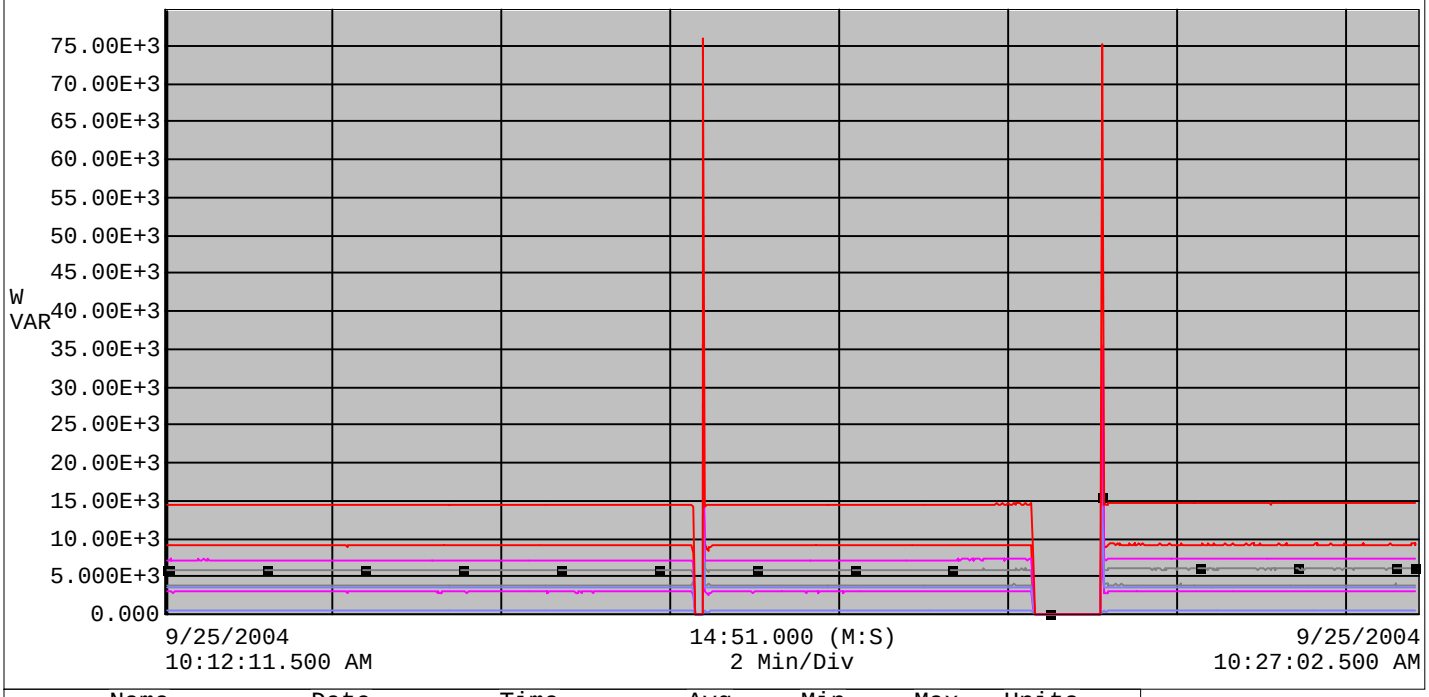
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/25/2004	10:12:11.500 AM	45.75	44.60	60.70	%
Aunb(IEEE)	9/25/2004	10:12:11.500 AM	9.132	0.000	10.20	%

9/25/2004 - 10:12:11.000 AM
Val
44.70 —— Vunb(IEEE)
9.600 —— Aunb(IEEE)

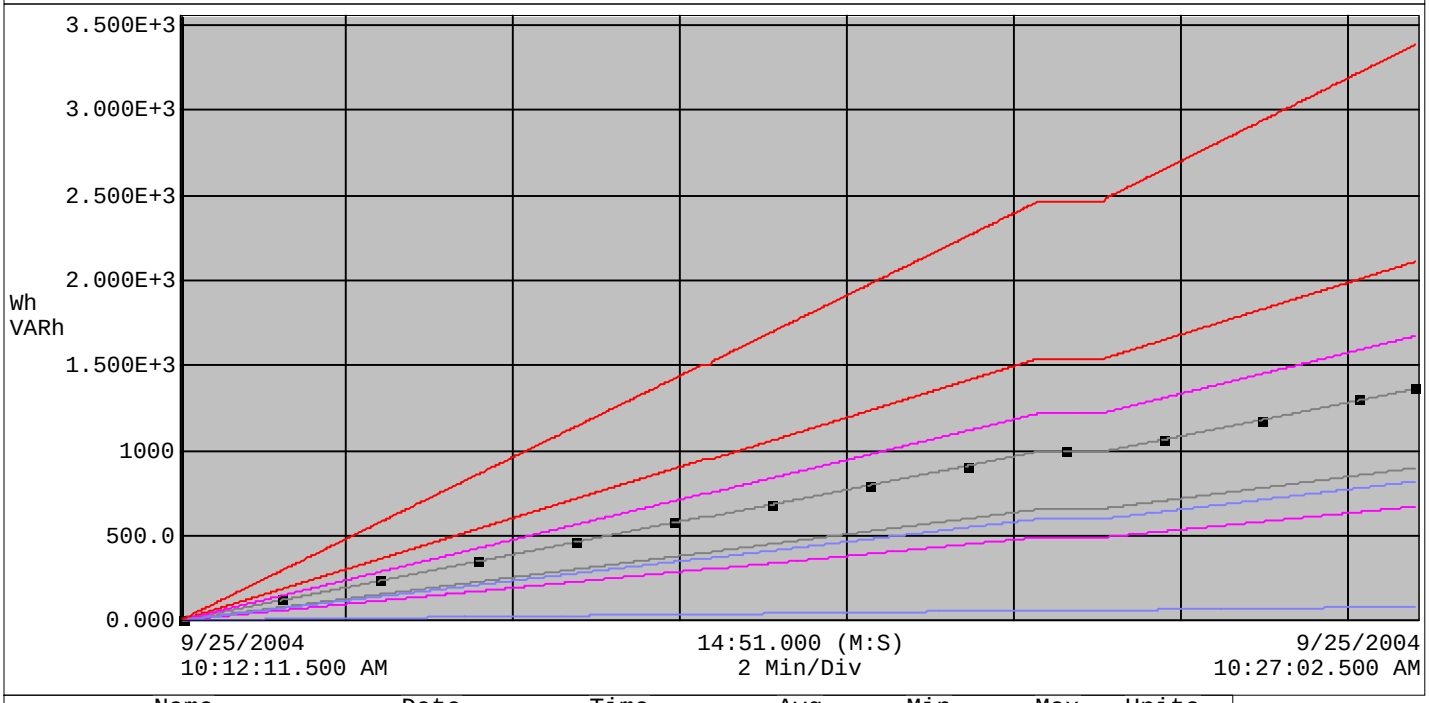
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/25/2004	10:12:11.500 AM	5.487E+3	0.000	15.37E+3	W
W Line2	9/25/2004	10:12:11.500 AM	2.701E+3	0.000	8.059E+3	W
W Line3	9/25/2004	10:12:11.500 AM	320.6	-83.71	419.9	W
W Sum of Phases	9/25/2004	10:12:11.500 AM	8.508E+3	0.000	23.69E+3	W
VAR Line1	9/25/2004	10:12:11.500 AM	3.615E+3	0.000	27.75E+3	VAR
VAR Line2	9/25/2004	10:12:11.500 AM	6.742E+3	0.000	35.50E+3	VAR
VAR Line3	9/25/2004	10:12:11.500 AM	3.298E+3	0.000	14.19E+3	VAR
VAR Sum of Phases	9/25/2004	10:12:11.500 AM	13.65E+3	0.000	75.88E+3	VAR

9/25/2004 - 10:12:11.000 AM
Val
5.799E+3 — W Line1
2.839E+3 — W Line2
339.4 — W Line3
8.977E+3 — W Sum of Phases
3.795E+3 — VAR Line1
7.101E+3 — VAR Line2
3.476E+3 — VAR Line3
14.37E+3 — VAR Sum of Phases

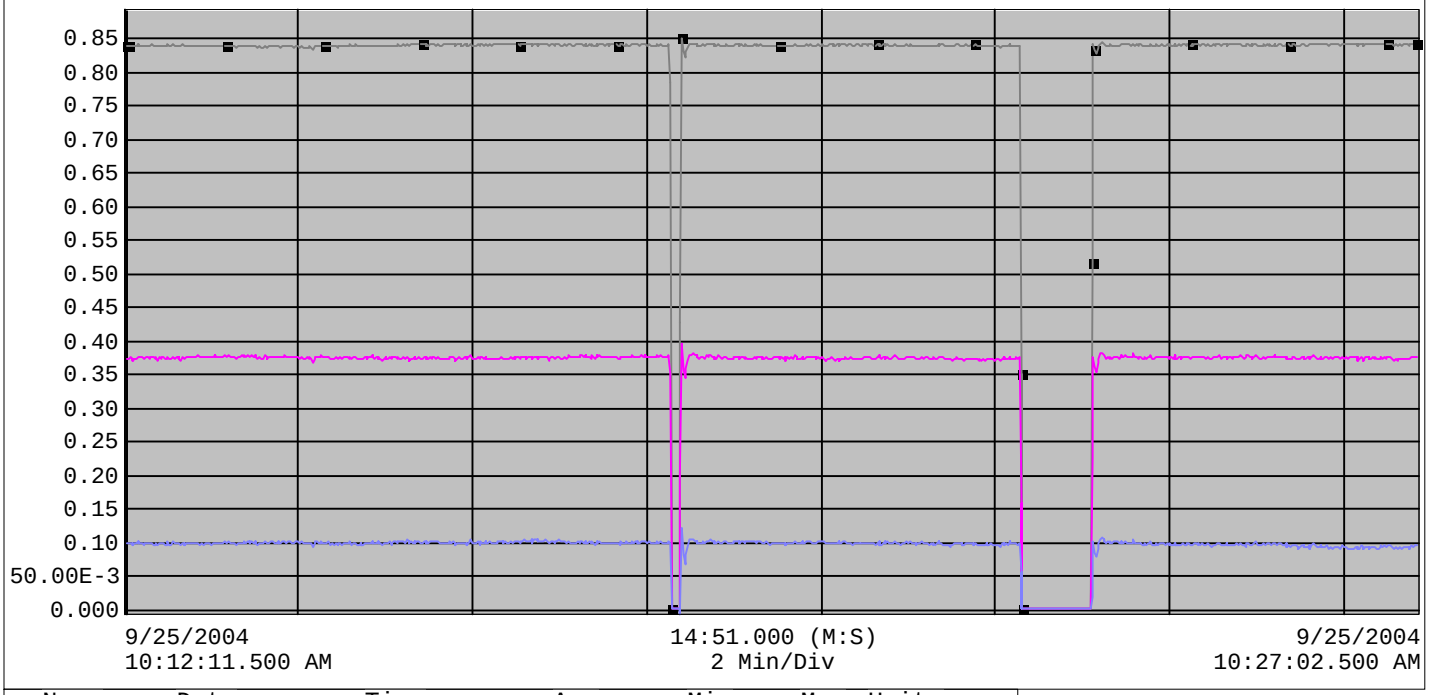
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/25/2004	10:12:11.500 AM	694.5	1.618	1.360E+3	Wh
W-hours Line2	9/25/2004	10:12:11.500 AM	341.9	0.797	669.2	Wh
W-hours Line3	9/25/2004	10:12:11.500 AM	40.97	94.65E-3	79.43	Wh
W-hours Sum of Phases	9/25/2004	10:12:11.500 AM	1.077E+3	2.509	2.108E+3	Wh
VAR-hours Line1	9/25/2004	10:12:11.500 AM	457.1	1.066	895.6	VARh
VAR-hours Line2	9/25/2004	10:12:11.500 AM	852.2	1.988	1.670E+3	VARh
VAR-hours Line3	9/25/2004	10:12:11.500 AM	417.3	0.973	817.0	VARh
VAR-hours Sum of Phases	9/25/2004	10:12:11.500 AM	1.727E+3	4.027	3.383E+3	VARh

9/25/2004 - 10:12:11.000 AM
Val
1.618 — W-hours Line1
0.797 — W-hours Line2
94.65E-3 — W-hours Line3
2.509 — W-hours Sum of Phases
1.066 — VAR-hours Line1
1.988 — VAR-hours Line2
0.973 — VAR-hours Line3
4.027 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/25/2004	10:12:11.500 AM	0.786	0.000	0.849	
PF Line2	9/25/2004	10:12:11.500 AM	0.351	0.000	0.394	
PF Line3	9/25/2004	10:12:11.500 AM	91.45E-3	-7.000E-3	0.120	

9/25/2004 - 10:12:11.000 AM
Val
0.837 — PF Line1
0.371 — PF Line2
97.00E-3 — PF Line3

Trend Summary Report

Database: X:\Bayside Ejector WWPS\092504 - Bayside Ejector WWPS - Pump Trend.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Bayside Ejector Station - Pump Trend Report ,

Comments
GPA Meter 02-465-829, Demand of 9.78 KW.

Single pump operation for this station. Formerly ejector compressors were used. High voltage leg to ground on ungrounded Delta system.

GWA Wastewater Pumping Station Assessment				
Station Name: CABRAS ISLAND	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/18/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.38	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	2	0.1	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.15	
Main Disconnect	5.0%	2	0.1	
Grounding	2.5%	2	0.05	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0	
Generator Condition	10.0%	0	0	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	0	0	
Auto Transfer Switch	2.5%	0	0	
Primary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.24	
Level	5.0%	3	0.15	
Alarms	3.0%	1	0.03	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.09	
Lighting and Power Devices	1.5%	3	0.045	
Sump Pump Controls	1.5%	3	0.045	
	100%	**Assessment Value**		**2.1**

Comments:

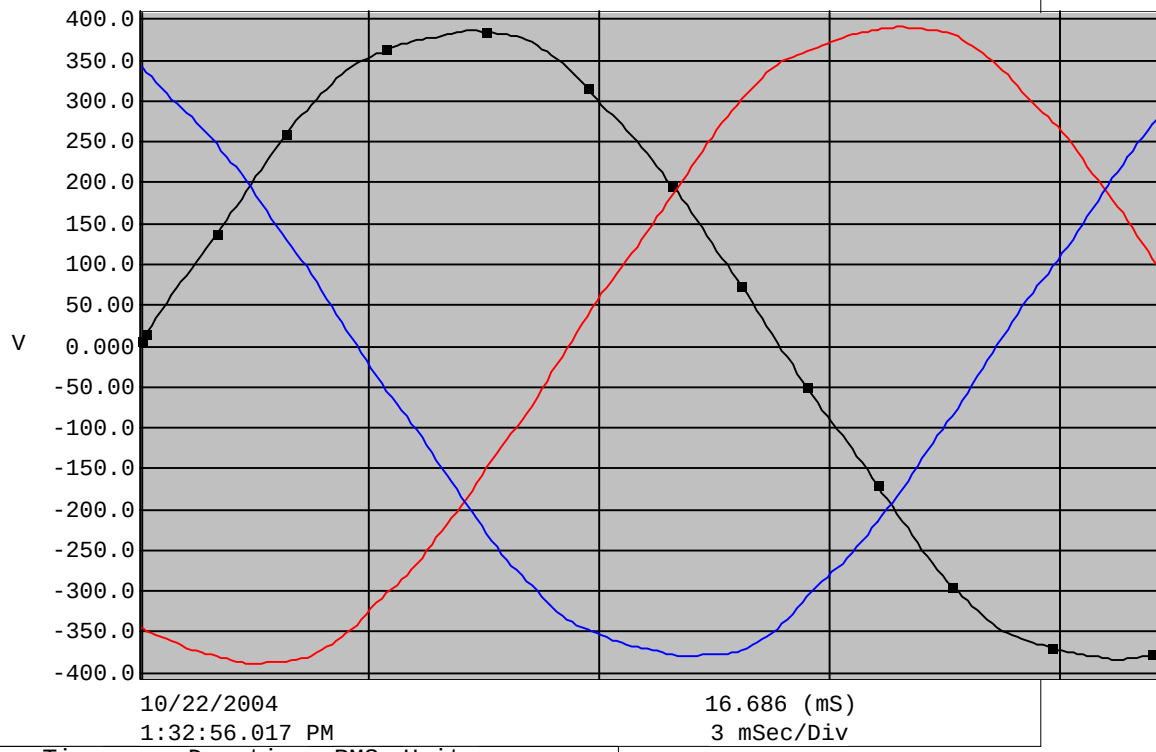
GWA Wastewater Pumping Station Assessment				
Station Name: CHALAN PAGO #3	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 10/22/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.54	
Transformer Pole Condition and Grounding	2.0%	4	0.08	
Transformer Connection Type	2.0%	4	0.08	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	4	0.2	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.45	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.68	
Main Breaker	4.0%	4	0.16	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.68	
Main Breaker	4.0%	4	0.16	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.22	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.105	
Lighting and Power Devices	1.5%	3	0.045	
Sump Pump Controls	1.5%	4	0.06	
	100%	**Assessment Value**		**2.9**

Comments:

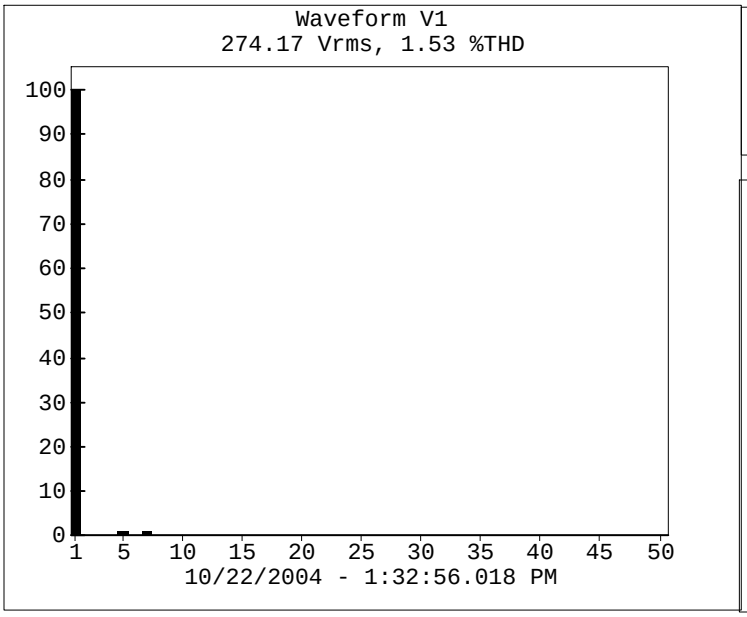
Chalan Pago 3 PS Pump 1 Photo

Recording Start Date	10/22/2004 - 1:32:56 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/22/2004	1:32:56.017 PM	16.686	274.2	V
Waveform V2	10/22/2004	1:32:56.017 PM	16.686	277.6	V
Waveform V3	10/22/2004	1:32:56.017 PM	16.686	272.2	V



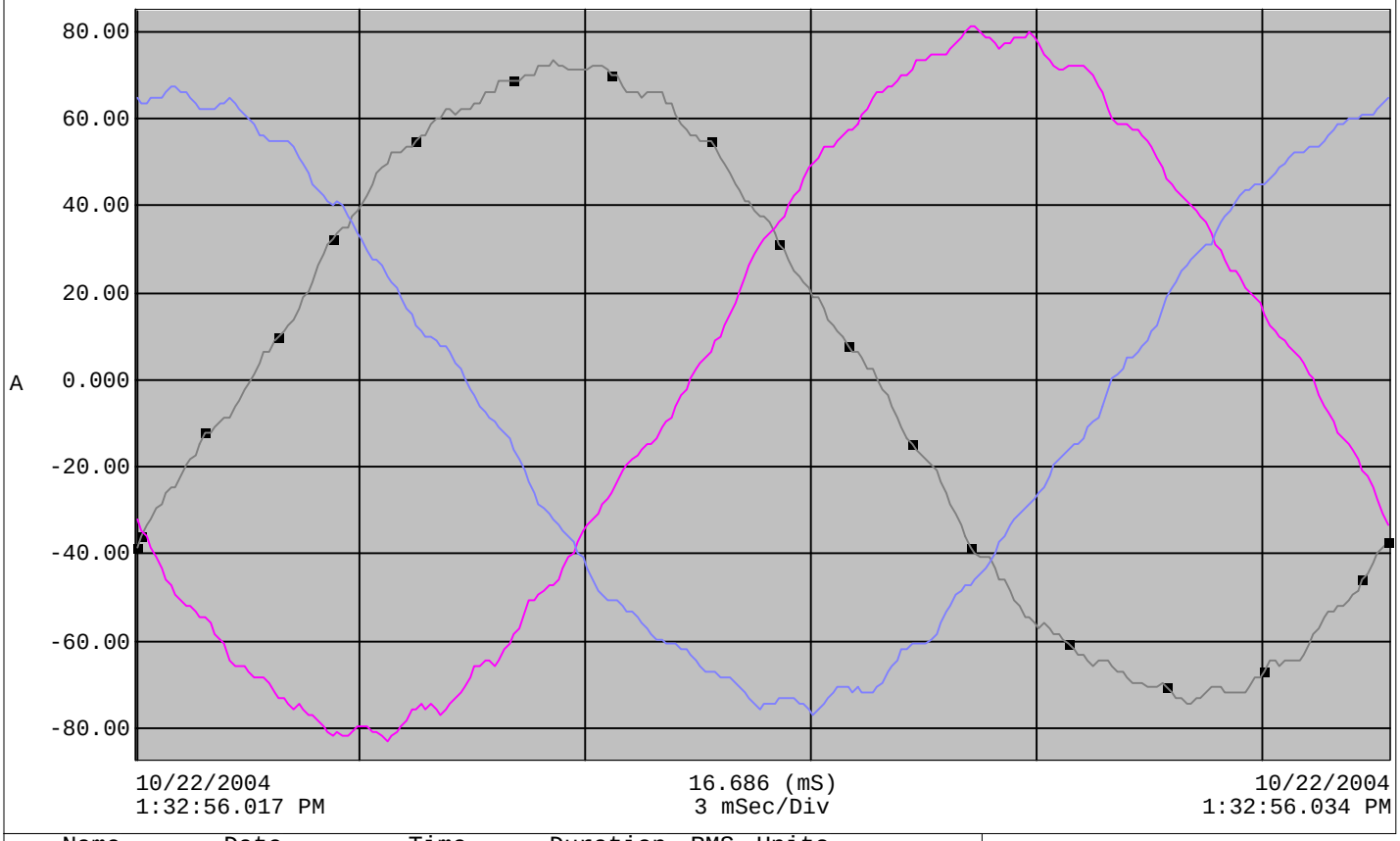
10/22/2004 - 1:32:56.000 PM

Val	
4.700	Waveform V1
-346.4	Waveform V2
341.7	Waveform V3

Waveform V1

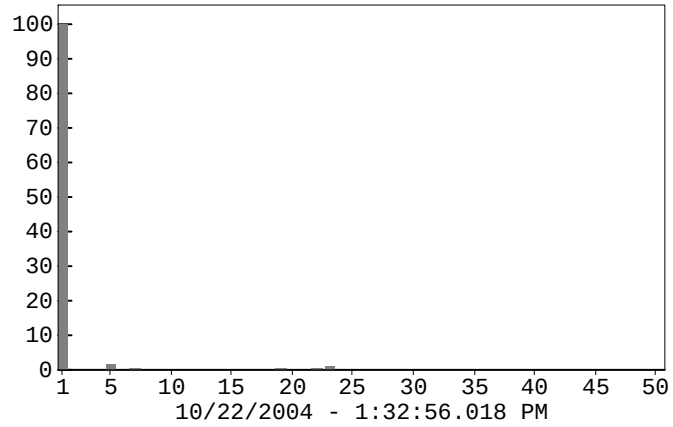
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.1	H22	0.1	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	1.0	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/22/2004	1:32:56.017 PM	16.686	51.30	A
Waveform I2	10/22/2004	1:32:56.017 PM	16.686	55.73	A
Waveform I3	10/22/2004	1:32:56.017 PM	16.686	49.53	A

Waveform I1
51.30 Arms, 3.03 %THD



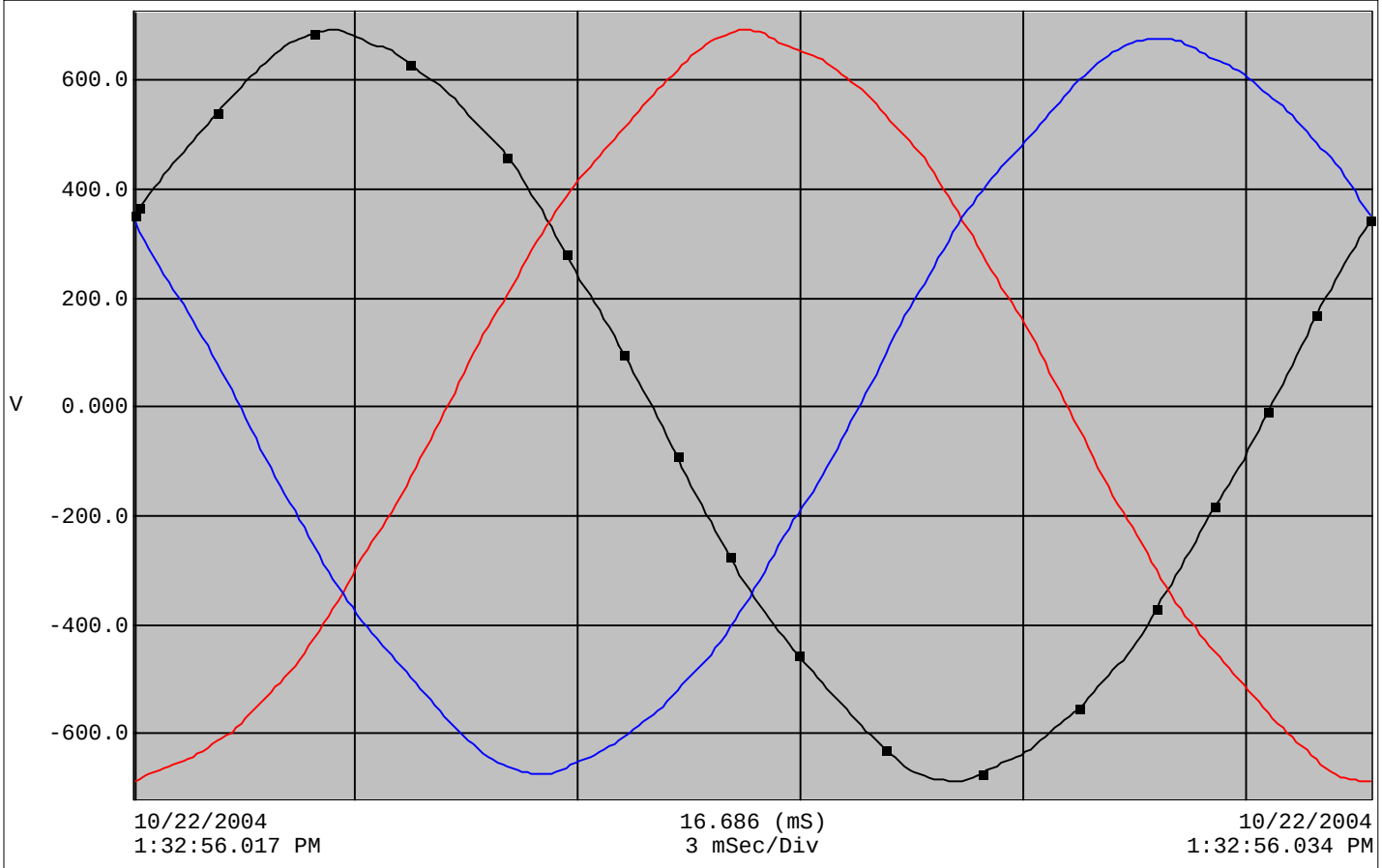
10/22/2004 - 1:32:56.000 PM

Val	
-38.50	Waveform I1
-32.30	Waveform I2
64.70	Waveform I3

Waveform I1

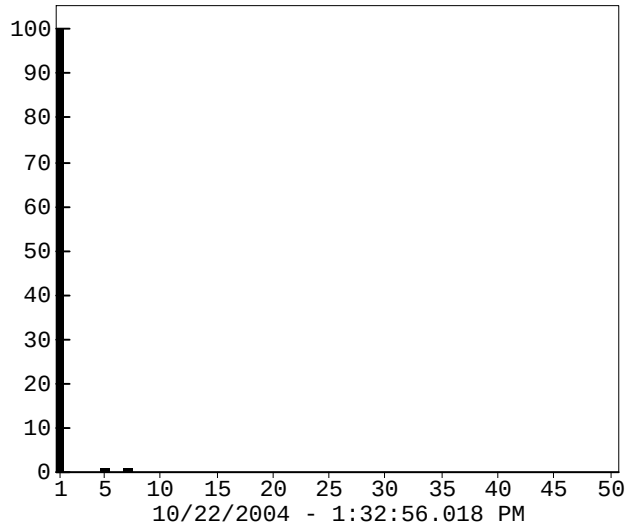
	(%)		(%)		(%)
H01	100.0	H18	0.3	H35	0.1
H02	0.5	H19	0.7	H36	0.1
H03	0.4	H20	0.4	H37	0.1
H04	0.2	H21	0.3	H38	0.0
H05	2.0	H22	0.8	H39	0.1
H06	0.1	H23	1.2	H40	0.0
H07	1.1	H24	0.4	H41	0.1
H08	0.2	H25	0.4	H42	0.2
H09	0.1	H26	0.1	H43	0.0
H10	0.0	H27	0.2	H44	0.1
H11	0.2	H28	0.0	H45	0.1
H12	0.0	H29	0.2	H46	0.1
H13	0.2	H30	0.1	H47	0.0
H14	0.1	H31	0.1	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.1
H17	0.2	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/22/2004	1:32:56.017 PM	16.686	479.7	V
Waveform U2	10/22/2004	1:32:56.017 PM	16.686	477.5	V
Waveform U3	10/22/2004	1:32:56.017 PM	16.686	470.2	V

Waveform U1
479.69 Vrms, 1.52 %THD



10/22/2004 - 1:32:56.000 PM

	Val	
—	351.1	Waveform U1
—	-688.1	Waveform U2
—	337.0	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.1	H22	0.1	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	1.0	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/22/2004
Start Time: 1:32:56 PM
Duration: 0:0.000 (M:S)
W: 12.02E+3 W
VAR: 7.324E+3 W
VA: 14.07E+3 W
Power Factor: 0.854
Displacement Power Factor: 0.854
TAN: 0.609
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Chalan Pago 3 PS\102204 - Chalan Pago 3 PS Photo Pump 1.dvb

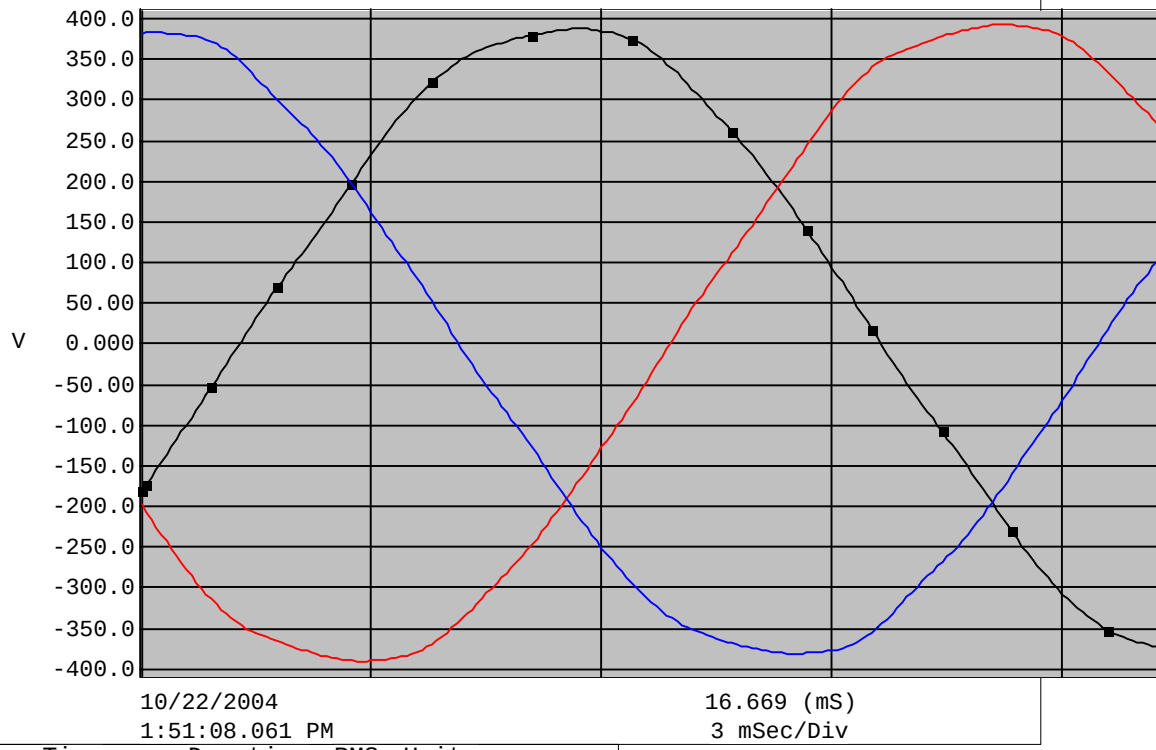
Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	GWA ,

Comments
Chalan Pago 3 PS Photo Pump1

Chalan Pago 3 PS Pump 2 Photo

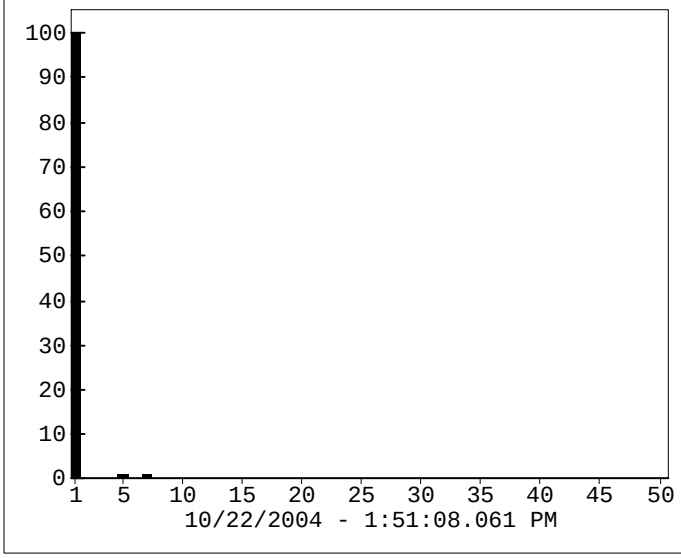
Recording Start Date	10/22/2004 - 1:51:08 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/22/2004	1:51:08.061 PM	16.669	275.8	V
Waveform V2	10/22/2004	1:51:08.061 PM	16.669	279.0	V
Waveform V3	10/22/2004	1:51:08.061 PM	16.669	273.5	V

Waveform V1
275.78 Vrms, 1.51 %THD

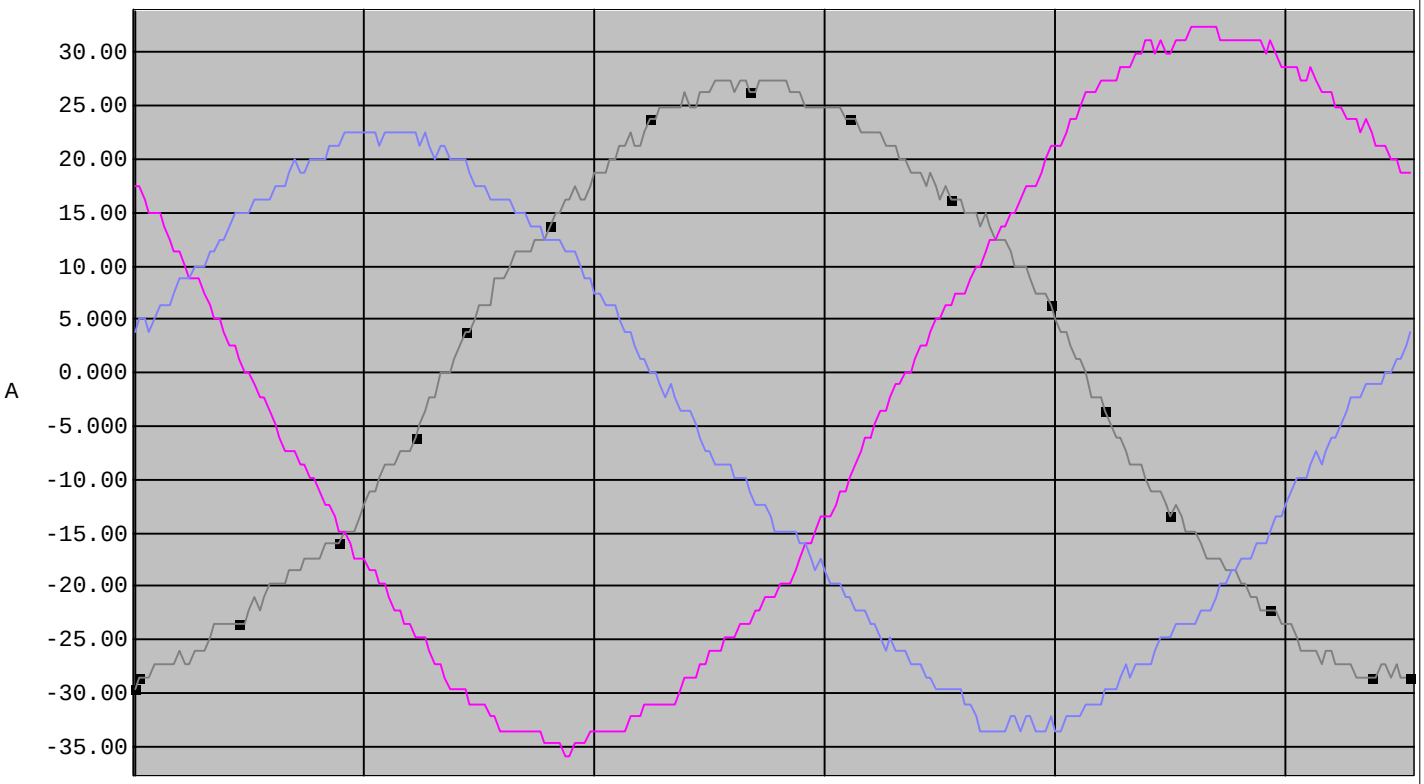


10/22/2004 - 1:51:08.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

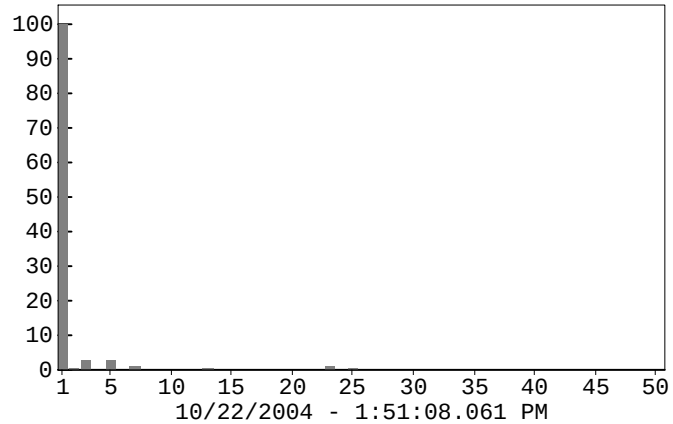
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/22/2004	1:51:08.061 PM	16.669	19.67	A
Waveform I2	10/22/2004	1:51:08.061 PM	16.669	23.33	A
Waveform I3	10/22/2004	1:51:08.061 PM	16.669	19.56	A

Waveform I1
19.67 Arms, 4.88 %THD

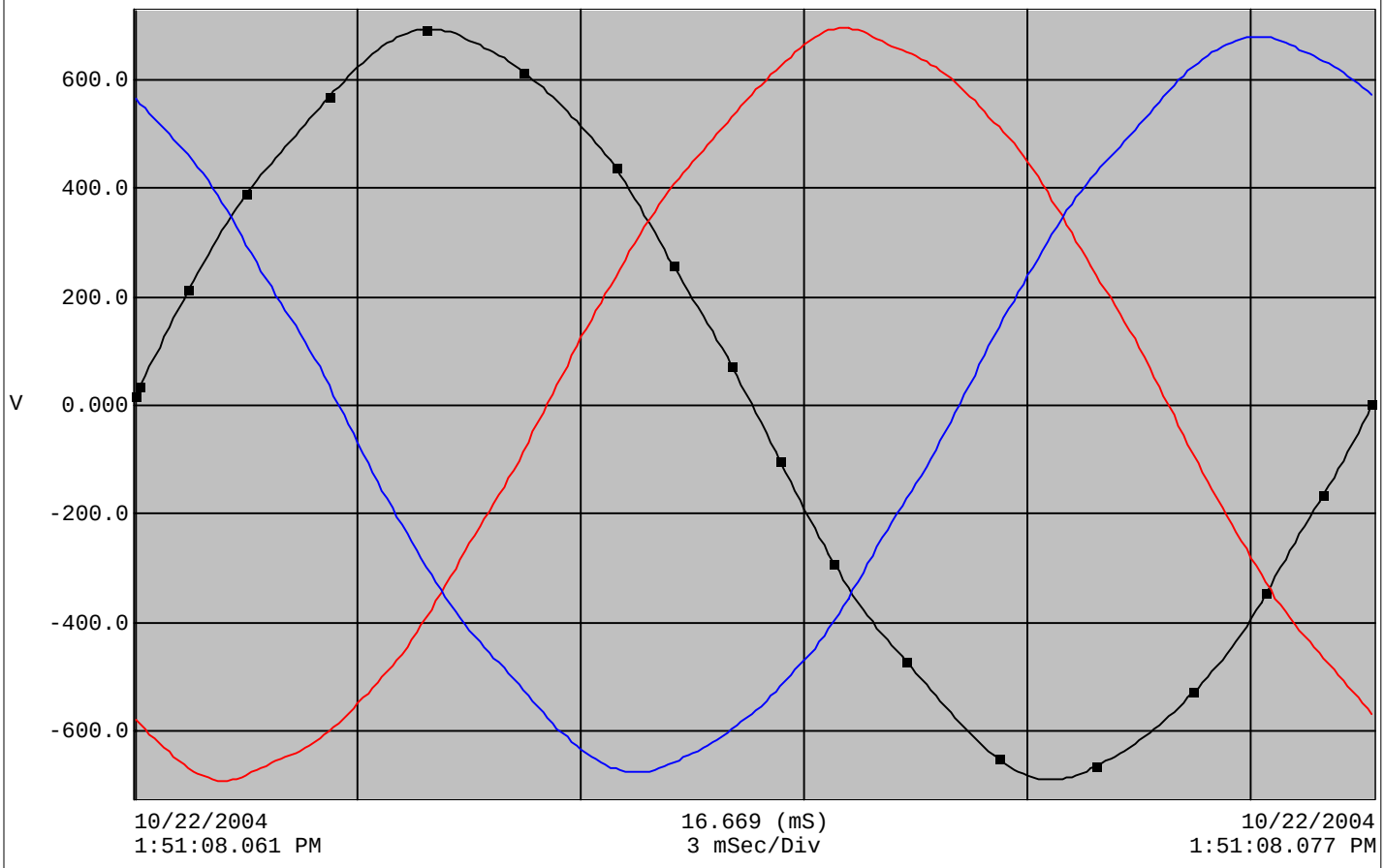


10/22/2004 - 1:51:08.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

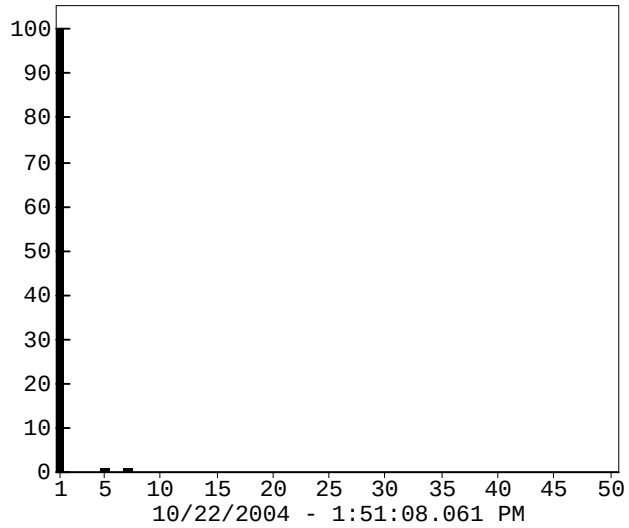
	(%)		(%)		(%)
H01	100.0	H18	0.3	H35	0.2
H02	0.8	H19	0.5	H36	0.1
H03	2.8	H20	0.1	H37	0.1
H04	0.3	H21	0.1	H38	0.1
H05	3.1	H22	0.3	H39	0.1
H06	0.2	H23	1.1	H40	0.2
H07	1.3	H24	0.1	H41	0.1
H08	0.3	H25	0.8	H42	0.3
H09	0.2	H26	0.1	H43	0.3
H10	0.3	H27	0.3	H44	0.1
H11	0.2	H28	0.2	H45	0.2
H12	0.1	H29	0.3	H46	0.3
H13	0.6	H30	0.2	H47	0.1
H14	0.2	H31	0.1	H48	0.2
H15	0.3	H32	0.1	H49	0.1
H16	0.2	H33	0.1	H50	0.1
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/22/2004	1:51:08.061 PM	16.669	482.4	V
Waveform U2	10/22/2004	1:51:08.061 PM	16.669	479.9	V
Waveform U3	10/22/2004	1:51:08.061 PM	16.669	472.5	V

Waveform U1
482.42 Vrms, 1.53 %THD



10/22/2004 - 1:51:08.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/22/2004
Start Time: 1:51:08 PM
Duration: 0:0.000 (M:S)
W: 6.060E+3 W
VAR: 5.938E+3 W
VA: 8.484E+3 W
Power Factor: 0.714
Displacement Power Factor: 0.719
TAN: 0.873
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Chalan Pago 3 PS\102204 - Chalan Pago 3 PS Photo Pump 2.dvb

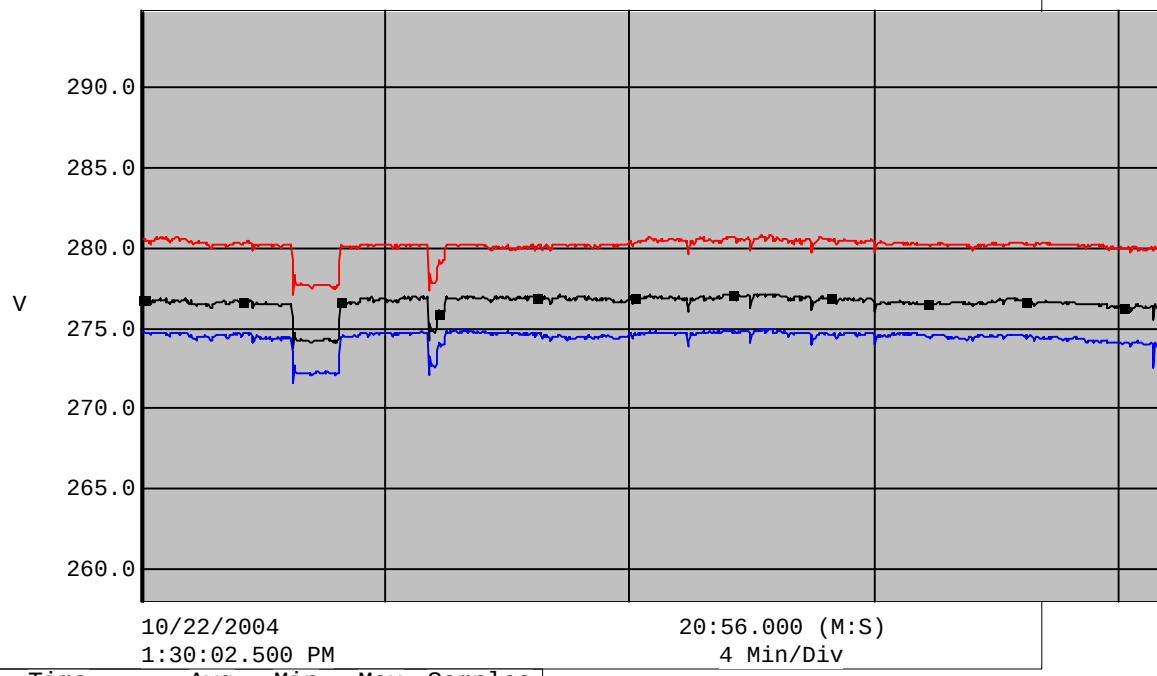
Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	GWA ,

Comments
Chalan Pago 3 PS Photo Pump 2

Chalan Pago 3 PS Trend

Recording Start Date	10/22/2004 - 1:30:02 PM
Recording Duration	20:56 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

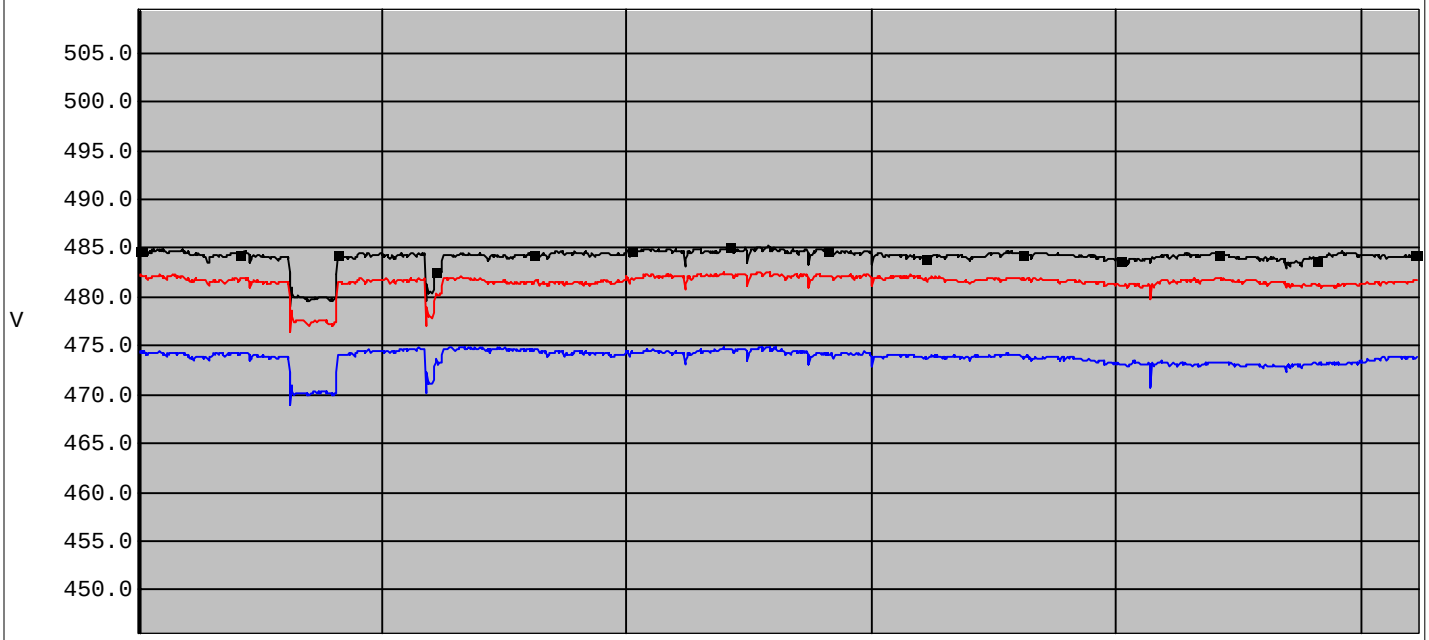
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/22/2004	1:30:02.500 PM	276.5	273.7	277.1	1257
Vrms Line2	10/22/2004	1:30:02.500 PM	280.1	277.1	280.7	1257
Vrms Line3	10/22/2004	1:30:02.500 PM	274.3	271.5	274.9	1257

10/22/2004 - 1:30:02.000 PM
Val
276.7 Vrms Line1
280.5 Vrms Line2
274.7 Vrms Line3

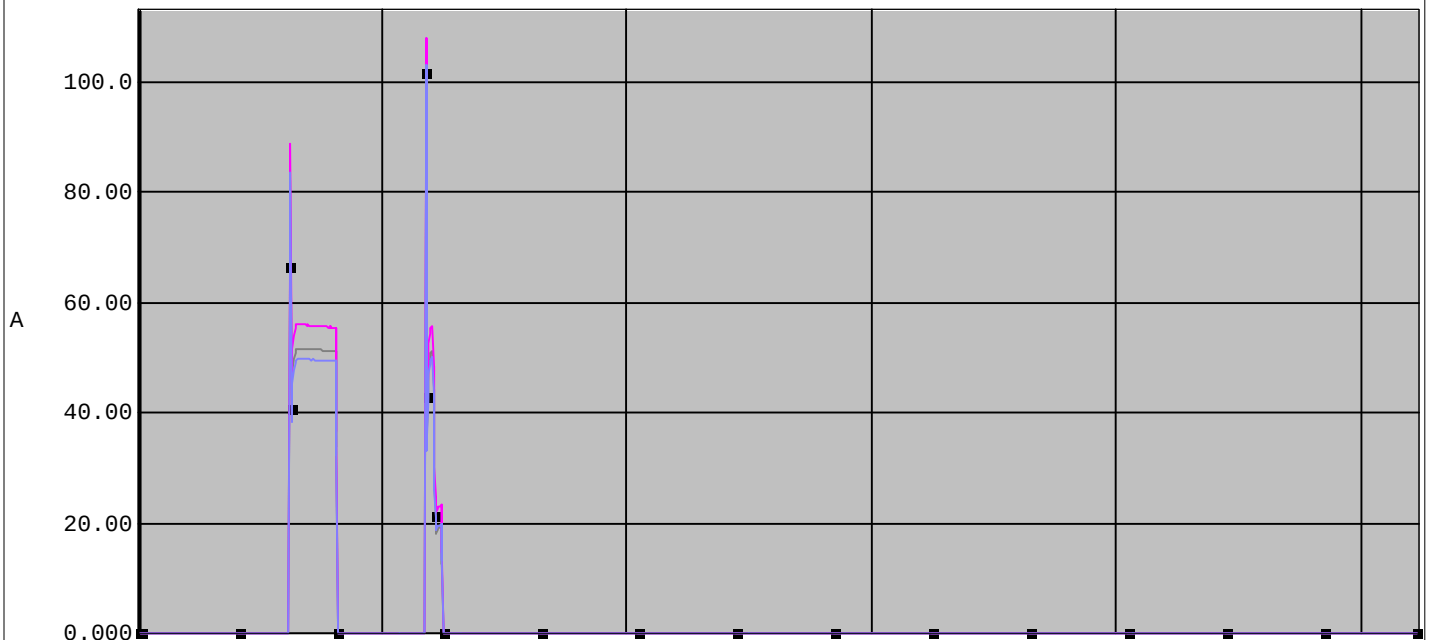
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/22/2004	1:30:02.500 PM	484.0	478.9	485.1	V
Urms Line2	10/22/2004	1:30:02.500 PM	481.4	476.3	482.5	V
Urms Line3	10/22/2004	1:30:02.500 PM	473.7	468.9	474.8	V

10/22/2004 - 1:30:02.000 PM
Val
484.5 — Urms Line1
482.1 — Urms Line2
474.2 — Urms Line3

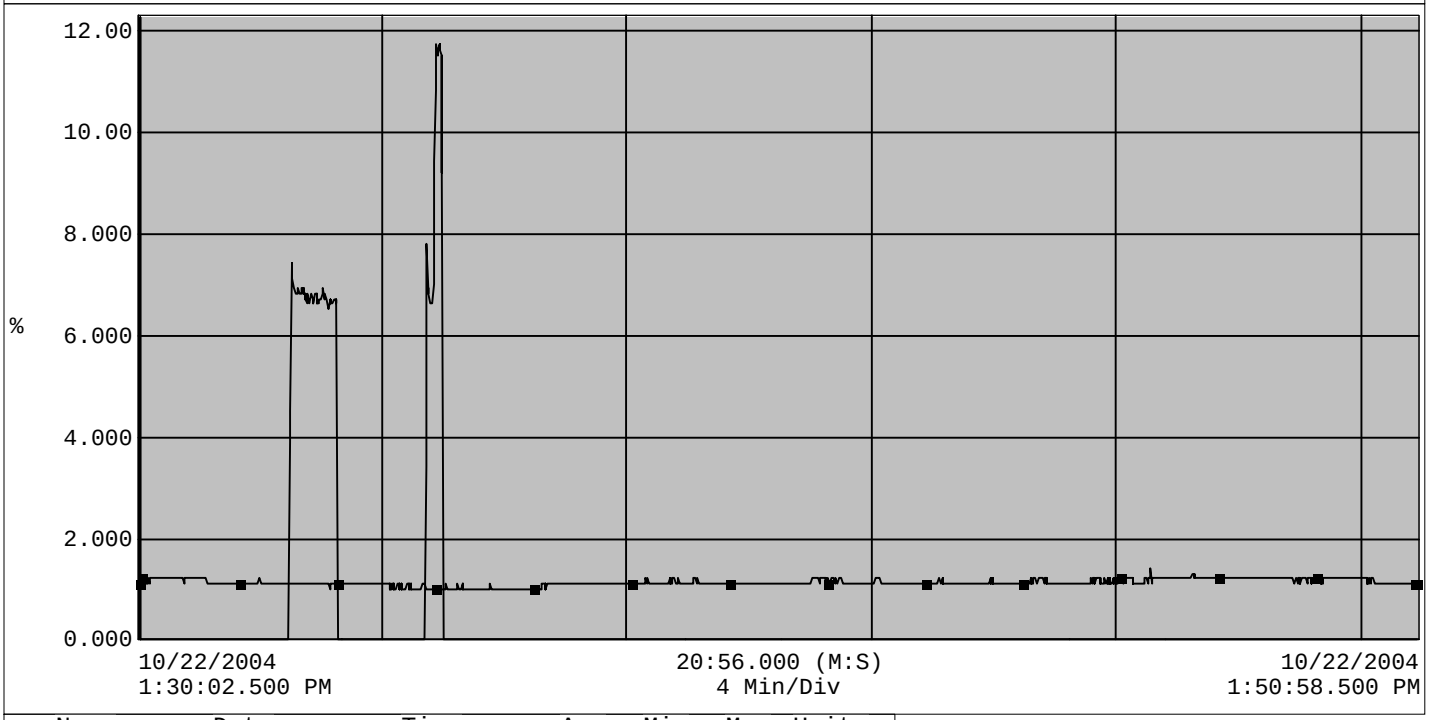
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/22/2004	1:30:02.500 PM	2.404	0.000	101.5	A
Arms Line2	10/22/2004	1:30:02.500 PM	2.618	0.000	107.6	A
Arms Line3	10/22/2004	1:30:02.500 PM	2.332	0.000	103.0	A

10/22/2004 - 1:30:02.000 PM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

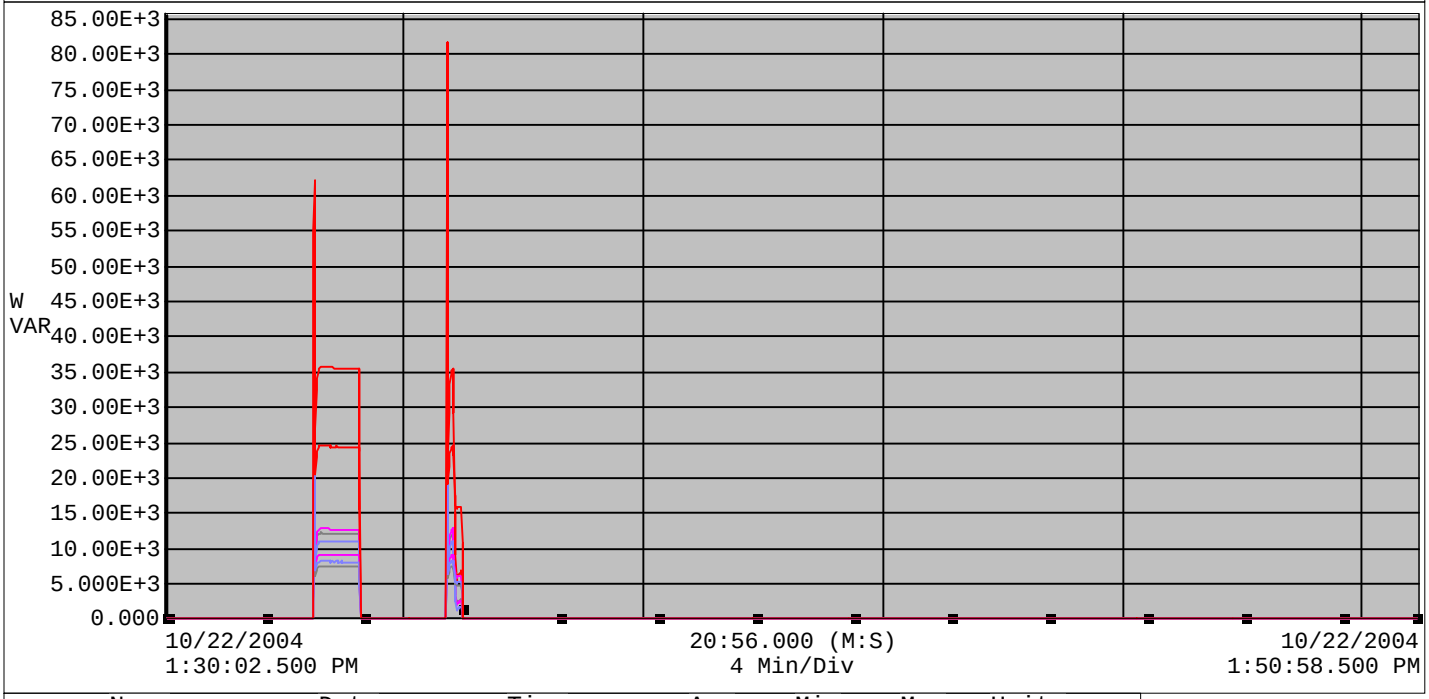
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/22/2004	1:30:02.500 PM	1.118	1.000	1.400	%
Aunb(IEEE)	10/22/2004	1:30:02.500 PM	0.368	0.000	11.70	%

10/22/2004 - 1:30:02.000 PM
Val
1.200 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

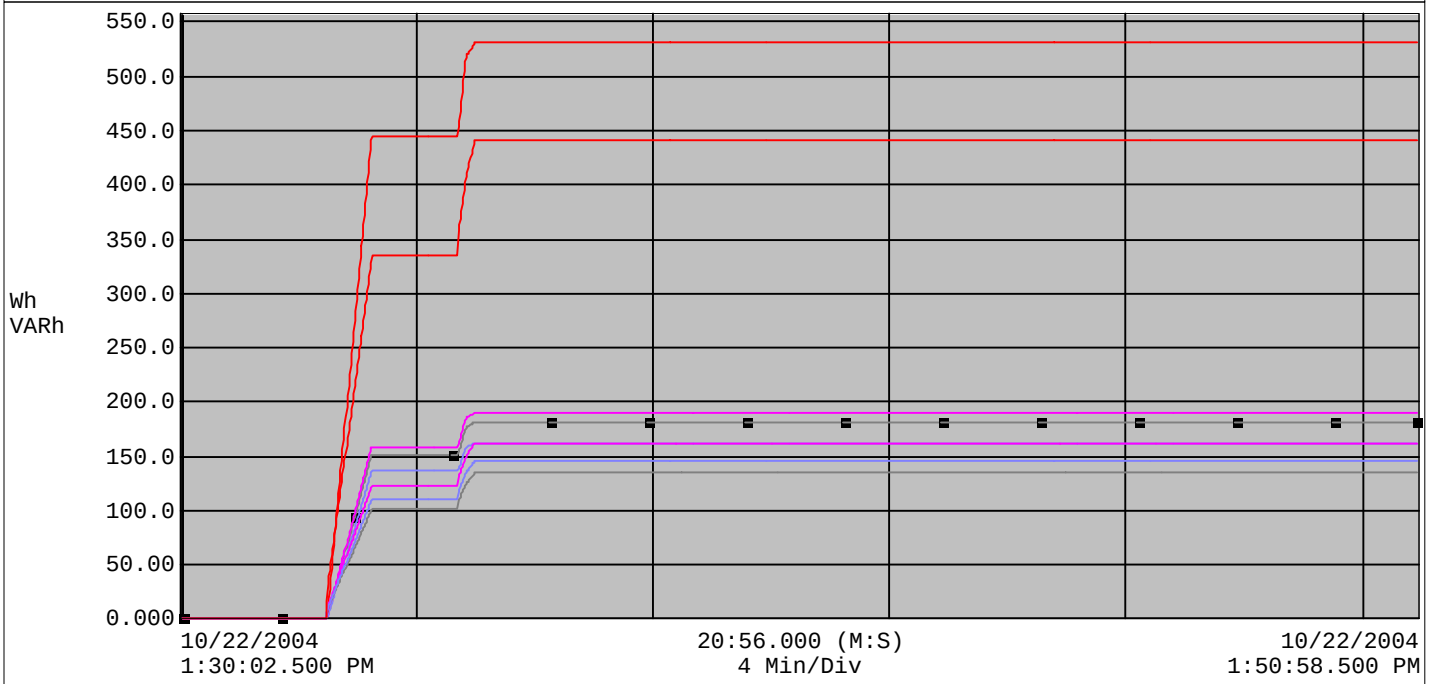
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/22/2004	1:30:02.500 PM	517.7	0.000	12.10E+3	W
W Line2	10/22/2004	1:30:02.500 PM	541.2	0.000	12.68E+3	W
W Line3	10/22/2004	1:30:02.500 PM	460.4	0.000	10.89E+3	W
W Sum of Phases	10/22/2004	1:30:02.500 PM	1.519E+3	0.000	35.64E+3	W
VAR Line1	10/22/2004	1:30:02.500 PM	382.8	0.000	26.46E+3	VAR
VAR Line2	10/22/2004	1:30:02.500 PM	461.7	0.000	28.27E+3	VAR
VAR Line3	10/22/2004	1:30:02.500 PM	414.7	0.000	26.85E+3	VAR
VAR Sum of Phases	10/22/2004	1:30:02.500 PM	1.259E+3	0.000	81.57E+3	VAR

10/22/2004 - 1:30:02.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

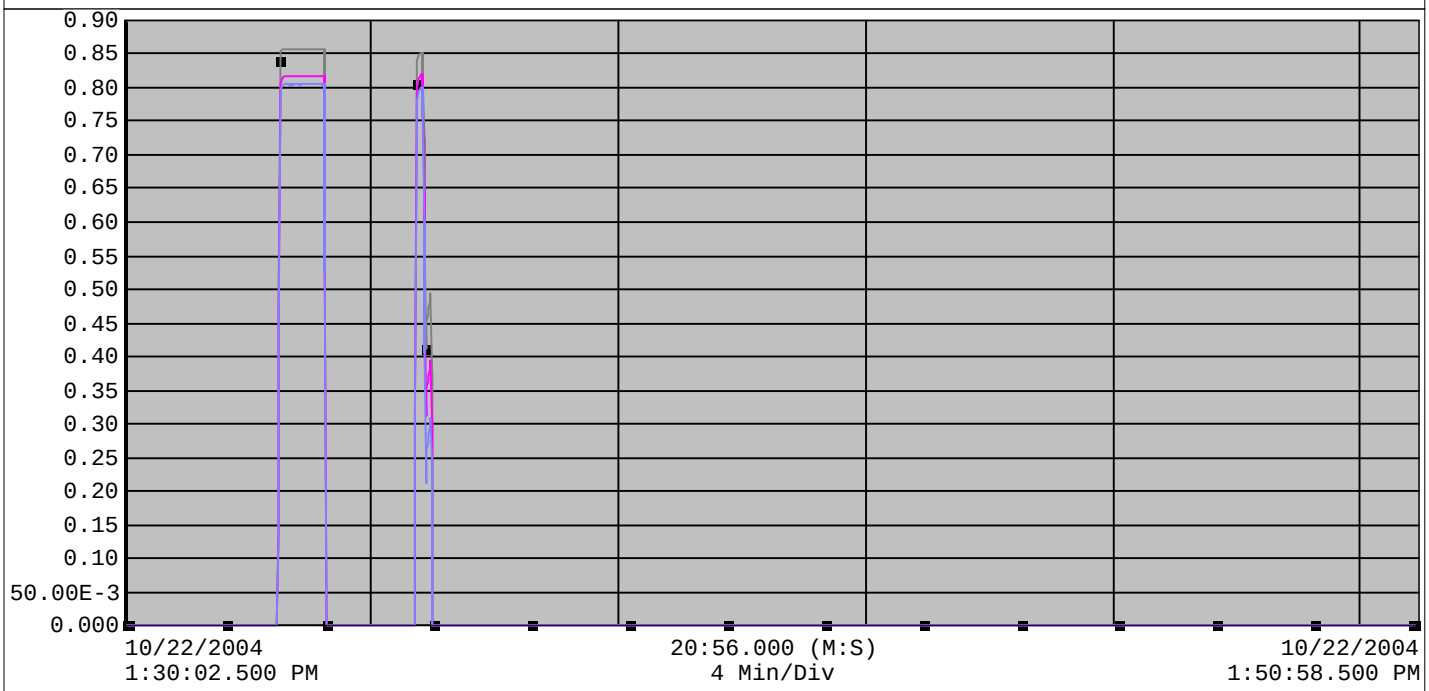
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/22/2004	1:30:02.500 PM	153.4	0.000	180.7	Wh
W-hours Line2	10/22/2004	1:30:02.500 PM	160.4	0.000	189.0	Wh
W-hours Line3	10/22/2004	1:30:02.500 PM	136.5	0.000	160.8	Wh
W-hours Sum of Phases	10/22/2004	1:30:02.500 PM	450.3	0.000	530.5	Wh
VAR-hours Line1	10/22/2004	1:30:02.500 PM	112.6	0.000	133.7	VARh
VAR-hours Line2	10/22/2004	1:30:02.500 PM	135.8	0.000	161.2	VARh
VAR-hours Line3	10/22/2004	1:30:02.500 PM	122.0	0.000	144.8	VARh
VAR-hours Sum of Phases	10/22/2004	1:30:02.500 PM	370.4	0.000	439.7	VARh

10/22/2004 - 1:30:02.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/22/2004	1:30:02.500 PM	39.27E-3	0.000	0.855	
PF Line2	10/22/2004	1:30:02.500 PM	36.94E-3	0.000	0.818	
PF Line3	10/22/2004	1:30:02.500 PM	35.77E-3	0.000	0.805	

10/22/2004 - 1:30:02.000 PM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: X:\Chalan Pago 3 PS\102204 - Chalan Pago 3 PS.dvb

Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	GWA ,

Comments
Chalan Pago 3 PS

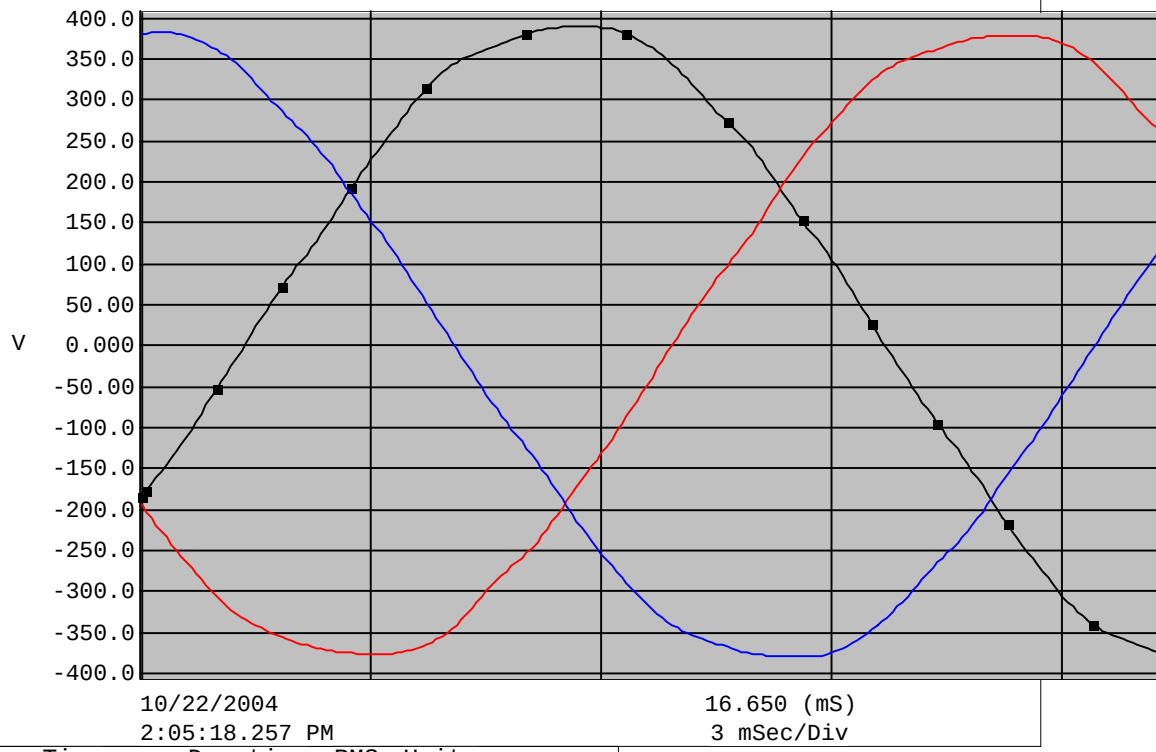
GWA Wastewater Pumping Station Assessment				
Station Name: CHALAN PAGO #5	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 10/22/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.54	
Transformer Pole Condition and Grounding	2.0%	4	0.08	
Transformer Connection Type	2.0%	4	0.08	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	4	0.2	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.45	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.68	
Main Breaker	4.0%	4	0.16	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.68	
Main Breaker	4.0%	4	0.16	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.3	
Level	5.0%	3	0.15	
Alarms	3.0%	3	0.09	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.105	
Lighting and Power Devices	1.5%	3	0.045	
Sump Pump Controls	1.5%	4	0.06	
	100%	**Assessment Value**		**3.0**

Comments:

Chalan Pago 5 PS Pump 1 Photo

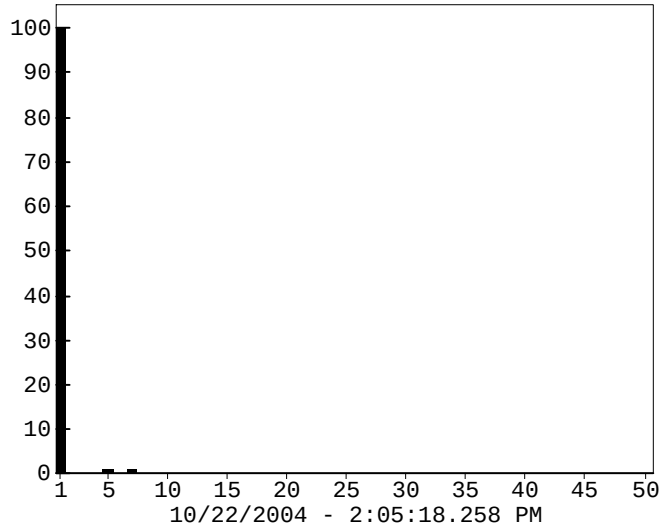
Recording Start Date	10/22/2004 - 2:05:18 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.06 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/22/2004	2:05:18.257 PM	16.650	277.4	V
Waveform V2	10/22/2004	2:05:18.257 PM	16.650	270.8	V
Waveform V3	10/22/2004	2:05:18.257 PM	16.650	272.3	V

Waveform V1
277.36 Vrms, 1.51 %THD

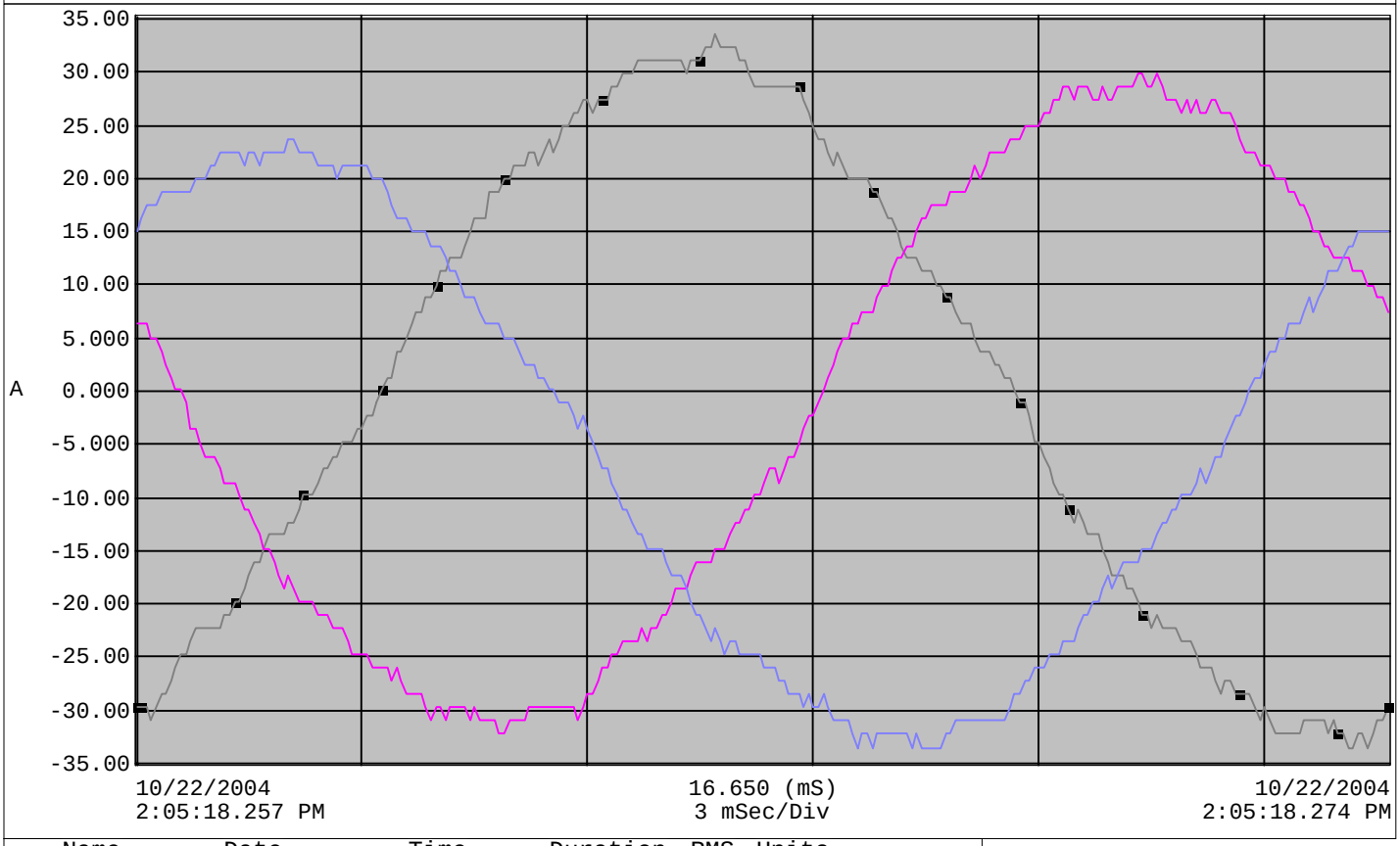


10/22/2004 - 2:05:18.000 PM
Val
-186.0 — Waveform V1
-194.5 — Waveform V2
379.8 — Waveform V3

Waveform V1

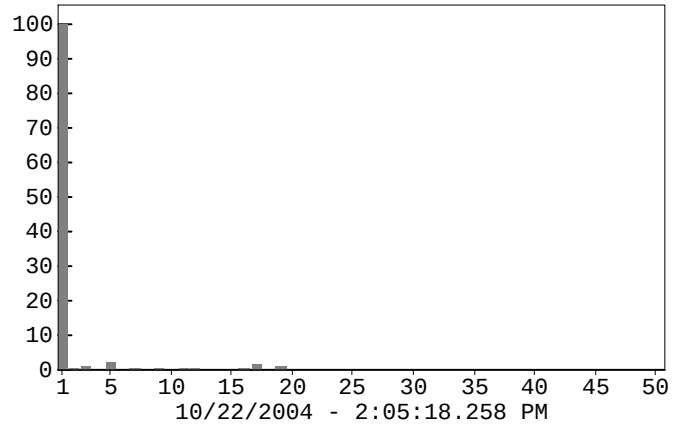
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.2	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Current
Frequency: 60.06 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/22/2004	2:05:18.257 PM	16.650	22.24	A
Waveform I2	10/22/2004	2:05:18.257 PM	16.650	21.27	A
Waveform I3	10/22/2004	2:05:18.257 PM	16.650	20.26	A

Waveform I1
22.24 Arms, 4.40 %THD



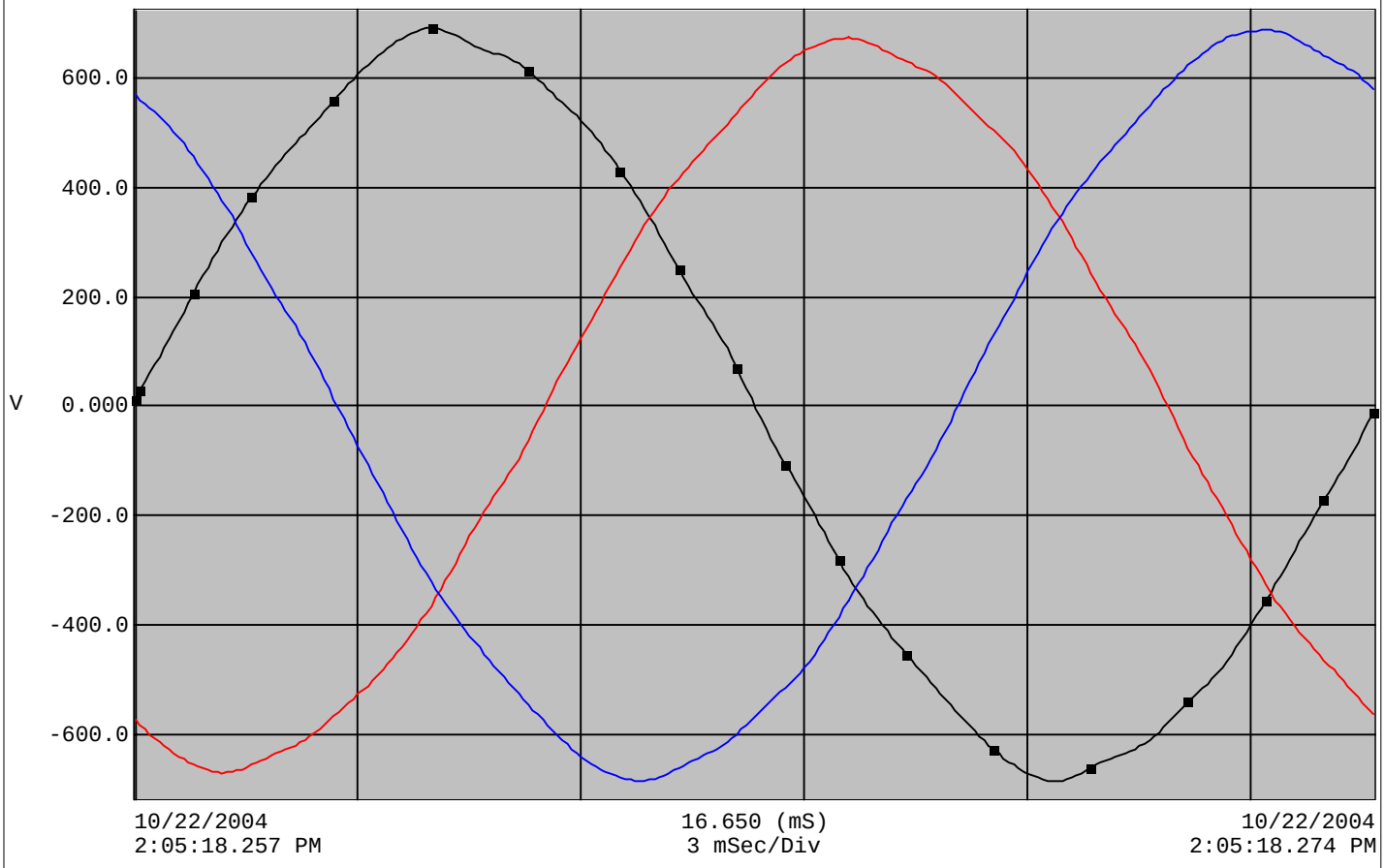
10/22/2004 - 2:05:18.000 PM

Val	
-29.80	Waveform I1
6.200	Waveform I2
14.90	Waveform I3

Waveform I1

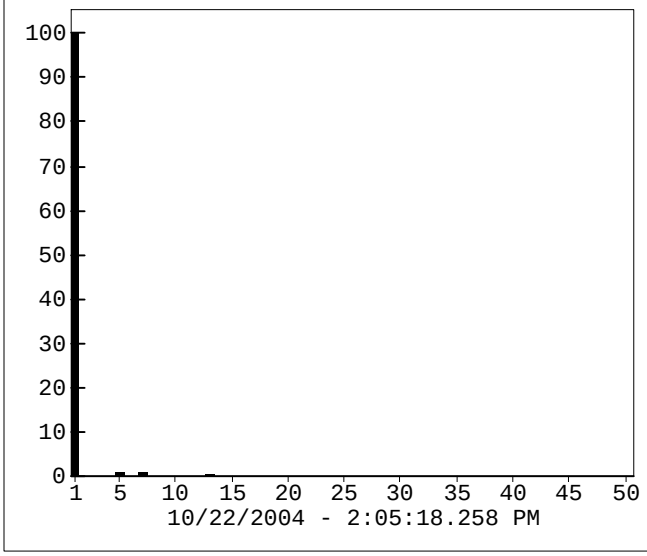
	(%)		(%)		(%)
H01	100.0	H18	0.4	H35	0.2
H02	0.8	H19	1.1	H36	0.1
H03	1.4	H20	0.5	H37	0.1
H04	0.1	H21	0.3	H38	0.3
H05	2.7	H22	0.1	H39	0.3
H06	0.1	H23	0.2	H40	0.2
H07	0.9	H24	0.2	H41	0.1
H08	0.2	H25	0.4	H42	0.3
H09	0.7	H26	0.1	H43	0.1
H10	0.2	H27	0.1	H44	0.2
H11	0.9	H28	0.2	H45	0.2
H12	0.7	H29	0.3	H46	0.2
H13	0.5	H30	0.2	H47	0.1
H14	0.4	H31	0.1	H48	0.2
H15	0.1	H32	0.1	H49	0.2
H16	0.8	H33	0.1	H50	0.1
H17	1.8	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.06 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/22/2004	2:05:18.257 PM	16.650	475.7	V
Waveform U2	10/22/2004	2:05:18.257 PM	16.650	467.1	V
Waveform U3	10/22/2004	2:05:18.257 PM	16.650	478.3	V

Waveform U1
475.73 Vrms, 1.58 %THD



10/22/2004 - 2:05:18.000 PM

Val	
8.500	Waveform U1
-574.4	Waveform U2
565.8	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/22/2004
Start Time: 2:05:18 PM
Duration: 0:0.000 (M:S)
W: 4.598E+3 W
VAR: 3.932E+3 W
VA: 6.050E+3 W
Power Factor: 0.760
Displacement Power Factor: 0.760
TAN: 0.854
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Chalan Pago 5 PS\102204 - Chalan Pago 5 PS Photo Pump 1.dvb

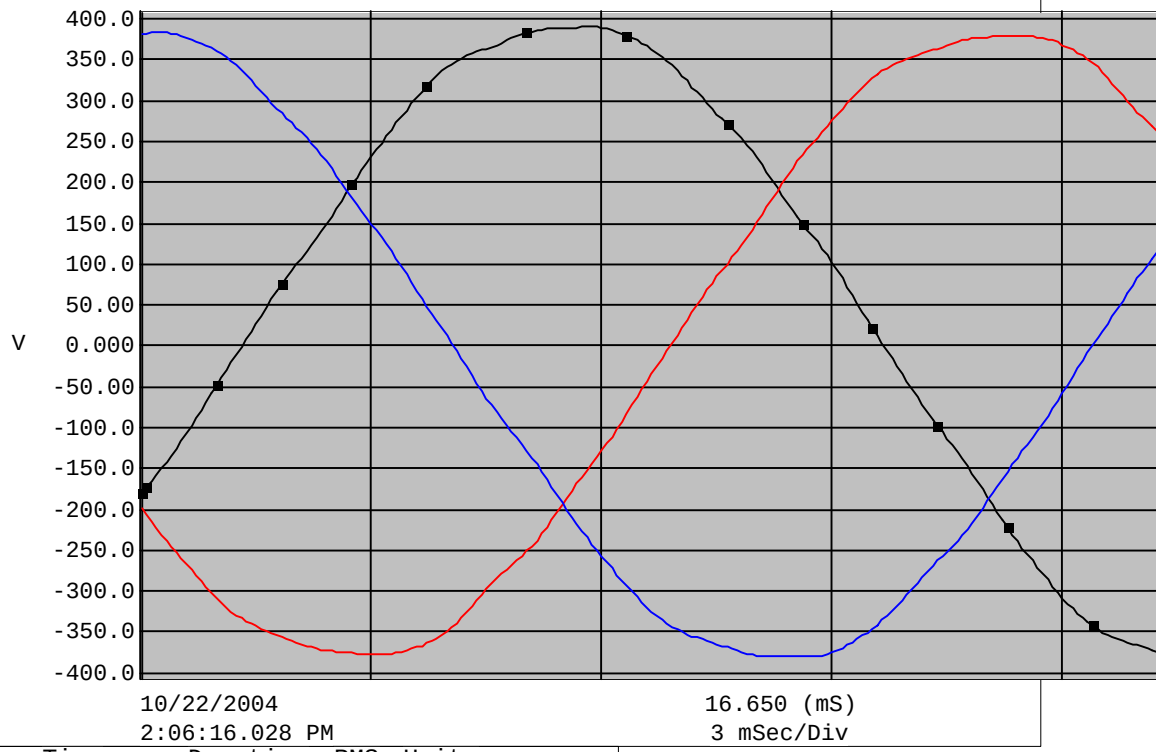
Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	GWA ,

Comments
Chalan Pago 5 PS Photo Pump 1

Chalan Pago 5 PS Pump 2 Photo

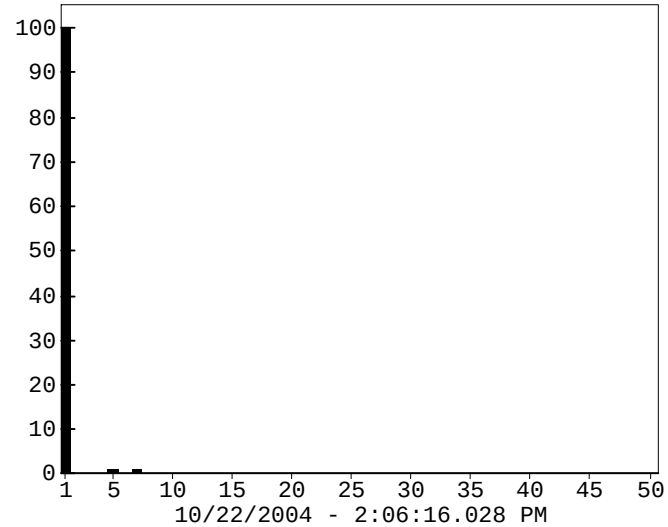
Recording Start Date	10/22/2004 - 2:06:16 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.06 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/22/2004	2:06:16.028 PM	16.650	277.9	V
Waveform V2	10/22/2004	2:06:16.028 PM	16.650	271.2	V
Waveform V3	10/22/2004	2:06:16.028 PM	16.650	272.8	V

Waveform V1
277.93 Vrms, 1.54 %THD

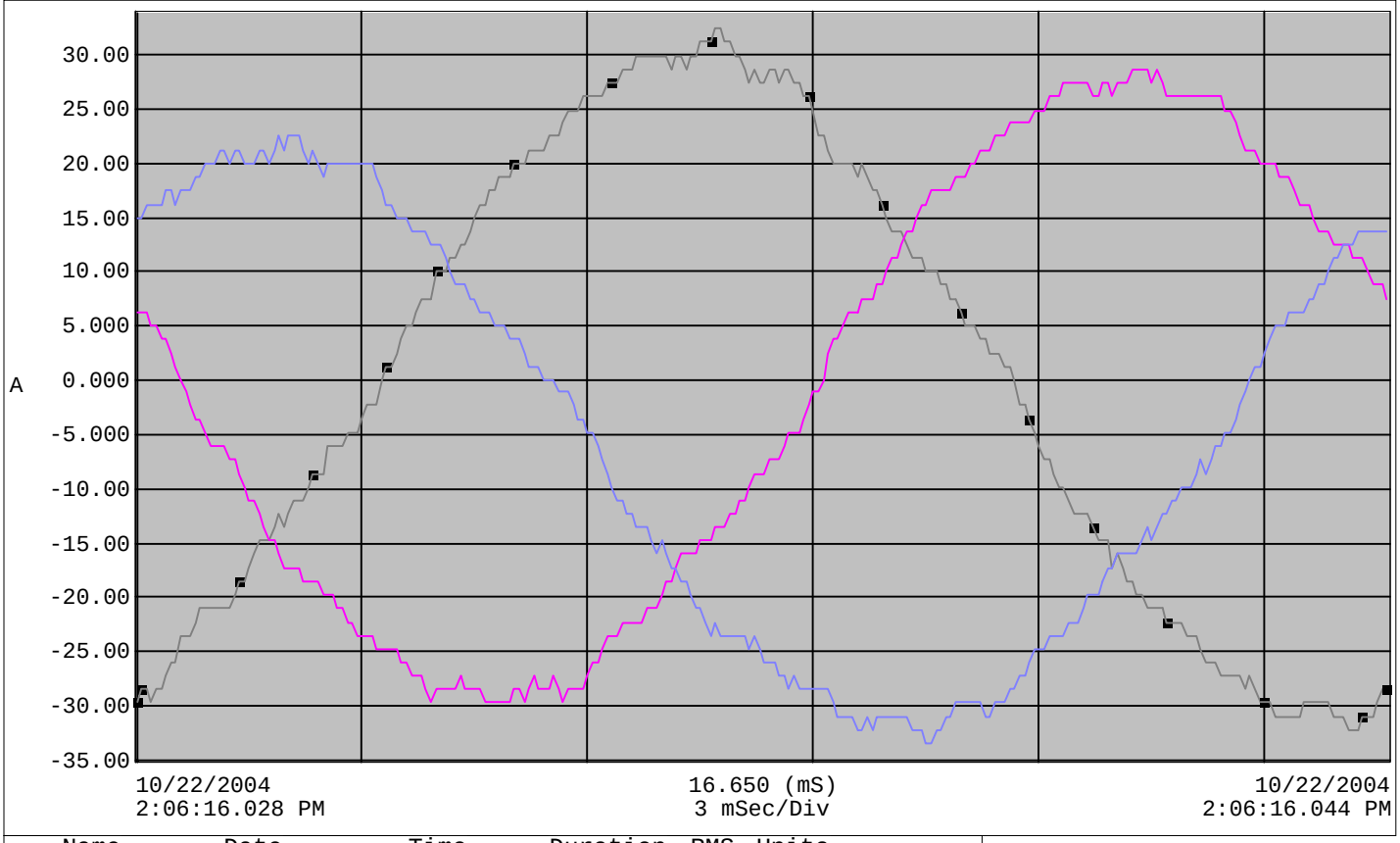


10/22/2004 - 2:06:16.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

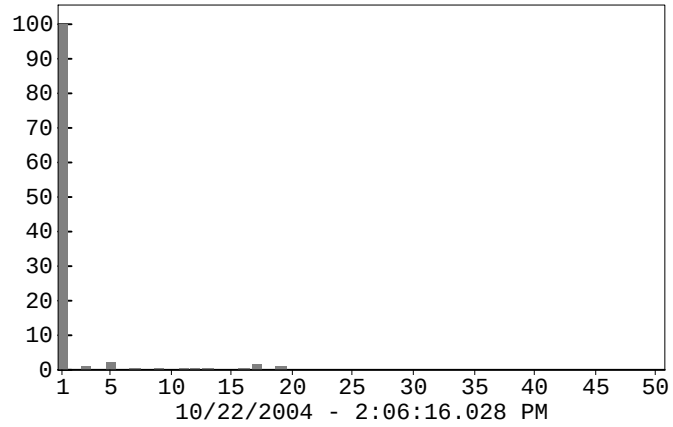
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.2	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Waveform - Current
Frequency: 60.06 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/22/2004	2:06:16.028 PM	16.650	21.45	A
Waveform I2	10/22/2004	2:06:16.028 PM	16.650	20.30	A
Waveform I3	10/22/2004	2:06:16.028 PM	16.650	19.56	A

Waveform I1
21.45 Arms, 4.43 %THD

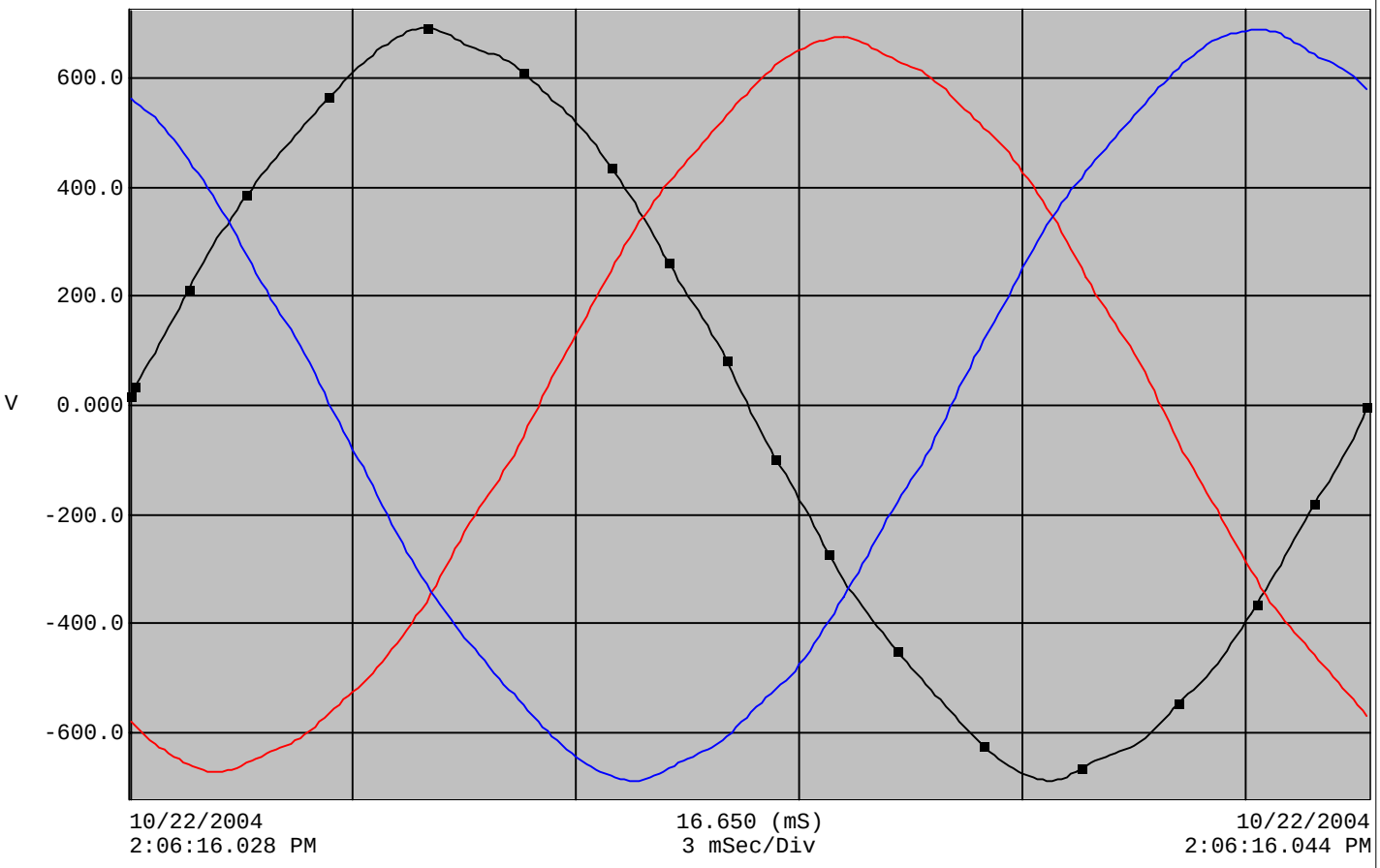


10/22/2004 - 2:06:16.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

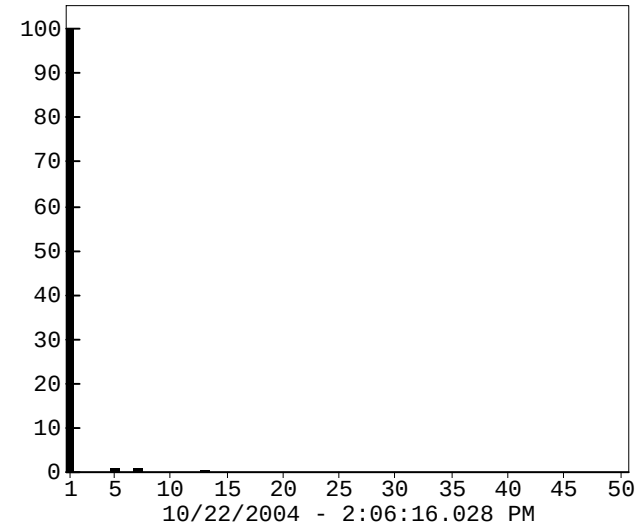
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.1
H02	0.1	H19	1.4	H36	0.1
H03	1.2	H20	0.5	H37	0.2
H04	0.1	H21	0.3	H38	0.1
H05	2.6	H22	0.1	H39	0.1
H06	0.2	H23	0.0	H40	0.1
H07	1.0	H24	0.1	H41	0.2
H08	0.4	H25	0.0	H42	0.1
H09	0.6	H26	0.3	H43	0.1
H10	0.2	H27	0.4	H44	0.1
H11	0.9	H28	0.1	H45	0.1
H12	0.8	H29	0.1	H46	0.1
H13	0.7	H30	0.1	H47	0.3
H14	0.3	H31	0.2	H48	0.1
H15	0.3	H32	0.2	H49	0.2
H16	0.8	H33	0.3	H50	0.1
H17	2.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.06 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/22/2004	2:06:16.028 PM	16.650	476.6	V
Waveform U2	10/22/2004	2:06:16.028 PM	16.650	467.9	V
Waveform U3	10/22/2004	2:06:16.028 PM	16.650	479.4	V

Waveform U1
476.62 Vrms, 1.59 %THD



10/22/2004 - 2:06:16.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.3	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/22/2004
Start Time: 2:06:16 PM
Duration: 0:0.000 (M:S)
W: 4.519E+3 W
VAR: 3.830E+3 W
VA: 5.924E+3 W
Power Factor: 0.763
Displacement Power Factor: 0.761
TAN: 0.851
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Chalan Pago 5 PS\102204 - Chalan Pago 5 PS Photo Pump 2.dvb

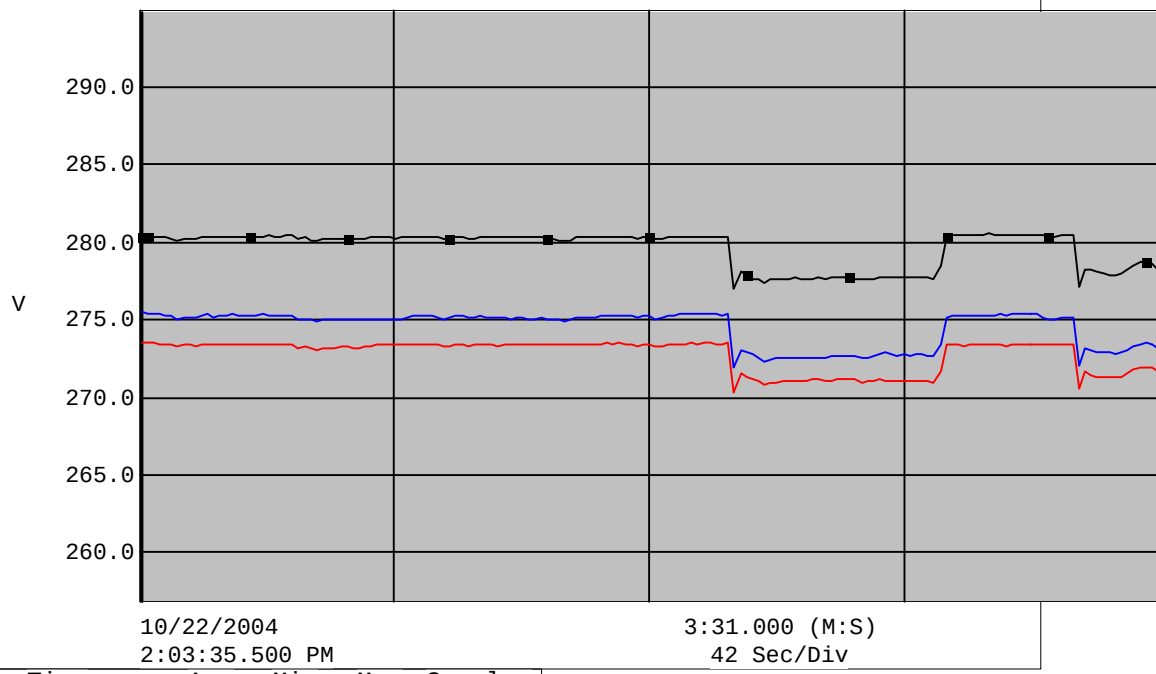
Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	GWA ,

Comments
Chalan Pago 5 PS Photo Pump 2

CHalan Pago 5 PS Trend

Recording Start Date	10/22/2004 - 2:03:35 PM
Recording Duration	3:31 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

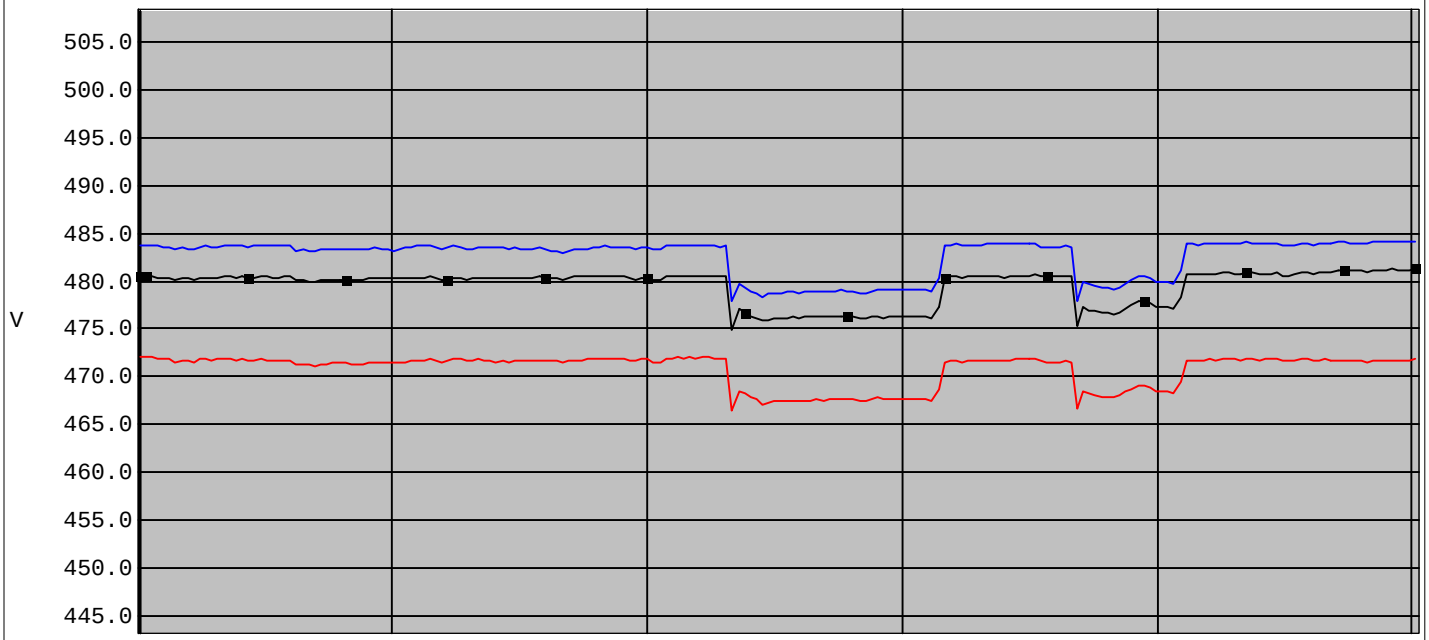
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/22/2004	2:03:35.500 PM	279.7	276.9	280.8	212
Vrms Line2	10/22/2004	2:03:35.500 PM	272.8	270.3	273.6	212
Vrms Line3	10/22/2004	2:03:35.500 PM	274.5	271.9	275.4	212

10/22/2004 - 2:03:35.000 PM
Val
280.3 Vrms Line1
273.5 Vrms Line2
275.4 Vrms Line3

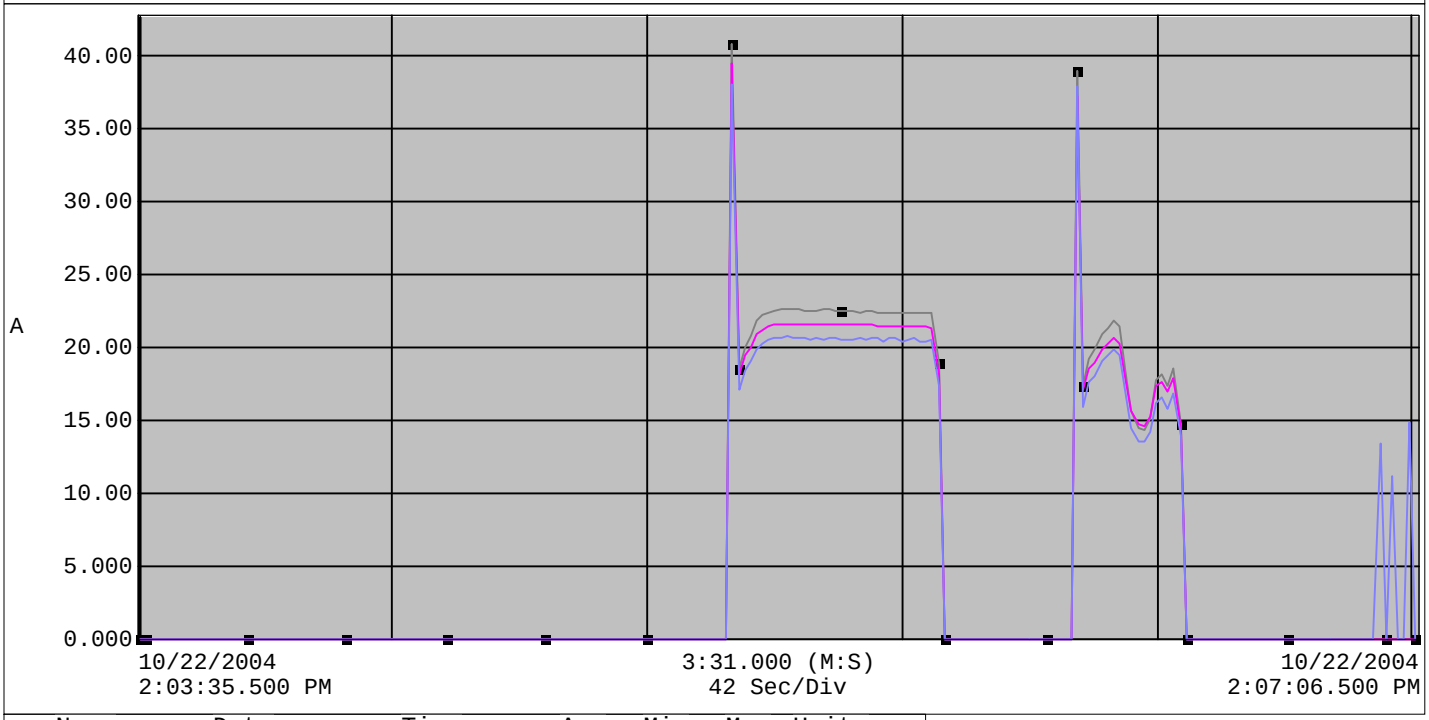
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/22/2004	2:03:35.500 PM	479.4	474.8	481.2	V
Urms Line2	10/22/2004	2:03:35.500 PM	470.6	466.4	472.0	V
Urms Line3	10/22/2004	2:03:35.500 PM	482.5	477.7	484.1	V

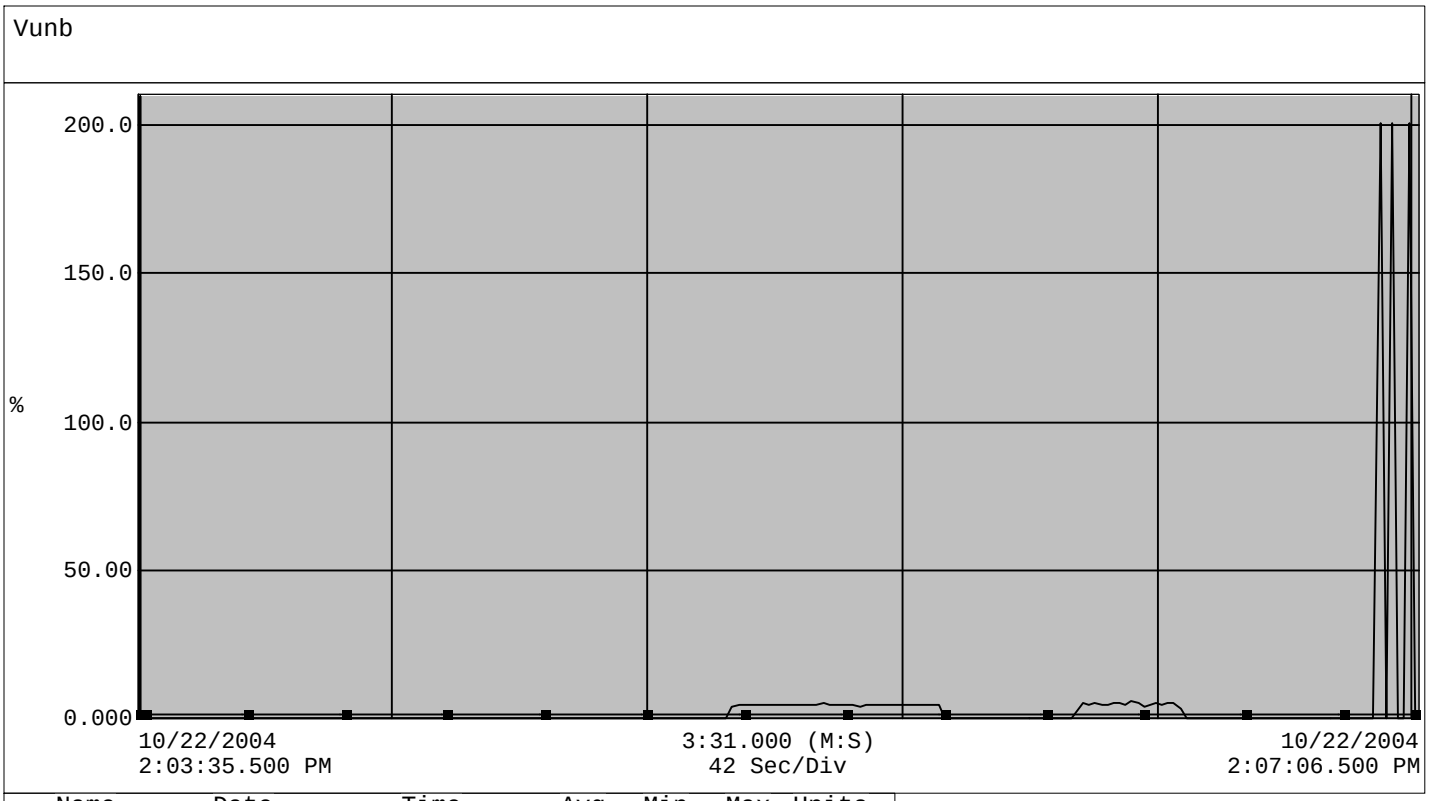
10/22/2004 - 2:03:35.000 PM
Val
480.4 Urms Line1
472.0 Urms Line2
483.7 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/22/2004	2:03:35.500 PM	5.365	0.000	40.70	A
Arms Line2	10/22/2004	2:03:35.500 PM	5.160	0.000	39.50	A
Arms Line3	10/22/2004	2:03:35.500 PM	5.114	0.000	38.00	A

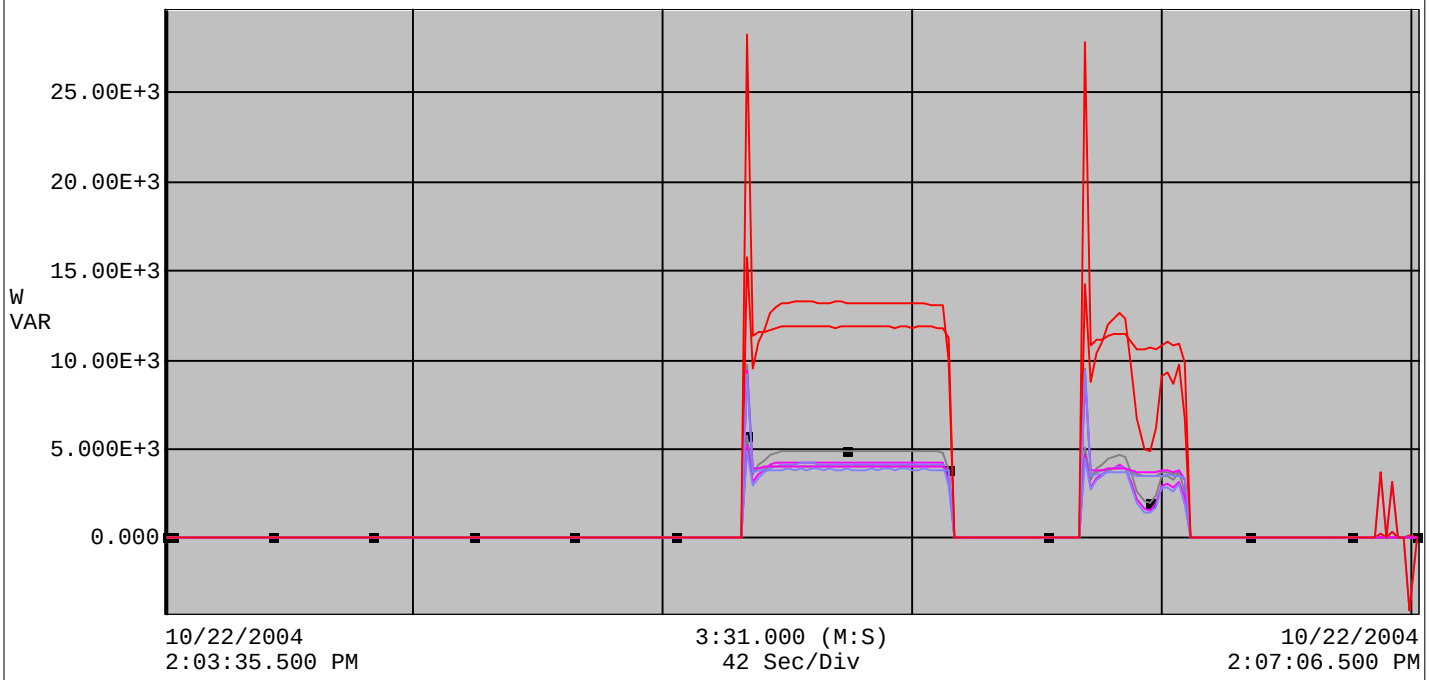
10/22/2004 - 2:03:35.000 PM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/22/2004	2:03:35.500 PM	1.444	1.400	1.600	%
Aunb(IEEE)	10/22/2004	2:03:35.500 PM	3.978	0.000	200.0	%

10/22/2004 - 2:03:35.000 PM
Val
1.400 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

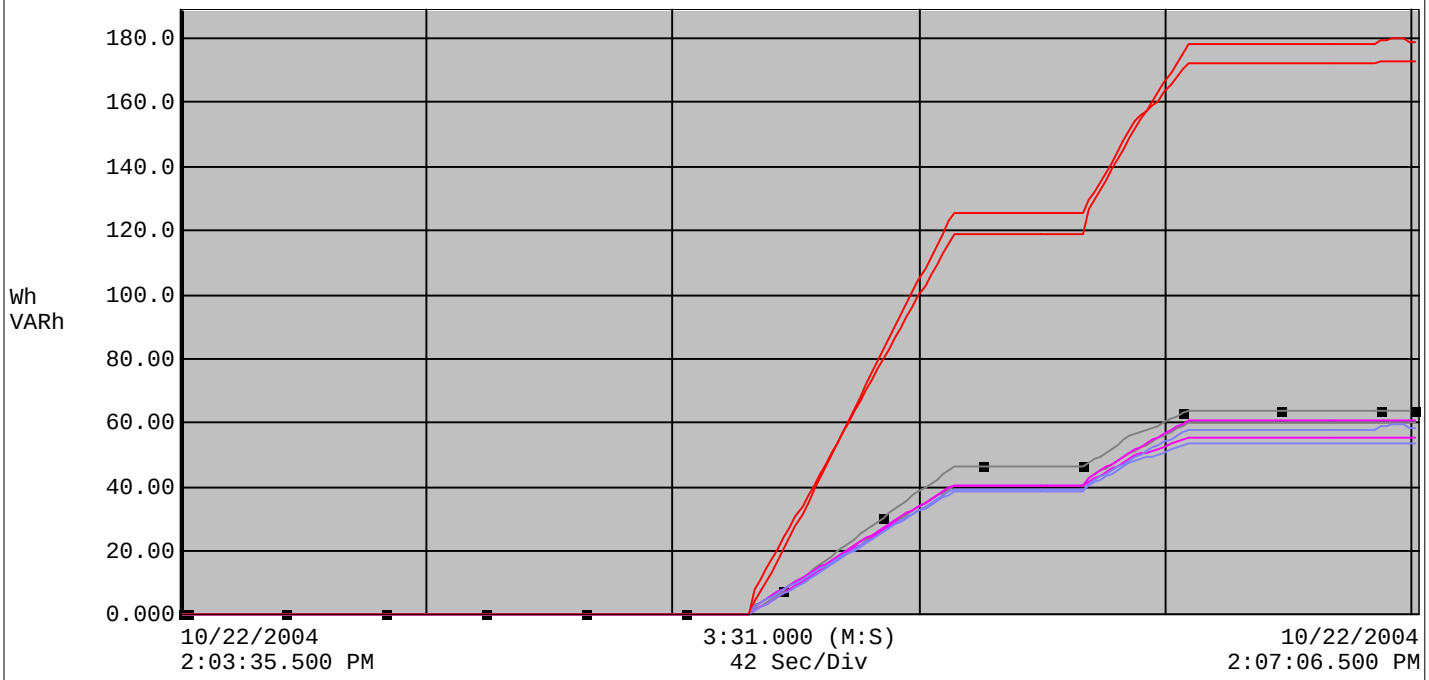
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/22/2004	2:03:35.500 PM	1.078E+3	0.000	5.678E+3	W
W Line2	10/22/2004	2:03:35.500 PM	938.8	0.000	5.207E+3	W
W Line3	10/22/2004	2:03:35.500 PM	909.1	0.000	4.839E+3	W
W Sum of Phases	10/22/2004	2:03:35.500 PM	2.926E+3	0.000	15.72E+3	W
VAR Line1	10/22/2004	2:03:35.500 PM	1.016E+3	0.000	9.721E+3	VAR
VAR Line2	10/22/2004	2:03:35.500 PM	1.025E+3	0.000	9.327E+3	VAR
VAR Line3	10/22/2004	2:03:35.500 PM	990.4	-4.109E+3	9.311E+3	VAR
VAR Sum of Phases	10/22/2004	2:03:35.500 PM	3.031E+3	-4.108E+3	28.19E+3	VAR

10/22/2004 - 2:03:35.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

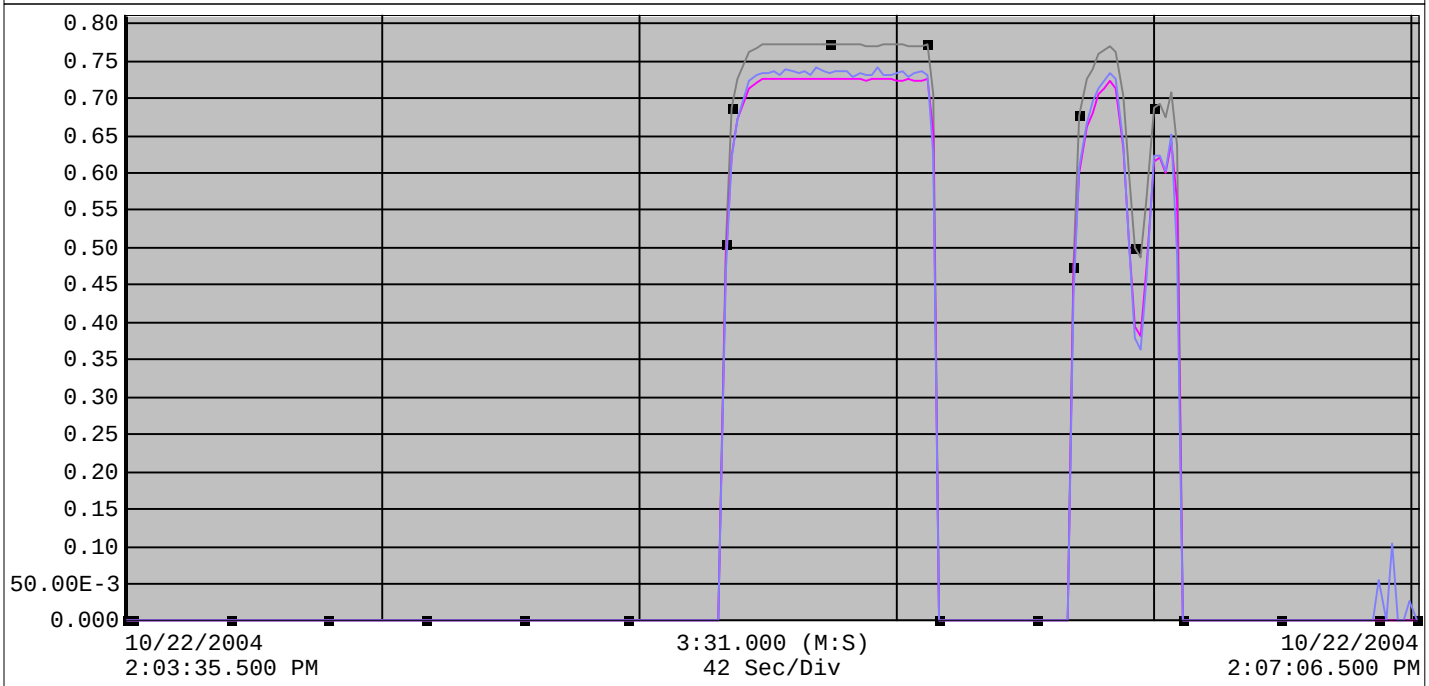
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/22/2004	2:03:35.500 PM	25.08	0.000	63.47	Wh
W-hours Line2	10/22/2004	2:03:35.500 PM	21.92	0.000	55.29	Wh
W-hours Line3	10/22/2004	2:03:35.500 PM	21.21	0.000	53.53	Wh
W-hours Sum of Phases	10/22/2004	2:03:35.500 PM	68.20	0.000	172.3	Wh
VAR-hours Line1	10/22/2004	2:03:35.500 PM	23.05	0.000	59.81	VARh
VAR-hours Line2	10/22/2004	2:03:35.500 PM	23.22	0.000	60.39	VARh
VAR-hours Line3	10/22/2004	2:03:35.500 PM	22.19	0.000	59.47	VARh
VAR-hours Sum of Phases	10/22/2004	2:03:35.500 PM	68.46	0.000	179.7	VARh

10/22/2004 - 2:03:35.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/22/2004	2:03:35.500 PM	0.181	0.000	0.771	
PF Line2	10/22/2004	2:03:35.500 PM	0.167	0.000	0.726	
PF Line3	10/22/2004	2:03:35.500 PM	0.169	0.000	0.740	

10/22/2004 - 2:03:35.000 PM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: X:\Chalan Pago 5 PS\102204 - Chalan Pago 5 PS.dvb

Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	GWA ,

Comments
Chalan Pago 5

GWA Wastewater Pumping Station Assessment				
Station Name: CHAOT (OLD)	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/16/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.38	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	2	0.1	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.1	
Main Disconnect	5.0%	1	0.05	
Grounding	2.5%	2	0.05	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.325	
Generator Condition	10.0%	2	0.2	
Generator Battery	5.0%	2	0.1	
Diesel Fuel Line Condition	2.5%	1	0.025	
Auto Transfer Switch	2.5%	0	0	
Primary Pump Motor Controls	**20.0%**		0.52	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.52	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.25	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.03	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%		0	NO INFO
	100%	**Assessment Value**		**2.1**

Comments:

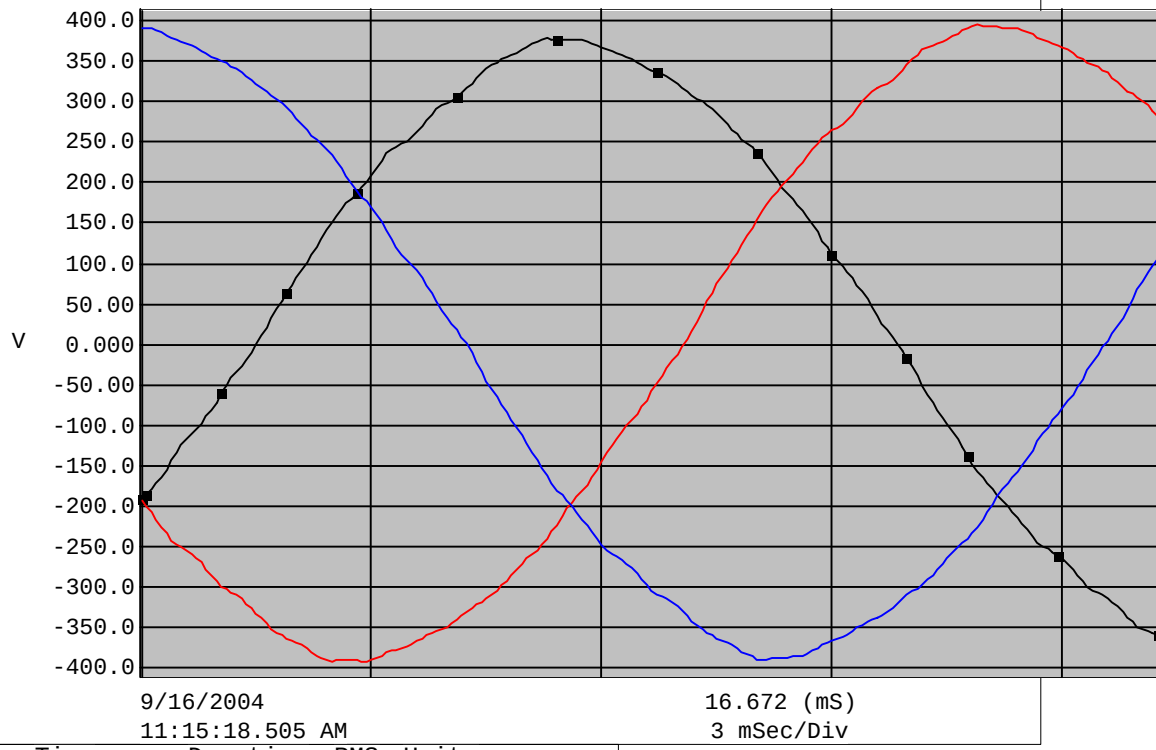
GWA Wastewater Pumping Station Assessment				
Station Name: CHAOT (NEW)	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/16/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.59	
Transformer Pole Condition and Grounding	2.0%	4	0.08	
Transformer Connection Type	2.0%	4	0.08	
Transformer Wiring Method	5.0%	4	0.2	
Lightning Arrester Condition	5.0%	4	0.2	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.3	
Main Disconnect	5.0%	4	0.2	
Grounding	2.5%	4	0.1	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.72	
Main Breaker	4.0%	4	0.16	
Motor Starter	4.0%	4	0.16	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.72	
Main Breaker	4.0%	4	0.16	
Motor Starter	4.0%	4	0.16	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0.04	
Main Breaker and Starter	1.0%	2	0.02	
Motor Starter	1.0%	2	0.02	
Pump Controls	**10.0%**		0.3	
Level	5.0%	3	0.15	
Alarms	3.0%	3	0.09	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.09	
Lighting and Power Devices	1.5%	3	0.045	
Sump Pump Controls	1.5%	3	0.045	
	100%	**Assessment Value**		**3.4**

Comments:

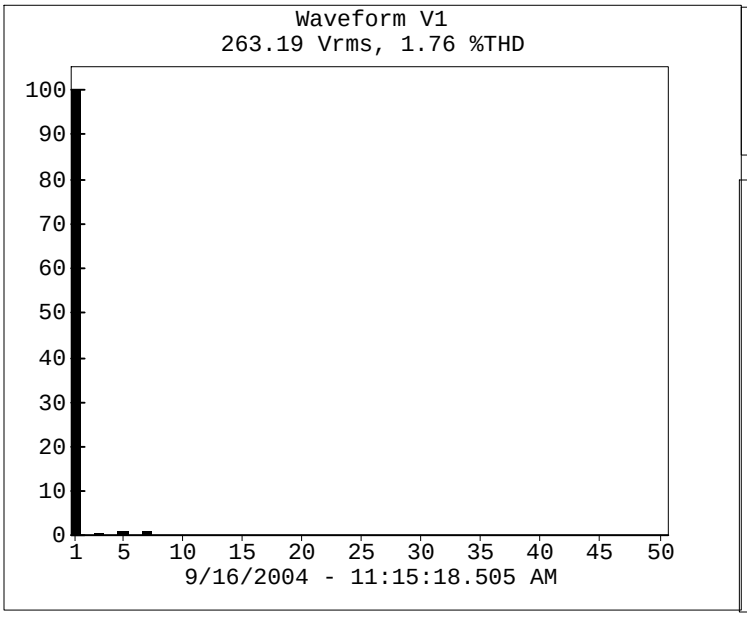
Chalot ATS Photo

Recording Start Date	9/16/2004 - 11:15:18 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/16/2004	11:15:18.505 AM	16.672	263.2	V
Waveform V2	9/16/2004	11:15:18.505 AM	16.672	274.9	V
Waveform V3	9/16/2004	11:15:18.505 AM	16.672	271.5	V

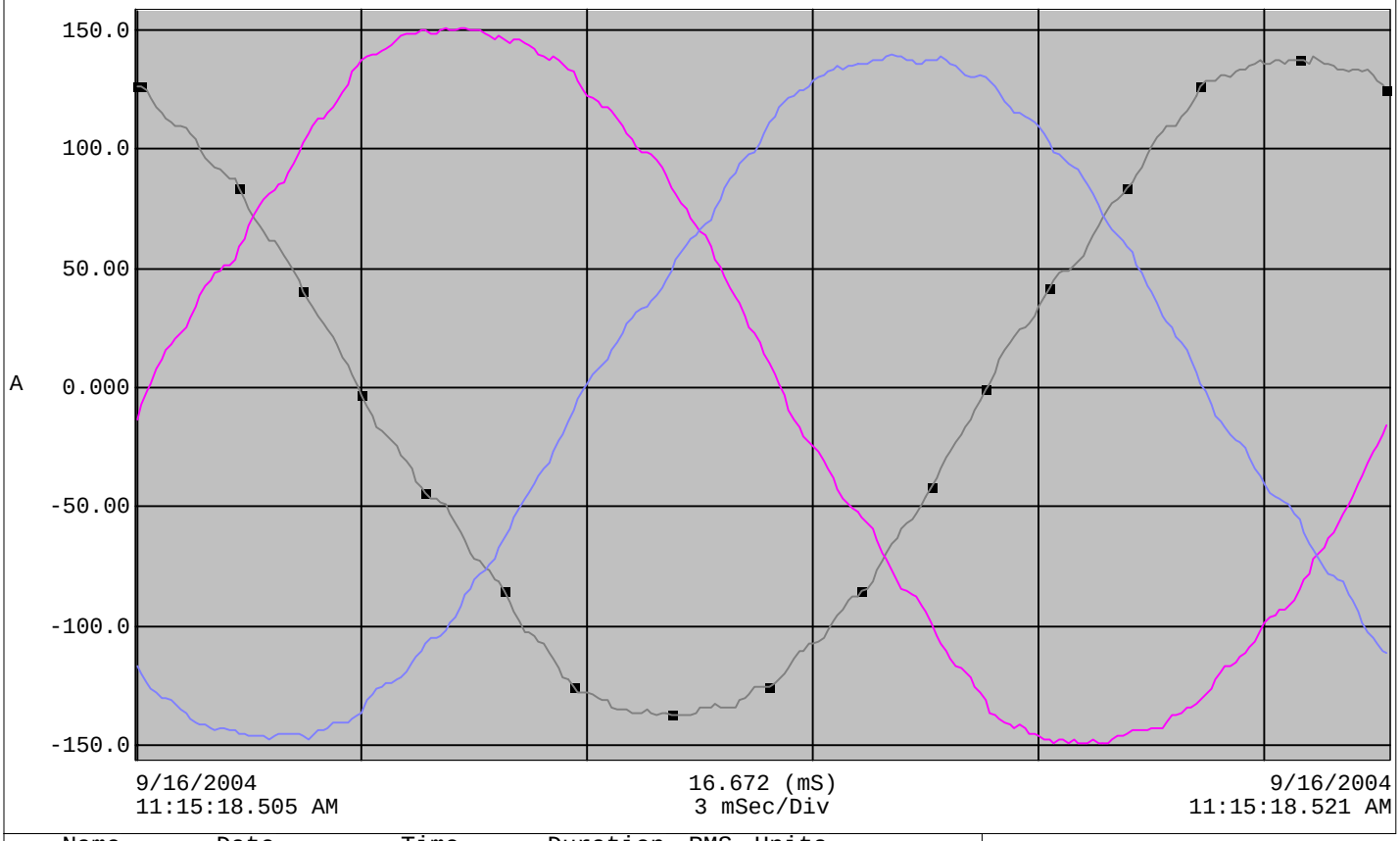


9/16/2004 - 11:15:18.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

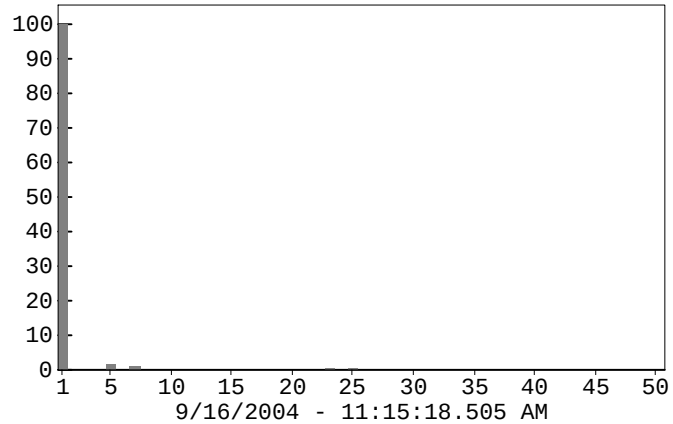
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.0	H19	0.0	H36	0.0
H03	0.6	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	1.1	H24	0.2	H41	0.0
H08	0.0	H25	0.4	H42	0.0
H09	0.1	H26	0.2	H43	0.0
H10	0.0	H27	0.3	H44	0.0
H11	0.2	H28	0.1	H45	0.0
H12	0.0	H29	0.2	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.2	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/16/2004	11:15:18.505 AM	16.672	98.01	A
Waveform I2	9/16/2004	11:15:18.505 AM	16.672	107.1	A
Waveform I3	9/16/2004	11:15:18.505 AM	16.672	101.7	A

Waveform I1
98.01 Arms, 2.61 %THD

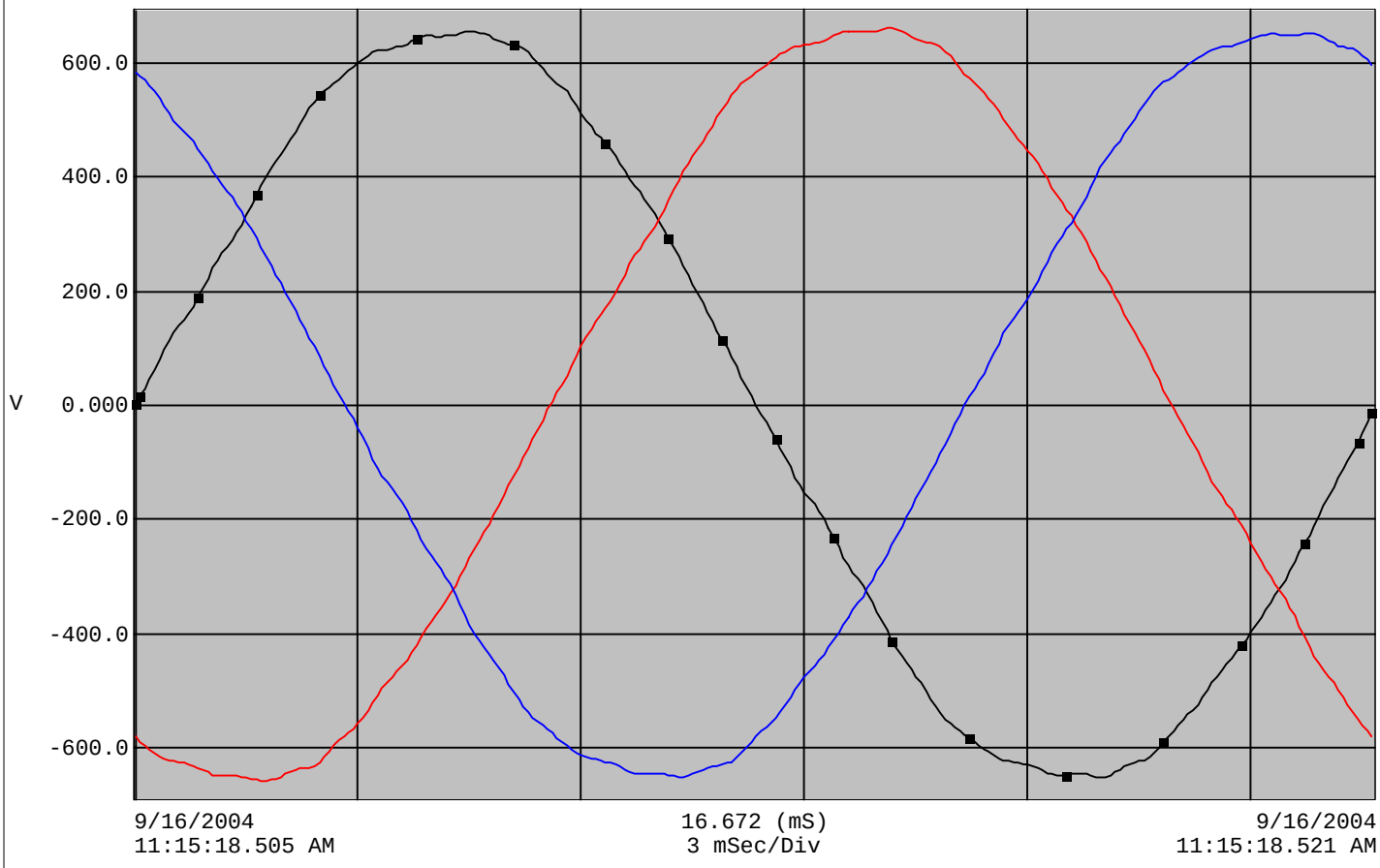


9/16/2004 - 11:15:18.015 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

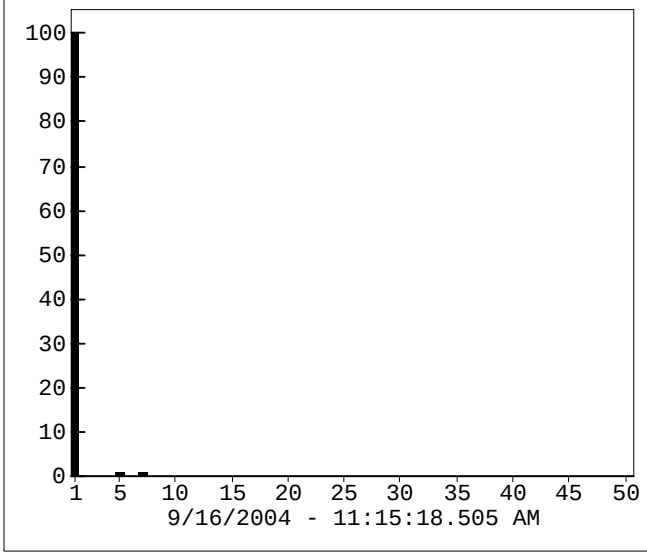
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.1	H19	0.0	H36	0.1
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.1
H05	1.7	H22	0.0	H39	0.0
H06	0.0	H23	0.6	H40	0.0
H07	1.3	H24	0.4	H41	0.1
H08	0.0	H25	0.9	H42	0.1
H09	0.2	H26	0.2	H43	0.0
H10	0.0	H27	0.2	H44	0.0
H11	0.3	H28	0.2	H45	0.1
H12	0.1	H29	0.5	H46	0.0
H13	0.3	H30	0.1	H47	0.0
H14	0.1	H31	0.2	H48	0.1
H15	0.1	H32	0.1	H49	0.1
H16	0.0	H33	0.1	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/16/2004	11:15:18.505 AM	16.672	465.9	V
Waveform U2	9/16/2004	11:15:18.505 AM	16.672	470.4	V
Waveform U3	9/16/2004	11:15:18.505 AM	16.672	465.9	V

Waveform U1
465.88 Vrms, 1.64 %THD



9/16/2004 - 11:15:18.015 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	1.2	H24	0.2	H41	0.0
H08	0.0	H25	0.4	H42	0.0
H09	0.0	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.2	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/16/2004
Start Time: 11:15:18 AM
Duration: 0:0.000 (M:S)
W: -21.36E+3 W
VAR: -14.32E+3 W
VA: 25.72E+3 W
Power Factor: -0.831
Displacement Power Factor: -0.831
TAN: 0.668
VoltageRatio: 1.000
CurrentRatio: 1.000
```

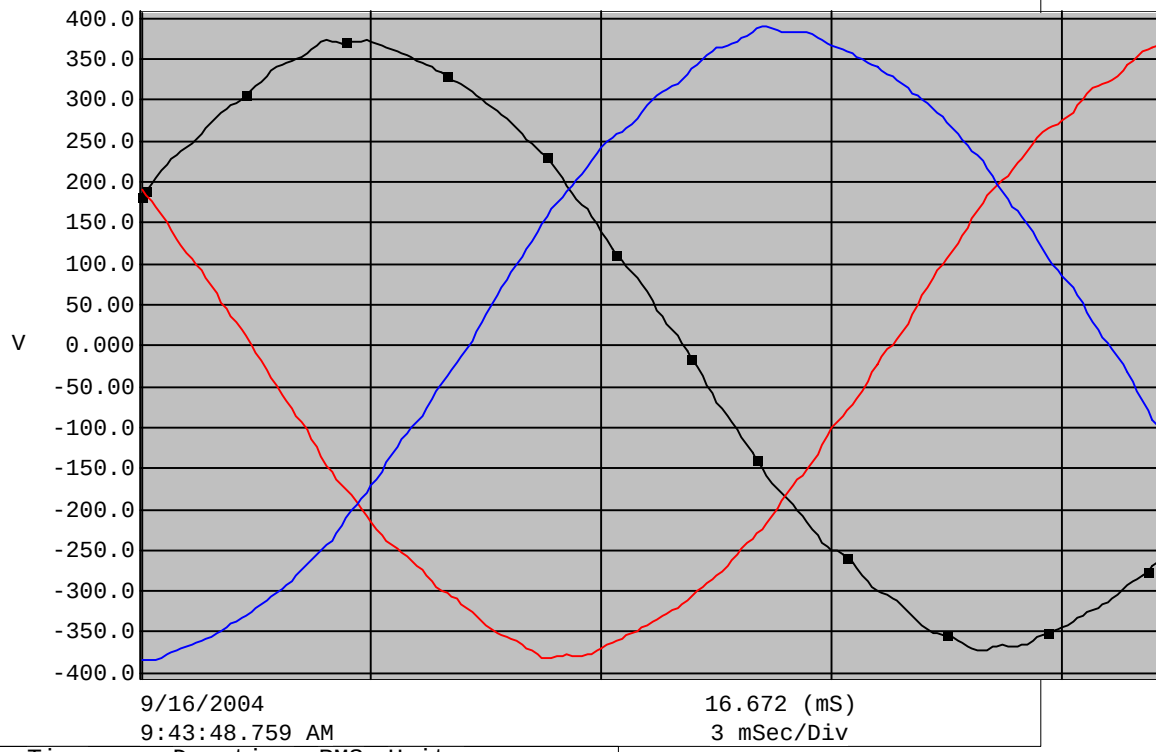
Photo Report

Database: X:\Chalot WWPS\091604-Chalot-ATS-Photo.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE ,	Test Site GWA Chalot WWPS ,
Comments Recorded at ATS. Only Pumps 1 and 3 operational. 50 HP submersibles.	

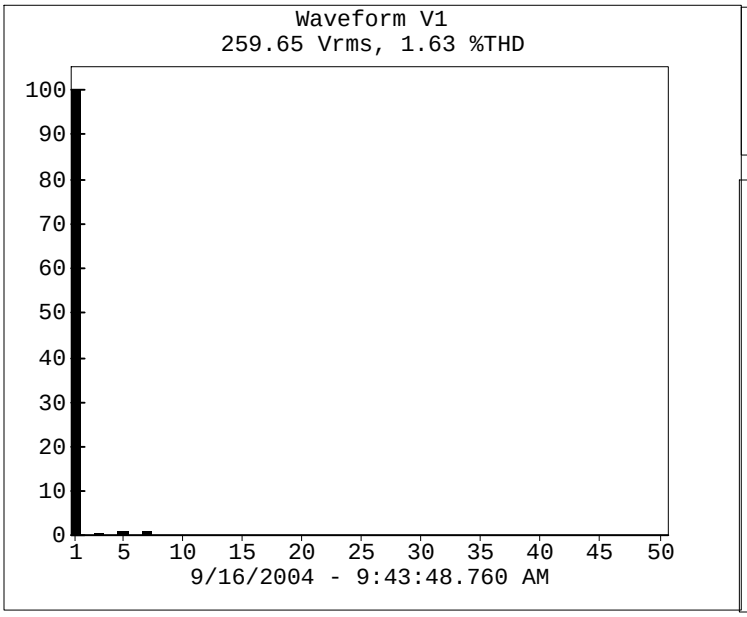
Chalot Pump 1 Photo

Recording Start Date	9/16/2004 - 9:43:48 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/16/2004	9:43:48.759 AM	16.672	259.7	V
Waveform V2	9/16/2004	9:43:48.759 AM	16.672	265.5	V
Waveform V3	9/16/2004	9:43:48.759 AM	16.672	269.6	V



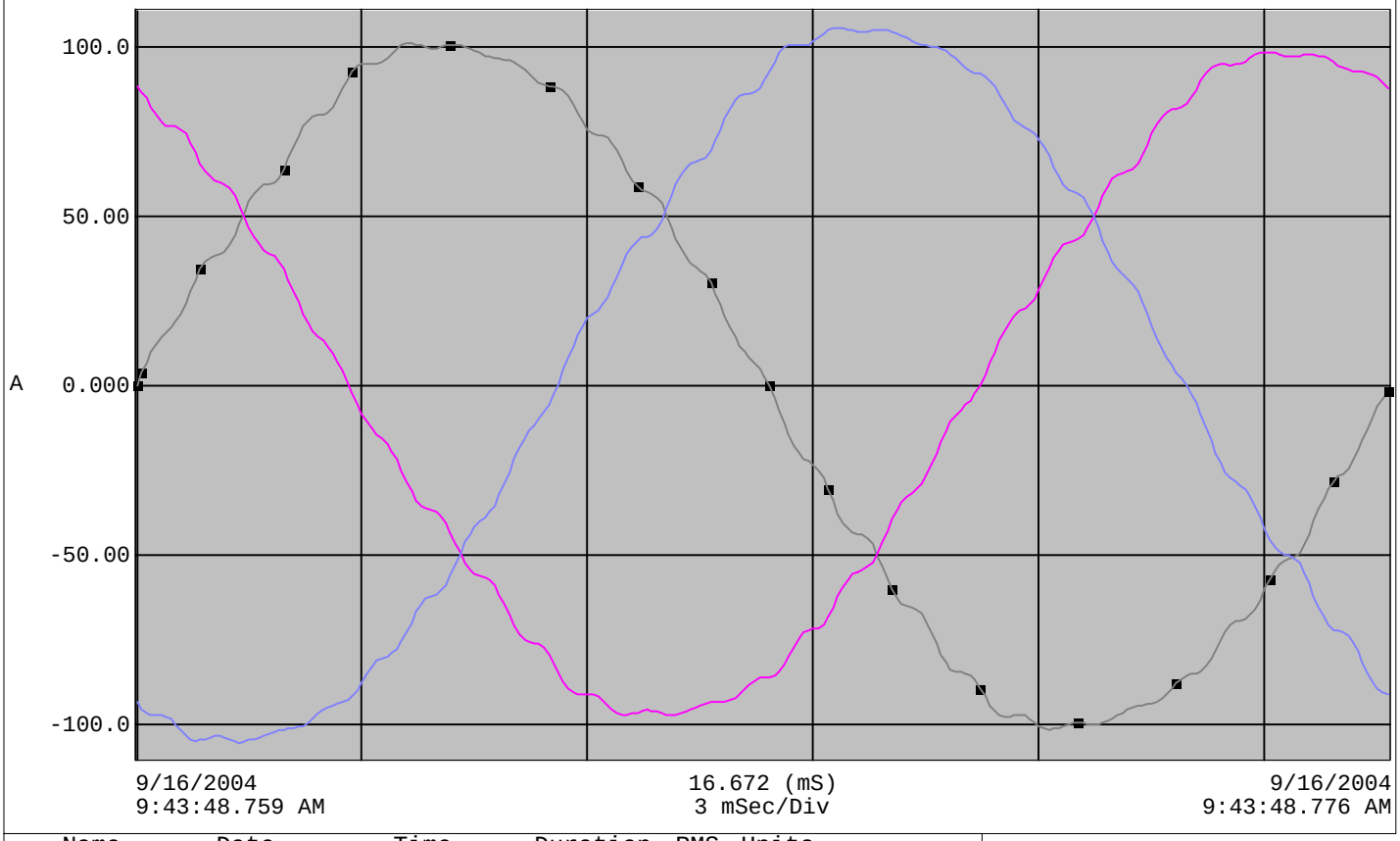
9/16/2004 - 9:43:48.000 AM

Val	
180.1	Waveform V1
190.2	Waveform V2
-385.5	Waveform V3

Waveform V1

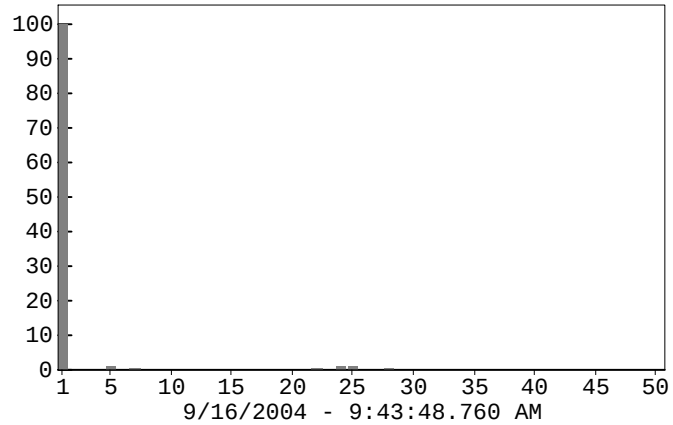
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	0.9	H22	0.2	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.0	H24	0.4	H41	0.0
H08	0.0	H25	0.4	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.4	H44	0.0
H11	0.1	H28	0.3	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/16/2004	9:43:48.759 AM	16.672	71.34	A
Waveform I2	9/16/2004	9:43:48.759 AM	16.672	69.04	A
Waveform I3	9/16/2004	9:43:48.759 AM	16.672	74.77	A

Waveform I1
71.34 Arms, 2.59 %THD



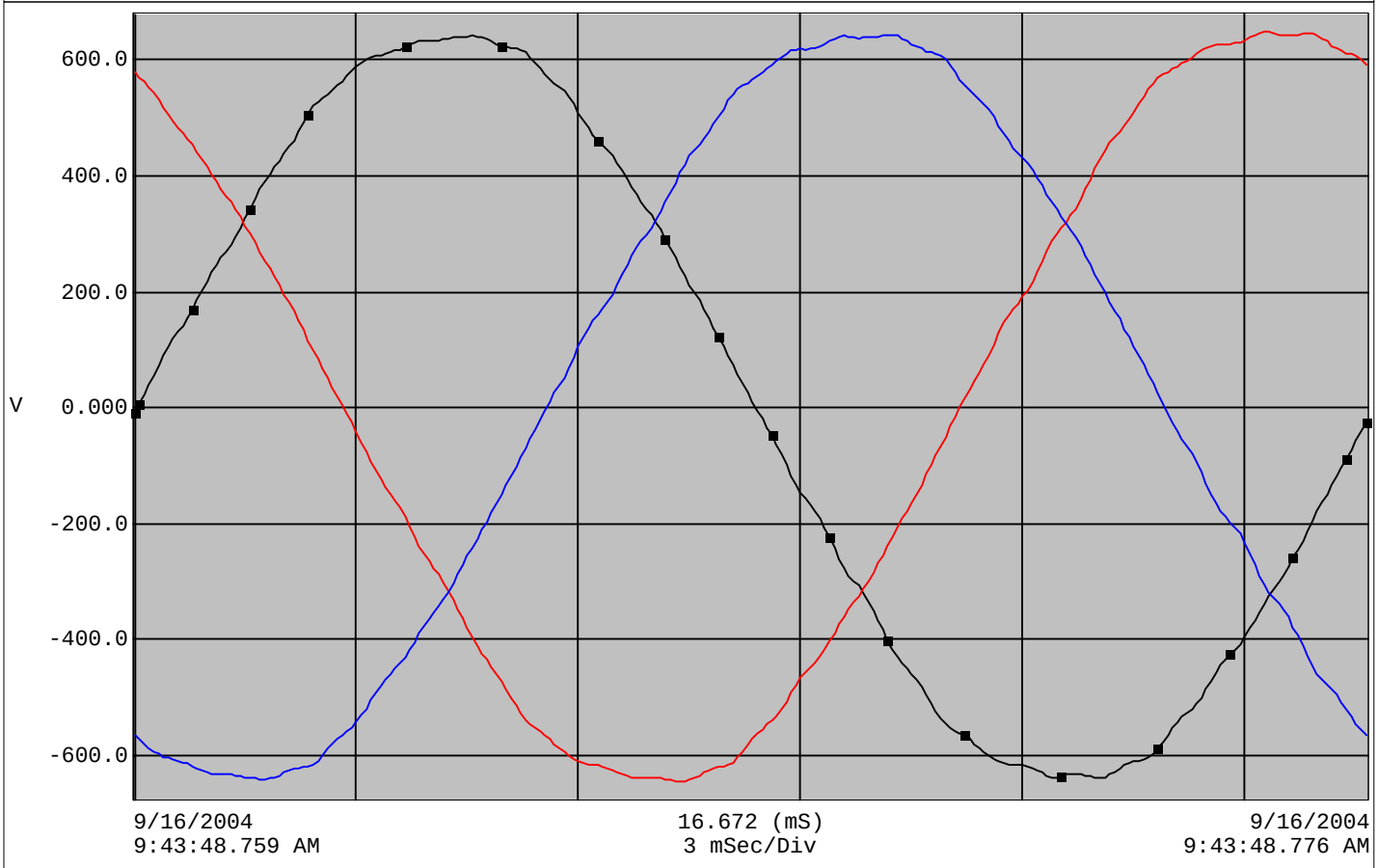
9/16/2004 - 9:43:48.000 AM

Val	
0.000	Waveform I1
88.00	Waveform I2
-93.50	Waveform I3

Waveform I1

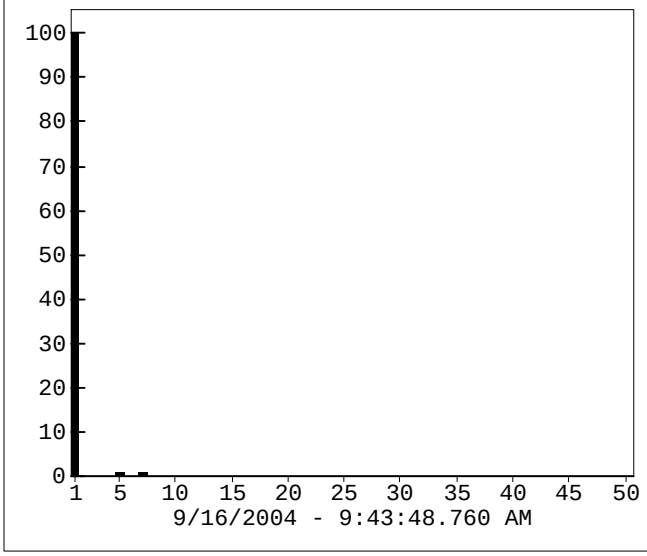
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.2	H19	0.1	H36	0.0
H03	0.5	H20	0.2	H37	0.0
H04	0.1	H21	0.3	H38	0.0
H05	1.2	H22	0.7	H39	0.0
H06	0.1	H23	0.2	H40	0.0
H07	0.8	H24	1.2	H41	0.0
H08	0.1	H25	1.1	H42	0.0
H09	0.0	H26	0.5	H43	0.0
H10	0.1	H27	0.4	H44	0.0
H11	0.1	H28	0.6	H45	0.0
H12	0.1	H29	0.2	H46	0.0
H13	0.2	H30	0.2	H47	0.0
H14	0.1	H31	0.1	H48	0.1
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.1	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/16/2004	9:43:48.759 AM	16.672	457.1	V
Waveform U2	9/16/2004	9:43:48.759 AM	16.672	461.5	V
Waveform U3	9/16/2004	9:43:48.759 AM	16.672	458.0	V

Waveform U1
457.08 Vrms, 1.54 %THD



9/16/2004 - 9:43:48.000 AM

	Val	
—	-10.10	Waveform U1
—	575.8	Waveform U2
—	-565.7	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.1	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.9	H24	0.4	H41	0.0
H08	0.0	H25	0.4	H42	0.0
H09	0.1	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.1	H28	0.2	H45	0.0
H12	0.0	H29	0.2	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/16/2004
Start Time: 9:43:48 AM
Duration: 0:0.000 (M:S)
W: 16.29E+3 W
VAR: 8.982E+3 W
VA: 18.60E+3 W
Power Factor: 0.876
Displacement Power Factor: 0.876
TAN: 0.551
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Chalot WWPS\091604-Chalot-Photo (Pump 1).dvb

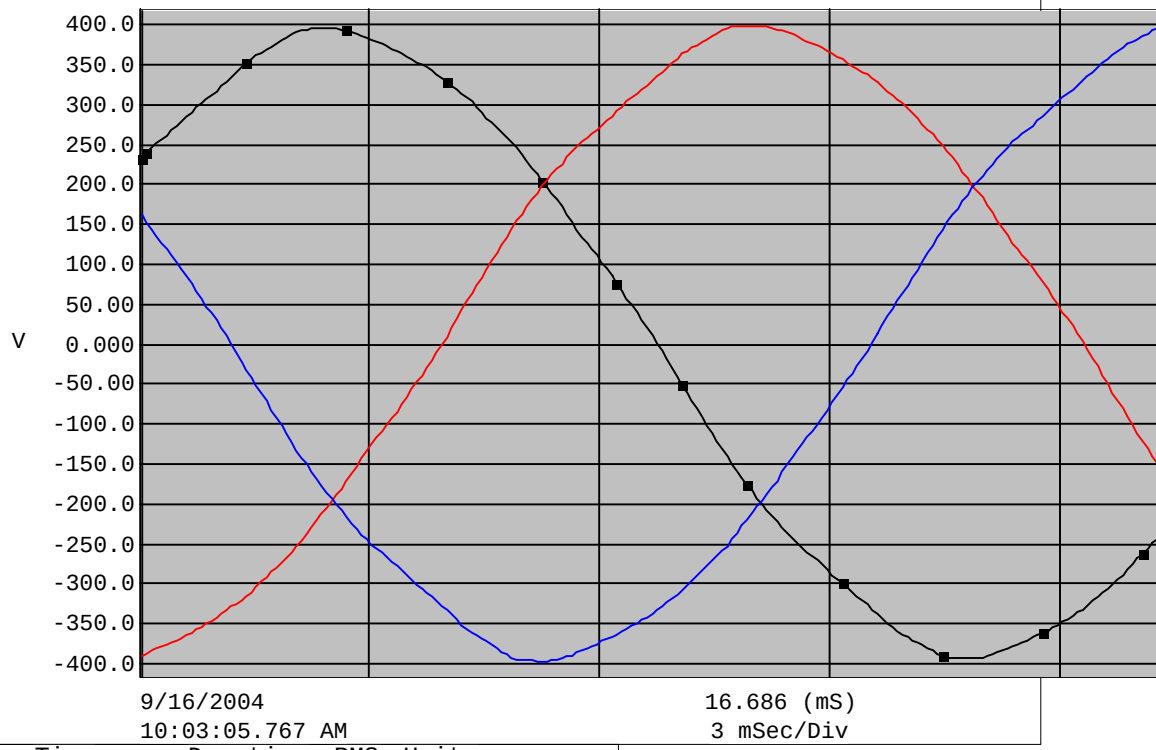
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Chalot WWPS ,

Comments
Recorded at feeder tap for Pump 1 at main breaker. Only Pump 1 operating. 50 HP Fairbanks Morse submersible Pump.

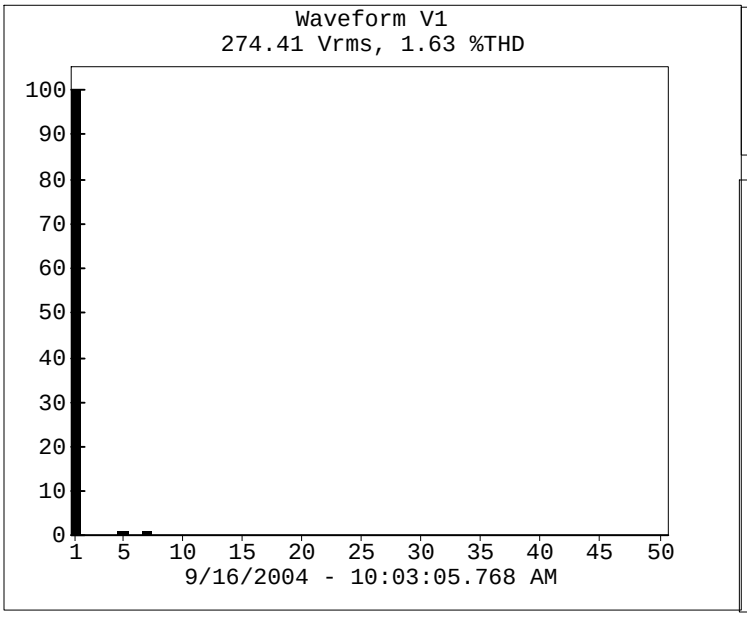
Chalot Pump 3 Photo

Recording Start Date	9/16/2004 - 10:03:05 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/16/2004	10:03:05.767 AM	16.686	274.4	V
Waveform V2	9/16/2004	10:03:05.767 AM	16.686	276.5	V
Waveform V3	9/16/2004	10:03:05.767 AM	16.686	276.0	V



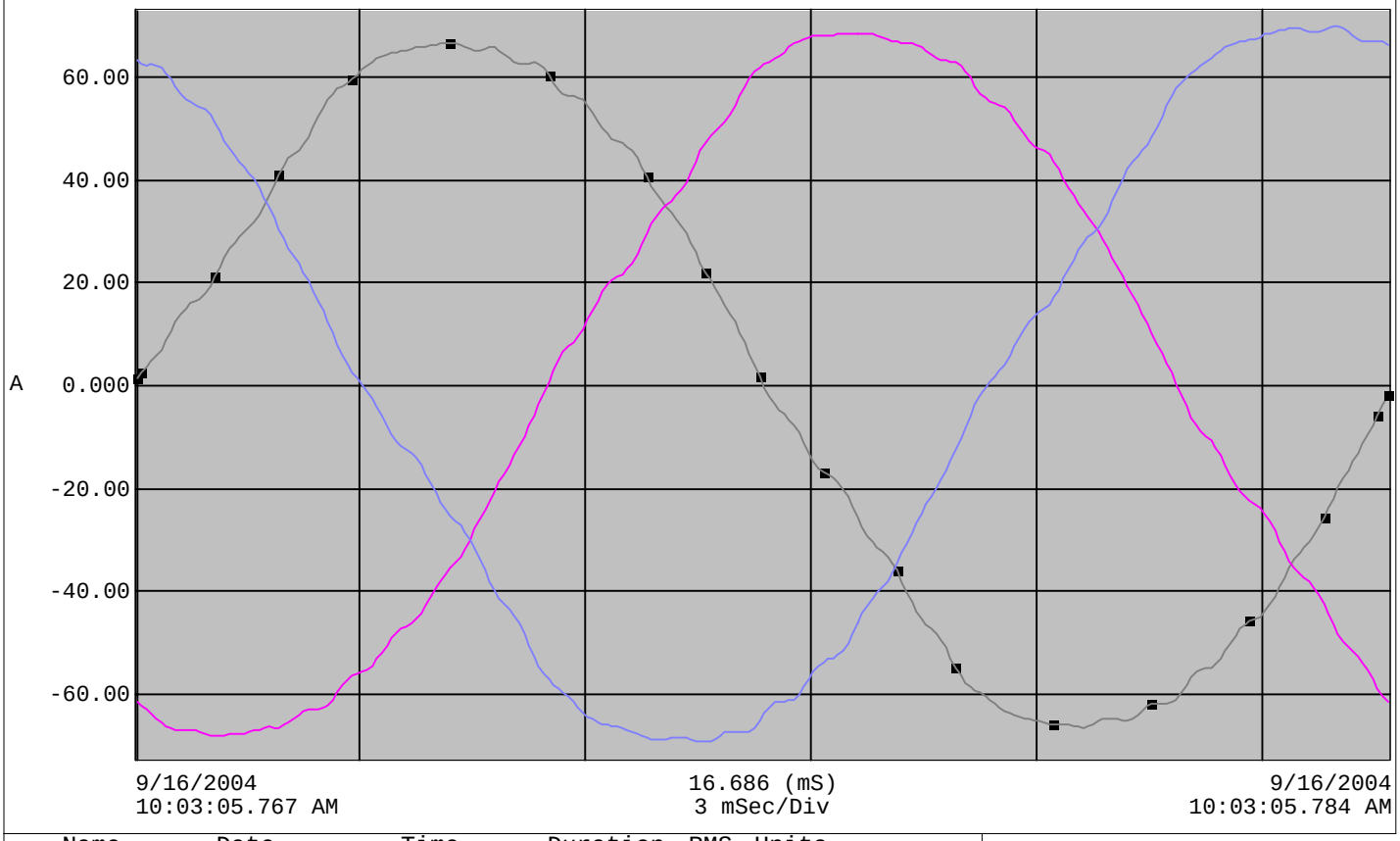
9/16/2004 - 10:03:05.000 AM

Val	
231.8	Waveform V1
-391.4	Waveform V2
160.6	Waveform V3

Waveform V1

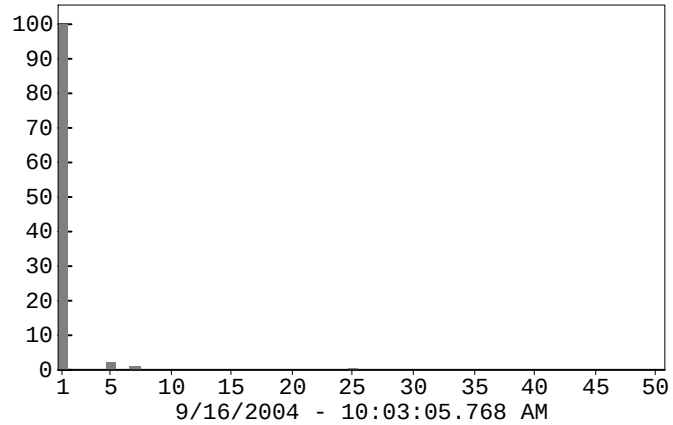
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.0	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/16/2004	10:03:05.767 AM	16.686	47.37	A
Waveform I2	9/16/2004	10:03:05.767 AM	16.686	48.67	A
Waveform I3	9/16/2004	10:03:05.767 AM	16.686	49.66	A

Waveform I1
47.37 Arms, 3.08 %THD



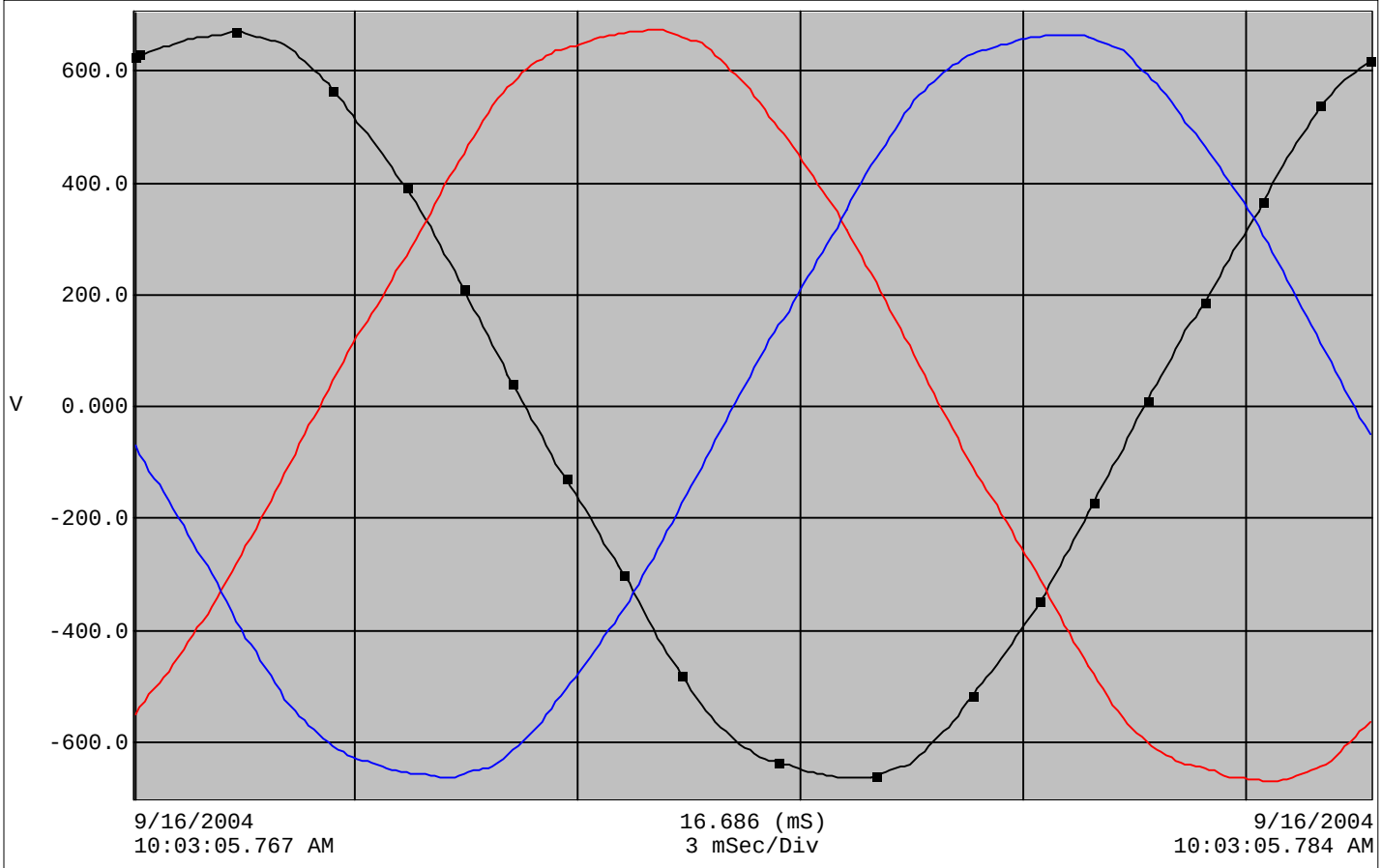
9/16/2004 - 10:03:05.000 AM

Val	
1.100	Waveform I1
-61.70	Waveform I2
63.00	Waveform I3

Waveform I1

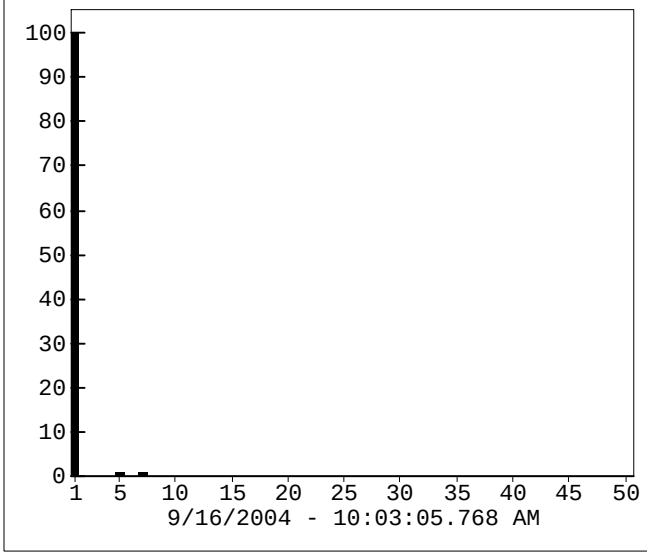
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.1	H19	0.1	H36	0.0
H03	0.2	H20	0.1	H37	0.1
H04	0.0	H21	0.1	H38	0.0
H05	2.4	H22	0.2	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	1.3	H24	0.3	H41	0.0
H08	0.0	H25	0.9	H42	0.0
H09	0.2	H26	0.2	H43	0.0
H10	0.1	H27	0.3	H44	0.0
H11	0.1	H28	0.3	H45	0.0
H12	0.1	H29	0.5	H46	0.0
H13	0.4	H30	0.1	H47	0.0
H14	0.0	H31	0.2	H48	0.0
H15	0.1	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/16/2004	10:03:05.767 AM	16.686	476.4	V
Waveform U2	9/16/2004	10:03:05.767 AM	16.686	480.3	V
Waveform U3	9/16/2004	10:03:05.767 AM	16.686	475.6	V

Waveform U1
476.40 Vrms, 1.69 %THD



9/16/2004 - 10:03:05.000 AM

Val	
623.3	Waveform U1
-552.1	Waveform U2
-71.10	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/16/2004
Start Time: 10:03:05 AM
Duration: 0:0.000 (M:S)
W: 10.47E+3 W
VAR: 8.013E+3 W
VA: 13.19E+3 W
Power Factor: 0.794
Displacement Power Factor: 0.794
TAN: 0.764
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Chalot WWPS\091604-Chalot-Pump 3-Photo.dvb

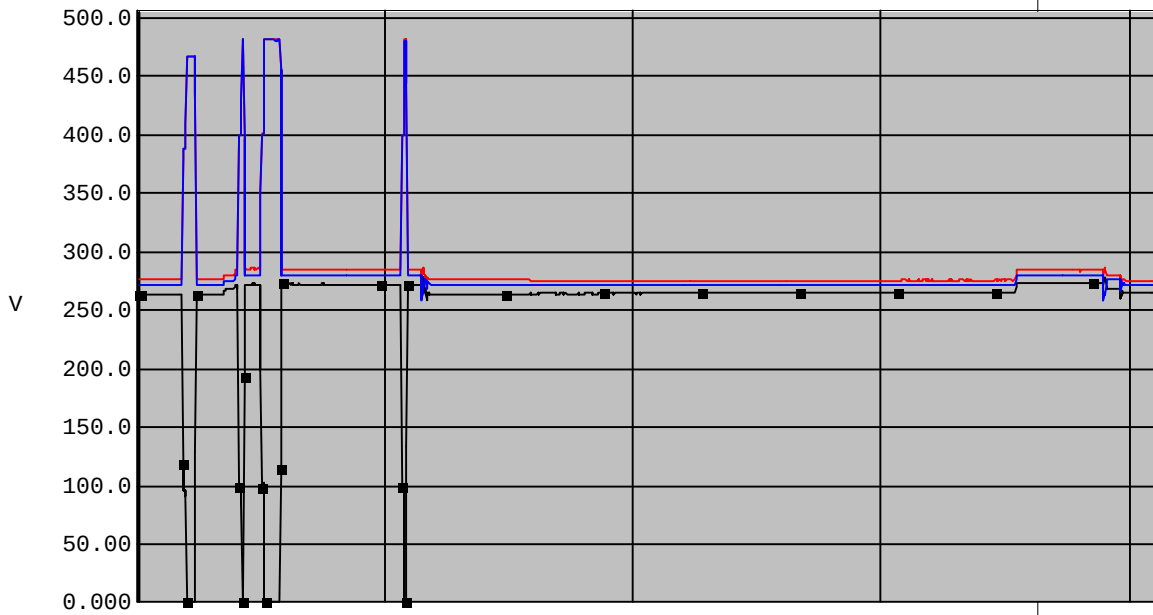
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Chalot WWPS ,

Comments
Recorded at Pump 3 motor starter overload relay. 50 HP Fairbanks Morse submersible pump (new). Only Pump 3 operational.

Chalot ATS Trend

Recording Start Date	9/16/2004 - 11:19:02 AM
Recording Duration	30:57 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

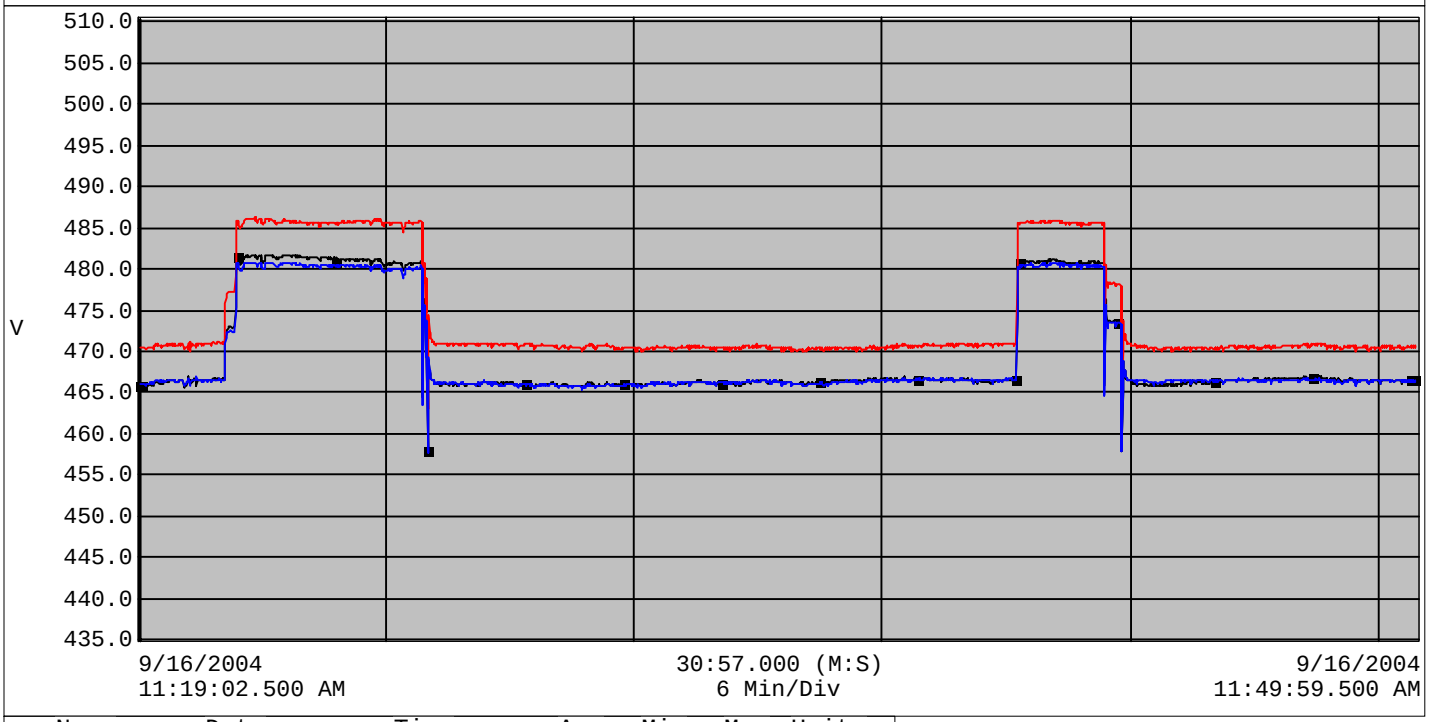
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/16/2004	11:19:02.500 AM	257.5	0.000	277.7	1858
Vrms Line2	9/16/2004	11:19:02.500 AM	283.0	269.9	481.6	1858
Vrms Line3	9/16/2004	11:19:02.500 AM	279.1	257.6	480.7	1858

9/16/2004 - 11:19:02.000 AM
Val
262.8 Vrms Line1
275.6 Vrms Line2
271.1 Vrms Line3

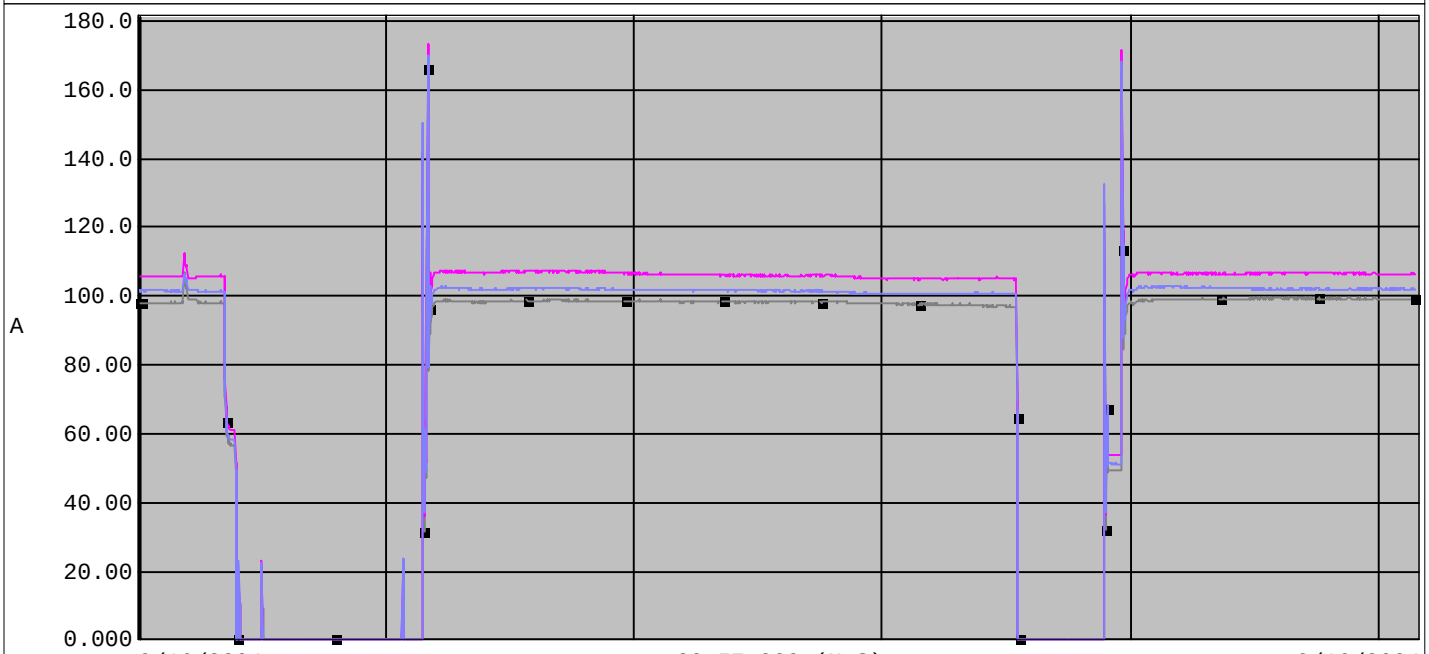
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/16/2004	11:19:02.500 AM	469.5	457.7	481.6	V
Urms Line2	9/16/2004	11:19:02.500 AM	473.9	462.8	486.1	V
Urms Line3	9/16/2004	11:19:02.500 AM	469.3	457.6	480.7	V

9/16/2004 - 11:19:02.000 AM
Val
465.8 Urms Line1
470.4 Urms Line2
465.9 Urms Line3

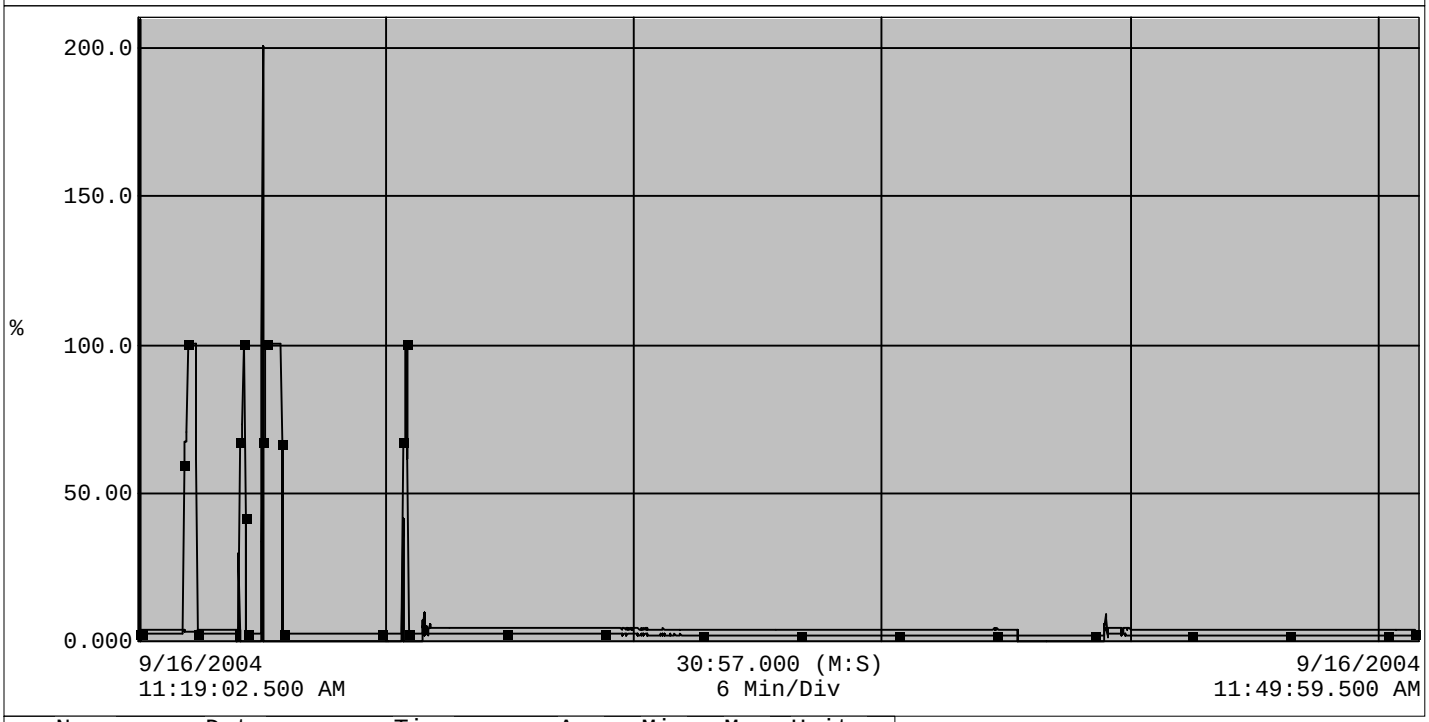
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/16/2004	11:19:02.500 AM	76.31	0.000	165.6	A
Arms Line2	9/16/2004	11:19:02.500 AM	82.33	0.000	172.7	A
Arms Line3	9/16/2004	11:19:02.500 AM	78.90	0.000	169.5	A

9/16/2004 - 11:19:02.000 AM
Val
97.60 — Arms Line1
105.5 — Arms Line2
101.3 — Arms Line3

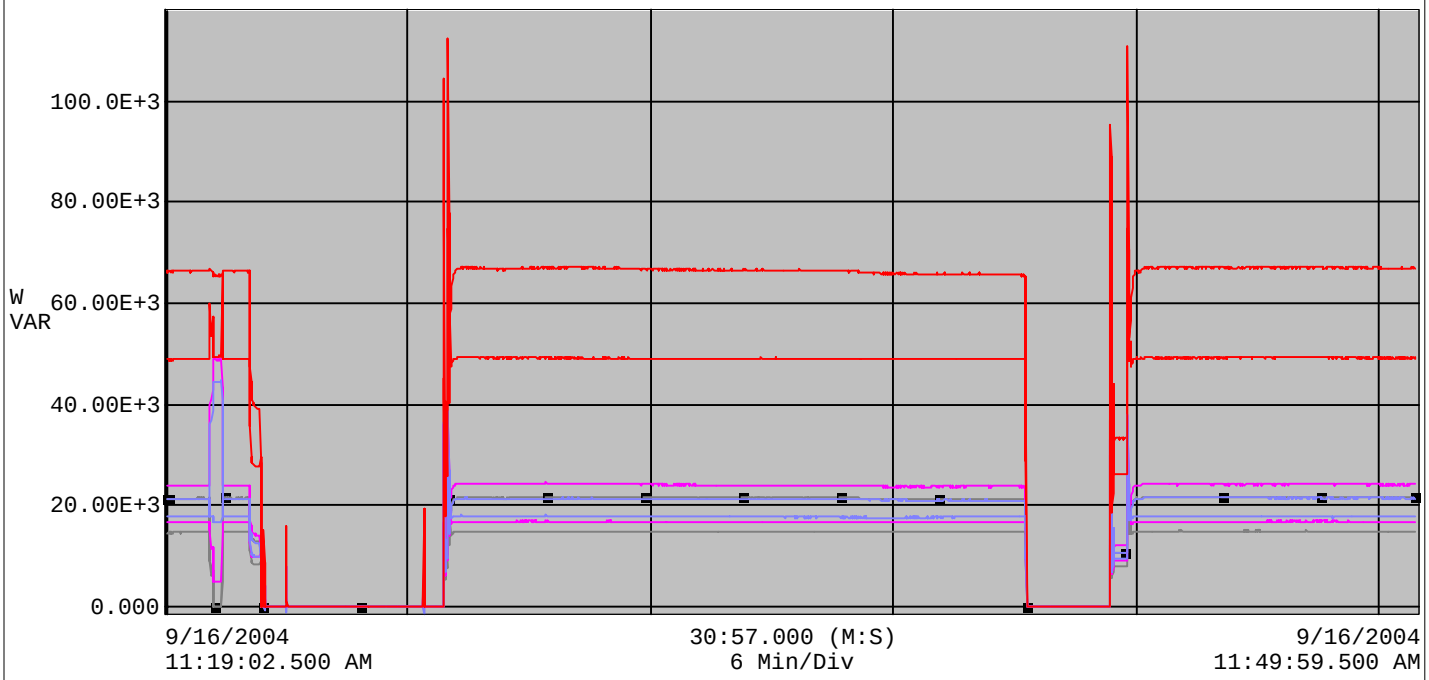
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/16/2004	11:19:02.500 AM	5.319	2.100	100.0	%
Aunb(IEEE)	9/16/2004	11:19:02.500 AM	3.362	0.000	200.0	%

9/16/2004 - 11:19:02.000 AM
Val
2.600 —— Vunb(IEEE)
4.000 —— Aunb(IEEE)

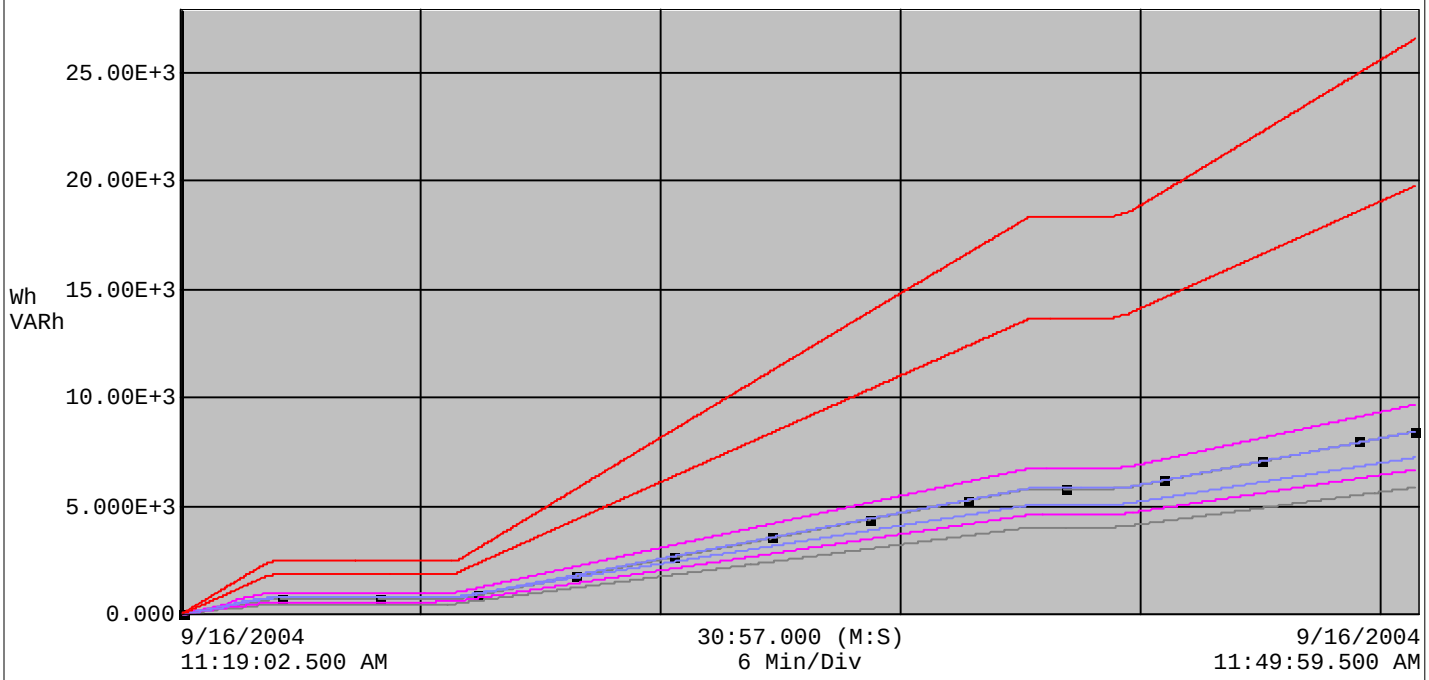
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/16/2004	11:19:02.500 AM	16.33E+3	0.000	24.53E+3	W
W Line2	9/16/2004	11:19:02.500 AM	18.74E+3	0.000	48.81E+3	W
W Line3	9/16/2004	11:19:02.500 AM	16.32E+3	-1.591E+3	23.76E+3	W
W Sum of Phases	9/16/2004	11:19:02.500 AM	51.39E+3	0.000	74.79E+3	W
VAR Line1	9/16/2004	11:19:02.500 AM	11.34E+3	0.000	35.19E+3	VAR
VAR Line2	9/16/2004	11:19:02.500 AM	12.91E+3	0.000	38.47E+3	VAR
VAR Line3	9/16/2004	11:19:02.500 AM	14.00E+3	0.000	44.44E+3	VAR
VAR Sum of Phases	9/16/2004	11:19:02.500 AM	38.25E+3	0.000	112.3E+3	VAR

9/16/2004 - 11:19:02.000 AM
Val
21.20E+3 — W Line1
23.90E+3 — W Line2
21.03E+3 — W Line3
66.13E+3 — W Sum of Phases
14.46E+3 — VAR Line1
16.58E+3 — VAR Line2
17.65E+3 — VAR Line3
48.69E+3 — VAR Sum of Phases

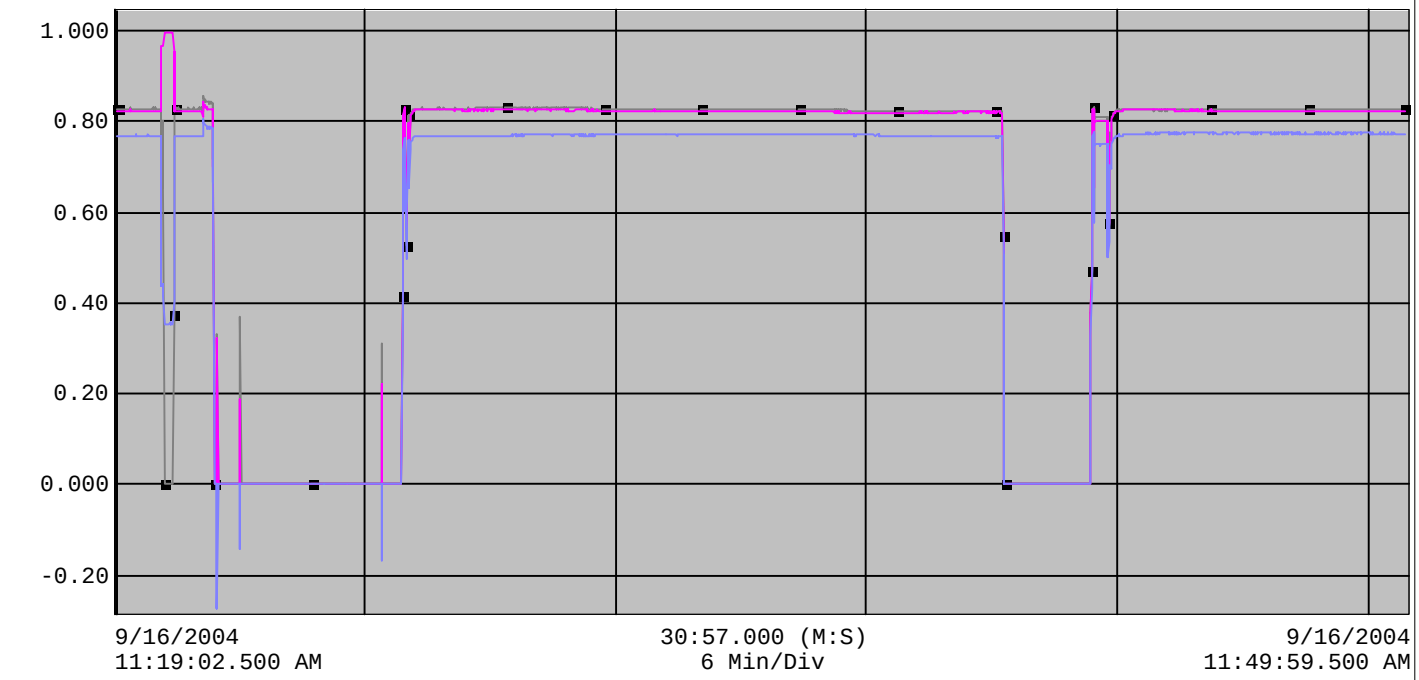
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/16/2004	11:19:02.500 AM	3.763E+3	5.917	8.430E+3	Wh
W-hours Line2	9/16/2004	11:19:02.500 AM	4.446E+3	6.493	9.670E+3	Wh
W-hours Line3	9/16/2004	11:19:02.500 AM	3.799E+3	5.912	8.423E+3	Wh
W-hours Sum of Phases	9/16/2004	11:19:02.500 AM	12.01E+3	18.62	26.52E+3	Wh
VAR-hours Line1	9/16/2004	11:19:02.500 AM	2.612E+3	3.928	5.850E+3	VARh
VAR-hours Line2	9/16/2004	11:19:02.500 AM	3.000E+3	4.678	6.664E+3	VARh
VAR-hours Line3	9/16/2004	11:19:02.500 AM	3.349E+3	4.853	7.227E+3	VARh
VAR-hours Sum of Phases	9/16/2004	11:19:02.500 AM	8.961E+3	13.26	19.74E+3	VARh

9/16/2004 - 11:19:02.000 AM
Val
5.917 — W-hours Line1
6.493 — W-hours Line2
5.912 — W-hours Line3
18.62 — W-hours Sum of Phases
3.928 — VAR-hours Line1
4.678 — VAR-hours Line2
4.853 — VAR-hours Line3
13.26 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/16/2004	11:19:02.500 AM	0.641	0.000	0.853	
PF Line2	9/16/2004	11:19:02.500 AM	0.646	0.000	0.995	
PF Line3	9/16/2004	11:19:02.500 AM	0.598	-0.275	0.802	

9/16/2004 - 11:19:02.000 AM
Val
0.826 — PF Line1
0.822 — PF Line2
0.766 — PF Line3

Trend Summary Report

Database: X:\Chalot WWPS\091604-Chalot-ATS.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Chalot WWPS ,

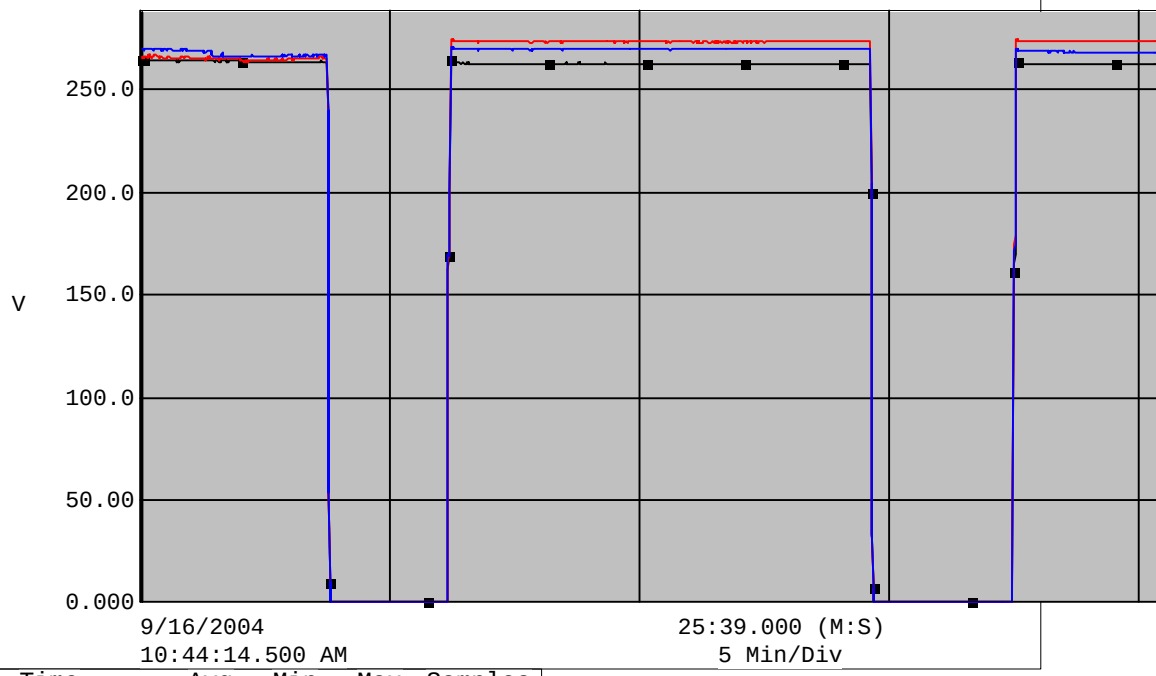
Comments

Recorded at auto transfer switch. Reversed current leads due to incorrect current flow direction during the recording (disregard this drop in current, voltage not changed). Both Pumps 1 and 3 operational sharing the same off float switch with different on swithes. On switches closely placed. Pump 2 had burned autotransformer that was replaced. Problem later found with pump that was recently repaired. All pumps rated at 50 HP, Fairbanks Morse type.

Chalot Pump 1 Trend

Recording Start Date	9/16/2004 - 10:44:14 AM
Recording Duration	25:39 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

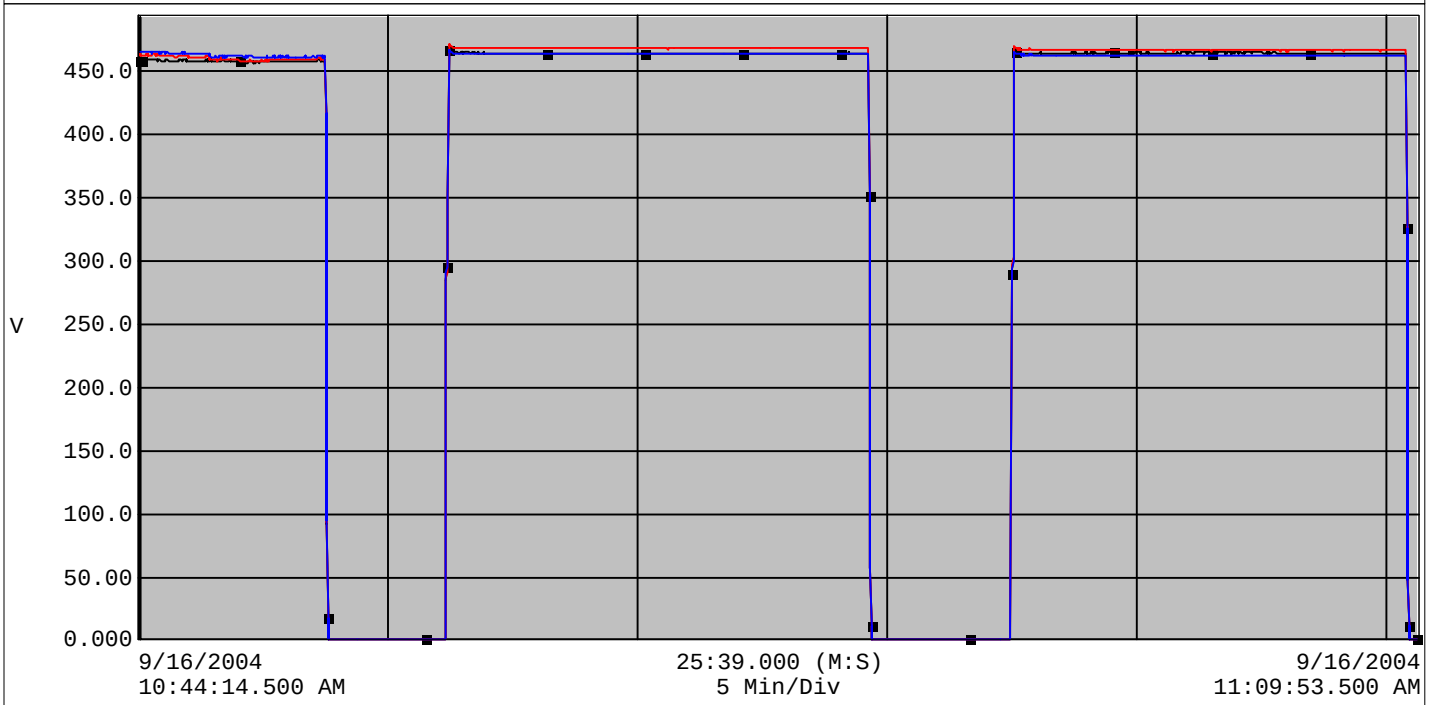
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/16/2004	10:44:14.500 AM	206.6	0.000	263.9	1540
Vrms Line2	9/16/2004	10:44:14.500 AM	213.8	0.000	274.4	1540
Vrms Line3	9/16/2004	10:44:14.500 AM	211.3	0.000	270.5	1540

9/16/2004 - 10:44:14.000 AM
Val
263.9 — Vrms Line1
264.8 — Vrms Line2
269.0 — Vrms Line3

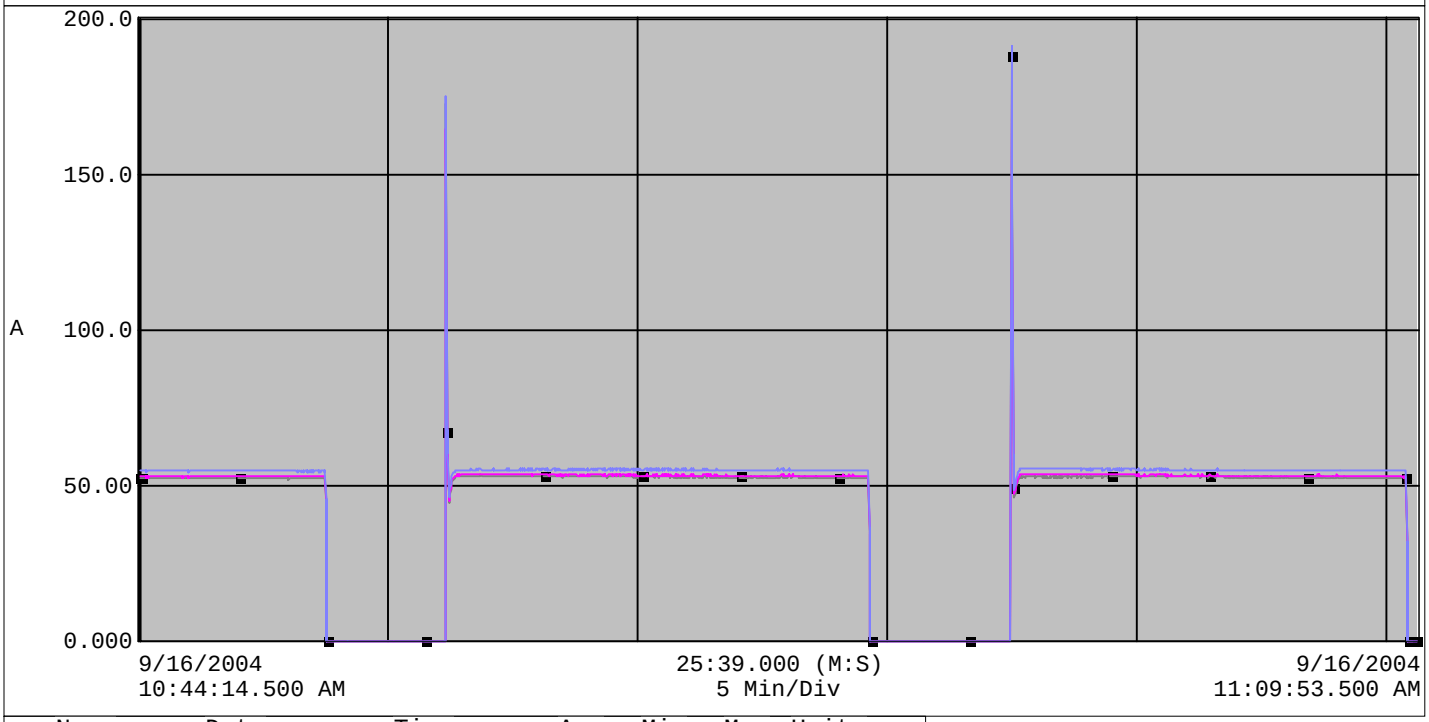
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/16/2004	10:44:14.500 AM	363.9	0.000	465.8	V
Urms Line2	9/16/2004	10:44:14.500 AM	366.3	0.000	469.5	V
Urms Line3	9/16/2004	10:44:14.500 AM	363.9	0.000	465.0	V

9/16/2004 - 10:44:14.000 AM
Val
457.0 Urms Line1
460.9 Urms Line2
463.8 Urms Line3

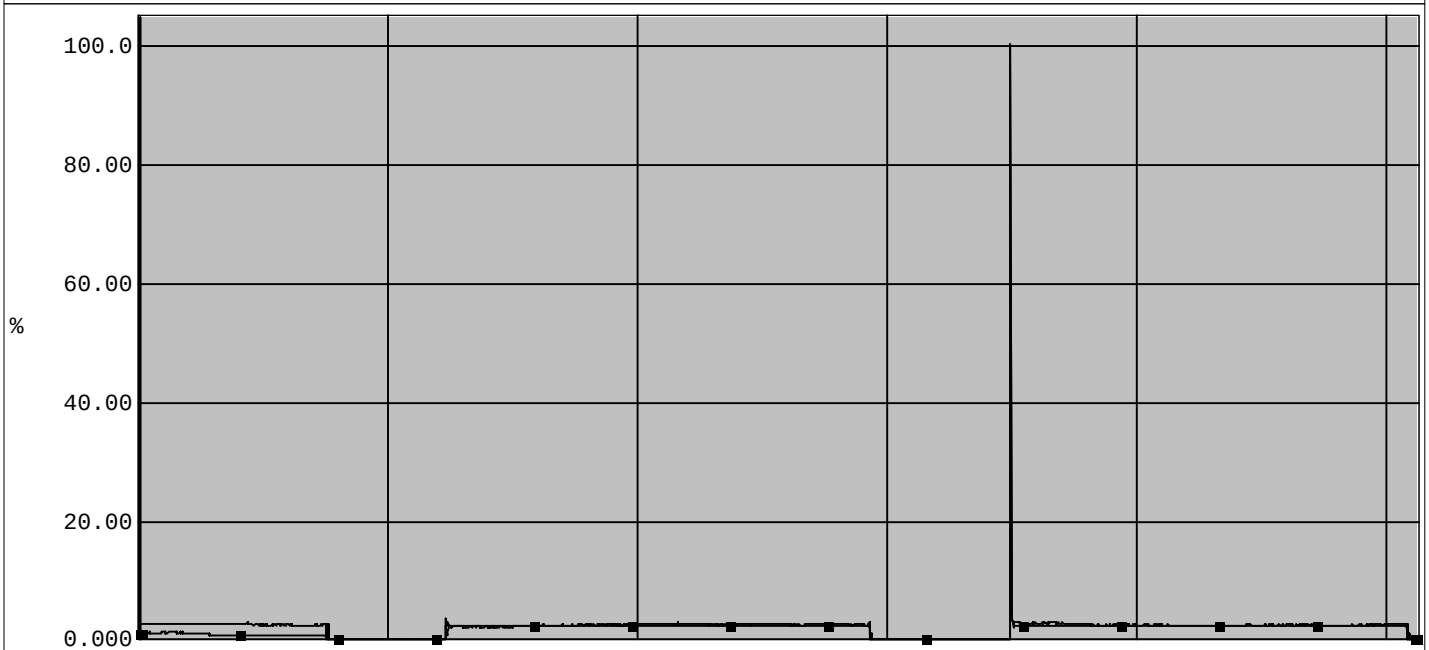
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/16/2004	10:44:14.500 AM	41.80	0.000	187.8	A
Arms Line2	9/16/2004	10:44:14.500 AM	42.20	0.000	180.2	A
Arms Line3	9/16/2004	10:44:14.500 AM	43.57	0.000	190.5	A

9/16/2004 - 10:44:14.000 AM
Val
52.50 — Arms Line1
52.90 — Arms Line2
54.90 — Arms Line3

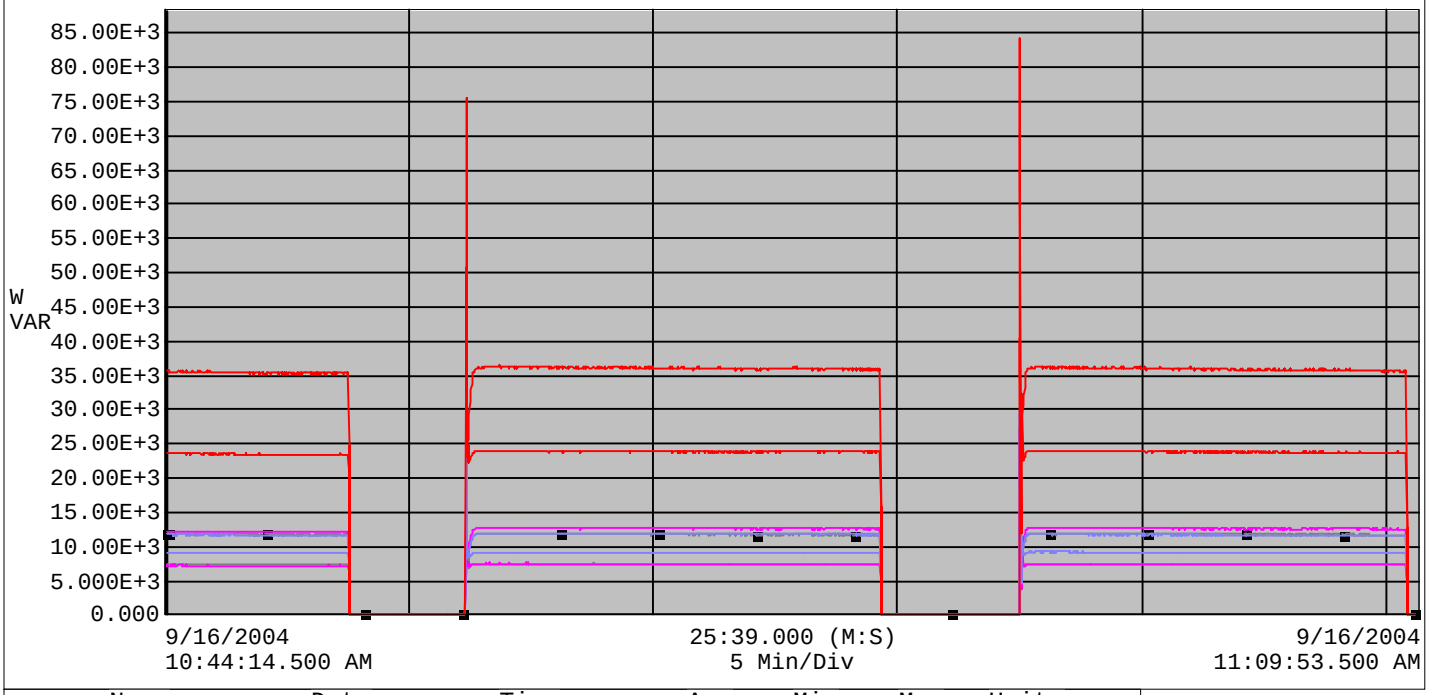
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/16/2004	10:44:14.500 AM	1.585	0.000	100.0	%
Aunb(IEEE)	9/16/2004	10:44:14.500 AM	2.010	0.000	100.0	%

9/16/2004 - 10:44:14.000 AM
Val
1.200 —— Vunb(IEEE)
2.700 —— Aunb(IEEE)

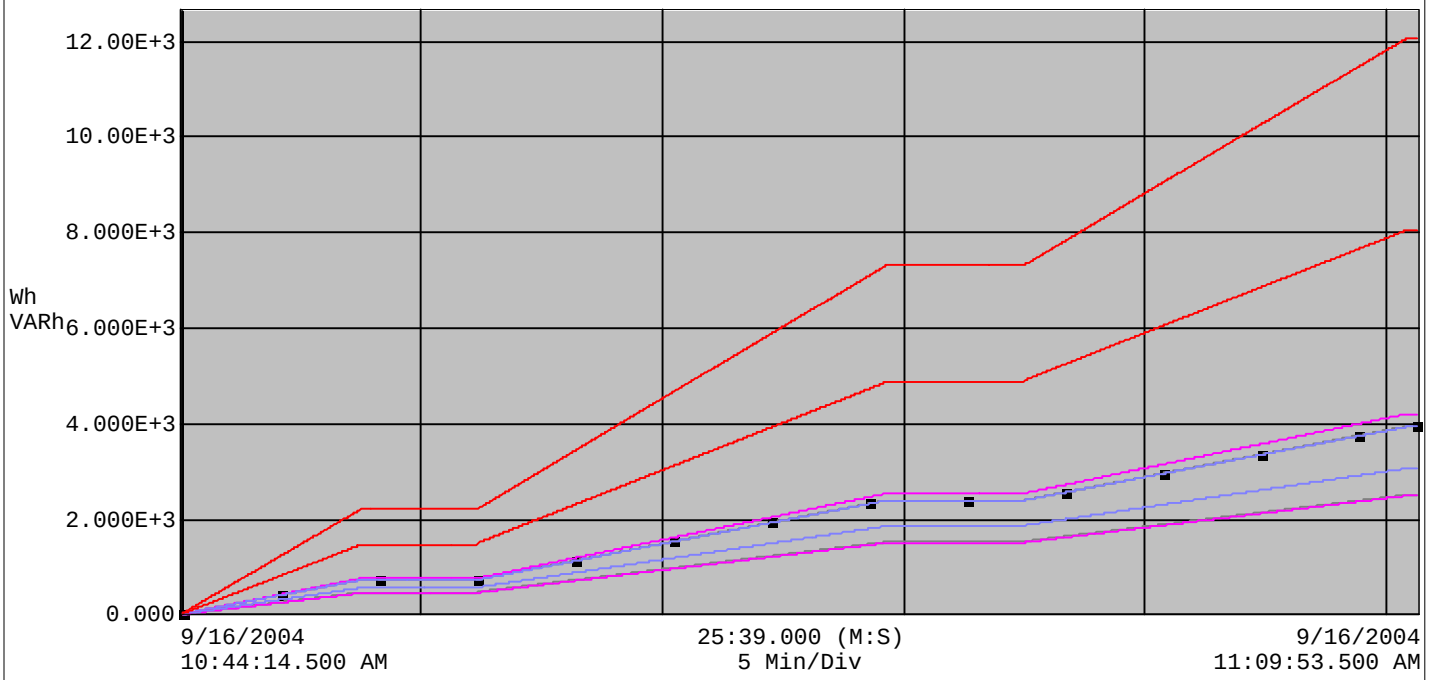
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/16/2004	10:44:14.500 AM	9.192E+3	0.000	12.81E+3	W
W Line2	9/16/2004	10:44:14.500 AM	9.797E+3	0.000	14.81E+3	W
W Line3	9/16/2004	10:44:14.500 AM	9.161E+3	0.000	12.63E+3	W
W Sum of Phases	9/16/2004	10:44:14.500 AM	28.15E+3	0.000	40.25E+3	W
VAR Line1	9/16/2004	10:44:14.500 AM	5.844E+3	0.000	27.37E+3	VAR
VAR Line2	9/16/2004	10:44:14.500 AM	5.798E+3	0.000	27.00E+3	VAR
VAR Line3	9/16/2004	10:44:14.500 AM	7.136E+3	0.000	29.72E+3	VAR
VAR Sum of Phases	9/16/2004	10:44:14.500 AM	18.78E+3	0.000	84.09E+3	VAR

9/16/2004 - 10:44:14.000 AM
Val
11.71E+3 — W Line1
12.08E+3 — W Line2
11.72E+3 — W Line3
35.51E+3 — W Sum of Phases
7.405E+3 — VAR Line1
7.107E+3 — VAR Line2
8.986E+3 — VAR Line3
23.50E+3 — VAR Sum of Phases

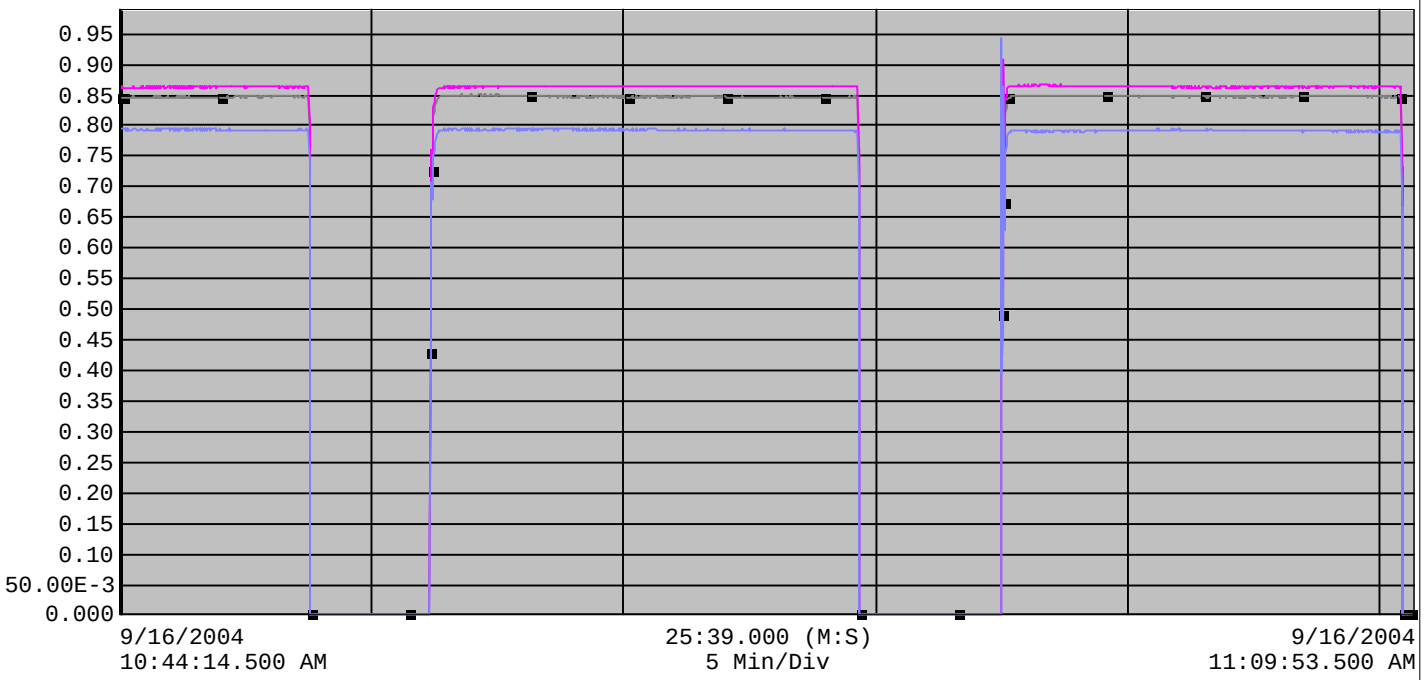
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/16/2004	10:44:14.500 AM	1.914E+3	3.240	3.932E+3	Wh
W-hours Line2	9/16/2004	10:44:14.500 AM	2.027E+3	3.326	4.191E+3	Wh
W-hours Line3	9/16/2004	10:44:14.500 AM	1.908E+3	3.229	3.919E+3	Wh
W-hours Sum of Phases	9/16/2004	10:44:14.500 AM	5.849E+3	9.923	12.04E+3	Wh
VAR-hours Line1	9/16/2004	10:44:14.500 AM	1.219E+3	2.060	2.500E+3	VARh
VAR-hours Line2	9/16/2004	10:44:14.500 AM	1.201E+3	1.968	2.480E+3	VARh
VAR-hours Line3	9/16/2004	10:44:14.500 AM	1.484E+3	2.516	3.053E+3	VARh
VAR-hours Sum of Phases	9/16/2004	10:44:14.500 AM	3.904E+3	6.619	8.033E+3	VARh

9/16/2004 - 10:44:14.000 AM
Val
3.240 — W-hours Line1
3.326 — W-hours Line2
3.229 — W-hours Line3
9.923 — W-hours Sum of Phases
2.060 — VAR-hours Line1
1.968 — VAR-hours Line2
2.516 — VAR-hours Line3
6.619 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/16/2004	10:44:14.500 AM	0.667	0.000	0.901	
PF Line2	9/16/2004	10:44:14.500 AM	0.680	0.000	0.906	
PF Line3	9/16/2004	10:44:14.500 AM	0.624	0.000	0.941	

9/16/2004 - 10:44:14.000 AM
Val
0.845 — PF Line1
0.862 — PF Line2
0.794 — PF Line3

Trend Summary Report

Database: X:\Chalot WWPS\091604-Chalot-Pump 1.dvb

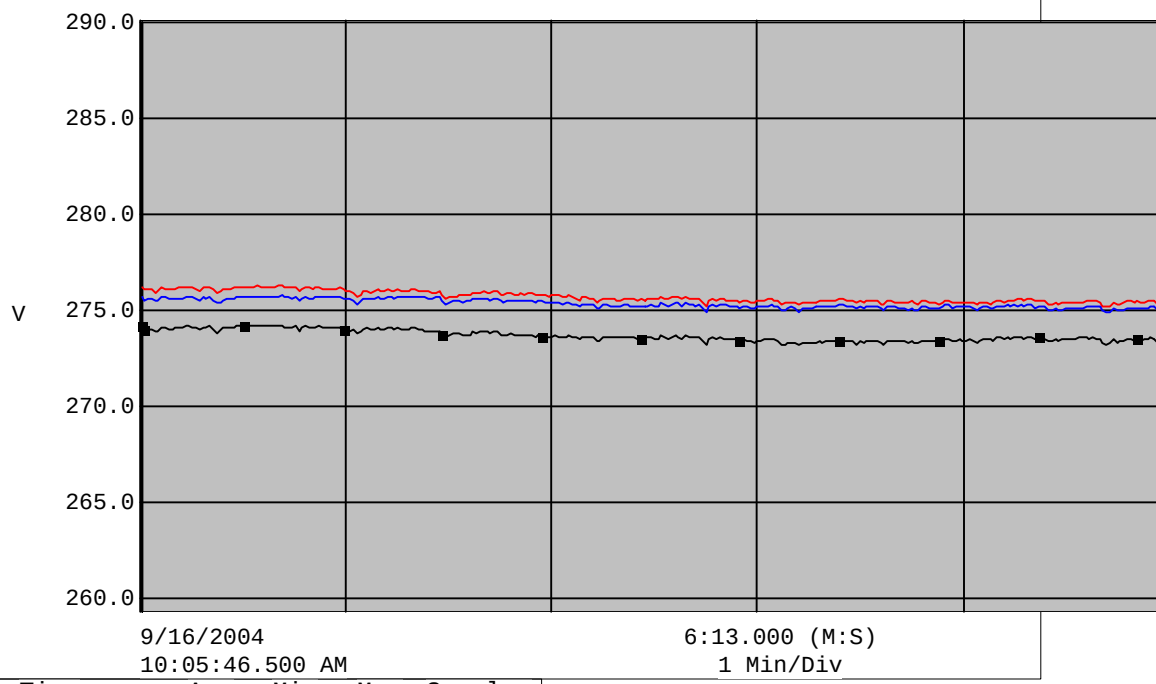
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Chalot WWPS ,

Comments
Recorded at motor starter overload relay for Pump 1. 50 HP Fairbanks Morse submersible pump. Boths pumps 1 and 3 operations (sharing the same float switch at this time).

Chalot Pump 3 Trend

Recording Start Date	9/16/2004 - 10:05:46 AM
Recording Duration	6:13 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

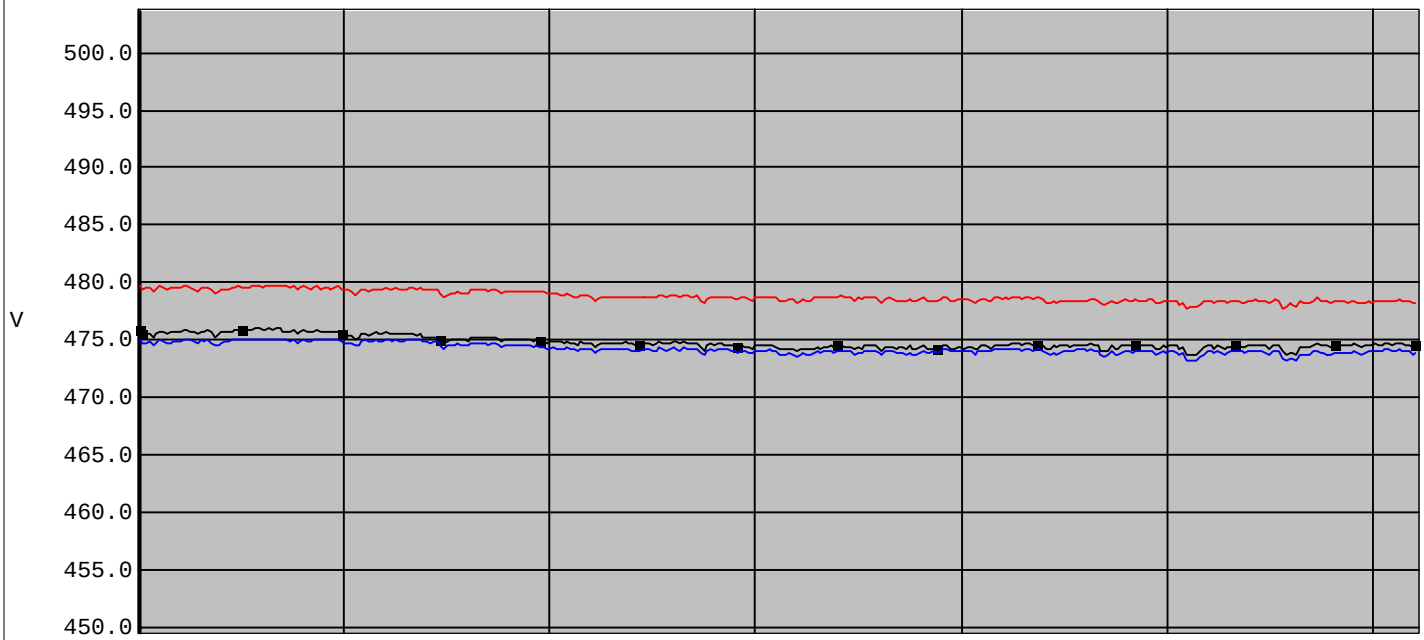
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/16/2004	10:05:46.500 AM	273.5	272.9	274.1	374
Vrms Line2	9/16/2004	10:05:46.500 AM	275.5	274.9	276.2	374
Vrms Line3	9/16/2004	10:05:46.500 AM	275.2	274.6	275.7	374

9/16/2004 - 10:05:46.000 AM
Val
274.1 Vrms Line1
276.1 Vrms Line2
275.6 Vrms Line3

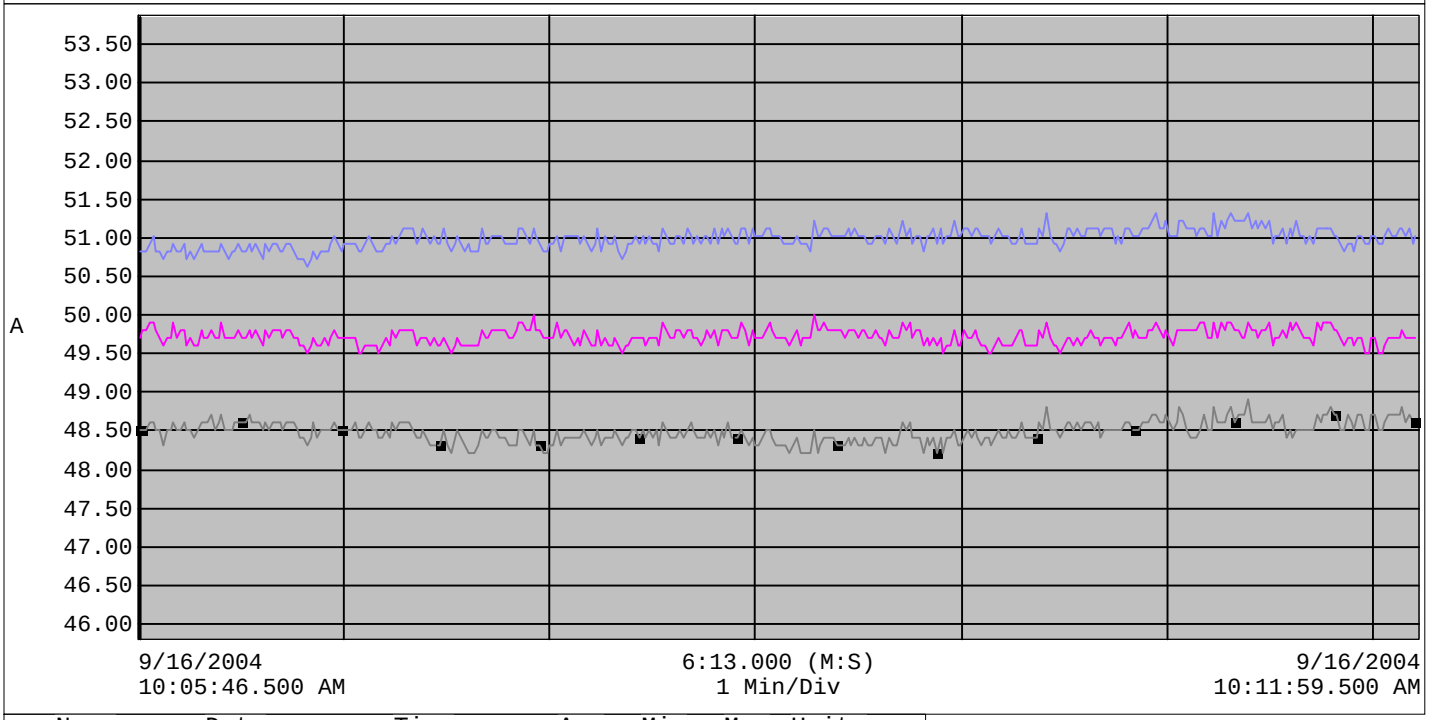
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/16/2004	10:05:46.500 AM	474.7	473.6	475.9	V
Urms Line2	9/16/2004	10:05:46.500 AM	478.7	477.7	479.7	V
Urms Line3	9/16/2004	10:05:46.500 AM	474.2	473.1	475.0	V

9/16/2004 - 10:05:46.000 AM
Val
475.8 Urms Line1
479.6 Urms Line2
474.9 Urms Line3

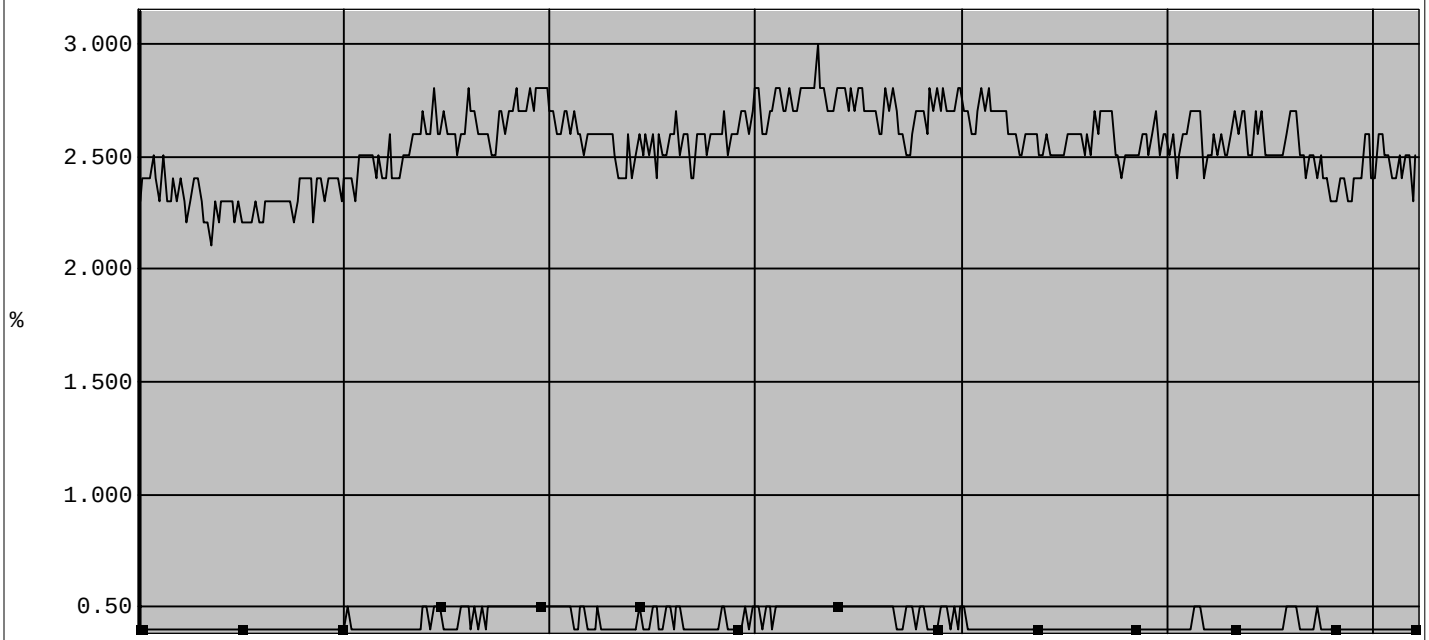
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/16/2004	10:05:46.500 AM	48.48	48.20	48.90	A
Arms Line2	9/16/2004	10:05:46.500 AM	49.72	49.50	50.00	A
Arms Line3	9/16/2004	10:05:46.500 AM	50.97	50.60	51.30	A

9/16/2004 - 10:05:46.000 AM
Val
48.50 — Arms Line1
49.70 — Arms Line2
50.80 — Arms Line3

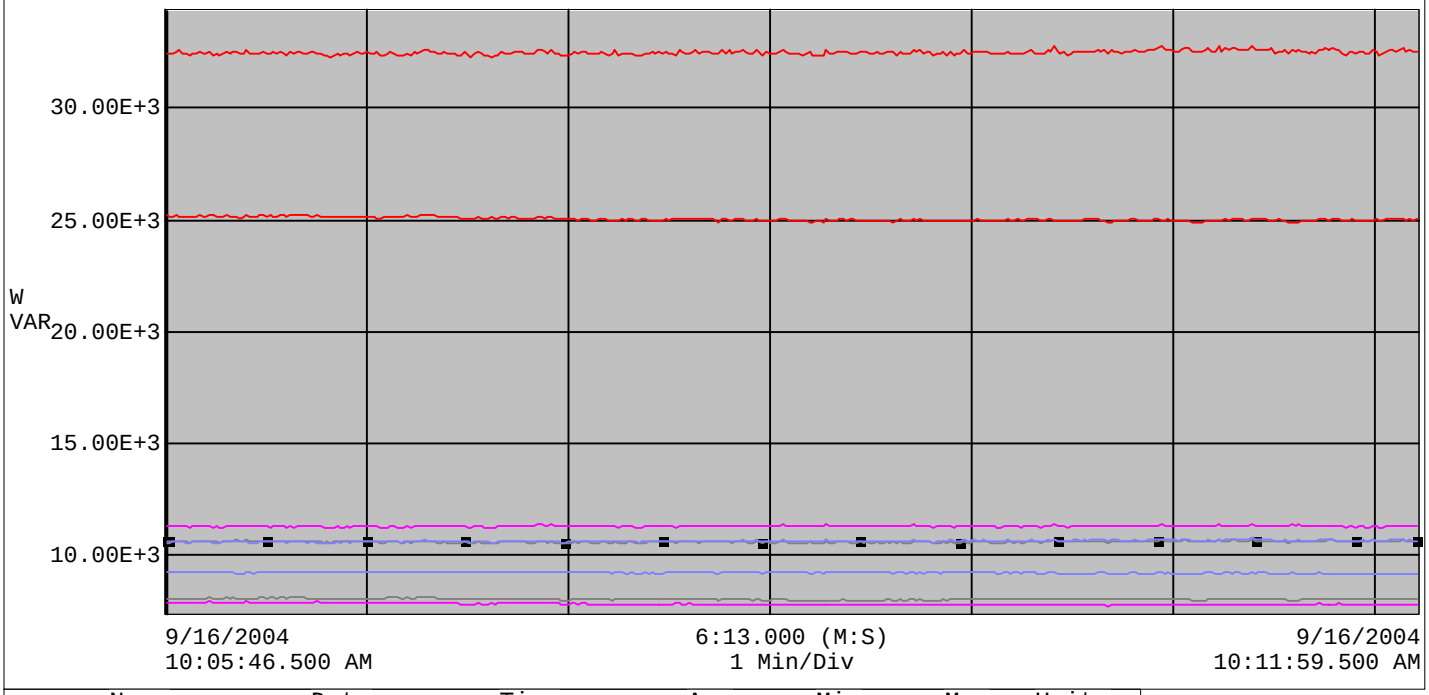
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/16/2004	10:05:46.500 AM	0.429	0.400	0.500	%
Aunb(IEEE)	9/16/2004	10:05:46.500 AM	2.551	2.100	3.000	%

9/16/2004 - 10:05:46.000 AM
Val
0.400 —— Vunb(IEEE)
2.300 —— Aunb(IEEE)

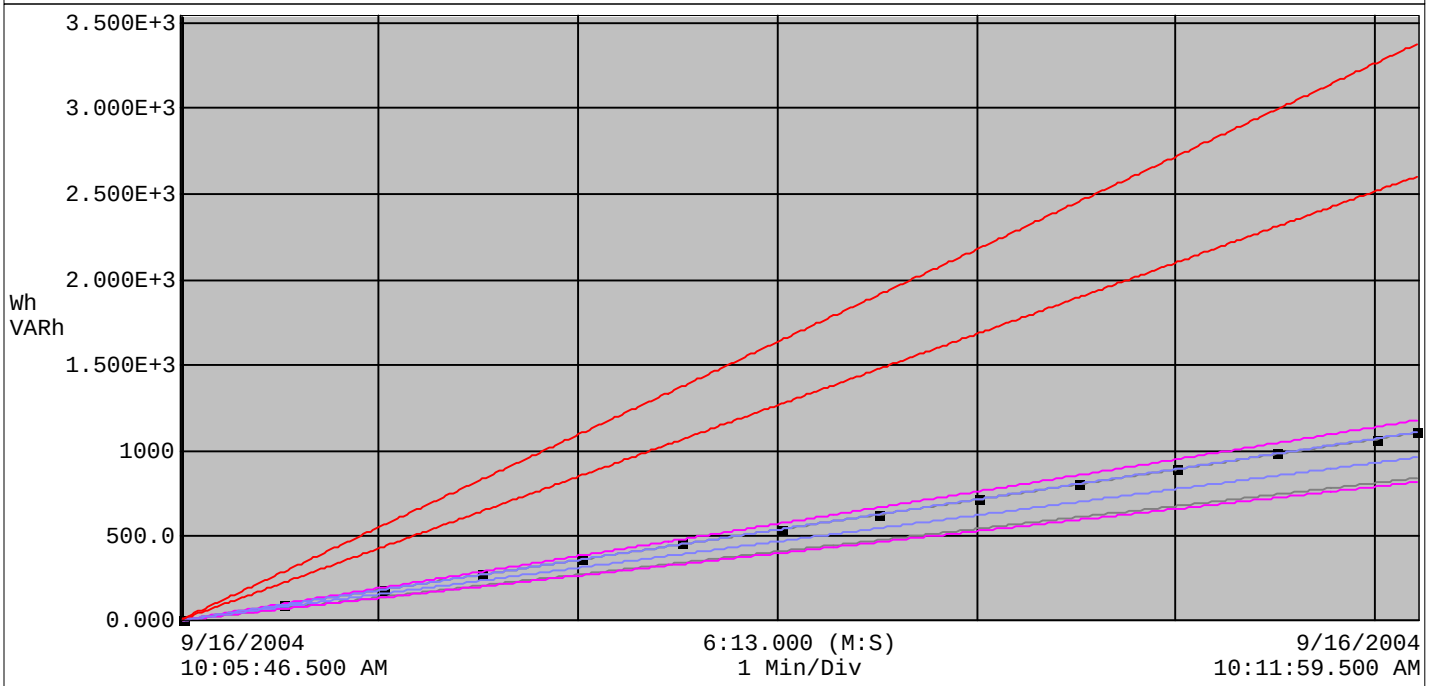
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/16/2004	10:05:46.500 AM	10.57E+3	10.48E+3	10.67E+3	W
W Line2	9/16/2004	10:05:46.500 AM	11.27E+3	11.18E+3	11.36E+3	W
W Line3	9/16/2004	10:05:46.500 AM	10.60E+3	10.49E+3	10.72E+3	W
W Sum of Phases	9/16/2004	10:05:46.500 AM	32.43E+3	32.19E+3	32.71E+3	W
VAR Line1	9/16/2004	10:05:46.500 AM	8.008E+3	7.933E+3	8.071E+3	VAR
VAR Line2	9/16/2004	10:05:46.500 AM	7.794E+3	7.716E+3	7.889E+3	VAR
VAR Line3	9/16/2004	10:05:46.500 AM	9.186E+3	9.125E+3	9.245E+3	VAR
VAR Sum of Phases	9/16/2004	10:05:46.500 AM	24.99E+3	24.81E+3	25.18E+3	VAR

9/16/2004 - 10:05:46.000 AM
Val
10.58E+3 — W Line1
11.24E+3 — W Line2
10.53E+3 — W Line3
32.36E+3 — W Sum of Phases
8.046E+3 — VAR Line1
7.886E+3 — VAR Line2
9.203E+3 — VAR Line3
25.13E+3 — VAR Sum of Phases

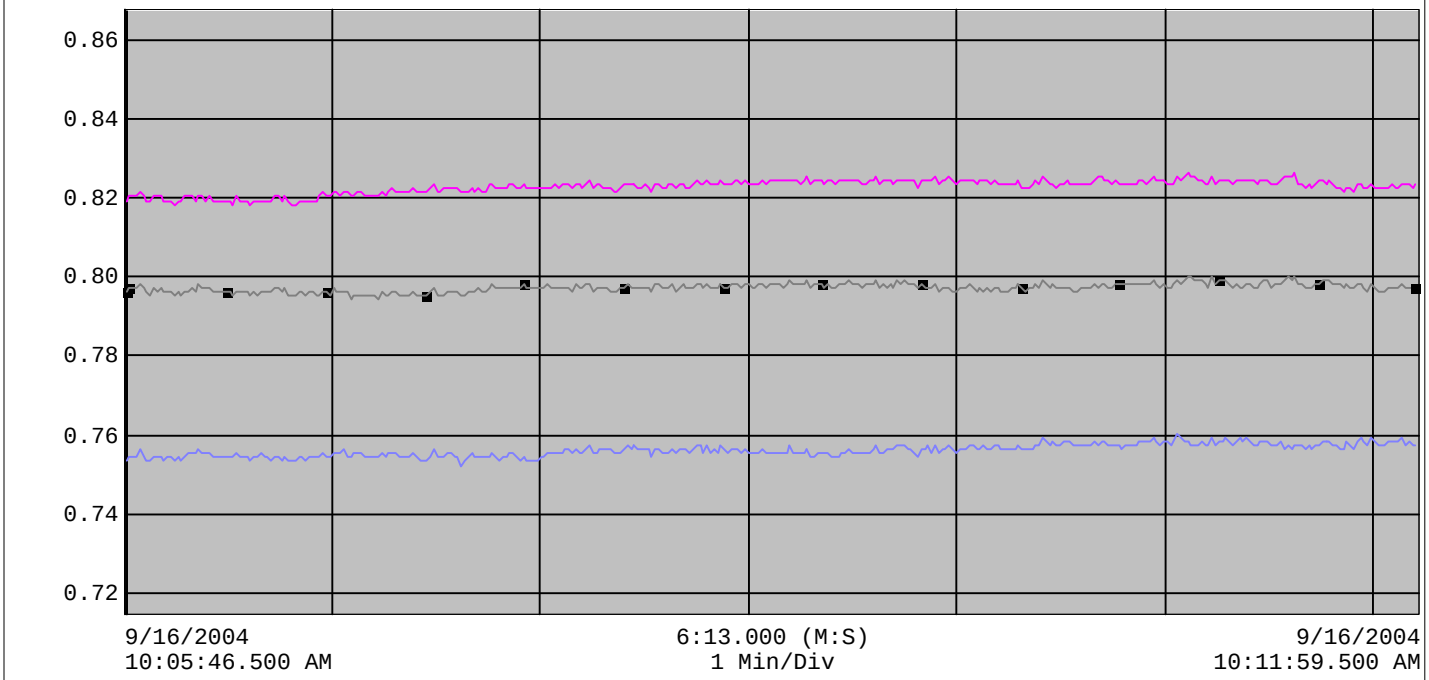
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/16/2004	10:05:46.500 AM	550.2	2.949	1.098E+3	Wh
W-hours Line2	9/16/2004	10:05:46.500 AM	586.5	3.108	1.170E+3	Wh
W-hours Line3	9/16/2004	10:05:46.500 AM	551.2	2.924	1.101E+3	Wh
W-hours Sum of Phases	9/16/2004	10:05:46.500 AM	1.688E+3	8.946	3.369E+3	Wh
VAR-hours Line1	9/16/2004	10:05:46.500 AM	417.5	2.235	832.0	VARh
VAR-hours Line2	9/16/2004	10:05:46.500 AM	406.9	2.200	809.7	VARh
VAR-hours Line3	9/16/2004	10:05:46.500 AM	478.9	2.563	954.3	VARh
VAR-hours Sum of Phases	9/16/2004	10:05:46.500 AM	1.303E+3	6.972	2.596E+3	VARh

9/16/2004 - 10:05:46.000 AM
Val
2.949 — W-hours Line1
3.108 — W-hours Line2
2.924 — W-hours Line3
8.946 — W-hours Sum of Phases
2.235 — VAR-hours Line1
2.200 — VAR-hours Line2
2.563 — VAR-hours Line3
6.972 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/16/2004	10:05:46.500 AM	0.797	0.794	0.800	
PF Line2	9/16/2004	10:05:46.500 AM	0.822	0.818	0.826	
PF Line3	9/16/2004	10:05:46.500 AM	0.756	0.752	0.760	

9/16/2004 - 10:05:46.000 AM
Val
0.796 — PF Line1
0.819 — PF Line2
0.753 — PF Line3

Trend Summary Report

Database: X:\Chalot WWPS\091604-Chalot-Pump 3.dvb

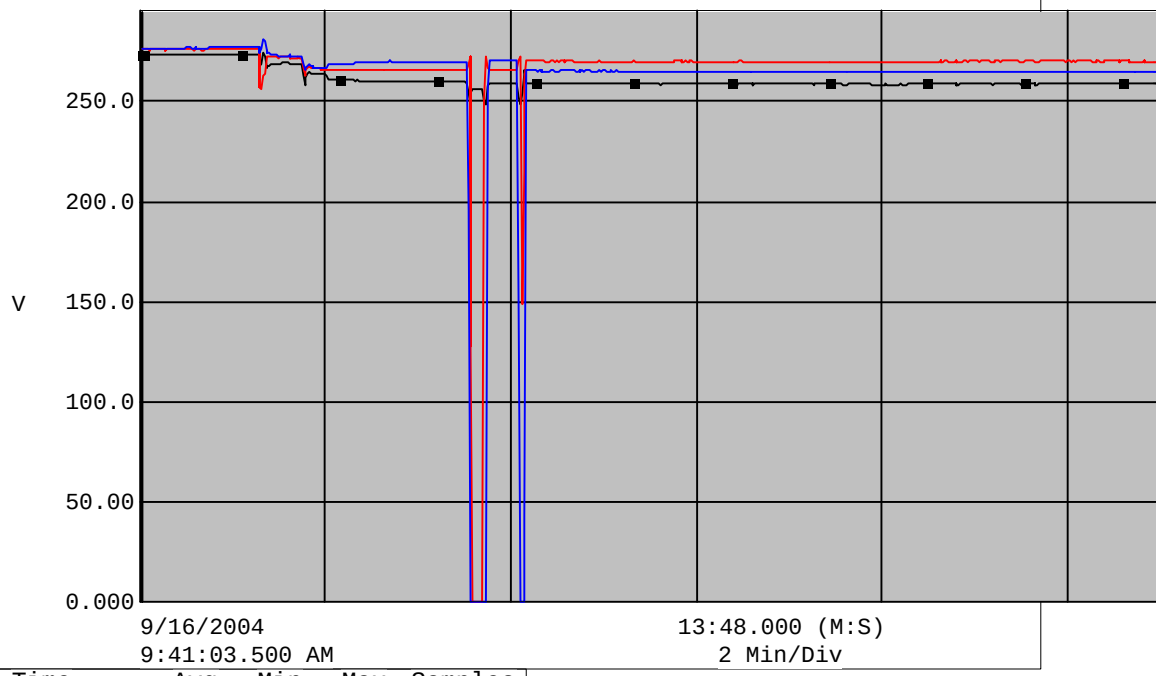
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Chalot WWPS ,

Comments
Recorded at motor starter overload relay for Pump 2. Only Pump 2 operating. New 50 HP Fairbanks Morse Submersible Pump. Station shares GPA meter with WPS A-1.

Chalot WWPS Trend

Recording Start Date	9/16/2004 - 9:41:03 AM
Recording Duration	13:48 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

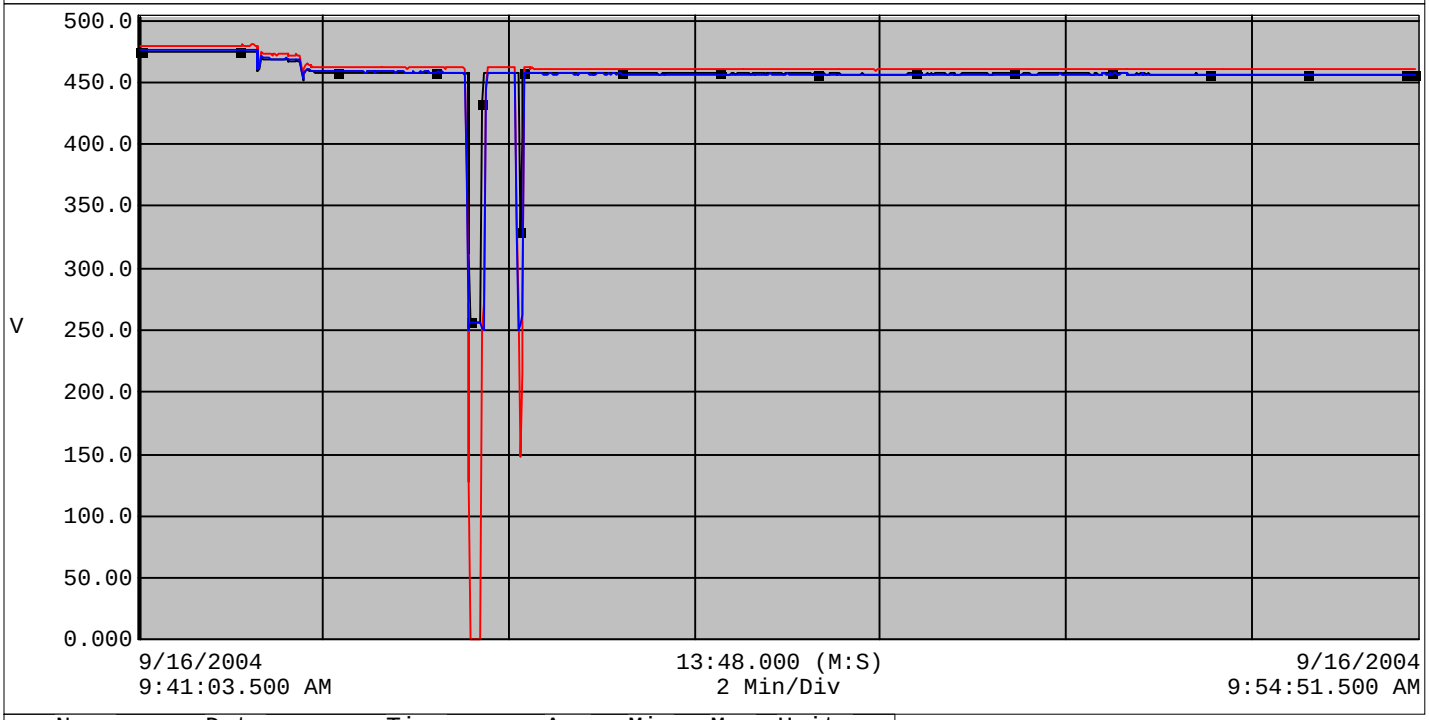
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/16/2004	9:41:03.500 AM	260.0	248.2	273.6	829
Vrms Line2	9/16/2004	9:41:03.500 AM	266.6	0.000	275.6	829
Vrms Line3	9/16/2004	9:41:03.500 AM	261.1	0.000	280.8	829

9/16/2004 - 9:41:03.000 AM
Val
273.0 — Vrms Line1
275.4 — Vrms Line2
276.1 — Vrms Line3

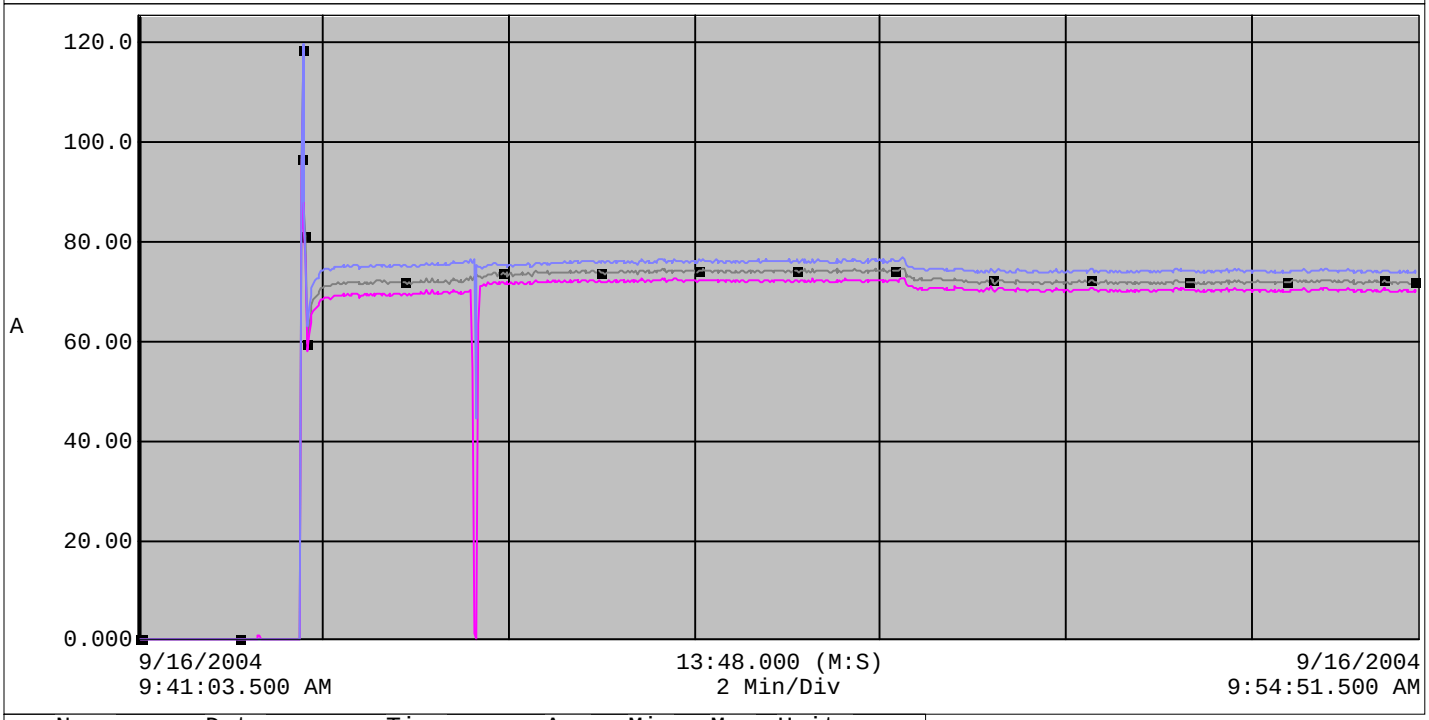
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/16/2004	9:41:03.500 AM	456.0	255.6	474.2	V
Urms Line2	9/16/2004	9:41:03.500 AM	455.5	0.000	479.2	V
Urms Line3	9/16/2004	9:41:03.500 AM	454.0	249.5	475.8	V

9/16/2004 - 9:41:03.000 AM
Val
473.9 Urms Line1
478.9 Urms Line2
475.4 Urms Line3

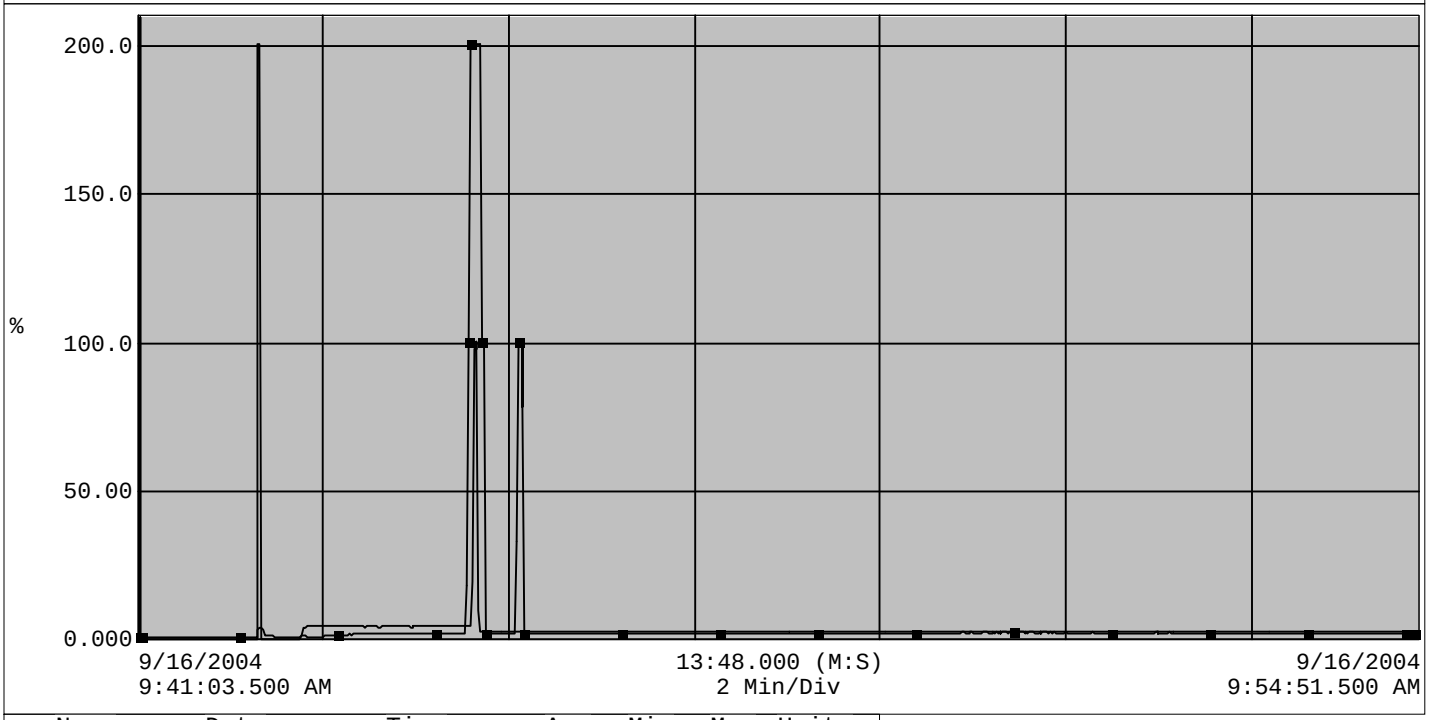
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/16/2004	9:41:03.500 AM	63.45	0.000	118.4	A
Arms Line2	9/16/2004	9:41:03.500 AM	61.57	0.000	111.9	A
Arms Line3	9/16/2004	9:41:03.500 AM	65.39	0.000	119.4	A

9/16/2004 - 9:41:03.000 AM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

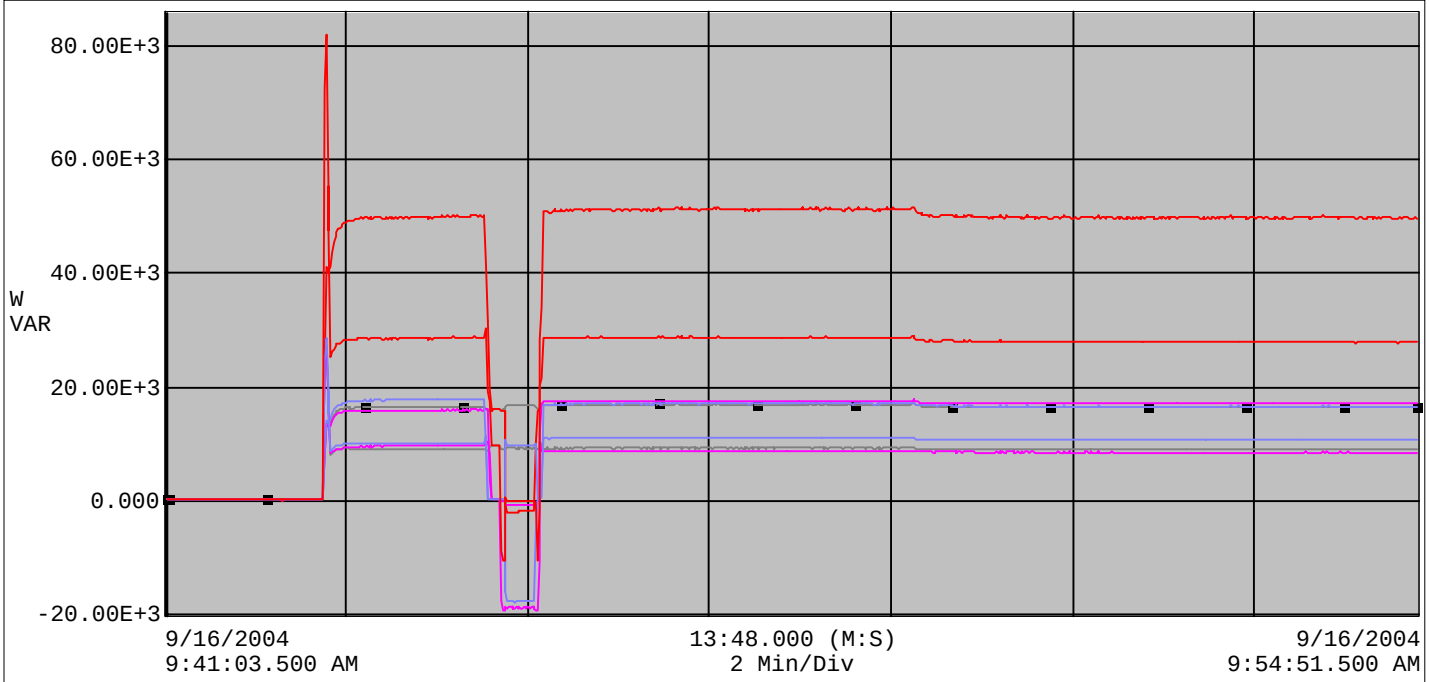
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/16/2004	9:41:03.500 AM	4.737	0.600	200.0	%
Aunb(IEEE)	9/16/2004	9:41:03.500 AM	3.416	0.000	200.0	%

9/16/2004 - 9:41:03.000 AM
Val
0.700 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

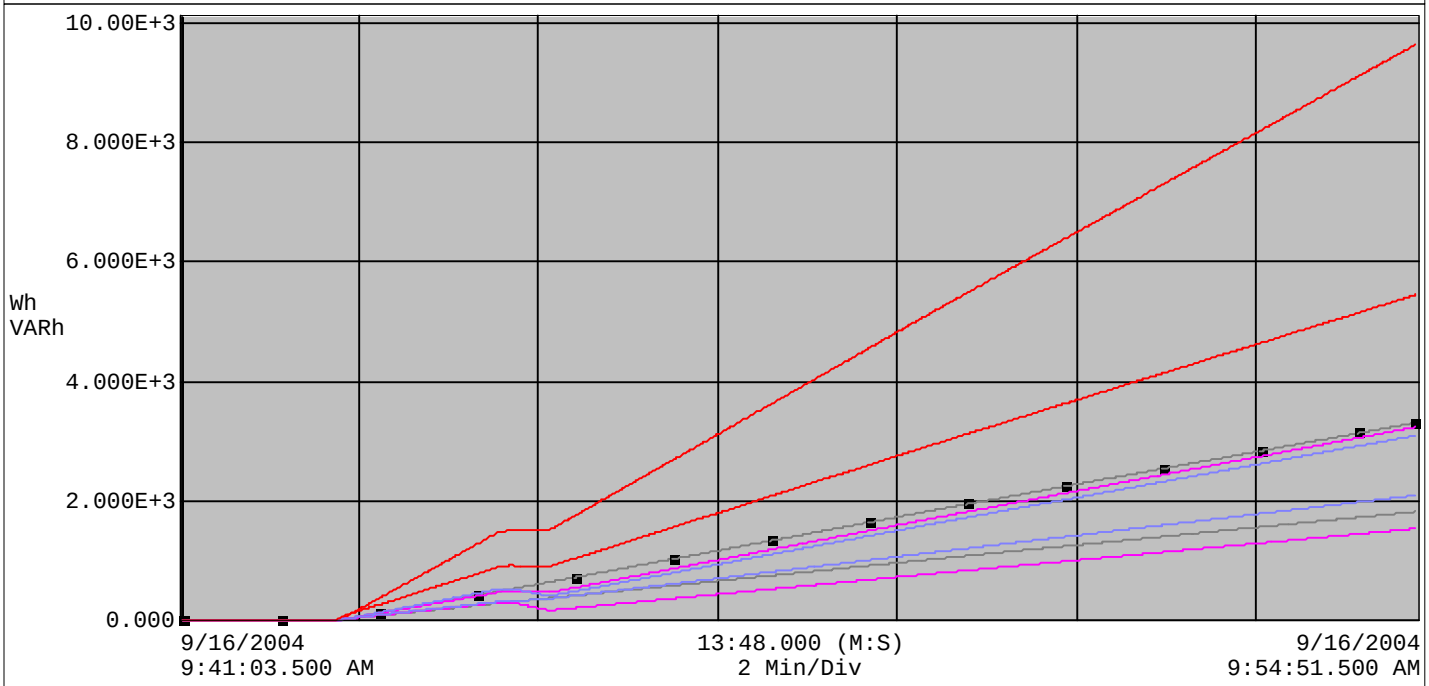
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/16/2004	9:41:03.500 AM	14.34E+3	0.000	16.91E+3	W
W Line2	9/16/2004	9:41:03.500 AM	14.03E+3	-886.9	17.54E+3	W
W Line3	9/16/2004	9:41:03.500 AM	13.42E+3	-17.92E+3	17.82E+3	W
W Sum of Phases	9/16/2004	9:41:03.500 AM	41.79E+3	-2.078E+3	51.52E+3	W
VAR Line1	9/16/2004	9:41:03.500 AM	7.885E+3	0.000	27.25E+3	VAR
VAR Line2	9/16/2004	9:41:03.500 AM	6.659E+3	-19.48E+3	26.13E+3	VAR
VAR Line3	9/16/2004	9:41:03.500 AM	9.071E+3	0.000	28.37E+3	VAR
VAR Sum of Phases	9/16/2004	9:41:03.500 AM	23.61E+3	-10.61E+3	81.75E+3	VAR

9/16/2004 - 9:41:03.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

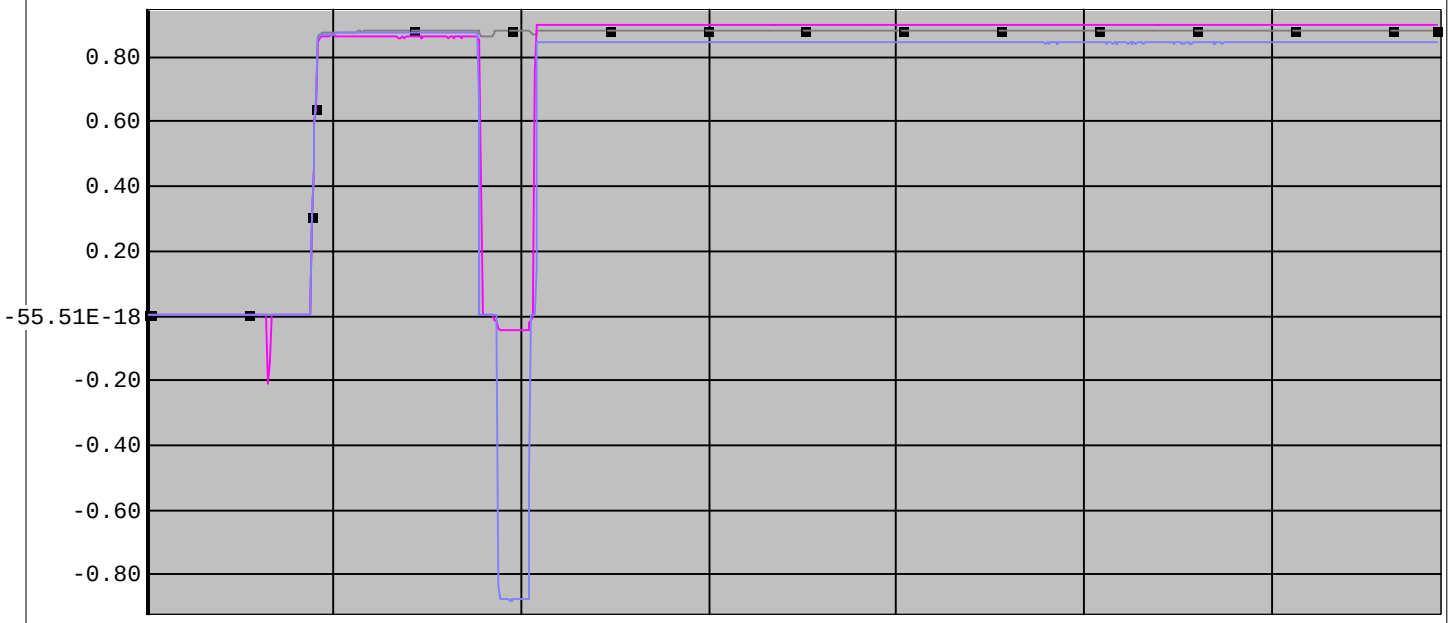
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/16/2004	9:41:03.500 AM	1.445E+3	0.000	3.303E+3	Wh
W-hours Line2	9/16/2004	9:41:03.500 AM	1.353E+3	0.000	3.231E+3	Wh
W-hours Line3	9/16/2004	9:41:03.500 AM	1.287E+3	0.000	3.090E+3	Wh
W-hours Sum of Phases	9/16/2004	9:41:03.500 AM	4.085E+3	0.000	9.624E+3	Wh
VAR-hours Line1	9/16/2004	9:41:03.500 AM	804.8	0.000	1.816E+3	VARh
VAR-hours Line2	9/16/2004	9:41:03.500 AM	630.2	0.000	1.533E+3	VARh
VAR-hours Line3	9/16/2004	9:41:03.500 AM	898.3	0.000	2.089E+3	VARh
VAR-hours Sum of Phases	9/16/2004	9:41:03.500 AM	2.333E+3	0.000	5.438E+3	VARh

9/16/2004 - 9:41:03.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/16/2004	9:41:03.500 AM	0.765	0.000	0.880	
PF Line2	9/16/2004	9:41:03.500 AM	0.738	-0.212	0.898	
PF Line3	9/16/2004	9:41:03.500 AM	0.677	-0.881	0.872	

9/16/2004 - 9:41:03.000 AM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: X:\Chalot WWPS\091604-Chalot.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Chalot WWPS ,

Comments
Recorded at feeder tap at Main Breaker to Pump 1. Only Pump 1 operating. 50 HP Fairbanks Morse Submersible. Shares same GPA Meter with Station A-1. Meter No. 86-189-866.

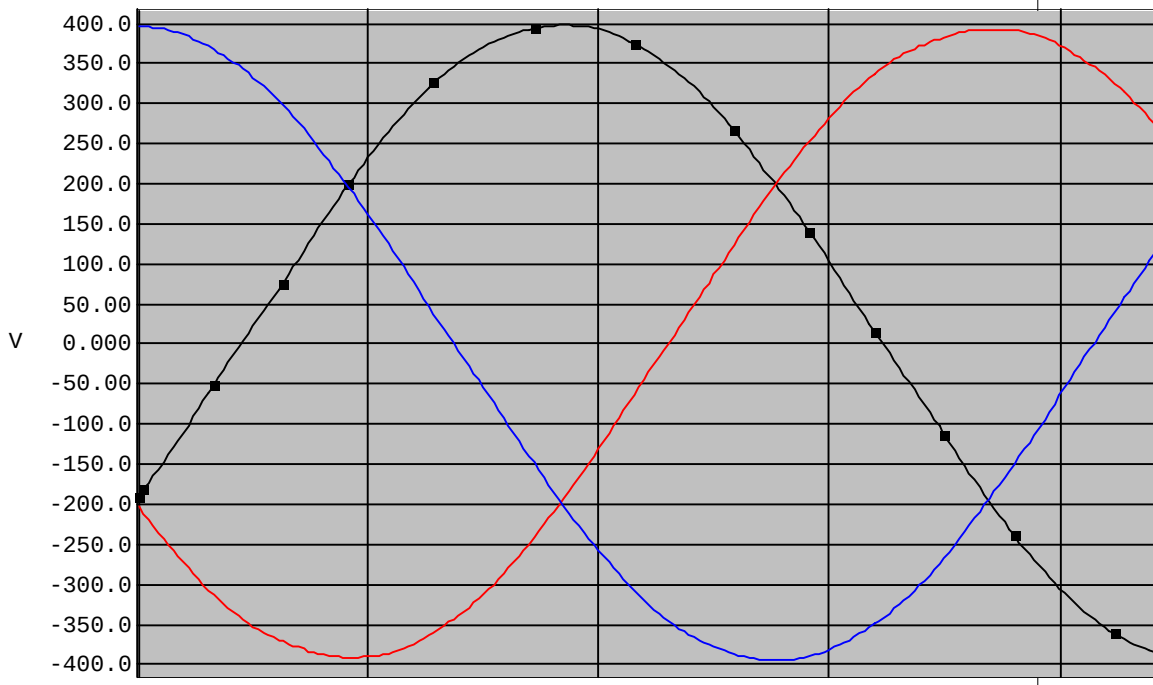
GWA Wastewater Pumping Station Assessment				
Station Name: COMMERCIAL PORT	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/18/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.57	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	4	0.08	
Transformer Wiring Method	5.0%	4	0.2	
Lightning Arrester Condition	5.0%	4	0.2	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.45	
Generator Condition	10.0%	2	0.2	
Generator Battery	5.0%	2	0.1	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.64	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.64	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.2	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.09	
Lighting and Power Devices	1.5%	3	0.045	
Sump Pump Controls	1.5%	3	0.045	
	100%	**Assessment Value**		**2.8**

Comments:

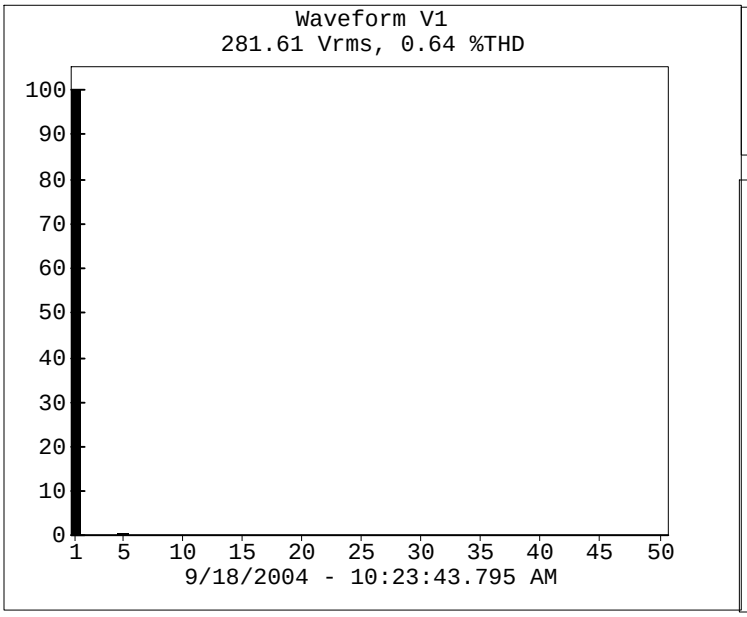
Commercial Port PS Pump 1 Photo

Recording Start Date	9/18/2004 - 10:23:43 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.13 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/18/2004	10:23:43.795 AM	16.631	281.6	V
Waveform V2	9/18/2004	10:23:43.795 AM	16.631	279.0	V
Waveform V3	9/18/2004	10:23:43.795 AM	16.631	280.7	V

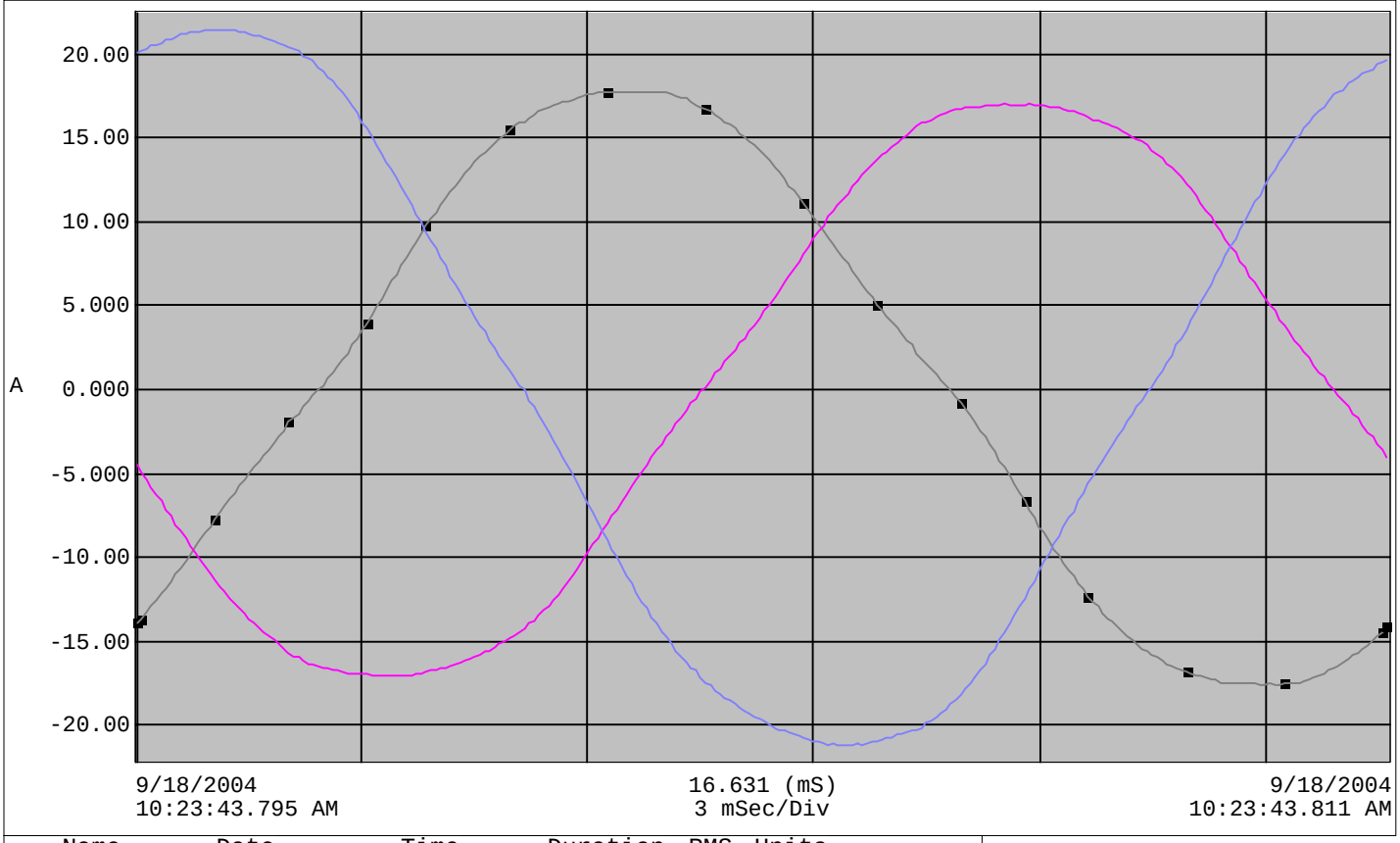


9/18/2004 - 10:23:43.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

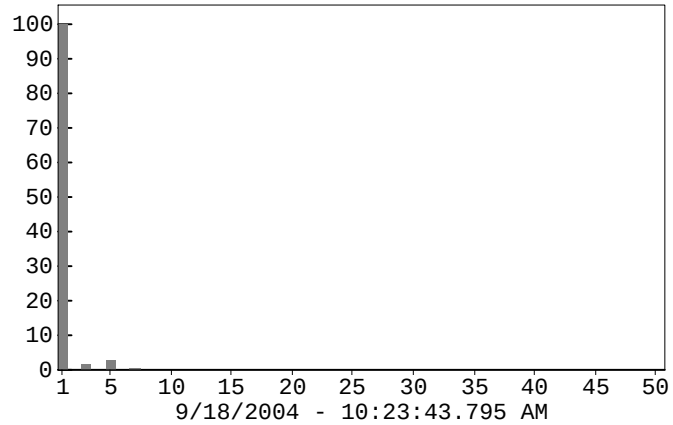
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.6	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.13 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/18/2004	10:23:43.795 AM	16.631	12.63	A
Waveform I2	9/18/2004	10:23:43.795 AM	16.631	12.36	A
Waveform I3	9/18/2004	10:23:43.795 AM	16.631	15.28	A

Waveform I1
12.63 Arms, 3.33 %THD

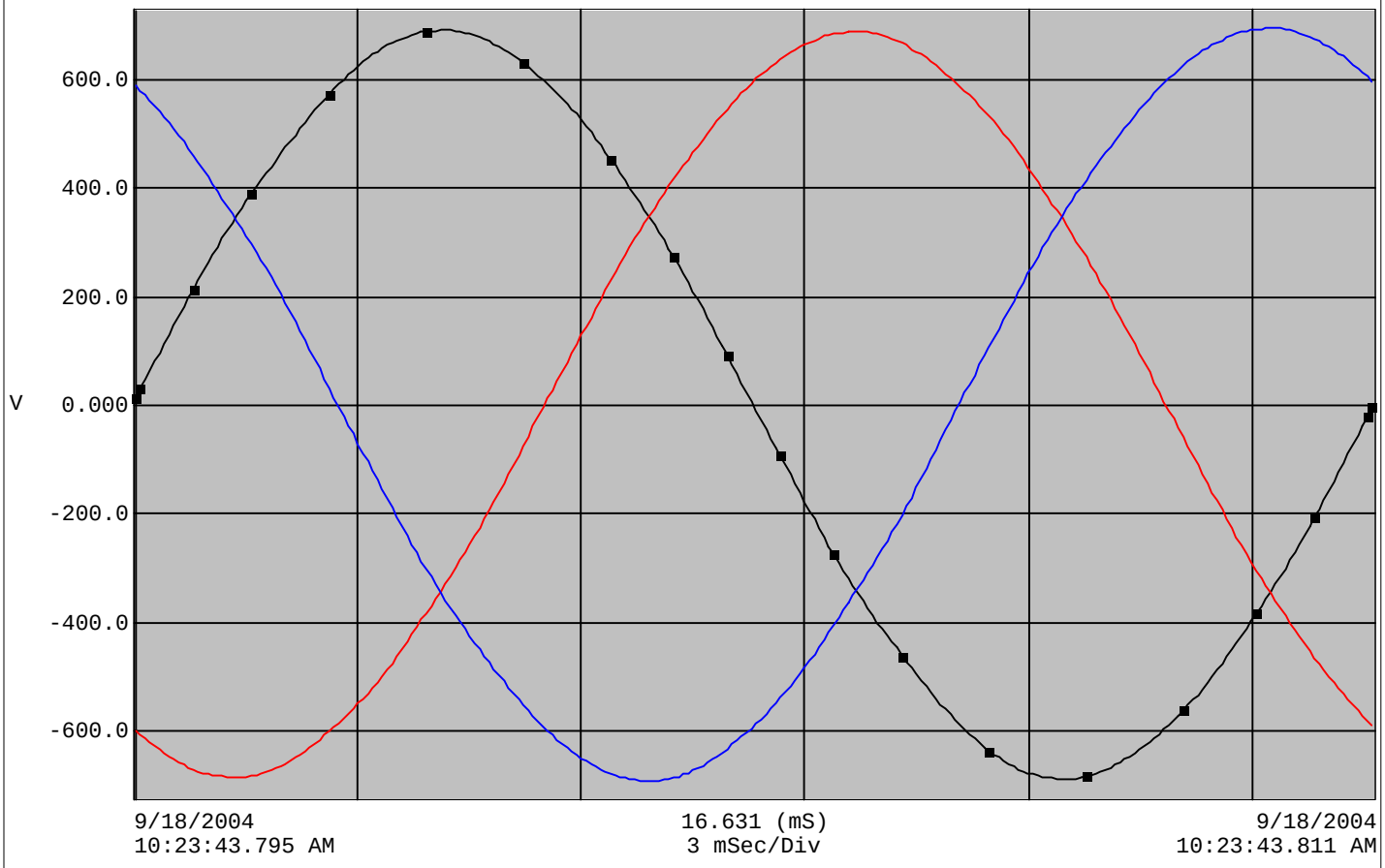


9/18/2004 - 10:23:43.015 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

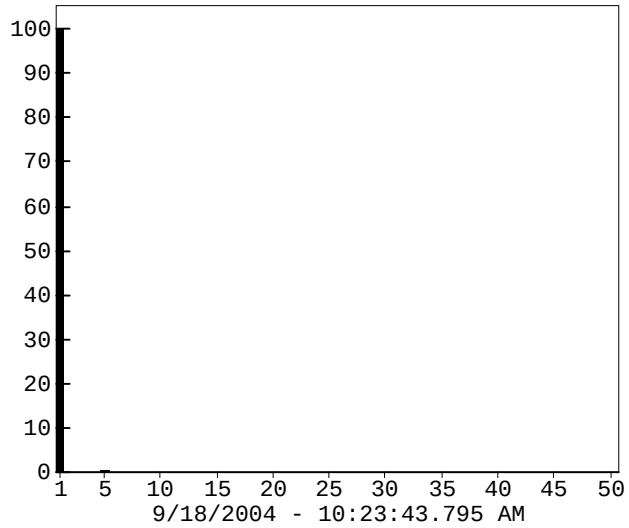
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.3	H19	0.0	H36	0.0
H03	1.7	H20	0.0	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	2.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.13 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/18/2004	10:23:43.795 AM	16.631	485.3	V
Waveform U2	9/18/2004	10:23:43.795 AM	16.631	483.8	V
Waveform U3	9/18/2004	10:23:43.795 AM	16.631	488.2	V

Waveform U1
485.25 Vrms, 0.63 %THD



9/18/2004 - 10:23:43.015 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/18/2004
Start Time: 10:23:43 AM
Duration: 0:0.000 (M:S)
W: 3.264E+3 W
VAR: 1.339E+3 W
VA: 3.528E+3 W
Power Factor: 0.925
Displacement Power Factor: 0.926
TAN: 0.409
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Commercial Port\091804 - Commercial Port PS - Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	New Commercial Port WWPS - Photo ,

Comments

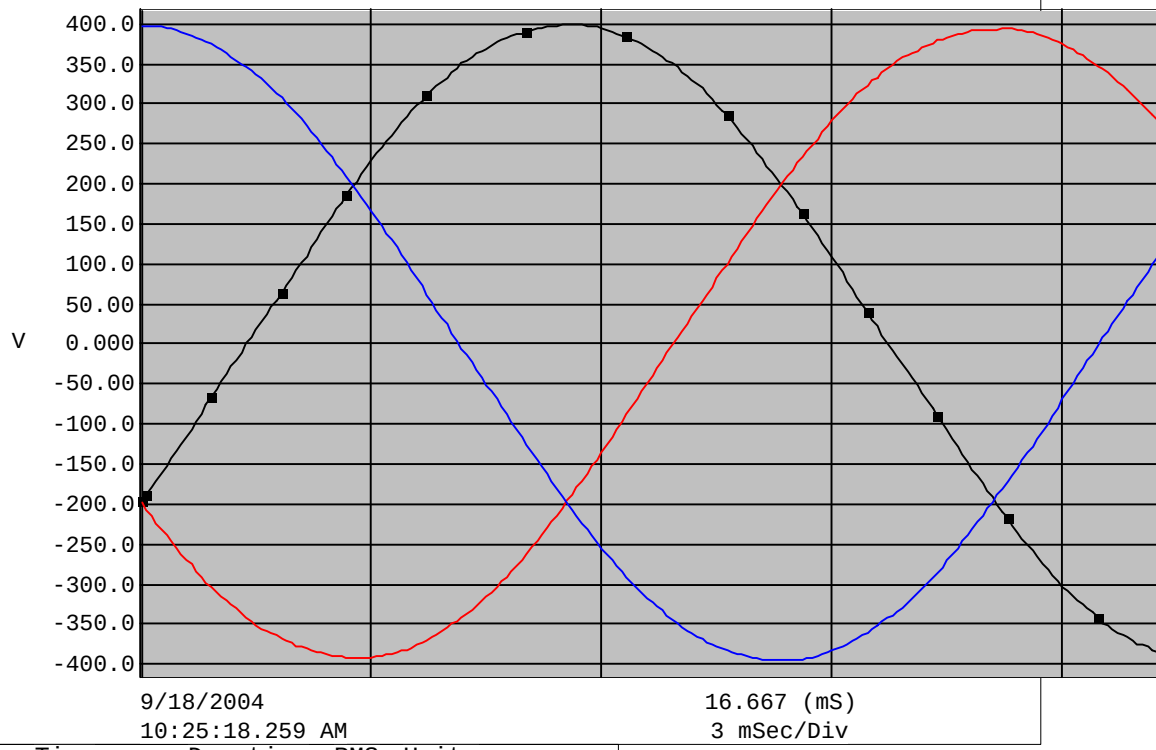
GPA Meter 01-037-469. Three Flygt 23 HP submersible pumps (17.2 KW).

Snapshot taken with no pump operating.

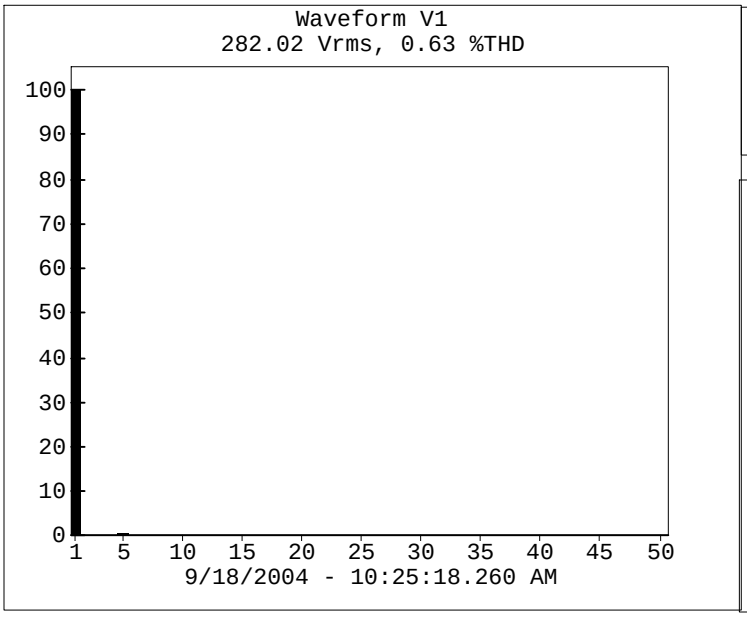
Commercial Port PS Pump 2 Photo

Recording Start Date	9/18/2004 - 10:25:18 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/18/2004	10:25:18.259 AM	16.667	282.0	V
Waveform V2	9/18/2004	10:25:18.259 AM	16.667	279.3	V
Waveform V3	9/18/2004	10:25:18.259 AM	16.667	281.2	V



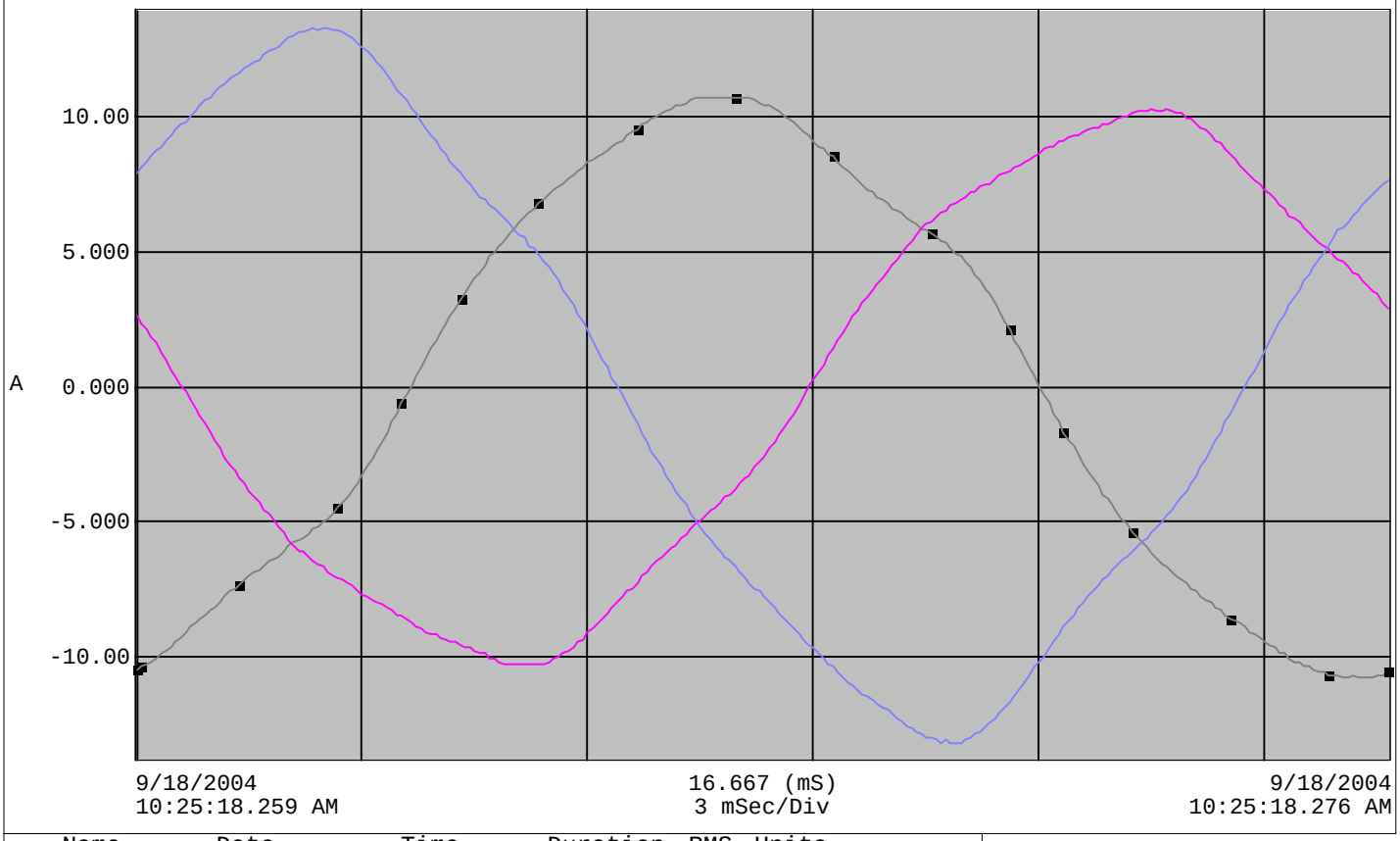
9/18/2004 - 10:25:18.000 AM

Val	
-196.9	Waveform V1
-200.0	Waveform V2
396.4	Waveform V3

Waveform V1

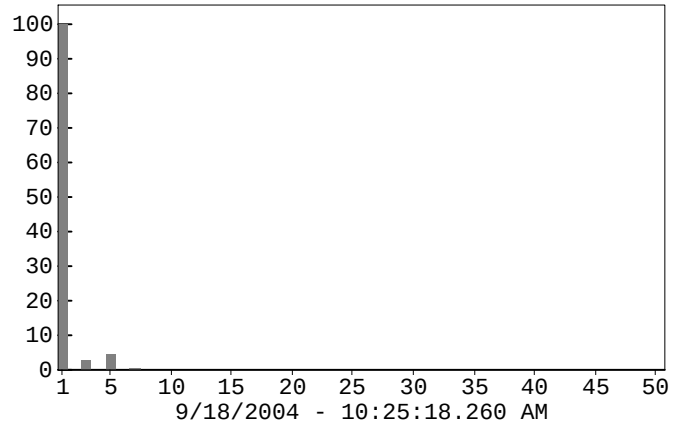
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/18/2004	10:25:18.259 AM	16.667	7.516	A
Waveform I2	9/18/2004	10:25:18.259 AM	16.667	7.080	A
Waveform I3	9/18/2004	10:25:18.259 AM	16.667	8.737	A

Waveform I1
7.52 Arms, 5.48 %THD

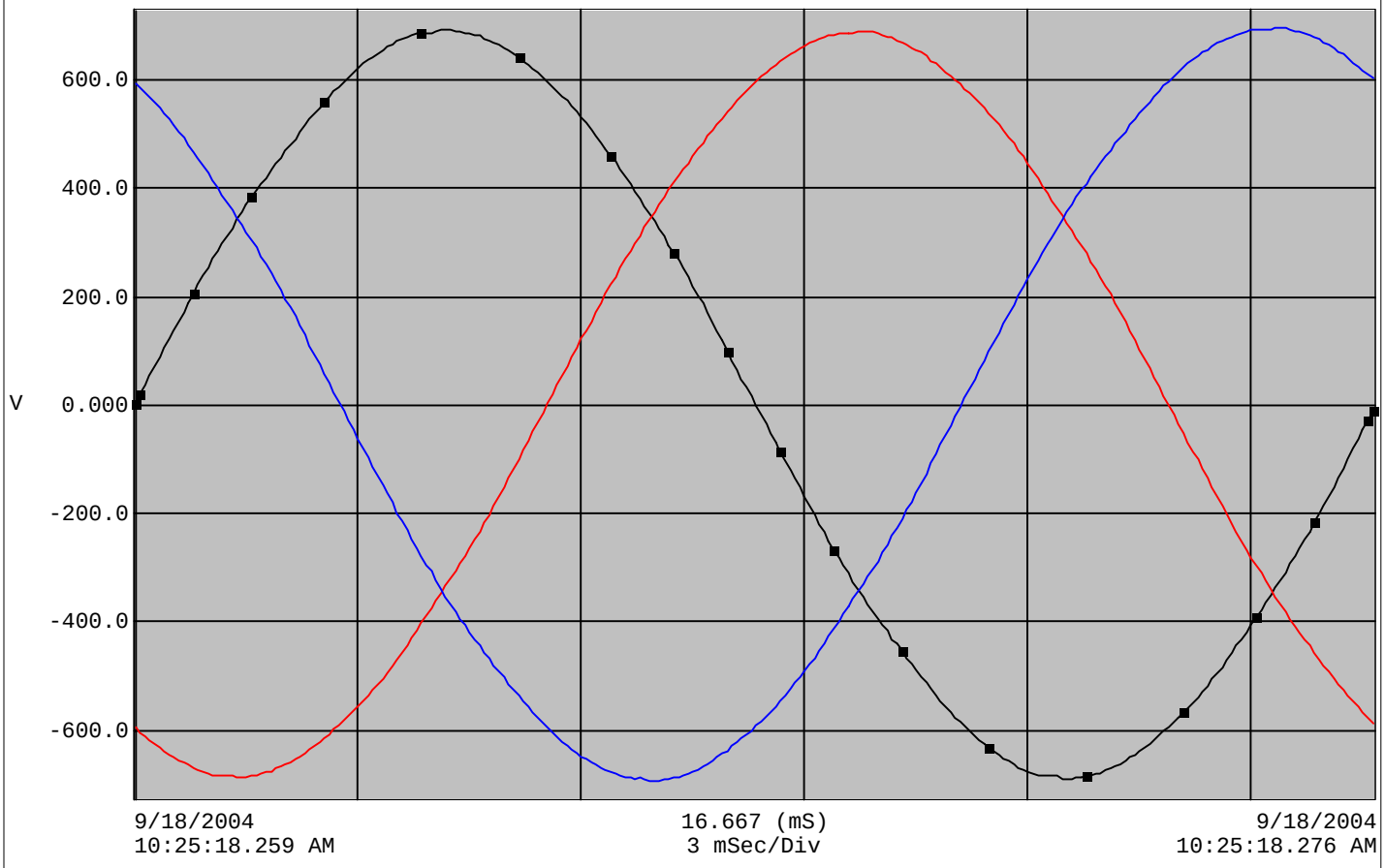


9/18/2004 - 10:25:18.000 AM
Val
-10.50 — Waveform I1
2.600 — Waveform I2
7.900 — Waveform I3

Waveform I1

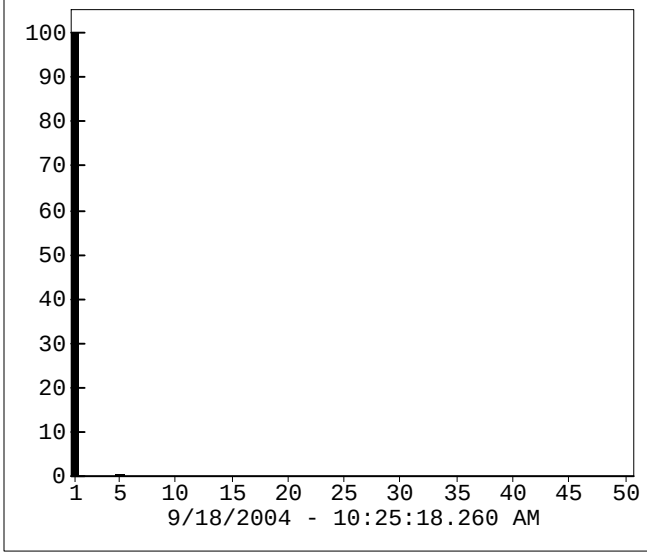
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.2	H19	0.0	H36	0.0
H03	2.8	H20	0.0	H37	0.1
H04	0.1	H21	0.1	H38	0.0
H05	4.6	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.1
H08	0.1	H25	0.1	H42	0.1
H09	0.4	H26	0.0	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.1
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.1
H16	0.0	H33	0.1	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/18/2004	10:25:18.259 AM	16.667	485.8	V
Waveform U2	9/18/2004	10:25:18.259 AM	16.667	484.5	V
Waveform U3	9/18/2004	10:25:18.259 AM	16.667	489.1	V

Waveform U1
485.76 Vrms, 0.61 %THD



9/18/2004 - 10:25:18.000 AM

Val	
3.100	Waveform U1
-596.4	Waveform U2
593.3	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/18/2004
Start Time: 10:25:18 AM
Duration: 0:0.000 (M:S)
W: 1.386E+3 W
VAR: 1.614E+3 W
VA: 2.127E+3 W
Power Factor: 0.651
Displacement Power Factor: 0.653
TAN: 1.160
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Commercial Port\091804 - Commercial Port PS - Pump 2 Photo.dvb

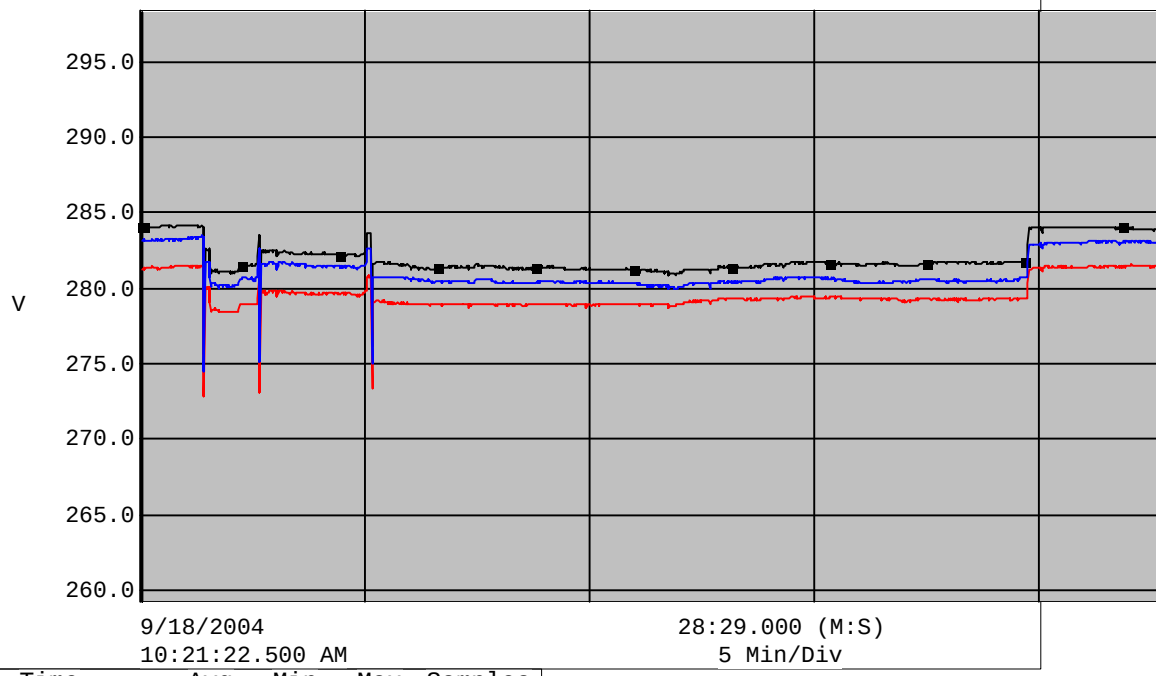
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	New Commercial Port WWPS - Pump 2 Photo ,

Comments
Pump 2 operating, 23 HP (17.2 KW), 460 volts.

Commecrial Port PS Pumps 1 and 2 Trend

Recording Start Date	9/18/2004 - 10:21:22 AM
Recording Duration	28:29 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

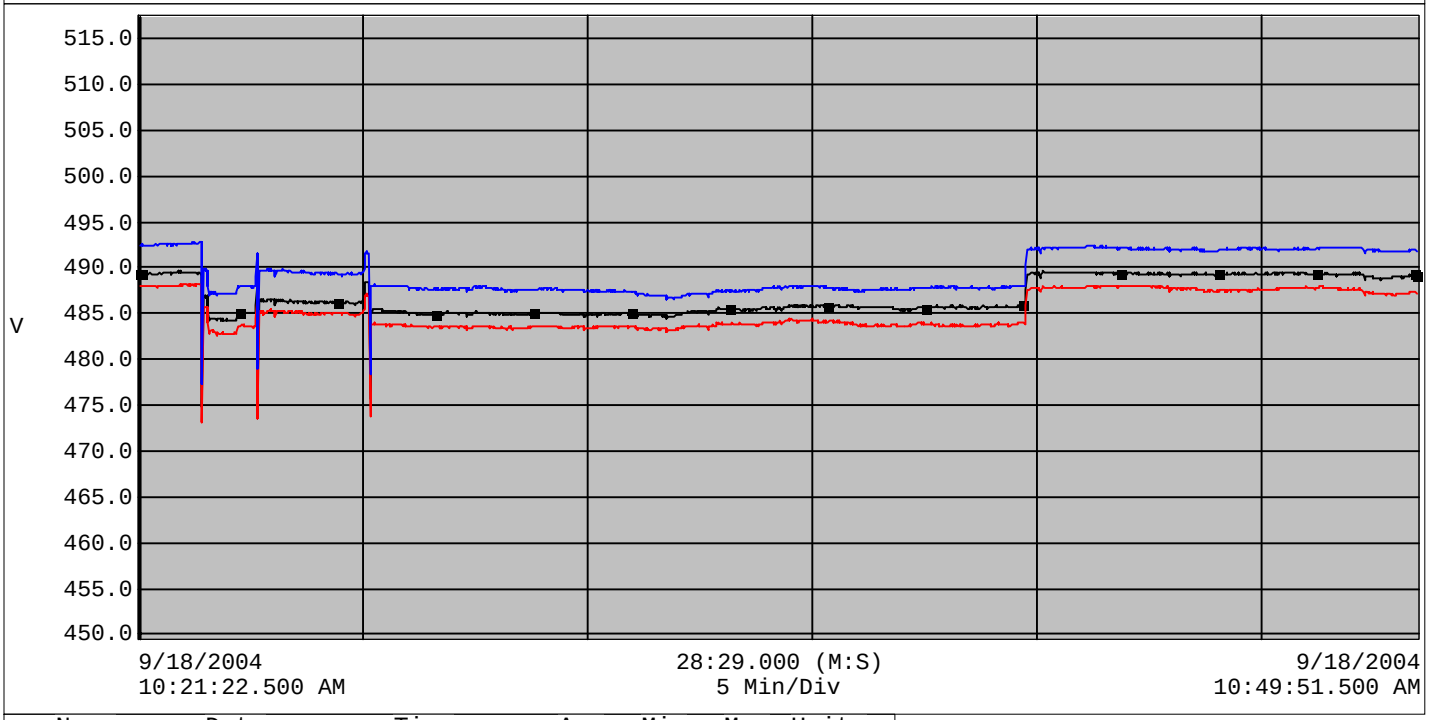
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/18/2004	10:21:22.500 AM	282.3	275.5	284.1	1710
Vrms Line2	9/18/2004	10:21:22.500 AM	279.8	272.8	281.5	1710
Vrms Line3	9/18/2004	10:21:22.500 AM	281.4	274.4	283.4	1710

9/18/2004 - 10:21:22.000 AM
Val
283.9 Vrms Line1
281.2 Vrms Line2
283.1 Vrms Line3

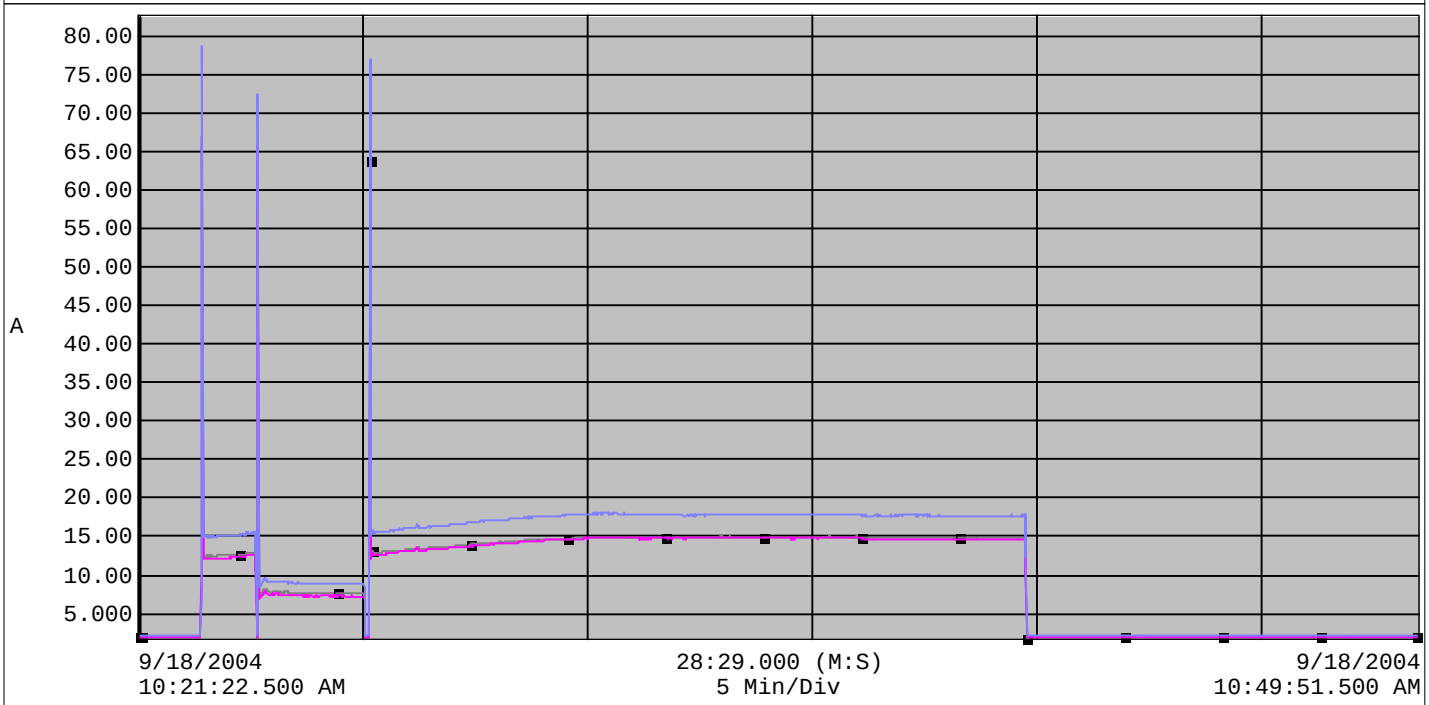
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/18/2004	10:21:22.500 AM	486.7	474.7	489.5	V
Urms Line2	9/18/2004	10:21:22.500 AM	485.1	473.0	488.2	V
Urms Line3	9/18/2004	10:21:22.500 AM	489.3	477.3	492.8	V

9/18/2004 - 10:21:22.000 AM
Val
489.1 Urms Line1
487.8 Urms Line2
492.4 Urms Line3

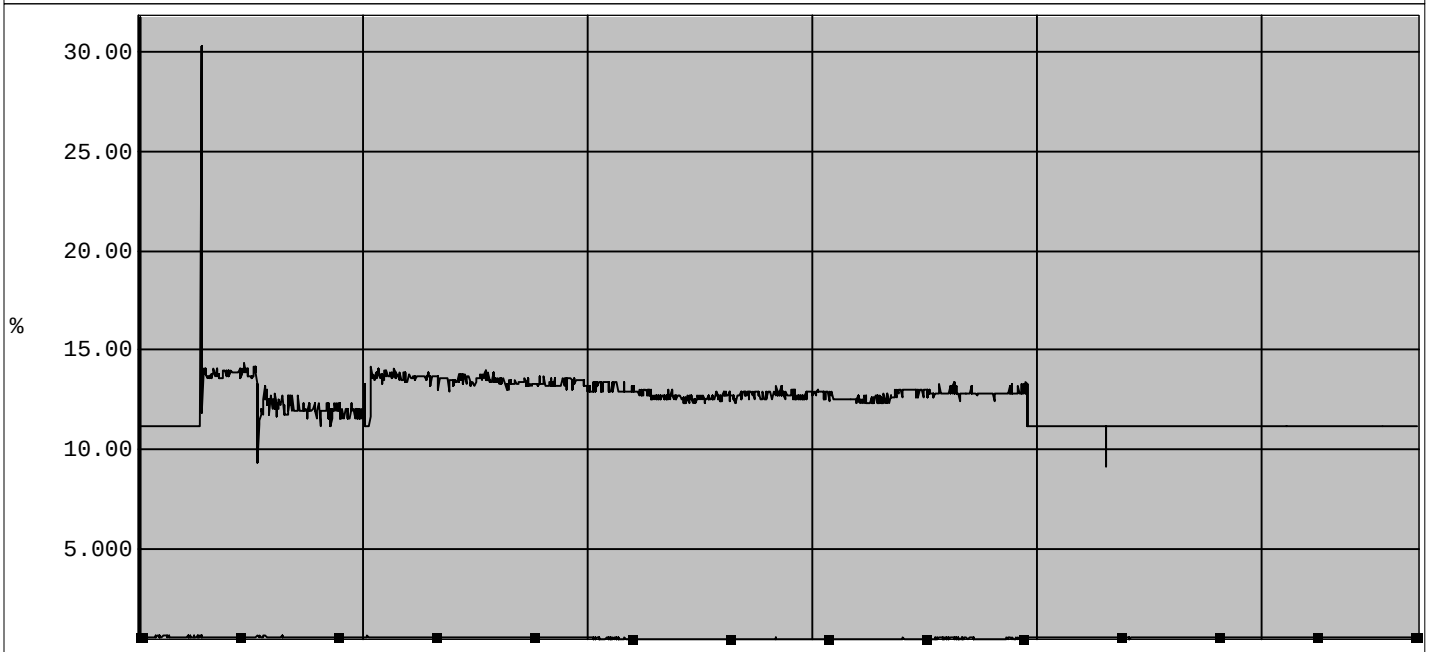
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/18/2004	10:21:22.500 AM	9.300	1.600	65.60	A
Arms Line2	9/18/2004	10:21:22.500 AM	9.195	1.700	66.80	A
Arms Line3	9/18/2004	10:21:22.500 AM	11.14	2.000	78.70	A

9/18/2004 - 10:21:22.000 AM
Val
1.700 Arms Line1
1.700 Arms Line2
2.000 Arms Line3

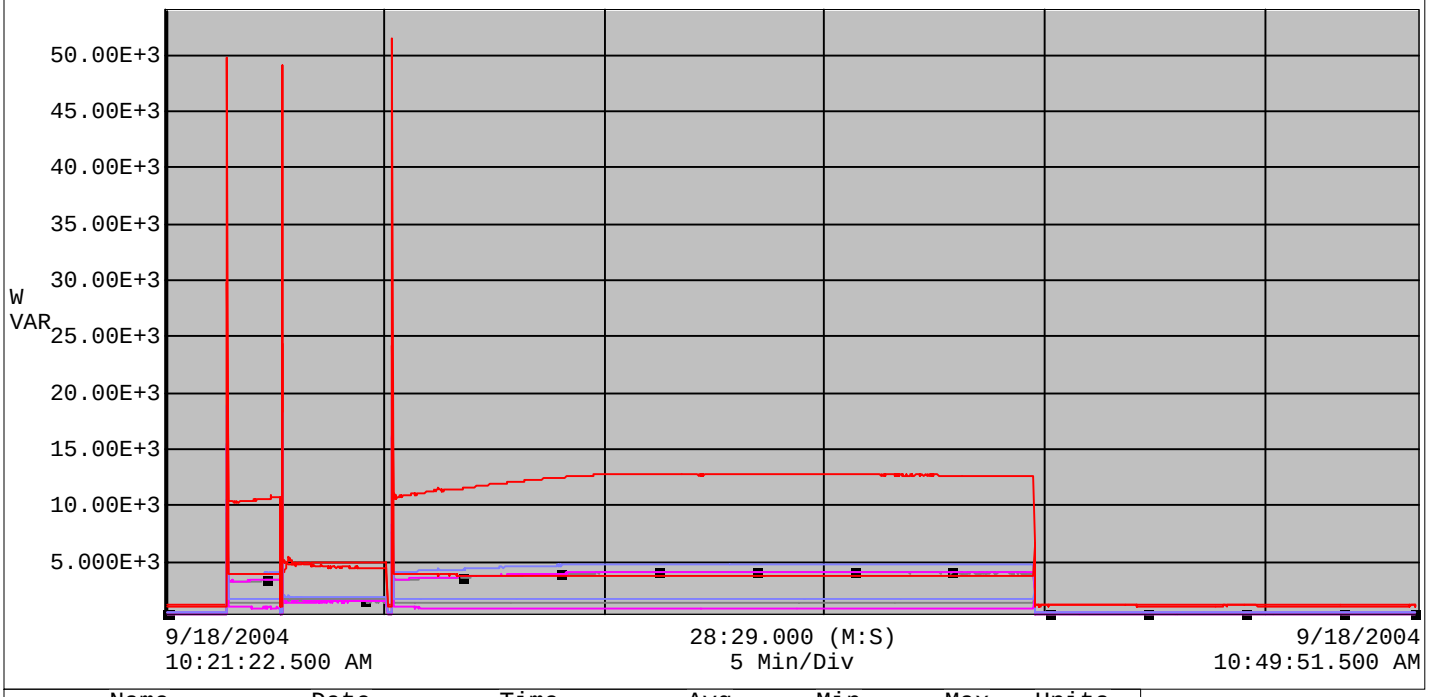
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/18/2004	10:21:22.500 AM	0.472	0.400	0.600	%
Aunb(IEEE)	9/18/2004	10:21:22.500 AM	12.26	9.100	30.30	%

9/18/2004 - 10:21:22.000 AM
Val
0.500 —— Vunb(IEEE)
11.10 —— Aunb(IEEE)

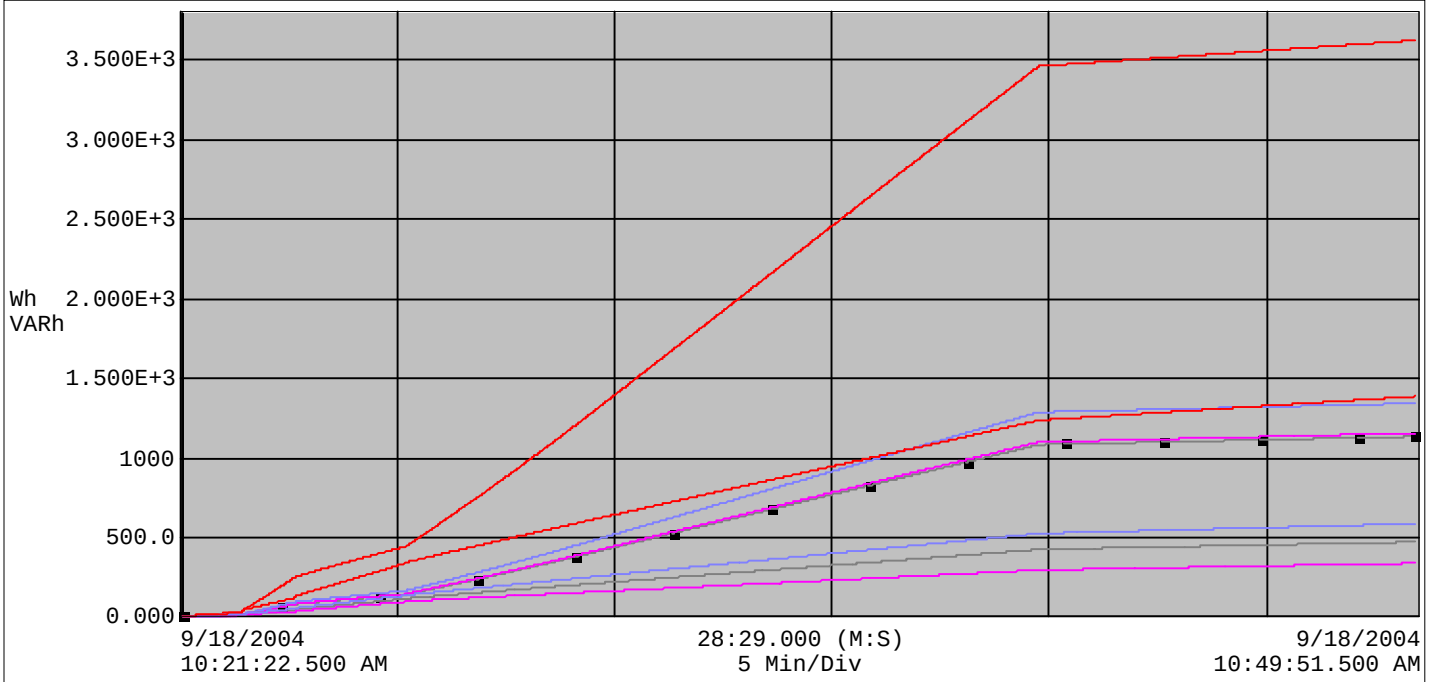
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/18/2004	10:21:22.500 AM	2.378E+3	344.0	9.322E+3	W
W Line2	9/18/2004	10:21:22.500 AM	2.424E+3	385.1	9.915E+3	W
W Line3	9/18/2004	10:21:22.500 AM	2.816E+3	379.0	10.55E+3	W
W Sum of Phases	9/18/2004	10:21:22.500 AM	7.618E+3	1.108E+3	29.78E+3	W
VAR Line1	9/18/2004	10:21:22.500 AM	983.1	301.5	15.89E+3	VAR
VAR Line2	9/18/2004	10:21:22.500 AM	702.0	285.1	16.06E+3	VAR
VAR Line3	9/18/2004	10:21:22.500 AM	1.224E+3	402.4	19.44E+3	VAR
VAR Sum of Phases	9/18/2004	10:21:22.500 AM	2.909E+3	991.2	51.39E+3	VAR

9/18/2004 - 10:21:22.000 AM
Val
351.4 — W Line1
391.7 — W Line2
382.7 — W Line3
1.126E+3 — W Sum of Phases
318.8 — VAR Line1
290.1 — VAR Line2
412.6 — VAR Line3
1.021E+3 — VAR Sum of Phases

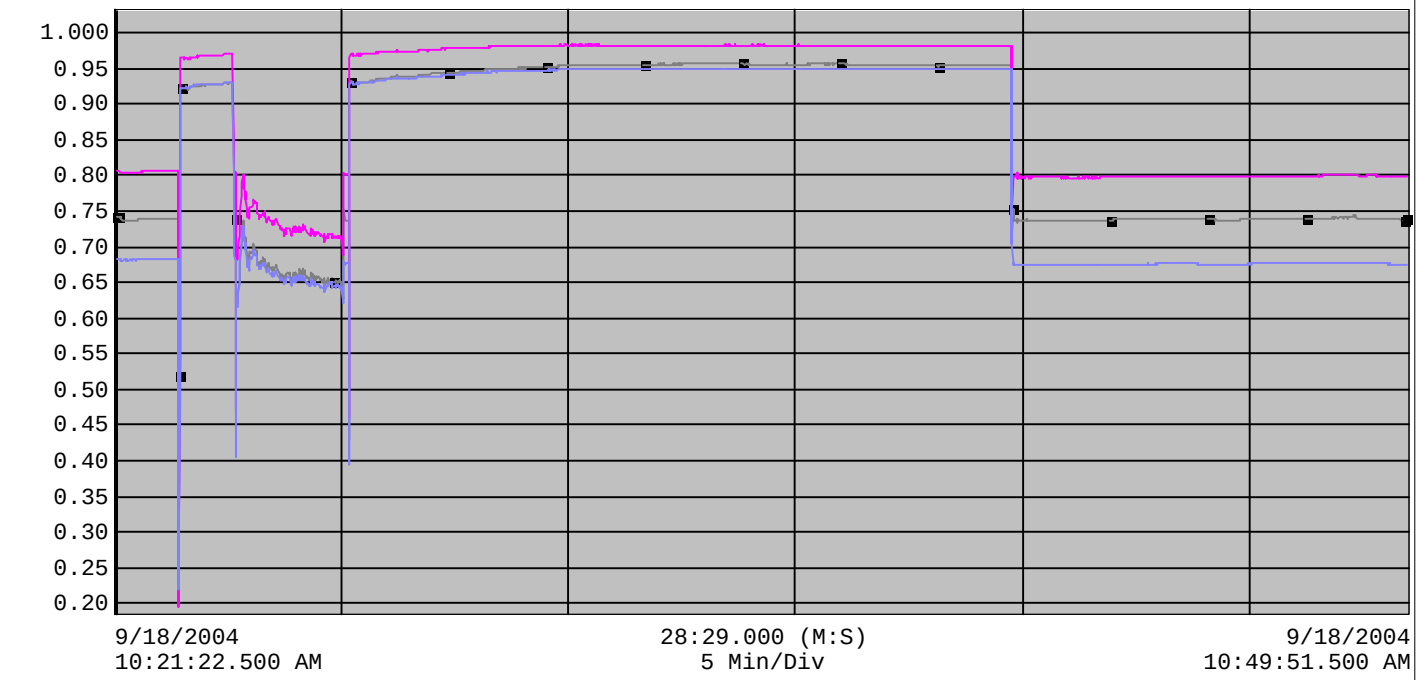
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/18/2004	10:21:22.500 AM	656.6	0.103	1.130E+3	Wh
W-hours Line2	9/18/2004	10:21:22.500 AM	668.0	0.105	1.151E+3	Wh
W-hours Line3	9/18/2004	10:21:22.500 AM	779.5	0.122	1.338E+3	Wh
W-hours Sum of Phases	9/18/2004	10:21:22.500 AM	2.104E+3	0.331	3.618E+3	Wh
VAR-hours Line1	9/18/2004	10:21:22.500 AM	280.8	85.53E-3	467.0	VARh
VAR-hours Line2	9/18/2004	10:21:22.500 AM	200.9	81.44E-3	333.5	VARh
VAR-hours Line3	9/18/2004	10:21:22.500 AM	346.2	0.106	581.4	VARh
VAR-hours Sum of Phases	9/18/2004	10:21:22.500 AM	827.9	0.295	1.382E+3	VARh

9/18/2004 - 10:21:22.000 AM
Val
0.103 — W-hours Line1
0.105 — W-hours Line2
0.122 — W-hours Line3
0.331 — W-hours Sum of Phases
85.53E-3 — VAR-hours Line1
81.44E-3 — VAR-hours Line2
0.106 — VAR-hours Line3
0.295 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/18/2004	10:21:22.500 AM	0.847	0.234	0.956	
PF Line2	9/18/2004	10:21:22.500 AM	0.891	0.193	0.982	
PF Line3	9/18/2004	10:21:22.500 AM	0.822	0.219	0.949	

9/18/2004 - 10:21:22.000 AM
Val
0.740 — PF Line1
0.804 — PF Line2
0.680 — PF Line3

Trend Summary Report

Database: X:\Commercial Port\091804 - Commercial Port PS - Pumps 1 and 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA New Commercial Port PS - Pumps 1 and 2 ,

Comments

GPA Meter 01-037-469, Demand 0.39 (Multiplier ?). Station has three 17.2 KW-23 HP, 230/460 volt, Flygt Pumps. Two pumps operational. Station located off ocean breakwater where sea water entered building during a storm condition. Damage to electronic controllers. Converted to normal float operation.

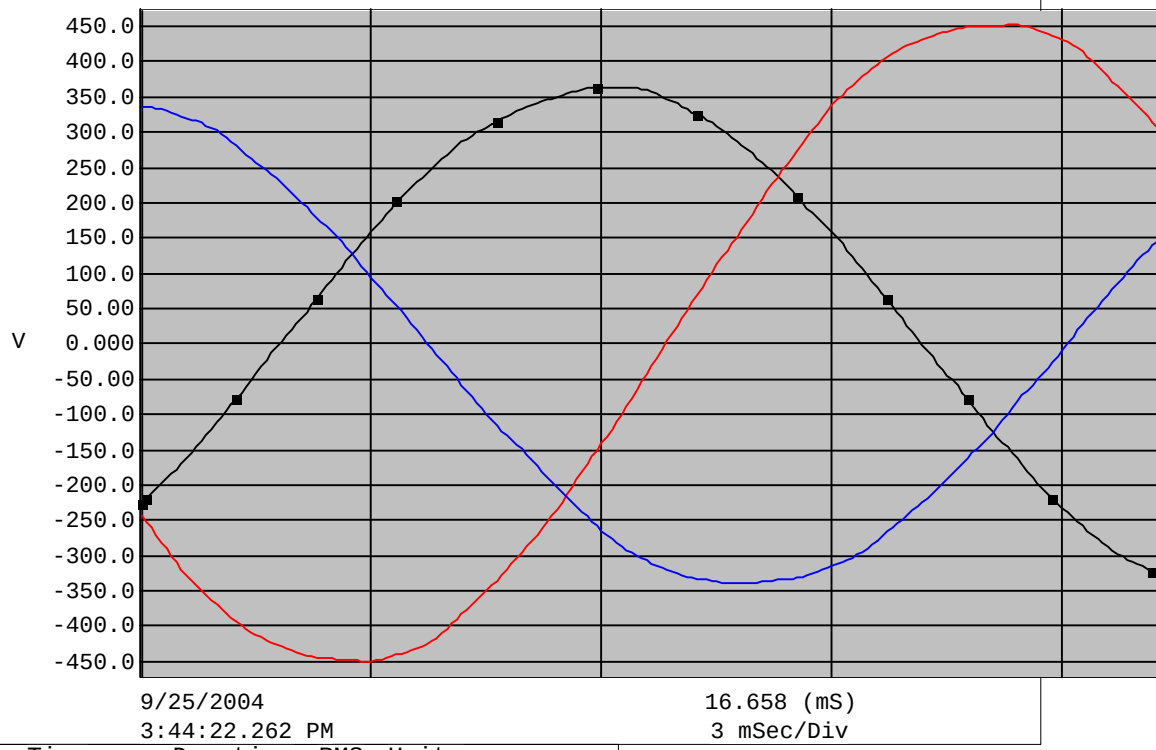
GWA Wastewater Pumping Station Assessment				
Station Name: DAIRY ROAD	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.47	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	4	0.2	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	2	0.02	
Building Service Information	**10.0%**		0.15	
Main Disconnect	5.0%	2	0.1	
Grounding	2.5%	2	0.05	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.2	
Generator Condition	10.0%	1	0.1	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	2	0.05	
Auto Transfer Switch	2.5%	2	0.05	
Primary Pump Motor Controls	**20.0%**		0.48	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	2	0.08	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.48	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	2	0.08	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.2	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	
	100%	**Assessment Value**		**2.0**

Comments:

Dairy Road WWPS Pump Photo

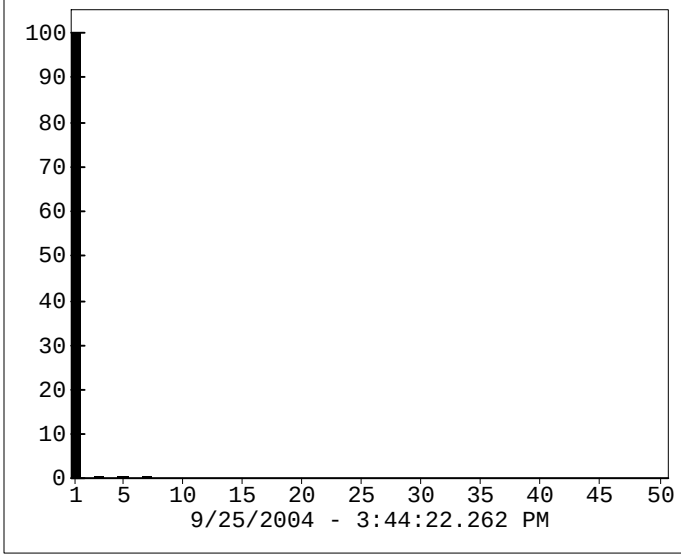
Recording Start Date	9/25/2004 - 3:44:22 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	3:44:22.262 PM	16.658	256.8	V
Waveform V2	9/25/2004	3:44:22.262 PM	16.658	322.4	V
Waveform V3	9/25/2004	3:44:22.262 PM	16.658	244.4	V

Waveform V1
256.75 Vrms, 0.95 %THD

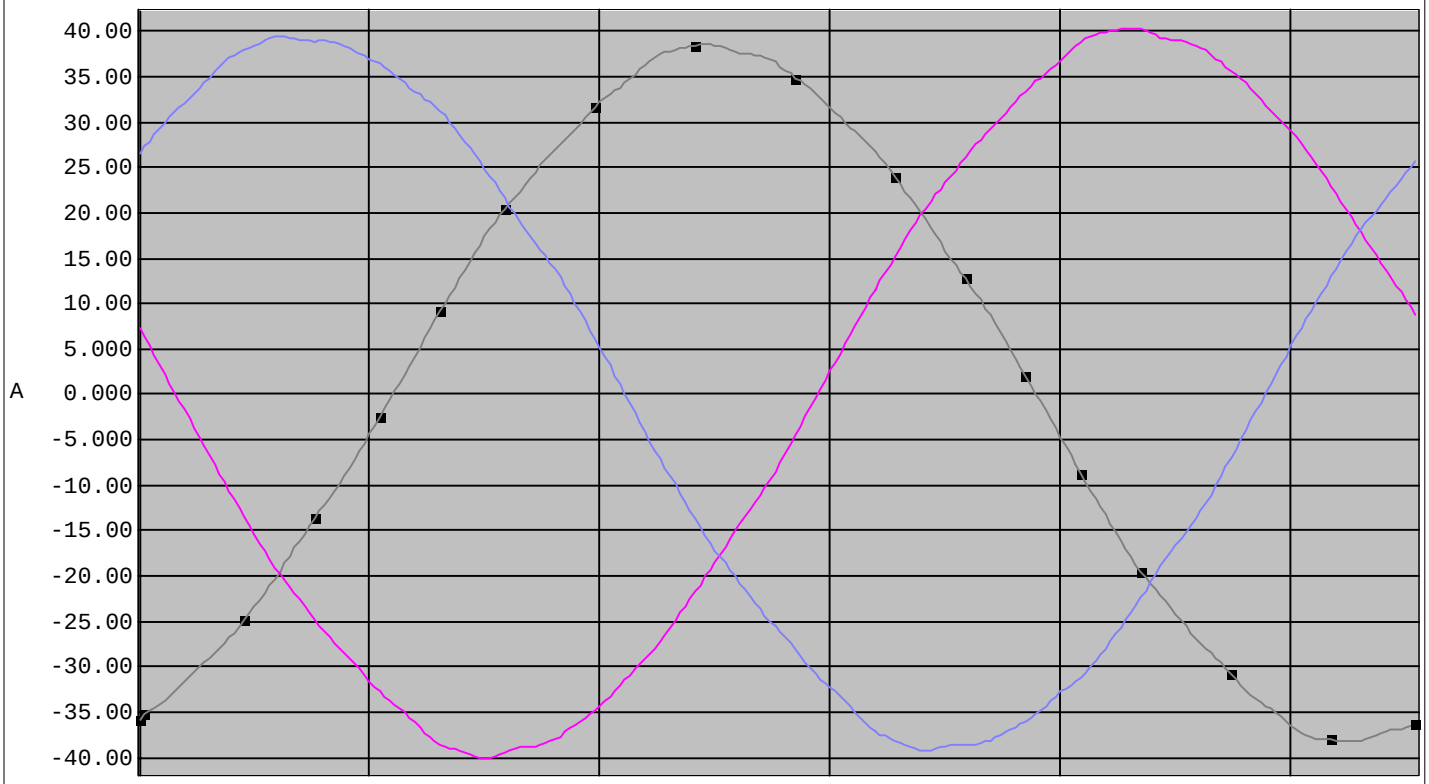


9/25/2004 - 3:44:22.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

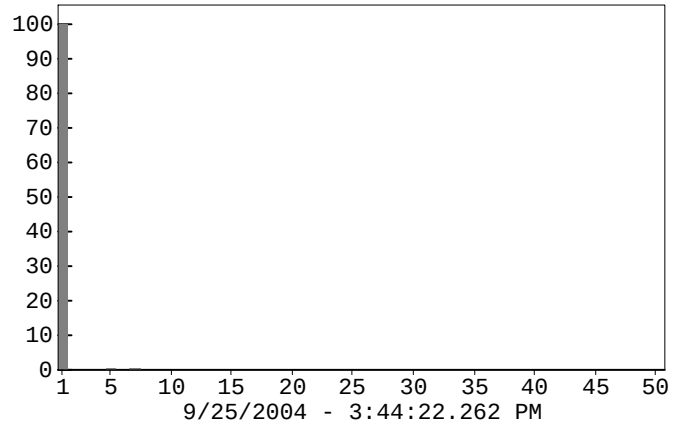
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.4	H20	0.1	H37	0.0
H04	0.0	H21	0.3	H38	0.0
H05	0.6	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	3:44:22.262 PM	16.658	26.87	A
Waveform I2	9/25/2004	3:44:22.262 PM	16.658	28.02	A
Waveform I3	9/25/2004	3:44:22.262 PM	16.658	27.67	A

Waveform I1
26.87 Arms, 1.29 %THD

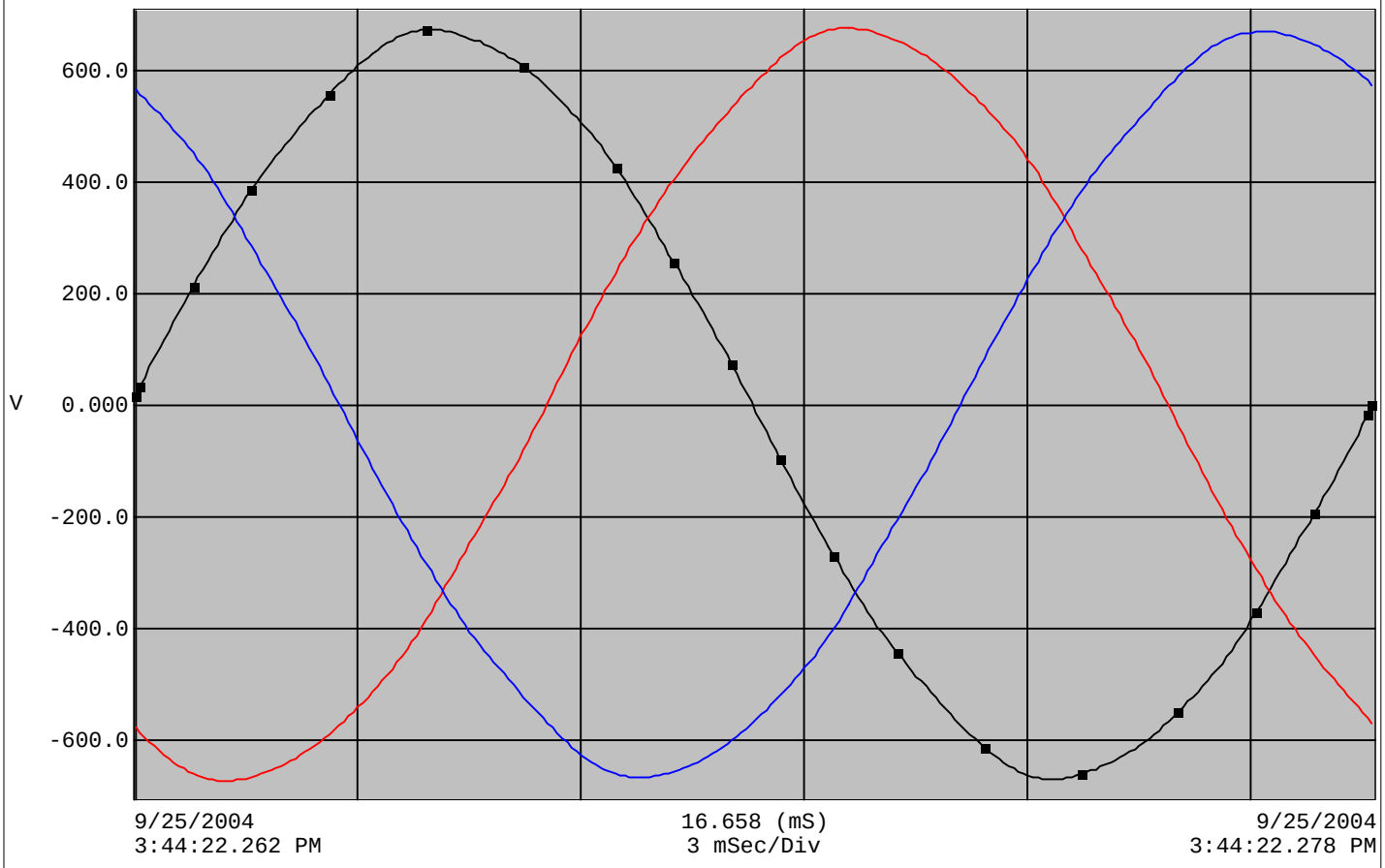


9/25/2004 - 3:44:22.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

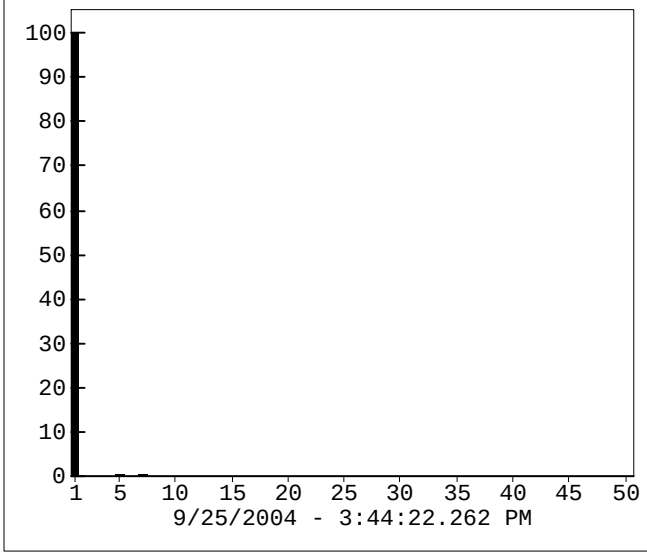
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.3	H19	0.1	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	0.8	H22	0.1	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	0.6	H24	0.1	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	3:44:22.262 PM	16.658	471.3	V
Waveform U2	9/25/2004	3:44:22.262 PM	16.658	473.8	V
Waveform U3	9/25/2004	3:44:22.262 PM	16.658	469.4	V

Waveform U1
471.29 Vrms, 0.86 %THD



9/25/2004 - 3:44:22.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.6	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 3:44:22 PM
Duration: 0:0.000 (M:S)
W: 5.884E+3 W
VAR: 3.639E+3 W
VA: 6.919E+3 W
Power Factor: 0.850
Displacement Power Factor: 0.851
TAN: 0.618
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Dairy Road WWPS\092504-Dairy Road WWPS Pump Photo.dvb

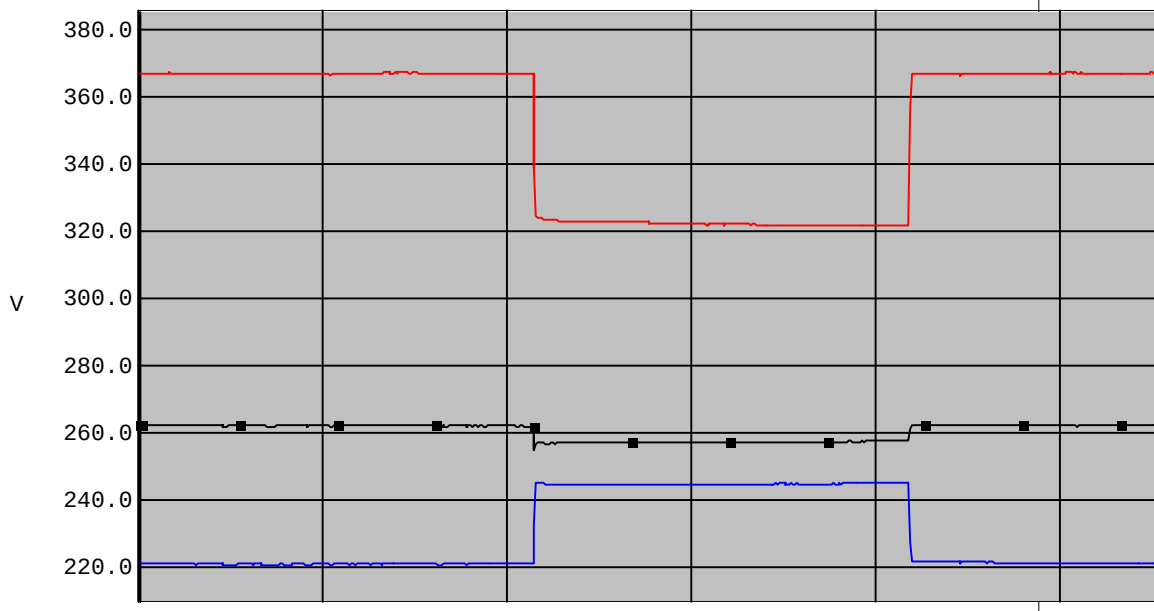
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Dairy Road WWPS - Pump Photo ,

Comments
GPA Meter 71-520-360, 16.0 KW demand. Single submersible pump station. Measured at motor starter.

Dairy Road WWPS Pump Trend

Recording Start Date	9/25/2004 - 3:39:11 PM
Recording Duration	13:53 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

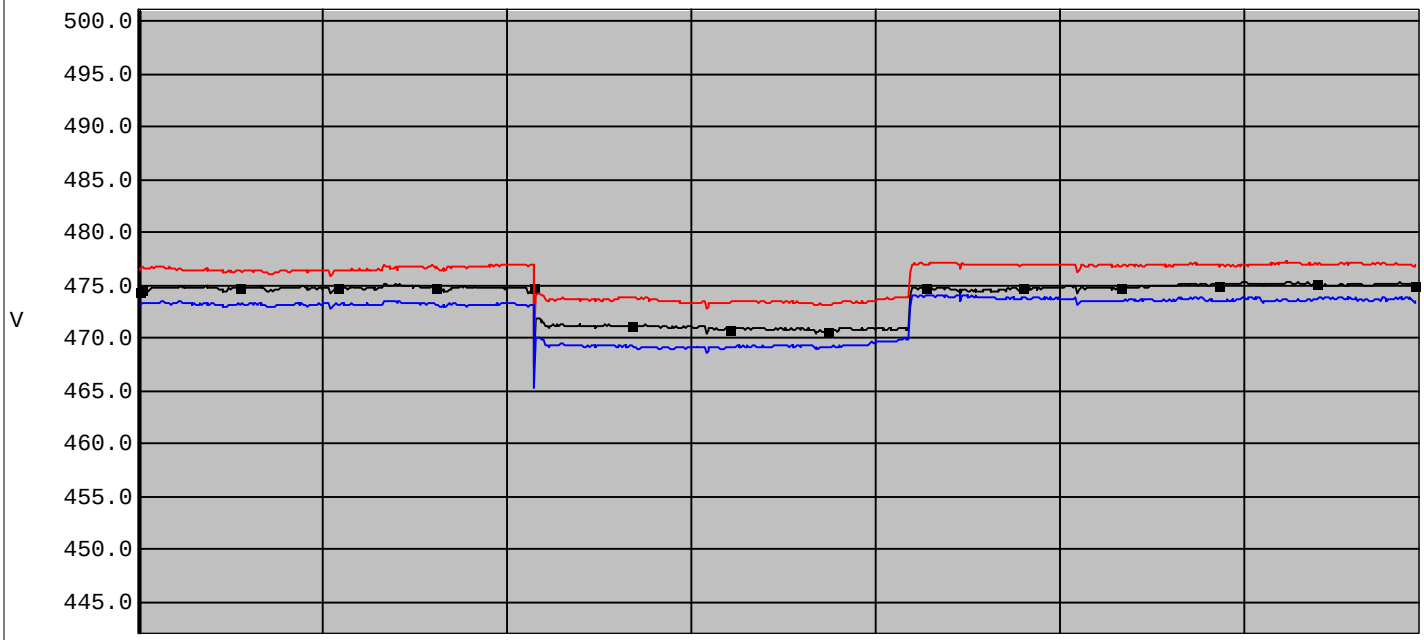
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/25/2004	3:39:11.500 PM	260.4	254.4	262.0	834
Vrms Line2	9/25/2004	3:39:11.500 PM	353.4	321.1	366.9	834
Vrms Line3	9/25/2004	3:39:11.500 PM	227.7	220.4	244.9	834

9/25/2004 - 3:39:11.000 PM
Val
261.7 Vrms Line1
366.5 Vrms Line2
220.6 Vrms Line3

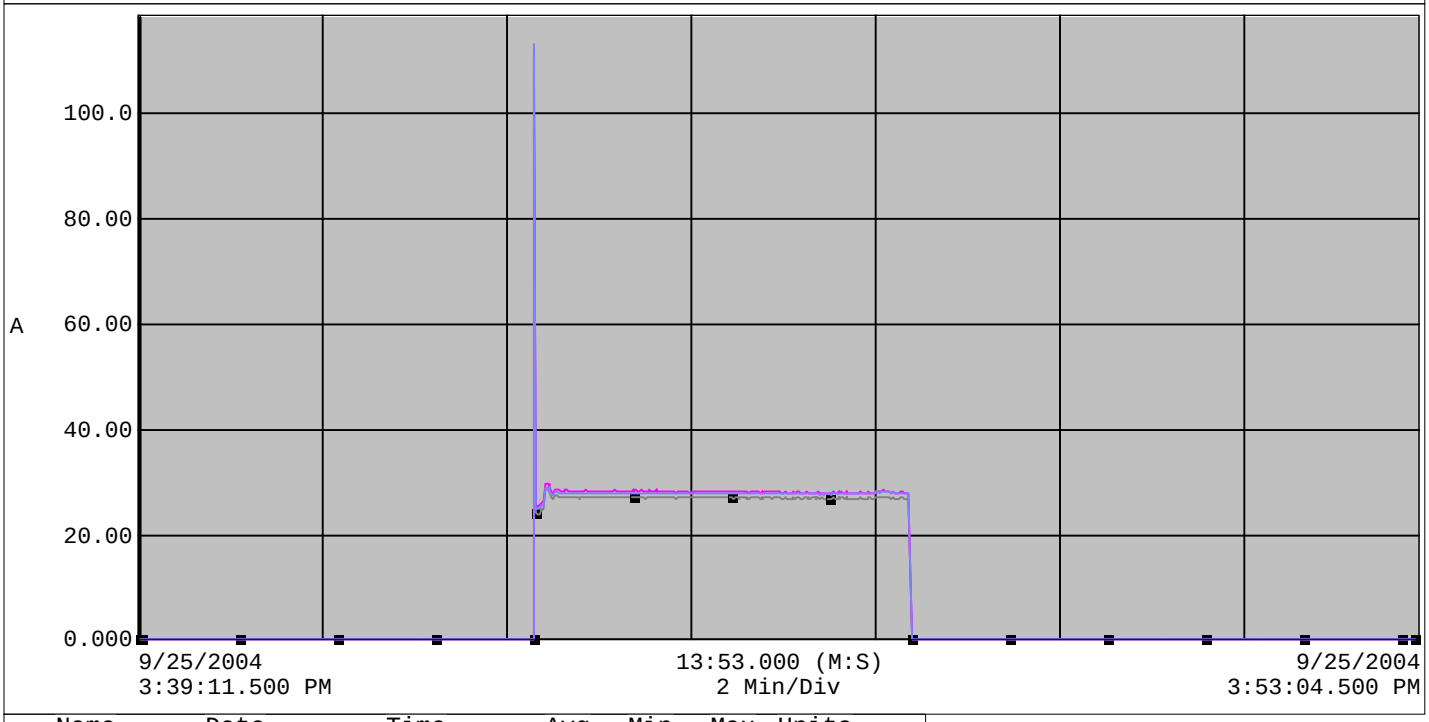
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/25/2004	3:39:11.500 PM	473.6	467.3	475.2	V
Urms Line2	9/25/2004	3:39:11.500 PM	475.7	469.5	477.2	V
Urms Line3	9/25/2004	3:39:11.500 PM	472.2	465.2	474.0	V

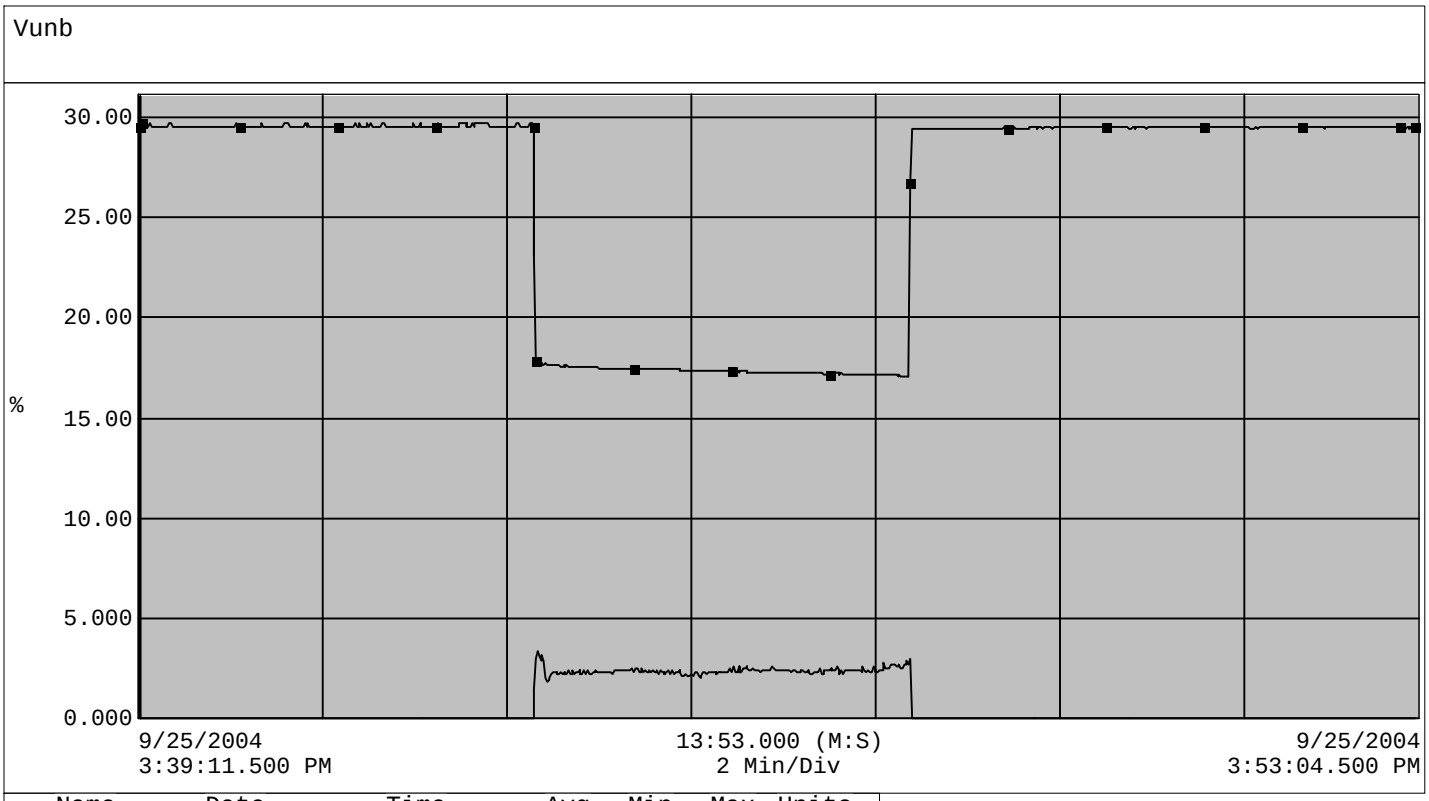
9/25/2004 - 3:39:11.000 PM
Val
474.3 Urms Line1
476.4 Urms Line2
473.1 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/25/2004	3:39:11.500 PM	7.985	0.000	110.7	A
Arms Line2	9/25/2004	3:39:11.500 PM	8.312	0.000	109.8	A
Arms Line3	9/25/2004	3:39:11.500 PM	8.231	0.000	112.6	A

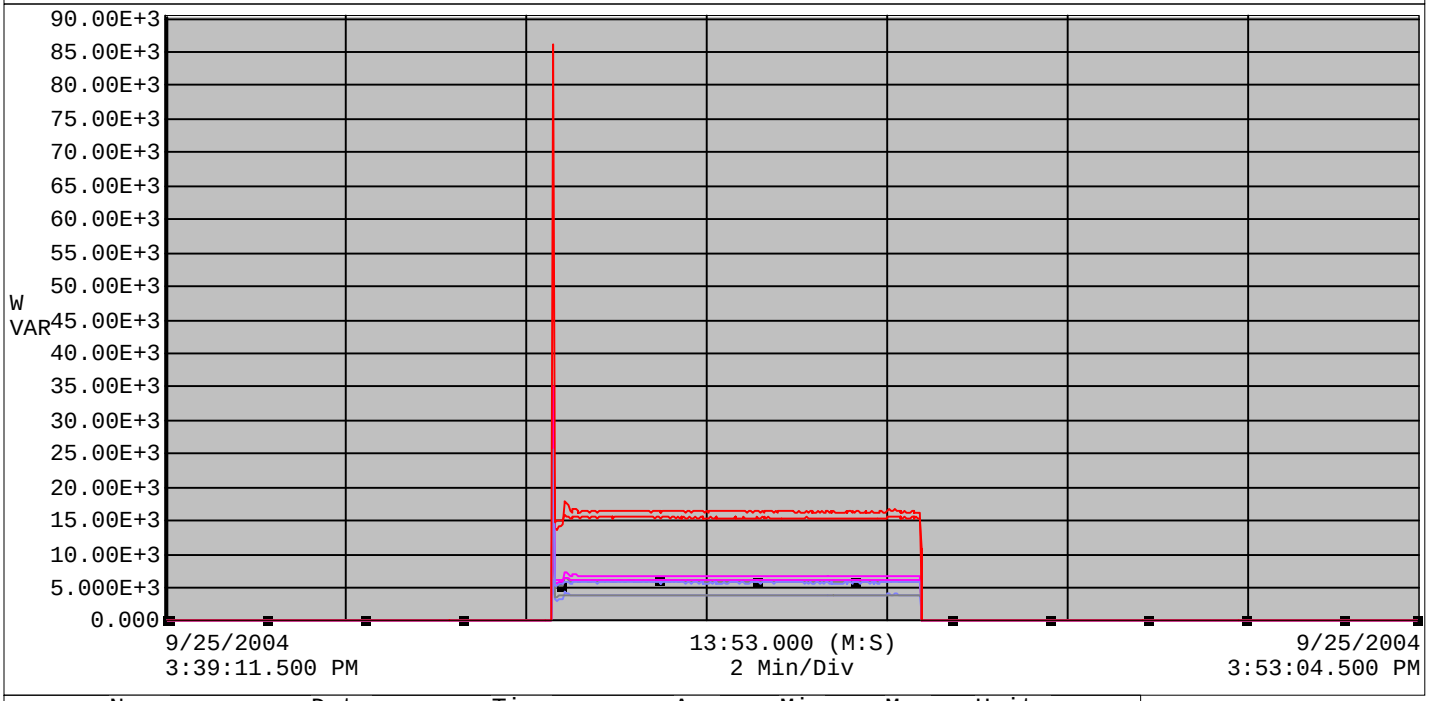
9/25/2004 - 3:39:11.000 PM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/25/2004	3:39:11.500 PM	25.91	17.00	29.60	%
Aunb(IEEE)	9/25/2004	3:39:11.500 PM	0.698	0.000	3.300	%

9/25/2004 - 3:39:11.000 PM
Val
29.50 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

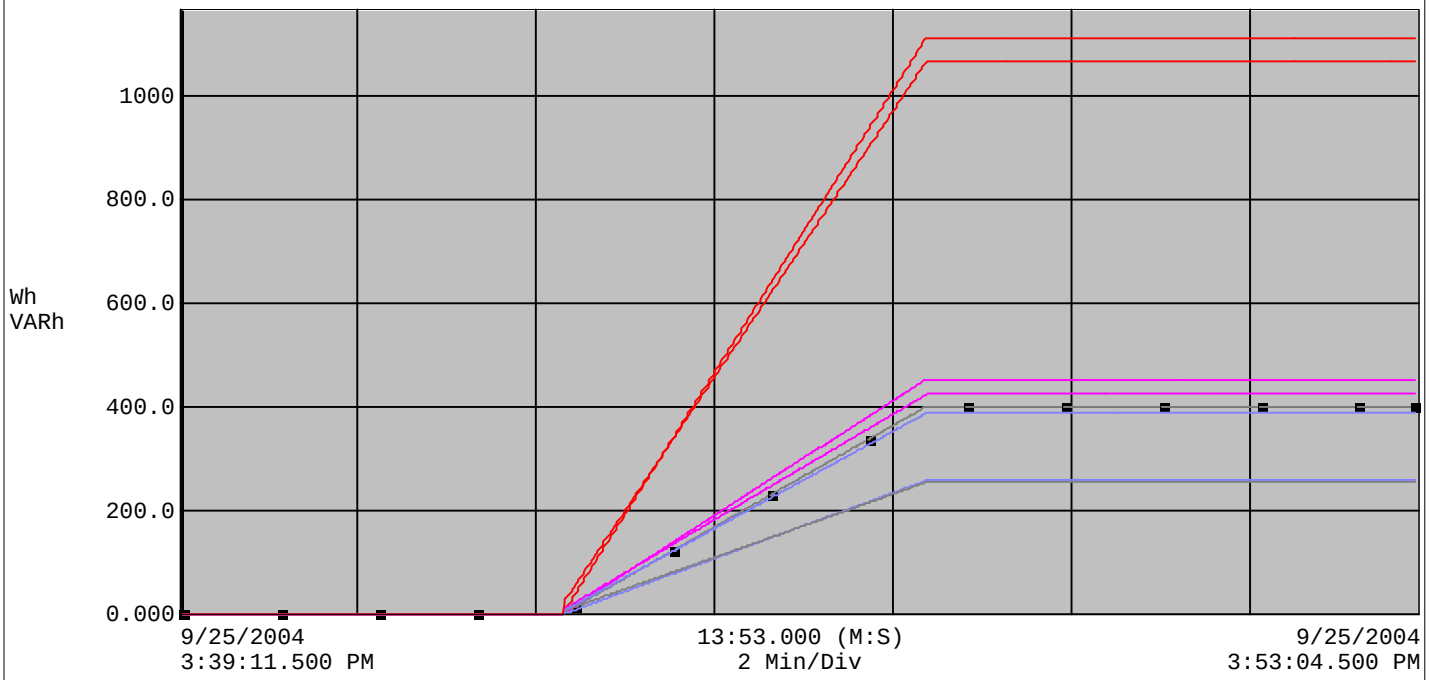
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/25/2004	3:39:11.500 PM	1.723E+3	0.000	12.22E+3	W
W Line2	9/25/2004	3:39:11.500 PM	1.950E+3	0.000	12.18E+3	W
W Line3	9/25/2004	3:39:11.500 PM	1.111E+3	0.000	5.943E+3	W
W Sum of Phases	9/25/2004	3:39:11.500 PM	4.785E+3	0.000	30.34E+3	W
VAR Line1	9/25/2004	3:39:11.500 PM	1.100E+3	0.000	25.38E+3	VAR
VAR Line2	9/25/2004	3:39:11.500 PM	1.826E+3	0.000	35.11E+3	VAR
VAR Line3	9/25/2004	3:39:11.500 PM	1.672E+3	0.000	25.50E+3	VAR
VAR Sum of Phases	9/25/2004	3:39:11.500 PM	4.598E+3	0.000	86.00E+3	VAR

9/25/2004 - 3:39:11.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

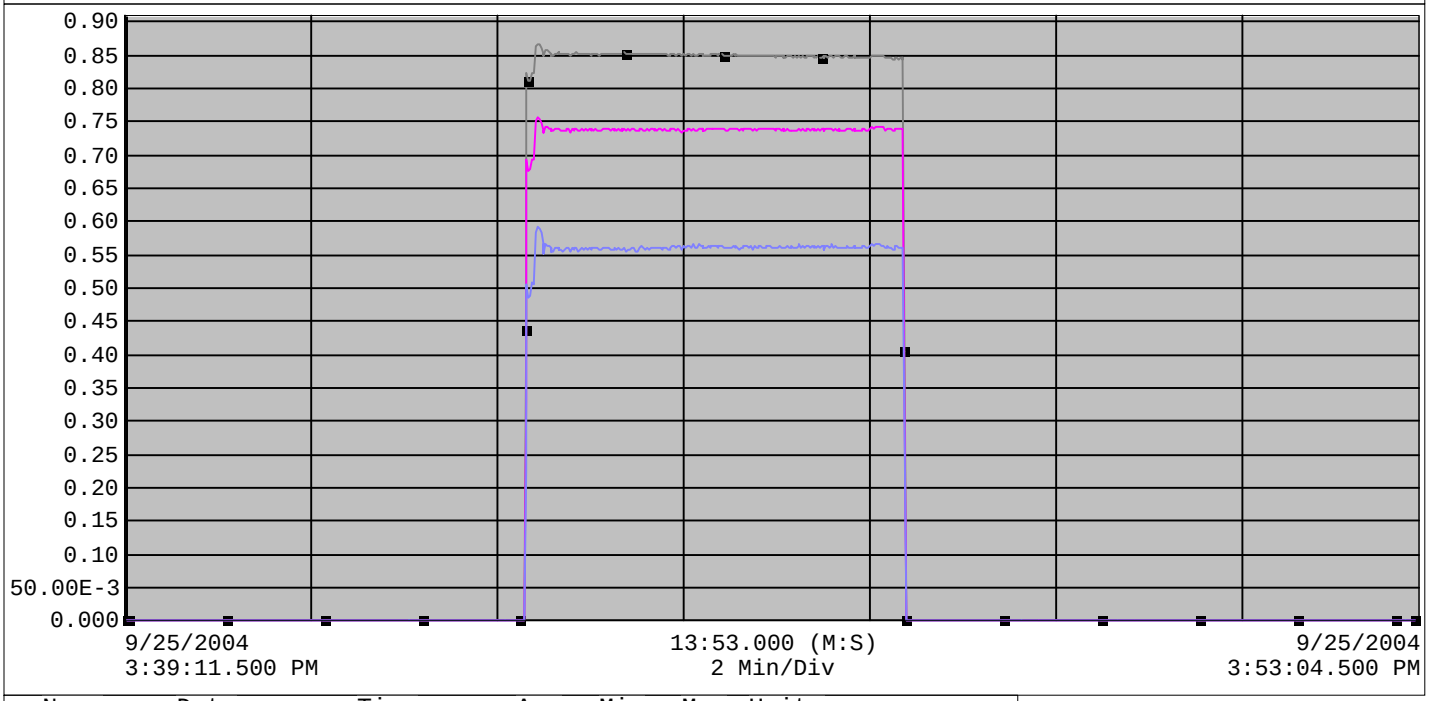
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/25/2004	3:39:11.500 PM	217.6	0.000	399.3	Wh
W-hours Line2	9/25/2004	3:39:11.500 PM	246.1	0.000	451.8	Wh
W-hours Line3	9/25/2004	3:39:11.500 PM	140.0	0.000	257.5	Wh
W-hours Sum of Phases	9/25/2004	3:39:11.500 PM	603.7	0.000	1.109E+3	Wh
VAR-hours Line1	9/25/2004	3:39:11.500 PM	139.4	0.000	254.8	VARh
VAR-hours Line2	9/25/2004	3:39:11.500 PM	231.5	0.000	423.1	VARh
VAR-hours Line3	9/25/2004	3:39:11.500 PM	211.4	0.000	387.3	VARh
VAR-hours Sum of Phases	9/25/2004	3:39:11.500 PM	582.3	0.000	1.065E+3	VARh

9/25/2004 - 3:39:11.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/25/2004	3:39:11.500 PM	0.249	0.000	0.865	
PF Line2	9/25/2004	3:39:11.500 PM	0.216	0.000	0.754	
PF Line3	9/25/2004	3:39:11.500 PM	0.164	0.000	0.592	

9/25/2004 - 3:39:11.000 PM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: X:\Dairy Road WWPS\092504-Dairy Road WWPS Pump.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Dairy Road WWPS - Pump Trend ,

Comments
GPA Meter 71-520-360, 16.0 KW Demand.

Single submersible pump in wet well.

GWA Wastewater Pumping Station Assessment				
Station Name: FEMA 96	**Weight**	**Condition**	**Weighted**	**Notes**
Date: NI		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.57	
Transformer Pole Condition and Grounding	2.0%	4	0.08	
Transformer Connection Type	2.0%	3	0.06	
Transformer Wiring Method	5.0%	4	0.2	
Lightning Arrester Condition	5.0%	4	0.2	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.15	
Generator Condition	10.0%	1	0.1	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	1	0.025	
Auto Transfer Switch	2.5%	1	0.025	
Primary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.17	
Level	5.0%	2	0.1	
Alarms	3.0%	1	0.03	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.03	
Lighting and Power Devices	1.5%	1	0.015	
Sump Pump Controls	1.5%	1	0.015	
	100%	**Assessment Value**		**2.3**

Comments:

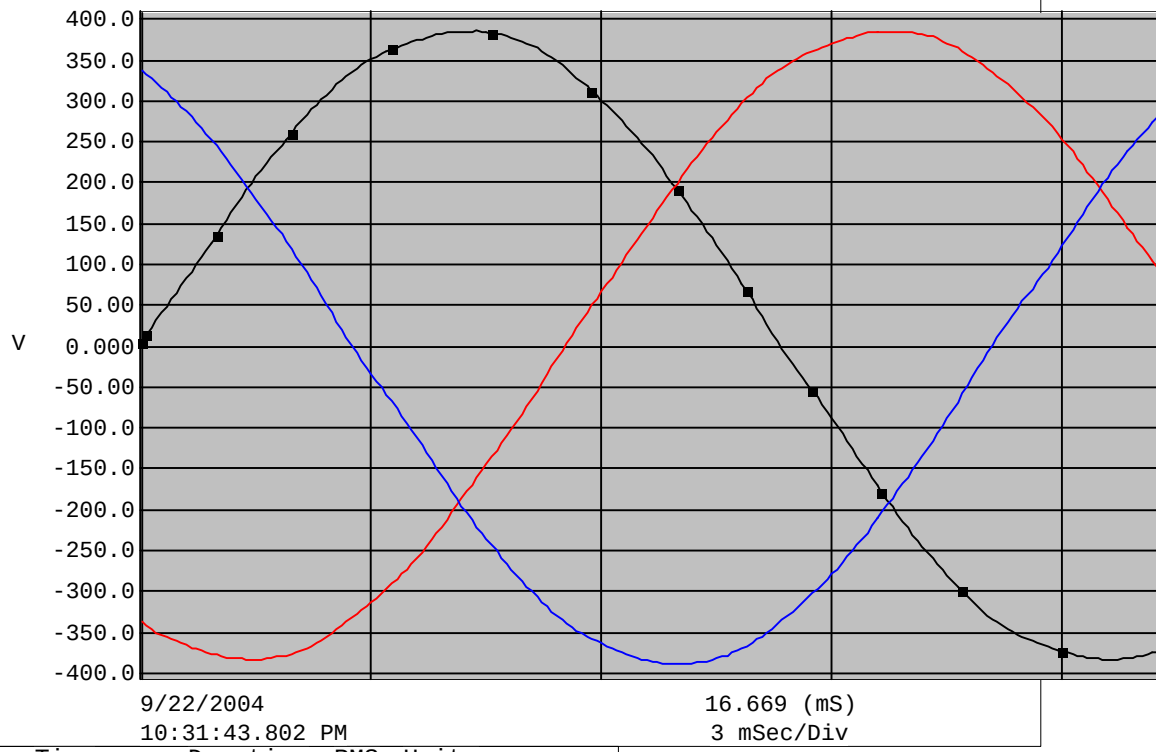
GWA Wastewater Pumping Station Assessment				
Station Name: FUJITA	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/22/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.57	
Transformer Pole Condition and Grounding	2.0%	4	0.08	
Transformer Connection Type	2.0%	3	0.06	
Transformer Wiring Method	5.0%	4	0.2	
Lightning Arrester Condition	5.0%	4	0.2	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.175	
Main Disconnect	5.0%	2	0.1	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.35	
Generator Condition	10.0%	2	0.2	
Generator Battery	5.0%	2	0.1	
Diesel Fuel Line Condition	2.5%	2	0.05	
Auto Transfer Switch	2.5%		0	NO INFO
Primary Pump Motor Controls	**20.0%**		0.52	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.52	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.2	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.09	
Lighting and Power Devices	1.5%	3	0.045	
Sump Pump Controls	1.5%	3	0.045	
	100%	**Assessment Value**		**2.4**

Comments:

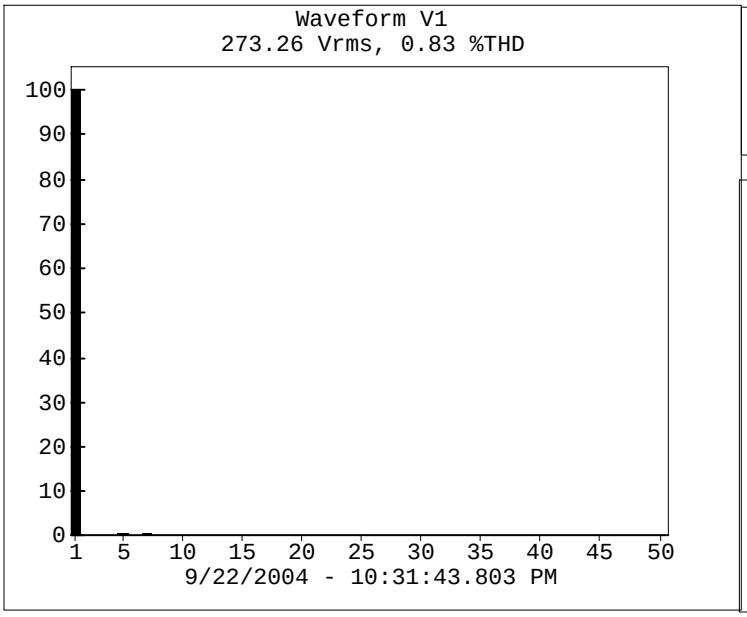
Fujita Pump 1 Photo

Recording Start Date	9/22/2004 - 10:31:43 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/22/2004	10:31:43.802 PM	16.669	273.3	V
Waveform V2	9/22/2004	10:31:43.802 PM	16.669	272.7	V
Waveform V3	9/22/2004	10:31:43.802 PM	16.669	276.1	V



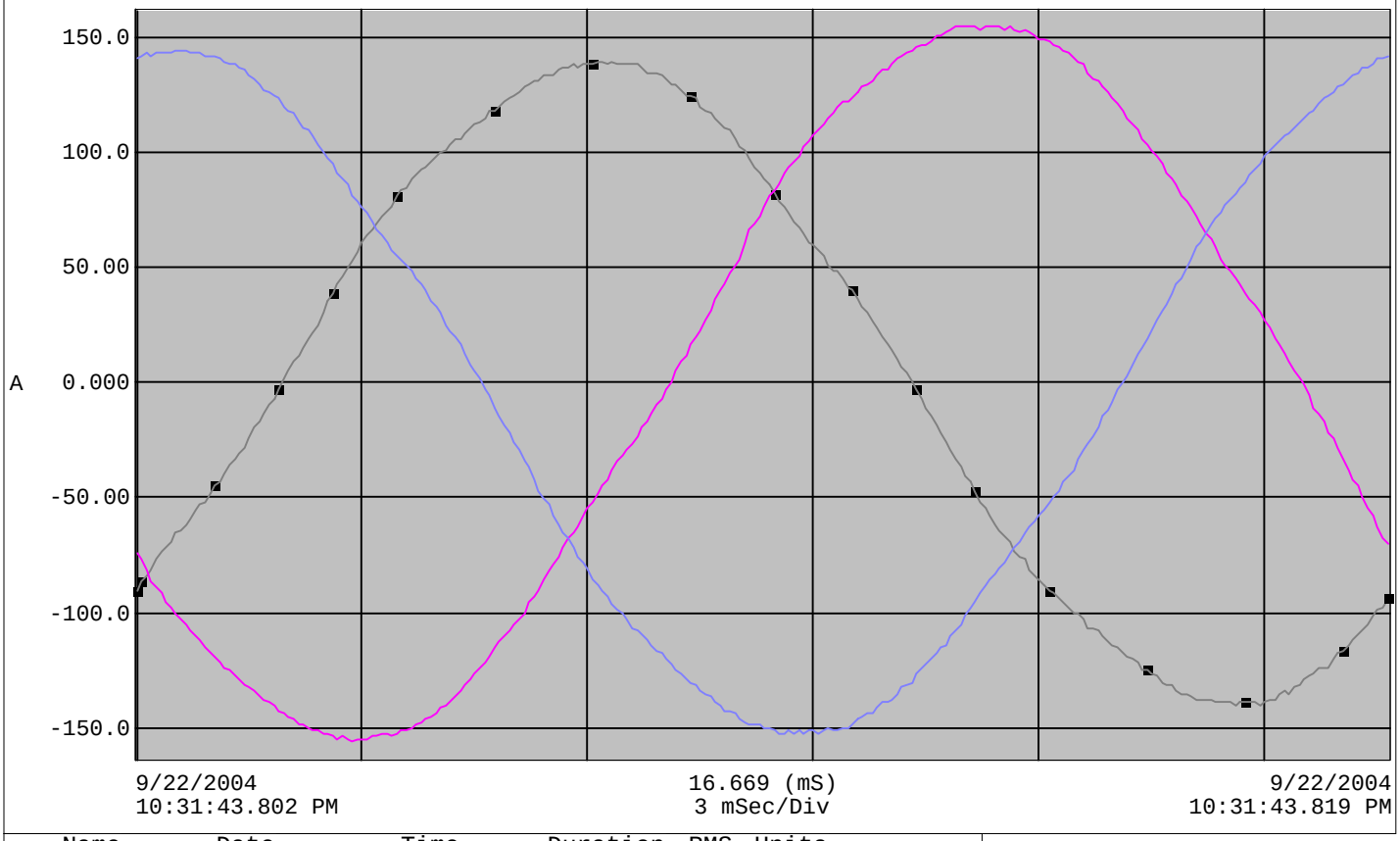
9/22/2004 - 10:31:43.000 PM

Val	
3.300	Waveform V1
-339.2	Waveform V2
336.0	Waveform V3

Waveform V1

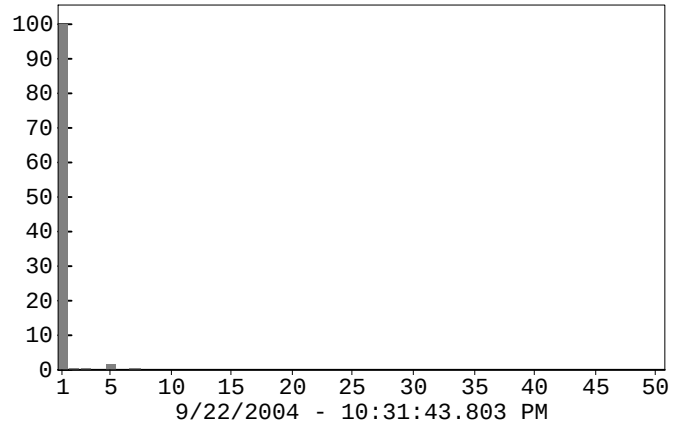
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.1
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/22/2004	10:31:43.802 PM	16.669	98.09	A
Waveform I2	9/22/2004	10:31:43.802 PM	16.669	109.7	A
Waveform I3	9/22/2004	10:31:43.802 PM	16.669	104.8	A

Waveform I1
98.09 Arms, 2.50 %THD

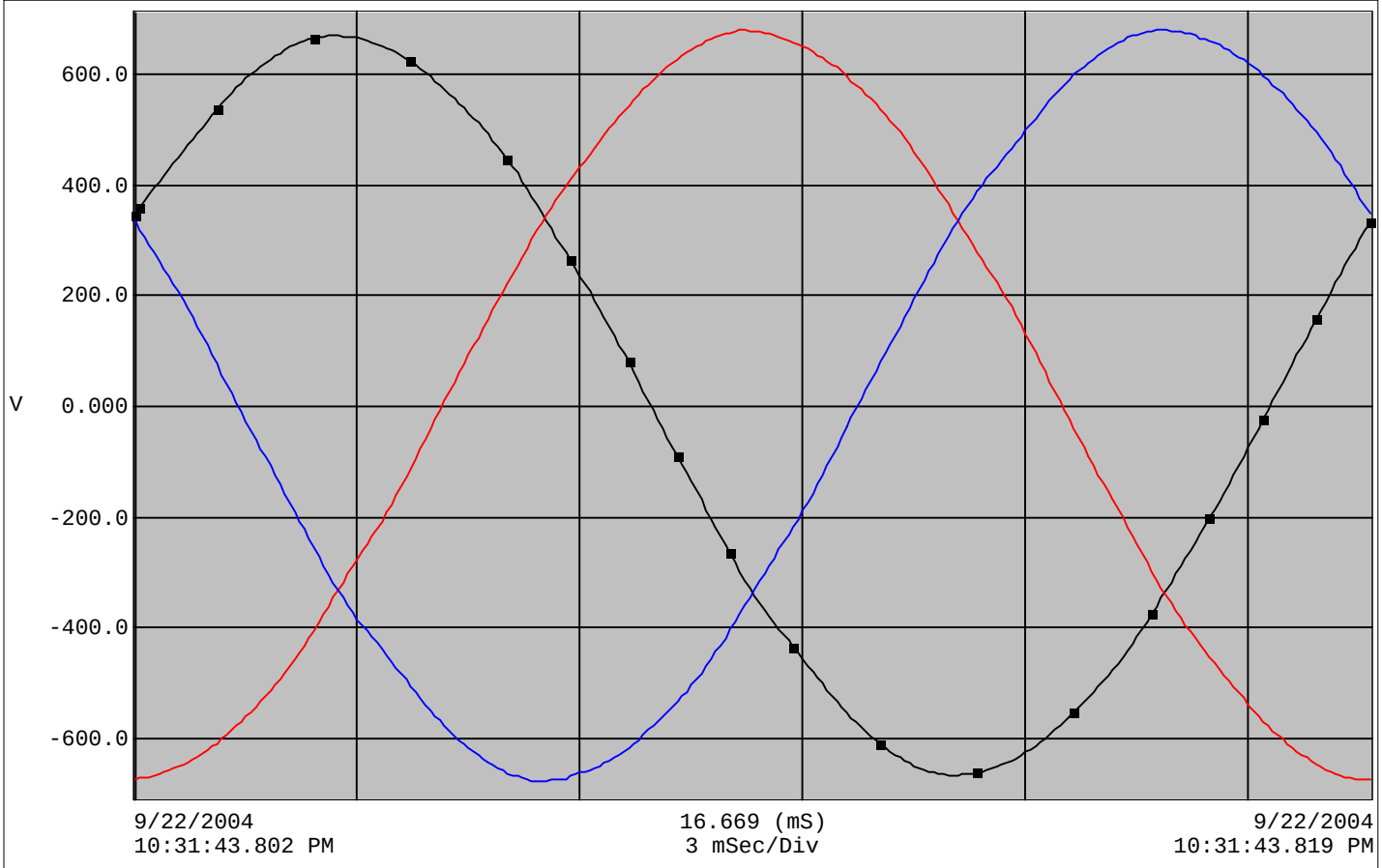


9/22/2004 - 10:31:43.000 PM
Val
-90.80 Waveform I1
-74.60 Waveform I2
140.6 Waveform I3

Waveform I1

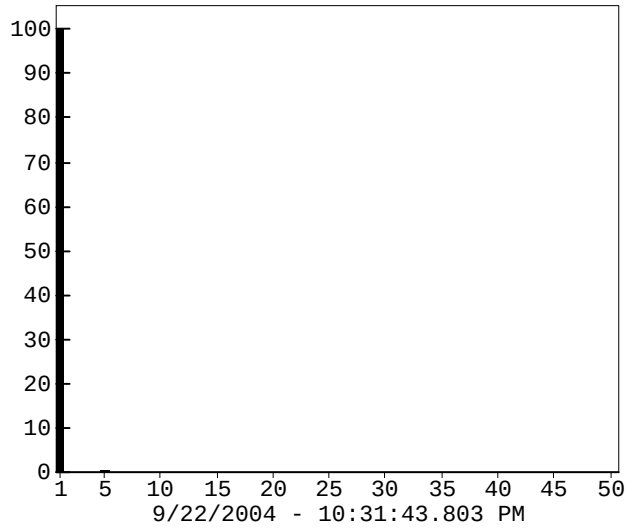
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.7	H19	0.1	H36	0.0
H03	0.8	H20	0.1	H37	0.2
H04	0.1	H21	0.1	H38	0.1
H05	2.0	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.1
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.1	H43	0.1
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.1	H32	0.1	H49	0.1
H16	0.1	H33	0.1	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/22/2004	10:31:43.802 PM	16.669	471.1	V
Waveform U2	9/22/2004	10:31:43.802 PM	16.669	476.1	V
Waveform U3	9/22/2004	10:31:43.802 PM	16.669	476.7	V

Waveform U1
471.06 Vrms, 0.74 %THD



9/22/2004 - 10:31:43.000 PM

	Val	
—	342.6	Waveform U1
—	-675.3	Waveform U2
—	332.7	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.1
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/22/2004
Start Time: 10:31:43 PM
Duration: 0:0.000 (M:S)
W: 19.99E+3 W
VAR: 17.67E+3 W
VA: 26.68E+3 W
Power Factor: 0.749
Displacement Power Factor: 0.750
TAN: 0.882
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Fujita WWPS\092204-Fujita Pump 1 - Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Fujita WWPS - Pump 1 ,

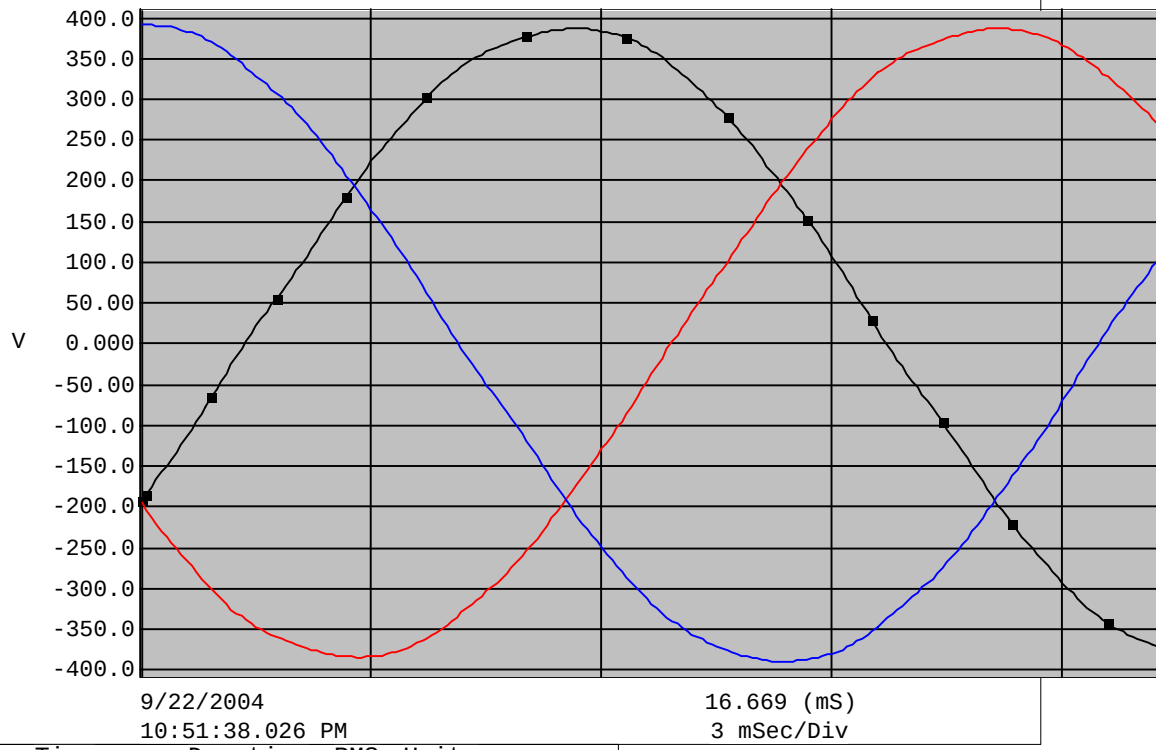
Comments

Measured at motor starter. Voltage ahead of Allen Bradley SMC Plus mtor starter and current at leads to motor. Problem at station during recording. Pump not pumping at full capacity. 110 KW, 460 volts.

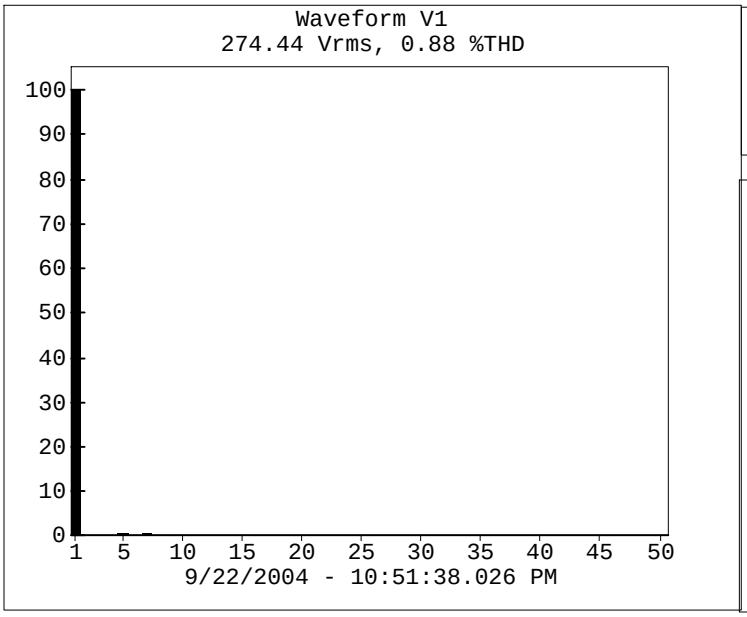
Fujita WWPS Pump 3 Photo

Recording Start Date	9/22/2004 - 10:51:38 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/22/2004	10:51:38.026 PM	16.669	274.4	V
Waveform V2	9/22/2004	10:51:38.026 PM	16.669	273.6	V
Waveform V3	9/22/2004	10:51:38.026 PM	16.669	276.9	V

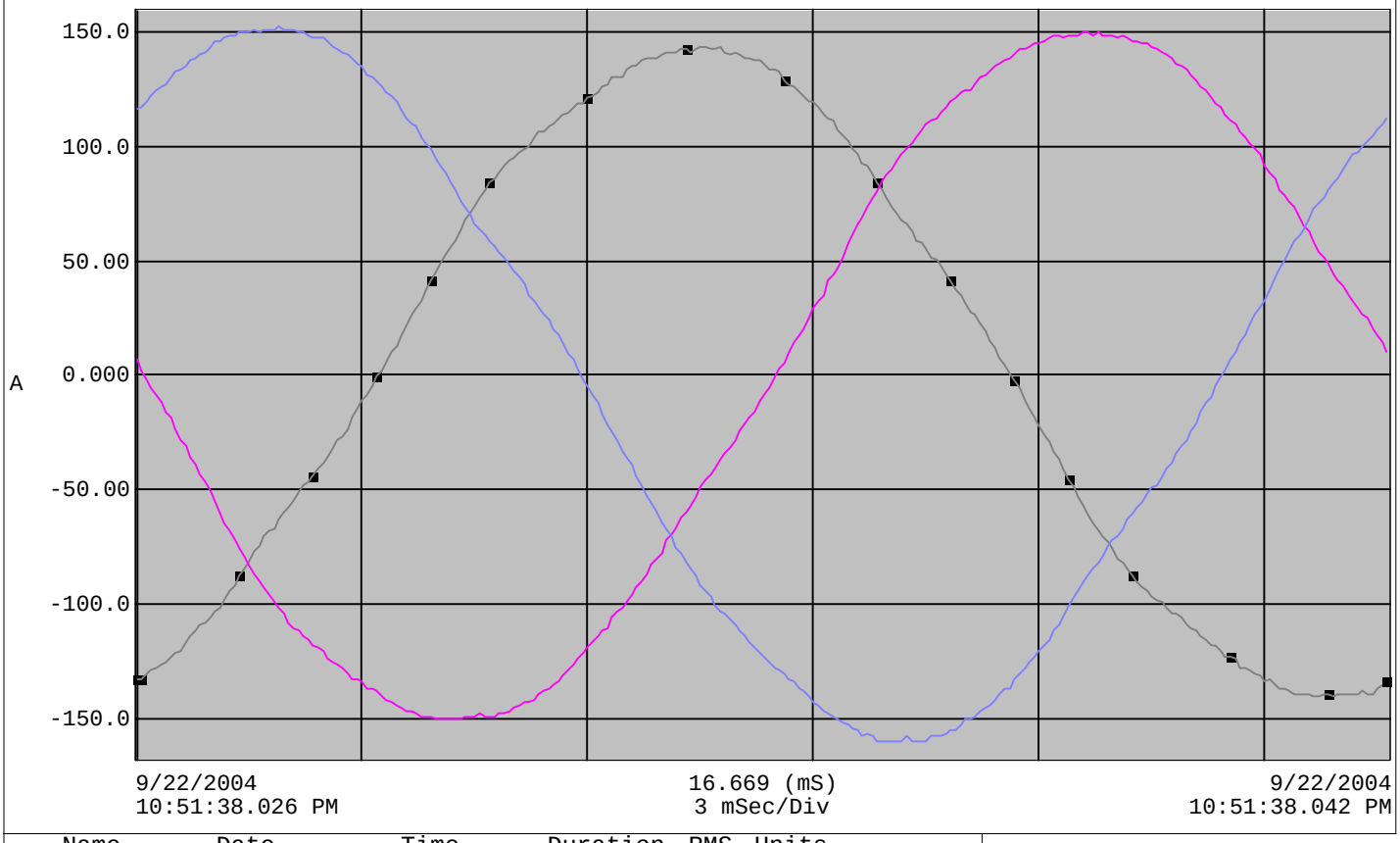


9/22/2004 - 10:51:38.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

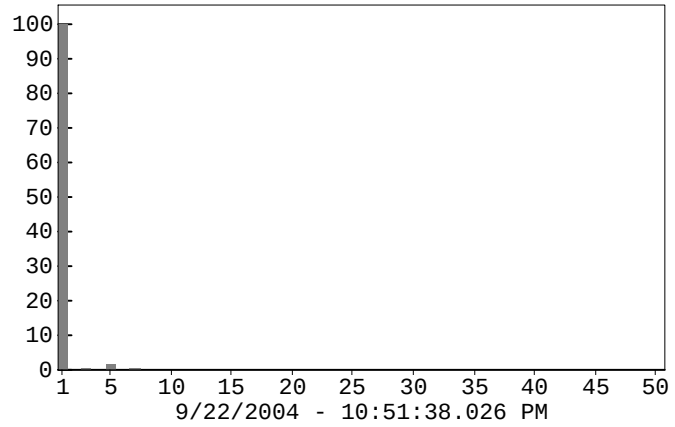
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.6	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/22/2004	10:51:38.026 PM	16.669	100.4	A
Waveform I2	9/22/2004	10:51:38.026 PM	16.669	106.9	A
Waveform I3	9/22/2004	10:51:38.026 PM	16.669	108.6	A

Waveform I1
100.40 Arms, 2.63 %THD

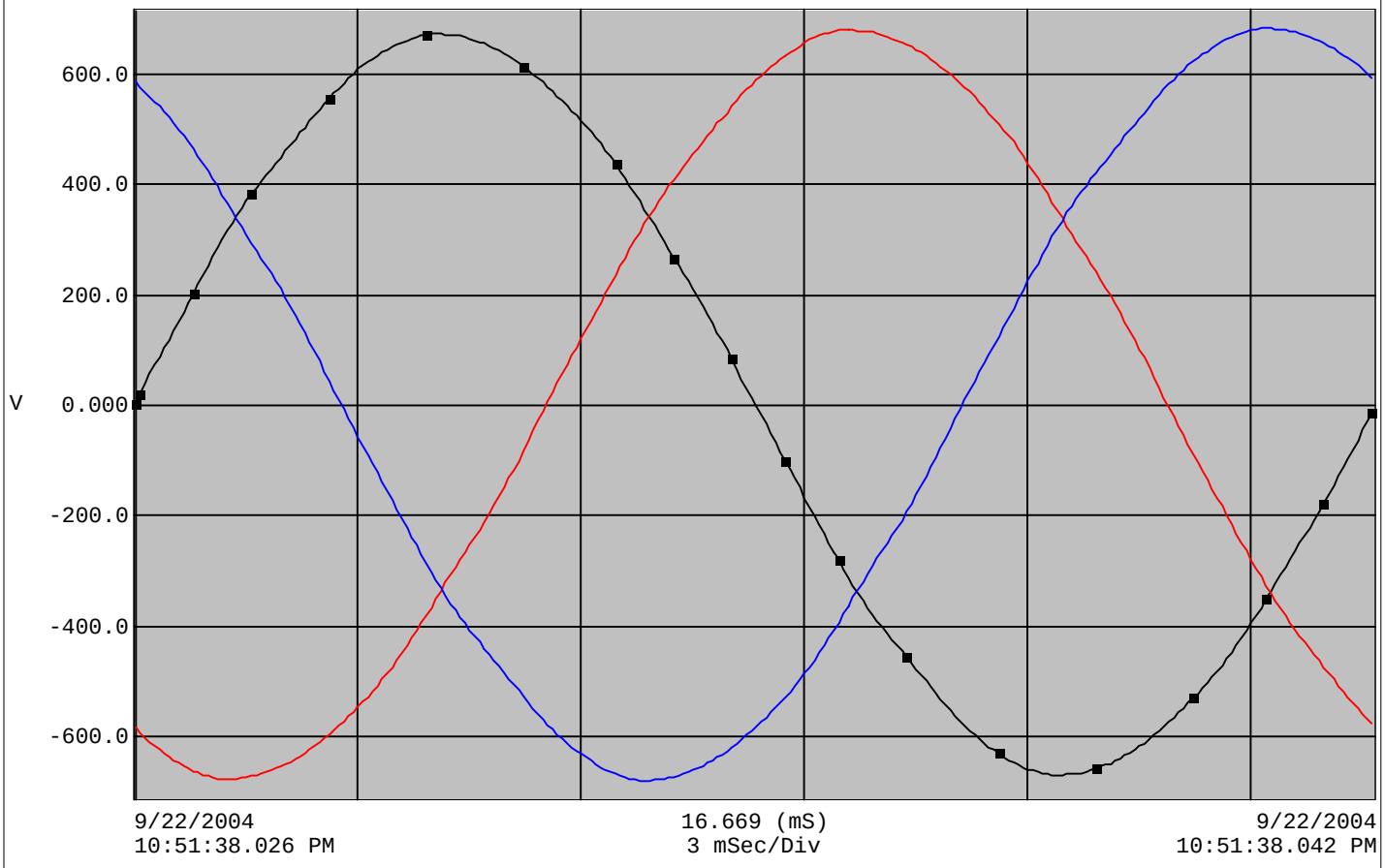


9/22/2004 - 10:51:38.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

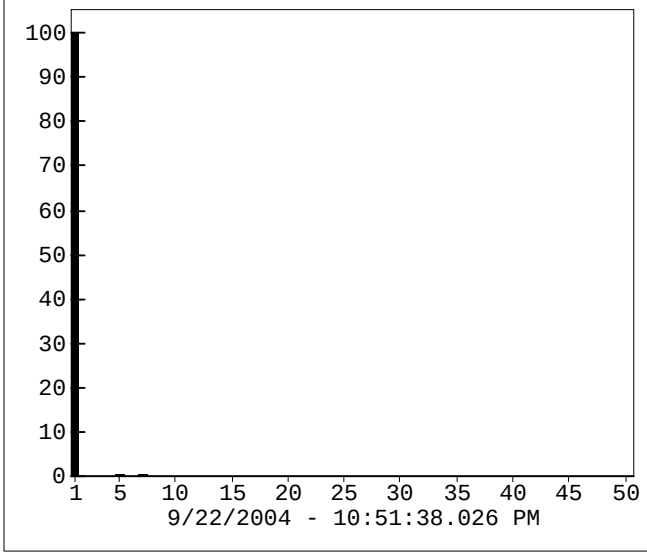
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.1
H02	0.3	H19	0.0	H36	0.1
H03	1.0	H20	0.1	H37	0.2
H04	0.0	H21	0.0	H38	0.0
H05	2.1	H22	0.2	H39	0.0
H06	0.1	H23	0.1	H40	0.1
H07	1.0	H24	0.1	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	0.1	H26	0.1	H43	0.0
H10	0.0	H27	0.0	H44	0.1
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.1
H15	0.1	H32	0.0	H49	0.1
H16	0.1	H33	0.0	H50	0.1
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/22/2004	10:51:38.026 PM	16.669	472.9	V
Waveform U2	9/22/2004	10:51:38.026 PM	16.669	477.5	V
Waveform U3	9/22/2004	10:51:38.026 PM	16.669	478.5	V

Waveform U1
472.91 Vrms, 0.79 %THD



9/22/2004 - 10:51:38.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/22/2004
Start Time: 10:51:38 PM
Duration: 0:0.000 (M:S)
W: 21.12E+3 W
VAR: 17.39E+3 W
VA: 27.36E+3 W
Power Factor: 0.772
Displacement Power Factor: 0.772
TAN: 0.822
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Fujita WWPS\092204-Fujita Pump 3 - Photo.dvb

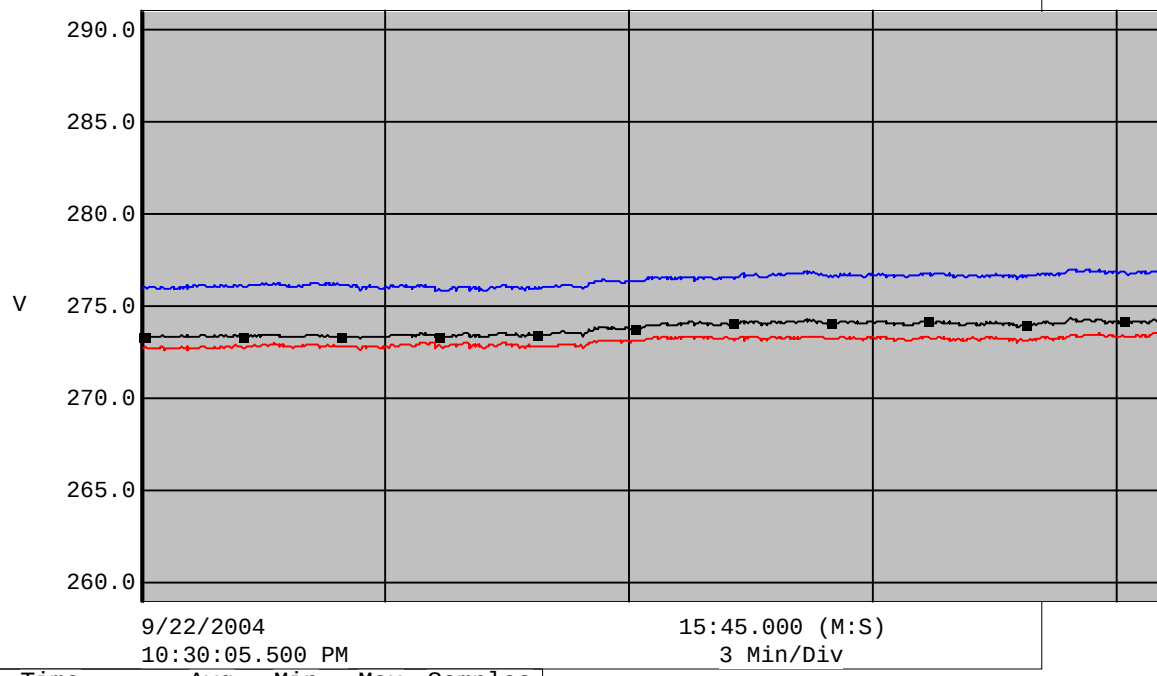
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	Fujita WWPS - Pump 3 ,

Comments
Measured at motor starter. Voltage ahead of Allen Bradley SMC Electronic Motor Starter and current at leads to motor. Motor 110 KW, 460 volts.

Fujita Pump 1 Trend

Recording Start Date	9/22/2004 - 10:30:05 PM
Recording Duration	15:45 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

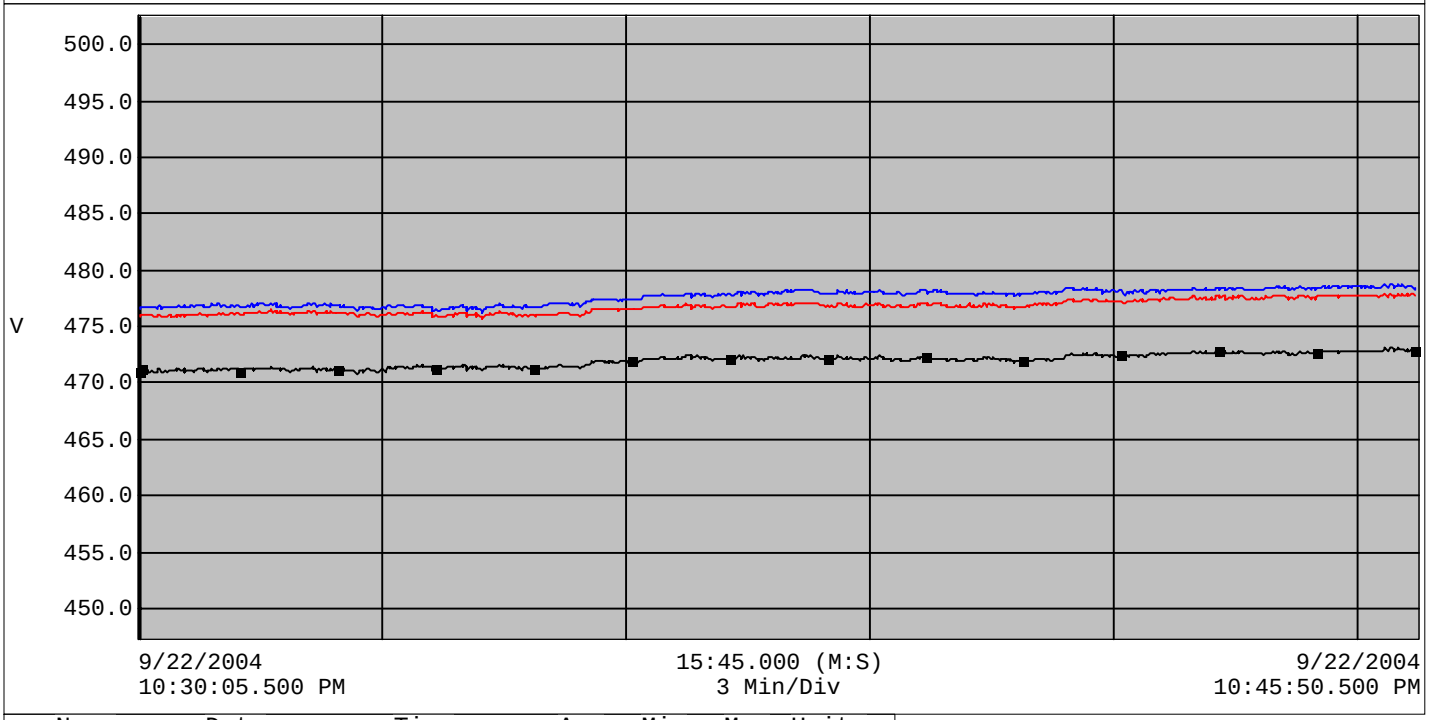
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/22/2004	10:30:05.500 PM	273.8	273.1	274.4	946
Vrms Line2	9/22/2004	10:30:05.500 PM	273.1	272.5	273.7	946
Vrms Line3	9/22/2004	10:30:05.500 PM	276.5	275.7	277.1	946

9/22/2004 - 10:30:05.000 PM
Val
273.2 Vrms Line1
272.6 Vrms Line2
275.9 Vrms Line3

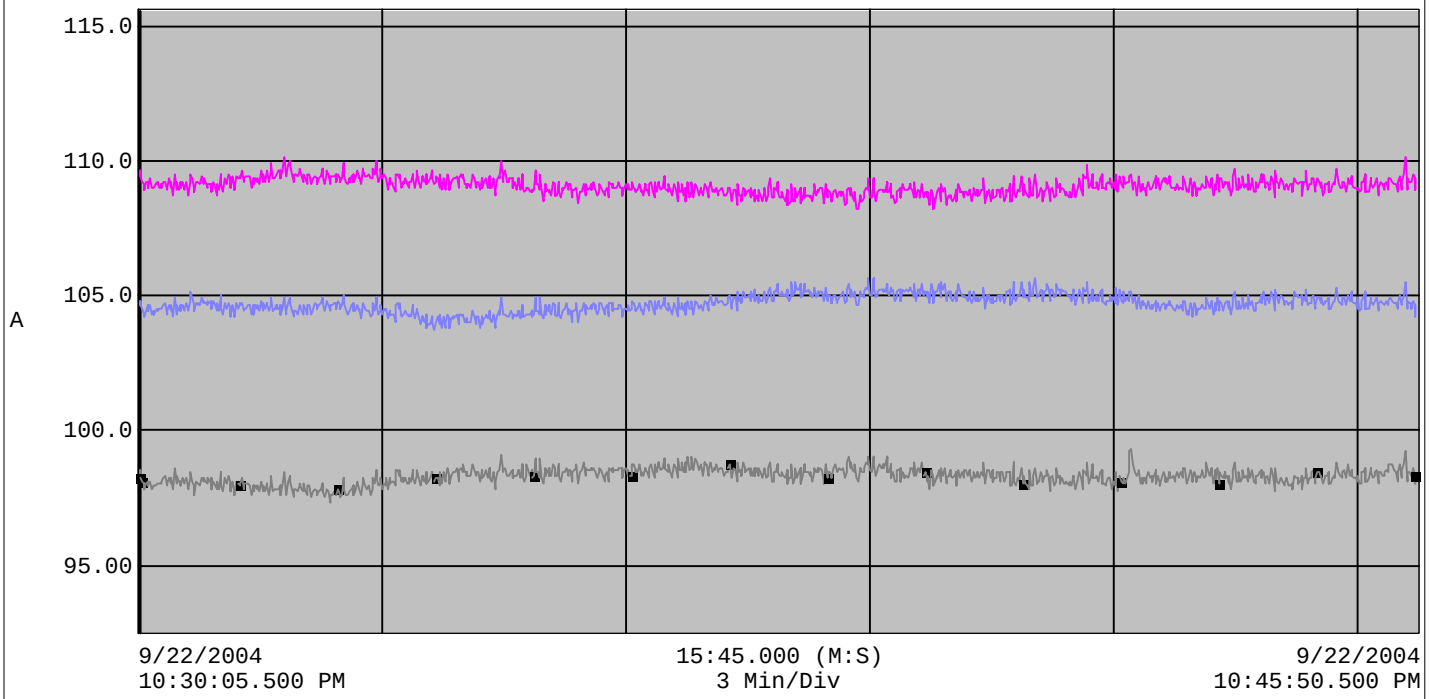
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/22/2004	10:30:05.500 PM	471.9	470.7	473.0	V
Urms Line2	9/22/2004	10:30:05.500 PM	476.7	475.6	477.8	V
Urms Line3	9/22/2004	10:30:05.500 PM	477.5	476.2	478.6	V

9/22/2004 - 10:30:05.000 PM
Val
470.9 Urms Line1
475.8 Urms Line2
476.5 Urms Line3

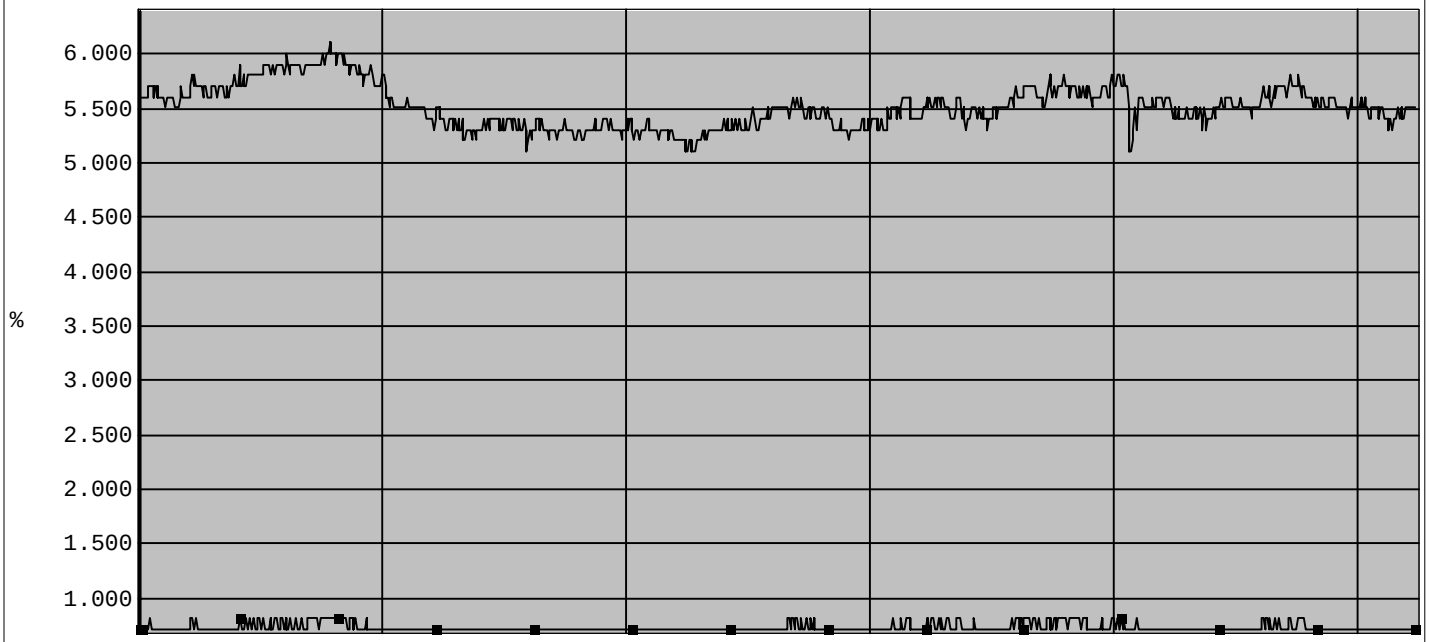
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/22/2004	10:30:05.500 PM	98.26	97.30	99.30	A
Arms Line2	9/22/2004	10:30:05.500 PM	109.0	108.2	110.1	A
Arms Line3	9/22/2004	10:30:05.500 PM	104.7	103.7	105.6	A

9/22/2004 - 10:30:05.000 PM
Val
98.50 — Arms Line1
109.6 — Arms Line2
104.8 — Arms Line3

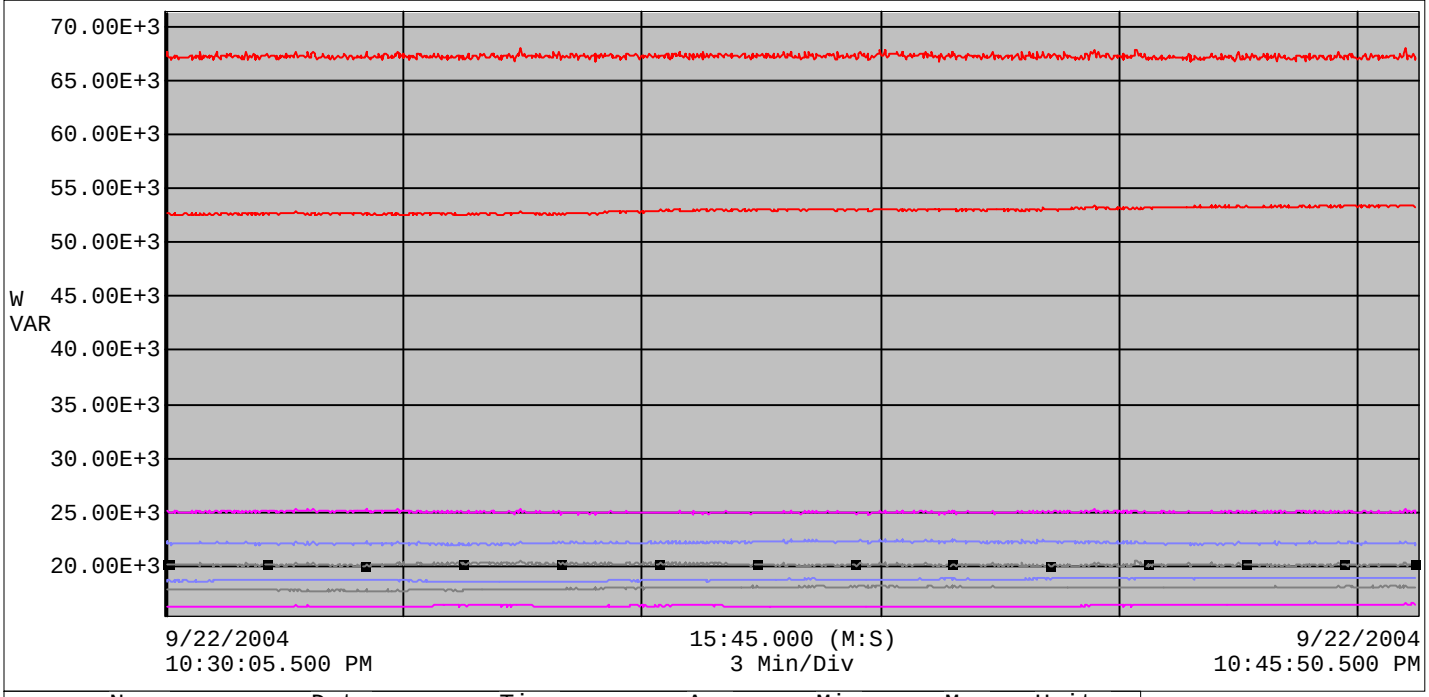
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/22/2004	10:30:05.500 PM	0.716	0.700	0.800	%
Aunb(IEEE)	9/22/2004	10:30:05.500 PM	5.510	5.100	6.100	%

9/22/2004 - 10:30:05.000 PM
Val
0.700 —— Vunb(IEEE)
5.600 —— Aunb(IEEE)

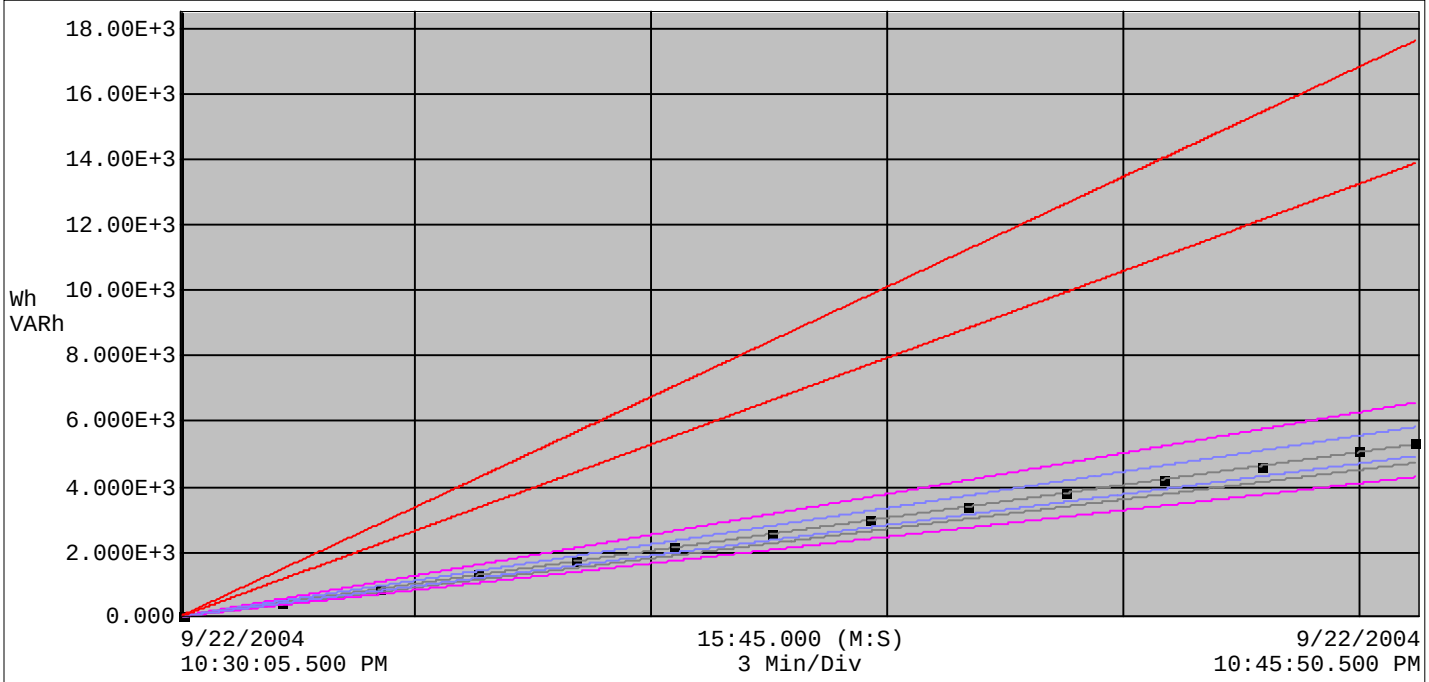
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/22/2004	10:30:05.500 PM	20.08E+3	19.86E+3	20.46E+3	W
W Line2	9/22/2004	10:30:05.500 PM	24.94E+3	24.73E+3	25.23E+3	W
W Line3	9/22/2004	10:30:05.500 PM	22.10E+3	21.86E+3	22.41E+3	W
W Sum of Phases	9/22/2004	10:30:05.500 PM	67.12E+3	66.66E+3	67.88E+3	W
VAR Line1	9/22/2004	10:30:05.500 PM	17.91E+3	17.62E+3	18.10E+3	VAR
VAR Line2	9/22/2004	10:30:05.500 PM	16.26E+3	16.10E+3	16.47E+3	VAR
VAR Line3	9/22/2004	10:30:05.500 PM	18.69E+3	18.44E+3	18.92E+3	VAR
VAR Sum of Phases	9/22/2004	10:30:05.500 PM	52.86E+3	52.41E+3	53.41E+3	VAR

9/22/2004 - 10:30:05.000 PM
Val
20.24E+3 — W Line1
25.10E+3 — W Line2
22.16E+3 — W Line3
67.50E+3 — W Sum of Phases
17.74E+3 — VAR Line1
16.22E+3 — VAR Line2
18.57E+3 — VAR Line3
52.53E+3 — VAR Sum of Phases

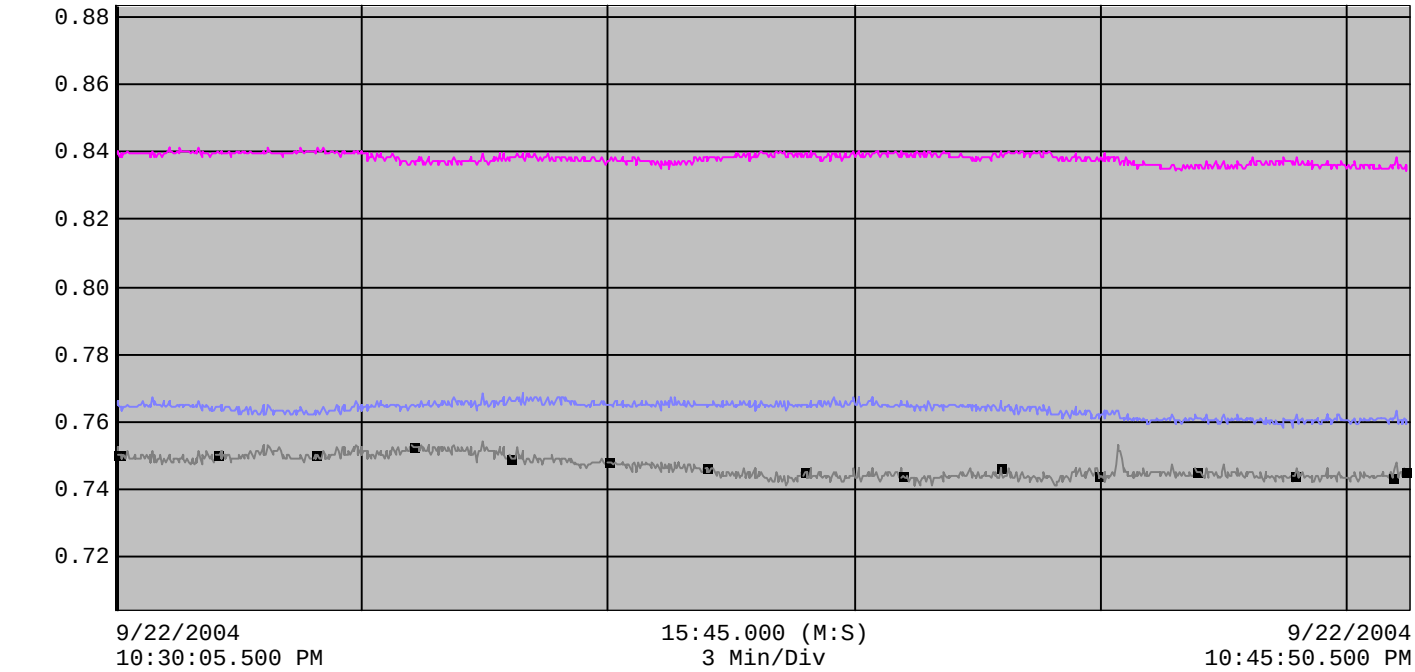
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/22/2004	10:30:05.500 PM	2.643E+3	5.637	5.277E+3	Wh
W-hours Line2	9/22/2004	10:30:05.500 PM	3.282E+3	7.002	6.555E+3	Wh
W-hours Line3	9/22/2004	10:30:05.500 PM	2.905E+3	6.202	5.806E+3	Wh
W-hours Sum of Phases	9/22/2004	10:30:05.500 PM	8.830E+3	18.84	17.64E+3	Wh
VAR-hours Line1	9/22/2004	10:30:05.500 PM	2.347E+3	4.883	4.706E+3	VARh
VAR-hours Line2	9/22/2004	10:30:05.500 PM	2.135E+3	4.564	4.273E+3	VARh
VAR-hours Line3	9/22/2004	10:30:05.500 PM	2.451E+3	5.097	4.912E+3	VARh
VAR-hours Sum of Phases	9/22/2004	10:30:05.500 PM	6.933E+3	14.41	13.89E+3	VARh

9/22/2004 - 10:30:05.000 PM
Val
5.637 — W-hours Line1
7.002 — W-hours Line2
6.202 — W-hours Line3
18.84 — W-hours Sum of Phases
4.883 — VAR-hours Line1
4.564 — VAR-hours Line2
5.097 — VAR-hours Line3
14.41 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/22/2004	10:30:05.500 PM	0.746	0.741	0.754	
PF Line2	9/22/2004	10:30:05.500 PM	0.838	0.834	0.841	
PF Line3	9/22/2004	10:30:05.500 PM	0.763	0.758	0.768	

9/22/2004 - 10:30:05.000 PM
Val
0.752 — PF Line1
0.840 — PF Line2
0.766 — PF Line3

Trend Summary Report

Database: X:\Fujita WWPS\092204-Fujita Pump 1.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Fujita WWPS - Pump 1 ,

Comments
Measured at motor starter overload. Voltage ahead of Allen Bradley SMC Plus Electronic Softstart Motor Starter and current leads at motor leads. Motor 110 KW, 460 volts.

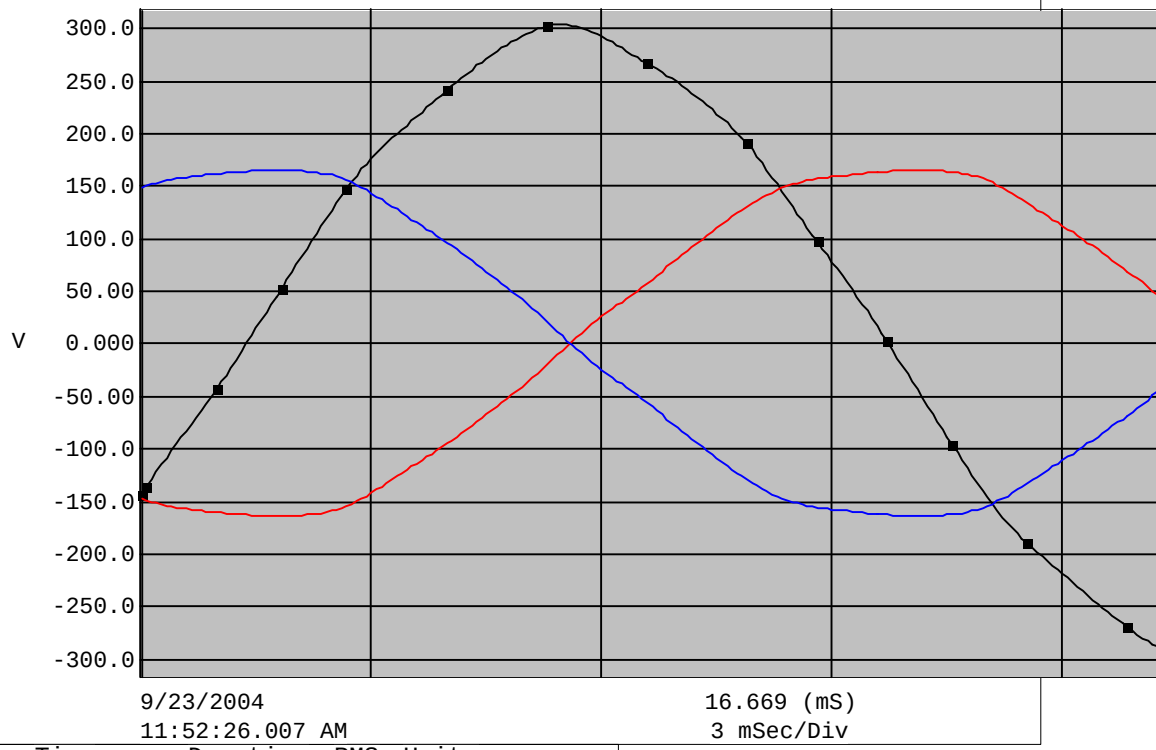
GWA Wastewater Pumping Station Assessment				
Station Name: HAFA ADAI	**Weight**	**Condition**	**Weighted**	**Notes**
Date:		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.39	
Transformer Pole Condition and Grounding	2.0%	2	0.04	
Transformer Connection Type	2.0%	1	0.02	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.05	
Main Disconnect	5.0%	0	0	
Grounding	2.5%	2	0.05	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.075	
Generator Condition	10.0%	0	0	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	0	0	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.4	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Secondary Pump Motor Controls	**20.0%**		0.48	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	2	0.08	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.2	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.03	
Lighting and Power Devices	1.5%	1	0.015	
Sump Pump Controls	1.5%	1	0.015	
	100%	**Assessment Value**		**1.6**

Comments:

Hafa Adai WWPS - No Load Photo

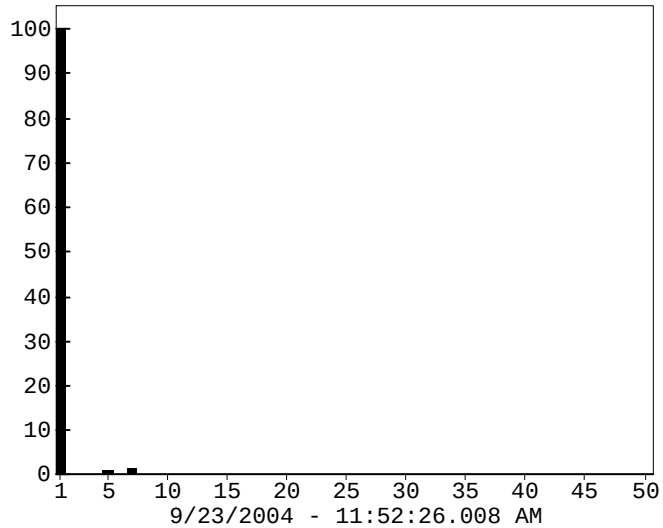
Recording Start Date	9/23/2004 - 11:52:26 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/23/2004	11:52:26.007 AM	16.669	208.8	V
Waveform V2	9/23/2004	11:52:26.007 AM	16.669	118.6	V
Waveform V3	9/23/2004	11:52:26.007 AM	16.669	118.6	V

Waveform V1
208.77 Vrms, 1.86 %THD



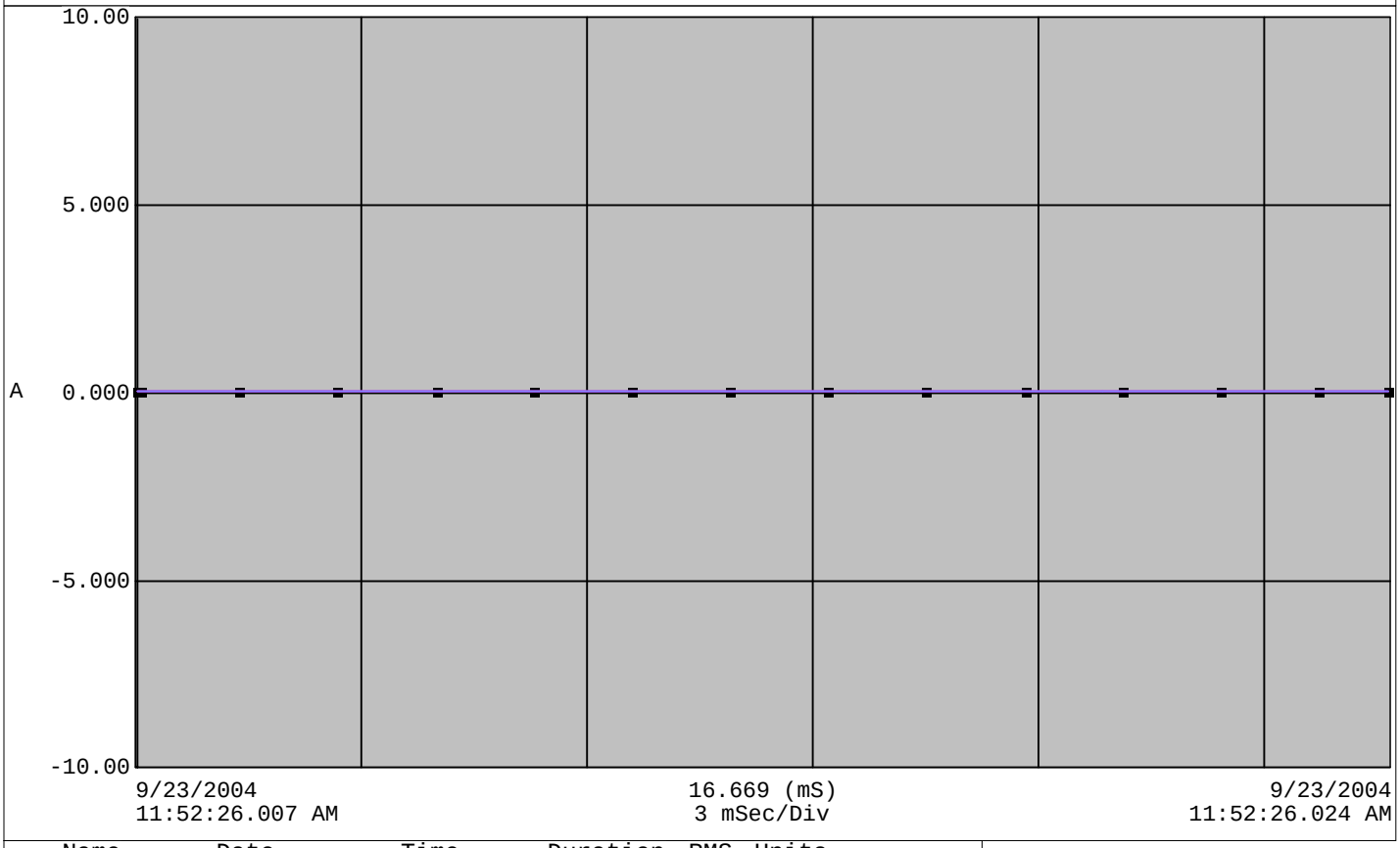
9/23/2004 - 11:52:26.000 AM

	Val	
—	-143.5	Waveform V1
—	-147.6	Waveform V2
—	147.2	Waveform V3

Waveform V1

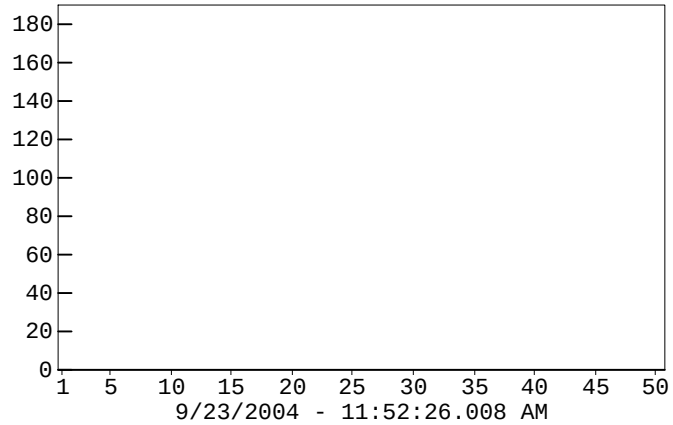
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/23/2004	11:52:26.007 AM	16.669	0.000	A
Waveform I2	9/23/2004	11:52:26.007 AM	16.669	0.000	A
Waveform I3	9/23/2004	11:52:26.007 AM	16.669	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



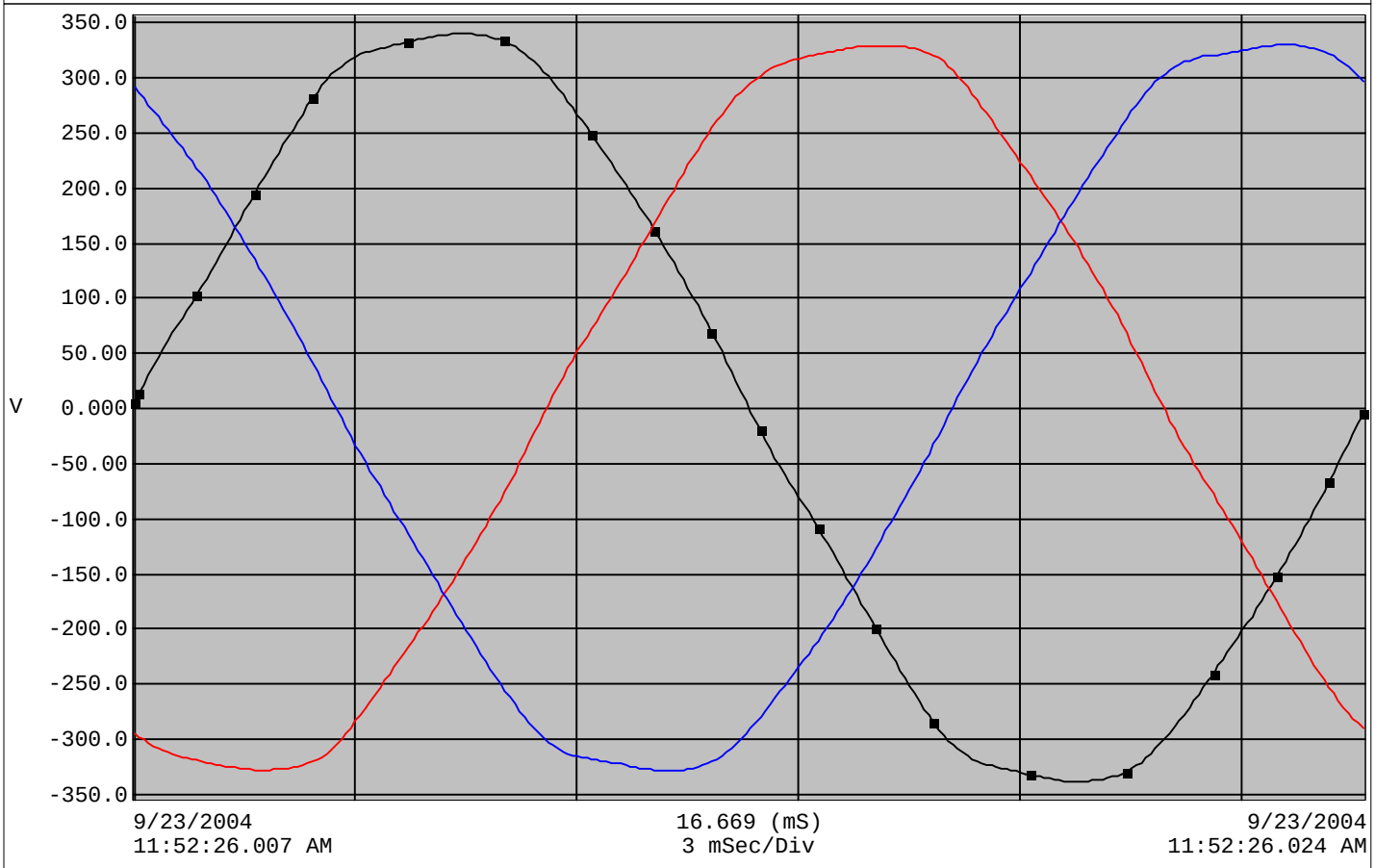
9/23/2004 - 11:52:26.000 AM

Val	
0.000	Waveform I1
0.000	Waveform I2
0.000	Waveform I3

Waveform I1

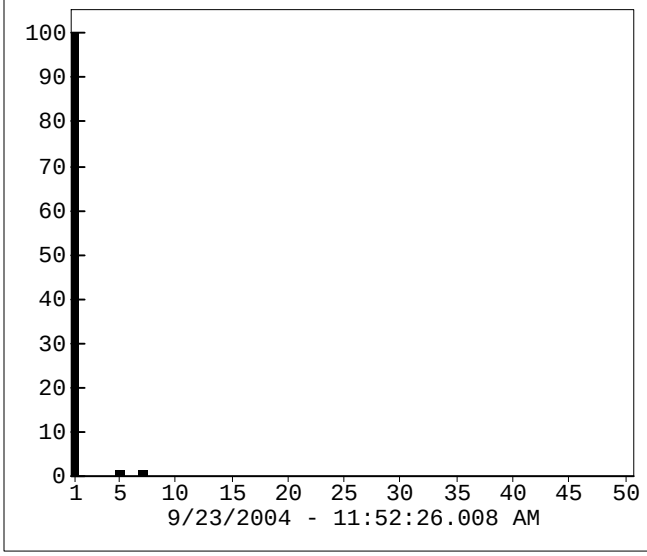
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/23/2004	11:52:26.007 AM	16.669	243.6	V
Waveform U2	9/23/2004	11:52:26.007 AM	16.669	237.2	V
Waveform U3	9/23/2004	11:52:26.007 AM	16.669	236.5	V

Waveform U1
243.64 Vrms, 2.04 %THD



9/23/2004 - 11:52:26.000 AM

	Val	
—	4.100	Waveform U1
—	-294.9	Waveform U2
—	290.7	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/23/2004
Start Time: 11:52:26 AM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

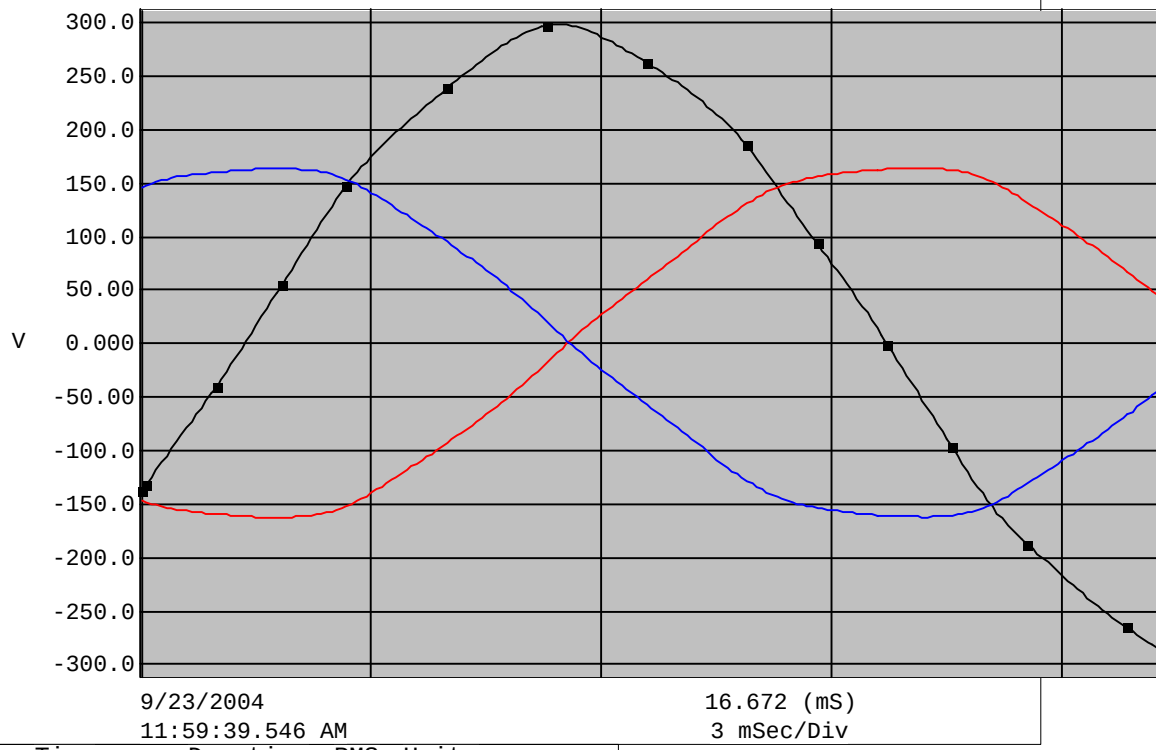
Database: X:\Hafa Adai WWPS\092304 - Hafa Adai WWPS - No Load.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	Test Site Hafa Adai WWPS - No Load ,

Comments
GPA Meter 76-789-661, Demand 1.0 K. Transformer bank connected open delta, 120/240 volt, three phase, four wire. Recorded at feeder tie to control panel.

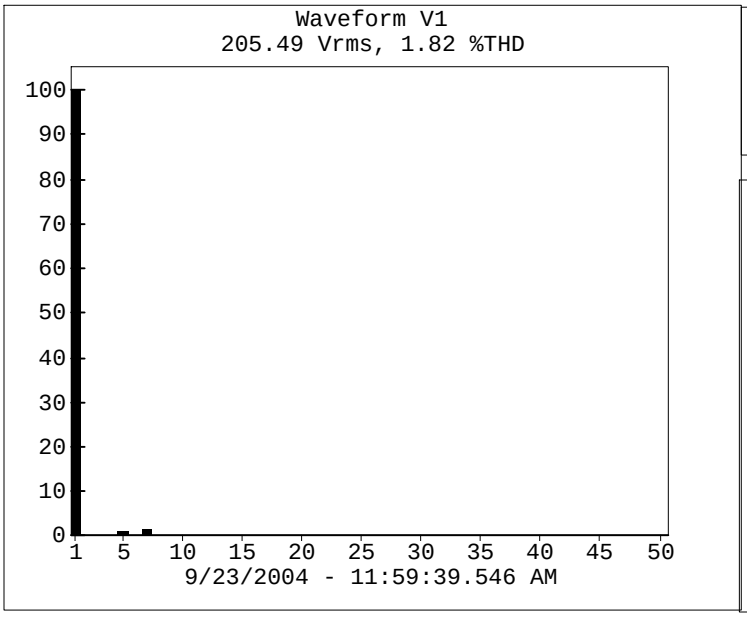
Hafa Adai WWPS Pump 1 Photo

Recording Start Date	9/23/2004 - 11:59:39 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/23/2004	11:59:39.546 AM	16.672	205.5	V
Waveform V2	9/23/2004	11:59:39.546 AM	16.672	117.8	V
Waveform V3	9/23/2004	11:59:39.546 AM	16.672	117.4	V

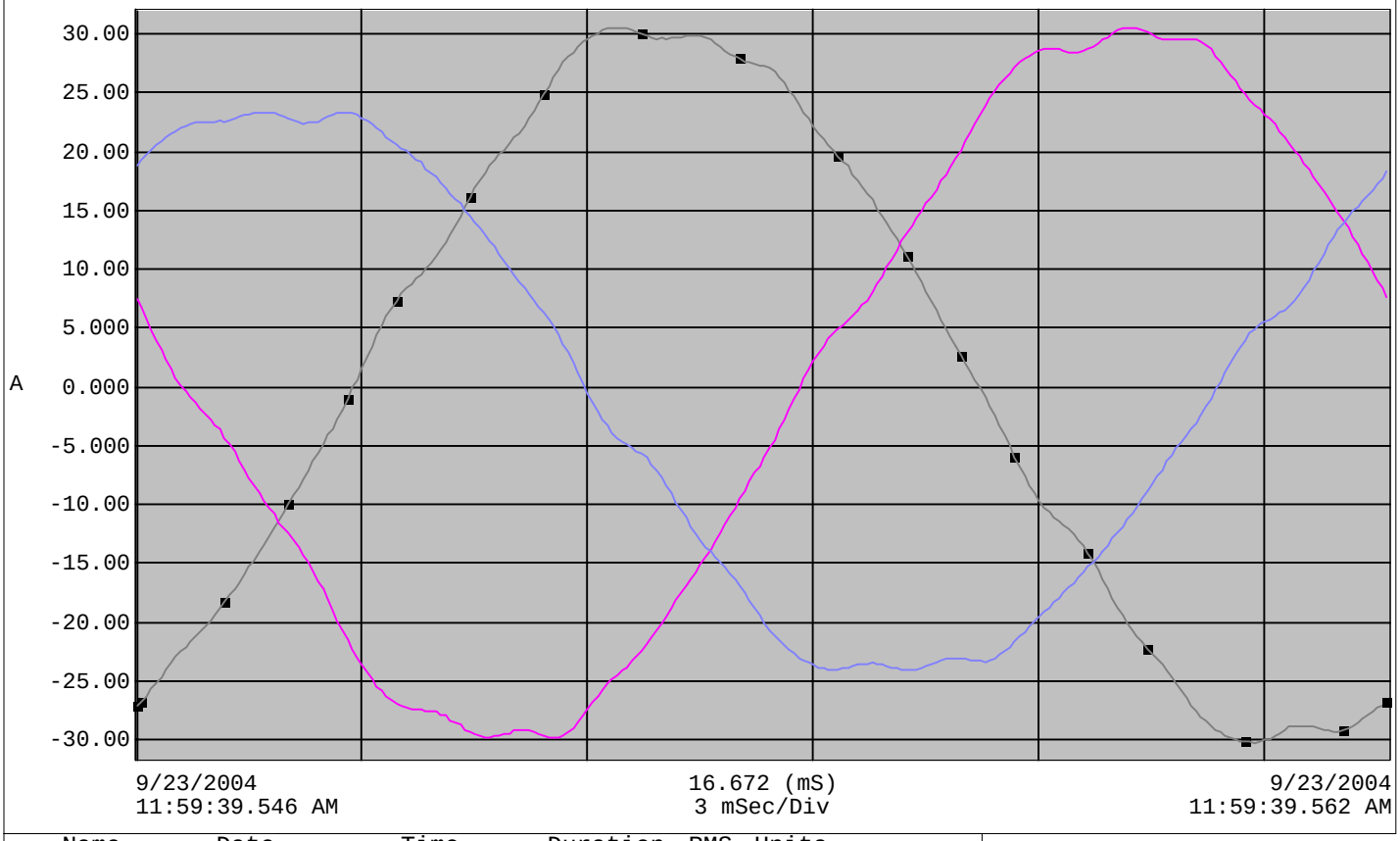


9/23/2004 - 11:59:39.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

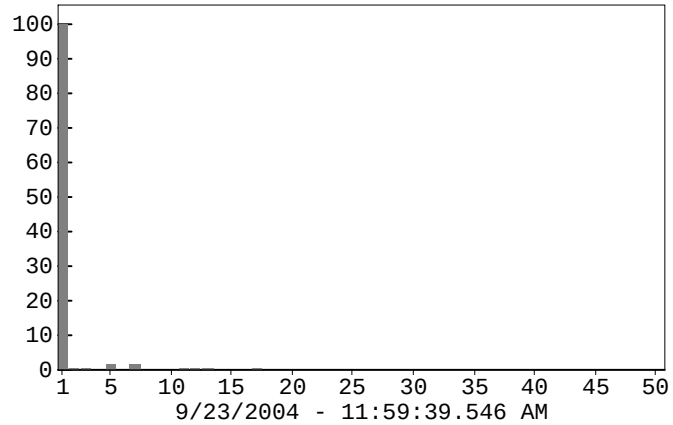
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/23/2004	11:59:39.546 AM	16.672	21.43	A
Waveform I2	9/23/2004	11:59:39.546 AM	16.672	21.19	A
Waveform I3	9/23/2004	11:59:39.546 AM	16.672	17.36	A

Waveform I1
21.43 Arms, 3.14 %THD

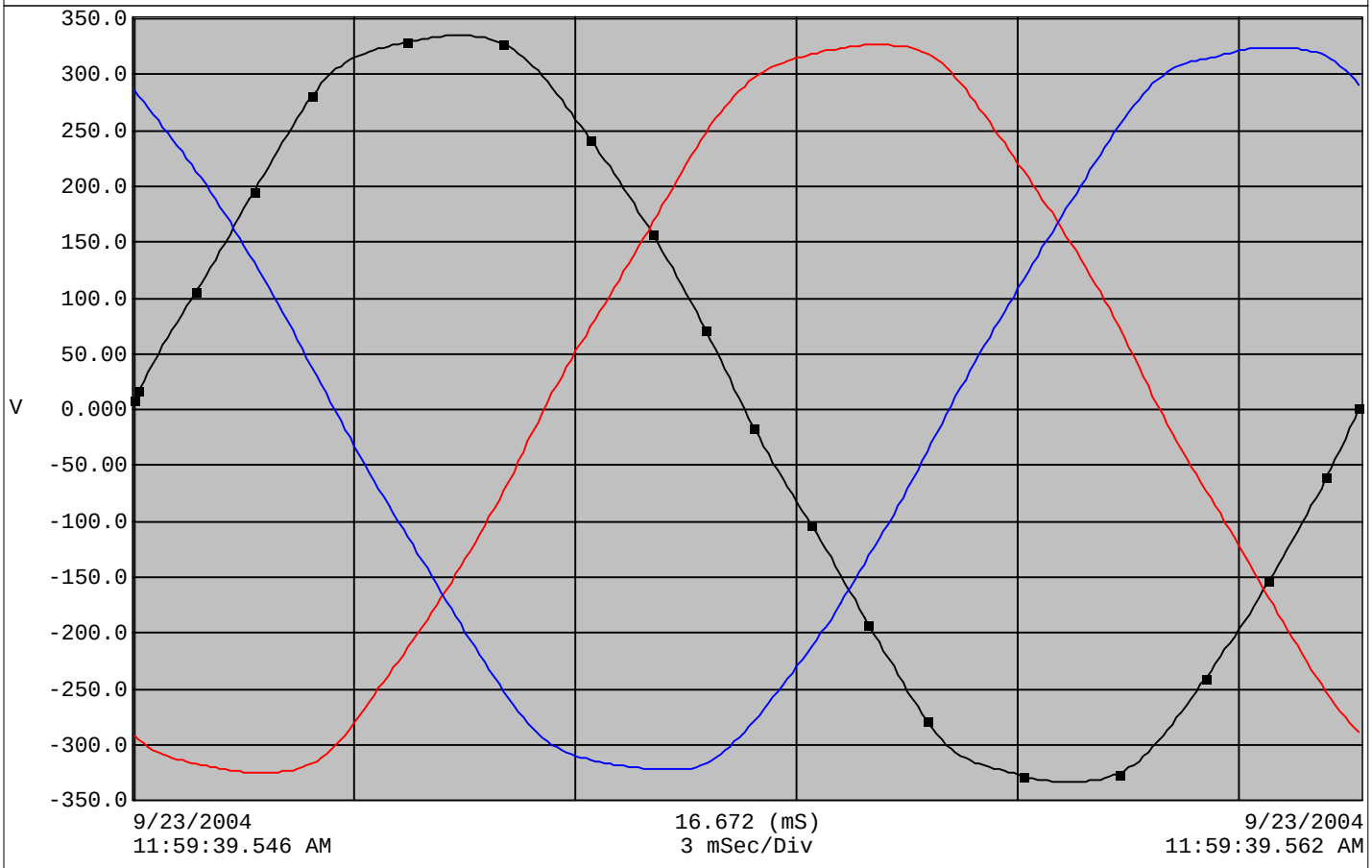


9/23/2004 - 11:59:39.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

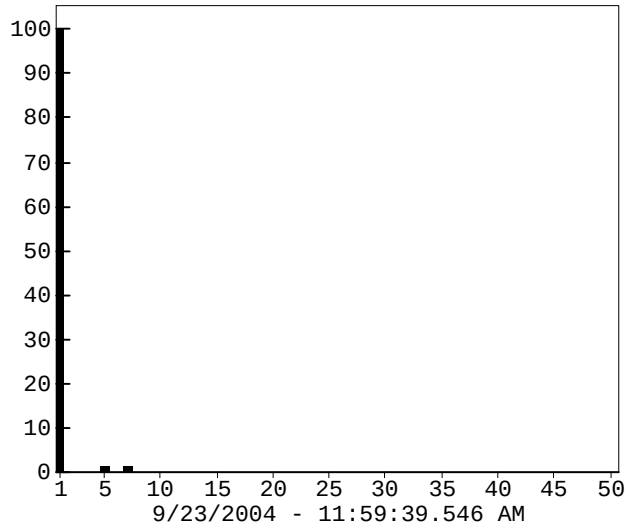
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.8	H19	0.3	H36	0.0
H03	0.6	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.8	H22	0.1	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	1.8	H24	0.1	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.7	H29	0.0	H46	0.0
H13	0.9	H30	0.0	H47	0.0
H14	0.2	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.3	H33	0.0	H50	0.0
H17	0.6	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/23/2004	11:59:39.546 AM	16.672	240.3	V
Waveform U2	9/23/2004	11:59:39.546 AM	16.672	235.3	V
Waveform U3	9/23/2004	11:59:39.546 AM	16.672	232.5	V

Waveform U1
240.31 Vrms, 2.02 %THD



9/23/2004 - 11:59:39.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/23/2004
Start Time: 11:59:39 AM
Duration: 0:0.000 (M:S)
W: 3.536E+3 W
VAR: 2.505E+3 W
VA: 4.334E+3 W
Power Factor: 0.816
Displacement Power Factor: 0.817
TAN: 0.706
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Hafa Adai WWPS\092304 - Hafa Adai WWPS Pump 1 Photo.dvb

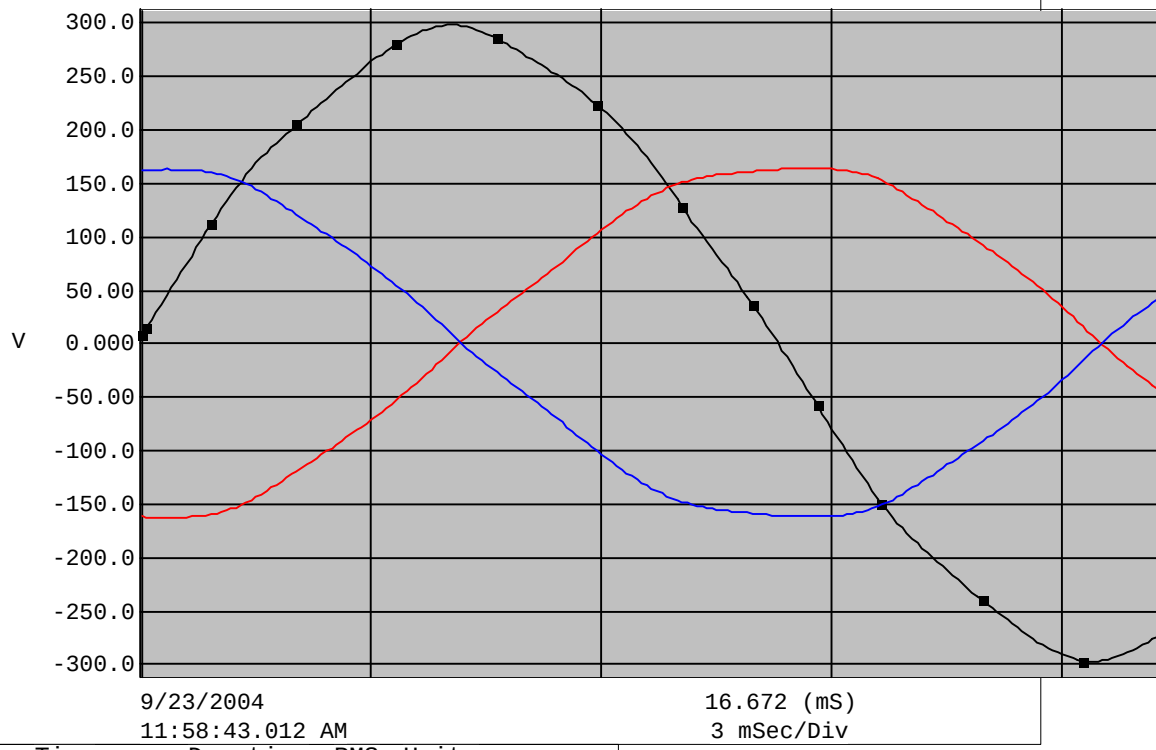
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	Hafa Adai WWPS - Pump 1 Photo ,

Comments
Connected to the feeder to the control panel. GPA Meter 76-789-664.

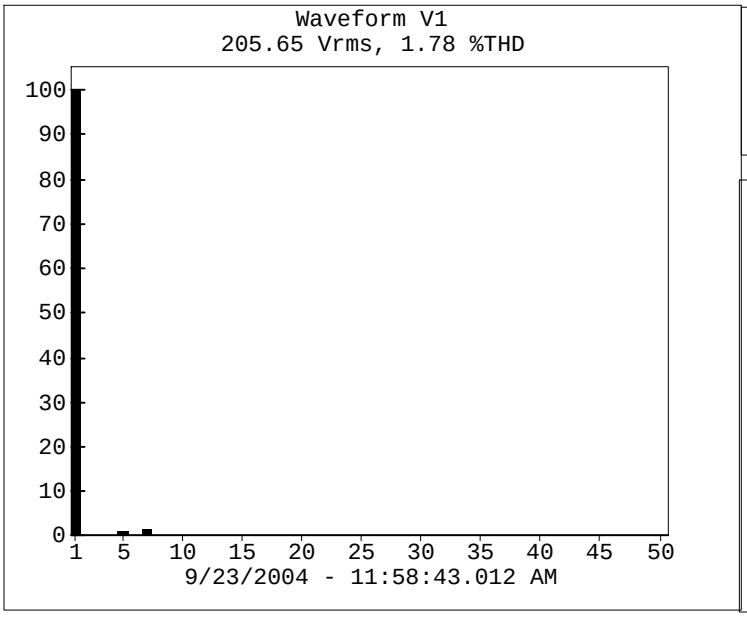
Hafa Adai WWPS Pump 2 Photo

Recording Start Date	9/23/2004 - 11:58:43 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/23/2004	11:58:43.012 AM	16.672	205.6	V
Waveform V2	9/23/2004	11:58:43.012 AM	16.672	117.9	V
Waveform V3	9/23/2004	11:58:43.012 AM	16.672	117.2	V

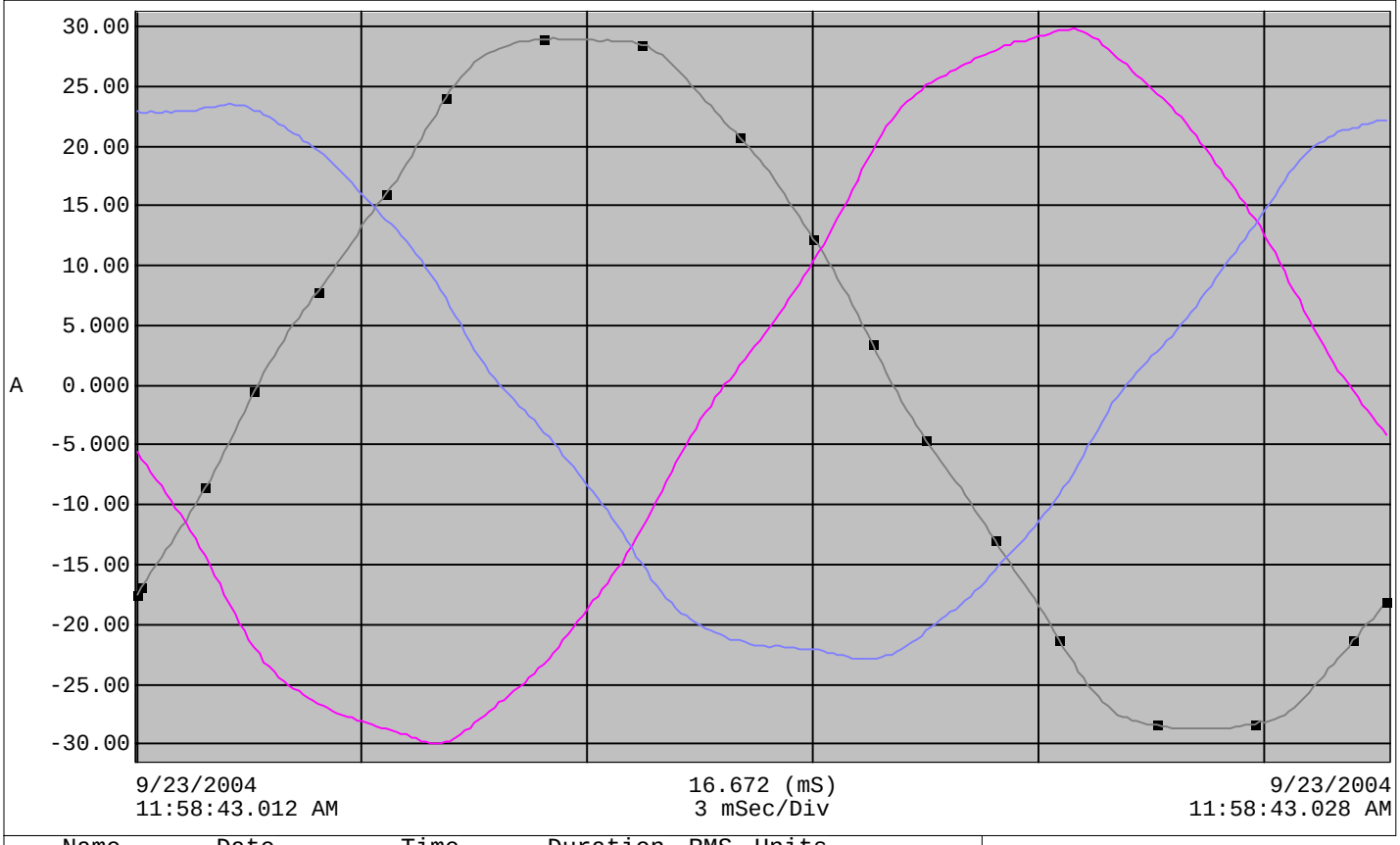


9/23/2004 - 11:58:43.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

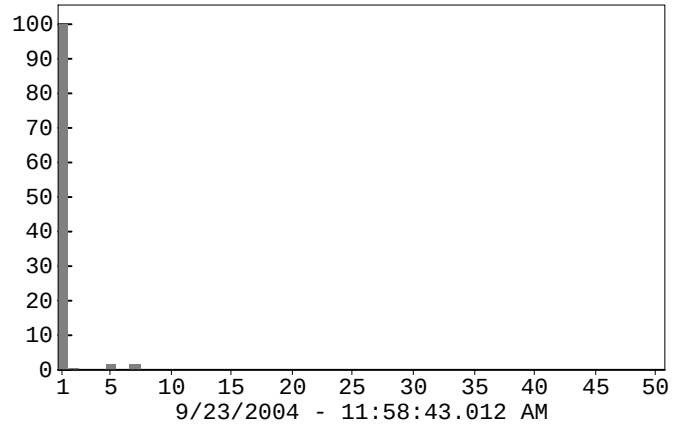
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.3	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/23/2004	11:58:43.012 AM	16.672	20.82	A
Waveform I2	9/23/2004	11:58:43.012 AM	16.672	20.77	A
Waveform I3	9/23/2004	11:58:43.012 AM	16.672	16.73	A

Waveform I1
20.82 Arms, 2.76 %THD

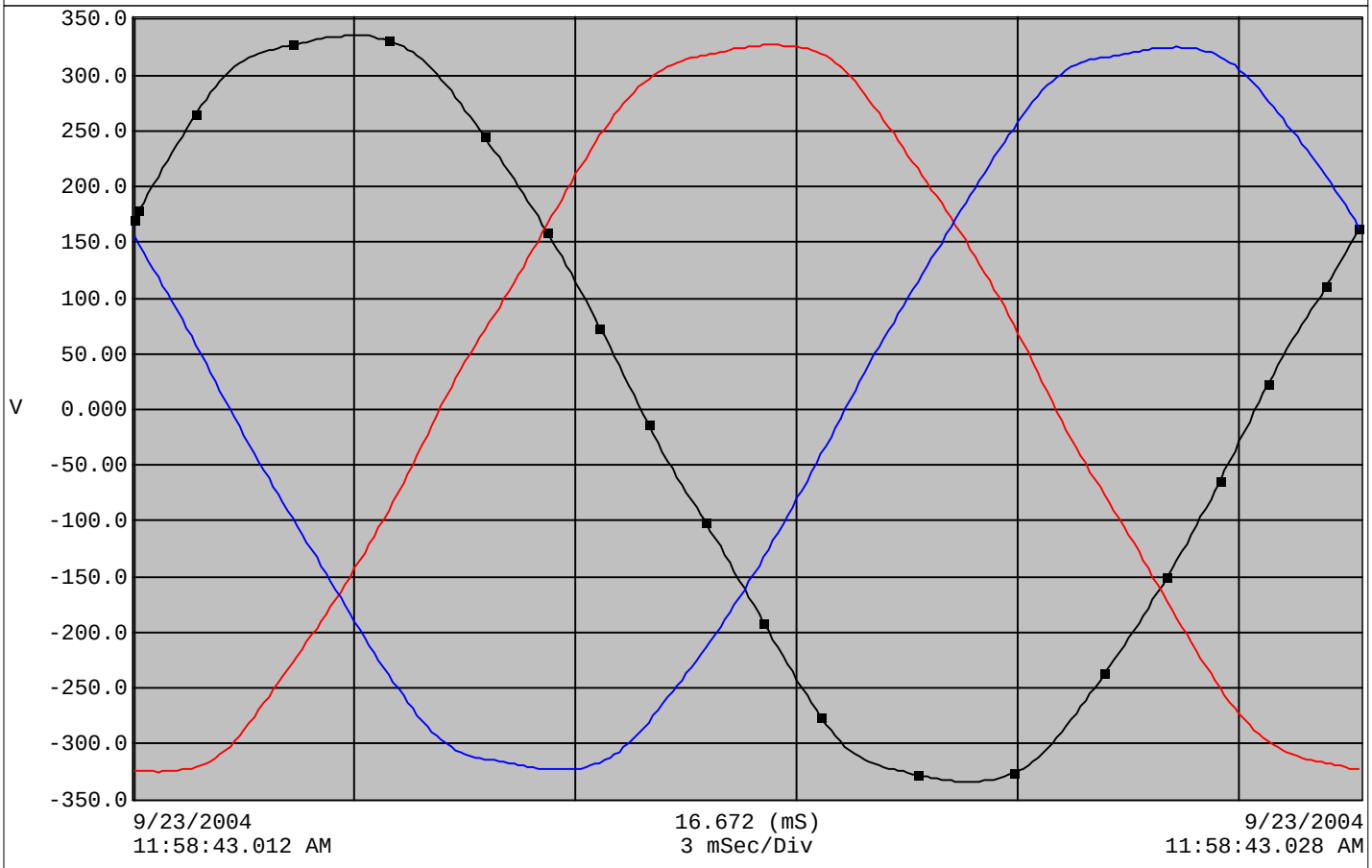


9/23/2004 - 11:58:43.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

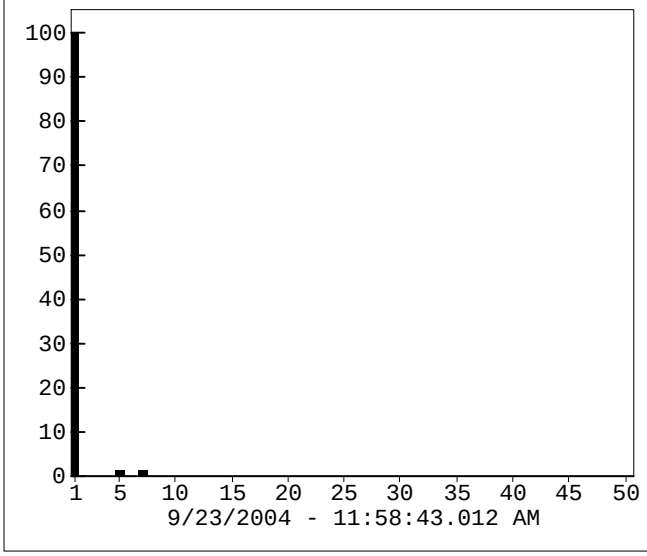
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.7	H19	0.1	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.9	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.2	H29	0.0	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/23/2004	11:58:43.012 AM	16.672	240.5	V
Waveform U2	9/23/2004	11:58:43.012 AM	16.672	235.2	V
Waveform U3	9/23/2004	11:58:43.012 AM	16.672	232.6	V

Waveform U1
240.52 Vrms, 1.99 %THD



9/23/2004 - 11:58:43.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/23/2004
Start Time: 11:58:43 AM
Duration: 0:0.000 (M:S)
W: 3.464E+3 W
VAR: 2.660E+3 W
VA: 4.368E+3 W
Power Factor: 0.793
Displacement Power Factor: 0.793
TAN: 0.767
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Hafa Adai WWPS\092304 - Hafa Adai WWPS Pump 2 Photo.dvb

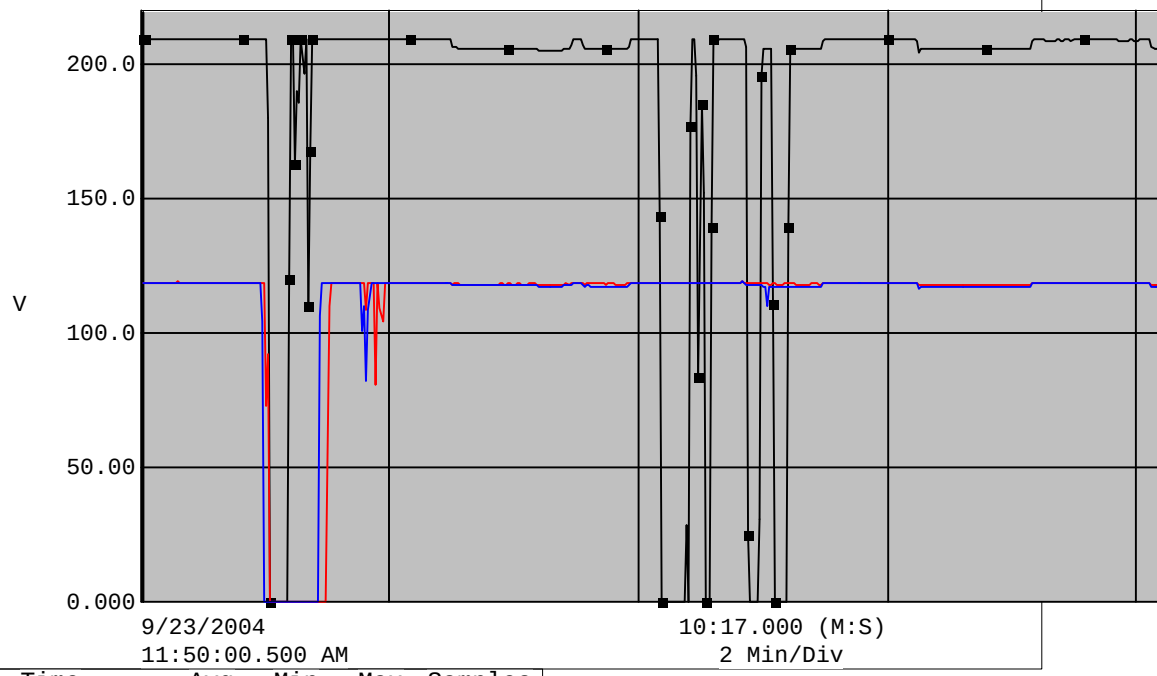
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Hafa Adai WWPS - Pump 2 Photo ,

Comments
Recorded at feeder tie to control panel. Transformer connected open delta, 120/240 volt, three phase, four wire.

Hafa Adai WWPS Pump 1 and 2 trend

Recording Start Date	9/23/2004 - 11:50:00 AM
Recording Duration	10:17 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

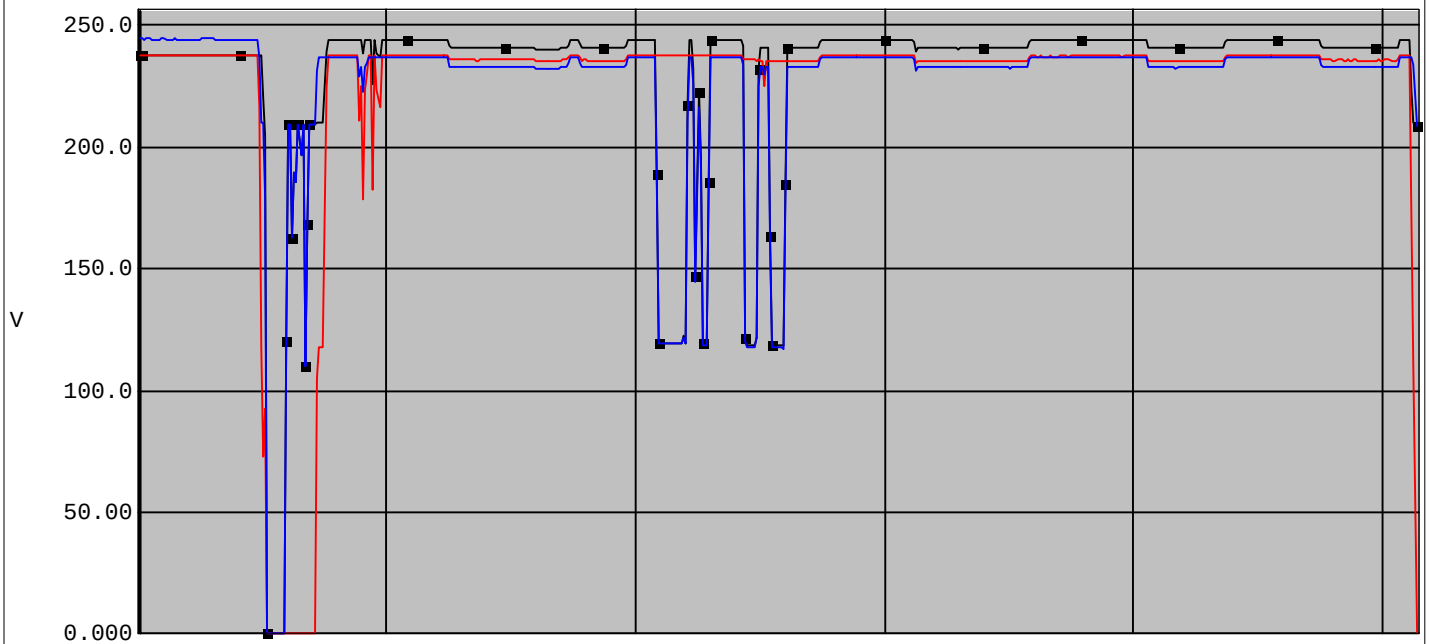
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/23/2004	11:50:00.500 AM	193.5	0.000	209.3	618
Vrms Line2	9/23/2004	11:50:00.500 AM	112.3	0.000	118.9	618
Vrms Line3	9/23/2004	11:50:00.500 AM	112.5	0.000	118.9	618

9/23/2004 - 11:50:00.000 AM
Val
209.3 Vrms Line1
118.8 Vrms Line2
118.8 Vrms Line3

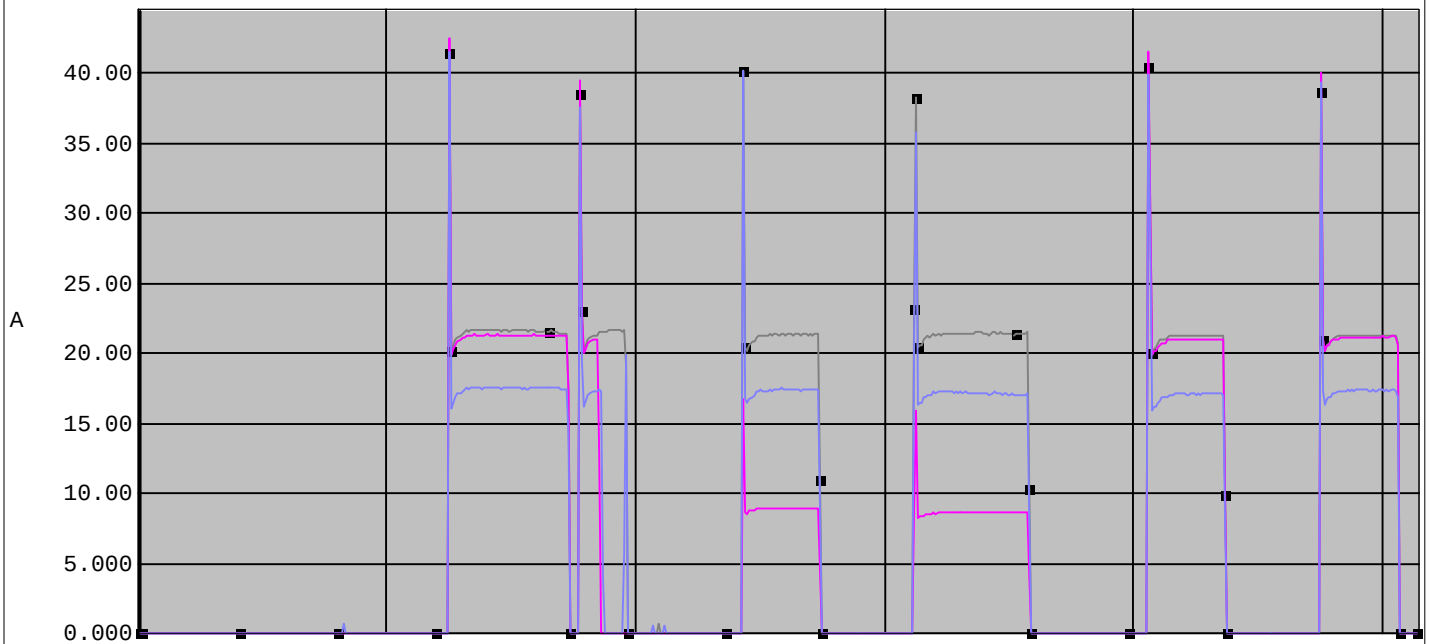
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/23/2004	11:50:00.500 AM	229.7	0.000	243.9	V
Urms Line2	9/23/2004	11:50:00.500 AM	224.7	0.000	237.7	V
Urms Line3	9/23/2004	11:50:00.500 AM	224.5	0.000	244.1	V

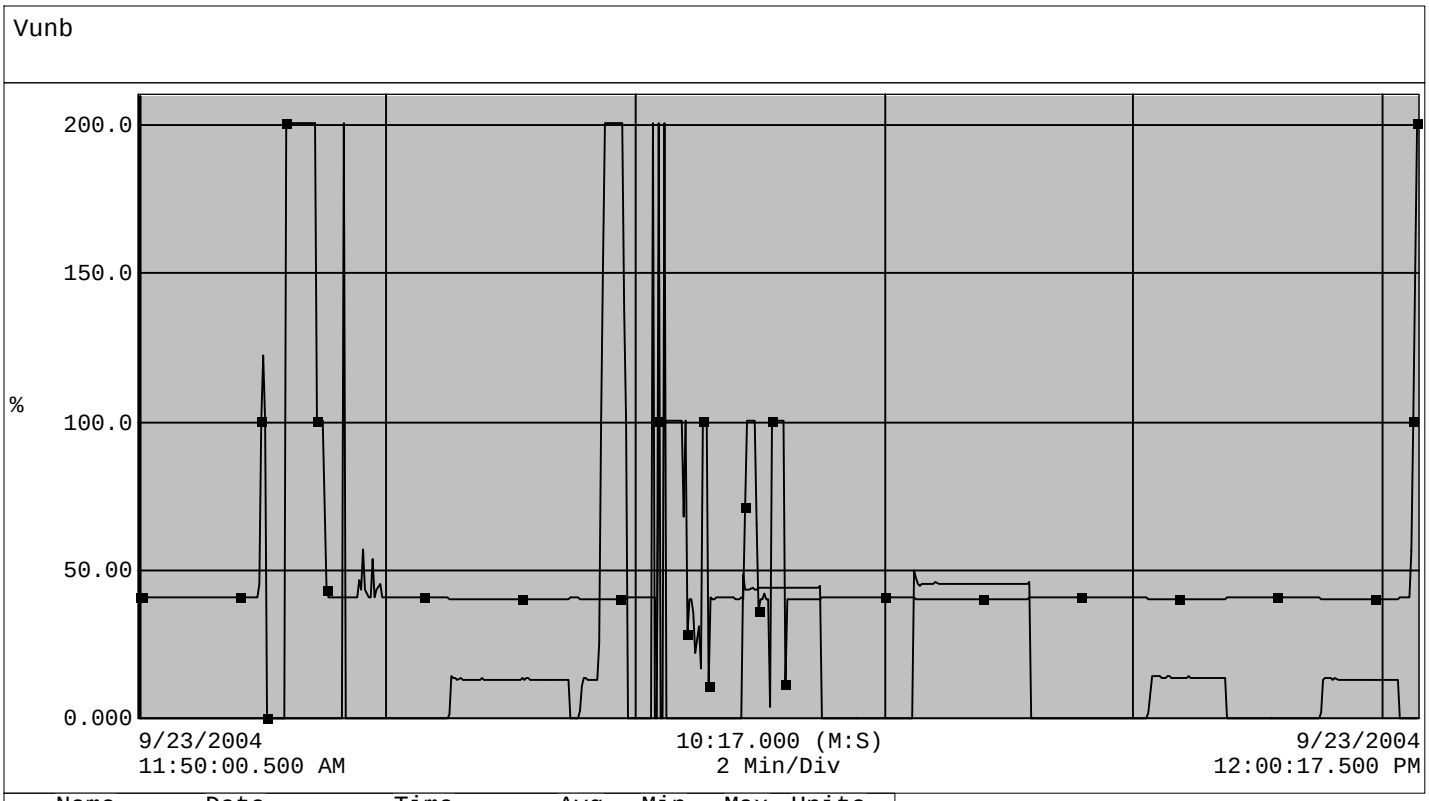
9/23/2004 - 11:50:00.000 AM
Val
237.1 Urms Line1
237.6 Urms Line2
244.1 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/23/2004	11:50:00.500 AM	8.803	0.000	41.40	A
Arms Line2	9/23/2004	11:50:00.500 AM	6.339	0.000	42.40	A
Arms Line3	9/23/2004	11:50:00.500 AM	6.900	0.000	41.50	A

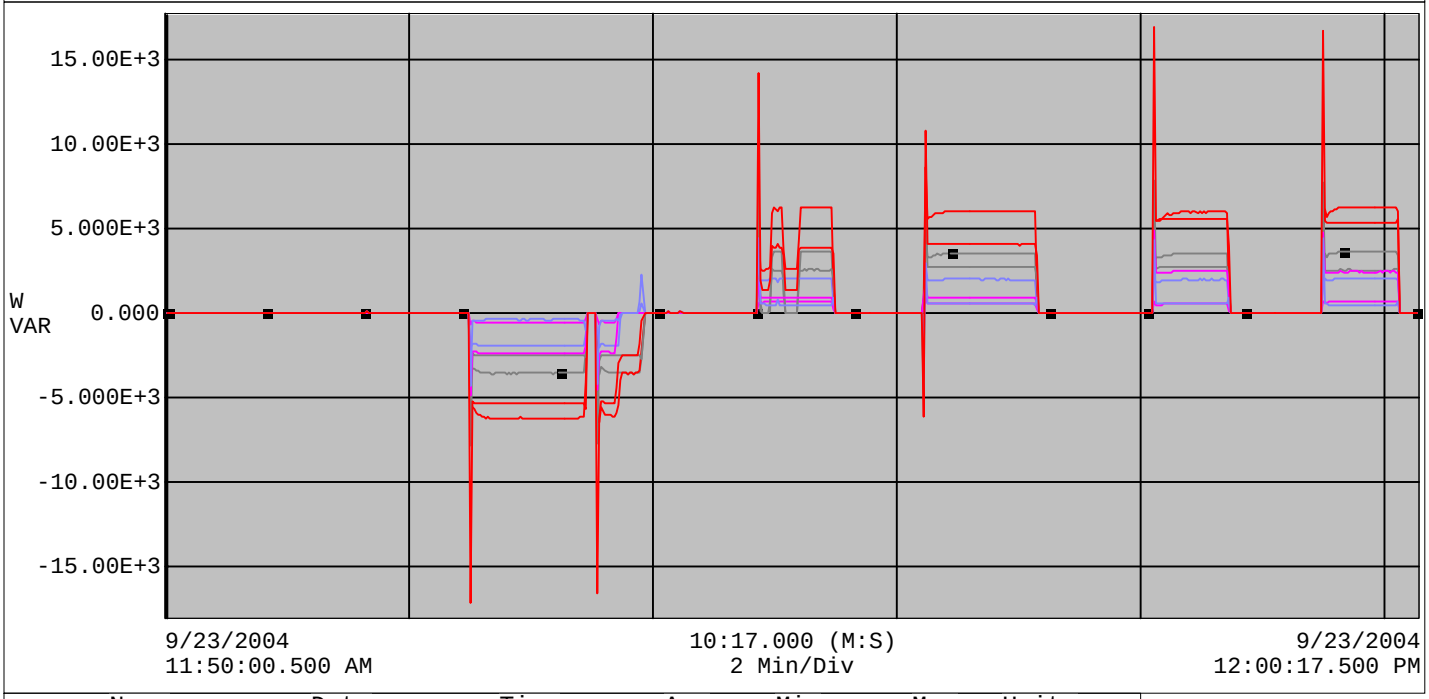
9/23/2004 - 11:50:00.000 AM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/23/2004	11:50:00.500 AM	47.04	0.000	200.0	%
Aunb(IEEE)	9/23/2004	11:50:00.500 AM	14.91	0.000	200.0	%

9/23/2004 - 11:50:00.000 AM
Val
40.50 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

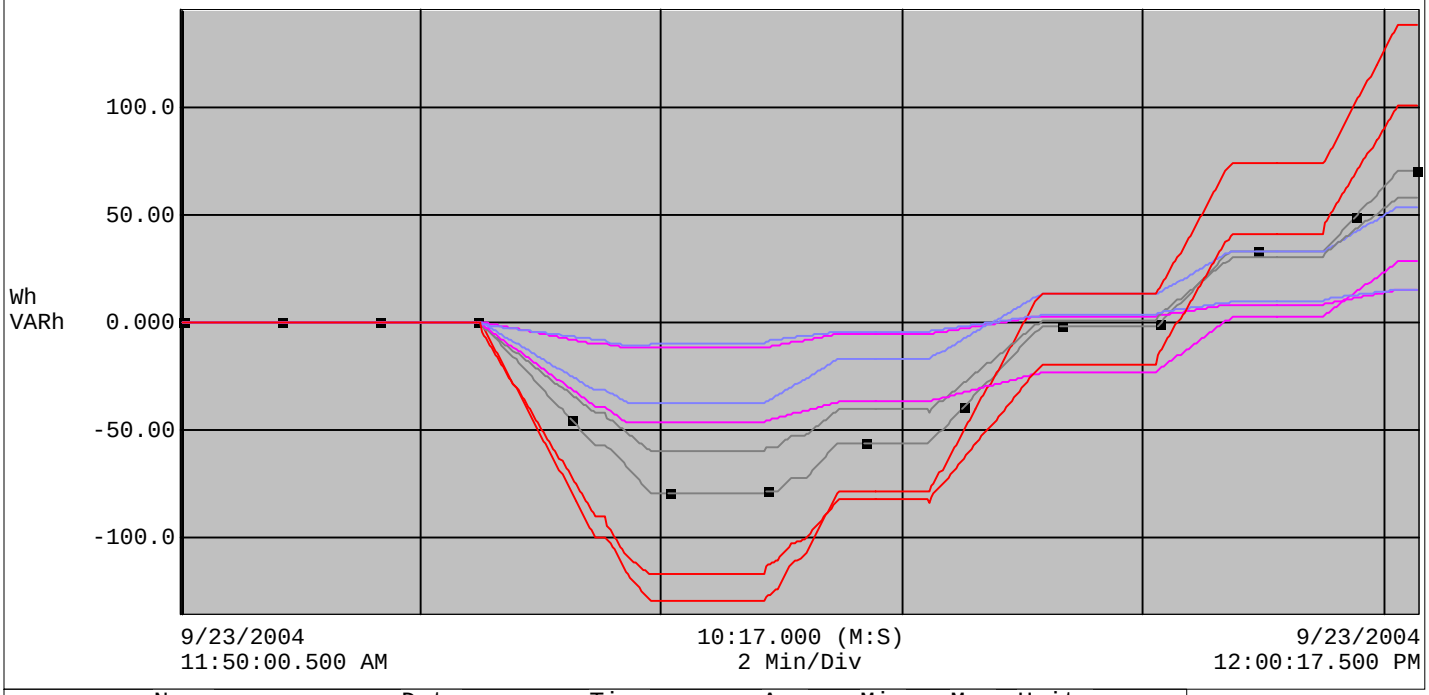
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/23/2004	11:50:00.500 AM	407.3	-3.751E+3	4.794E+3	W
W Line2	9/23/2004	11:50:00.500 AM	87.04	-775.4	862.7	W
W Line3	9/23/2004	11:50:00.500 AM	311.2	-2.112E+3	2.950E+3	W
W Sum of Phases	9/23/2004	11:50:00.500 AM	805.6	-6.591E+3	8.606E+3	W
VAR Line1	9/23/2004	11:50:00.500 AM	336.4	-7.964E+3	7.895E+3	VAR
VAR Line2	9/23/2004	11:50:00.500 AM	162.2	-4.943E+3	4.838E+3	VAR
VAR Line3	9/23/2004	11:50:00.500 AM	87.29	-4.392E+3	4.392E+3	VAR
VAR Sum of Phases	9/23/2004	11:50:00.500 AM	585.9	-17.30E+3	16.88E+3	VAR

9/23/2004 - 11:50:00.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

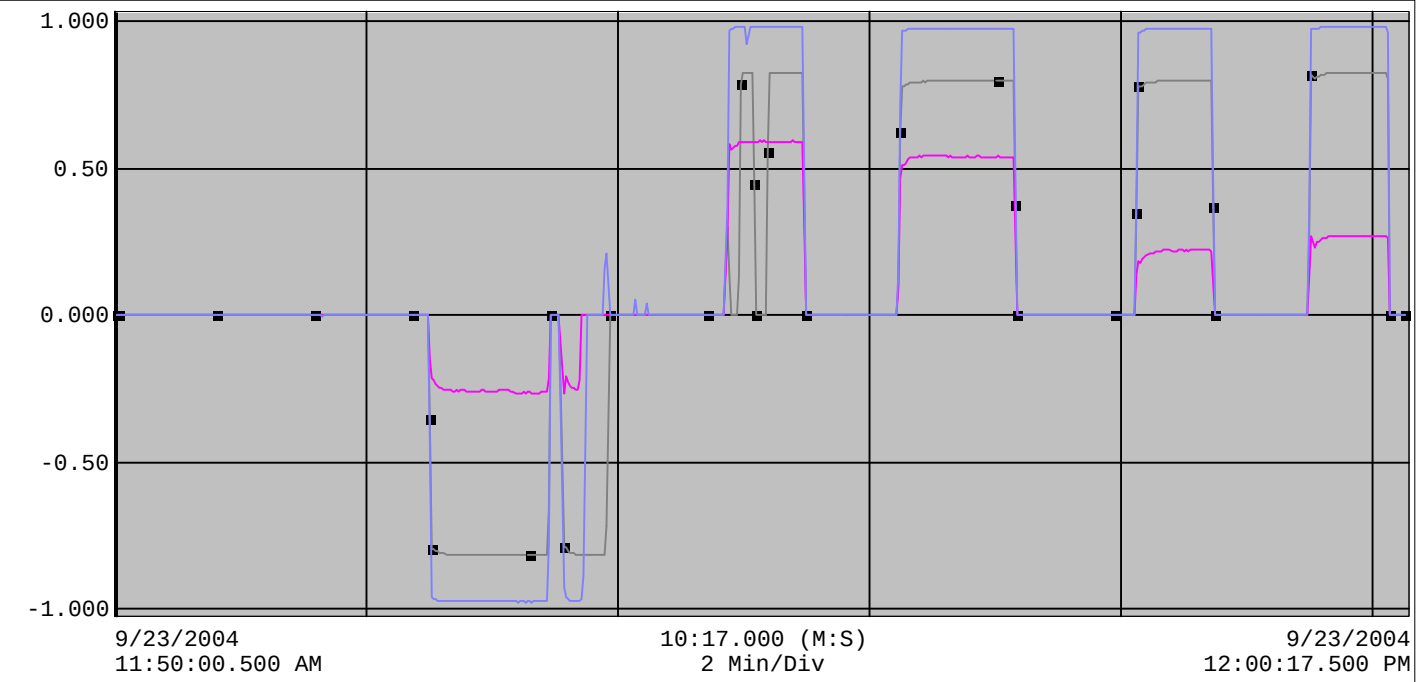
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/23/2004	11:50:00.500 AM	-16.66	-79.78	69.92	Wh
W-hours Line2	9/23/2004	11:50:00.500 AM	-1.073	-12.01	14.94	Wh
W-hours Line3	9/23/2004	11:50:00.500 AM	-1.260	-37.92	53.42	Wh
W-hours Sum of Phases	9/23/2004	11:50:00.500 AM	-18.99	-129.6	138.3	Wh
VAR-hours Line1	9/23/2004	11:50:00.500 AM	-10.98	-60.45	57.74	VARh
VAR-hours Line2	9/23/2004	11:50:00.500 AM	-17.45	-46.52	27.85	VARh
VAR-hours Line3	9/23/2004	11:50:00.500 AM	-0.249	-11.09	14.98	VARh
VAR-hours Sum of Phases	9/23/2004	11:50:00.500 AM	-28.69	-117.2	100.6	VARh

9/23/2004 - 11:50:00.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/23/2004	11:50:00.500 AM	94.81E-3	-0.821	0.821	
PF Line2	9/23/2004	11:50:00.500 AM	83.75E-3	-0.270	0.589	
PF Line3	9/23/2004	11:50:00.500 AM	0.155	-0.978	0.980	

9/23/2004 - 11:50:00.000 AM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: X:\Hafa Adai WWPS\092304 - Hafa Adai WWPS Pump 1 and 2.dvb

Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa, PE & Victor Jardel ,	Hafa Adai WWPS - Pumps 1 and 2 ,

Comments
Recorded at main lugs to pump control panel to record operation of Pumps 1 and 2. GPA Meter 76-789-664, Demand of 1 KW.

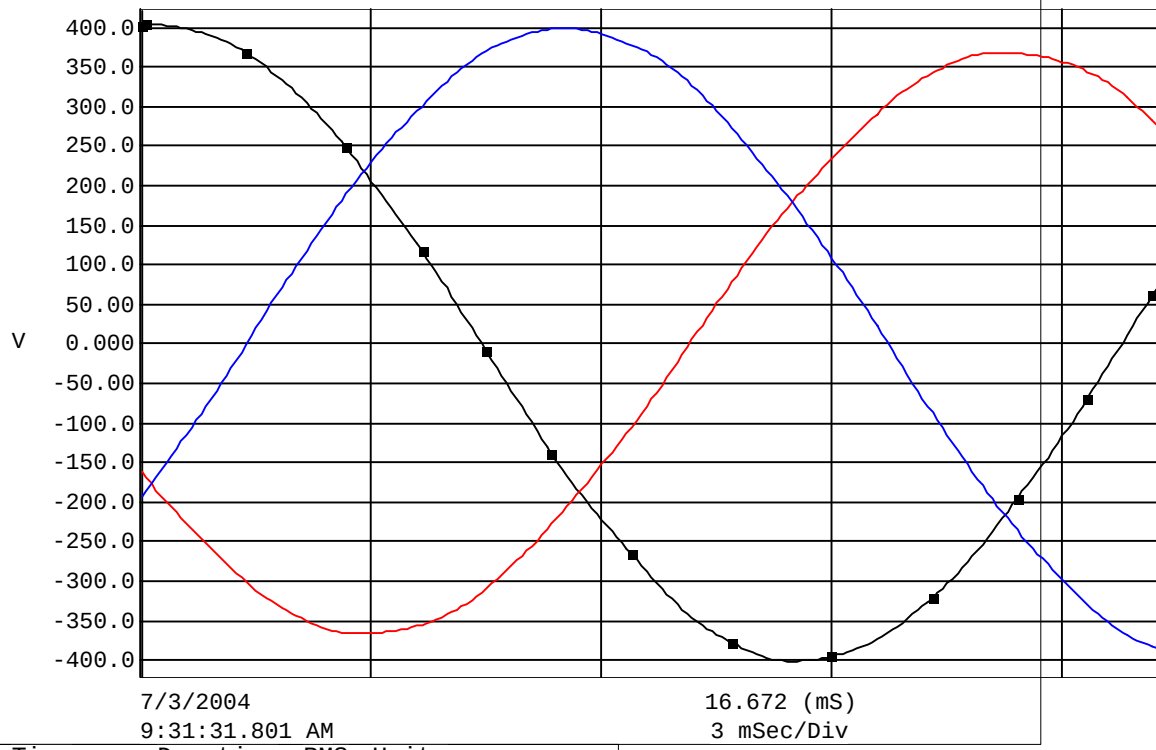
GWA Wastewater Pumping Station Assessment				
Station Name: HARMON	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/03/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.27	
Transformer Pole Condition and Grounding	2.0%		0	NO INFO
Transformer Connection Type	2.0%		0	NO INFO
Transformer Wiring Method	5.0%	2	0.1	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	2	0.02	
Building Service Information	**10.0%**		0	
Main Disconnect	5.0%		0	NO INFO
Grounding	2.5%		0	NO INFO
Surge Protection	2.5%		0	NO INFO
Standby Generator	**20.0%**		0.175	
Generator Condition	10.0%	1	0.1	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	1	0.025	
Auto Transfer Switch	2.5%	2	0.05	
Primary Pump Motor Controls	**20.0%**		0.52	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	3	0.12	
Secondary Pump Motor Controls	**20.0%**		0.52	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	3	0.12	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.25	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	
	100%	**Assessment Value**		**1.8**

Comments:

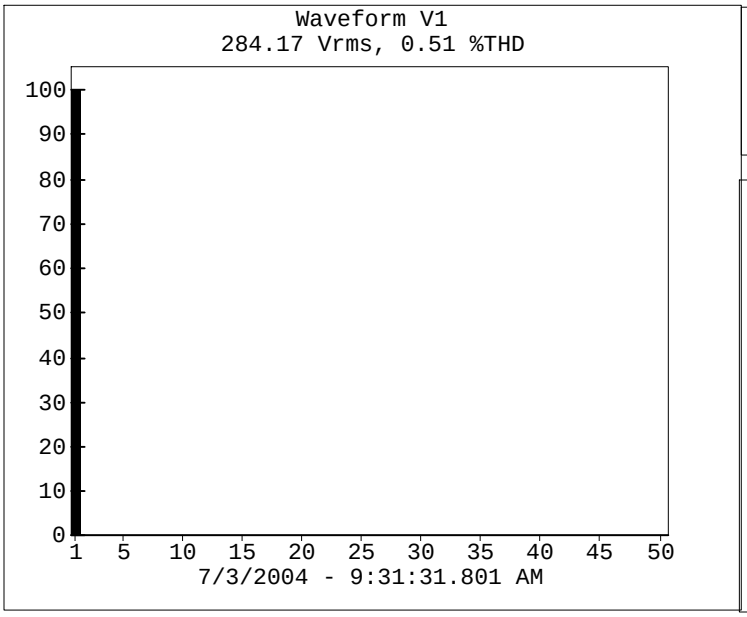
Harmon / Pepsi WWPS Photo 1

Recording Start Date	7/3/2004 - 9:31:31 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/3/2004	9:31:31.801 AM	16.672	284.2	V
Waveform V2	7/3/2004	9:31:31.801 AM	16.672	260.0	V
Waveform V3	7/3/2004	9:31:31.801 AM	16.672	281.3	V

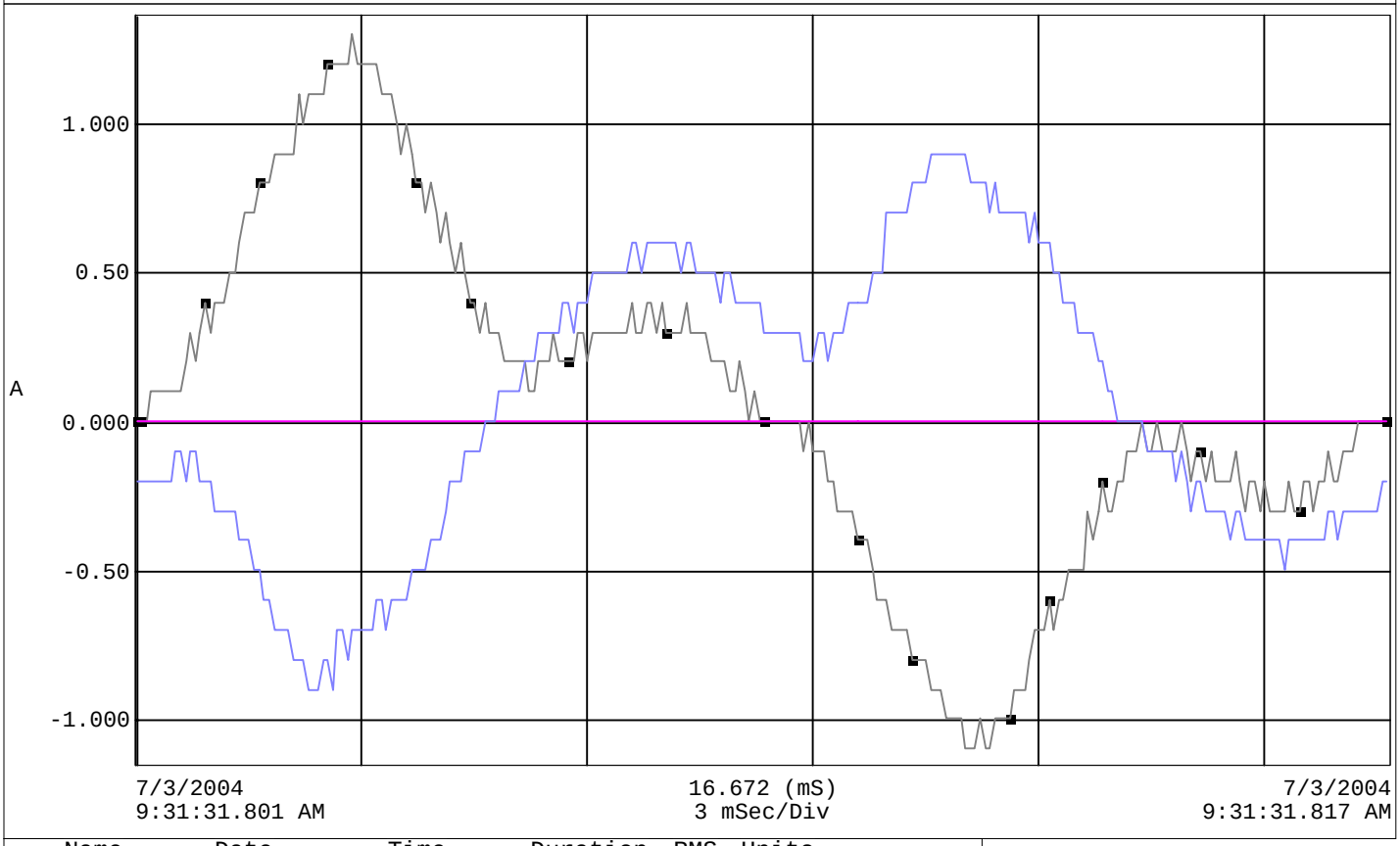


7/3/2004 - 9:31:31.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

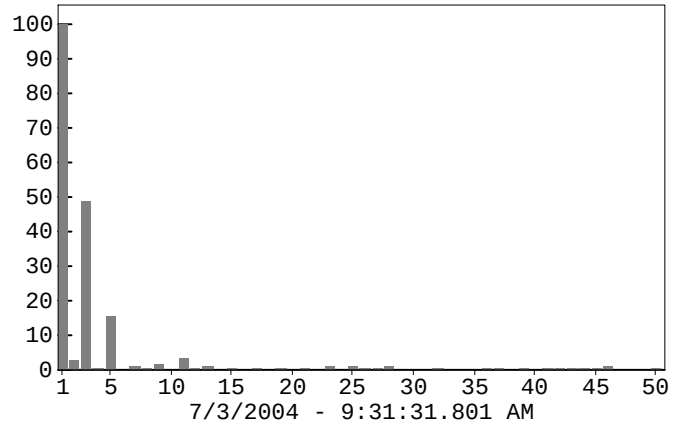
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.3	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/3/2004	9:31:31.801 AM	16.672	0.569	A
Waveform I2	7/3/2004	9:31:31.801 AM	16.672	0.000	A
Waveform I3	7/3/2004	9:31:31.801 AM	16.672	0.483	A

Waveform I1
0.57 Arms, 52.01 %THD

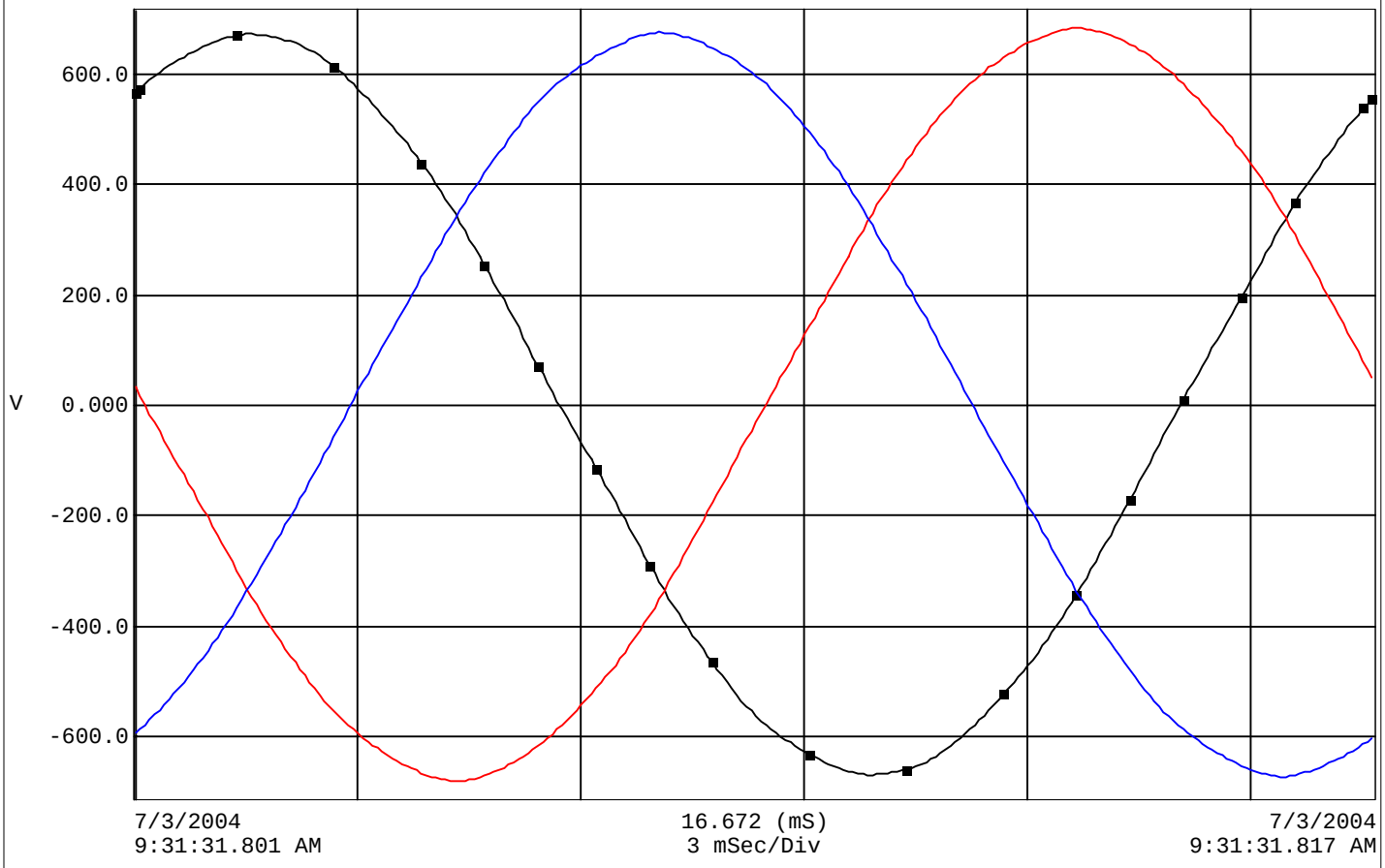


7/3/2004 - 9:31:31.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

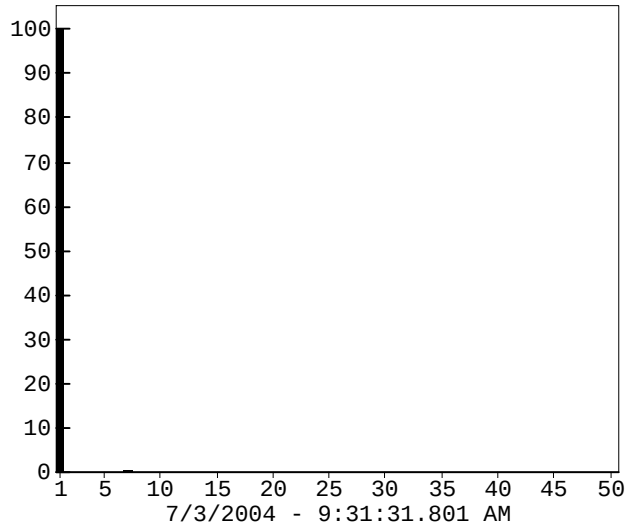
	(%)		(%)		(%)
H01	100.0	H18	0.5	H35	0.2
H02	2.8	H19	0.7	H36	0.8
H03	49.1	H20	0.5	H37	0.7
H04	0.9	H21	0.8	H38	0.2
H05	15.6	H22	0.4	H39	0.7
H06	0.2	H23	1.2	H40	0.1
H07	1.5	H24	0.5	H41	0.8
H08	0.8	H25	1.2	H42	0.6
H09	1.7	H26	1.0	H43	0.7
H10	0.4	H27	0.7	H44	1.1
H11	3.4	H28	1.2	H45	0.8
H12	0.9	H29	0.3	H46	1.5
H13	1.3	H30	0.5	H47	0.4
H14	0.4	H31	0.2	H48	0.4
H15	0.6	H32	0.8	H49	0.5
H16	0.4	H33	0.3	H50	0.8
H17	0.7	H34	0.3		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/3/2004	9:31:31.801 AM	16.672	474.6	V
Waveform U2	7/3/2004	9:31:31.801 AM	16.672	479.5	V
Waveform U3	7/3/2004	9:31:31.801 AM	16.672	474.4	V

Waveform U1
474.56 Vrms, 0.62 %THD



7/3/2004 - 9:31:31.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/3/2004
Start Time: 9:31:31 AM
Duration: 0:0.000 (M:S)
W: 52.27 W
VAR: 210.6 W
VA: 217.0 W
Power Factor: 0.241
Displacement Power Factor: 0.343
TAN: 2.703
VoltageRatio: 1.000
CurrentRatio: 1.000
```

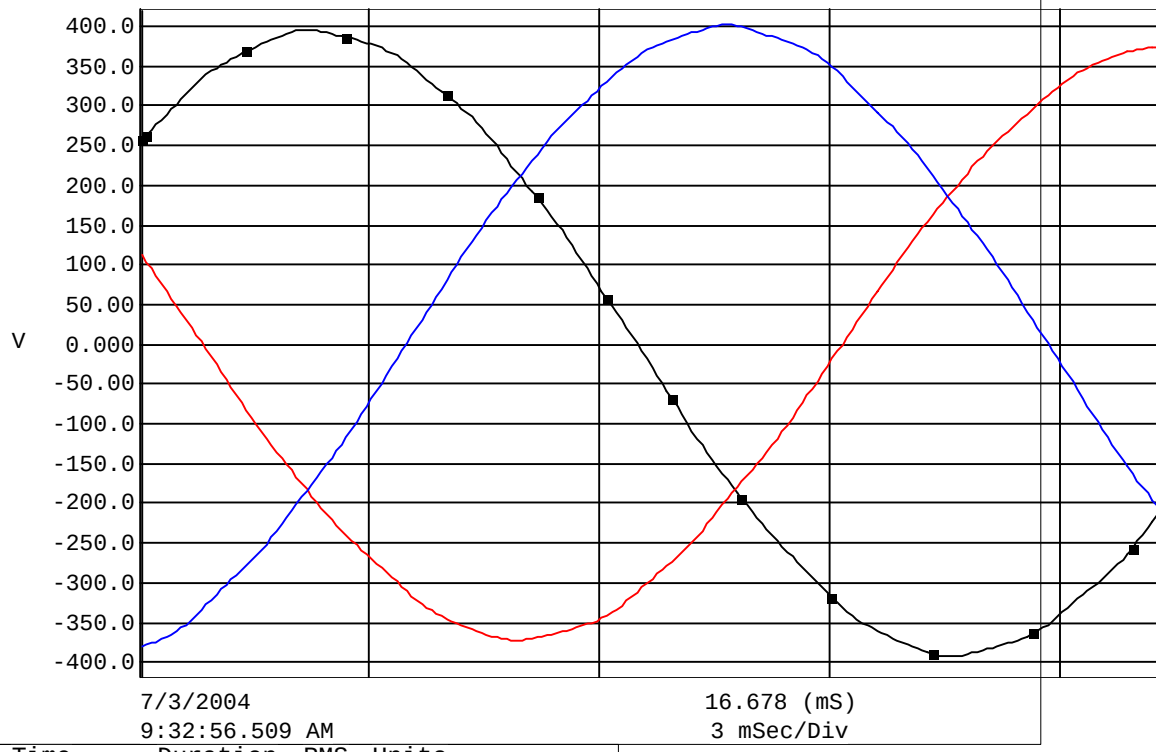
Photo Report

Database: X:\Harmon Pepsi\070304-SPS Harmon Pepsi-Photo1.dvb	
Operator ,	Test Site ,
Comments	

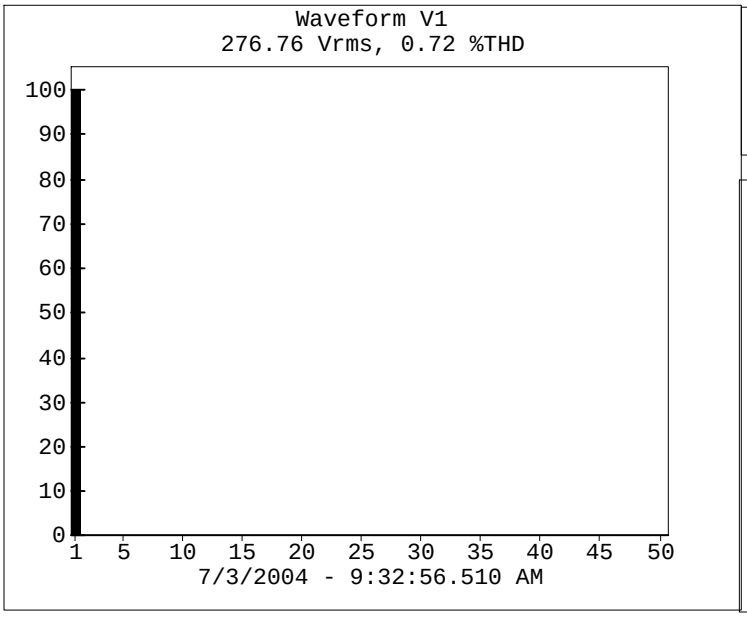
Harmon / Pepsi WWPS Photo 2

Recording Start Date	7/3/2004 - 9:32:56 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/3/2004	9:32:56.509 AM	16.678	276.8	V
Waveform V2	7/3/2004	9:32:56.509 AM	16.678	262.6	V
Waveform V3	7/3/2004	9:32:56.509 AM	16.678	281.2	V



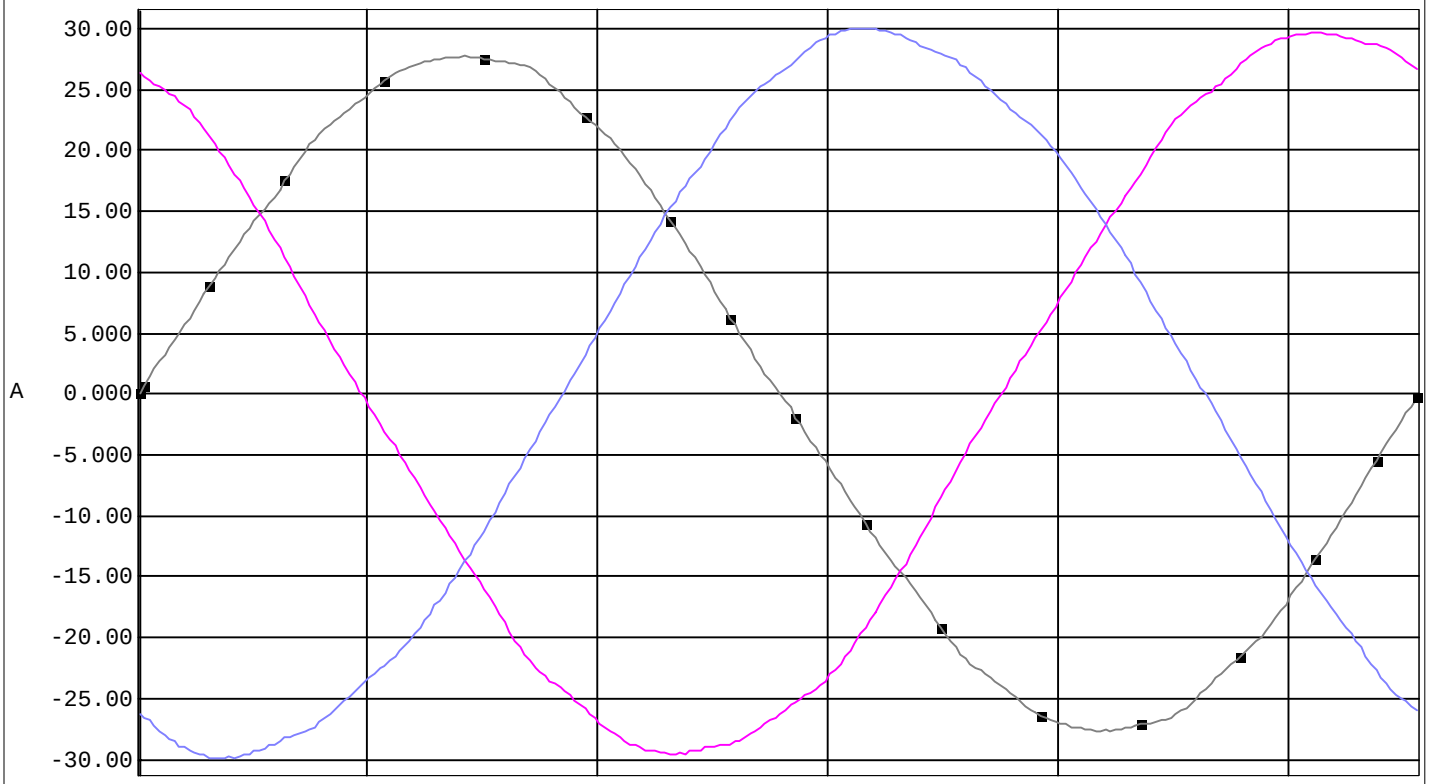
7/3/2004 - 9:32:56.000 AM

Val	
255.3	Waveform V1
111.2	Waveform V2
-382.1	Waveform V3

Waveform V1

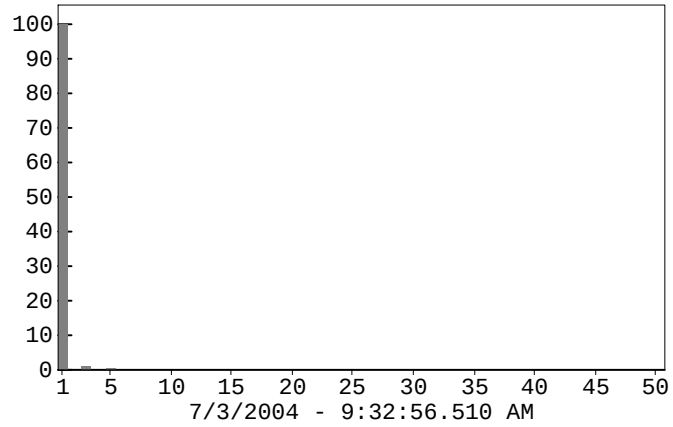
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.4	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/3/2004	9:32:56.509 AM	16.678	19.51	A
Waveform I2	7/3/2004	9:32:56.509 AM	16.678	20.97	A
Waveform I3	7/3/2004	9:32:56.509 AM	16.678	21.02	A

Waveform I1
19.51 Arms, 1.70 %THD



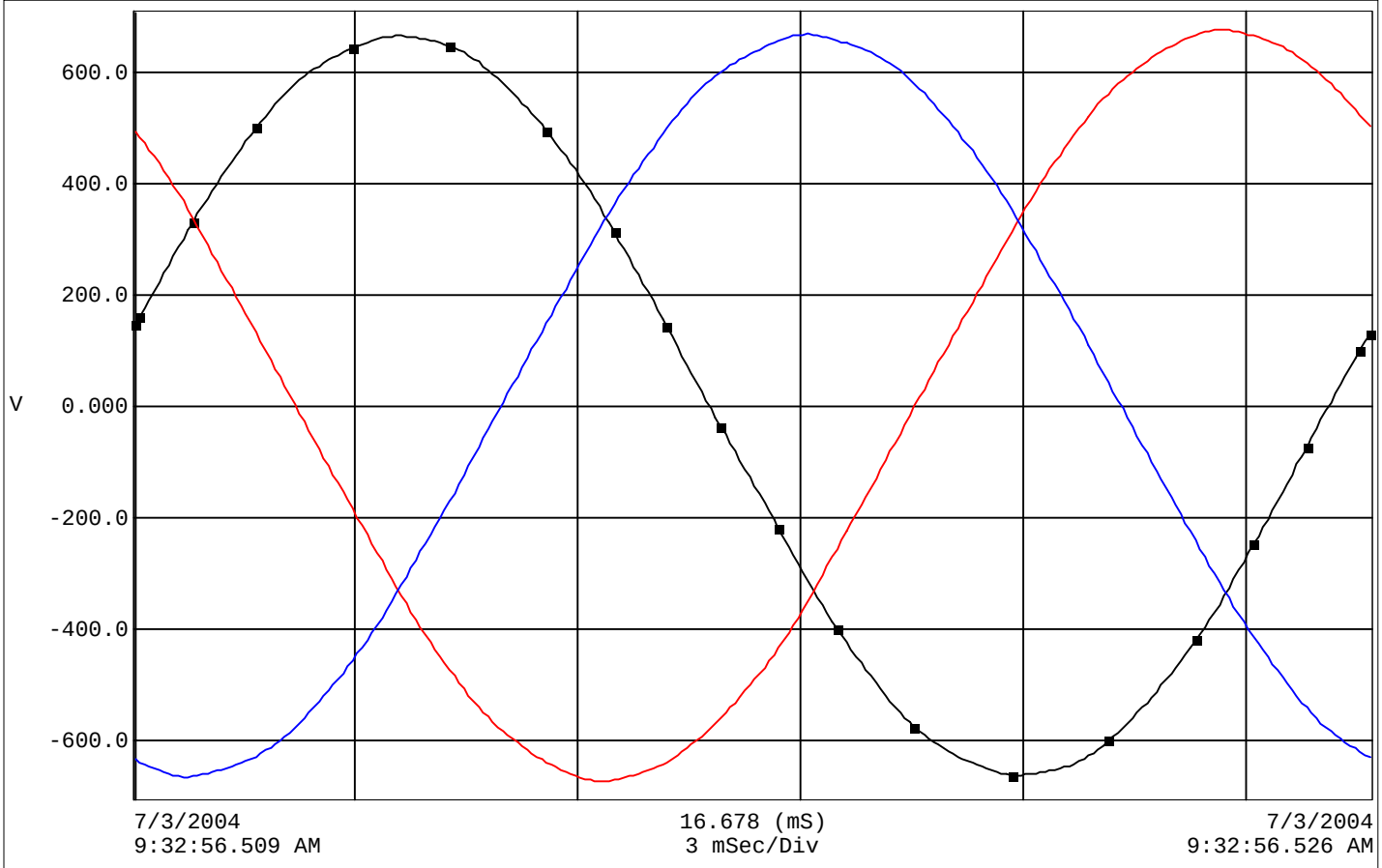
7/3/2004 - 9:32:56.000 AM

Val	
0.000	Waveform I1
26.30	Waveform I2
-26.30	Waveform I3

Waveform I1

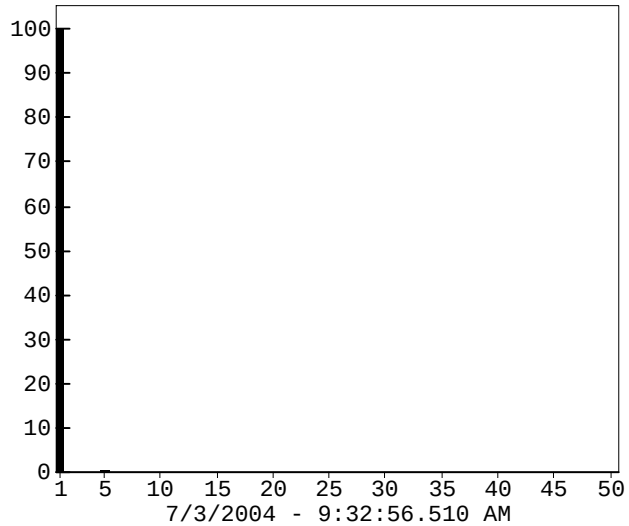
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	1.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.3	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.4	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/3/2004	9:32:56.509 AM	16.678	471.9	V
Waveform U2	7/3/2004	9:32:56.509 AM	16.678	476.7	V
Waveform U3	7/3/2004	9:32:56.509 AM	16.678	471.9	V

Waveform U1
471.92 Vrms, 0.65 %THD



7/3/2004 - 9:32:56.000 AM

Val	
144.0	Waveform U1
493.4	Waveform U2
-637.4	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.3	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/3/2004
Start Time: 9:32:56 AM
Duration: 0:0.000 (M:S)
W: 4.139E+3 W
VAR: 3.558E+3 W
VA: 5.458E+3 W
Power Factor: 0.758
Displacement Power Factor: 0.758
TAN: 0.859
VoltageRatio: 1.000
CurrentRatio: 1.000
```

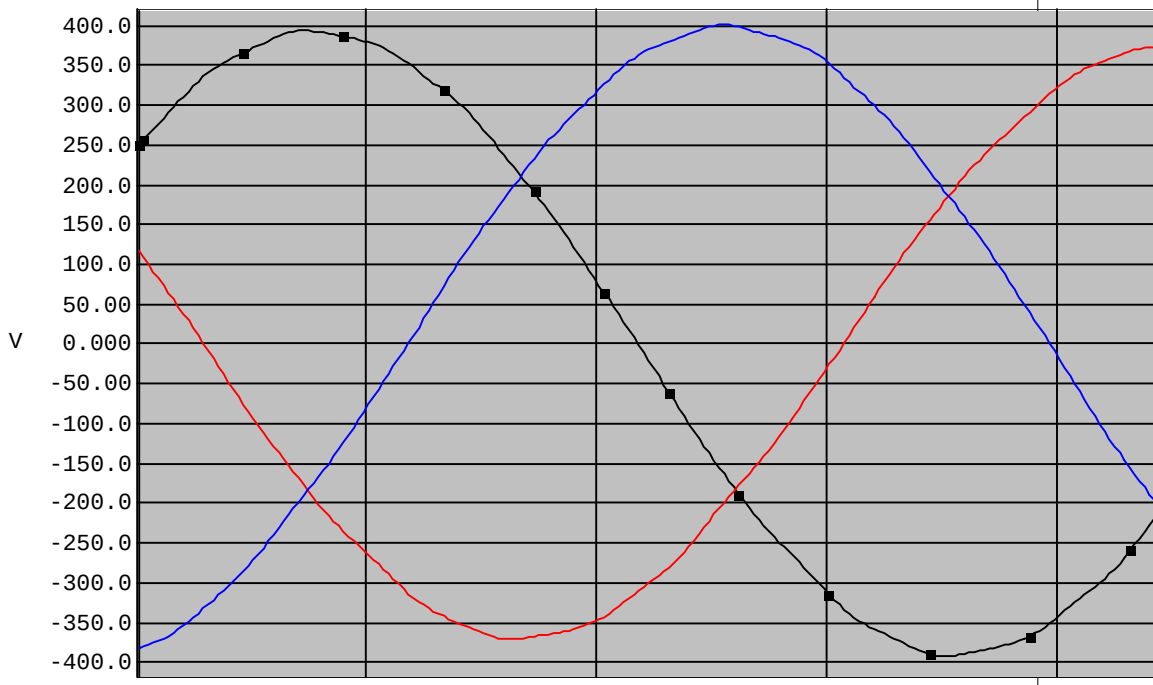
Photo Report

Database: X:\Harmon Pepsi\070304-SPS Harmon Pepsi-Photo2.dvb	
Operator ,	Test Site ,
Comments	

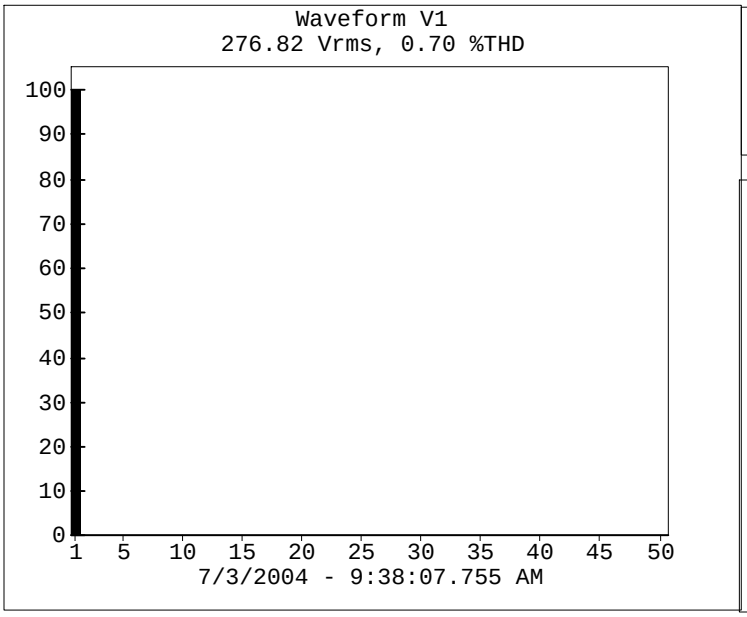
Harmon / Pepsi WWPS Photo 3

Recording Start Date	7/3/2004 - 9:38:07 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/3/2004	9:38:07.755 AM	16.681	276.8	V
Waveform V2	7/3/2004	9:38:07.755 AM	16.681	262.4	V
Waveform V3	7/3/2004	9:38:07.755 AM	16.681	281.1	V

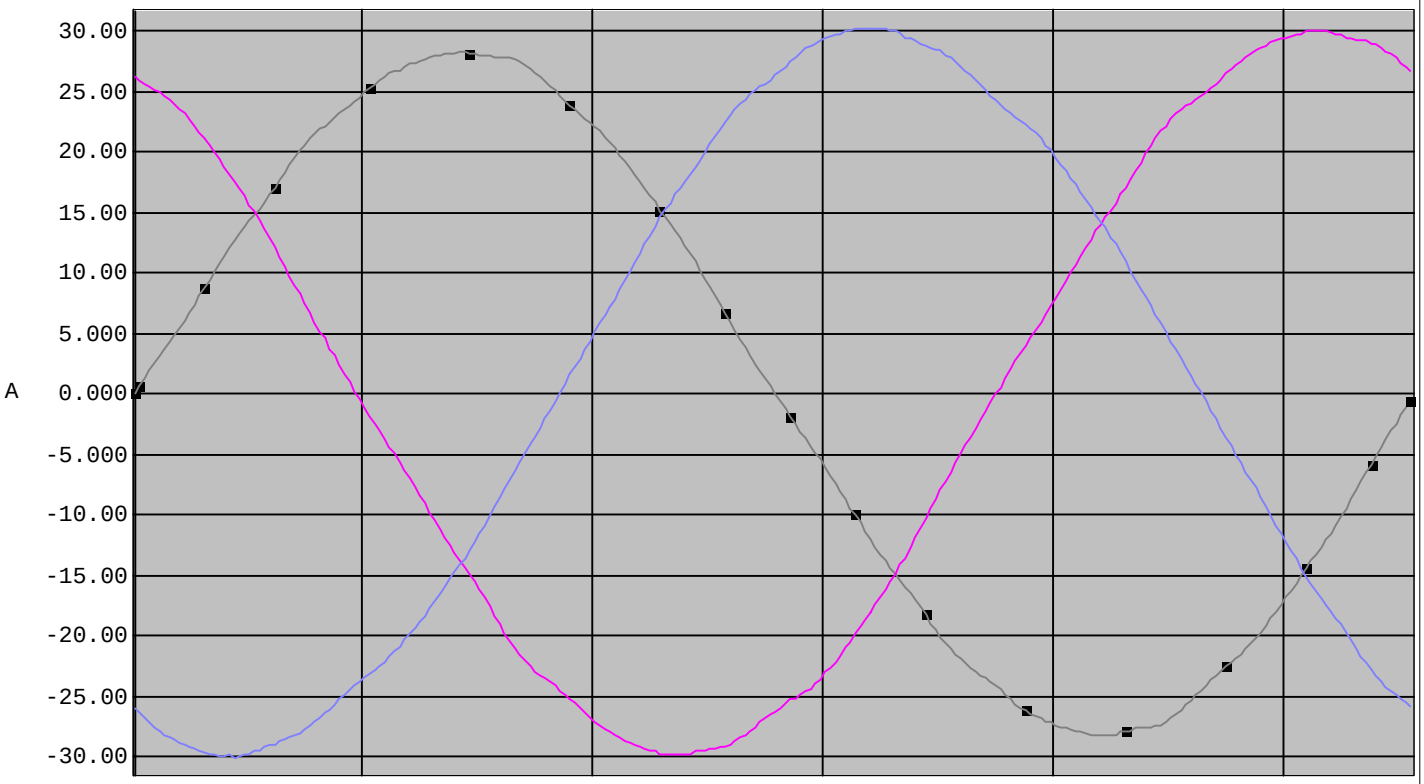


7/3/2004 - 9:38:07.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

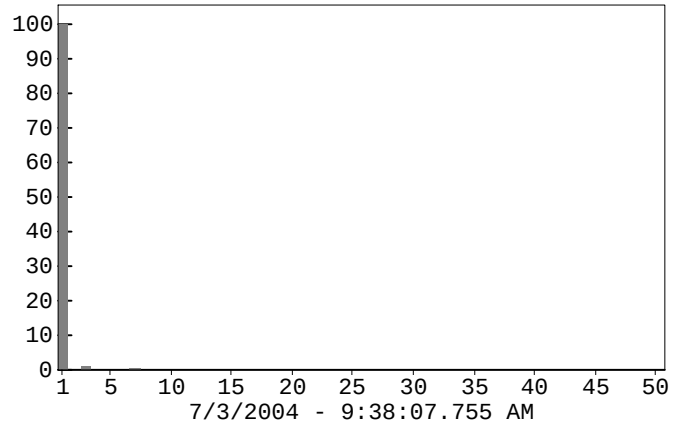
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.3	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.3	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.4	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.95 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/3/2004	9:38:07.755 AM	16.681	19.80	A
Waveform I2	7/3/2004	9:38:07.755 AM	16.681	21.10	A
Waveform I3	7/3/2004	9:38:07.755 AM	16.681	21.13	A

Waveform I1
19.80 Arms, 1.62 %THD

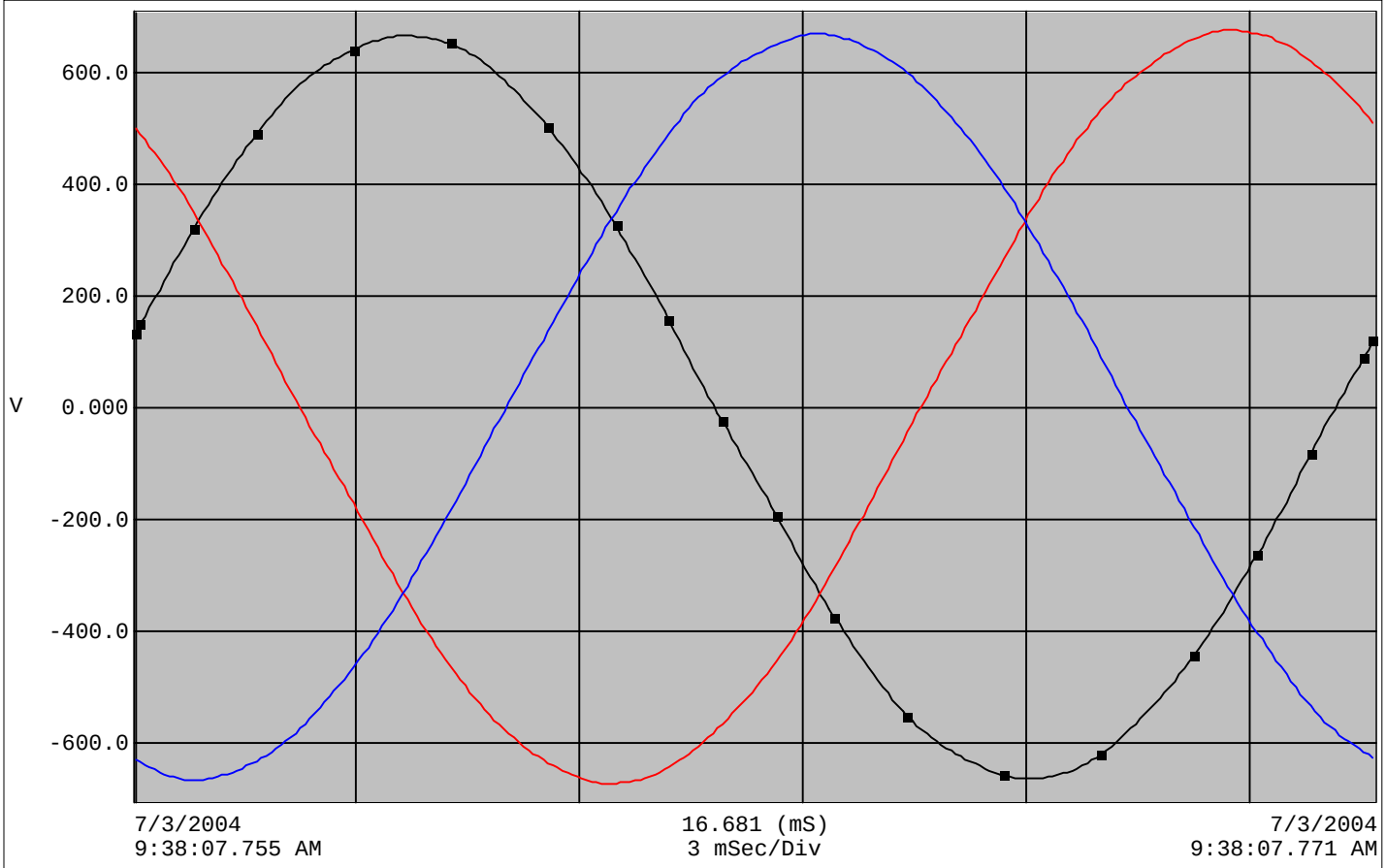


7/3/2004 - 9:38:07.015 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

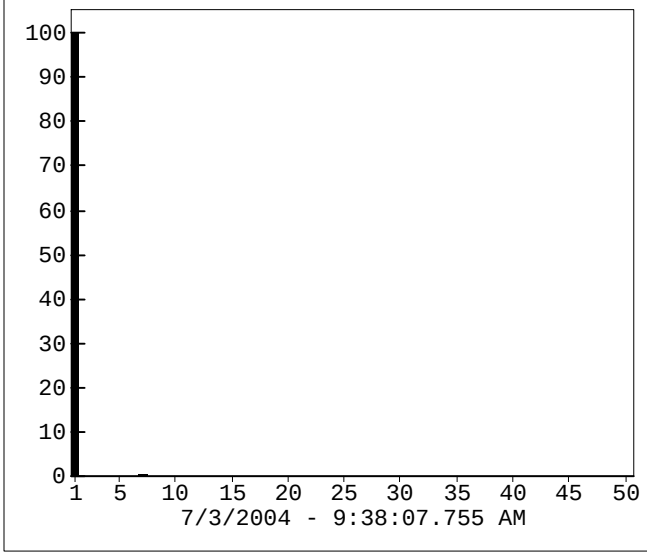
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.2	H19	0.1	H36	0.0
H03	1.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.4	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/3/2004	9:38:07.755 AM	16.681	471.8	V
Waveform U2	7/3/2004	9:38:07.755 AM	16.681	476.4	V
Waveform U3	7/3/2004	9:38:07.755 AM	16.681	471.9	V

Waveform U1
471.84 Vrms, 0.63 %THD



7/3/2004 - 9:38:07.015 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/3/2004
Start Time: 9:38:07 AM
Duration: 0:0.000 (M:S)
W: 4.185E+3 W
VAR: 3.579E+3 W
VA: 5.507E+3 W
Power Factor: 0.760
Displacement Power Factor: 0.760
TAN: 0.855
VoltageRatio: 1.000
CurrentRatio: 1.000
```

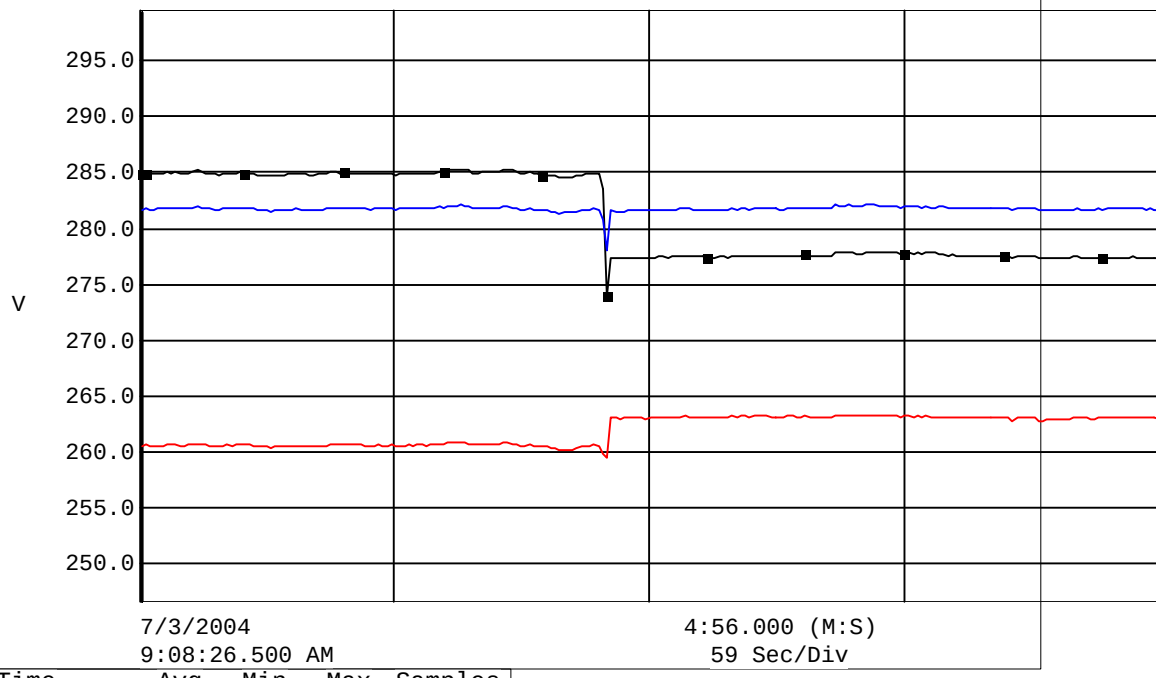
Photo Report

Database: X:\Harmon Pepsi\070304-SPS Harmon Pepsi-Photo3.dvb	
Operator ,	Test Site ,
Comments	

Harmon / Pepsi WWPS Trend 1

Recording Start Date	7/3/2004 - 9:08:26 AM
Recording Duration	4:56 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

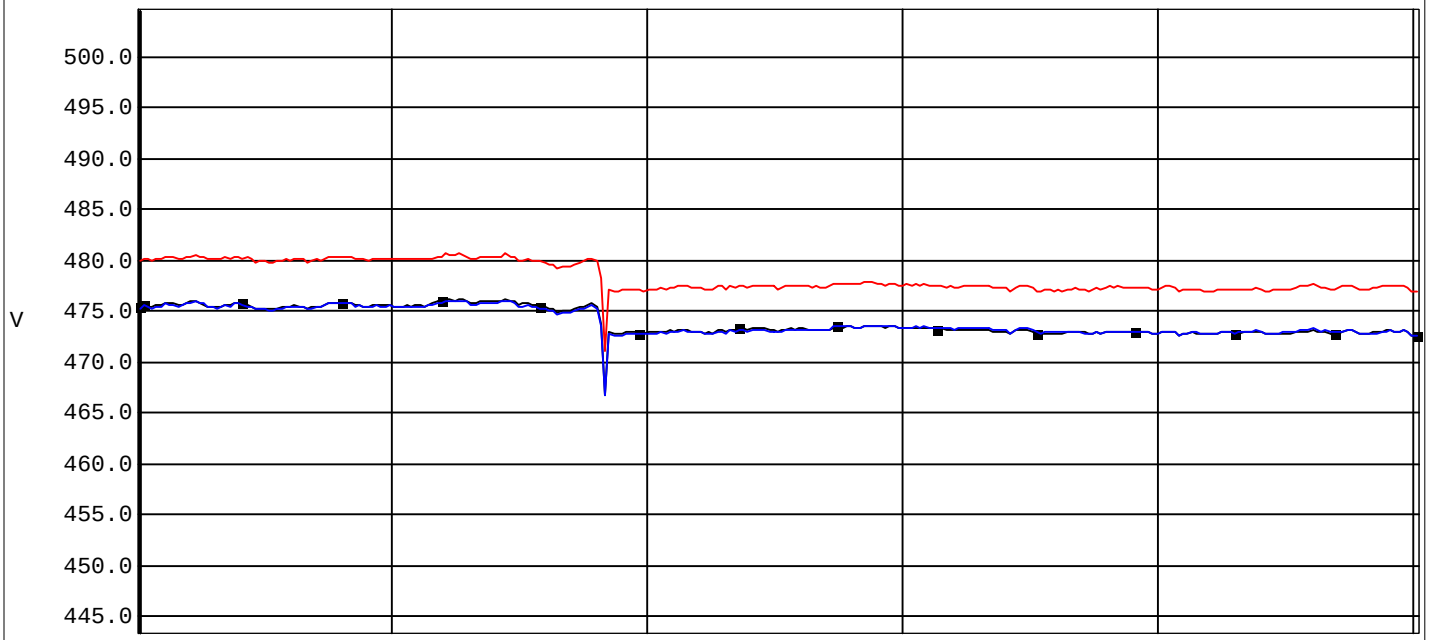
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/3/2004	9:08:26.500 AM	280.1	273.8	285.2	297
Vrms Line2	7/3/2004	9:08:26.500 AM	262.0	259.4	263.2	297
Vrms Line3	7/3/2004	9:08:26.500 AM	281.7	277.9	282.0	297

7/3/2004 - 9:08:26.000 AM
Val
284.8 — Vrms Line1
260.3 — Vrms Line2
281.6 — Vrms Line3

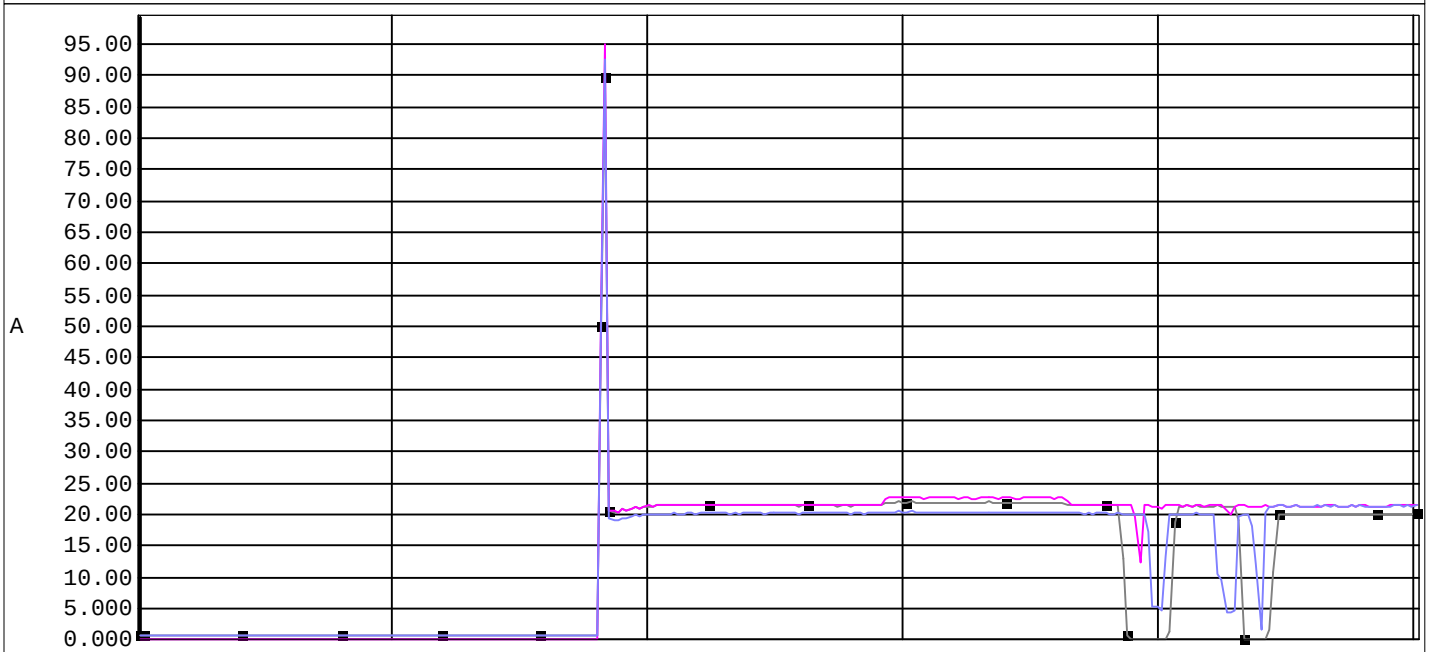
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/3/2004	9:08:26.500 AM	473.8	466.6	476.0	V
Urms Line2	7/3/2004	9:08:26.500 AM	478.2	471.0	480.5	V
Urms Line3	7/3/2004	9:08:26.500 AM	473.8	466.6	475.9	V

7/3/2004 - 9:08:26.000 AM
Val
475.3 Urms Line1
479.9 Urms Line2
475.2 Urms Line3

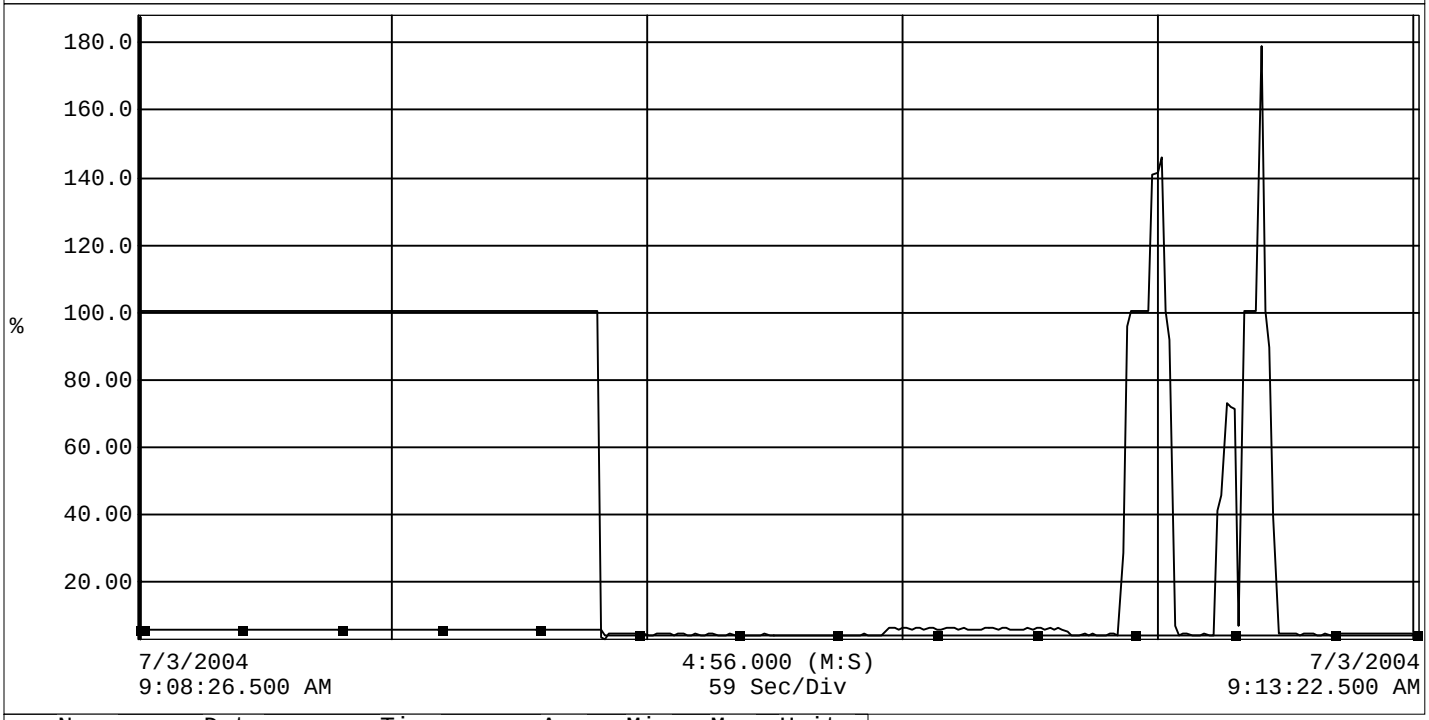
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/3/2004	9:08:26.500 AM	12.71	0.000	89.60	A
Arms Line2	7/3/2004	9:08:26.500 AM	14.10	0.000	94.70	A
Arms Line3	7/3/2004	9:08:26.500 AM	13.04	0.600	92.50	A

7/3/2004 - 9:08:26.000 AM
Val
0.600 — Arms Line1
0.000 — Arms Line2
0.600 — Arms Line3

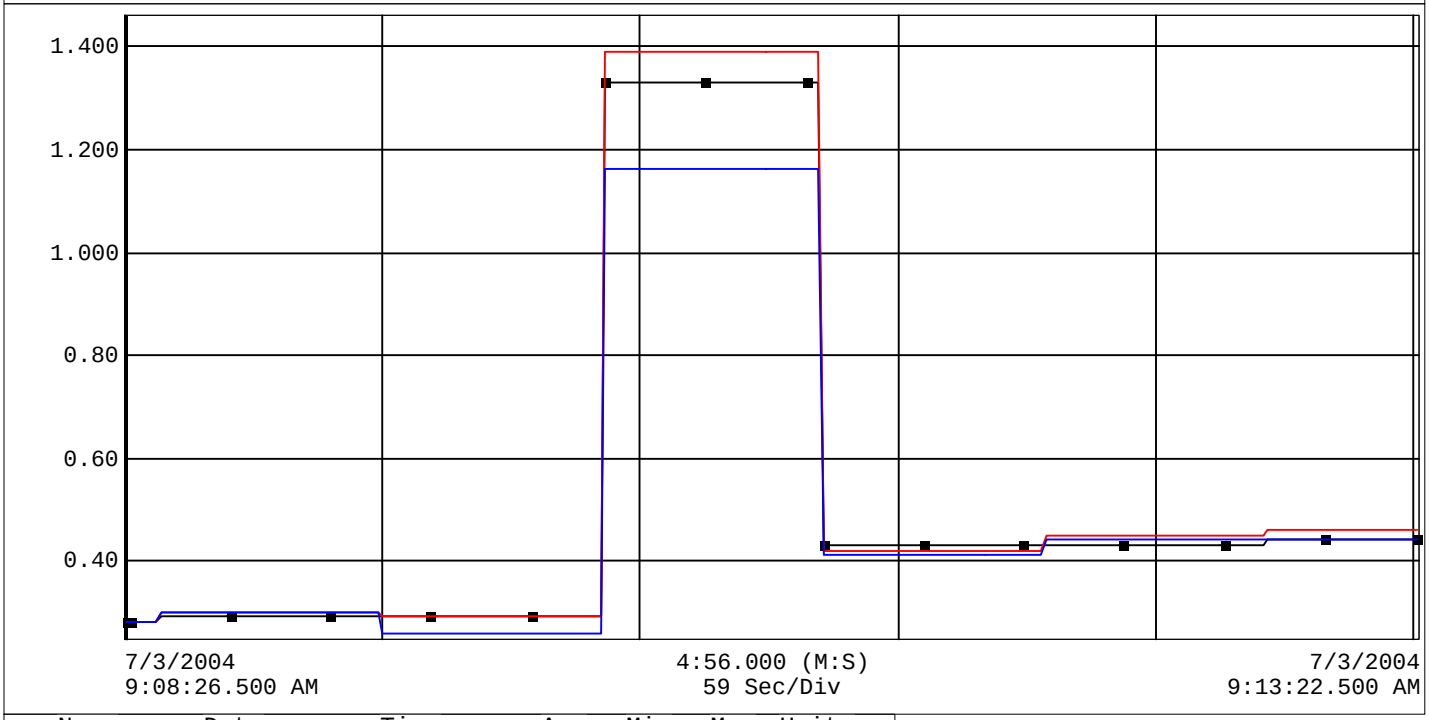
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/3/2004	9:08:26.500 AM	4.565	4.000	5.500	%
Aunb(IEEE)	7/3/2004	9:08:26.500 AM	46.49	2.900	178.9	%

7/3/2004 - 9:08:26.000 AM
Val
5.500 —— Vunb(IEEE)
100.0 —— Aunb(IEEE)

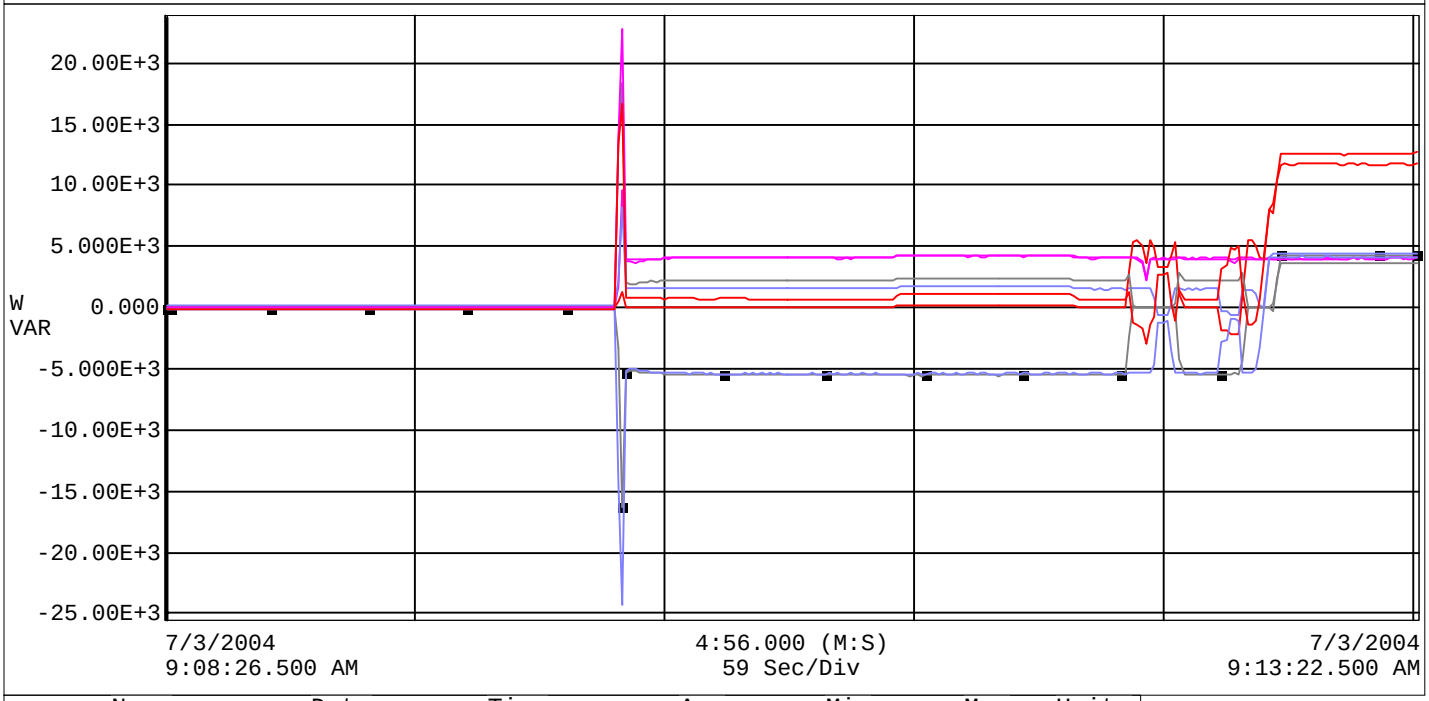
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/3/2004	9:08:26.500 AM	0.531	0.280	1.330	
Vflk Line2	7/3/2004	9:08:26.500 AM	0.546	0.280	1.390	
Vflk Line3	7/3/2004	9:08:26.500 AM	0.497	0.260	1.160	

7/3/2004 - 9:08:26.000 AM
Val
0.280 Vflk Line1
0.280 Vflk Line2
0.280 Vflk Line3

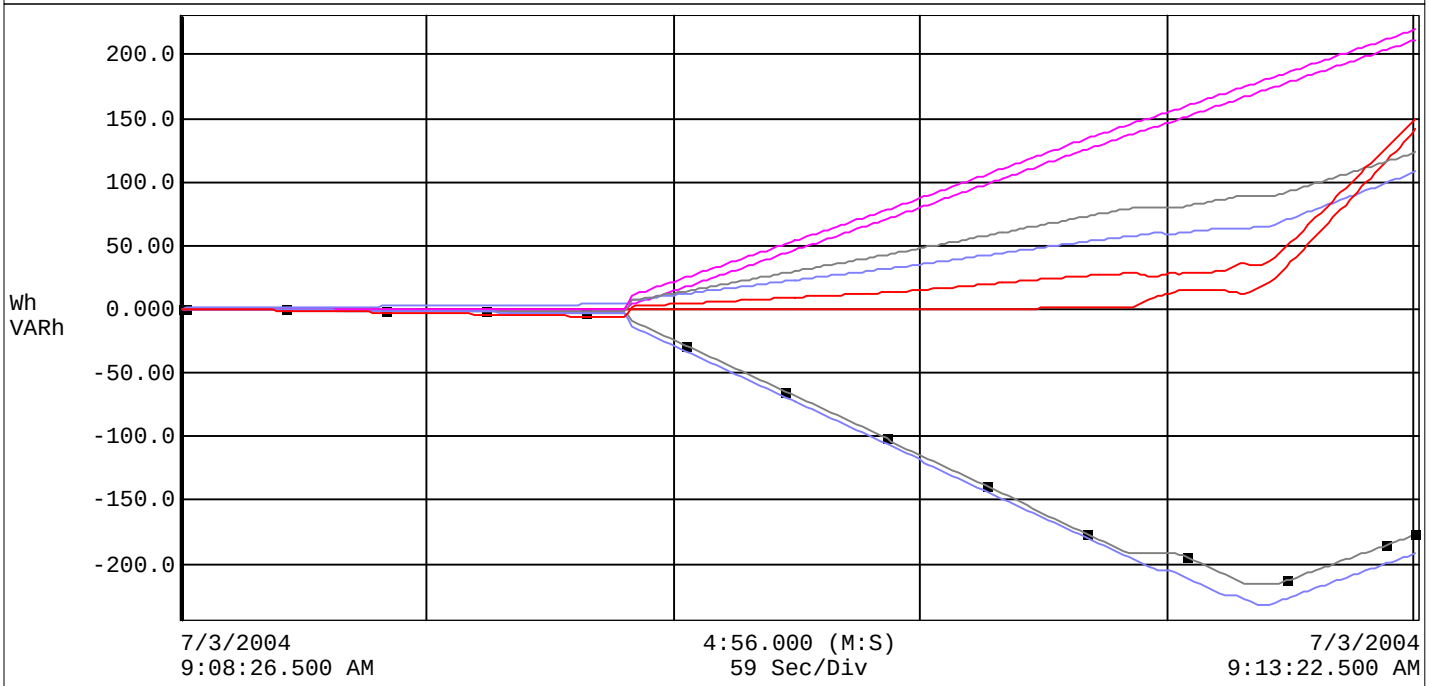
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/3/2004	9:08:26.500 AM	-2.155E+3	-16.37E+3	4.244E+3	W
W Line2	7/3/2004	9:08:26.500 AM	2.560E+3	0.000	9.456E+3	W
W Line3	7/3/2004	9:08:26.500 AM	1.300E+3	-745.3	8.070E+3	W
W Sum of Phases	7/3/2004	9:08:26.500 AM	1.704E+3	-2.257E+3	12.66E+3	W
VAR Line1	7/3/2004	9:08:26.500 AM	1.484E+3	-378.0	18.27E+3	VAR
VAR Line2	7/3/2004	9:08:26.500 AM	2.657E+3	0.000	22.67E+3	VAR
VAR Line3	7/3/2004	9:08:26.500 AM	-2.333E+3	-24.41E+3	4.114E+3	VAR
VAR Sum of Phases	7/3/2004	9:08:26.500 AM	1.807E+3	-3.077E+3	16.54E+3	VAR

7/3/2004 - 9:08:26.000 AM
Val
-135.0 — W Line1
0.000 — W Line2
113.3 — W Line3
-21.80 — W Sum of Phases
-89.69 — VAR Line1
0.000 — VAR Line2
-139.7 — VAR Line3
-230.1 — VAR Sum of Phases

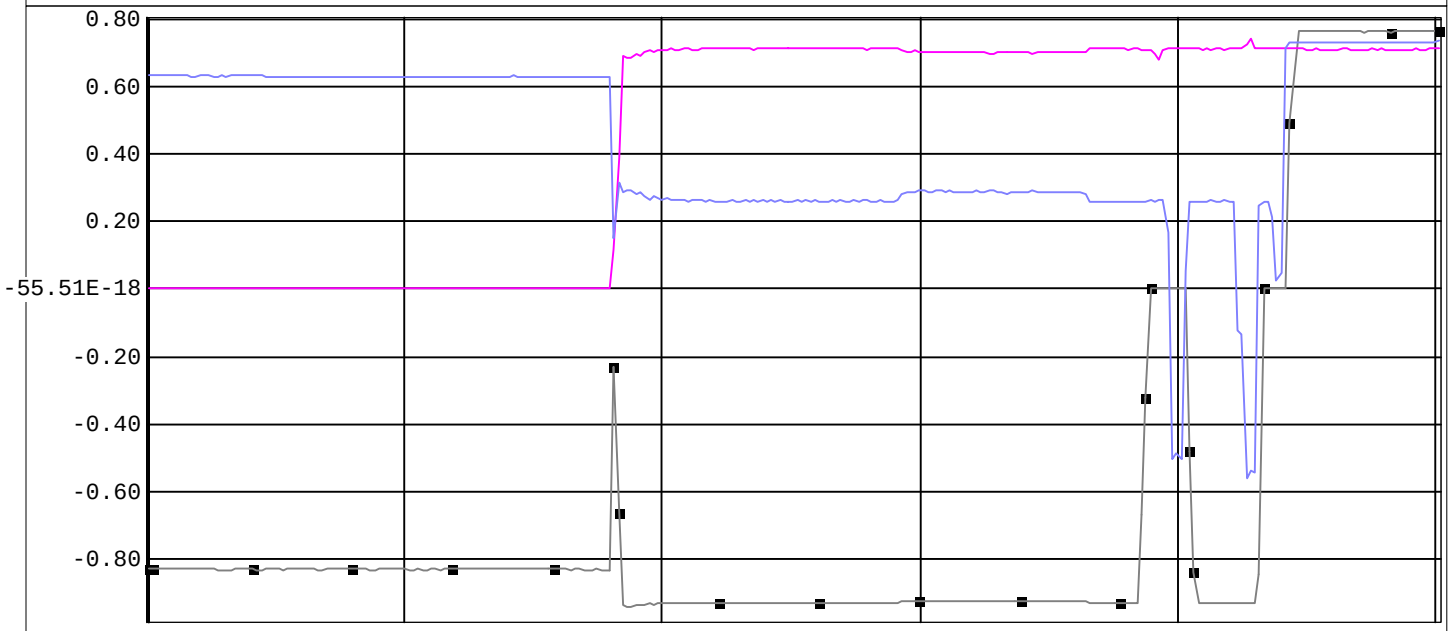
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/3/2004	9:08:26.500 AM	-87.94	-216.9	-33.12E-3	Wh
W-hours Line2	7/3/2004	9:08:26.500 AM	68.26	0.000	211.2	Wh
W-hours Line3	7/3/2004	9:08:26.500 AM	30.36	32.75E-3	107.2	Wh
W-hours Sum of Phases	7/3/2004	9:08:26.500 AM	10.67	-1.421	140.6	Wh
VAR-hours Line1	7/3/2004	9:08:26.500 AM	38.32	-2.684	122.4	VARh
VAR-hours Line2	7/3/2004	9:08:26.500 AM	73.21	0.000	219.2	VARh
VAR-hours Line3	7/3/2004	9:08:26.500 AM	-92.88	-233.5	-28.52E-3	VARh
VAR-hours Sum of Phases	7/3/2004	9:08:26.500 AM	18.65	-6.873	149.1	VARh

7/3/2004 - 9:08:26.000 AM
Val
-33.12E-3 — W-hours Line1
0.000 — W-hours Line2
32.75E-3 — W-hours Line3
0.000 — W-hours Sum of Phases
-22.43E-3 — VAR-hours Line1
0.000 — VAR-hours Line2
-28.52E-3 — VAR-hours Line3
-59.18E-3 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/3/2004	9:08:26.500 AM	-0.642	-0.942	0.763	
PF Line2	7/3/2004	9:08:26.500 AM	0.448	0.000	0.738	
PF Line3	7/3/2004	9:08:26.500 AM	0.431	-0.561	0.732	

7/3/2004 - 9:08:26.000 AM
Val
-0.832 — PF Line1
0.000 — PF Line2
0.628 — PF Line3

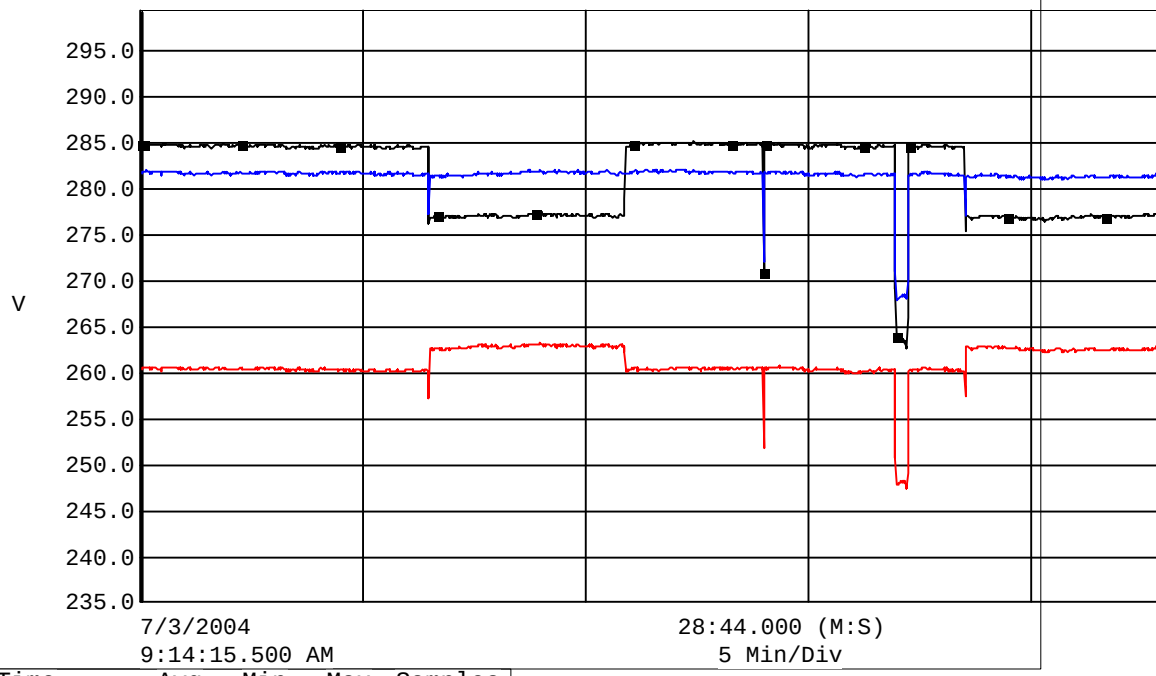
Trend Summary Report

Database: X:\Harmon Pepsi\070304-SPS Harmon Pepsi-1.dvb	
Operator ,	Test Site ,
Comments	

Harmon / Pepsi WWPS Trend 2

Recording Start Date	7/3/2004 - 9:14:15 AM
Recording Duration	28:44 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

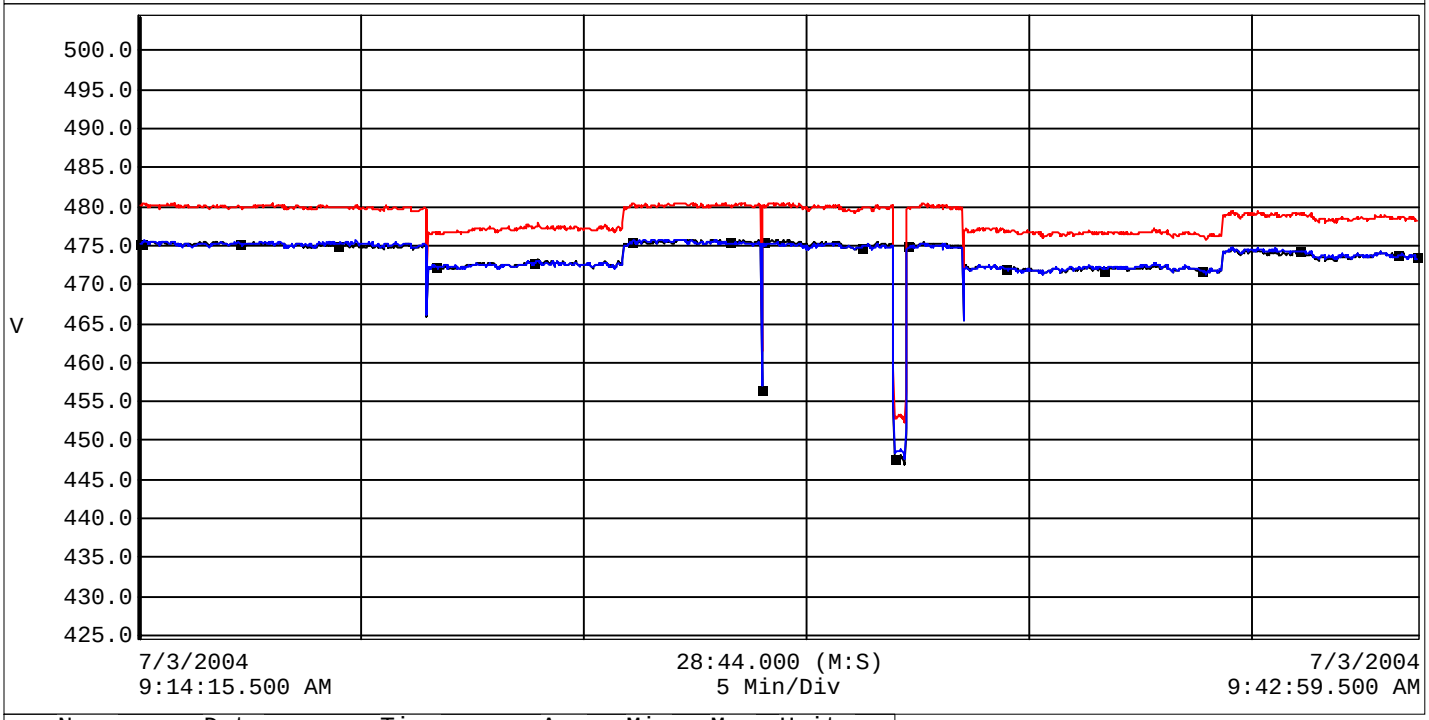
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/3/2004	9:14:15.500 AM	281.5	262.5	285.0	1725
Vrms Line2	7/3/2004	9:14:15.500 AM	260.8	247.4	263.2	1725
Vrms Line3	7/3/2004	9:14:15.500 AM	281.2	267.7	282.0	1725

7/3/2004 - 9:14:15.000 AM
Val
284.6 Vrms Line1
260.3 Vrms Line2
281.6 Vrms Line3

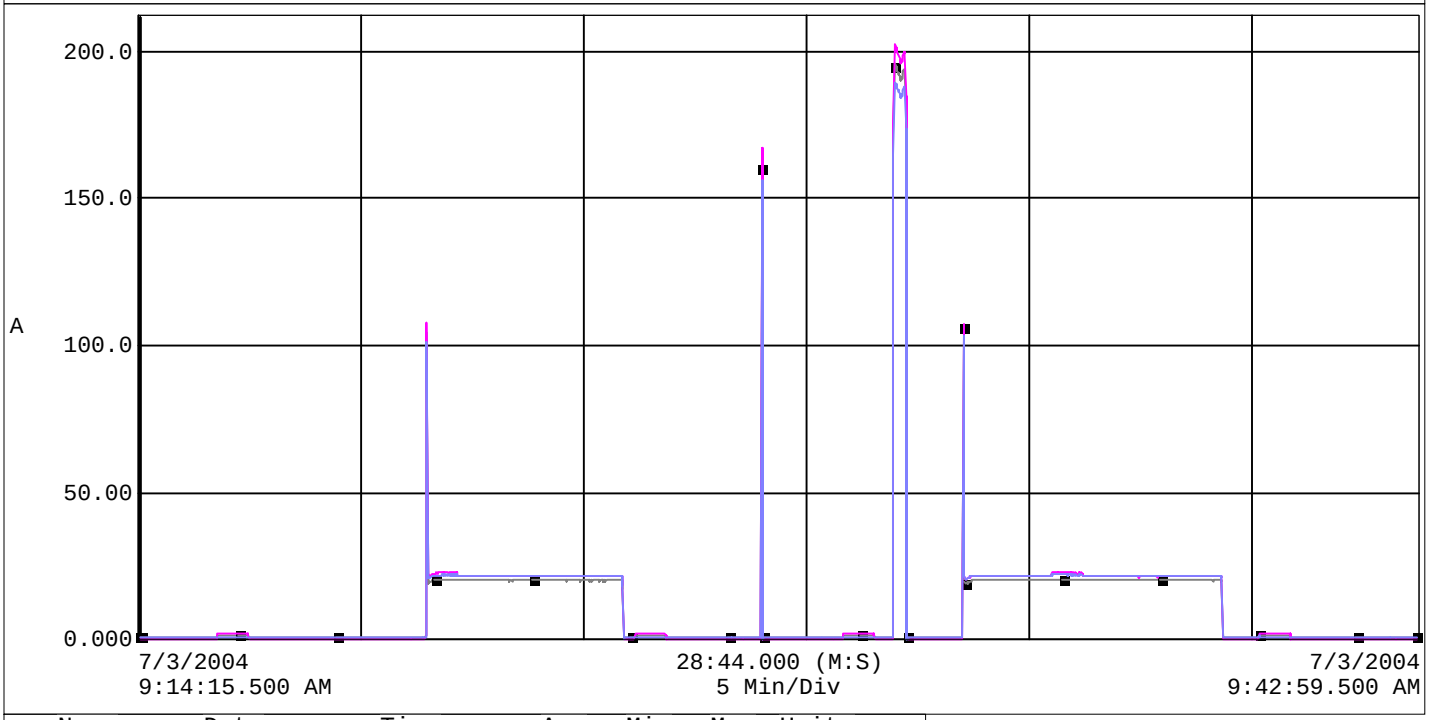
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/3/2004	9:14:15.500 AM	473.5	446.7	475.7	V
Urms Line2	7/3/2004	9:14:15.500 AM	478.3	452.1	480.4	V
Urms Line3	7/3/2004	9:14:15.500 AM	473.5	447.6	475.7	V

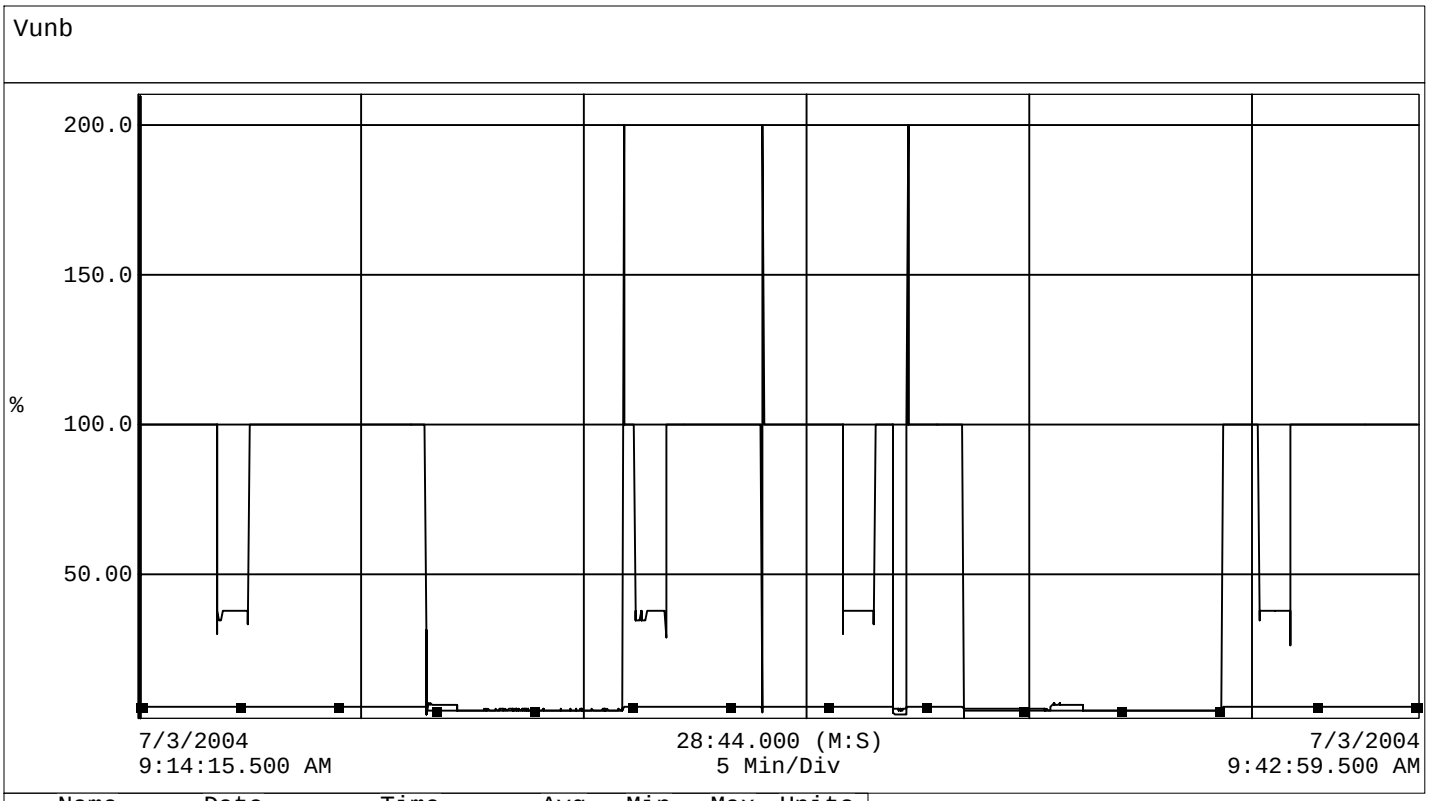
7/3/2004 - 9:14:15.000 AM
Val
475.1 Urms Line1
480.0 Urms Line2
475.1 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/3/2004	9:14:15.500 AM	9.799	0.600	195.3	A
Arms Line2	7/3/2004	9:14:15.500 AM	10.15	0.000	201.8	A
Arms Line3	7/3/2004	9:14:15.500 AM	10.22	0.000	189.3	A

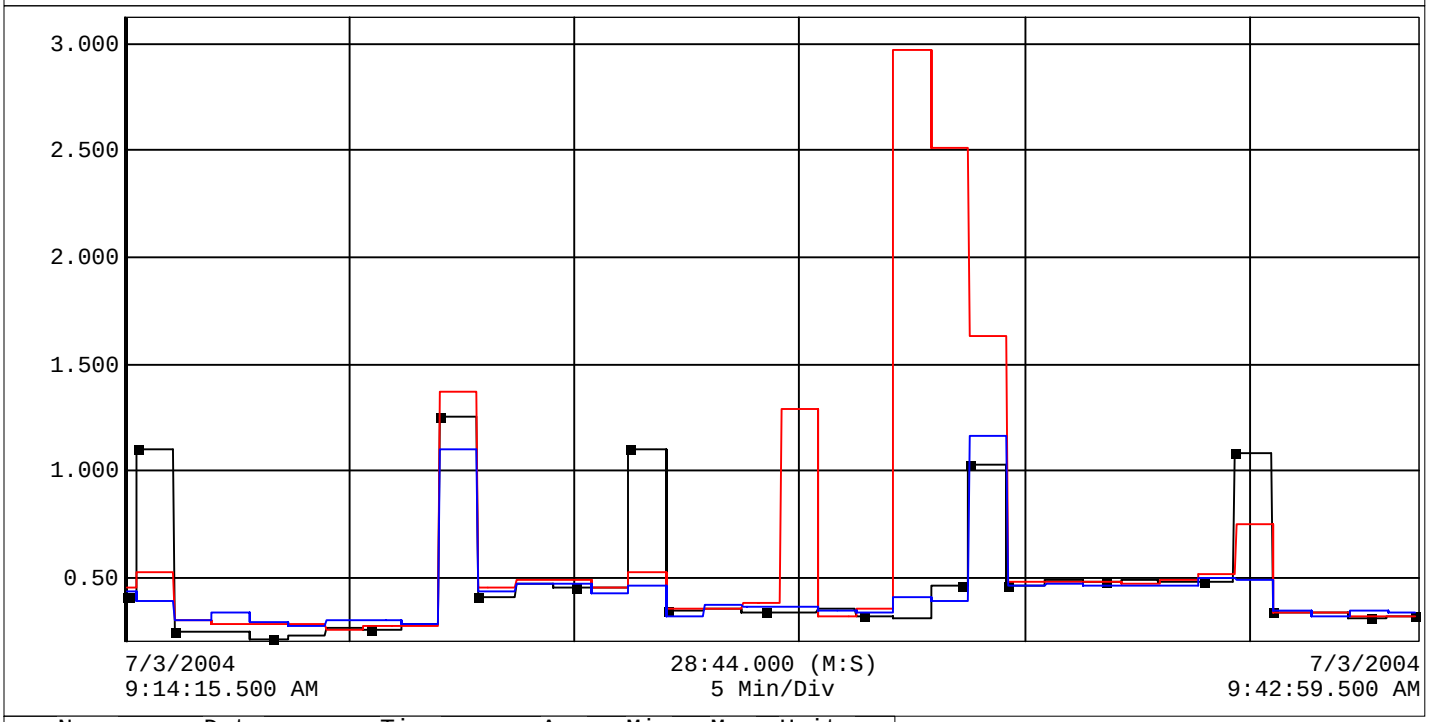
7/3/2004 - 9:14:15.000 AM
Val
0.600 — Arms Line1
0.000 — Arms Line2
0.600 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/3/2004	9:14:15.500 AM	4.980	4.000	5.600	%
Aunb(IEEE)	7/3/2004	9:14:15.500 AM	58.70	1.800	200.0	%

7/3/2004 - 9:14:15.000 AM
Val
5.500 —— Vunb(IEEE)
100.0 —— Aunb(IEEE)

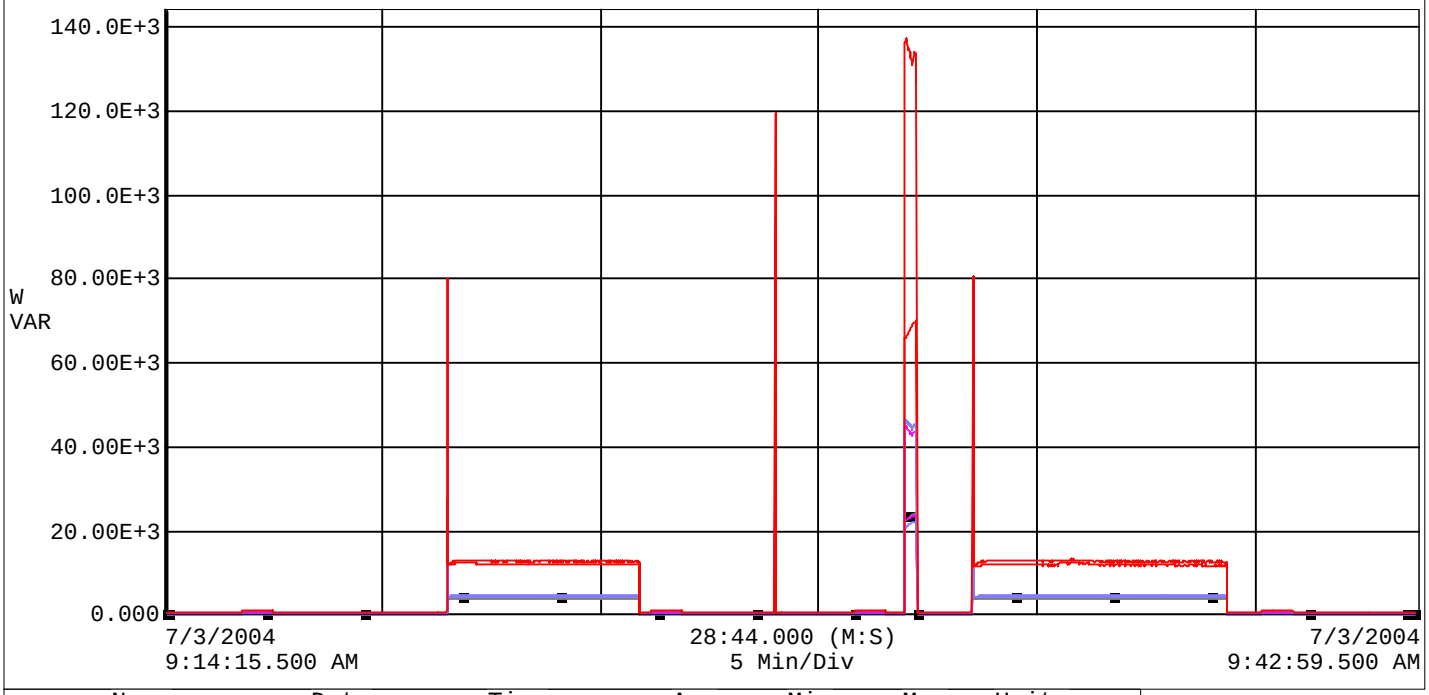
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/3/2004	9:14:15.500 AM	0.472	0.210	1.250	
Vflk Line2	7/3/2004	9:14:15.500 AM	0.628	0.250	2.970	
Vflk Line3	7/3/2004	9:14:15.500 AM	0.427	0.270	1.160	

7/3/2004 - 9:14:15.000 AM
Val
0.410 — Vflk Line1
0.450 — Vflk Line2
0.430 — Vflk Line3

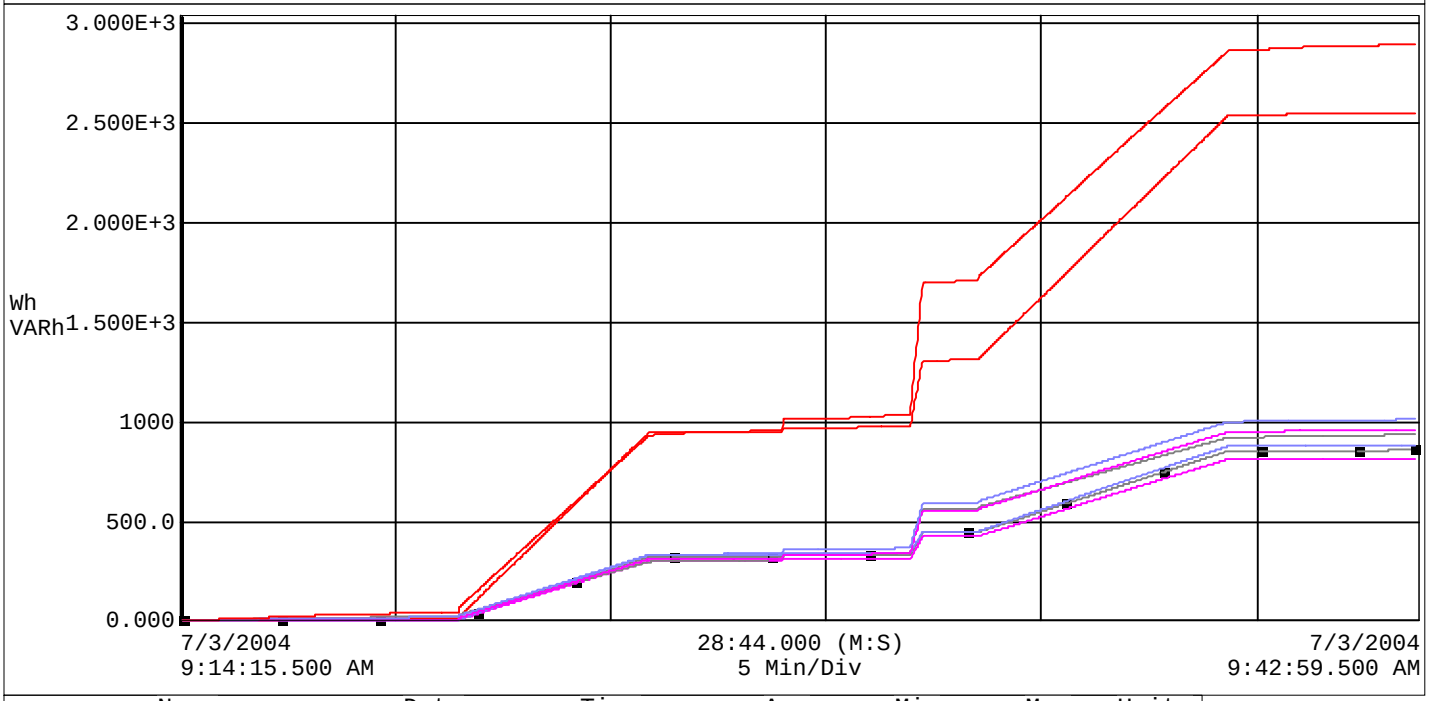
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/3/2004	9:14:15.500 AM	1.780E+3	-39.44	24.06E+3	W
W Line2	7/3/2004	9:14:15.500 AM	1.693E+3	0.000	23.52E+3	W
W Line3	7/3/2004	9:14:15.500 AM	1.831E+3	0.000	22.16E+3	W
W Sum of Phases	7/3/2004	9:14:15.500 AM	5.303E+3	55.59	69.73E+3	W
VAR Line1	7/3/2004	9:14:15.500 AM	1.944E+3	162.0	46.24E+3	VAR
VAR Line2	7/3/2004	9:14:15.500 AM	1.982E+3	0.000	44.67E+3	VAR
VAR Line3	7/3/2004	9:14:15.500 AM	2.103E+3	0.000	46.21E+3	VAR
VAR Sum of Phases	7/3/2004	9:14:15.500 AM	6.029E+3	163.6	137.1E+3	VAR

7/3/2004 - 9:14:15.000 AM
Val
52.84 — W Line1
0.000 — W Line2
6.176 — W Line3
59.87 — W Sum of Phases
173.4 — VAR Line1
0.000 — VAR Line2
160.5 — VAR Line3
331.4 — VAR Sum of Phases

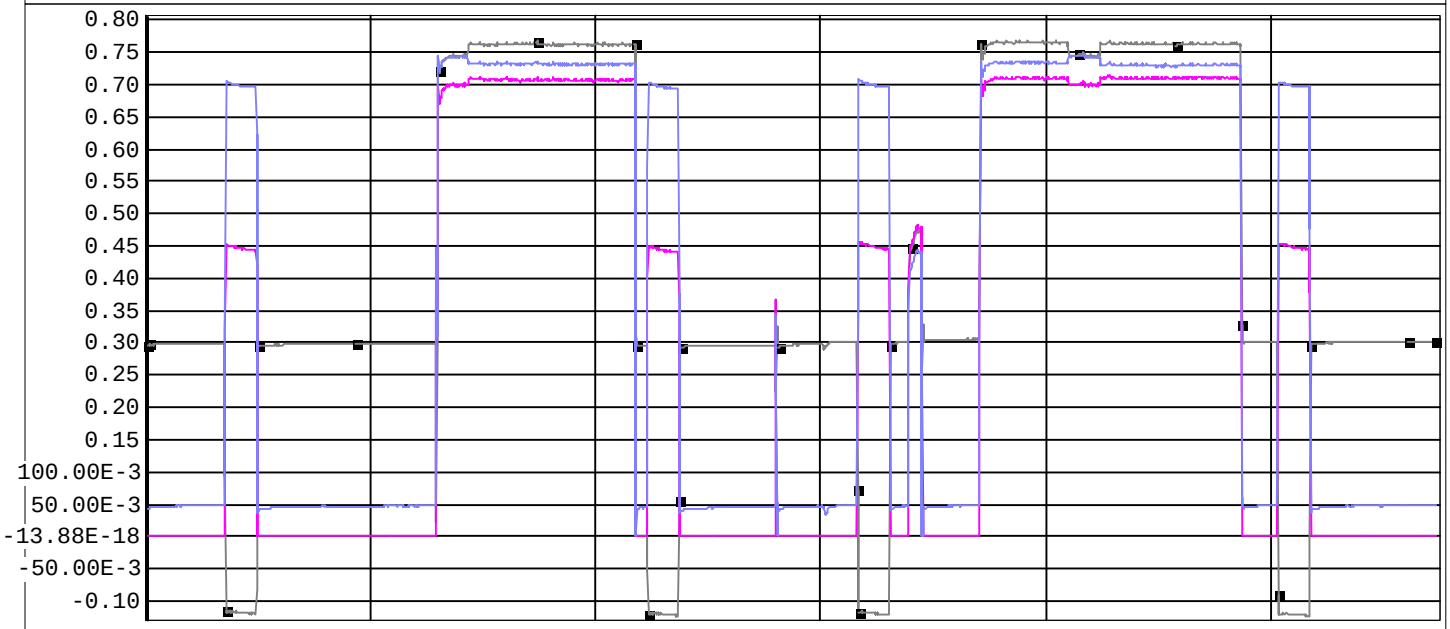
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/3/2004	9:14:15.500 AM	376.7	26.03E-3	852.8	Wh
W-hours Line2	7/3/2004	9:14:15.500 AM	358.4	0.000	811.2	Wh
W-hours Line3	7/3/2004	9:14:15.500 AM	388.2	0.000	877.2	Wh
W-hours Sum of Phases	7/3/2004	9:14:15.500 AM	1.123E+3	0.000	2.541E+3	Wh
VAR-hours Line1	7/3/2004	9:14:15.500 AM	414.2	56.85E-3	931.3	VARh
VAR-hours Line2	7/3/2004	9:14:15.500 AM	419.6	0.000	949.9	VARh
VAR-hours Line3	7/3/2004	9:14:15.500 AM	446.9	30.75E-3	1.007E+3	VARh
VAR-hours Sum of Phases	7/3/2004	9:14:15.500 AM	1.281E+3	88.17E-3	2.889E+3	VARh

7/3/2004 - 9:14:15.000 AM
Val
26.03E-3 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
56.85E-3 — VAR-hours Line1
0.000 — VAR-hours Line2
30.75E-3 — VAR-hours Line3
88.17E-3 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/3/2004	9:14:15.500 AM	0.422	-0.125	0.767	
PF Line2	7/3/2004	9:14:15.500 AM	0.301	0.000	0.714	
PF Line3	7/3/2004	9:14:15.500 AM	0.358	0.000	0.746	

7/3/2004 - 9:14:15.000 AM
Val
0.294 — PF Line1
0.000 — PF Line2
40.00E-3 — PF Line3

Trend Summary Report

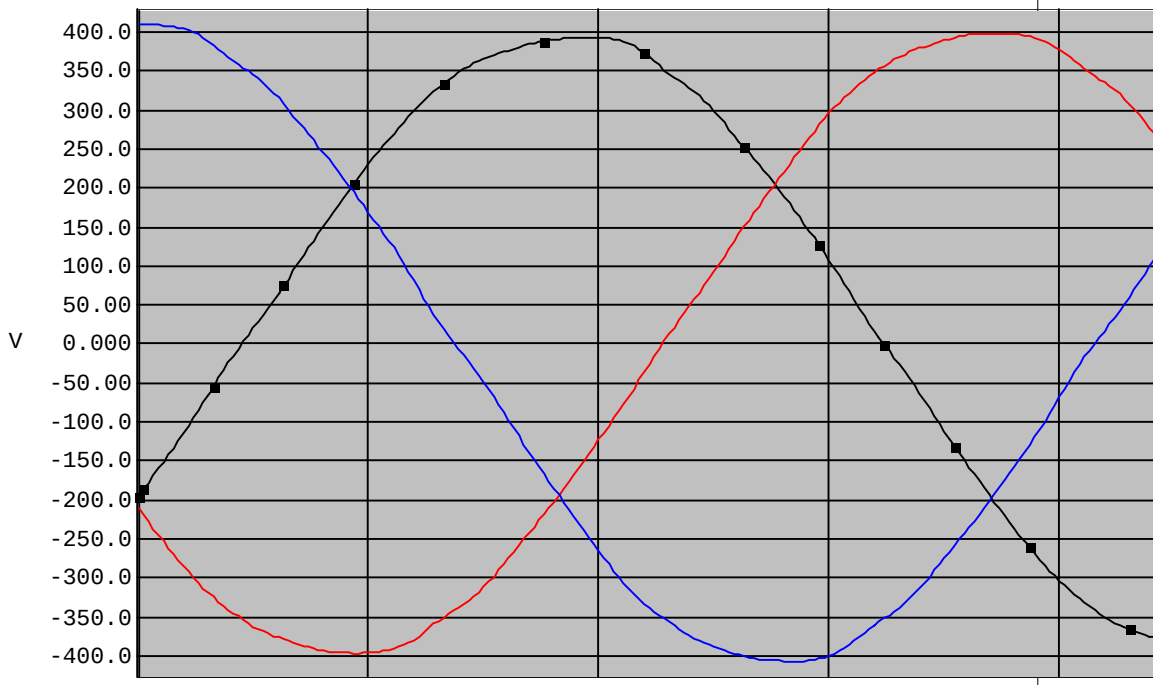
Database: X:\Harmon Pepsi\070304-SPS Harmon Pepsi-2.dvb	
Operator ,	Test Site ,
Comments	

GWA Wastewater Pumping Station Assessment				
Station Name: INARAJAN MAIN	**Weight**	**Condition**	**Weighted**	**Notes**
Date: NI		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.4	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	3	0.06	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	2	0.1	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.2	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	2	0.05	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.425	
Generator Condition	10.0%	2	0.2	
Generator Battery	5.0%	2	0.1	
Diesel Fuel Line Condition	2.5%	2	0.05	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.52	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.32	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	2	0.08	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.2	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	
	100%	**Assessment Value**		**2.1**
Comments:				

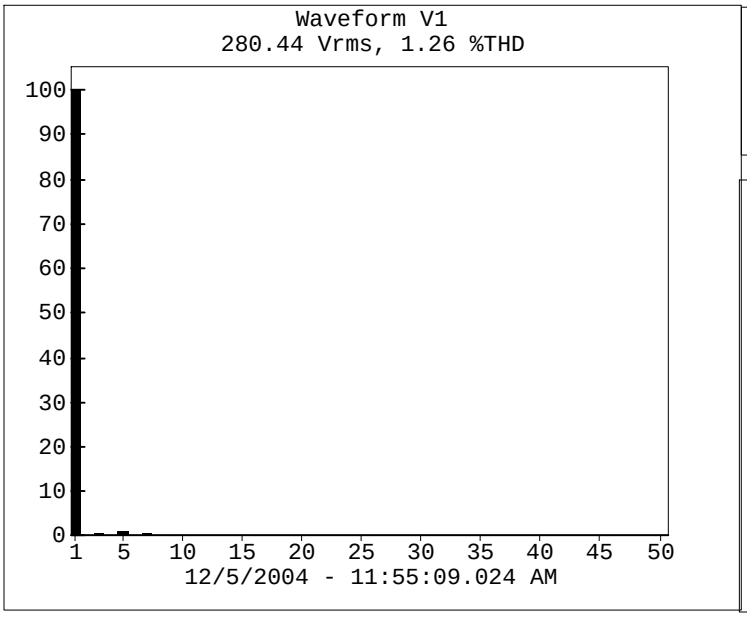
Inarajan Main WWPS Photo

Recording Start Date	12/5/2004 - 11:55:09 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	12/5/2004	11:55:09.023 AM	16.669	280.4	V
Waveform V2	12/5/2004	11:55:09.023 AM	16.669	282.9	V
Waveform V3	12/5/2004	11:55:09.023 AM	16.669	290.0	V



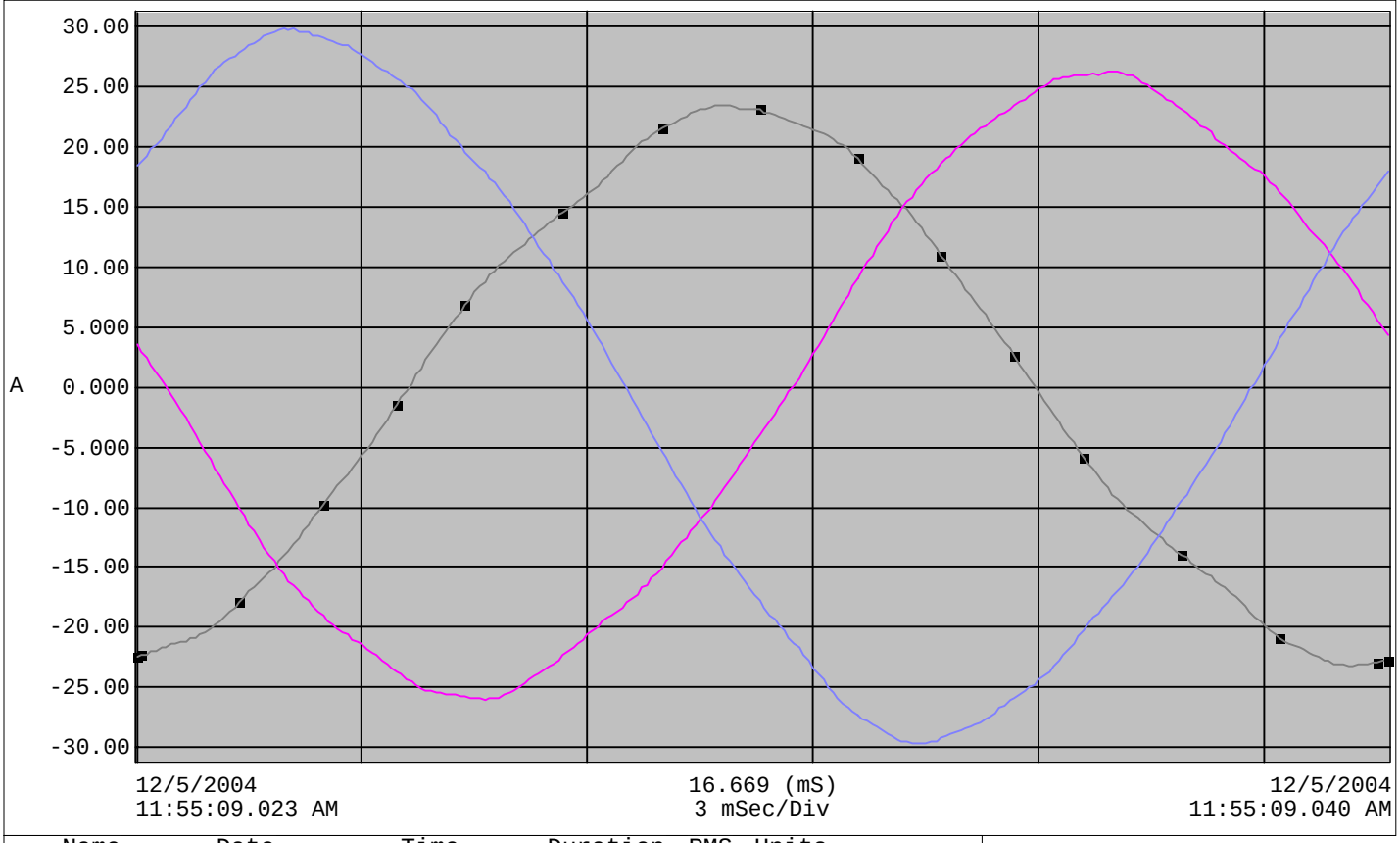
12/5/2004 - 11:55:09.000 AM

Val	
-196.9	Waveform V1
-211.1	Waveform V2
407.6	Waveform V3

Waveform V1

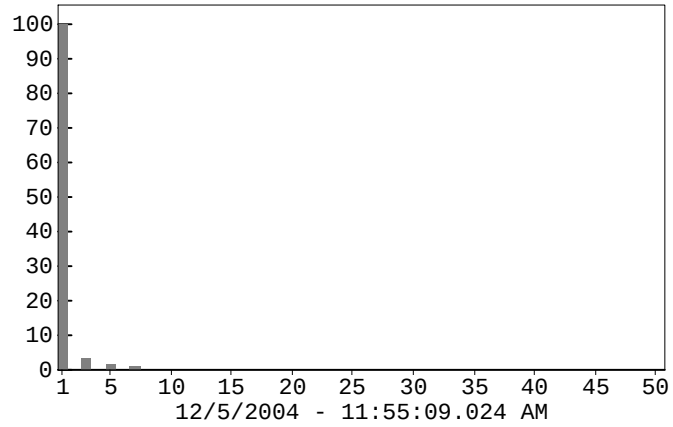
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	12/5/2004	11:55:09.023 AM	16.669	16.18	A
Waveform I2	12/5/2004	11:55:09.023 AM	16.669	18.20	A
Waveform I3	12/5/2004	11:55:09.023 AM	16.669	20.34	A

Waveform I1
16.18 Arms, 4.04 %THD



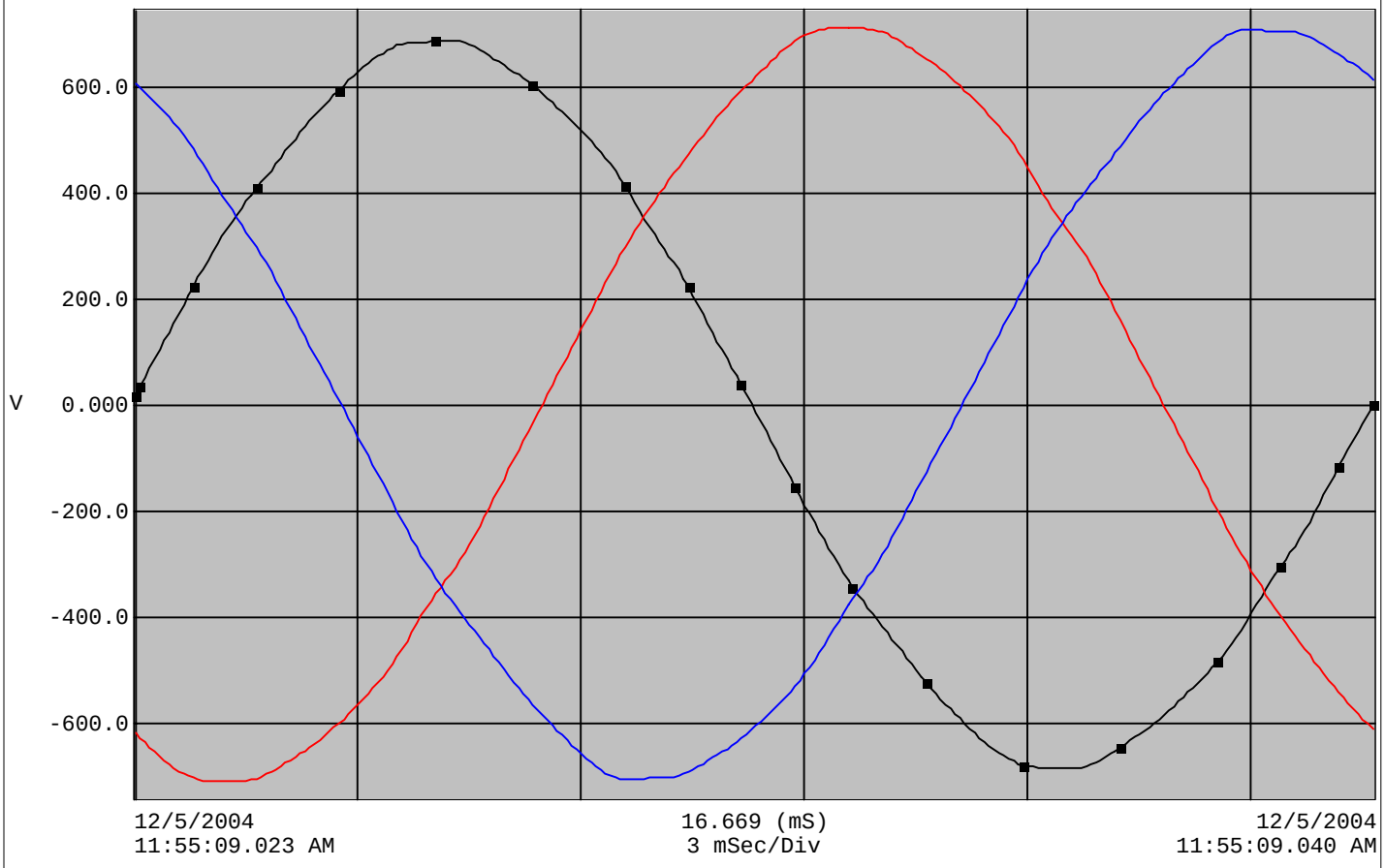
12/5/2004 - 11:55:09.000 AM

Val	
-22.50	Waveform I1
3.500	Waveform I2
18.30	Waveform I3

Waveform I1

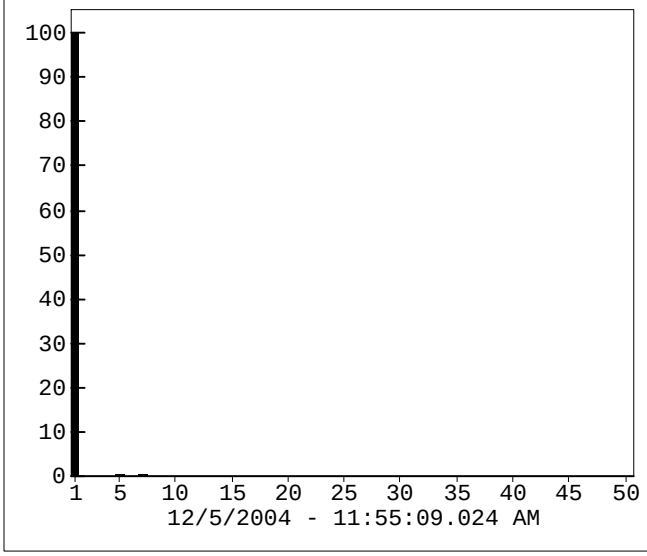
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.5	H19	0.2	H36	0.0
H03	3.4	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	12/5/2004	11:55:09.023 AM	16.669	482.9	V
Waveform U2	12/5/2004	11:55:09.023 AM	16.669	499.7	V
Waveform U3	12/5/2004	11:55:09.023 AM	16.669	495.5	V

Waveform U1
482.85 Vrms, 1.13 %THD



12/5/2004 - 11:55:09.000 AM

Val	
14.20	Waveform U1
-618.8	Waveform U2
604.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 12/5/2004
Start Time: 11:55:09 AM
Duration: 0:0.000 (M:S)
W: 2.925E+3 W
VAR: 3.503E+3 W
VA: 4.563E+3 W
Power Factor: 0.641
Displacement Power Factor: 0.642
TAN: 1.195
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Inarajan Main WWPS\120504-Inarajan Main WWPS-Photo.dvb

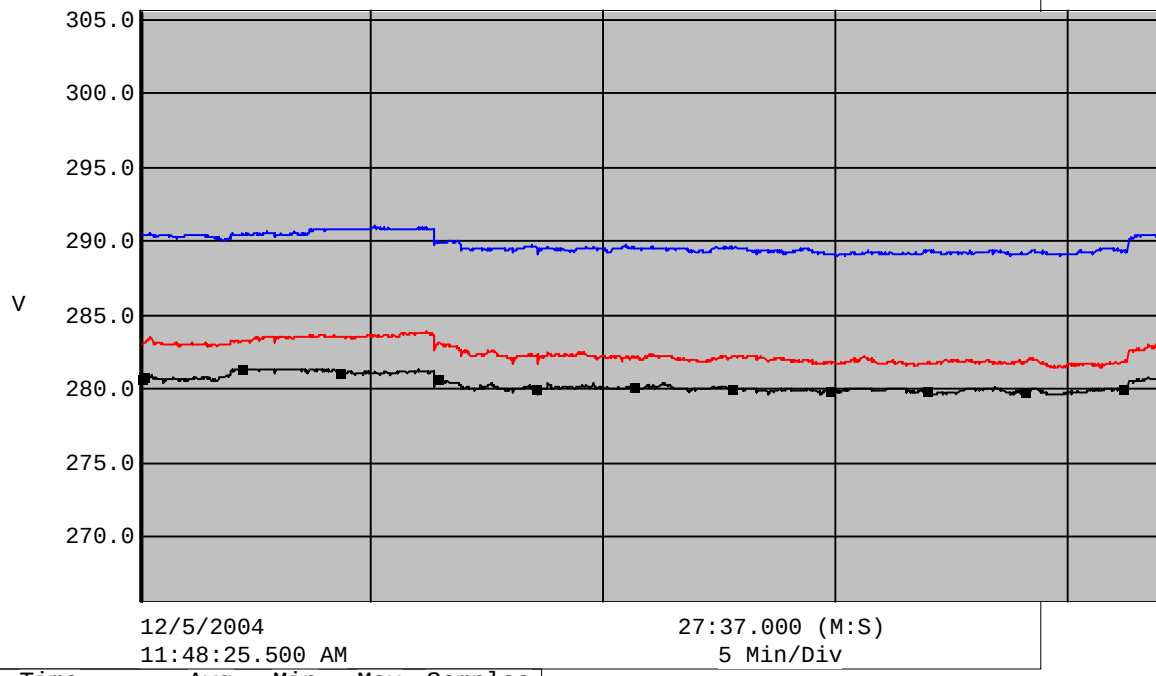
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Inarajan Main WWPS - Photo ,

Comments
Recorded at the autotransfer switch, single pump operation.

Inarajan Main WWPS Trend

Recording Start Date	12/5/2004 - 11:48:25 AM
Recording Duration	27:37 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

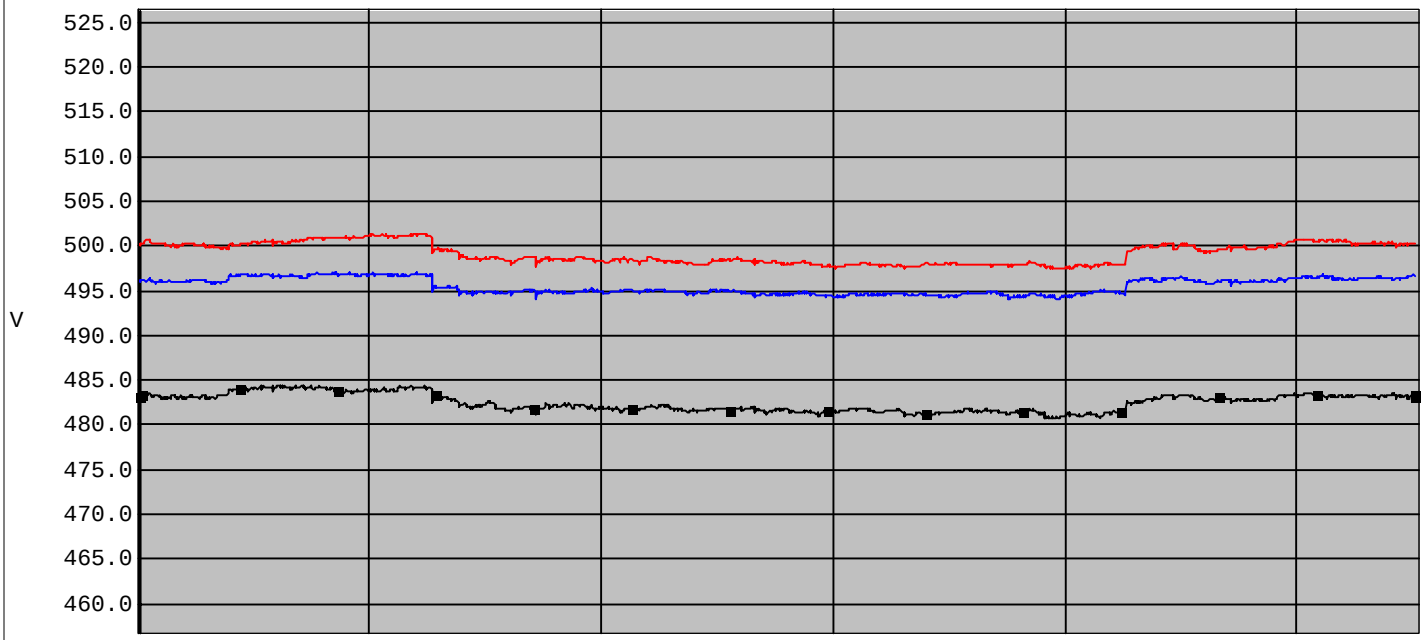
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	12/5/2004	11:48:25.500 AM	280.3	279.5	281.3	1658
Vrms Line2	12/5/2004	11:48:25.500 AM	282.5	281.4	283.8	1658
Vrms Line3	12/5/2004	11:48:25.500 AM	289.8	288.9	291.0	1658

12/5/2004 - 11:48:25.000 AM
Val
280.6 — Vrms Line1
283.0 — Vrms Line2
290.3 — Vrms Line3

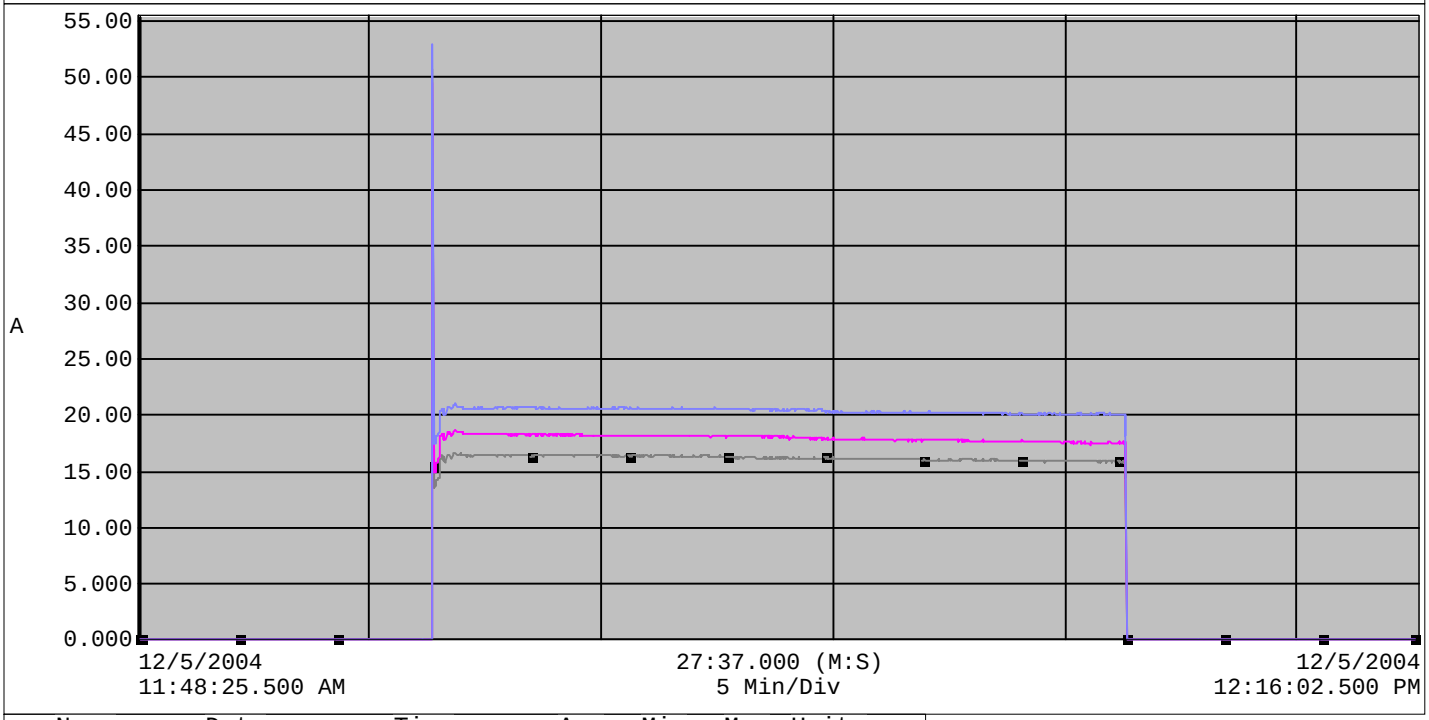
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	12/5/2004	11:48:25.500 AM	482.4	480.6	484.3	V
Urms Line2	12/5/2004	11:48:25.500 AM	499.1	497.3	501.3	V
Urms Line3	12/5/2004	11:48:25.500 AM	495.4	493.9	496.9	V

12/5/2004 - 11:48:25.000 AM
Val
482.9 Urms Line1
500.1 Urms Line2
496.0 Urms Line3

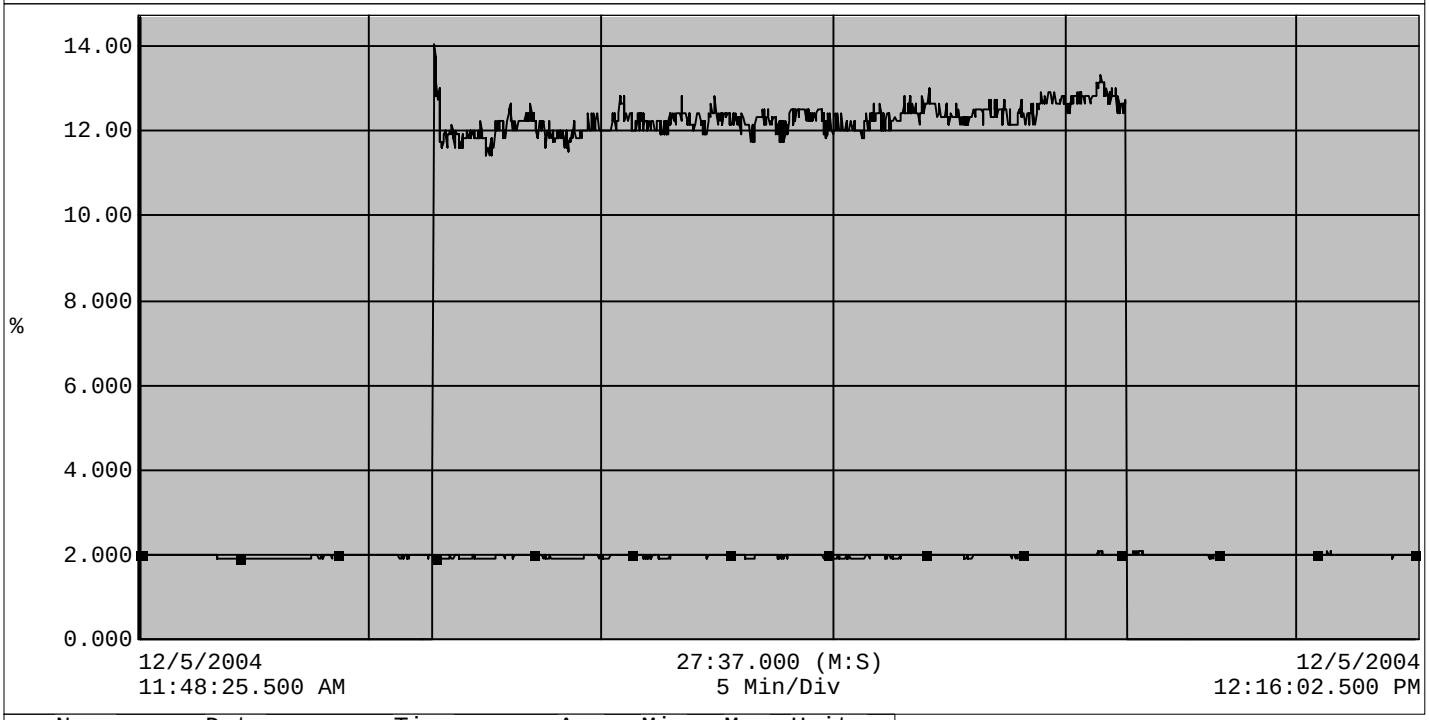
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	12/5/2004	11:48:25.500 AM	8.751	0.000	50.60	A
Arms Line2	12/5/2004	11:48:25.500 AM	9.710	0.000	49.40	A
Arms Line3	12/5/2004	11:48:25.500 AM	11.04	0.000	52.80	A

12/5/2004 - 11:48:25.000 AM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

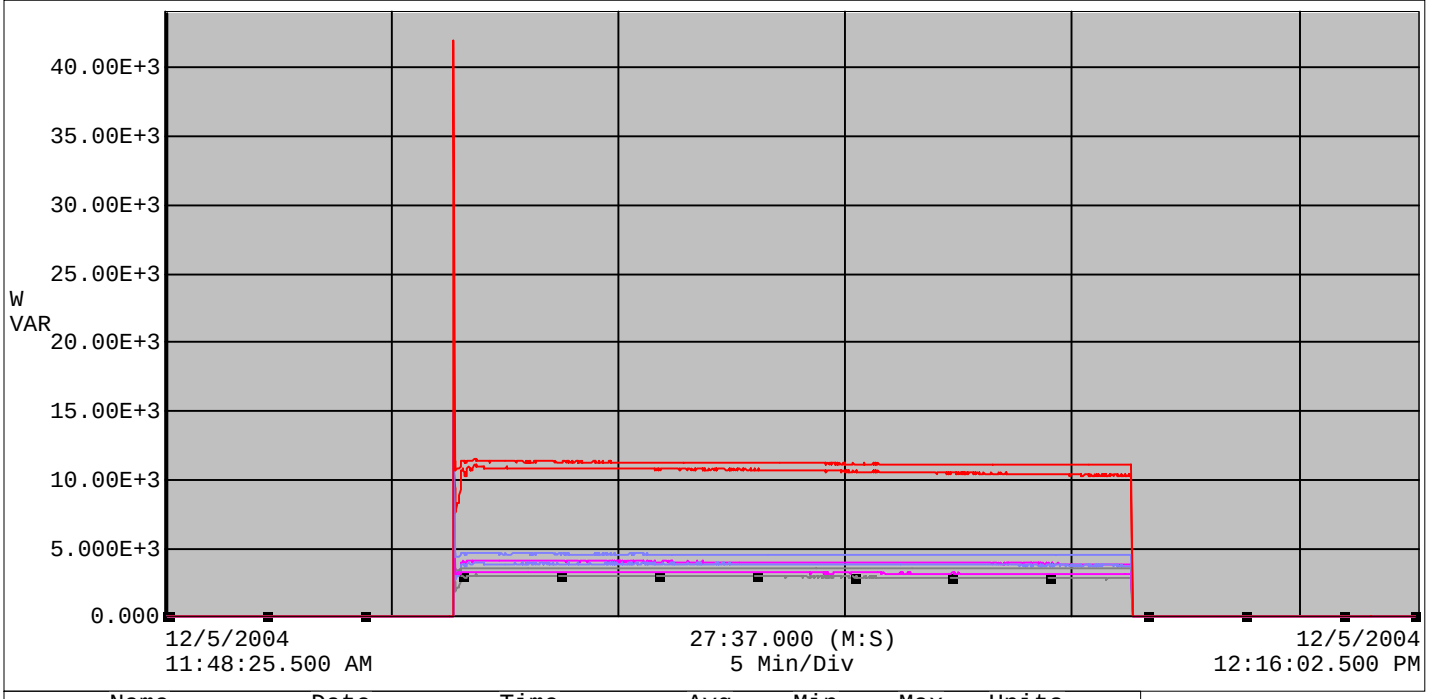
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	12/5/2004	11:48:25.500 AM	1.977	1.900	2.100	%
Aunb(IEEE)	12/5/2004	11:48:25.500 AM	6.653	0.000	14.00	%

12/5/2004 - 11:48:25.000 AM
Val
2.000 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

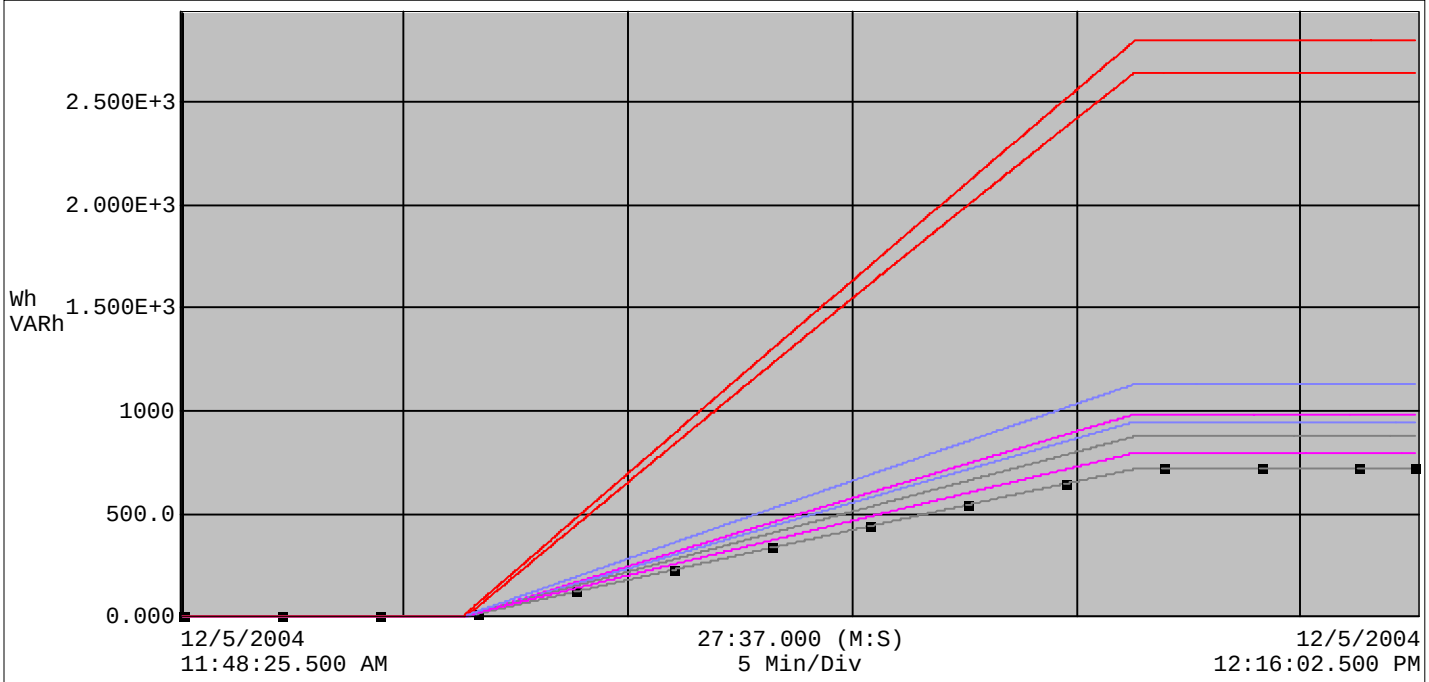
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	12/5/2004	11:48:25.500 AM	1.550E+3	0.000	3.613E+3	W
W Line2	12/5/2004	11:48:25.500 AM	2.127E+3	0.000	4.117E+3	W
W Line3	12/5/2004	11:48:25.500 AM	2.049E+3	0.000	3.982E+3	W
W Sum of Phases	12/5/2004	11:48:25.500 AM	5.726E+3	0.000	11.35E+3	W
VAR Line1	12/5/2004	11:48:25.500 AM	1.895E+3	0.000	13.71E+3	VAR
VAR Line2	12/5/2004	11:48:25.500 AM	1.721E+3	0.000	13.45E+3	VAR
VAR Line3	12/5/2004	11:48:25.500 AM	2.447E+3	0.000	14.76E+3	VAR
VAR Sum of Phases	12/5/2004	11:48:25.500 AM	6.063E+3	0.000	41.91E+3	VAR

12/5/2004 - 11:48:25.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

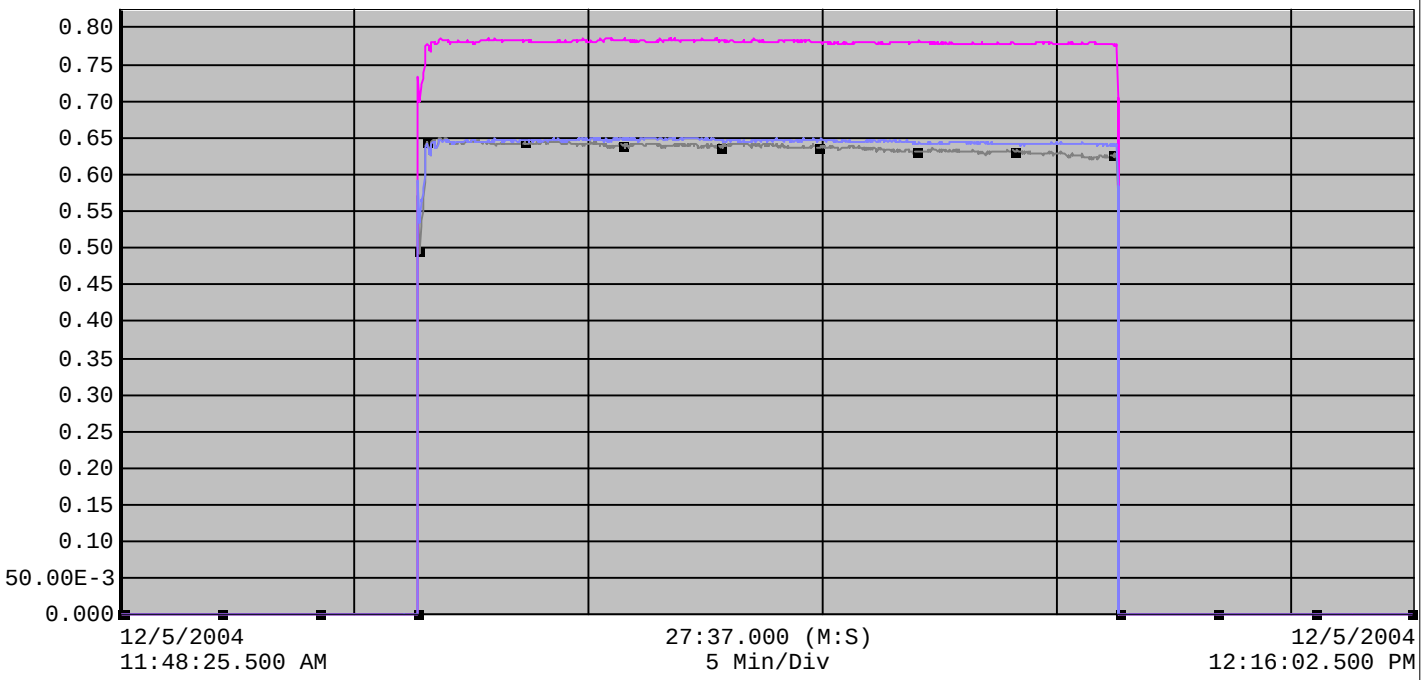
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	12/5/2004	11:48:25.500 AM	358.2	0.000	714.1	Wh
W-hours Line2	12/5/2004	11:48:25.500 AM	491.0	0.000	979.6	Wh
W-hours Line3	12/5/2004	11:48:25.500 AM	472.3	0.000	943.7	Wh
W-hours Sum of Phases	12/5/2004	11:48:25.500 AM	1.321E+3	0.000	2.637E+3	Wh
VAR-hours Line1	12/5/2004	11:48:25.500 AM	437.0	0.000	872.7	VARh
VAR-hours Line2	12/5/2004	11:48:25.500 AM	397.8	0.000	792.6	VARh
VAR-hours Line3	12/5/2004	11:48:25.500 AM	564.5	0.000	1.127E+3	VARh
VAR-hours Sum of Phases	12/5/2004	11:48:25.500 AM	1.399E+3	0.000	2.792E+3	VARh

12/5/2004 - 11:48:25.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	12/5/2004	11:48:25.500 AM	0.344	0.000	0.649	
PF Line2	12/5/2004	11:48:25.500 AM	0.422	0.000	0.784	
PF Line3	12/5/2004	11:48:25.500 AM	0.349	0.000	0.649	

12/5/2004 - 11:48:25.000 AM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: X:\Inarajan Main WWPS\120504-Inarajan Main WWPS.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Inarajan Main WWPS ,

Comments
Recorded at the autotransfer switch for the station, single 20 HP submersible pump.

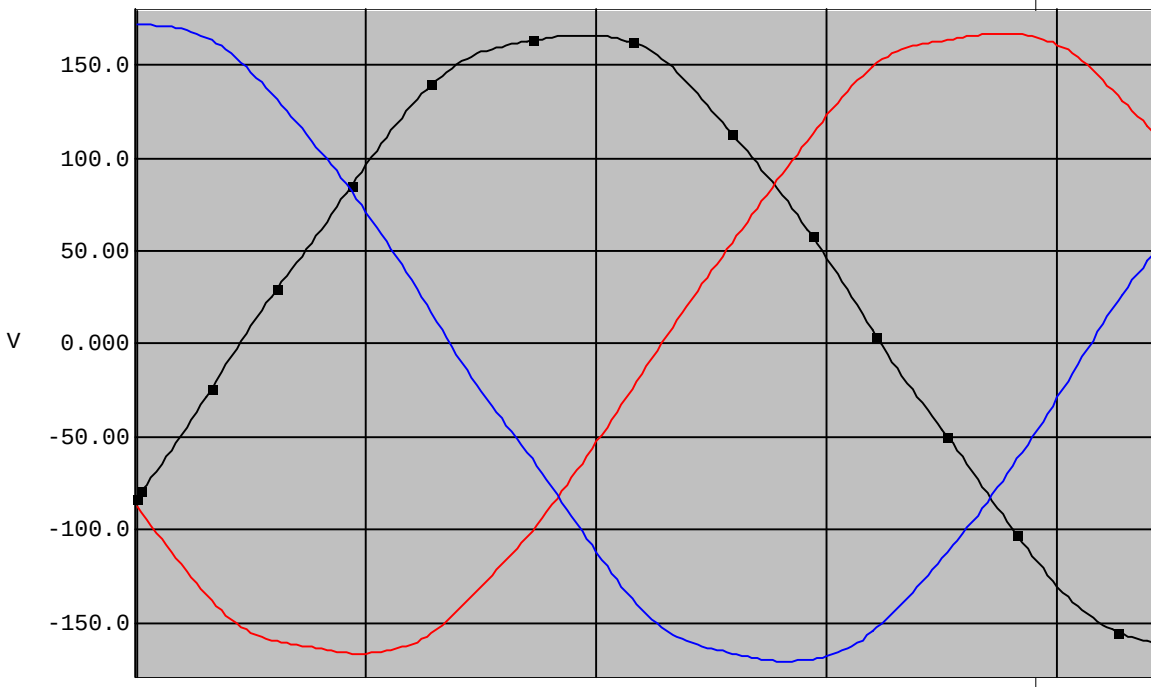
GWA Wastewater Pumping Station Assessment				
Station Name: LATTE HEIGHTS PLANTATION	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/24/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.43	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.475	
Generator Condition	10.0%	2	0.2	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.36	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%		0	NO INFO
Secondary Pump Motor Controls	**20.0%**		0.36	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%		0	NO INFO
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.2	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.09	
Lighting and Power Devices	1.5%	3	0.045	
Sump Pump Controls	1.5%	3	0.045	
	100%	**Assessment Value**		**2.1**

Comments:

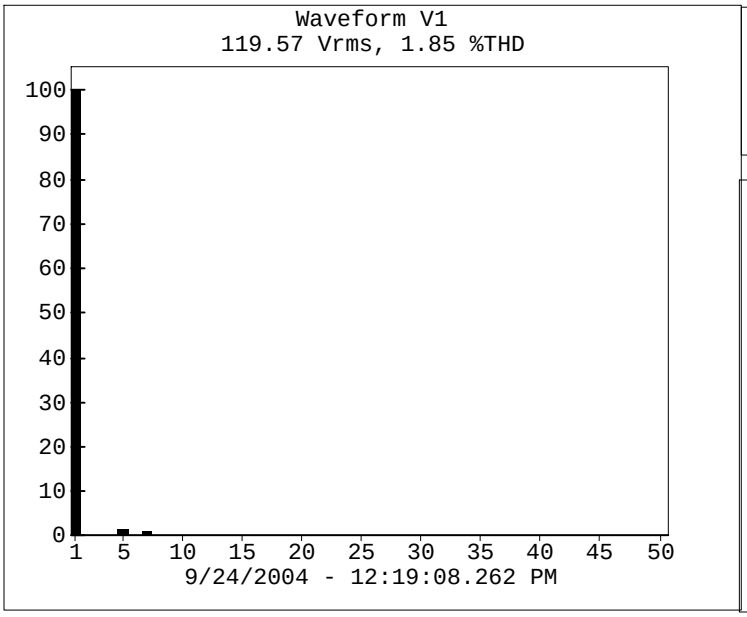
Latte Heights Plantation WWPS Pump 1 Photo

Recording Start Date	9/24/2004 - 12:19:08 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/24/2004	12:19:08.262 PM	16.661	119.6	V
Waveform V2	9/24/2004	12:19:08.262 PM	16.661	119.6	V
Waveform V3	9/24/2004	12:19:08.262 PM	16.661	122.7	V

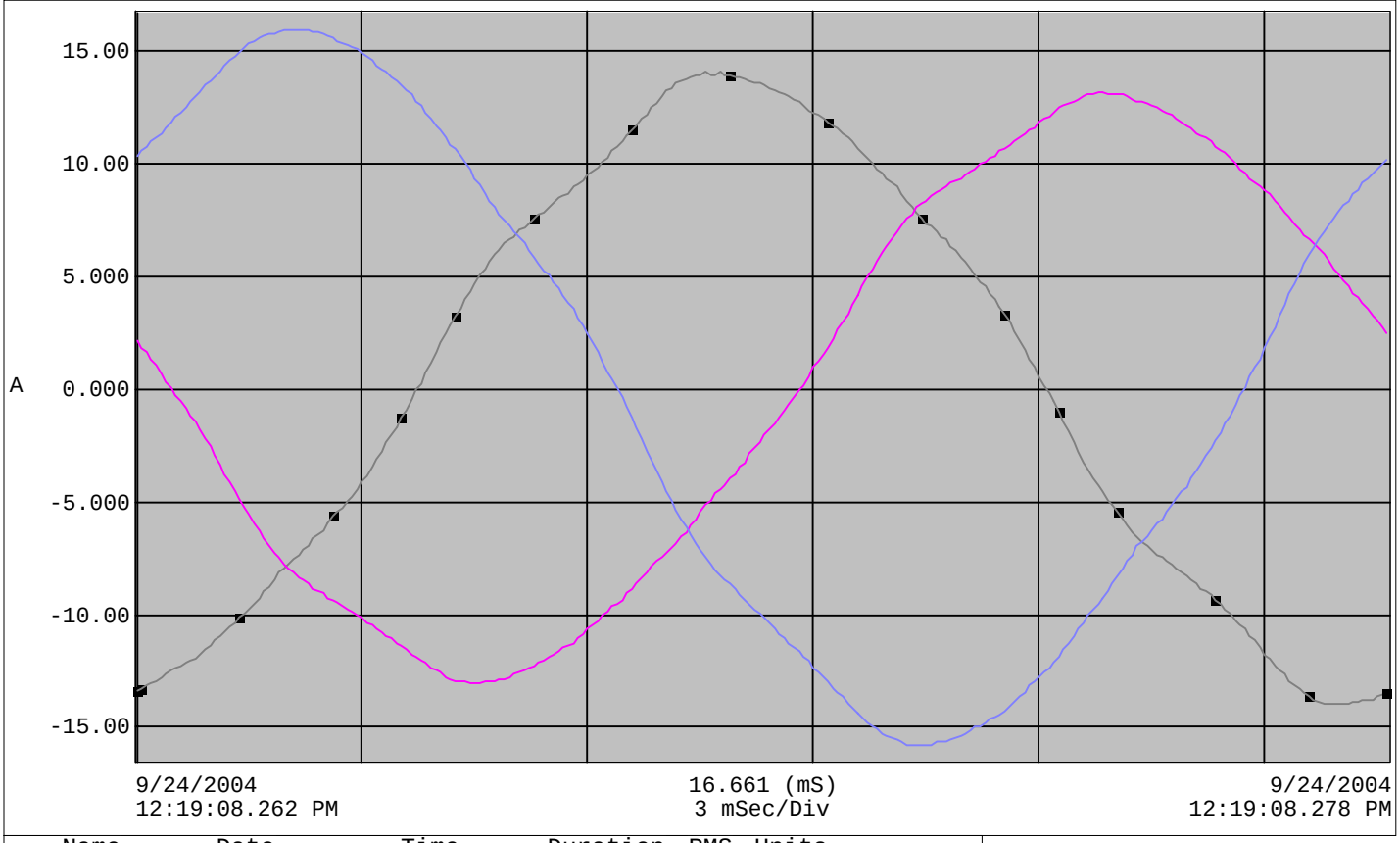


9/24/2004 - 12:19:08.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

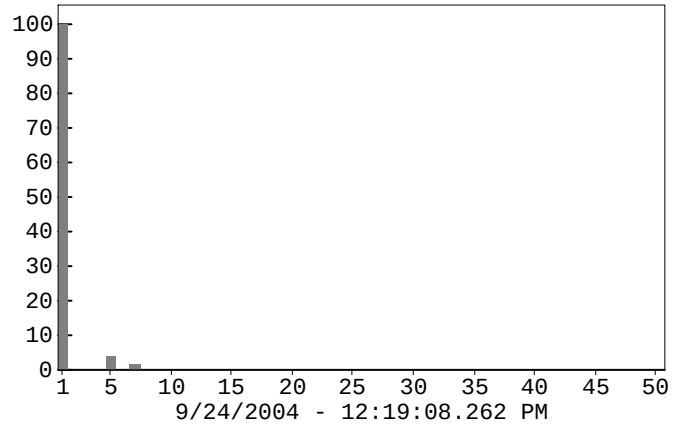
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/24/2004	12:19:08.262 PM	16.661	9.558	A
Waveform I2	9/24/2004	12:19:08.262 PM	16.661	8.996	A
Waveform I3	9/24/2004	12:19:08.262 PM	16.661	10.89	A

Waveform I1
9.56 Arms, 4.53 %THD

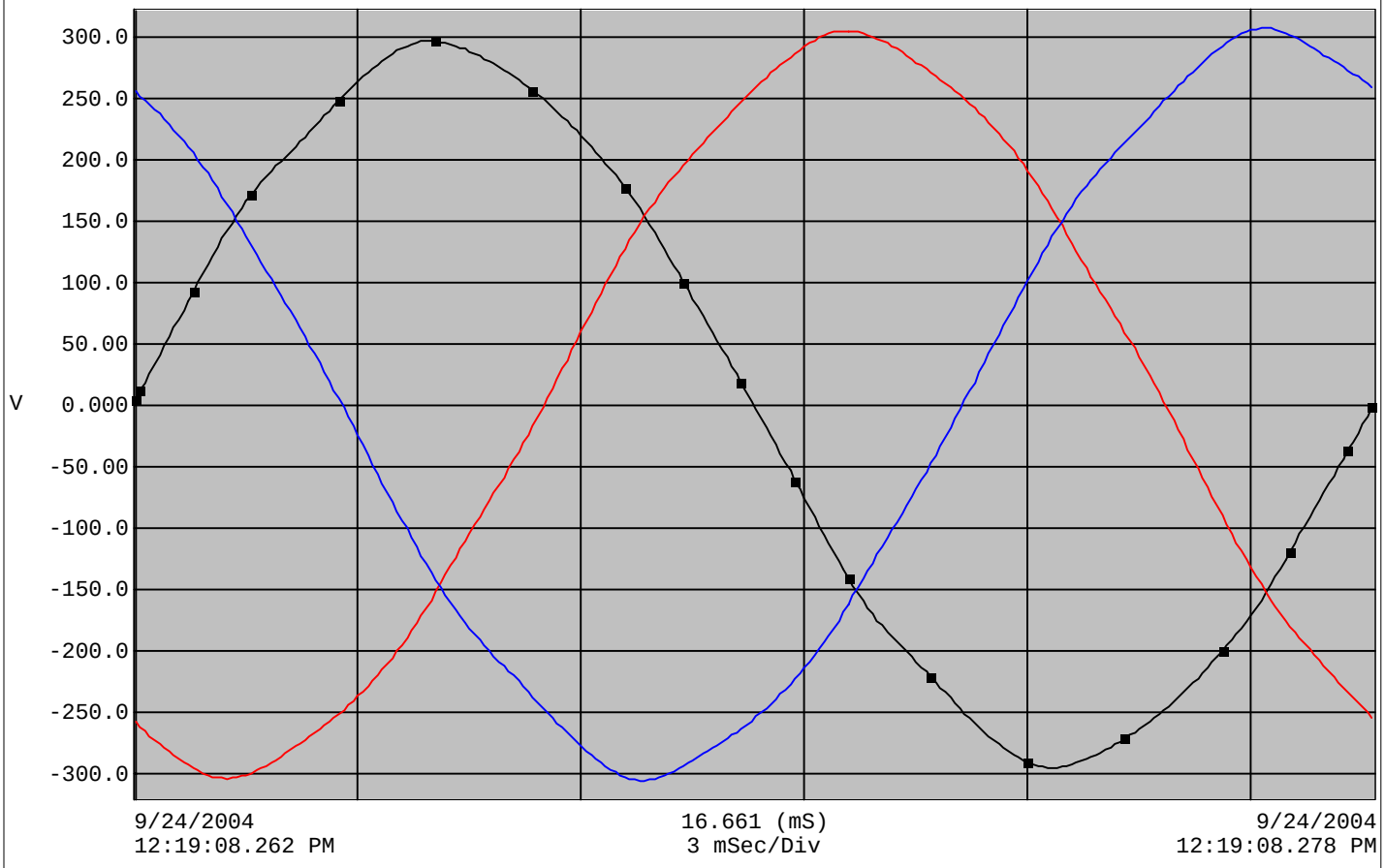


9/24/2004 - 12:19:08.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

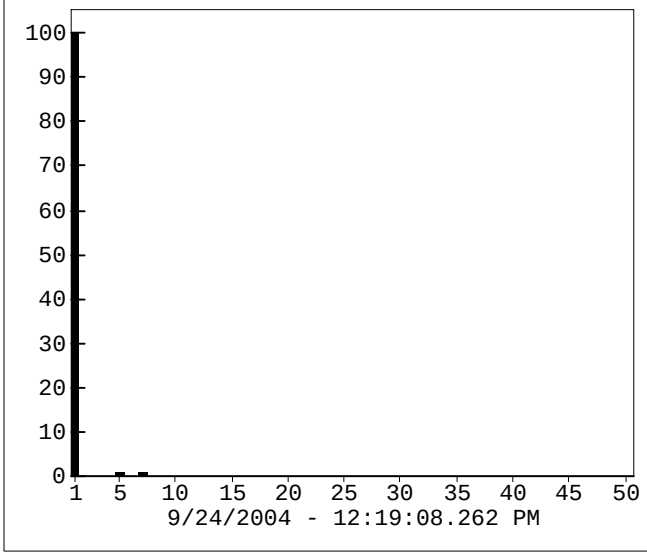
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.1
H03	0.4	H20	0.1	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	4.0	H22	0.2	H39	0.0
H06	0.1	H23	0.2	H40	0.0
H07	2.0	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.4	H26	0.1	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/24/2004	12:19:08.262 PM	16.661	205.3	V
Waveform U2	9/24/2004	12:19:08.262 PM	16.661	210.7	V
Waveform U3	9/24/2004	12:19:08.262 PM	16.661	210.9	V

Waveform U1
205.30 Vrms, 1.68 %THD



9/24/2004 - 12:19:08.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/24/2004
Start Time: 12:19:08 PM
Duration: 0:0.000 (M:S)
W: 726.4 W
VAR: 886.5 W
VA: 1.146E+3 W
Power Factor: 0.634
Displacement Power Factor: 0.634
TAN: 1.218
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Latte Heights Plantation WWPS\092404 - Latte Heights Plantation WWPS - Pump 1.dvb

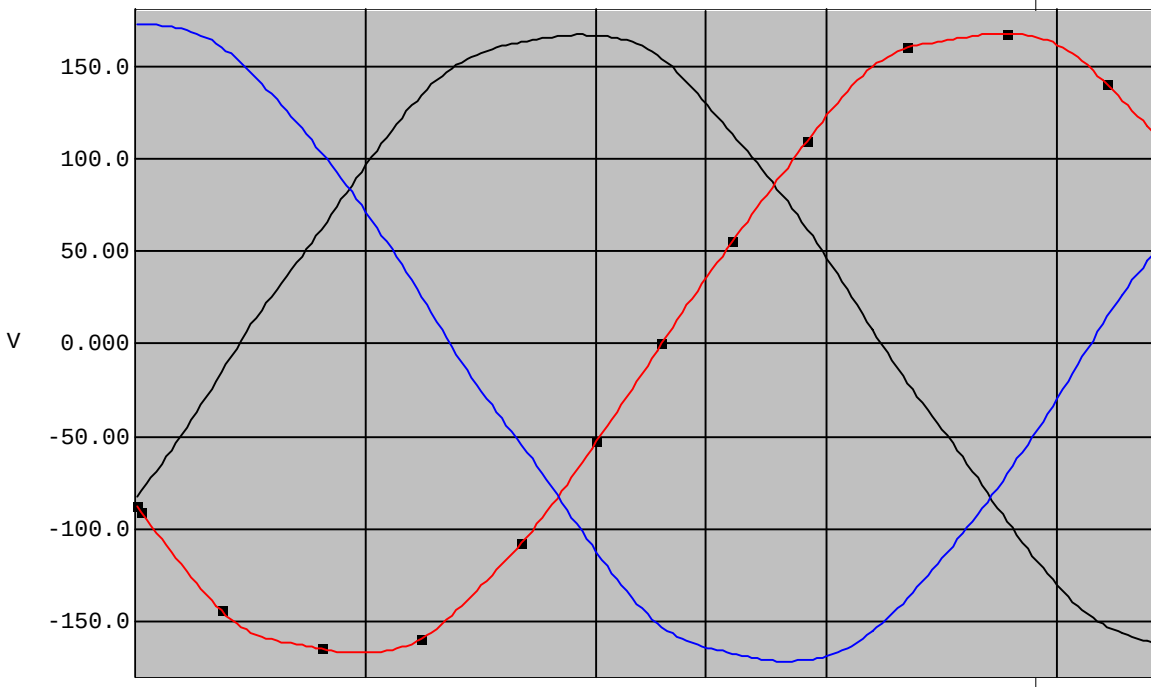
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Latte Heights Plantation WWPS - Pump 1 Photo ,

Comments
Recorded at breaker for the pump control panel, 120/208 volts.

Latte Heights Plantation WWPS Pump Photo 1A

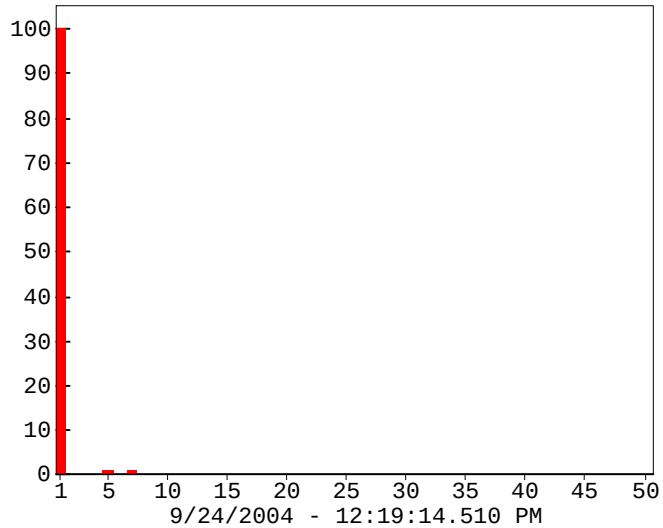
Recording Start Date	9/24/2004 - 12:19:14 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/24/2004	12:19:14.509 PM	16.661	119.7	V
Waveform V2	9/24/2004	12:19:14.509 PM	16.661	119.7	V
Waveform V3	9/24/2004	12:19:14.509 PM	16.661	122.8	V

Waveform V2
119.71 Vrms, 1.56 %THD



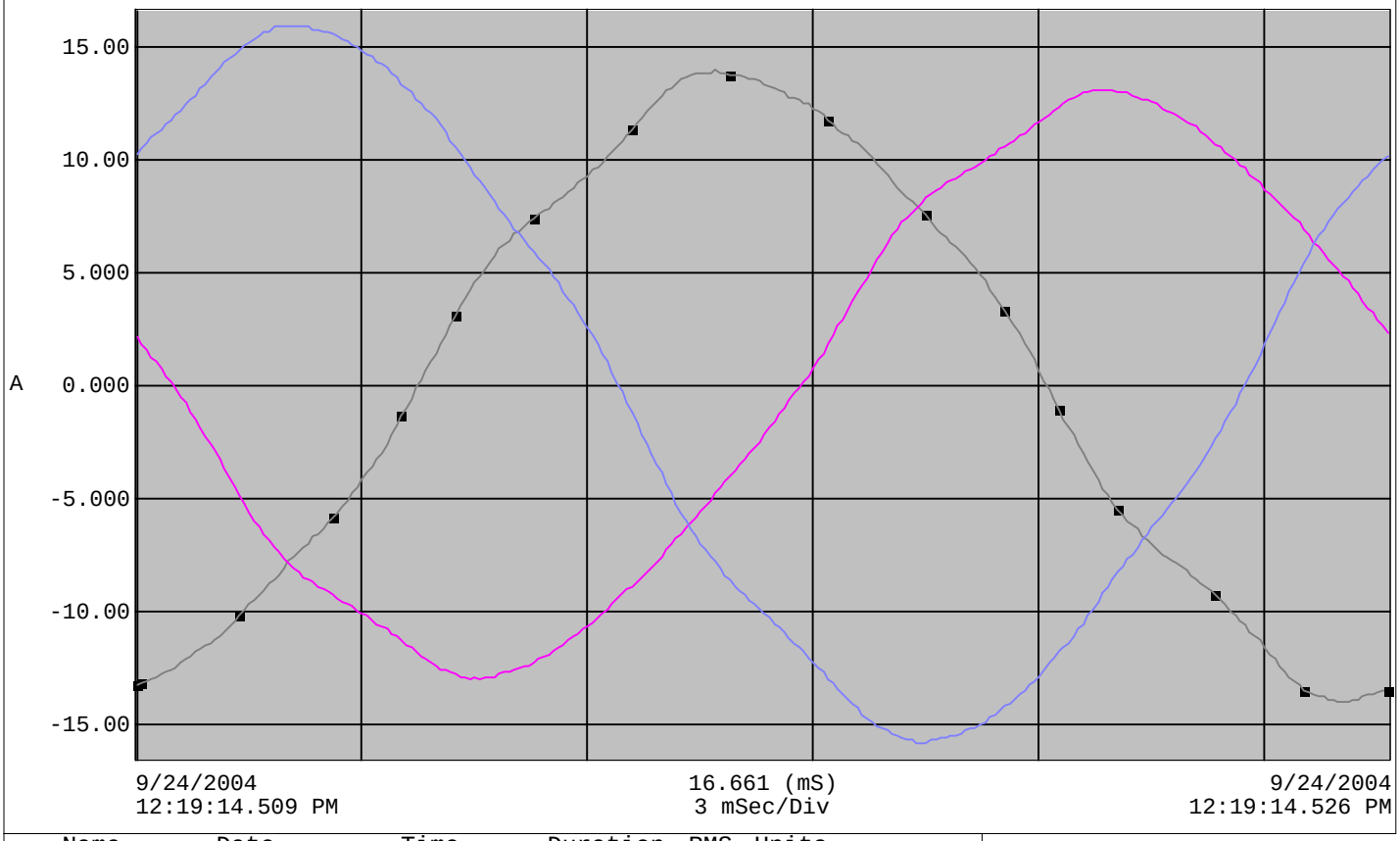
9/24/2004 - 12:19:14.007 PM

Val	
128.1	Waveform V1
35.70	Waveform V2
-164.3	Waveform V3

Waveform V2

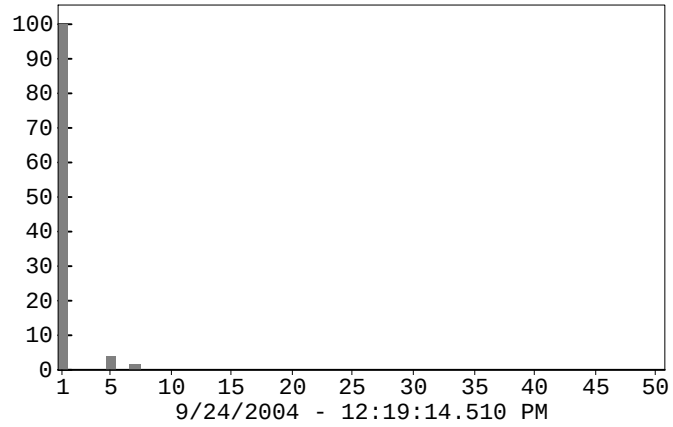
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/24/2004	12:19:14.509 PM	16.661	9.499	A
Waveform I2	9/24/2004	12:19:14.509 PM	16.661	8.938	A
Waveform I3	9/24/2004	12:19:14.509 PM	16.661	10.85	A

Waveform I1
9.50 Arms, 4.56 %THD



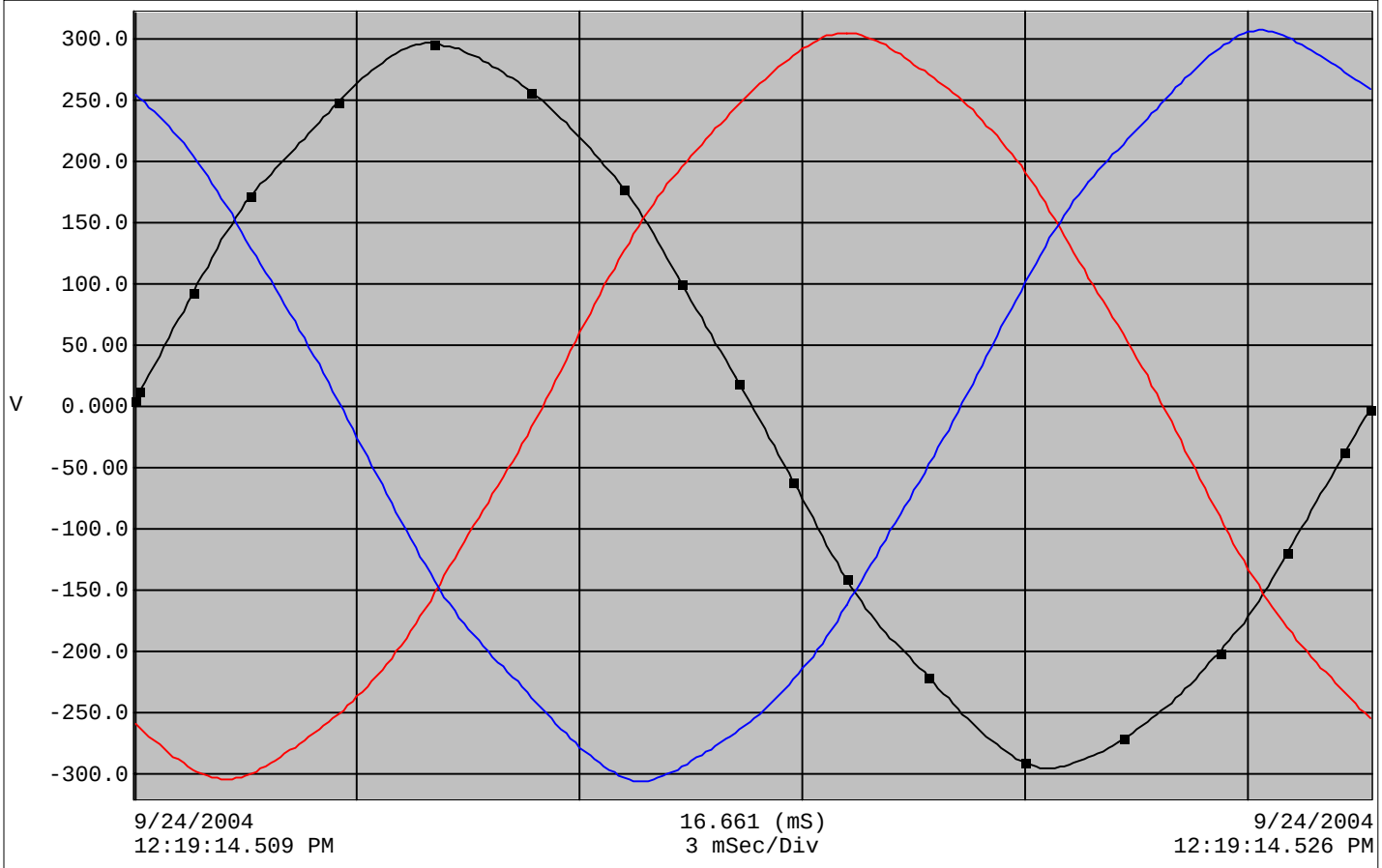
9/24/2004 - 12:19:14.000 PM

	Val	
—	-13.30	Waveform I1
—	2.100	Waveform I2
—	10.20	Waveform I3

Waveform I1

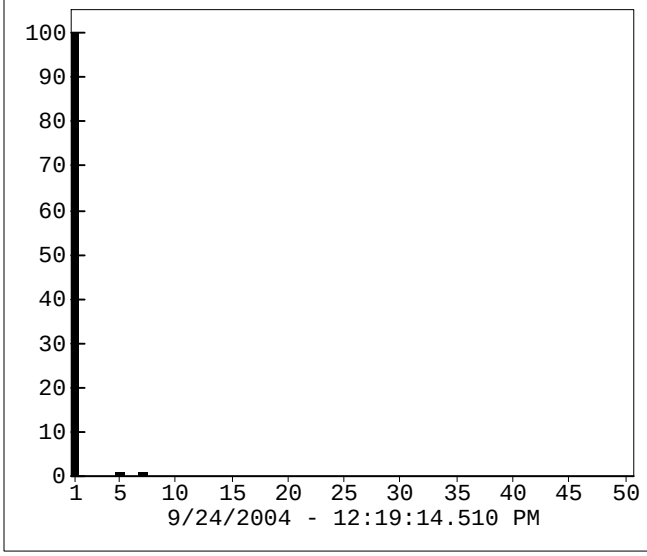
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.2	H19	0.1	H36	0.0
H03	0.4	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	4.0	H22	0.2	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	2.0	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.4	H26	0.1	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.1	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/24/2004	12:19:14.509 PM	16.661	205.5	V
Waveform U2	9/24/2004	12:19:14.509 PM	16.661	210.9	V
Waveform U3	9/24/2004	12:19:14.509 PM	16.661	211.1	V

Waveform U1
205.47 Vrms, 1.67 %THD



9/24/2004 - 12:19:14.000 PM

Val	
4.500	Waveform U1
-259.2	Waveform U2
254.6	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/24/2004
Start Time: 12:19:14 PM
Duration: 0:0.000 (M:S)
W: 723.8 W
VAR: 886.7 W
VA: 1.145E+3 W
Power Factor: 0.632
Displacement Power Factor: 0.633
TAN: 1.223
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Latte Heights Plantation WWPS\092404 - Latte Heights Plantation WWPS - Pump 1A.dvb

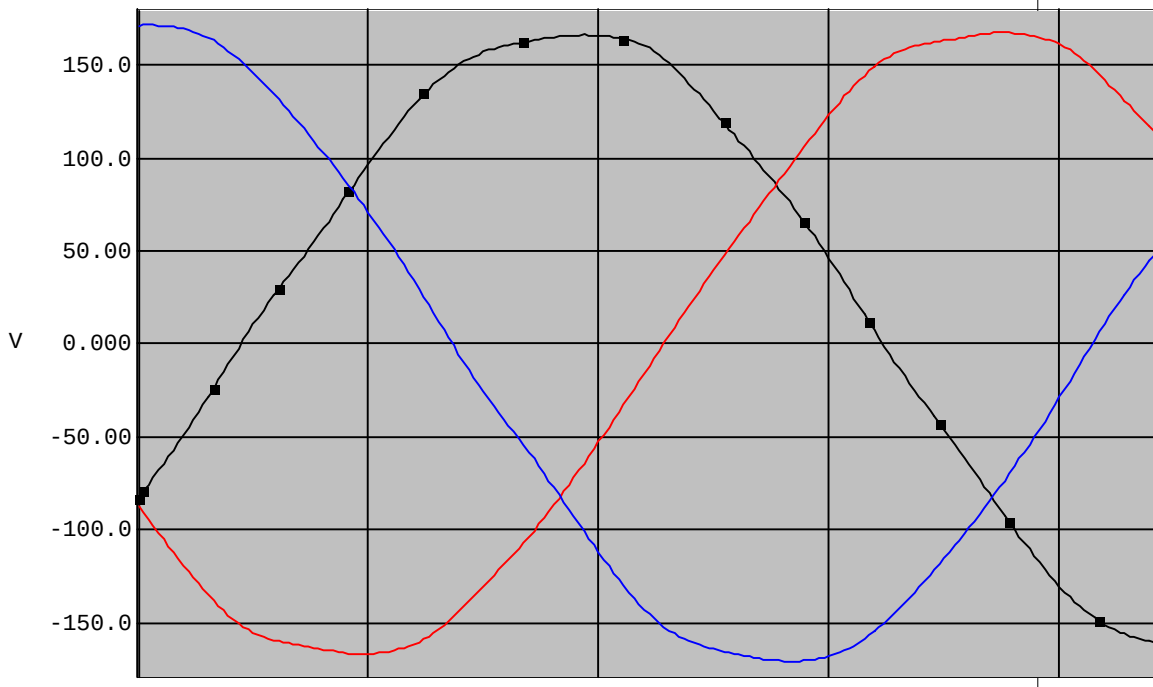
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE & Victor Jardel ,	Latte Heights Plantation WWPS - Pump 1 - Photo ,

Comments
Recorded at main breaker for the control panel. 120/208 volts, 3 phase.

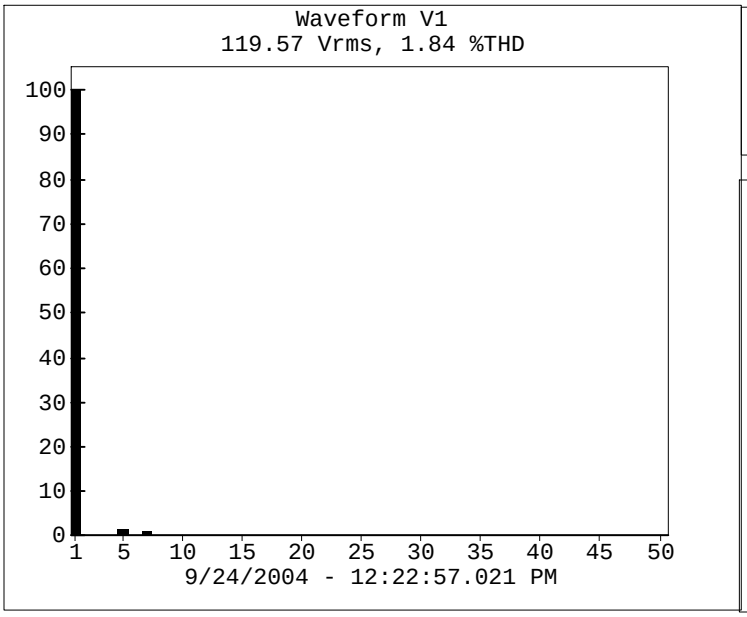
Latte Heights Plantation WWPS Pump 2 Photo

Recording Start Date	9/24/2004 - 12:22:57 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/24/2004	12:22:57.020 PM	16.667	119.6	V
Waveform V2	9/24/2004	12:22:57.020 PM	16.667	119.7	V
Waveform V3	9/24/2004	12:22:57.020 PM	16.667	122.7	V



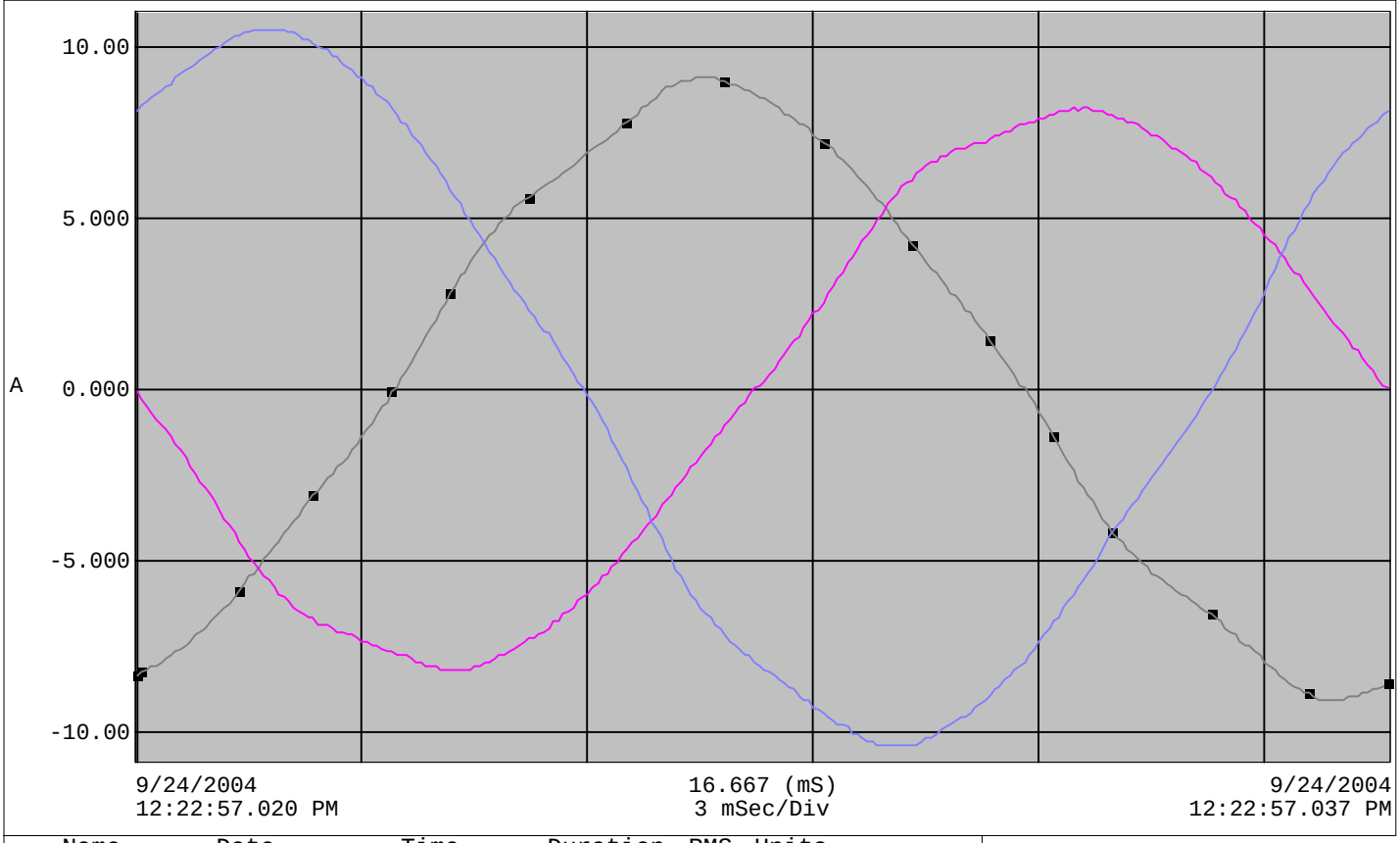
9/24/2004 - 12:22:57.000 PM

	Val	
—	-83.30	Waveform V1
—	-87.90	Waveform V2
—	170.9	Waveform V3

Waveform V1

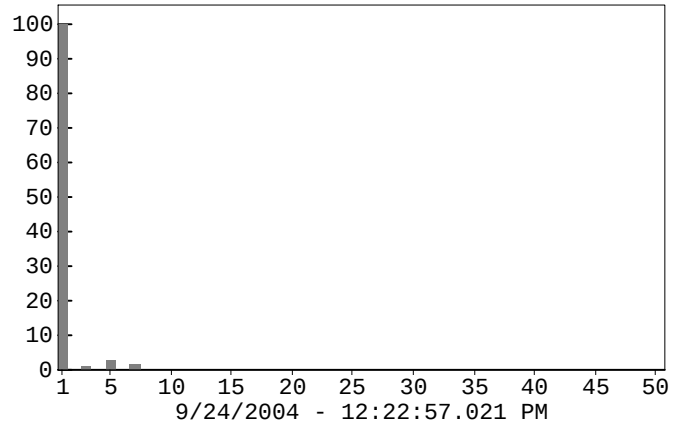
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/24/2004	12:22:57.020 PM	16.667	6.165	A
Waveform I2	9/24/2004	12:22:57.020 PM	16.667	5.752	A
Waveform I3	9/24/2004	12:22:57.020 PM	16.667	7.255	A

Waveform I1
6.17 Arms, 3.74 %THD



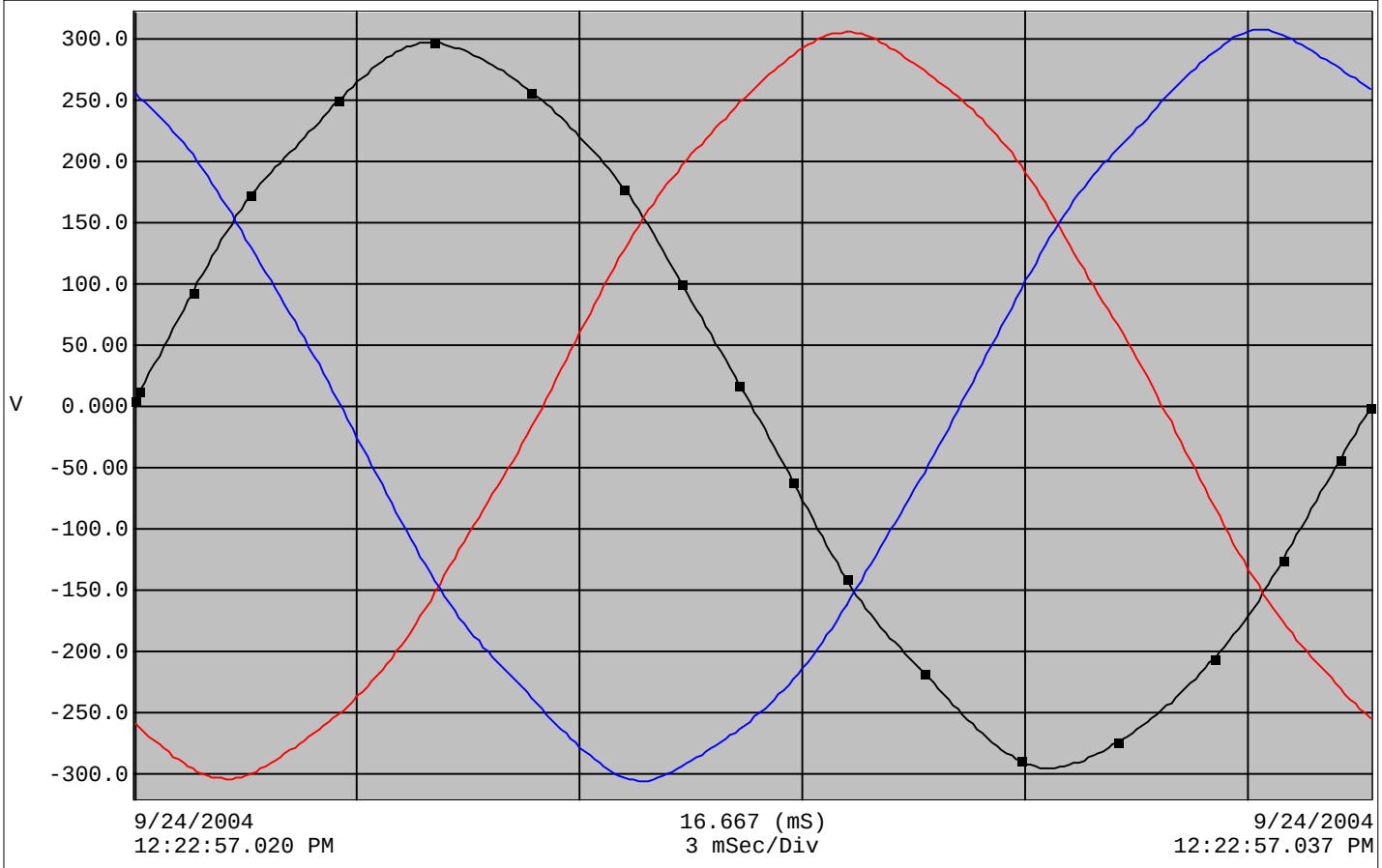
9/24/2004 - 12:22:57.000 PM

Val	
-8.400	Waveform I1
-0.100	Waveform I2
8.100	Waveform I3

Waveform I1

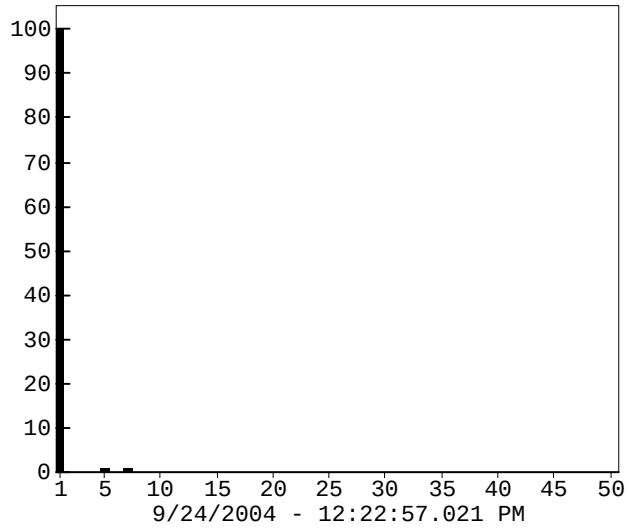
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.4	H19	0.0	H36	0.1
H03	1.5	H20	0.1	H37	0.1
H04	0.1	H21	0.1	H38	0.0
H05	2.8	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.8	H24	0.1	H41	0.1
H08	0.1	H25	0.0	H42	0.1
H09	0.2	H26	0.0	H43	0.1
H10	0.0	H27	0.1	H44	0.0
H11	0.1	H28	0.1	H45	0.1
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/24/2004	12:22:57.020 PM	16.667	205.5	V
Waveform U2	9/24/2004	12:22:57.020 PM	16.667	210.7	V
Waveform U3	9/24/2004	12:22:57.020 PM	16.667	210.7	V

Waveform U1
205.45 Vrms, 1.66 %THD



9/24/2004 - 12:22:57.000 PM

	Val	
—	4.500	Waveform U1
—	-258.9	Waveform U2
—	254.3	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/24/2004
Start Time: 12:22:57 PM
Duration: 0:0.000 (M:S)
W: 511.2 W
VAR: 516.4 W
VA: 726.6 W
Power Factor: 0.704
Displacement Power Factor: 0.705
TAN: 1.006
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Latte Heights Plantation WWPS\092404 - Latte Heights Plantation WWPS - Pump 2.dvb

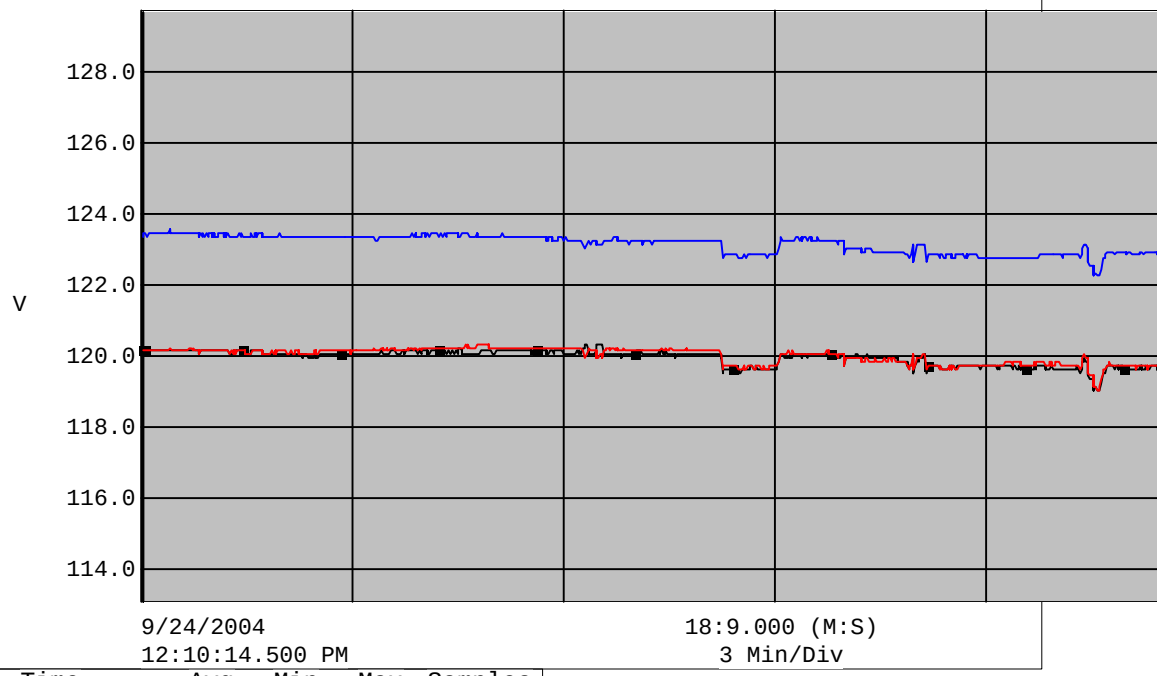
Operator	Test Site
Morikawa & Assocaites, LLC Lyman Morikawa, PE and Victor Jardel ,	Latte Heights Plantation WWPS - Pump 2 Photo ,

Comments
Recorded at main breaker for the control panel.

Latte Heights Plantation WWPS Trend

Recording Start Date	9/24/2004 - 12:10:14 PM
Recording Duration	18:09 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

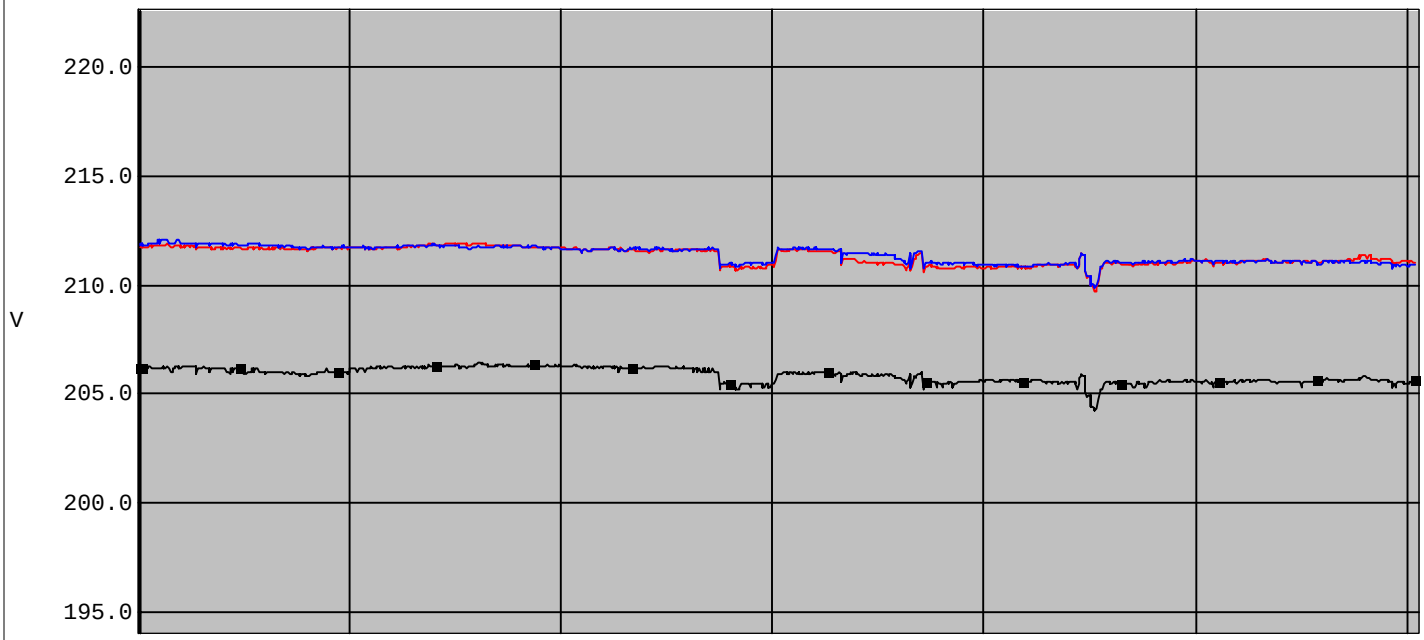
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/24/2004	12:10:14.500 PM	119.9	119.0	120.3	1090
Vrms Line2	9/24/2004	12:10:14.500 PM	119.9	119.0	120.3	1090
Vrms Line3	9/24/2004	12:10:14.500 PM	123.1	122.2	123.5	1090

9/24/2004 - 12:10:14.000 PM
Val
120.1 — Vrms Line1
120.1 — Vrms Line2
123.3 — Vrms Line3

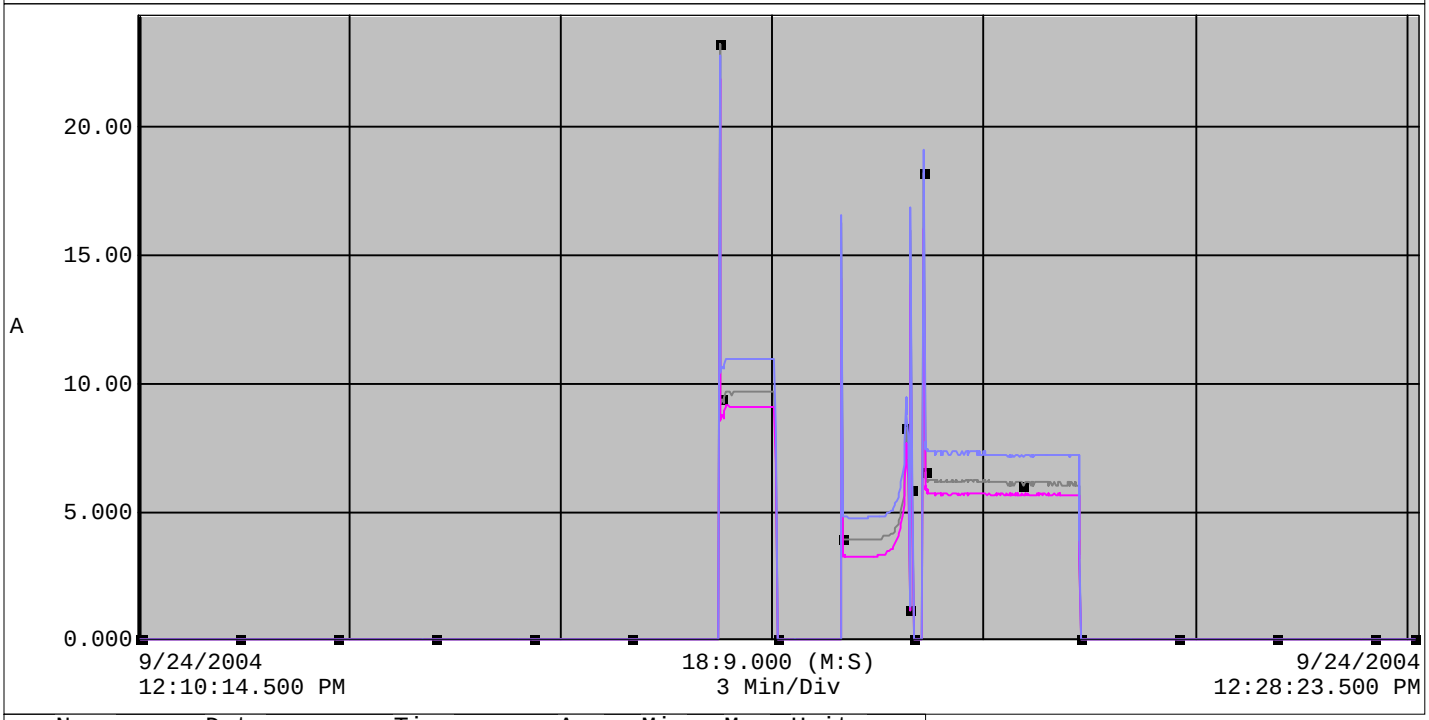
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/24/2004	12:10:14.500 PM	205.8	204.2	206.4	V
Urms Line2	9/24/2004	12:10:14.500 PM	211.3	209.7	211.9	V
Urms Line3	9/24/2004	12:10:14.500 PM	211.4	209.8	212.0	V

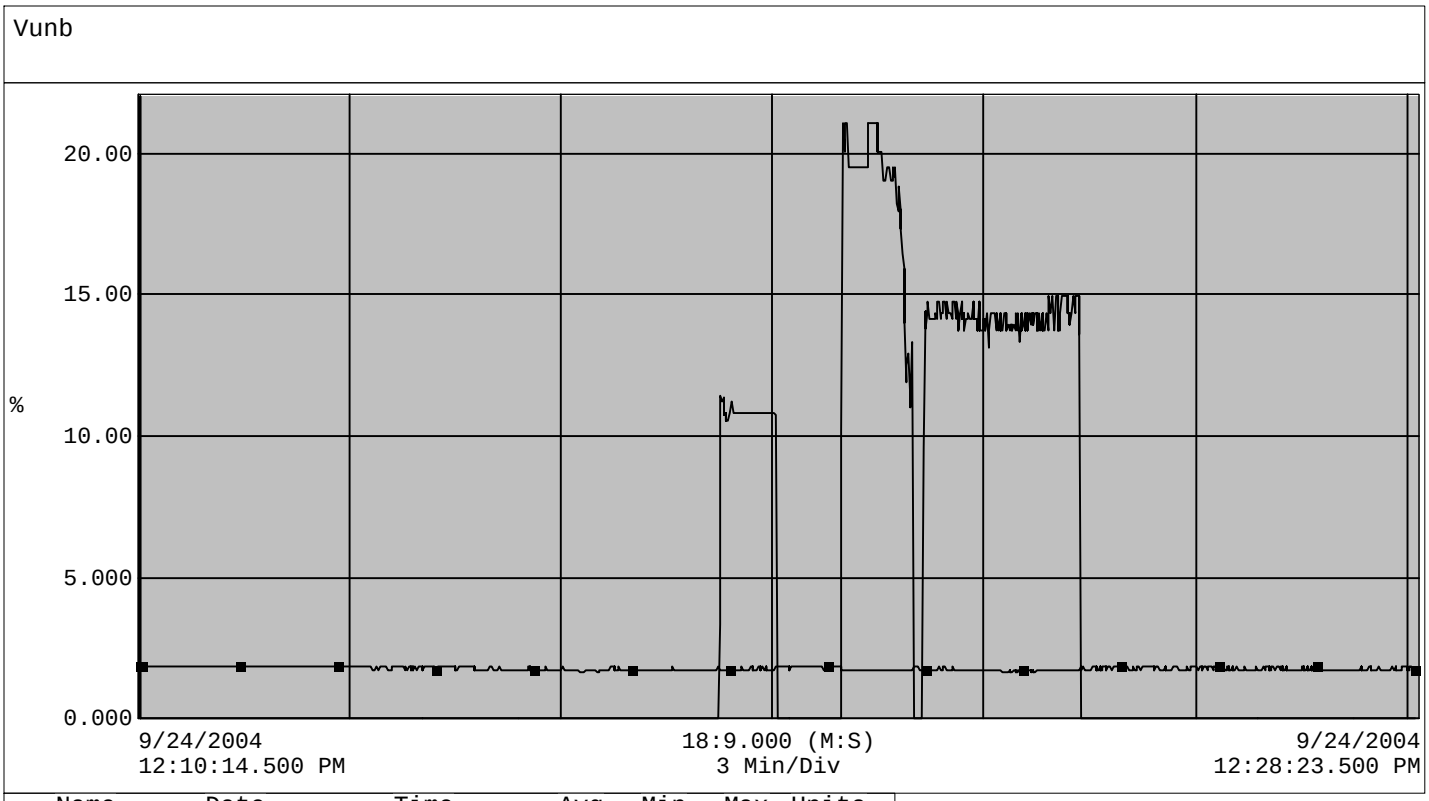
9/24/2004 - 12:10:14.000 PM
Val
206.1 — Urms Line1
211.7 — Urms Line2
211.8 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/24/2004	12:10:14.500 PM	1.459	0.000	23.10	A
Arms Line2	9/24/2004	12:10:14.500 PM	1.338	0.000	21.80	A
Arms Line3	9/24/2004	12:10:14.500 PM	1.703	0.000	22.70	A

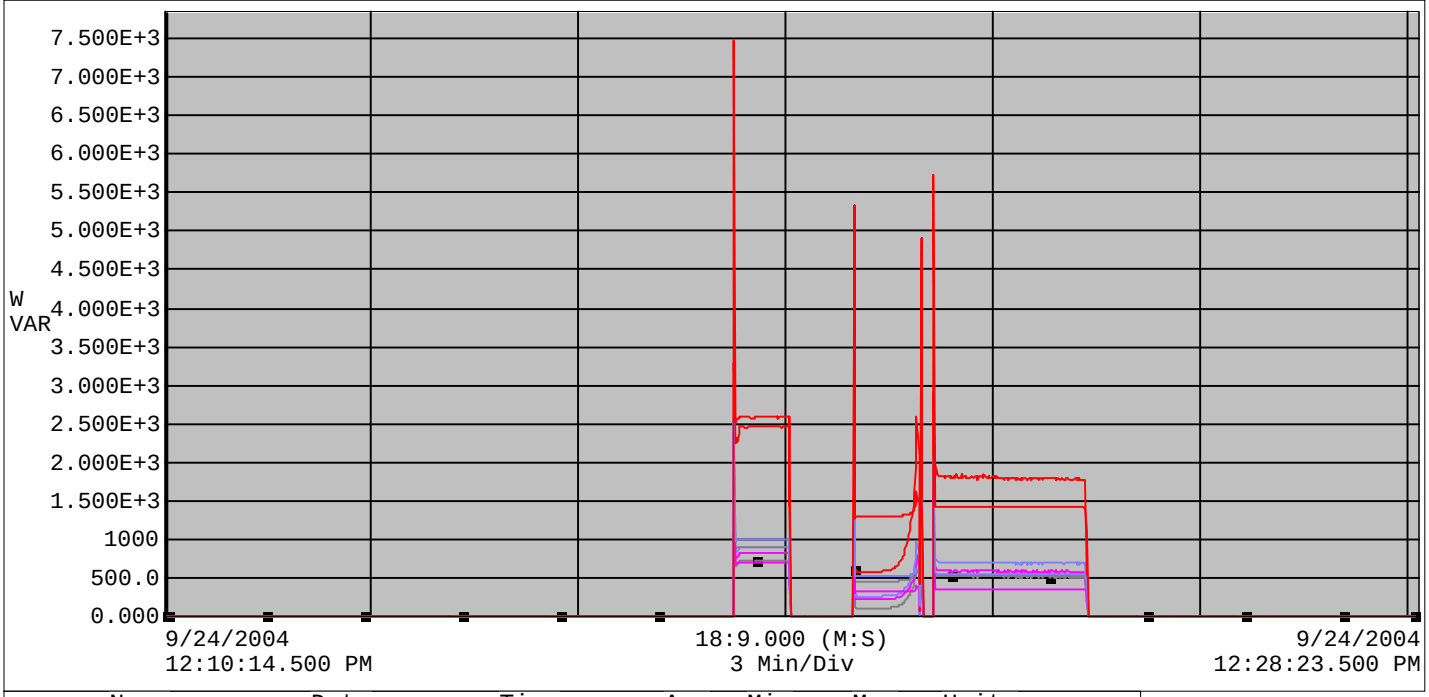
9/24/2004 - 12:10:14.000 PM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/24/2004	12:10:14.500 PM	1.740	1.600	1.800	%
Aunb(IEEE)	9/24/2004	12:10:14.500 PM	3.260	0.000	21.00	%

9/24/2004 - 12:10:14.000 PM
Val
1.800 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

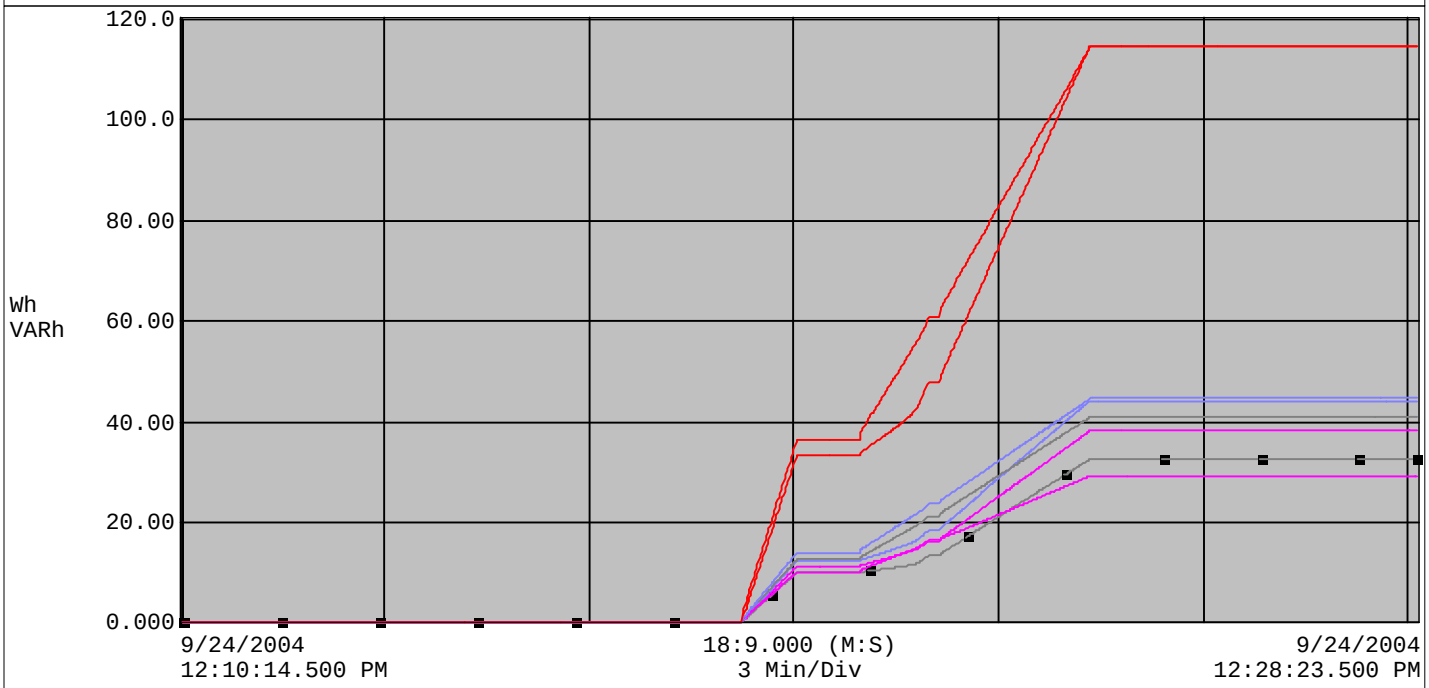
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/24/2004	12:10:14.500 PM	106.9	0.000	1.097E+3	W
W Line2	9/24/2004	12:10:14.500 PM	125.5	0.000	1.069E+3	W
W Line3	9/24/2004	12:10:14.500 PM	145.3	0.000	1.117E+3	W
W Sum of Phases	9/24/2004	12:10:14.500 PM	377.7	0.000	3.283E+3	W
VAR Line1	9/24/2004	12:10:14.500 PM	134.5	0.000	2.532E+3	VAR
VAR Line2	9/24/2004	12:10:14.500 PM	96.06	0.000	2.376E+3	VAR
VAR Line3	9/24/2004	12:10:14.500 PM	146.8	0.000	2.548E+3	VAR
VAR Sum of Phases	9/24/2004	12:10:14.500 PM	377.3	0.000	7.456E+3	VAR

9/24/2004 - 12:10:14.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

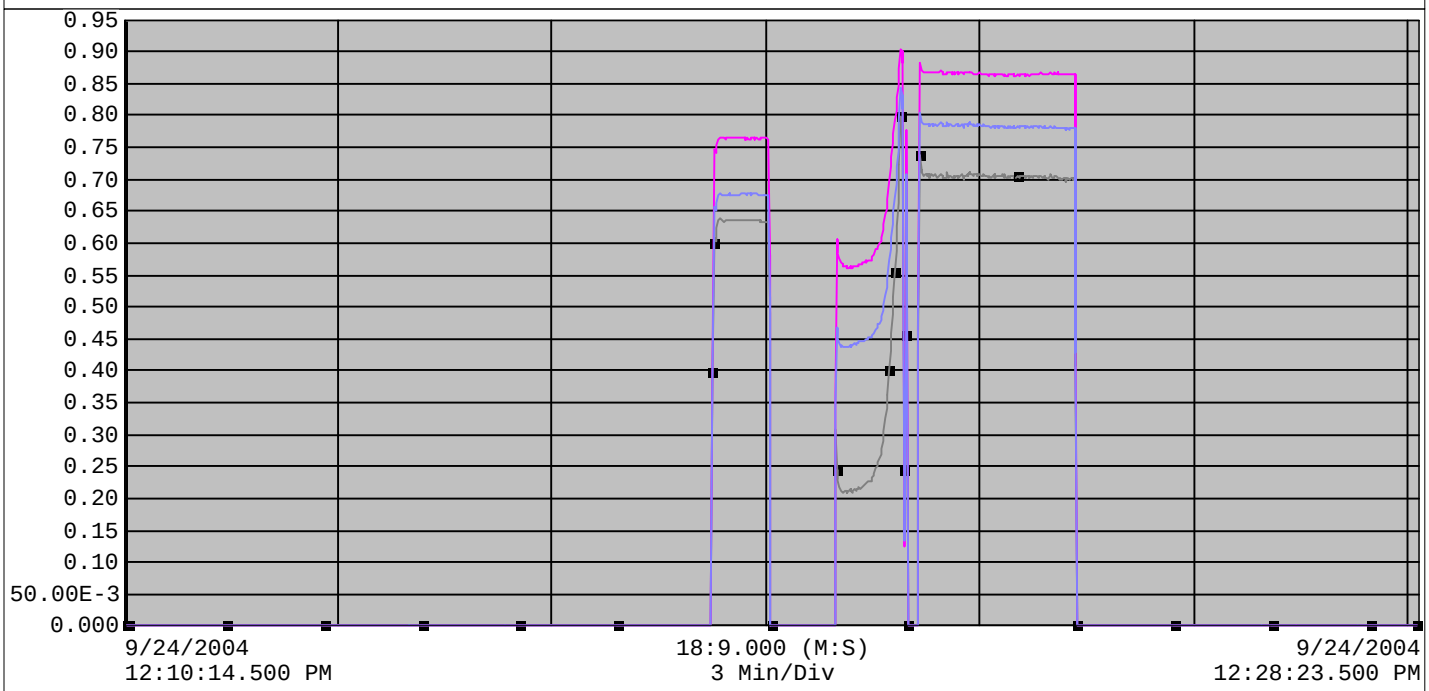
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/24/2004	12:10:14.500 PM	12.81	0.000	32.38	Wh
W-hours Line2	9/24/2004	12:10:14.500 PM	15.06	0.000	37.99	Wh
W-hours Line3	9/24/2004	12:10:14.500 PM	17.32	0.000	44.00	Wh
W-hours Sum of Phases	9/24/2004	12:10:14.500 PM	45.18	0.000	114.4	Wh
VAR-hours Line1	9/24/2004	12:10:14.500 PM	16.60	0.000	40.72	VARh
VAR-hours Line2	9/24/2004	12:10:14.500 PM	12.06	0.000	29.09	VARh
VAR-hours Line3	9/24/2004	12:10:14.500 PM	18.19	0.000	44.44	VARh
VAR-hours Sum of Phases	9/24/2004	12:10:14.500 PM	46.85	0.000	114.3	VARh

9/24/2004 - 12:10:14.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/24/2004	12:10:14.500 PM	0.132	0.000	0.798	
PF Line2	9/24/2004	12:10:14.500 PM	0.174	0.000	0.902	
PF Line3	9/24/2004	12:10:14.500 PM	0.154	0.000	0.843	

9/24/2004 - 12:10:14.000 PM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: X:\Latte Heights Plantation WWPS\092404 - Latte Heights Plantation WWPS.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE & Victor Jardel ,	Latte Heights Plantation WWPS Pumps 1 and 2 ,

Comments
GPA Meter 57-396-112, 4 KW Demand. 120/208 volts, 3 phase, 4 wire. Bubbler system malfunction causing both pumps to operate.

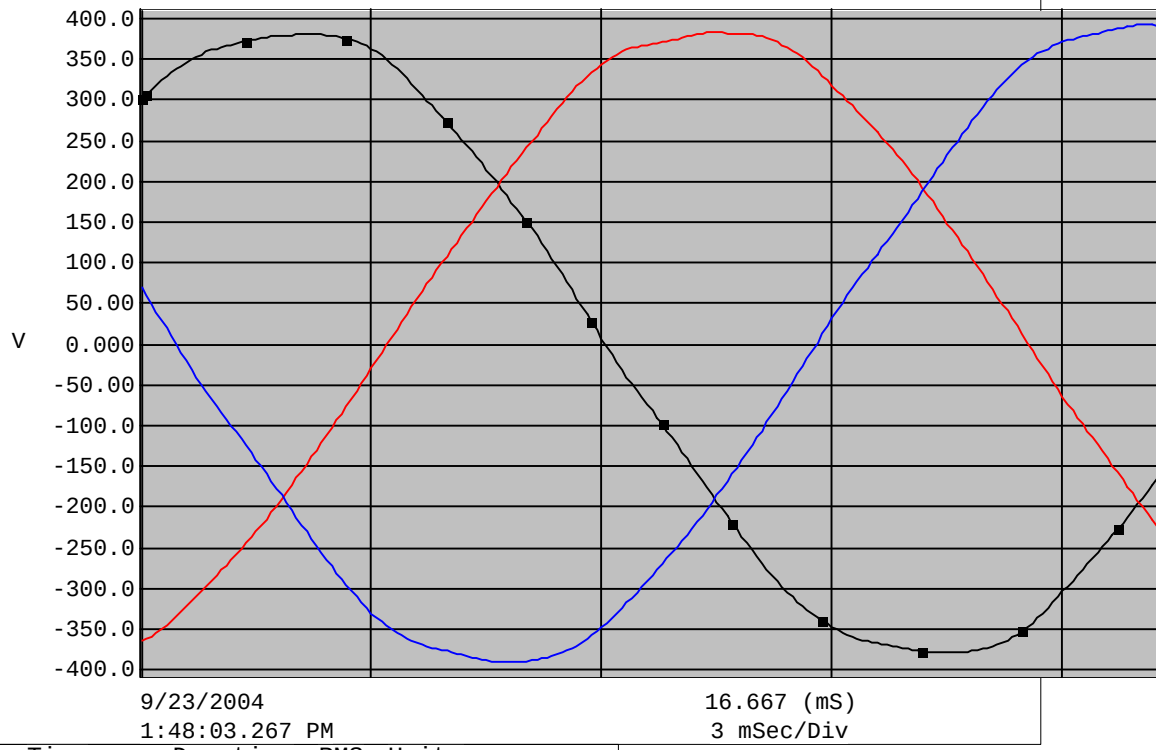
GWA Wastewater Pumping Station Assessment				
Station Name: LATTE HEIGHTS DBL TRBL	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/23/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.59	
Transformer Pole Condition and Grounding	2.0%	4	0.08	
Transformer Connection Type	2.0%	4	0.08	
Transformer Wiring Method	5.0%	4	0.2	
Lightning Arrester Condition	5.0%	4	0.2	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.52	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Secondary Pump Motor Controls	**20.0%**		0.52	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.27	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.045	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	1	0.015	
	100%	**Assessment Value**		**2.8**

Comments:

Latte Heights WWPS Pump 1 Photo

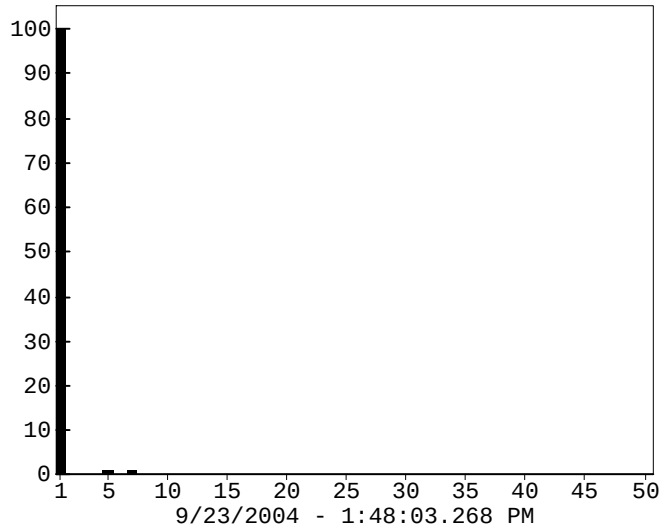
Recording Start Date	9/23/2004 - 1:48:03 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/23/2004	1:48:03.267 PM	16.667	272.8	V
Waveform V2	9/23/2004	1:48:03.267 PM	16.667	272.8	V
Waveform V3	9/23/2004	1:48:03.267 PM	16.667	279.4	V

Waveform V1
272.81 Vrms, 1.65 %THD



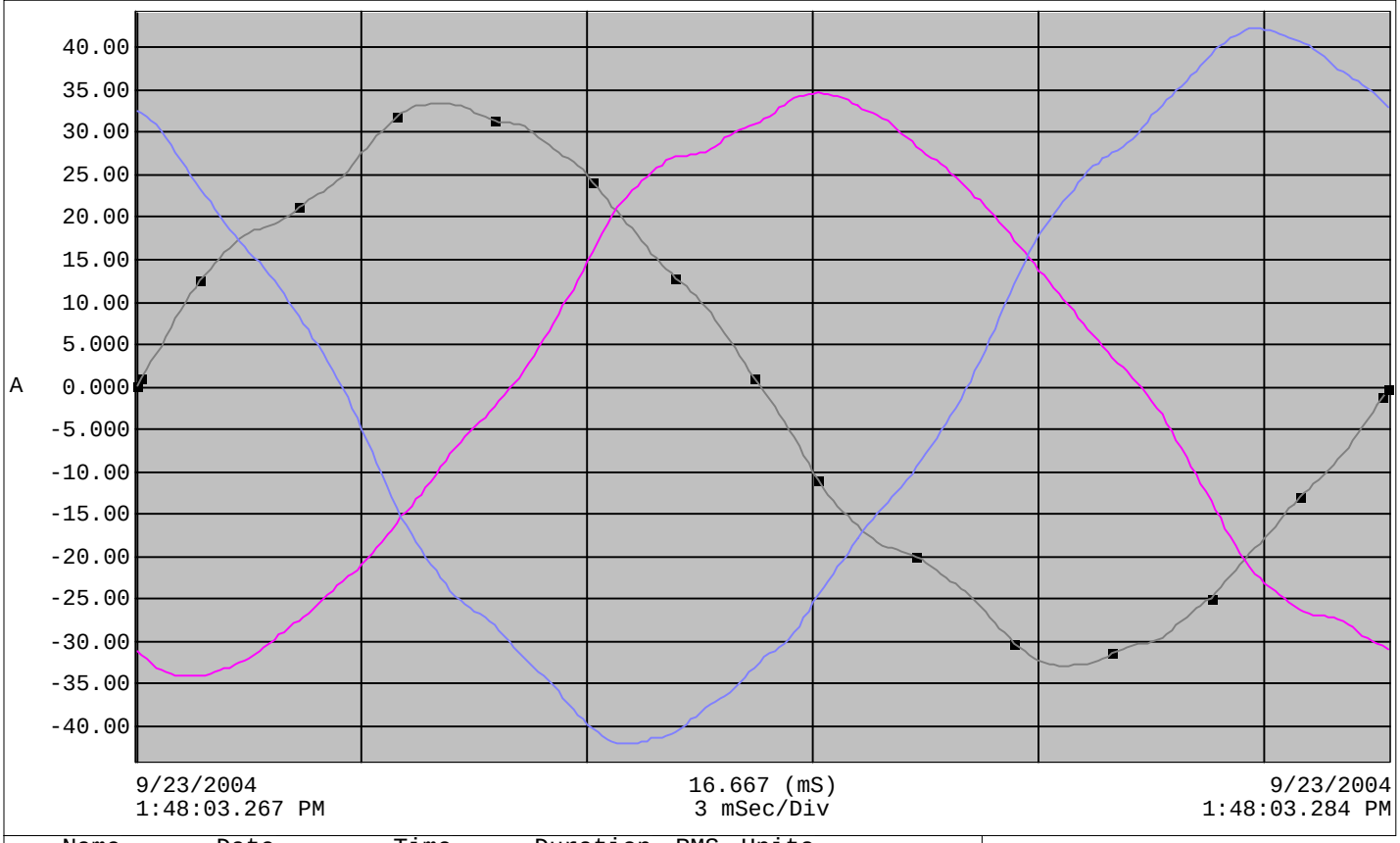
9/23/2004 - 1:48:03.000 PM

Val	
298.5	Waveform V1
-366.1	Waveform V2
67.50	Waveform V3

Waveform V1

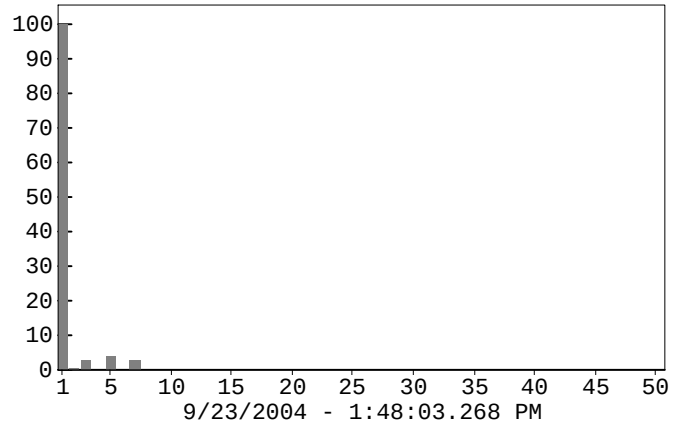
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/23/2004	1:48:03.267 PM	16.667	22.53	A
Waveform I2	9/23/2004	1:48:03.267 PM	16.667	23.68	A
Waveform I3	9/23/2004	1:48:03.267 PM	16.667	28.62	A

Waveform I1
22.53 Arms, 5.74 %THD

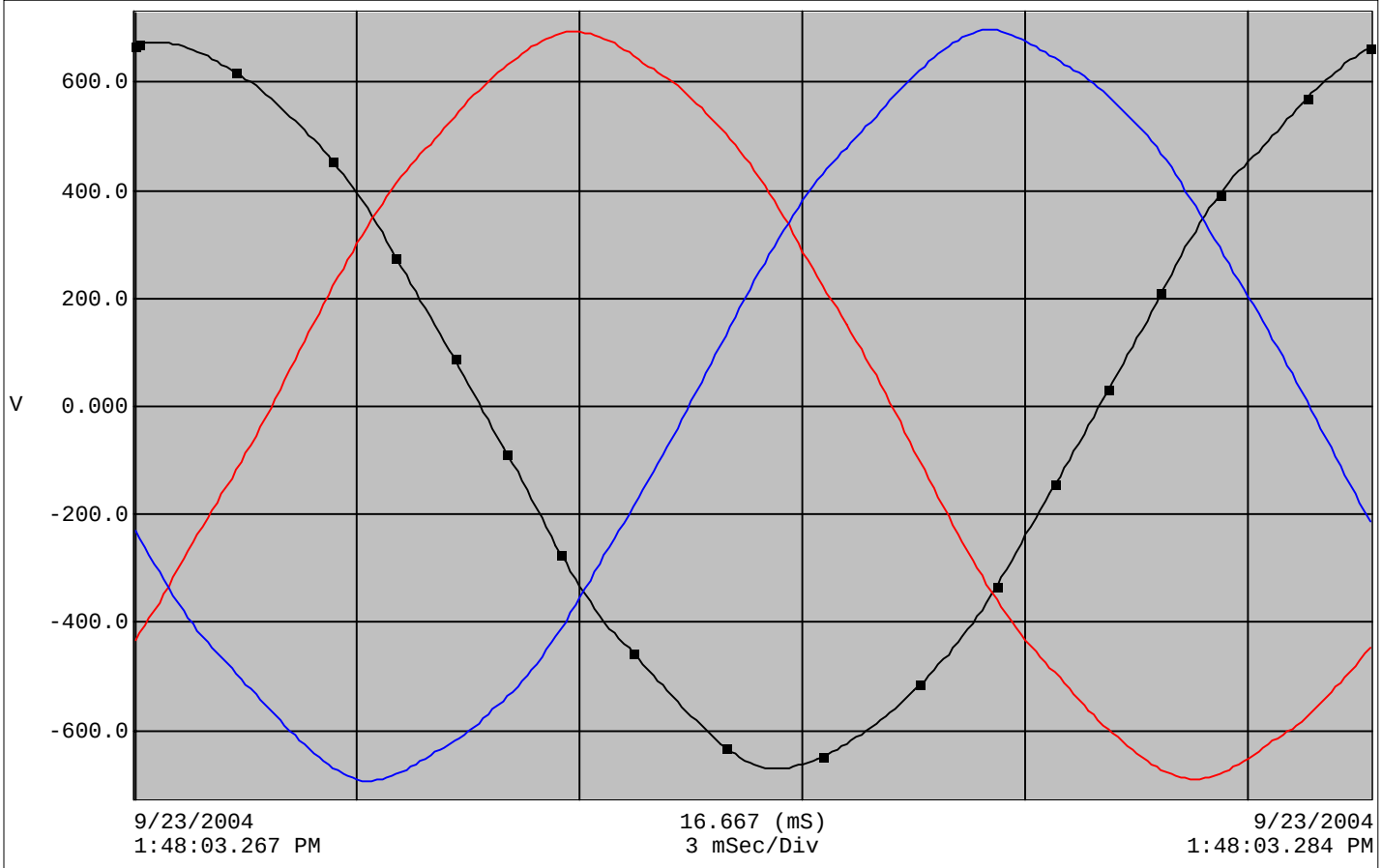


9/23/2004 - 1:48:03.000 PM
Val
0.100 — Waveform I1
-31.20 — Waveform I2
32.40 — Waveform I3

Waveform I1

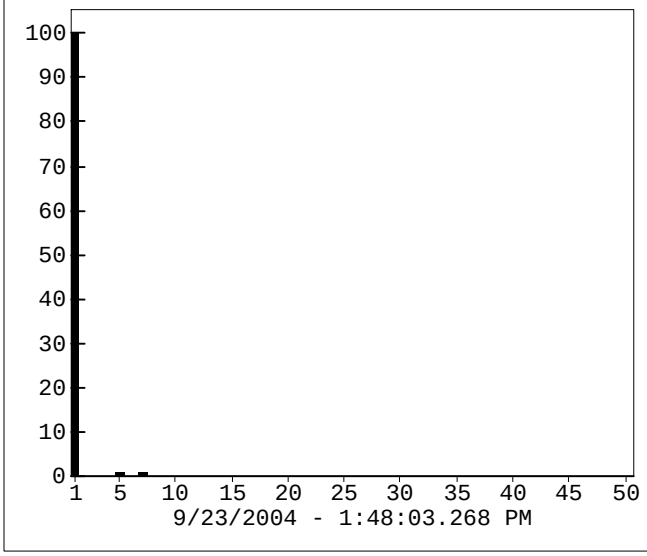
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.6	H19	0.4	H36	0.0
H03	2.9	H20	0.1	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	3.9	H22	0.1	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	2.8	H24	0.1	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.2	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/23/2004	1:48:03.267 PM	16.667	468.7	V
Waveform U2	9/23/2004	1:48:03.267 PM	16.667	480.1	V
Waveform U3	9/23/2004	1:48:03.267 PM	16.667	480.1	V

Waveform U1
468.68 Vrms, 1.52 %THD



9/23/2004 - 1:48:03.000 PM

Val	
664.6	Waveform U1
-433.7	Waveform U2
-230.9	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/23/2004
Start Time: 1:48:03 PM
Duration: 0:0.000 (M:S)
W: 4.227E+3 W
VAR: 4.597E+3 W
VA: 6.245E+3 W
Power Factor: 0.677
Displacement Power Factor: 0.678
TAN: 1.084
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

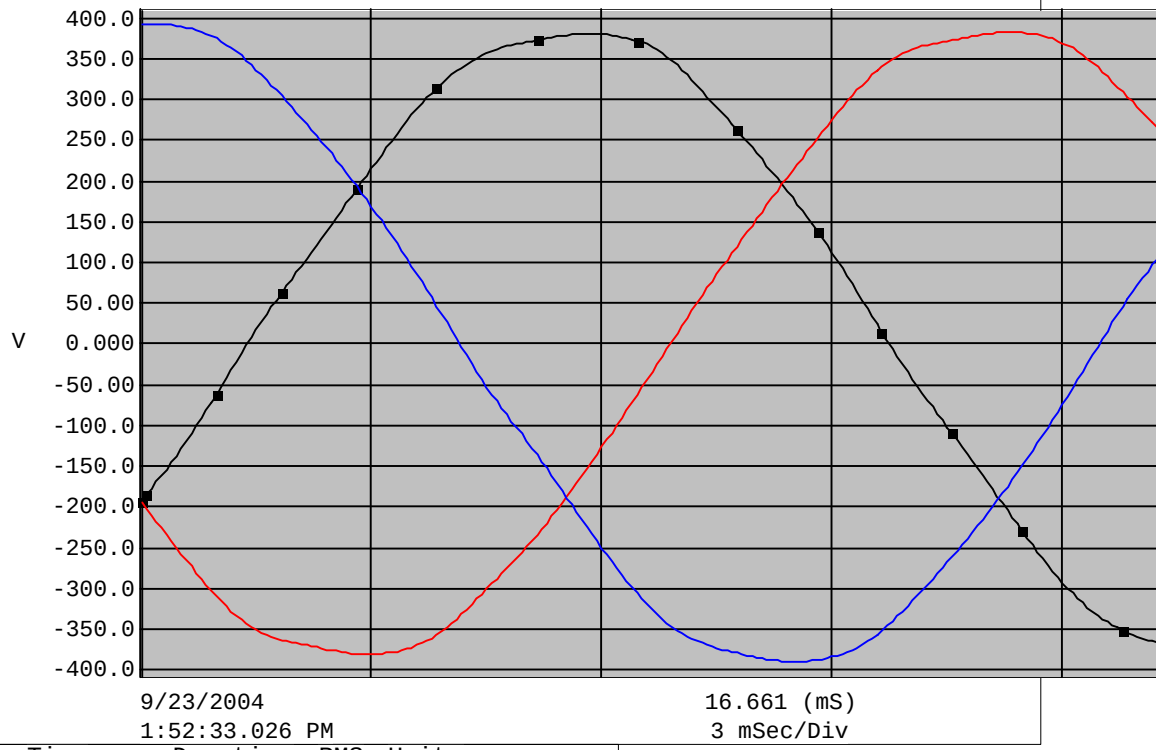
Database: X:\Latte Heights WWPS\092304 - Latte Hts WWPS - Pumps 1 - Photo.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE ,	Test Site Latte Heights WWPS - Pump 1 Photo ,

Comments
Recorded at feeder to pump control panel. GPA Meter 01-739-894, Demand 31.65 KW.

Latte Heights WWPS Pump 2 Photo

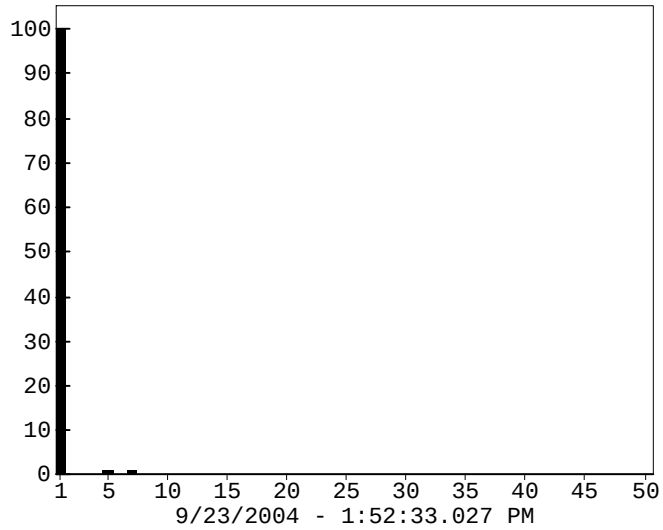
Recording Start Date 9/23/2004 - 1:52:33 PM
Recording Duration 0 (s)
Instrument ID Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/23/2004	1:52:33.026 PM	16.661	273.0	V
Waveform V2	9/23/2004	1:52:33.026 PM	16.661	273.0	V
Waveform V3	9/23/2004	1:52:33.026 PM	16.661	279.7	V

Waveform V1
273.01 Vrms, 1.68 %THD

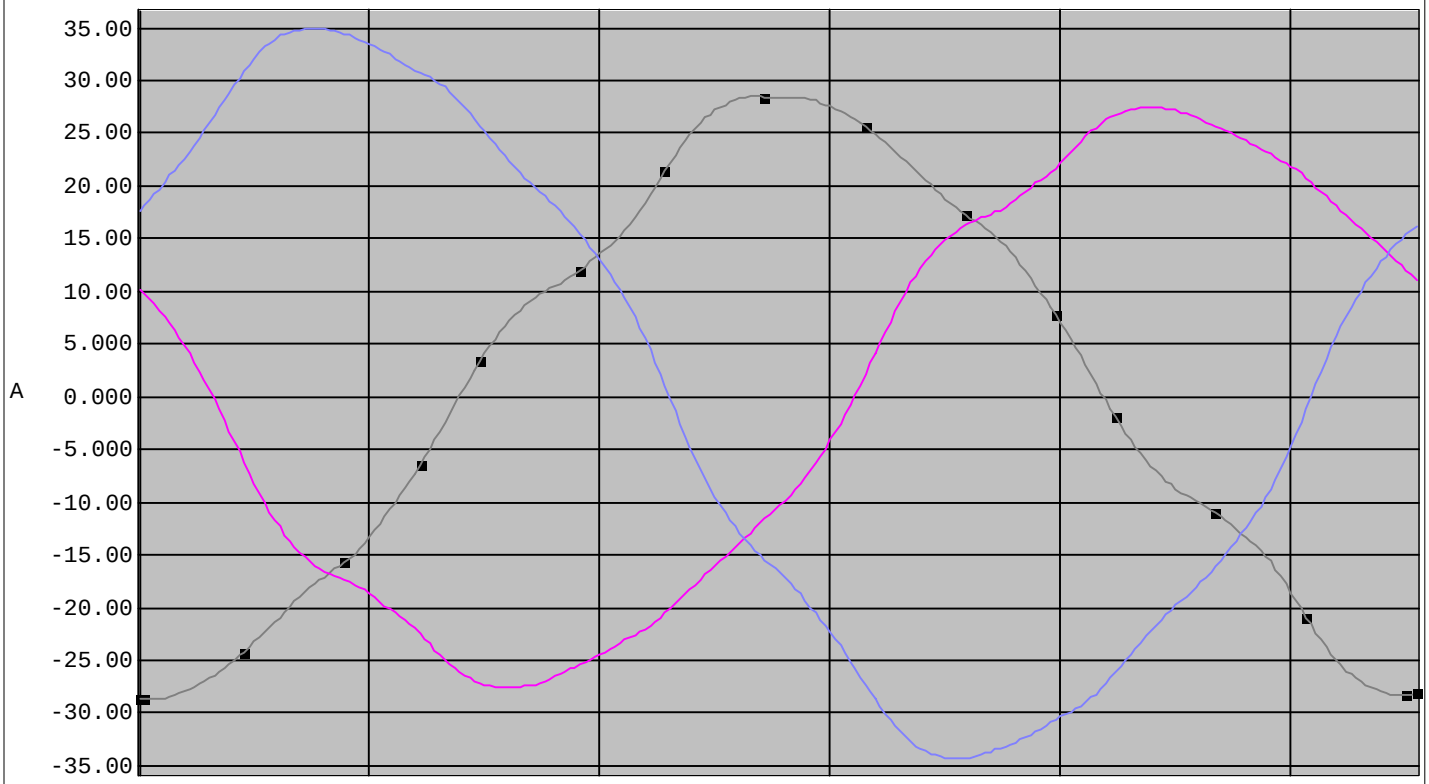


9/23/2004 - 1:52:33.000 PM
Val
-195.2 — Waveform V1
-195.3 — Waveform V2
390.3 — Waveform V3

Waveform V1

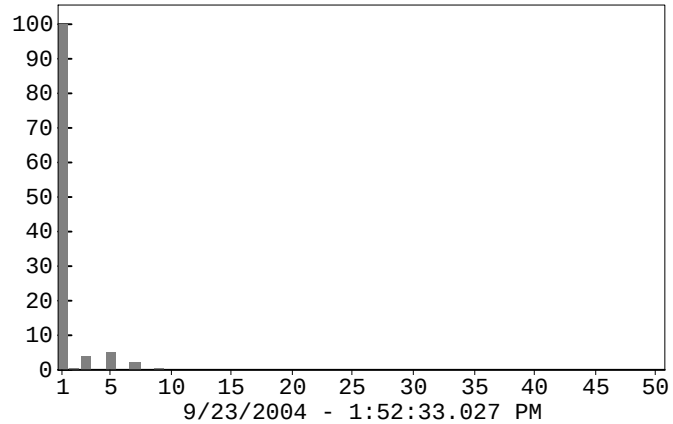
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/23/2004	1:52:33.026 PM	16.661	19.31	A
Waveform I2	9/23/2004	1:52:33.026 PM	16.661	19.20	A
Waveform I3	9/23/2004	1:52:33.026 PM	16.661	23.91	A

Waveform I1
19.31 Arms, 7.37 %THD



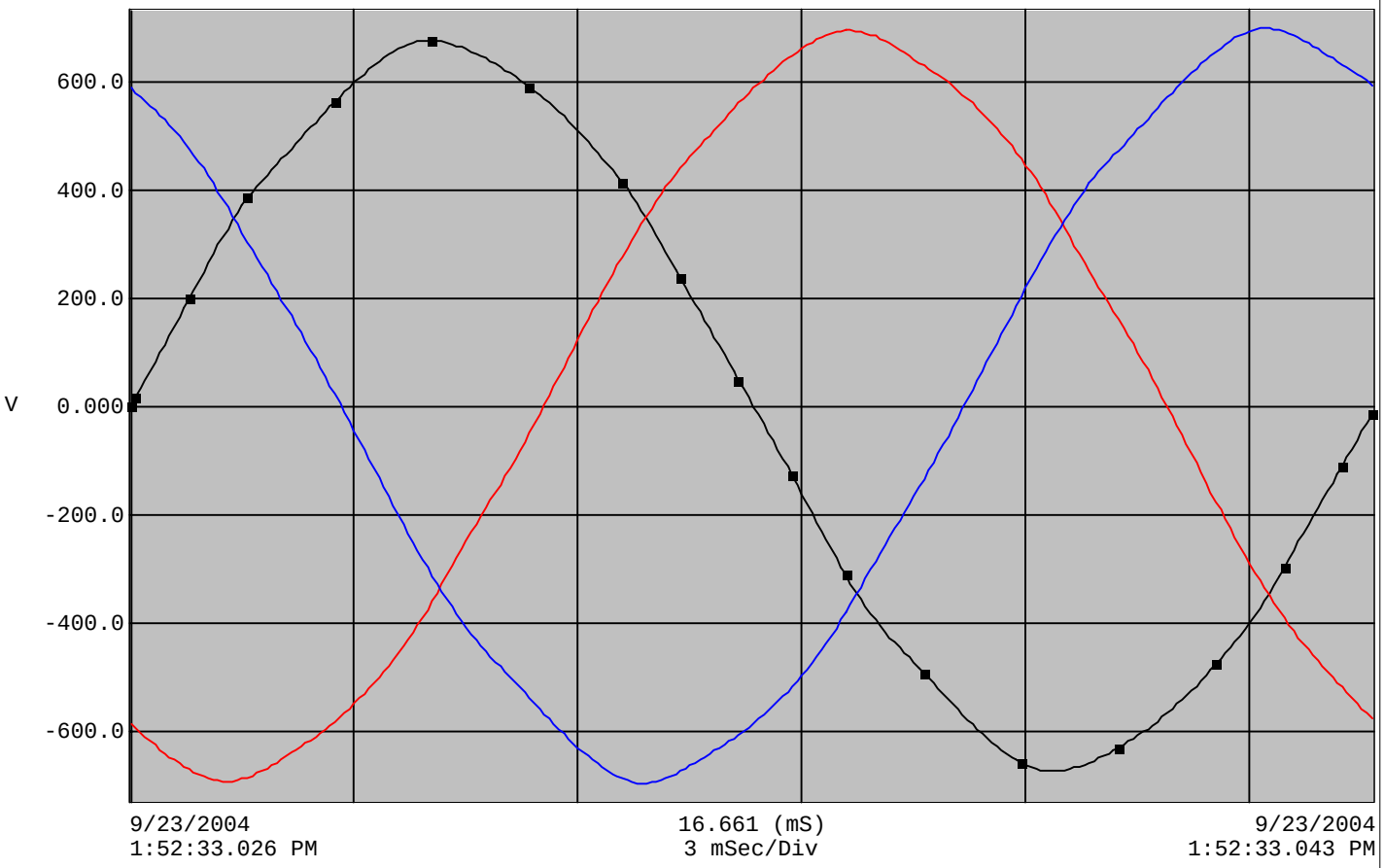
9/23/2004 - 1:52:33.000 PM

Val	
-28.80	Waveform I1
10.10	Waveform I2
17.60	Waveform I3

Waveform I1

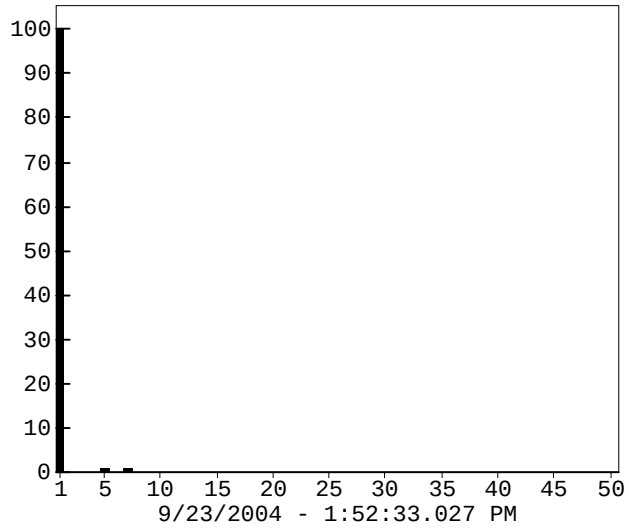
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.7	H19	0.2	H36	0.0
H03	4.2	H20	0.1	H37	0.0
H04	0.2	H21	0.0	H38	0.0
H05	5.3	H22	0.0	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	2.6	H24	0.0	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/23/2004	1:52:33.026 PM	16.661	469.0	V
Waveform U2	9/23/2004	1:52:33.026 PM	16.661	480.7	V
Waveform U3	9/23/2004	1:52:33.026 PM	16.661	480.6	V

Waveform U1
468.98 Vrms, 1.53 %THD



9/23/2004 - 1:52:33.000 PM

	Val
—	0.100 Waveform U1
—	-585.7 Waveform U2
—	585.6 Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/23/2004
Start Time: 1:52:33 PM
Duration: 0:0.000 (M:S)
W: 2.463E+3 W
VAR: 4.677E+3 W
VA: 5.286E+3 W
Power Factor: 0.466
Displacement Power Factor: 0.467
TAN: 1.894
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Latte Heights WWPS\092304 - Latte Hts WWPS - Pumps 2 - Photo.dvb

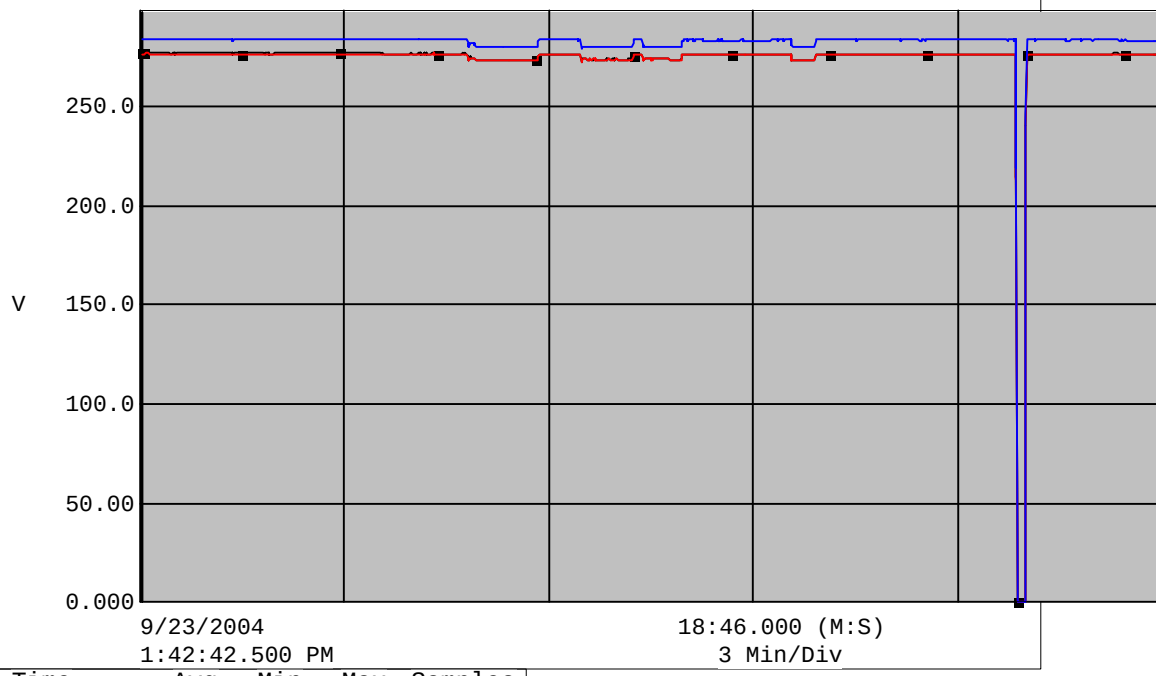
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Latte Heights WWPS - Pump 2 Photo ,

Comments
Recorded at power feeder to the pump control cabinet. Motor has WYE-Delta motor starter. GPA Meter 01-739-894, Demand 31.65 KW.

Latte Heights WWPS Pump 1 and 2 Trend

Recording Start Date	9/23/2004 - 1:42:42 PM
Recording Duration	18:46 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

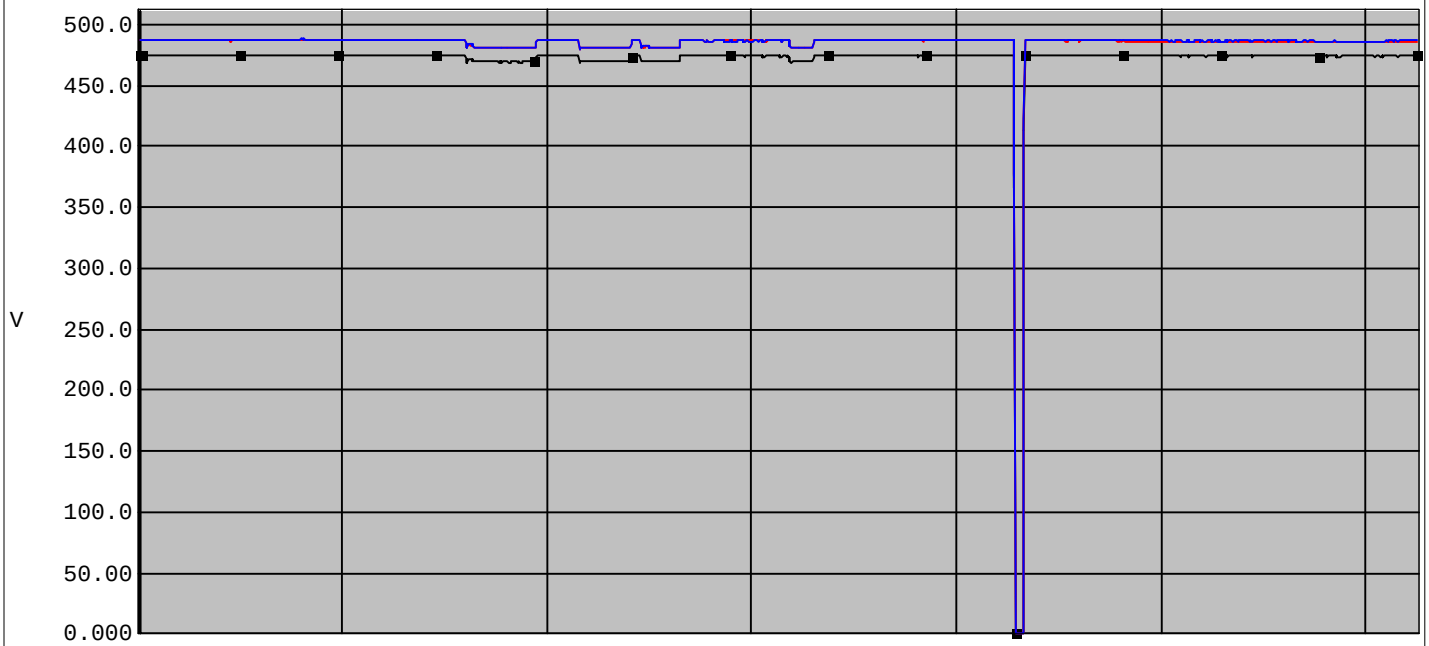
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/23/2004	1:42:42.500 PM	273.7	0.000	276.4	1127
Vrms Line2	9/23/2004	1:42:42.500 PM	273.5	0.000	276.1	1127
Vrms Line3	9/23/2004	1:42:42.500 PM	280.5	0.000	283.6	1127

9/23/2004 - 1:42:42.000 PM
Val
276.2 Vrms Line1
275.9 Vrms Line2
283.0 Vrms Line3

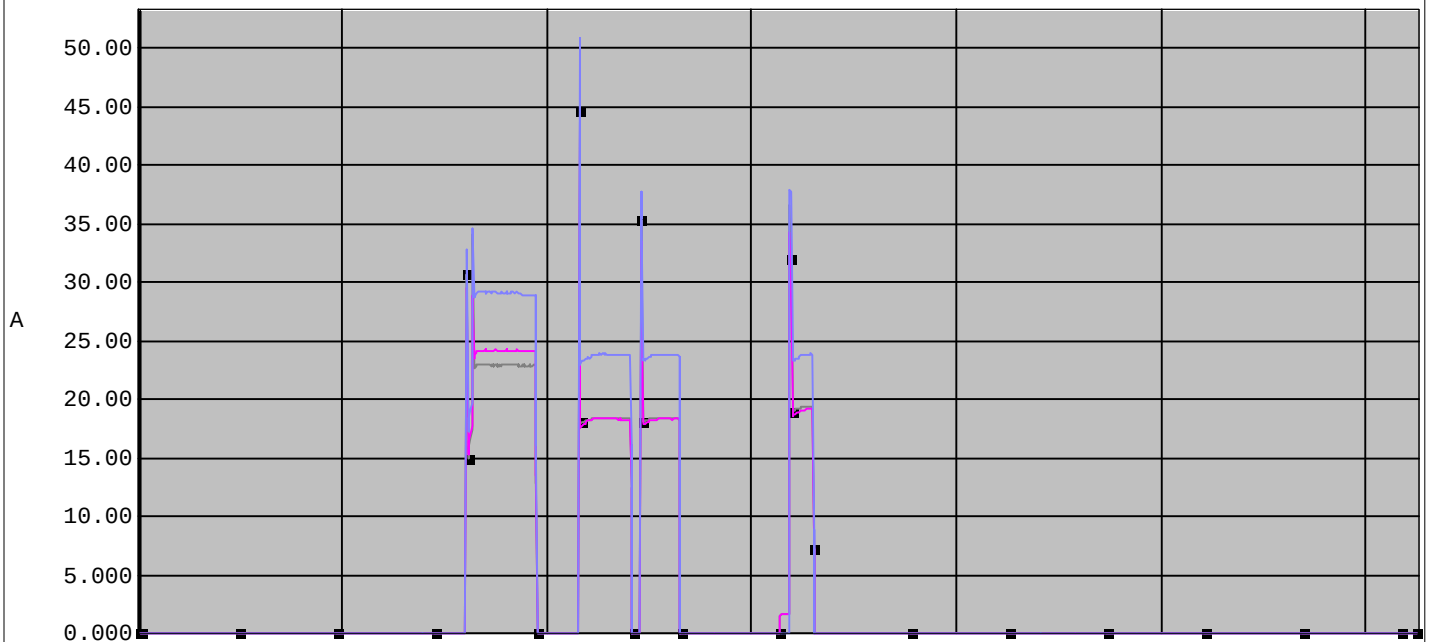
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/23/2004	1:42:42.500 PM	469.7	0.000	474.2	V
Urms Line2	9/23/2004	1:42:42.500 PM	481.8	0.000	486.8	V
Urms Line3	9/23/2004	1:42:42.500 PM	482.0	0.000	487.2	V

9/23/2004 - 1:42:42.000 PM
Val
474.0 Urms Line1
486.1 Urms Line2
486.4 Urms Line3

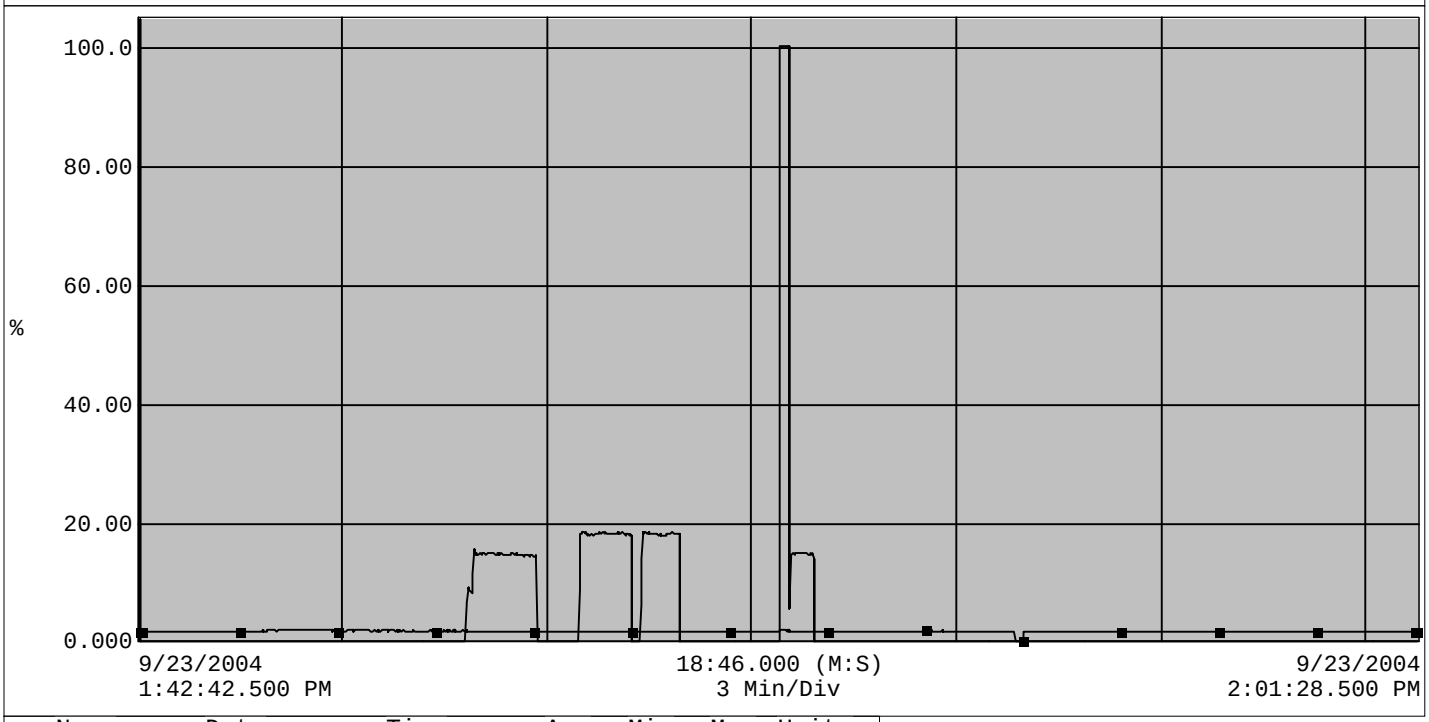
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/23/2004	1:42:42.500 PM	3.050	0.000	44.50	A
Arms Line2	9/23/2004	1:42:42.500 PM	3.080	0.000	44.60	A
Arms Line3	9/23/2004	1:42:42.500 PM	3.821	0.000	50.70	A

9/23/2004 - 1:42:42.000 PM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

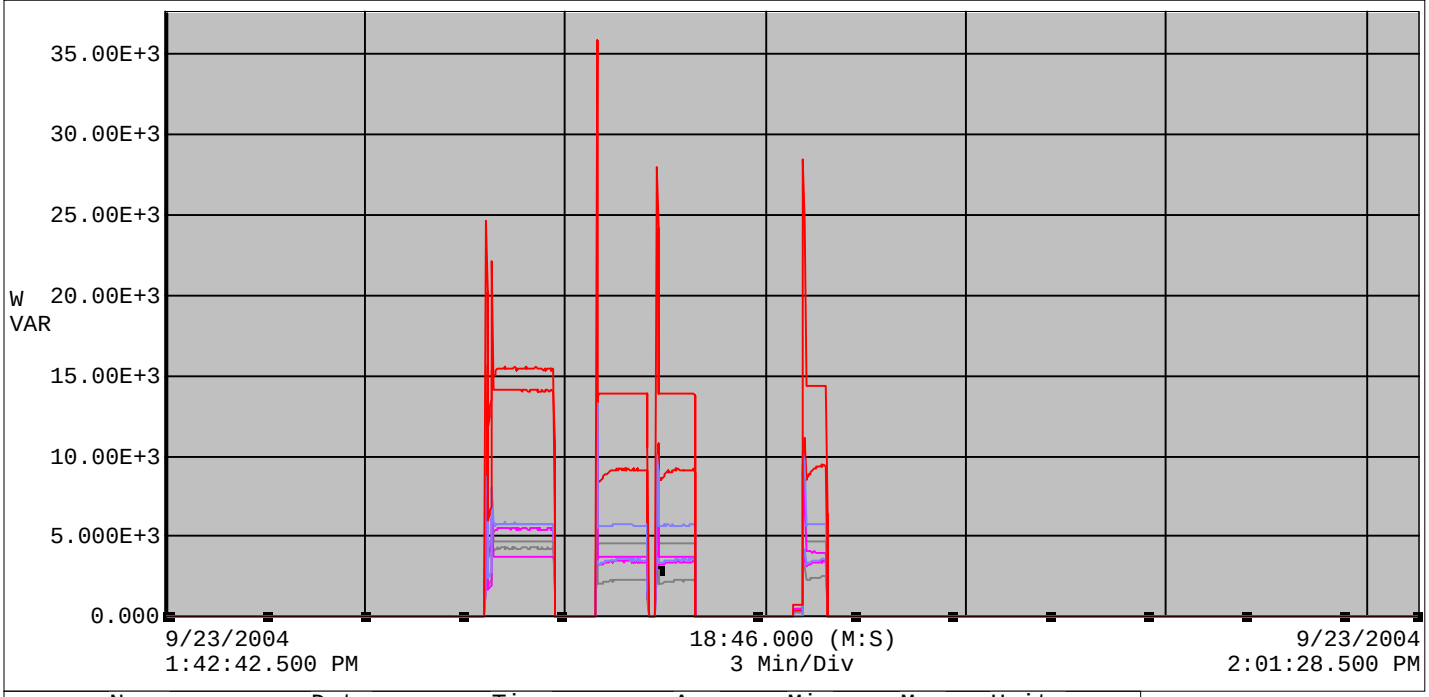
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/23/2004	1:42:42.500 PM	1.674	0.000	1.800	%
Aunb(IEEE)	9/23/2004	1:42:42.500 PM	3.148	0.000	100.0	%

9/23/2004 - 1:42:42.000 PM
Val
1.700 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

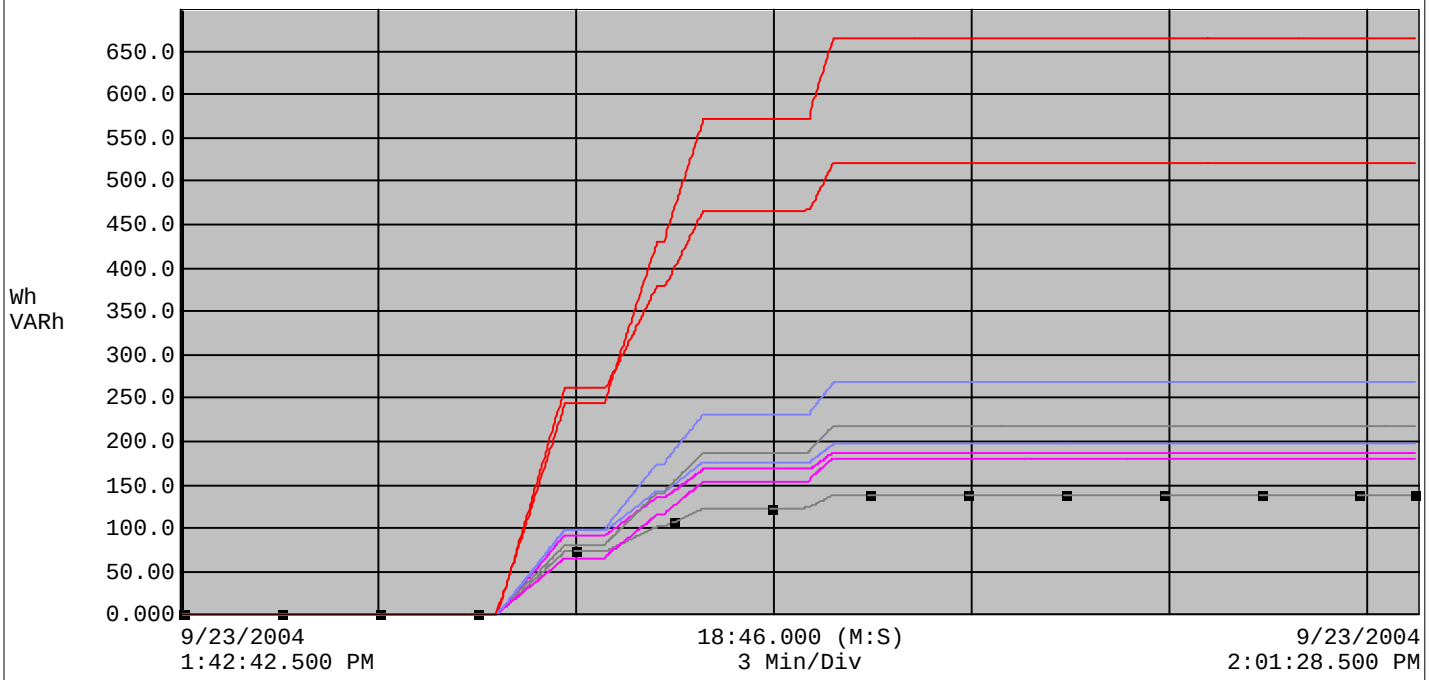
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/23/2004	1:42:42.500 PM	439.8	0.000	4.871E+3	W
W Line2	9/23/2004	1:42:42.500 PM	595.8	-17.80	5.446E+3	W
W Line3	9/23/2004	1:42:42.500 PM	625.4	0.000	5.772E+3	W
W Sum of Phases	9/23/2004	1:42:42.500 PM	1.661E+3	0.000	15.59E+3	W
VAR Line1	9/23/2004	1:42:42.500 PM	693.3	0.000	11.34E+3	VAR
VAR Line2	9/23/2004	1:42:42.500 PM	574.1	0.000	11.24E+3	VAR
VAR Line3	9/23/2004	1:42:42.500 PM	851.7	0.000	13.20E+3	VAR
VAR Sum of Phases	9/23/2004	1:42:42.500 PM	2.119E+3	0.000	35.79E+3	VAR

9/23/2004 - 1:42:42.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

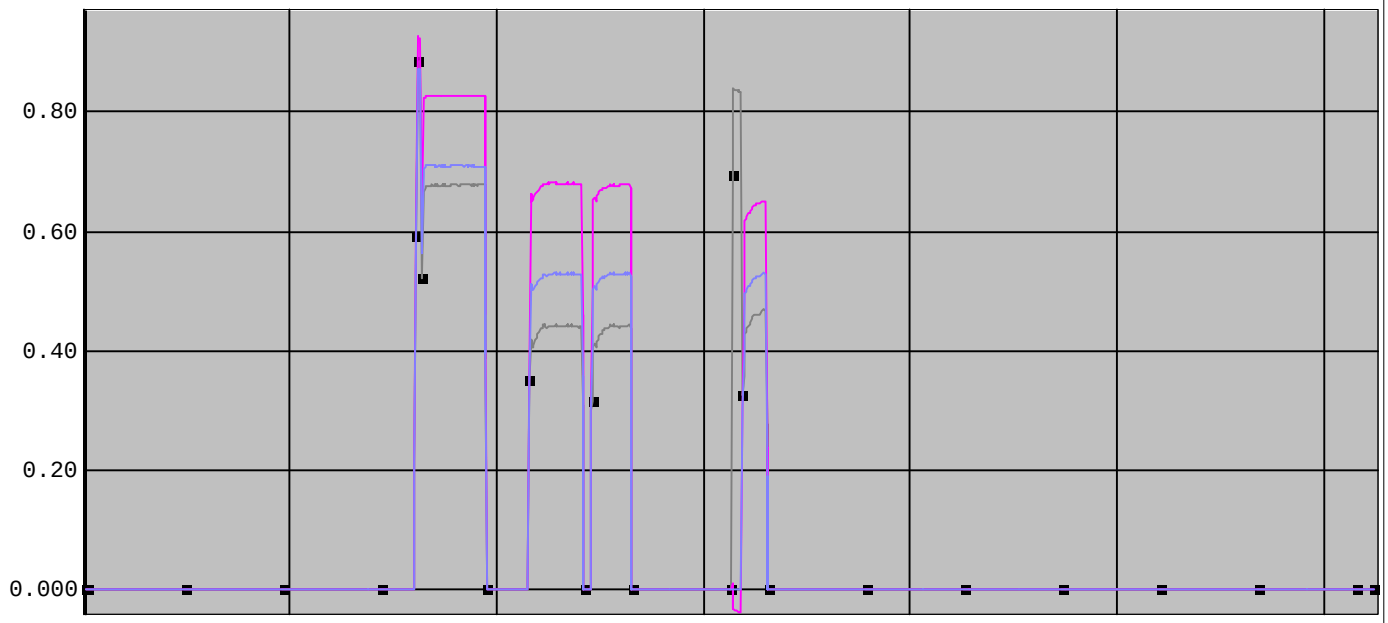
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/23/2004	1:42:42.500 PM	90.13	0.000	137.7	Wh
W-hours Line2	9/23/2004	1:42:42.500 PM	121.5	0.000	186.5	Wh
W-hours Line3	9/23/2004	1:42:42.500 PM	127.7	0.000	195.8	Wh
W-hours Sum of Phases	9/23/2004	1:42:42.500 PM	339.4	0.000	520.0	Wh
VAR-hours Line1	9/23/2004	1:42:42.500 PM	137.8	0.000	217.0	VARh
VAR-hours Line2	9/23/2004	1:42:42.500 PM	113.8	0.000	179.7	VARh
VAR-hours Line3	9/23/2004	1:42:42.500 PM	169.5	0.000	266.6	VARh
VAR-hours Sum of Phases	9/23/2004	1:42:42.500 PM	421.2	0.000	663.4	VARh

9/23/2004 - 1:42:42.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/23/2004	1:42:42.500 PM	83.81E-3	0.000	0.883	
PF Line2	9/23/2004	1:42:42.500 PM	0.105	-41.00E-3	0.924	
PF Line3	9/23/2004	1:42:42.500 PM	86.13E-3	0.000	0.871	

9/23/2004 - 1:42:42.000 PM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: X:\Latte Heights WWPS\092304 - Latte Hts WWPS - Pumps 1 and 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Latte Heights WWPS - Pumps 1 and 2 ,

Comments

Recorded at main lugs to pump control panel for pumps 1 and 2. Pumps operated to determine loading. Pump motor starter of the WYE-Delta starting type.

GPA meter 01-739-894, Demand 31.65 KW. GPA Generator, 60 KW rated.

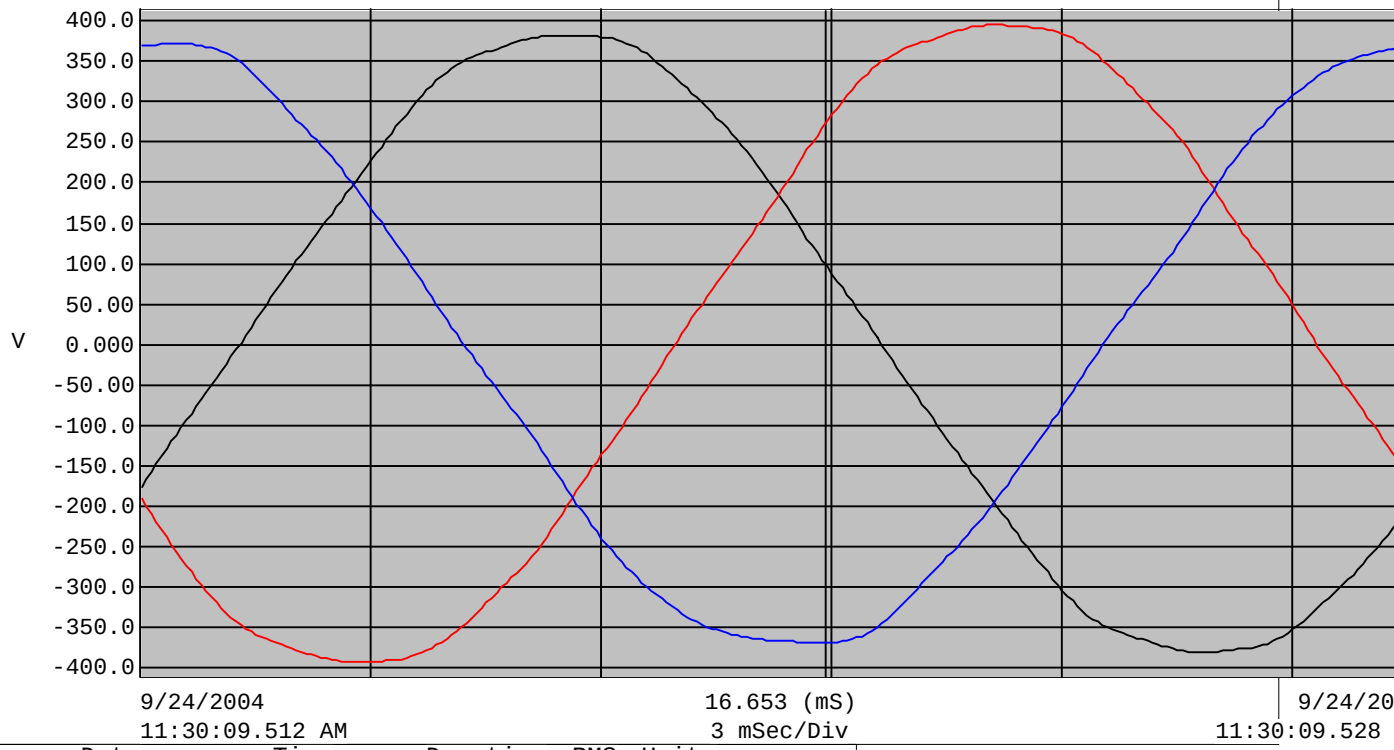
GWA Wastewater Pumping Station Assessment				
Station Name: MACHANAO	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/24/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.45	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	3	0.06	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.15	
Main Disconnect	5.0%	2	0.1	
Grounding	2.5%	2	0.05	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.25	
Generator Condition	10.0%	1	0.1	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.32	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	2	0.08	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Secondary Pump Motor Controls	**20.0%**		0.32	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	2	0.08	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Chlorination Motor Starter	**2.0%**		0.02	
Main Breaker and Starter	1.0%	1	0.01	
Motor Starter	1.0%	1	0.01	
Pump Controls	**10.0%**		0.2	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.03	
Lighting and Power Devices	1.5%	1	0.015	
Sump Pump Controls	1.5%	1	0.015	
	100%	**Assessment Value**		**1.7**

Comments:

Machanao WWPS Pump 1 Photo

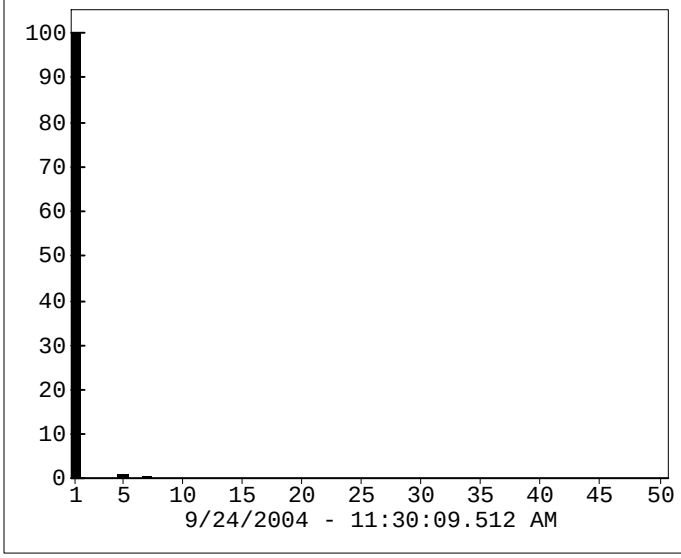
Recording Start Date	9/24/2004 - 11:30:09 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/24/2004	11:30:09.512 AM	16.653	273.1	V
Waveform V2	9/24/2004	11:30:09.512 AM	16.653	283.1	V
Waveform V3	9/24/2004	11:30:09.512 AM	16.653	267.7	V

Waveform V1
273.08 Vrms, 1.58 %THD



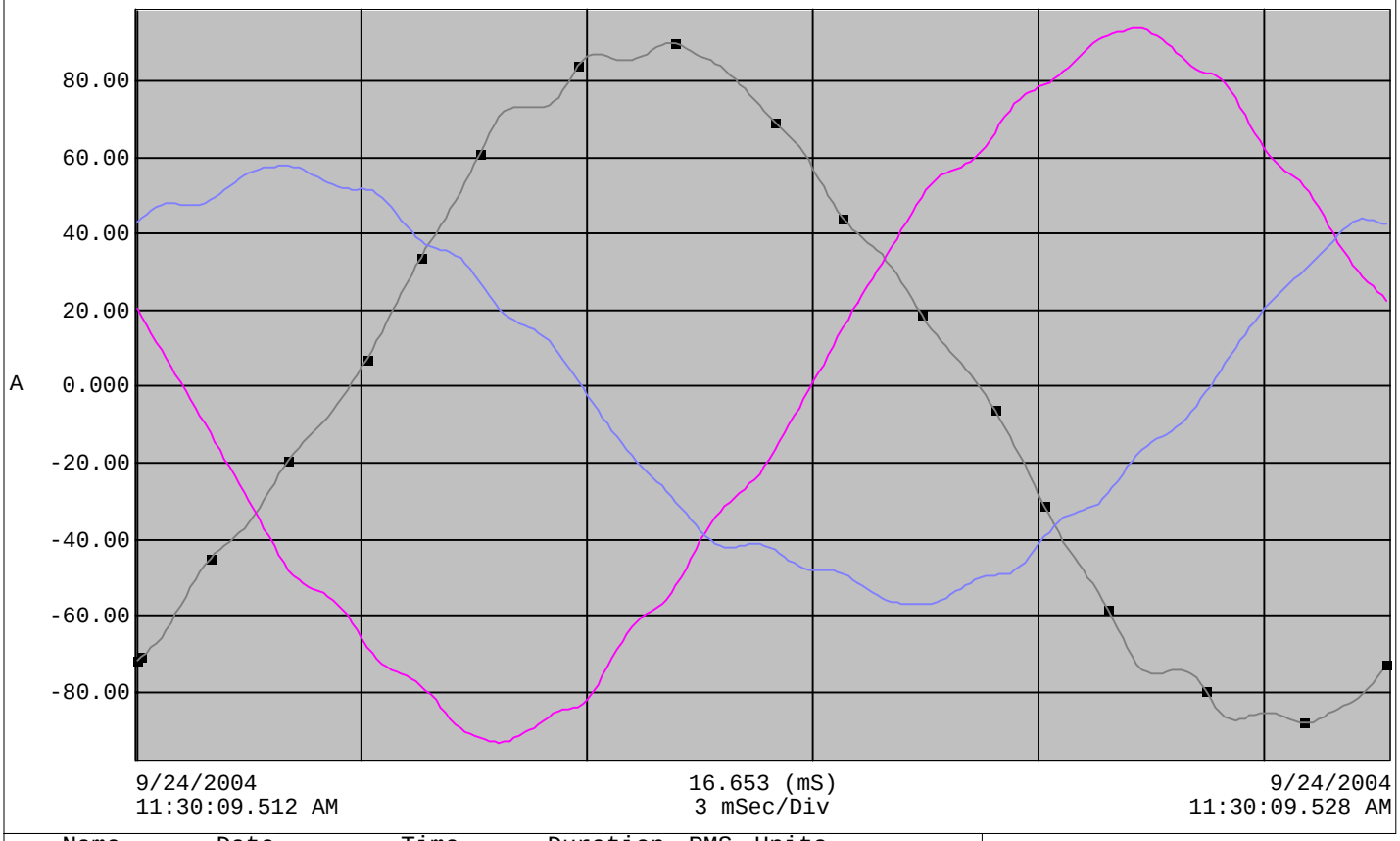
9/24/2004 - 11:30:09.008 AM

Val	
94.80	Waveform V1
275.1	Waveform V2
-370.1	Waveform V3

Waveform V1

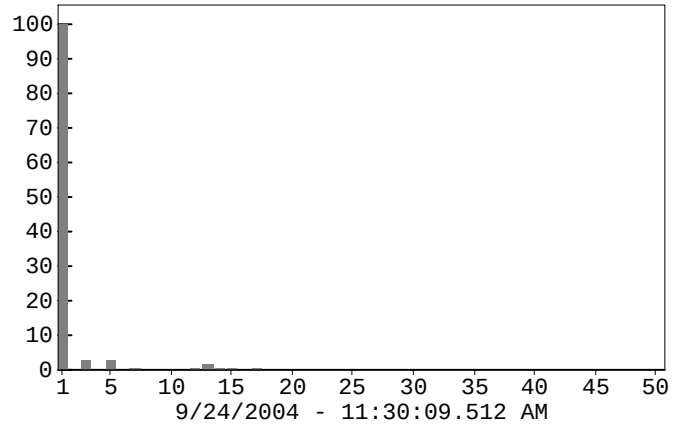
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.05 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/24/2004	11:30:09.512 AM	16.653	61.58	A
Waveform I2	9/24/2004	11:30:09.512 AM	16.653	62.17	A
Waveform I3	9/24/2004	11:30:09.512 AM	16.653	39.79	A

Waveform I1
61.58 Arms, 5.23 %THD

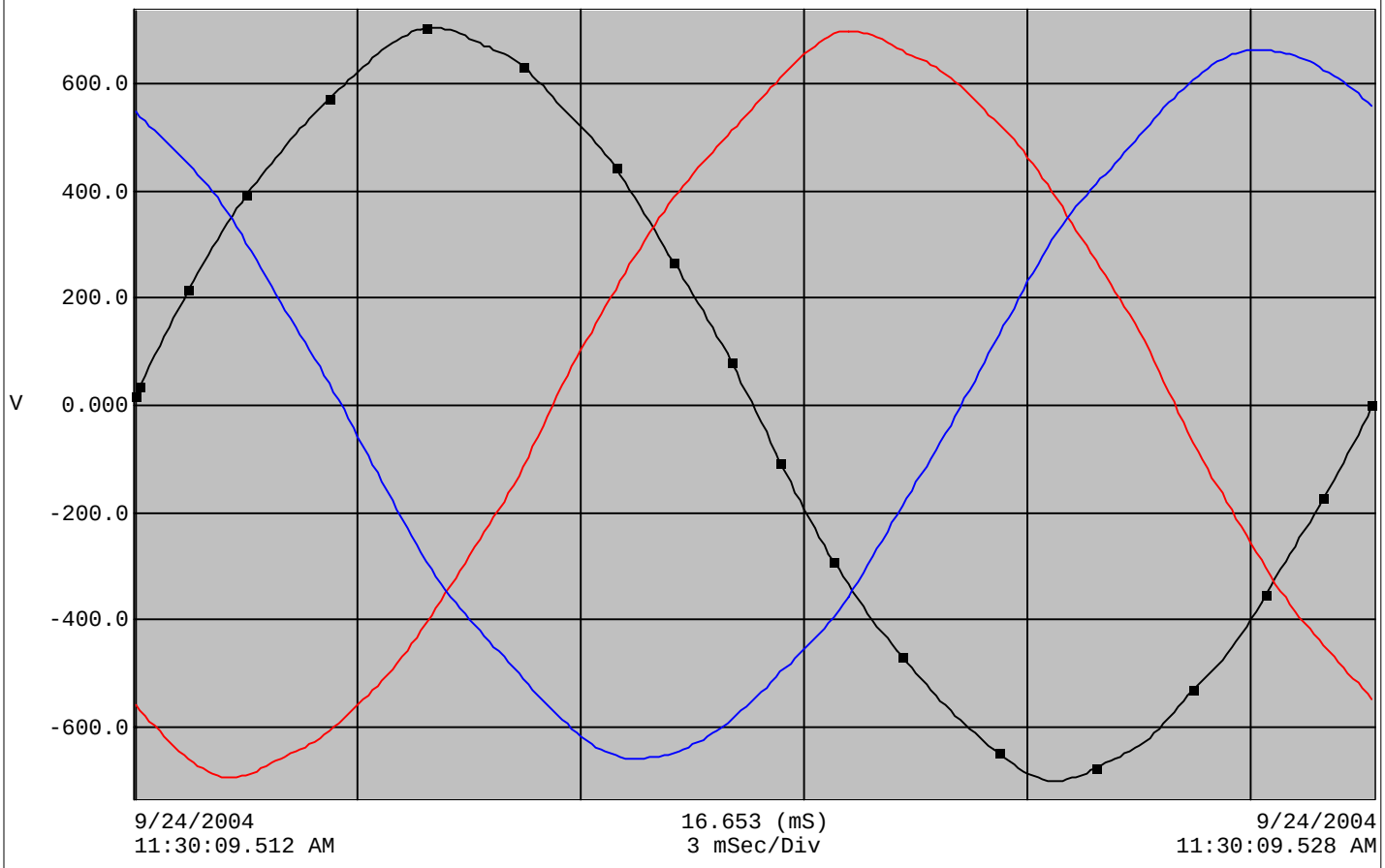


9/24/2004 - 11:30:09.015 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

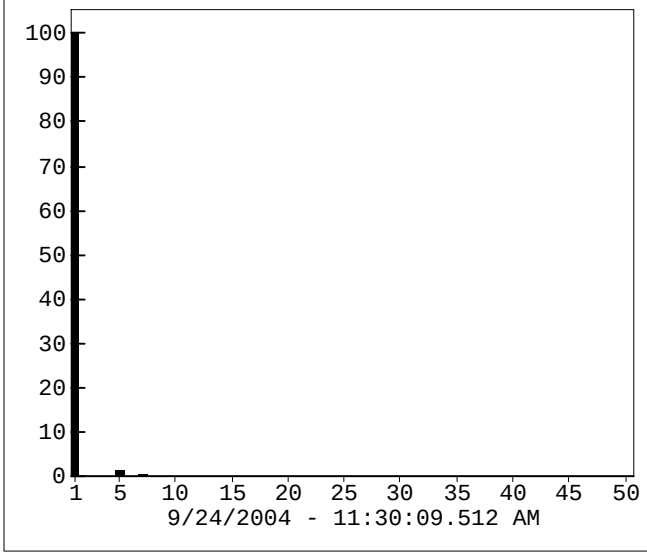
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.3	H36	0.0
H03	3.3	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	3.2	H22	0.1	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.7	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.1	H43	0.0
H10	0.2	H27	0.0	H44	0.0
H11	0.5	H28	0.1	H45	0.0
H12	0.6	H29	0.1	H46	0.0
H13	1.8	H30	0.0	H47	0.0
H14	0.6	H31	0.1	H48	0.0
H15	0.6	H32	0.0	H49	0.0
H16	0.5	H33	0.0	H50	0.0
H17	1.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/24/2004	11:30:09.512 AM	16.653	487.6	V
Waveform U2	9/24/2004	11:30:09.512 AM	16.653	478.6	V
Waveform U3	9/24/2004	11:30:09.512 AM	16.653	460.9	V

Waveform U1
487.57 Vrms, 1.62 %THD



9/24/2004 - 11:30:09.015 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/24/2004
Start Time: 11:30:09 AM
Duration: 0:0.000 (M:S)
W: 14.40E+3 W
VAR: 8.286E+3 W
VA: 16.62E+3 W
Power Factor: 0.867
Displacement Power Factor: 0.868
TAN: 0.572
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Machanao WWPS\092404 - Machanao WWPS Pump 1 Photo.dvb

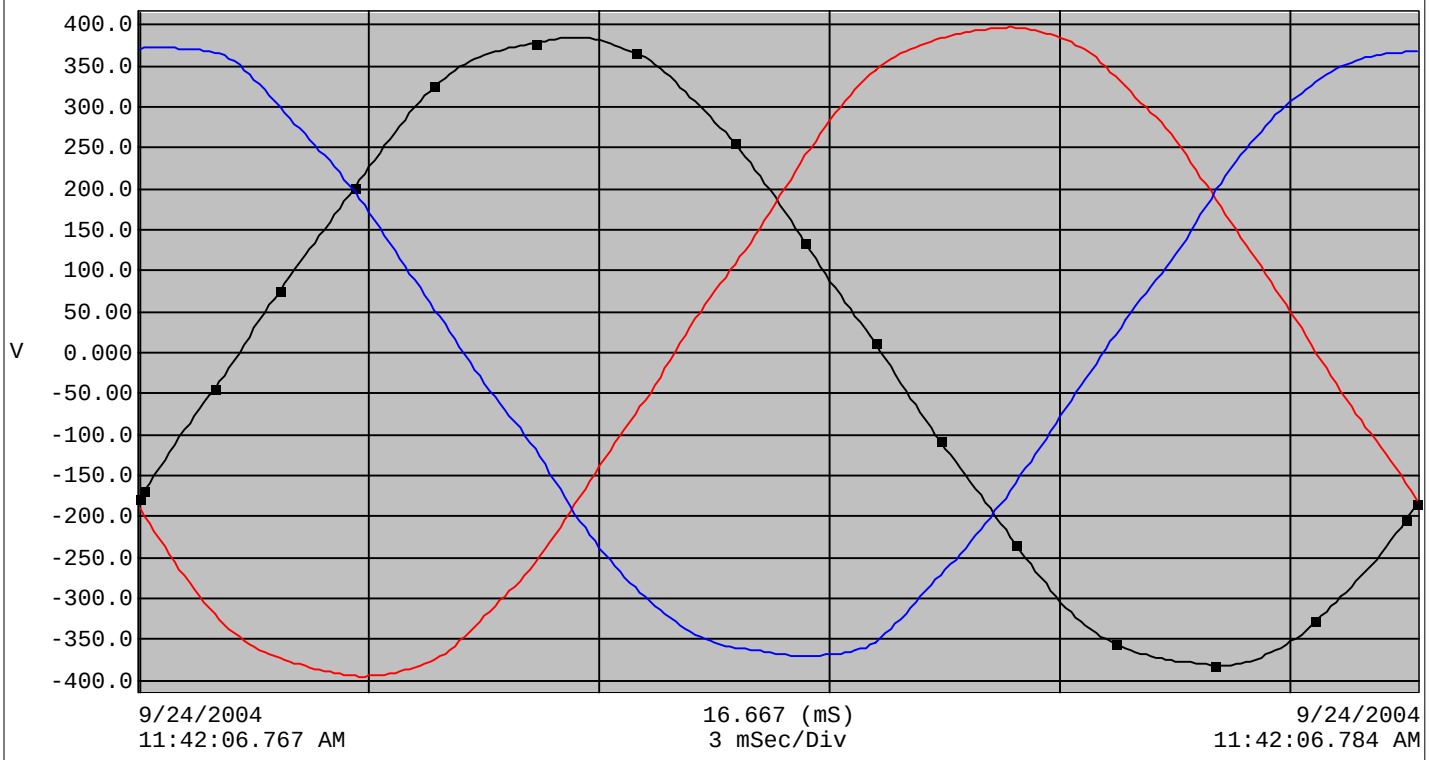
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Machanao WWPS - Pump 1 Photo ,

Comments
Recorded at the main breaker to the station, 250 amps, to record pump 1 opeation.

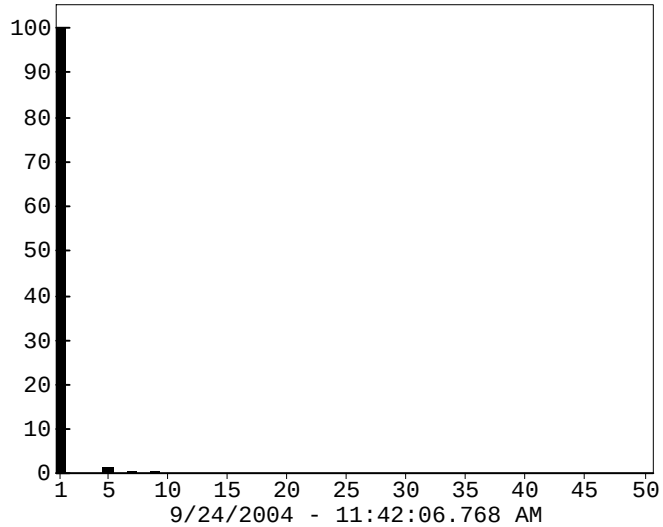
Machanao WWPS Pump 2 Photo

Recording Start Date	9/24/2004 - 11:42:06 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/24/2004	11:42:06.767 AM	16.667	273.2	V
Waveform V2	9/24/2004	11:42:06.767 AM	16.667	283.7	V
Waveform V3	9/24/2004	11:42:06.767 AM	16.667	268.1	V



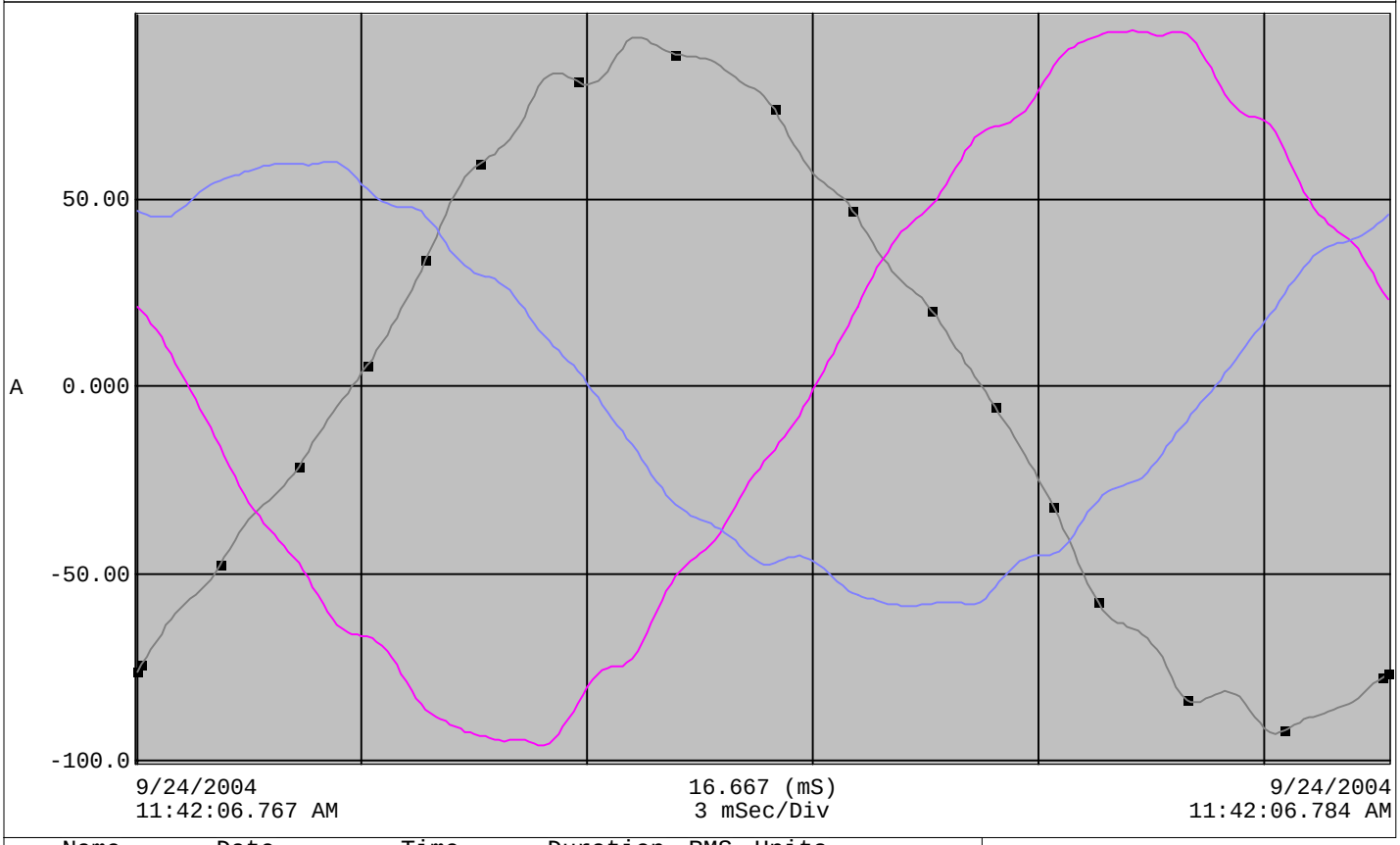
9/24/2004 - 11:42:06.000 AM

Val	
-179.5	Waveform V1
-191.0	Waveform V2
369.9	Waveform V3

Waveform V1

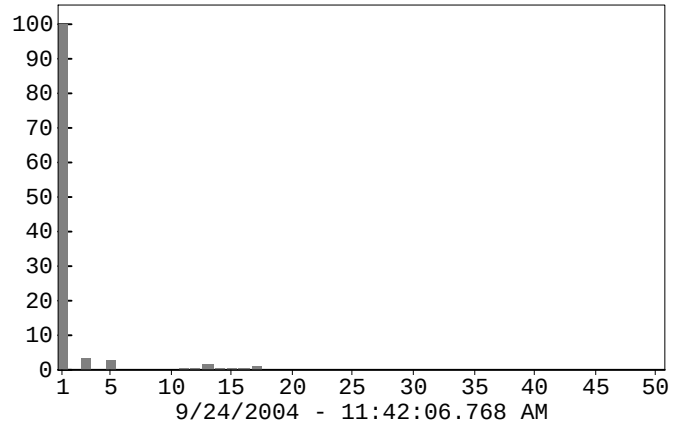
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/24/2004	11:42:06.767 AM	16.667	62.89	A
Waveform I2	9/24/2004	11:42:06.767 AM	16.667	64.65	A
Waveform I3	9/24/2004	11:42:06.767 AM	16.667	41.90	A

Waveform I1
62.89 Arms, 5.31 %THD

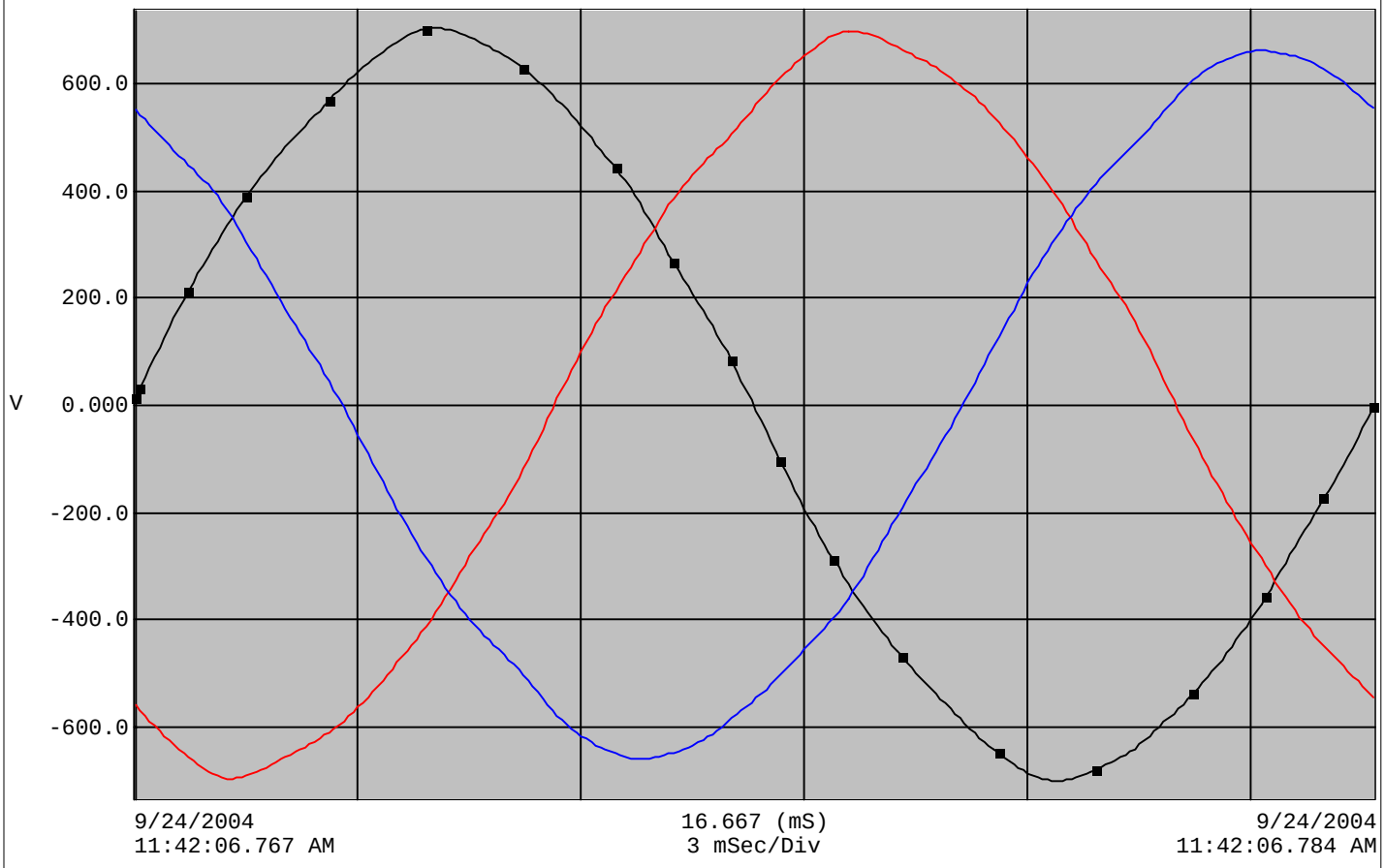


9/24/2004 - 11:42:06.000 AM
Val
-76.60 — Waveform I1
21.20 — Waveform I2
46.70 — Waveform I3

Waveform I1

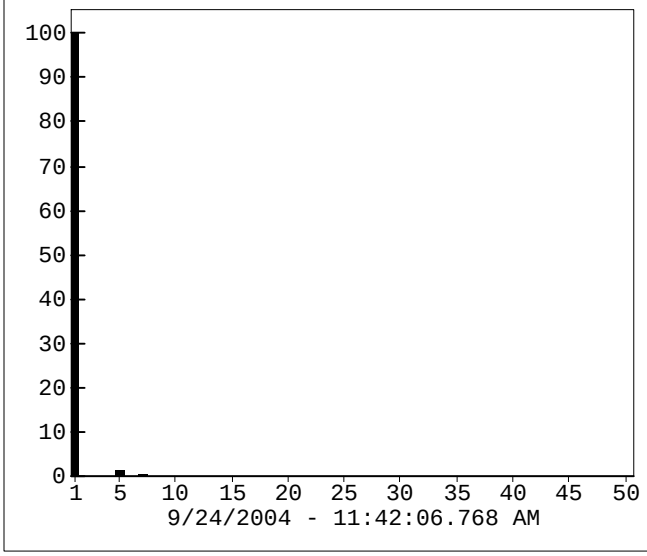
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.2	H19	0.4	H36	0.0
H03	3.4	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	2.8	H22	0.0	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.2	H27	0.1	H44	0.0
H11	0.9	H28	0.1	H45	0.0
H12	0.7	H29	0.1	H46	0.0
H13	2.0	H30	0.1	H47	0.0
H14	0.6	H31	0.1	H48	0.0
H15	0.8	H32	0.1	H49	0.0
H16	0.6	H33	0.0	H50	0.0
H17	1.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/24/2004	11:42:06.767 AM	16.667	488.3	V
Waveform U2	9/24/2004	11:42:06.767 AM	16.667	479.8	V
Waveform U3	9/24/2004	11:42:06.767 AM	16.667	461.2	V

Waveform U1
488.27 Vrms, 1.61 %THD



9/24/2004 - 11:42:06.000 AM
Val
11.40 — Waveform U1
-560.9 — Waveform U2
549.5 — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/24/2004
Start Time: 11:42:06 AM
Duration: 0:0.000 (M:S)
W: 14.81E+3 W
VAR: 8.904E+3 W
VA: 17.28E+3 W
Power Factor: 0.857
Displacement Power Factor: 0.858
TAN: 0.598
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Machanao WWPS\092404 - Machanao WWPS Pump 2 Photo.dvb

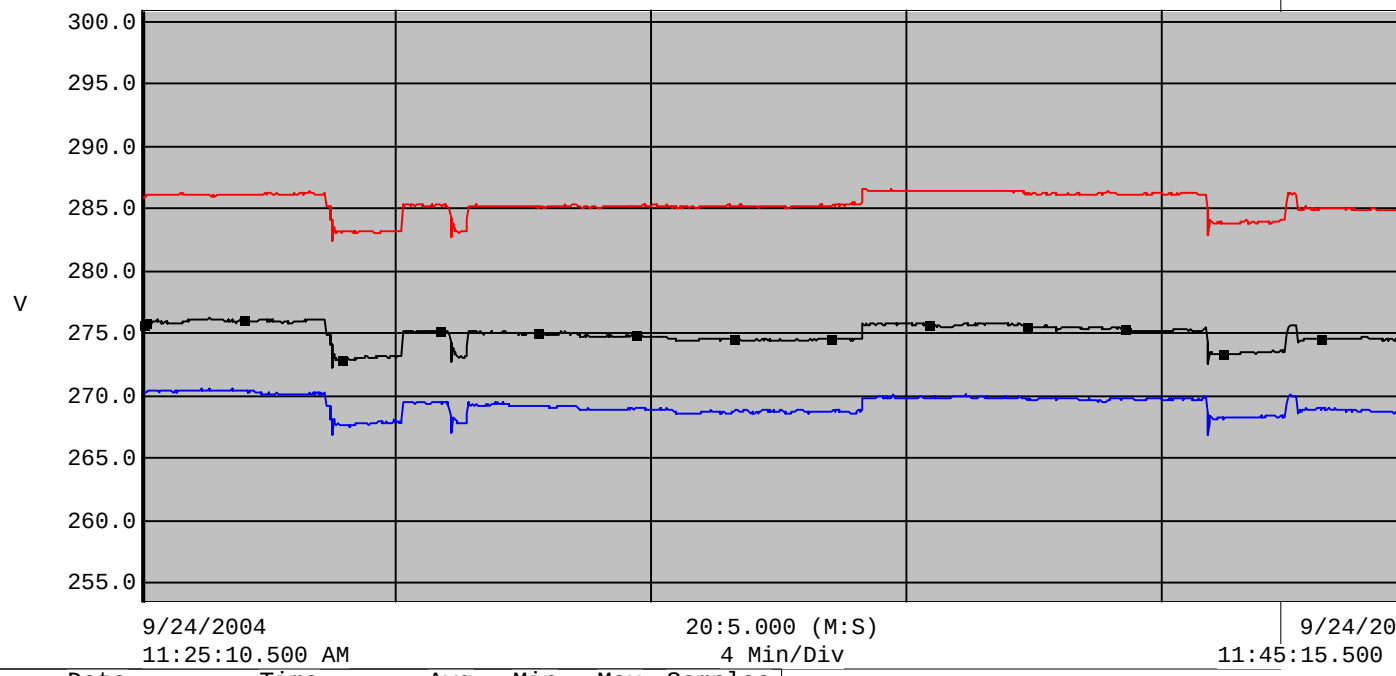
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Machannao WWPs - Pump 2 Photo ,

Comments
Recorded at main breaker to the station, 250 amps.

Machanao WWPS Pump 1 and 2

Recording Start Date	9/24/2004 - 11:25:10 AM
Recording Duration	20:05 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

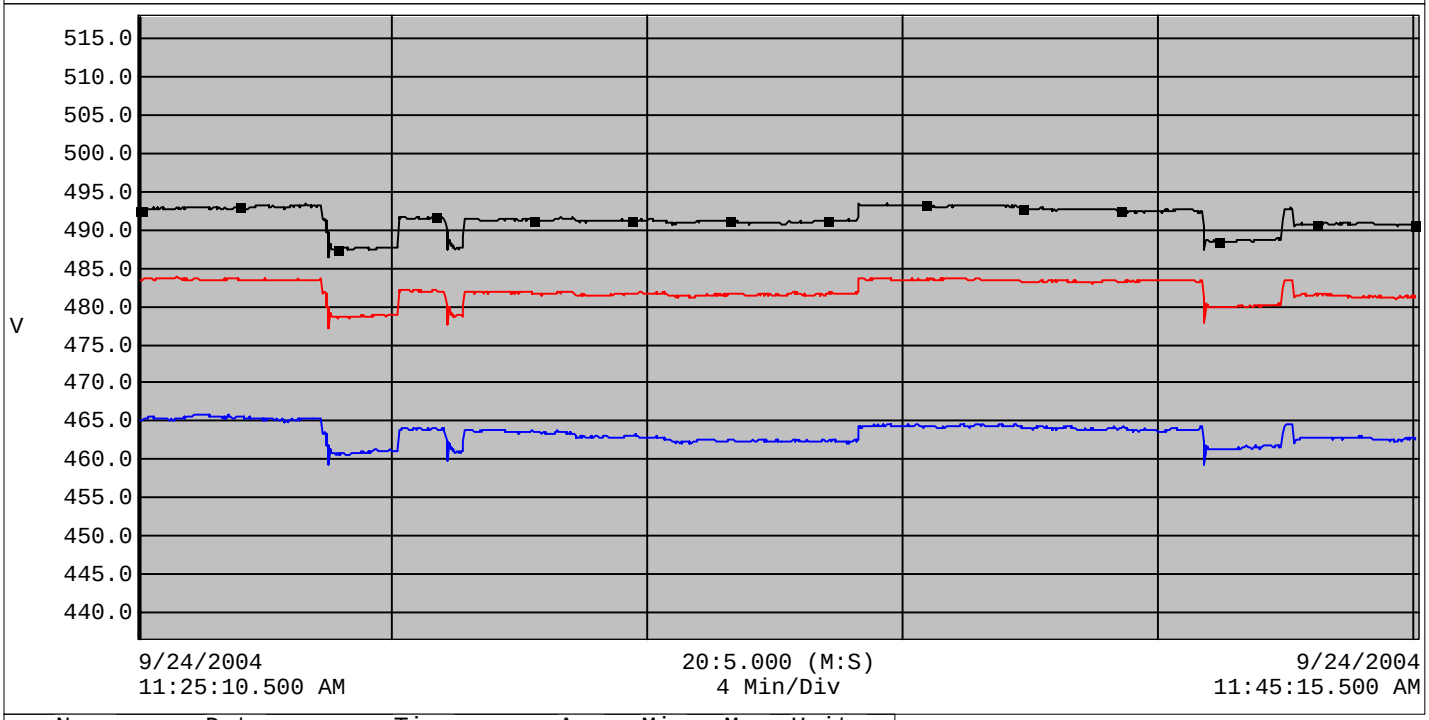
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/24/2004	11:25:10.500 AM	274.9	272.2	276.2	1206
Vrms Line2	9/24/2004	11:25:10.500 AM	285.3	282.3	286.5	1206
Vrms Line3	9/24/2004	11:25:10.500 AM	269.2	266.8	270.5	1206

9/24/2004 - 11:25:10.000 AM
Val
275.6 — Vrms Line1
285.8 — Vrms Line2
270.2 — Vrms Line3

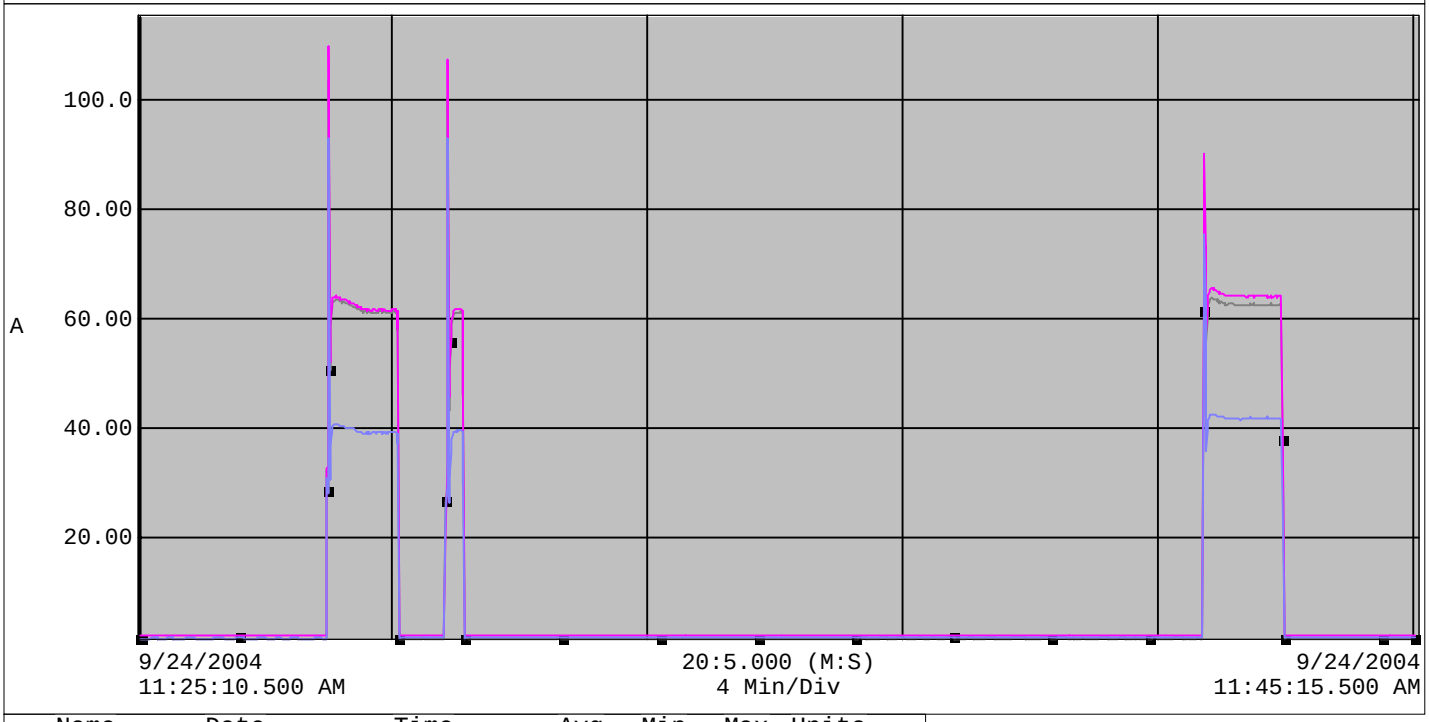
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/24/2004	11:25:10.500 AM	491.4	486.3	493.3	V
Urms Line2	9/24/2004	11:25:10.500 AM	482.0	477.1	483.7	V
Urms Line3	9/24/2004	11:25:10.500 AM	463.3	459.3	465.8	V

9/24/2004 - 11:25:10.000 AM
Val
492.3 — Urms Line1
483.2 — Urms Line2
465.0 — Urms Line3

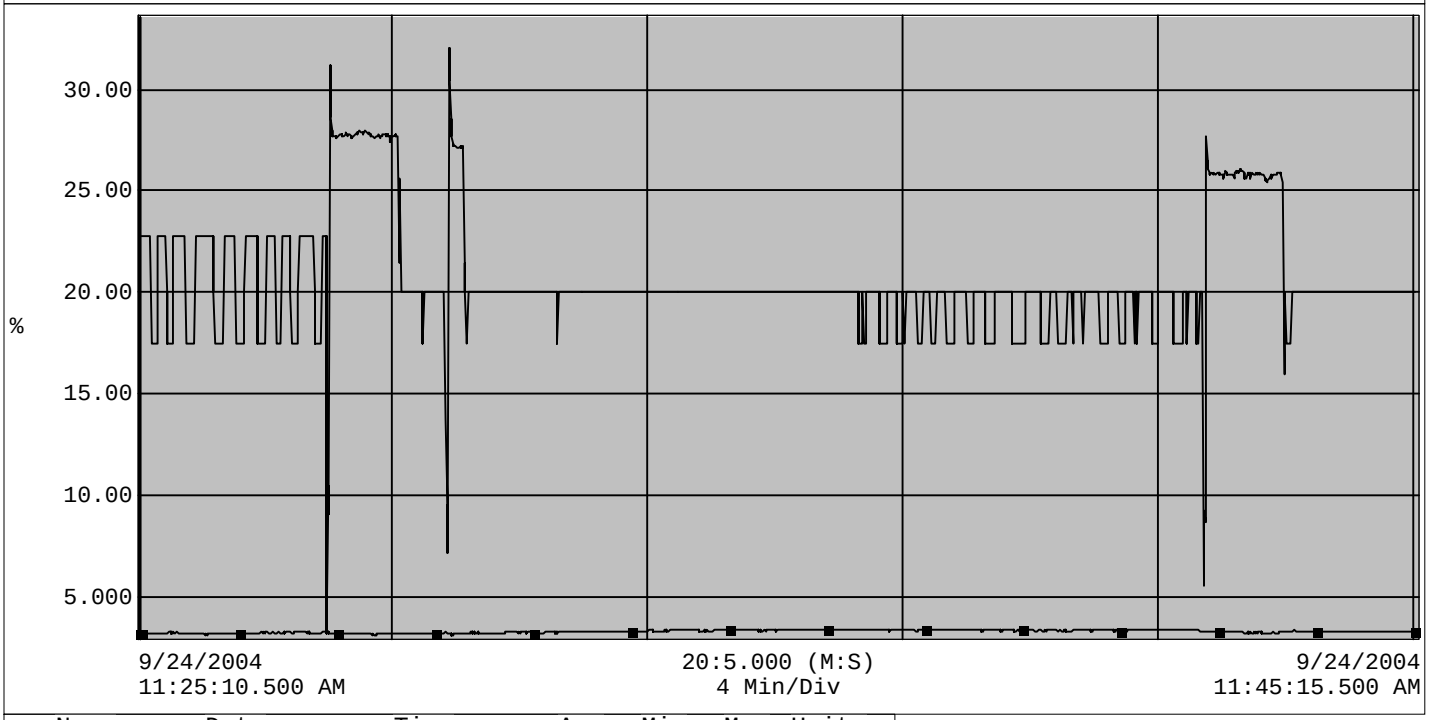
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/24/2004	11:25:10.500 AM	9.345	1.200	103.1	A
Arms Line2	9/24/2004	11:25:10.500 AM	9.925	1.700	109.7	A
Arms Line3	9/24/2004	11:25:10.500 AM	6.674	1.300	92.90	A

9/24/2004 - 11:25:10.000 AM
Val
1.300 — Arms Line1
1.800 — Arms Line2
1.300 — Arms Line3

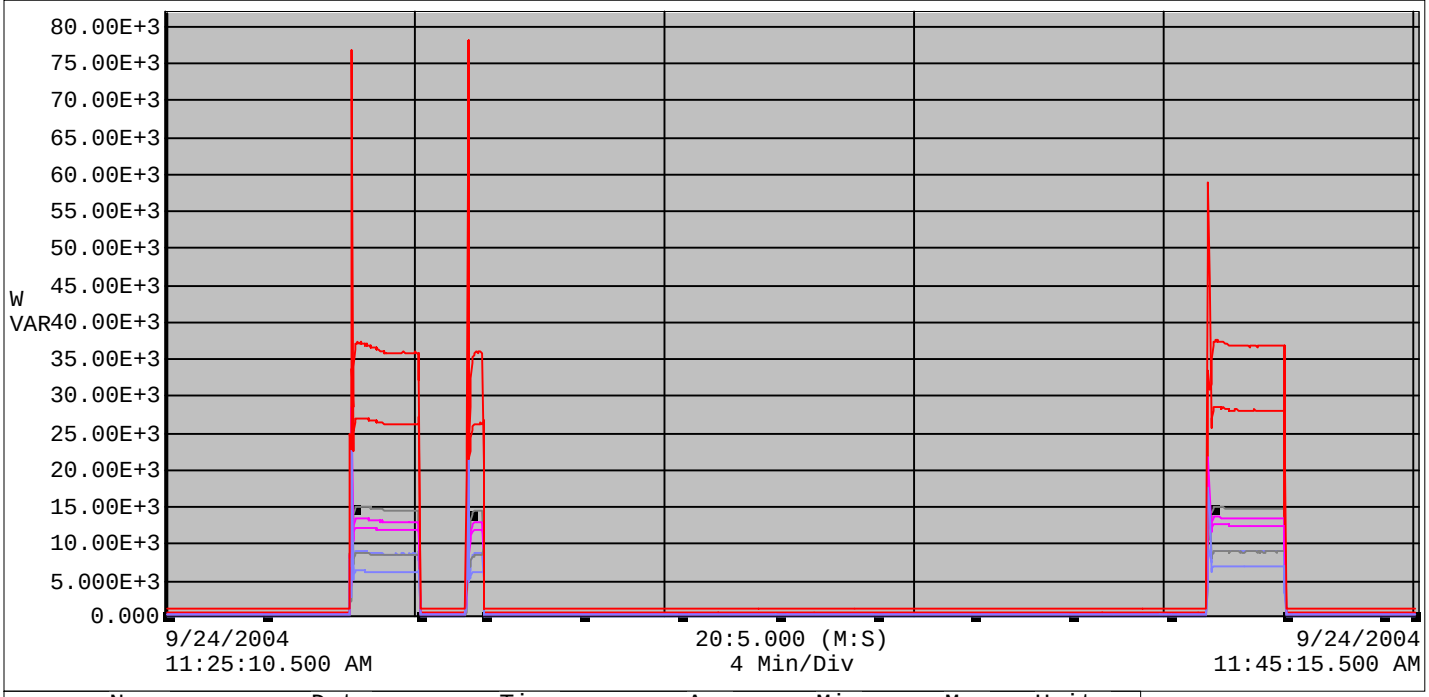
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/24/2004	11:25:10.500 AM	3.208	3.000	3.300	%
Aunb(IEEE)	9/24/2004	11:25:10.500 AM	20.59	3.200	32.00	%

9/24/2004 - 11:25:10.000 AM
Val
3.100 —— Vunb(IEEE)
22.70 —— Aunb(IEEE)

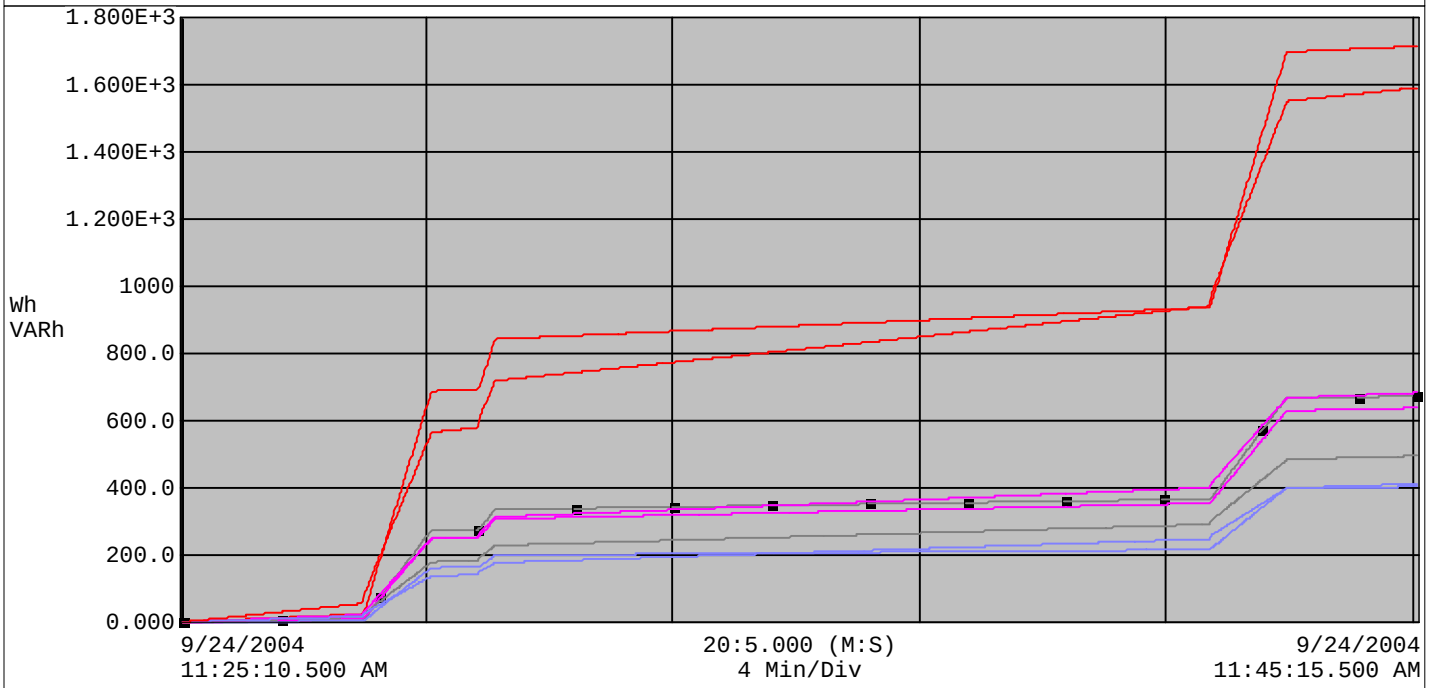
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/24/2004	11:25:10.500 AM	2.005E+3	154.4	14.95E+3	W
W Line2	9/24/2004	11:25:10.500 AM	1.901E+3	236.5	13.54E+3	W
W Line3	9/24/2004	11:25:10.500 AM	1.201E+3	78.91	9.734E+3	W
W Sum of Phases	9/24/2004	11:25:10.500 AM	5.107E+3	475.7	37.41E+3	W
VAR Line1	9/24/2004	11:25:10.500 AM	1.476E+3	283.1	25.87E+3	VAR
VAR Line2	9/24/2004	11:25:10.500 AM	2.035E+3	420.6	28.51E+3	VAR
VAR Line3	9/24/2004	11:25:10.500 AM	1.227E+3	333.3	23.62E+3	VAR
VAR Sum of Phases	9/24/2004	11:25:10.500 AM	4.738E+3	1.035E+3	78.00E+3	VAR

9/24/2004 - 11:25:10.000 AM
Val
159.5 — W Line1
239.9 — W Line2
84.44 — W Line3
483.7 — W Sum of Phases
321.5 — VAR Line1
447.0 — VAR Line2
349.3 — VAR Line3
1.119E+3 — VAR Sum of Phases

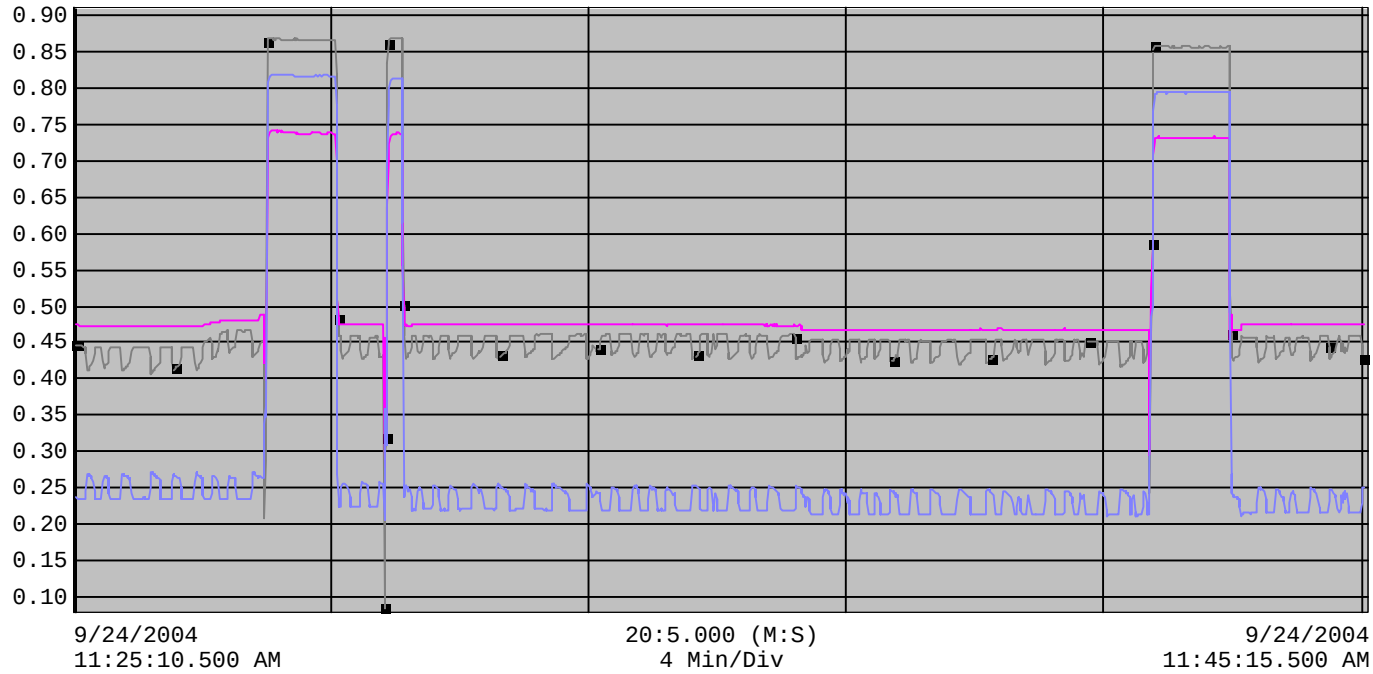
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/24/2004	11:25:10.500 AM	328.1	41.01E-3	671.7	Wh
W-hours Line2	9/24/2004	11:25:10.500 AM	309.6	58.30E-3	636.7	Wh
W-hours Line3	9/24/2004	11:25:10.500 AM	194.9	24.57E-3	402.5	Wh
W-hours Sum of Phases	9/24/2004	11:25:10.500 AM	832.6	0.157	1.711E+3	Wh
VAR-hours Line1	9/24/2004	11:25:10.500 AM	242.3	90.56E-3	494.5	VARh
VAR-hours Line2	9/24/2004	11:25:10.500 AM	333.0	0.125	681.8	VARh
VAR-hours Line3	9/24/2004	11:25:10.500 AM	198.9	0.100	411.1	VARh
VAR-hours Sum of Phases	9/24/2004	11:25:10.500 AM	774.2	0.291	1.587E+3	VARh

9/24/2004 - 11:25:10.000 AM
Val
41.01E-3 — W-hours Line1
58.30E-3 — W-hours Line2
24.57E-3 — W-hours Line3
0.157 — W-hours Sum of Phases
90.56E-3 — VAR-hours Line1
0.125 — VAR-hours Line2
0.100 — VAR-hours Line3
0.291 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/24/2004	11:25:10.500 AM	0.495	81.00E-3	0.867	
PF Line2	9/24/2004	11:25:10.500 AM	0.504	0.277	0.741	
PF Line3	9/24/2004	11:25:10.500 AM	0.304	0.204	0.818	

9/24/2004 - 11:25:10.000 AM
Val
0.444 — PF Line1
0.473 — PF Line2
0.235 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Machanao WWPS\092404 - Machanao WWPS Pump 1 and 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Machanao WWPS - Pumps 1 and 2 ,

Comments
Connected to main breaker for the station. 250 Amps, 277/480 volts. GPA Meter 82-772-195(?).

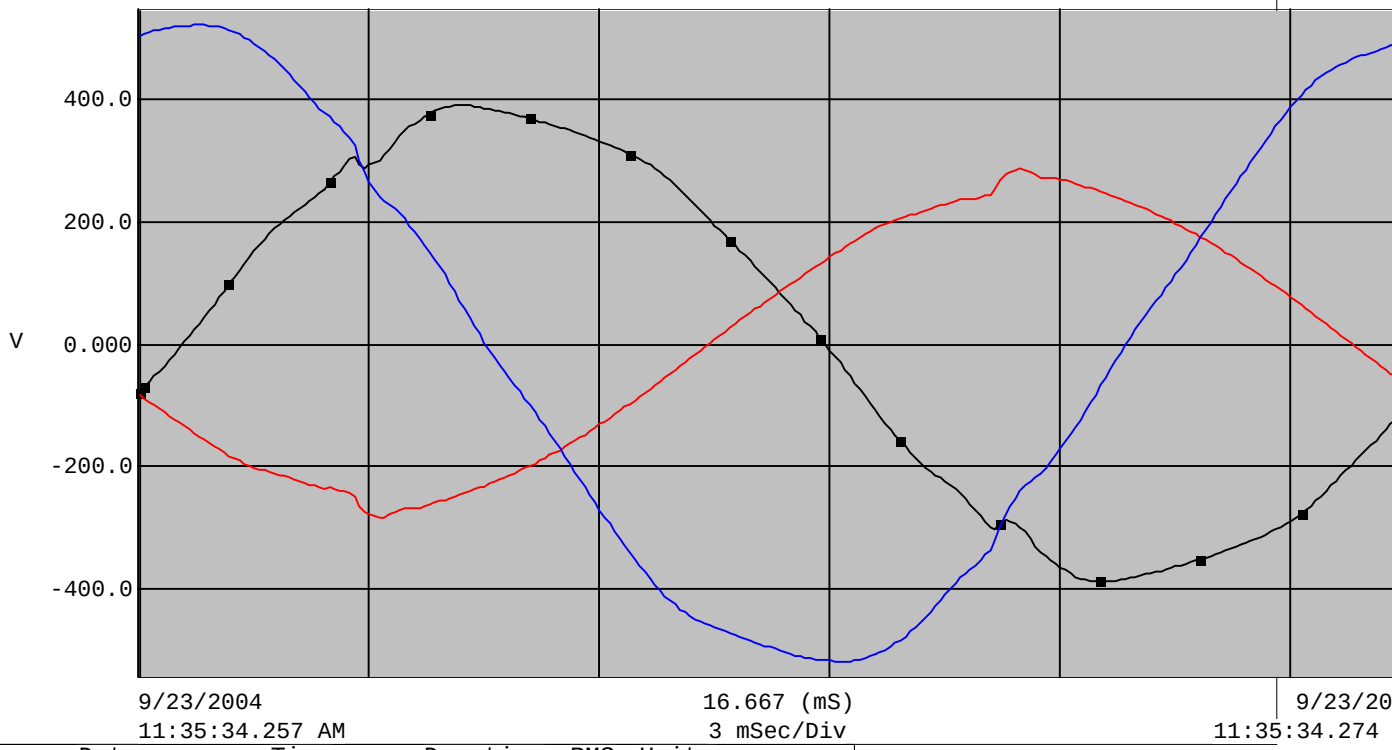
GWA Wastewater Pumping Station Assessment				
Station Name: MACHECHE	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/23/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.38	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	2	0.1	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.2	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	2	0.05	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.525	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	2	0.1	
Diesel Fuel Line Condition	2.5%	2	0.05	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.32	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	2	0.08	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Secondary Pump Motor Controls	**20.0%**		0.32	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	2	0.08	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.2	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	
	100%	**Assessment Value**		**2.0**

Comments:

Macheche WWPS - No Load Photo

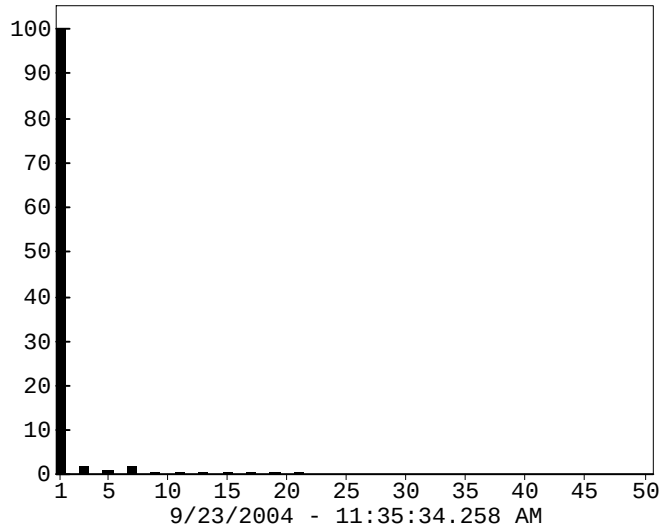
Recording Start Date	9/23/2004 - 11:35:34 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/23/2004	11:35:34.257 AM	16.667	272.2	V
Waveform V2	9/23/2004	11:35:34.257 AM	16.667	184.6	V
Waveform V3	9/23/2004	11:35:34.257 AM	16.667	370.0	V

Waveform V1
272.23 Vrms, 3.44 %THD



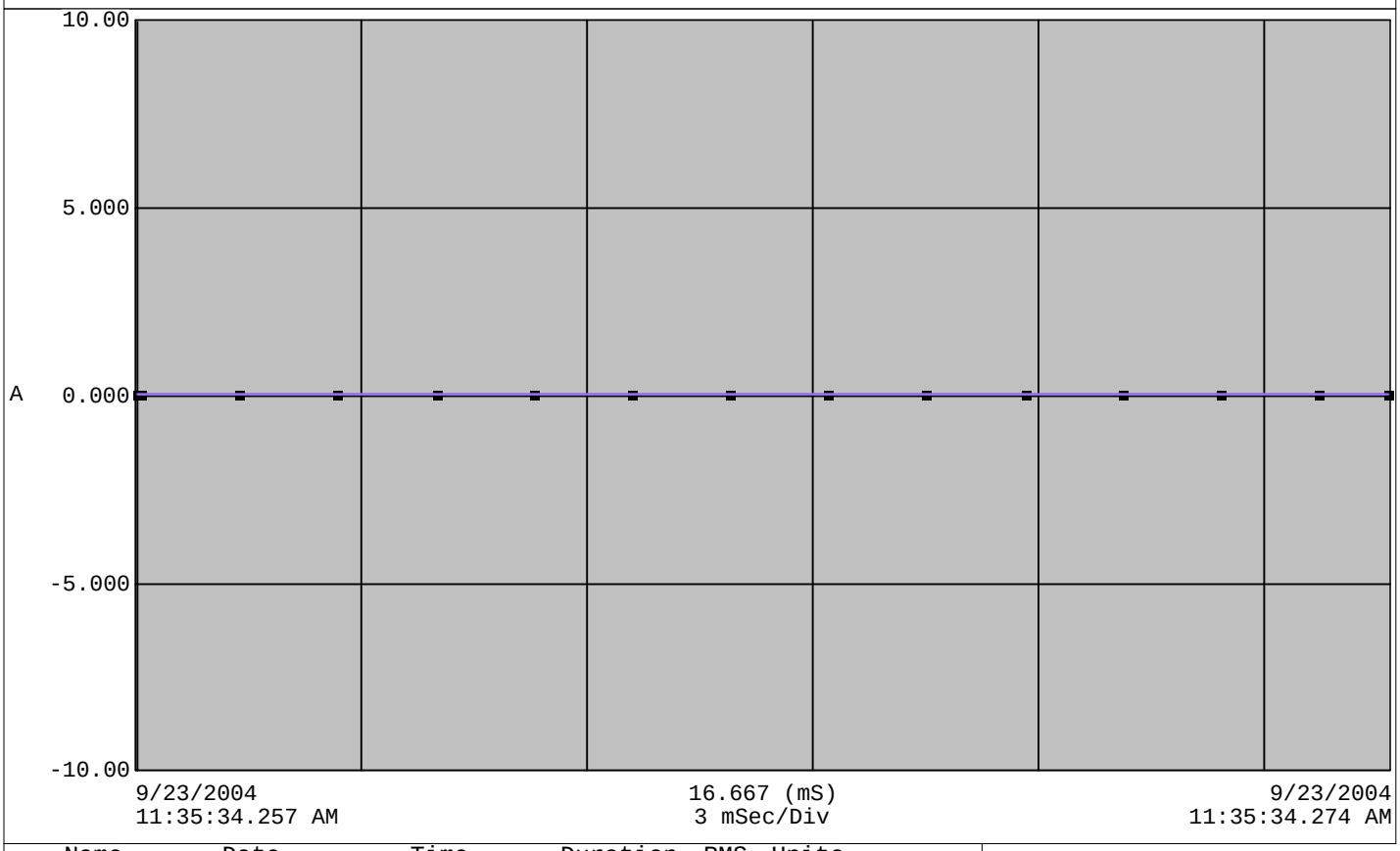
9/23/2004 - 11:35:34.000 AM

Val	
-81.60	Waveform V1
-83.80	Waveform V2
503.6	Waveform V3

Waveform V1

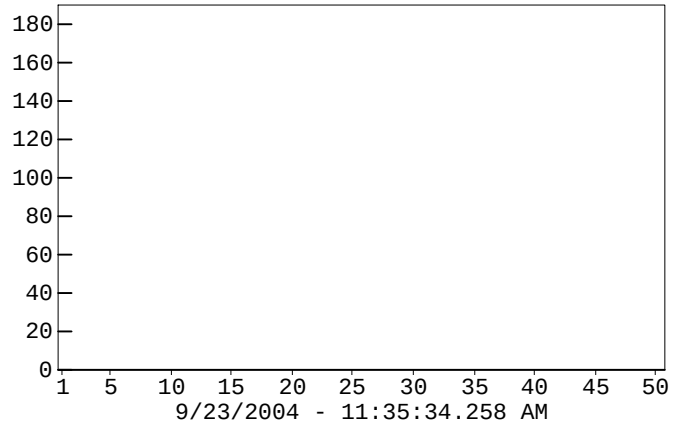
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.1	H19	0.5	H36	0.0
H03	1.9	H20	0.0	H37	0.1
H04	0.0	H21	0.4	H38	0.0
H05	1.1	H22	0.0	H39	0.1
H06	0.0	H23	0.4	H40	0.0
H07	2.1	H24	0.0	H41	0.1
H08	0.0	H25	0.3	H42	0.0
H09	0.4	H26	0.0	H43	0.1
H10	0.0	H27	0.3	H44	0.0
H11	0.6	H28	0.0	H45	0.1
H12	0.0	H29	0.2	H46	0.0
H13	0.7	H30	0.0	H47	0.1
H14	0.0	H31	0.2	H48	0.0
H15	0.6	H32	0.0	H49	0.1
H16	0.0	H33	0.1	H50	0.0
H17	0.6	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/23/2004	11:35:34.257 AM	16.667	0.000	A
Waveform I2	9/23/2004	11:35:34.257 AM	16.667	0.000	A
Waveform I3	9/23/2004	11:35:34.257 AM	16.667	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



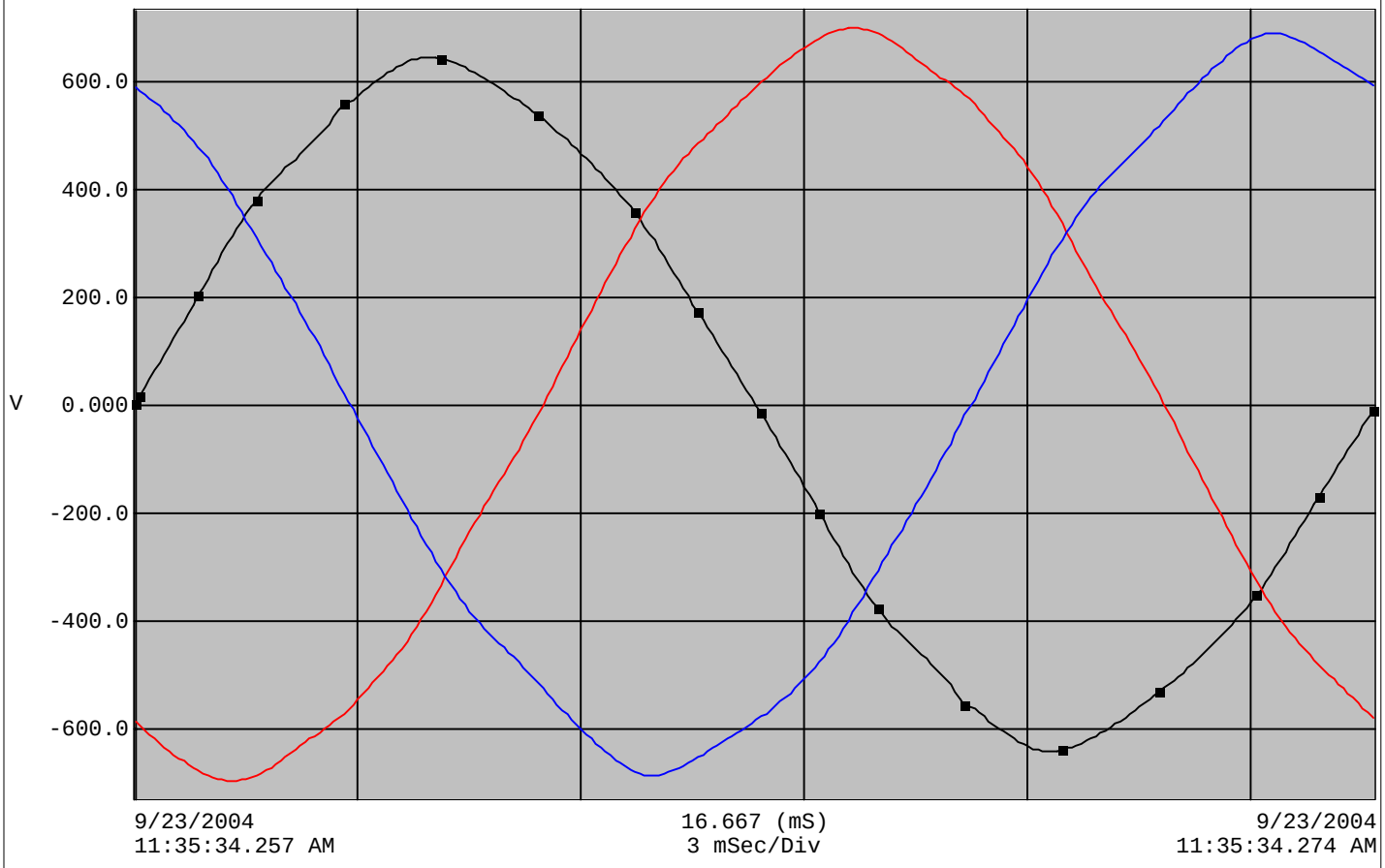
9/23/2004 - 11:35:34.000 AM

Val	
0.000	Waveform I1
0.000	Waveform I2
0.000	Waveform I3

Waveform I1

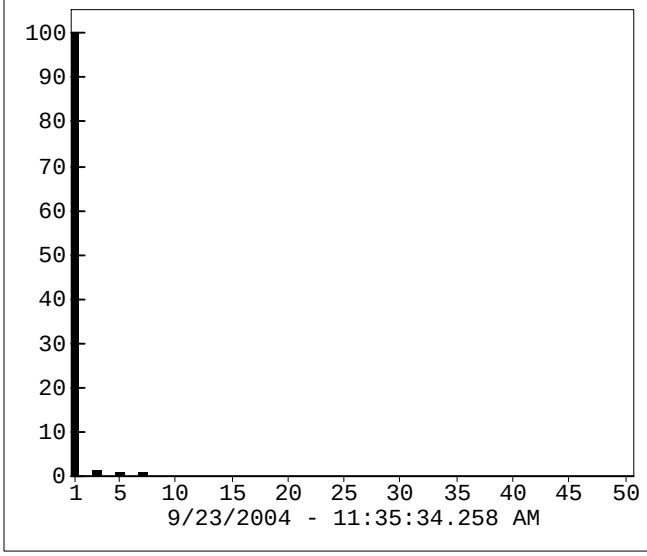
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/23/2004	11:35:34.257 AM	16.667	441.3	V
Waveform U2	9/23/2004	11:35:34.257 AM	16.667	482.9	V
Waveform U3	9/23/2004	11:35:34.257 AM	16.667	471.8	V

Waveform U1
441.28 Vrms, 2.28 %THD



9/23/2004 - 11:35:34.000 AM

Val	
2.200	Waveform U1
-587.5	Waveform U2
585.3	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	1.5	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/23/2004
Start Time: 11:35:34 AM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Macheche WWPS\092304 - Macheche WWPS - No Load Photo.dvb

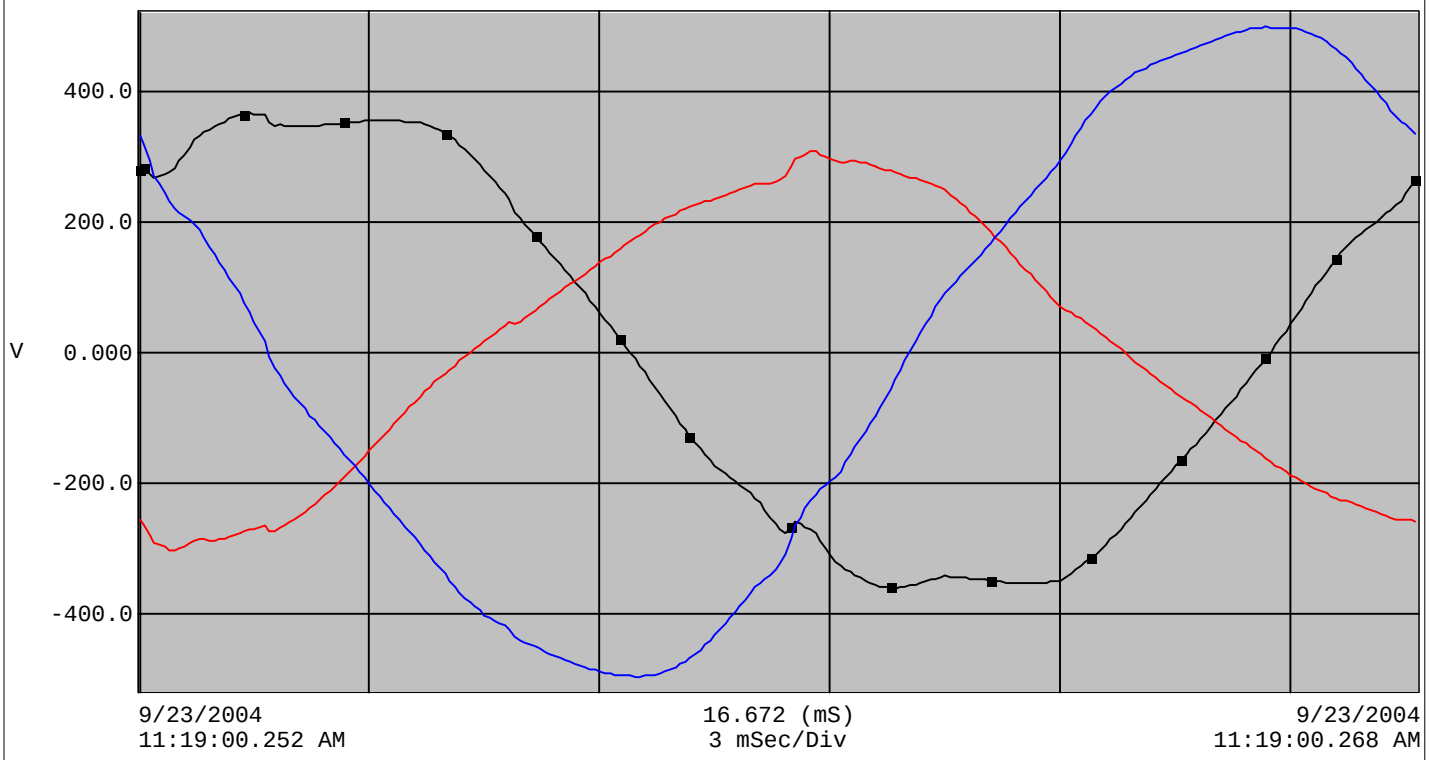
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	Macheche WWPS - No Load Photo ,

Comments
GPA Meter 02-465-820, 13.73 KW demand. Measured at feeder to control panel. Pump 1 noted to single phase.

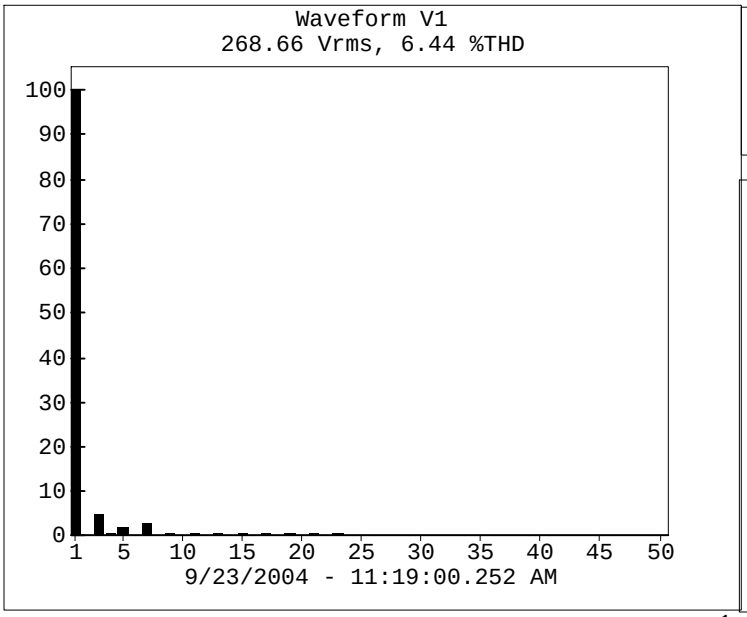
Macheche WWPS - Photo

Recording Start Date	9/23/2004 - 11:19:00 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/23/2004	11:19:00.252 AM	16.672	268.7	V
Waveform V2	9/23/2004	11:19:00.252 AM	16.672	199.9	V
Waveform V3	9/23/2004	11:19:00.252 AM	16.672	347.8	V

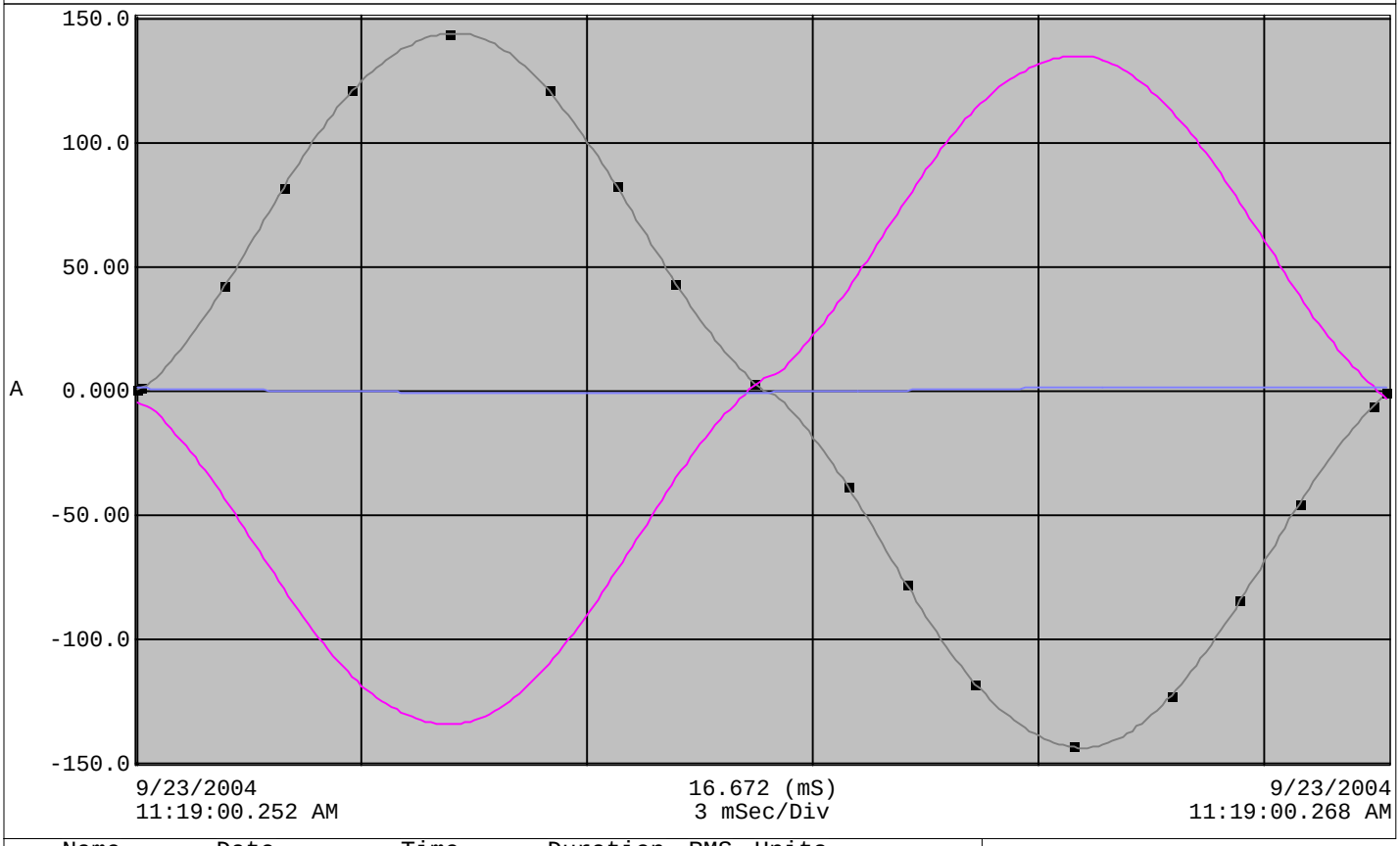


9/23/2004 - 11:19:00.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

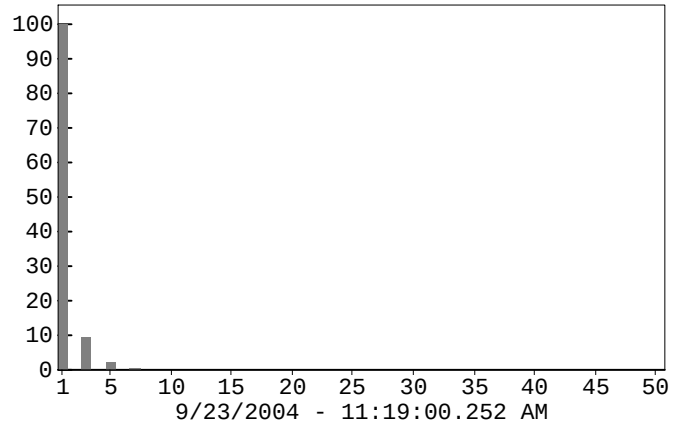
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.1
H02	0.4	H19	0.5	H36	0.1
H03	5.1	H20	0.1	H37	0.1
H04	0.5	H21	0.6	H38	0.0
H05	1.9	H22	0.1	H39	0.1
H06	0.3	H23	0.5	H40	0.0
H07	2.8	H24	0.0	H41	0.1
H08	0.3	H25	0.4	H42	0.1
H09	0.7	H26	0.1	H43	0.1
H10	0.2	H27	0.3	H44	0.0
H11	0.7	H28	0.0	H45	0.1
H12	0.2	H29	0.2	H46	0.0
H13	0.7	H30	0.0	H47	0.1
H14	0.1	H31	0.2	H48	0.0
H15	0.6	H32	0.1	H49	0.1
H16	0.1	H33	0.1	H50	0.0
H17	0.5	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/23/2004	11:19:00.252 AM	16.672	94.81	A
Waveform I2	9/23/2004	11:19:00.252 AM	16.672	88.73	A
Waveform I3	9/23/2004	11:19:00.252 AM	16.672	0.978	A

Waveform I1
94.81 Arms, 10.01 %THD

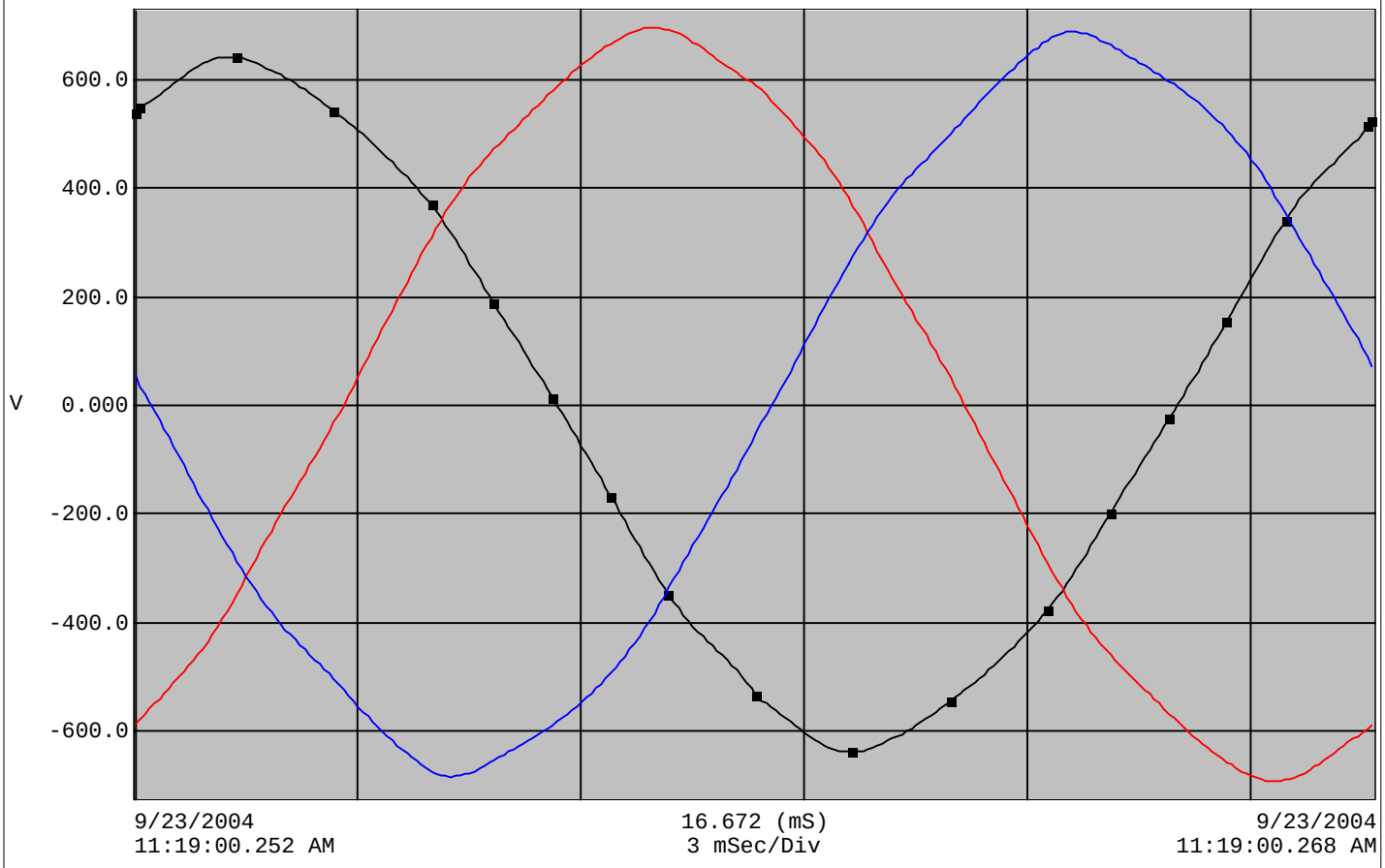


9/23/2004 - 11:19:00.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

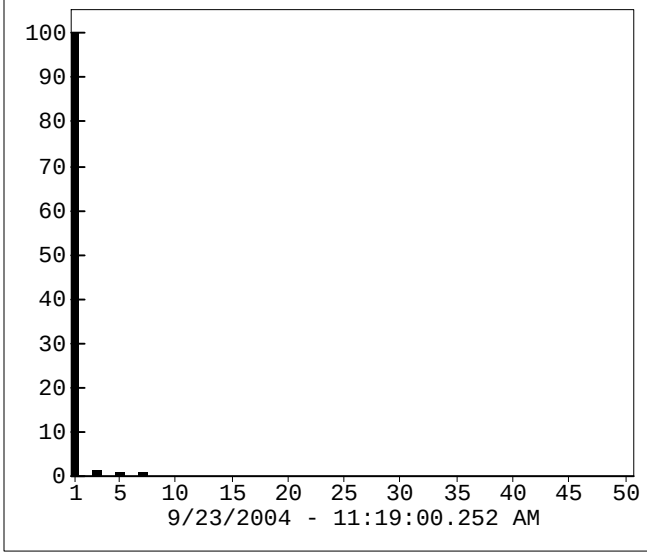
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	9.6	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	2.5	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/23/2004	11:19:00.252 AM	16.672	440.7	V
Waveform U2	9/23/2004	11:19:00.252 AM	16.672	480.6	V
Waveform U3	9/23/2004	11:19:00.252 AM	16.672	470.8	V

Waveform U1
440.71 Vrms, 2.21 %THD



9/23/2004 - 11:19:00.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	1.5	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/23/2004
Start Time: 11:19:00 AM
Duration: 0:0.000 (M:S)
W: 18.57E+3 W
VAR: 17.56E+3 W
VA: 25.56E+3 W
Power Factor: 0.727
Displacement Power Factor: 0.728
TAN: 0.942
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Macheche WWPS\092304 - Macheche WWPS - Photo.dvb

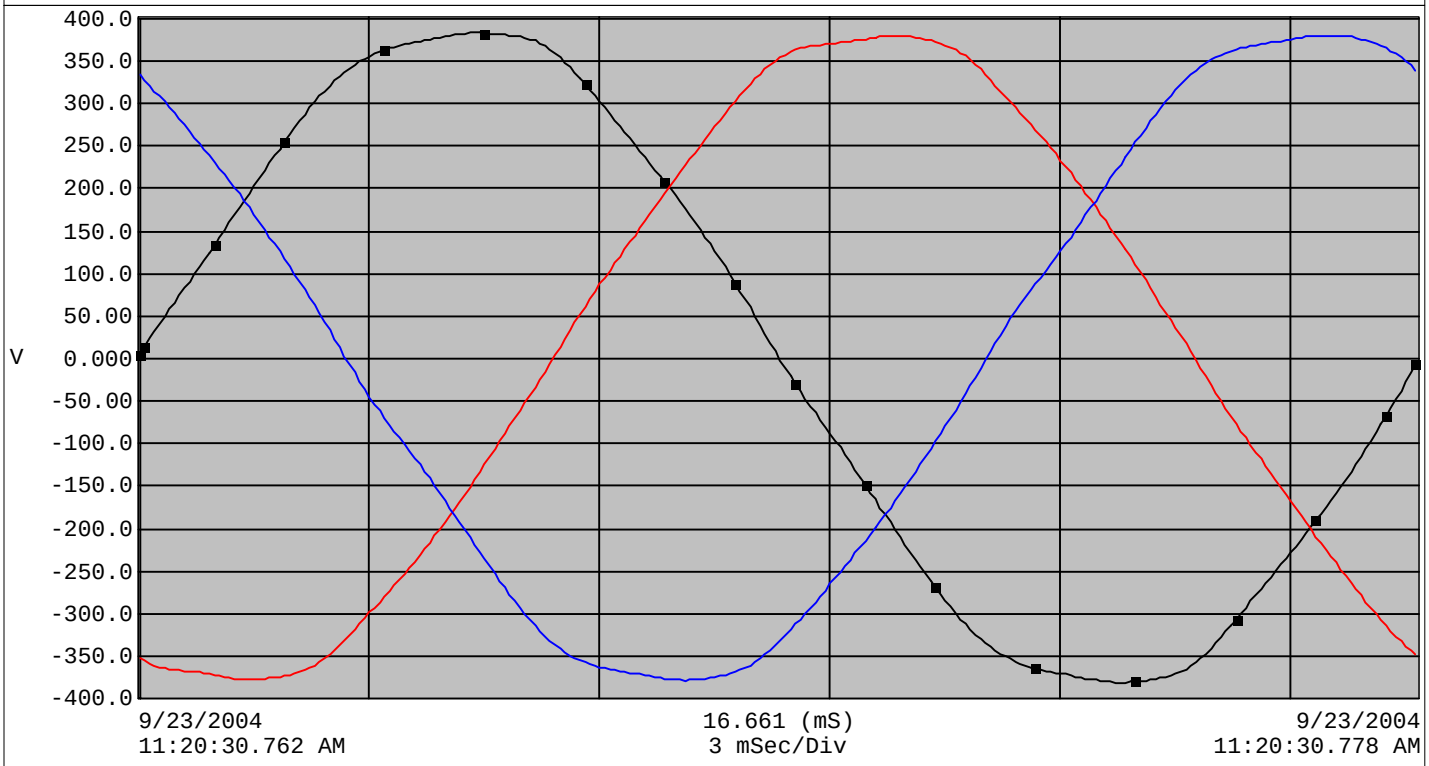
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	Macheche WWPS - Pump ,

Comments

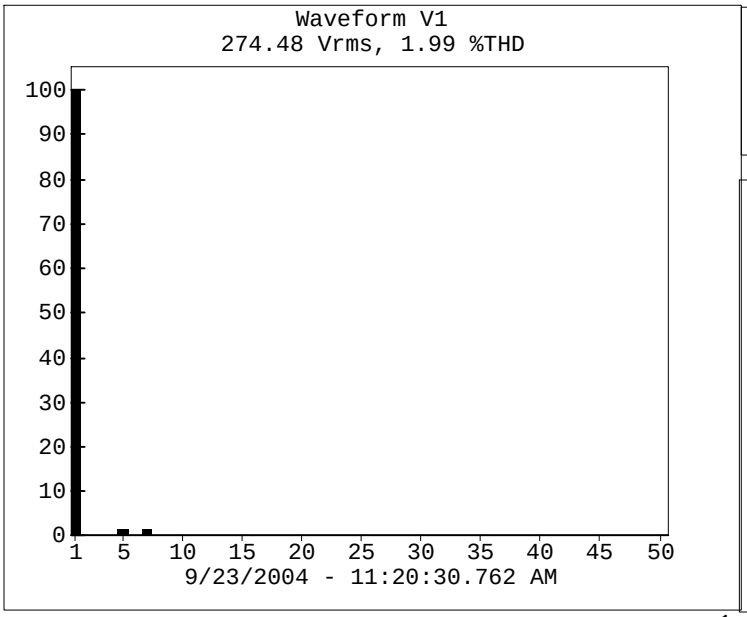
Macheche WWPS - Pump 2 - Photo

Recording Start Date	9/23/2004 - 11:20:30 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/23/2004	11:20:30.762 AM	16.661	274.5	V
Waveform V2	9/23/2004	11:20:30.762 AM	16.661	271.2	V
Waveform V3	9/23/2004	11:20:30.762 AM	16.661	271.9	V

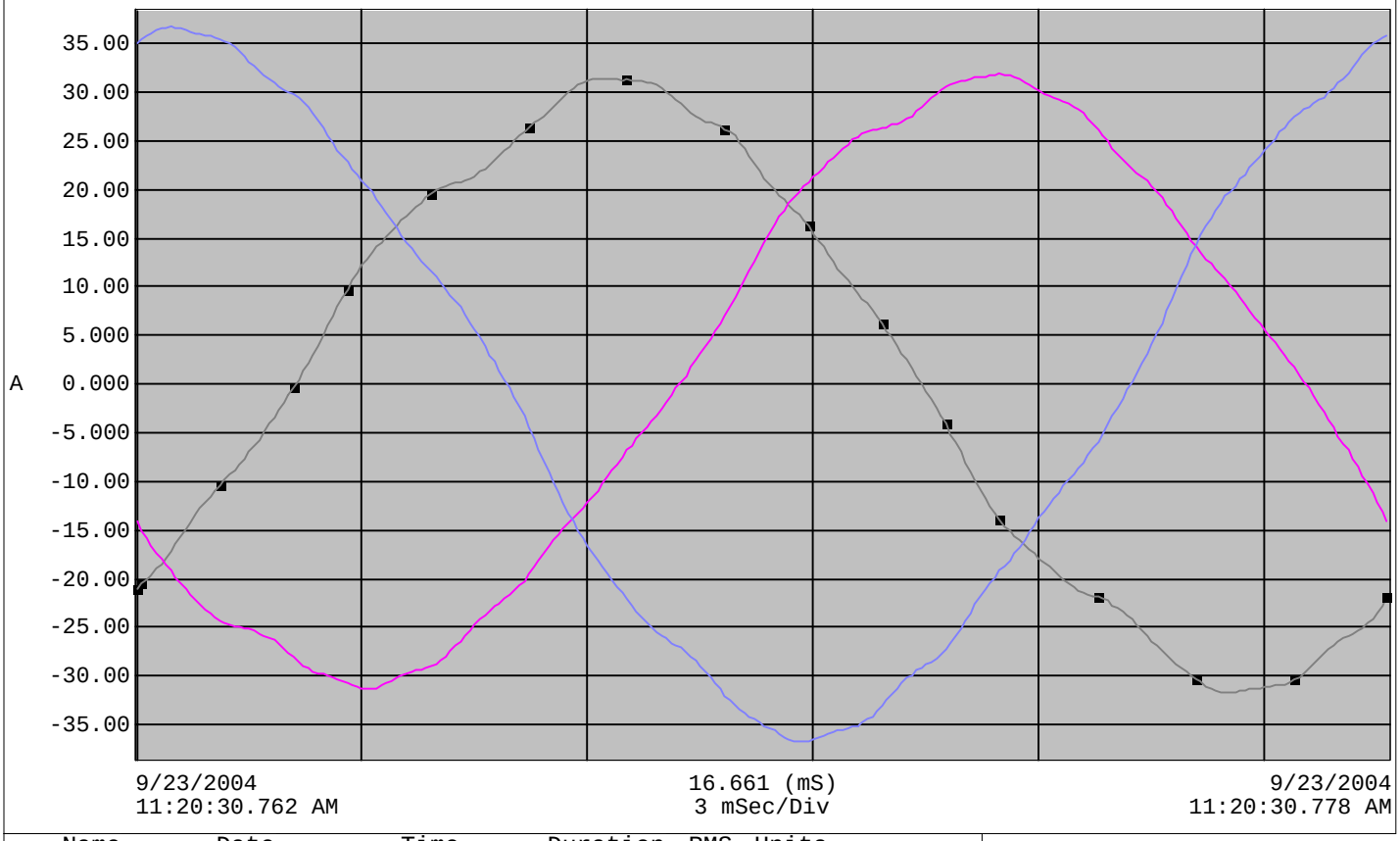


9/23/2004 - 11:20:30.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

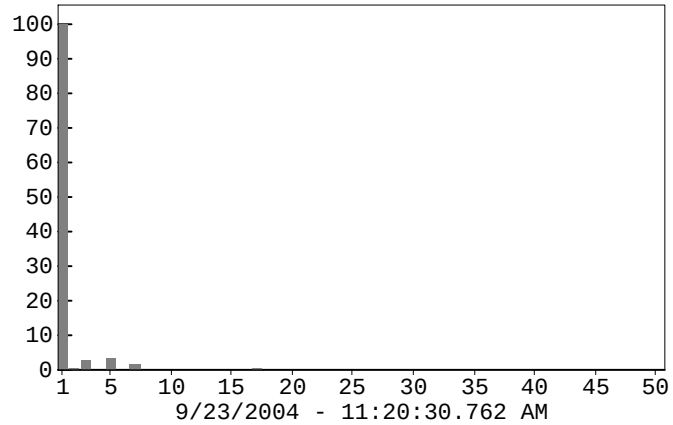
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/23/2004	11:20:30.762 AM	16.661	21.59	A
Waveform I2	9/23/2004	11:20:30.762 AM	16.661	21.75	A
Waveform I3	9/23/2004	11:20:30.762 AM	16.661	25.21	A

Waveform I1
21.59 Arms, 5.15 %THD

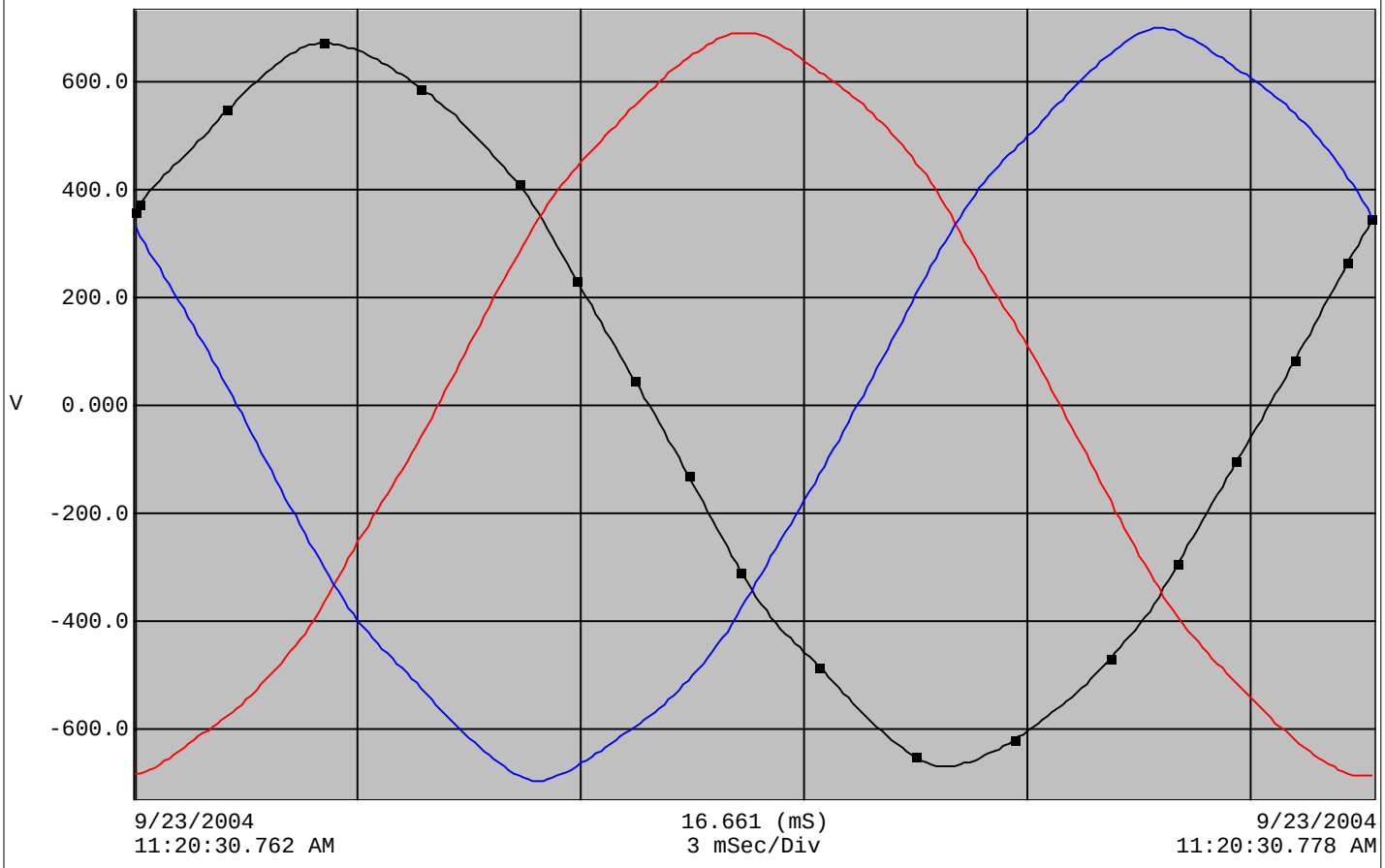


9/23/2004 - 11:20:30.015 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

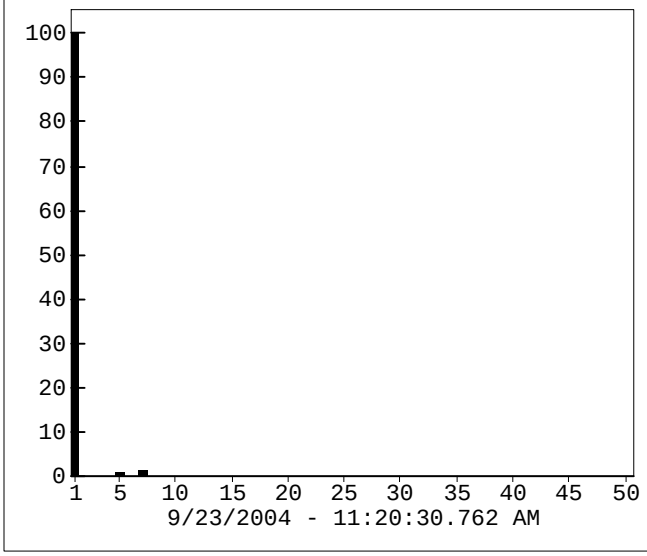
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.6	H19	0.3	H36	0.0
H03	2.8	H20	0.1	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	3.7	H22	0.0	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	2.0	H24	0.0	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	0.2	H26	0.1	H43	0.0
H10	0.2	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.4	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.3	H33	0.0	H50	0.0
H17	0.7	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/23/2004	11:20:30.762 AM	16.661	463.2	V
Waveform U2	9/23/2004	11:20:30.762 AM	16.661	475.1	V
Waveform U3	9/23/2004	11:20:30.762 AM	16.661	477.4	V

Waveform U1
463.22 Vrms, 1.83 %THD



9/23/2004 - 11:20:30.015 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.3	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/23/2004
Start Time: 11:20:30 AM
Duration: 0:0.000 (M:S)
W: 4.216E+3 W
VAR: 4.151E+3 W
VA: 5.917E+3 W
Power Factor: 0.713
Displacement Power Factor: 0.714
TAN: 0.981
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Macheche WWPS\092304 - Macheche WWPS - Pump 2 - Photo.dvb

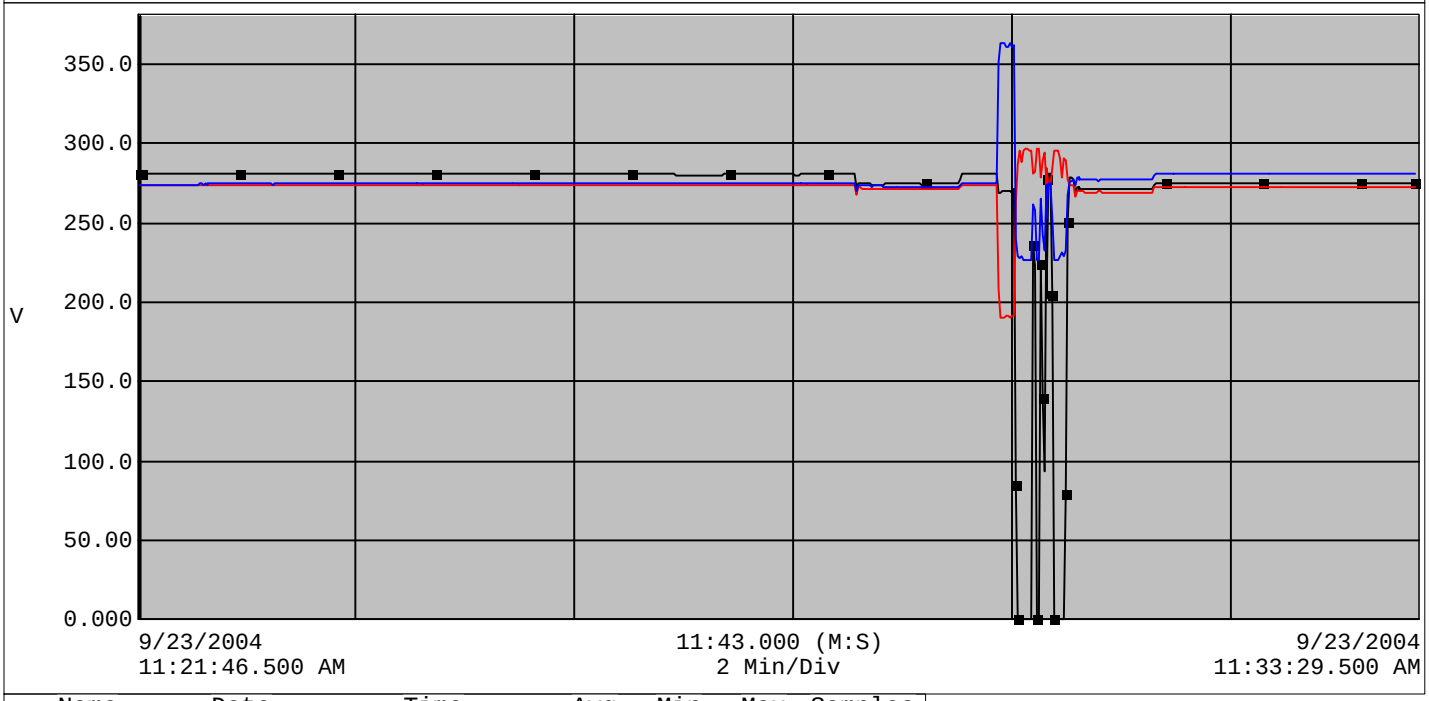
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	Macheche WWPS - Pump 2 Photo ,

Comments
Recorded at feeder for Pump 1 and Pump 2. Pump 1 noted to be tripped. GPA Meter 02-465-820, Demand of 13.73 KW.

Macheche WWPS - Pump 2

Recording Start Date	9/23/2004 - 11:21:46 AM
Recording Duration	11:43 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

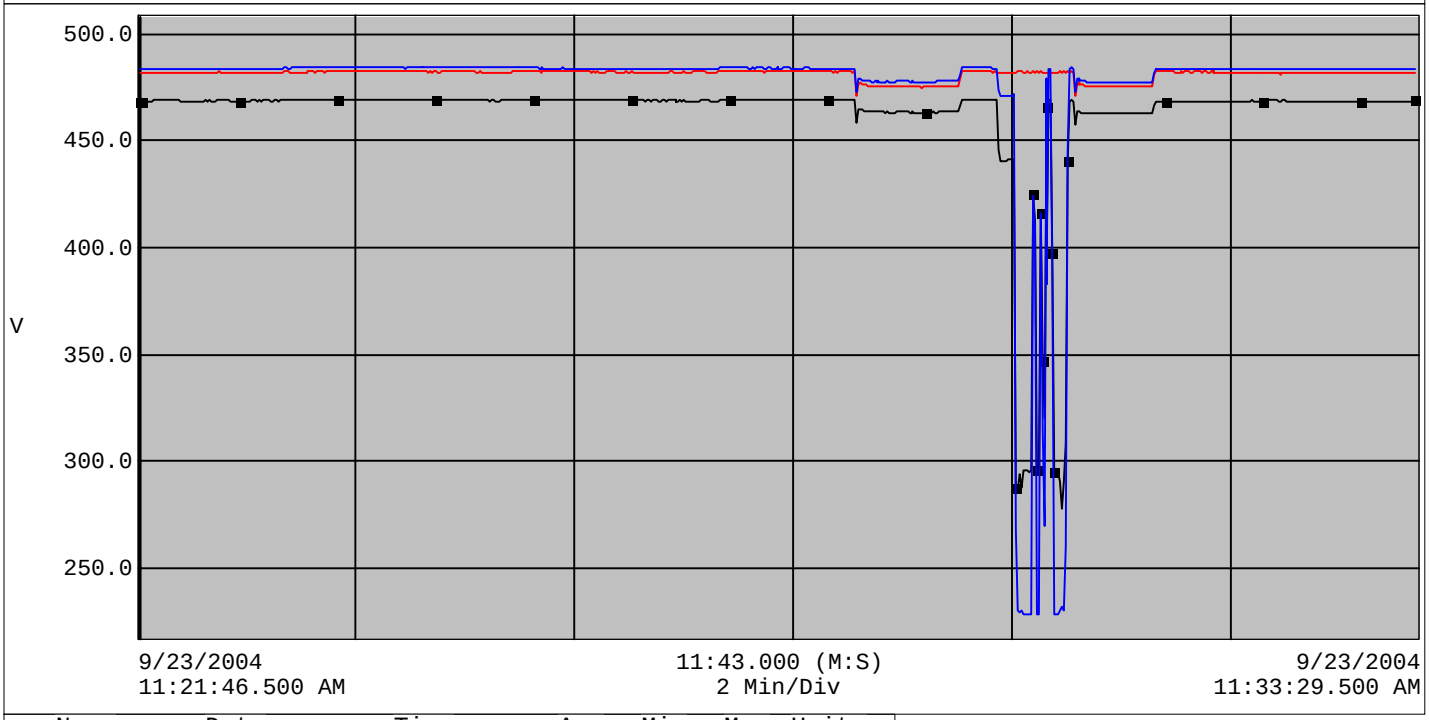
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/23/2004	11:21:46.500 AM	270.0	0.000	281.0	704
Vrms Line2	9/23/2004	11:21:46.500 AM	272.2	189.4	296.3	704
Vrms Line3	9/23/2004	11:21:46.500 AM	275.5	226.5	362.9	704

9/23/2004 - 11:21:46.000 AM
Val
280.7 Vrms Line1
273.2 Vrms Line2
273.7 Vrms Line3

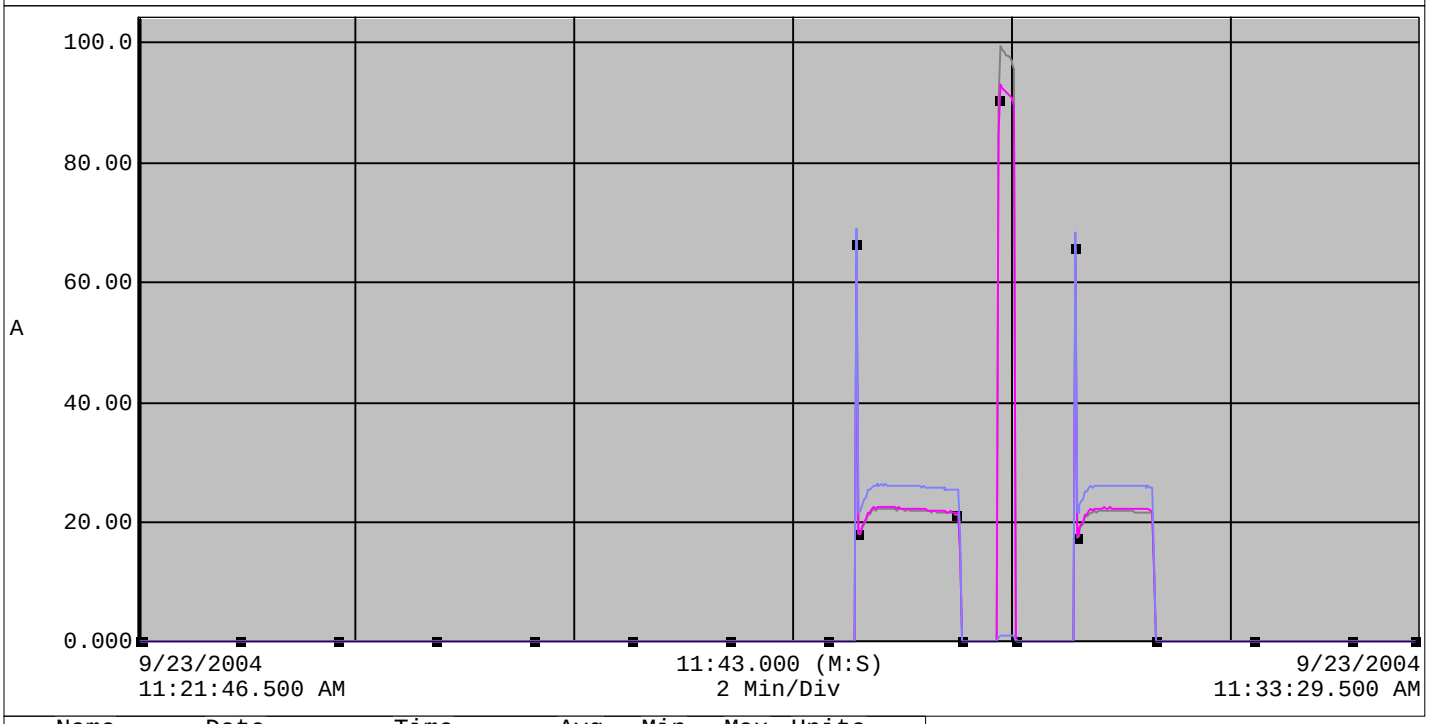
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/23/2004	11:21:46.500 AM	462.0	277.2	469.3	V
Urms Line2	9/23/2004	11:21:46.500 AM	480.8	470.6	482.3	V
Urms Line3	9/23/2004	11:21:46.500 AM	474.8	227.6	484.2	V

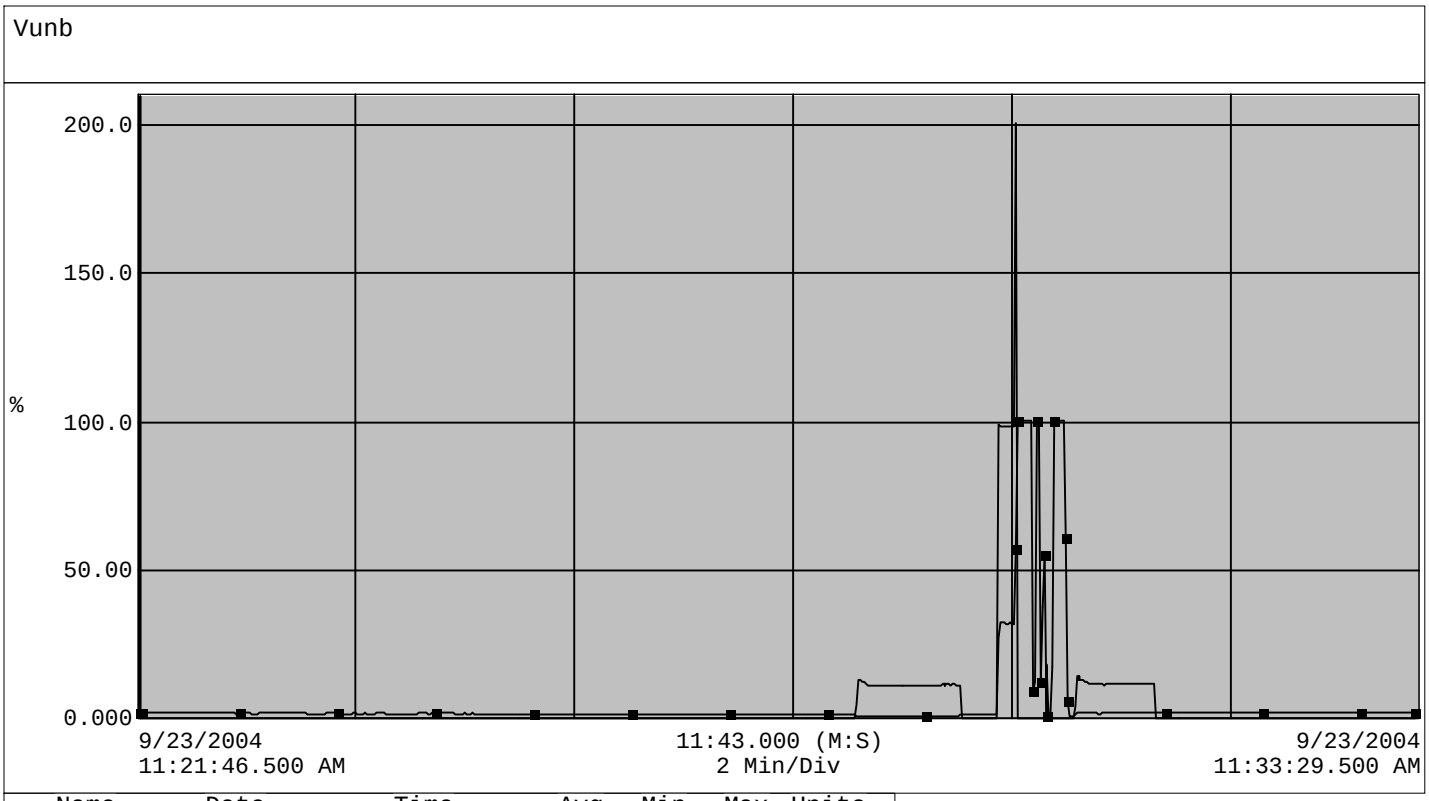
9/23/2004 - 11:21:46.000 AM
Val
468.4 Urms Line1
481.4 Urms Line2
483.1 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/23/2004	11:21:46.500 AM	4.607	0.000	99.20	A
Arms Line2	9/23/2004	11:21:46.500 AM	4.563	0.000	92.90	A
Arms Line3	9/23/2004	11:21:46.500 AM	3.839	0.000	69.00	A

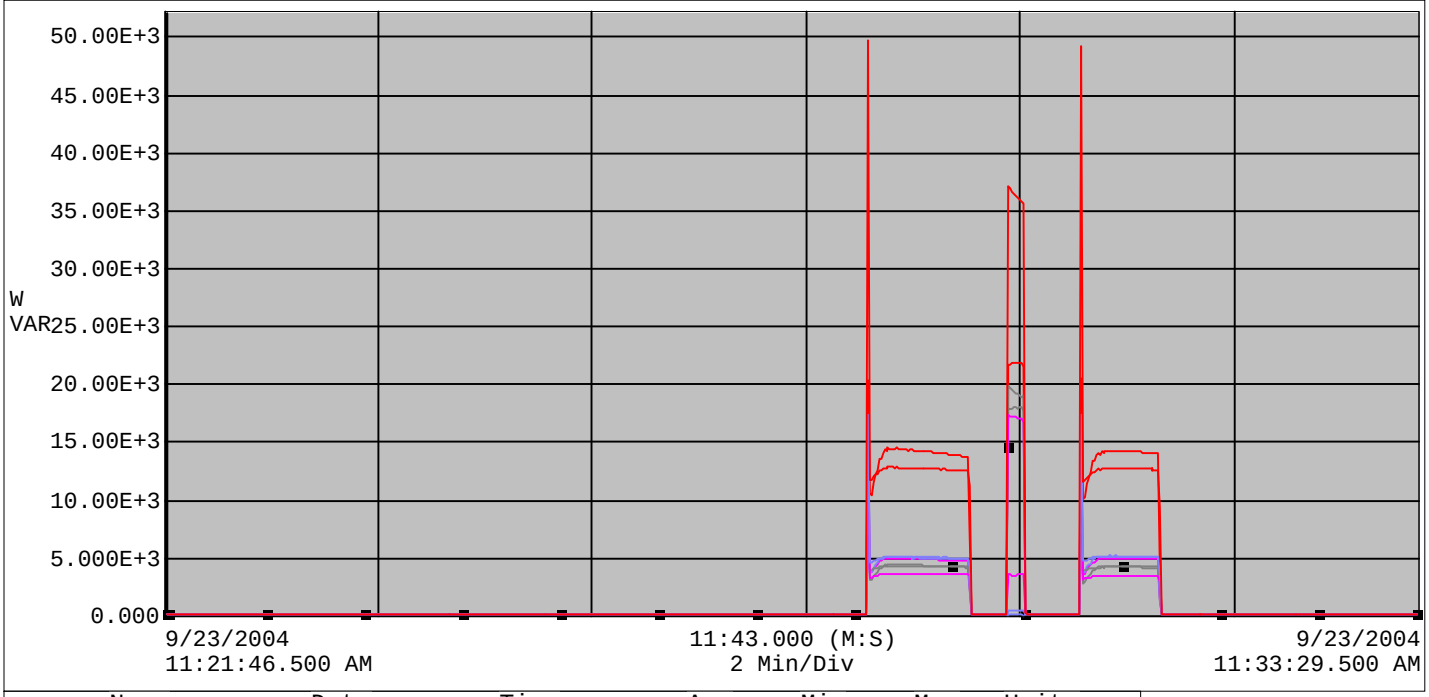
9/23/2004 - 11:21:46.000 AM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/23/2004	11:21:46.500 AM	4.593	0.500	100.0	%
Aunb(IEEE)	9/23/2004	11:21:46.500 AM	3.346	0.000	200.0	%

9/23/2004 - 11:21:46.000 AM
Val
1.800 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

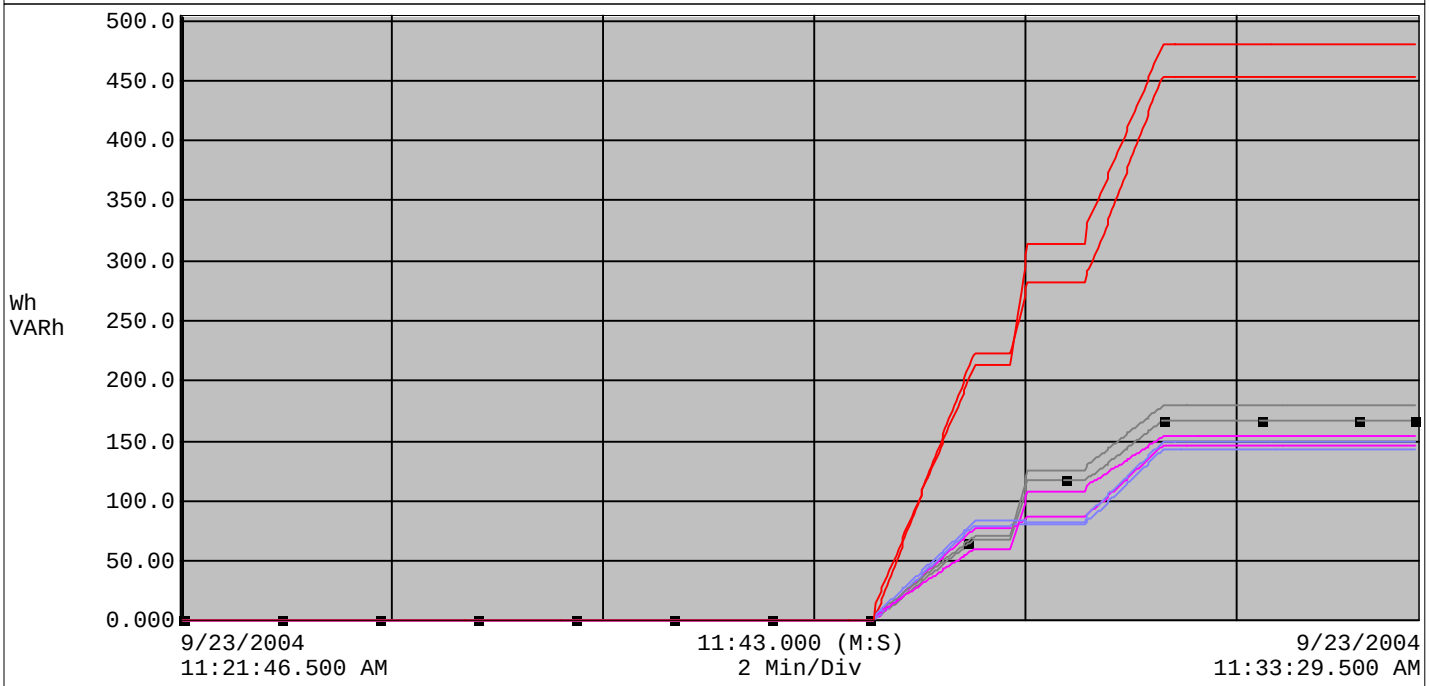
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/23/2004	11:21:46.500 AM	848.5	0.000	18.00E+3	W
W Line2	9/23/2004	11:21:46.500 AM	740.5	-6.988	6.827E+3	W
W Line3	9/23/2004	11:21:46.500 AM	724.0	0.000	7.047E+3	W
W Sum of Phases	9/23/2004	11:21:46.500 AM	2.313E+3	-6.760	21.82E+3	W
VAR Line1	9/23/2004	11:21:46.500 AM	913.0	0.000	19.75E+3	VAR
VAR Line2	9/23/2004	11:21:46.500 AM	781.3	0.000	17.35E+3	VAR
VAR Line3	9/23/2004	11:21:46.500 AM	757.4	-100.7	17.31E+3	VAR
VAR Sum of Phases	9/23/2004	11:21:46.500 AM	2.452E+3	0.000	49.67E+3	VAR

9/23/2004 - 11:21:46.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

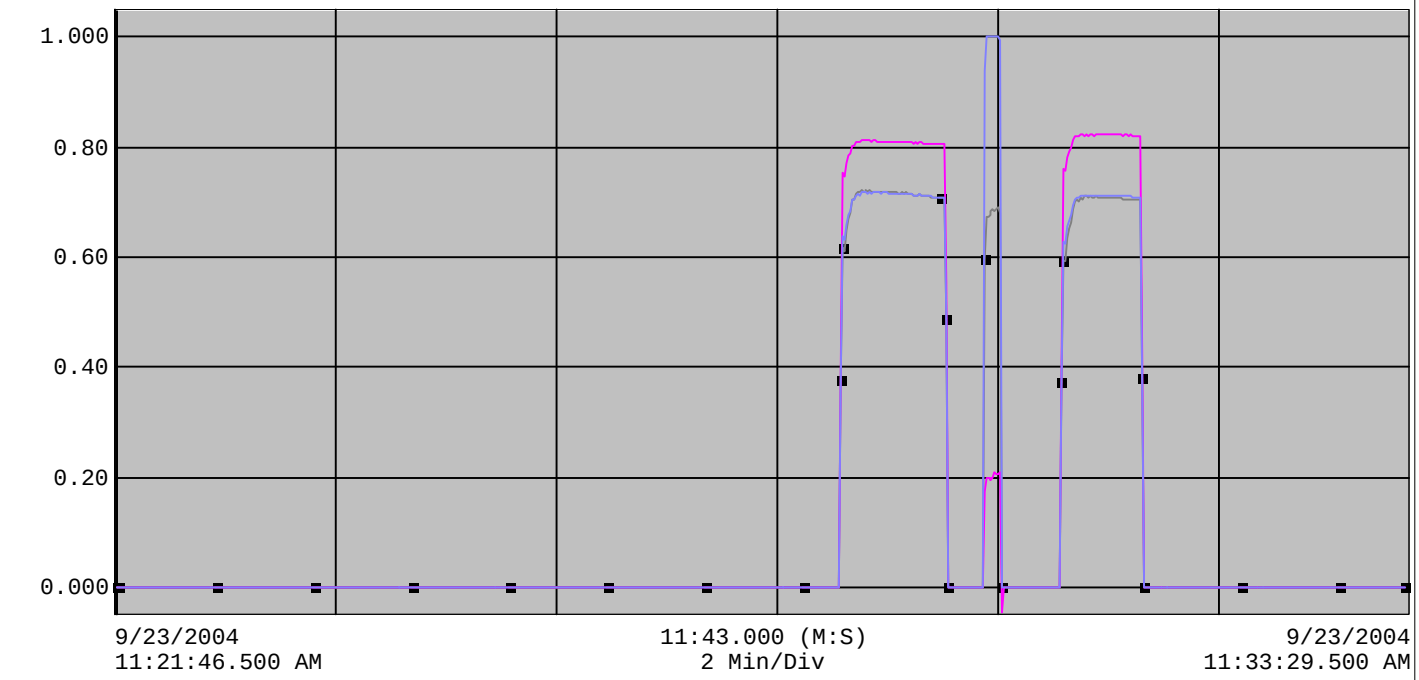
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/23/2004	11:21:46.500 AM	54.35	0.000	165.9	Wh
W-hours Line2	9/23/2004	11:21:46.500 AM	47.48	0.000	144.8	Wh
W-hours Line3	9/23/2004	11:21:46.500 AM	46.44	0.000	141.6	Wh
W-hours Sum of Phases	9/23/2004	11:21:46.500 AM	148.3	0.000	452.3	Wh
VAR-hours Line1	9/23/2004	11:21:46.500 AM	58.48	0.000	178.5	VARh
VAR-hours Line2	9/23/2004	11:21:46.500 AM	50.14	0.000	152.8	VARh
VAR-hours Line3	9/23/2004	11:21:46.500 AM	48.66	0.000	148.1	VARh
VAR-hours Sum of Phases	9/23/2004	11:21:46.500 AM	157.3	0.000	479.4	VARh

9/23/2004 - 11:21:46.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/23/2004	11:21:46.500 AM	0.110	0.000	0.720	
PF Line2	9/23/2004	11:21:46.500 AM	0.119	-48.00E-3	0.821	
PF Line3	9/23/2004	11:21:46.500 AM	0.115	0.000	0.998	

9/23/2004 - 11:21:46.000 AM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Macheche WWPS\092304 - Macheche WWPS - Pump 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	Macheche WWPS - Pump 2 ,

Comments

GPA Meter 02-465-820, Demand 13.73 KW. Submersible pumps. Pump 1 indicated a trip condition. Motor single phased when operated. Recorded Pump 2 at motor starter.

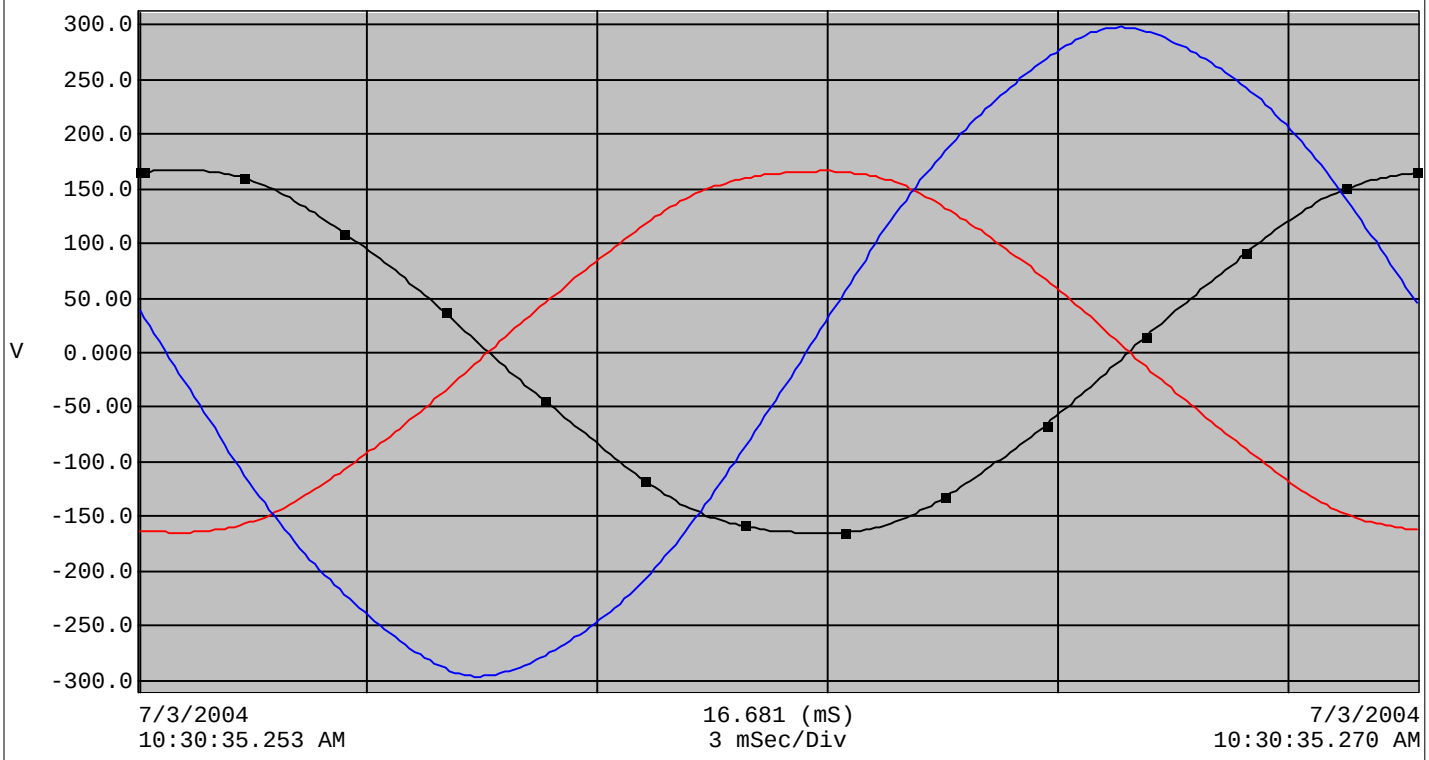
GWA Wastewater Pumping Station Assessment				
Station Name: MAITE	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/03/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.38	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	2	0.1	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.32	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	2	0.08	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Secondary Pump Motor Controls	**20.0%**		0.36	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Chlorination Motor Starter	**2.0%**		0.02	
Main Breaker and Starter	1.0%	1	0.01	
Motor Starter	1.0%	1	0.01	
Pump Controls	**10.0%**		0.2	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	3	0.045	
Sump Pump Controls	1.5%	1	0.015	
	100%	**Assessment Value**		**2.2**

Comments:

SPS MTE-Photo 1

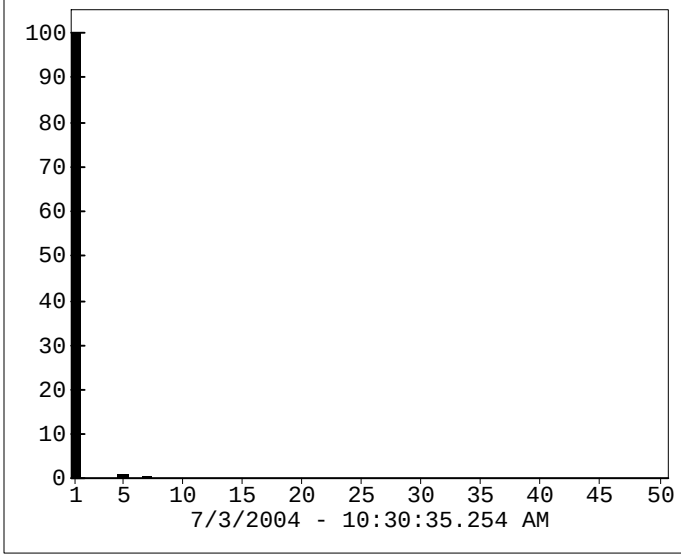
Recording Start Date	7/3/2004 - 10:30:35 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/3/2004	10:30:35.253 AM	16.681	119.3	V
Waveform V2	7/3/2004	10:30:35.253 AM	16.681	118.5	V
Waveform V3	7/3/2004	10:30:35.253 AM	16.681	206.9	V

Waveform V1
119.28 Vrms, 1.19 %THD



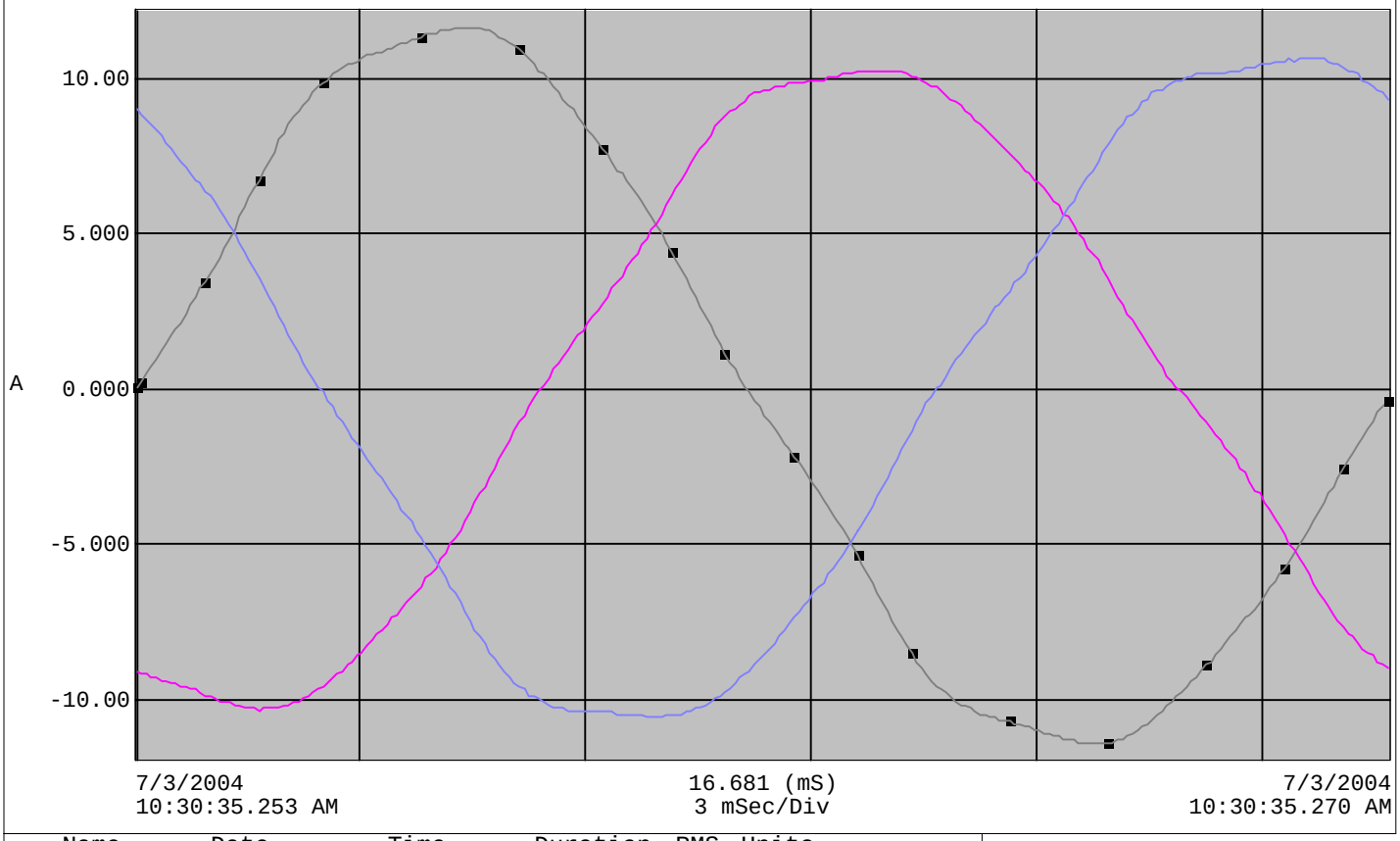
7/3/2004 - 10:30:35.000 AM

Val	
164.5	Waveform V1
-163.7	Waveform V2
37.80	Waveform V3

Waveform V1

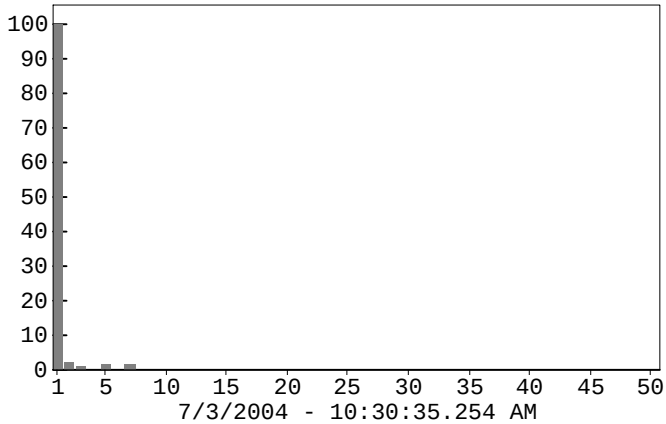
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.95 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/3/2004	10:30:35.253 AM	16.681	8.124	A
Waveform I2	7/3/2004	10:30:35.253 AM	16.681	7.320	A
Waveform I3	7/3/2004	10:30:35.253 AM	16.681	7.657	A

Waveform I1
8.12 Arms, 3.83 %THD



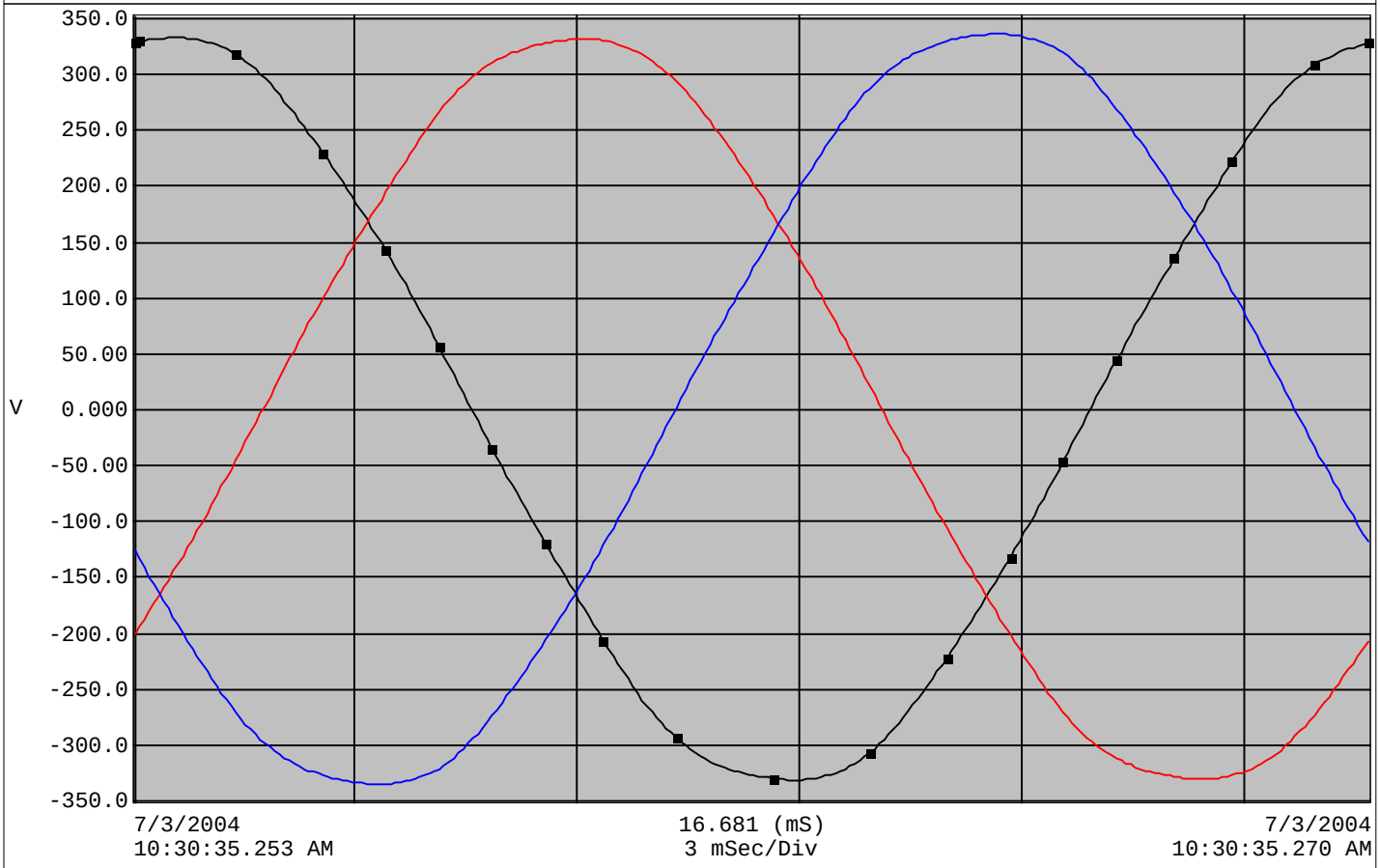
7/3/2004 - 10:30:35.000 AM

	Val
Waveform I1	0.000
Waveform I2	-9.100
Waveform I3	9.000

Waveform I1

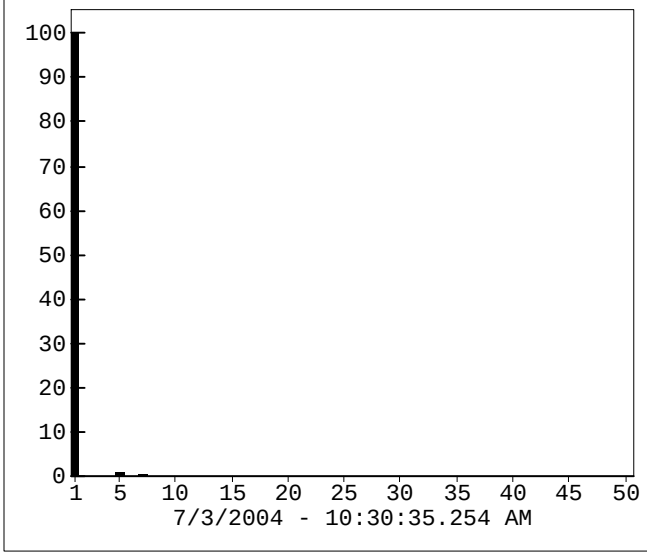
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	2.3	H19	0.0	H36	0.0
H03	1.2	H20	0.0	H37	0.0
H04	0.2	H21	0.0	H38	0.1
H05	1.9	H22	0.0	H39	0.1
H06	0.2	H23	0.1	H40	0.0
H07	2.0	H24	0.0	H41	0.0
H08	0.2	H25	0.0	H42	0.1
H09	0.0	H26	0.0	H43	0.1
H10	0.1	H27	0.1	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.1
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/3/2004	10:30:35.253 AM	16.681	237.8	V
Waveform U2	7/3/2004	10:30:35.253 AM	16.681	237.0	V
Waveform U3	7/3/2004	10:30:35.253 AM	16.681	240.1	V

Waveform U1
237.81 Vrms, 1.18 %THD



7/3/2004 - 10:30:35.000 AM

	Val	
—	328.2	Waveform U1
—	-201.5	Waveform U2
—	-126.6	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/3/2004
Start Time: 10:30:35 AM
Duration: 0:0.000 (M:S)
W: 120.2 W
VAR: 953.1 W
VA: 960.6 W
Power Factor: 0.125
Displacement Power Factor: 0.126
TAN: 7.879
VoltageRatio: 1.000
CurrentRatio: 1.000
```

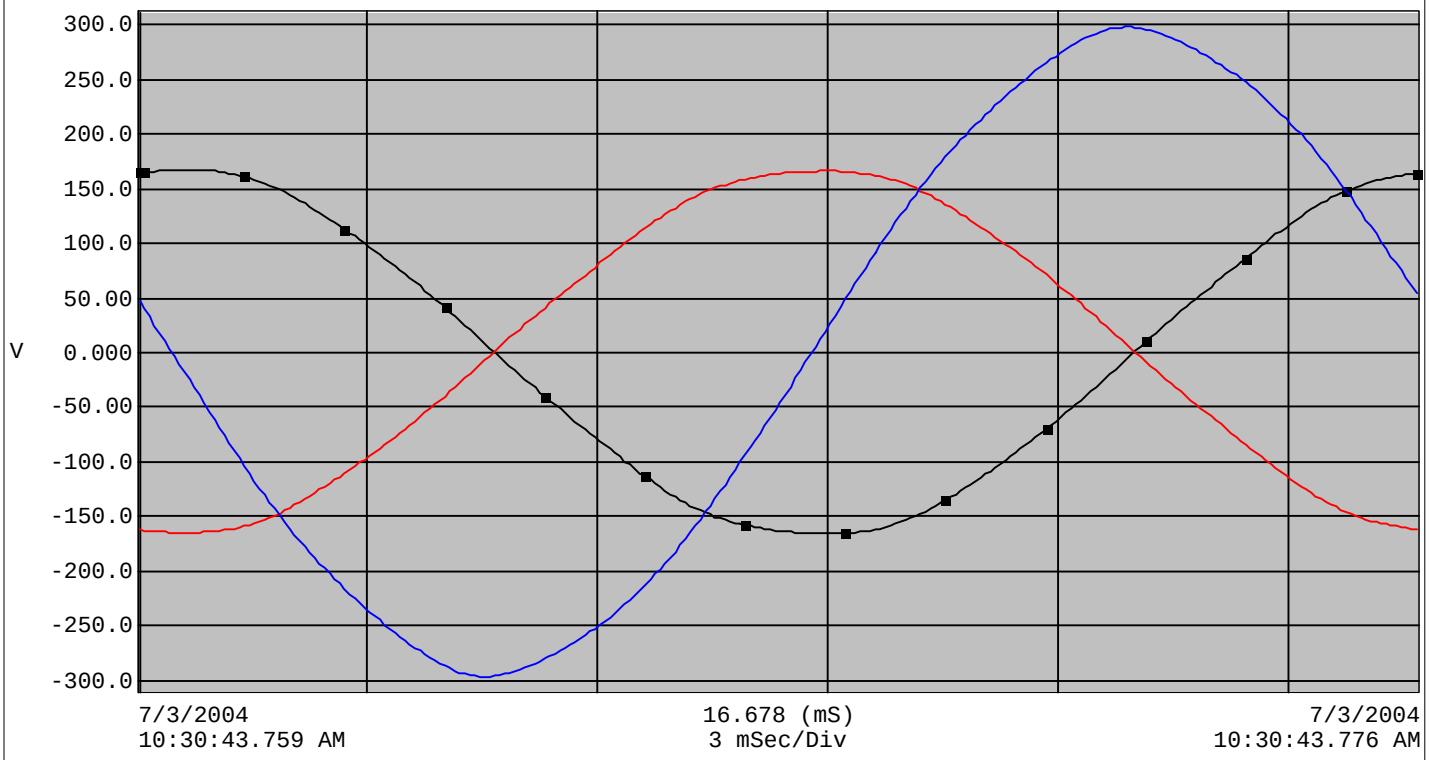
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Maite WWPS\070304-SPS MTE-Photo1.dvb	
Operator ,	Test Site ,
Comments	

SPS MTE-Photo2

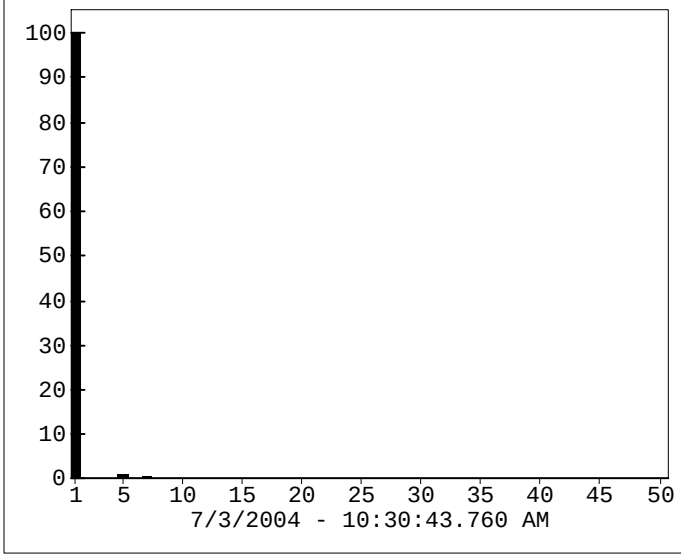
Recording Start Date	7/3/2004 - 10:30:43 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/3/2004	10:30:43.759 AM	16.678	119.4	V
Waveform V2	7/3/2004	10:30:43.759 AM	16.678	118.5	V
Waveform V3	7/3/2004	10:30:43.759 AM	16.678	207.0	V

Waveform V1
119.37 Vrms, 1.17 %THD



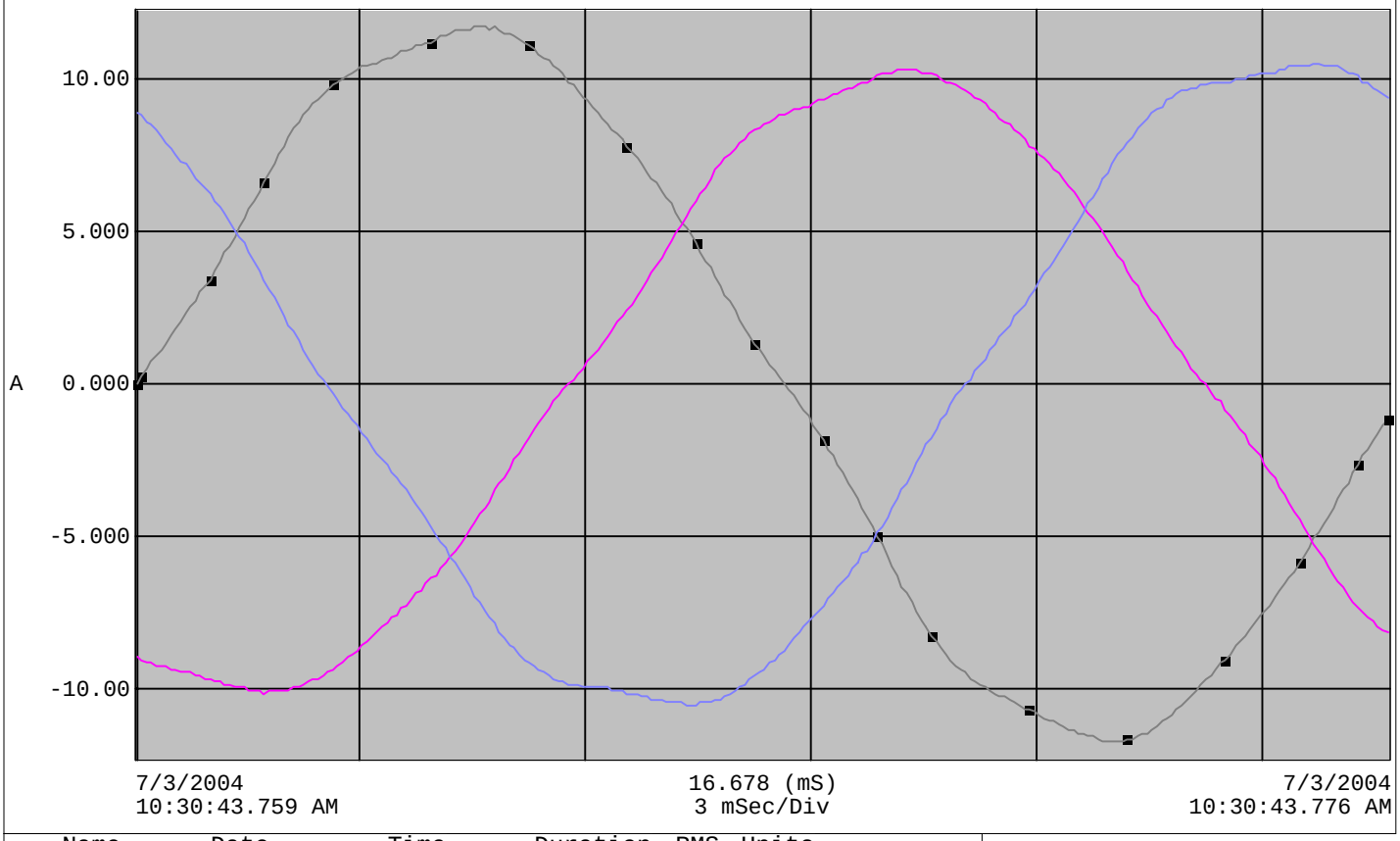
7/3/2004 - 10:30:43.000 AM

Val	
164.1	Waveform V1
-163.0	Waveform V2
46.30	Waveform V3

Waveform V1

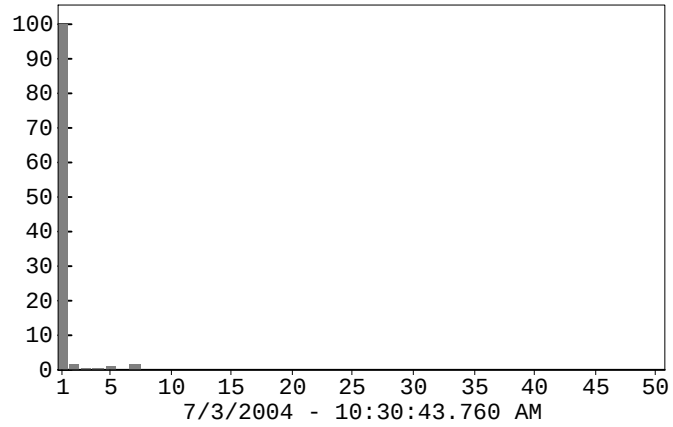
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/3/2004	10:30:43.759 AM	16.678	8.231	A
Waveform I2	7/3/2004	10:30:43.759 AM	16.678	7.183	A
Waveform I3	7/3/2004	10:30:43.759 AM	16.678	7.547	A

Waveform I1
8.23 Arms, 3.42 %THD



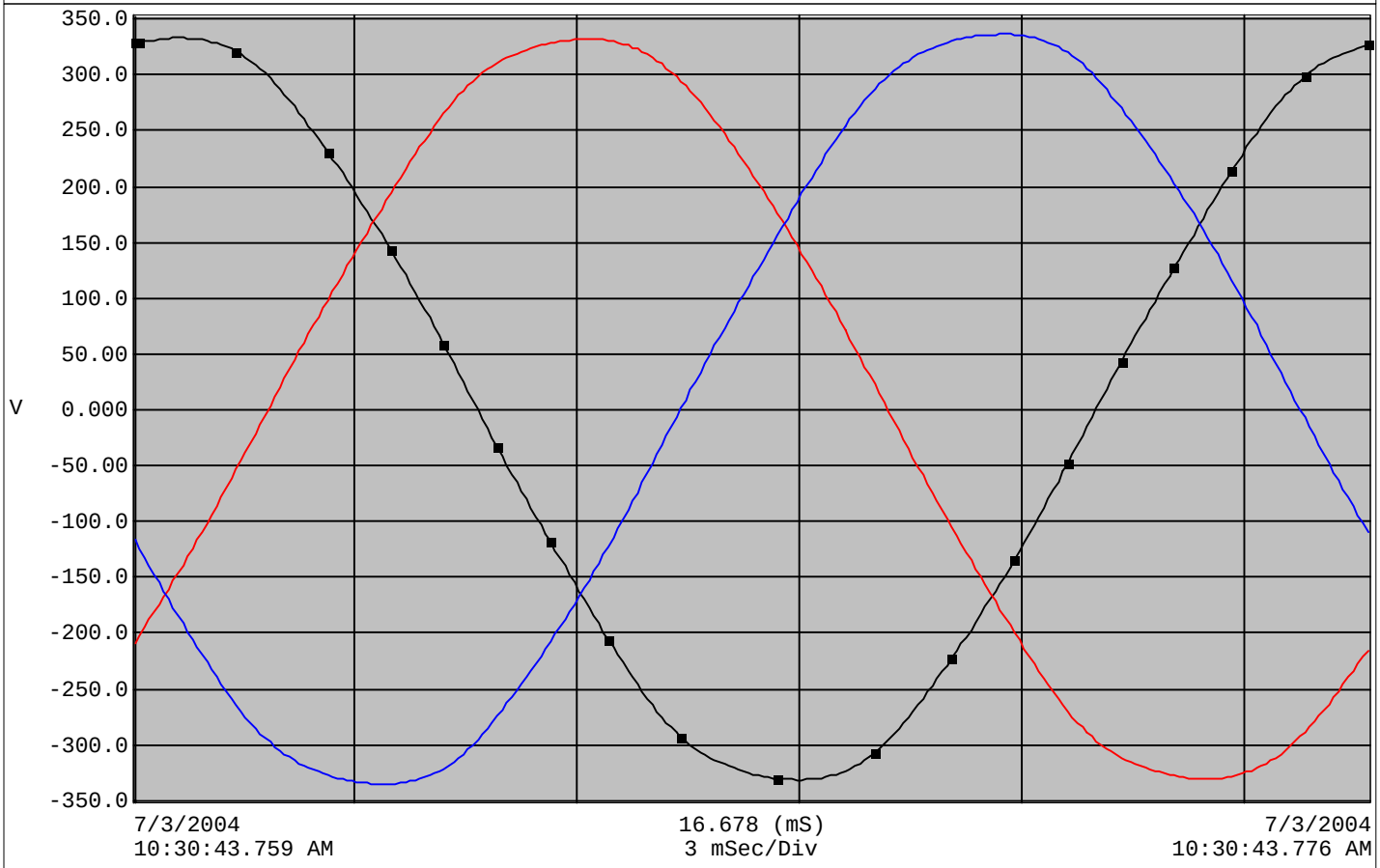
7/3/2004 - 10:30:43.000 AM

Val	
0.000	Waveform I1
-9.000	Waveform I2
8.900	Waveform I3

Waveform I1

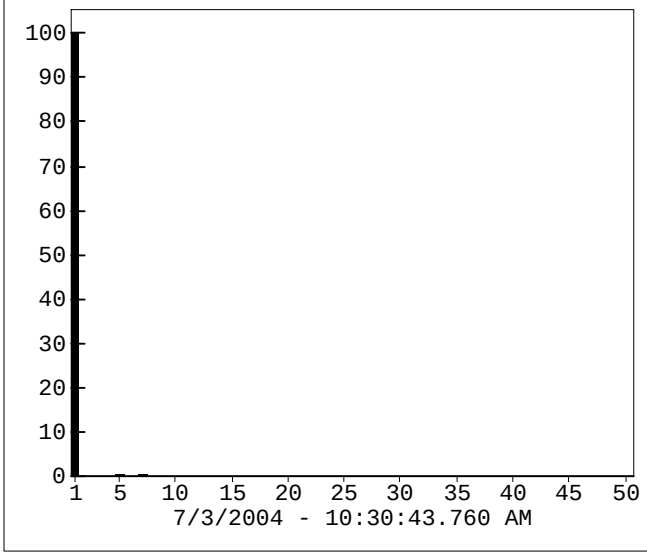
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	2.0	H19	0.2	H36	0.1
H03	0.6	H20	0.1	H37	0.1
H04	0.6	H21	0.1	H38	0.0
H05	1.5	H22	0.1	H39	0.1
H06	0.4	H23	0.1	H40	0.0
H07	1.9	H24	0.2	H41	0.1
H08	0.3	H25	0.1	H42	0.0
H09	0.4	H26	0.1	H43	0.0
H10	0.3	H27	0.1	H44	0.1
H11	0.2	H28	0.1	H45	0.1
H12	0.2	H29	0.1	H46	0.1
H13	0.1	H30	0.1	H47	0.0
H14	0.2	H31	0.1	H48	0.1
H15	0.1	H32	0.1	H49	0.0
H16	0.2	H33	0.1	H50	0.1
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/3/2004	10:30:43.759 AM	16.678	238.0	V
Waveform U2	7/3/2004	10:30:43.759 AM	16.678	237.1	V
Waveform U3	7/3/2004	10:30:43.759 AM	16.678	240.3	V

Waveform U1
237.96 Vrms, 1.17 %THD



7/3/2004 - 10:30:43.000 AM

	Val	
—	327.2	Waveform U1
—	-209.3	Waveform U2
—	-117.8	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/3/2004
Start Time: 10:30:43 AM
Duration: 0:0.000 (M:S)
W: 120.5 W
VAR: 972.7 W
VA: 980.1 W
Power Factor: 0.123
Displacement Power Factor: 0.123
TAN: 8.096
VoltageRatio: 1.000
CurrentRatio: 1.000
```

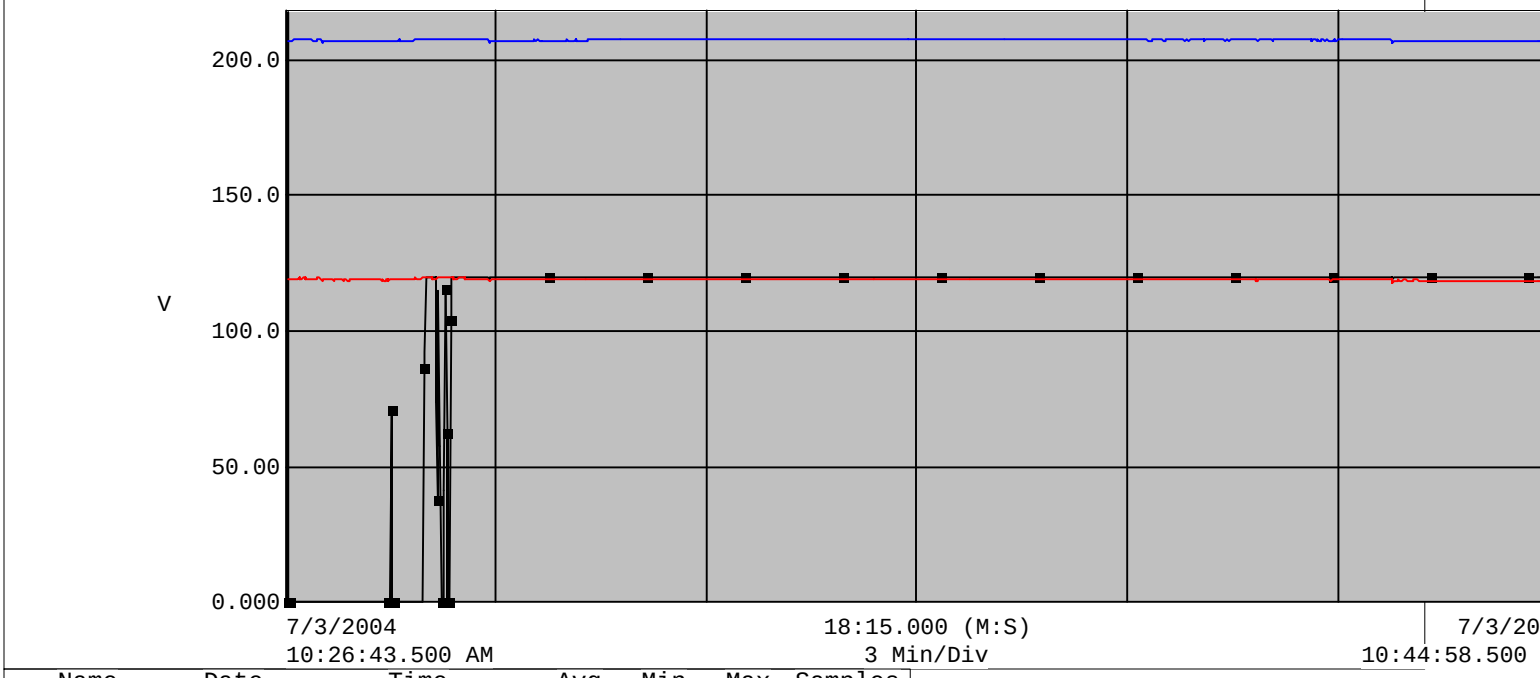
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Maite WWPS\070304-SPS MTE-Photo2.dvb	
Operator ,	Test Site ,
Comments	

SPS MTE

Recording Start Date	7/3/2004 - 10:26:43 AM
Recording Duration	18:15 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

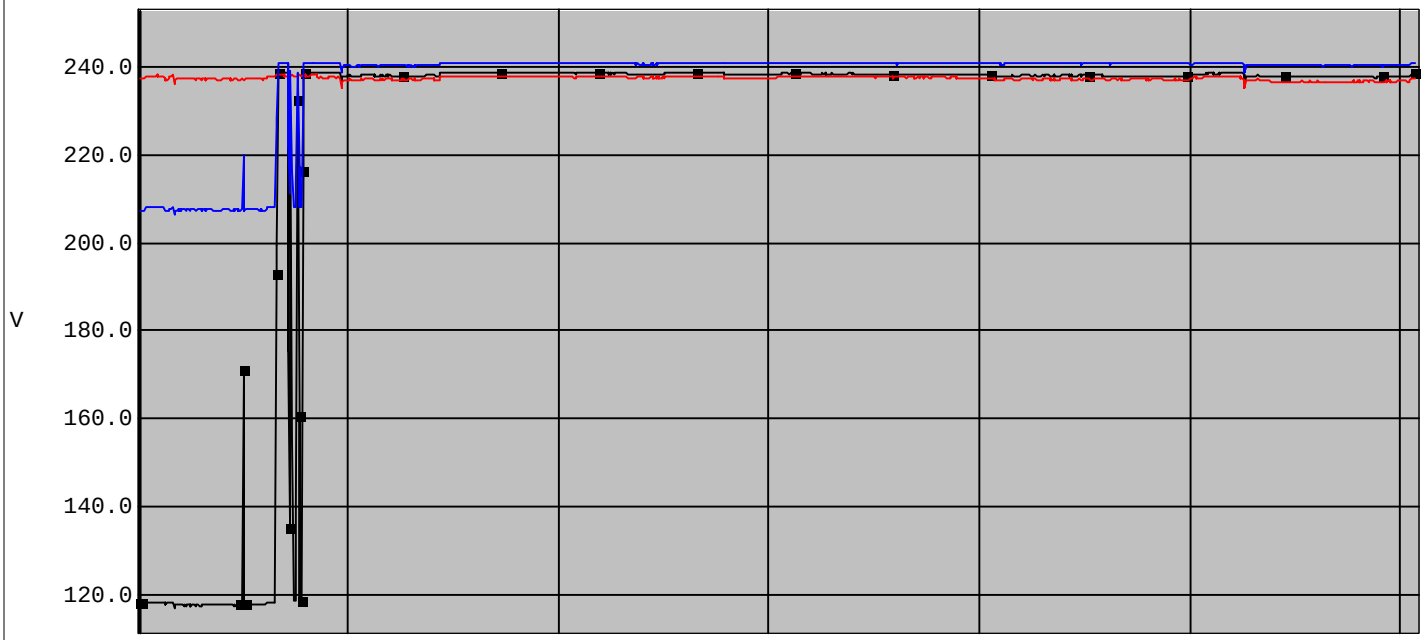
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/3/2004	10:26:43.500 AM	105.8	0.000	119.6	1096
Vrms Line2	7/3/2004	10:26:43.500 AM	118.7	117.5	119.3	1096
Vrms Line3	7/3/2004	10:26:43.500 AM	207.1	205.6	207.5	1096

7/3/2004 - 10:26:43.000 AM
Val
0.000 — Vrms Line1
119.1 — Vrms Line2
206.5 — Vrms Line3

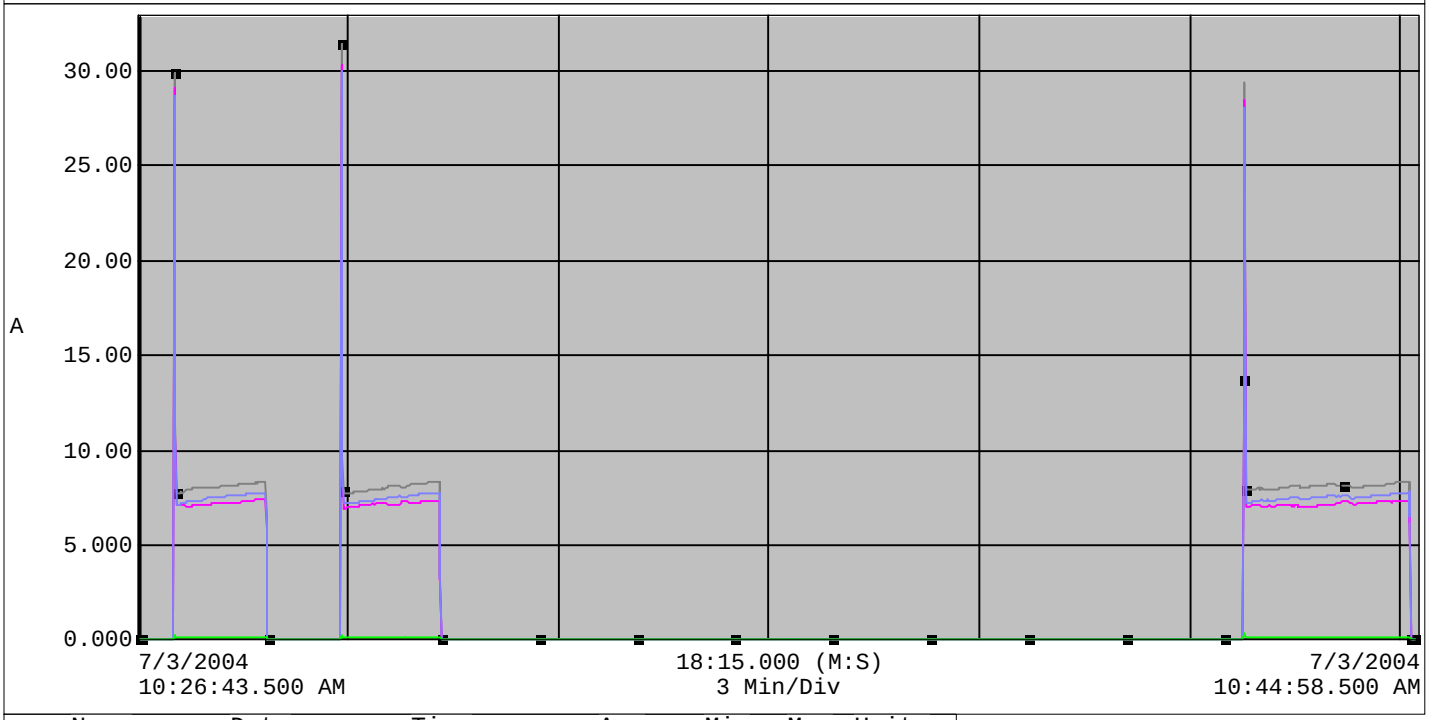
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/3/2004	10:26:43.500 AM	224.3	116.7	238.9	V
Urms Line2	7/3/2004	10:26:43.500 AM	237.3	235.0	238.1	V
Urms Line3	7/3/2004	10:26:43.500 AM	236.8	206.4	241.0	V

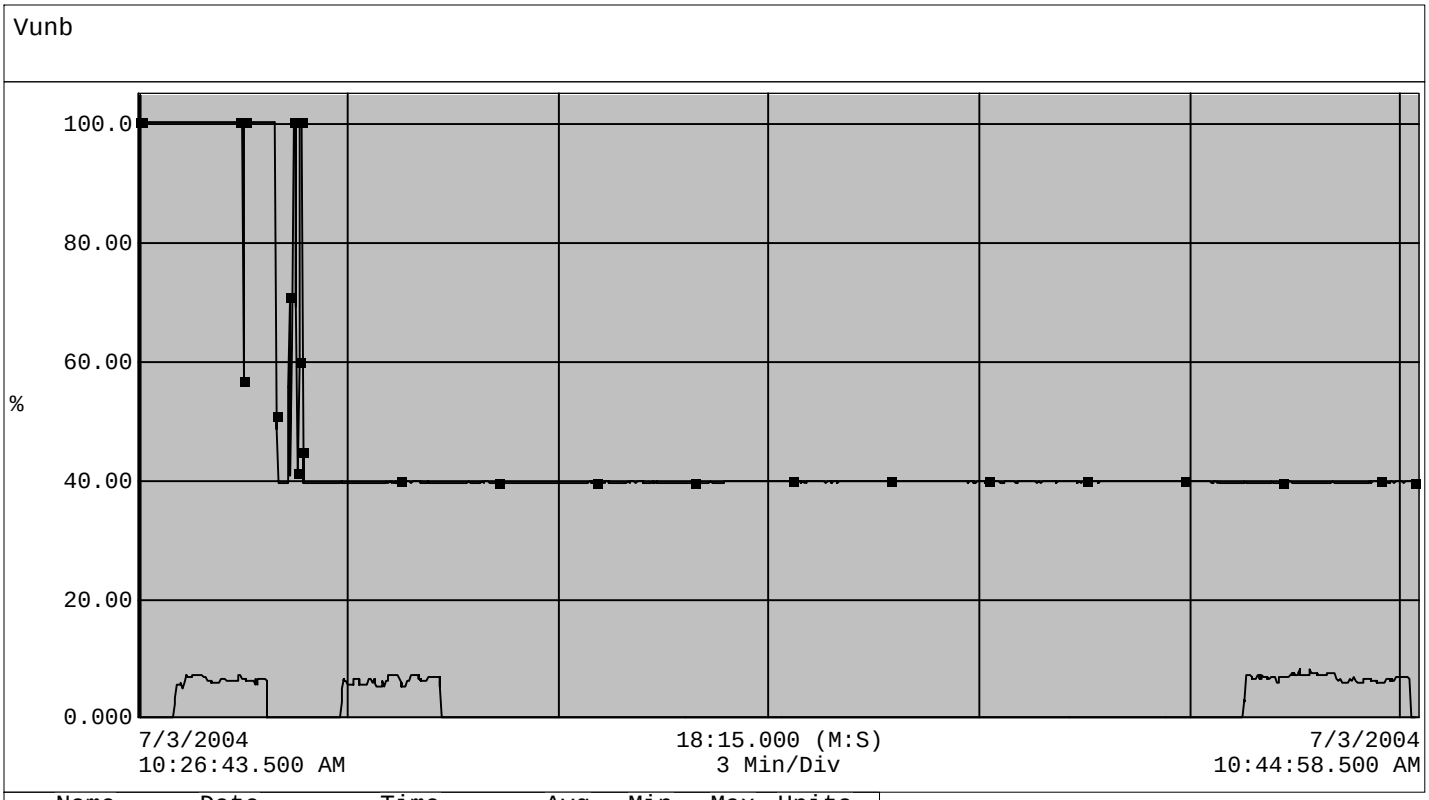
7/3/2004 - 10:26:43.000 AM
Val
117.8 — Urms Line1
237.2 — Urms Line2
207.0 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/3/2004	10:26:43.500 AM	2.341	0.000	31.30	A
Arms Line2	7/3/2004	10:26:43.500 AM	2.091	0.000	30.20	A
Arms Line3	7/3/2004	10:26:43.500 AM	2.178	0.000	29.90	A
Arms Neutral	7/3/2004	10:26:43.500 AM	28.74E-3	0.000	0.300	A

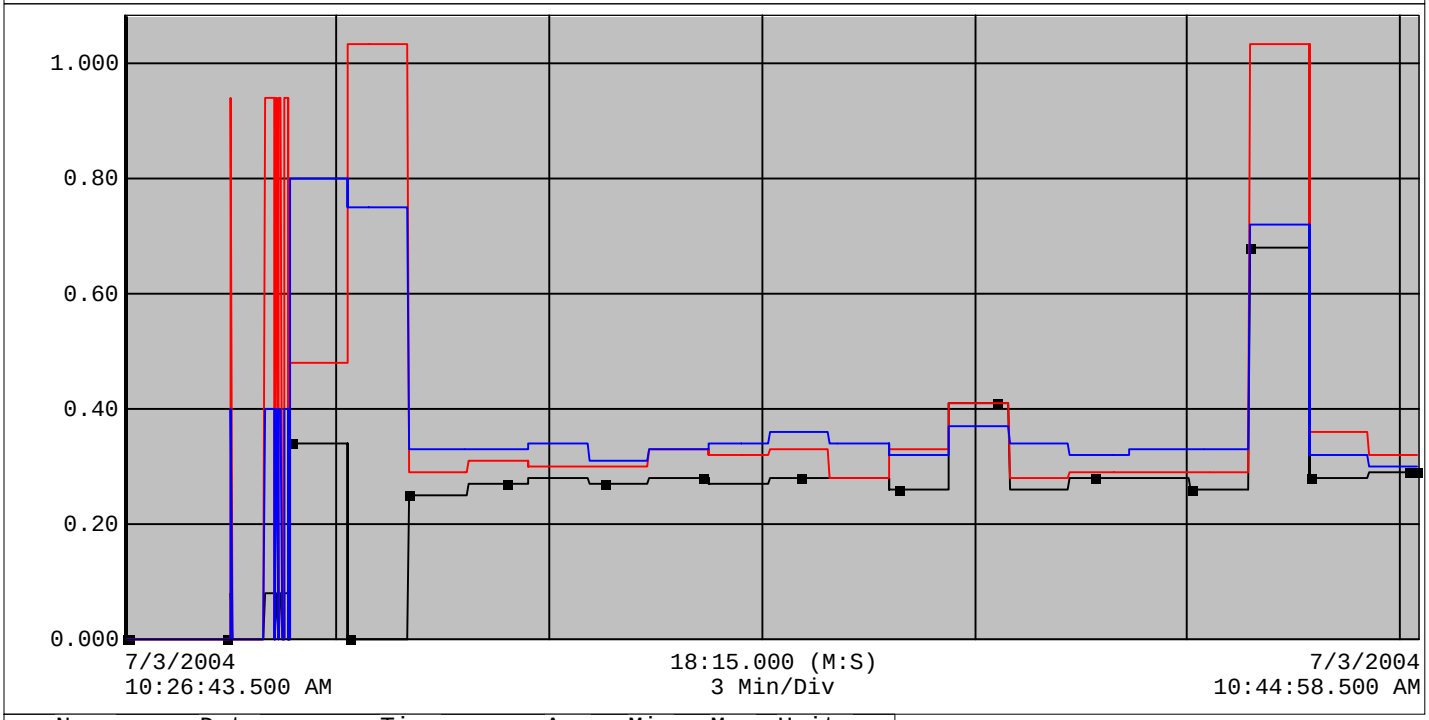
7/3/2004 - 10:26:43.000 AM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3
0.000 — Arms Neutral



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/3/2004	10:26:43.500 AM	46.37	39.40	100.0	%
Aunb(IEEE)	7/3/2004	10:26:43.500 AM	1.802	0.000	8.000	%

7/3/2004 - 10:26:43.000 AM
Val
100.0 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

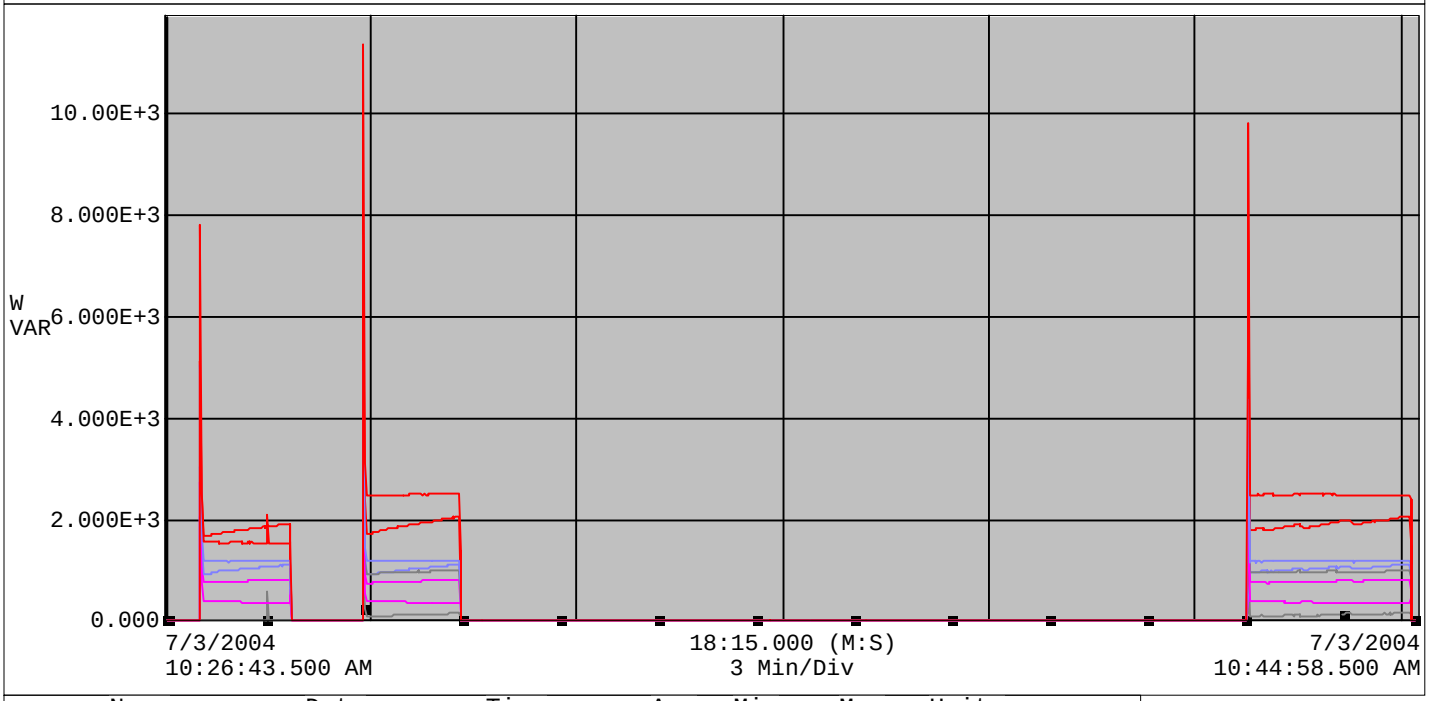
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/3/2004	10:26:43.500 AM	0.255	0.000	0.680	
Vflk Line2	7/3/2004	10:26:43.500 AM	0.362	0.000	1.030	
Vflk Line3	7/3/2004	10:26:43.500 AM	0.354	0.000	0.800	

7/3/2004 - 10:26:43.000 AM
Val
0.000 Vflk Line1
0.000 Vflk Line2
0.000 Vflk Line3

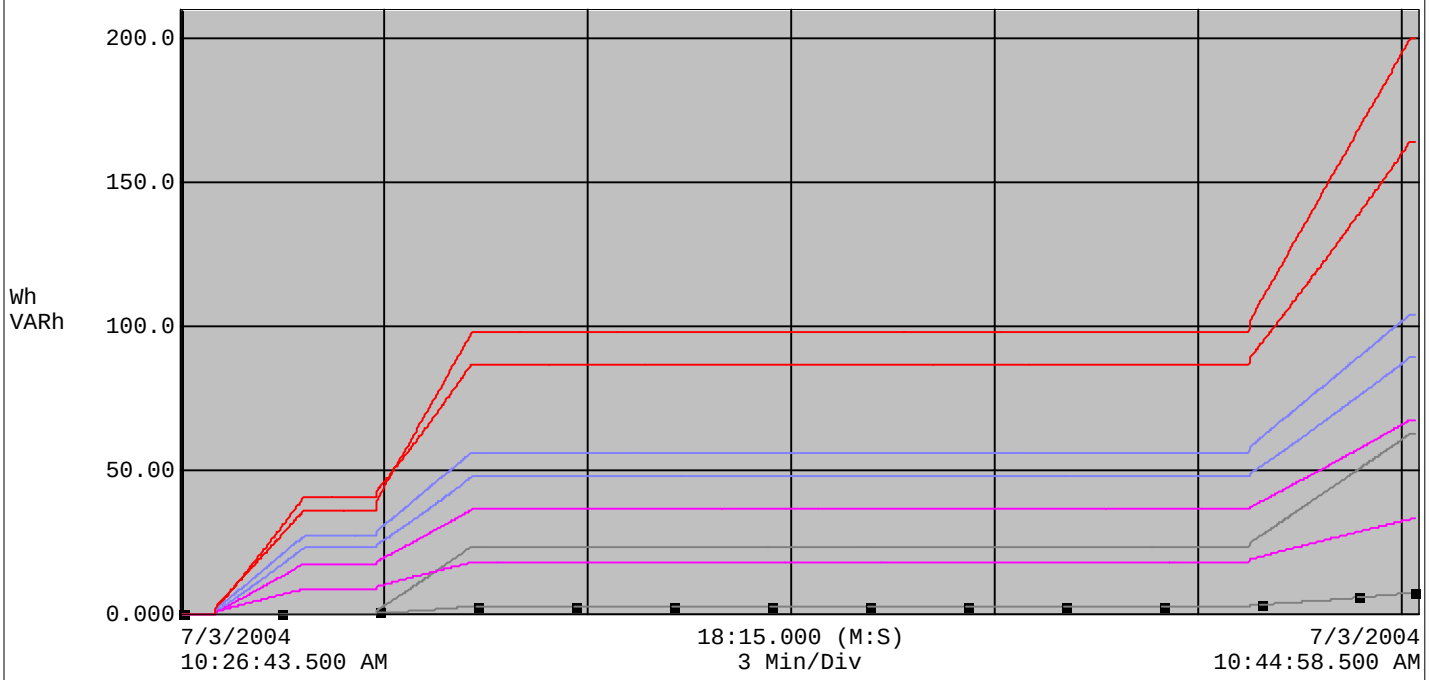
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/3/2004	10:26:43.500 AM	24.55	0.000	1.172E+3	W
W Line2	7/3/2004	10:26:43.500 AM	221.0	0.000	2.559E+3	W
W Line3	7/3/2004	10:26:43.500 AM	292.6	0.000	3.747E+3	W
W Sum of Phases	7/3/2004	10:26:43.500 AM	538.1	0.000	7.478E+3	W
VAR Line1	7/3/2004	10:26:43.500 AM	205.6	0.000	3.542E+3	VAR
VAR Line2	7/3/2004	10:26:43.500 AM	108.3	0.000	2.737E+3	VAR
VAR Line3	7/3/2004	10:26:43.500 AM	341.6	0.000	5.108E+3	VAR
VAR Sum of Phases	7/3/2004	10:26:43.500 AM	655.5	0.000	11.35E+3	VAR

7/3/2004 - 10:26:43.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

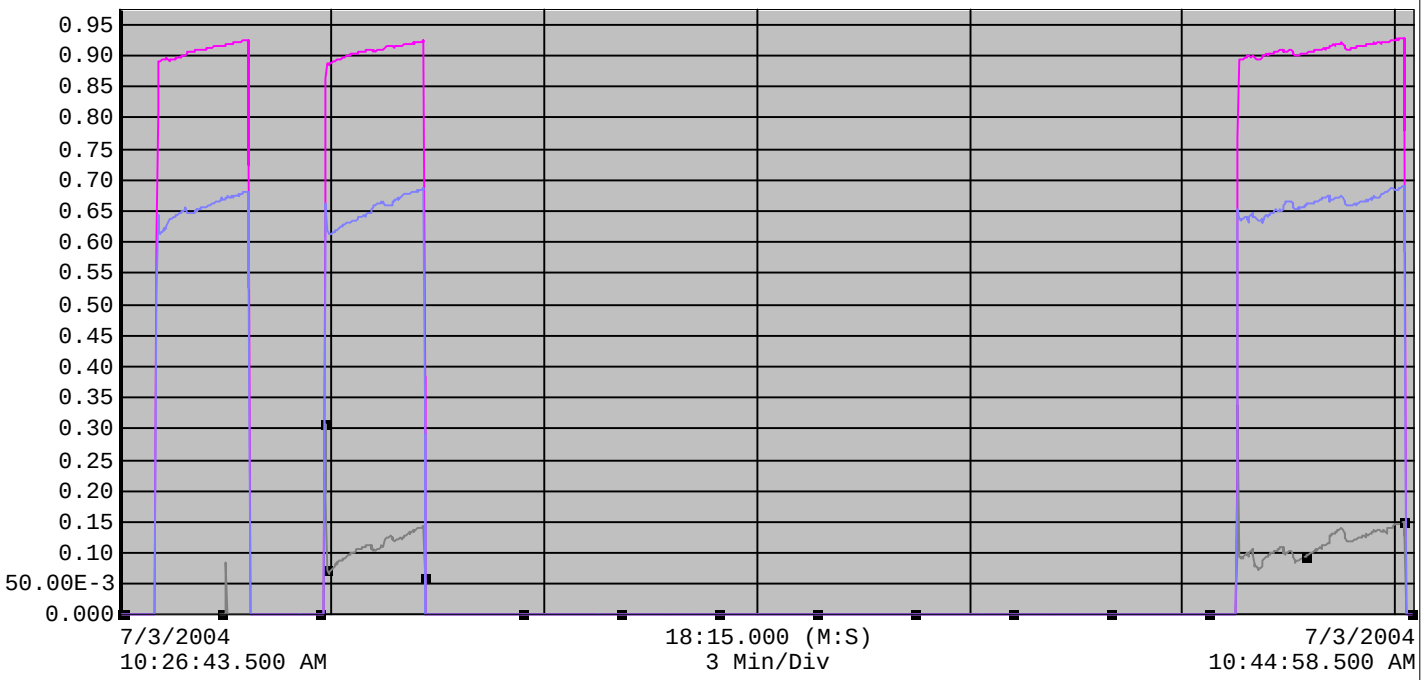
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/3/2004	10:26:43.500 AM	2.592	0.000	7.475	Wh
W-hours Line2	7/3/2004	10:26:43.500 AM	33.68	0.000	67.29	Wh
W-hours Line3	7/3/2004	10:26:43.500 AM	44.26	0.000	89.07	Wh
W-hours Sum of Phases	7/3/2004	10:26:43.500 AM	80.53	0.000	163.8	Wh
VAR-hours Line1	7/3/2004	10:26:43.500 AM	21.73	0.000	62.59	VARh
VAR-hours Line2	7/3/2004	10:26:43.500 AM	16.84	0.000	32.96	VARh
VAR-hours Line3	7/3/2004	10:26:43.500 AM	52.32	0.000	104.0	VARh
VAR-hours Sum of Phases	7/3/2004	10:26:43.500 AM	90.89	0.000	199.6	VARh

7/3/2004 - 10:26:43.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/3/2004	10:26:43.500 AM	23.84E-3	0.000	0.337	
PF Line2	7/3/2004	10:26:43.500 AM	0.255	0.000	0.926	
PF Line3	7/3/2004	10:26:43.500 AM	0.184	0.000	0.689	

7/3/2004 - 10:26:43.000 AM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Maite WWPS\070304-SPS MTE.dvb	
Operator ,	Test Site ,
Comments	

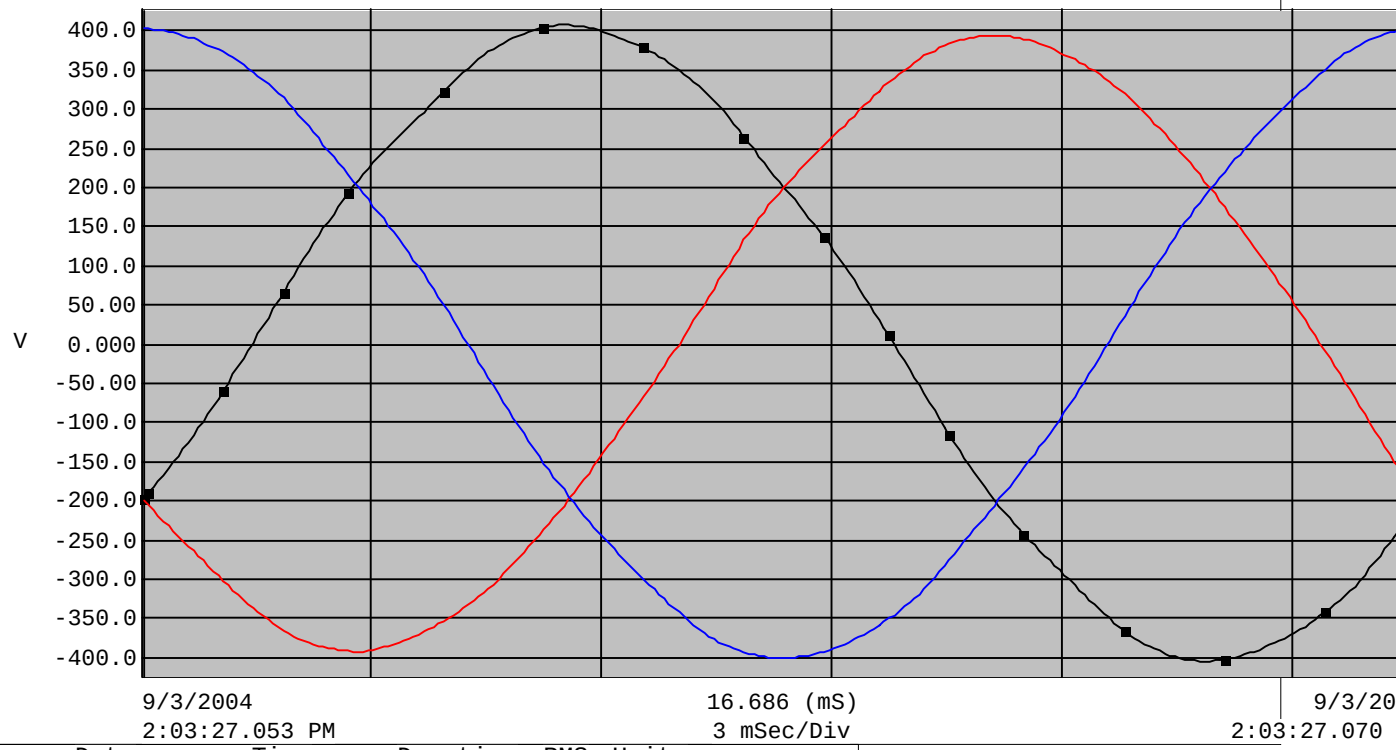
GWA Wastewater Pumping Station Assessment				
Station Name: MAMAJANAO	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/03/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.37	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	2	0.1	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	2	0.02	
Building Service Information	**10.0%**		0.15	
Main Disconnect	5.0%	2	0.1	
Grounding	2.5%	2	0.05	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.475	
Generator Condition	10.0%	2	0.2	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	2	0.05	
Primary Pump Motor Controls	**20.0%**		0.4	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%		0	NO INFO
Secondary Pump Motor Controls	**20.0%**		0.4	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%		0	NO INFO
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.27	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.045	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	1	0.015	
	100%	**Assessment Value**		**2.1**

Comments:

Mamajanao WWPS - Pump 1 - No Load Photo

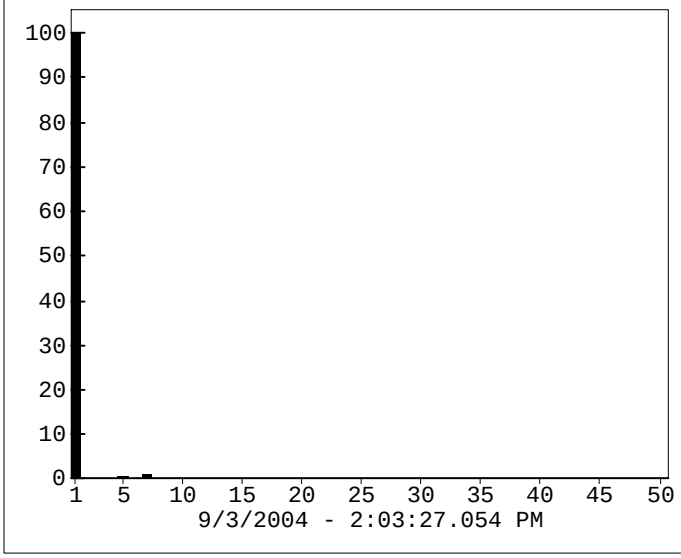
Recording Start Date	9/3/2004 - 2:03:27 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/3/2004	2:03:27.053 PM	16.686	285.2	V
Waveform V2	9/3/2004	2:03:27.053 PM	16.686	276.3	V
Waveform V3	9/3/2004	2:03:27.053 PM	16.686	283.1	V

Waveform V1
285.22 Vrms, 1.31 %THD



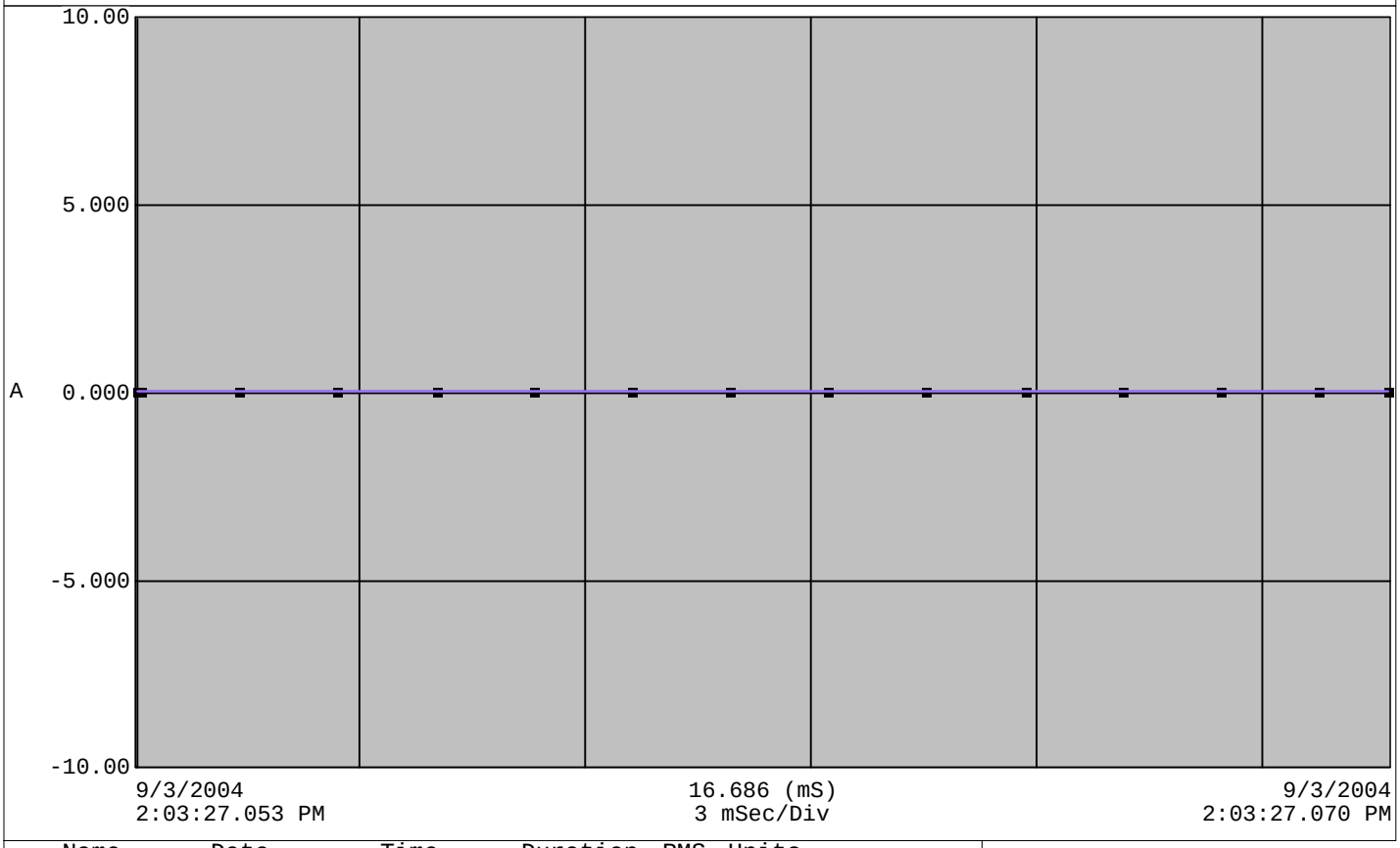
9/3/2004 - 2:03:27.000 PM

Val	
-198.9	Waveform V1
-199.8	Waveform V2
401.0	Waveform V3

Waveform V1

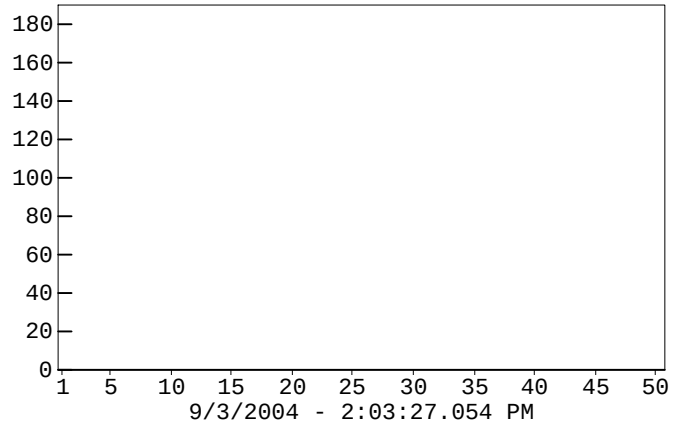
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/3/2004	2:03:27.053 PM	16.686	0.000	A
Waveform I2	9/3/2004	2:03:27.053 PM	16.686	0.000	A
Waveform I3	9/3/2004	2:03:27.053 PM	16.686	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



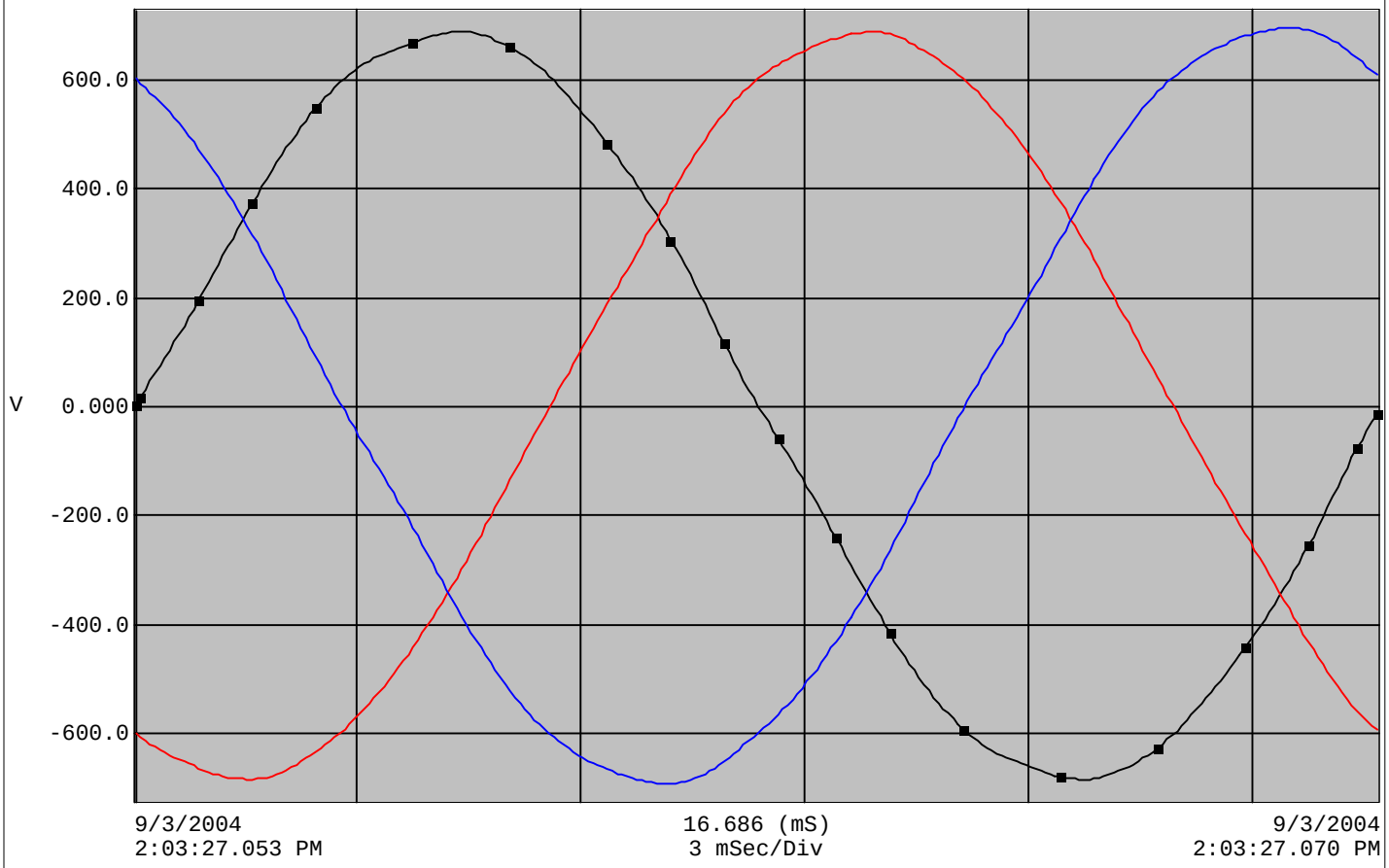
9/3/2004 - 2:03:27.000 PM

	Val
Waveform I1	0.000
Waveform I2	0.000
Waveform I3	0.000

Waveform I1

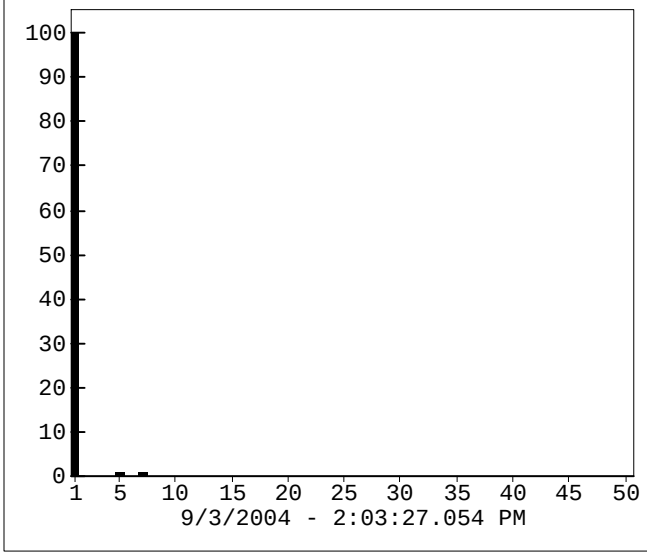
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/3/2004	2:03:27.053 PM	16.686	486.1	V
Waveform U2	9/3/2004	2:03:27.053 PM	16.686	485.8	V
Waveform U3	9/3/2004	2:03:27.053 PM	16.686	491.0	V

Waveform U1
486.14 Vrms, 1.33 %THD



9/3/2004 - 2:03:27.000 PM

Val	
0.900	Waveform U1
-600.8	Waveform U2
599.9	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 9/3/2004
Start Time: 2:03:27 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Mamajanao WWPS\090304-Mamajanao WWPS - Pump 1 - No Load Photo.dvb

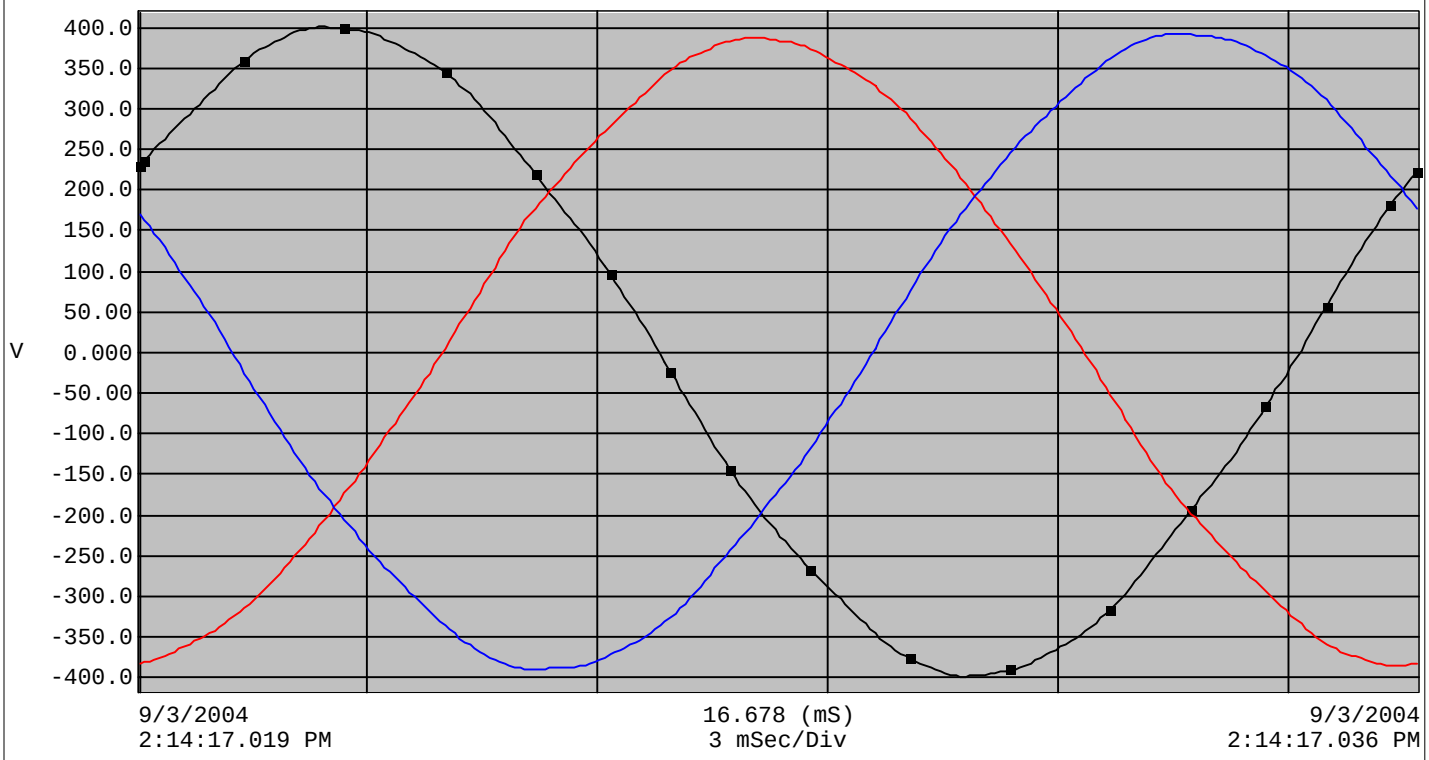
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Mamajanao WWPS - Pump 1 - No Load Photo ,

Comments
Measured at motor starter breaker. 75 HP ABS Pumps.

Mamajanao WWPS - Pump 1 - Photo 1

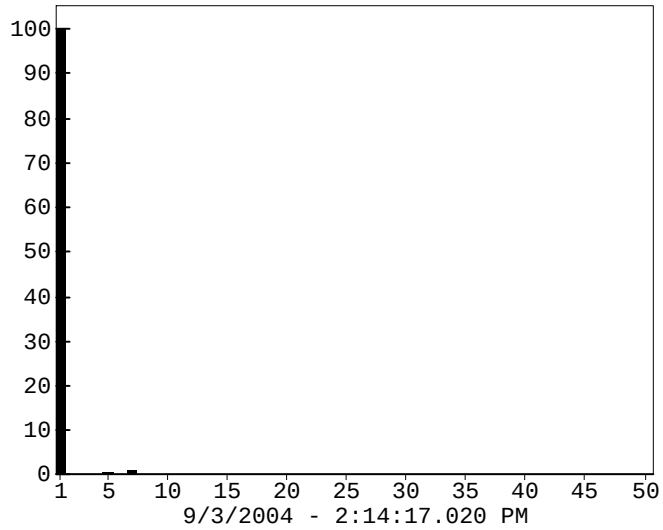
Recording Start Date	9/3/2004 - 2:14:17 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/3/2004	2:14:17.019 PM	16.678	281.0	V
Waveform V2	9/3/2004	2:14:17.019 PM	16.678	271.5	V
Waveform V3	9/3/2004	2:14:17.019 PM	16.678	276.1	V

Waveform V1
280.99 Vrms, 1.24 %THD



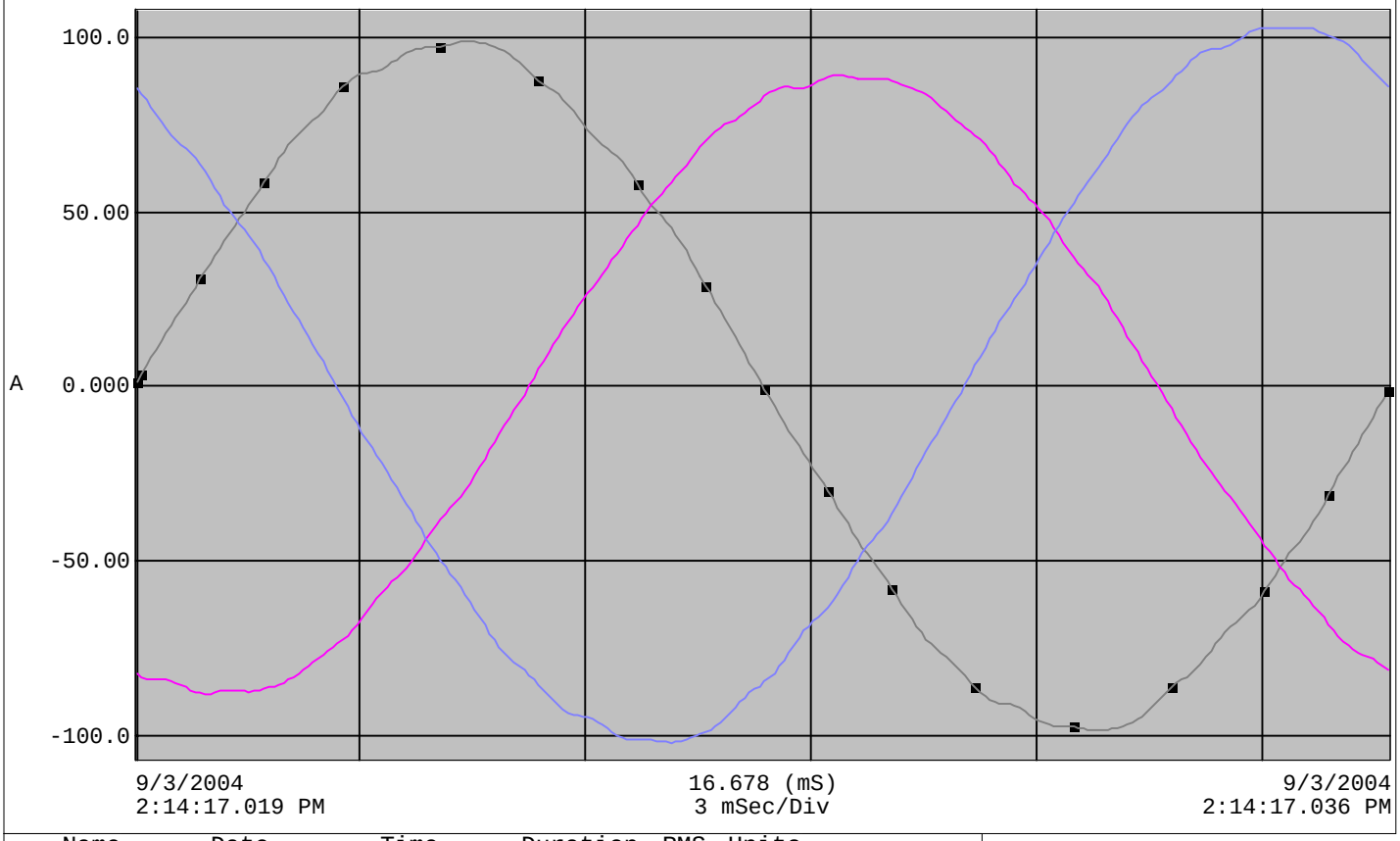
9/3/2004 - 2:14:17.000 PM

Val	
227.4	Waveform V1
-383.8	Waveform V2
169.0	Waveform V3

Waveform V1

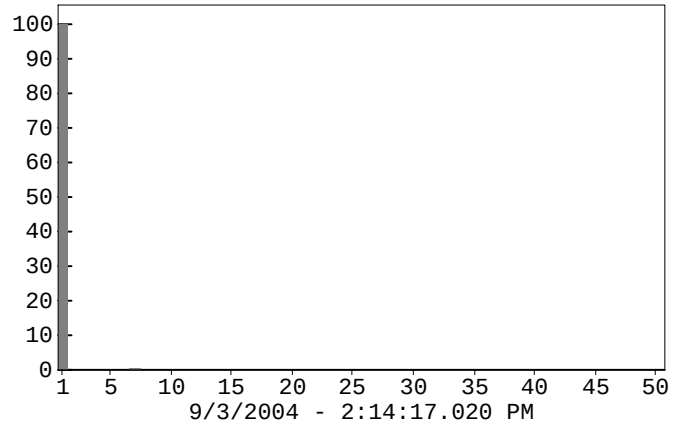
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/3/2004	2:14:17.019 PM	16.678	69.52	A
Waveform I2	9/3/2004	2:14:17.019 PM	16.678	63.36	A
Waveform I3	9/3/2004	2:14:17.019 PM	16.678	71.95	A

Waveform I1
69.52 Arms, 1.33 %THD



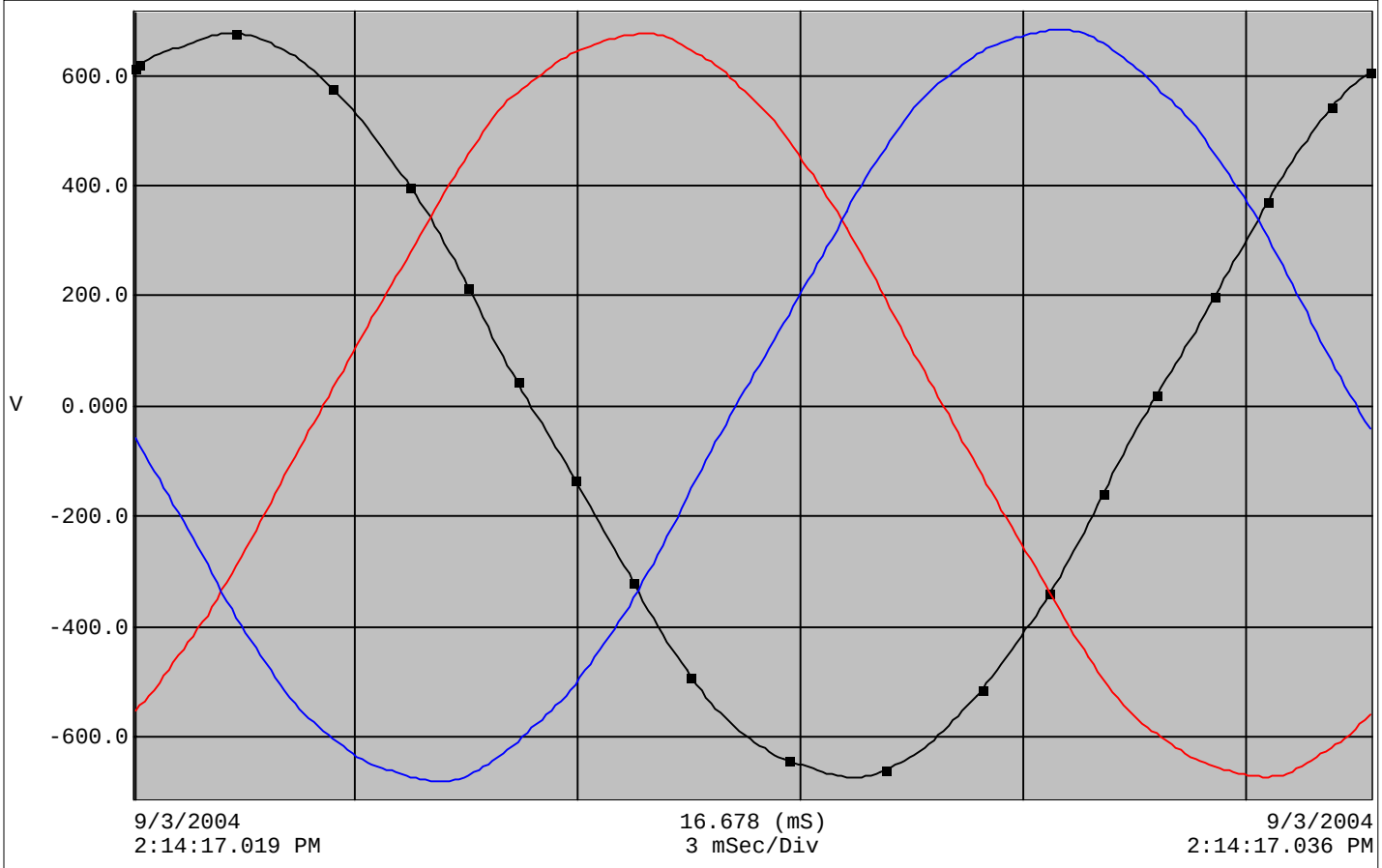
9/3/2004 - 2:14:17.000 PM

Val	
1.100	Waveform I1
-82.90	Waveform I2
85.20	Waveform I3

Waveform I1

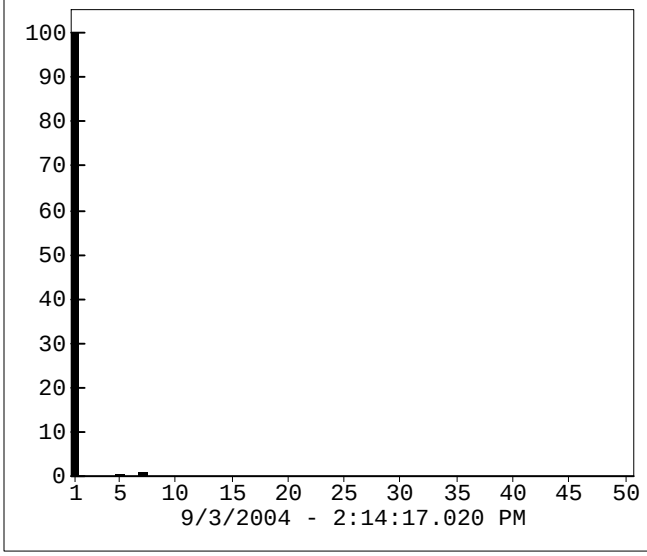
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.1	H19	0.5	H36	0.0
H03	0.2	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	0.3	H22	0.1	H39	0.0
H06	0.0	H23	0.4	H40	0.0
H07	1.0	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/3/2004	2:14:17.019 PM	16.678	477.1	V
Waveform U2	9/3/2004	2:14:17.019 PM	16.678	476.5	V
Waveform U3	9/3/2004	2:14:17.019 PM	16.678	481.6	V

Waveform U1
477.10 Vrms, 1.26 %THD



9/3/2004 - 2:14:17.000 PM

	Val
Waveform U1	611.2
Waveform U2	-552.8
Waveform U3	-58.40

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/3/2004
Start Time: 2:14:17 PM
Duration: 0:0.000 (M:S)
W: 15.89E+3 W
VAR: 11.04E+3 W
VA: 19.35E+3 W
Power Factor: 0.821
Displacement Power Factor: 0.821
TAN: 0.694
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Mamajanao WWPS\090304-Mamajanao WWPS - Pump 1 - Photo 1.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Mamajanao WWPS - Pump 1 - Photo 1 ,

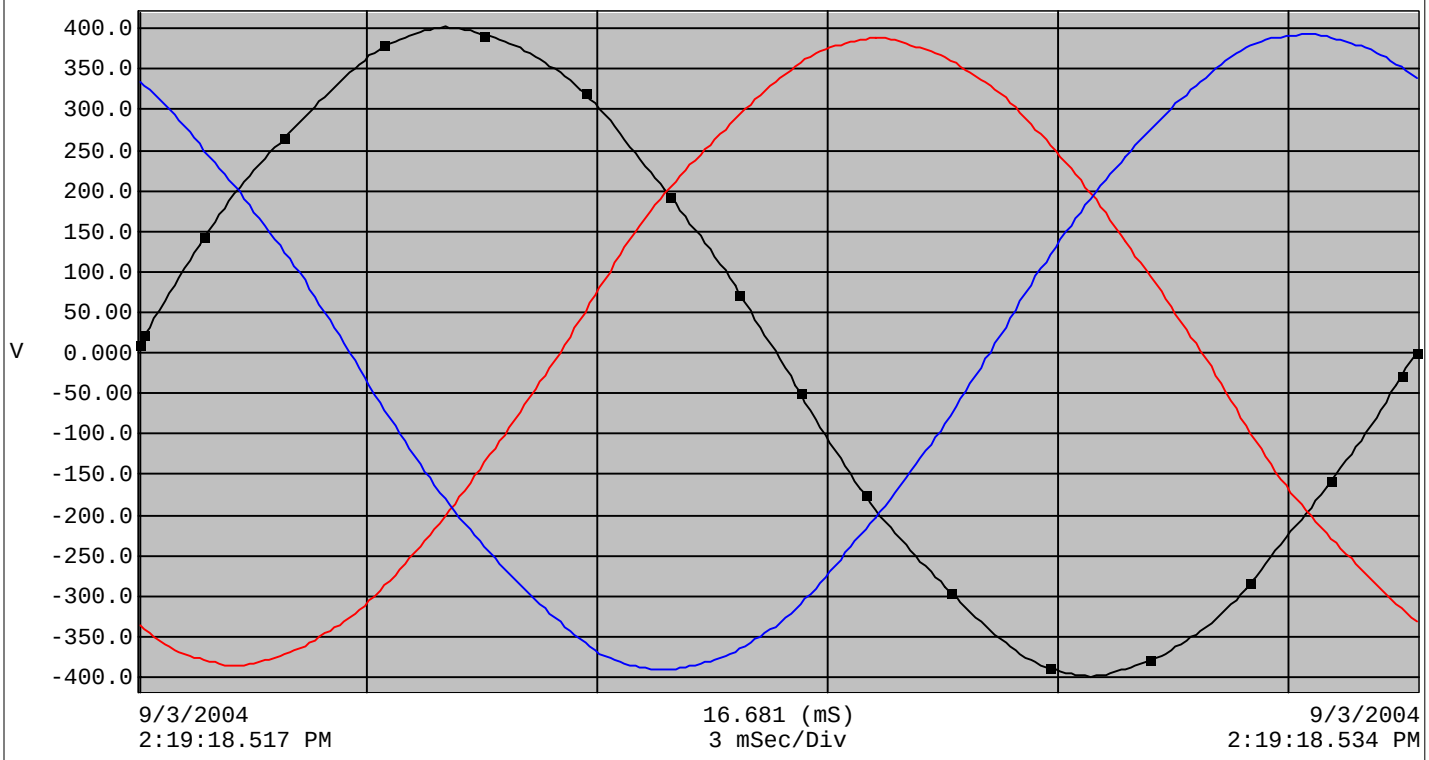
Comments

Measured at motor starter. 75 HP ABS Submersible. Pump Operational

Mamajanao WWPS - Pump 1 - Photo 2

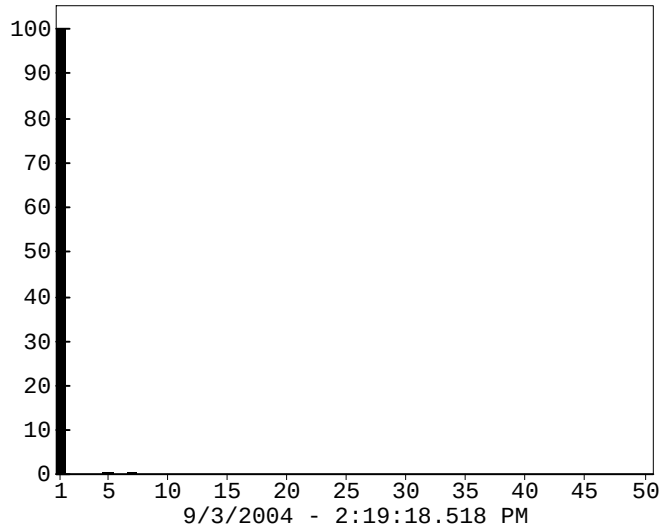
Recording Start Date	9/3/2004 - 2:19:18 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/3/2004	2:19:18.517 PM	16.681	280.6	V
Waveform V2	9/3/2004	2:19:18.517 PM	16.681	271.4	V
Waveform V3	9/3/2004	2:19:18.517 PM	16.681	275.9	V

Waveform V1
280.62 Vrms, 1.21 %THD



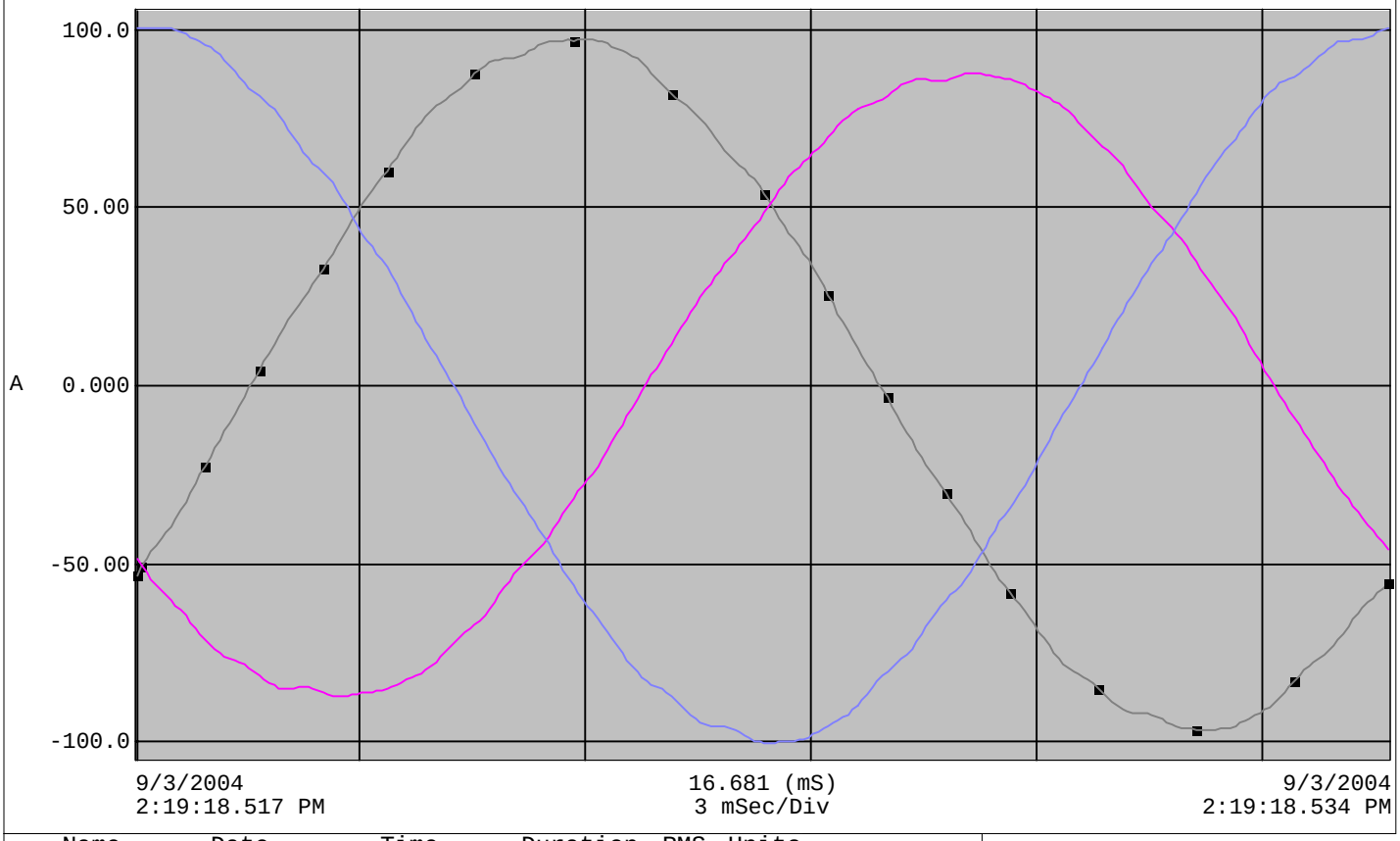
9/3/2004 - 2:19:18.000 PM

Val	
8.400	Waveform V1
-337.7	Waveform V2
333.9	Waveform V3

Waveform V1

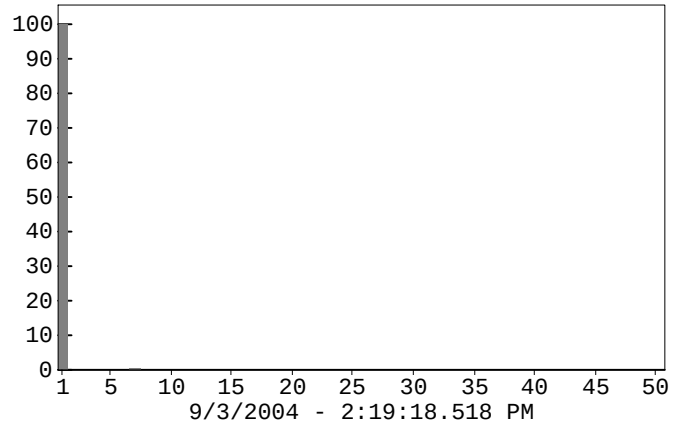
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.95 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/3/2004	2:19:18.517 PM	16.681	68.22	A
Waveform I2	9/3/2004	2:19:18.517 PM	16.681	62.24	A
Waveform I3	9/3/2004	2:19:18.517 PM	16.681	70.36	A

Waveform I1
68.22 Arms, 1.33 %THD



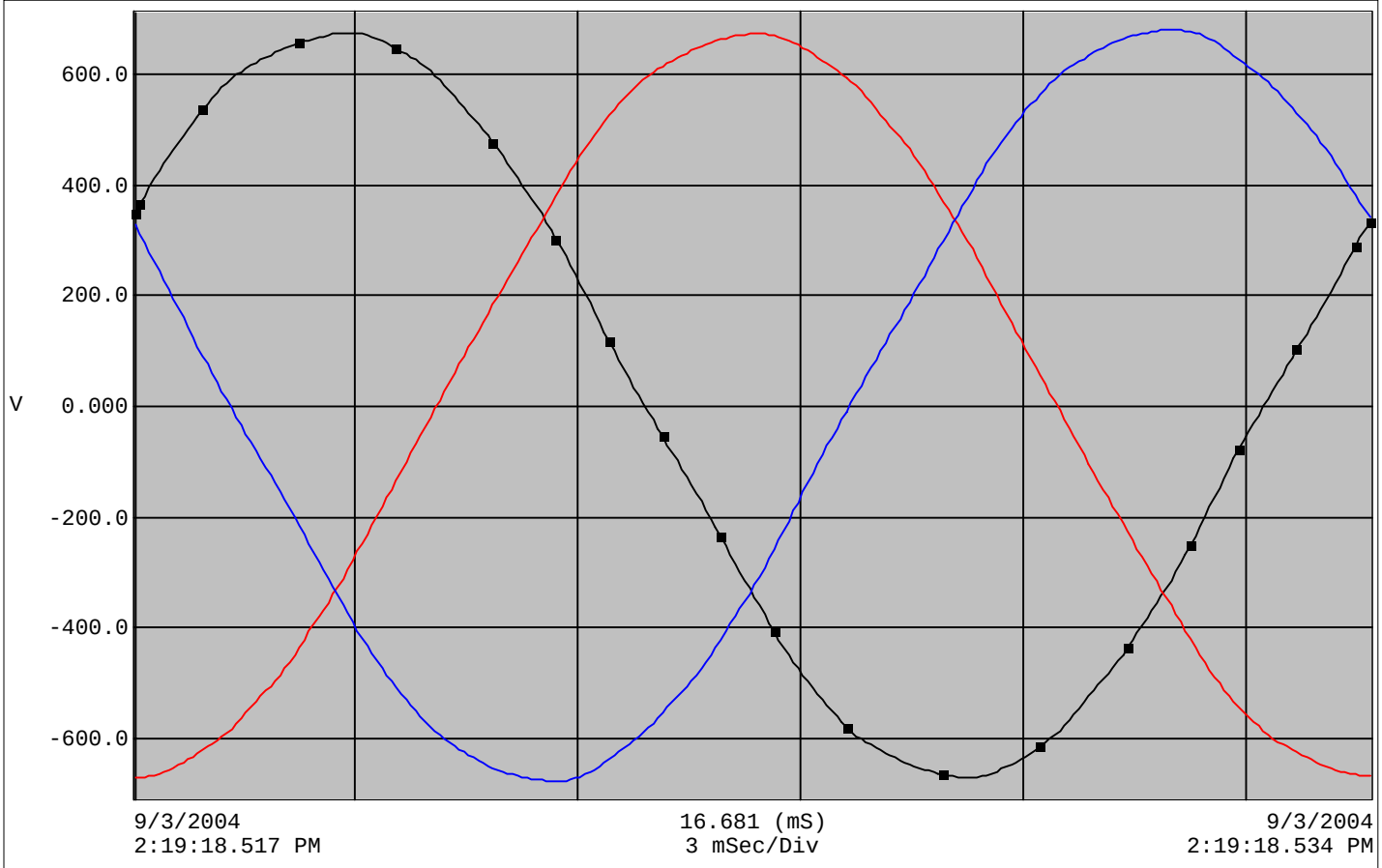
9/3/2004 - 2:19:18.000 PM

Val	
-53.40	Waveform I1
-48.60	Waveform I2
100.4	Waveform I3

Waveform I1

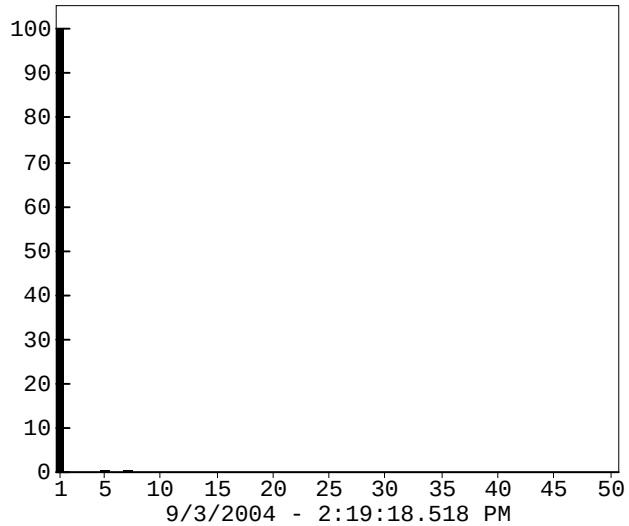
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.1	H19	0.5	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.3	H22	0.1	H39	0.0
H06	0.0	H23	0.4	H40	0.0
H07	1.0	H24	0.1	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/3/2004	2:19:18.517 PM	16.681	476.9	V
Waveform U2	9/3/2004	2:19:18.517 PM	16.681	476.2	V
Waveform U3	9/3/2004	2:19:18.517 PM	16.681	481.1	V

Waveform U1
476.90 Vrms, 1.24 %THD



9/3/2004 - 2:19:18.000 PM

	Val	
—	346.2	Waveform U1
—	-671.7	Waveform U2
—	325.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/3/2004
Start Time: 2:19:18 PM
Duration: 0:0.000 (M:S)
W: 15.92E+3 W
VAR: 11.02E+3 W
VA: 19.36E+3 W
Power Factor: 0.823
Displacement Power Factor: 0.823
TAN: 0.690
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Mamajanao WWPS\090304-Mamajanao WWPS - Pump 1 - Photo 2.dvb

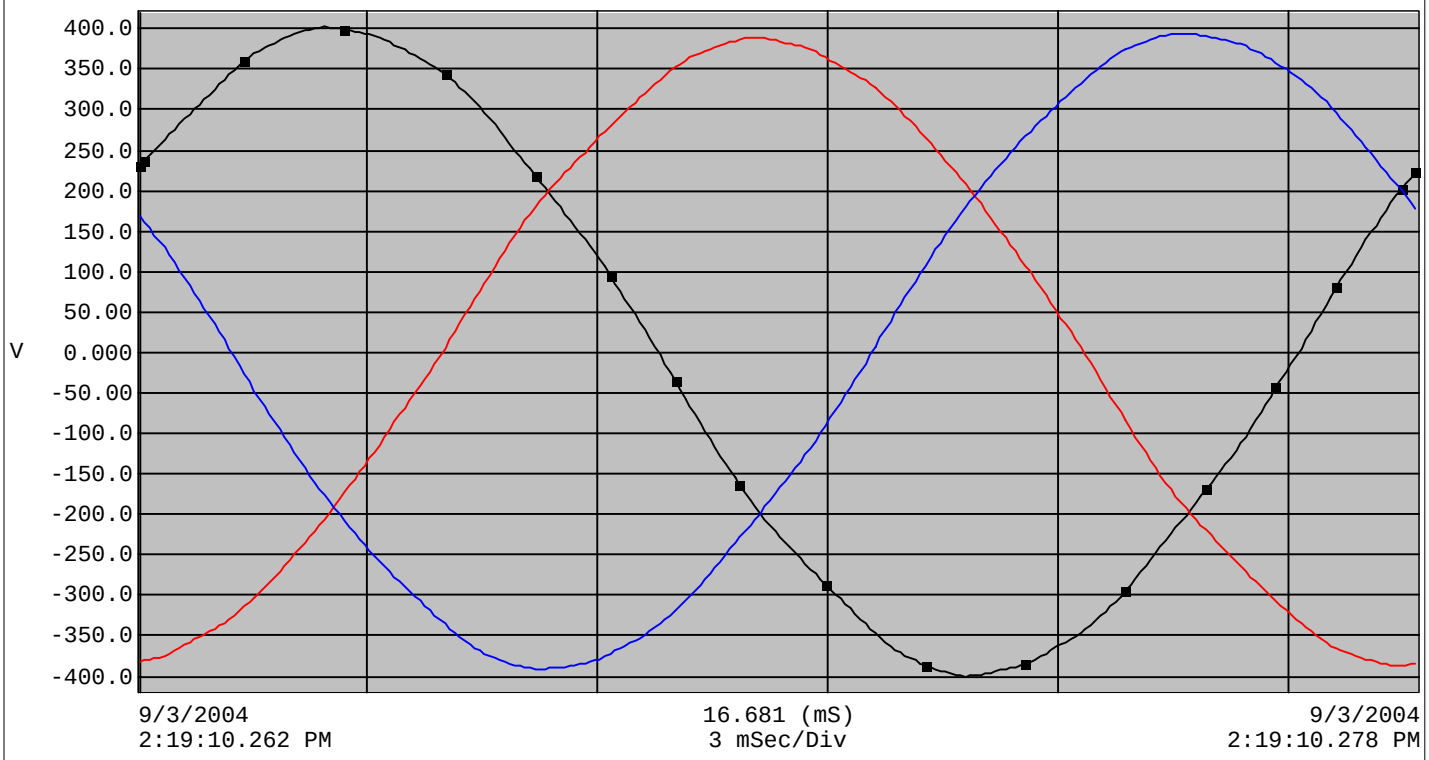
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Mamajanao WWPS - Pump 1 - Photo 2 ,

Comments
Measured at motor starter. 75 HP ABS Submersible Motor. Pump 1 Operational.

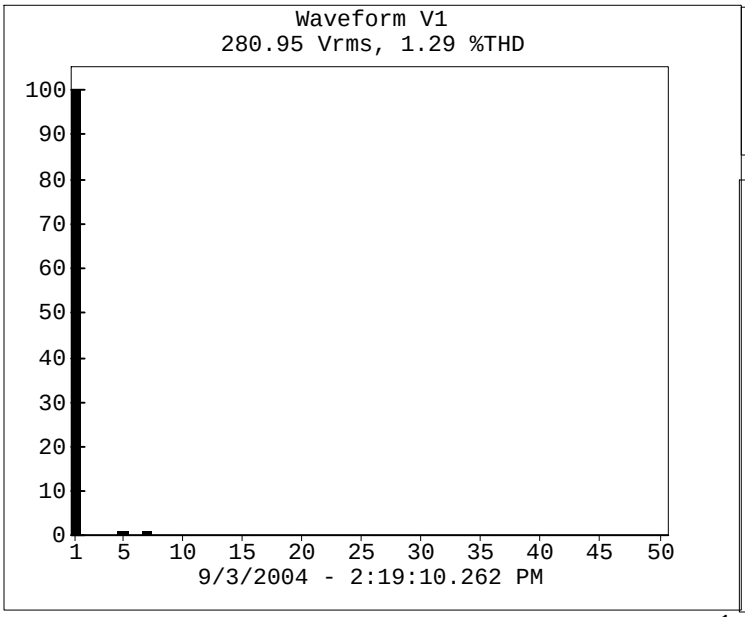
Mamajanao WWPS - Pump 1 - Power Photo

Recording Start Date	9/3/2004 - 2:19:10 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/3/2004	2:19:10.262 PM	16.681	280.9	V
Waveform V2	9/3/2004	2:19:10.262 PM	16.681	271.7	V
Waveform V3	9/3/2004	2:19:10.262 PM	16.681	276.2	V

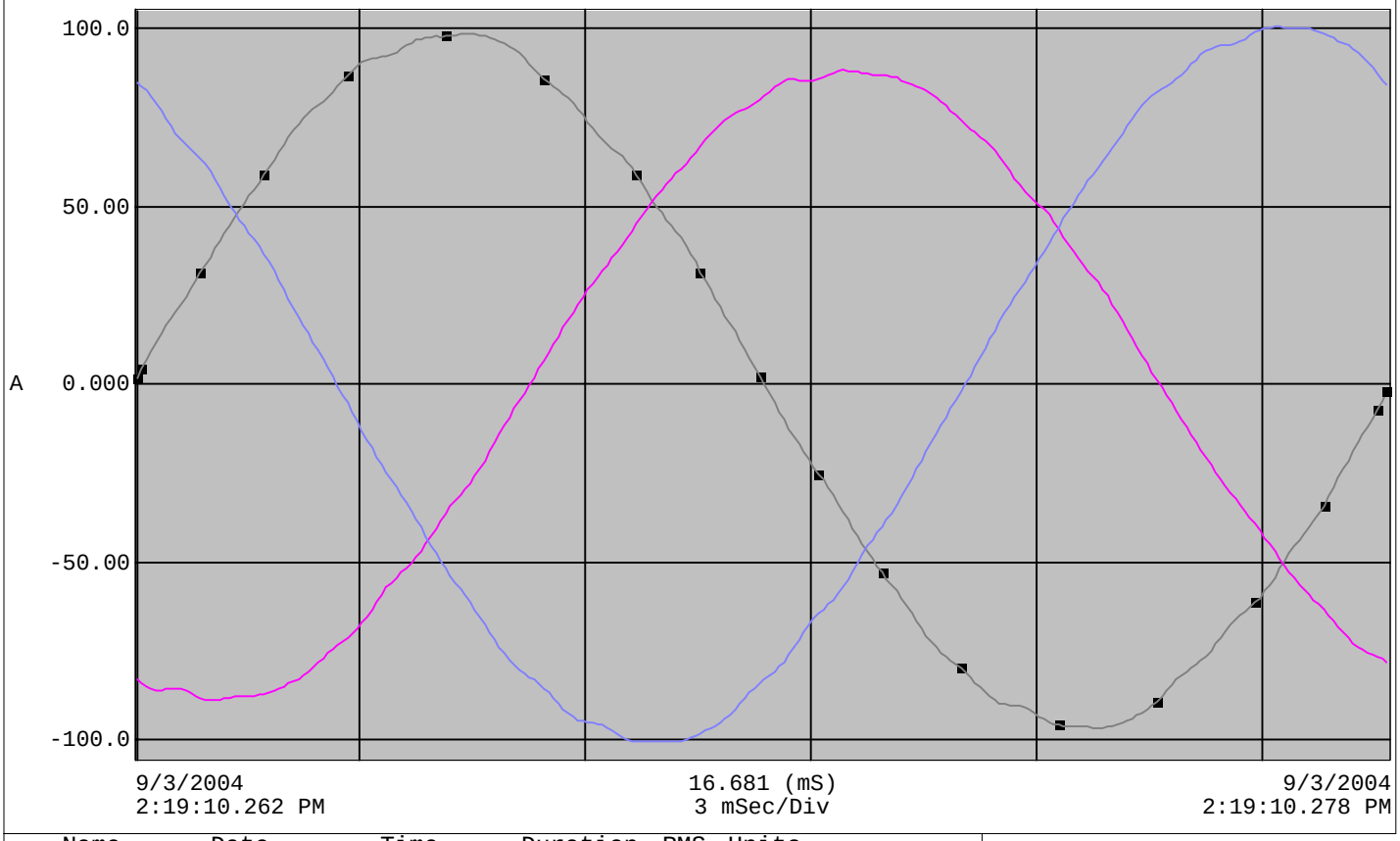


9/3/2004 - 2:19:10.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

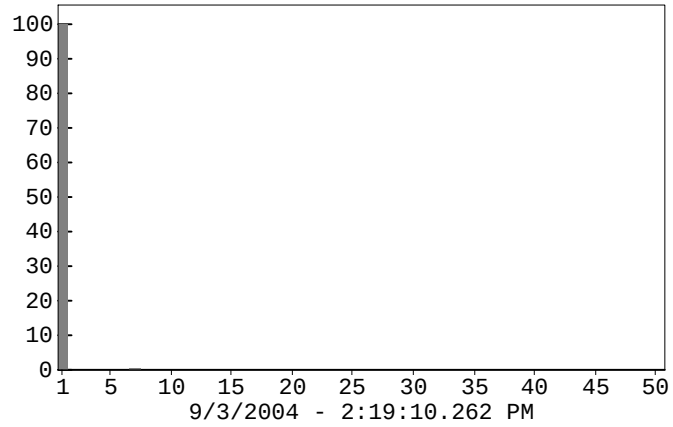
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.95 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/3/2004	2:19:10.262 PM	16.681	68.74	A
Waveform I2	9/3/2004	2:19:10.262 PM	16.681	62.65	A
Waveform I3	9/3/2004	2:19:10.262 PM	16.681	70.65	A

Waveform I1
68.74 Arms, 1.45 %THD

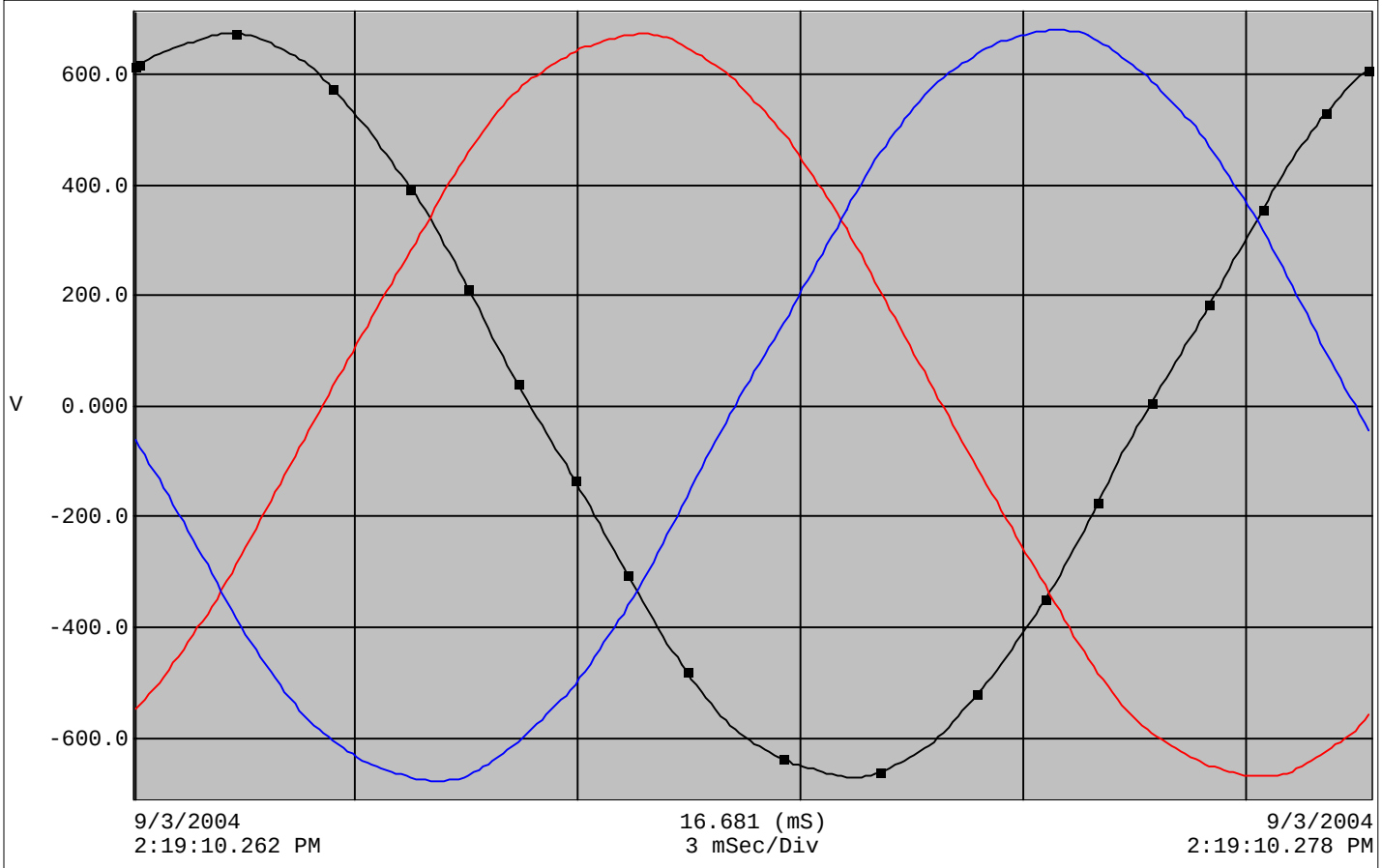


9/3/2004 - 2:19:10.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

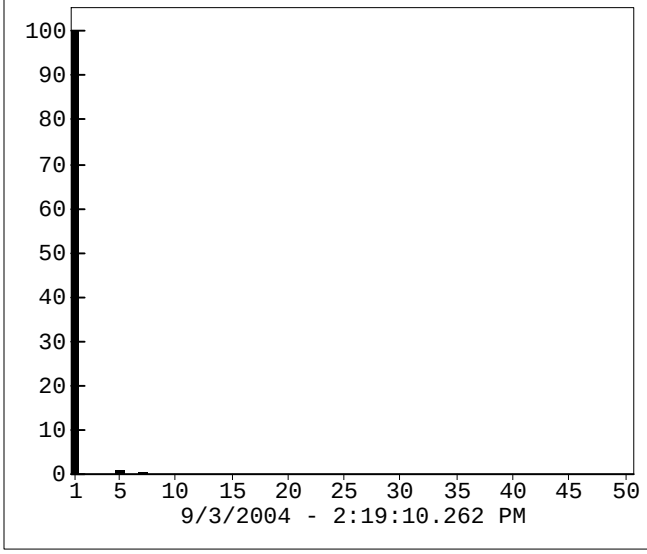
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.5	H19	0.5	H36	0.0
H03	0.4	H20	0.1	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	0.4	H22	0.1	H39	0.0
H06	0.1	H23	0.4	H40	0.0
H07	1.0	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/3/2004	2:19:10.262 PM	16.681	477.4	V
Waveform U2	9/3/2004	2:19:10.262 PM	16.681	476.7	V
Waveform U3	9/3/2004	2:19:10.262 PM	16.681	481.6	V

Waveform U1
477.36 Vrms, 1.31 %THD



9/3/2004 - 2:19:10.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/3/2004
Start Time: 2:19:10 PM
Duration: 0:0.000 (M:S)
W: 15.90E+3 W
VAR: 11.06E+3 W
VA: 19.37E+3 W
Power Factor: 0.821
Displacement Power Factor: 0.821
TAN: 0.695
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Mamajanao WWPS\090304-Mamajanao WWPS - Pump 1 - Power Photo.dvb

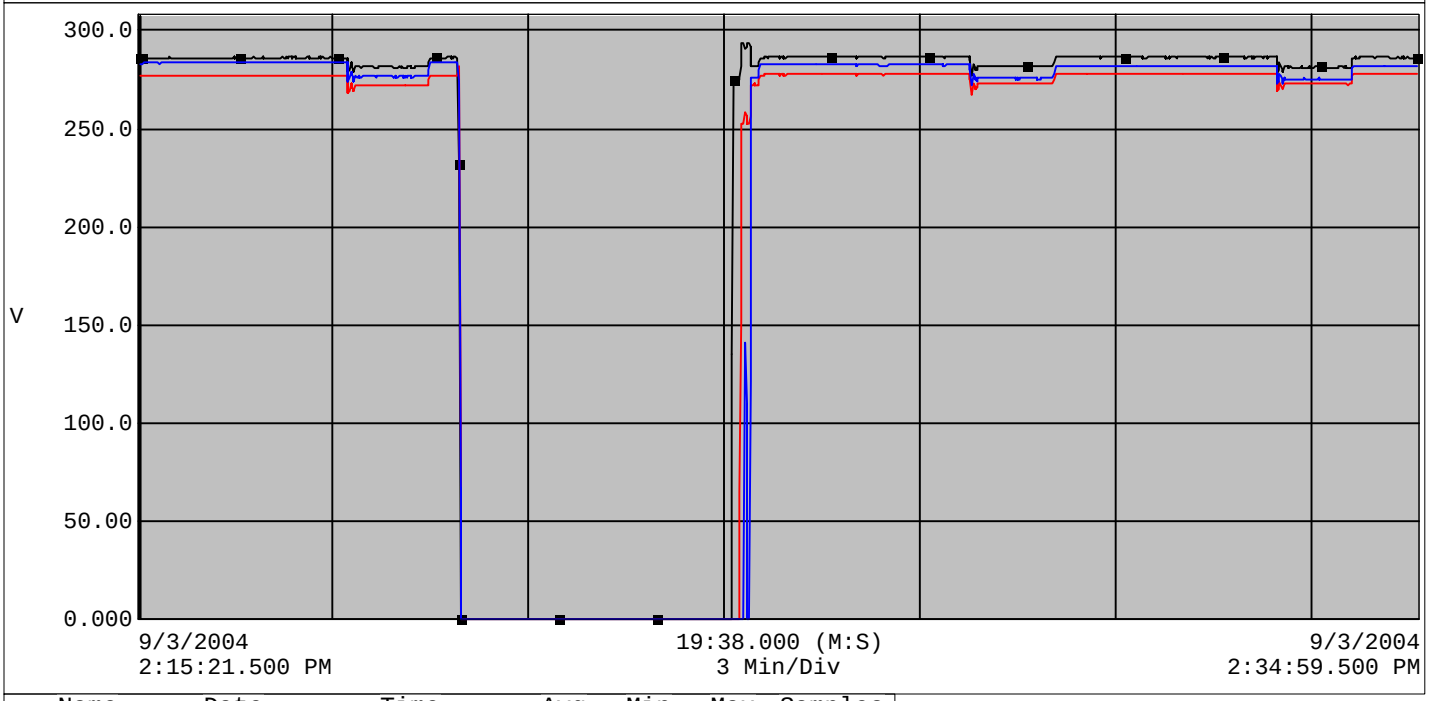
Operator	Test Site
Morikawa & Associates, LLC ,	Mamajanao WWPS - Pump 1 - Power Photo ,

Comments
Measured at motor starter and breaker. 75 HP ABS Submersible Motor. Pump 1 operational. Power reading.

Mamajanao WWPS - Pump 1

Recording Start Date	9/3/2004 - 2:15:21 PM
Recording Duration	19:38 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Vrms

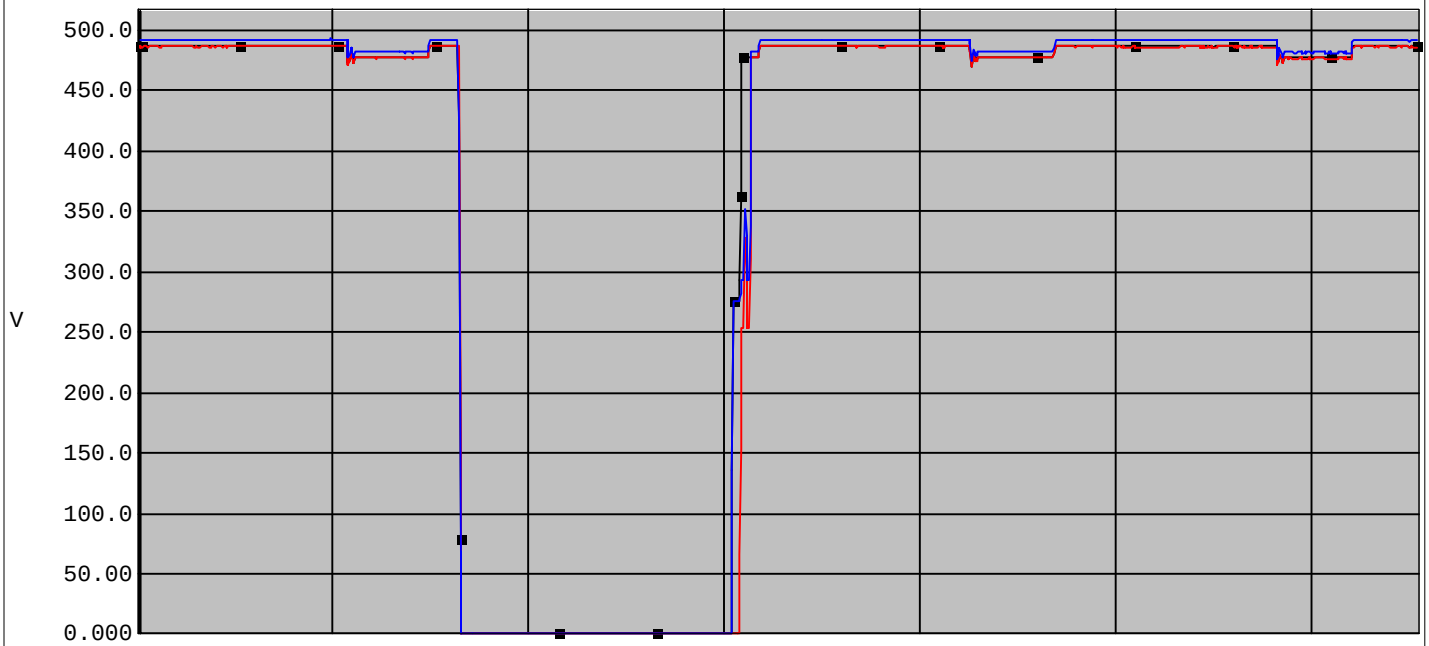


Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/3/2004	2:15:21.500 PM	223.8	0.000	293.1	1179
Vrms Line2	9/3/2004	2:15:21.500 PM	215.1	0.000	281.8	1179
Vrms Line3	9/3/2004	2:15:21.500 PM	216.9	0.000	283.4	1179

9/3/2004 - 2:15:21.000 PM

Val	
285.6	Vrms Line1
276.5	Vrms Line2
282.8	Vrms Line3

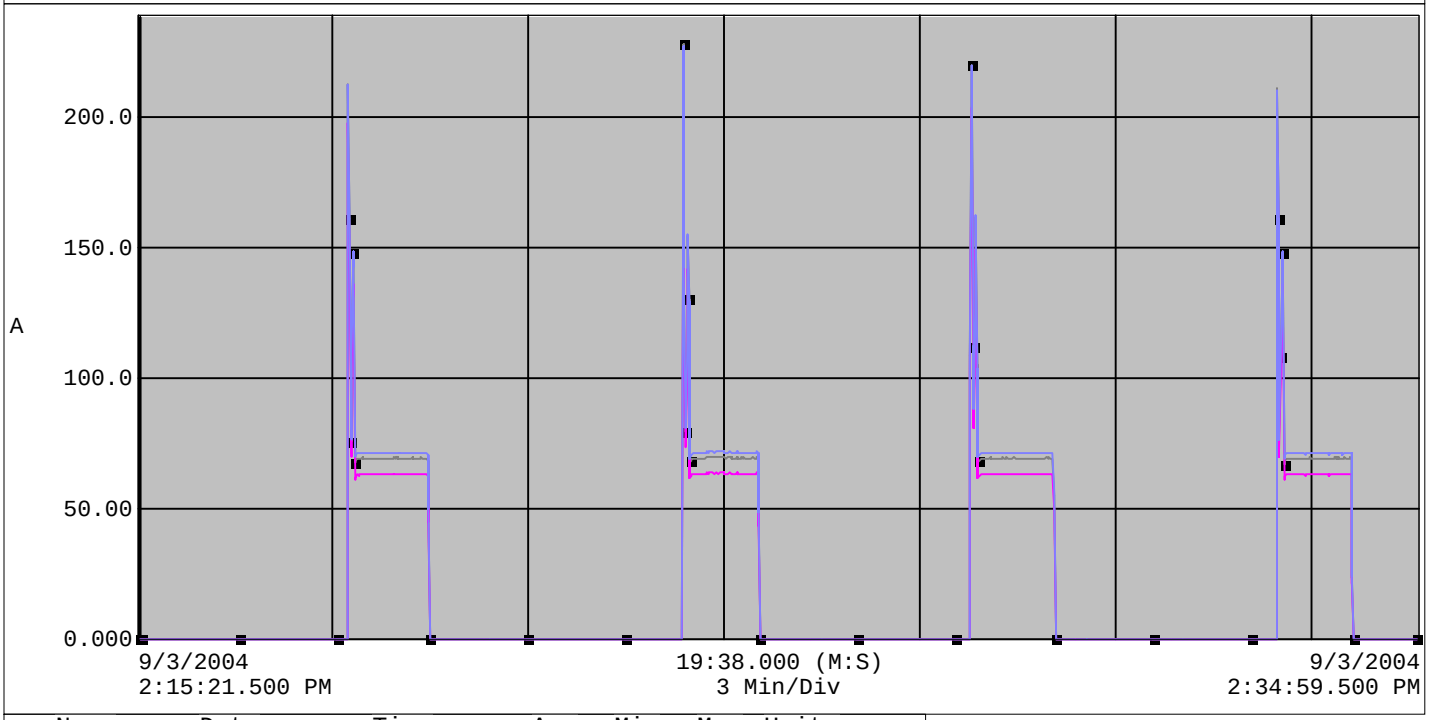
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/3/2004	2:15:21.500 PM	379.4	0.000	487.1	V
Urms Line2	9/3/2004	2:15:21.500 PM	375.6	0.000	486.5	V
Urms Line3	9/3/2004	2:15:21.500 PM	381.6	0.000	492.1	V

9/3/2004 - 2:15:21.000 PM
Val
486.3 Urms Line1
485.8 Urms Line2
491.3 Urms Line3

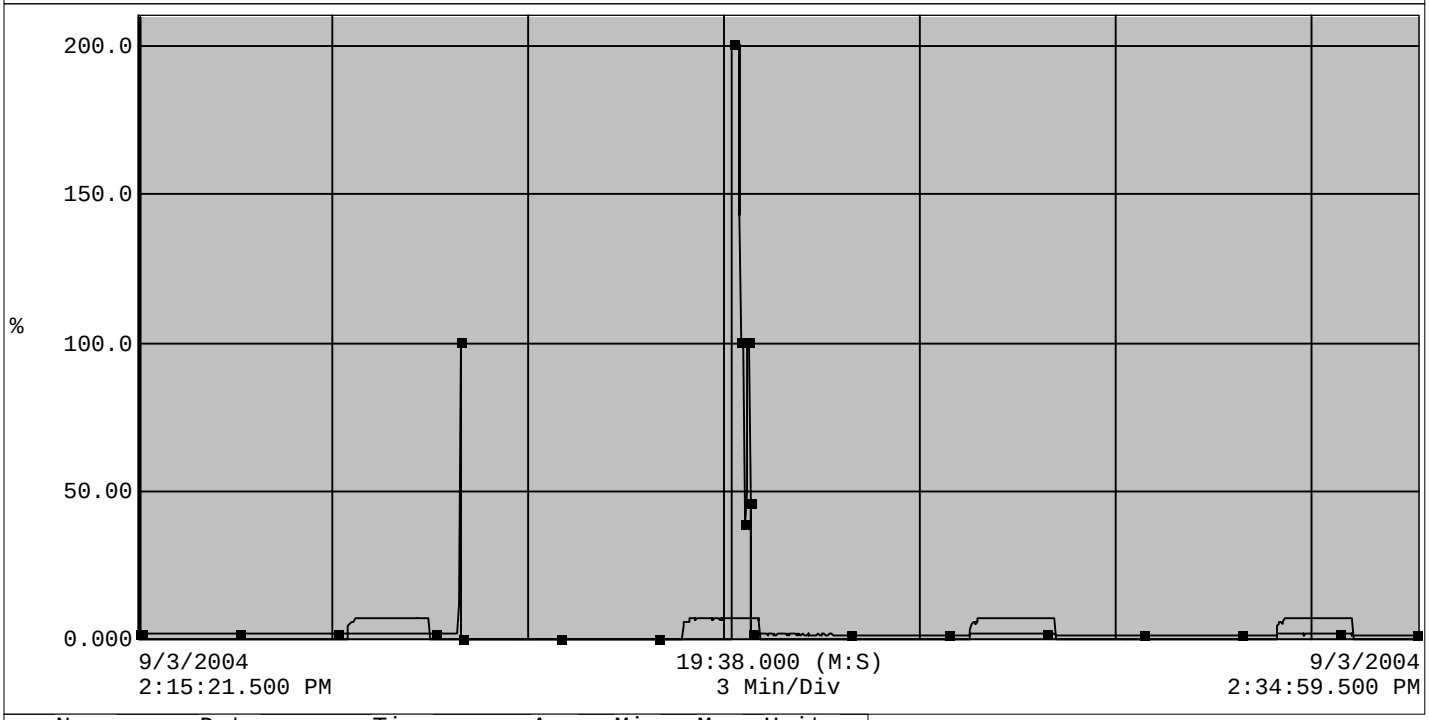
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/3/2004	2:15:21.500 PM	18.60	0.000	226.9	A
Arms Line2	9/3/2004	2:15:21.500 PM	17.00	0.000	210.7	A
Arms Line3	9/3/2004	2:15:21.500 PM	19.07	0.000	226.6	A

9/3/2004 - 2:15:21.000 PM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

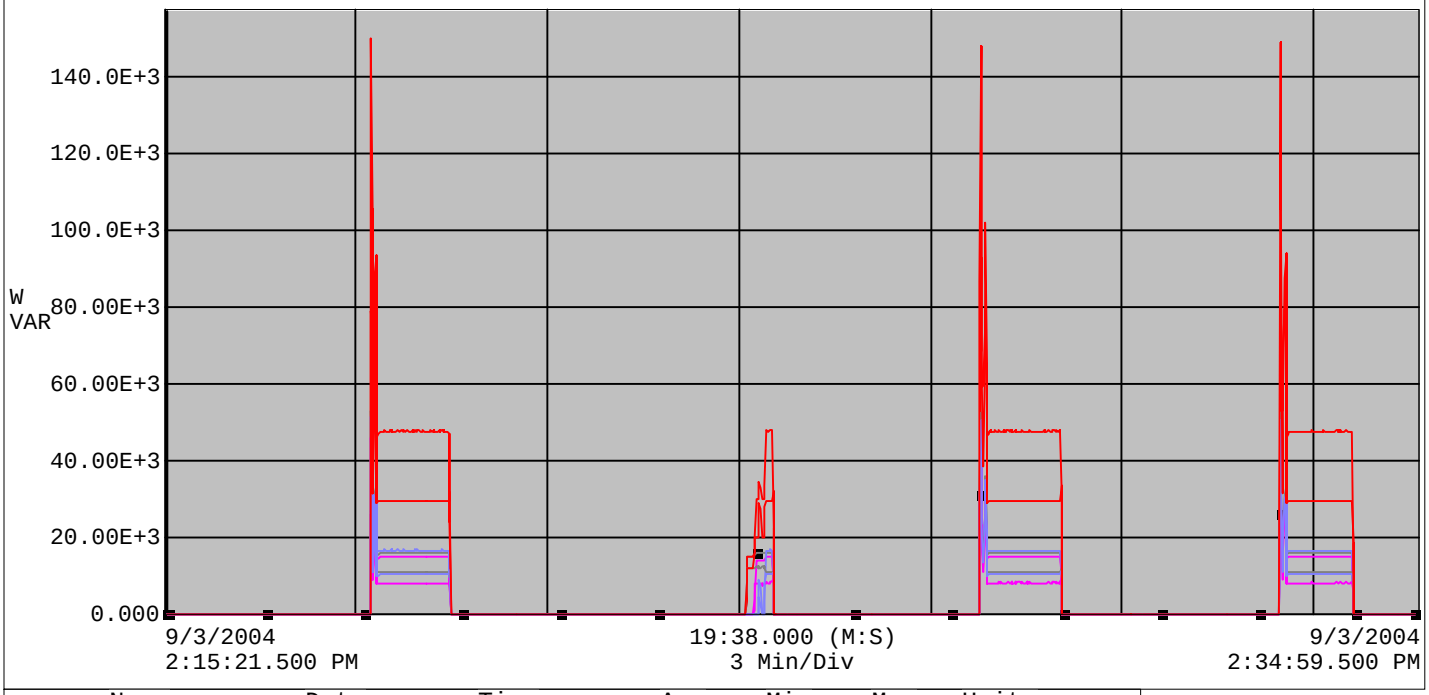
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/3/2004	2:15:21.500 PM	3.402	0.000	200.0	%
Aunb(IEEE)	9/3/2004	2:15:21.500 PM	1.707	0.000	7.400	%

9/3/2004 - 2:15:21.000 PM
Val
1.800 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

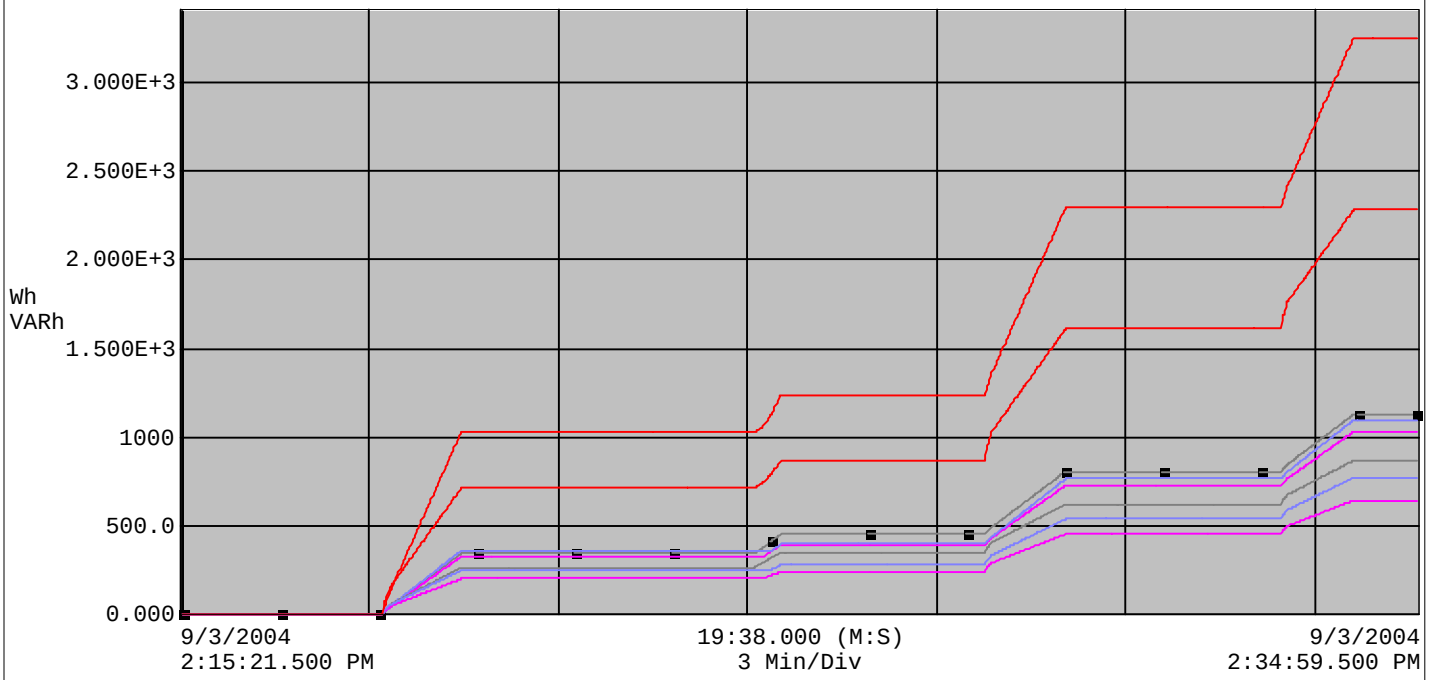
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/3/2004	2:15:21.500 PM	3.430E+3	0.000	30.94E+3	W
W Line2	9/3/2004	2:15:21.500 PM	3.134E+3	0.000	30.43E+3	W
W Line3	9/3/2004	2:15:21.500 PM	3.334E+3	0.000	31.37E+3	W
W Sum of Phases	9/3/2004	2:15:21.500 PM	9.898E+3	0.000	92.74E+3	W
VAR Line1	9/3/2004	2:15:21.500 PM	2.645E+3	0.000	52.81E+3	VAR
VAR Line2	9/3/2004	2:15:21.500 PM	1.960E+3	0.000	45.84E+3	VAR
VAR Line3	9/3/2004	2:15:21.500 PM	2.350E+3	0.000	51.39E+3	VAR
VAR Sum of Phases	9/3/2004	2:15:21.500 PM	6.955E+3	0.000	150.0E+3	VAR

9/3/2004 - 2:15:21.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

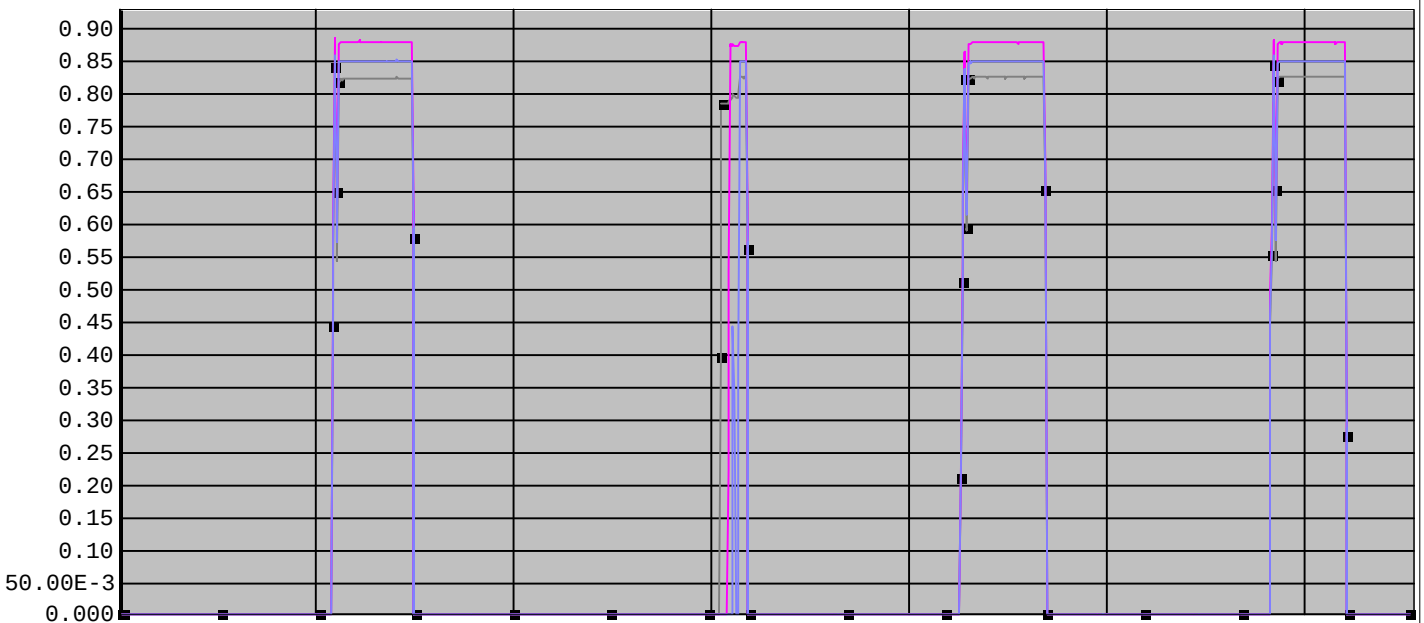
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/3/2004	2:15:21.500 PM	471.0	0.000	1.123E+3	Wh
W-hours Line2	9/3/2004	2:15:21.500 PM	426.8	0.000	1.026E+3	Wh
W-hours Line3	9/3/2004	2:15:21.500 PM	451.0	0.000	1.092E+3	Wh
W-hours Sum of Phases	9/3/2004	2:15:21.500 PM	1.349E+3	0.000	3.241E+3	Wh
VAR-hours Line1	9/3/2004	2:15:21.500 PM	365.5	0.000	866.2	VARh
VAR-hours Line2	9/3/2004	2:15:21.500 PM	267.5	0.000	641.9	VARh
VAR-hours Line3	9/3/2004	2:15:21.500 PM	319.3	0.000	769.7	VARh
VAR-hours Sum of Phases	9/3/2004	2:15:21.500 PM	952.3	0.000	2.278E+3	VARh

9/3/2004 - 2:15:21.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/3/2004	2:15:21.500 PM	0.169	0.000	0.843	
PF Line2	9/3/2004	2:15:21.500 PM	0.175	0.000	0.884	
PF Line3	9/3/2004	2:15:21.500 PM	0.163	0.000	0.858	

9/3/2004 - 2:15:21.000 PM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Mamajanao WWPS\090304-Mamajanao WWPS - Pump 1.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Mamajanao WWPS - Pump 1 ,

Comments

Measured at motor breaker and leads to motor. 75 HP ABS submersible motor. Measured serveral motor starts.

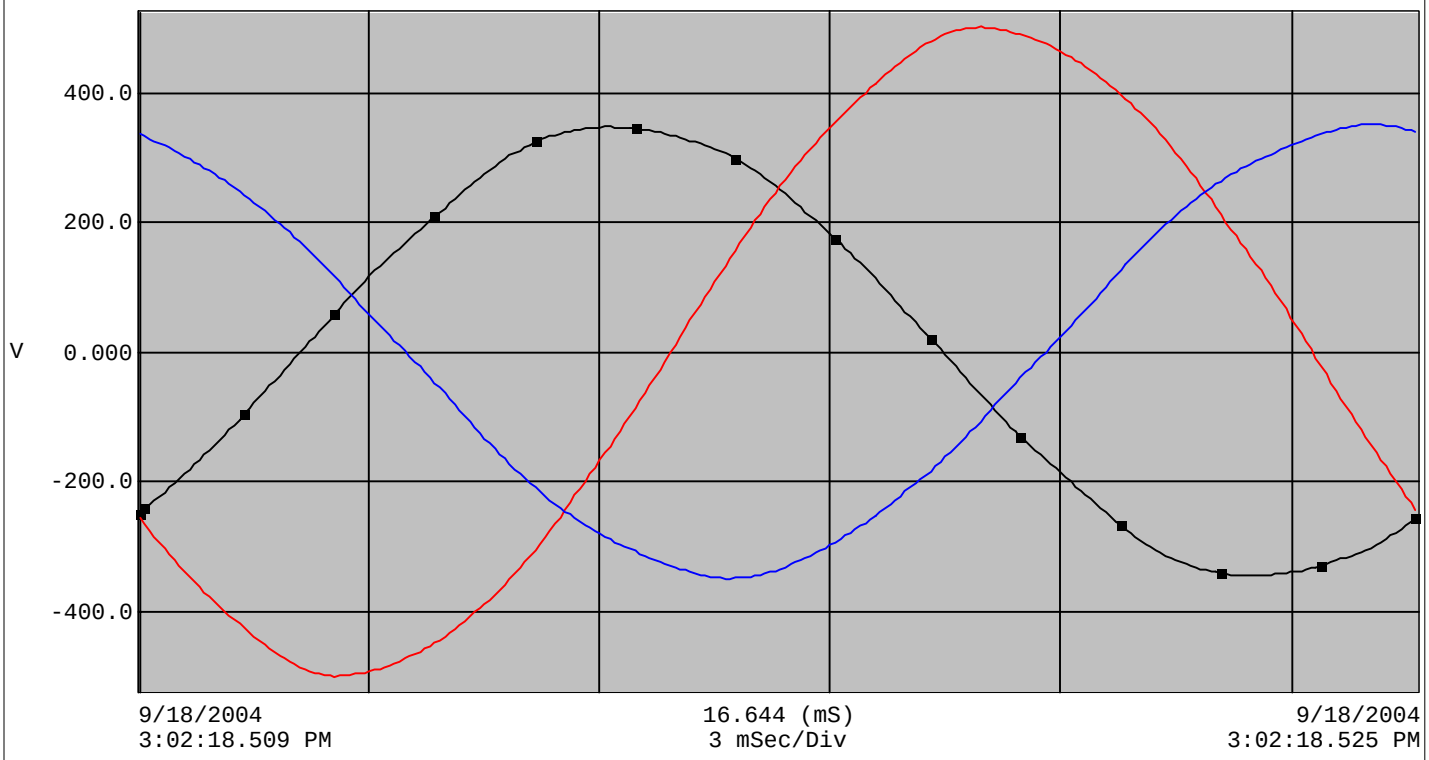
GWA Wastewater Pumping Station Assessment				
Station Name: MANGILAO	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/18/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.42	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	2	0.02	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.48	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	2	0.08	31
Motor Protection (Overload and moisture)	4.0%	2	0.08	31
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	3	0.12	
Secondary Pump Motor Controls	**20.0%**		0.36	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	2	0.08	31
Motor Protection (Overload and moisture)	4.0%	2	0.08	31
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Chlorination Motor Starter	**2.0%**		0.02	
Main Breaker and Starter	1.0%	1	0.01	OLD EQUIPMENT PRESENT
Motor Starter	1.0%	1	0.01	
Pump Controls	**10.0%**		0.27	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.075	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	3	0.045	
	100%	**Assessment Value**		**2.4**

Comments:

Mangilao Photo

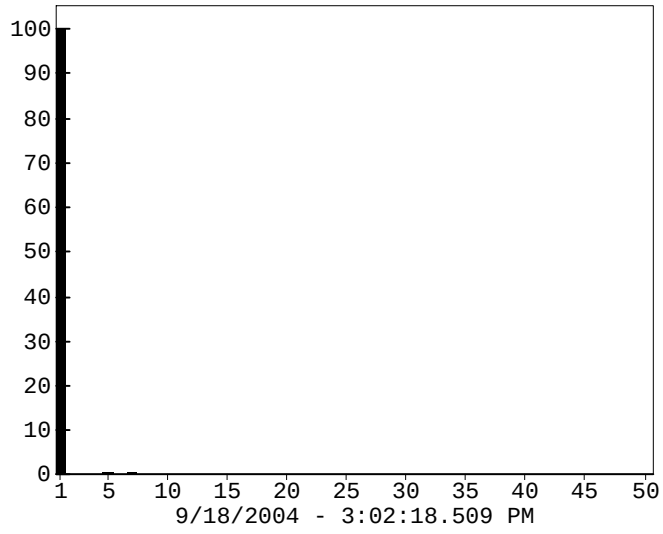
Recording Start Date	9/18/2004 - 3:02:18 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/18/2004	3:02:18.509 PM	16.644	246.6	V
Waveform V2	9/18/2004	3:02:18.509 PM	16.644	350.8	V
Waveform V3	9/18/2004	3:02:18.509 PM	16.644	244.5	V

Waveform V1
246.57 Vrms, 1.01 %THD

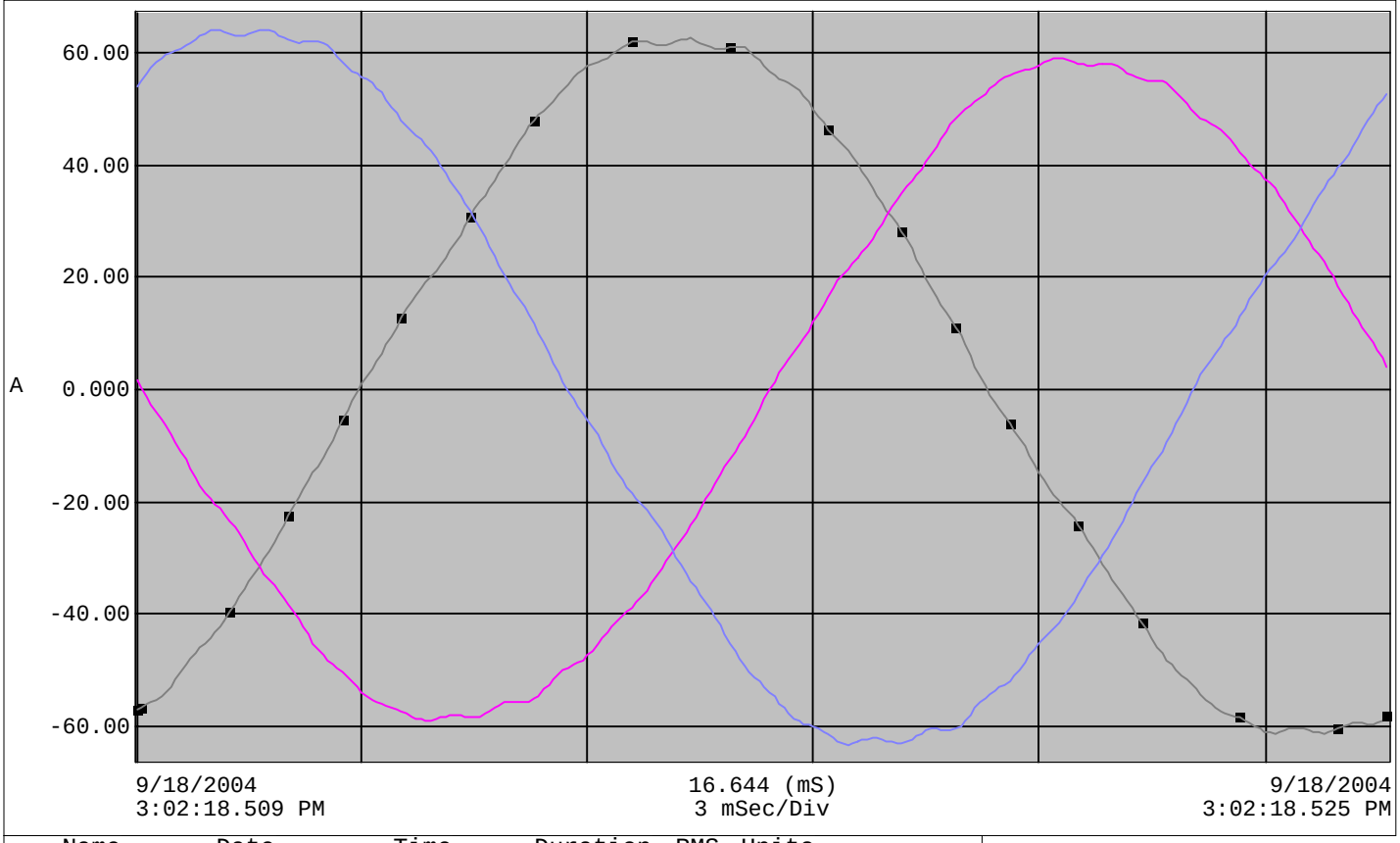


9/18/2004 - 3:02:18.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

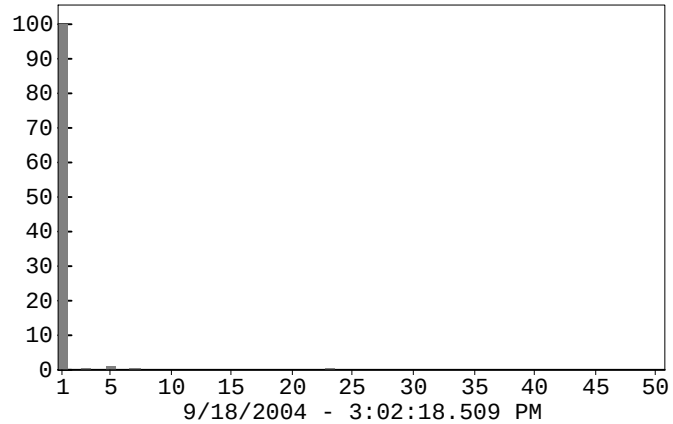
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.7	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.08 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/18/2004	3:02:18.509 PM	16.644	44.25	A
Waveform I2	9/18/2004	3:02:18.509 PM	16.644	41.76	A
Waveform I3	9/18/2004	3:02:18.509 PM	16.644	45.14	A

Waveform I1
44.25 Arms, 2.09 %THD

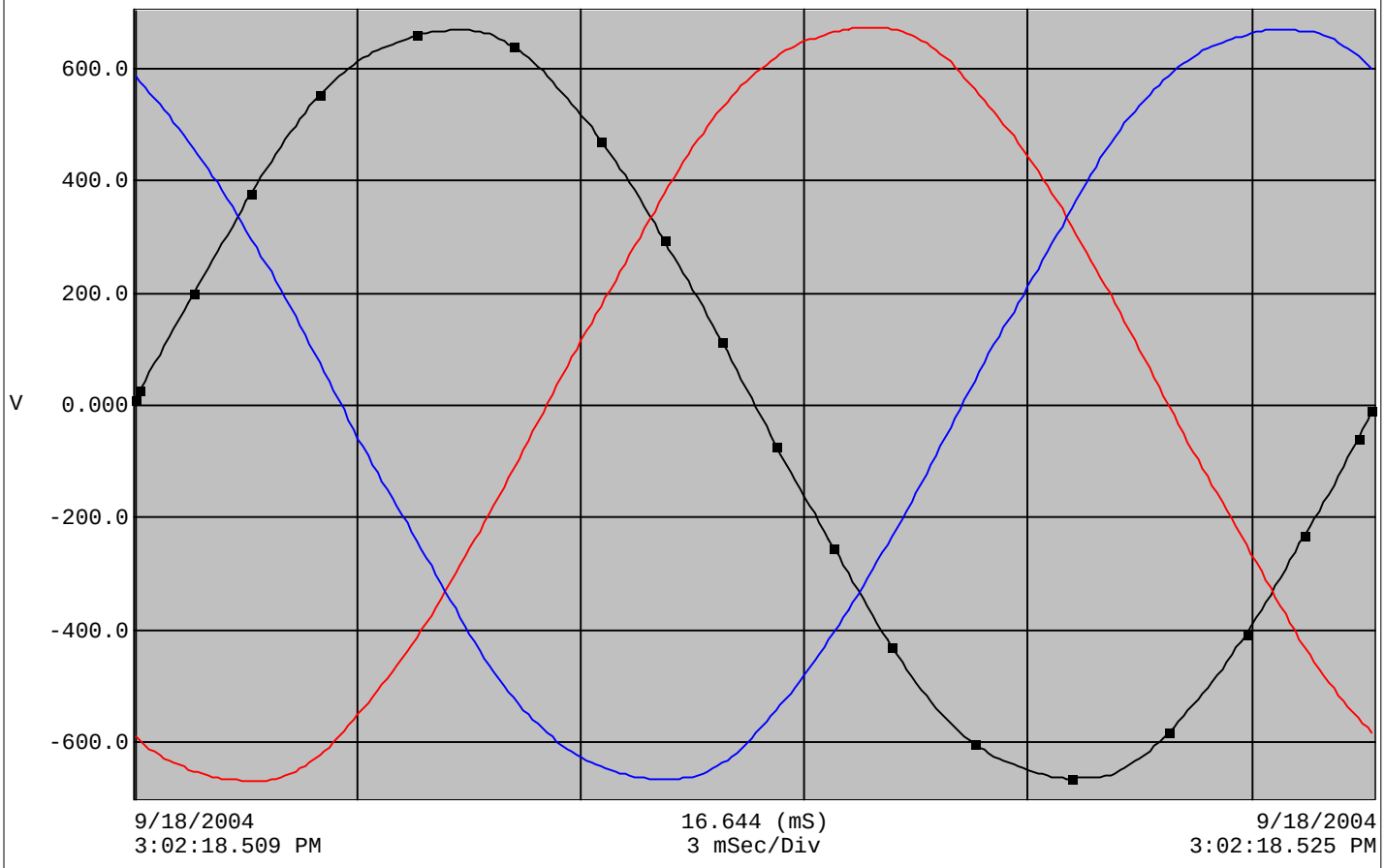


9/18/2004 - 3:02:18.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

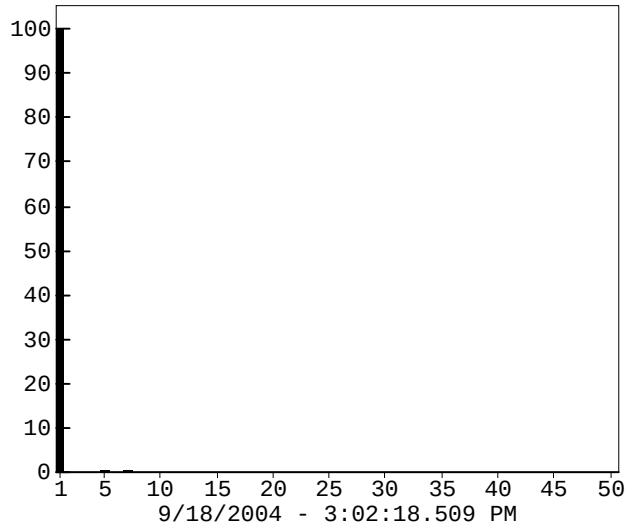
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.3	H19	0.2	H36	0.0
H03	0.8	H20	0.1	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	1.5	H22	0.3	H39	0.0
H06	0.1	H23	0.6	H40	0.0
H07	0.7	H24	0.1	H41	0.0
H08	0.1	H25	0.3	H42	0.0
H09	0.2	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.3	H28	0.1	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/18/2004	3:02:18.509 PM	16.644	474.2	V
Waveform U2	9/18/2004	3:02:18.509 PM	16.644	477.3	V
Waveform U3	9/18/2004	3:02:18.509 PM	16.644	475.6	V

Waveform U1
474.23 Vrms, 0.88 %THD



9/18/2004 - 3:02:18.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.6	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/18/2004
Start Time: 3:02:18 PM
Duration: 0:0.000 (M:S)
W: 10.58E+3 W
VAR: 3.686E+3 W
VA: 11.20E+3 W
Power Factor: 0.944
Displacement Power Factor: 0.945
TAN: 0.348
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Mangillao WWPS\091804-Mangilao Photo.dvb

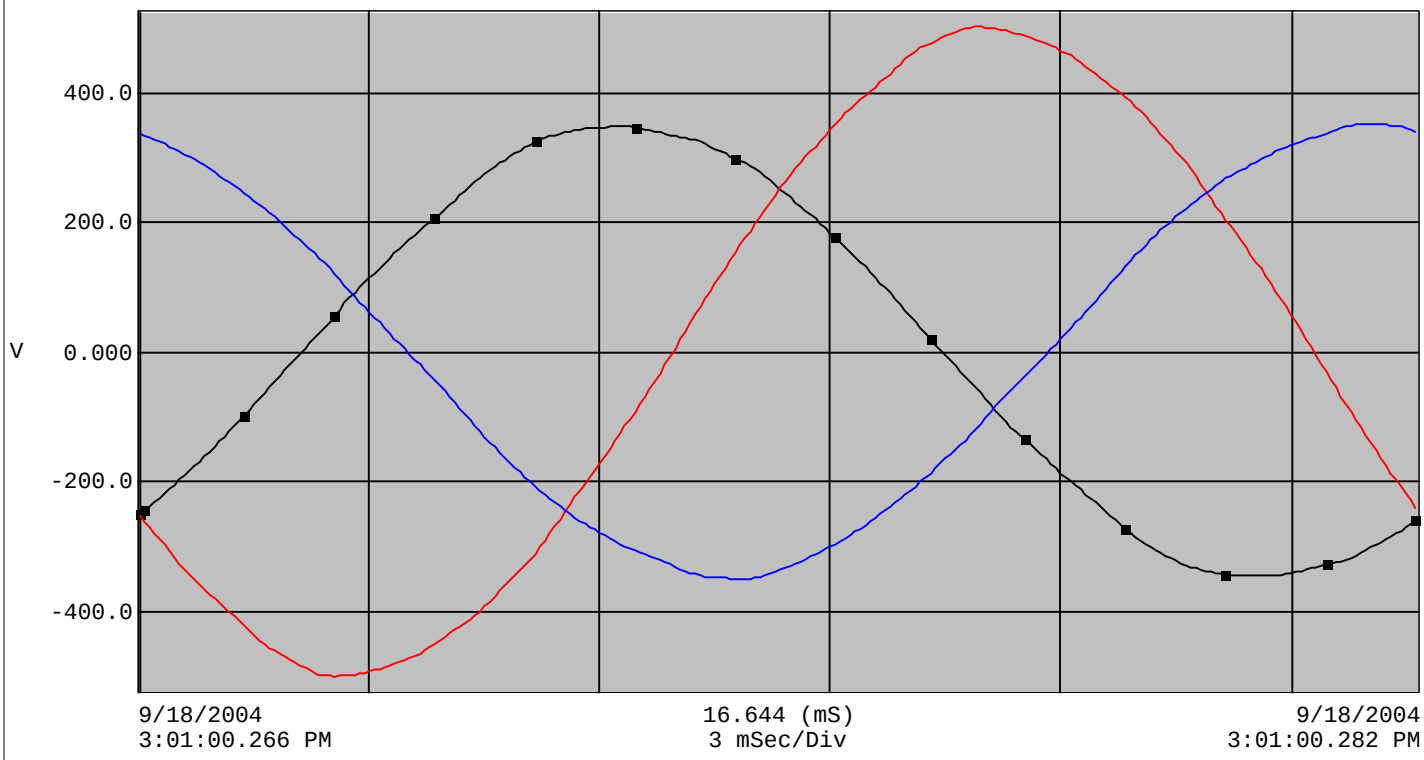
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Mangilao WWPS - Photo ,

Comments
GPA Mtr No. 82-778-981, Demand 0.55 (CT Ratio 200:5). Two 38.7 HP Fairbanks Morse Submersible Pumps.

Mangilao Pump 1 - Photo

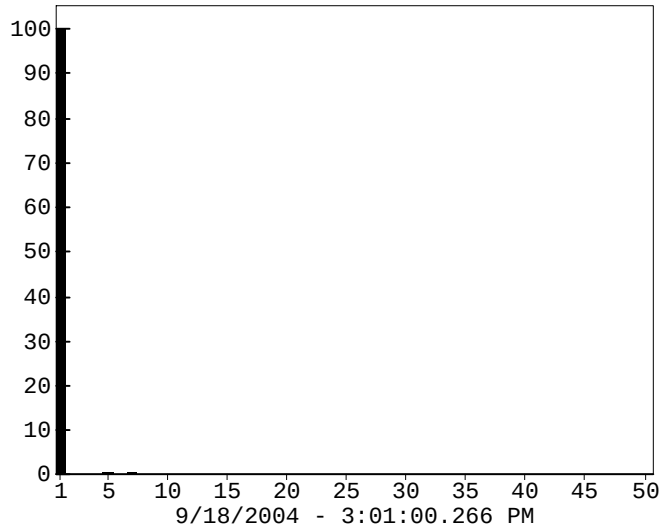
Recording Start Date	9/18/2004 - 3:01:00 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/18/2004	3:01:00.266 PM	16.644	247.1	V
Waveform V2	9/18/2004	3:01:00.266 PM	16.644	350.3	V
Waveform V3	9/18/2004	3:01:00.266 PM	16.644	245.2	V

Waveform V1
247.07 Vrms, 1.10 %THD

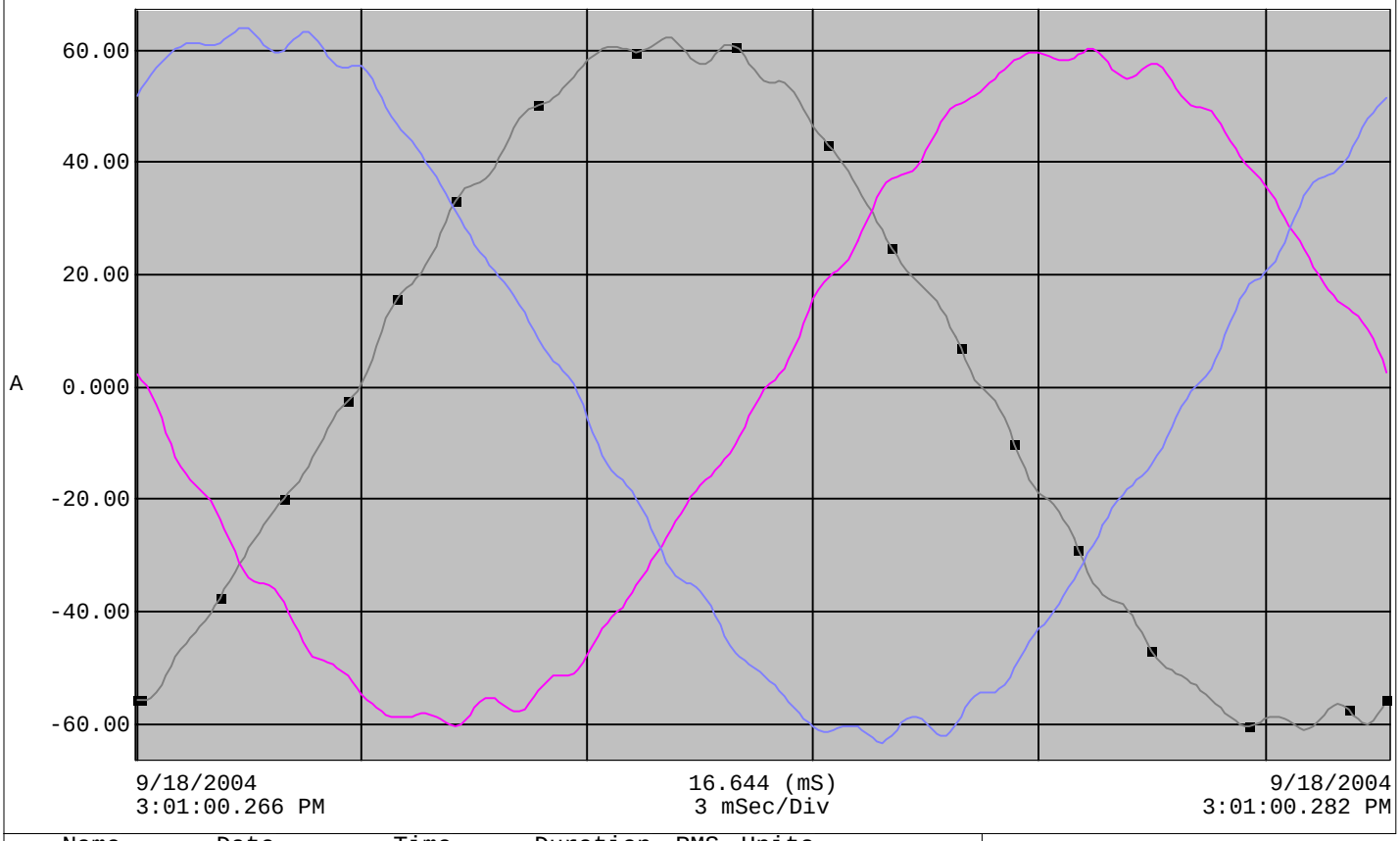


9/18/2004 - 3:01:00.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

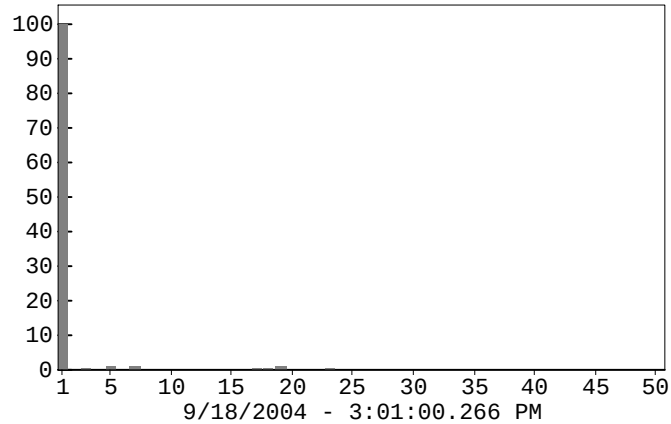
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.2	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.08 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/18/2004	3:01:00.266 PM	16.644	43.62	A
Waveform I2	9/18/2004	3:01:00.266 PM	16.644	42.30	A
Waveform I3	9/18/2004	3:01:00.266 PM	16.644	44.28	A

Waveform I1
43.62 Arms, 3.25 %THD

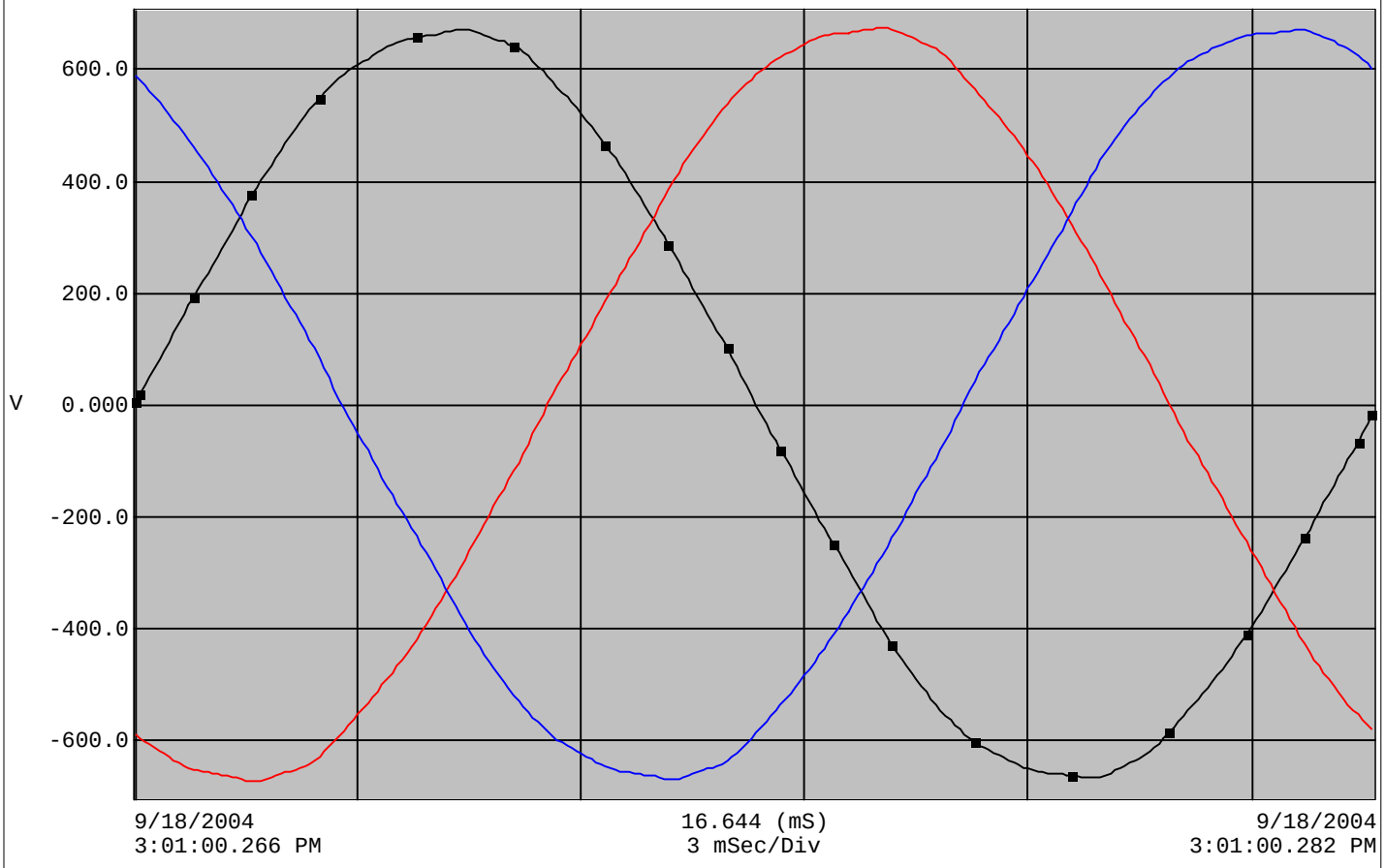


9/18/2004 - 3:01:00.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

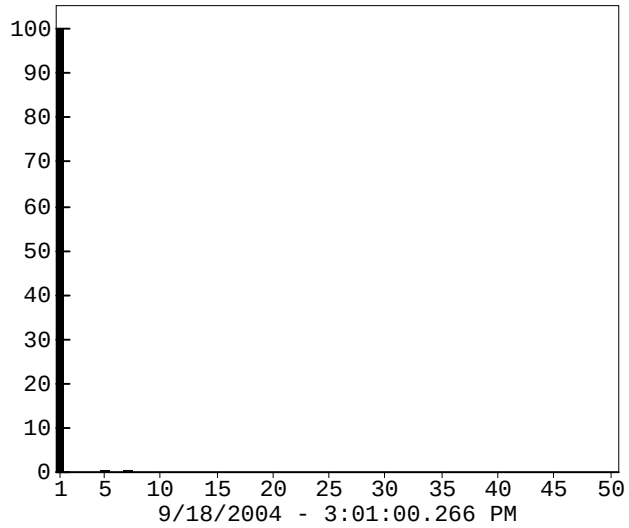
	(%)		(%)		(%)
H01	100.0	H18	0.9	H35	0.1
H02	0.2	H19	1.5	H36	0.0
H03	0.7	H20	0.3	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	1.3	H22	0.4	H39	0.0
H06	0.2	H23	0.9	H40	0.0
H07	1.6	H24	0.1	H41	0.0
H08	0.2	H25	0.4	H42	0.1
H09	0.3	H26	0.2	H43	0.0
H10	0.2	H27	0.1	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.3	H29	0.2	H46	0.0
H13	0.3	H30	0.1	H47	0.0
H14	0.1	H31	0.1	H48	0.0
H15	0.2	H32	0.1	H49	0.0
H16	0.2	H33	0.1	H50	0.0
H17	0.6	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/18/2004	3:01:00.266 PM	16.644	474.8	V
Waveform U2	9/18/2004	3:01:00.266 PM	16.644	477.6	V
Waveform U3	9/18/2004	3:01:00.266 PM	16.644	476.4	V

Waveform U1
474.81 Vrms, 0.98 %THD



9/18/2004 - 3:01:00.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.7	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/18/2004
Start Time: 3:01:00 PM
Duration: 0:0.000 (M:S)
W: 10.24E+3 W
VAR: 2.992E+3 W
VA: 10.67E+3 W
Power Factor: 0.960
Displacement Power Factor: 0.960
TAN: 0.290
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Mangillao WWPS\091804-Mangilao Pump 1 - Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Mangilao WWPS - Pump 1 - Photo ,

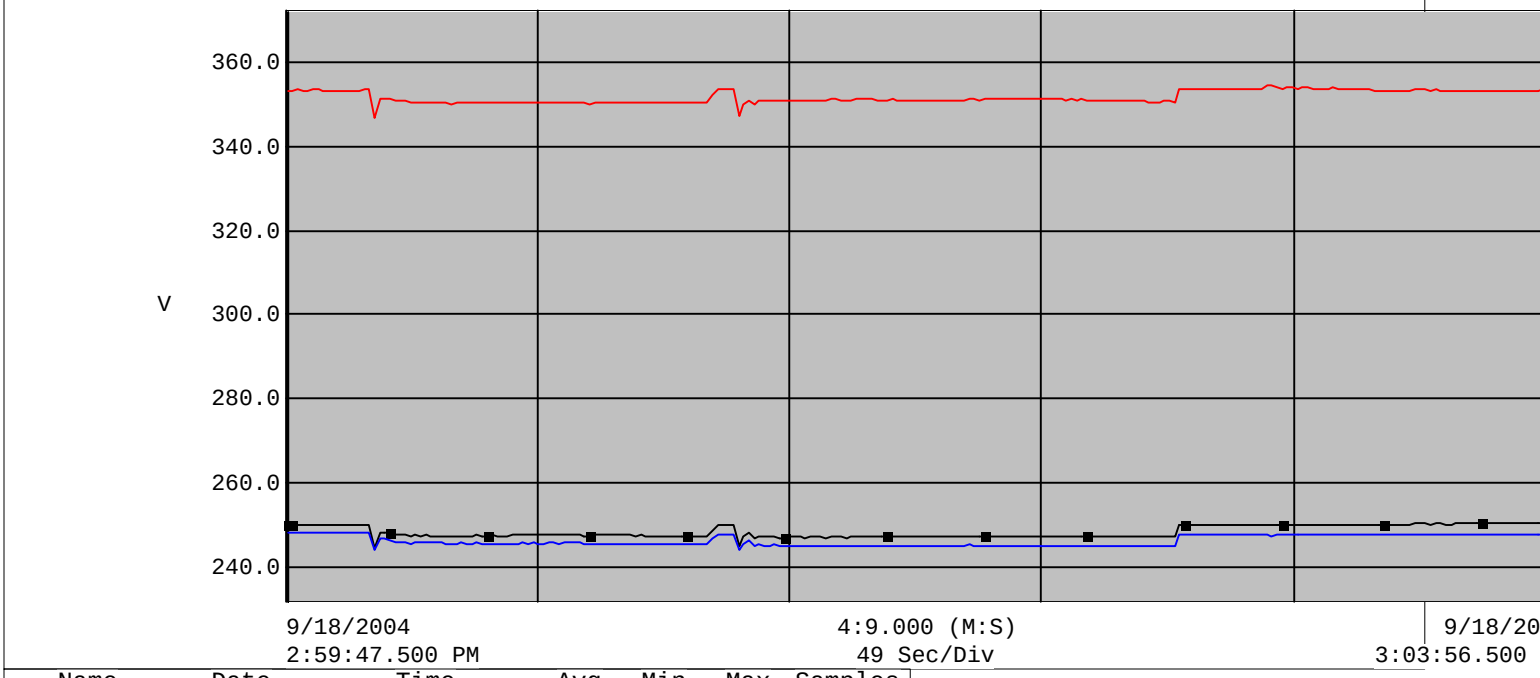
Comments

GPA Meter 82-778-981. Pump 1 - 38.7 HP, Fairbanks Morse Submersible Pump.

Mangilao

Recording Start Date	9/18/2004 - 2:59:47 PM
Recording Duration	4:09 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

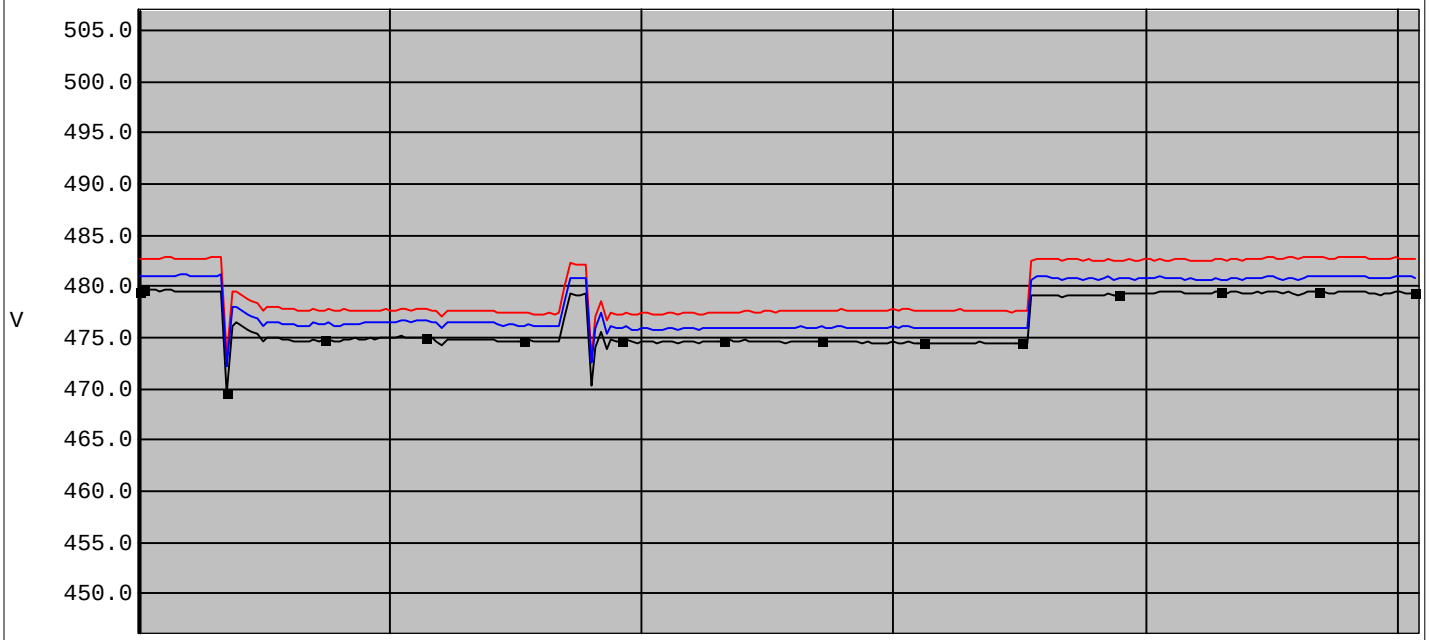
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/18/2004	2:59:47.500 PM	248.0	244.3	250.1	250
Vrms Line2	9/18/2004	2:59:47.500 PM	351.5	346.4	354.4	250
Vrms Line3	9/18/2004	2:59:47.500 PM	245.9	243.5	247.9	250

9/18/2004 - 2:59:47.000 PM
Val
249.6 — Vrms Line1
353.1 — Vrms Line2
247.7 — Vrms Line3

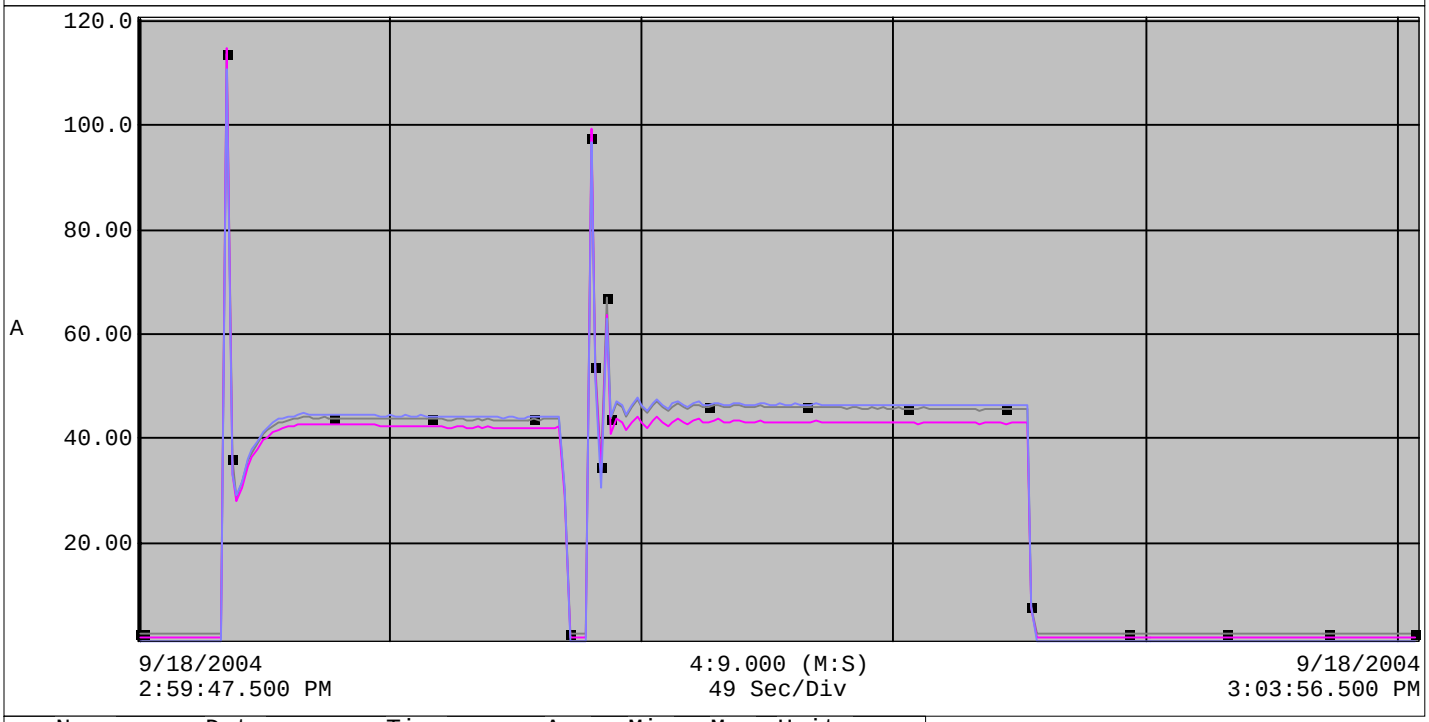
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/18/2004	2:59:47.500 PM	476.4	469.5	479.5	V
Urms Line2	9/18/2004	2:59:47.500 PM	479.5	472.8	482.8	V
Urms Line3	9/18/2004	2:59:47.500 PM	477.9	472.1	481.0	V

9/18/2004 - 2:59:47.000 PM
Val
479.4 — Urms Line1
482.6 — Urms Line2
480.8 — Urms Line3

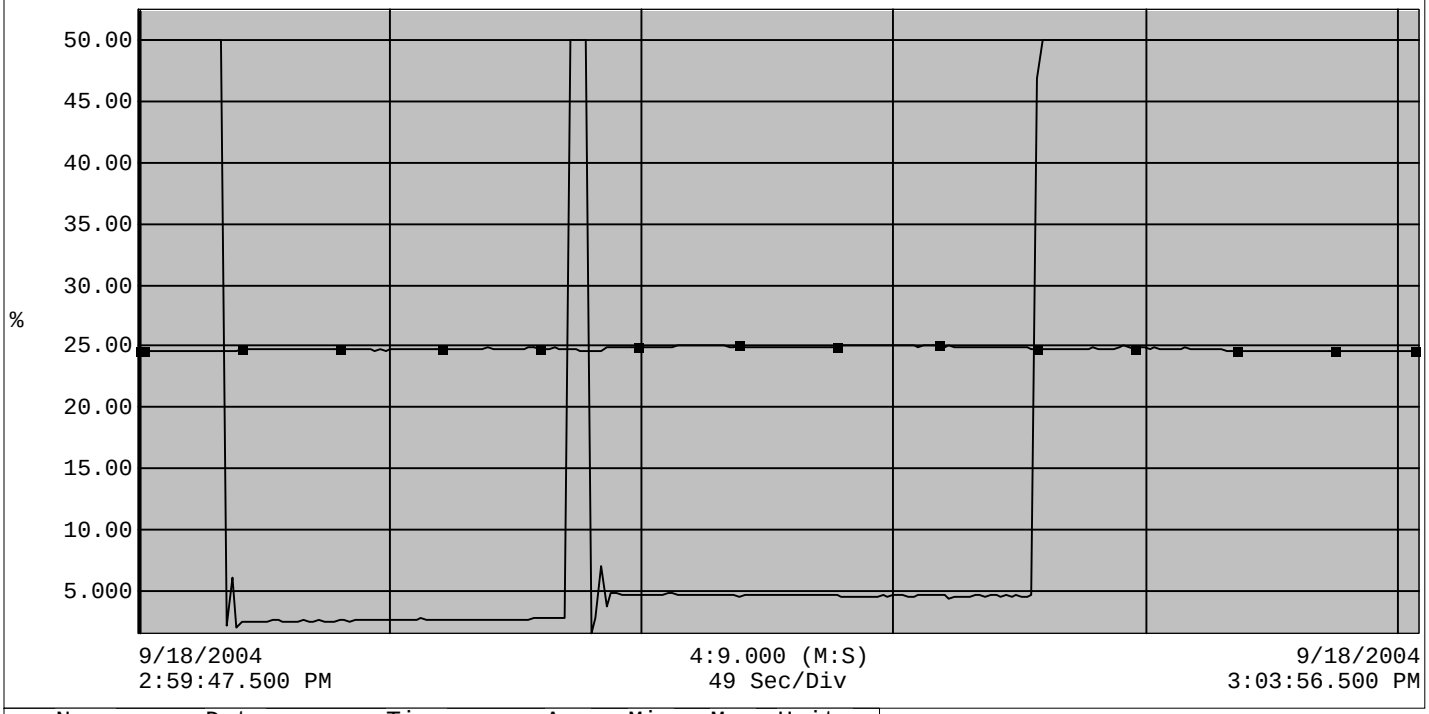
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/18/2004	2:59:47.500 PM	28.59	2.400	113.6	A
Arms Line2	9/18/2004	2:59:47.500 PM	26.97	1.500	114.8	A
Arms Line3	9/18/2004	2:59:47.500 PM	28.24	0.900	110.6	A

9/18/2004 - 2:59:47.000 PM
Val
2.500 — Arms Line1
1.600 — Arms Line2
0.900 — Arms Line3

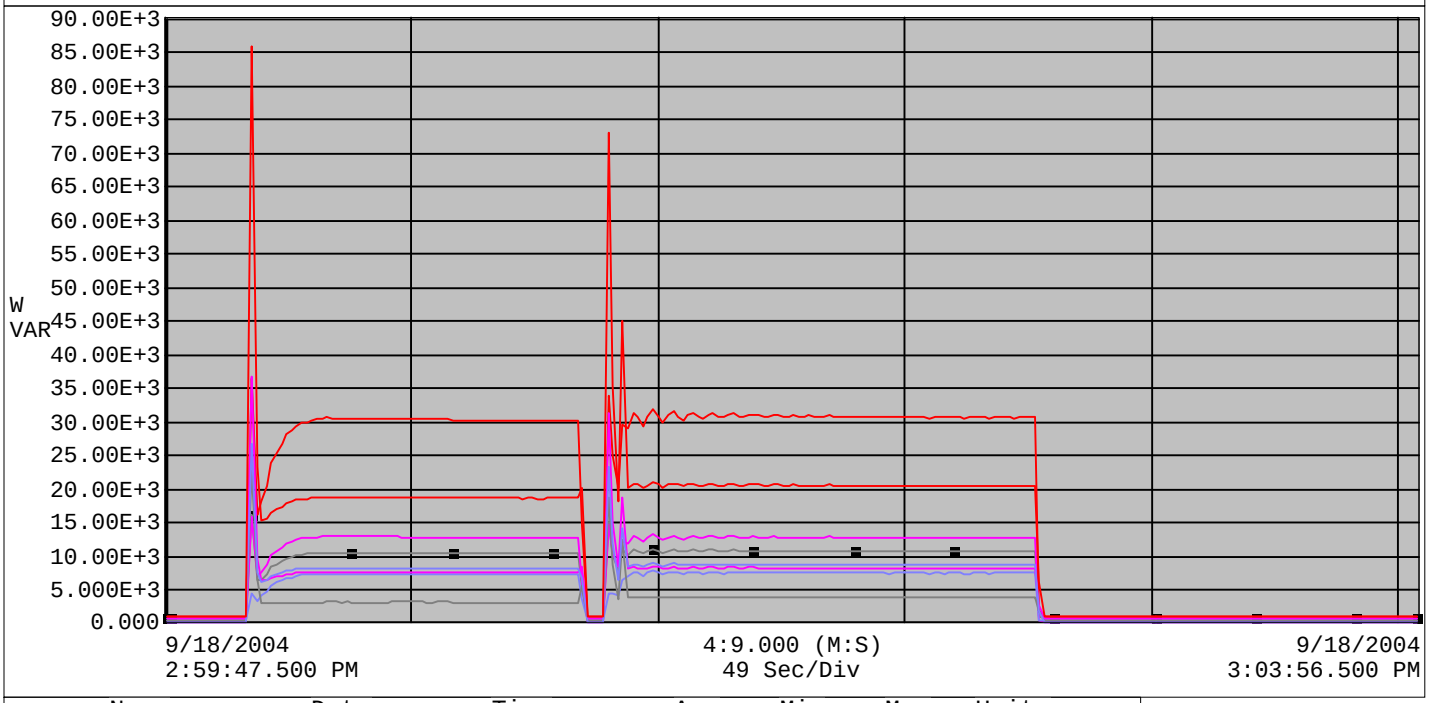
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/18/2004	2:59:47.500 PM	24.75	24.50	25.00	%
Aunb(IEEE)	9/18/2004	2:59:47.500 PM	21.43	1.500	50.00	%

9/18/2004 - 2:59:47.000 PM
Val
24.60 —— Vunb(IEEE)
50.00 —— Aunb(IEEE)

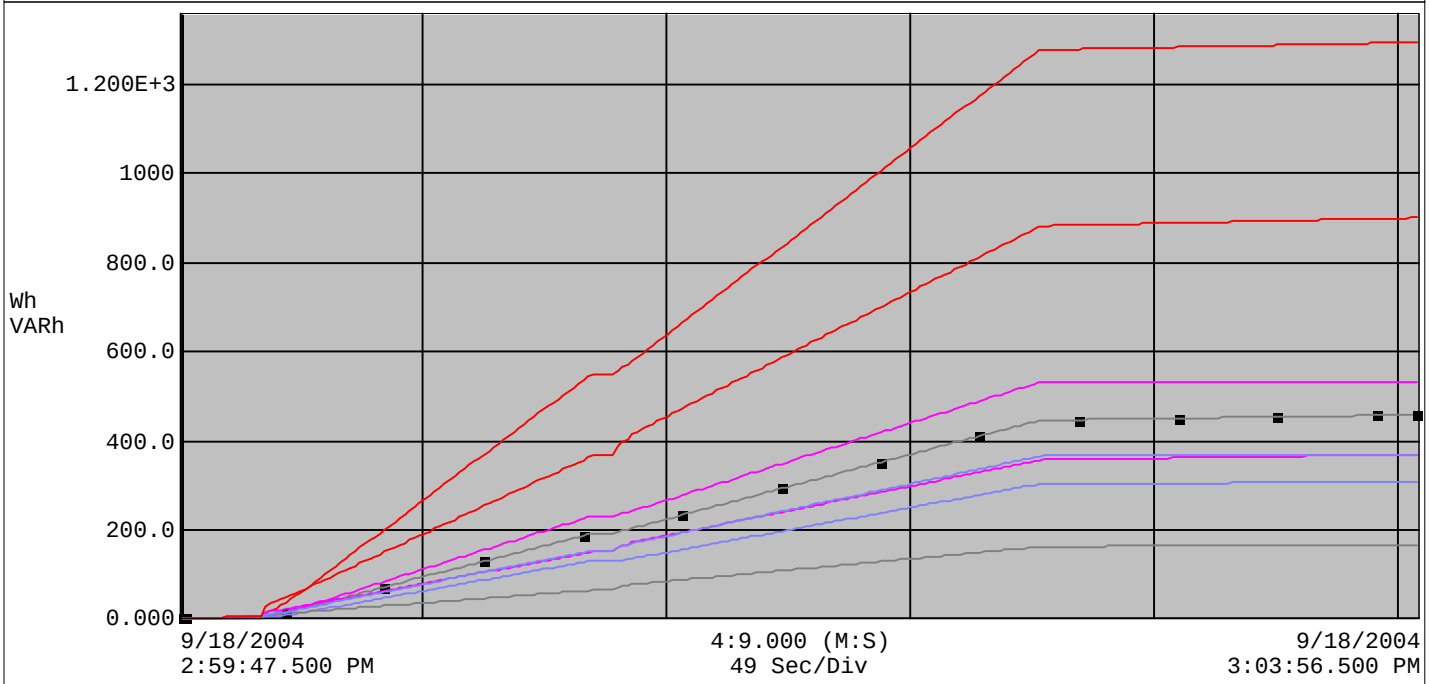
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/18/2004	2:59:47.500 PM	6.576E+3	562.1	16.01E+3	W
W Line2	9/18/2004	2:59:47.500 PM	7.635E+3	16.67	15.74E+3	W
W Line3	9/18/2004	2:59:47.500 PM	4.409E+3	210.3	7.628E+3	W
W Sum of Phases	9/18/2004	2:59:47.500 PM	18.62E+3	804.7	36.19E+3	W
VAR Line1	9/18/2004	2:59:47.500 PM	2.385E+3	215.5	22.67E+3	VAR
VAR Line2	9/18/2004	2:59:47.500 PM	5.295E+3	543.1	36.52E+3	VAR
VAR Line3	9/18/2004	2:59:47.500 PM	5.267E+3	60.79	26.59E+3	VAR
VAR Sum of Phases	9/18/2004	2:59:47.500 PM	12.95E+3	819.9	85.78E+3	VAR

9/18/2004 - 2:59:47.000 PM
Val
570.1 — W Line1
23.53 — W Line2
219.5 — W Line3
812.5 — W Sum of Phases
225.3 — VAR Line1
567.9 — VAR Line2
65.72 — VAR Line3
859.4 — VAR Sum of Phases

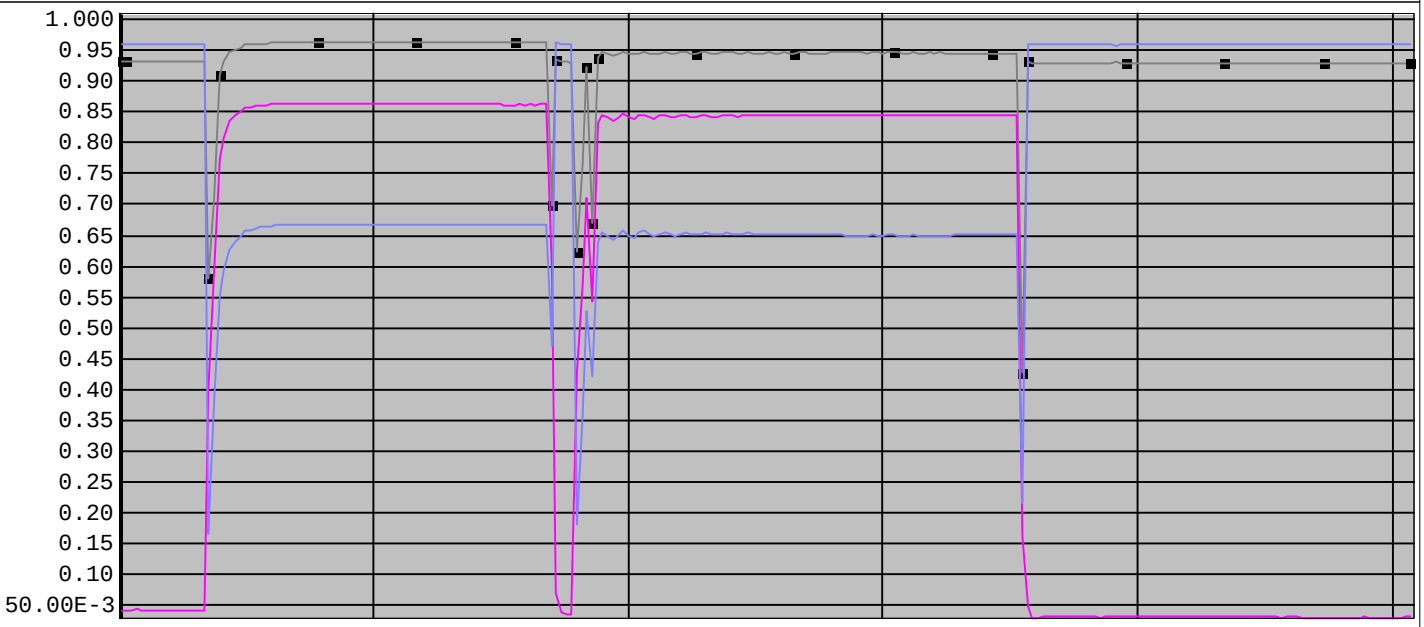
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/18/2004	2:59:47.500 PM	276.0	0.153	456.6	Wh
W-hours Line2	9/18/2004	2:59:47.500 PM	326.4	0.000	530.2	Wh
W-hours Line3	9/18/2004	2:59:47.500 PM	185.6	65.43E-3	306.2	Wh
W-hours Sum of Phases	9/18/2004	2:59:47.500 PM	788.0	0.237	1.293E+3	Wh
VAR-hours Line1	9/18/2004	2:59:47.500 PM	100.4	60.70E-3	165.6	VARh
VAR-hours Line2	9/18/2004	2:59:47.500 PM	223.4	0.157	367.7	VARh
VAR-hours Line3	9/18/2004	2:59:47.500 PM	225.0	22.33E-3	365.8	VARh
VAR-hours Sum of Phases	9/18/2004	2:59:47.500 PM	548.8	0.247	899.1	VARh

9/18/2004 - 2:59:47.000 PM
Val
0.153 — W-hours Line1
0.000 — W-hours Line2
65.43E-3 — W-hours Line3
0.237 — W-hours Sum of Phases
60.70E-3 — VAR-hours Line1
0.157 — VAR-hours Line2
22.33E-3 — VAR-hours Line3
0.247 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/18/2004	2:59:47.500 PM	0.933	0.426	0.960	
PF Line2	9/18/2004	2:59:47.500 PM	0.524	29.00E-3	0.862	
PF Line3	9/18/2004	2:59:47.500 PM	0.761	0.165	0.960	

9/18/2004 - 2:59:47.000 PM
Val
0.930 — PF Line1
41.00E-3 — PF Line2
0.958 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Mangillao WWPS\091804 - Mangilao.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Mangilao WWPS ,

Comments

Station Power from Grounded Delta Transformer Bank, GPA Meter 82-778-981, Demand of 0.55 (200:5 CT Ratio). Station has two Fairbanks Morse 38.7 HP, submersible pumps, 460 volts. Float control with new control panel.

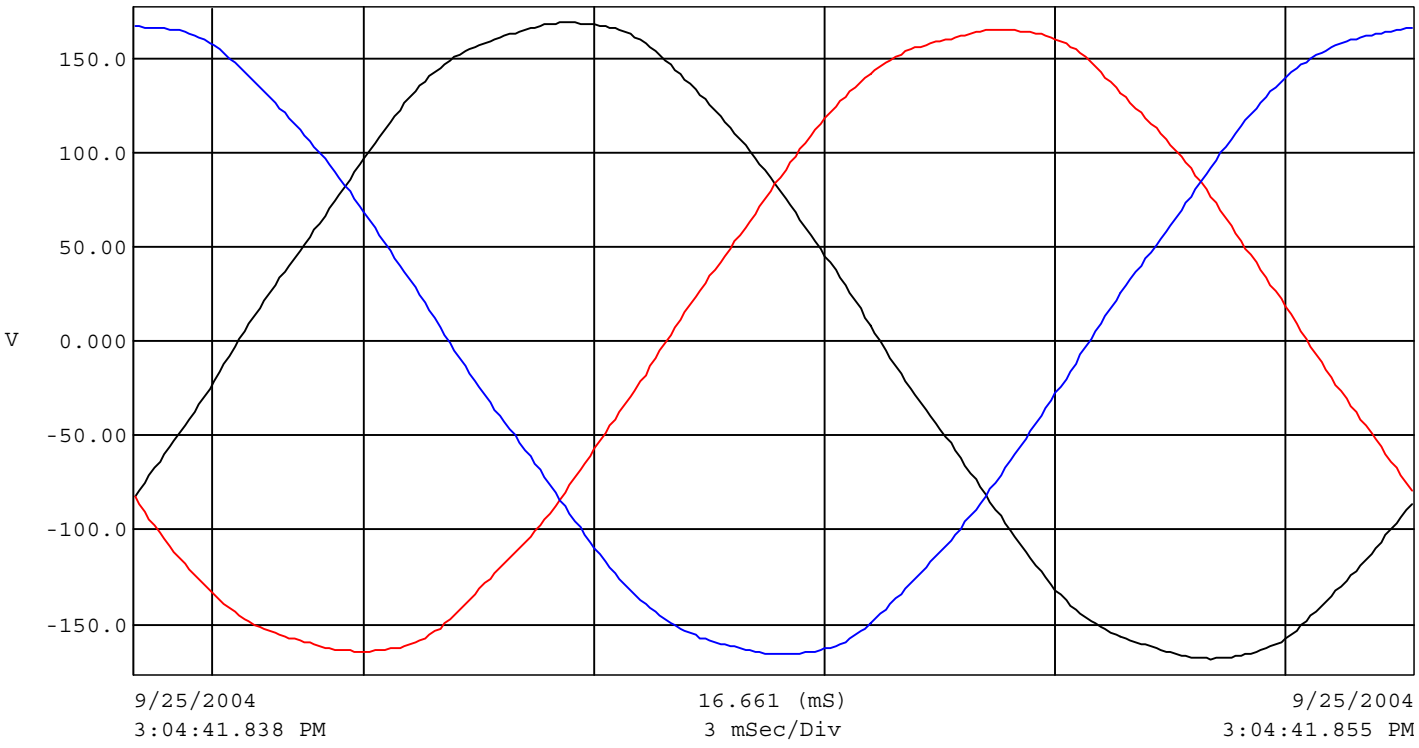
GWA Wastewater Pumping Station Assessment				
Station Name: ORDOT CHALAN PAGO	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.43	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.64	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.64	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.25	
Level	5.0%	2	0.1	
Alarms	3.0%	3	0.09	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.09	
Lighting and Power Devices	1.5%	3	0.045	
Sump Pump Controls	1.5%	3	0.045	(NONE)
	100%	**Assessment Value**		**2.9**

Comments:

Ordot Chalan Pago WWPS - Pump 1 Photo

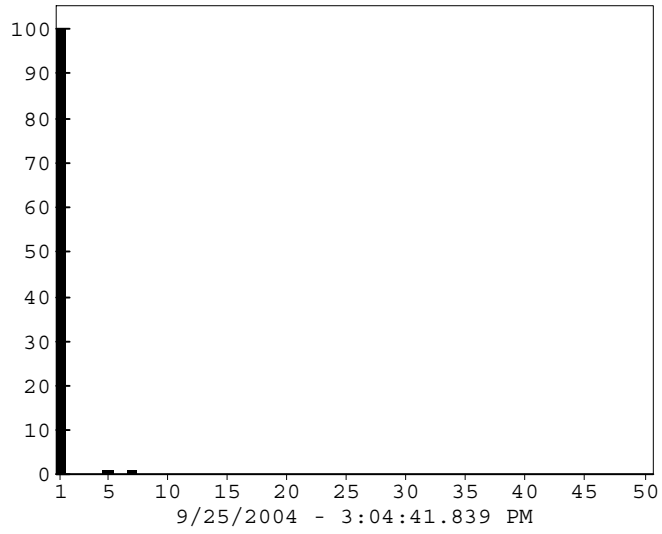
Recording Start Date	9/25/2004 - 3:04:41 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	3:04:41.838 PM	16.661	120.1	V
Waveform V2	9/25/2004	3:04:41.838 PM	16.661	117.7	V
Waveform V3	9/25/2004	3:04:41.838 PM	16.661	118.7	V

Waveform V1
120.14 Vrms, 1.43 %THD



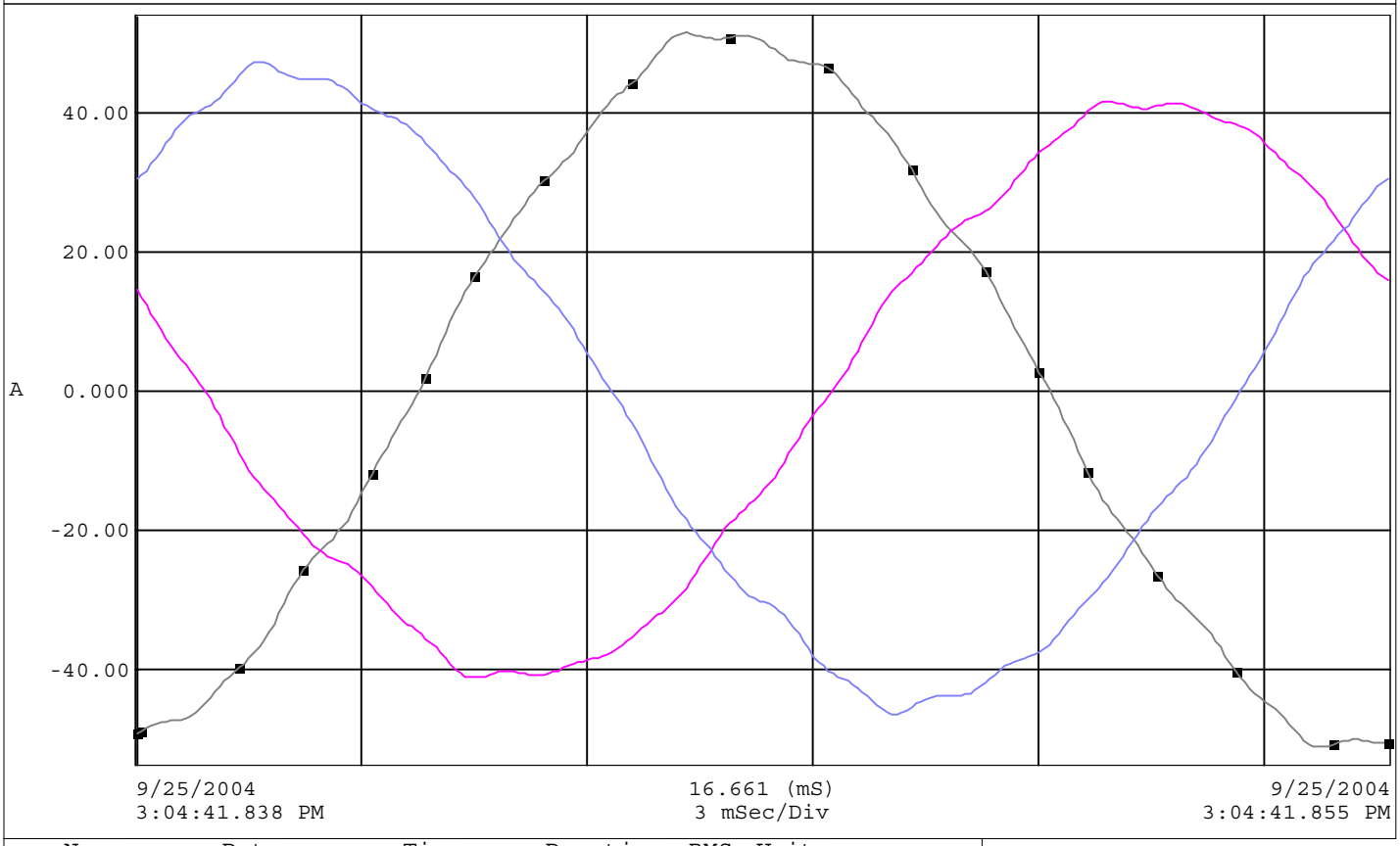
9/25/2004 - 3:04:41.001 PM

Val	
-21.40	Waveform V1
-134.7	Waveform V2
156.4	Waveform V3

Waveform V1

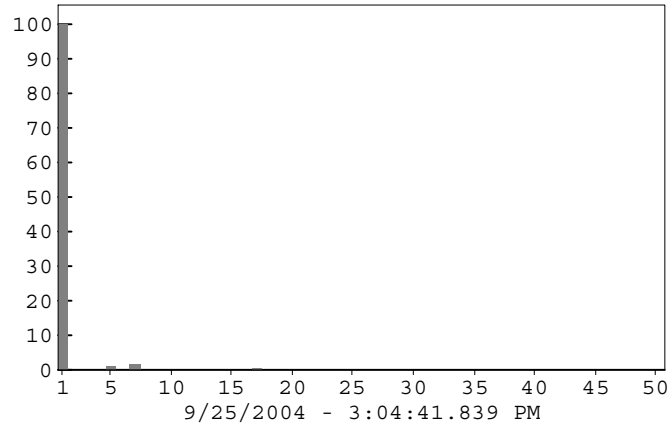
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	3:04:41.838 PM	16.661	35.93	A
Waveform I2	9/25/2004	3:04:41.838 PM	16.661	29.09	A
Waveform I3	9/25/2004	3:04:41.838 PM	16.661	31.76	A

Waveform I1
35.93 Arms, 2.64 %THD



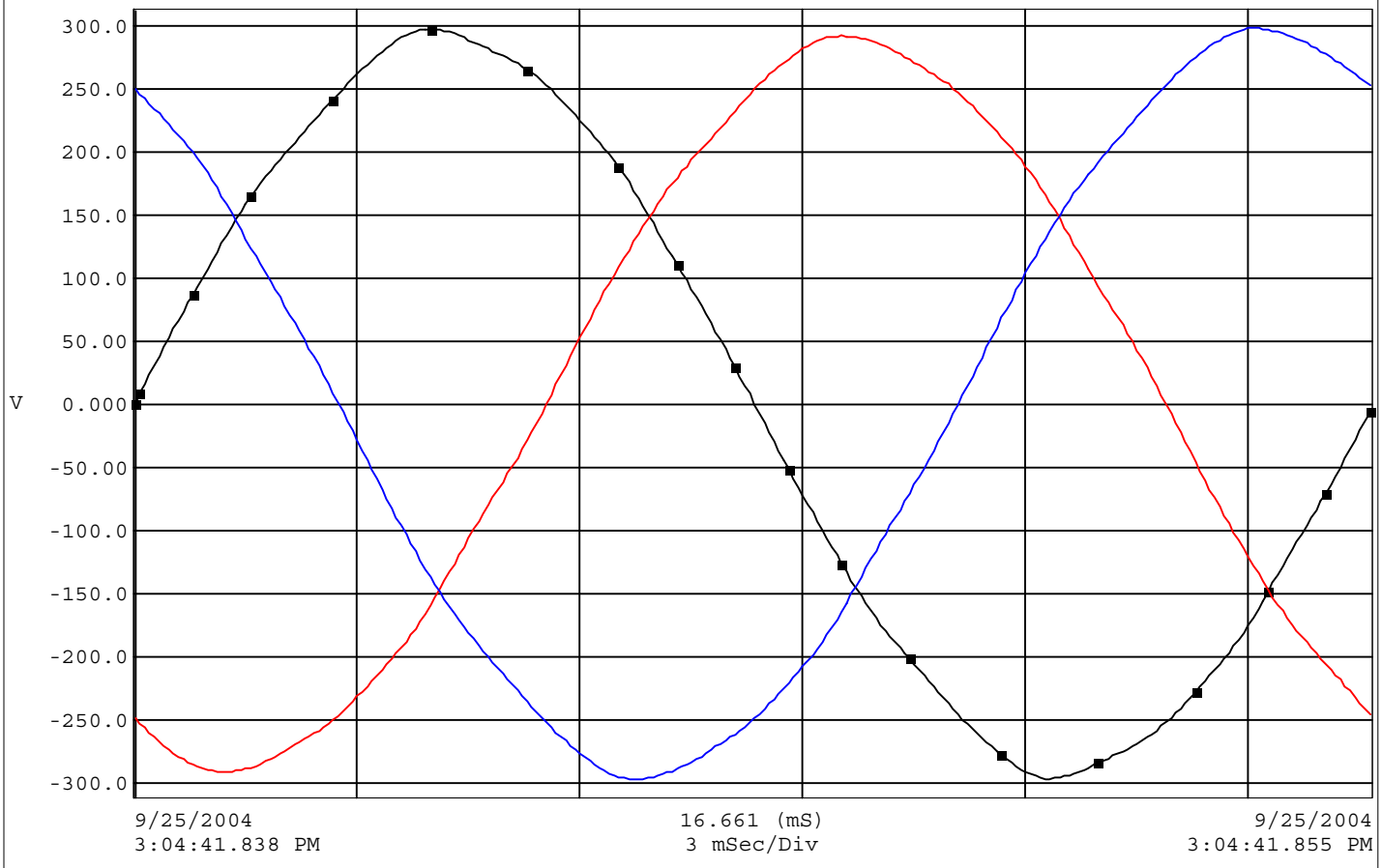
9/25/2004 - 3:04:41.000 PM

Val	
-49.40	Waveform I1
14.30	Waveform I2
30.40	Waveform I3

Waveform I1

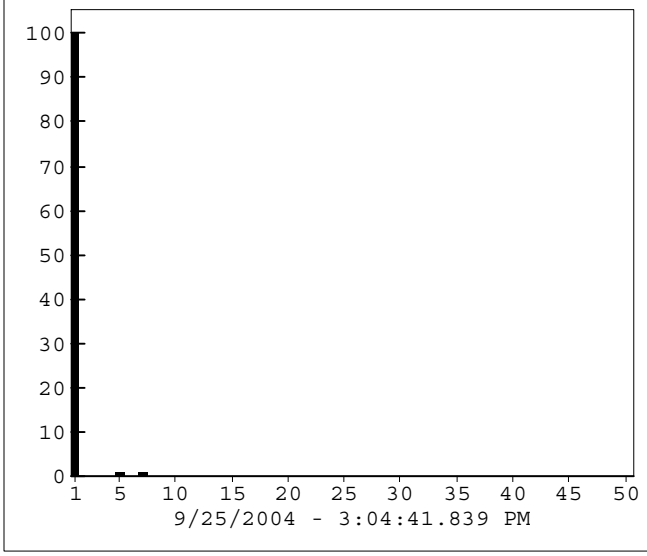
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.4	H19	0.3	H36	0.0
H03	0.3	H20	0.2	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	1.1	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.9	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.2	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.3	H33	0.0	H50	0.0
H17	1.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	3:04:41.838 PM	16.661	206.2	V
Waveform U2	9/25/2004	3:04:41.838 PM	16.661	203.6	V
Waveform U3	9/25/2004	3:04:41.838 PM	16.661	207.8	V

Waveform U1
206.25 Vrms, 1.40 %THD



9/25/2004 - 3:04:41.000 PM

Val	
0.100	Waveform U1
-249.7	Waveform U2
249.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 3:04:41 PM
Duration: 0:0.000 (M:S)
W: 2.712E+3 W
VAR: 3.375E+3 W
VA: 4.330E+3 W
Power Factor: 0.626
Displacement Power Factor: 0.627
TAN: 1.243
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Ordot Chalan Pago WWPS\092504-Ordot Chalan Pago WWPS - Pump 1 Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Ordot Chalan Pago WWPS - Pump 1 Photo ,

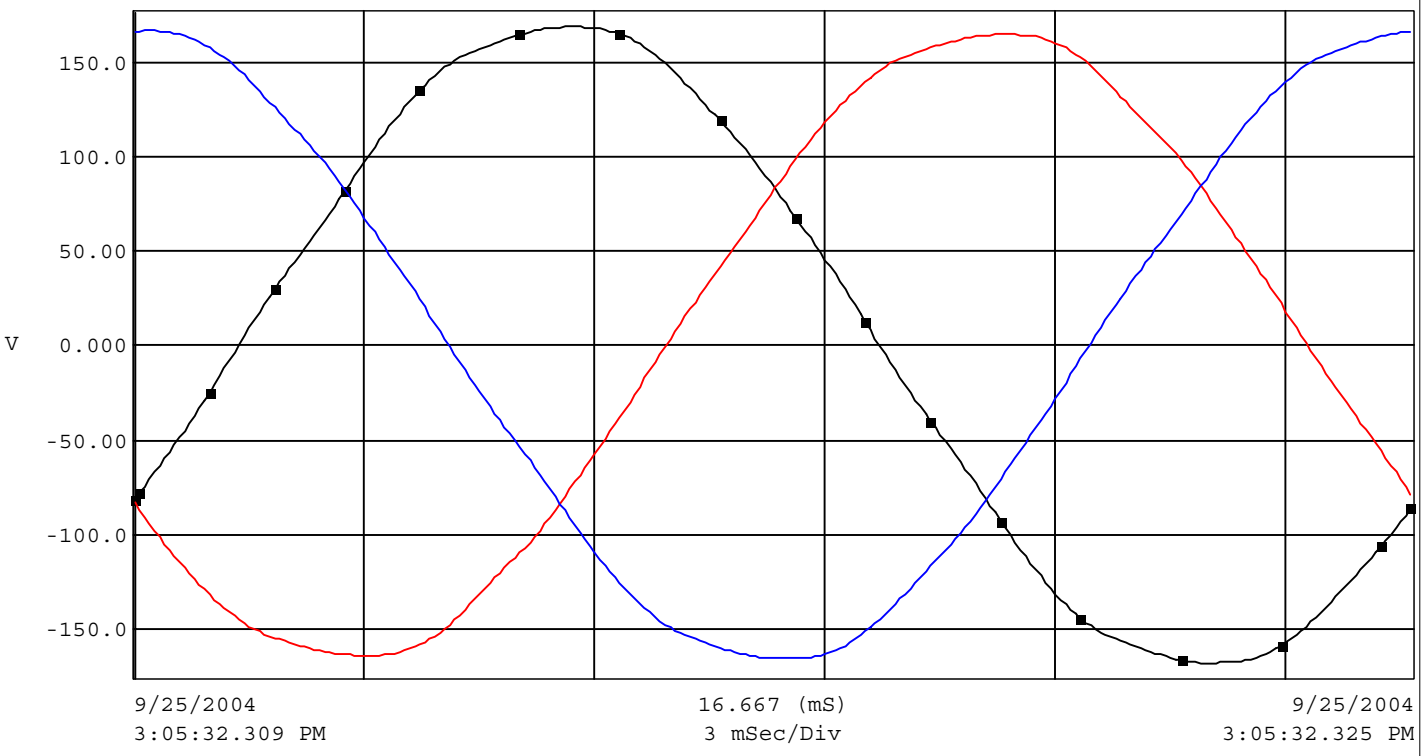
Comments

GPA Meter 01-495-524, 14.2 KW demand. Barnes 15 HP, 200 volt, 43.7 amp, 1750 RPM submersible pump. Measured at feeder to pump control cabinet.

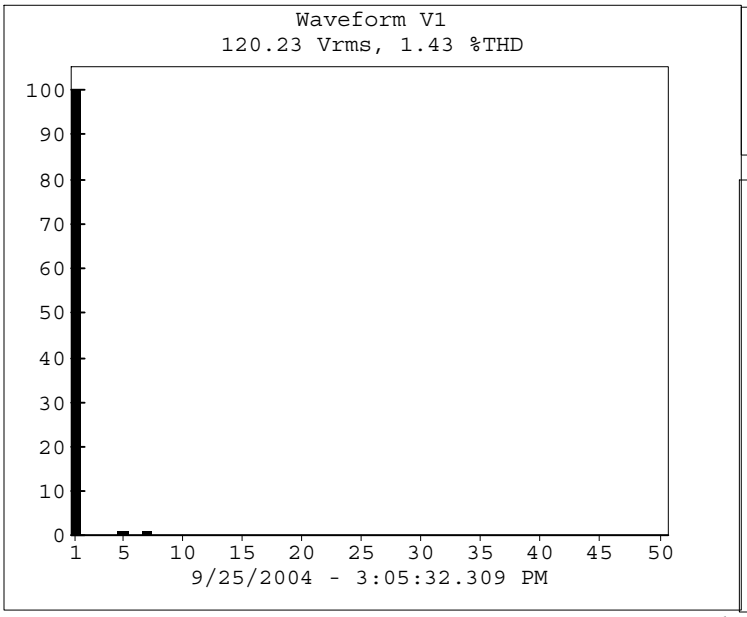
Ordot Chalan Pago WWPS - Pump 2 Photo

Recording Start Date	9/25/2004 - 3:05:32 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	3:05:32.309 PM	16.667	120.2	V
Waveform V2	9/25/2004	3:05:32.309 PM	16.667	117.8	V
Waveform V3	9/25/2004	3:05:32.309 PM	16.667	118.7	V

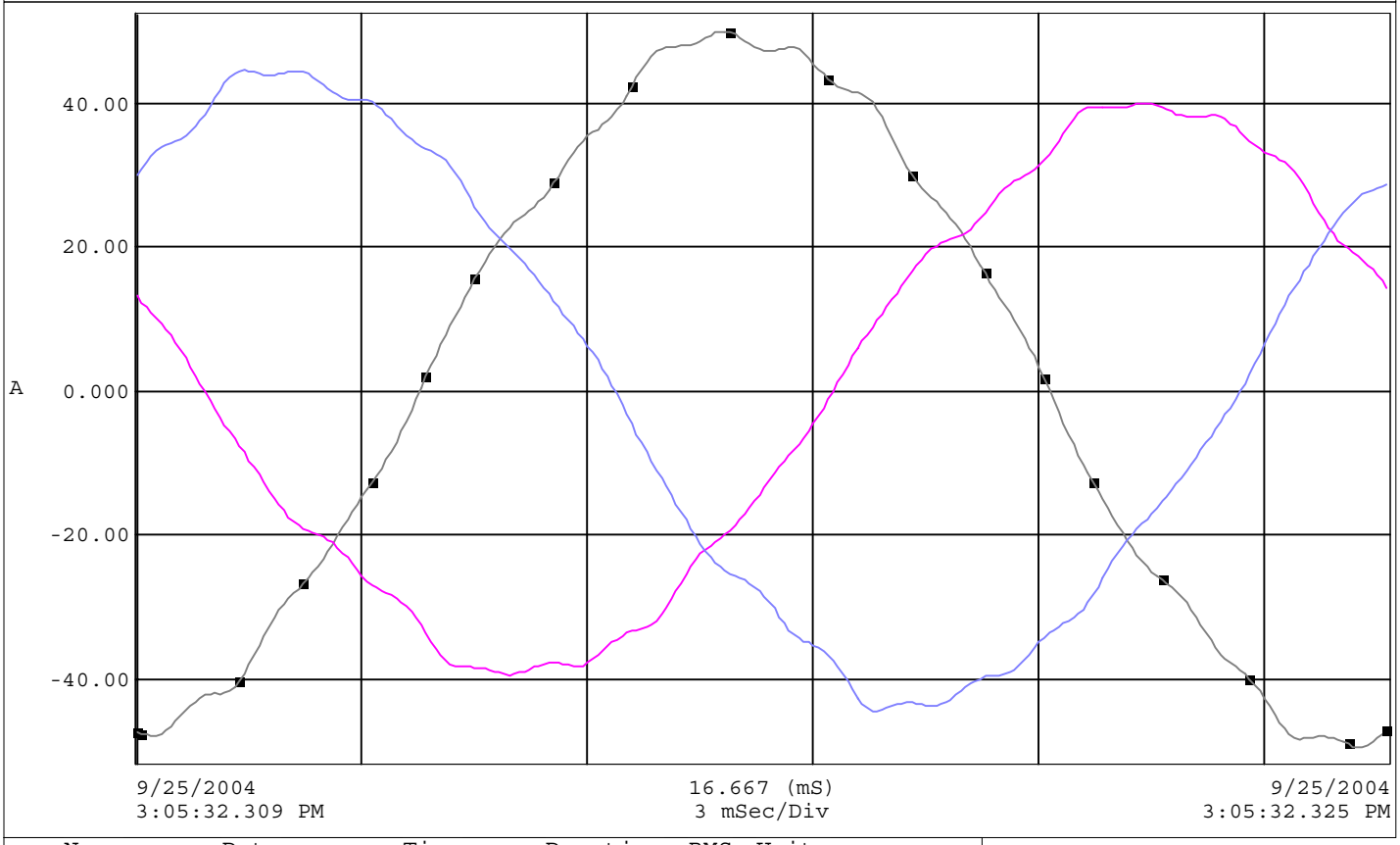


9/25/2004 - 3:05:32.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

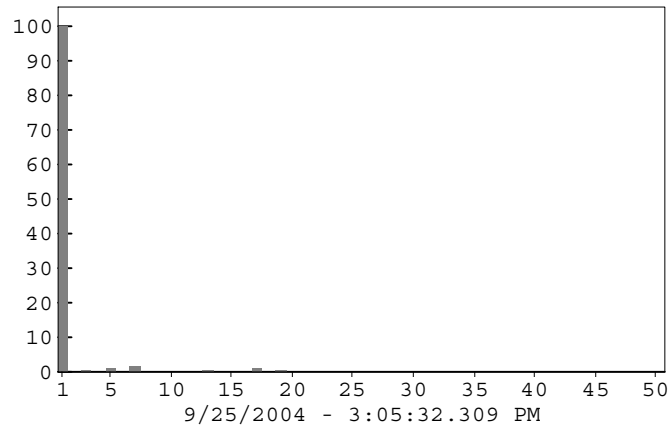
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	3:05:32.309 PM	16.667	34.76	A
Waveform I2	9/25/2004	3:05:32.309 PM	16.667	27.62	A
Waveform I3	9/25/2004	3:05:32.309 PM	16.667	30.62	A

Waveform I1
34.76 Arms, 3.32 %THD

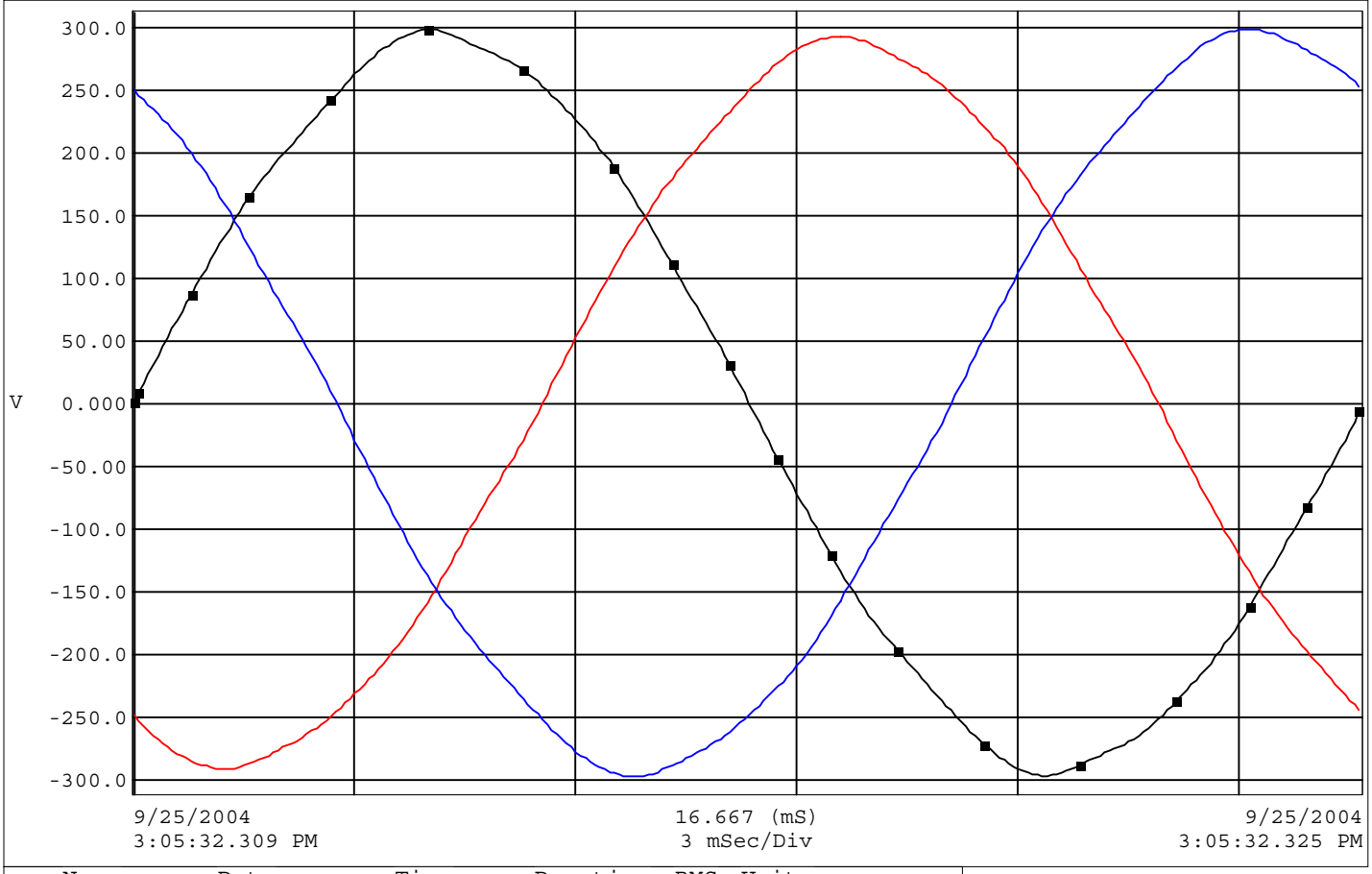


9/25/2004 - 3:05:32.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

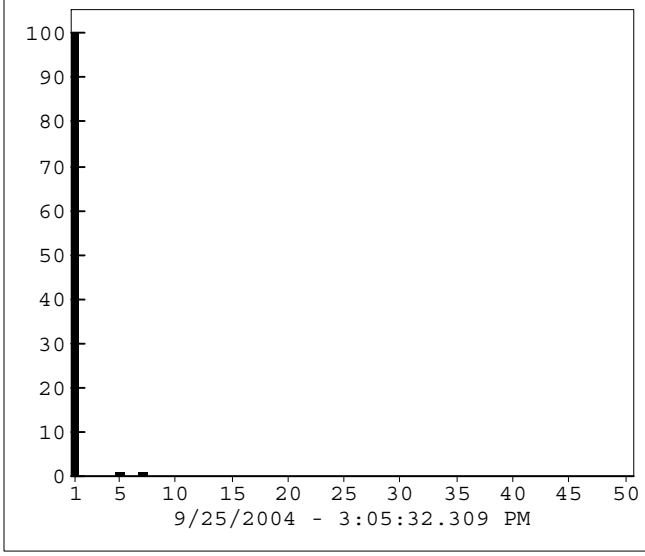
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.3	H19	0.6	H36	0.0
H03	0.8	H20	0.2	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	1.6	H22	0.1	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	2.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	0.3	H28	0.1	H45	0.0
H12	0.1	H29	0.1	H46	0.0
H13	0.7	H30	0.1	H47	0.0
H14	0.3	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.5	H33	0.0	H50	0.0
H17	1.2	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	3:05:32.309 PM	16.667	206.4	V
Waveform U2	9/25/2004	3:05:32.309 PM	16.667	203.7	V
Waveform U3	9/25/2004	3:05:32.309 PM	16.667	207.8	V

Waveform U1
206.44 Vrms, 1.39 %THD



9/25/2004 - 3:05:32.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 3:05:32 PM
Duration: 0:0.000 (M:S)
W: 2.625E+3 W
VAR: 3.273E+3 W
VA: 4.196E+3 W
Power Factor: 0.626
Displacement Power Factor: 0.626
TAN: 1.244
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Ordot Chalan Pago WWPS\092504-Ordot Chalan Pago WWPS - Pump 2 Photo.dvb

Operator	Test Site
Morikawa & Assocaites, LLC Lyman Morikawa, PE and Tony Capacia ,	Ordot Chalan Pago WWPS - Pump 2 Photo ,

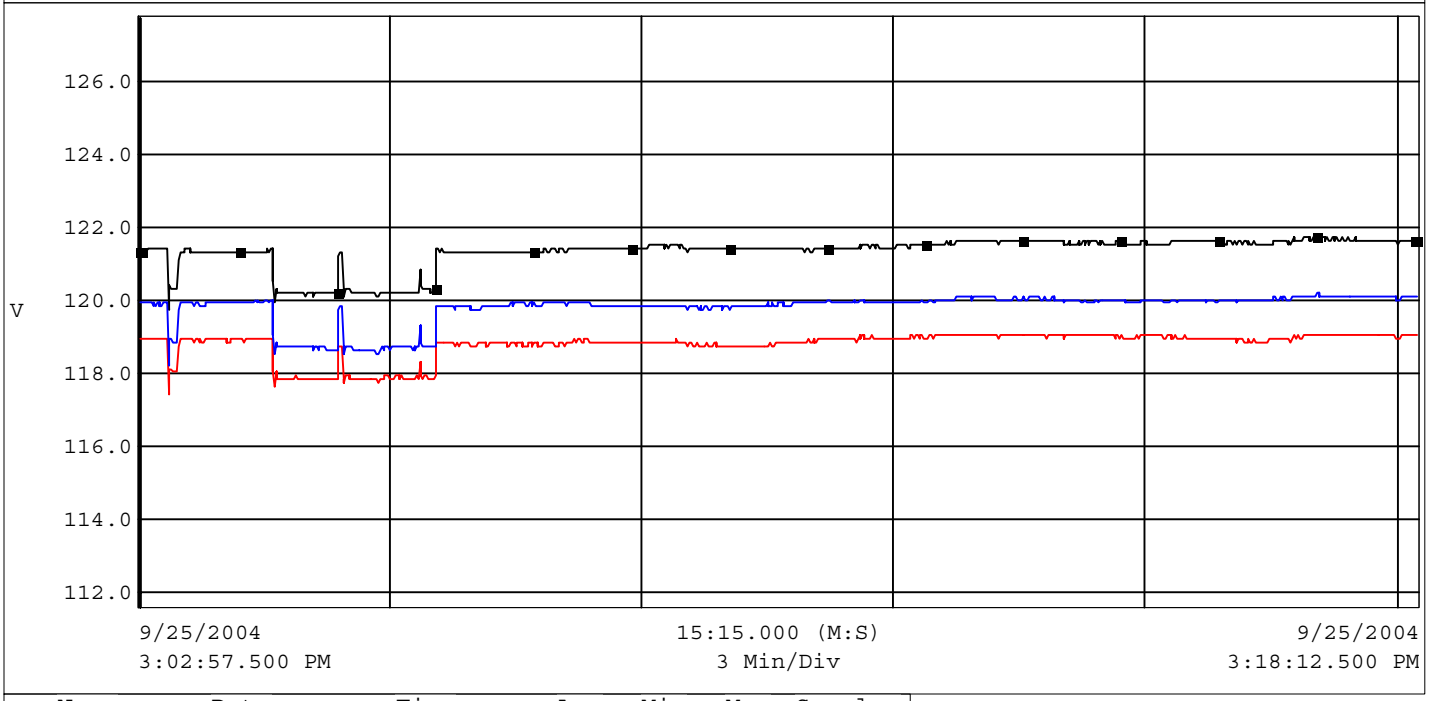
Comments

GPA Meter 01-495-524, demand 14.2 KW. Barnes 15 HP, 200 Volt, 43.7 amps submersible motor.

Ordot Chalan Pago WWPS - Pump 1 and 2

Recording Start Date	9/25/2004 - 3:02:57 PM
Recording Duration	15:15 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Vrms

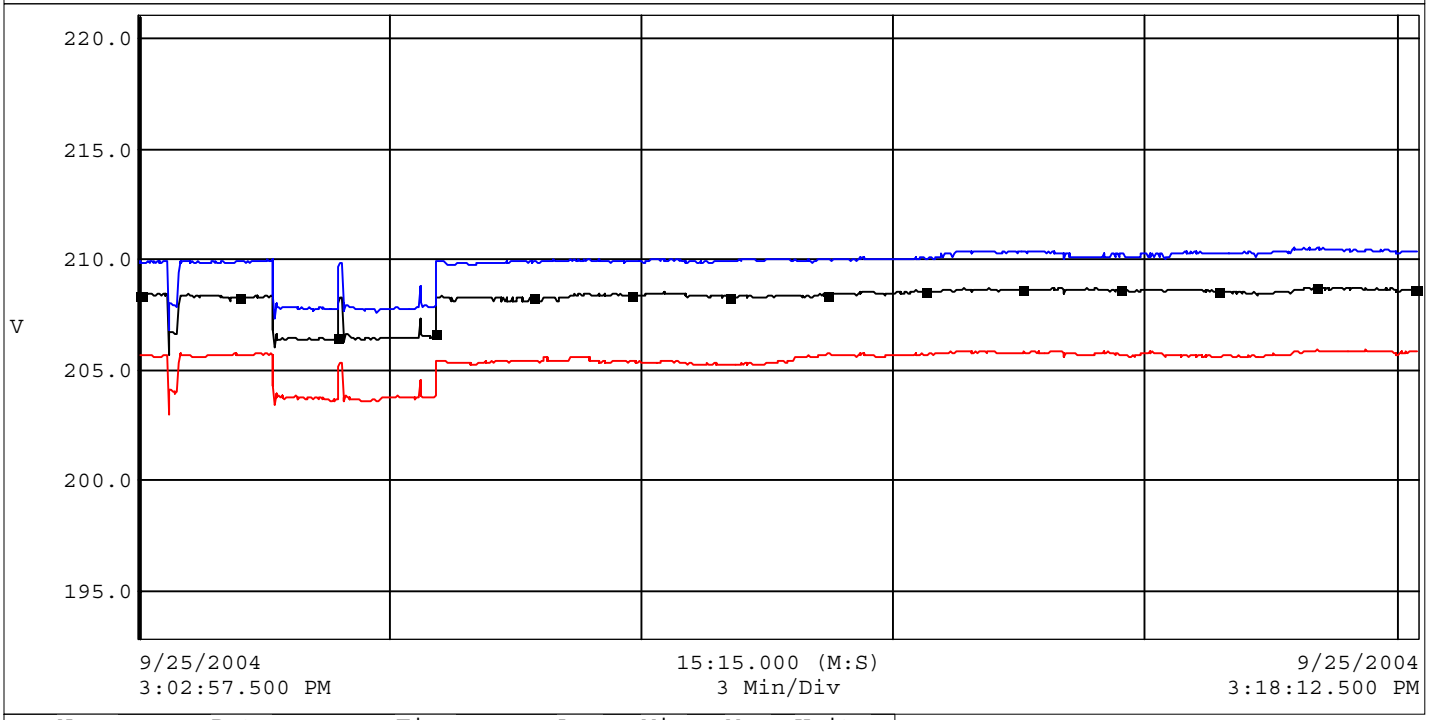


Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/25/2004	3:02:57.500 PM	121.3	119.7	121.7	916
Vrms Line2	9/25/2004	3:02:57.500 PM	118.7	117.4	119.0	916
Vrms Line3	9/25/2004	3:02:57.500 PM	119.8	118.2	120.2	916

9/25/2004 - 3:02:57.000 PM

Val	
121.3	Vrms Line1
118.9	Vrms Line2
119.9	Vrms Line3

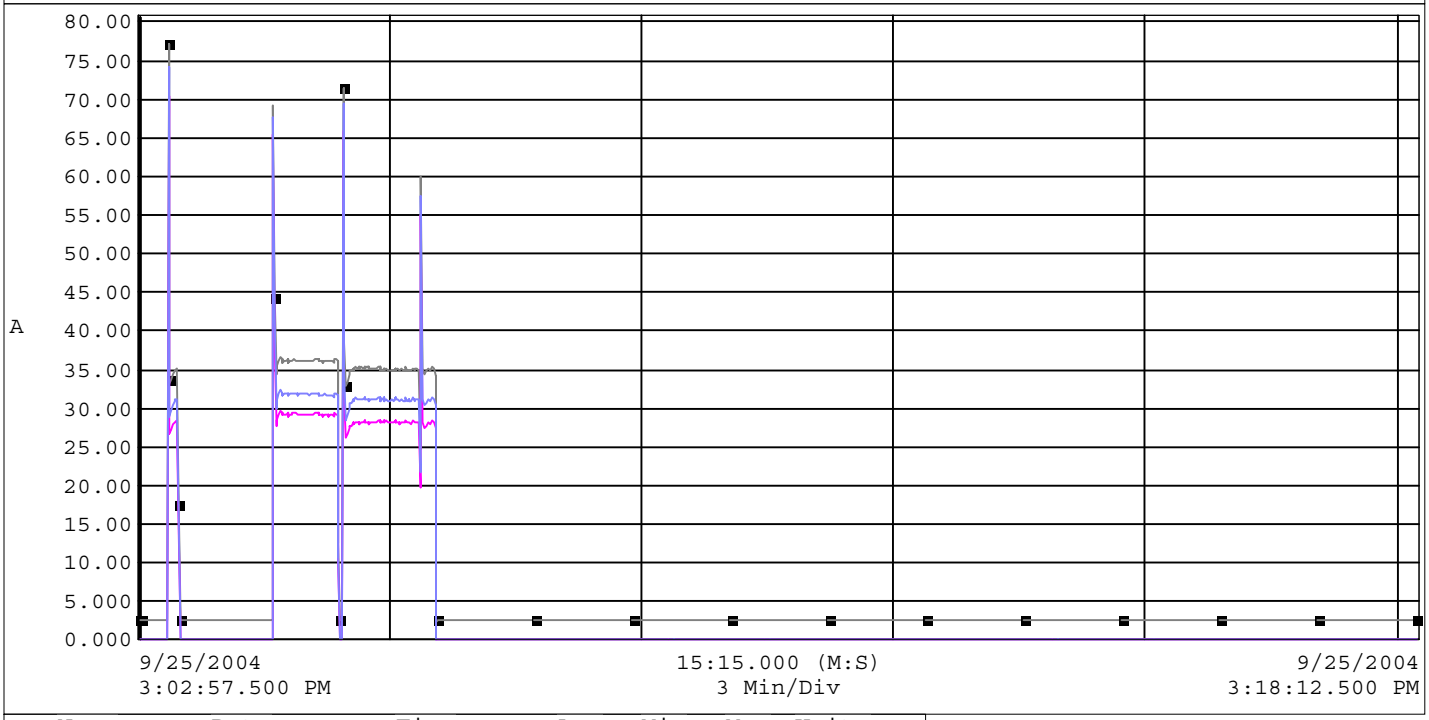
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/25/2004	3:02:57.500 PM	208.2	205.6	208.7	V
Urms Line2	9/25/2004	3:02:57.500 PM	205.3	202.9	205.9	V
Urms Line3	9/25/2004	3:02:57.500 PM	209.8	206.8	210.5	V

9/25/2004 - 3:02:57.000 PM
Val
208.3 — Urms Line1
205.6 — Urms Line2
209.9 — Urms Line3

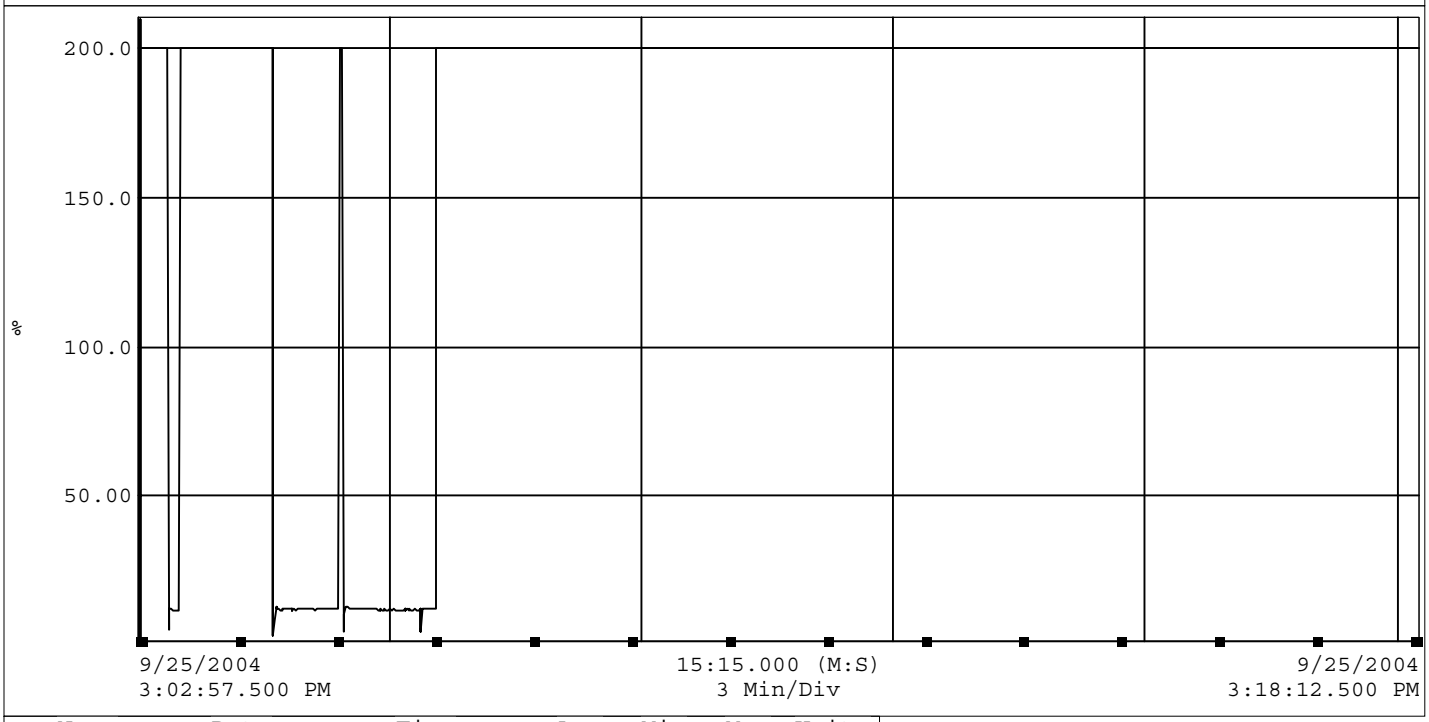
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/25/2004	3:02:57.500 PM	6.923	2.300	76.90	A
Arms Line2	9/25/2004	3:02:57.500 PM	3.932	0.000	70.30	A
Arms Line3	9/25/2004	3:02:57.500 PM	4.305	0.000	74.10	A

9/25/2004 - 3:02:57.000 PM
Val
2.400 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

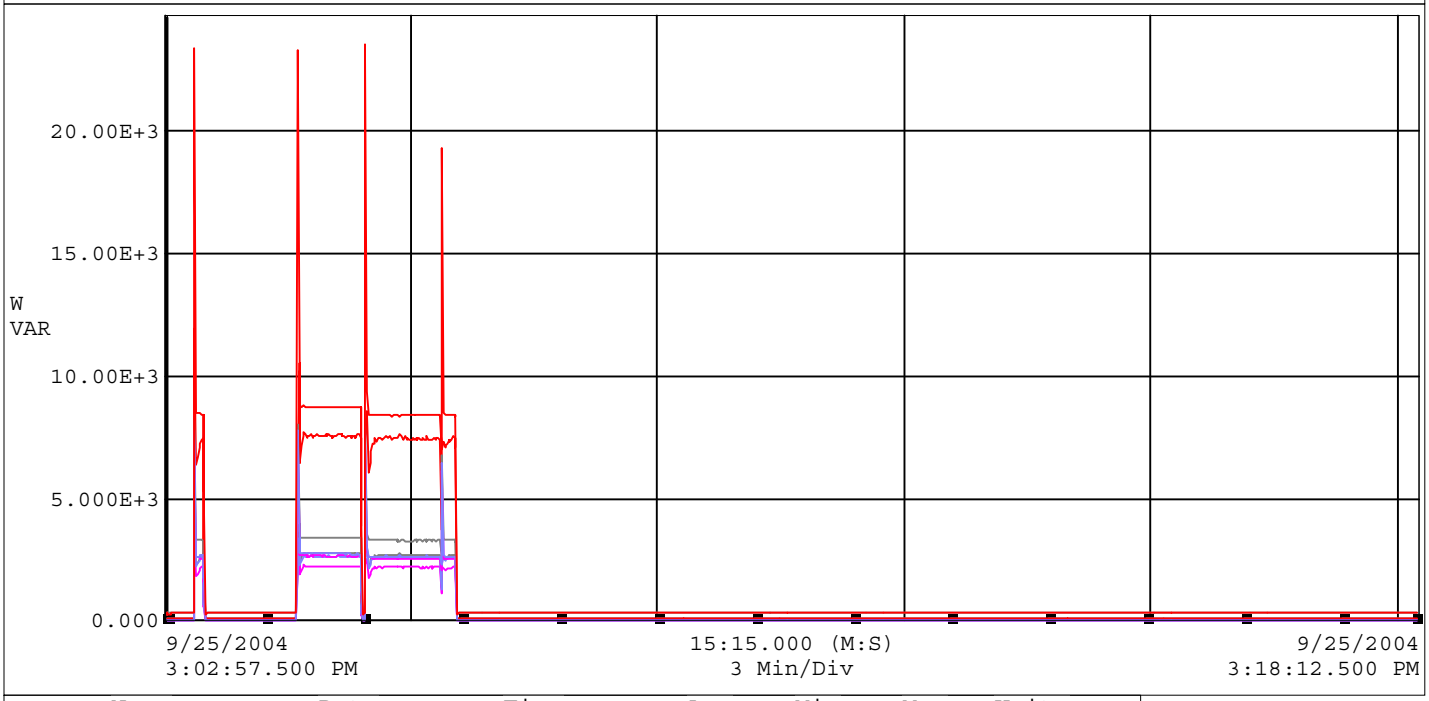
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/25/2004	3:02:57.500 PM	1.137	1.000	1.200	%
Aunb(IEEE)	9/25/2004	3:02:57.500 PM	174.7	2.900	200.0	%

9/25/2004 - 3:02:57.000 PM
Val
1.100 ── Vunb(IEEE)
200.0 ── Aunb(IEEE)

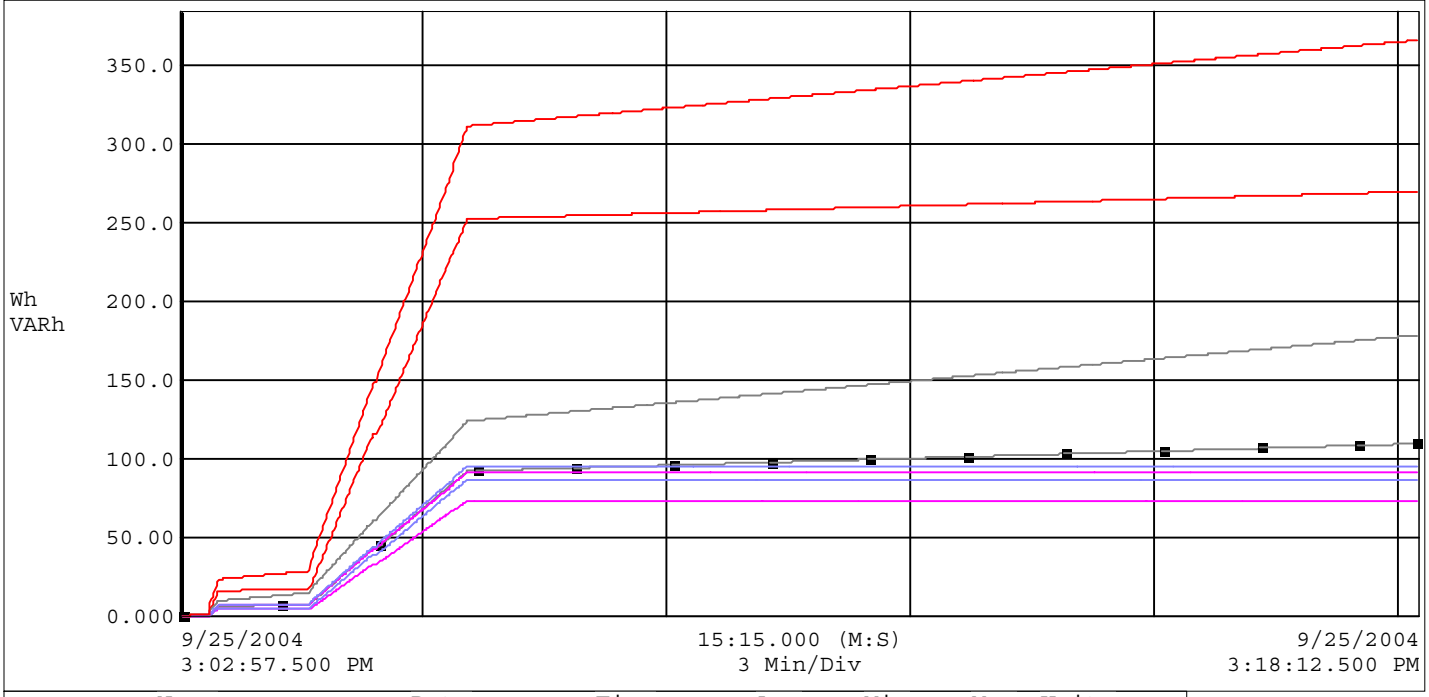
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/25/2004	3:02:57.500 PM	430.2	87.88	4.200E+3	W
W Line2	9/25/2004	3:02:57.500 PM	287.7	0.000	3.716E+3	W
W Line3	9/25/2004	3:02:57.500 PM	341.3	0.000	4.009E+3	W
W Sum of Phases	9/25/2004	3:02:57.500 PM	1.059E+3	87.88	11.93E+3	W
VAR Line1	9/25/2004	3:02:57.500 PM	700.9	264.2	8.193E+3	VAR
VAR Line2	9/25/2004	3:02:57.500 PM	360.0	0.000	7.455E+3	VAR
VAR Line3	9/25/2004	3:02:57.500 PM	375.5	0.000	7.897E+3	VAR
VAR Sum of Phases	9/25/2004	3:02:57.500 PM	1.436E+3	264.2	23.52E+3	VAR

9/25/2004 - 3:02:57.000 PM
Val
89.54 — W Line1
0.000 — W Line2
0.000 — W Line3
89.75 — W Sum of Phases
274.9 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
275.1 — VAR Sum of Phases

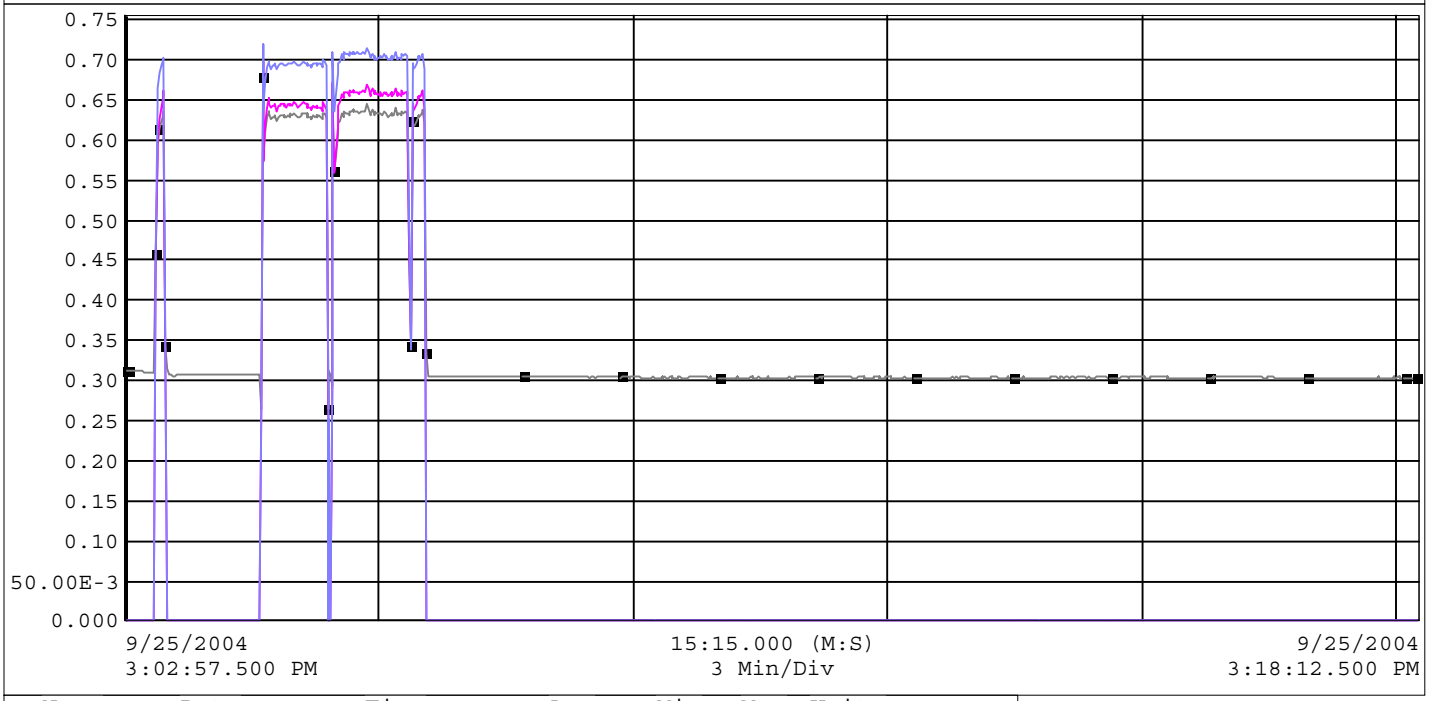
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/25/2004	3:02:57.500 PM	84.39	23.40E-3	109.5	Wh
W-hours Line2	9/25/2004	3:02:57.500 PM	61.57	0.000	73.21	Wh
W-hours Line3	9/25/2004	3:02:57.500 PM	73.01	0.000	86.84	Wh
W-hours Sum of Phases	9/25/2004	3:02:57.500 PM	219.0	24.68E-3	269.5	Wh
VAR-hours Line1	9/25/2004	3:02:57.500 PM	126.0	76.24E-3	178.3	VARh
VAR-hours Line2	9/25/2004	3:02:57.500 PM	77.26	0.000	91.59	VARh
VAR-hours Line3	9/25/2004	3:02:57.500 PM	80.58	0.000	95.55	VARh
VAR-hours Sum of Phases	9/25/2004	3:02:57.500 PM	283.8	78.10E-3	365.5	VARh

9/25/2004 - 3:02:57.000 PM
Val
23.40E-3 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
24.68E-3 — W-hours Sum of Phases
76.24E-3 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
78.10E-3 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/25/2004	3:02:57.500 PM	0.345	0.264	0.678	
PF Line2	9/25/2004	3:02:57.500 PM	84.42E-3	0.000	0.696	
PF Line3	9/25/2004	3:02:57.500 PM	90.81E-3	0.000	0.718	

9/25/2004 - 3:02:57.000 PM
Val
0.310 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Ordot Chalan Pago WWPS\092504-Ordot Chalan Pago WWPS - Pump 1 and 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Ordot Chalan Pago WWPS - Pumps 1 and 2 ,

Comments

GPA Meter 01-495-524, 14.2 KW Demand.

Two Barnes 15 HP, 200 volt, 43.7 amp, 1750 RPM submersible pumps. Measured at feeder to the control panel.

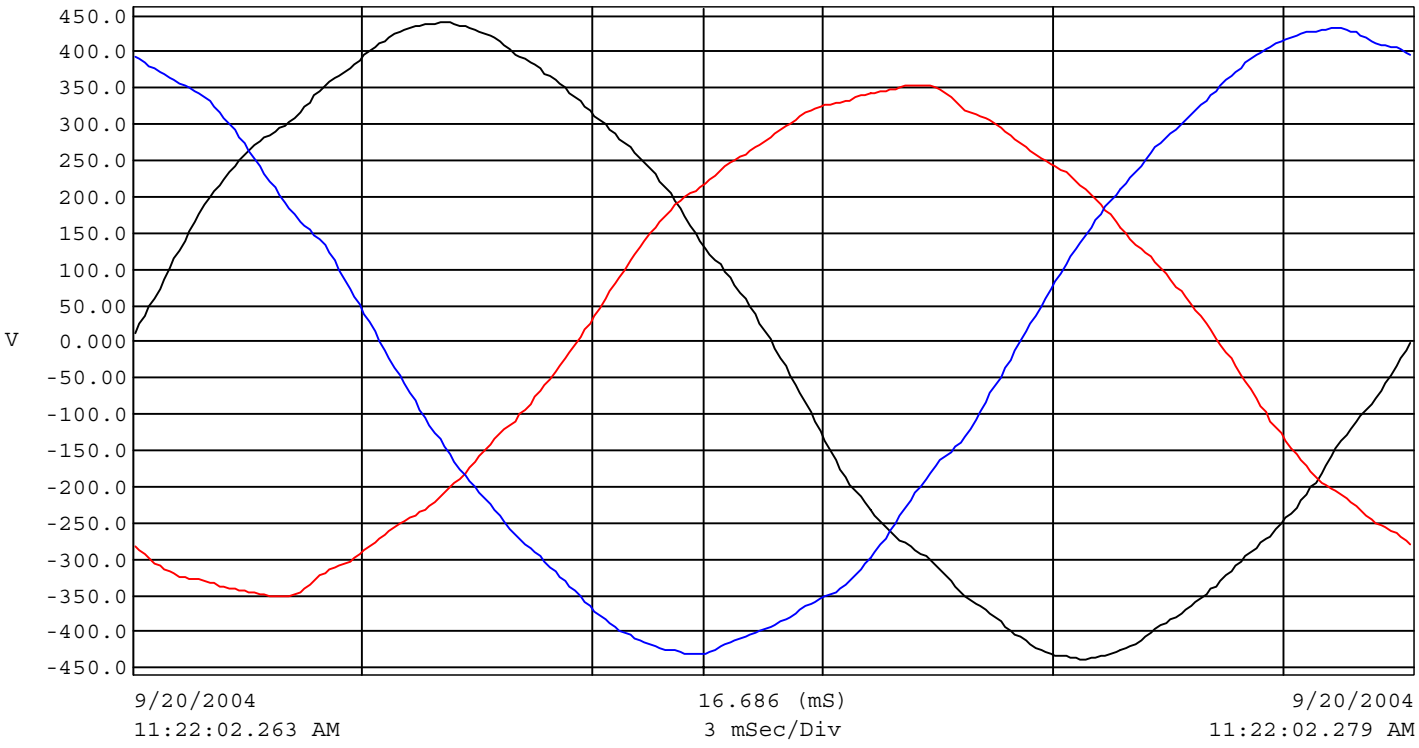
GWA Wastewater Pumping Station Assessment				
Station Name: PACIFIC LATTE	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/20/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.41	
Transformer Pole Condition and Grounding	2.0%	2	0.04	1
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.45	
Generator Condition	10.0%	2	0.2	22
Generator Battery	5.0%	2	0.1	22
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	SHARED PM
Secondary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	SHARED PM
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.22	
Level	5.0%	3	0.15	
Alarms	3.0%	1	0.03	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	(NONE)
	100%	**Assessment Value**		**2.6**

Comments:

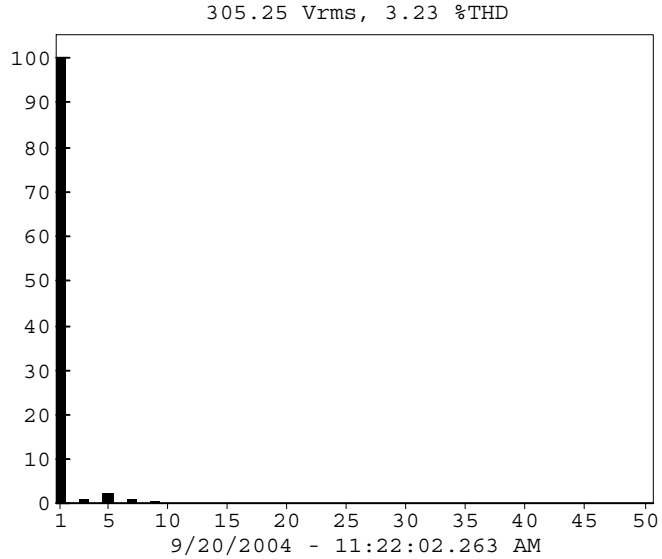
Pacific Latte WWPS - Pump 1 Photo 1

Recording Start Date	9/20/2004 - 11:22:02 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/20/2004	11:22:02.263 AM	16.686	305.3	V
Waveform V2	9/20/2004	11:22:02.263 AM	16.686	246.4	V
Waveform V3	9/20/2004	11:22:02.263 AM	16.686	303.8	V



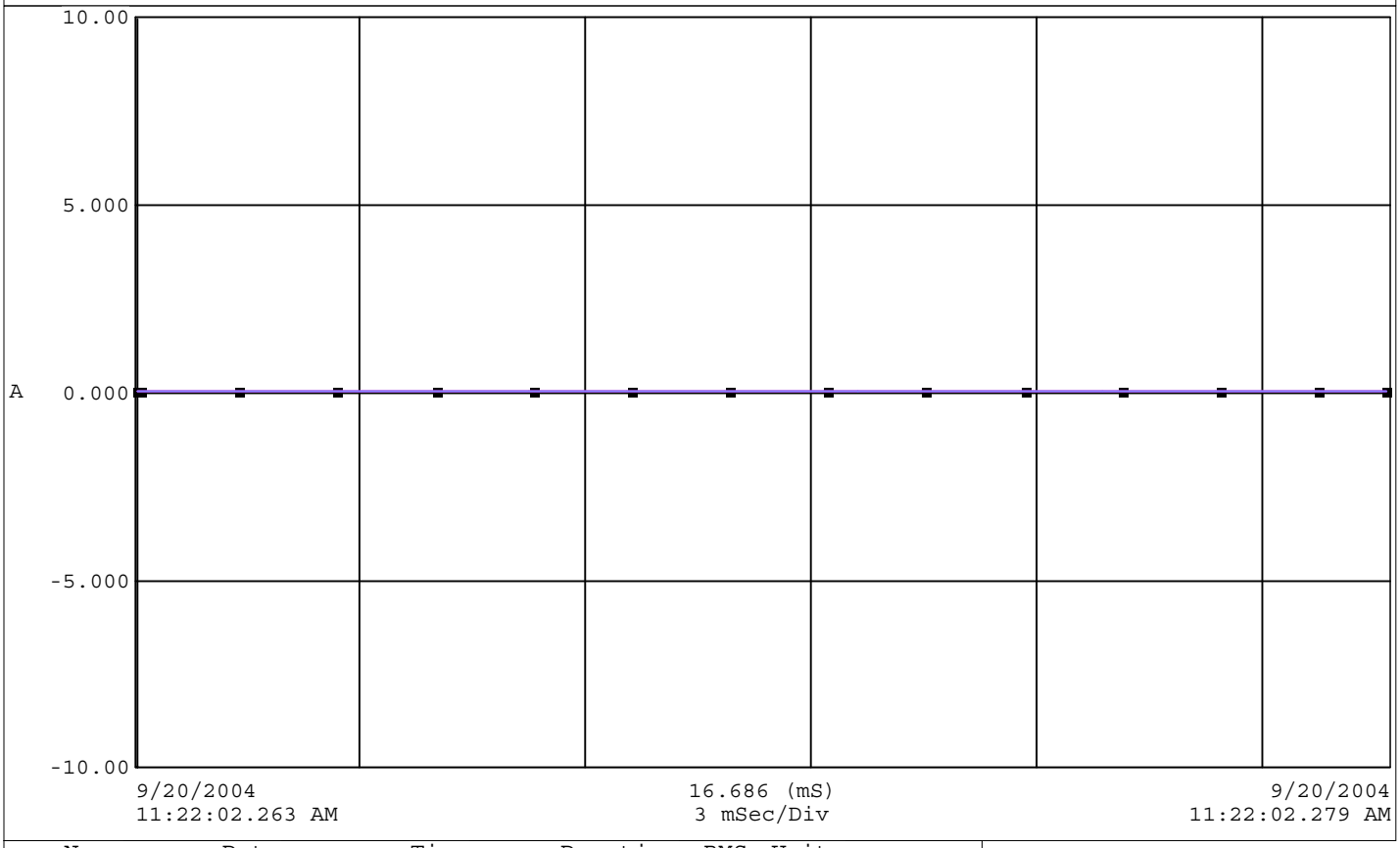
9/20/2004 - 11:22:02.007 AM

Val	
128.4	Waveform V1
216.3	Waveform V2
-431.0	Waveform V3

Waveform V1

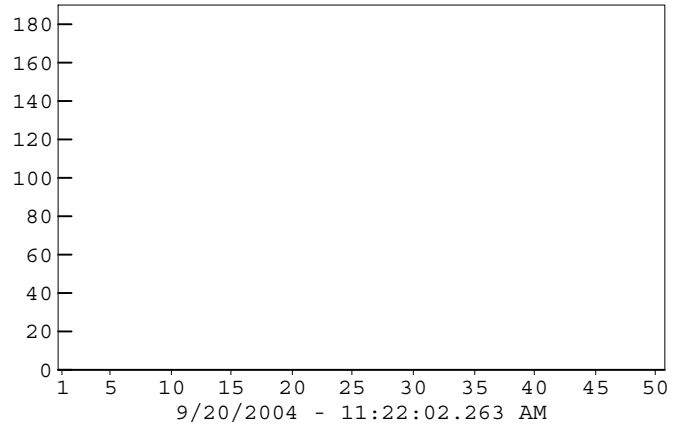
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	1.2	H20	0.0	H37	0.0
H04	0.0	H21	0.2	H38	0.0
H05	2.5	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.3	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.7	H26	0.0	H43	0.1
H10	0.0	H27	0.1	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.1
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.3	H32	0.0	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/20/2004	11:22:02.263 AM	16.686	0.000	A
Waveform I2	9/20/2004	11:22:02.263 AM	16.686	0.000	A
Waveform I3	9/20/2004	11:22:02.263 AM	16.686	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD

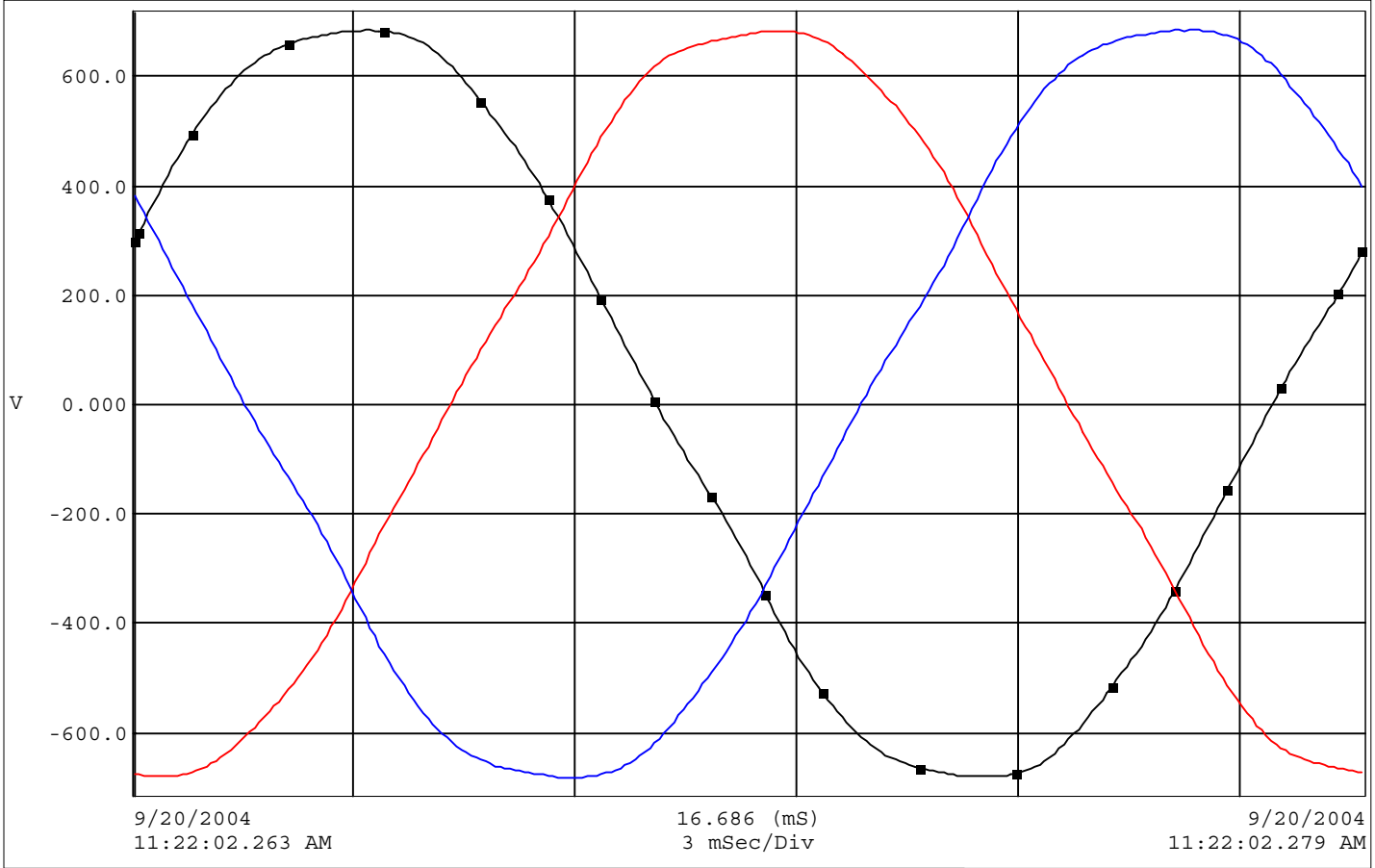


9/20/2004 - 11:22:02.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

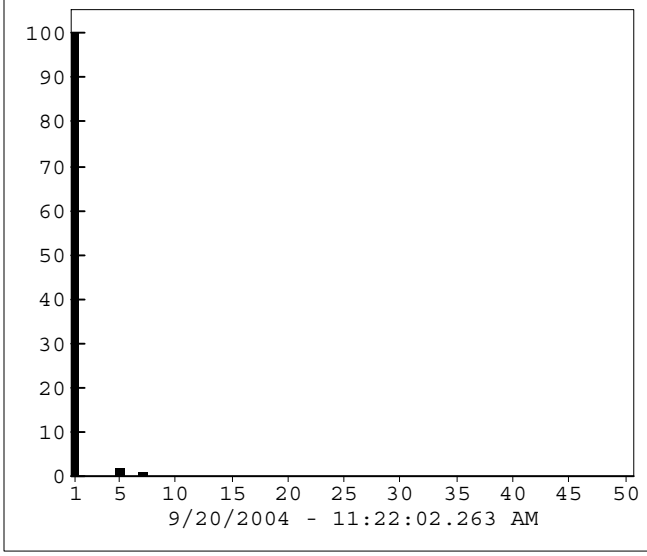
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/20/2004	11:22:02.263 AM	16.686	491.8	V
Waveform U2	9/20/2004	11:22:02.263 AM	16.686	490.8	V
Waveform U3	9/20/2004	11:22:02.263 AM	16.686	493.1	V

Waveform U1
491.84 Vrms, 2.09 %THD



9/20/2004 - 11:22:02.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/20/2004
Start Time: 11:22:02 AM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Pacific Latte WWPS\092004 - Pacific Latte WWPS - Pump 1 Photo 1.dvb

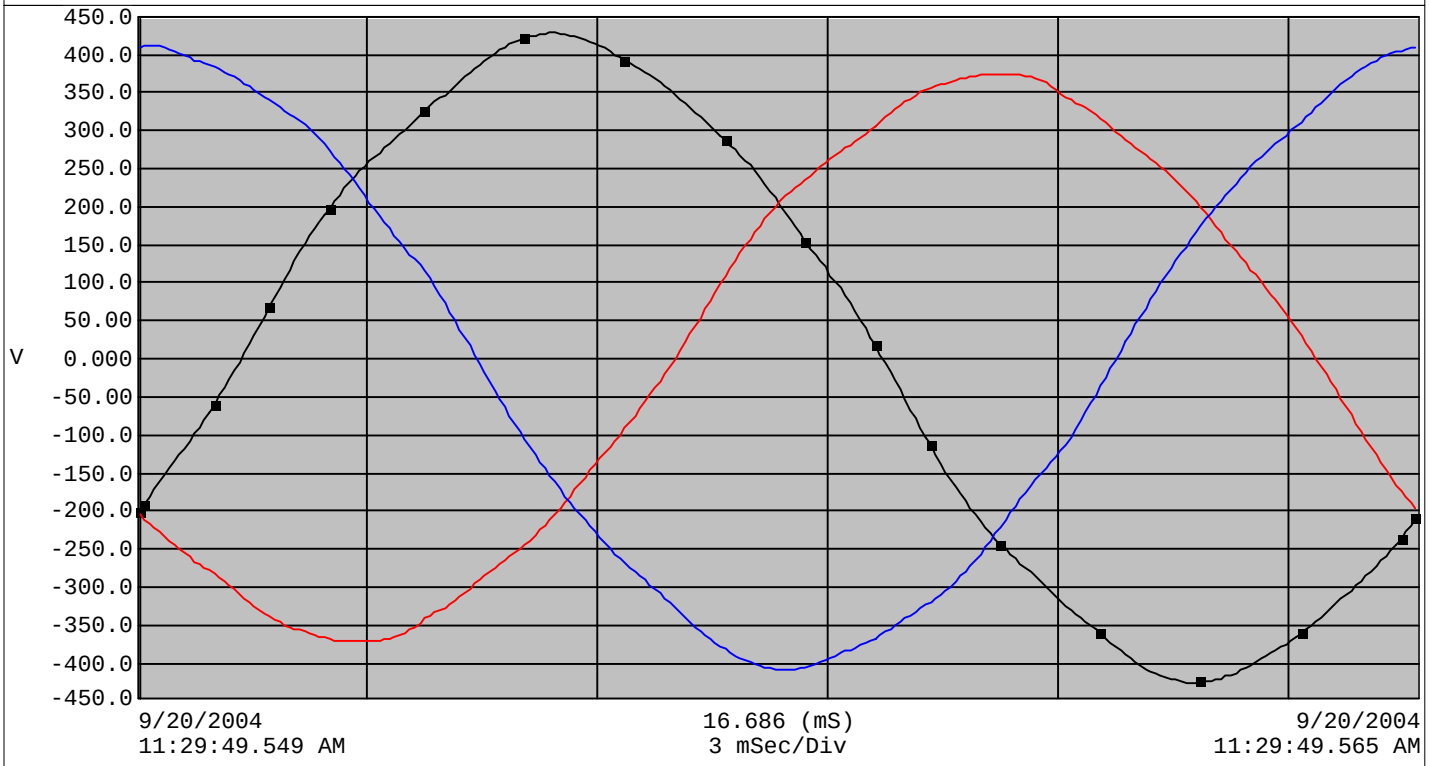
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Pacific Latte WWPS - No Load Phto ,

Comments
GPA Power 04565841, Demand 0.89.

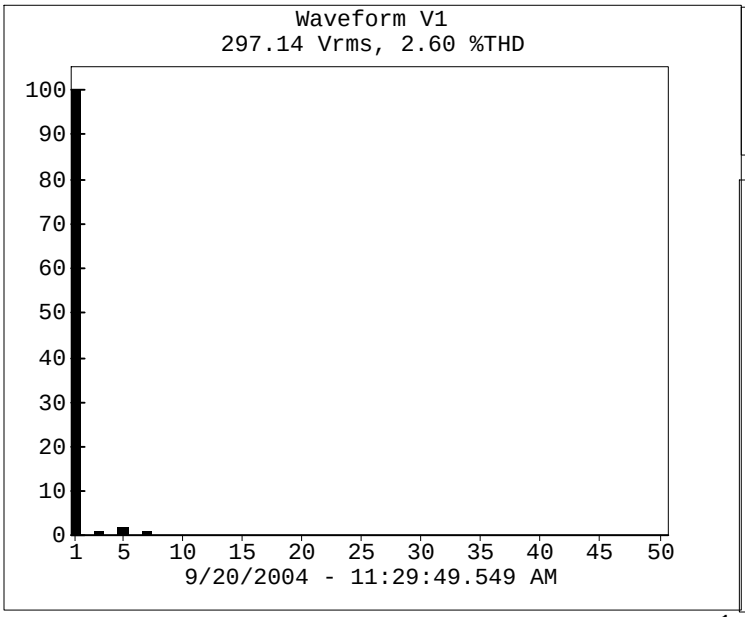
Pacific Latte WWPS - Pump 1 Photo 2

Recording Start Date	9/20/2004 - 11:29:49 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/20/2004	11:29:49.549 AM	16.686	297.1	V
Waveform V2	9/20/2004	11:29:49.549 AM	16.686	263.2	V
Waveform V3	9/20/2004	11:29:49.549 AM	16.686	287.2	V

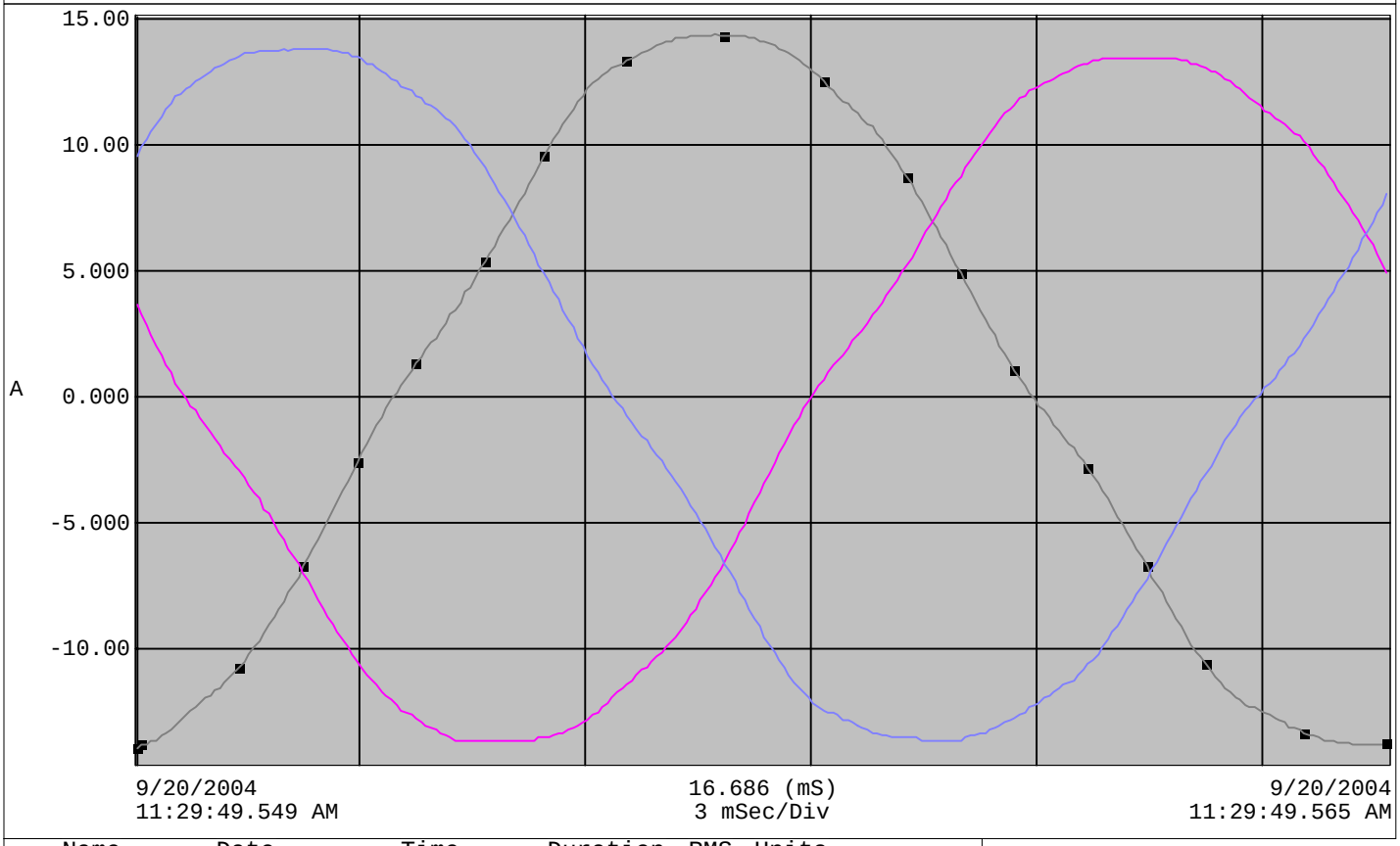


9/20/2004 - 11:29:49.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

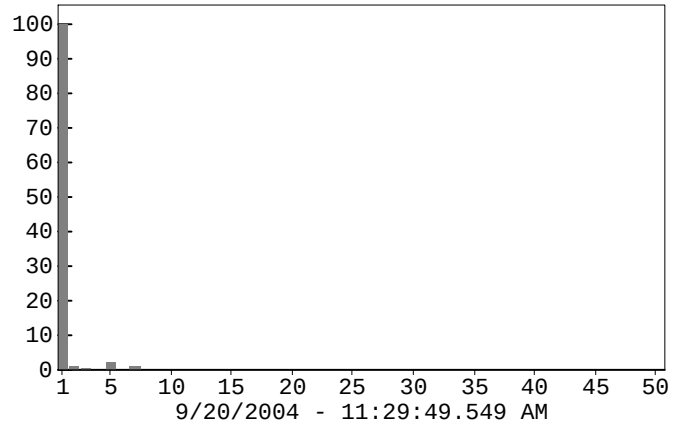
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	1.0	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	2.1	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/20/2004	11:29:49.549 AM	16.686	10.08	A
Waveform I2	9/20/2004	11:29:49.549 AM	16.686	9.861	A
Waveform I3	9/20/2004	11:29:49.549 AM	16.686	9.926	A

Waveform I1
10.08 Arms, 3.58 %THD

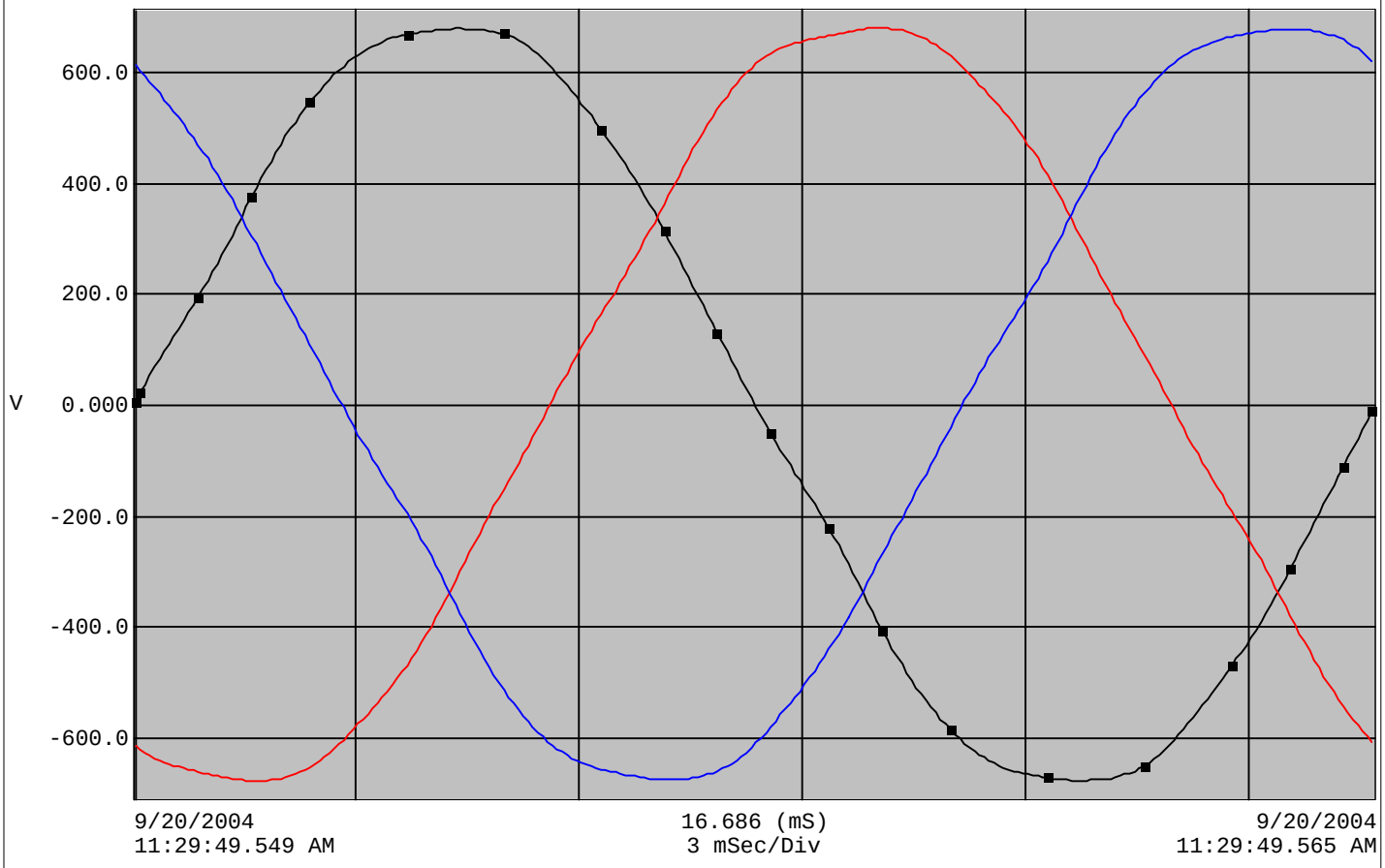


9/20/2004 - 11:29:49.015 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

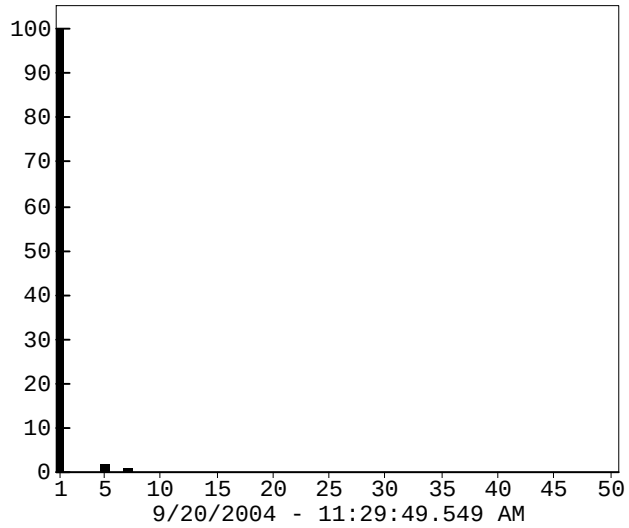
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	1.6	H19	0.1	H36	0.0
H03	1.0	H20	0.0	H37	0.0
H04	0.2	H21	0.0	H38	0.0
H05	2.6	H22	0.0	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.1
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/20/2004	11:29:49.549 AM	16.686	489.2	V
Waveform U2	9/20/2004	11:29:49.549 AM	16.686	488.9	V
Waveform U3	9/20/2004	11:29:49.549 AM	16.686	488.1	V

Waveform U1
489.16 Vrms, 2.06 %THD



9/20/2004 - 11:29:49.015 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/20/2004
Start Time: 11:29:49 AM
Duration: 0:0.000 (M:S)
W: 1.864E+3 W
VAR: 2.351E+3 W
VA: 3.000E+3 W
Power Factor: 0.621
Displacement Power Factor: 0.623
TAN: 1.255
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Pacific Latte WWPS\092004 - Pacific Latte WWPS - Pump 1 Photo 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Pacific Latte WWPS - Pump 1 Photo ,

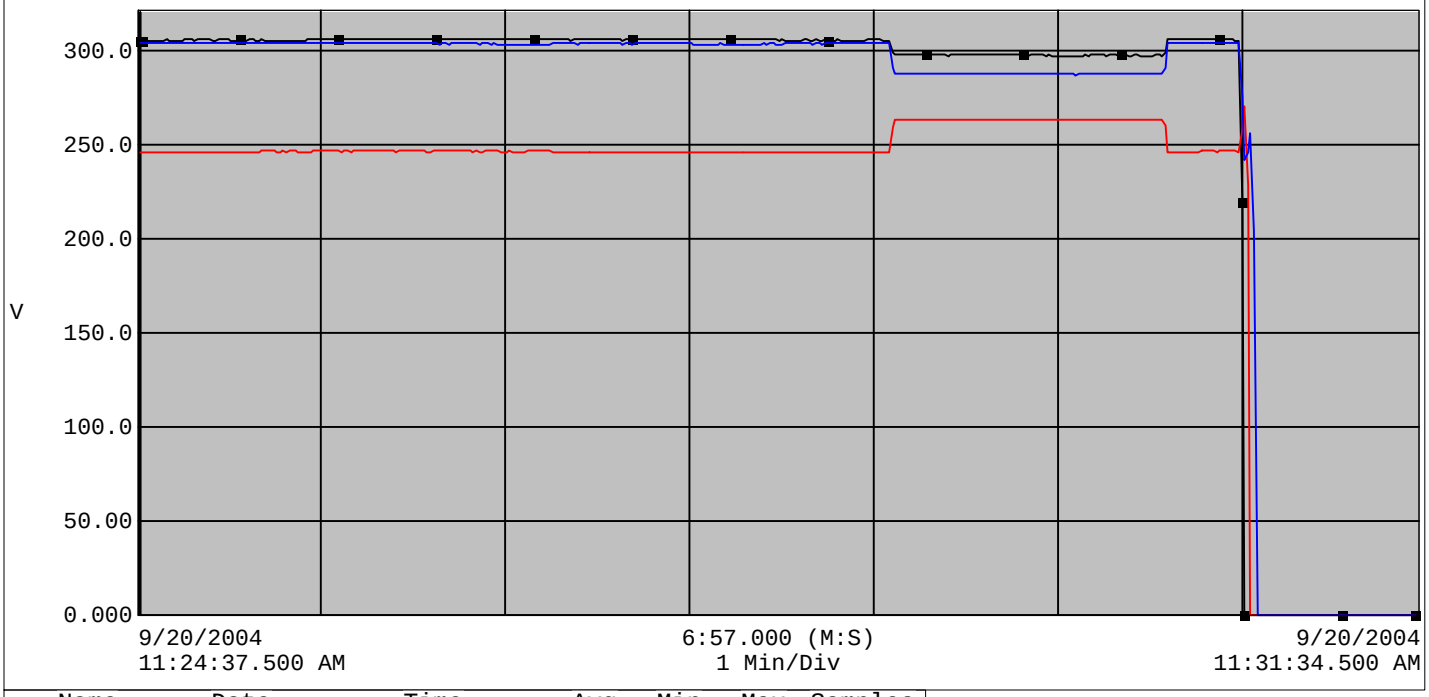
Comments

GPA Meter 04565841, demand 0.89. Pump 1 operational.

Pacific Latte WWPS - Pump 1

Recording Start Date	9/20/2004 - 11:24:37 AM
Recording Duration	6:57 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

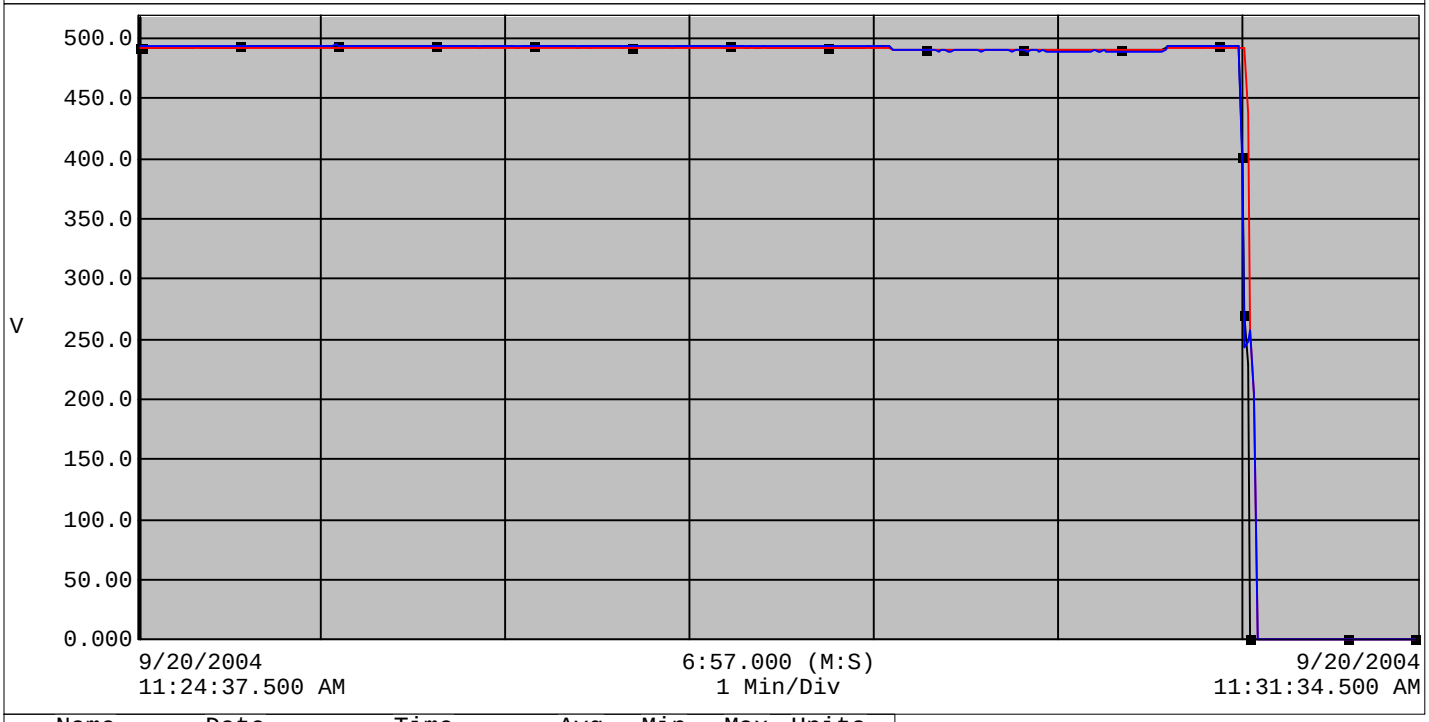
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/20/2004	11:24:37.500 AM	262.0	0.000	306.0	418
Vrms Line2	9/20/2004	11:24:37.500 AM	217.5	0.000	270.7	418
Vrms Line3	9/20/2004	11:24:37.500 AM	260.9	0.000	304.0	418

9/20/2004 - 11:24:37.000 AM
Val
305.3 Vrms Line1
246.1 Vrms Line2
303.5 Vrms Line3

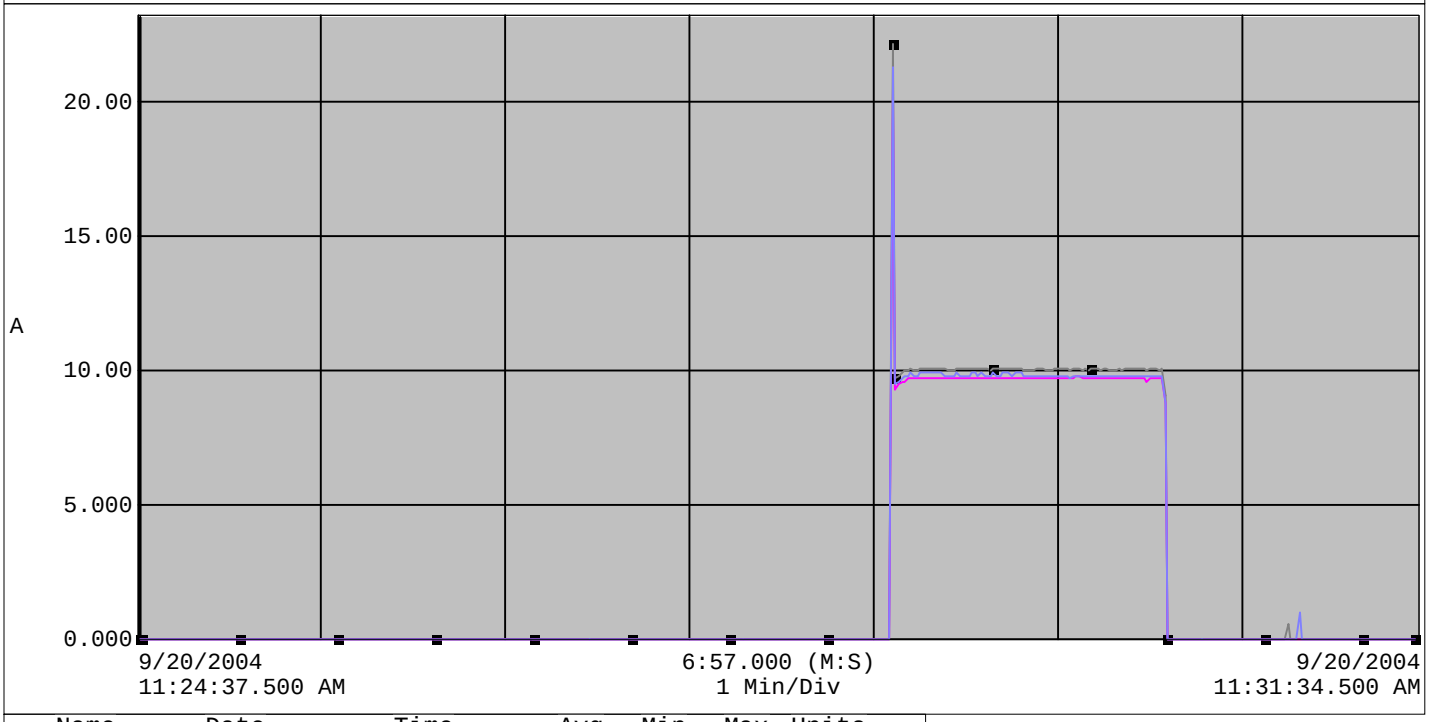
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/20/2004	11:24:37.500 AM	425.2	0.000	492.3	V
Urms Line2	9/20/2004	11:24:37.500 AM	426.9	0.000	491.4	V
Urms Line3	9/20/2004	11:24:37.500 AM	426.6	0.000	493.3	V

9/20/2004 - 11:24:37.000 AM
Val
491.2 Urms Line1
490.8 Urms Line2
492.9 Urms Line3

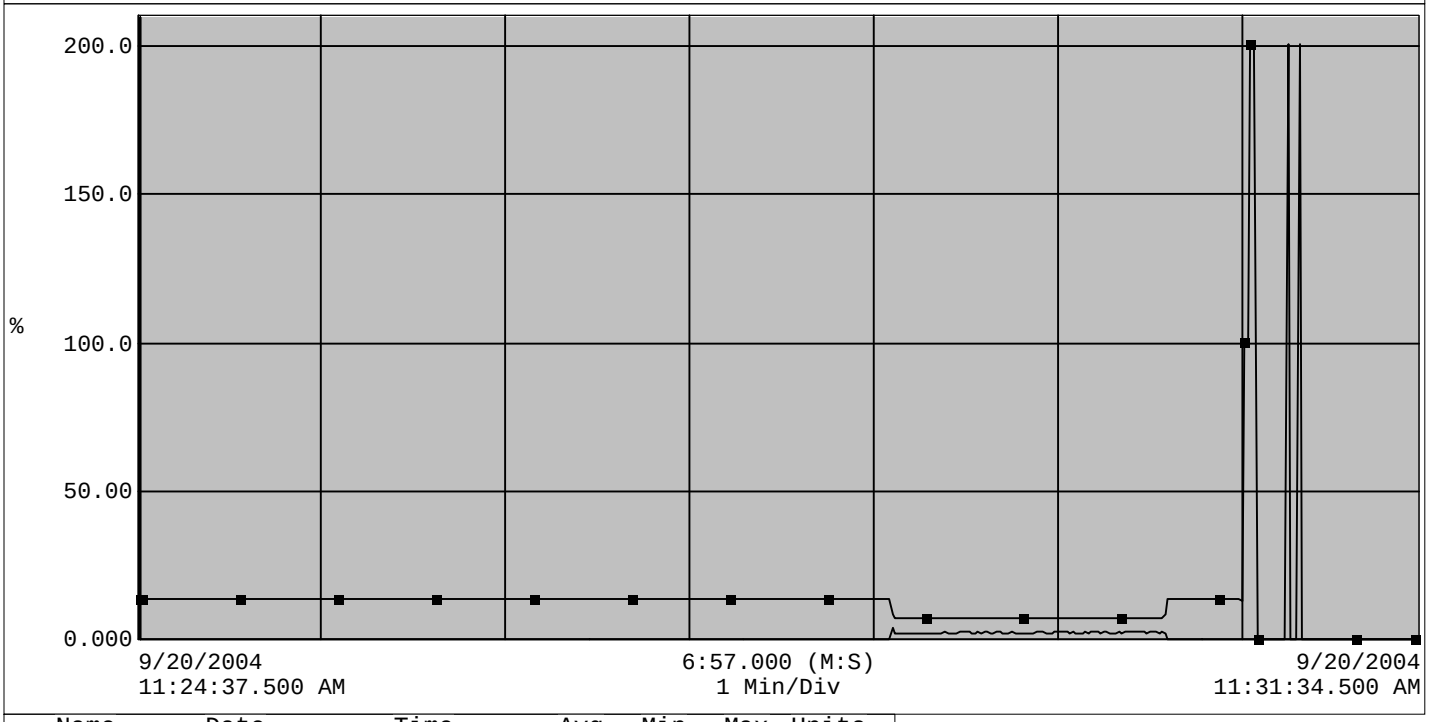
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/20/2004	11:24:37.500 AM	2.194	0.000	22.10	A
Arms Line2	9/20/2004	11:24:37.500 AM	2.111	0.000	20.50	A
Arms Line3	9/20/2004	11:24:37.500 AM	2.141	0.000	21.30	A

9/20/2004 - 11:24:37.000 AM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

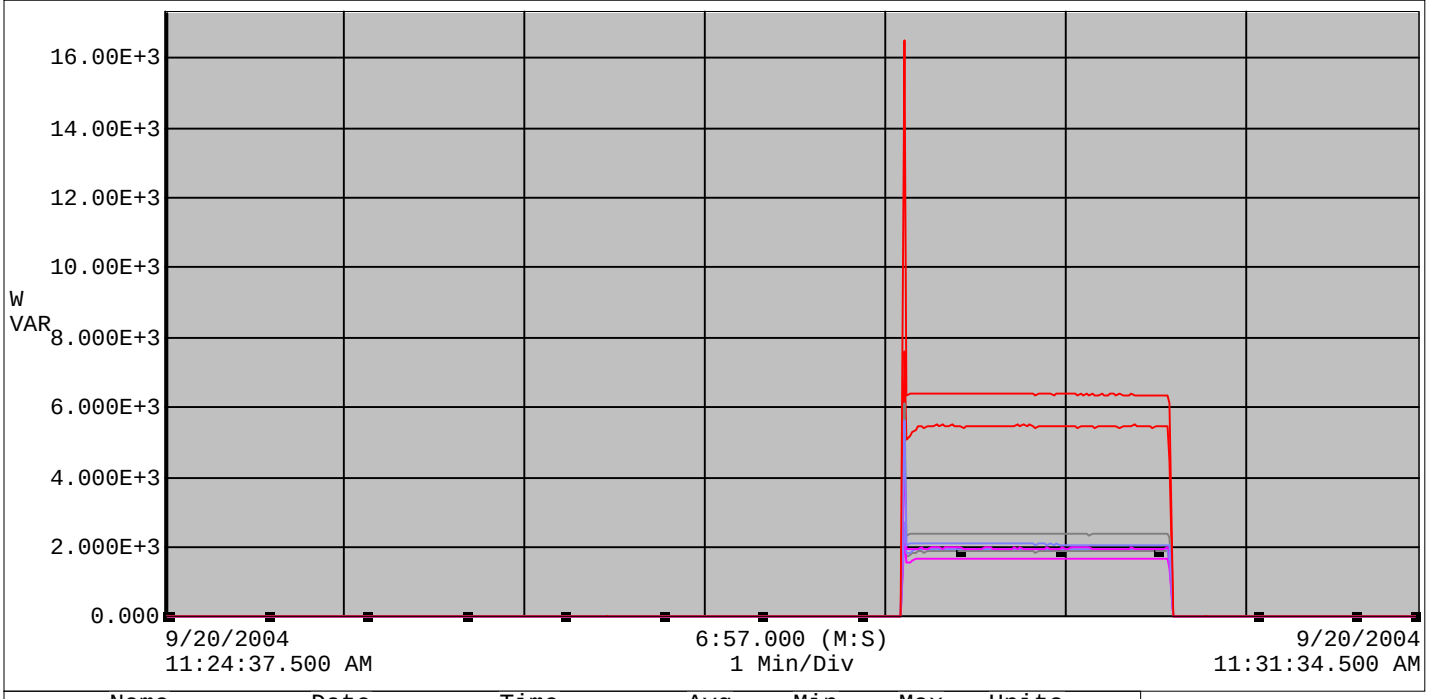
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/20/2004	11:24:37.500 AM	11.76	0.000	200.0	%
Aunb(IEEE)	9/20/2004	11:24:37.500 AM	1.412	0.000	200.0	%

9/20/2004 - 11:24:37.000 AM
Val
13.60 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

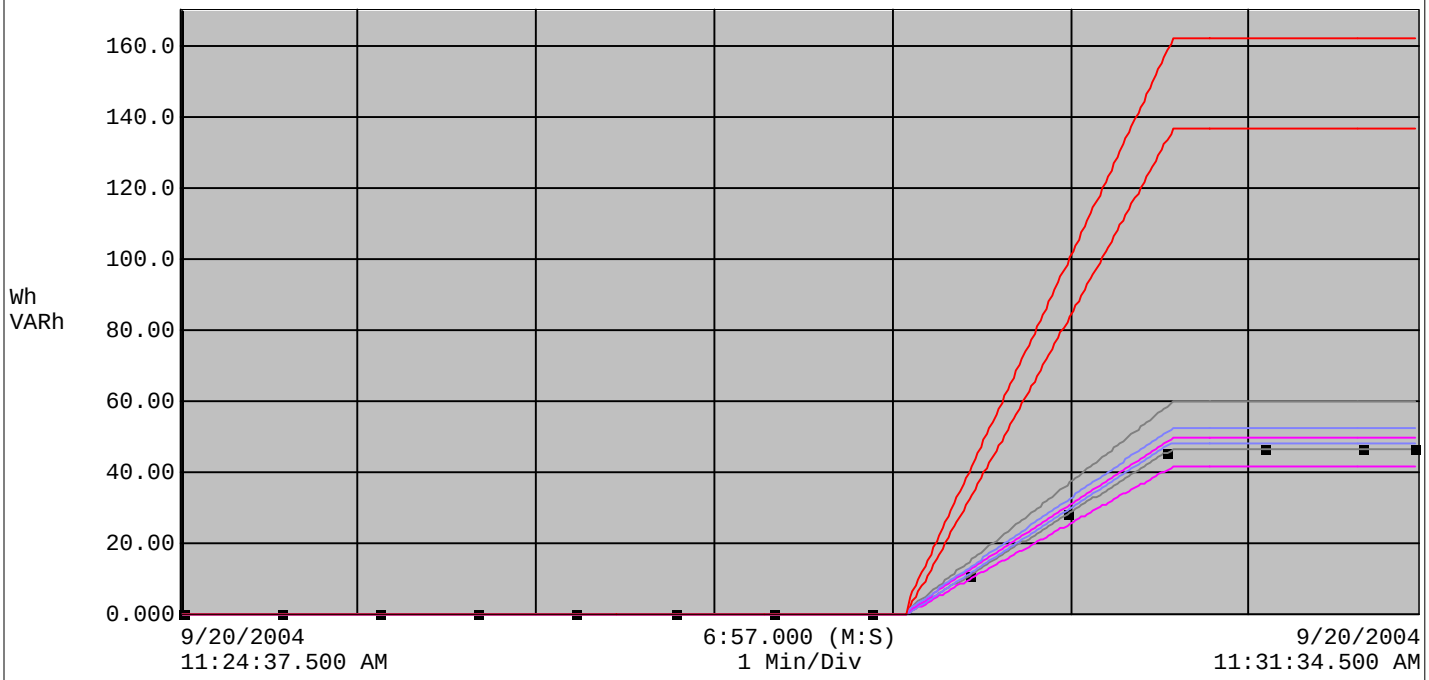
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/20/2004	11:24:37.500 AM	400.1	0.000	2.607E+3	W
W Line2	9/20/2004	11:24:37.500 AM	356.6	0.000	2.272E+3	W
W Line3	9/20/2004	11:24:37.500 AM	415.2	0.000	2.692E+3	W
W Sum of Phases	9/20/2004	11:24:37.500 AM	1.172E+3	0.000	7.572E+3	W
VAR Line1	9/20/2004	11:24:37.500 AM	513.9	0.000	6.083E+3	VAR
VAR Line2	9/20/2004	11:24:37.500 AM	426.0	0.000	4.811E+3	VAR
VAR Line3	9/20/2004	11:24:37.500 AM	452.1	0.000	5.590E+3	VAR
VAR Sum of Phases	9/20/2004	11:24:37.500 AM	1.392E+3	0.000	16.48E+3	VAR

9/20/2004 - 11:24:37.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

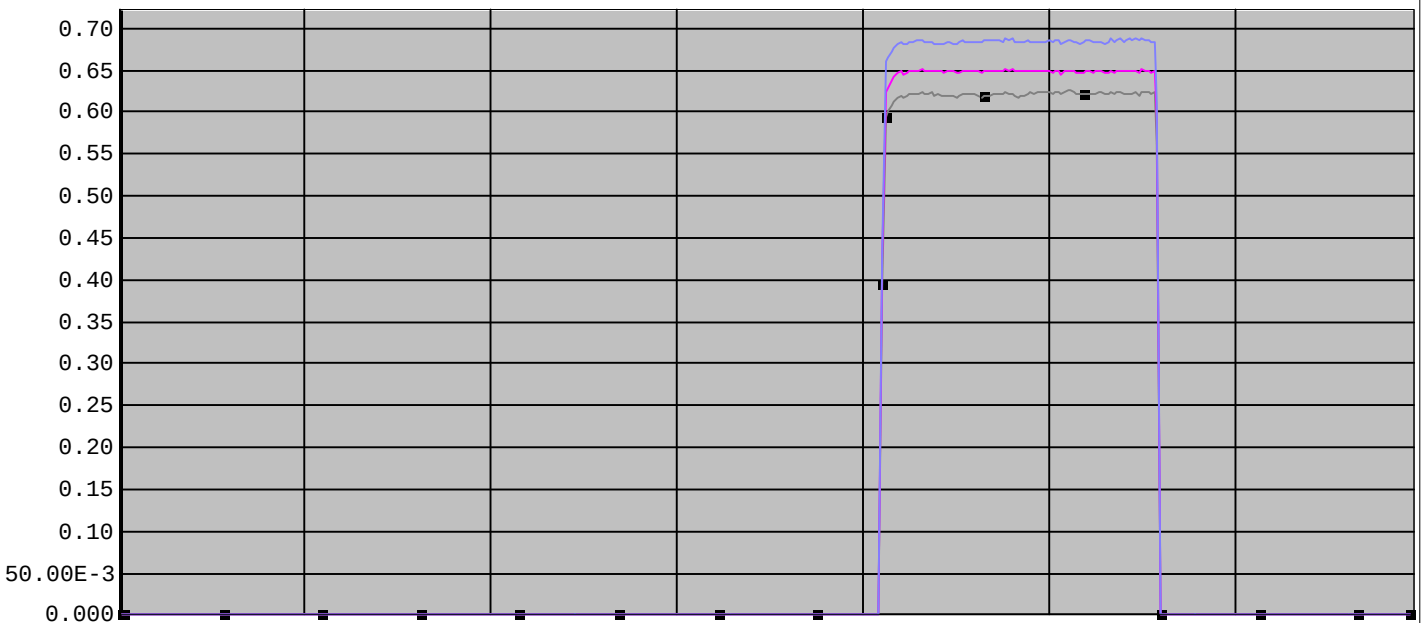
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/20/2004	11:24:37.500 AM	14.19	0.000	46.46	Wh
W-hours Line2	9/20/2004	11:24:37.500 AM	12.65	0.000	41.40	Wh
W-hours Line3	9/20/2004	11:24:37.500 AM	14.74	0.000	48.21	Wh
W-hours Sum of Phases	9/20/2004	11:24:37.500 AM	41.58	0.000	136.1	Wh
VAR-hours Line1	9/20/2004	11:24:37.500 AM	18.32	0.000	59.67	VARh
VAR-hours Line2	9/20/2004	11:24:37.500 AM	15.18	0.000	49.47	VARh
VAR-hours Line3	9/20/2004	11:24:37.500 AM	16.13	0.000	52.49	VARh
VAR-hours Sum of Phases	9/20/2004	11:24:37.500 AM	49.62	0.000	161.6	VARh

9/20/2004 - 11:24:37.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/20/2004	11:24:37.500 AM	0.133	0.000	0.626	
PF Line2	9/20/2004	11:24:37.500 AM	0.139	0.000	0.651	
PF Line3	9/20/2004	11:24:37.500 AM	0.146	0.000	0.687	

9/20/2004 - 11:24:37.000 AM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Pacific Latte WWPS\092004 - Pacific Latte WWPS - Pump 1.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Pacific Latte WWPS - Pump 1 ,

Comments

GPA Meter 04565841, Demand 0.89. From KVA recording, submersible motor appears to be rated at 9 or 10 HP. GWA 20 KW standby generator.

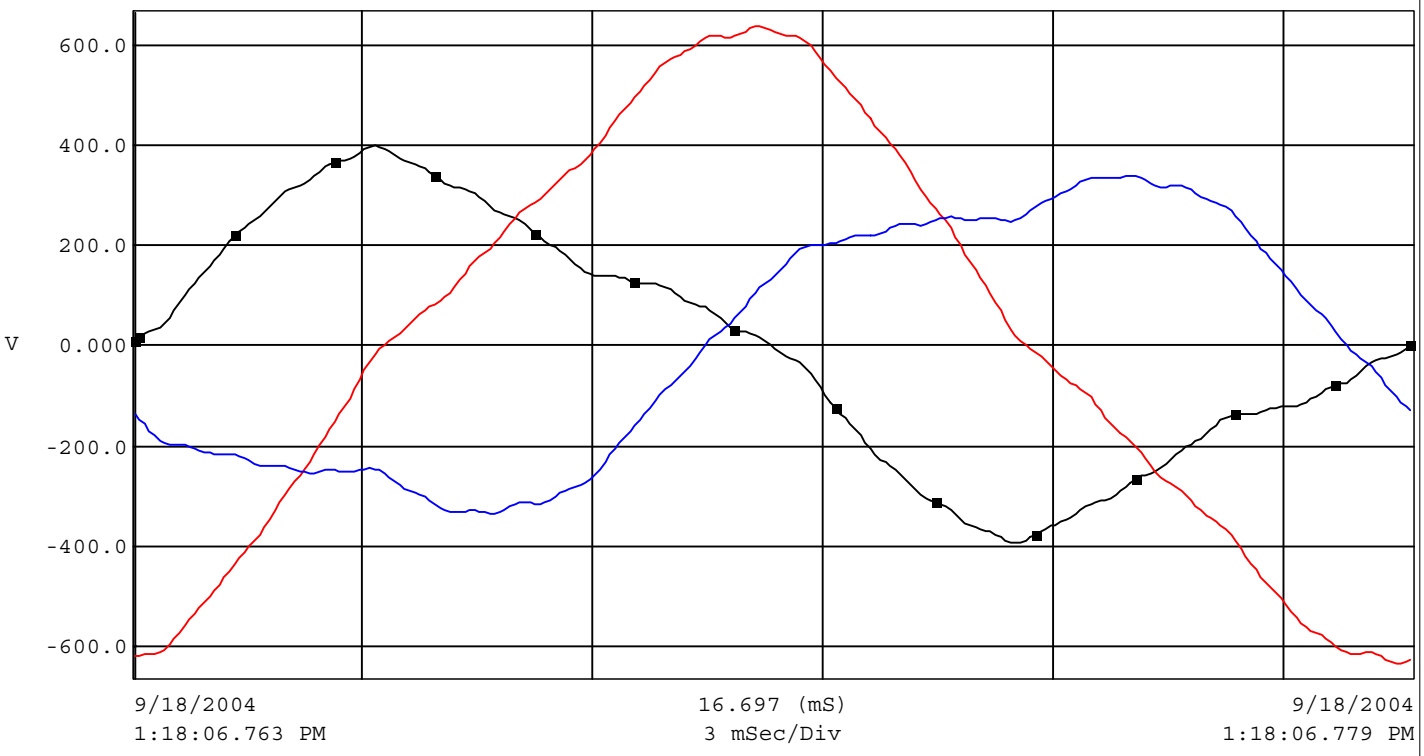
GWA Wastewater Pumping Station Assessment				
Station Name: PAGO DOUBLE SHAFT	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/18/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.37	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	2	0.02	
Building Service Information	**10.0%**		0.175	
Main Disconnect	5.0%	2	0.1	11
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.025	
Generator Condition	10.0%	0	0	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	0	0	
Auto Transfer Switch	2.5%	1	0.025	
Primary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Secondary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.22	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	
	100%	**Assessment Value**		**2.1**

Comments:

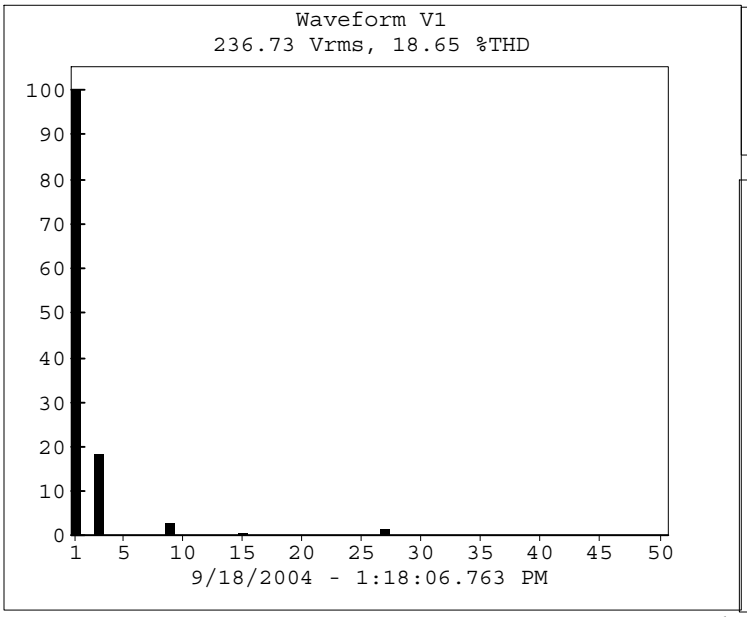
Pago DS - No Load Photo

Recording Start Date	9/18/2004 - 1:18:06 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.89 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/18/2004	1:18:06.763 PM	16.697	236.7	V
Waveform V2	9/18/2004	1:18:06.763 PM	16.697	412.1	V
Waveform V3	9/18/2004	1:18:06.763 PM	16.697	236.6	V

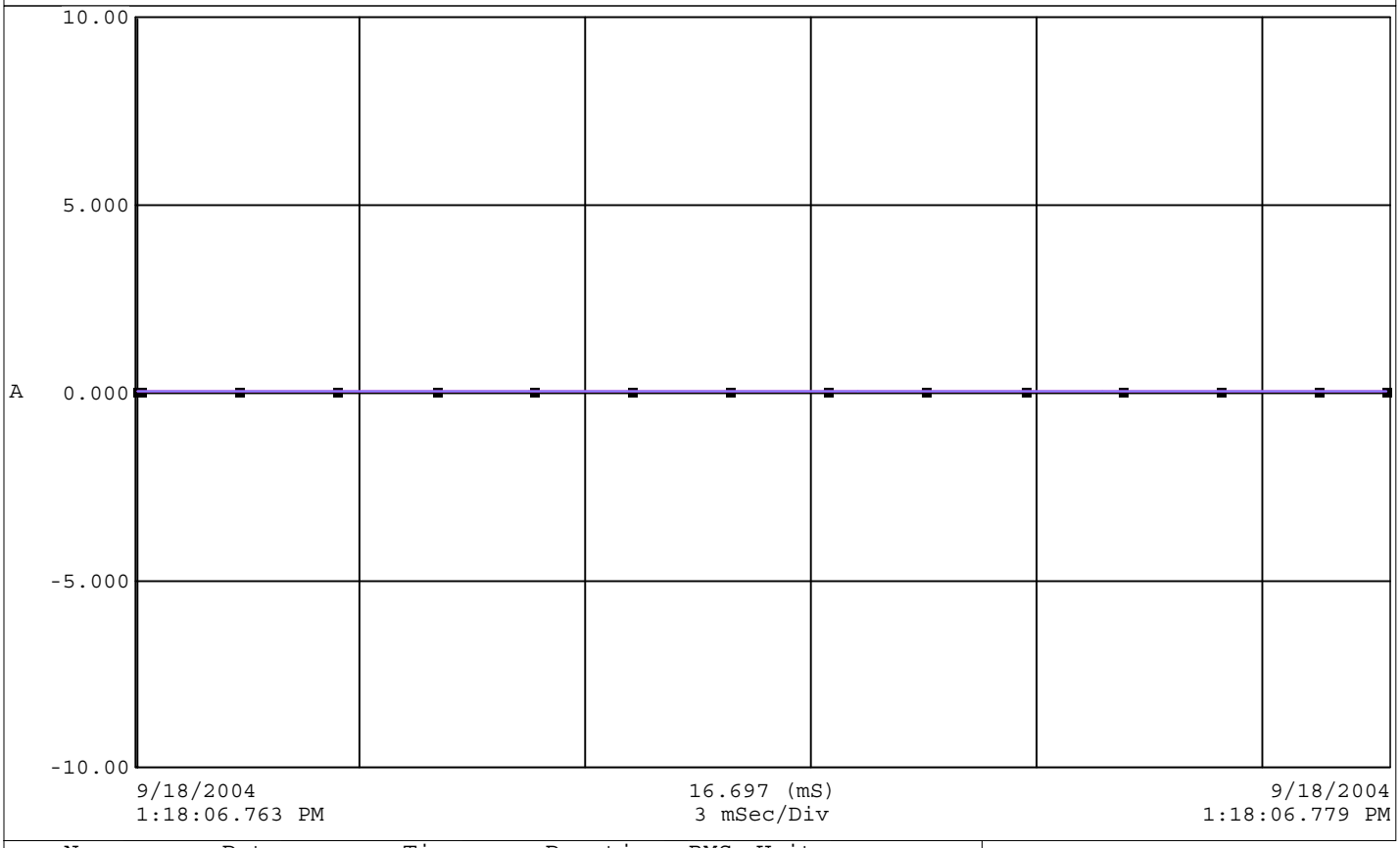


9/18/2004 - 1:18:06.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

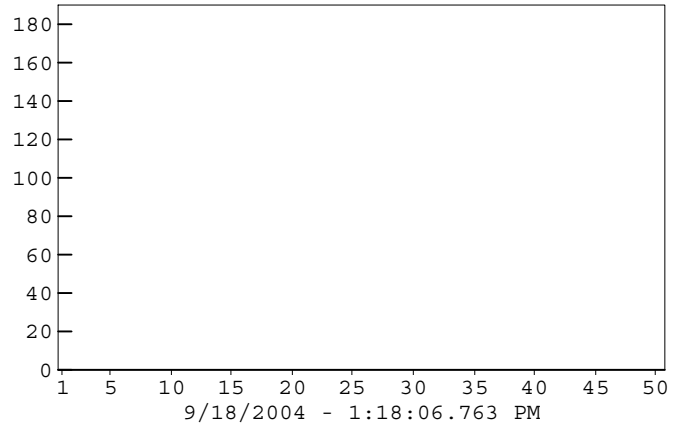
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.2	H19	0.2	H36	0.0
H03	18.4	H20	0.0	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	0.1	H22	0.0	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.3	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	2.8	H26	0.1	H43	0.0
H10	0.0	H27	1.3	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.7	H32	0.0	H49	0.0
H16	0.0	H33	0.2	H50	0.0
H17	0.2	H34	0.0		

Waveform - Current
Frequency: 59.89 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/18/2004	1:18:06.763 PM	16.697	0.000	A
Waveform I2	9/18/2004	1:18:06.763 PM	16.697	0.000	A
Waveform I3	9/18/2004	1:18:06.763 PM	16.697	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD

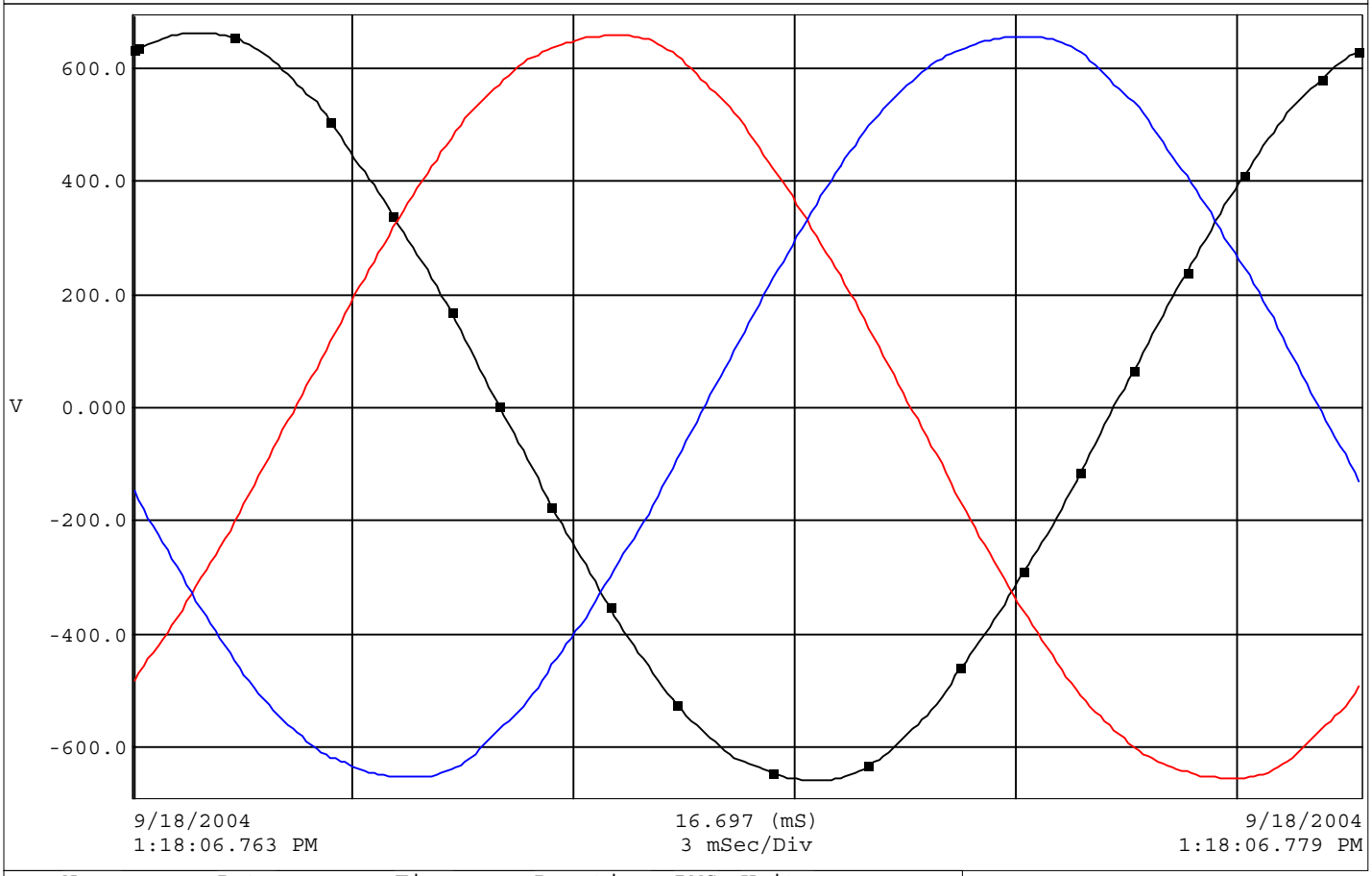


9/18/2004 - 1:18:06.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

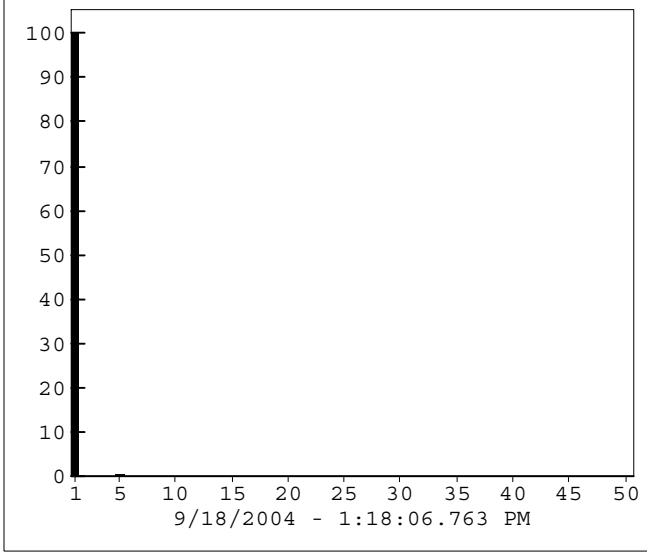
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.89 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/18/2004	1:18:06.763 PM	16.697	468.5	V
Waveform U2	9/18/2004	1:18:06.763 PM	16.697	466.5	V
Waveform U3	9/18/2004	1:18:06.763 PM	16.697	465.2	V

Waveform U1
468.55 Vrms, 0.74 %THD



9/18/2004 - 1:18:06.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.2	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/18/2004
Start Time: 1:18:06 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Pago Double Shaft WWPS\091804 - Pago DS - No Load Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Pago Double Shaft WWPS - No Load Photo ,

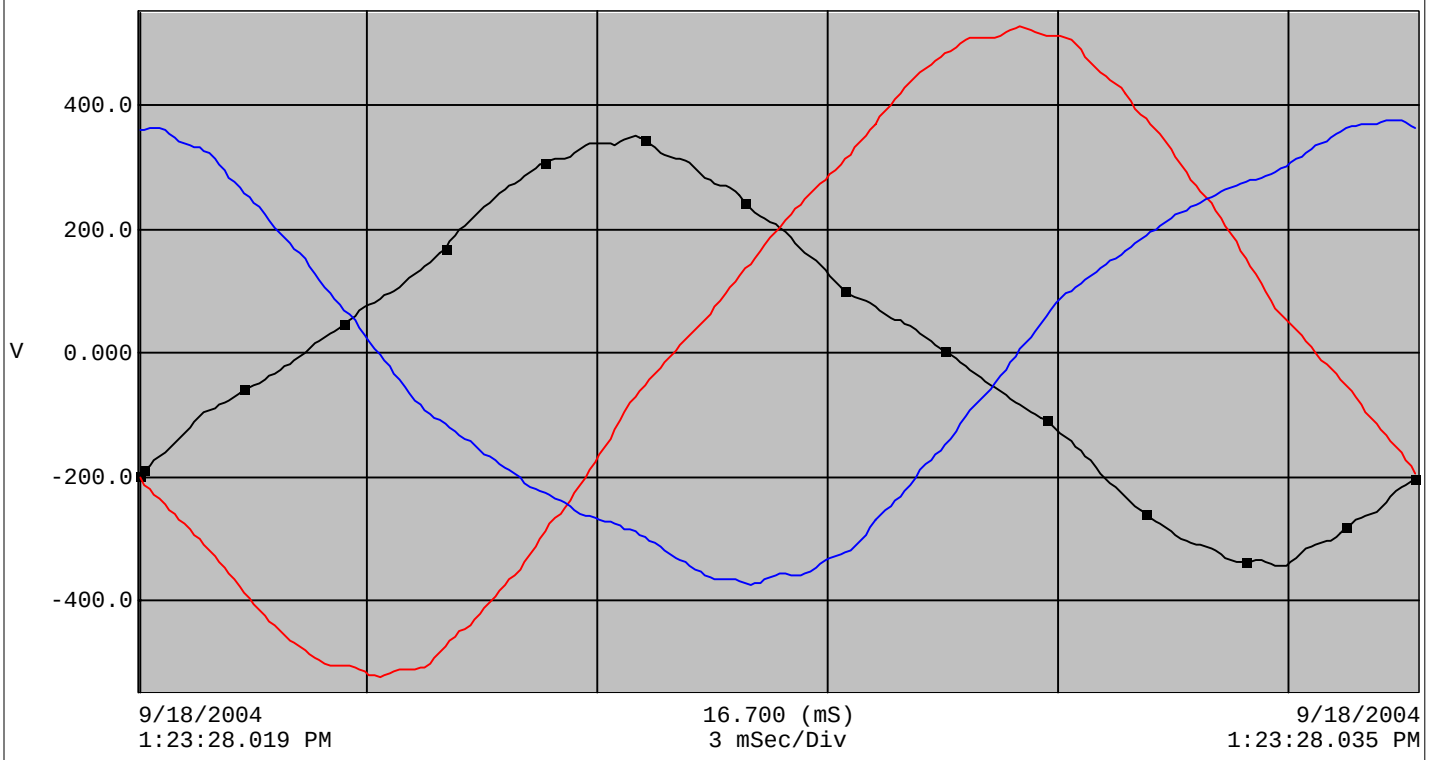
Comments

GPA Meter 01-443-835, Demand 2.25 (300:5 CT Ratio). Three 100 HP, 460 volt, Fairbanks Morse Submersible Pumps

Pago DS - Pump 1 Photo

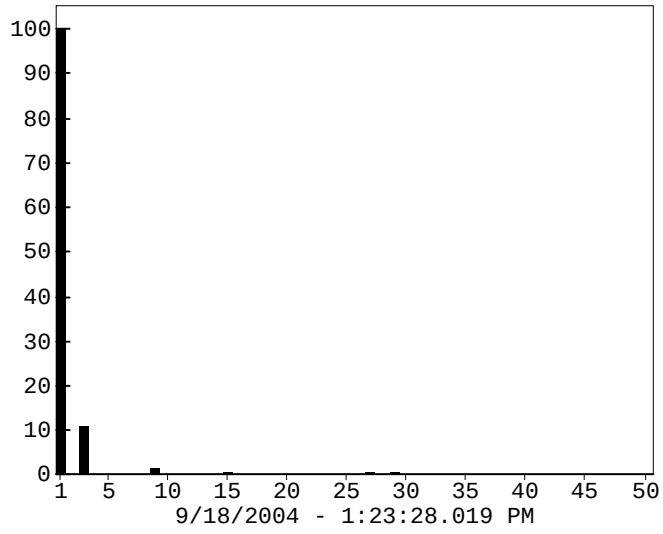
Recording Start Date	9/18/2004 - 1:23:28 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.88 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/18/2004	1:23:28.019 PM	16.700	218.2	V
Waveform V2	9/18/2004	1:23:28.019 PM	16.700	348.0	V
Waveform V3	9/18/2004	1:23:28.019 PM	16.700	255.2	V

Waveform V1
218.25 Vrms, 11.07 %THD

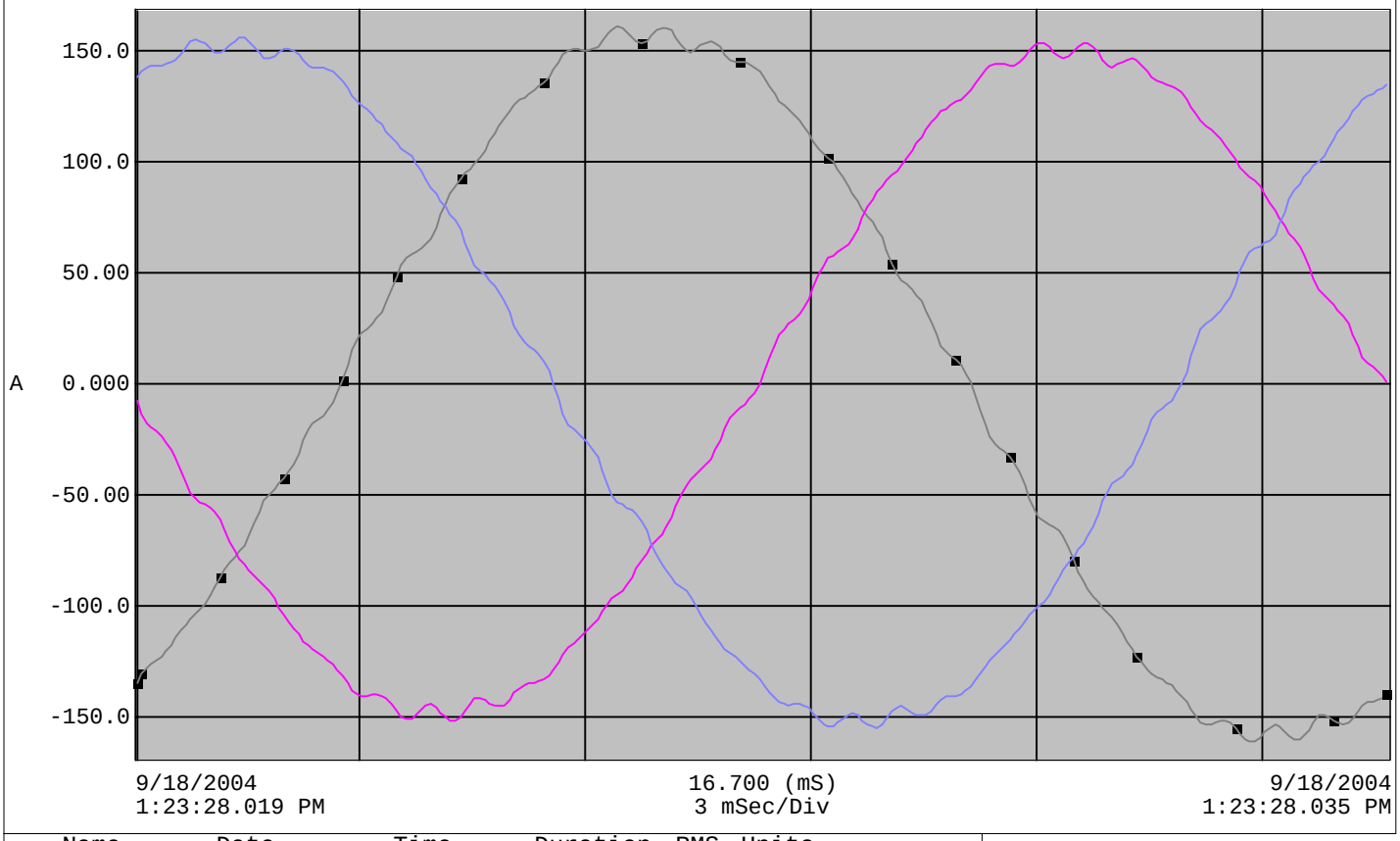


9/18/2004 - 1:23:28.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

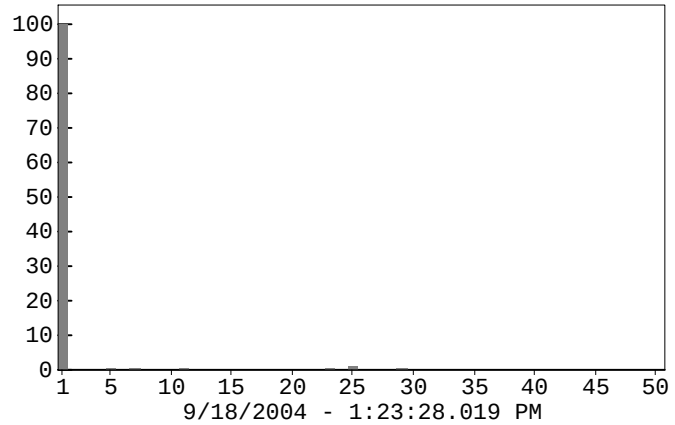
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	10.9	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	0.3	H22	0.0	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	0.3	H24	0.1	H41	0.0
H08	0.0	H25	0.3	H42	0.0
H09	1.6	H26	0.1	H43	0.0
H10	0.0	H27	0.6	H44	0.0
H11	0.0	H28	0.2	H45	0.0
H12	0.0	H29	0.7	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.5	H32	0.1	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.2	H34	0.0		

Waveform - Current
Frequency: 59.88 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/18/2004	1:23:28.019 PM	16.700	112.6	A
Waveform I2	9/18/2004	1:23:28.019 PM	16.700	106.0	A
Waveform I3	9/18/2004	1:23:28.019 PM	16.700	109.3	A

Waveform I1
112.58 Arms, 2.24 %THD

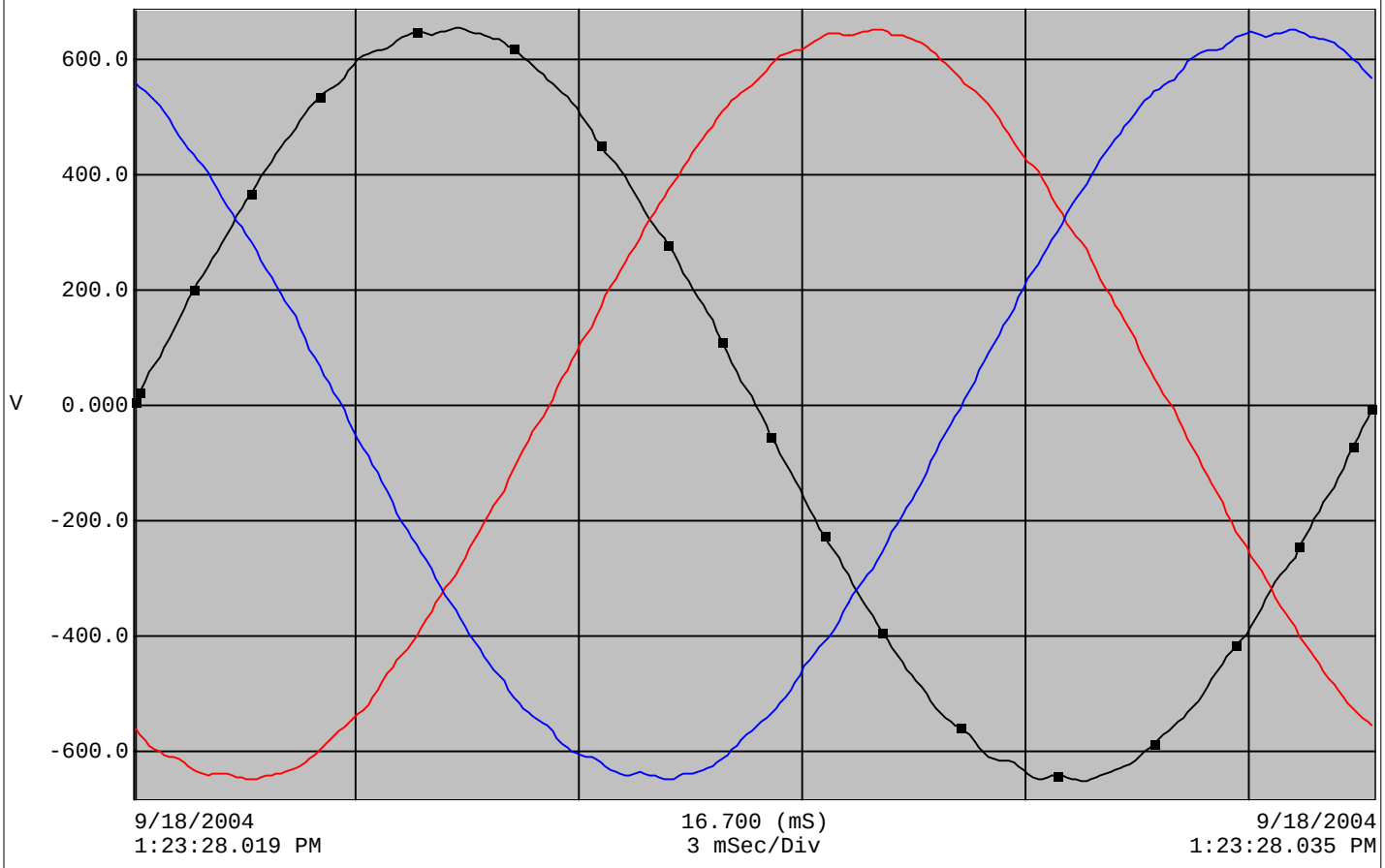


9/18/2004 - 1:23:28.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

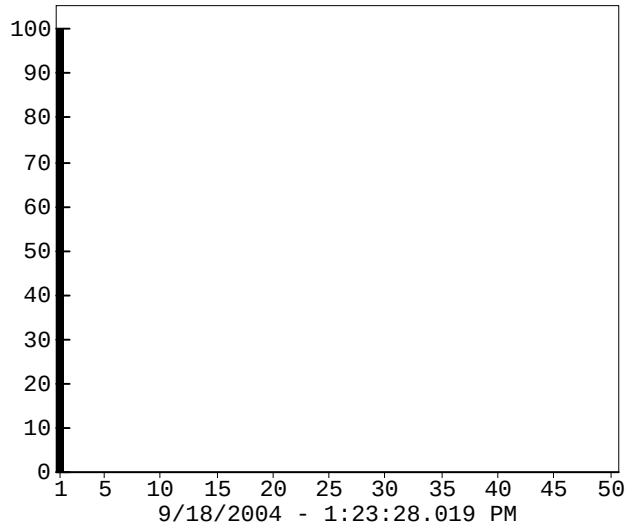
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.3	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.7	H22	0.1	H39	0.0
H06	0.1	H23	0.6	H40	0.0
H07	0.6	H24	0.4	H41	0.0
H08	0.0	H25	1.2	H42	0.0
H09	0.1	H26	0.3	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.6	H28	0.3	H45	0.0
H12	0.1	H29	1.0	H46	0.0
H13	0.4	H30	0.2	H47	0.0
H14	0.0	H31	0.3	H48	0.0
H15	0.1	H32	0.1	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.88 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/18/2004	1:23:28.019 PM	16.700	461.3	V
Waveform U2	9/18/2004	1:23:28.019 PM	16.700	460.0	V
Waveform U3	9/18/2004	1:23:28.019 PM	16.700	458.9	V

Waveform U1
461.28 Vrms, 0.85 %THD



9/18/2004 - 1:23:28.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	0.4	H22	0.0	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	0.3	H24	0.1	H41	0.0
H08	0.0	H25	0.3	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.4	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/18/2004
Start Time: 1:23:28 PM
Duration: 0:0.000 (M:S)
W: 24.73E+3 W
VAR: 5.854E+3 W
VA: 25.41E+3 W
Power Factor: 0.973
Displacement Power Factor: 0.979
TAN: 0.207
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Pago Double Shaft WWPS\091804 - Pago DS - Pump 1 Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Pago Double Shaft - Pump 1 Photo ,

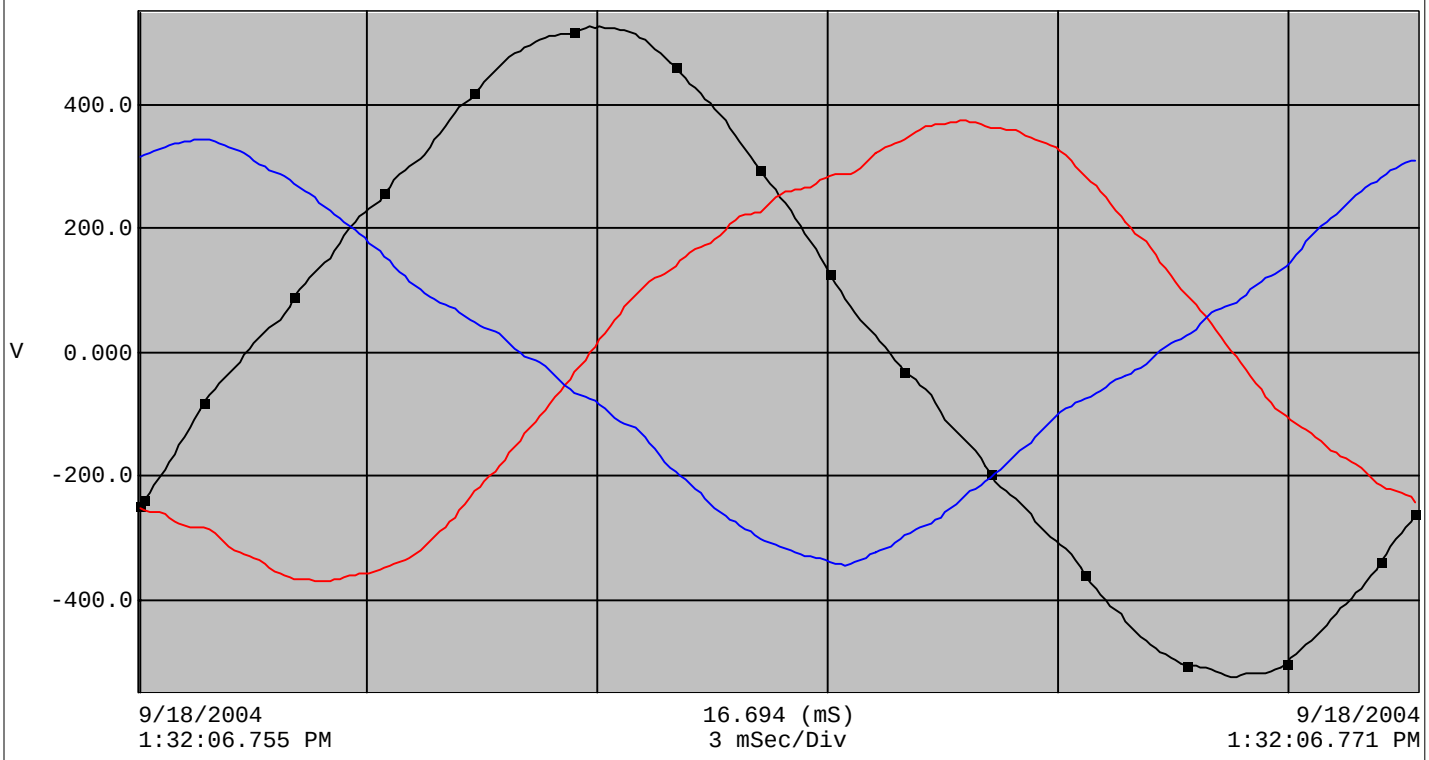
Comments

GPA Meter 01-443-835, Demand 2.25 (300:5 CT Ratio). Fairbanks Morse 100 HP, 460 volt, submersible motor.

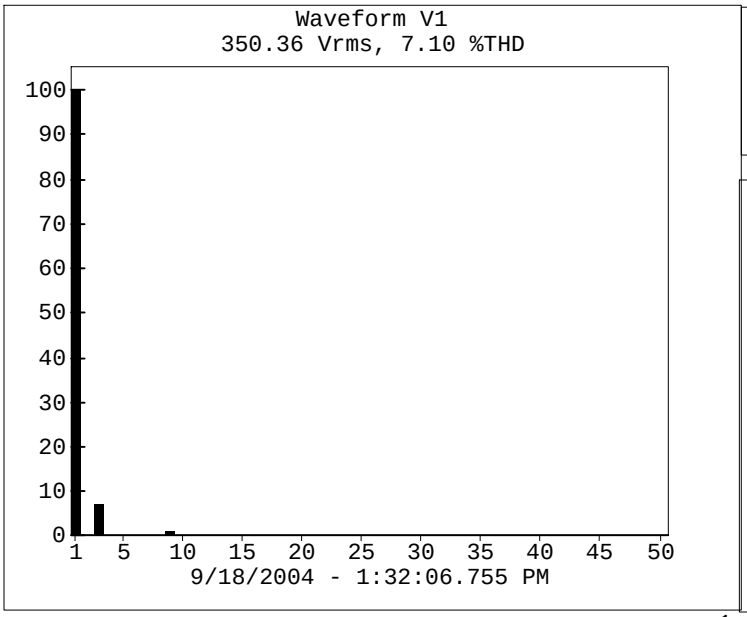
Pago DS - Pump 3 Photo

Recording Start Date	9/18/2004 - 1:32:06 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.90 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/18/2004	1:32:06.755 PM	16.694	350.4	V
Waveform V2	9/18/2004	1:32:06.755 PM	16.694	255.4	V
Waveform V3	9/18/2004	1:32:06.755 PM	16.694	216.8	V

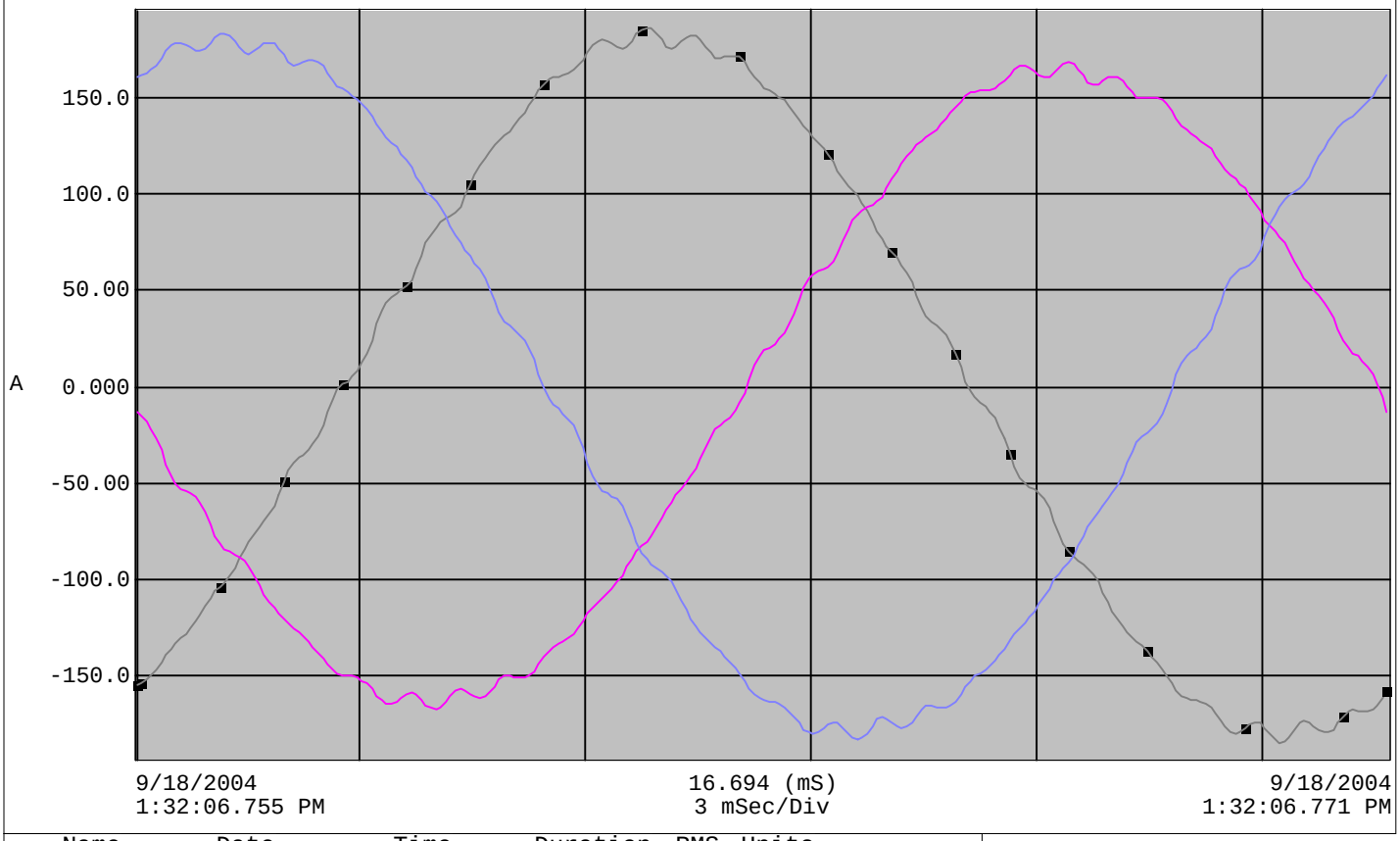


9/18/2004 - 1:32:06.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

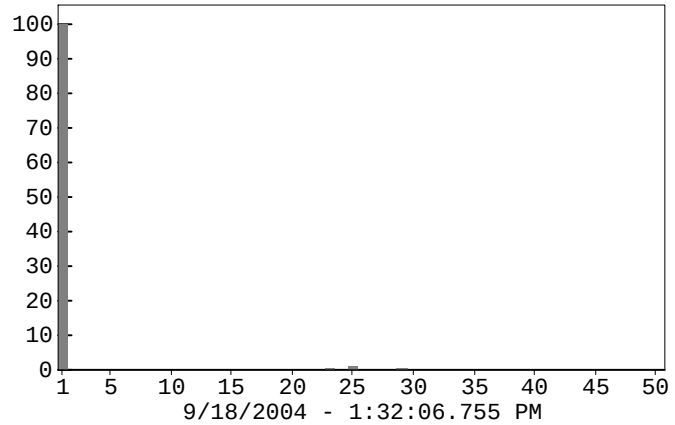
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.2	H36	0.0
H03	7.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.4	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.2	H24	0.1	H41	0.0
H08	0.0	H25	0.3	H42	0.0
H09	1.0	H26	0.0	H43	0.0
H10	0.0	H27	0.4	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.2	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.3	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.90 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/18/2004	1:32:06.755 PM	16.694	128.0	A
Waveform I2	9/18/2004	1:32:06.755 PM	16.694	116.5	A
Waveform I3	9/18/2004	1:32:06.755 PM	16.694	127.4	A

Waveform I1
127.98 Arms, 2.10 %THD

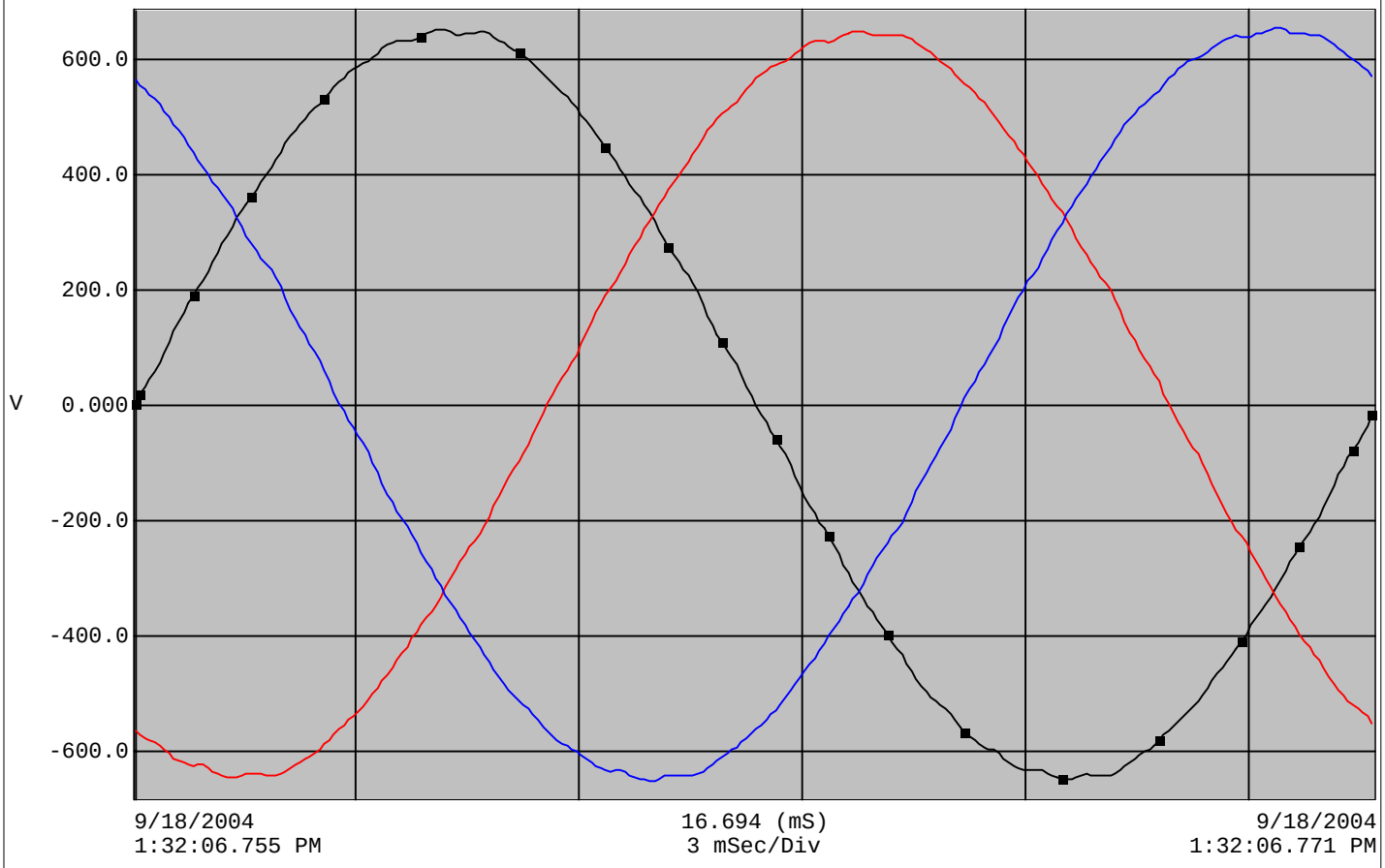


9/18/2004 - 1:32:06.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

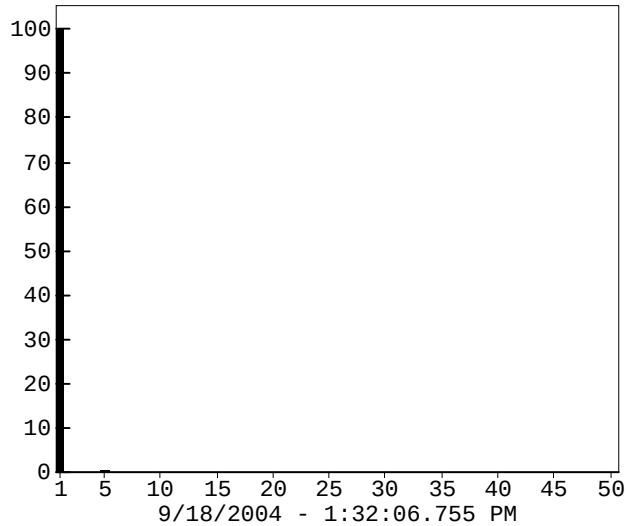
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.1	H19	0.0	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.1	H39	0.0
H06	0.0	H23	0.7	H40	0.1
H07	0.4	H24	0.5	H41	0.0
H08	0.0	H25	1.2	H42	0.0
H09	0.1	H26	0.2	H43	0.0
H10	0.1	H27	0.2	H44	0.0
H11	0.3	H28	0.4	H45	0.0
H12	0.1	H29	1.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.3	H48	0.0
H15	0.1	H32	0.1	H49	0.1
H16	0.0	H33	0.1	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.90 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/18/2004	1:32:06.755 PM	16.694	460.3	V
Waveform U2	9/18/2004	1:32:06.755 PM	16.694	458.4	V
Waveform U3	9/18/2004	1:32:06.755 PM	16.694	461.4	V

Waveform U1
460.27 Vrms, 0.81 %THD



9/18/2004 - 1:32:06.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.2	H24	0.1	H41	0.0
H08	0.0	H25	0.3	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.3	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/18/2004
Start Time: 1:32:06 PM
Duration: 0:0.000 (M:S)
W: 39.63E+3 W
VAR: 19.85E+3 W
VA: 44.32E+3 W
Power Factor: 0.894
Displacement Power Factor: 0.896
TAN: 0.494
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Pago Double Shaft WWPS\091804 - Pago DS - Pump 3 Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Pago Double Shaft - Pump 3 Photo ,

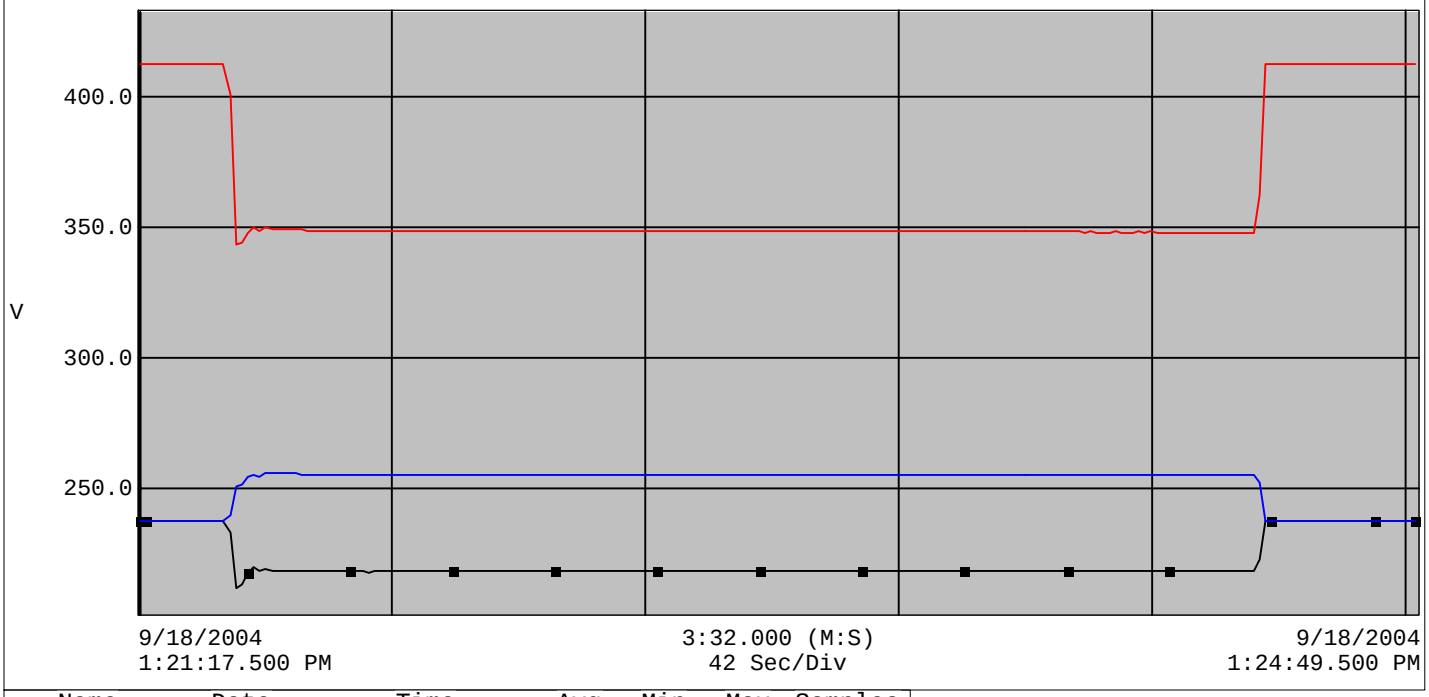
Comments

GPA Meter 01-443-835, Demand 2.25 (CT Ratio 300:5). Fairbanks Morse 100 HP, 460 volts, submersible motors.

Pago DS - Pump 1

Recording Start Date	9/18/2004 - 1:21:17 PM
Recording Duration	3:32 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

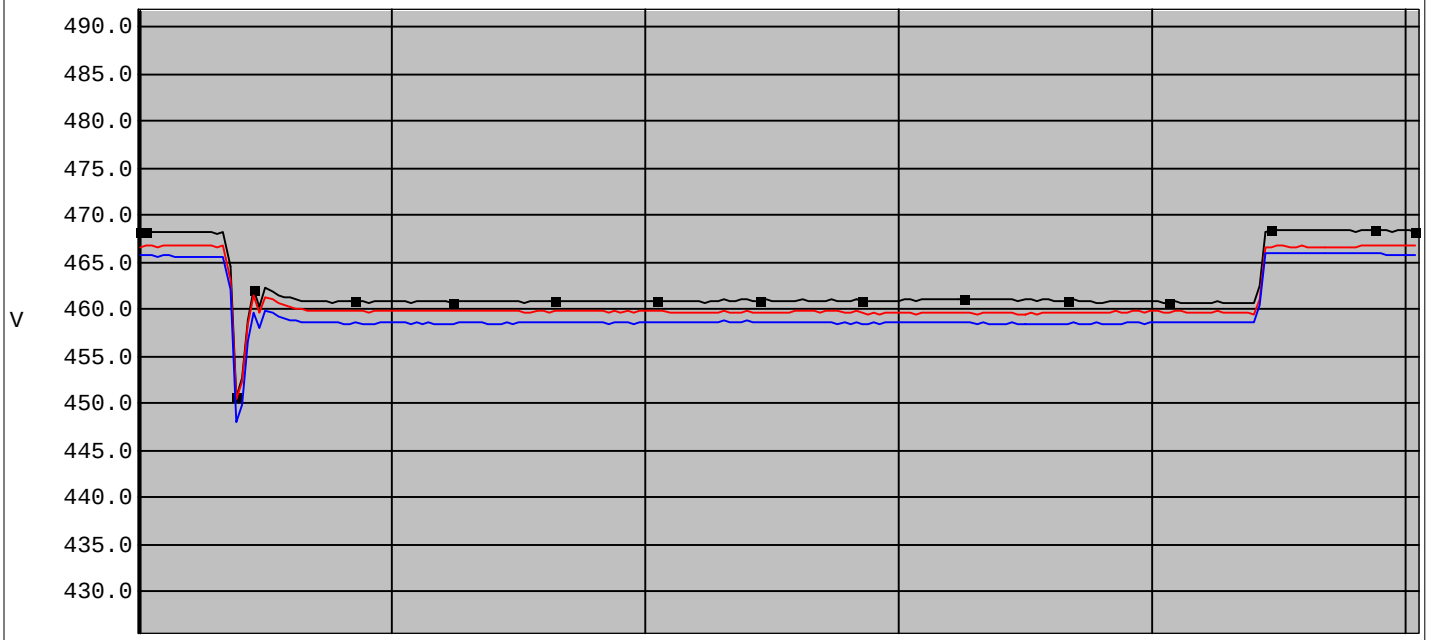
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/18/2004	1:21:17.500 PM	221.7	211.8	237.1	213
Vrms Line2	9/18/2004	1:21:17.500 PM	360.5	342.5	411.8	213
Vrms Line3	9/18/2004	1:21:17.500 PM	251.4	236.9	255.8	213

9/18/2004 - 1:21:17.000 PM
Val
237.0 — Vrms Line1
411.6 — Vrms Line2
237.0 — Vrms Line3

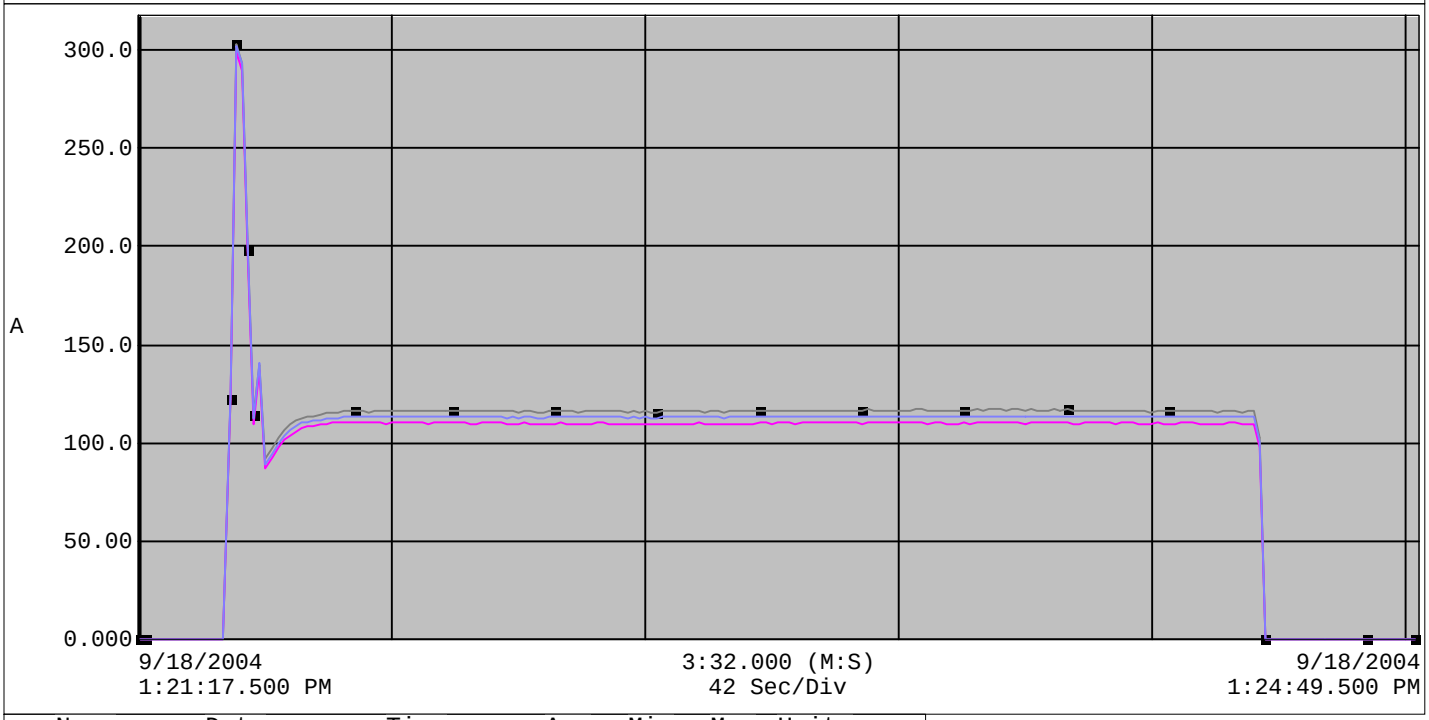
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/18/2004	1:21:17.500 PM	462.2	450.5	468.4	V
Urms Line2	9/18/2004	1:21:17.500 PM	460.9	450.4	466.7	V
Urms Line3	9/18/2004	1:21:17.500 PM	459.8	447.8	465.9	V

9/18/2004 - 1:21:17.000 PM
Val
468.1 Urms Line1
466.5 Urms Line2
465.6 Urms Line3

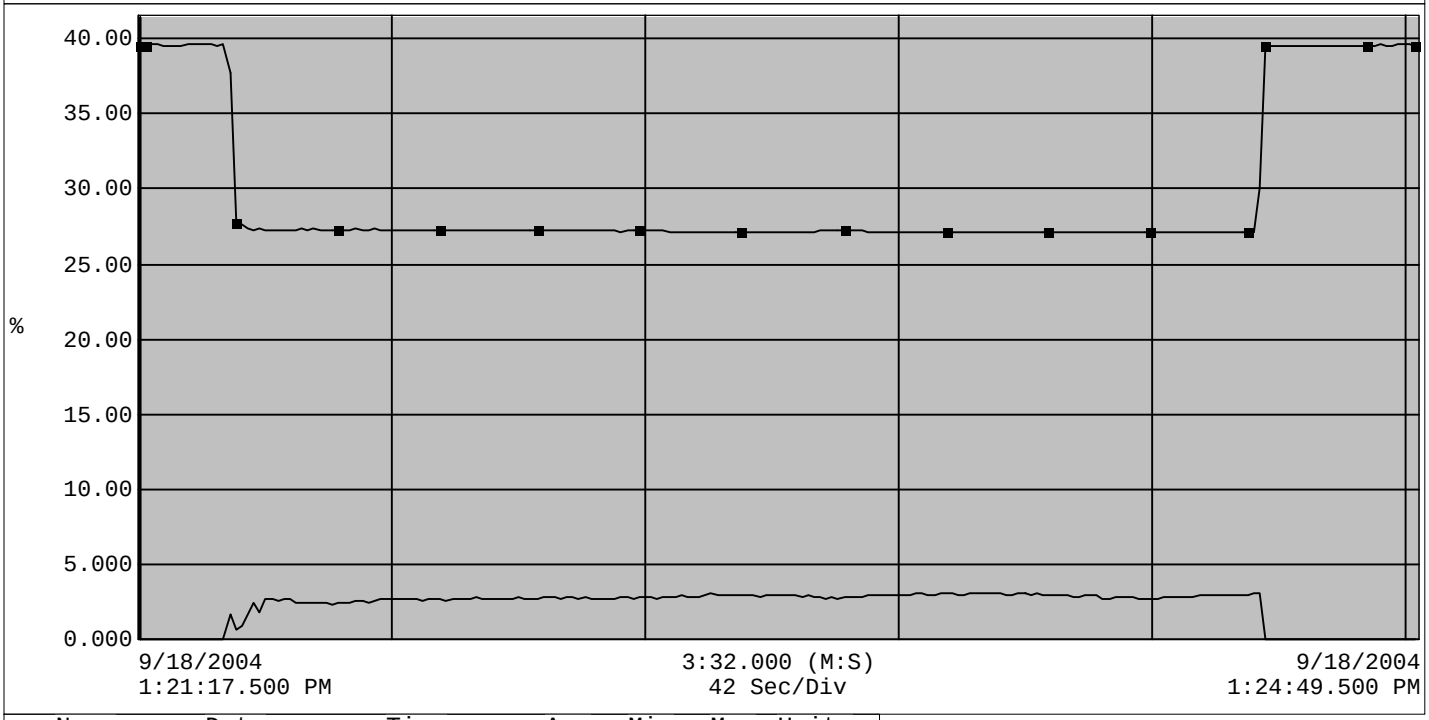
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/18/2004	1:21:17.500 PM	95.39	0.000	301.9	A
Arms Line2	9/18/2004	1:21:17.500 PM	90.52	0.000	298.6	A
Arms Line3	9/18/2004	1:21:17.500 PM	93.11	0.000	301.8	A

9/18/2004 - 1:21:17.000 PM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

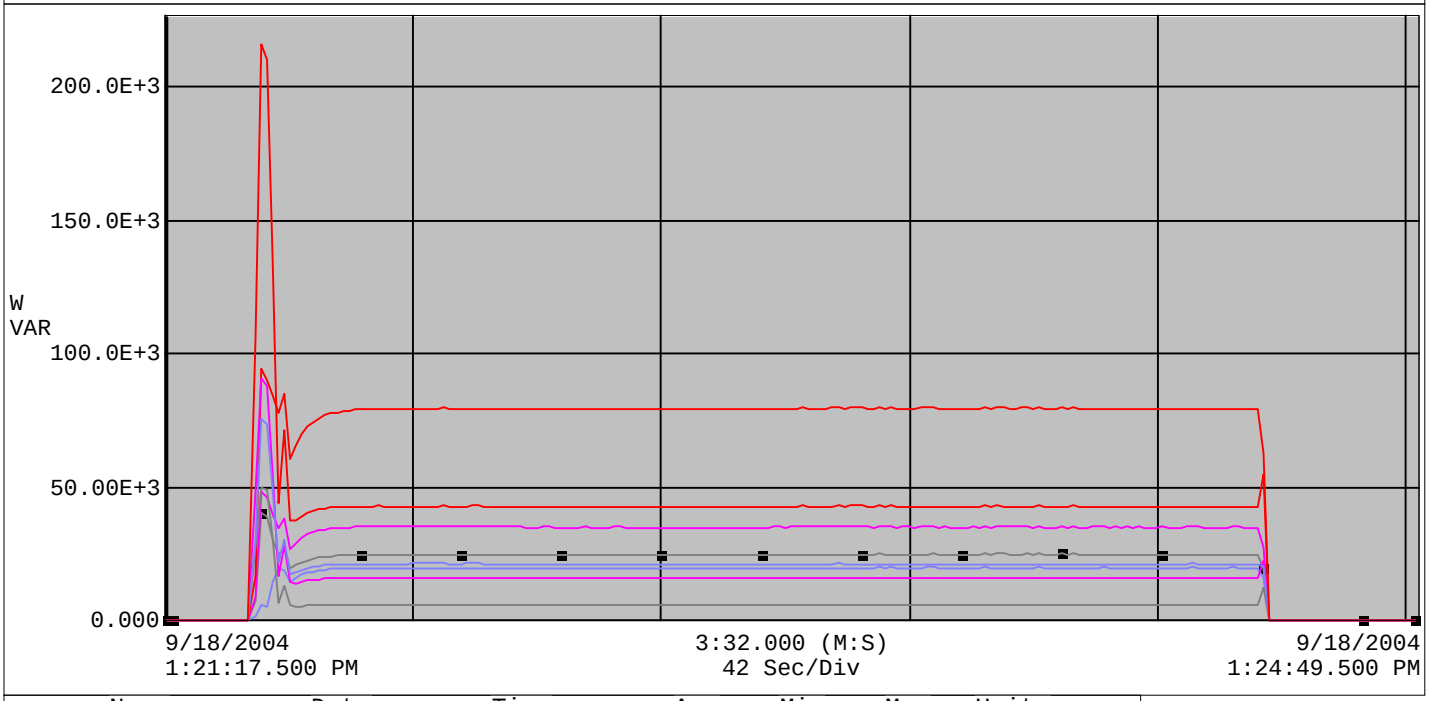
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/18/2004	1:21:17.500 PM	29.57	27.00	39.50	%
Aunb(IEEE)	9/18/2004	1:21:17.500 PM	2.215	0.000	3.000	%

9/18/2004 - 1:21:17.000 PM
Val
39.40 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

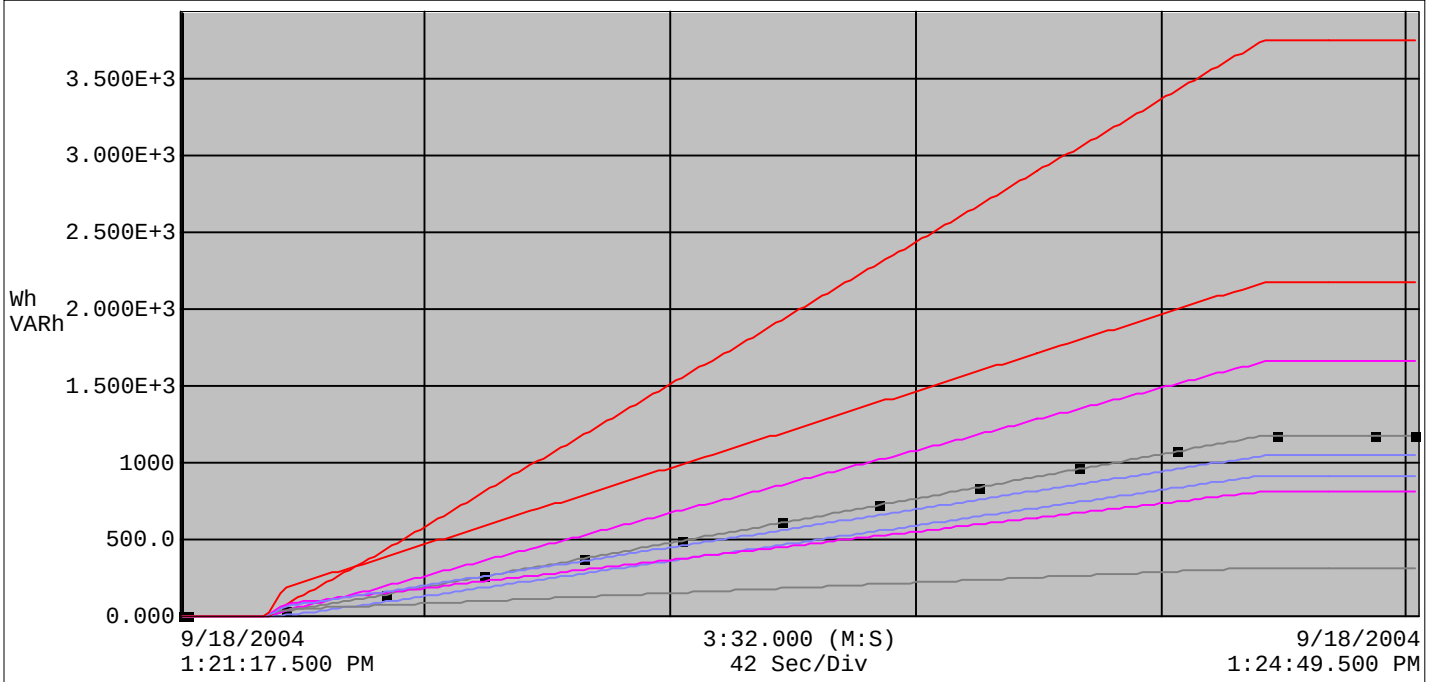
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/18/2004	1:21:17.500 PM	19.85E+3	0.000	40.26E+3	W
W Line2	9/18/2004	1:21:17.500 PM	27.98E+3	0.000	47.93E+3	W
W Line3	9/18/2004	1:21:17.500 PM	15.50E+3	0.000	19.78E+3	W
W Sum of Phases	9/18/2004	1:21:17.500 PM	63.33E+3	0.000	93.80E+3	W
VAR Line1	9/18/2004	1:21:17.500 PM	5.376E+3	0.000	49.70E+3	VAR
VAR Line2	9/18/2004	1:21:17.500 PM	13.75E+3	0.000	90.35E+3	VAR
VAR Line3	9/18/2004	1:21:17.500 PM	17.67E+3	0.000	75.28E+3	VAR
VAR Sum of Phases	9/18/2004	1:21:17.500 PM	36.80E+3	0.000	215.3E+3	VAR

9/18/2004 - 1:21:17.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

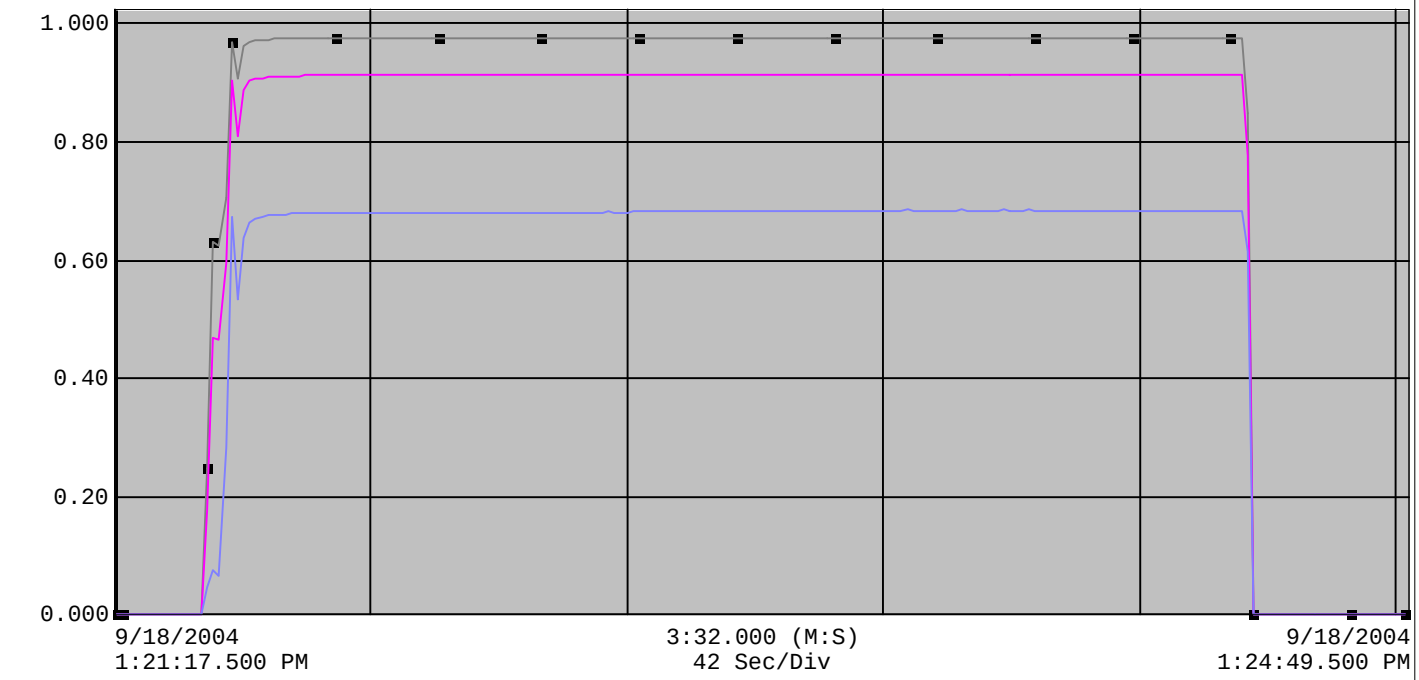
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/18/2004	1:21:17.500 PM	620.8	0.000	1.175E+3	Wh
W-hours Line2	9/18/2004	1:21:17.500 PM	873.4	0.000	1.656E+3	Wh
W-hours Line3	9/18/2004	1:21:17.500 PM	476.7	0.000	917.1	Wh
W-hours Sum of Phases	9/18/2004	1:21:17.500 PM	1.971E+3	0.000	3.747E+3	Wh
VAR-hours Line1	9/18/2004	1:21:17.500 PM	182.2	0.000	318.1	VARh
VAR-hours Line2	9/18/2004	1:21:17.500 PM	453.7	0.000	813.6	VARh
VAR-hours Line3	9/18/2004	1:21:17.500 PM	567.7	0.000	1.046E+3	VARh
VAR-hours Sum of Phases	9/18/2004	1:21:17.500 PM	1.204E+3	0.000	2.177E+3	VARh

9/18/2004 - 1:21:17.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/18/2004	1:21:17.500 PM	0.777	0.000	0.974	
PF Line2	9/18/2004	1:21:17.500 PM	0.726	0.000	0.913	
PF Line3	9/18/2004	1:21:17.500 PM	0.538	0.000	0.684	

9/18/2004 - 1:21:17.000 PM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Pago Double Shaft WWPS\091804 - Pago DS - Pump 1.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Pago Double Shaft - Pump 1 ,

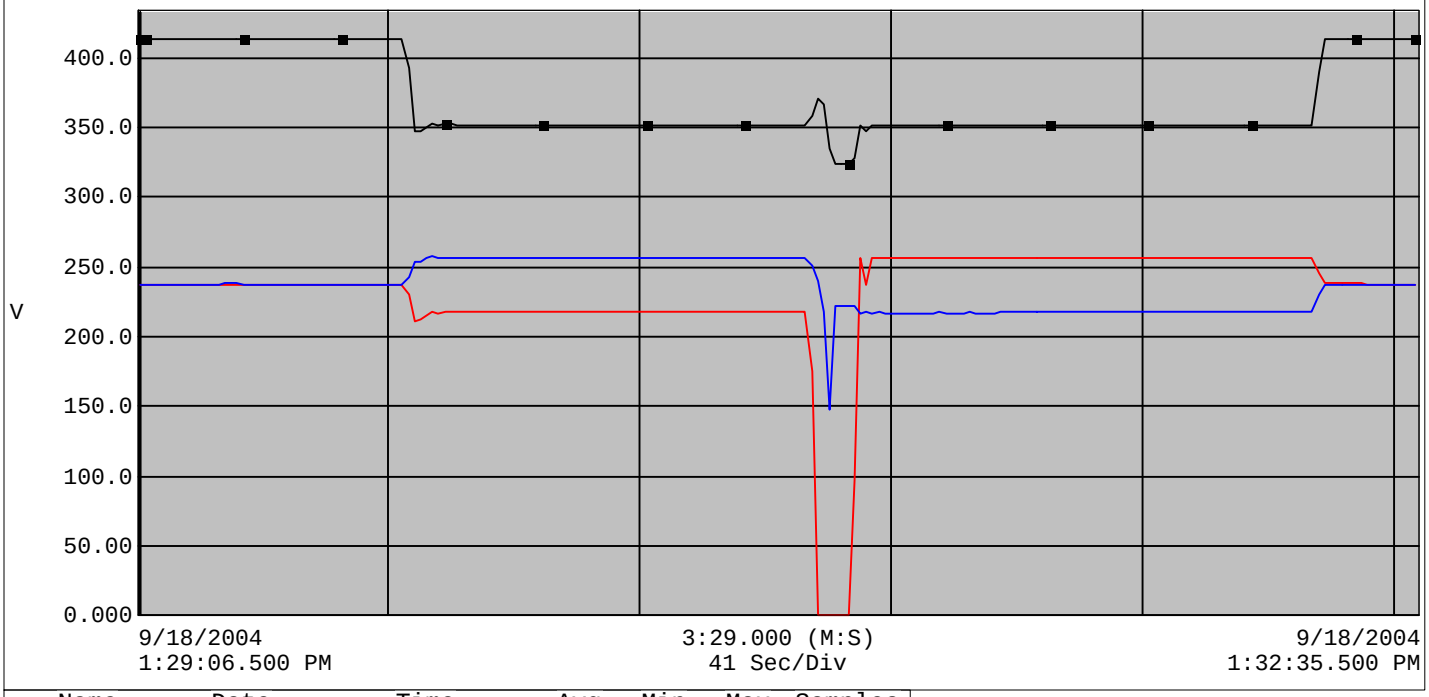
Comments

Motor 1 operated for one cycle. GPA Meter 01-443-835, Demand 2.25 (300:5 CT ratio). Station has three Fairbanks Morse 100 HP, 460 volts.

Pago DS - Pump 3

Recording Start Date	9/18/2004 - 1:29:06 PM
Recording Duration	3:29 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/18/2004	1:29:06.500 PM	368.0	323.1	412.4	210
Vrms Line2	9/18/2004	1:29:06.500 PM	229.3	0.000	255.5	210
Vrms Line3	9/18/2004	1:29:06.500 PM	234.6	146.6	257.1	210

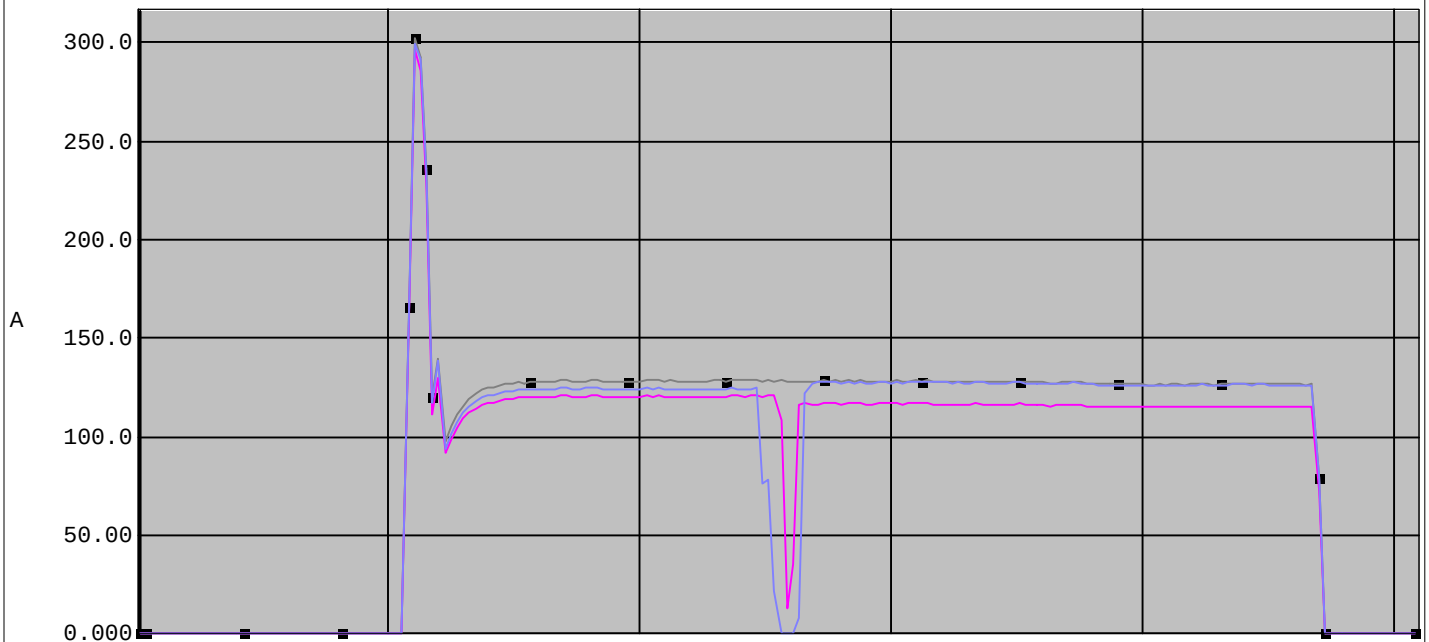
9/18/2004 - 1:29:06.000 PM
Val
411.9 Vrms Line1
236.7 Vrms Line2
237.0 Vrms Line3

Urms
VoltageRatio: 1.000

Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/18/2004	1:29:06.500 PM	458.4	324.0	468.3	V
Urms Line2	9/18/2004	1:29:06.500 PM	451.9	145.5	465.6	V
Urms Line3	9/18/2004	1:29:06.500 PM	462.3	398.9	468.8	V

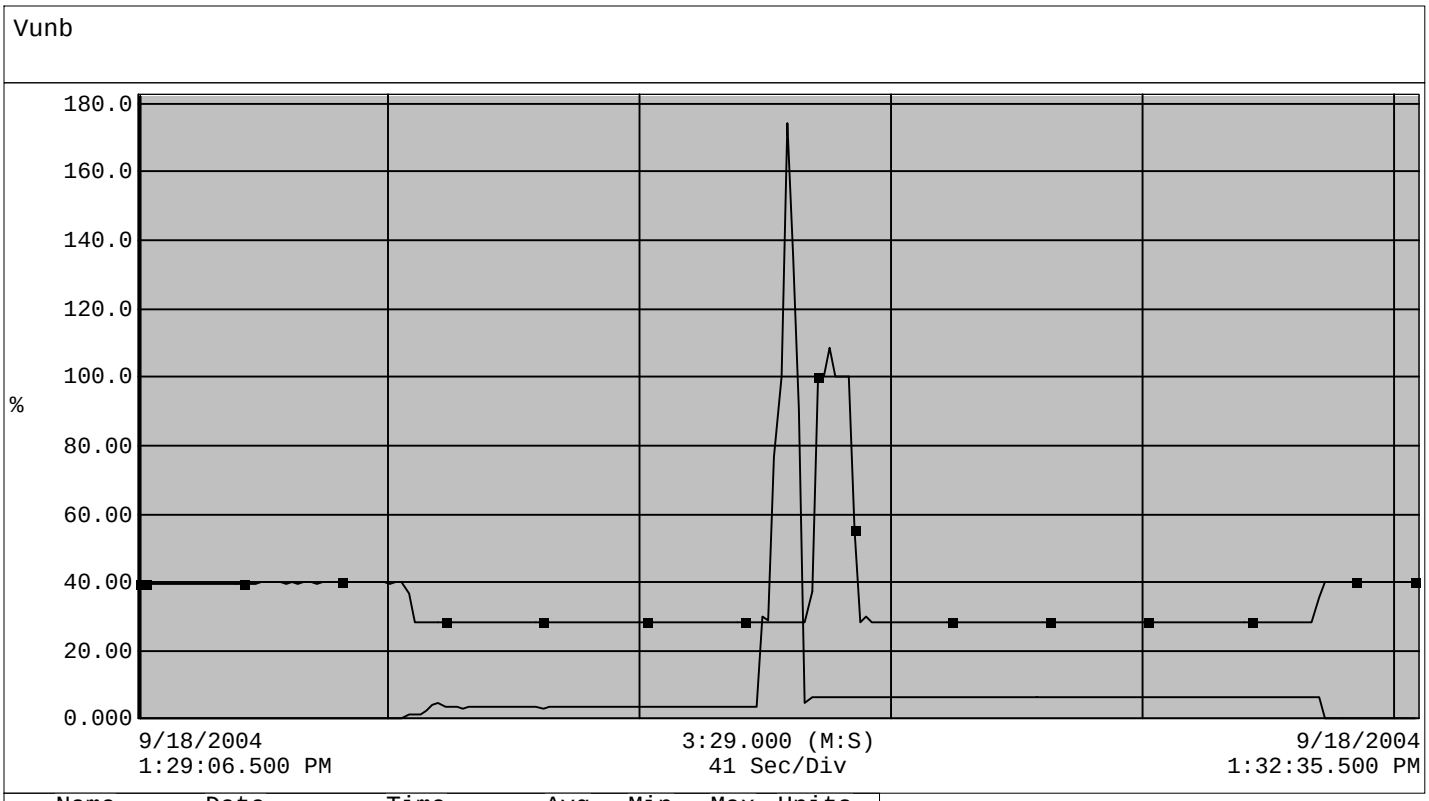
9/18/2004 - 1:29:06.000 PM
Val
468.1 Urms Line1
465.5 Urms Line2
467.0 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/18/2004	1:29:06.500 PM	92.56	0.000	301.2	A
Arms Line2	9/18/2004	1:29:06.500 PM	84.55	0.000	295.6	A
Arms Line3	9/18/2004	1:29:06.500 PM	87.83	0.000	299.2	A

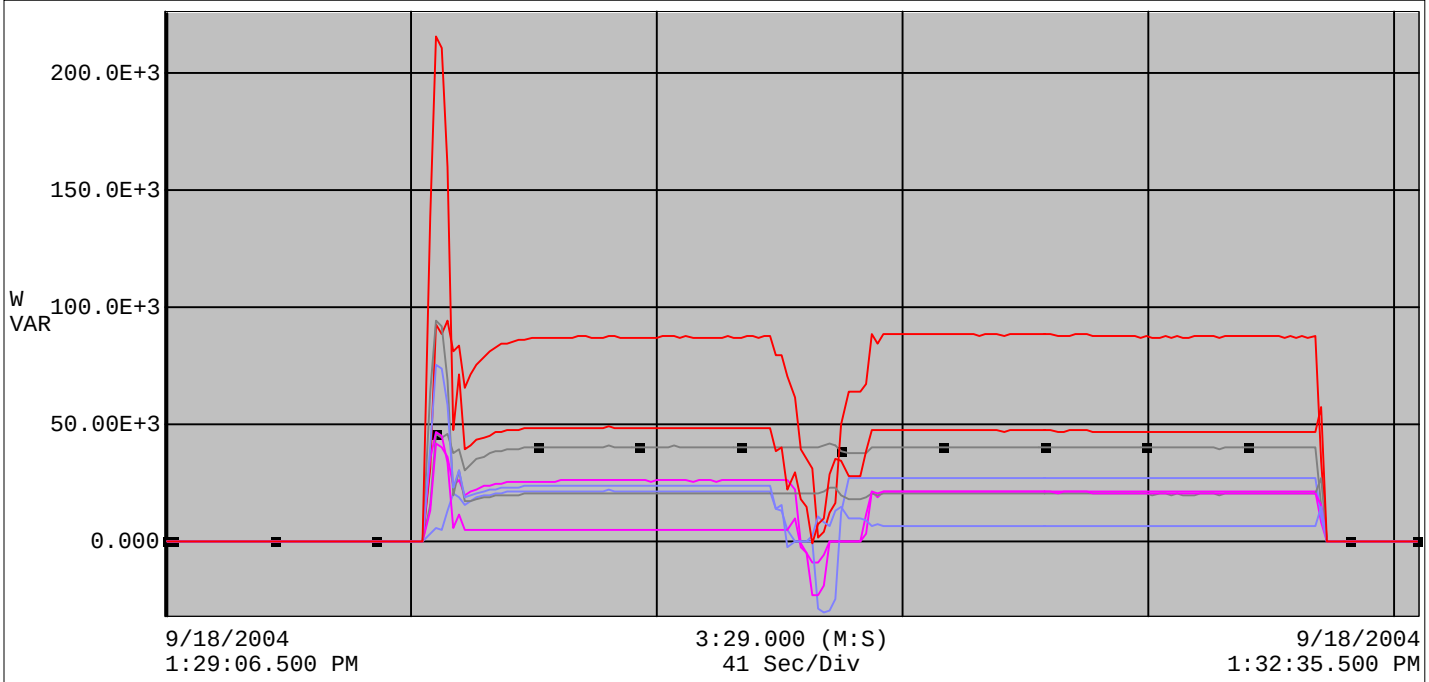
9/18/2004 - 1:29:06.000 PM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/18/2004	1:29:06.500 PM	33.56	27.80	108.5	%
Aunb(IEEE)	9/18/2004	1:29:06.500 PM	6.331	0.000	173.7	%

9/18/2004 - 1:29:06.000 PM
Val
39.50 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

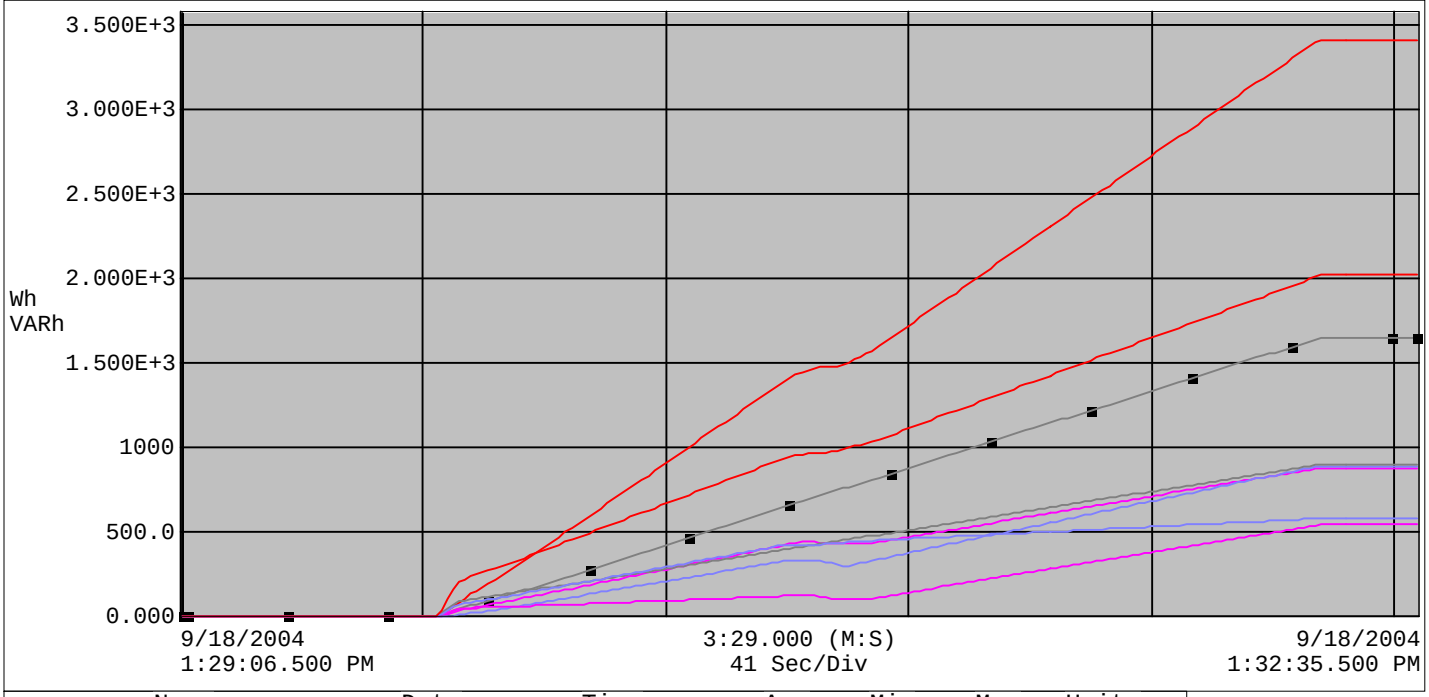
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/18/2004	1:29:06.500 PM	28.11E+3	0.000	45.62E+3	W
W Line2	9/18/2004	1:29:06.500 PM	14.98E+3	-9.022E+3	41.71E+3	W
W Line3	9/18/2004	1:29:06.500 PM	15.21E+3	-30.76E+3	26.88E+3	W
W Sum of Phases	9/18/2004	1:29:06.500 PM	58.30E+3	0.000	93.93E+3	W
VAR Line1	9/18/2004	1:29:06.500 PM	15.40E+3	0.000	93.68E+3	VAR
VAR Line2	9/18/2004	1:29:06.500 PM	9.258E+3	-23.56E+3	46.05E+3	VAR
VAR Line3	9/18/2004	1:29:06.500 PM	9.949E+3	-2.993E+3	75.45E+3	VAR
VAR Sum of Phases	9/18/2004	1:29:06.500 PM	34.60E+3	-1.546E+3	215.2E+3	VAR

9/18/2004 - 1:29:06.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

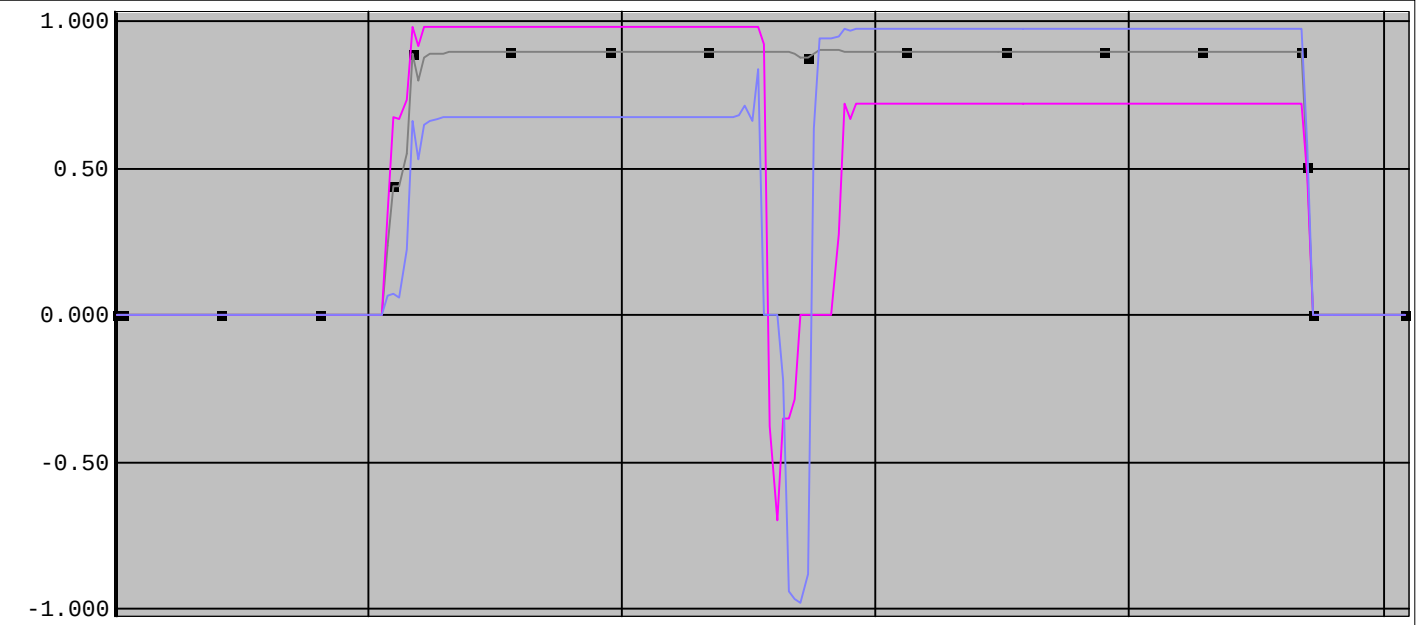
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/18/2004	1:29:06.500 PM	713.5	0.000	1.640E+3	Wh
W-hours Line2	9/18/2004	1:29:06.500 PM	395.8	0.000	873.6	Wh
W-hours Line3	9/18/2004	1:29:06.500 PM	356.6	0.000	887.5	Wh
W-hours Sum of Phases	9/18/2004	1:29:06.500 PM	1.466E+3	0.000	3.401E+3	Wh
VAR-hours Line1	9/18/2004	1:29:06.500 PM	413.8	0.000	898.1	VARh
VAR-hours Line2	9/18/2004	1:29:06.500 PM	189.9	0.000	540.0	VARh
VAR-hours Line3	9/18/2004	1:29:06.500 PM	326.3	0.000	580.4	VARh
VAR-hours Sum of Phases	9/18/2004	1:29:06.500 PM	930.0	0.000	2.019E+3	VARh

9/18/2004 - 1:29:06.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/18/2004	1:29:06.500 PM	0.627	0.000	0.902	
PF Line2	9/18/2004	1:29:06.500 PM	0.531	-0.703	0.983	
PF Line3	9/18/2004	1:29:06.500 PM	0.537	-0.980	0.974	

9/18/2004 - 1:29:06.000 PM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Pago Double Shaft WWPS\091804 - Pago DS - Pump 3.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Pago Double Shaft - Pump 3 ,

Comments

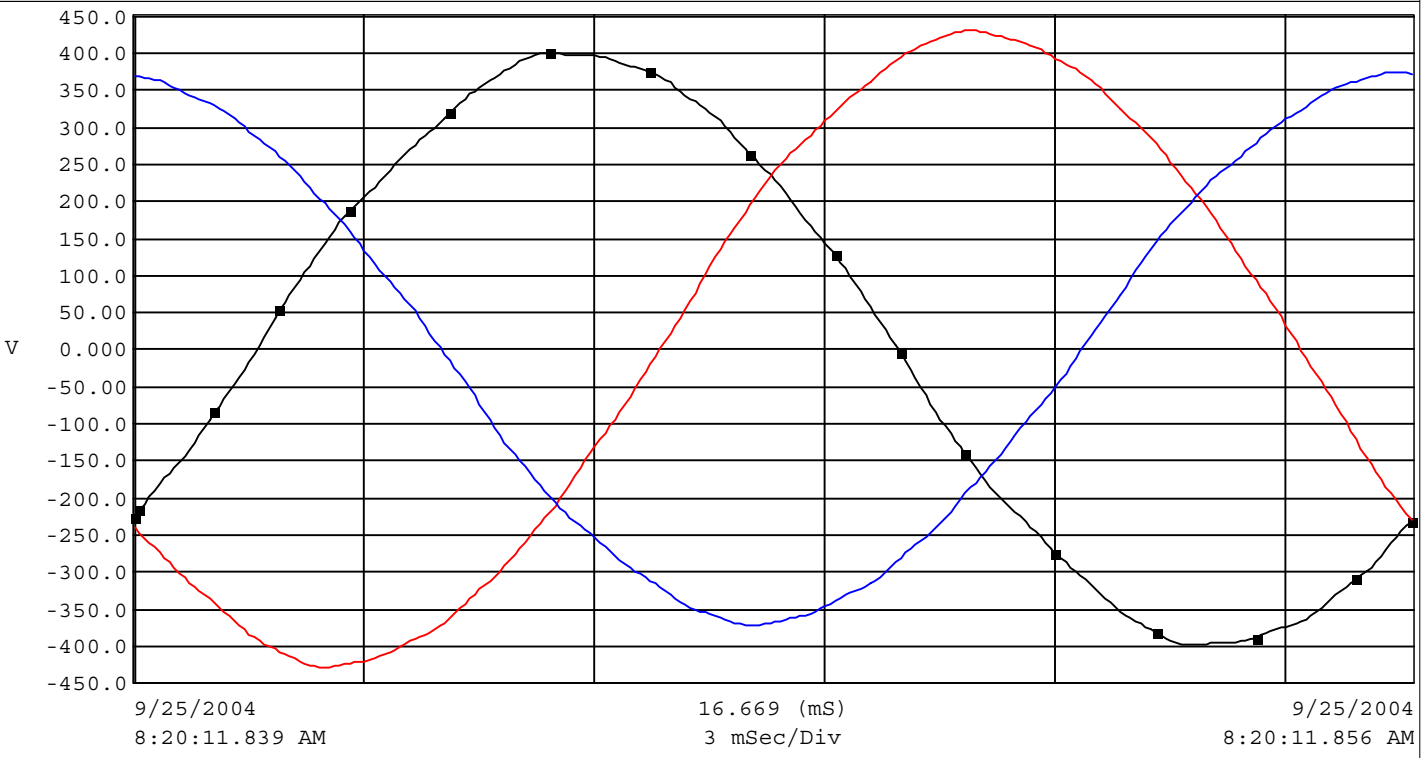
Operated Pump 3 on one cycle. Fairbanks Morse 100 HP, 460 volt, submersible motor. Large wet well drawn down.

GWA Wastewater Pumping Station Assessment				
Station Name: PASEO DE ORO	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.28	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	1	0.05	2
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.475	
Generator Condition	10.0%	2	0.2	22
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	2	0.05	
Primary Pump Motor Controls	**20.0%**		0.52	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	2	0.08	35
Secondary Pump Motor Controls	**20.0%**		0.44	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.27	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	
	100%	**Assessment Value**		**2.3**
Comments:				

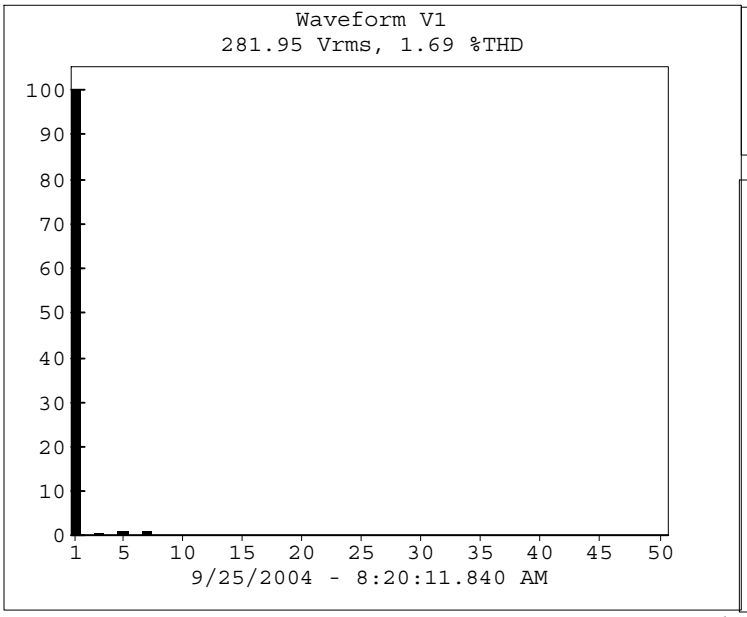
Paseo de Oro WWPS Pump 1 - Photo

Recording Start Date	9/25/2004 - 8:20:11 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	8:20:11.839 AM	16.669	282.0	V
Waveform V2	9/25/2004	8:20:11.839 AM	16.669	300.8	V
Waveform V3	9/25/2004	8:20:11.839 AM	16.669	261.0	V



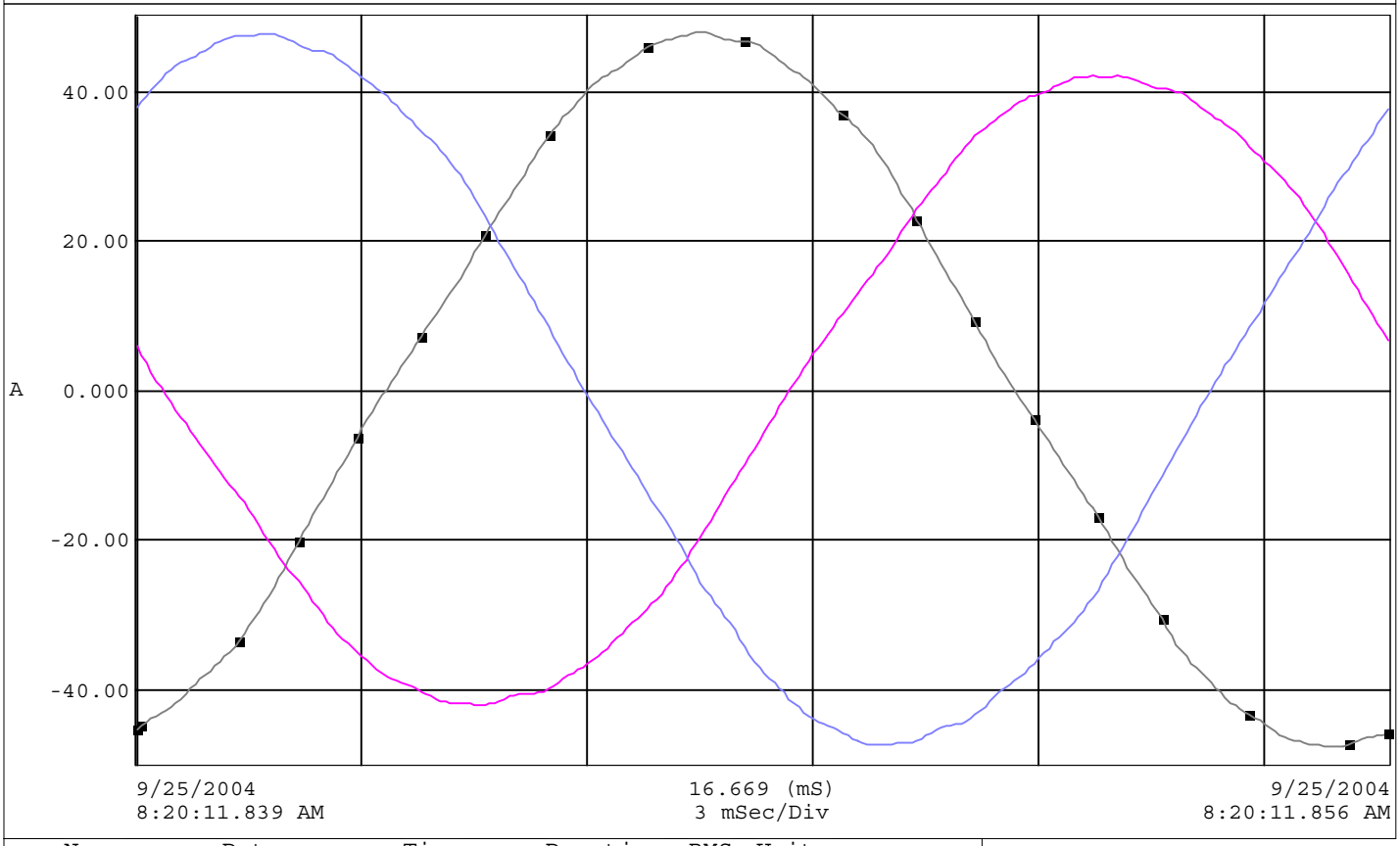
9/25/2004 - 8:20:11.000 AM

Val	
-226.8	Waveform V1
-241.4	Waveform V2
367.9	Waveform V3

Waveform V1

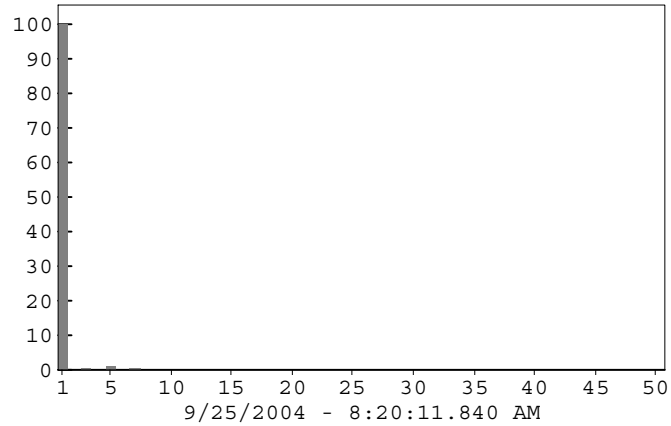
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	0.7	H20	0.2	H37	0.0
H04	0.0	H21	0.4	H38	0.0
H05	1.1	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	8:20:11.839 AM	16.669	33.53	A
Waveform I2	9/25/2004	8:20:11.839 AM	16.669	29.97	A
Waveform I3	9/25/2004	8:20:11.839 AM	16.669	33.52	A

Waveform I1
33.53 Arms, 2.04 %THD



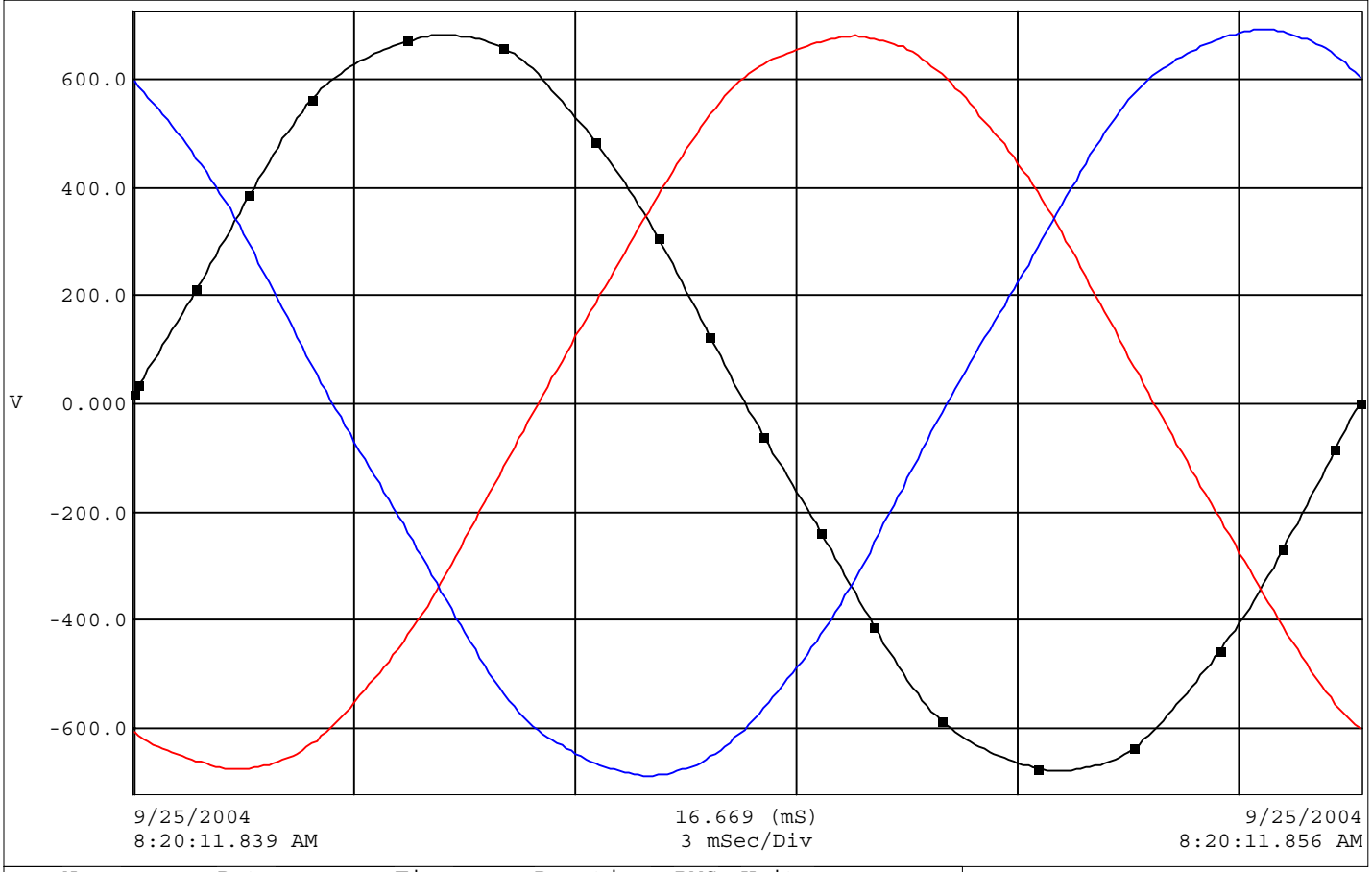
9/25/2004 - 8:20:11.000 AM

Val	
-45.40	Waveform I1
5.800	Waveform I2
37.80	Waveform I3

Waveform I1

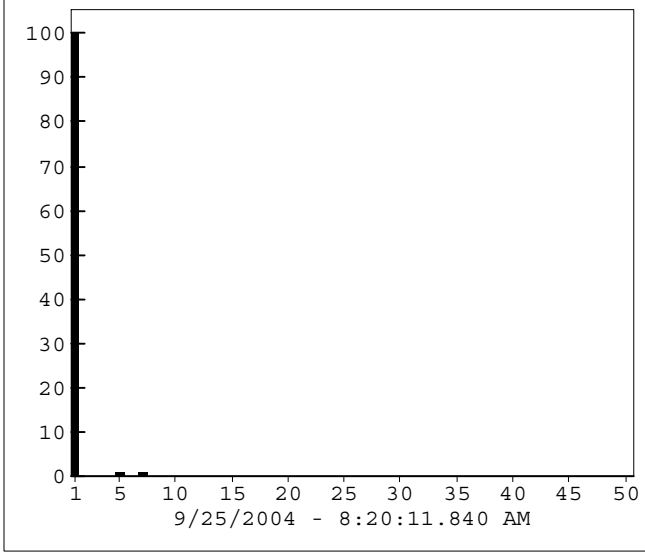
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	1.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.5	H22	0.1	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	0.8	H24	0.1	H41	0.0
H08	0.1	H25	0.2	H42	0.0
H09	0.1	H26	0.1	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	8:20:11.839 AM	16.669	485.9	V
Waveform U2	9/25/2004	8:20:11.839 AM	16.669	482.8	V
Waveform U3	9/25/2004	8:20:11.839 AM	16.669	489.6	V

Waveform U1
485.91 Vrms, 1.46 %THD



9/25/2004 - 8:20:11.000 AM

	Val	
—	14.50	Waveform U1
—	-609.4	Waveform U2
—	594.8	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 8:20:11 AM
Duration: 0:0.000 (M:S)
W: 7.441E+3 W
VAR: 5.886E+3 W
VA: 9.488E+3 W
Power Factor: 0.784
Displacement Power Factor: 0.784
TAN: 0.791
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Paseo de Oro WWPS\092504-Paseo de Oro WWPS Pump 1 - Photo.dvb

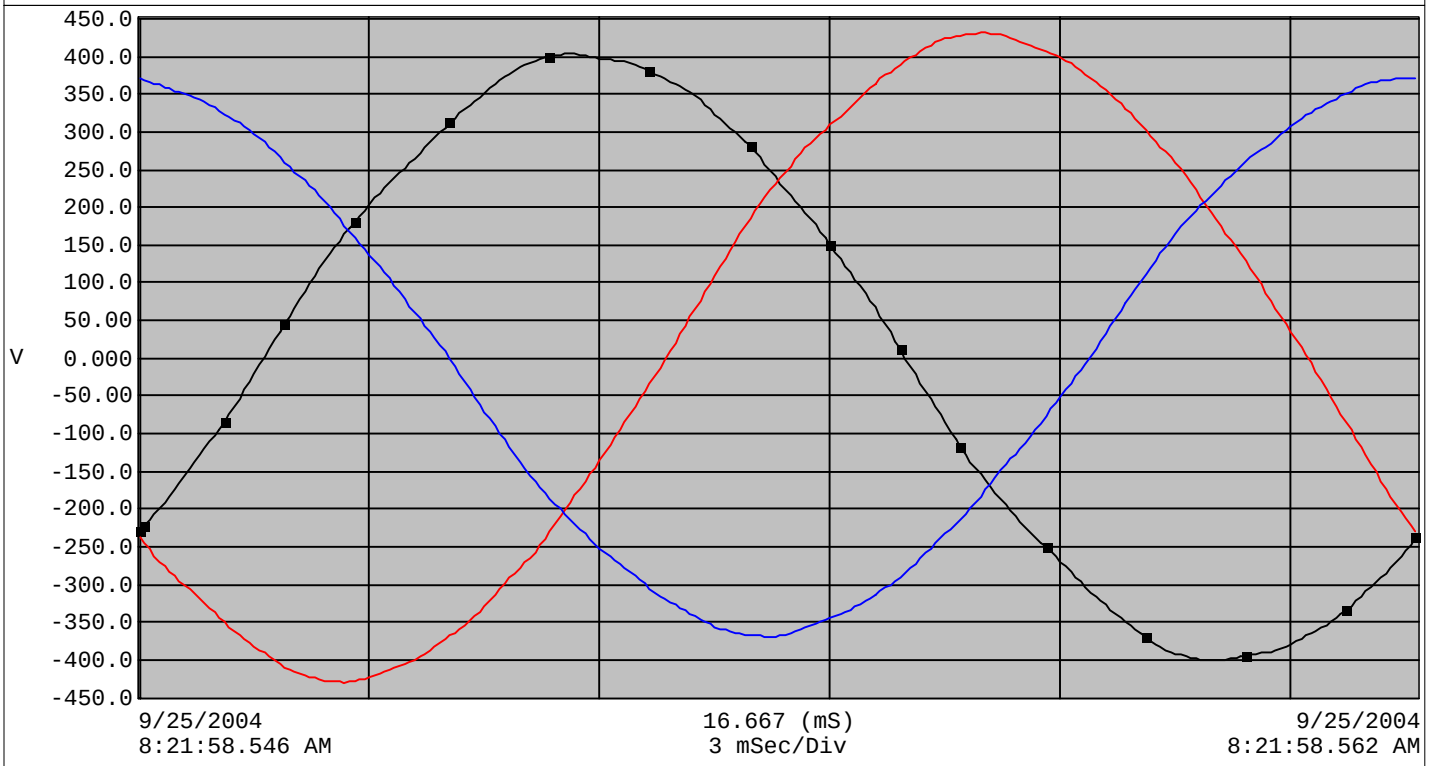
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Paseo de Oro WWPS - Pump 1 Photo ,

Comments

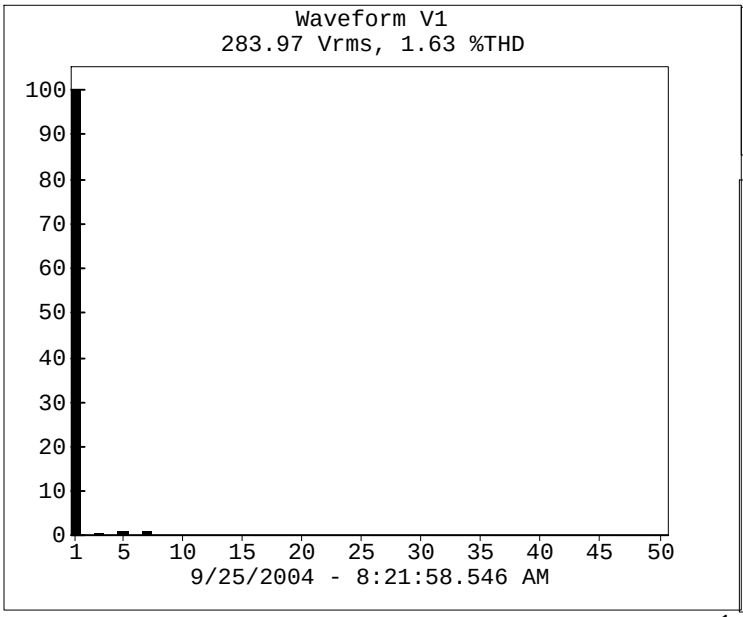
Paseo de Oro WWPS Pump 2 - Photo

Recording Start Date	9/25/2004 - 8:21:58 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	8:21:58.546 AM	16.667	284.0	V
Waveform V2	9/25/2004	8:21:58.546 AM	16.667	302.6	V
Waveform V3	9/25/2004	8:21:58.546 AM	16.667	259.9	V

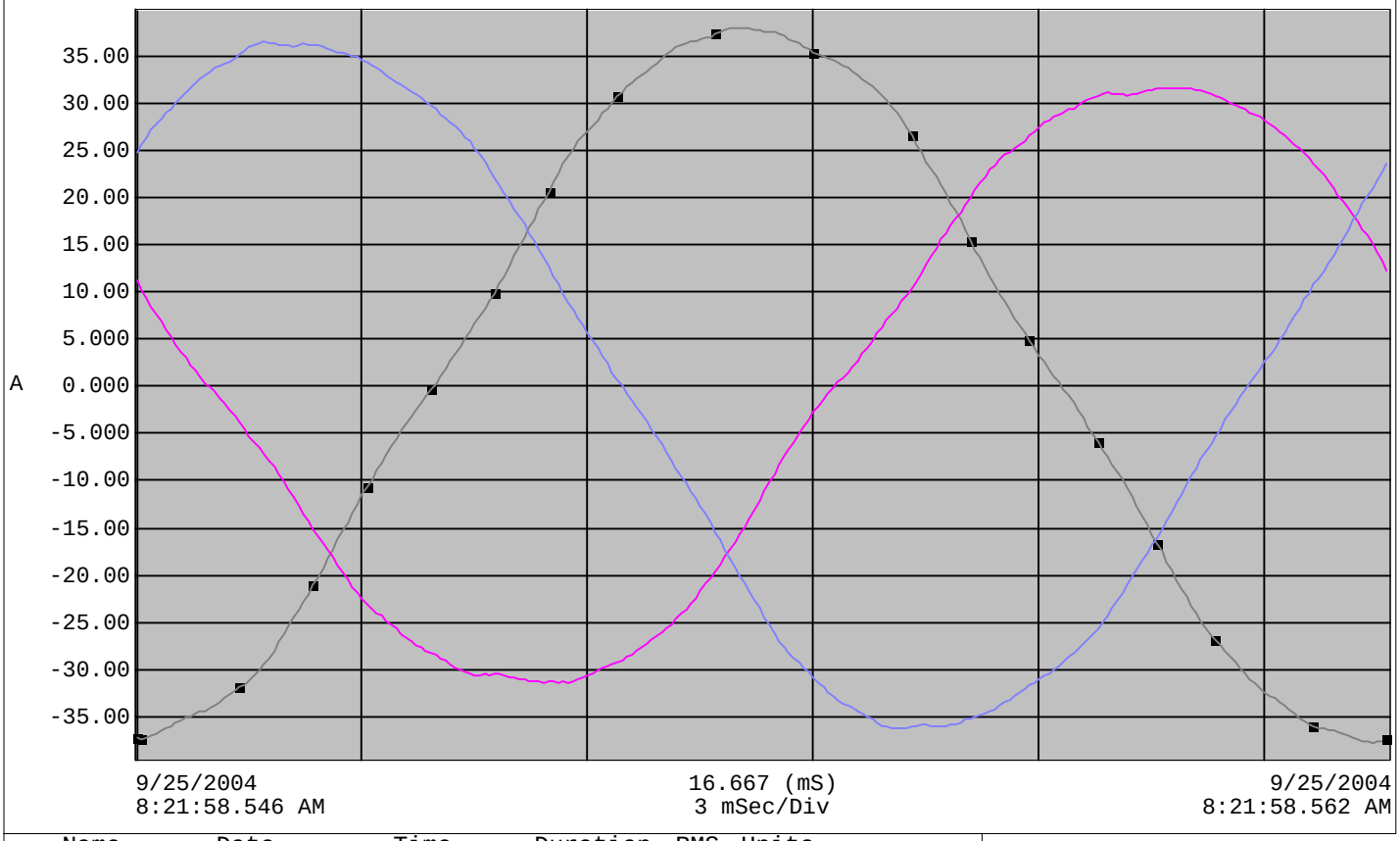


9/25/2004 - 8:21:58.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

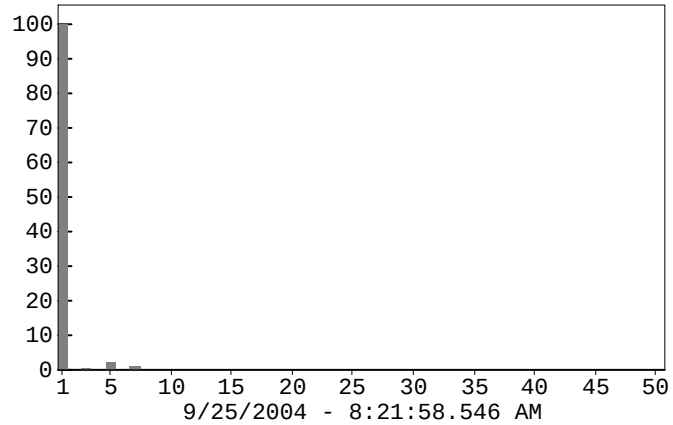
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.7	H20	0.1	H37	0.0
H04	0.0	H21	0.3	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	8:21:58.546 AM	16.667	26.73	A
Waveform I2	9/25/2004	8:21:58.546 AM	16.667	22.73	A
Waveform I3	9/25/2004	8:21:58.546 AM	16.667	25.83	A

Waveform I1
26.73 Arms, 2.88 %THD

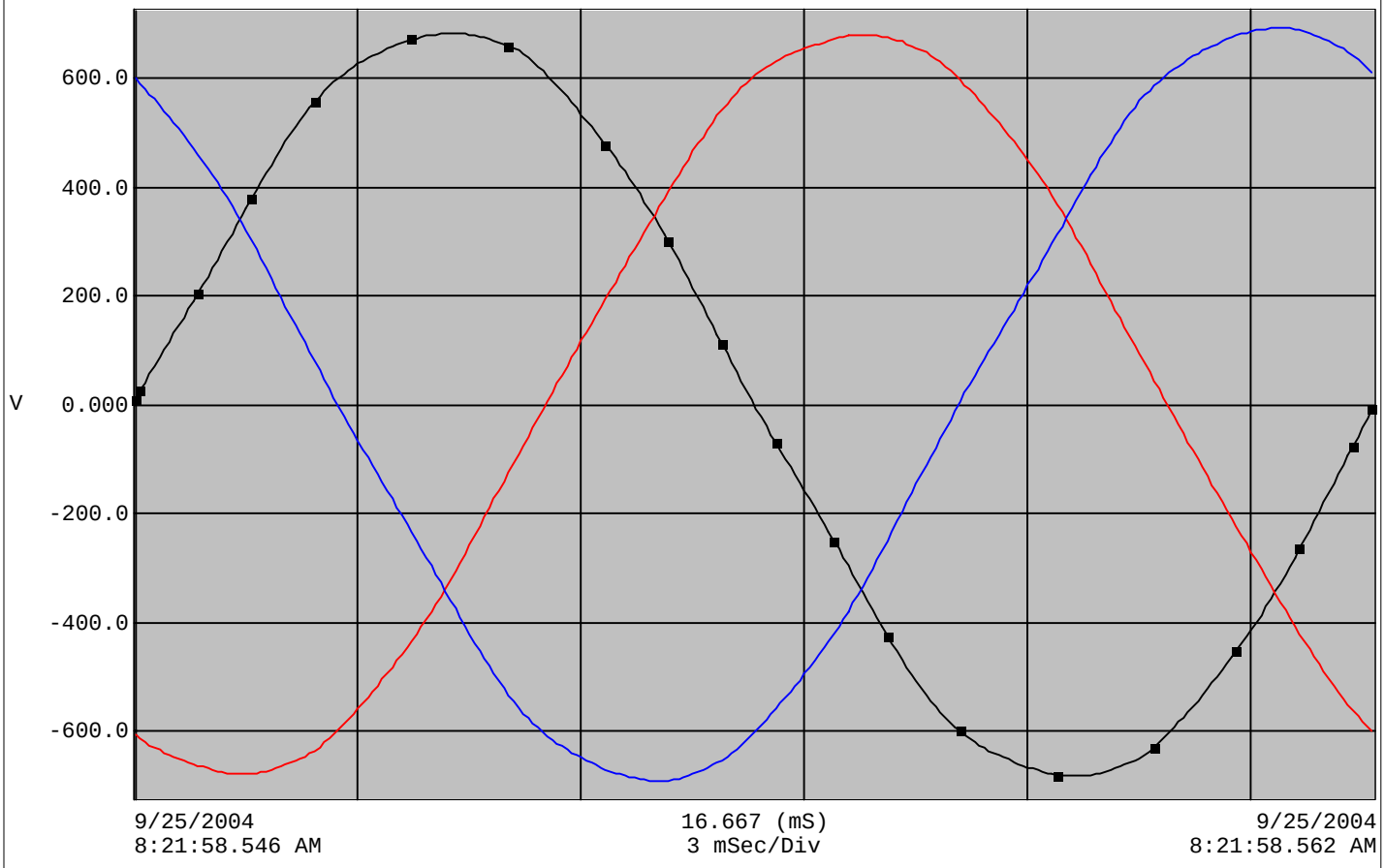


9/25/2004 - 8:21:58.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

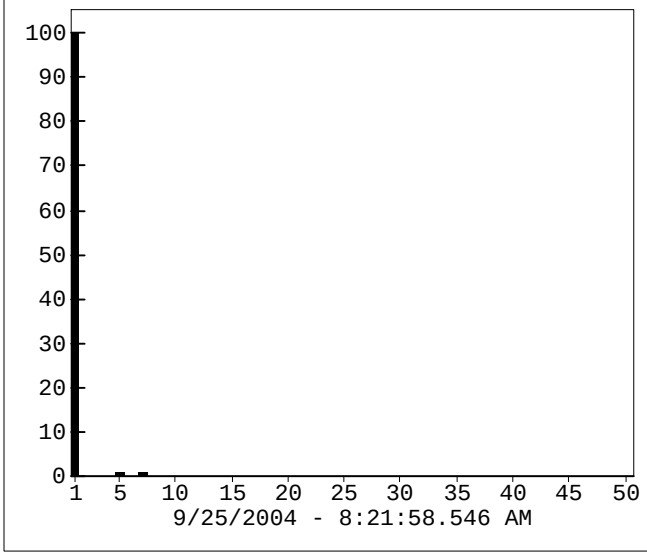
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.2	H19	0.1	H36	0.0
H03	0.8	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.4	H22	0.0	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	1.3	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	8:21:58.546 AM	16.667	487.4	V
Waveform U2	9/25/2004	8:21:58.546 AM	16.667	484.2	V
Waveform U3	9/25/2004	8:21:58.546 AM	16.667	491.1	V

Waveform U1
487.42 Vrms, 1.40 %THD



9/25/2004 - 8:21:58.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 8:21:58 AM
Duration: 0:0.000 (M:S)
W: 4.858E+3 W
VAR: 5.788E+3 W
VA: 7.556E+3 W
Power Factor: 0.643
Displacement Power Factor: 0.643
TAN: 1.191
VoltageRatio: 1.000
CurrentRatio: 1.000
```

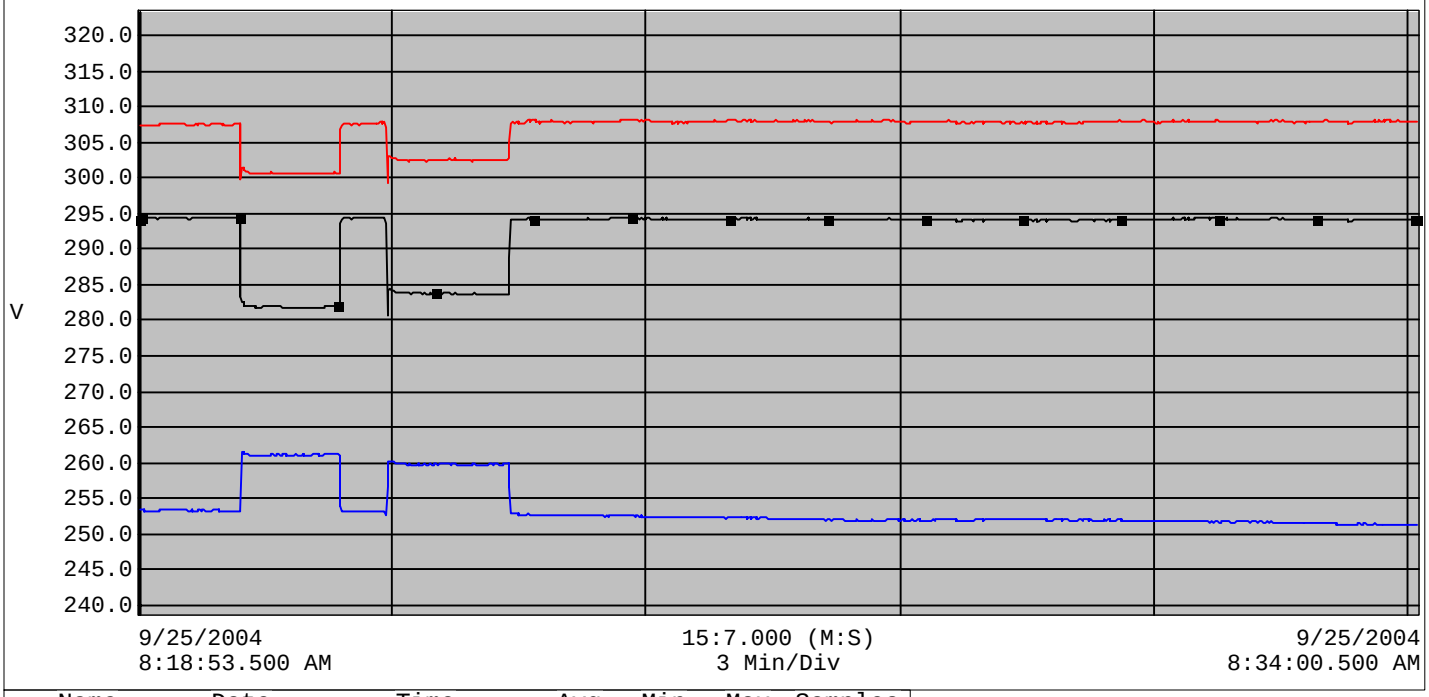
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Paseo de Oro WWPS\092504-Paseo de Oro WWPS Pump 2 - Photo.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Test Site Paseo de Oro WWPS - Pump 2 Photo ,
Comments	

Paseo de Oro WWPS Pump 1 and 2

Recording Start Date	9/25/2004 - 8:18:53 AM
Recording Duration	15:07 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

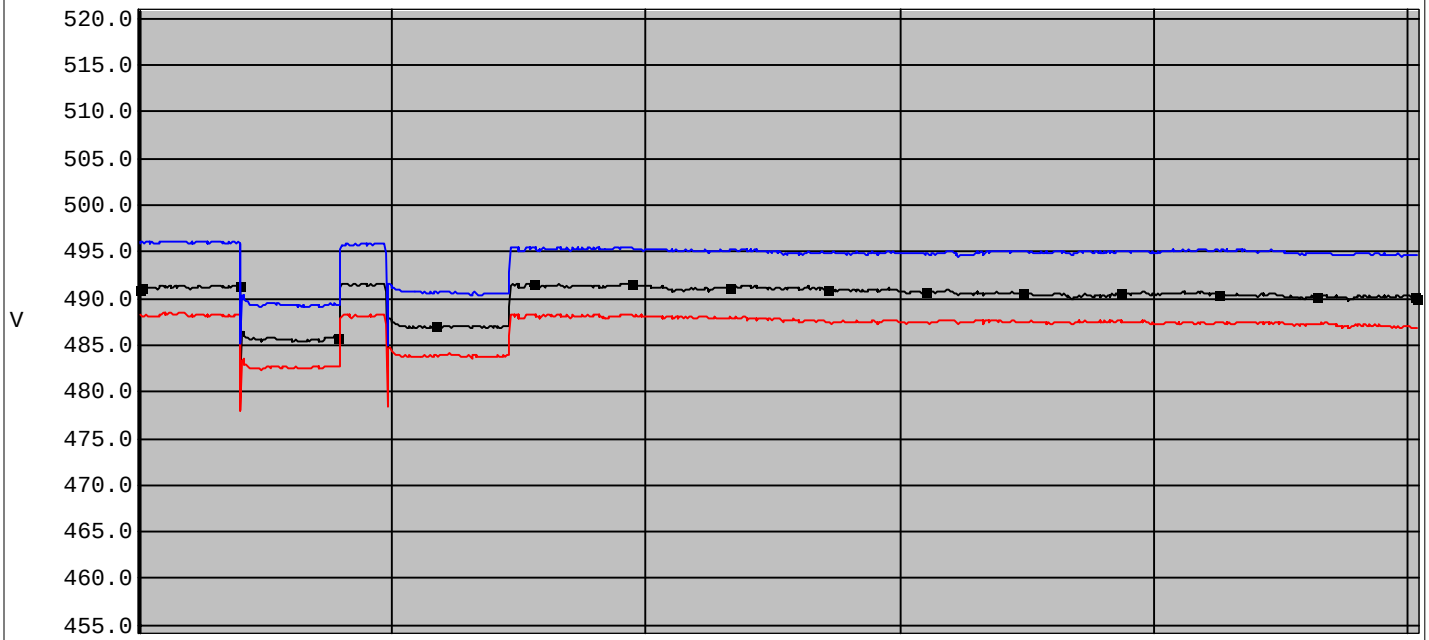
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/25/2004	8:18:53.500 AM	292.1	280.4	294.3	908
Vrms Line2	9/25/2004	8:18:53.500 AM	306.6	299.2	308.0	908
Vrms Line3	9/25/2004	8:18:53.500 AM	253.4	251.0	261.4	908

9/25/2004 - 8:18:53.000 AM
Val
294.1 Vrms Line1
307.2 Vrms Line2
253.2 Vrms Line3

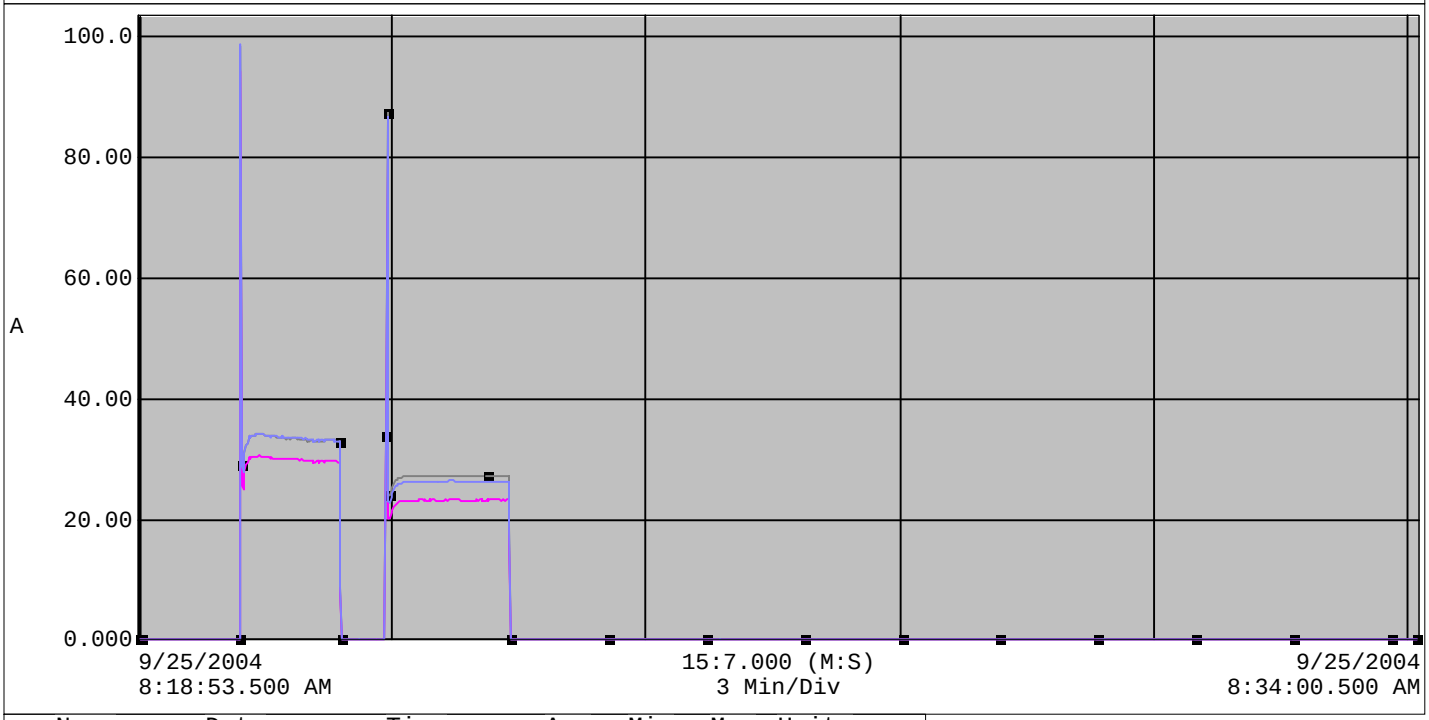
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/25/2004	8:18:53.500 AM	489.9	481.0	491.5	V
Urms Line2	9/25/2004	8:18:53.500 AM	486.8	477.9	488.3	V
Urms Line3	9/25/2004	8:18:53.500 AM	494.1	484.9	496.1	V

9/25/2004 - 8:18:53.000 AM
Val
490.9 Urms Line1
488.1 Urms Line2
495.8 Urms Line3

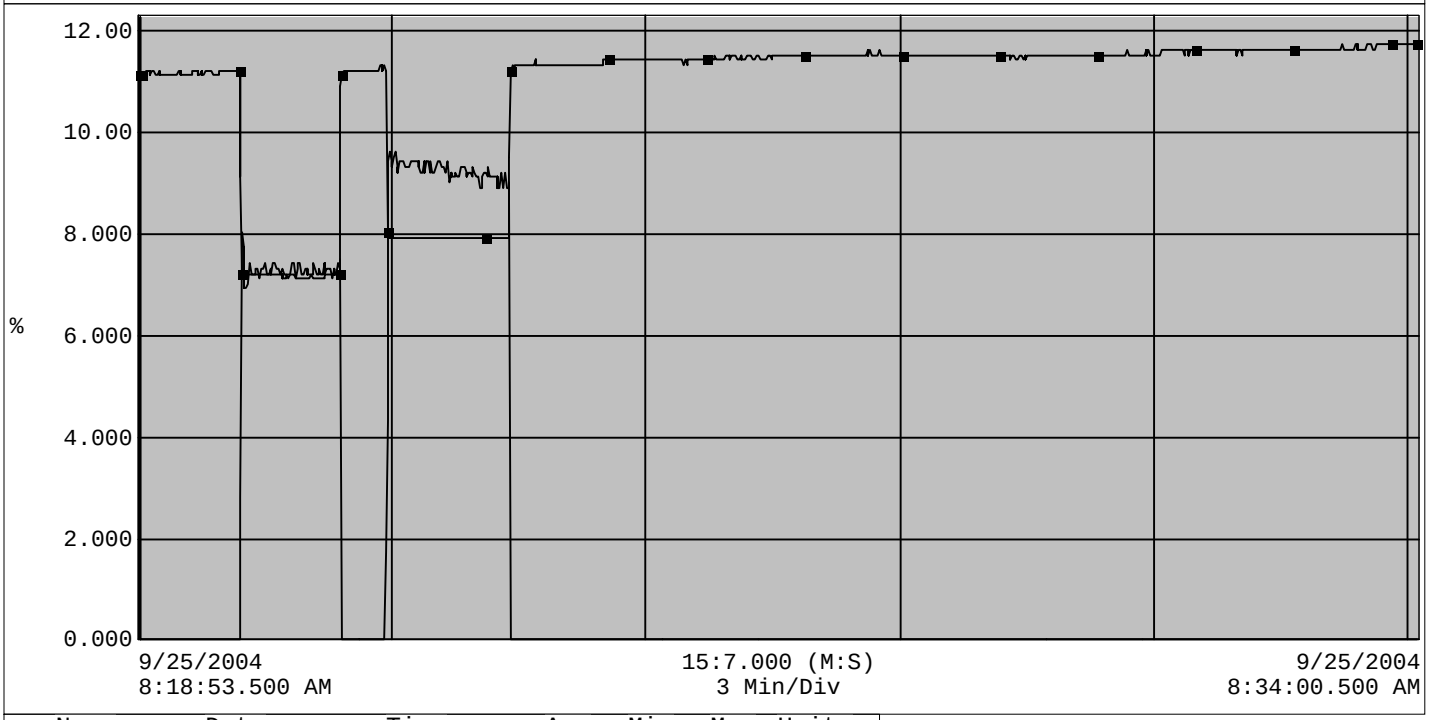
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/25/2004	8:18:53.500 AM	5.364	0.000	98.20	A
Arms Line2	9/25/2004	8:18:53.500 AM	4.711	0.000	94.30	A
Arms Line3	9/25/2004	8:18:53.500 AM	5.285	0.000	98.50	A

9/25/2004 - 8:18:53.000 AM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

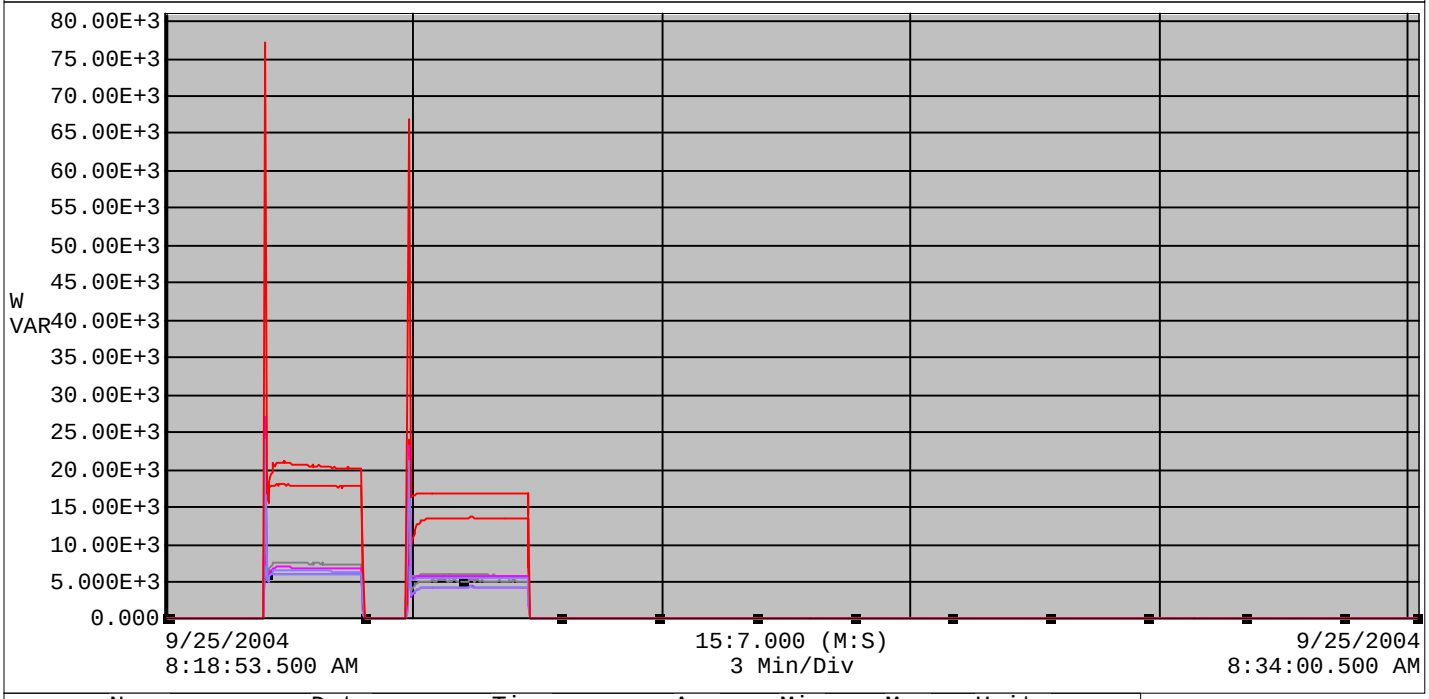
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/25/2004	8:18:53.500 AM	10.77	7.100	11.70	%
Aunb(IEEE)	9/25/2004	8:18:53.500 AM	1.462	0.000	9.600	%

9/25/2004 - 8:18:53.000 AM
Val
11.10 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

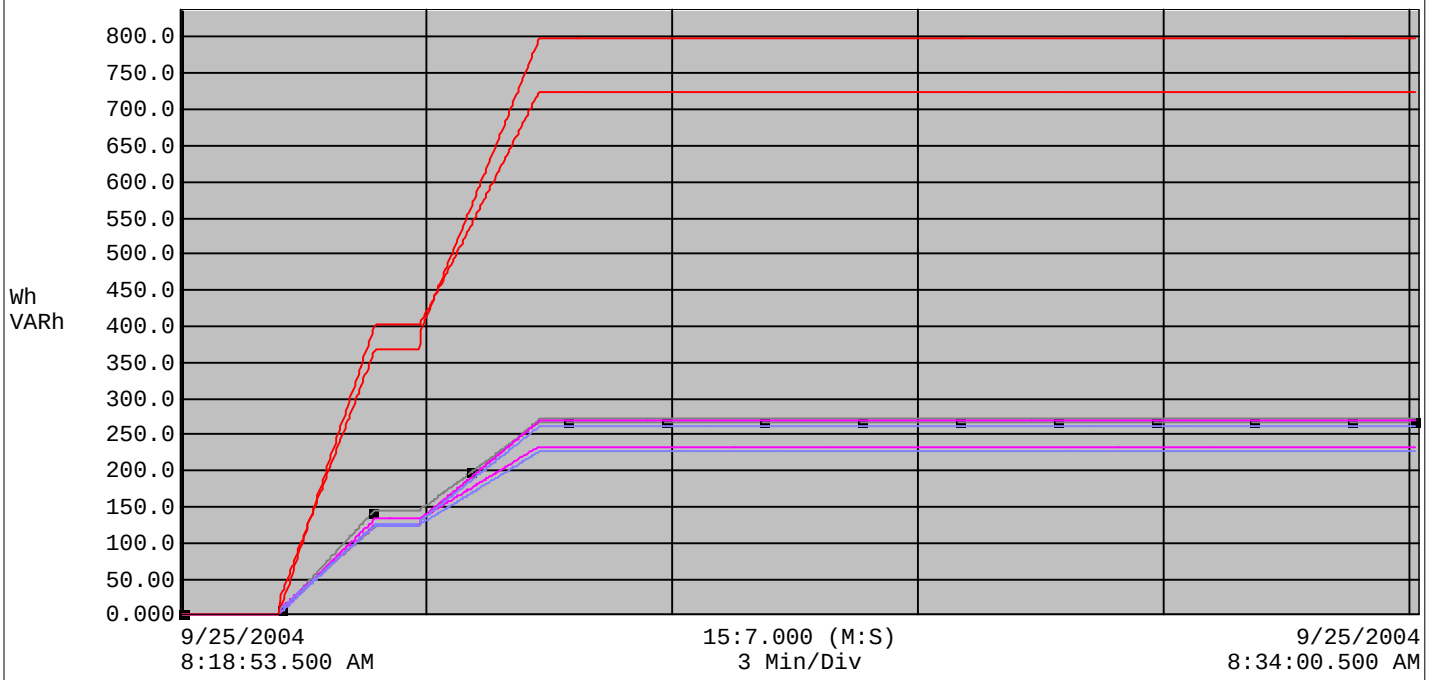
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/25/2004	8:18:53.500 AM	1.054E+3	0.000	9.557E+3	W
W Line2	9/25/2004	8:18:53.500 AM	920.5	0.000	8.396E+3	W
W Line3	9/25/2004	8:18:53.500 AM	891.6	0.000	6.902E+3	W
W Sum of Phases	9/25/2004	8:18:53.500 AM	2.866E+3	0.000	24.85E+3	W
VAR Line1	9/25/2004	8:18:53.500 AM	1.070E+3	0.000	26.12E+3	VAR
VAR Line2	9/25/2004	8:18:53.500 AM	1.061E+3	0.000	26.98E+3	VAR
VAR Line3	9/25/2004	8:18:53.500 AM	1.030E+3	0.000	23.97E+3	VAR
VAR Sum of Phases	9/25/2004	8:18:53.500 AM	3.161E+3	0.000	77.07E+3	VAR

9/25/2004 - 8:18:53.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

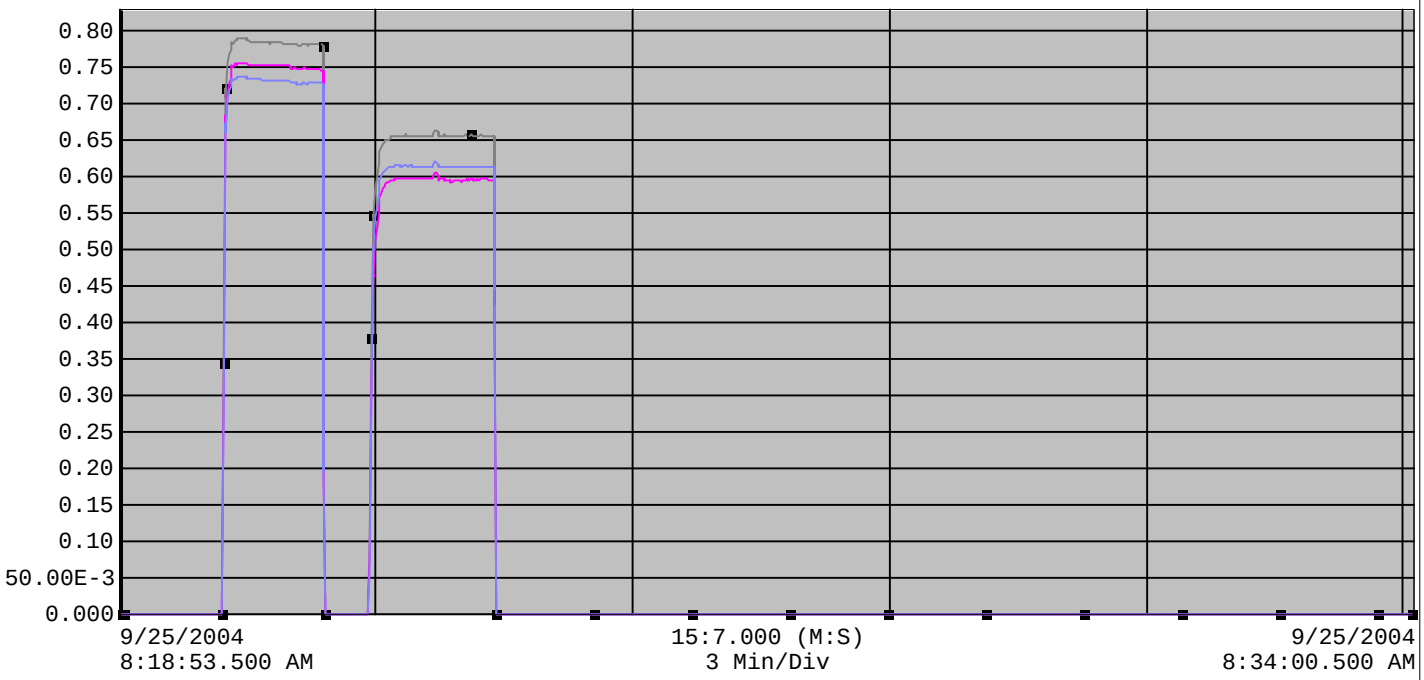
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/25/2004	8:18:53.500 AM	219.4	0.000	265.7	Wh
W-hours Line2	9/25/2004	8:18:53.500 AM	192.4	0.000	232.2	Wh
W-hours Line3	9/25/2004	8:18:53.500 AM	185.9	0.000	224.9	Wh
W-hours Sum of Phases	9/25/2004	8:18:53.500 AM	597.7	0.000	722.8	Wh
VAR-hours Line1	9/25/2004	8:18:53.500 AM	220.3	0.000	269.9	VARh
VAR-hours Line2	9/25/2004	8:18:53.500 AM	218.7	0.000	267.5	VARh
VAR-hours Line3	9/25/2004	8:18:53.500 AM	212.6	0.000	259.8	VARh
VAR-hours Sum of Phases	9/25/2004	8:18:53.500 AM	651.6	0.000	797.2	VARh

9/25/2004 - 8:18:53.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/25/2004	8:18:53.500 AM	0.123	0.000	0.788	
PF Line2	9/25/2004	8:18:53.500 AM	0.115	0.000	0.755	
PF Line3	9/25/2004	8:18:53.500 AM	0.115	0.000	0.736	

9/25/2004 - 8:18:53.000 AM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Paseo de Oro WWPS\092504-Paseo de Oro WWPS Pump 1 and 2.dvb	
Operator Morikawa & Associates, LLC ,	Test Site ,
Comments	

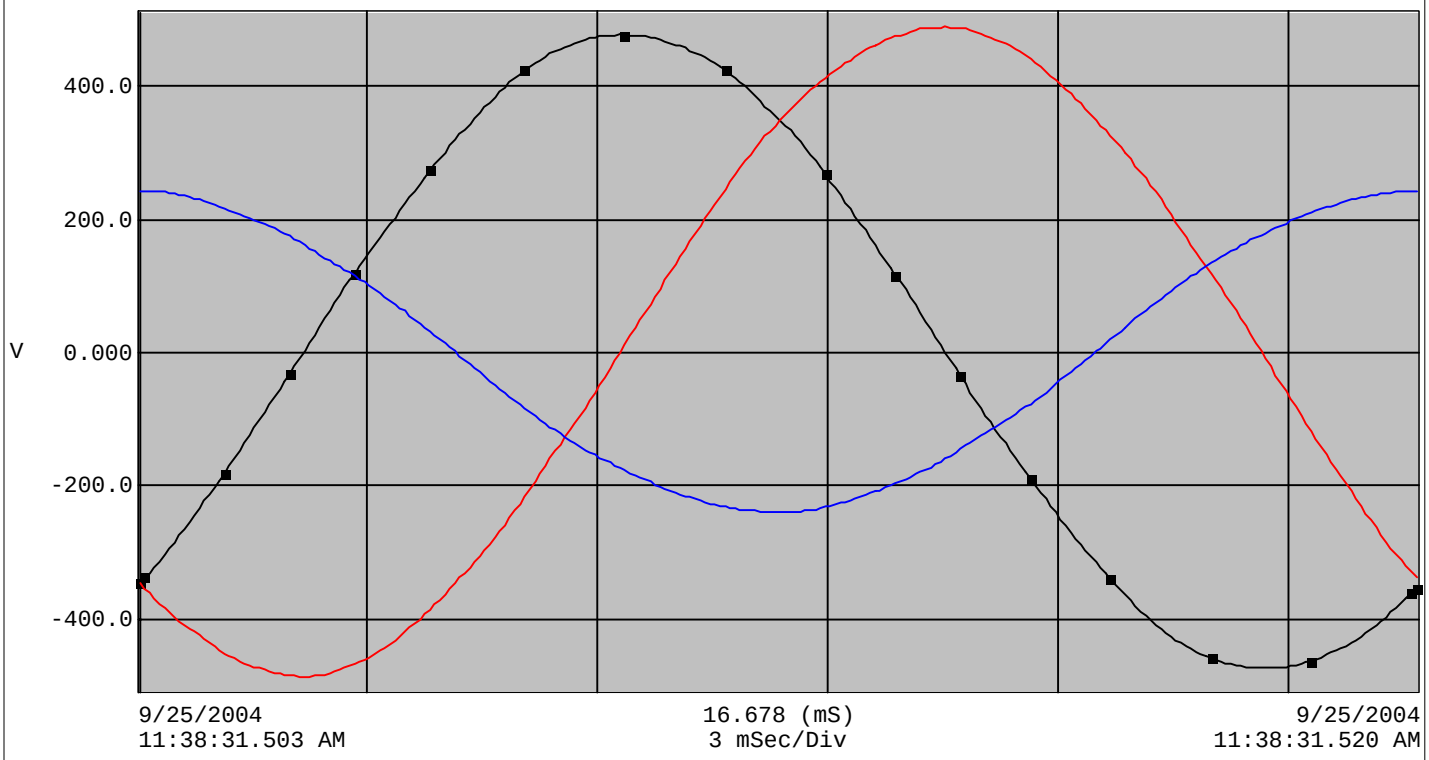
GWA Wastewater Pumping Station Assessment				
Station Name: PITI	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.38	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Secondary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.27	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.09	
Lighting and Power Devices	1.5%	3	0.045	
Sump Pump Controls	1.5%	3	0.045	
	100%	**Assessment Value**		**2.8**

Comments: PLC Control

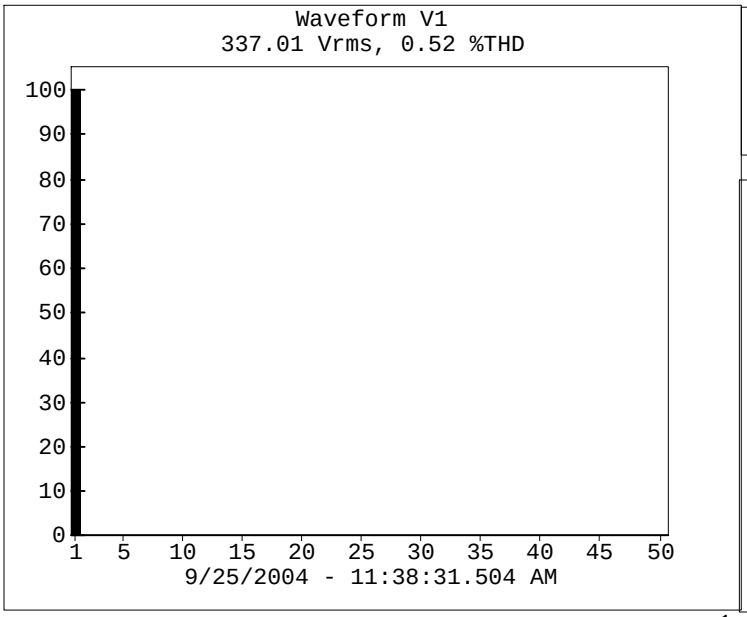
Piti WWPS Pump 1 Photo

Recording Start Date	9/25/2004 - 11:38:31 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	11:38:31.503 AM	16.678	337.0	V
Waveform V2	9/25/2004	11:38:31.503 AM	16.678	343.7	V
Waveform V3	9/25/2004	11:38:31.503 AM	16.678	170.1	V



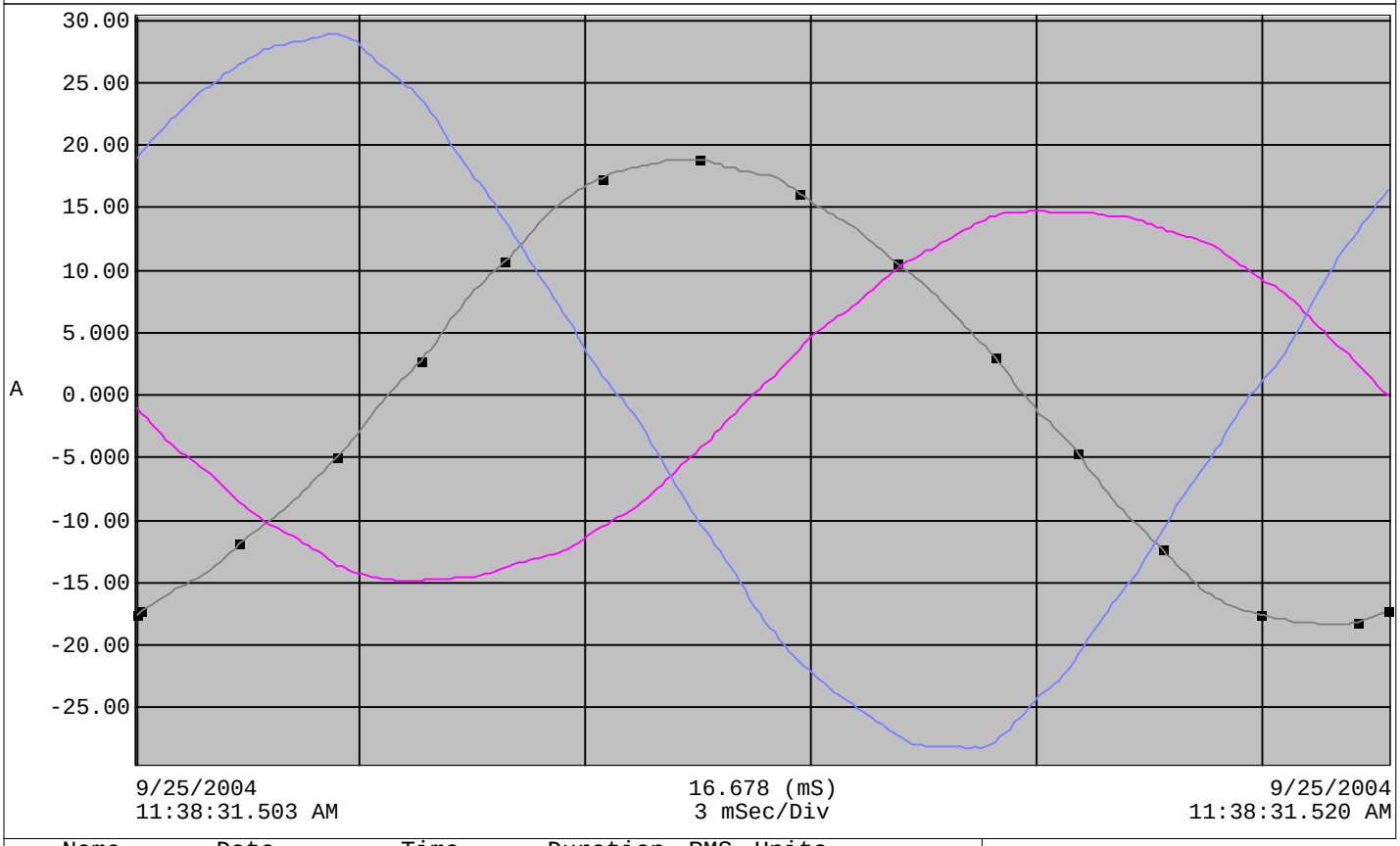
9/25/2004 - 11:38:31.000 AM

Val	
-347.2	Waveform V1
-347.3	Waveform V2
241.0	Waveform V3

Waveform V1

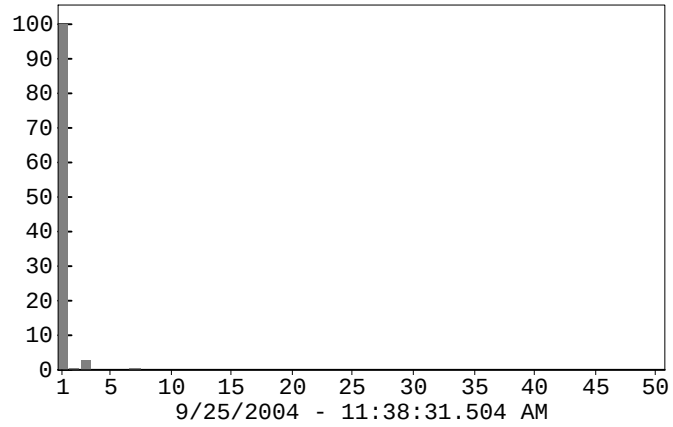
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	11:38:31.503 AM	16.678	13.23	A
Waveform I2	9/25/2004	11:38:31.503 AM	16.678	10.76	A
Waveform I3	9/25/2004	11:38:31.503 AM	16.678	19.63	A

Waveform I1
13.23 Arms, 3.41 %THD



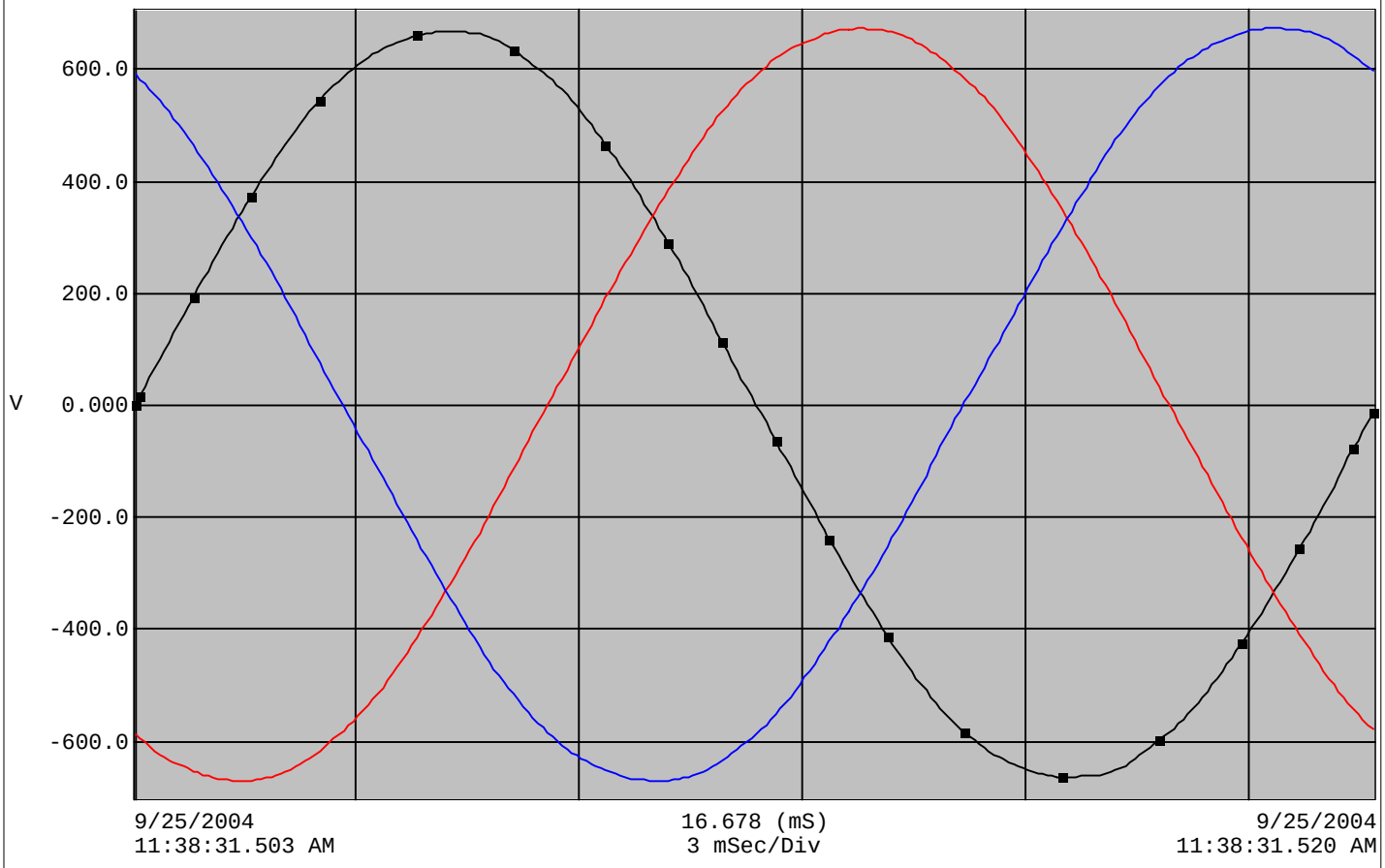
9/25/2004 - 11:38:31.000 AM

Val	
-17.60	Waveform I1
-1.100	Waveform I2
18.90	Waveform I3

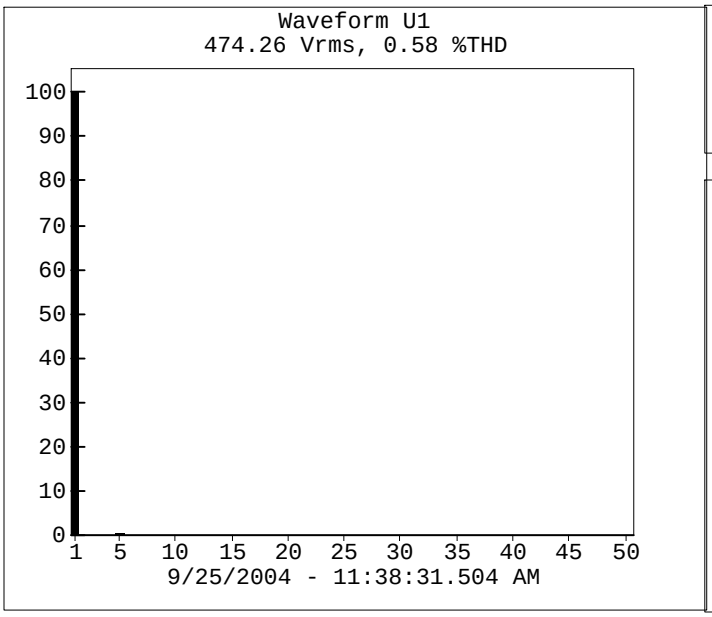
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.8	H19	0.2	H36	0.0
H03	3.1	H20	0.1	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	0.5	H22	0.1	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	0.6	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.4	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.3	H33	0.0	H50	0.0
H17	0.4	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	11:38:31.503 AM	16.678	474.3	V
Waveform U2	9/25/2004	11:38:31.503 AM	16.678	477.0	V
Waveform U3	9/25/2004	11:38:31.503 AM	16.678	477.6	V



9/25/2004 - 11:38:31.000 AM
Val
0.100 — Waveform U1
-588.4 — Waveform U2
588.2 — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 11:38:31 AM
Duration: 0:0.000 (M:S)
W: 3.998E+3 W
VAR: 1.980E+3 W
VA: 4.461E+3 W
Power Factor: 0.897
Displacement Power Factor: 0.898
TAN: 0.490
VoltageRatio: 1.000
CurrentRatio: 1.000
```

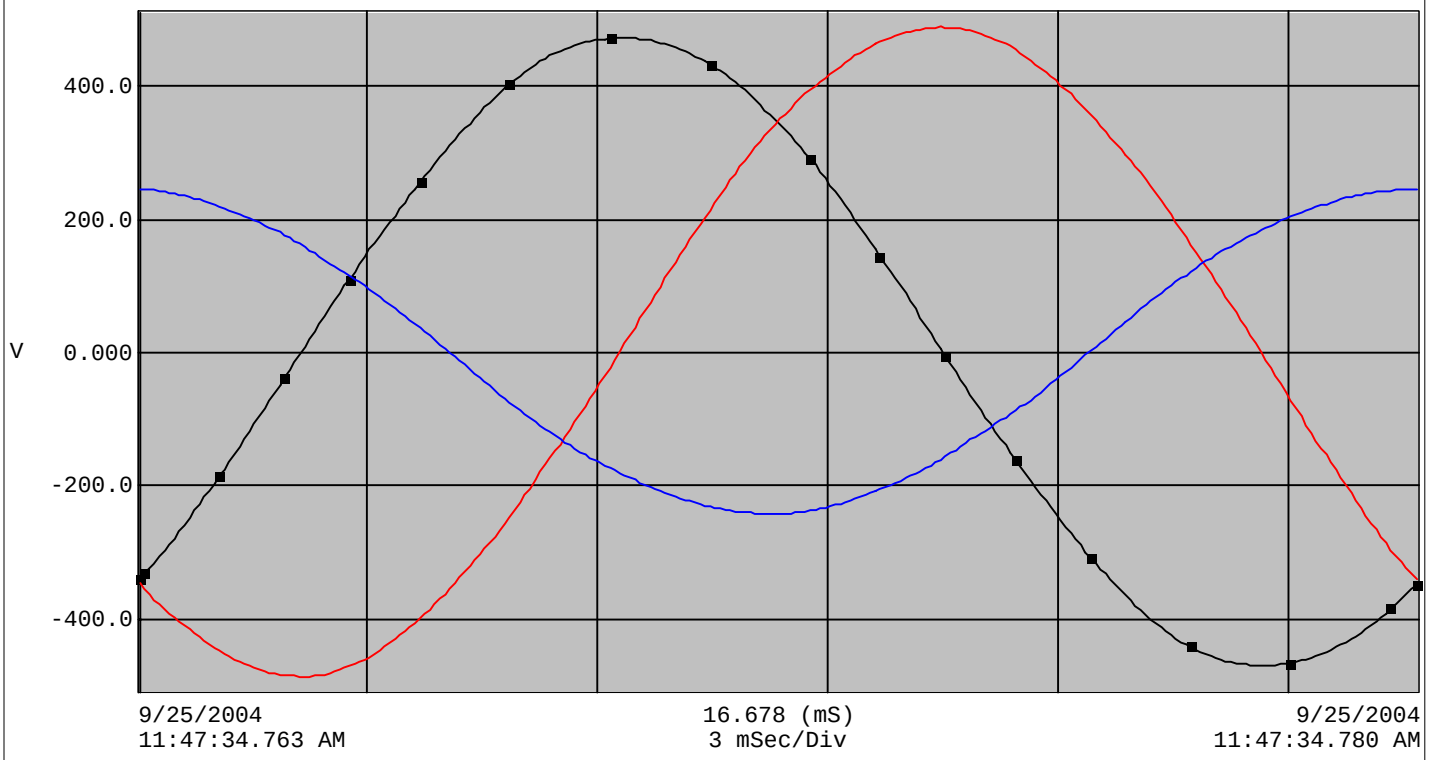
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Piti WWPS\092504-Piti WWPS Pump 1 Photo.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Test Site Piti WWPS - Pump 1 Photo ,
Comments	

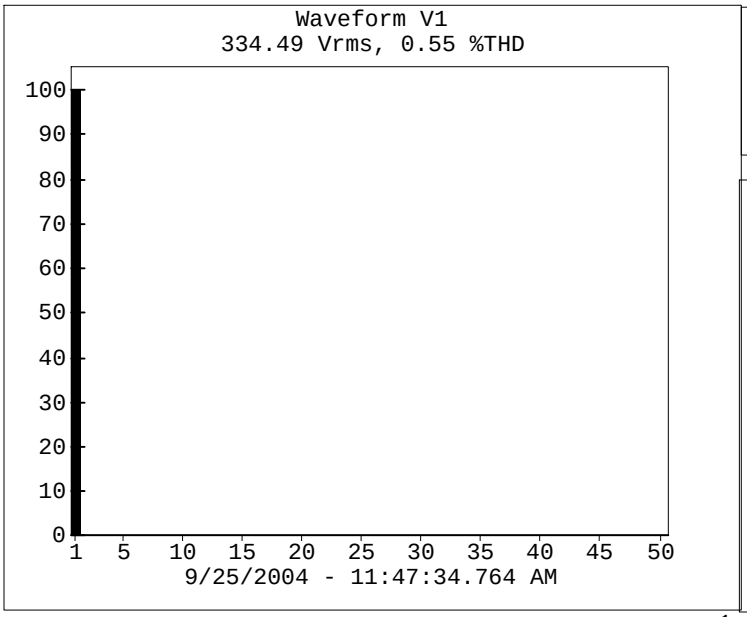
Piti WWPS Pump 2 Photo

Recording Start Date	9/25/2004 - 11:47:34 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	11:47:34.763 AM	16.678	334.5	V
Waveform V2	9/25/2004	11:47:34.763 AM	16.678	344.7	V
Waveform V3	9/25/2004	11:47:34.763 AM	16.678	172.5	V



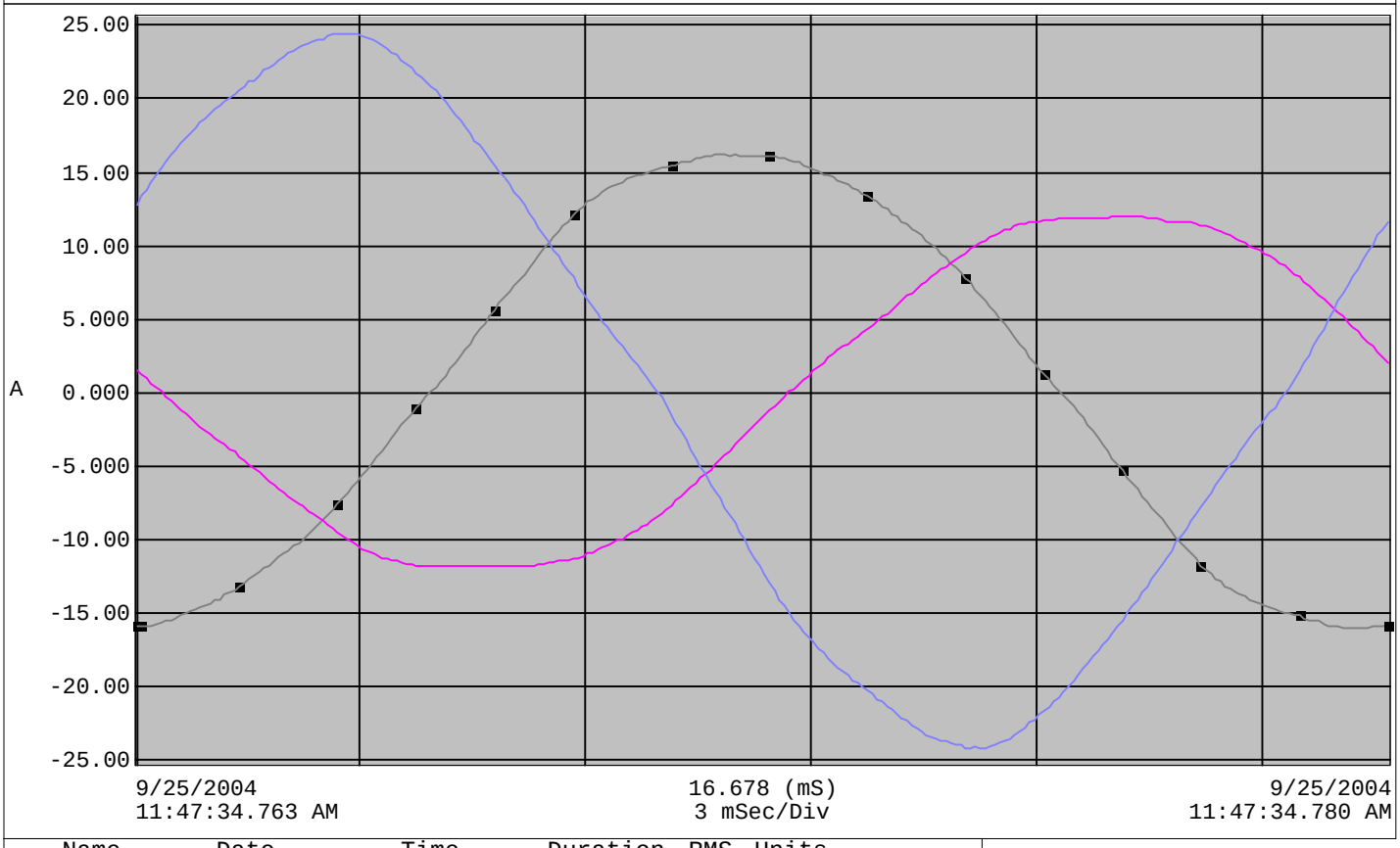
9/25/2004 - 11:47:34.000 AM

Val	
-341.4	Waveform V1
-349.0	Waveform V2
243.7	Waveform V3

Waveform V1

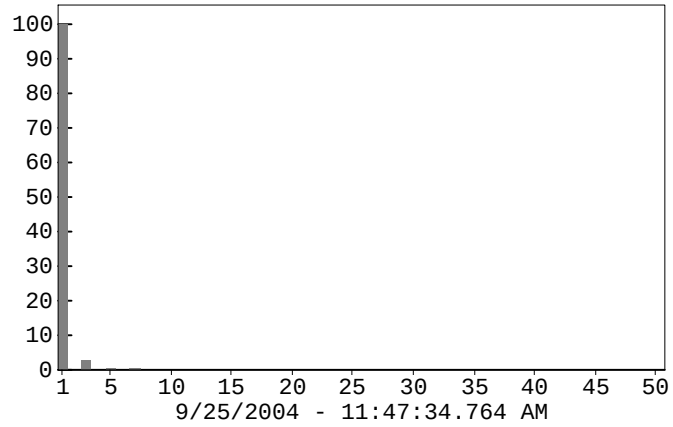
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	11:47:34.763 AM	16.678	11.72	A
Waveform I2	9/25/2004	11:47:34.763 AM	16.678	8.803	A
Waveform I3	9/25/2004	11:47:34.763 AM	16.678	16.49	A

Waveform I1
11.72 Arms, 3.48 %THD

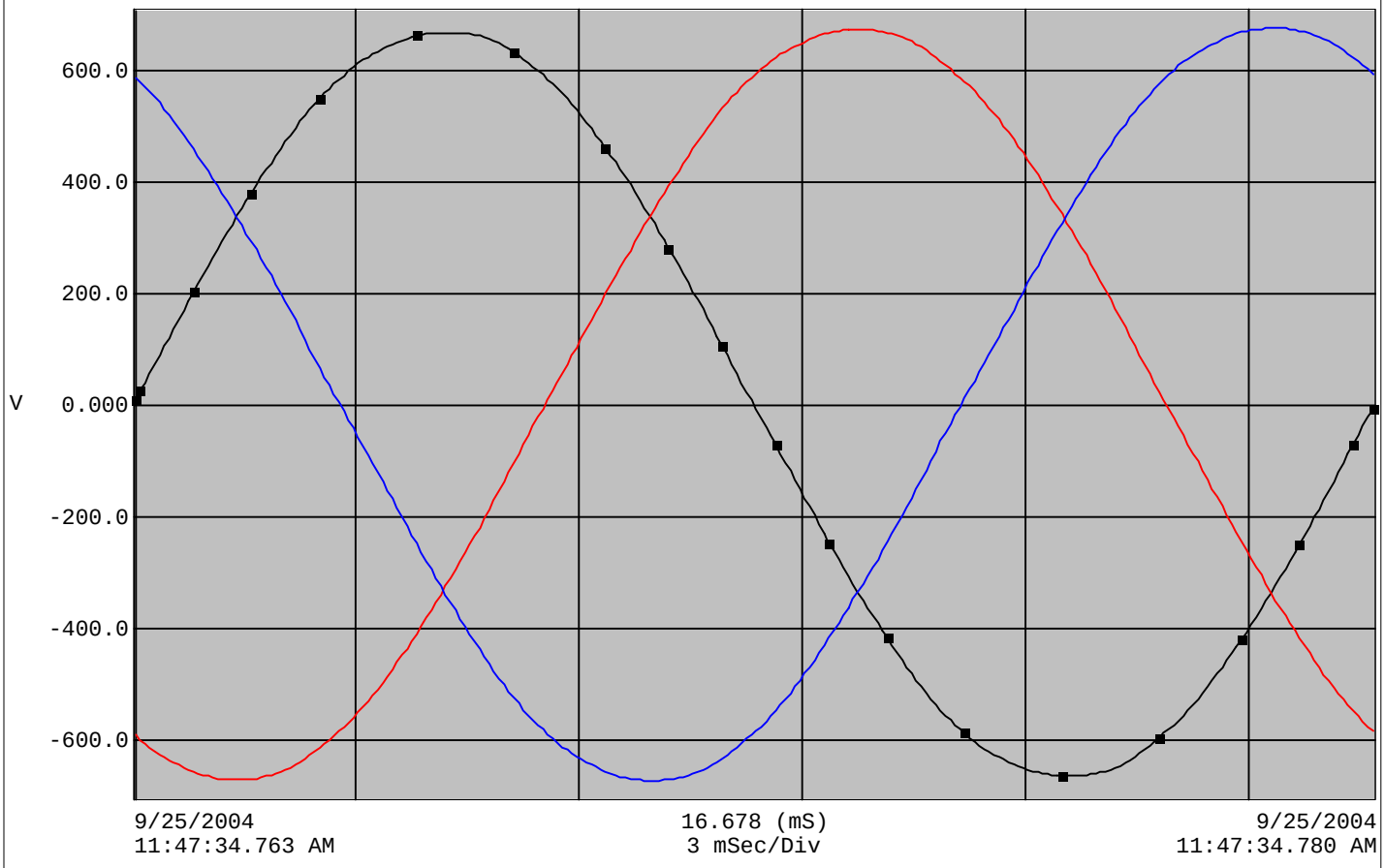


9/25/2004 - 11:47:34.000 AM
Val
-16.00 — Waveform I1
1.500 — Waveform I2
12.70 — Waveform I3

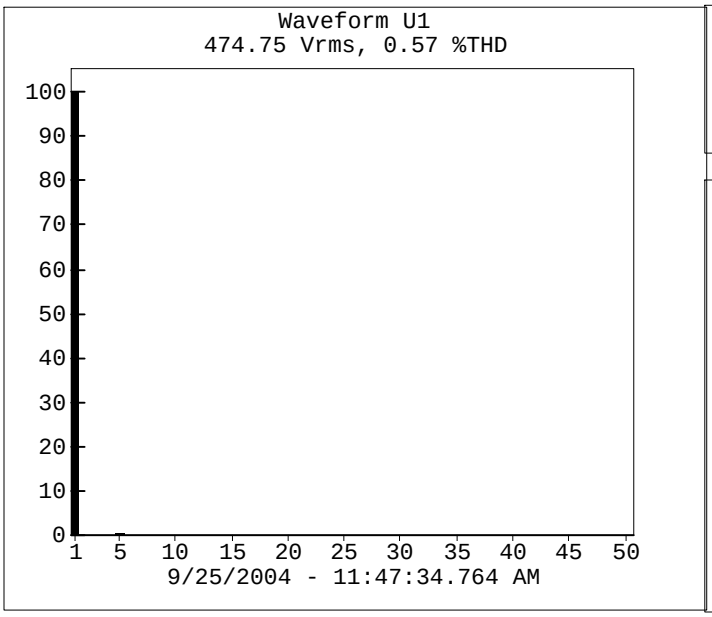
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.2	H19	0.1	H36	0.0
H03	3.1	H20	0.0	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.3	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	11:47:34.763 AM	16.678	474.8	V
Waveform U2	9/25/2004	11:47:34.763 AM	16.678	477.7	V
Waveform U3	9/25/2004	11:47:34.763 AM	16.678	478.8	V



9/25/2004 - 11:47:34.000 AM
Val
7.500 — Waveform U1
-592.8 — Waveform U2
585.2 — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 11:47:34 AM
Duration: 0:0.000 (M:S)
W: 3.110E+3 W
VAR: 2.408E+3 W
VA: 3.933E+3 W
Power Factor: 0.791
Displacement Power Factor: 0.791
TAN: 0.774
VoltageRatio: 1.000
CurrentRatio: 1.000
```

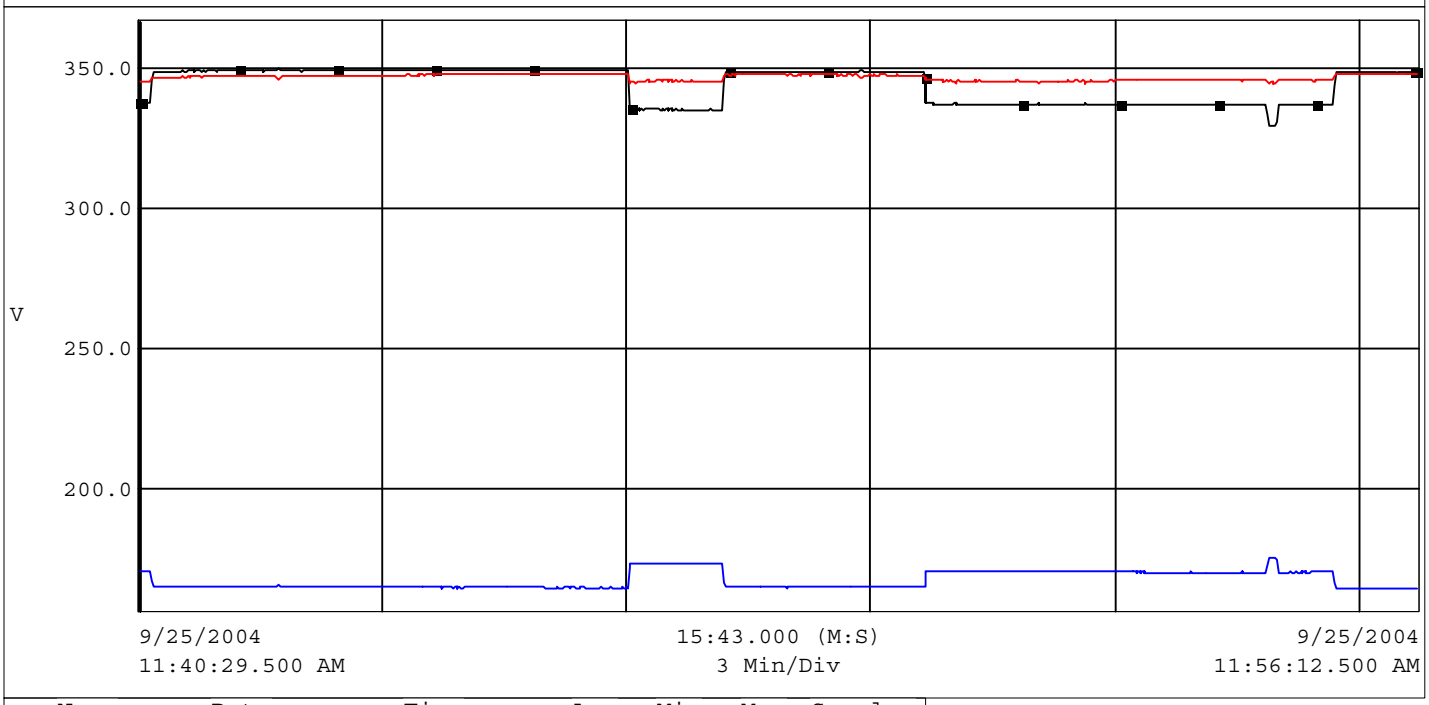
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Piti WWPS\092504-Piti WWPS Pump 2 Photo.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Test Site Piti WWPs Pump 2 Photo ,
Comments	

Piti WWPS Pump 1 and 2

Recording Start Date	9/25/2004 - 11:40:29 AM
Recording Duration	15:43 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Vrms

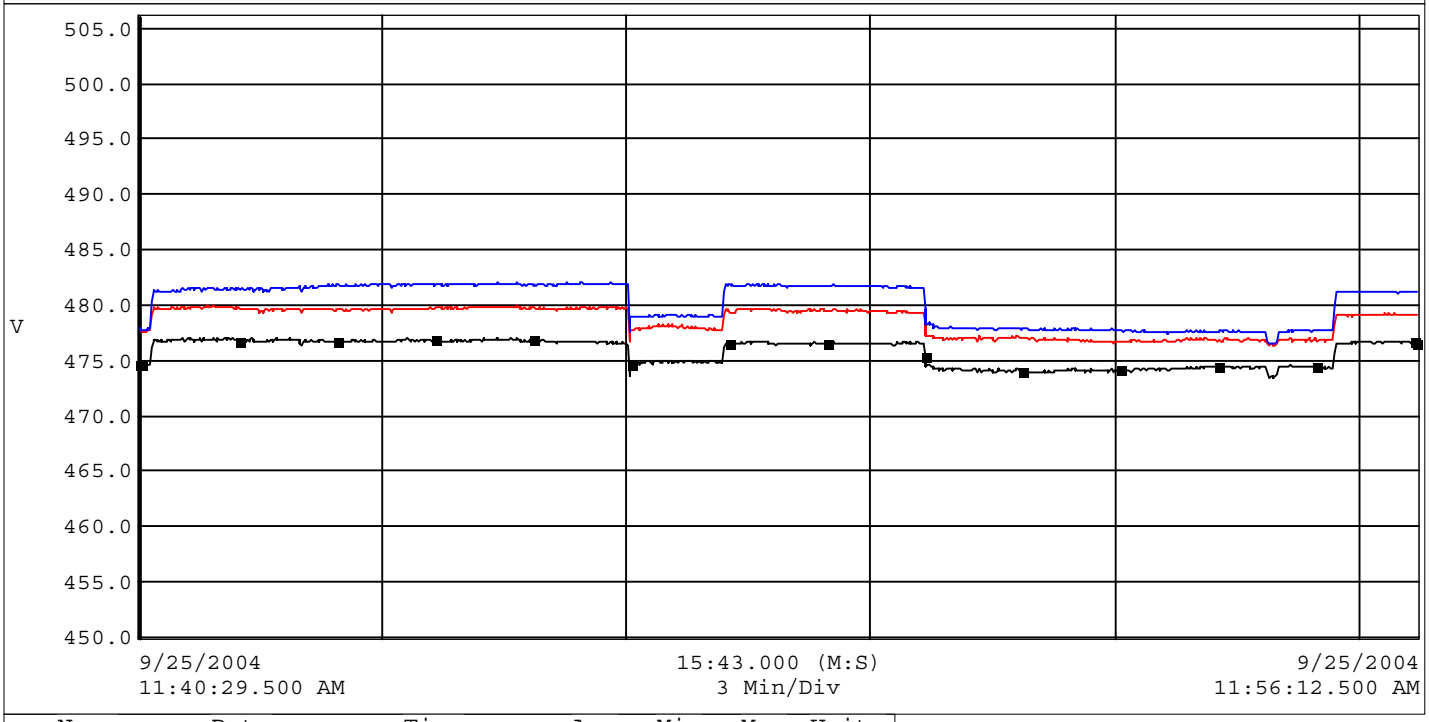


Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/25/2004	11:40:29.500 AM	343.3	329.0	349.0	944
Vrms Line2	9/25/2004	11:40:29.500 AM	346.1	343.7	347.4	944
Vrms Line3	9/25/2004	11:40:29.500 AM	166.7	163.8	174.5	944

9/25/2004 - 11:40:29.000 AM

Val	
337.0	Vrms Line1
344.6	Vrms Line2
170.1	Vrms Line3

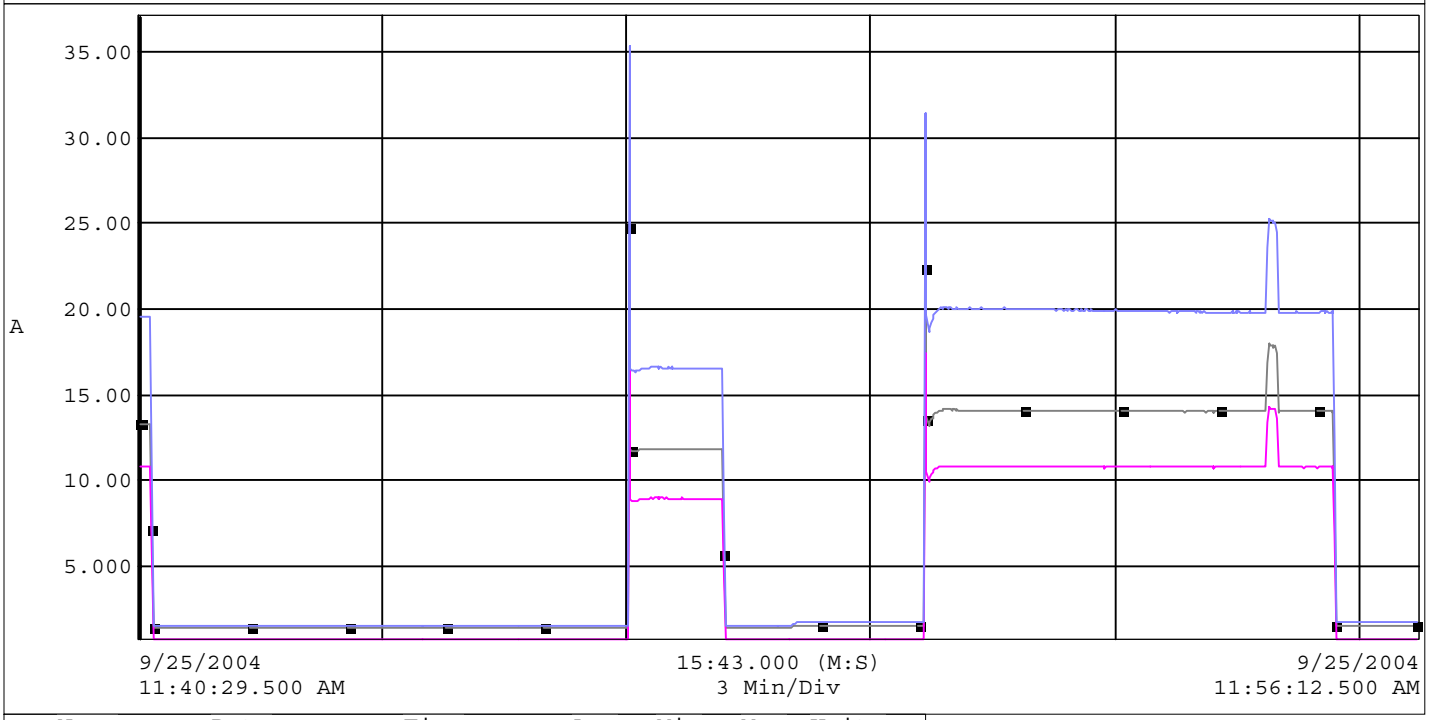
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/25/2004	11:40:29.500 AM	475.7	473.4	476.9	V
Urms Line2	9/25/2004	11:40:29.500 AM	478.5	476.2	479.9	V
Urms Line3	9/25/2004	11:40:29.500 AM	480.1	476.4	482.0	V

9/25/2004 - 11:40:29.000 AM
Val
474.6 — Urms Line1
477.6 — Urms Line2
477.8 — Urms Line3

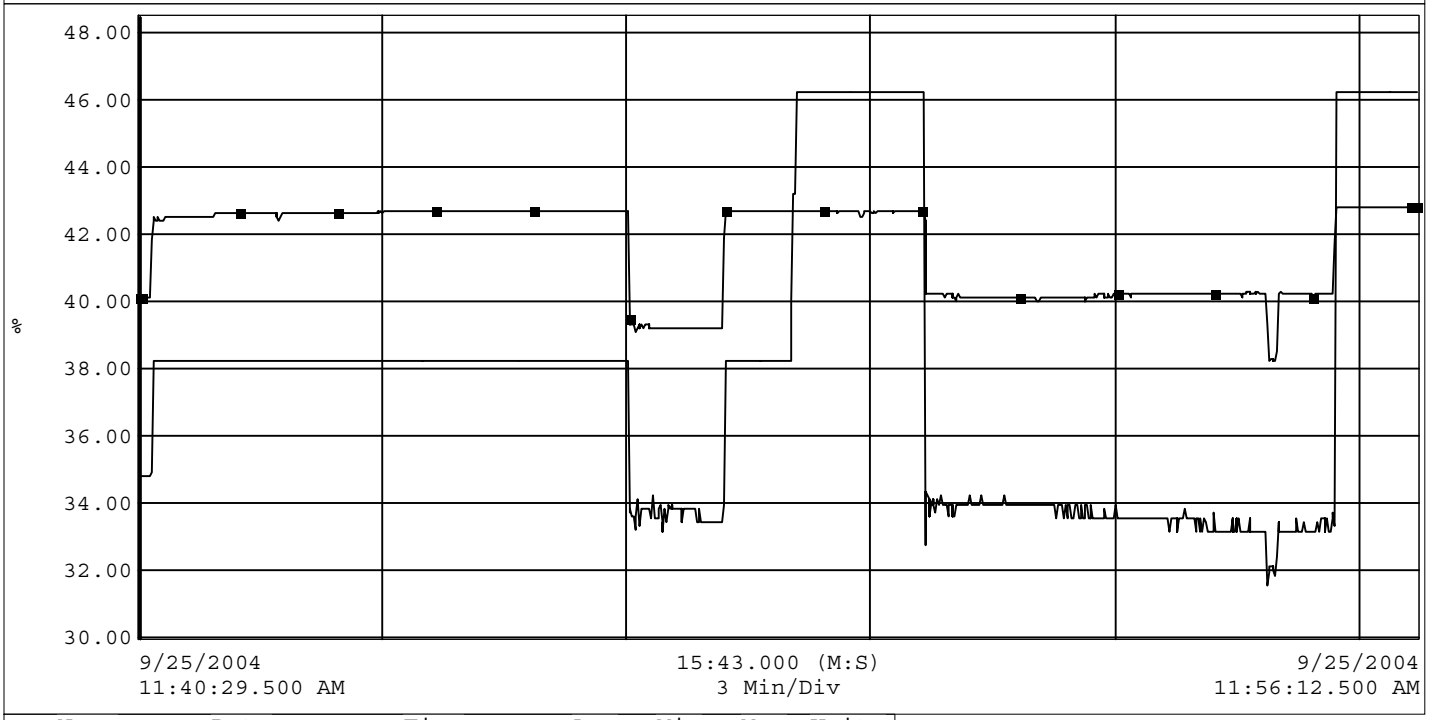
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/25/2004	11:40:29.500 AM	6.364	1.300	24.60	A
Arms Line2	9/25/2004	11:40:29.500 AM	4.663	0.700	19.30	A
Arms Line3	9/25/2004	11:40:29.500 AM	8.749	1.400	35.30	A

9/25/2004 - 11:40:29.000 AM
Val
13.20 — Arms Line1
10.70 — Arms Line2
19.50 — Arms Line3

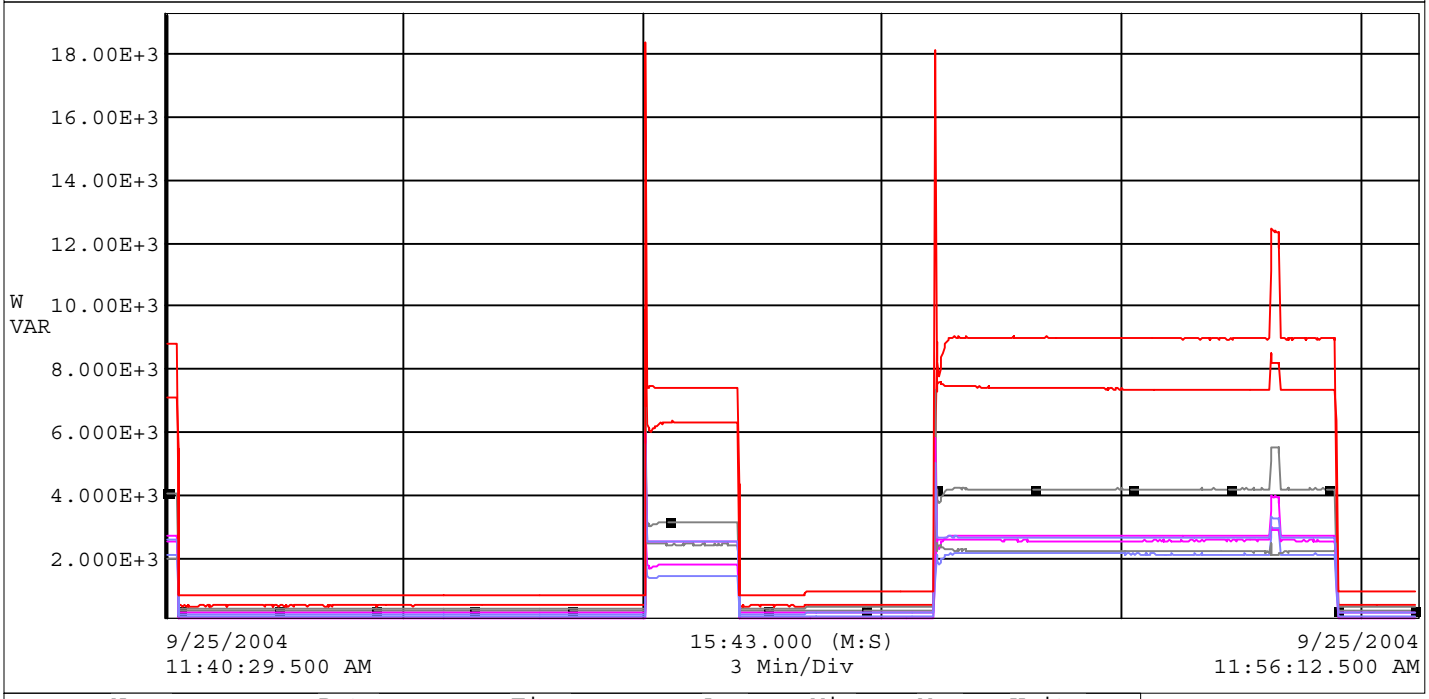
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/25/2004	11:40:29.500 AM	41.57	38.20	42.80	%
Aunb(IEEE)	9/25/2004	11:40:29.500 AM	37.64	31.50	46.20	%

9/25/2004 - 11:40:29.000 AM
Val
40.10 ── Vunb(IEEE)
34.80 ── Aunb(IEEE)

Power
VoltageRatio: 1.000
CurrentRatio: 1.000

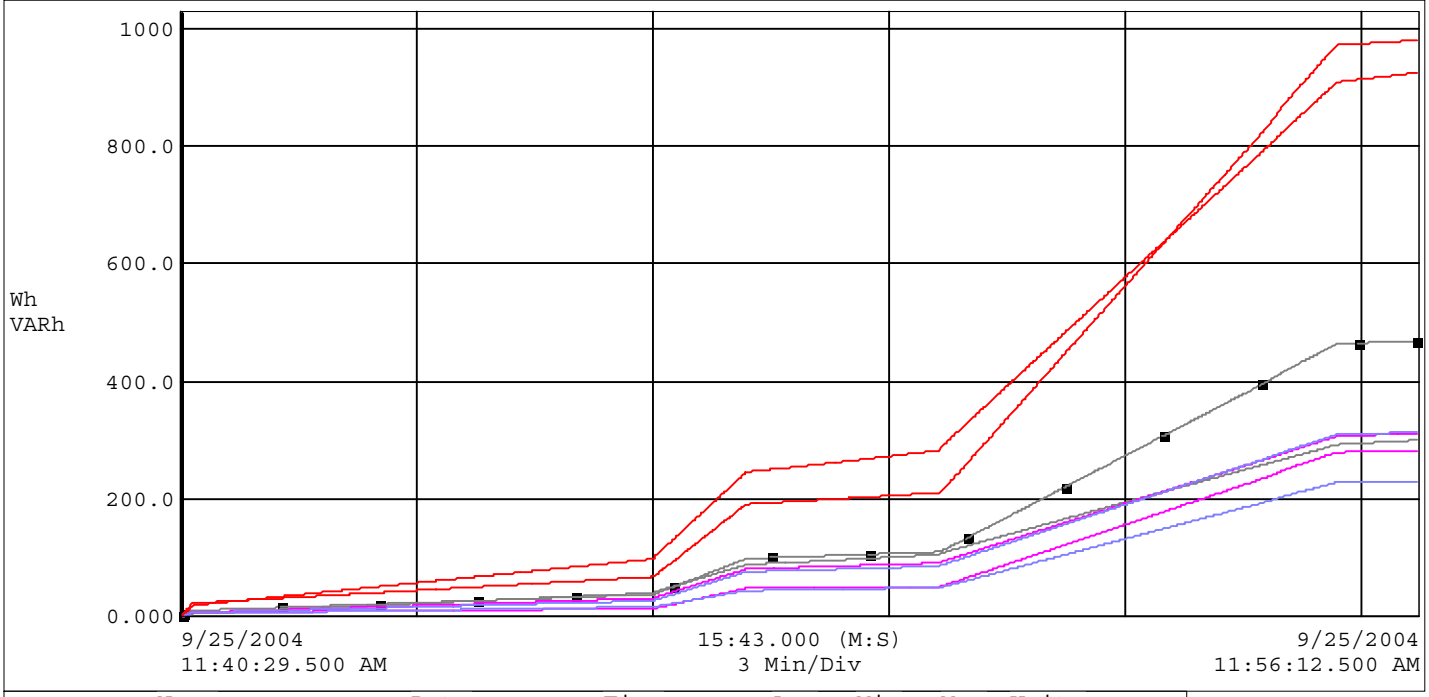


Name	Date	Time	Avg	Min	Max	Units
W Line1	9/25/2004	11:40:29.500 AM	1.783E+3	276.1	5.506E+3	W
W Line2	9/25/2004	11:40:29.500 AM	1.068E+3	65.78	3.949E+3	W
W Line3	9/25/2004	11:40:29.500 AM	877.1	113.4	2.944E+3	W
W Sum of Phases	9/25/2004	11:40:29.500 AM	3.728E+3	457.9	12.40E+3	W
VAR Line1	9/25/2004	11:40:29.500 AM	1.141E+3	348.2	7.314E+3	VAR
VAR Line2	9/25/2004	11:40:29.500 AM	1.184E+3	248.2	5.985E+3	VAR
VAR Line3	9/25/2004	11:40:29.500 AM	1.193E+3	202.4	5.598E+3	VAR
VAR Sum of Phases	9/25/2004	11:40:29.500 AM	3.518E+3	799.0	18.33E+3	VAR

9/25/2004 - 11:40:29.000 AM

Val	
3.998E+3	W Line1
2.688E+3	W Line2
2.088E+3	W Line3
8.774E+3	W Sum of Phases
1.972E+3	VAR Line1
2.515E+3	VAR Line2
2.569E+3	VAR Line3
7.056E+3	VAR Sum of Phases

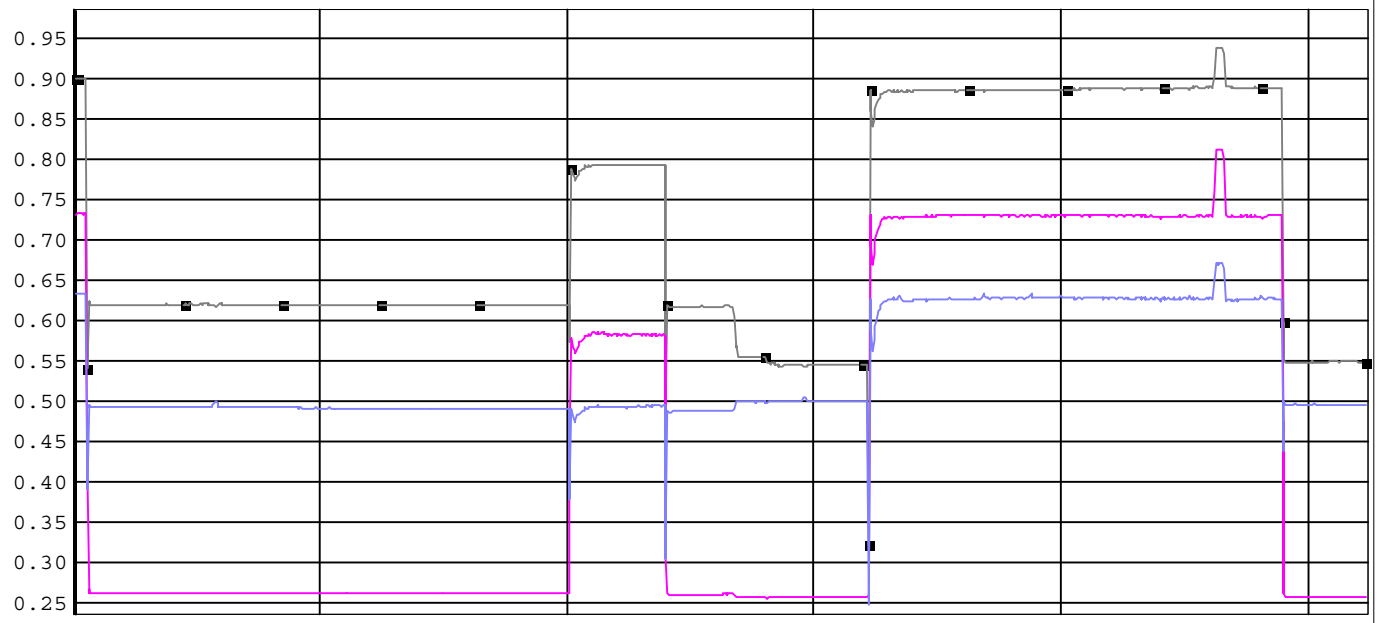
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/25/2004	11:40:29.500 AM	152.0	1.113	467.5	Wh
W-hours Line2	9/25/2004	11:40:29.500 AM	84.60	0.744	280.0	Wh
W-hours Line3	9/25/2004	11:40:29.500 AM	72.81	0.583	230.0	Wh
W-hours Sum of Phases	9/25/2004	11:40:29.500 AM	309.4	2.446	977.5	Wh
VAR-hours Line1	9/25/2004	11:40:29.500 AM	111.7	0.548	299.1	VARh
VAR-hours Line2	9/25/2004	11:40:29.500 AM	108.6	0.701	310.4	VARh
VAR-hours Line3	9/25/2004	11:40:29.500 AM	106.3	0.716	312.9	VARh
VAR-hours Sum of Phases	9/25/2004	11:40:29.500 AM	326.6	1.971	922.4	VARh

9/25/2004 - 11:40:29.000 AM
Val
1.113 — W-hours Line1
0.744 — W-hours Line2
0.583 — W-hours Line3
2.446 — W-hours Sum of Phases
0.548 — VAR-hours Line1
0.701 — VAR-hours Line2
0.716 — VAR-hours Line3
1.971 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/25/2004	11:40:29.500 AM	0.706	0.319	0.937	
PF Line2	9/25/2004	11:40:29.500 AM	0.437	0.253	0.810	
PF Line3	9/25/2004	11:40:29.500 AM	0.535	0.246	0.670	

9/25/2004 - 11:40:29.000 AM
Val
0.897 PF Line1
0.730 PF Line2
0.631 PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Piti WWPS\092504-Piti WWPS Pump 1 and 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Piti WWPS - Pumps 1 and 2 ,

Comments

GPA Meter 04565843, Demand of 17.29 KW.

Two submersible ABS 12.6 KW, 230/460 volt, 39/19.4 amp, 1750 RPM pumps in dry well. Ball float level control. Measured at feeder to control panel.

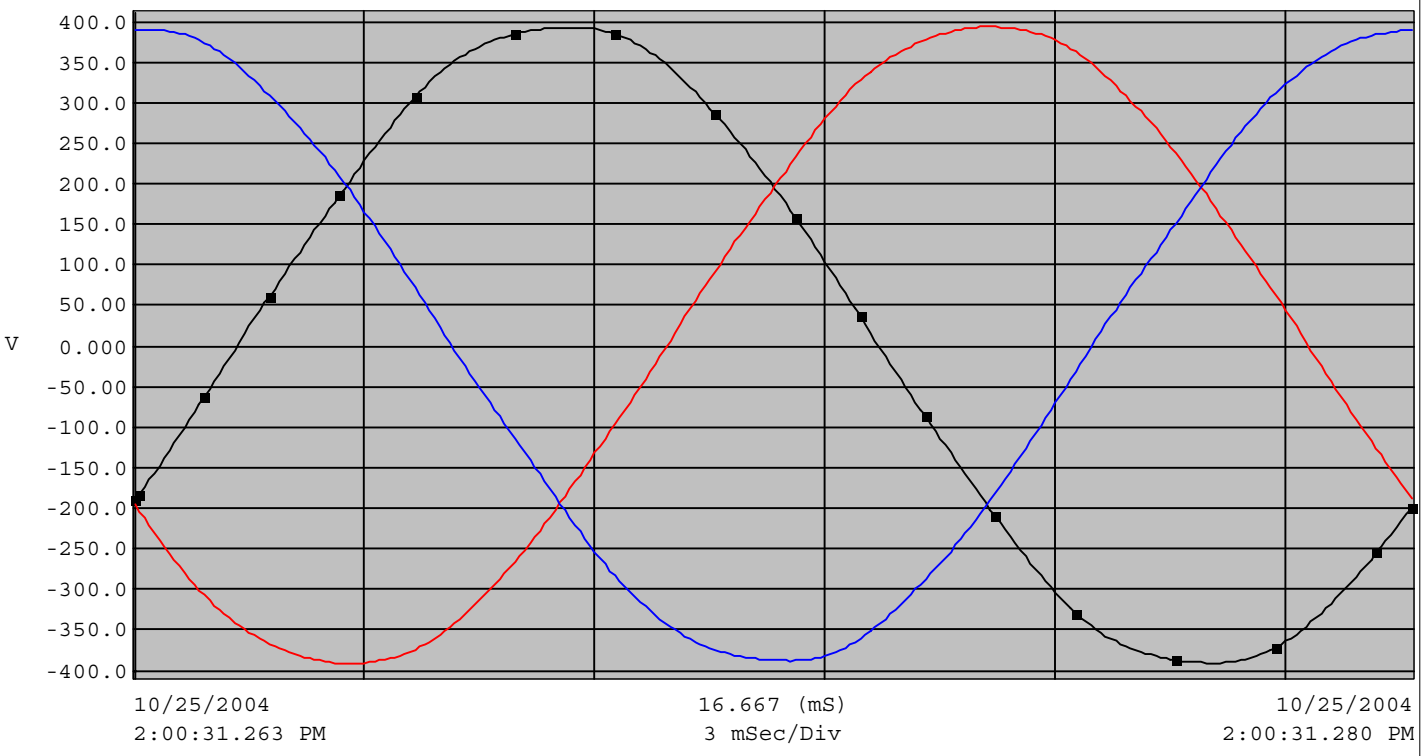
GWA Wastewater Pumping Station Assessment				
Station Name: PS-12 (SD-5)	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 10/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0	
Transformer Pole Condition and Grounding	2.0%	NV	0	
Transformer Connection Type	2.0%	NV	0	
Transformer Wiring Method	5.0%	NV	0	
Lightning Arrester Condition	5.0%	NV	0	
Metering Arrangement	1.0%	NV	0	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.32	
Main Breaker	4.0%	1	0.04	
Motor Starter	4.0%	2	0.08	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.17	
Level	5.0%	2	0.1	
Alarms	3.0%	1	0.03	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	
	100%	**Assessment Value**		**2.0**

Comments: NV = Not Verified

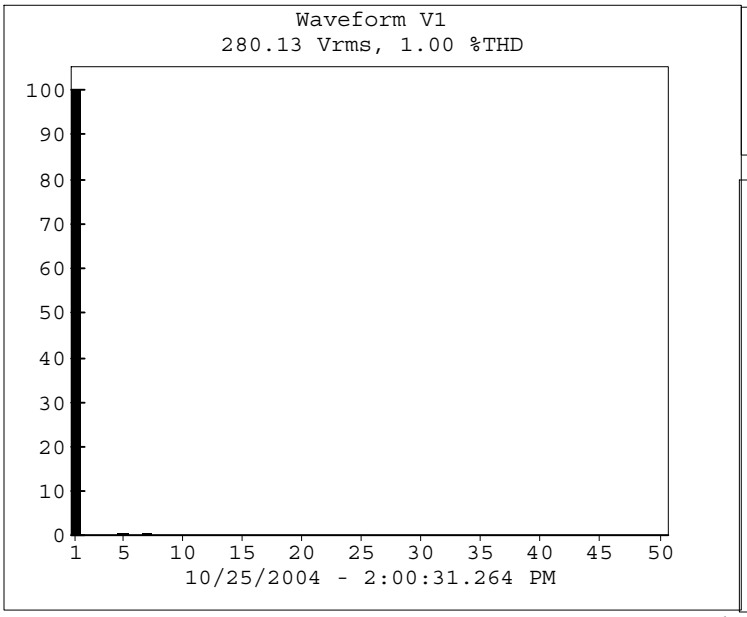
102504 - WWPS PS-12 Photo

Recording Start Date	10/25/2004 - 2:00:31 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/25/2004	2:00:31.263 PM	16.667	280.1	V
Waveform V2	10/25/2004	2:00:31.263 PM	16.667	279.4	V
Waveform V3	10/25/2004	2:00:31.263 PM	16.667	278.3	V



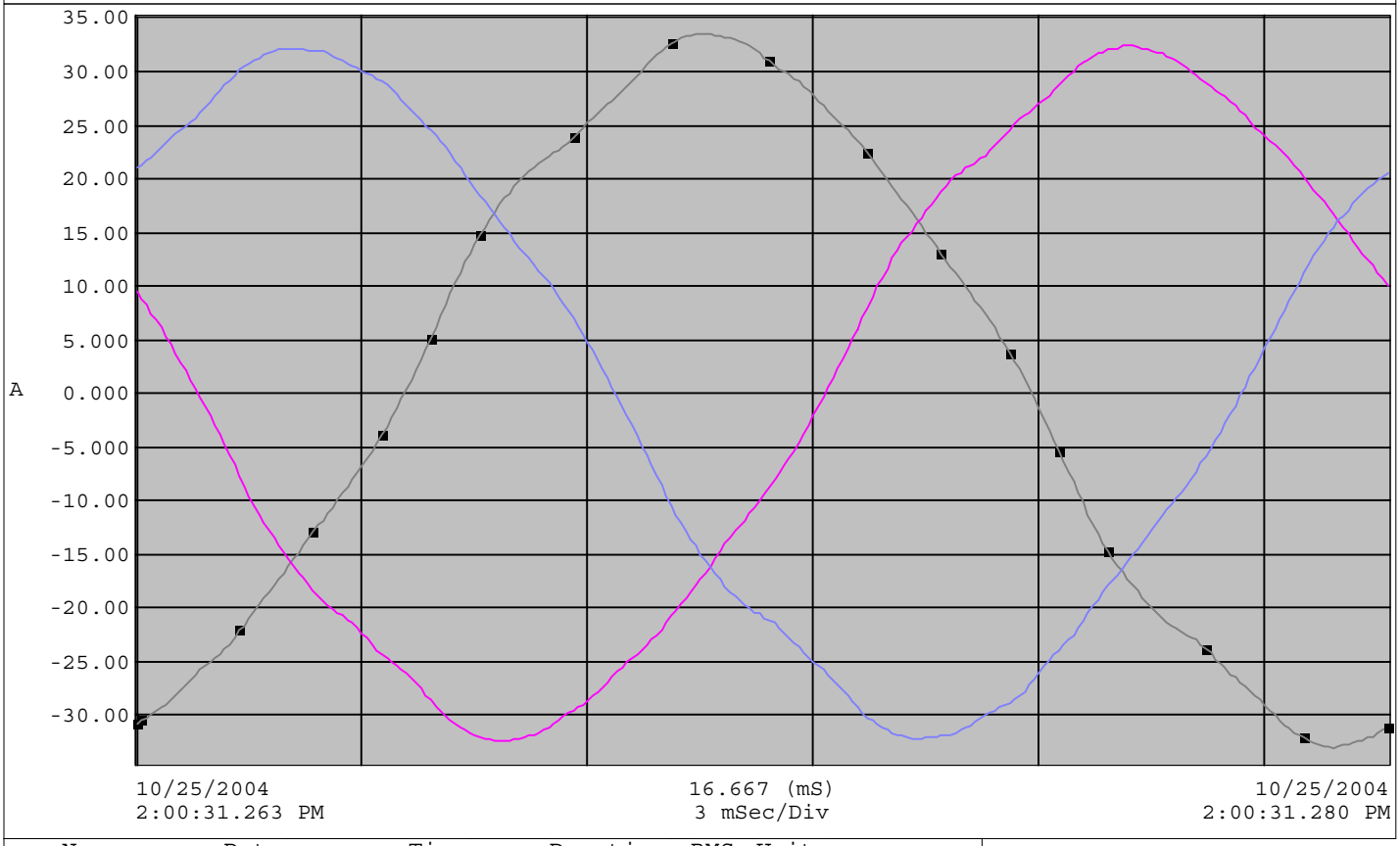
10/25/2004 - 2:00:31.000 PM

Val	
-192.4	Waveform V1
-196.9	Waveform V2
388.6	Waveform V3

Waveform V1

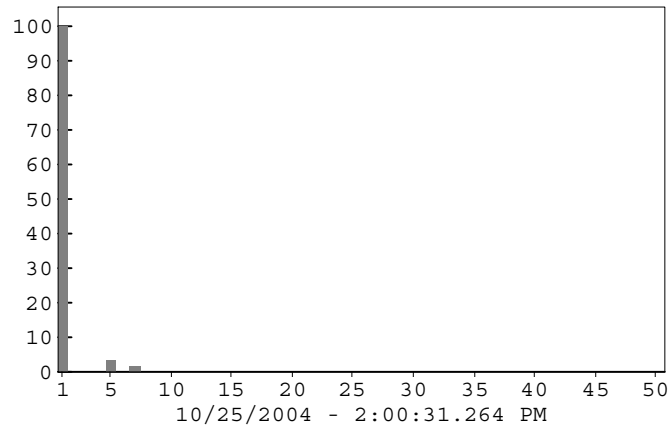
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/25/2004	2:00:31.263 PM	16.667	22.78	A
Waveform I2	10/25/2004	2:00:31.263 PM	16.667	22.18	A
Waveform I3	10/25/2004	2:00:31.263 PM	16.667	22.14	A

Waveform I1
22.78 Arms, 3.97 %THD



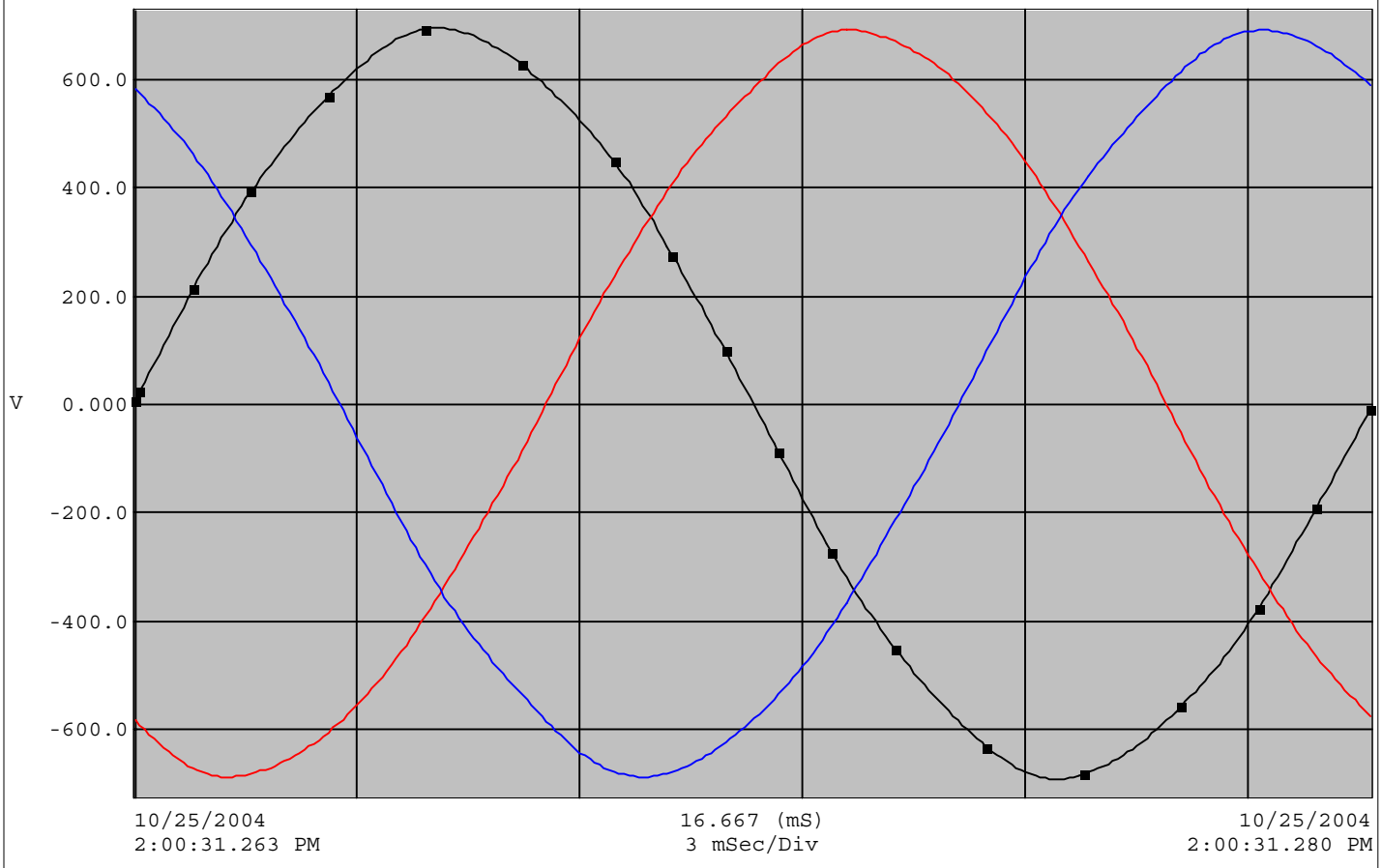
10/25/2004 - 2:00:31.000 PM

Val	
-30.90	Waveform I1
9.400	Waveform I2
20.90	Waveform I3

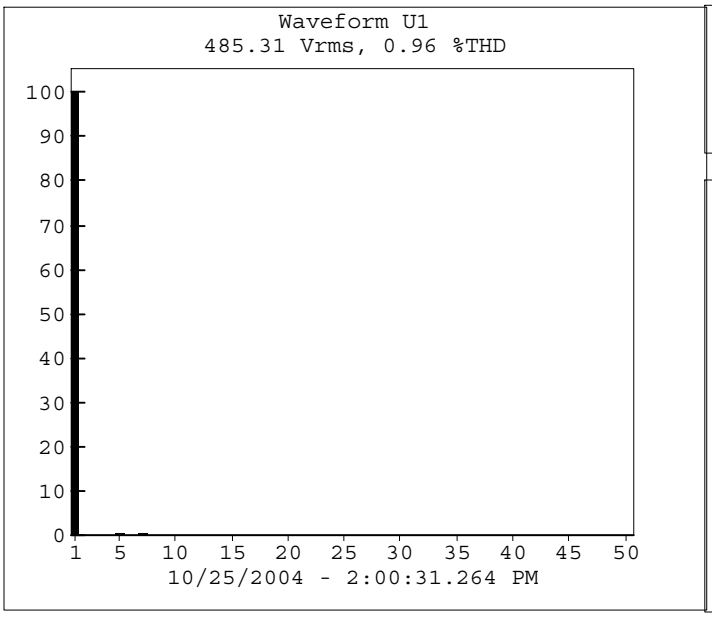
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.5	H19	0.2	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	3.4	H22	0.1	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	1.9	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/25/2004	2:00:31.263 PM	16.667	485.3	V
Waveform U2	10/25/2004	2:00:31.263 PM	16.667	482.7	V
Waveform U3	10/25/2004	2:00:31.263 PM	16.667	483.1	V



10/25/2004 - 2:00:31.000 PM

Val	
4.400	Waveform U1
-585.6	Waveform U2
581.1	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/25/2004
Start Time: 2:00:31 PM
Duration: 0:0.000 (M:S)
W: 4.496E+3 W
VAR: 4.560E+3 W
VA: 6.403E+3 W
Power Factor: 0.702
Displacement Power Factor: 0.703
TAN: 1.013
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Wastewater Pumping Station\PS-12\102504-PS12-Photo.dvb

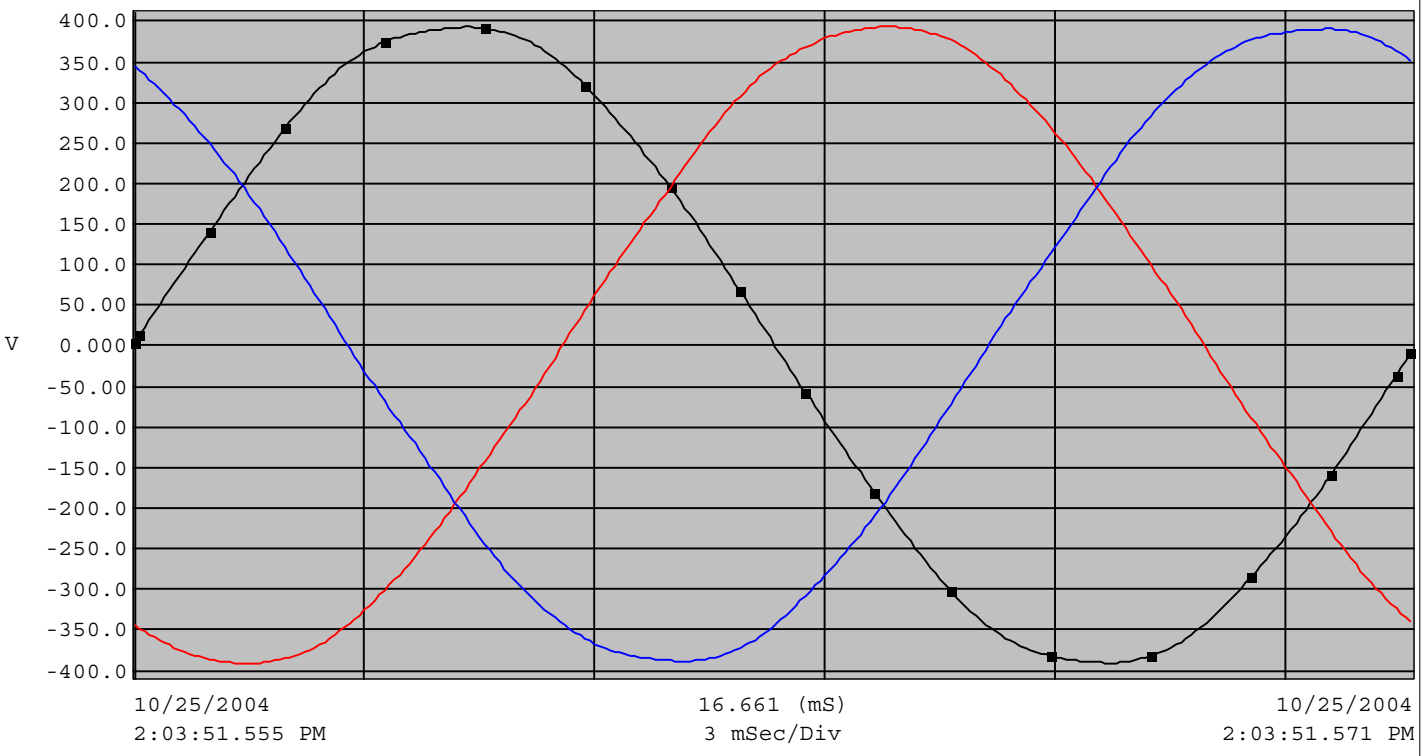
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Southern District - PS 12 - Pump 1 Photo ,

Comments
GPA Meter 01-696-901
Demand 27.62
Pump 1 leaking at check valve.

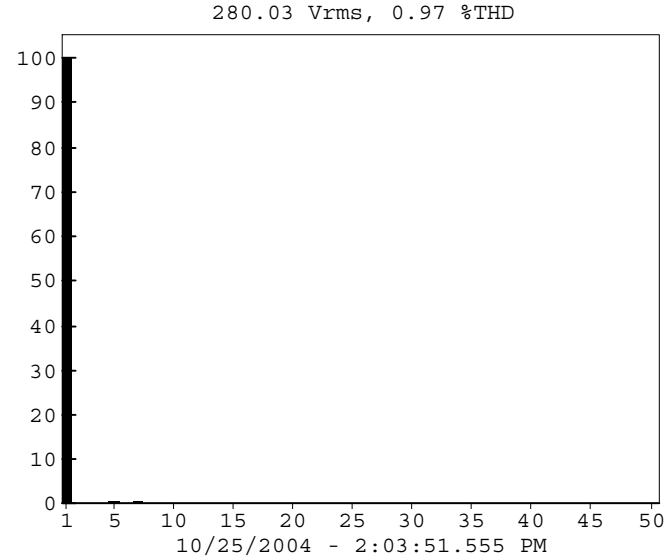
102504 - WWPS PS-12 Pump 1 Photo

Recording Start Date	10/25/2004 - 2:03:51 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/25/2004	2:03:51.555 PM	16.661	280.0	V
Waveform V2	10/25/2004	2:03:51.555 PM	16.661	279.2	V
Waveform V3	10/25/2004	2:03:51.555 PM	16.661	278.3	V

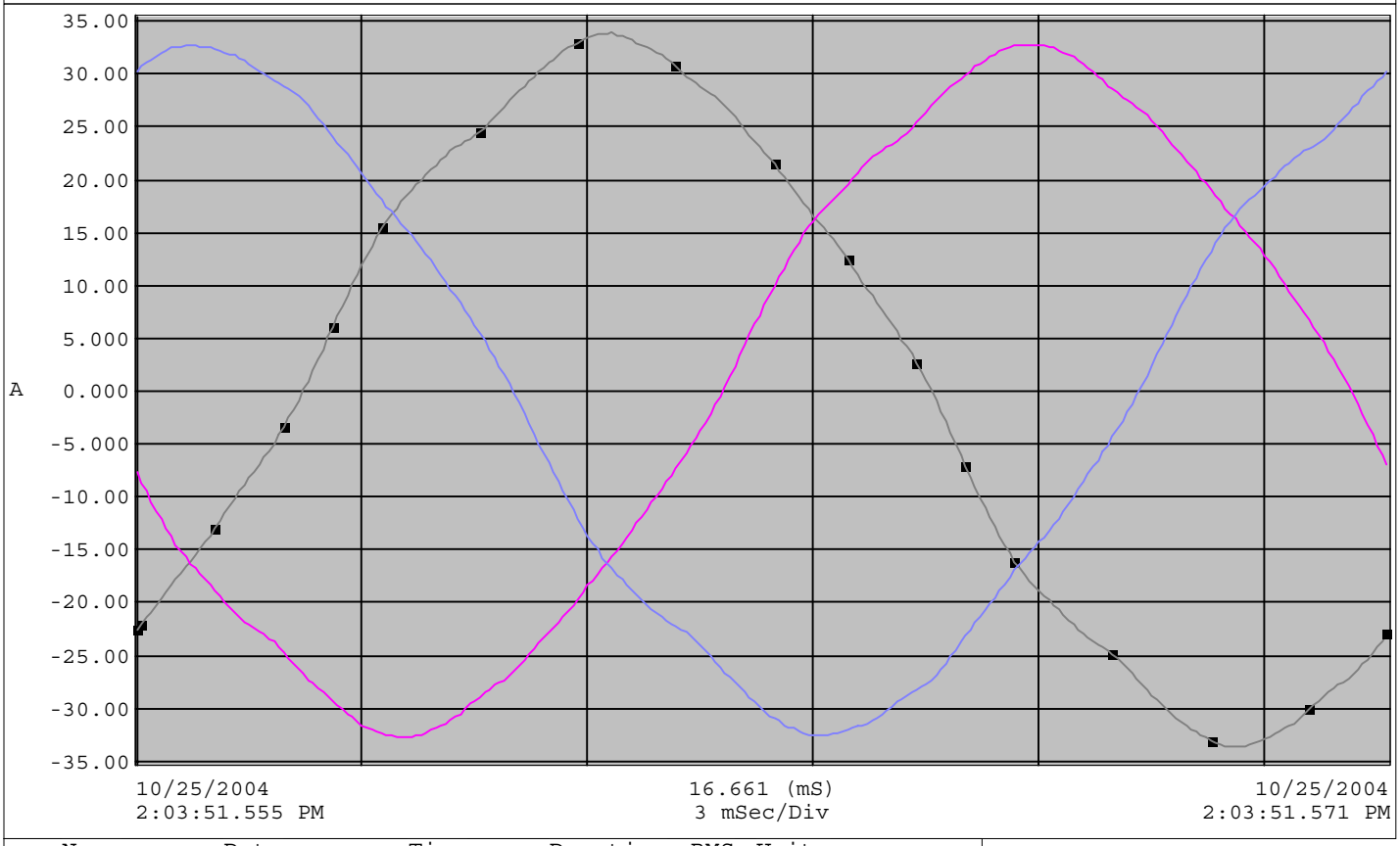


10/25/2004 - 2:03:51.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

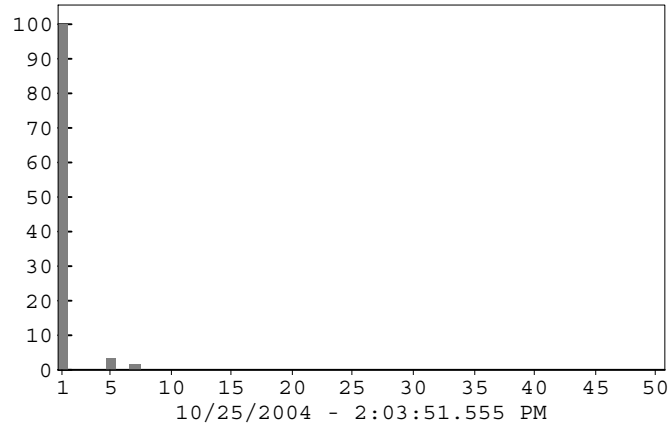
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/25/2004	2:03:51.555 PM	16.661	23.06	A
Waveform I2	10/25/2004	2:03:51.555 PM	16.661	22.42	A
Waveform I3	10/25/2004	2:03:51.555 PM	16.661	22.42	A

Waveform I1
23.06 Arms, 3.89 %THD

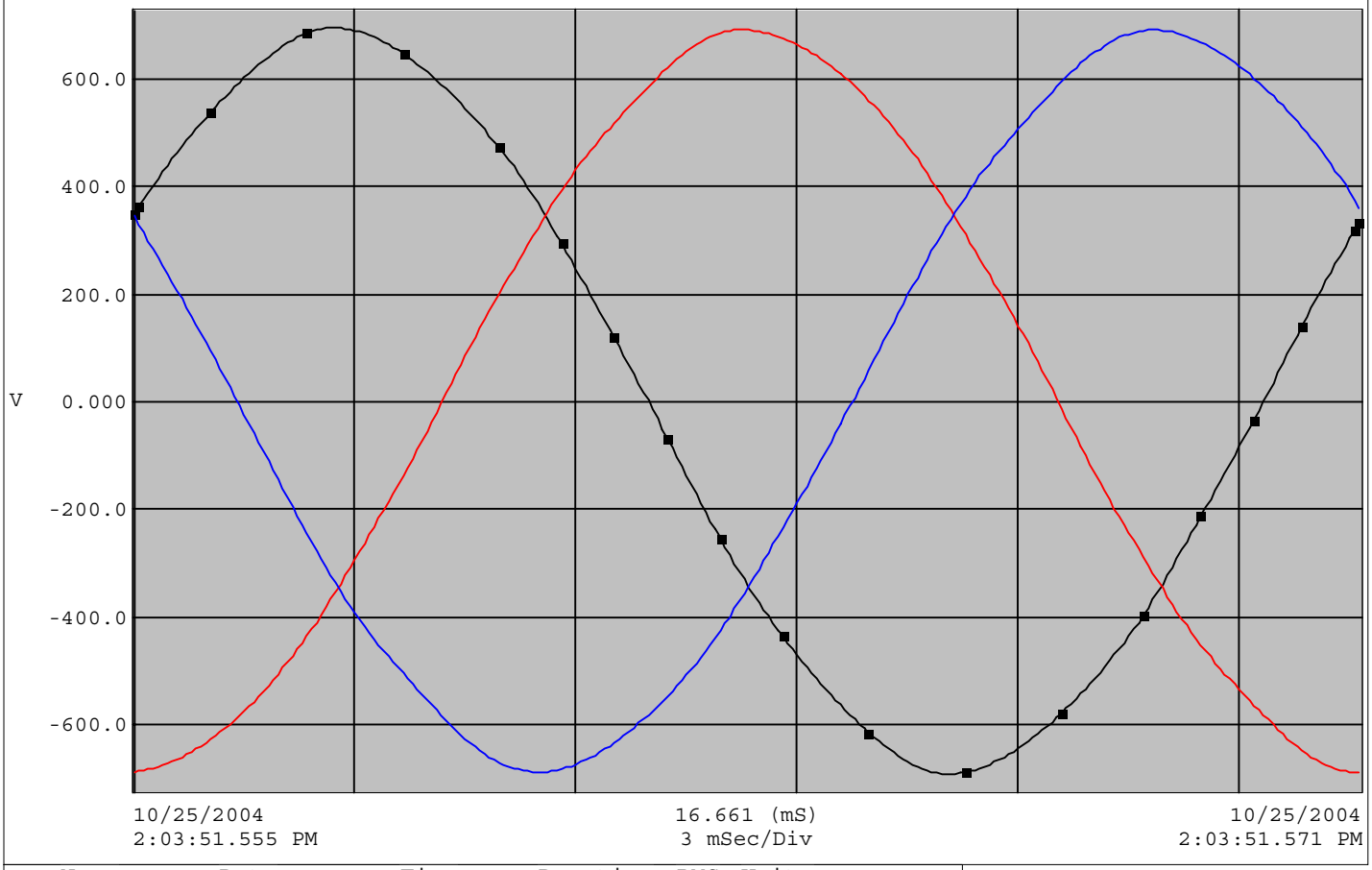


10/25/2004 - 2:03:51.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

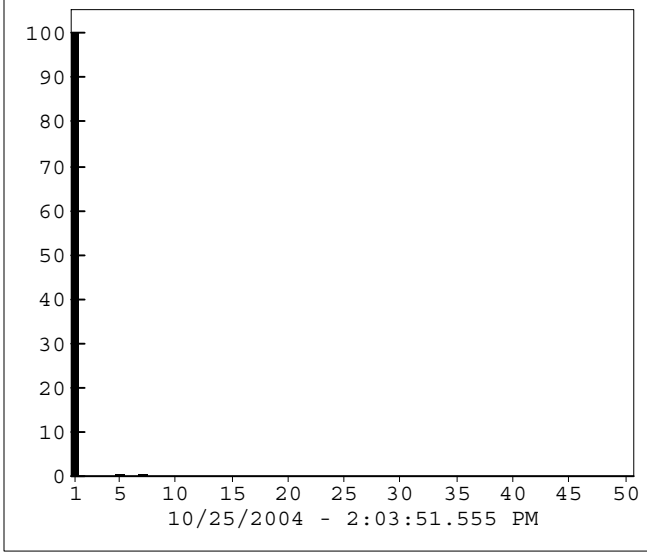
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.2	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	3.4	H22	0.0	H39	0.0
H06	0.1	H23	0.2	H40	0.0
H07	1.7	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/25/2004	2:03:51.555 PM	16.661	484.9	V
Waveform U2	10/25/2004	2:03:51.555 PM	16.661	482.7	V
Waveform U3	10/25/2004	2:03:51.555 PM	16.661	483.1	V

Waveform U1
484.90 Vrms, 0.95 %THD



10/25/2004 - 2:03:51.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/25/2004
Start Time: 2:03:51 PM
Duration: 0:0.000 (M:S)
W: 4.506E+3 W
VAR: 4.624E+3 W
VA: 6.456E+3 W
Power Factor: 0.698
Displacement Power Factor: 0.699
TAN: 1.024
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Wastewater Pumping Station\PS-12\102504-PS12-Photo Pump 1.dvb

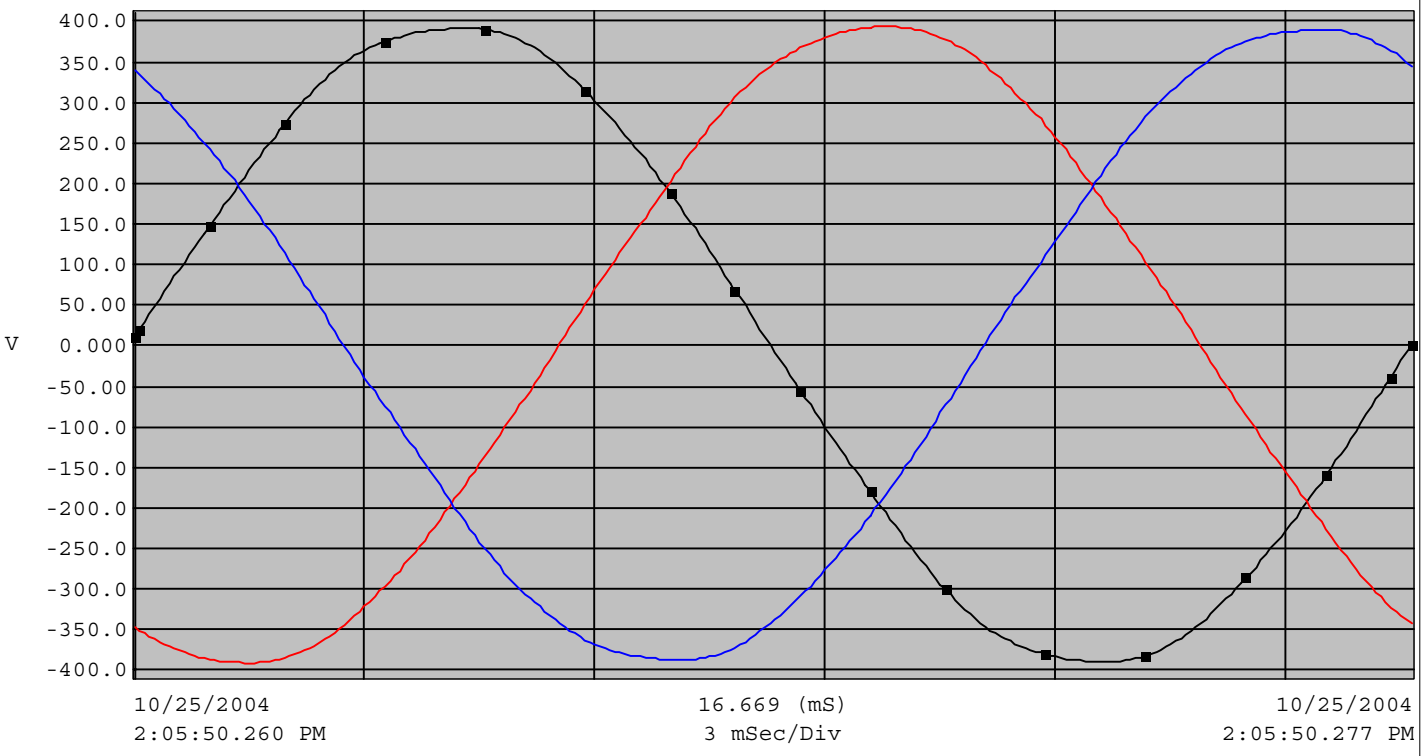
Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	Southern District-PS12- Pump 1 ,

Comments
Meter #: 01-969-901
Demand: 27.62
PS-12 Pump 1 leaking at the check valve.

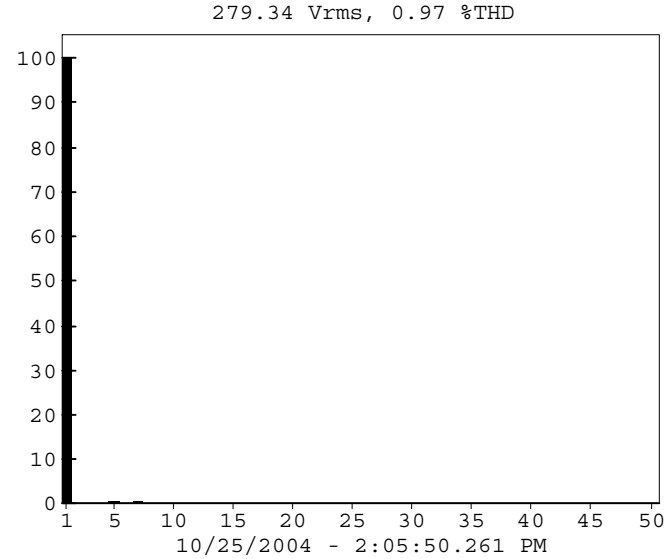
102504 - WWPS PS-12 Pump 2 Photo

Recording Start Date	10/25/2004 - 2:05:50 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/25/2004	2:05:50.260 PM	16.669	279.3	V
Waveform V2	10/25/2004	2:05:50.260 PM	16.669	279.3	V
Waveform V3	10/25/2004	2:05:50.260 PM	16.669	277.6	V



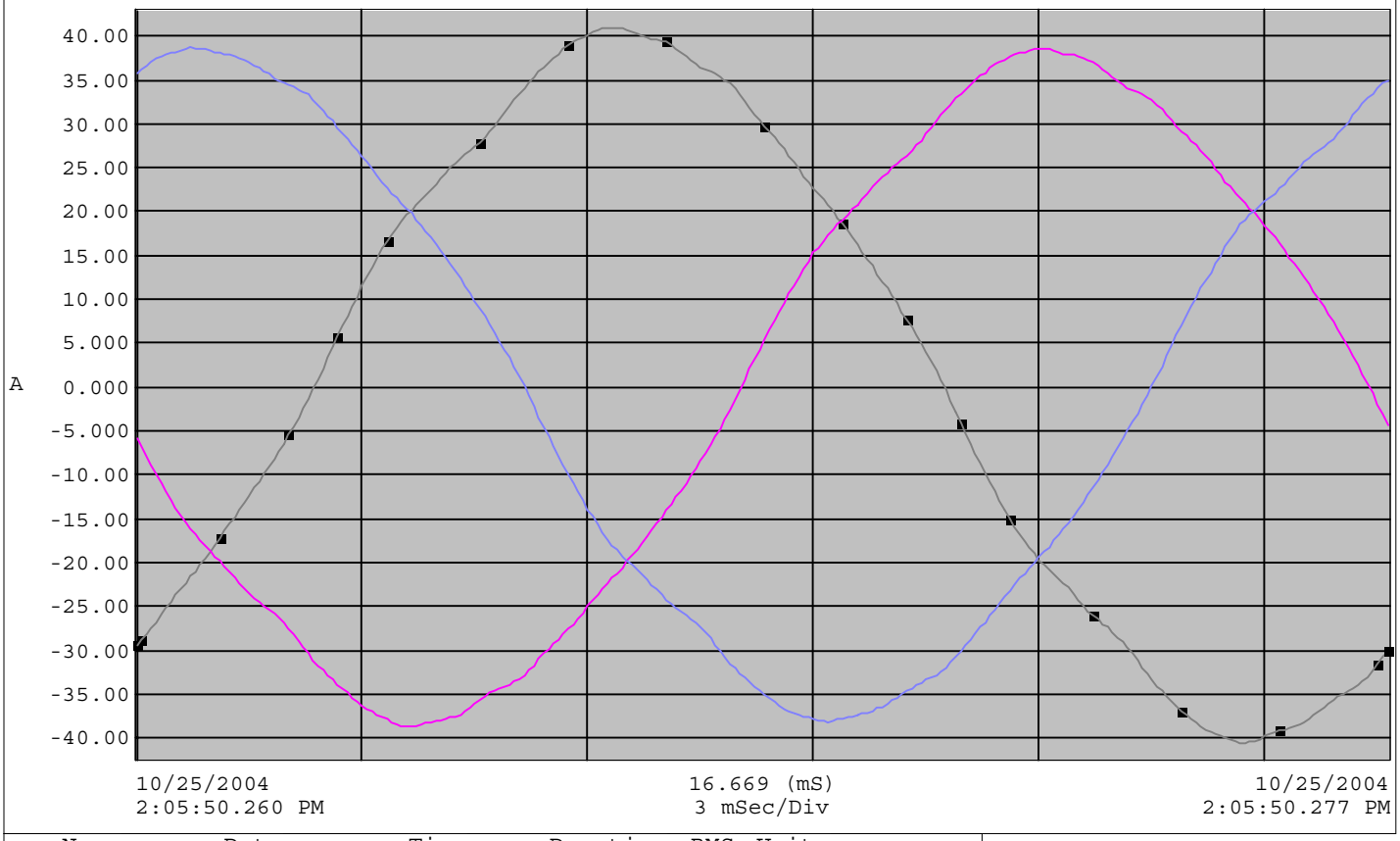
10/25/2004 - 2:05:50.000 PM

Val	
9.800	Waveform V1
-348.6	Waveform V2
338.7	Waveform V3

Waveform V1

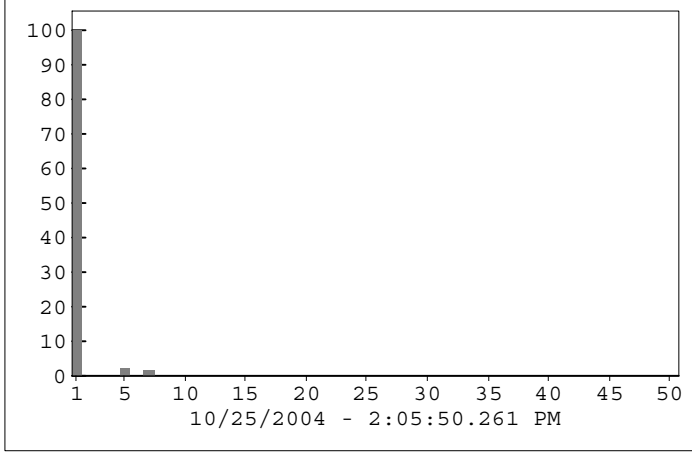
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/25/2004	2:05:50.260 PM	16.669	27.93	A
Waveform I2	10/25/2004	2:05:50.260 PM	16.669	26.55	A
Waveform I3	10/25/2004	2:05:50.260 PM	16.669	26.59	A

Waveform I1
27.93 Arms, 3.27 %THD



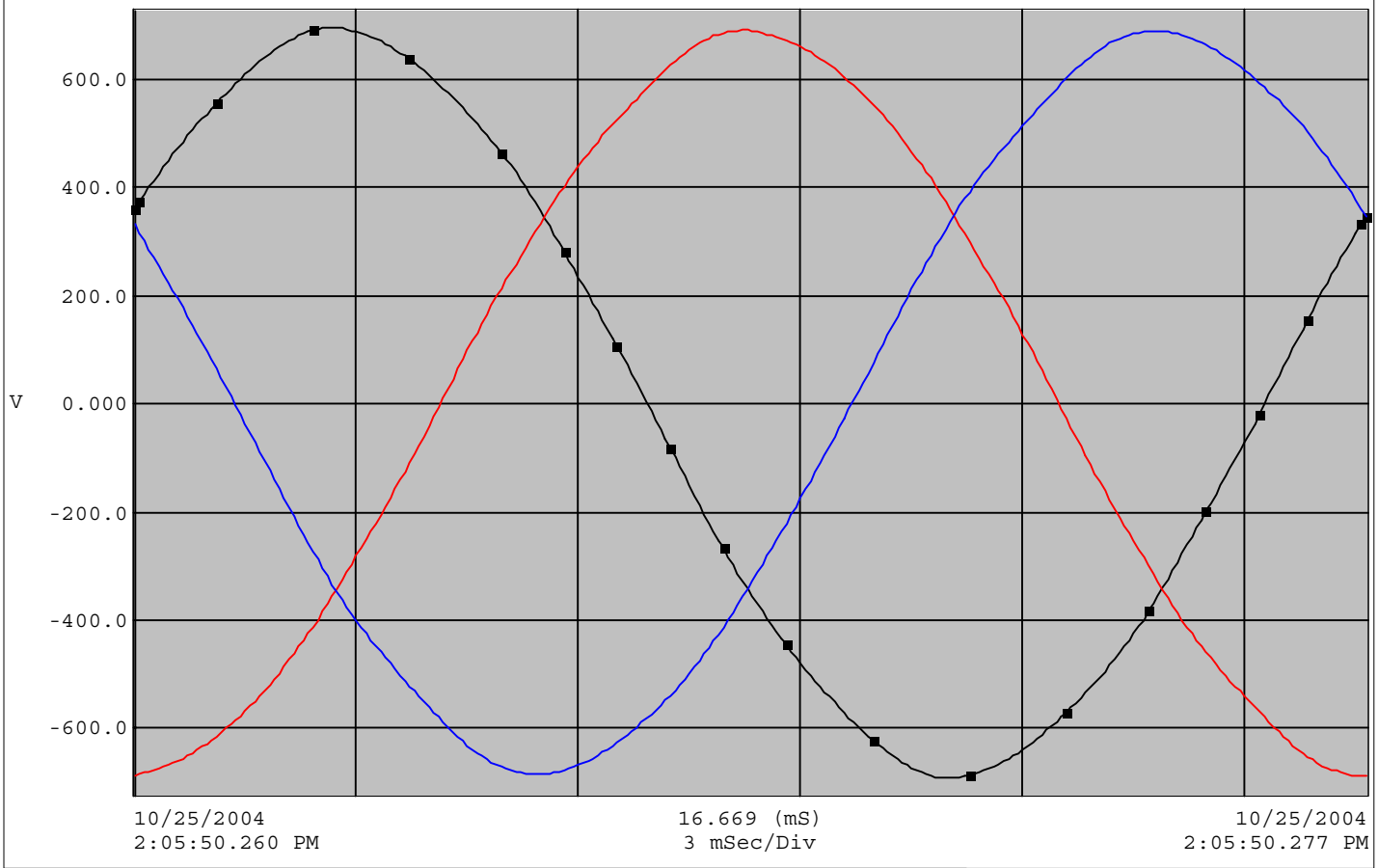
10/25/2004 - 2:05:50.000 PM

Val	
-29.50	Waveform I1
-5.900	Waveform I2
35.70	Waveform I3

Waveform I1

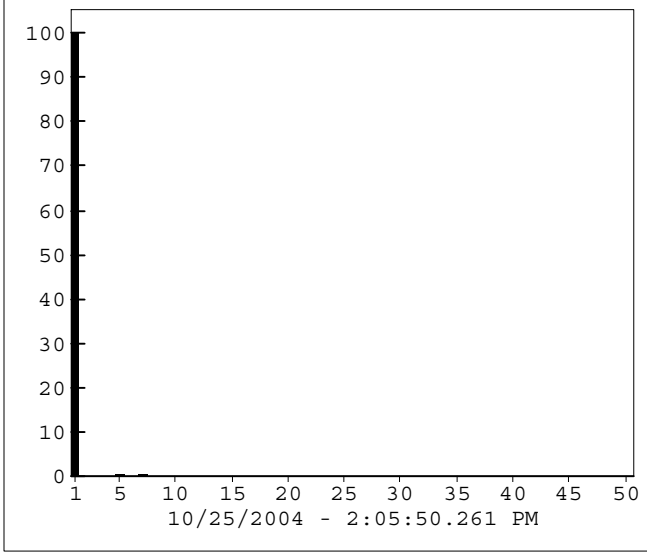
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.2	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	2.6	H22	0.1	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	1.8	H24	0.0	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/25/2004	2:05:50.260 PM	16.669	484.8	V
Waveform U2	10/25/2004	2:05:50.260 PM	16.669	481.9	V
Waveform U3	10/25/2004	2:05:50.260 PM	16.669	481.8	V

Waveform U1
484.75 Vrms, 0.94 %THD



10/25/2004 - 2:05:50.000 PM

	Val	
—	358.5	Waveform U1
—	-687.4	Waveform U2
—	328.9	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/25/2004
Start Time: 2:05:50 PM
Duration: 0:0.000 (M:S)
W: 4.960E+3 W
VAR: 6.052E+3 W
VA: 7.825E+3 W
Power Factor: 0.634
Displacement Power Factor: 0.634
TAN: 1.219
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Wastewater Pumping Station\PS-12\102504-PS12-Photo Pump 2.dvb

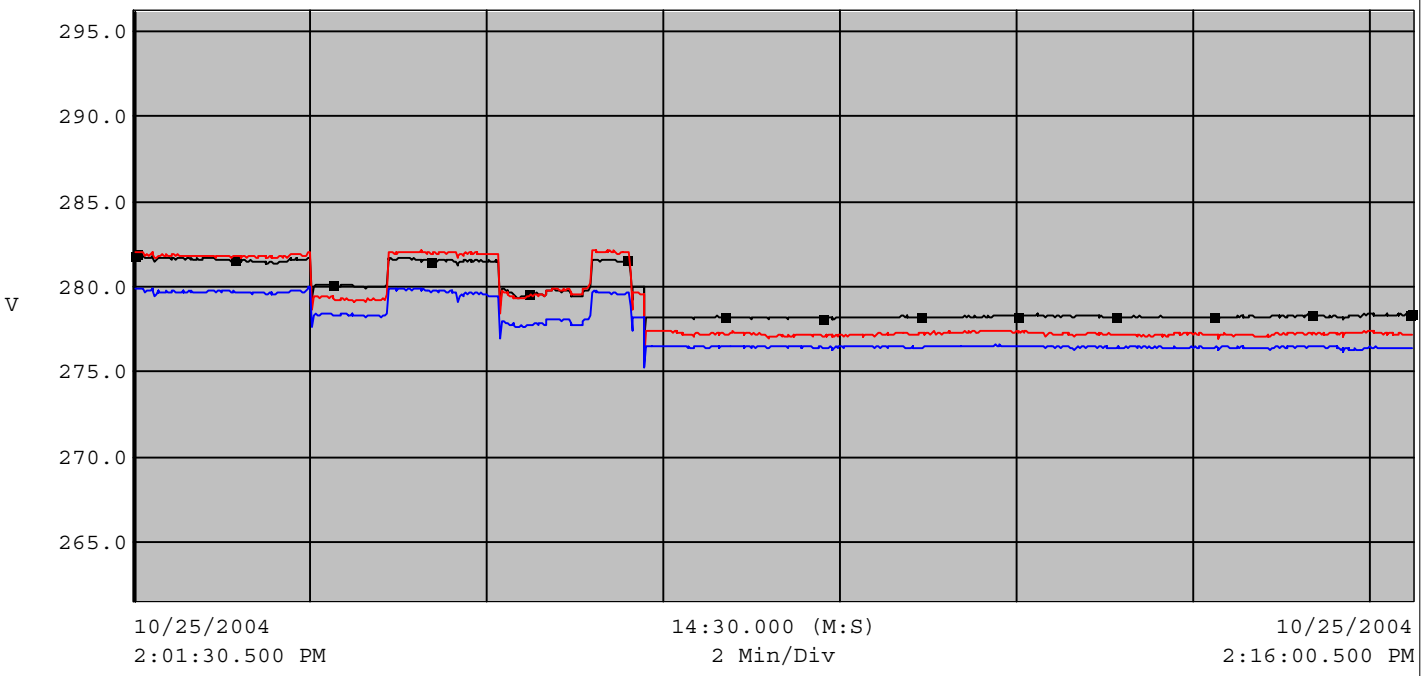
Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	Southern District-PS12-Pump 2 ,

Comments
Meter#: 01-969-901
Demand: 27.62
PS 12 Pump 2 leaking at the fitting.

102504 - WWPS PS-12 Trend

Recording Start Date	10/25/2004 - 2:01:30 PM
Recording Duration	14:30 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

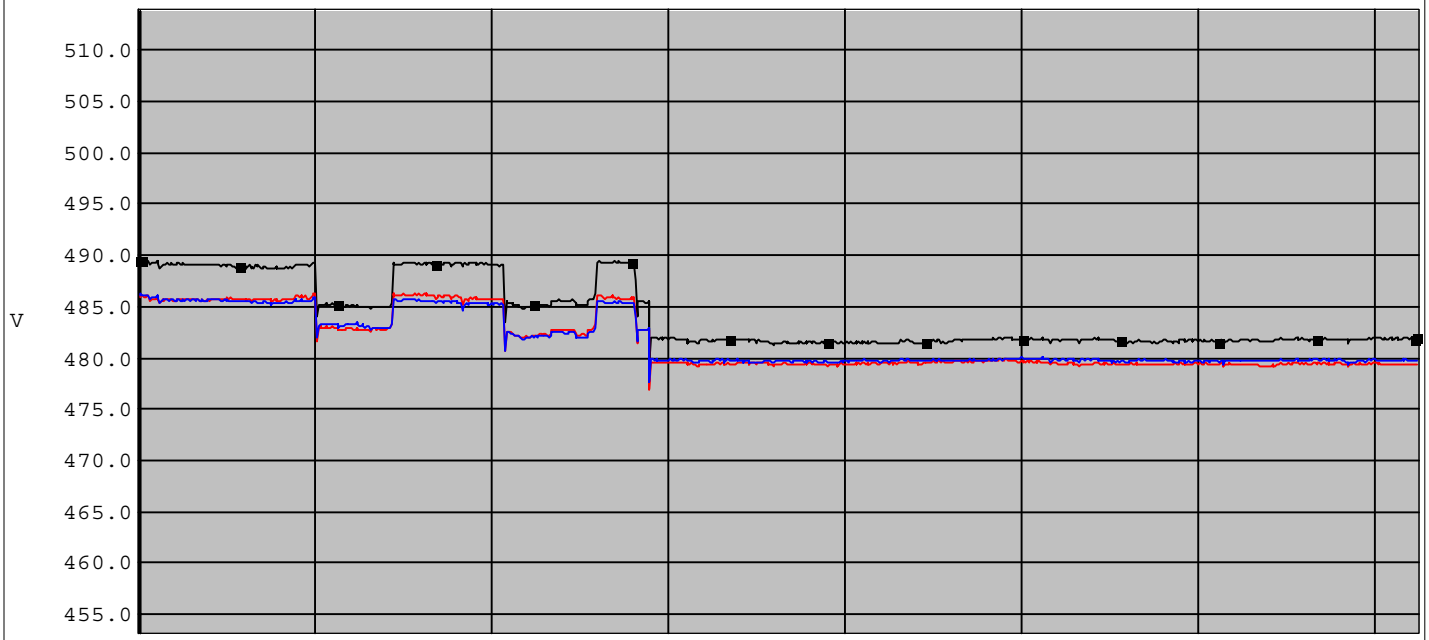
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/25/2004	2:01:30.500 PM	279.3	276.8	281.9	871
Vrms Line2	10/25/2004	2:01:30.500 PM	278.7	275.6	282.1	871
Vrms Line3	10/25/2004	2:01:30.500 PM	277.4	275.2	279.9	871

10/25/2004 - 2:01:30.000 PM
Val
281.8 — Vrms Line1
282.0 — Vrms Line2
279.8 — Vrms Line3

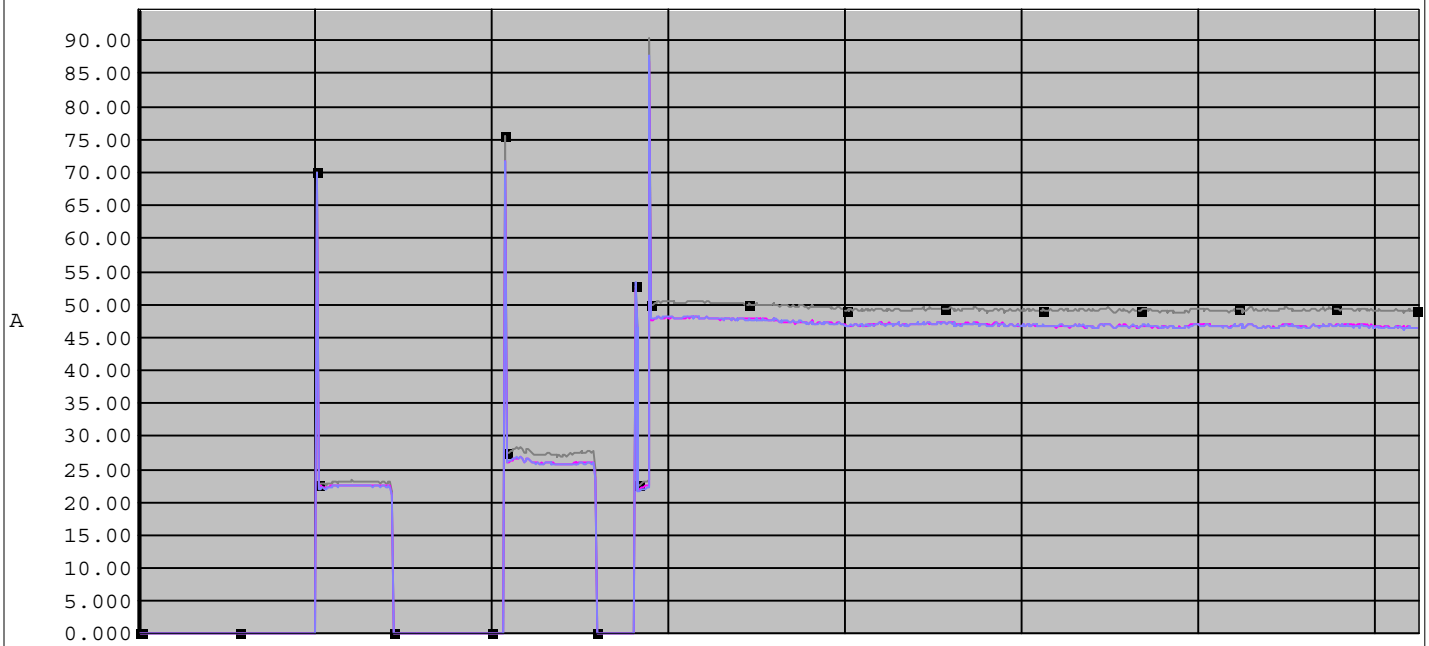
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/25/2004	2:01:30.500 PM	484.0	479.1	489.4	V
Urms Line2	10/25/2004	2:01:30.500 PM	481.4	476.9	486.1	V
Urms Line3	10/25/2004	2:01:30.500 PM	481.6	477.5	486.1	V

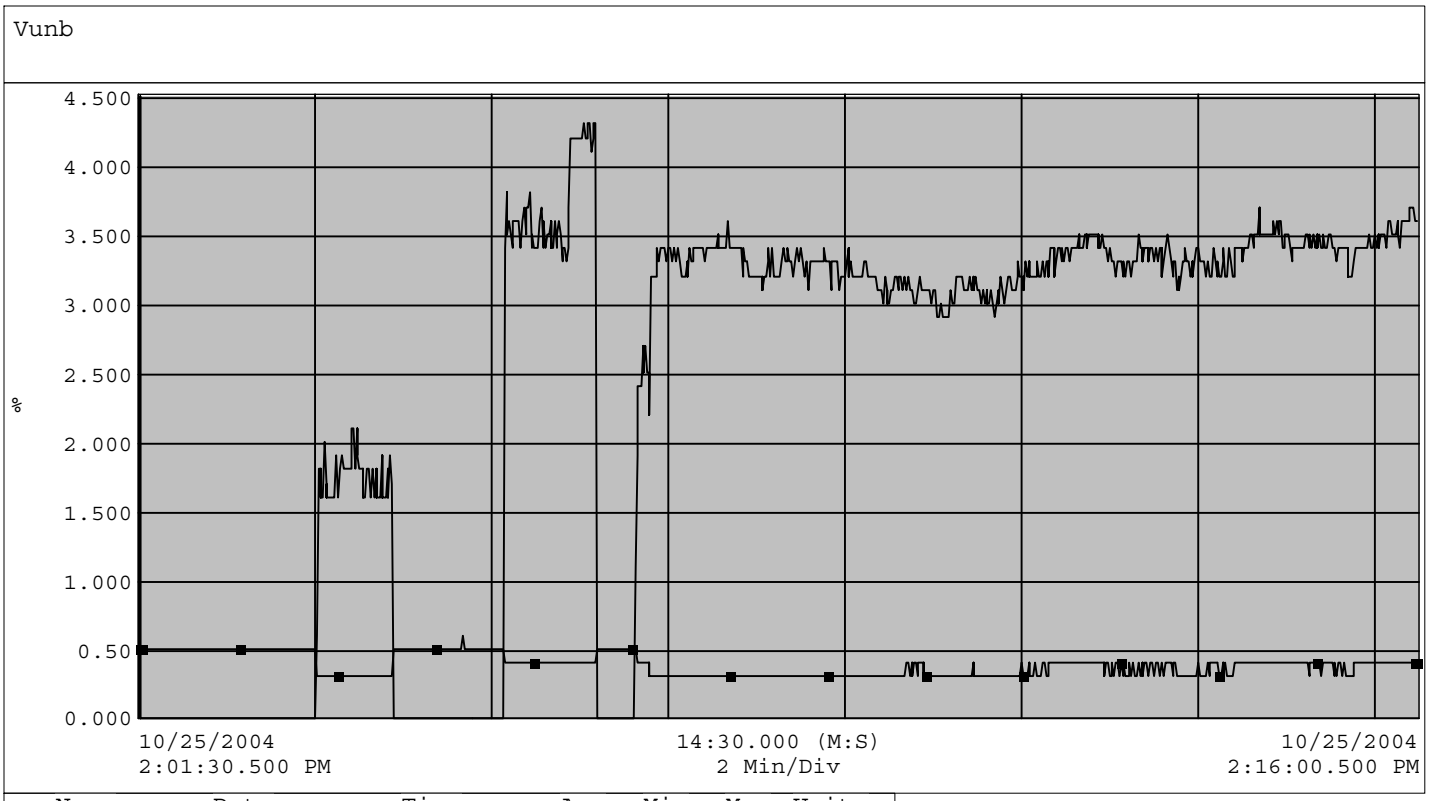
10/25/2004 - 2:01:30.000 PM
Val
489.3 — Urms Line1
485.8 — Urms Line2
486.0 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/25/2004	2:01:30.500 PM	33.39	0.000	90.10	A
Arms Line2	10/25/2004	2:01:30.500 PM	31.84	0.000	86.70	A
Arms Line3	10/25/2004	2:01:30.500 PM	31.81	0.000	87.60	A

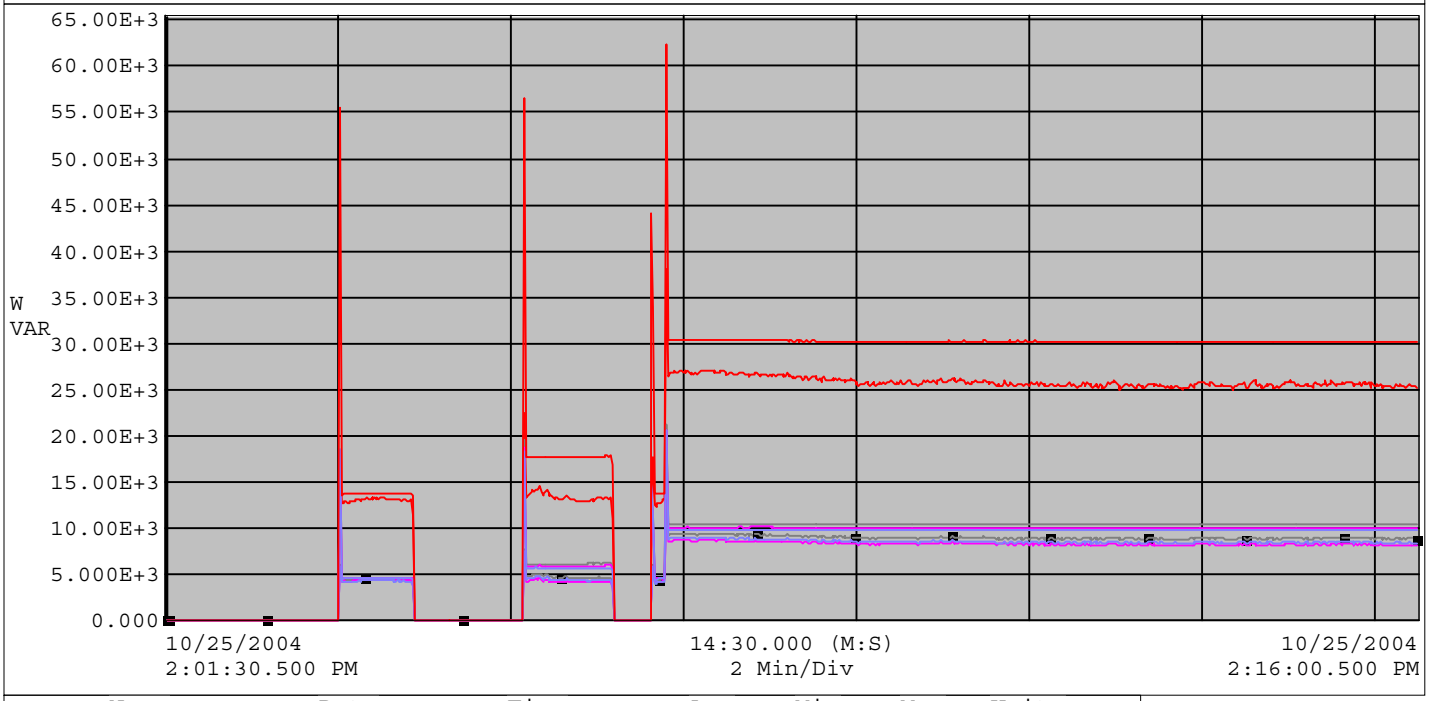
10/25/2004 - 2:01:30.000 PM
Val
0.000 Arms Line1
0.000 Arms Line2
0.000 Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/25/2004	2:01:30.500 PM	0.384	0.300	0.600	%
Aunb(IEEE)	10/25/2004	2:01:30.500 PM	2.380	0.000	4.300	%

10/25/2004 - 2:01:30.000 PM
Val
0.500 ── Vunb(IEEE)
0.000 ── Aunb(IEEE)

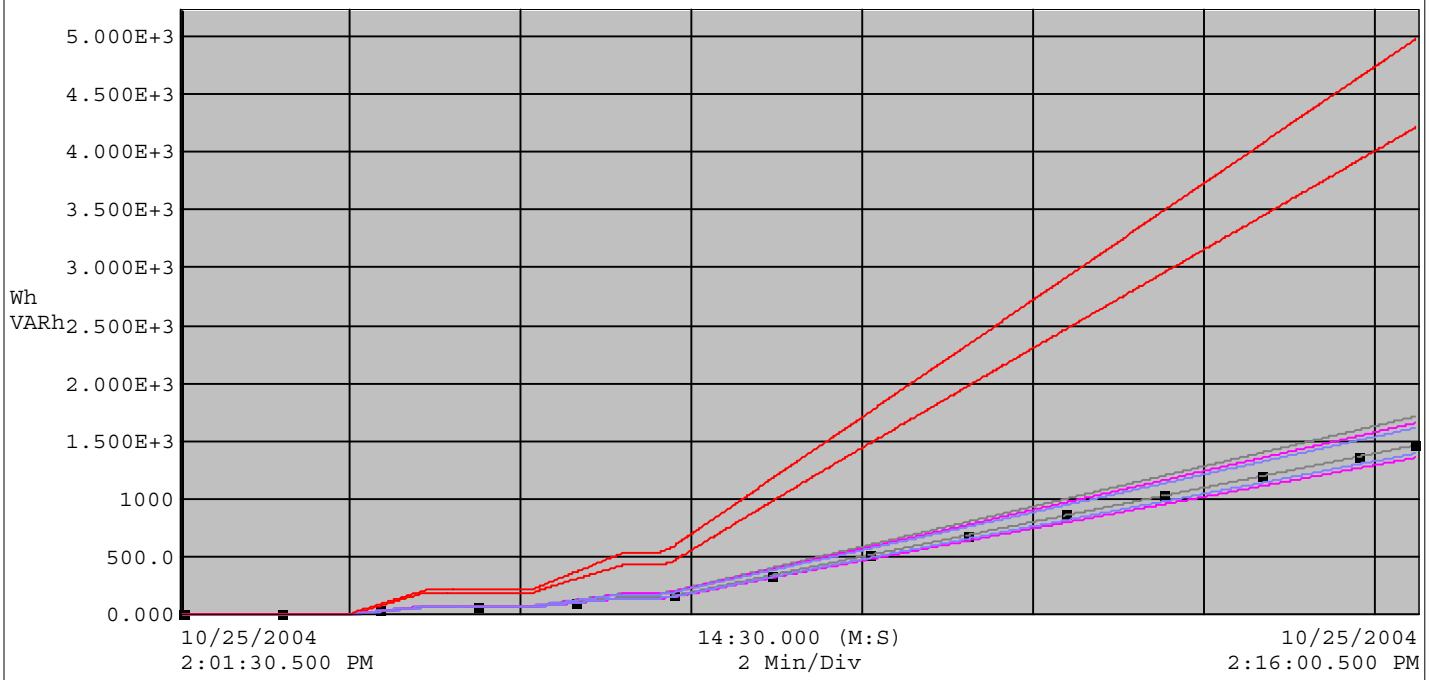
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/25/2004	2:01:30.500 PM	6.035E+3	0.000	13.08E+3	W
W Line2	10/25/2004	2:01:30.500 PM	5.591E+3	0.000	12.26E+3	W
W Line3	10/25/2004	2:01:30.500 PM	5.742E+3	0.000	12.70E+3	W
W Sum of Phases	10/25/2004	2:01:30.500 PM	17.37E+3	0.000	38.04E+3	W
VAR Line1	10/25/2004	2:01:30.500 PM	7.060E+3	0.000	21.25E+3	VAR
VAR Line2	10/25/2004	2:01:30.500 PM	6.826E+3	0.000	20.50E+3	VAR
VAR Line3	10/25/2004	2:01:30.500 PM	6.654E+3	0.000	20.50E+3	VAR
VAR Sum of Phases	10/25/2004	2:01:30.500 PM	20.54E+3	0.000	62.25E+3	VAR

10/25/2004 - 2:01:30.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

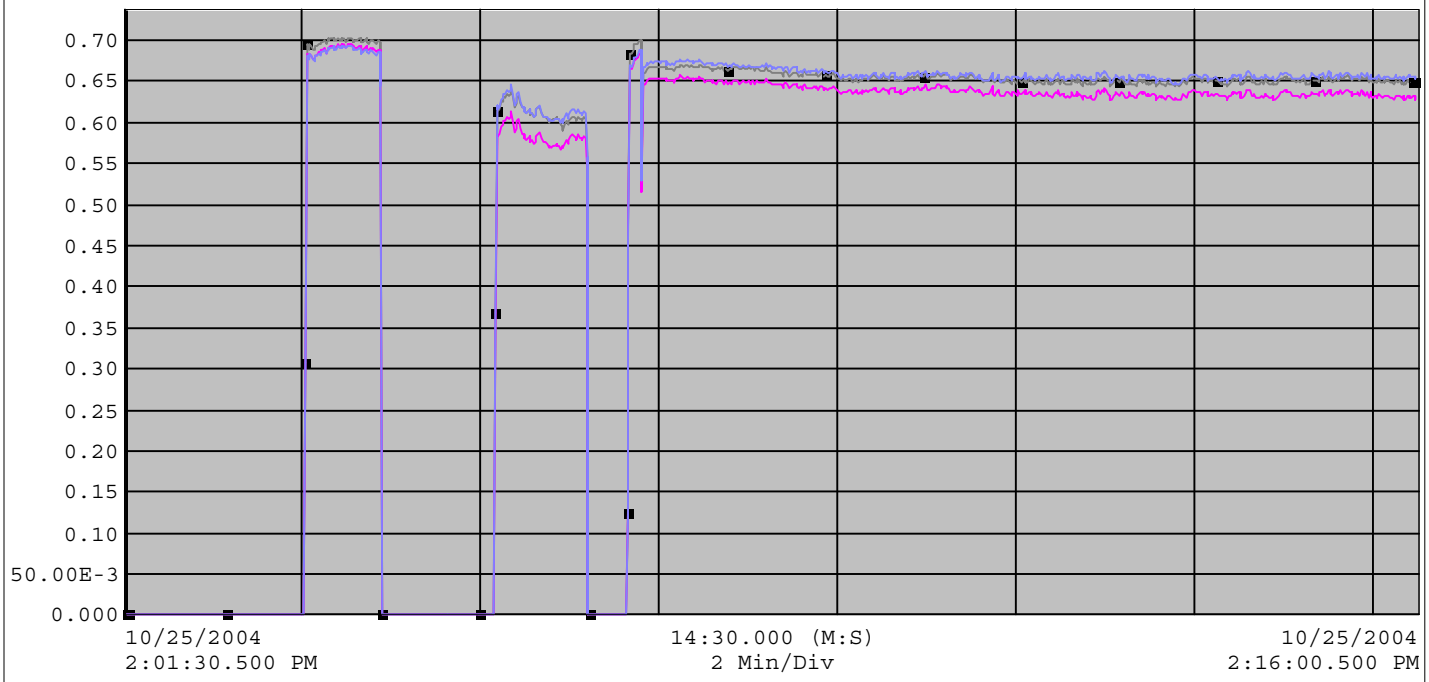
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/25/2004	2:01:30.500 PM	512.1	0.000	1.460E+3	Wh
W-hours Line2	10/25/2004	2:01:30.500 PM	475.4	0.000	1.353E+3	Wh
W-hours Line3	10/25/2004	2:01:30.500 PM	487.2	0.000	1.389E+3	Wh
W-hours Sum of Phases	10/25/2004	2:01:30.500 PM	1.475E+3	0.000	4.202E+3	Wh
VAR-hours Line1	10/25/2004	2:01:30.500 PM	599.4	0.000	1.708E+3	VARh
VAR-hours Line2	10/25/2004	2:01:30.500 PM	580.6	0.000	1.651E+3	VARh
VAR-hours Line3	10/25/2004	2:01:30.500 PM	566.8	0.000	1.610E+3	VARh
VAR-hours Sum of Phases	10/25/2004	2:01:30.500 PM	1.747E+3	0.000	4.969E+3	VARh

10/25/2004 - 2:01:30.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/25/2004	2:01:30.500 PM	0.484	0.000	0.701	
PF Line2	10/25/2004	2:01:30.500 PM	0.472	0.000	0.693	
PF Line3	10/25/2004	2:01:30.500 PM	0.486	0.000	0.692	

10/25/2004 - 2:01:30.000 PM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: X:\Wastewater Pumping Station\PS-12\102504-PS12 Trend.dvb

Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	Southern District-PS12-Trend ,

Comments
01-969-901
Demand 27.62

GWA Wastewater Pumping Station Assessment				
Station Name: PS-15 (SD-8)	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 10/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.38	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0	
Main Disconnect	5.0%		0	
Grounding	2.5%		0	
Surge Protection	2.5%		0	
Standby Generator	**20.0%**		0	
Generator Condition	10.0%		0	
Generator Battery	5.0%		0	
Diesel Fuel Line Condition	2.5%		0	
Auto Transfer Switch	2.5%		0	
Primary Pump Motor Controls	**20.0%**		0	
Main Breaker	4.0%		0	
Motor Starter	4.0%		0	
Motor Protection (Overload and moisture)	4.0%		0	
Wiring	4.0%		0	
Phase Monitor	4.0%		0	
Secondary Pump Motor Controls	**20.0%**		0	
Main Breaker	4.0%		0	
Motor Starter	4.0%		0	
Motor Protection (Overload and moisture)	4.0%		0	
Wiring	4.0%		0	
Phase Monitor	4.0%		0	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%		0	
Motor Starter	1.0%		0	
Pump Controls	**10.0%**		0	
Level	5.0%		0	
Alarms	3.0%		0	
Automatic Controls	2.0%		0	
Building Electrical	**3.0%**		0	
Lighting and Power Devices	1.5%		0	
Sump Pump Controls	1.5%		0	
	100%	**Assessment Value**		**0.4**

Comments: Station locked.

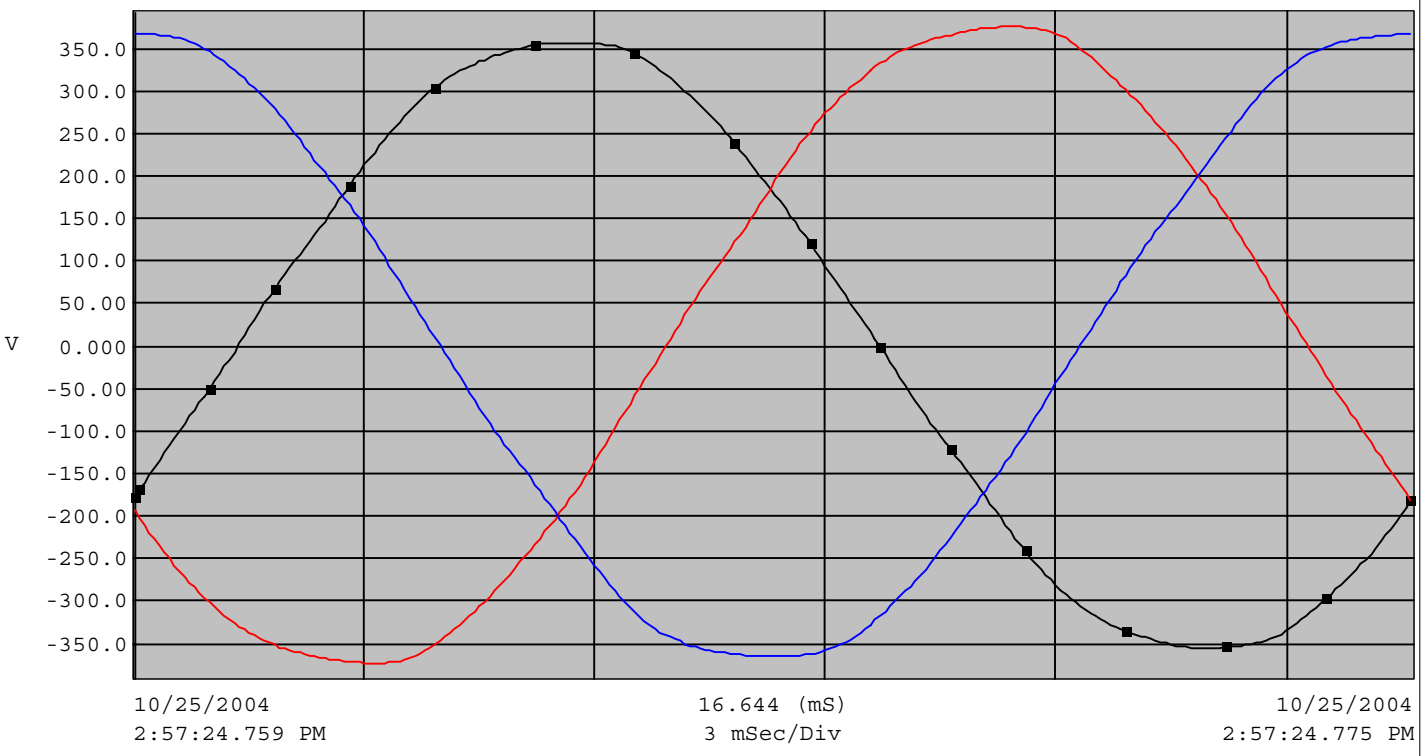
GWA Wastewater Pumping Station Assessment				
Station Name: PS-17	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 10/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.4	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	3	0.06	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.5	
Generator Condition	10.0%	2	0.2	25
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.56	
Main Breaker	4.0%	2	0.08	36
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	37
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.52	
Main Breaker	4.0%	1	0.04	36
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	37
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.25	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	(NONE)
	100%	**Assessment Value**		**2.5**

Comments:

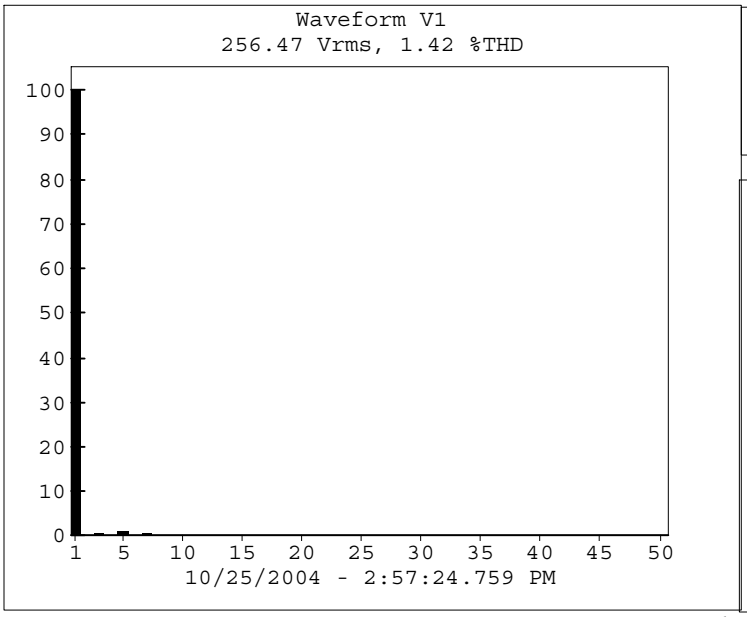
102504 - WWPS PS-17 Pump 1 Photo

Recording Start Date	10/25/2004 - 2:57:24 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/25/2004	2:57:24.759 PM	16.644	256.5	V
Waveform V2	10/25/2004	2:57:24.759 PM	16.644	269.9	V
Waveform V3	10/25/2004	2:57:24.759 PM	16.644	265.8	V

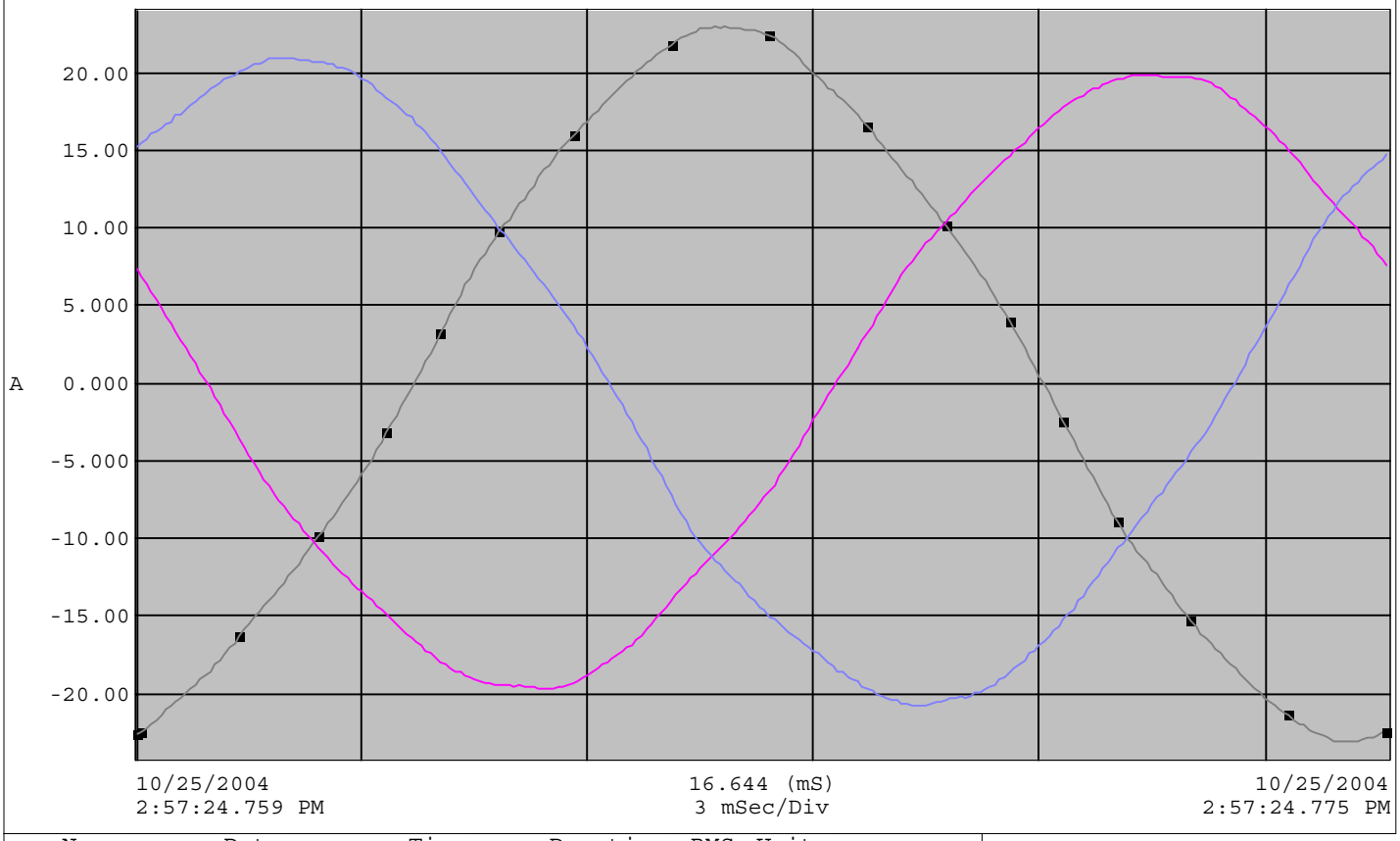


10/25/2004 - 2:57:24.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

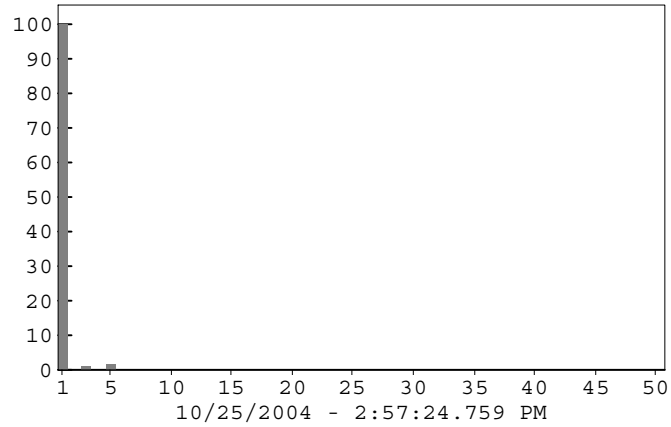
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.6	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.08 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/25/2004	2:57:24.759 PM	16.644	15.88	A
Waveform I2	10/25/2004	2:57:24.759 PM	16.644	13.94	A
Waveform I3	10/25/2004	2:57:24.759 PM	16.644	14.65	A

Waveform I1
15.88 Arms, 2.40 %THD

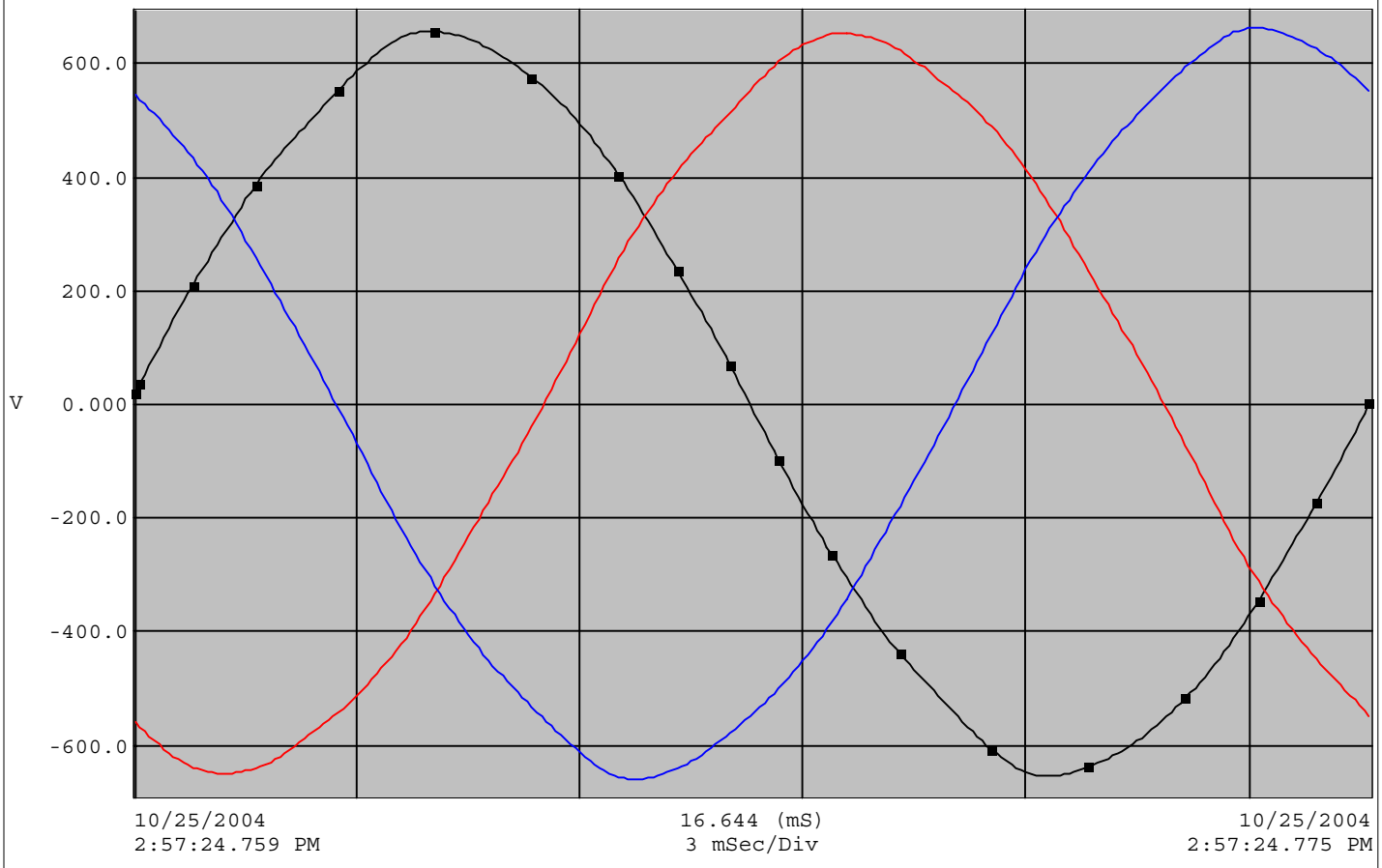


10/25/2004 - 2:57:24.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

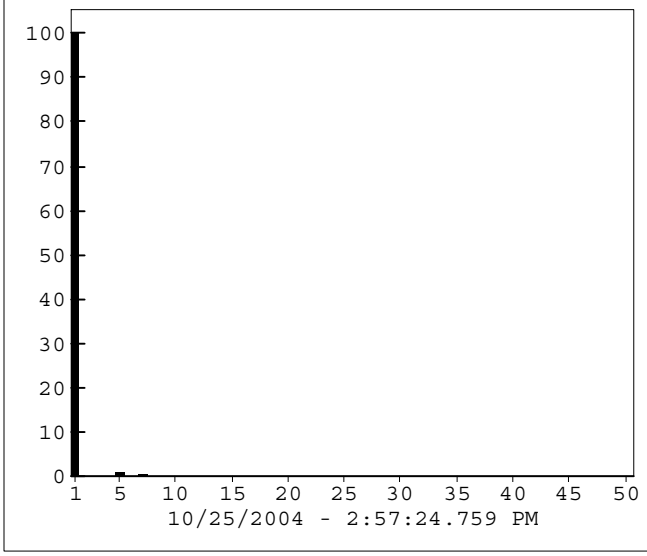
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.5	H19	0.1	H36	0.0
H03	1.2	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.3	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/25/2004	2:57:24.759 PM	16.644	457.4	V
Waveform U2	10/25/2004	2:57:24.759 PM	16.644	455.0	V
Waveform U3	10/25/2004	2:57:24.759 PM	16.644	459.3	V

Waveform U1
457.42 Vrms, 1.26 %THD



10/25/2004 - 2:57:24.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/25/2004
Start Time: 2:57:24 PM
Duration: 0:0.000 (M:S)
W: 2.677E+3 W
VAR: 3.077E+3 W
VA: 4.079E+3 W
Power Factor: 0.656
Displacement Power Factor: 0.656
TAN: 1.149
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Wastewater Pumping Station\PS-17\102504-PS17-Pump 1.dvb

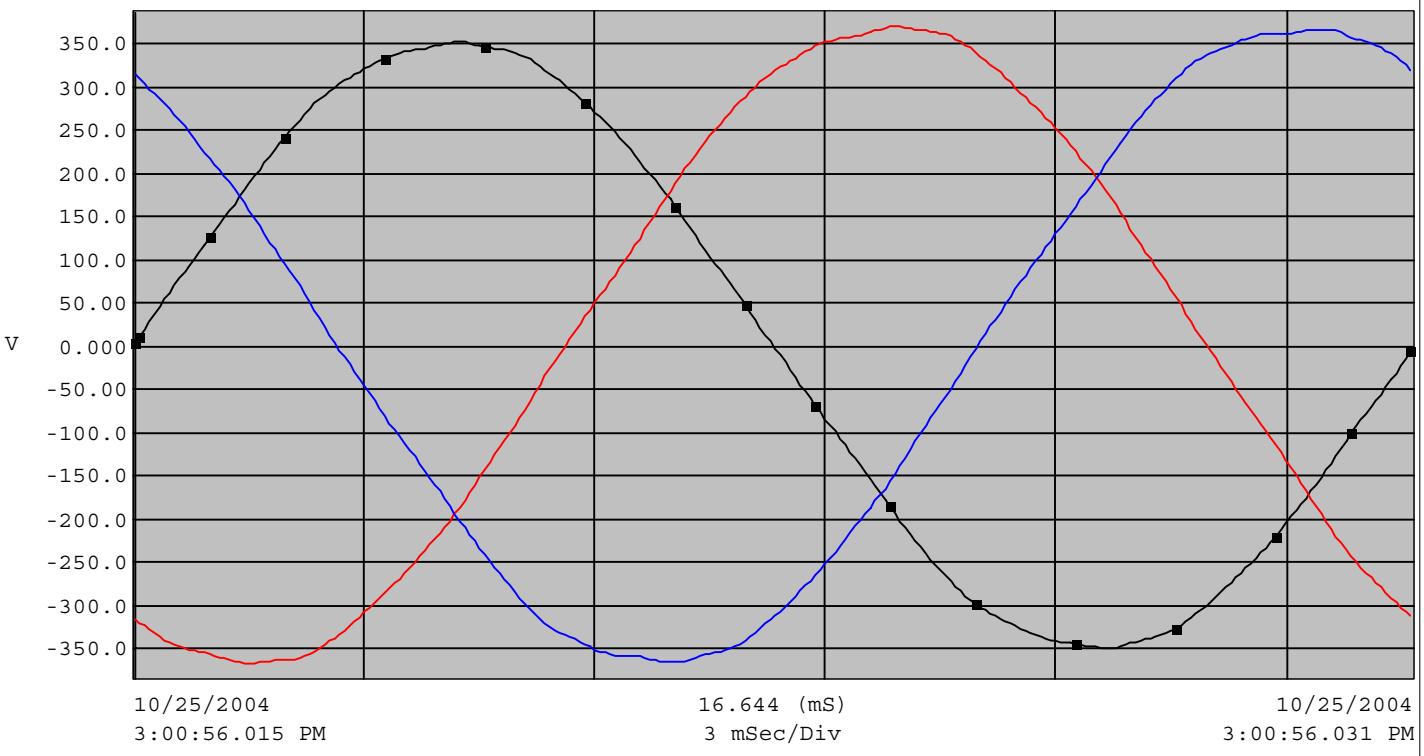
Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	Southern District-PS17- Pump 1 ,

Comments
Meter #: 78-289-426
Demand 7.8 KW
Pump 1 is operational pump.

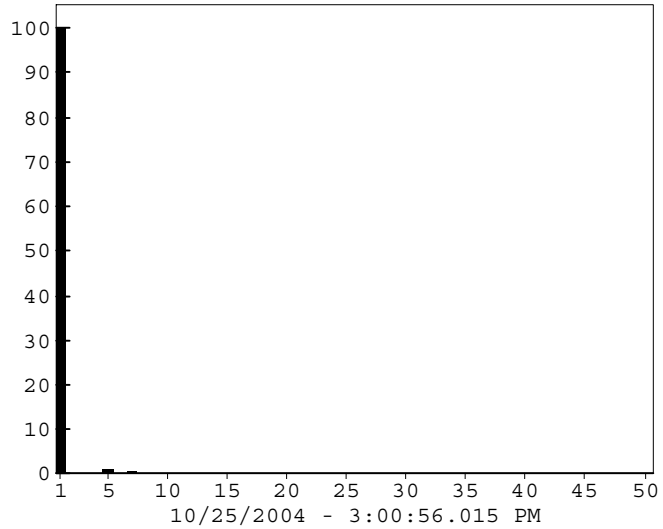
102504 - WWPS PS-17 Pump 2 Photo

Recording Start Date	10/25/2004 - 3:00:56 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/25/2004	3:00:56.015 PM	16.644	248.7	V
Waveform V2	10/25/2004	3:00:56.015 PM	16.644	261.8	V
Waveform V3	10/25/2004	3:00:56.015 PM	16.644	261.3	V

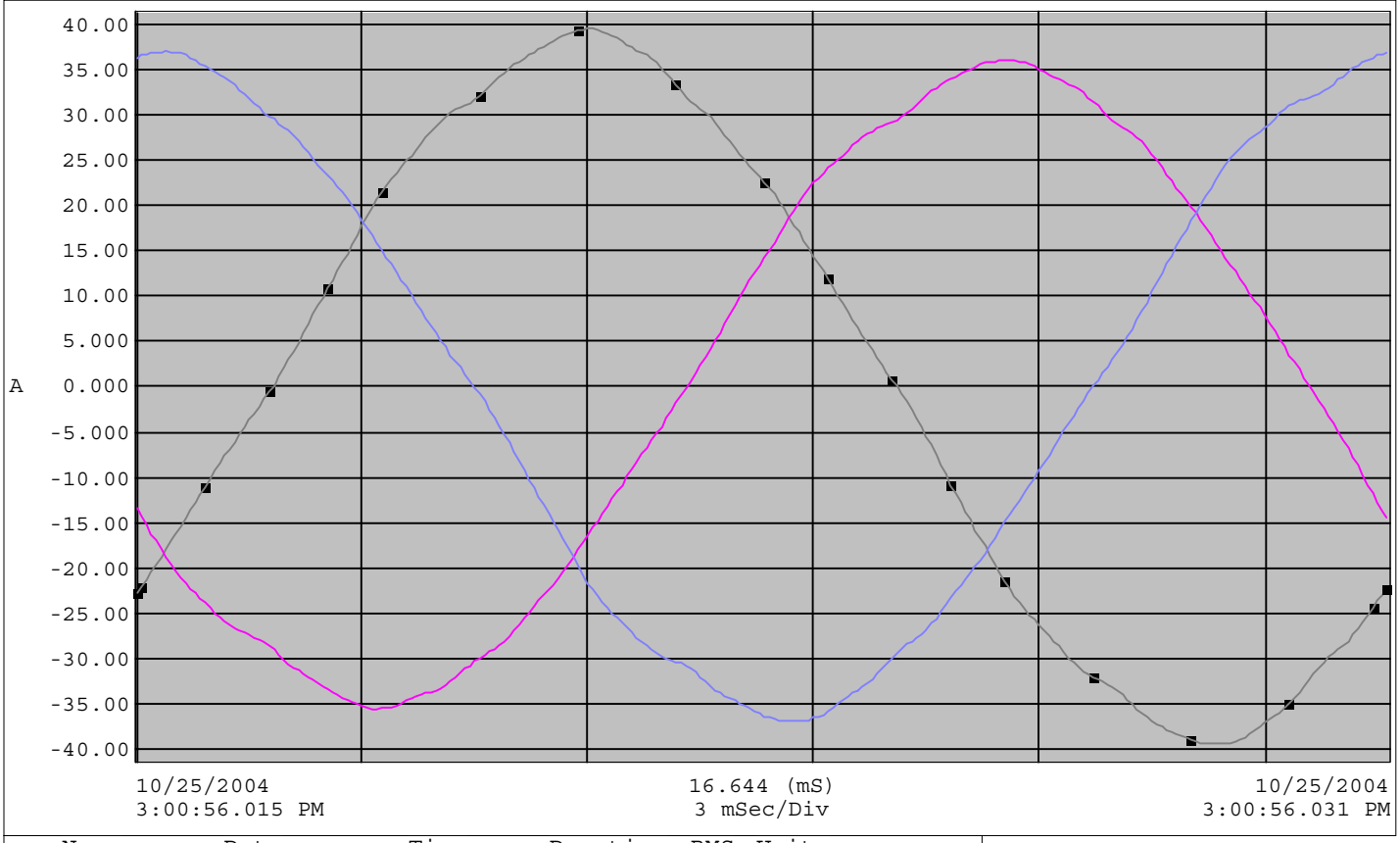


10/25/2004 - 3:00:56.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

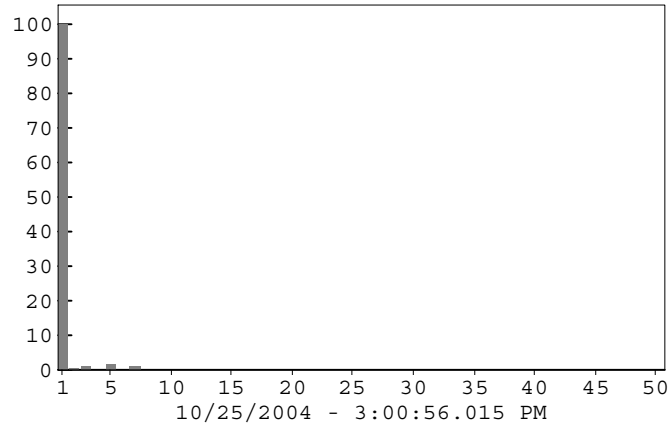
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.2	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.08 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/25/2004	3:00:56.015 PM	16.644	26.96	A
Waveform I2	10/25/2004	3:00:56.015 PM	16.644	24.80	A
Waveform I3	10/25/2004	3:00:56.015 PM	16.644	25.73	A

Waveform I1
26.96 Arms, 2.81 %THD

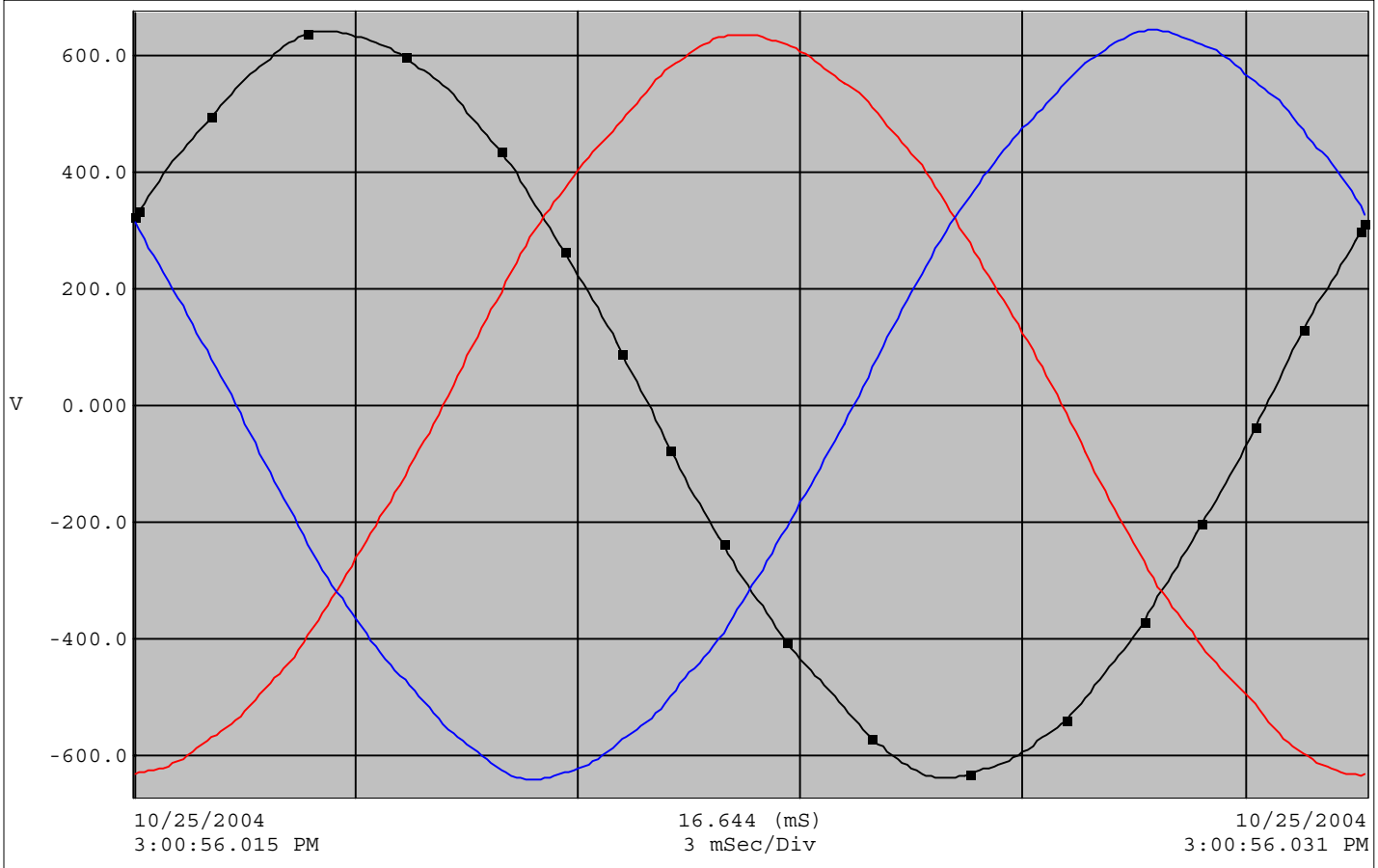


10/25/2004 - 3:00:56.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

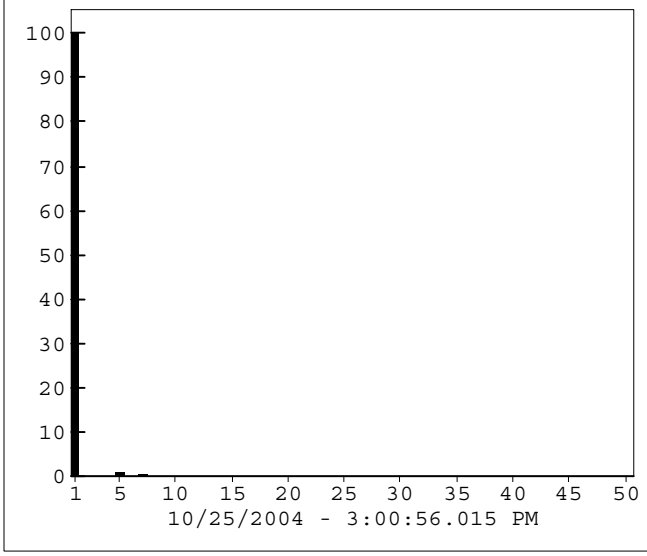
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.8	H19	0.4	H36	0.0
H03	1.2	H20	0.1	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	1.9	H22	0.1	H39	0.0
H06	0.1	H23	0.2	H40	0.0
H07	1.3	H24	0.1	H41	0.1
H08	0.1	H25	0.1	H42	0.0
H09	0.3	H26	0.1	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/25/2004	3:00:56.015 PM	16.644	446.6	V
Waveform U2	10/25/2004	3:00:56.015 PM	16.644	443.3	V
Waveform U3	10/25/2004	3:00:56.015 PM	16.644	446.4	V

Waveform U1
446.58 Vrms, 1.19 %THD



10/25/2004 - 3:00:56.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/25/2004
Start Time: 3:00:56 PM
Duration: 0:0.000 (M:S)
W: 5.364E+3 W
VAR: 4.028E+3 W
VA: 6.708E+3 W
Power Factor: 0.800
Displacement Power Factor: 0.800
TAN: 0.750
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Wastewater Pumping Station\PS-17\102504-PS17-Pump 2.dvb

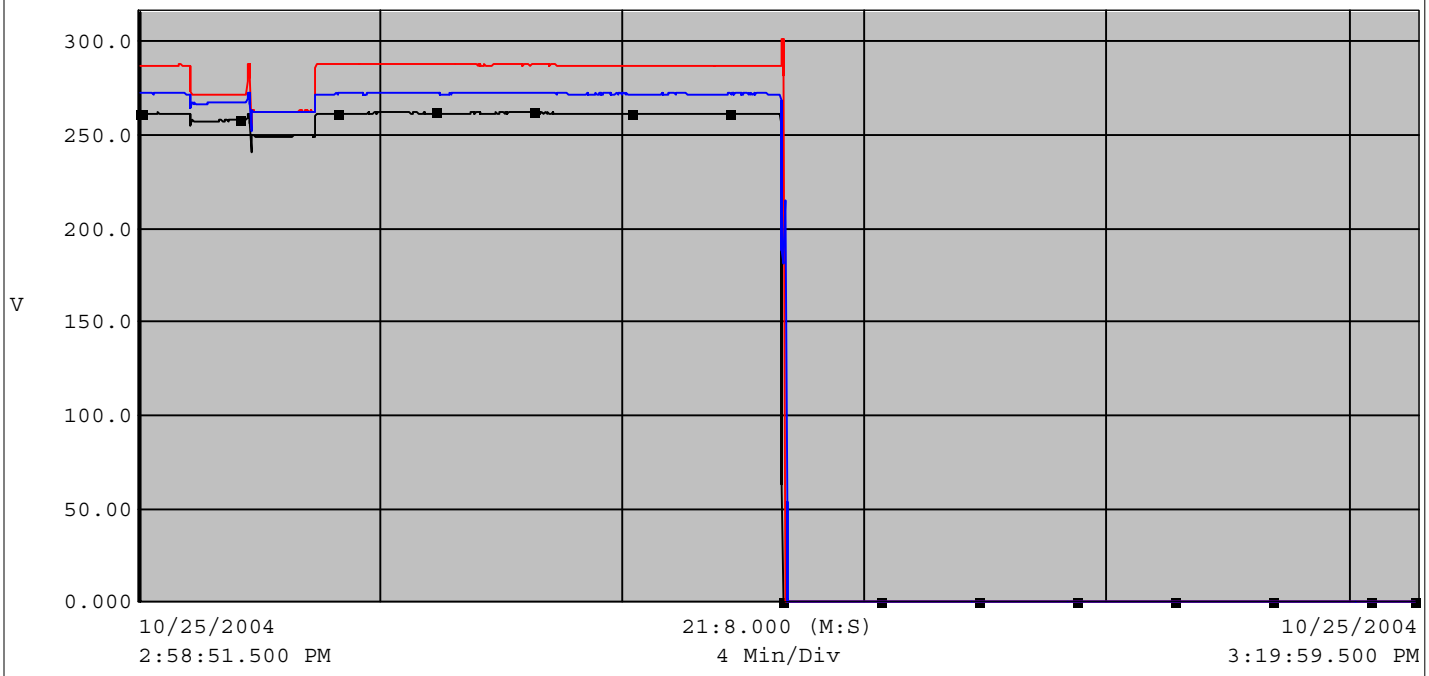
Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	Southern District-PS17-Pump 2 ,

Comments
Meter#: 78-289-426
Demand: 7.8 KW
Pump 2 is standby pump.

102504 - WWPS PS-17 Trend

Recording Start Date	10/25/2004 - 2:58:51 PM
Recording Duration	21:08 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

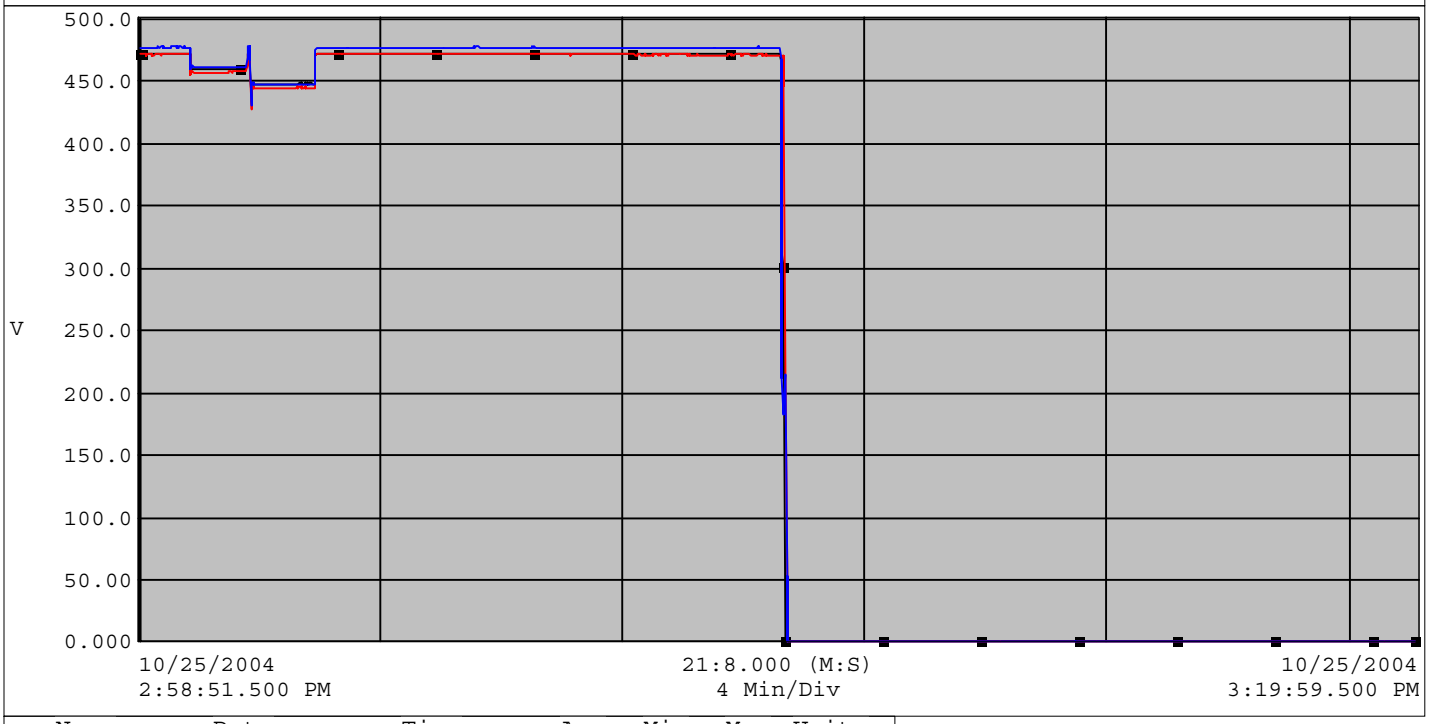
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/25/2004	2:58:51.500 PM	130.5	0.000	261.3	1269
Vrms Line2	10/25/2004	2:58:51.500 PM	142.9	0.000	301.0	1269
Vrms Line3	10/25/2004	2:58:51.500 PM	136.6	0.000	271.8	1269

10/25/2004 - 2:58:51.000 PM
Val
260.9 — Vrms Line1
286.6 — Vrms Line2
271.5 — Vrms Line3

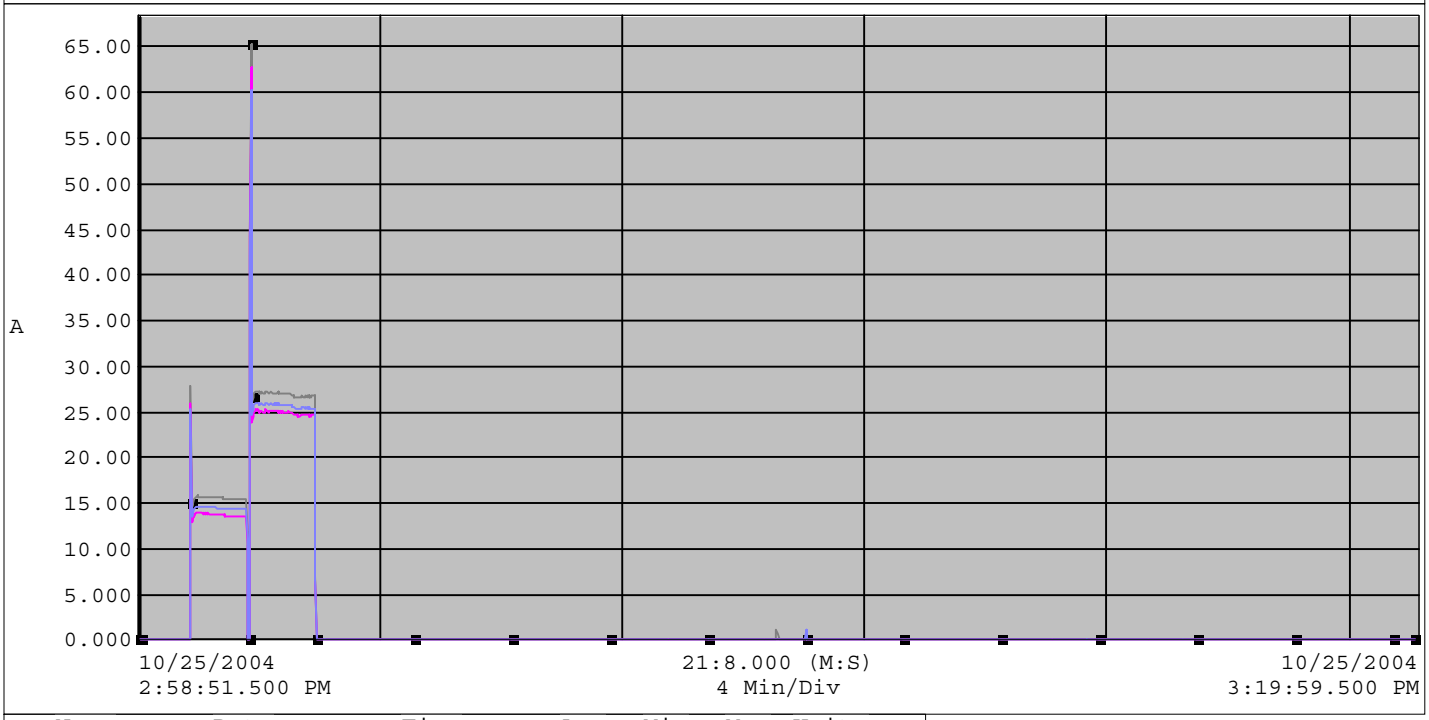
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/25/2004	2:58:51.500 PM	235.6	0.000	471.4	V
Urms Line2	10/25/2004	2:58:51.500 PM	236.0	0.000	471.1	V
Urms Line3	10/25/2004	2:58:51.500 PM	237.9	0.000	476.3	V

10/25/2004 - 2:58:51.000 PM
Val
470.5 Urms Line1
470.2 Urms Line2
476.1 Urms Line3

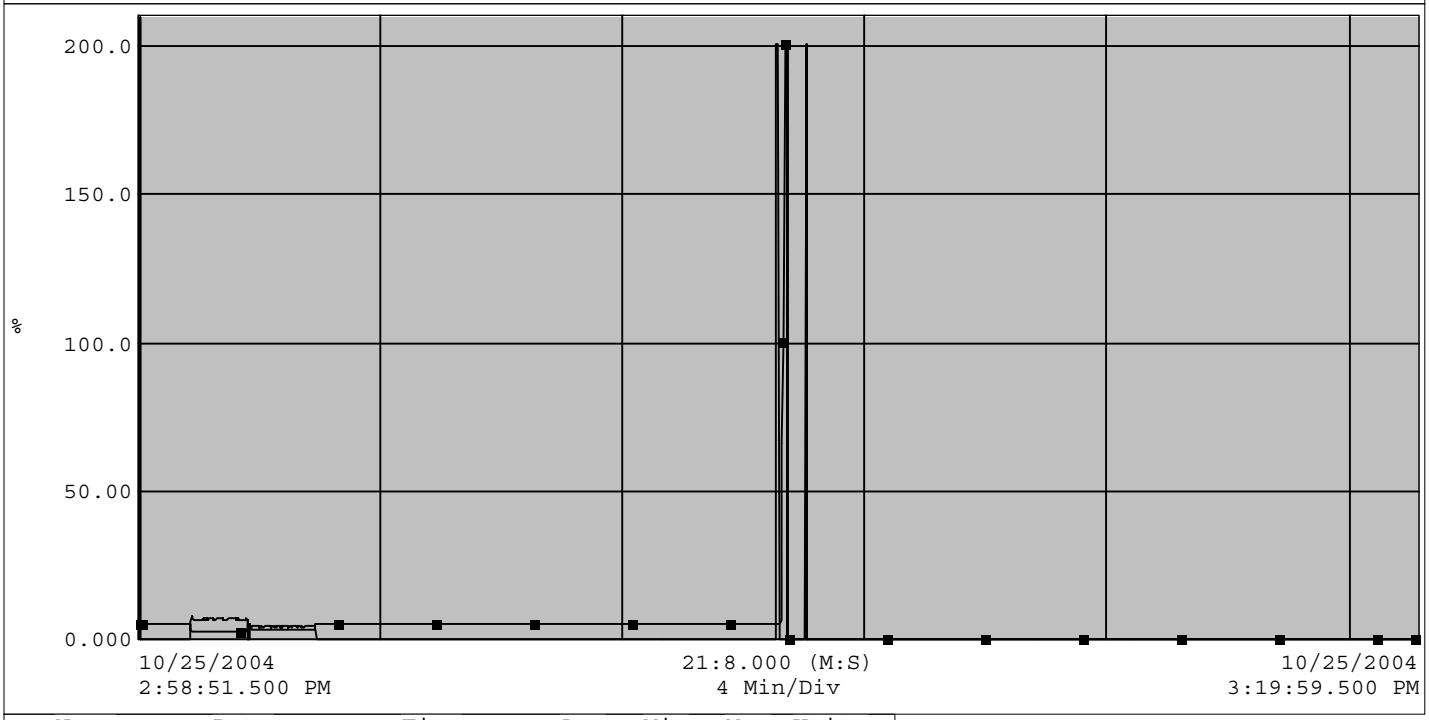
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/25/2004	2:58:51.500 PM	2.126	0.000	65.10	A
Arms Line2	10/25/2004	2:58:51.500 PM	1.939	0.000	62.70	A
Arms Line3	10/25/2004	2:58:51.500 PM	2.007	0.000	60.10	A

10/25/2004 - 2:58:51.000 PM
Val
0.000 Arms Line1
0.000 Arms Line2
0.000 Arms Line3

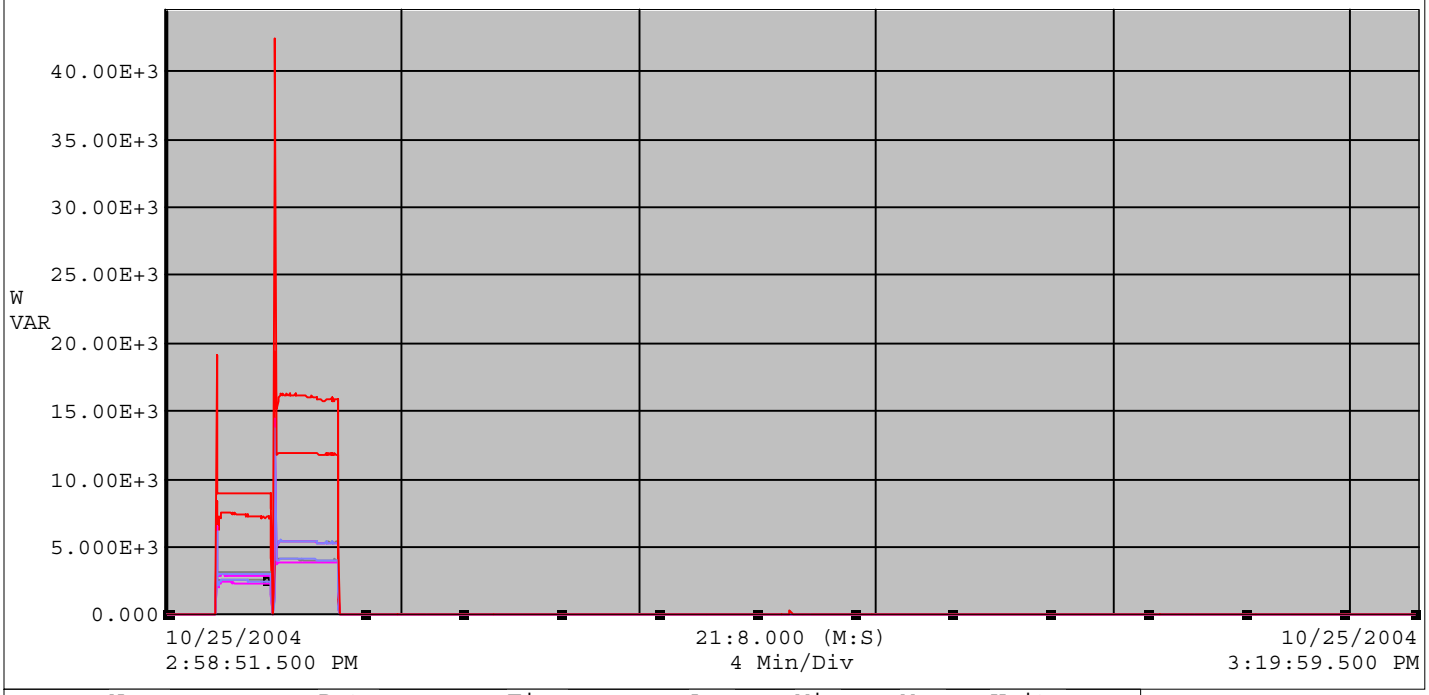
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/25/2004	2:58:51.500 PM	3.023	0.000	200.0	%
Aunb(IEEE)	10/25/2004	2:58:51.500 PM	0.996	0.000	200.0	%

10/25/2004 - 2:58:51.000 PM
Val
5.000 ── Vunb(IEEE)
0.000 ── Aunb(IEEE)

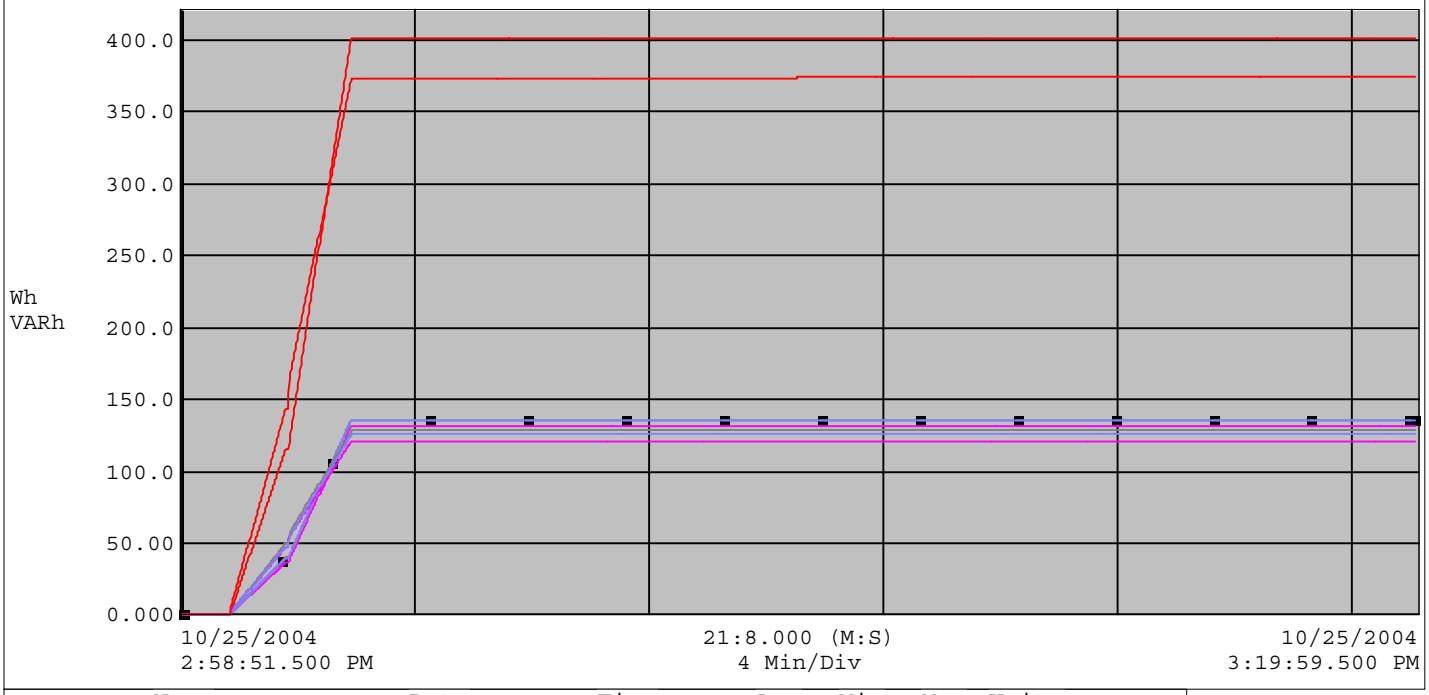
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/25/2004	2:58:51.500 PM	383.2	0.000	6.558E+3	W
W Line2	10/25/2004	2:58:51.500 PM	370.9	0.000	6.575E+3	W
W Line3	10/25/2004	2:58:51.500 PM	381.1	0.000	6.182E+3	W
W Sum of Phases	10/25/2004	2:58:51.500 PM	1.135E+3	0.000	19.31E+3	W
VAR Line1	10/25/2004	2:58:51.500 PM	361.8	0.000	14.21E+3	VAR
VAR Line2	10/25/2004	2:58:51.500 PM	342.1	0.000	14.40E+3	VAR
VAR Line3	10/25/2004	2:58:51.500 PM	354.2	0.000	13.75E+3	VAR
VAR Sum of Phases	10/25/2004	2:58:51.500 PM	1.058E+3	0.000	42.36E+3	VAR

10/25/2004 - 2:58:51.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

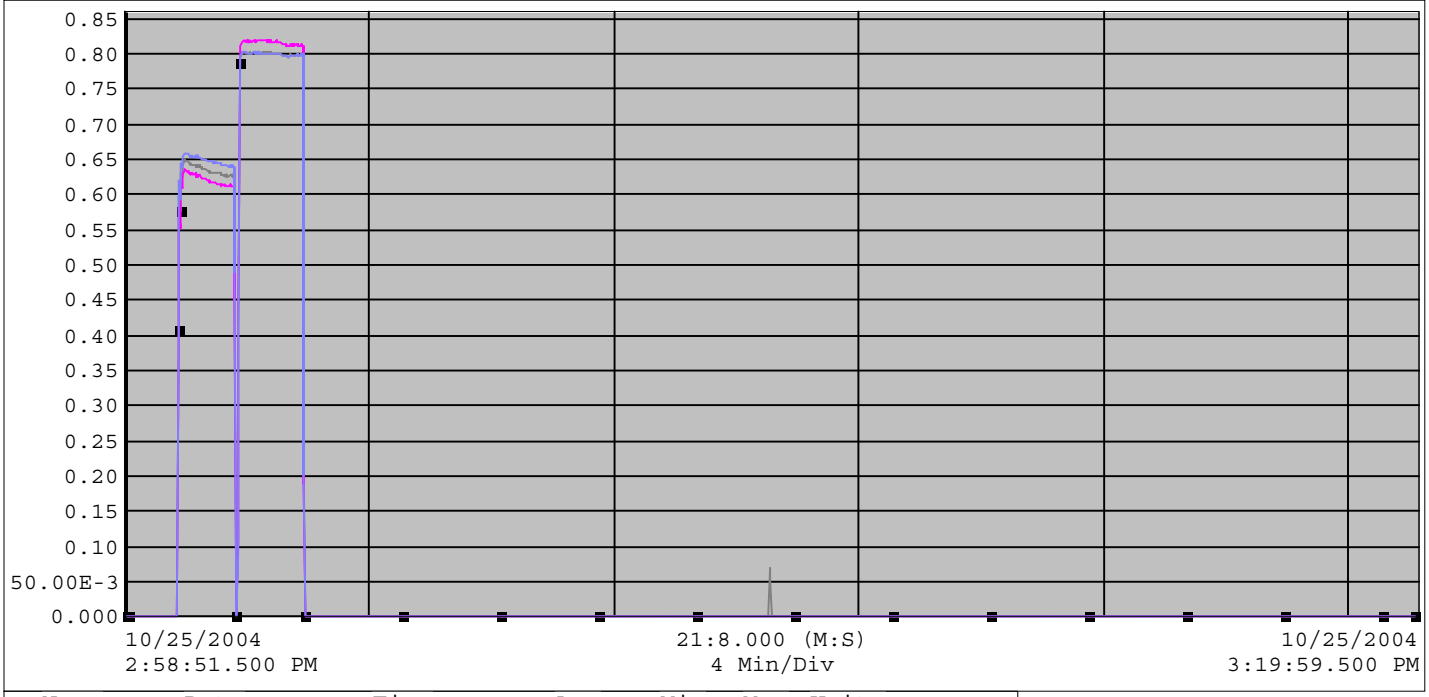
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/25/2004	2:58:51.500 PM	121.9	0.000	135.1	Wh
W-hours Line2	10/25/2004	2:58:51.500 PM	117.9	0.000	130.8	Wh
W-hours Line3	10/25/2004	2:58:51.500 PM	121.2	0.000	134.3	Wh
W-hours Sum of Phases	10/25/2004	2:58:51.500 PM	361.1	0.000	400.2	Wh
VAR-hours Line1	10/25/2004	2:58:51.500 PM	115.8	0.000	127.5	VARh
VAR-hours Line2	10/25/2004	2:58:51.500 PM	109.5	0.000	120.6	VARh
VAR-hours Line3	10/25/2004	2:58:51.500 PM	113.4	0.000	124.9	VARh
VAR-hours Sum of Phases	10/25/2004	2:58:51.500 PM	338.7	0.000	373.0	VARh

10/25/2004 - 2:58:51.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/25/2004	2:58:51.500 PM	68.41E-3	0.000	0.802	
PF Line2	10/25/2004	2:58:51.500 PM	68.42E-3	0.000	0.818	
PF Line3	10/25/2004	2:58:51.500 PM	68.86E-3	0.000	0.802	

10/25/2004 - 2:58:51.000 PM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: X:\Wastewater Pumping Station\PS-17\102504-PS17- Trend.dvb

Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	Southern District-PS17-Trend ,

Comments
78-289-426
Demand 7.8 KW
PS17 Trend Report

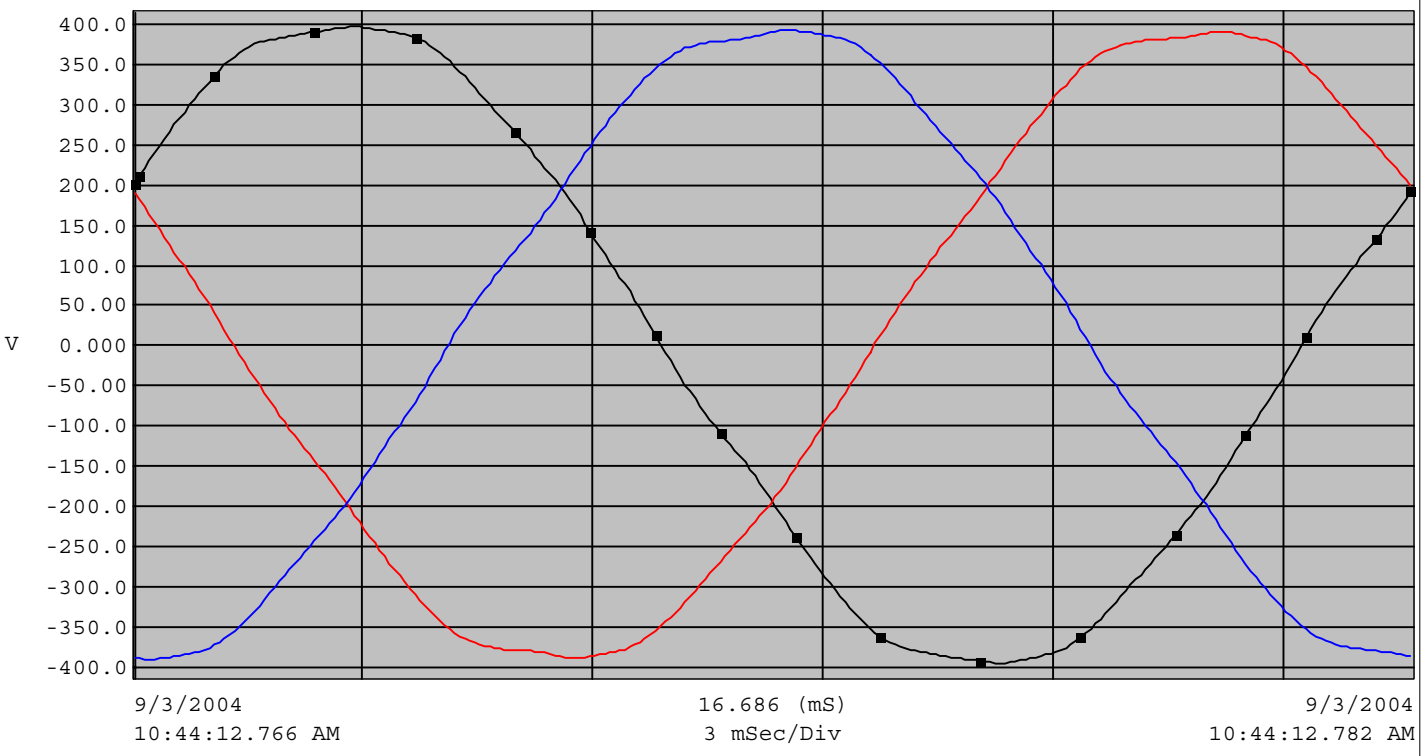
GWA Wastewater Pumping Station Assessment				
Station Name: ROUTE 16	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/22/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.57	
Transformer Pole Condition and Grounding	2.0%	4	0.08	
Transformer Connection Type	2.0%	3	0.06	
Transformer Wiring Method	5.0%	4	0.2	
Lightning Arrester Condition	5.0%	4	0.2	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.175	
Main Disconnect	5.0%	2	0.1	11
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.225	
Generator Condition	10.0%	1	0.1	20
Generator Battery	5.0%	0	0	20
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	2	0.05	22
Primary Pump Motor Controls	**20.0%**		0.64	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.64	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0.02	
Main Breaker and Starter	1.0%	1	0.01	
Motor Starter	1.0%	1	0.01	
Pump Controls	**10.0%**		0.25	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	52
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	
	100%	**Assessment Value**		**2.6**

Comments: Generator under repair.

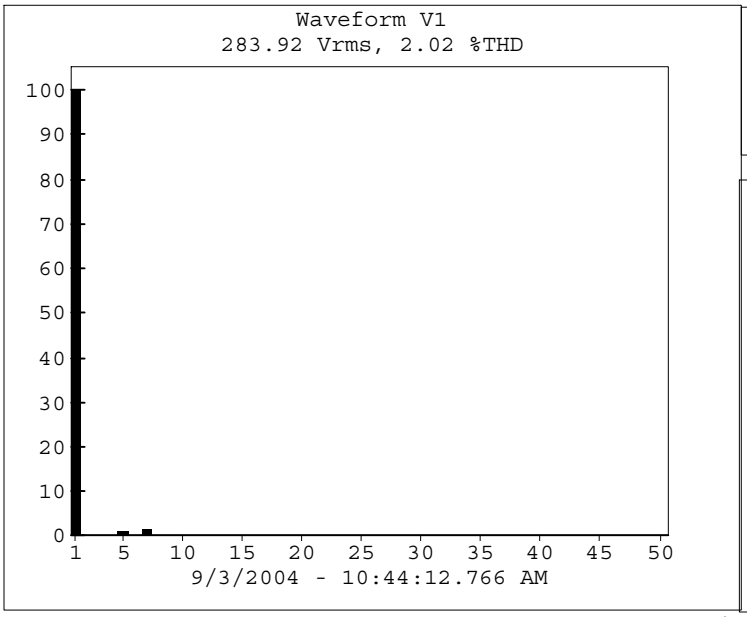
090304 - Rte 16 WWPS - Pump 3 - Photo

Recording Start Date	9/3/2004 - 10:44:12 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/3/2004	10:44:12.766 AM	16.686	283.9	V
Waveform V2	9/3/2004	10:44:12.766 AM	16.686	279.2	V
Waveform V3	9/3/2004	10:44:12.766 AM	16.686	280.4	V

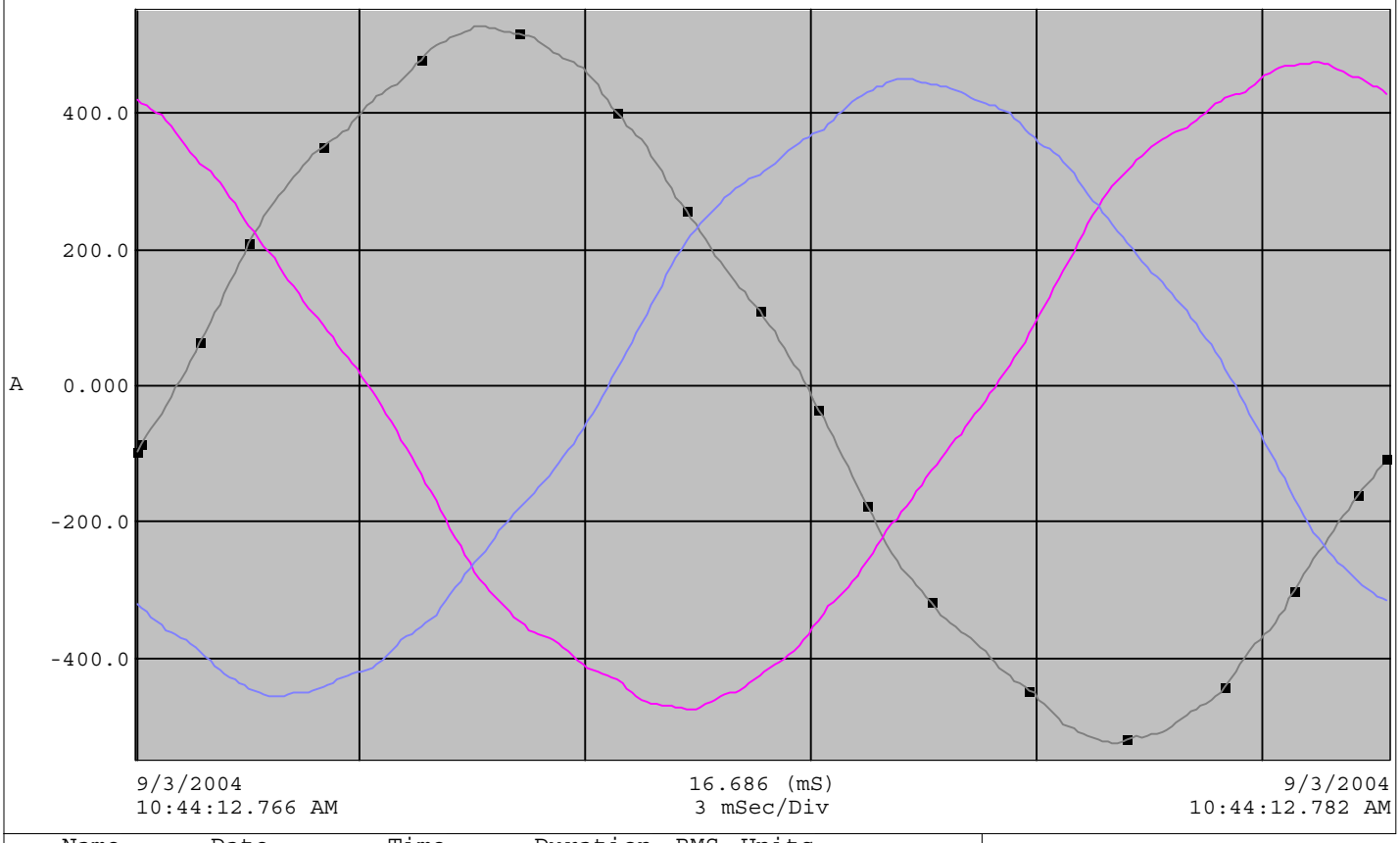


9/3/2004 - 10:44:12.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

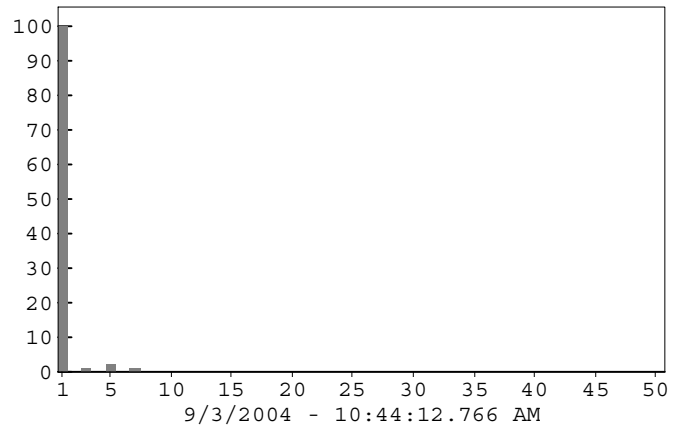
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/3/2004	10:44:12.766 AM	16.686	361.8	A
Waveform I2	9/3/2004	10:44:12.766 AM	16.686	329.7	A
Waveform I3	9/3/2004	10:44:12.766 AM	16.686	316.3	A

Waveform I1
361.78 Arms, 3.35 %THD

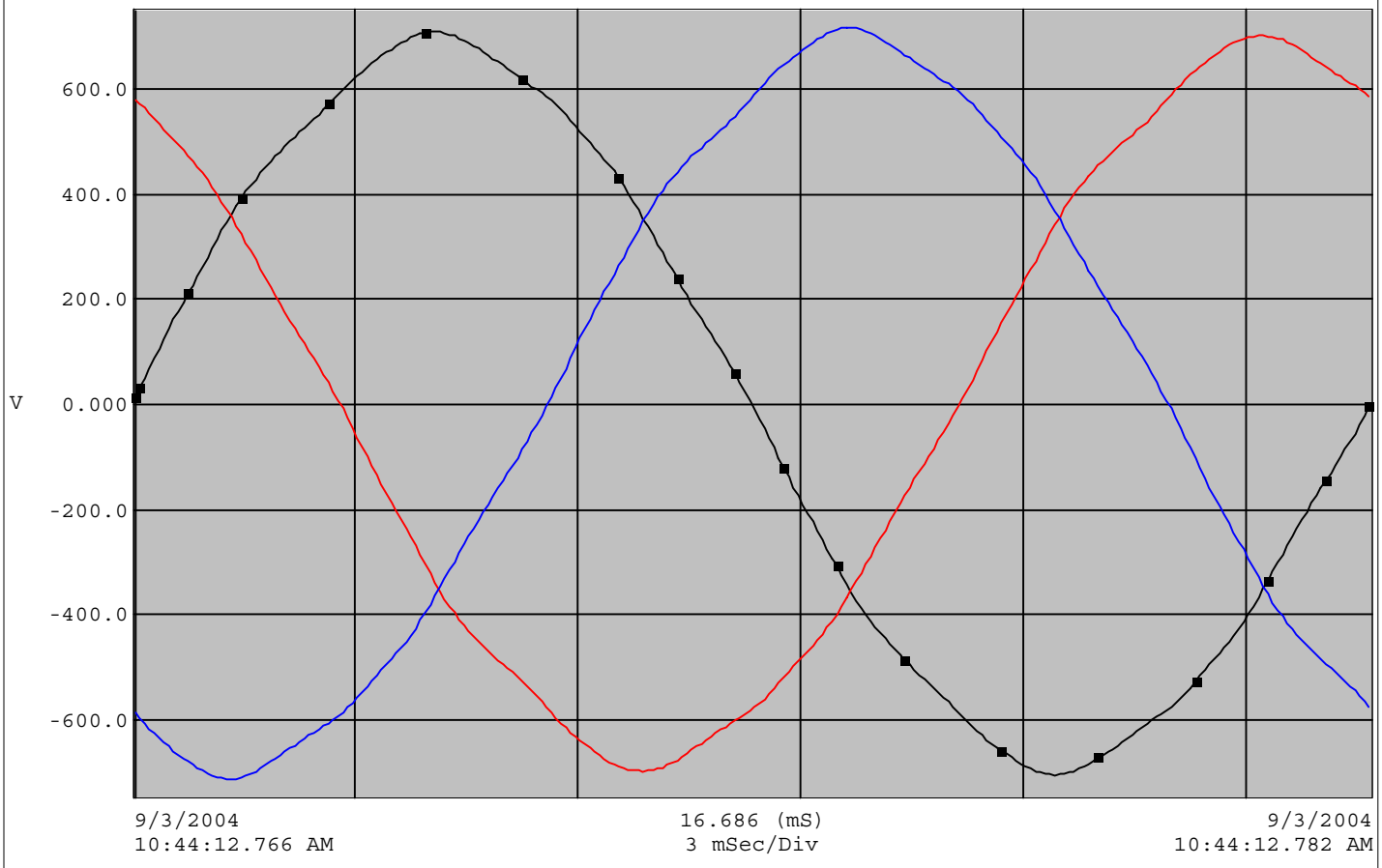


9/3/2004 - 10:44:12.015 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

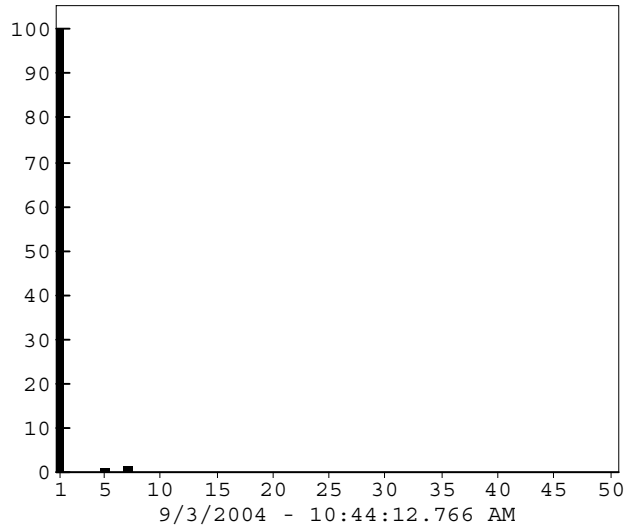
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.3	H36	0.0
H03	1.2	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	2.6	H22	0.1	H39	0.0
H06	0.0	H23	0.4	H40	0.0
H07	1.6	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/3/2004	10:44:12.766 AM	16.686	488.2	V
Waveform U2	9/3/2004	10:44:12.766 AM	16.686	482.7	V
Waveform U3	9/3/2004	10:44:12.766 AM	16.686	490.3	V

Waveform U1
488.25 Vrms, 1.88 %THD



9/3/2004 - 10:44:12.015 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/3/2004
Start Time: 10:44:12 AM
Duration: 0:0.000 (M:S)
W: 76.86E+3 W
VAR: 67.85E+3 W
VA: 102.5E+3 W
Power Factor: 0.750
Displacement Power Factor: 0.750
TAN: 0.881
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Route 16 WWPS\090304-Rte 16 WWPS - Pump 3 - Photo.dvb

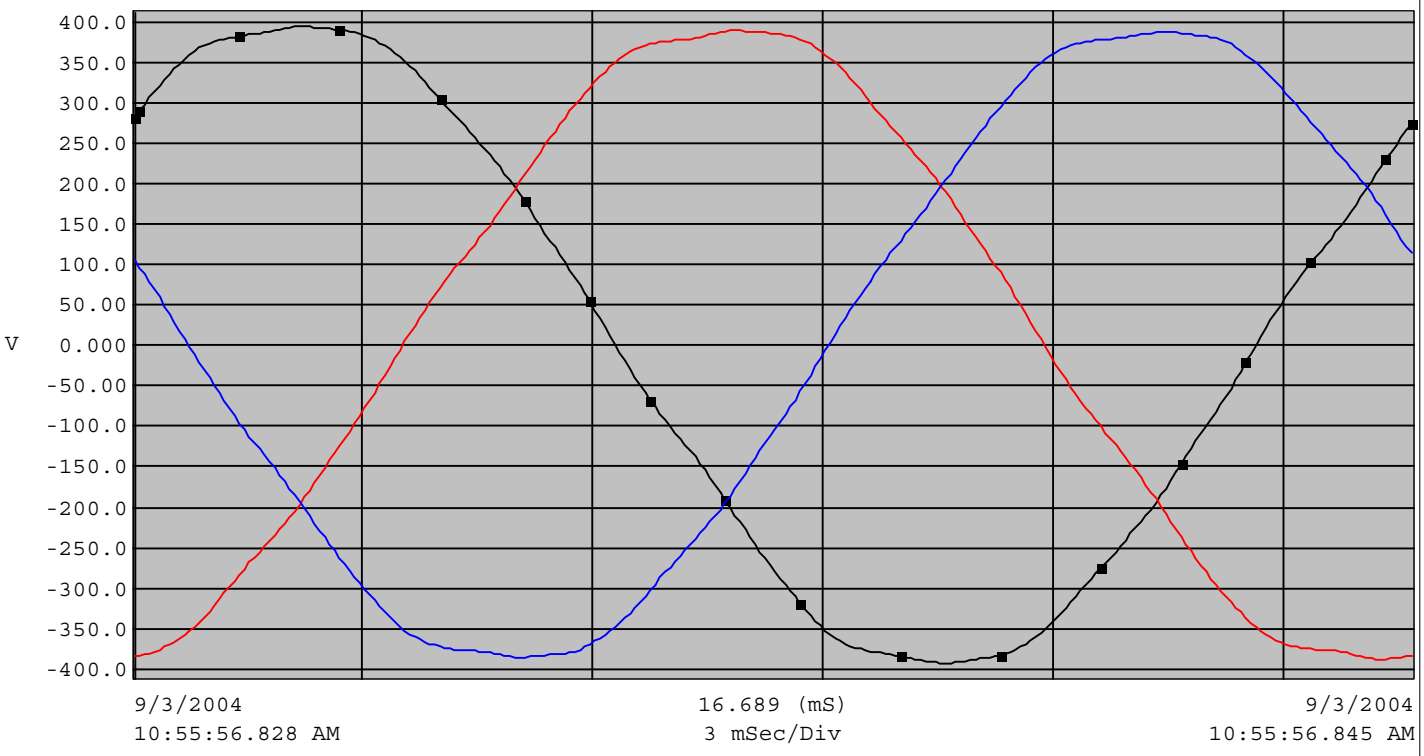
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Route 16 WWPS - Pump 3 - Photo 1 ,

Comments
Measured at motor starter. 300 HP motor.

090304 - Rte 16 WWPS - Pump3 - Photo 1

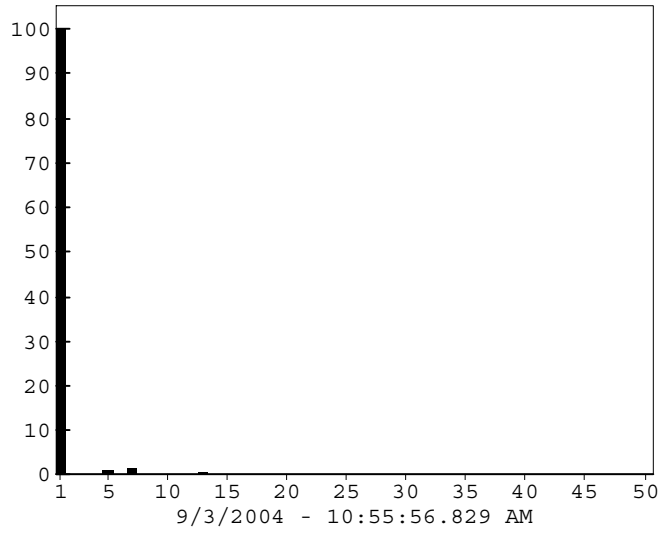
Recording Start Date	9/3/2004 - 10:55:56 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.92 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/3/2004	10:55:56.828 AM	16.689	283.0	V
Waveform V2	9/3/2004	10:55:56.828 AM	16.689	279.7	V
Waveform V3	9/3/2004	10:55:56.828 AM	16.689	278.4	V

Waveform V1
282.95 Vrms, 2.02 %THD



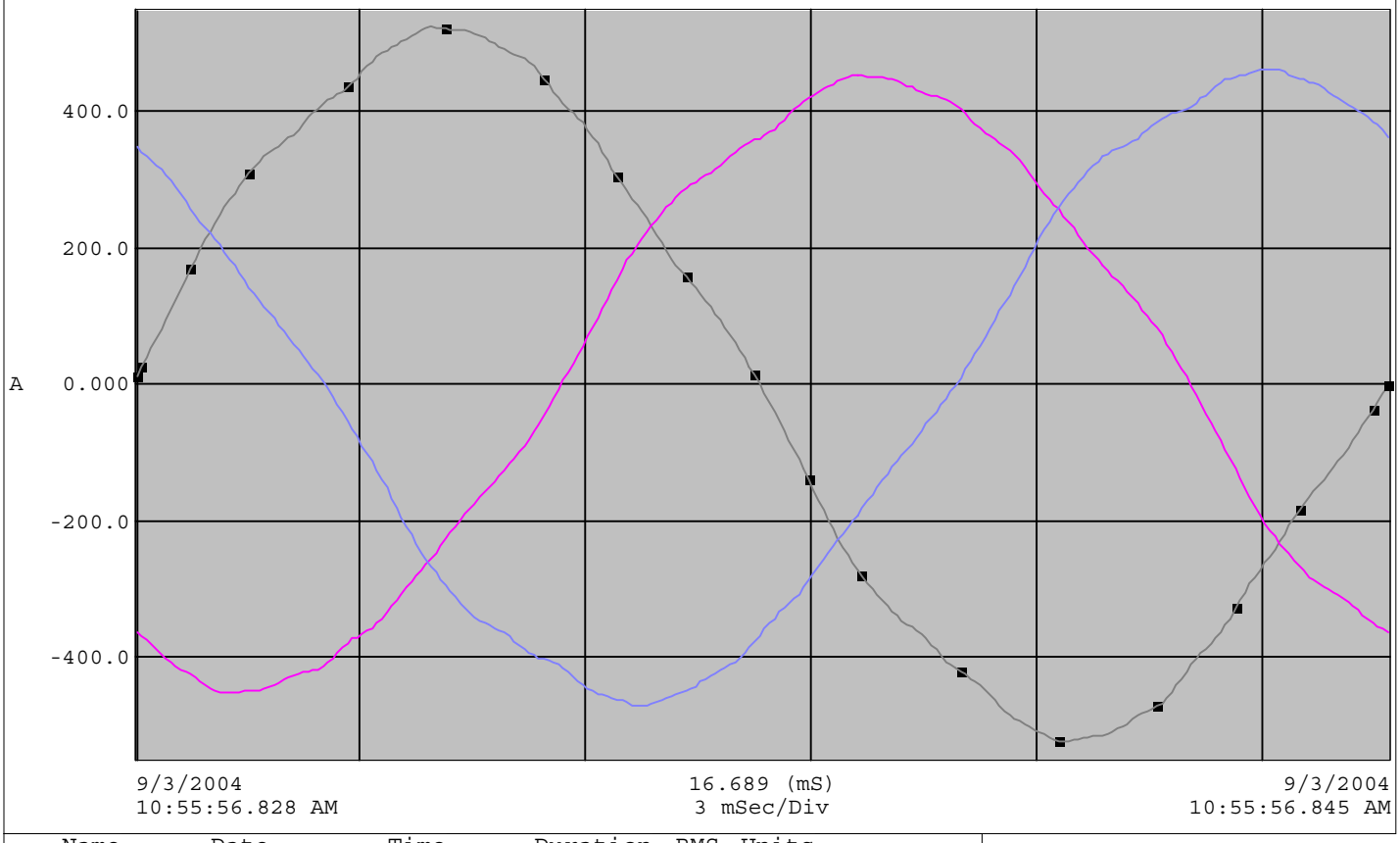
9/3/2004 - 10:55:56.000 AM

Val	
281.1	Waveform V1
-385.8	Waveform V2
104.6	Waveform V3

Waveform V1

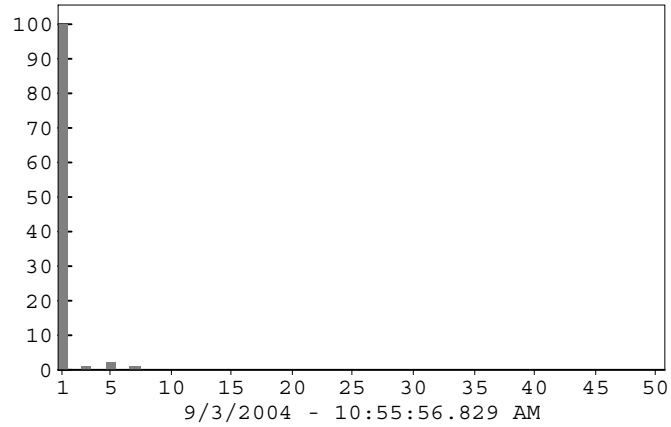
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.92 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/3/2004	10:55:56.828 AM	16.689	360.8	A
Waveform I2	9/3/2004	10:55:56.828 AM	16.689	315.8	A
Waveform I3	9/3/2004	10:55:56.828 AM	16.689	323.2	A

Waveform I1
360.77 Arms, 3.41 %THD

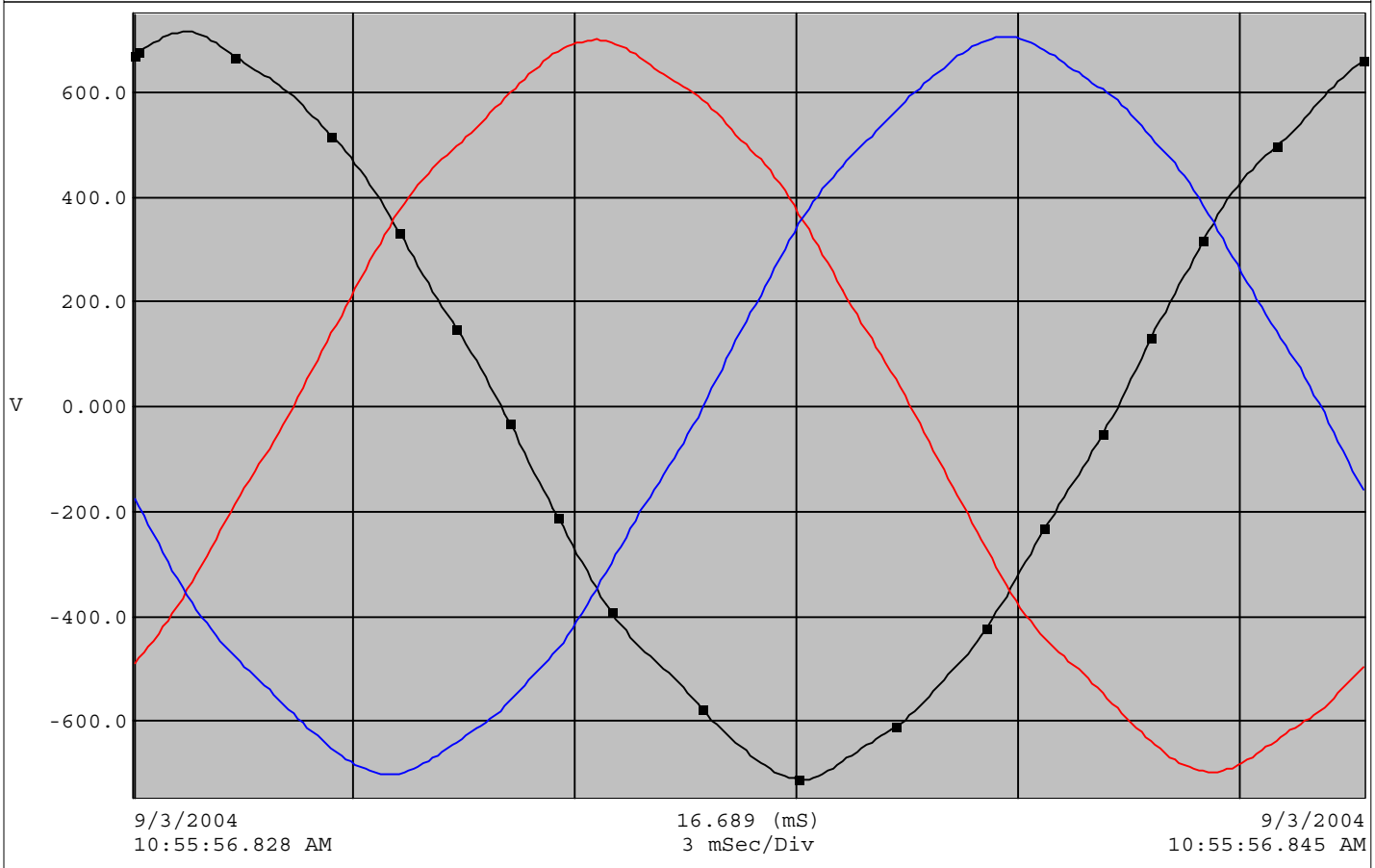


9/3/2004 - 10:55:56.000 AM
Val
9.900 — Waveform I1
-364.7 — Waveform I2
348.5 — Waveform I3

Waveform I1

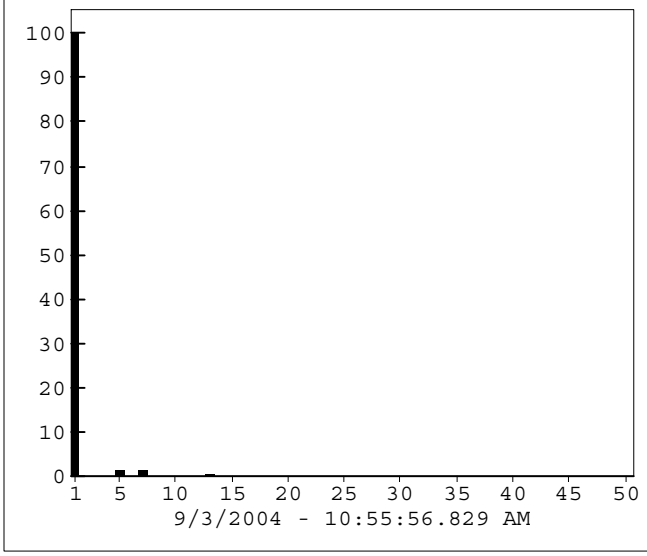
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.3	H36	0.0
H03	1.1	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	2.7	H22	0.1	H39	0.0
H06	0.0	H23	0.4	H40	0.0
H07	1.6	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.92 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/3/2004	10:55:56.828 AM	16.689	488.7	V
Waveform U2	9/3/2004	10:55:56.828 AM	16.689	481.4	V
Waveform U3	9/3/2004	10:55:56.828 AM	16.689	486.7	V

Waveform U1
488.68 Vrms, 2.23 %THD



9/3/2004 - 10:55:56.000 AM

	Val	
—	666.9	Waveform U1
—	-490.4	Waveform U2
—	-176.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/3/2004
Start Time: 10:55:56 AM
Duration: 0:0.000 (M:S)
W: 77.12E+3 W
VAR: 67.46E+3 W
VA: 102.5E+3 W
Power Factor: 0.753
Displacement Power Factor: 0.753
TAN: 0.873
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Route 16 WWPS\090304-Rte 16 WWPS - Pump 3 - Photo1.dvb

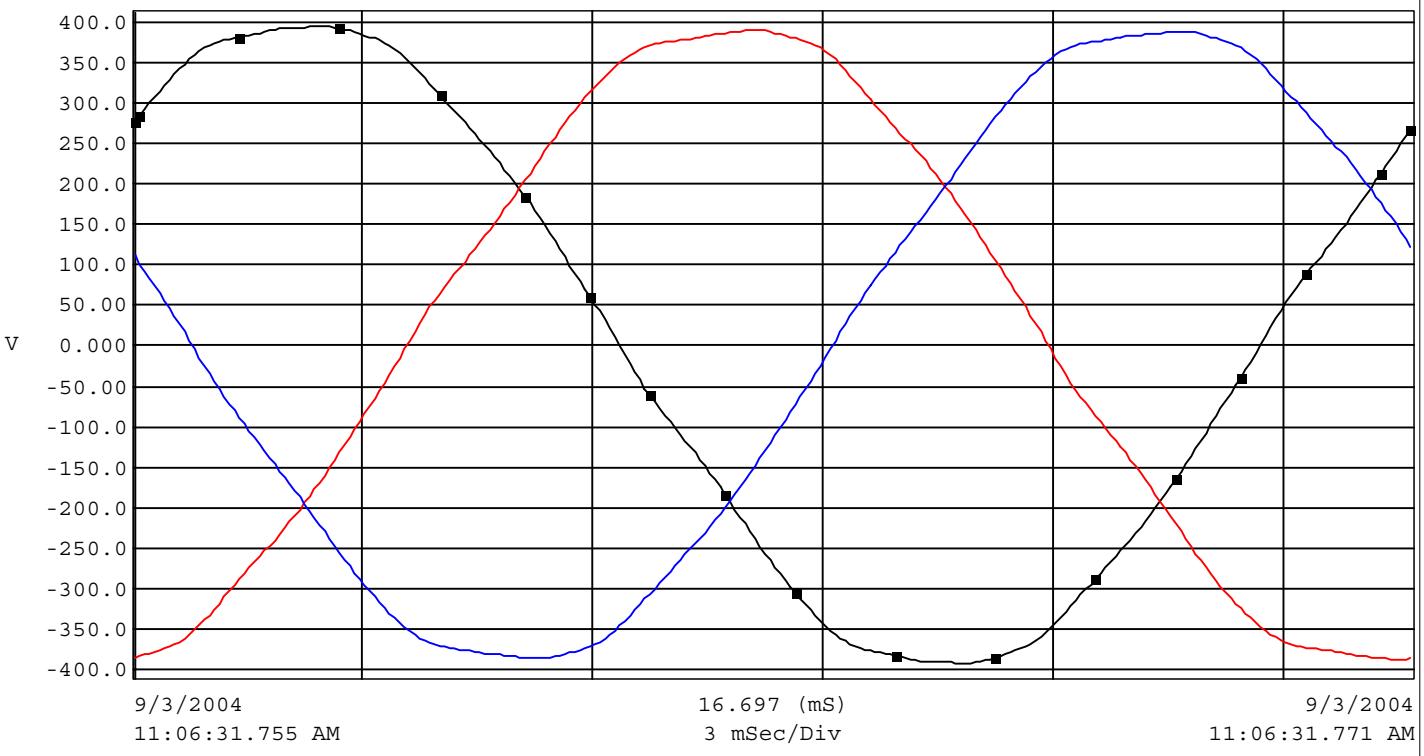
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Route 16 WWPS - Pump 3 - Photo 1 ,

Comments
Measured at motor starter. 300 HP Flygt Pump. With motor operating.

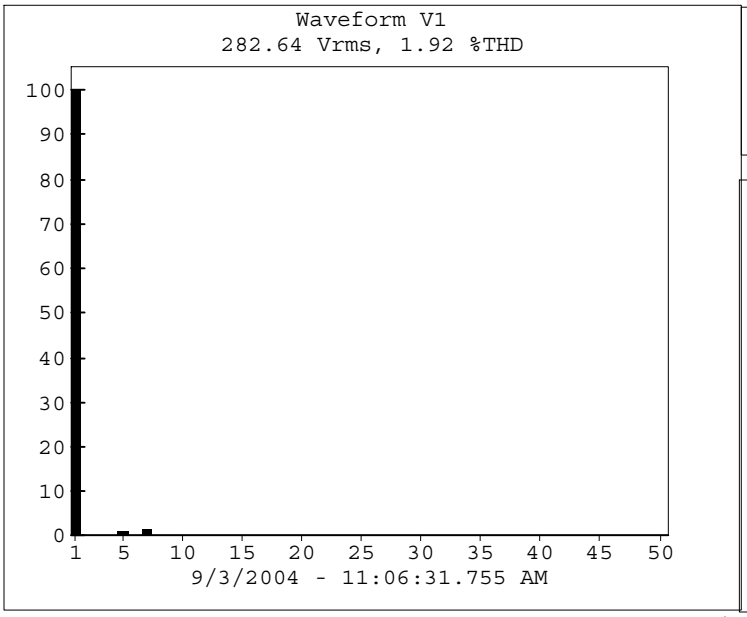
090304 - Rte 16 WWPS - Pump 4 - Photo

Recording Start Date	9/3/2004 - 11:06:31 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.89 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/3/2004	11:06:31.755 AM	16.697	282.6	V
Waveform V2	9/3/2004	11:06:31.755 AM	16.697	279.1	V
Waveform V3	9/3/2004	11:06:31.755 AM	16.697	278.1	V

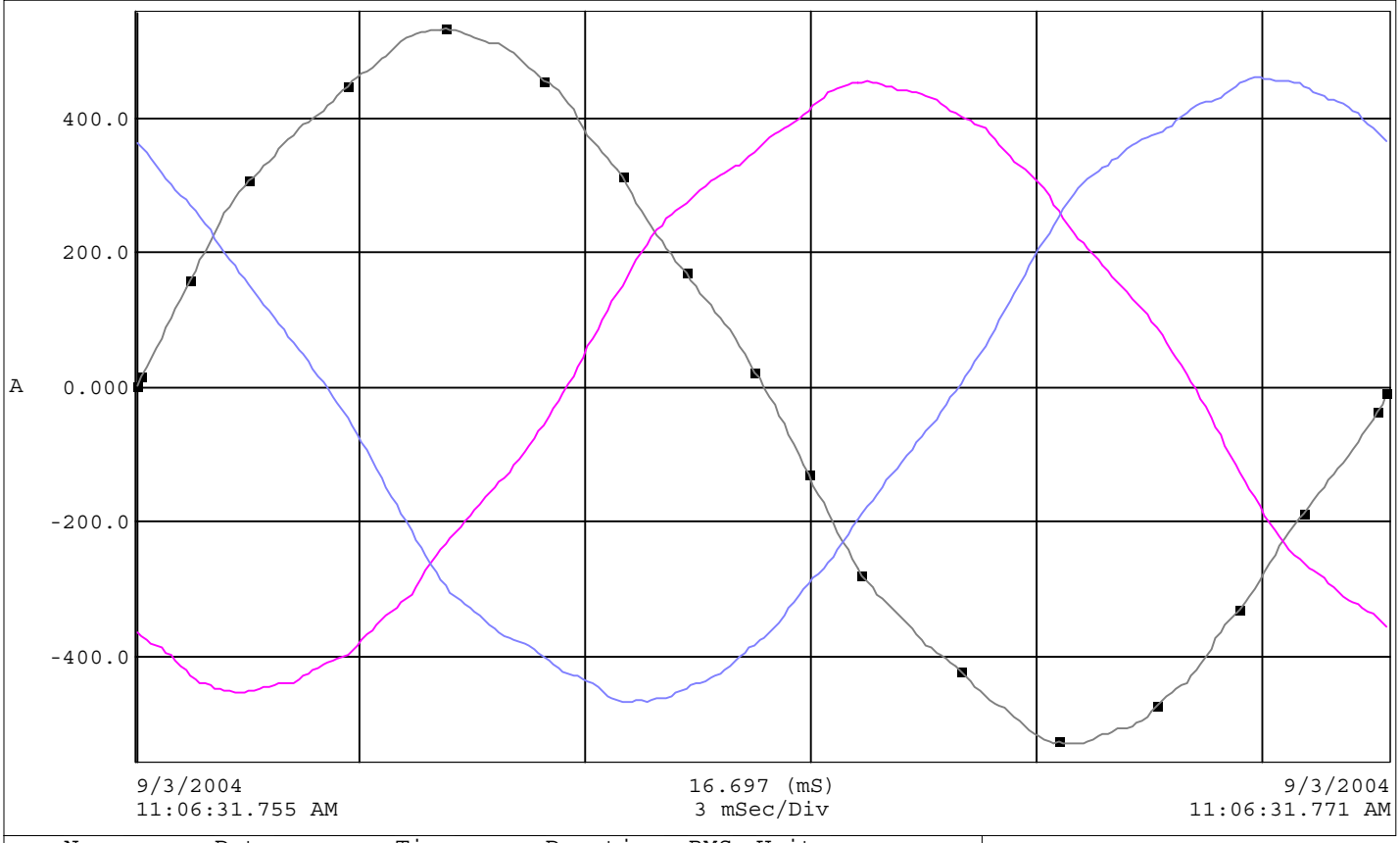


9/3/2004 - 11:06:31.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

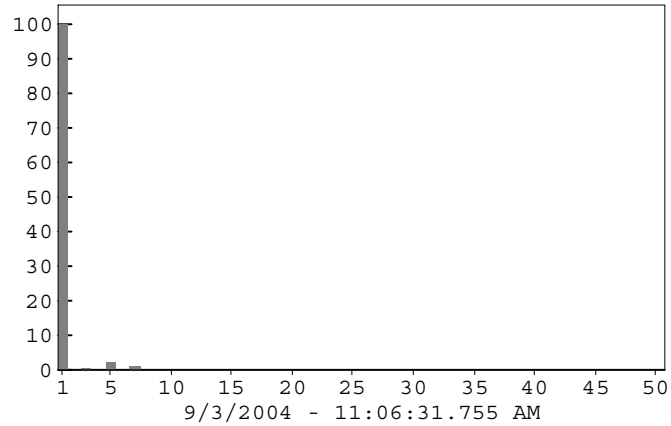
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.89 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/3/2004	11:06:31.755 AM	16.697	366.4	A
Waveform I2	9/3/2004	11:06:31.755 AM	16.697	315.9	A
Waveform I3	9/3/2004	11:06:31.755 AM	16.697	324.0	A

Waveform I1
366.40 Arms, 3.28 %THD

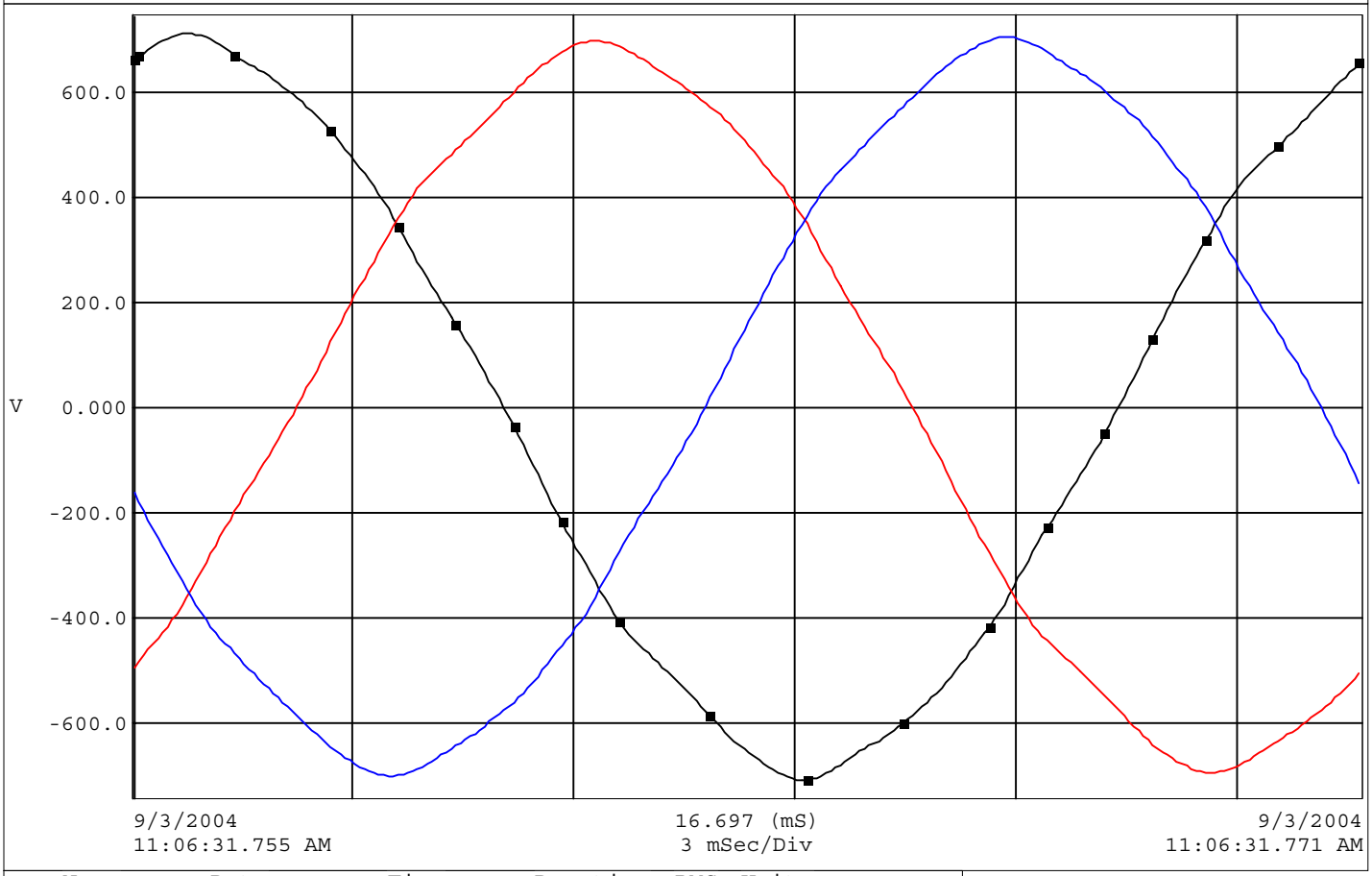


9/3/2004 - 11:06:31.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

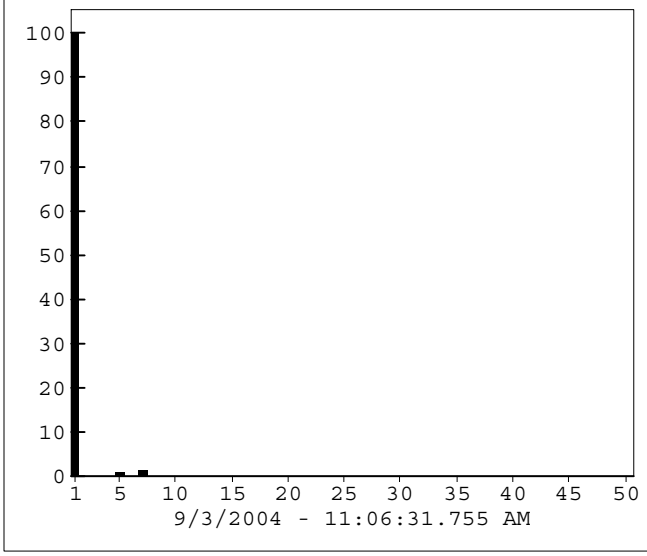
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.3	H36	0.0
H03	1.1	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	2.6	H22	0.1	H39	0.0
H06	0.0	H23	0.4	H40	0.0
H07	1.6	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.89 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/3/2004	11:06:31.755 AM	16.697	487.9	V
Waveform U2	9/3/2004	11:06:31.755 AM	16.697	480.5	V
Waveform U3	9/3/2004	11:06:31.755 AM	16.697	486.3	V

Waveform U1
487.88 Vrms, 2.11 %THD



9/3/2004 - 11:06:31.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/3/2004
Start Time: 11:06:31 AM
Duration: 0:0.000 (M:S)
W: 78.51E+3 W
VAR: 68.03E+3 W
VA: 103.9E+3 W
Power Factor: 0.756
Displacement Power Factor: 0.756
TAN: 0.865
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Route 16 WWPS\090304-Rte 16 WWPS - Pump 4 - Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Southern Link WWPS - Pump 4 - Photo ,

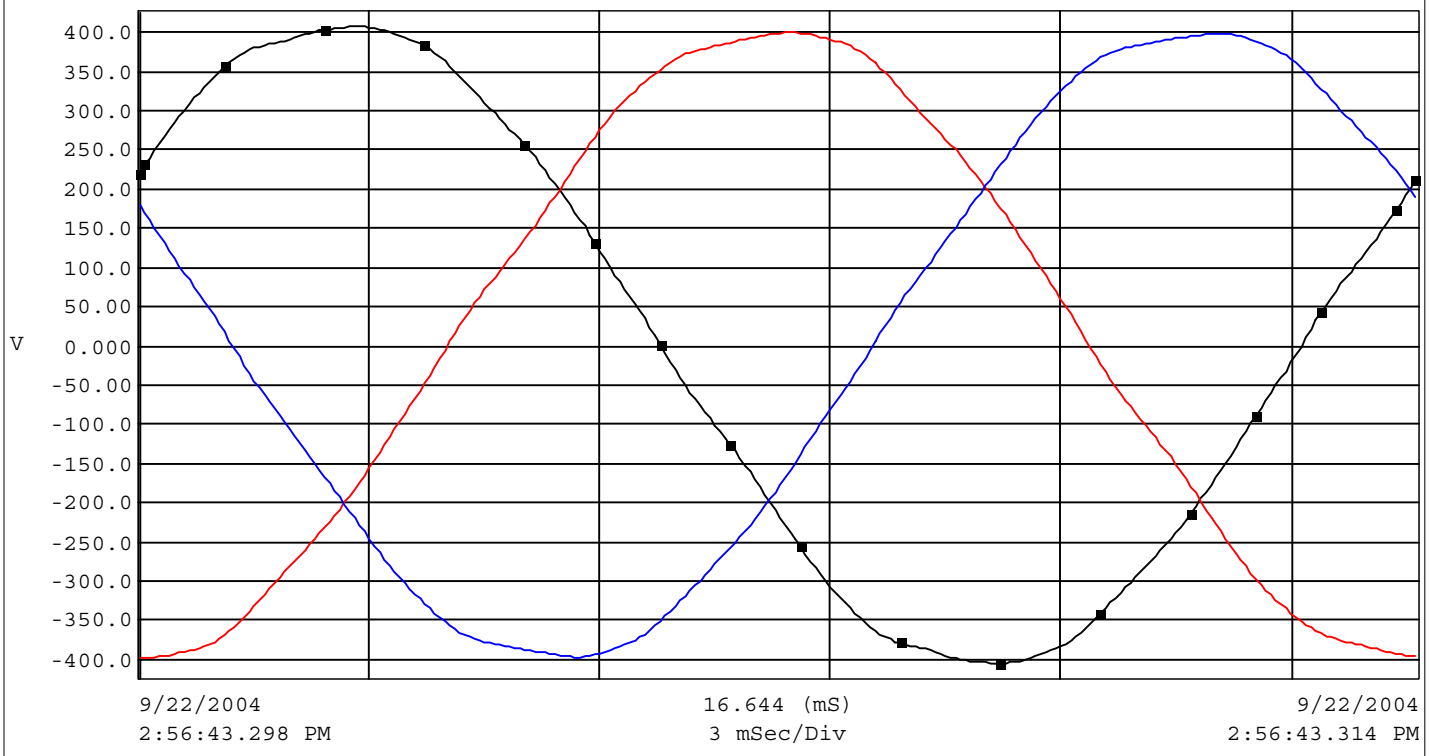
Comments

Measured at motor starter. 300 HP Flygt Motor.

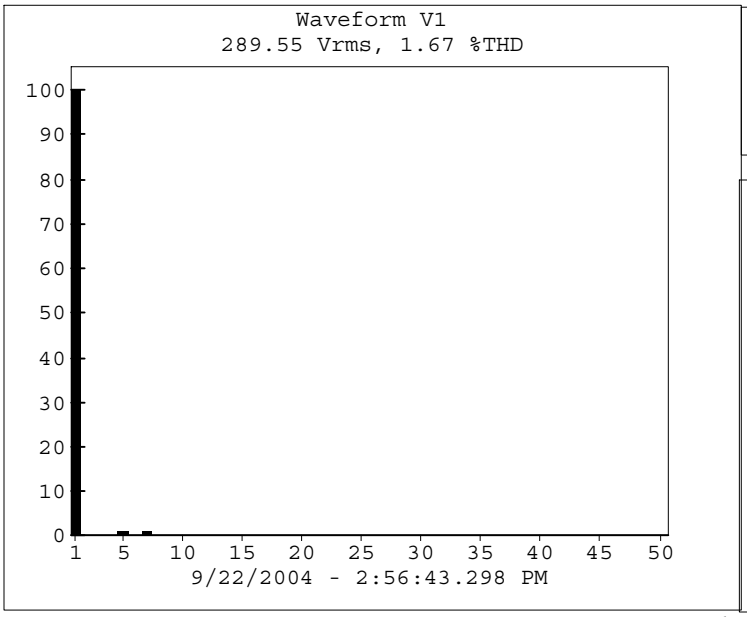
Rte 16 WWPS - Pump 4 - Photo

Recording Start Date	9/22/2004 - 2:56:43 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/22/2004	2:56:43.298 PM	16.644	289.5	V
Waveform V2	9/22/2004	2:56:43.298 PM	16.644	285.1	V
Waveform V3	9/22/2004	2:56:43.298 PM	16.644	283.9	V

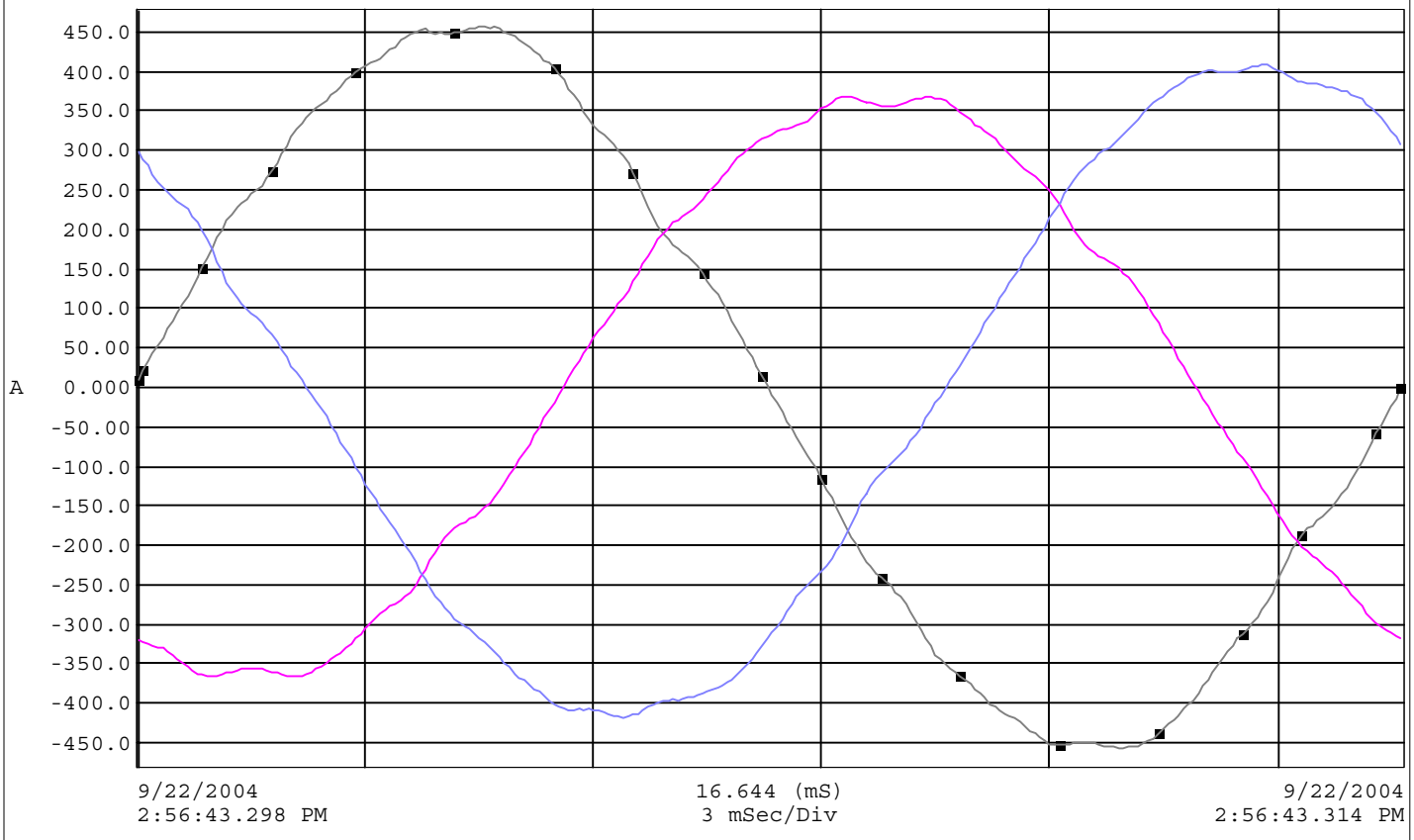


9/22/2004 - 2:56:43.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

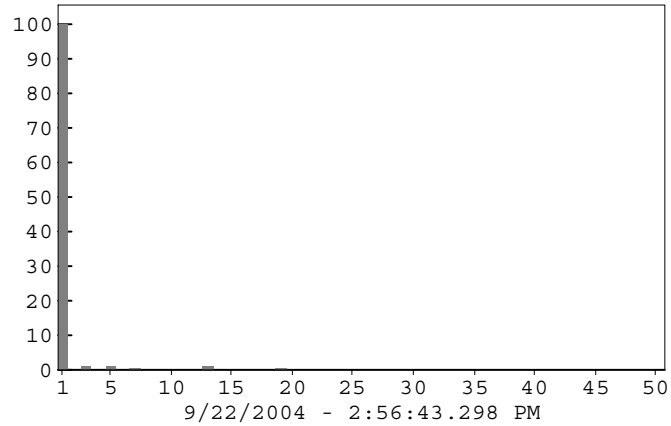
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.08 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/22/2004	2:56:43.298 PM	16.644	319.4	A
Waveform I2	9/22/2004	2:56:43.298 PM	16.644	262.9	A
Waveform I3	9/22/2004	2:56:43.298 PM	16.644	292.0	A

Waveform I1
319.38 Arms, 2.86 %THD

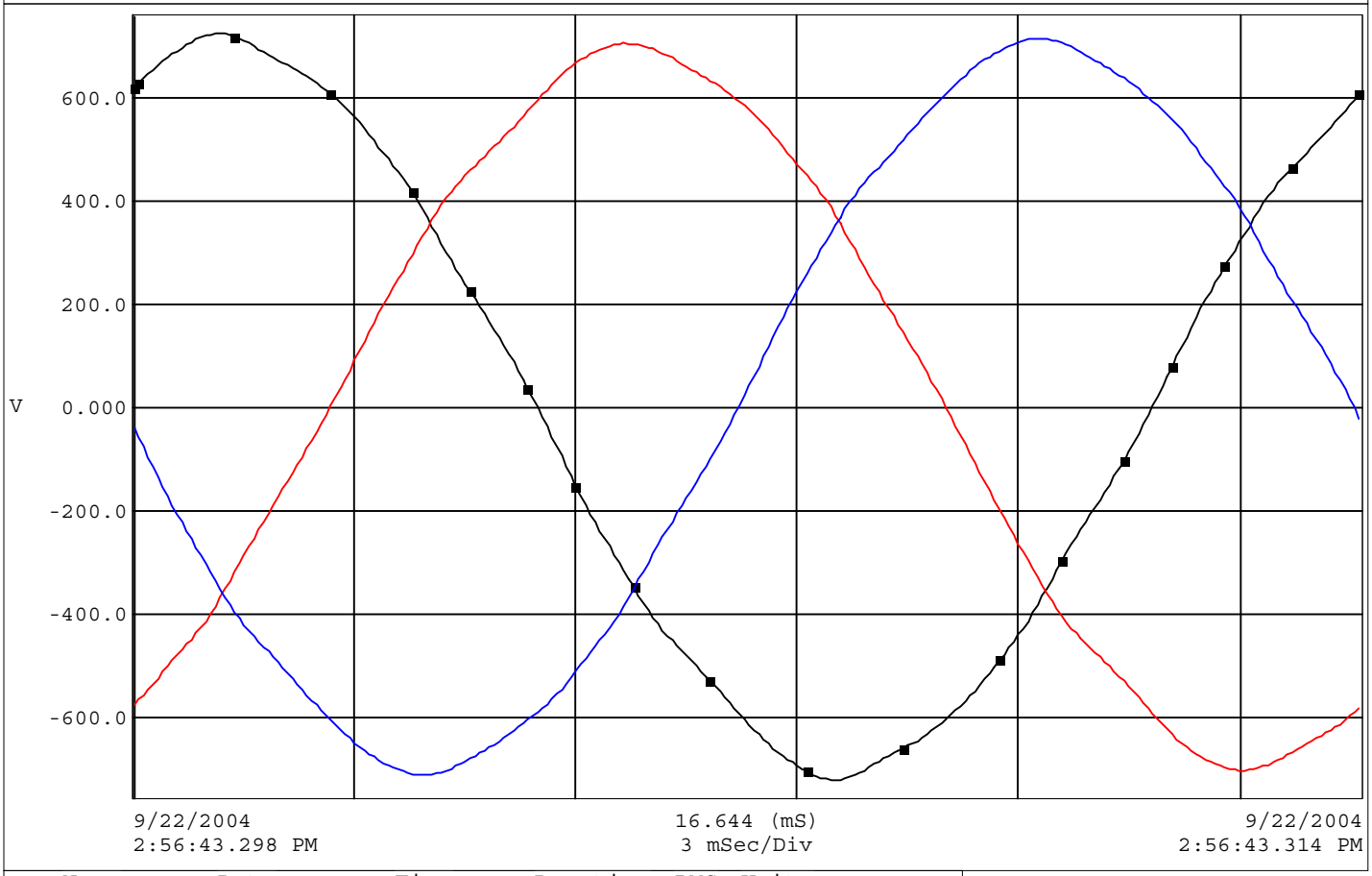


9/22/2004 - 2:56:43.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

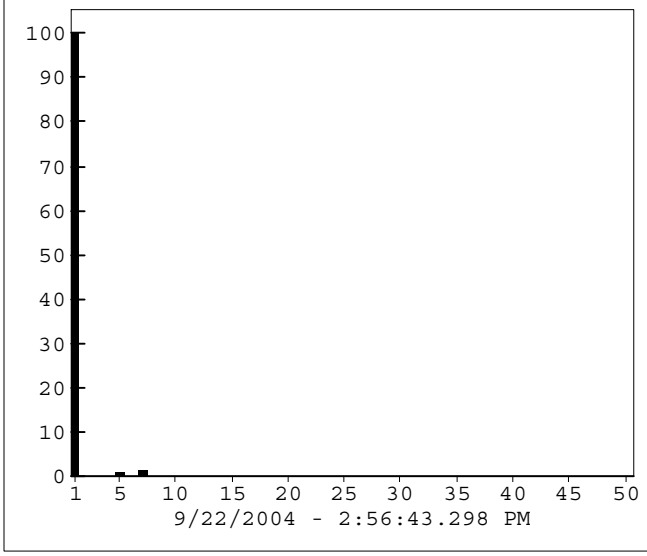
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.7	H36	0.0
H03	1.5	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.6	H22	0.1	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	1.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.5	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/22/2004	2:56:43.298 PM	16.644	499.4	V
Waveform U2	9/22/2004	2:56:43.298 PM	16.644	490.1	V
Waveform U3	9/22/2004	2:56:43.298 PM	16.644	497.5	V

Waveform U1
499.43 Vrms, 1.87 %THD



9/22/2004 - 2:56:43.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/22/2004
Start Time: 2:56:43 PM
Duration: 0:0.000 (M:S)
W: 78.40E+3 W
VAR: 48.83E+3 W
VA: 92.37E+3 W
Power Factor: 0.849
Displacement Power Factor: 0.849
TAN: 0.622
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Route 16 WWPS\092204-Rte 16 WWPS - Pump 4 - Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Route 16 WWPS - Pump 4 Photo ,

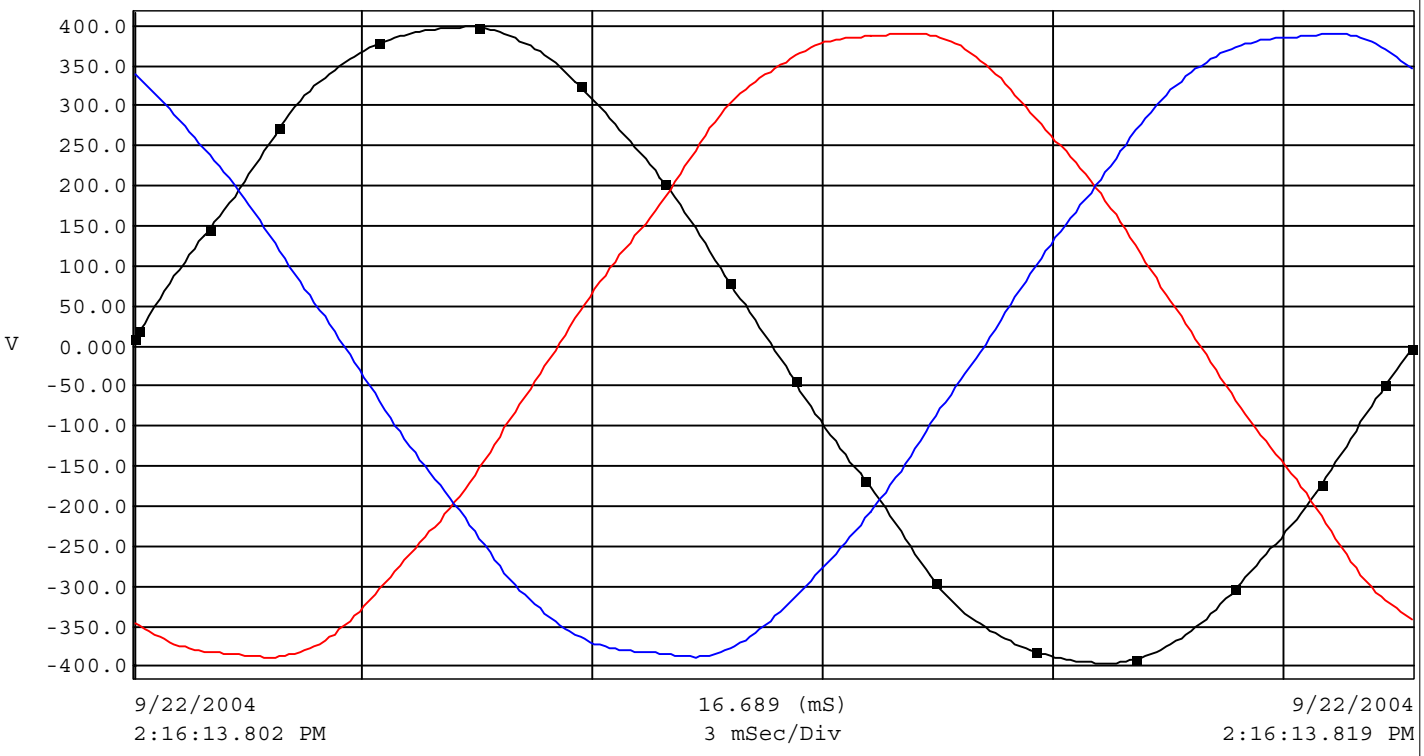
Comments

Recorded at MCC BUS Tie. Motor rated at 209 KW, 280 HP, 1185 RPM, 460 volt, 345 amps.

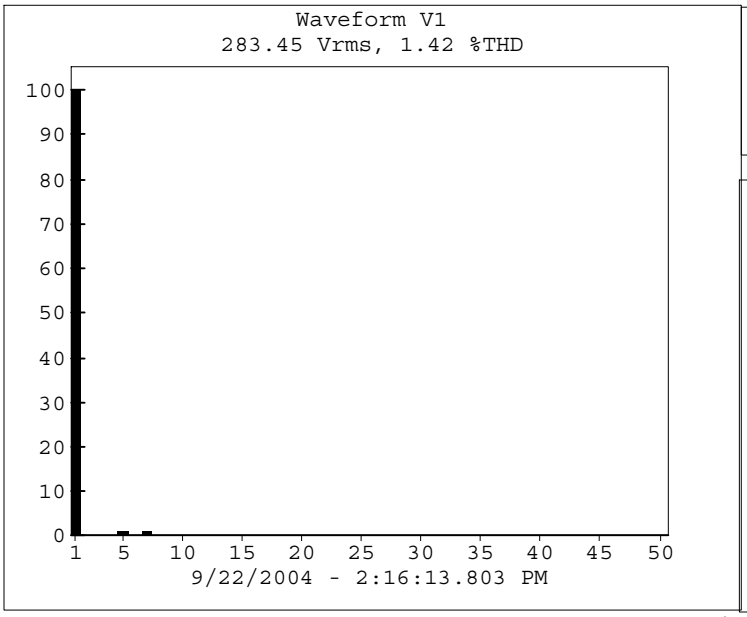
Rte 16 WWPS - Pumps 3 and 4 - Photo

Recording Start Date	9/22/2004 - 2:16:13 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.92 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/22/2004	2:16:13.802 PM	16.689	283.5	V
Waveform V2	9/22/2004	2:16:13.802 PM	16.689	279.4	V
Waveform V3	9/22/2004	2:16:13.802 PM	16.689	278.4	V



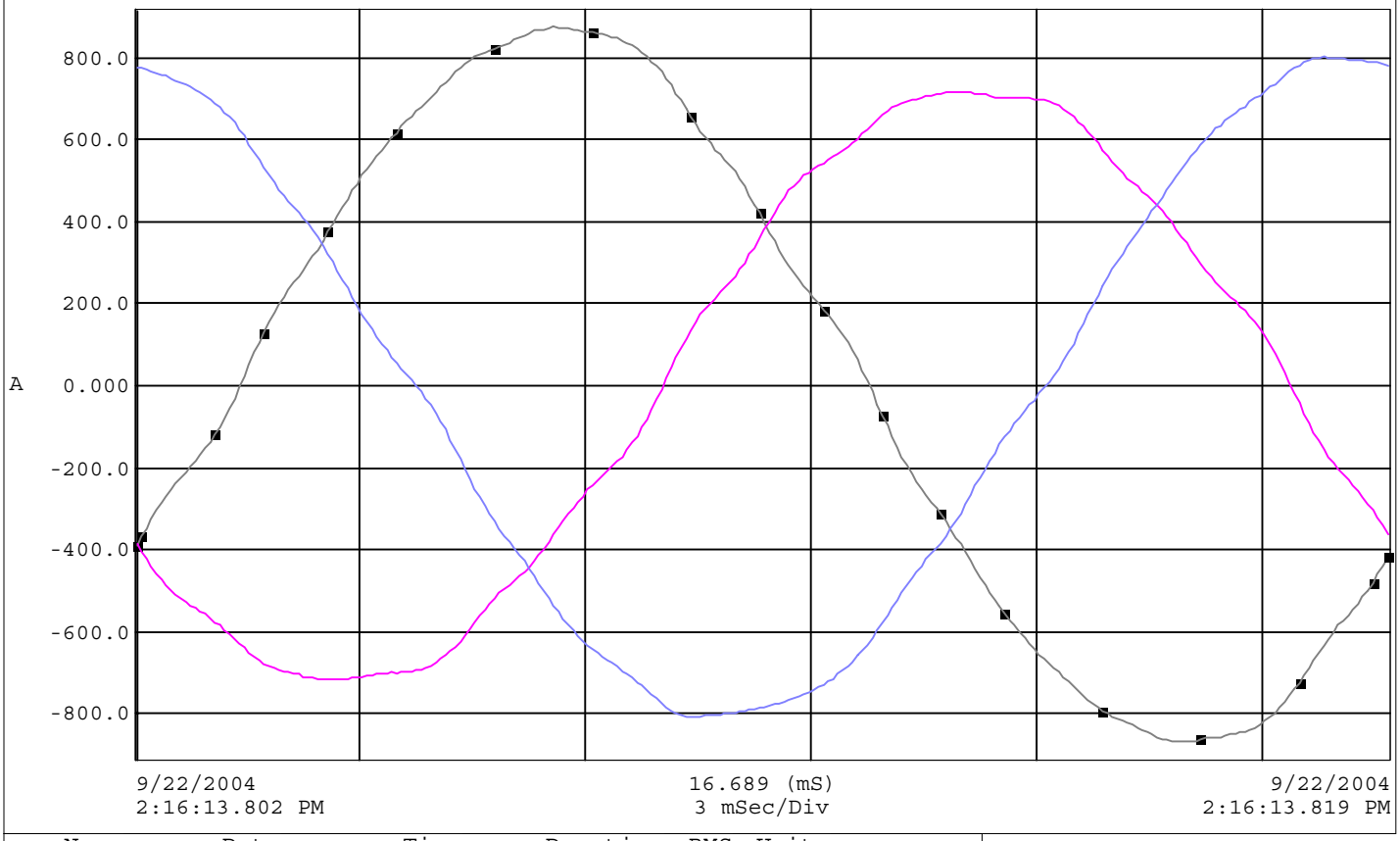
9/22/2004 - 2:16:13.000 PM

Val	
7.400	Waveform V1
-346.7	Waveform V2
338.9	Waveform V3

Waveform V1

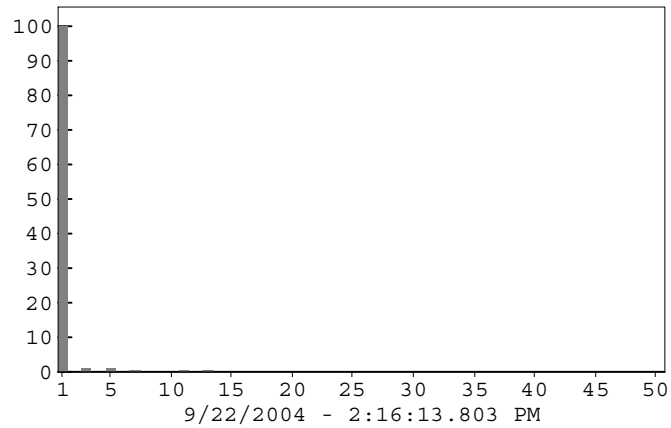
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.92 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/22/2004	2:16:13.802 PM	16.689	613.0	A
Waveform I2	9/22/2004	2:16:13.802 PM	16.689	517.3	A
Waveform I3	9/22/2004	2:16:13.802 PM	16.689	570.5	A

Waveform I1
612.99 Arms, 2.55 %THD



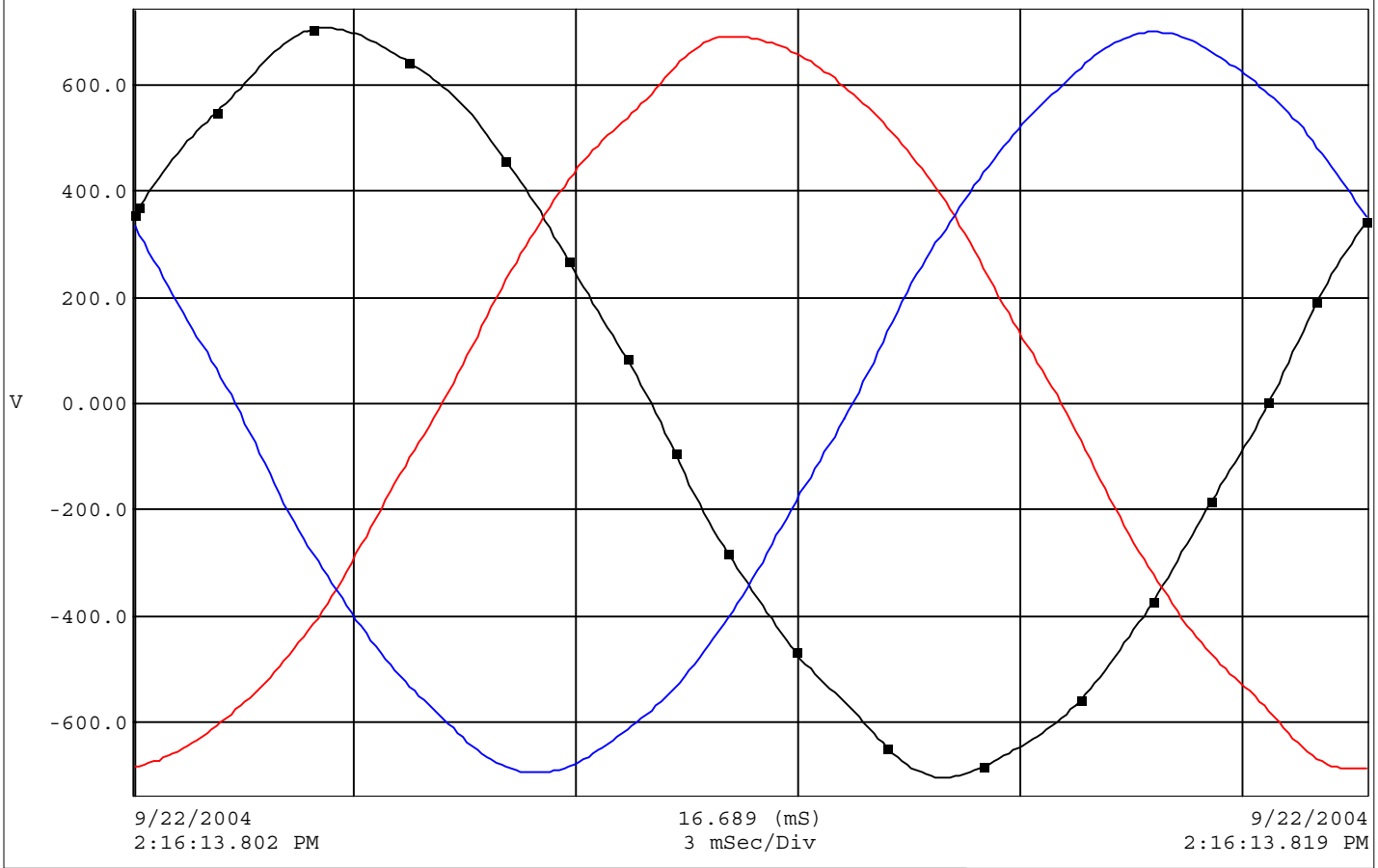
9/22/2004 - 2:16:13.000 PM

Val	
-392.1	Waveform I1
-388.3	Waveform I2
774.2	Waveform I3

Waveform I1

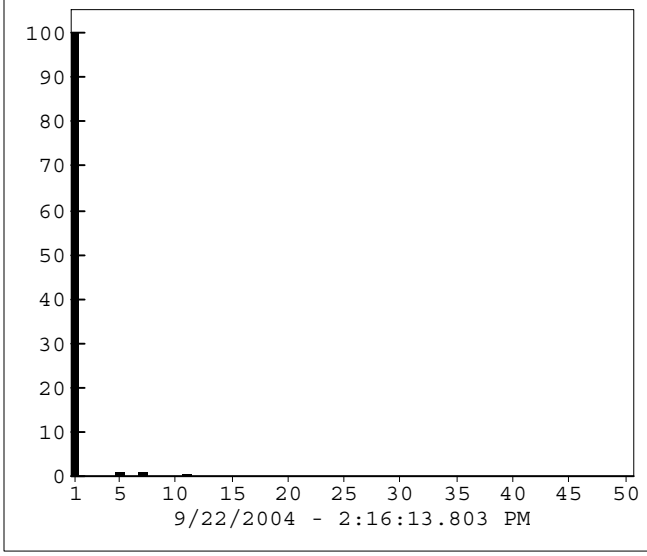
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	1.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.5	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	1.0	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	1.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.92 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/22/2004	2:16:13.802 PM	16.689	488.9	V
Waveform U2	9/22/2004	2:16:13.802 PM	16.689	480.8	V
Waveform U3	9/22/2004	2:16:13.802 PM	16.689	487.3	V

Waveform U1
488.90 Vrms, 1.69 %THD



9/22/2004 - 2:16:13.000 PM

Val	
354.2	Waveform U1
-685.6	Waveform U2
331.4	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/22/2004
Start Time: 2:16:13 PM
Duration: 0:0.000 (M:S)
W: 149.8E+3 W
VAR: 86.42E+3 W
VA: 172.9E+3 W
Power Factor: 0.866
Displacement Power Factor: 0.866
TAN: 0.576
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Route 16 WWPS\092204-Rte 16 WWPS - Pumps 3 and 4 - Photo.dvb

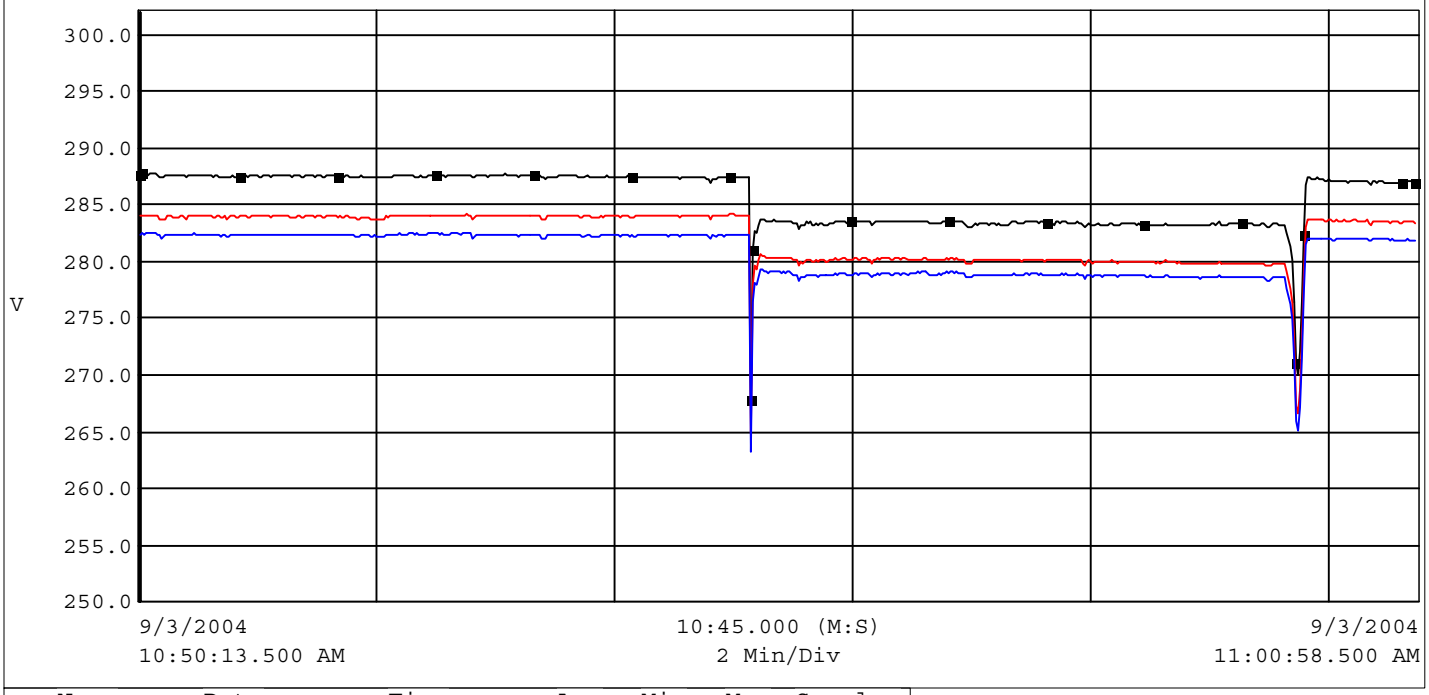
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Route 16 WWPS - Pumps 3 and 4 Operational ,

Comments
Flygt 280 HP, 209 KW, 1185 RPM 460 volt, 345 amp submersible ;pumps. GPA Meter 01-696-951, 0.75 KW demand, 93-180-522 KVARH meter.

090304 - Rte 16 WWPS - Pump 3

Recording Start Date	9/3/2004 - 10:50:13 AM
Recording Duration	10:45 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

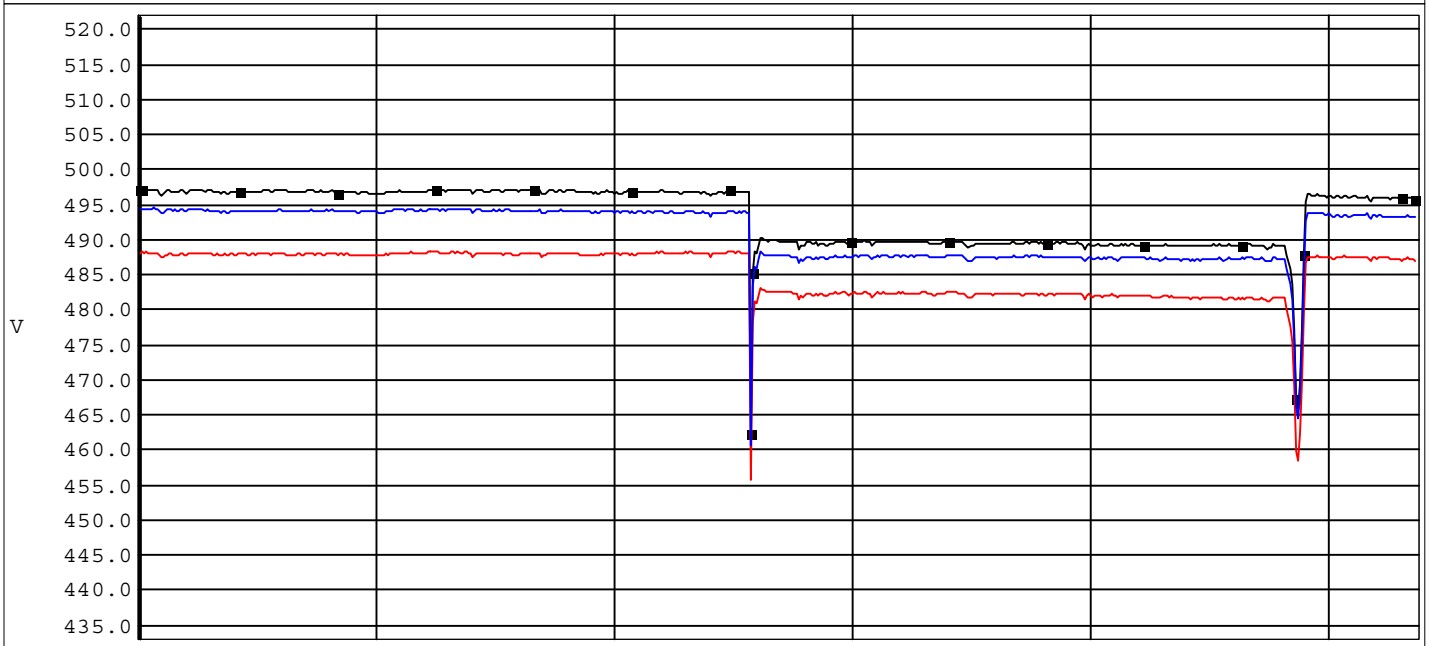
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/3/2004	10:50:13.500 AM	285.5	267.7	287.7	646
Vrms Line2	9/3/2004	10:50:13.500 AM	282.0	264.9	284.1	646
Vrms Line3	9/3/2004	10:50:13.500 AM	280.6	263.1	282.4	646

9/3/2004 - 10:50:13.000 AM
Val
287.6 — Vrms Line1
283.9 — Vrms Line2
282.3 — Vrms Line3

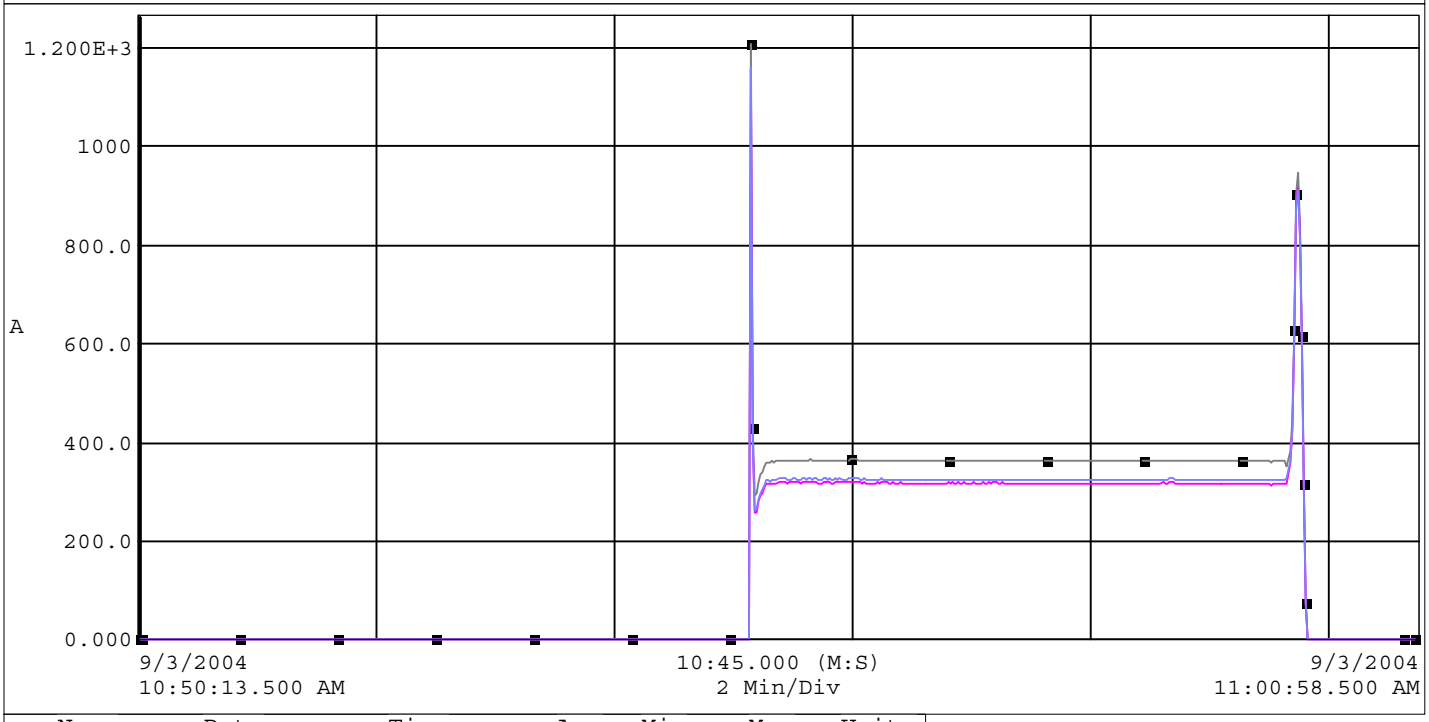
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/3/2004	10:50:13.500 AM	493.2	462.1	497.0	V
Urms Line2	9/3/2004	10:50:13.500 AM	485.0	455.6	488.2	V
Urms Line3	9/3/2004	10:50:13.500 AM	490.8	460.5	494.4	V

9/3/2004 - 10:50:13.000 AM
Val
496.8 — Urms Line1
487.9 — Urms Line2
494.1 — Urms Line3

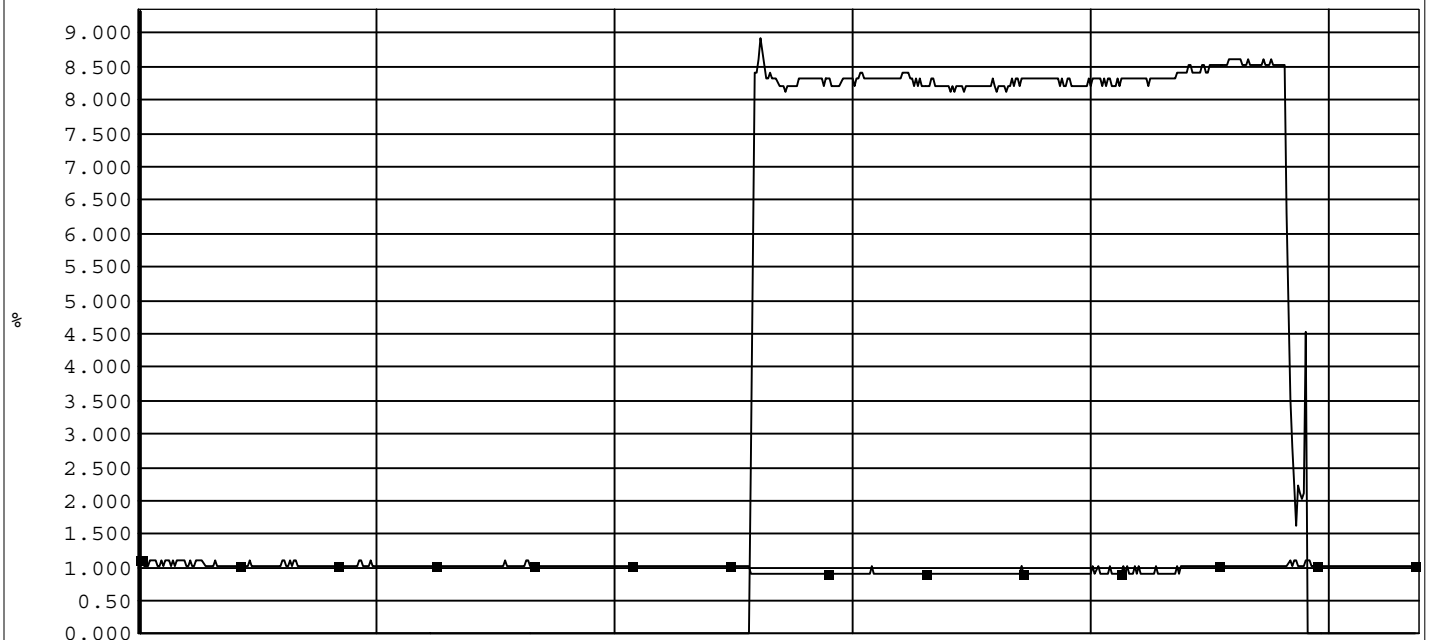
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/3/2004	10:50:13.500 AM	161.0	0.000	1.202E+3	A
Arms Line2	9/3/2004	10:50:13.500 AM	141.7	0.000	1.154E+3	A
Arms Line3	9/3/2004	10:50:13.500 AM	144.8	0.000	1.158E+3	A

9/3/2004 - 10:50:13.000 AM
Val
0.000 Arms Line1
0.000 Arms Line2
0.000 Arms Line3

Vunb

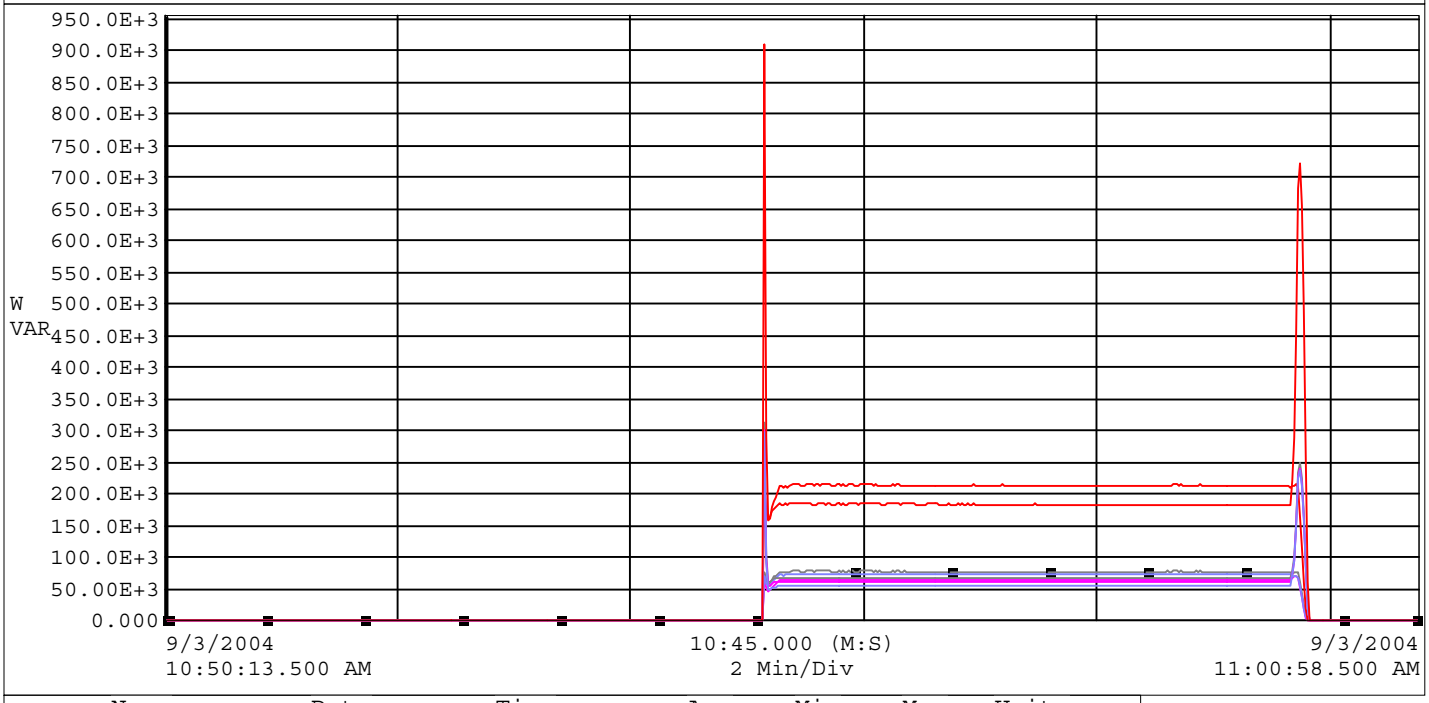


Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/3/2004	10:50:13.500 AM	0.974	0.900	1.100	%
Aunb(IEEE)	9/3/2004	10:50:13.500 AM	3.521	0.000	8.900	%

9/3/2004 - 10:50:13.000 AM
Val
1.100 ── Vunb(IEEE)
0.000 ── Aunb(IEEE)

Appendix 1K - Electrical

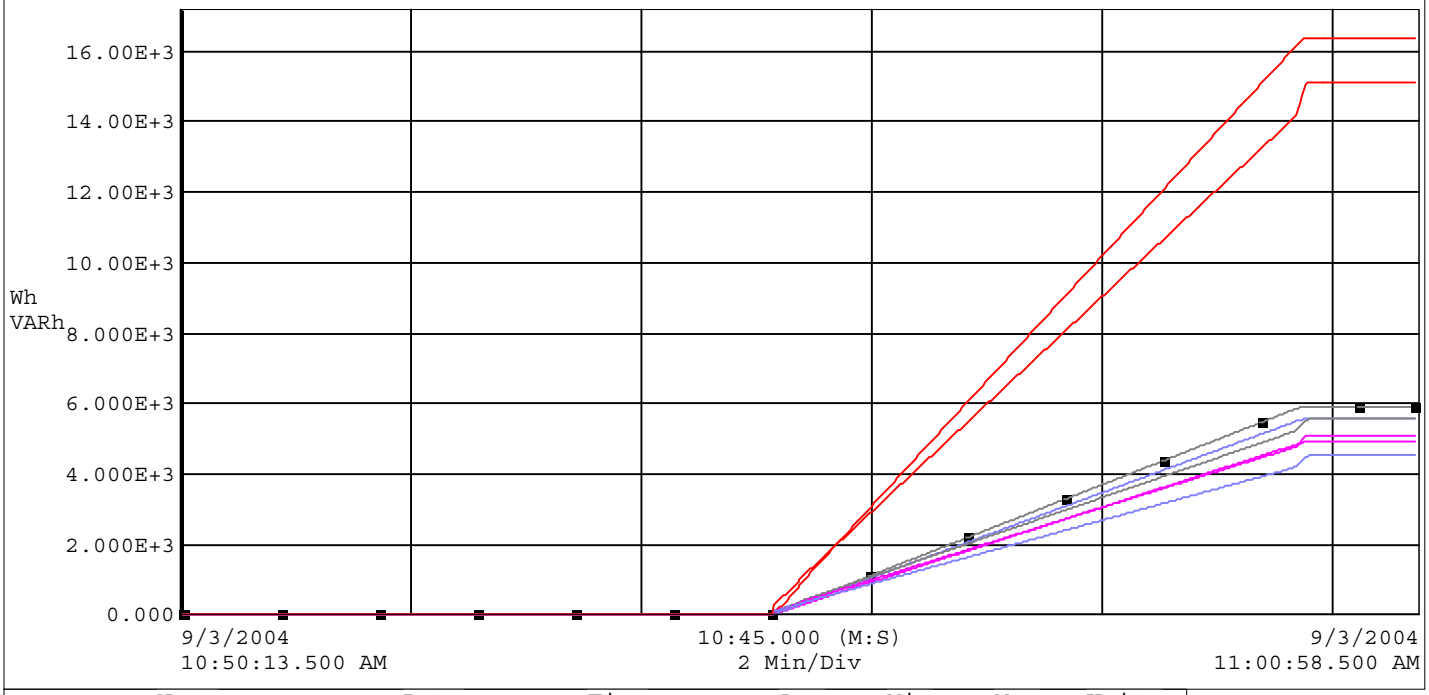
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/3/2004	10:50:13.500 AM	32.92E+3	0.000	77.90E+3	W
W Line2	9/3/2004	10:50:13.500 AM	27.22E+3	0.000	68.87E+3	W
W Line3	9/3/2004	10:50:13.500 AM	30.89E+3	0.000	73.11E+3	W
W Sum of Phases	9/3/2004	10:50:13.500 AM	91.02E+3	0.000	215.4E+3	W
VAR Line1	9/3/2004	10:50:13.500 AM	30.82E+3	0.000	313.2E+3	VAR
VAR Line2	9/3/2004	10:50:13.500 AM	28.24E+3	0.000	298.7E+3	VAR
VAR Line3	9/3/2004	10:50:13.500 AM	25.03E+3	0.000	296.5E+3	VAR
VAR Sum of Phases	9/3/2004	10:50:13.500 AM	84.09E+3	0.000	908.4E+3	VAR

9/3/2004 - 10:50:13.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

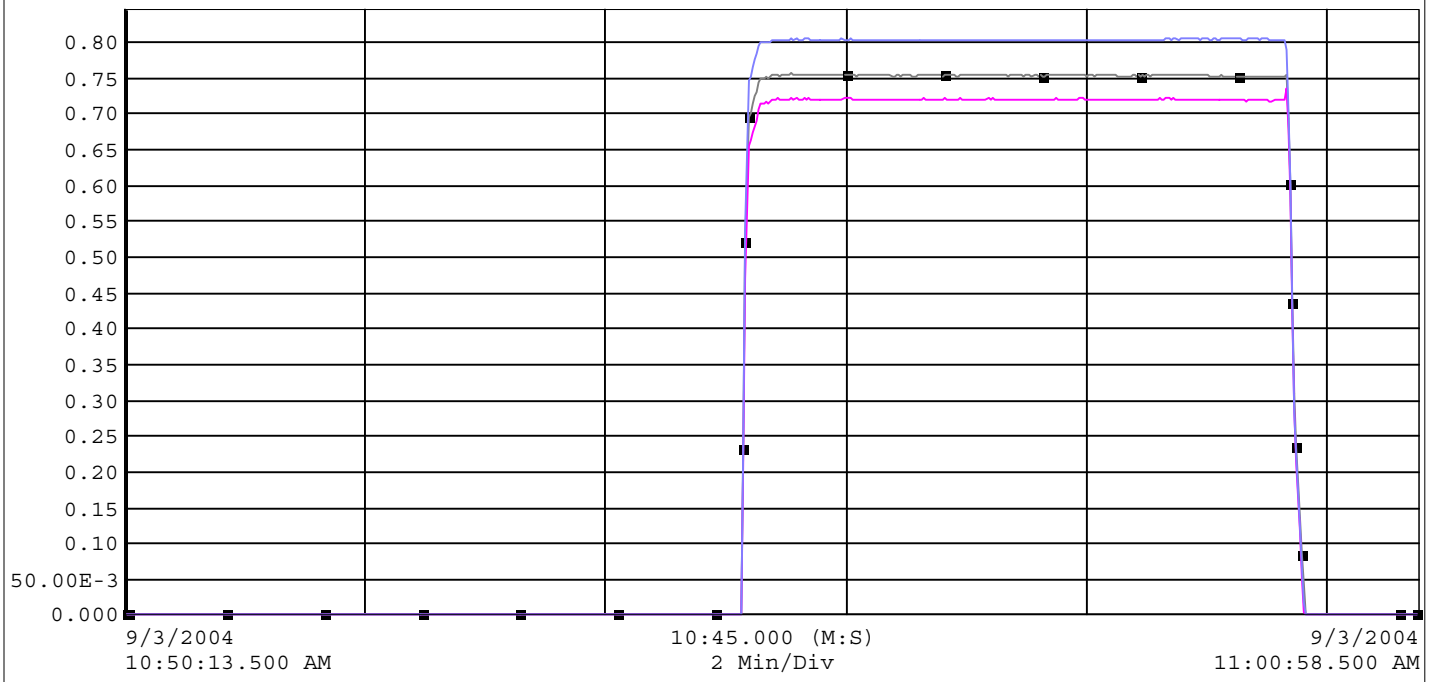
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/3/2004	10:50:13.500 AM	1.813E+3	0.000	5.907E+3	Wh
W-hours Line2	9/3/2004	10:50:13.500 AM	1.498E+3	0.000	4.884E+3	Wh
W-hours Line3	9/3/2004	10:50:13.500 AM	1.702E+3	0.000	5.542E+3	Wh
W-hours Sum of Phases	9/3/2004	10:50:13.500 AM	5.013E+3	0.000	16.33E+3	Wh
VAR-hours Line1	9/3/2004	10:50:13.500 AM	1.661E+3	0.000	5.530E+3	VARh
VAR-hours Line2	9/3/2004	10:50:13.500 AM	1.520E+3	0.000	5.067E+3	VARh
VAR-hours Line3	9/3/2004	10:50:13.500 AM	1.343E+3	0.000	4.492E+3	VARh
VAR-hours Sum of Phases	9/3/2004	10:50:13.500 AM	4.525E+3	0.000	15.09E+3	VARh

9/3/2004 - 10:50:13.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/3/2004	10:50:13.500 AM	0.319	0.000	0.755	
PF Line2	9/3/2004	10:50:13.500 AM	0.305	0.000	0.734	
PF Line3	9/3/2004	10:50:13.500 AM	0.340	0.000	0.804	

9/3/2004 - 10:50:13.000 AM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Route 16 WWPS\090304-Rte 16 WWPS - Pump 3.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Route 16 WWPS - Pump No. 3 ,

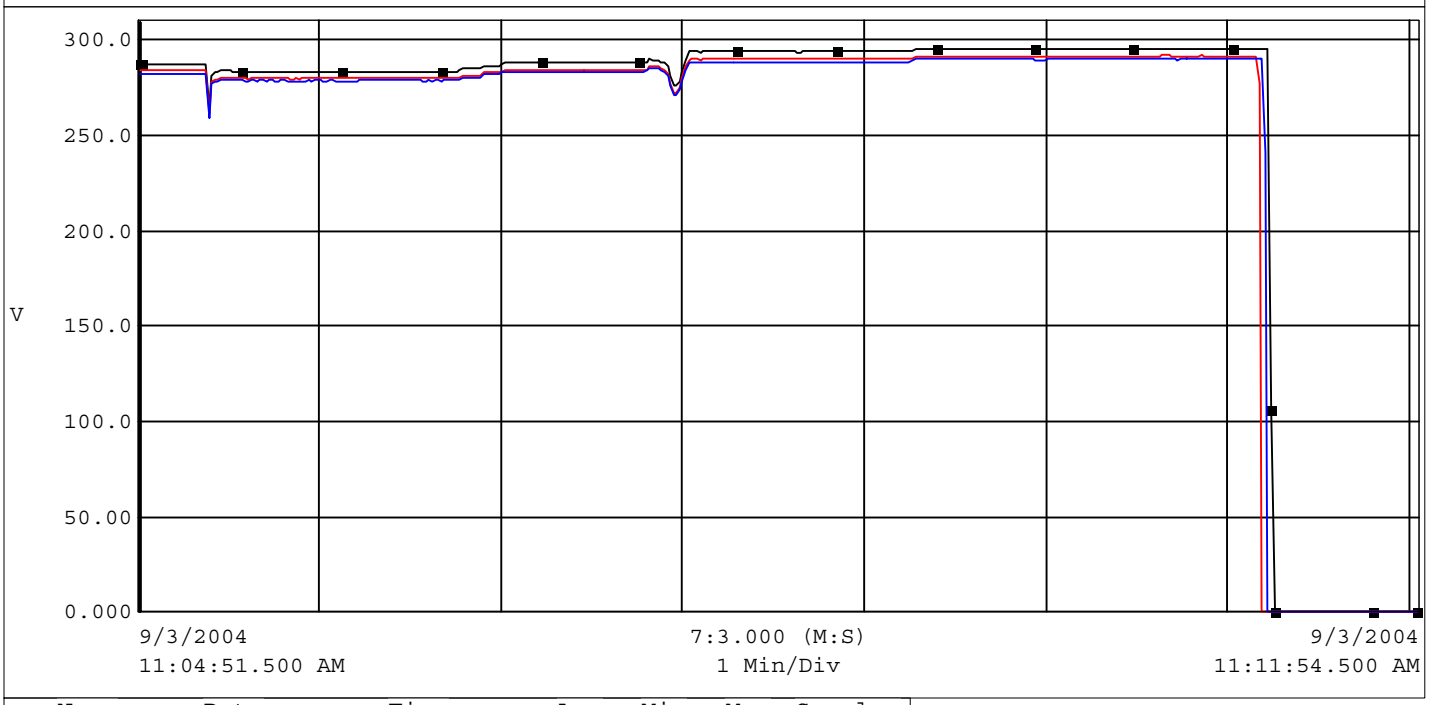
Comments

Measured at motor leads and main breaker. 300 HP Flygt motor with Allen Bradley Electronic Soft-start Motor Starter. One pump operation.

090304 - Rte 16 WWPS - Pump 4

Recording Start Date	9/3/2004 - 11:04:51 AM
Recording Duration	7:03 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Vrms

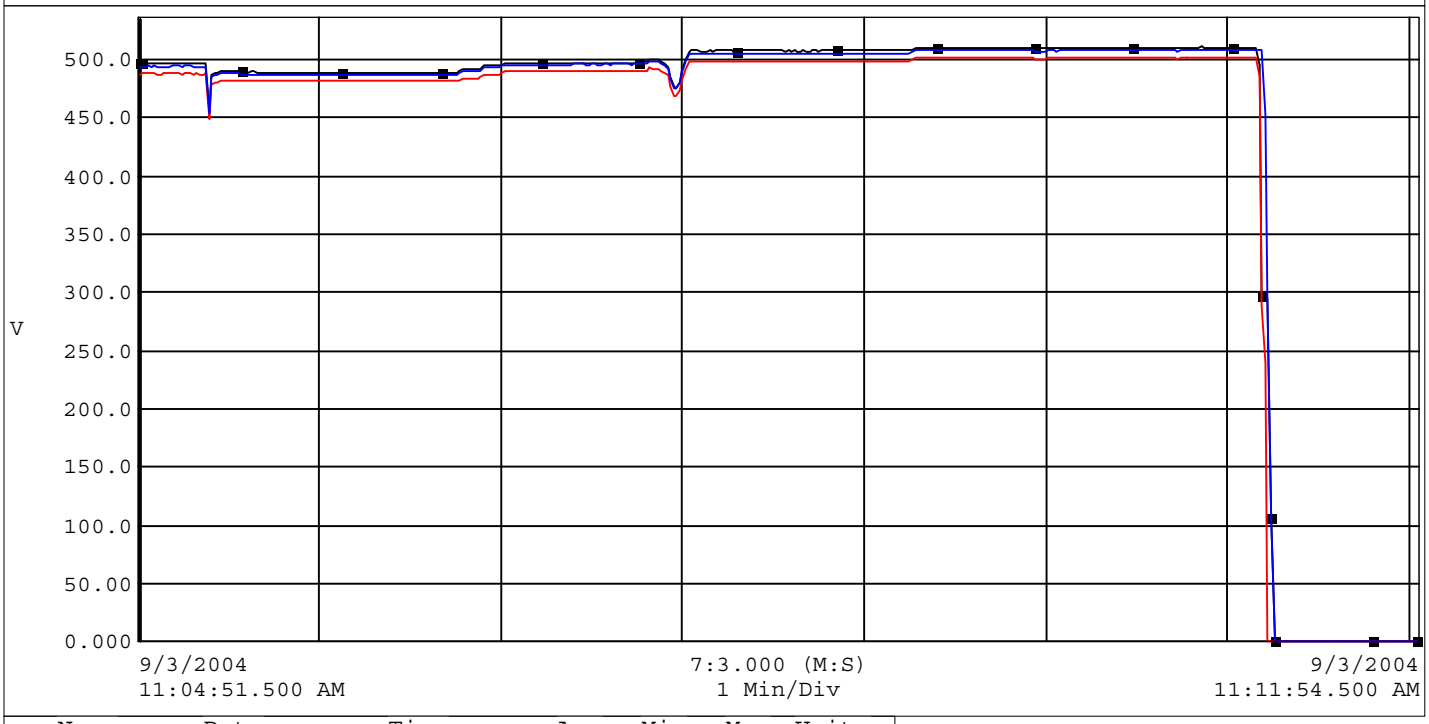


Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/3/2004	11:04:51.500 AM	256.5	0.000	295.1	424
Vrms Line2	9/3/2004	11:04:51.500 AM	250.8	0.000	291.3	424
Vrms Line3	9/3/2004	11:04:51.500 AM	250.9	0.000	289.6	424

9/3/2004 - 11:04:51.000 AM

Val	
286.9	Vrms Line1
283.2	Vrms Line2
281.6	Vrms Line3

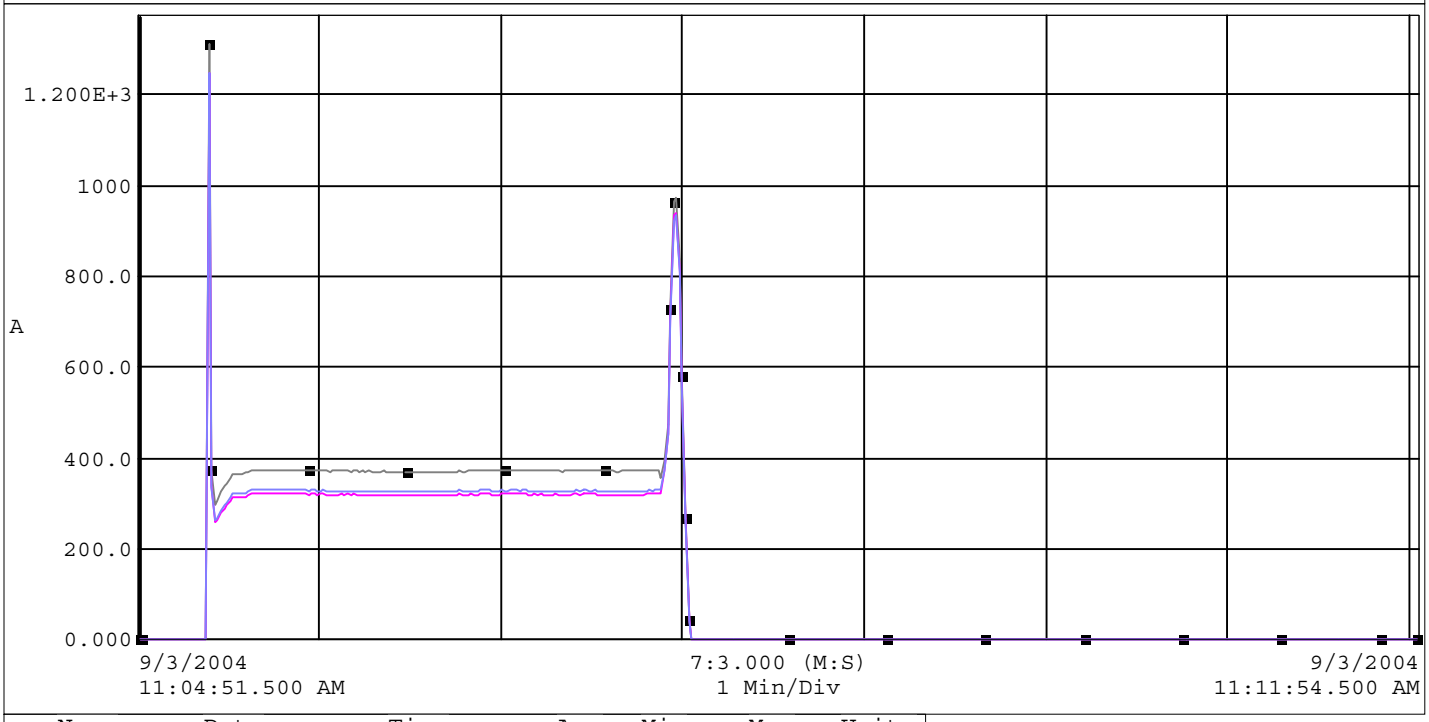
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/3/2004	11:04:51.500 AM	441.1	0.000	509.8	V
Urms Line2	9/3/2004	11:04:51.500 AM	432.6	0.000	500.5	V
Urms Line3	9/3/2004	11:04:51.500 AM	440.1	0.000	507.0	V

9/3/2004 - 11:04:51.000 AM
Val
495.6 — Urms Line1
486.6 — Urms Line2
493.0 — Urms Line3

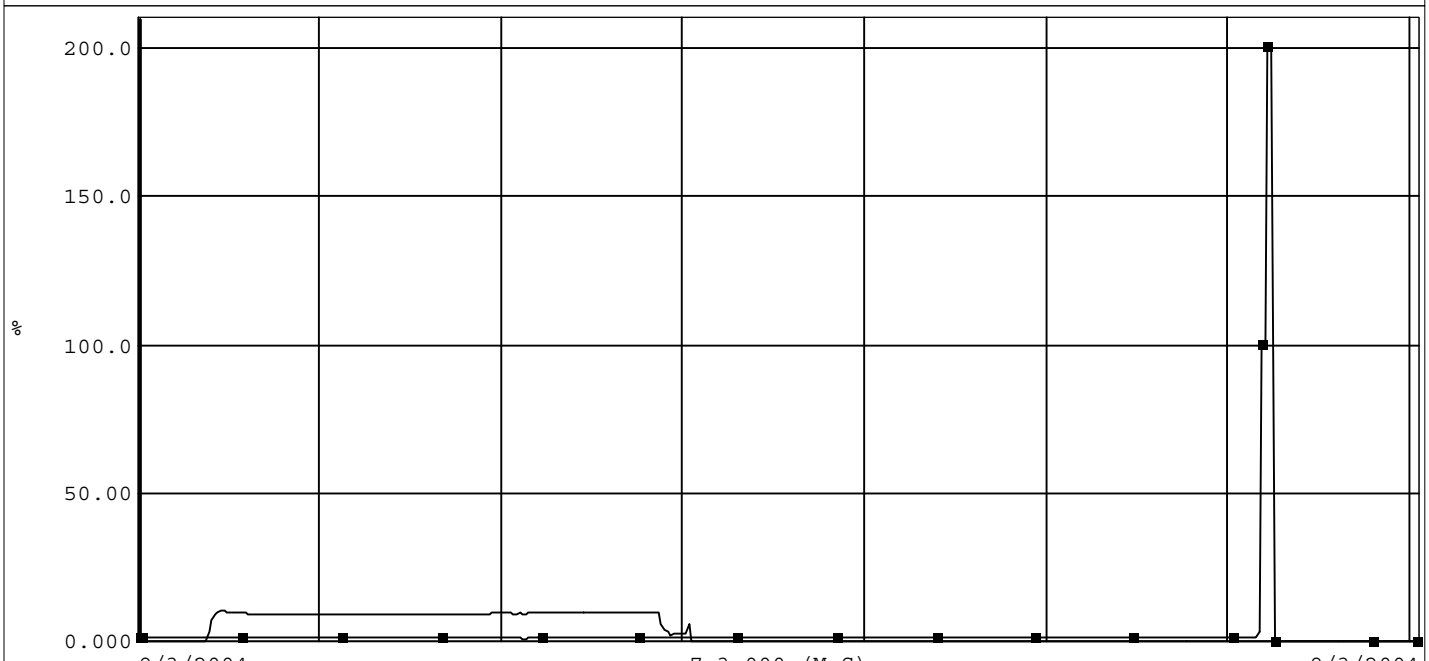
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/3/2004	11:04:51.500 AM	145.6	0.000	1.306E+3	A
Arms Line2	9/3/2004	11:04:51.500 AM	127.0	0.000	1.245E+3	A
Arms Line3	9/3/2004	11:04:51.500 AM	129.8	0.000	1.246E+3	A

9/3/2004 - 11:04:51.000 AM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

Vunb

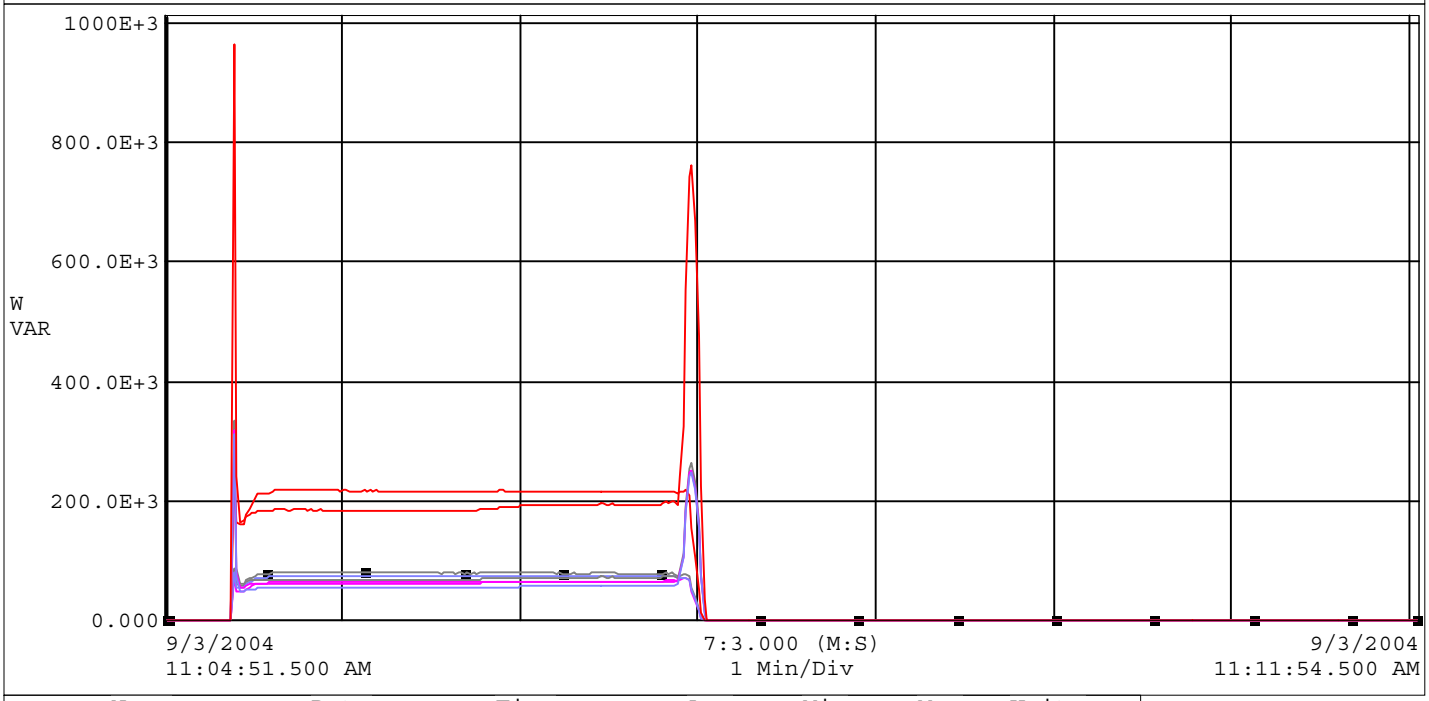


Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/3/2004	11:04:51.500 AM	2.340	0.000	200.0	%
Aunb(IEEE)	9/3/2004	11:04:51.500 AM	3.360	0.000	10.40	%

9/3/2004 - 11:04:51.000 AM
Val
1.100 — Vunb(IEEE)
0.000 — Aunb(IEEE)

Appendix 1K - Electrical

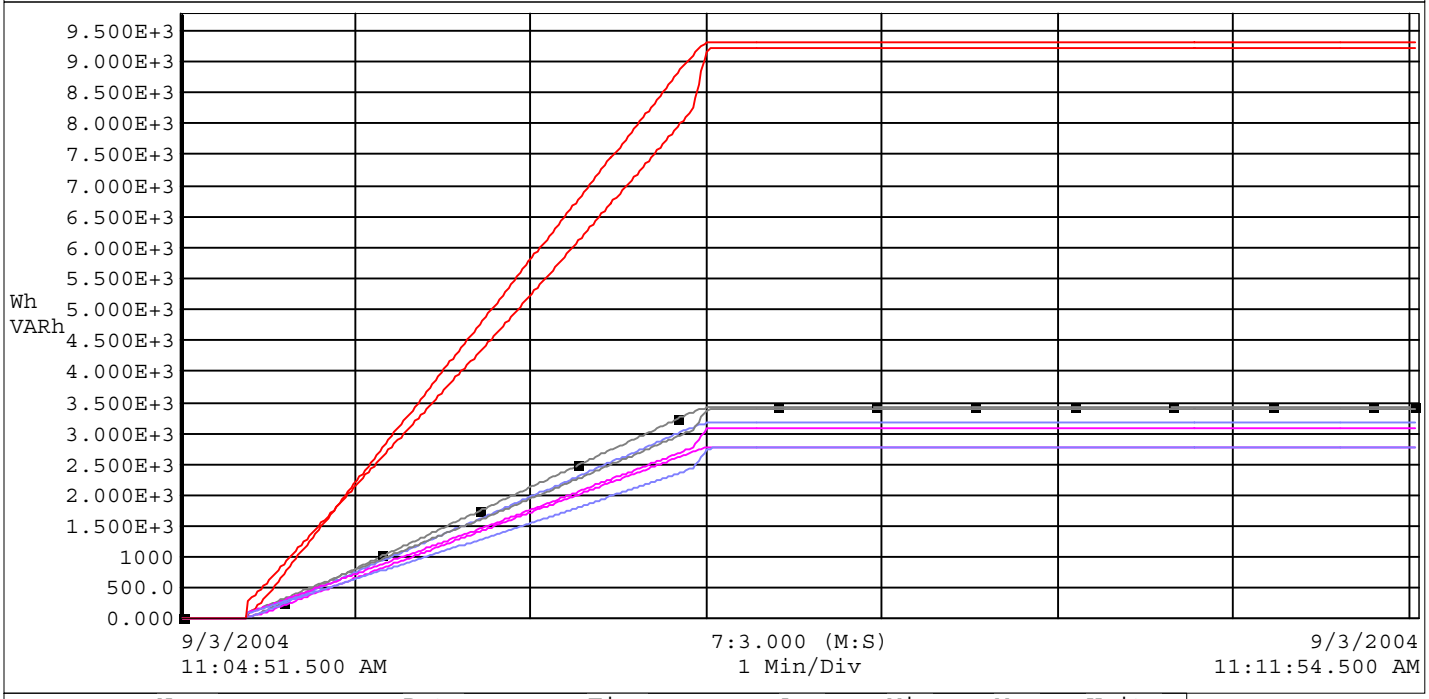
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/3/2004	11:04:51.500 AM	28.85E+3	0.000	85.90E+3	W
W Line2	9/3/2004	11:04:51.500 AM	23.34E+3	-39.09	75.02E+3	W
W Line3	9/3/2004	11:04:51.500 AM	26.73E+3	0.000	81.27E+3	W
W Sum of Phases	9/3/2004	11:04:51.500 AM	78.93E+3	0.000	242.2E+3	W
VAR Line1	9/3/2004	11:04:51.500 AM	28.71E+3	0.000	333.5E+3	VAR
VAR Line2	9/3/2004	11:04:51.500 AM	26.17E+3	0.000	315.8E+3	VAR
VAR Line3	9/3/2004	11:04:51.500 AM	23.29E+3	0.000	312.3E+3	VAR
VAR Sum of Phases	9/3/2004	11:04:51.500 AM	78.16E+3	0.000	961.6E+3	VAR

9/3/2004 - 11:04:51.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

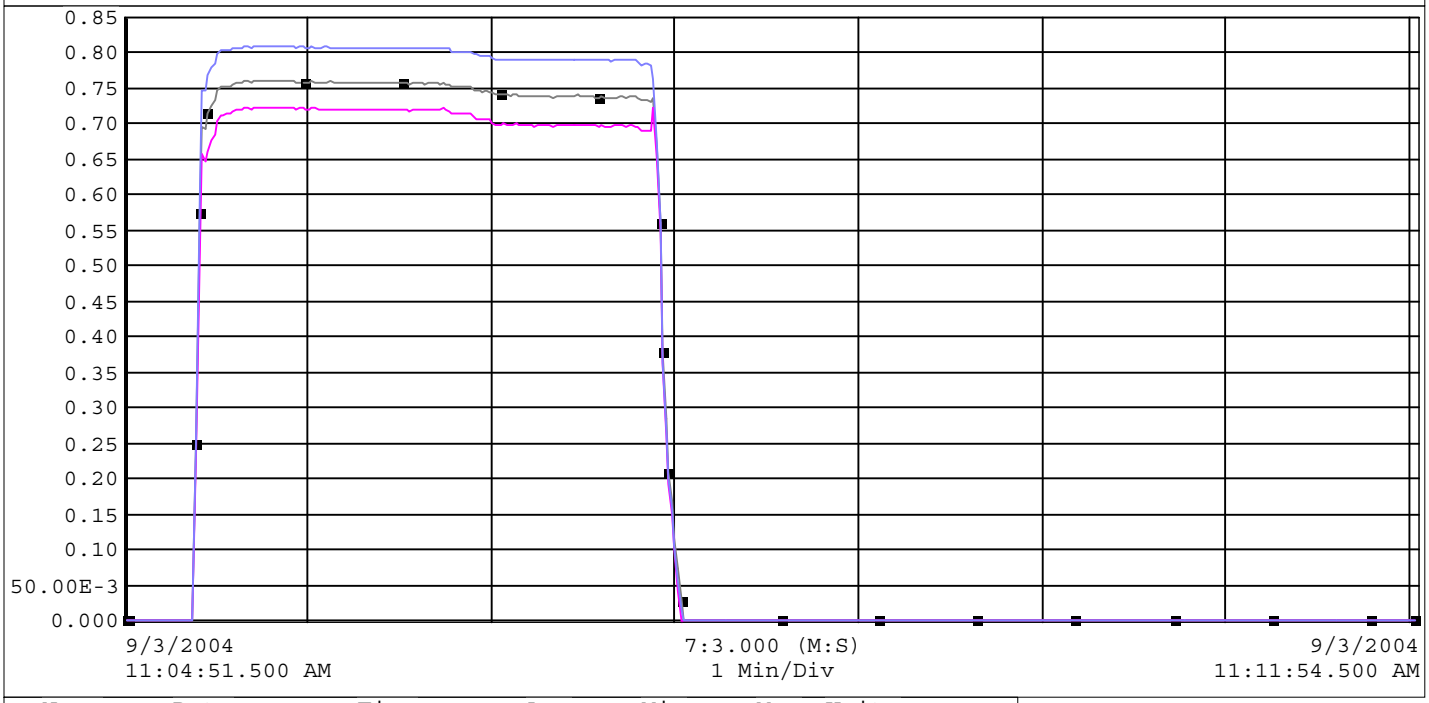
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/3/2004	11:04:51.500 AM	2.588E+3	0.000	3.398E+3	Wh
W-hours Line2	9/3/2004	11:04:51.500 AM	2.093E+3	0.000	2.749E+3	Wh
W-hours Line3	9/3/2004	11:04:51.500 AM	2.398E+3	0.000	3.148E+3	Wh
W-hours Sum of Phases	9/3/2004	11:04:51.500 AM	7.079E+3	0.000	9.296E+3	Wh
VAR-hours Line1	9/3/2004	11:04:51.500 AM	2.534E+3	0.000	3.381E+3	VARh
VAR-hours Line2	9/3/2004	11:04:51.500 AM	2.307E+3	0.000	3.082E+3	VARh
VAR-hours Line3	9/3/2004	11:04:51.500 AM	2.048E+3	0.000	2.743E+3	VARh
VAR-hours Sum of Phases	9/3/2004	11:04:51.500 AM	6.889E+3	0.000	9.206E+3	VARh

9/3/2004 - 11:04:51.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/3/2004	11:04:51.500 AM	0.270	0.000	0.760	
PF Line2	9/3/2004	11:04:51.500 AM	0.256	-3.000E-3	0.722	
PF Line3	9/3/2004	11:04:51.500 AM	0.288	0.000	0.808	

9/3/2004 - 11:04:51.000 AM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Route 16 WWPS\090304-Rte 16 WWPS - Pump 4.dvb

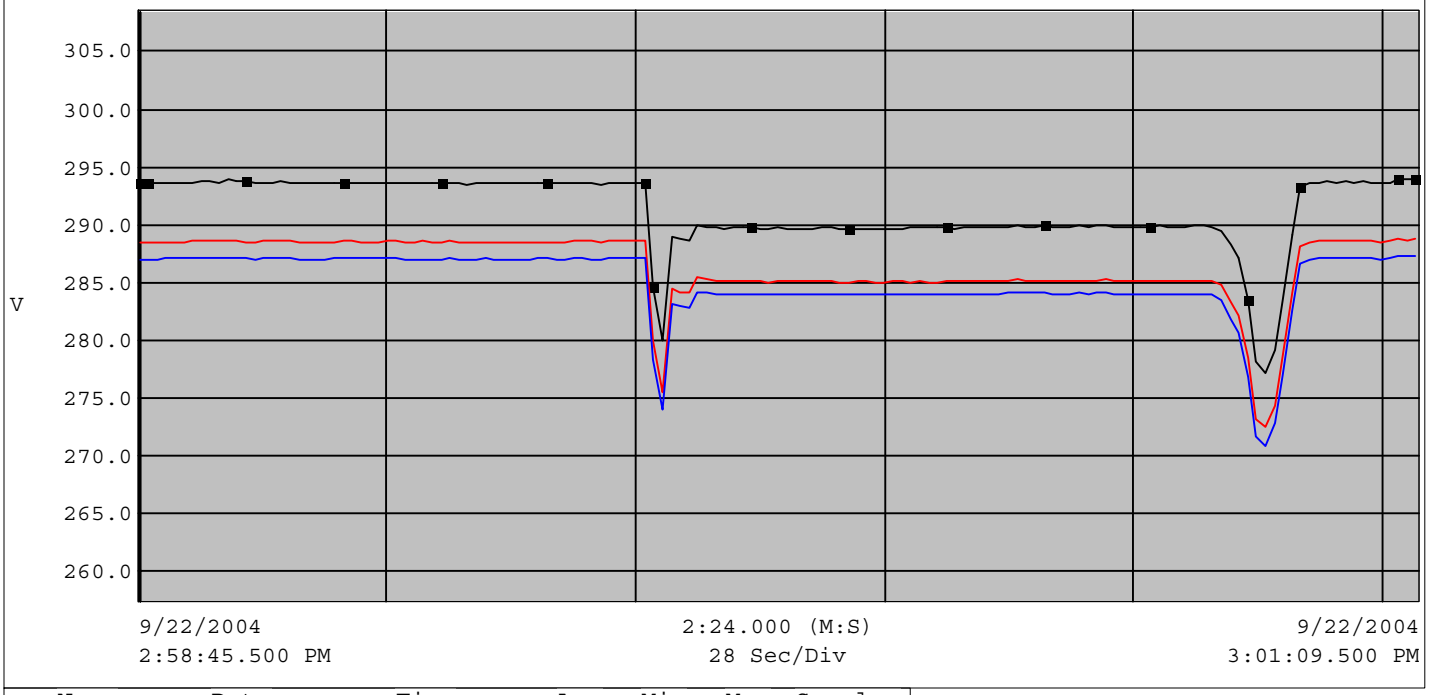
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Route 16 WWPS - Pump 4 ,

Comments
Measured at motor starter lead and main breaker. 300 HP Flygt Motor.

092204 - Rte 16 WWPS - Pump 3

Recording Start Date	9/22/2004 - 2:58:45 PM
Recording Duration	2:24 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

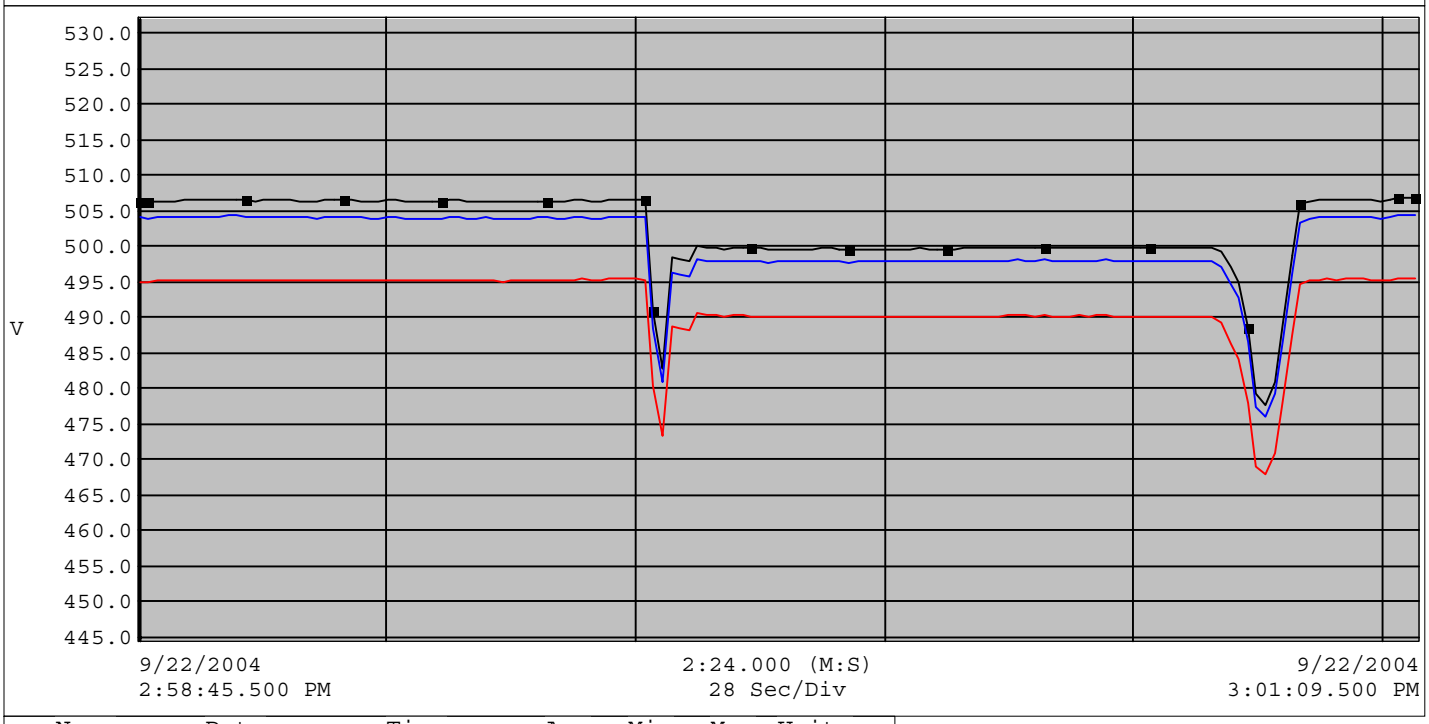
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/22/2004	2:58:45.500 PM	291.1	277.1	293.8	145
Vrms Line2	9/22/2004	2:58:45.500 PM	286.2	272.4	288.7	145
Vrms Line3	9/22/2004	2:58:45.500 PM	284.9	270.8	287.2	145

9/22/2004 - 2:58:45.000 PM
Val
293.6 — Vrms Line1
288.4 — Vrms Line2
286.9 — Vrms Line3

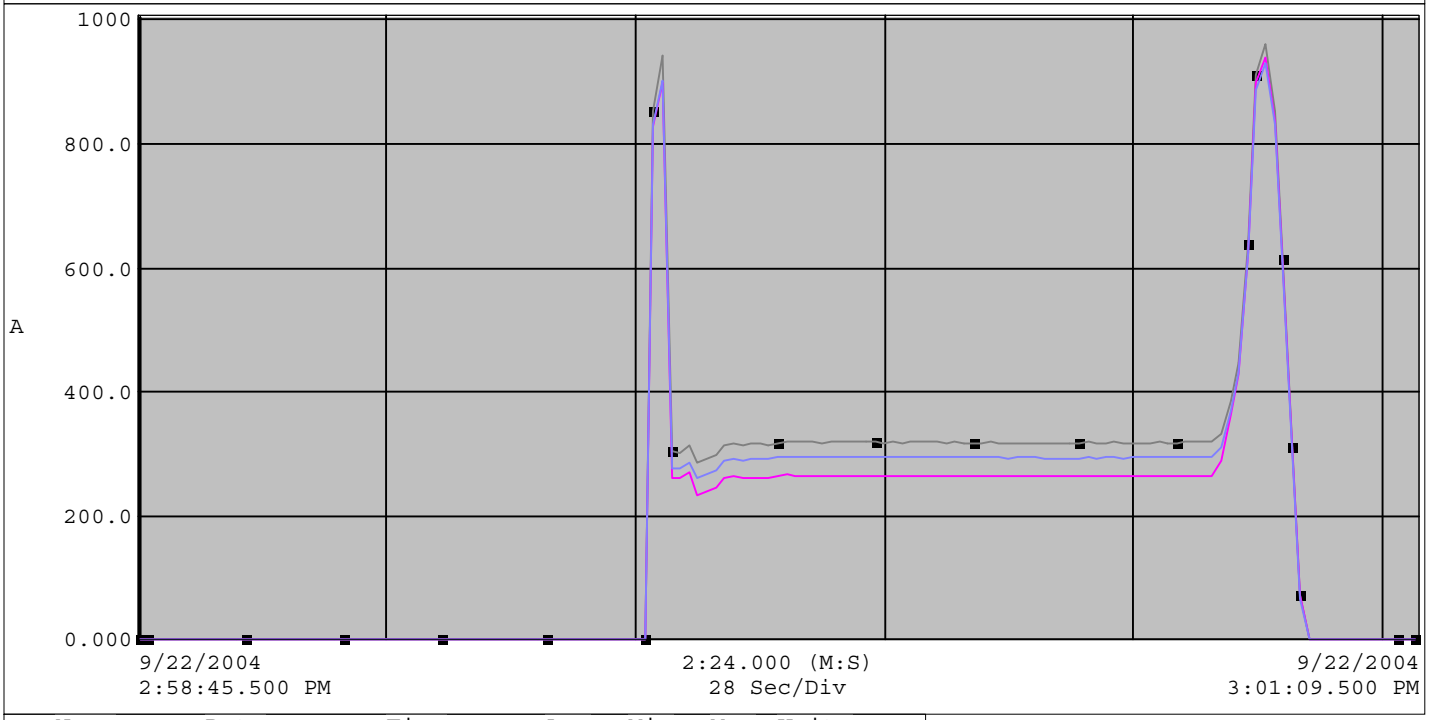
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/22/2004	2:58:45.500 PM	502.0	477.5	506.7	V
Urms Line2	9/22/2004	2:58:45.500 PM	491.6	467.6	495.4	V
Urms Line3	9/22/2004	2:58:45.500 PM	499.9	475.7	504.3	V

9/22/2004 - 2:58:45.000 PM
Val
506.2 — Urms Line1
494.8 — Urms Line2
503.8 — Urms Line3

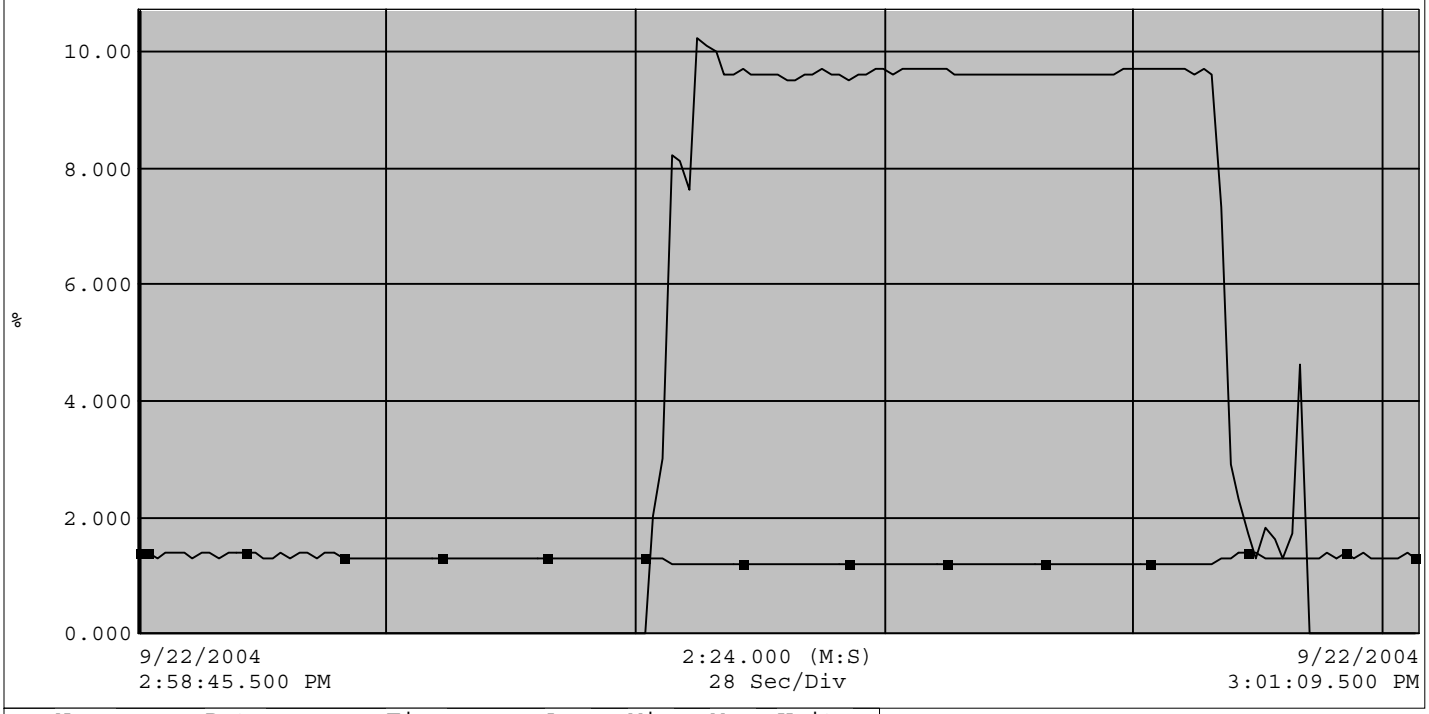
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/22/2004	2:58:45.500 PM	184.9	0.000	957.5	A
Arms Line2	9/22/2004	2:58:45.500 PM	160.6	0.000	937.5	A
Arms Line3	9/22/2004	2:58:45.500 PM	173.1	0.000	927.7	A

9/22/2004 - 2:58:45.000 PM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

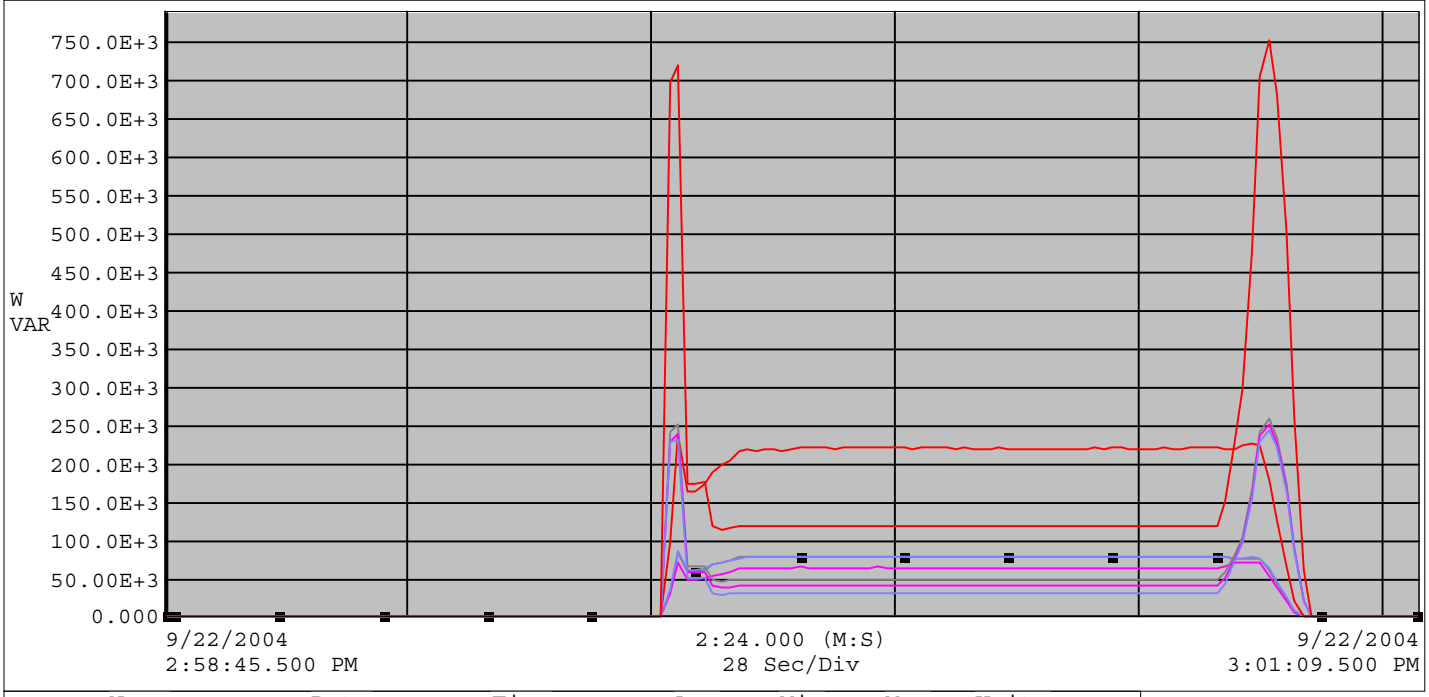
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/22/2004	2:58:45.500 PM	1.273	1.200	1.400	%
Aunb(IEEE)	9/22/2004	2:58:45.500 PM	4.310	0.000	10.20	%

9/22/2004 - 2:58:45.000 PM
Val
1.400 ── Vunb(IEEE)
0.000 ── Aunb(IEEE)

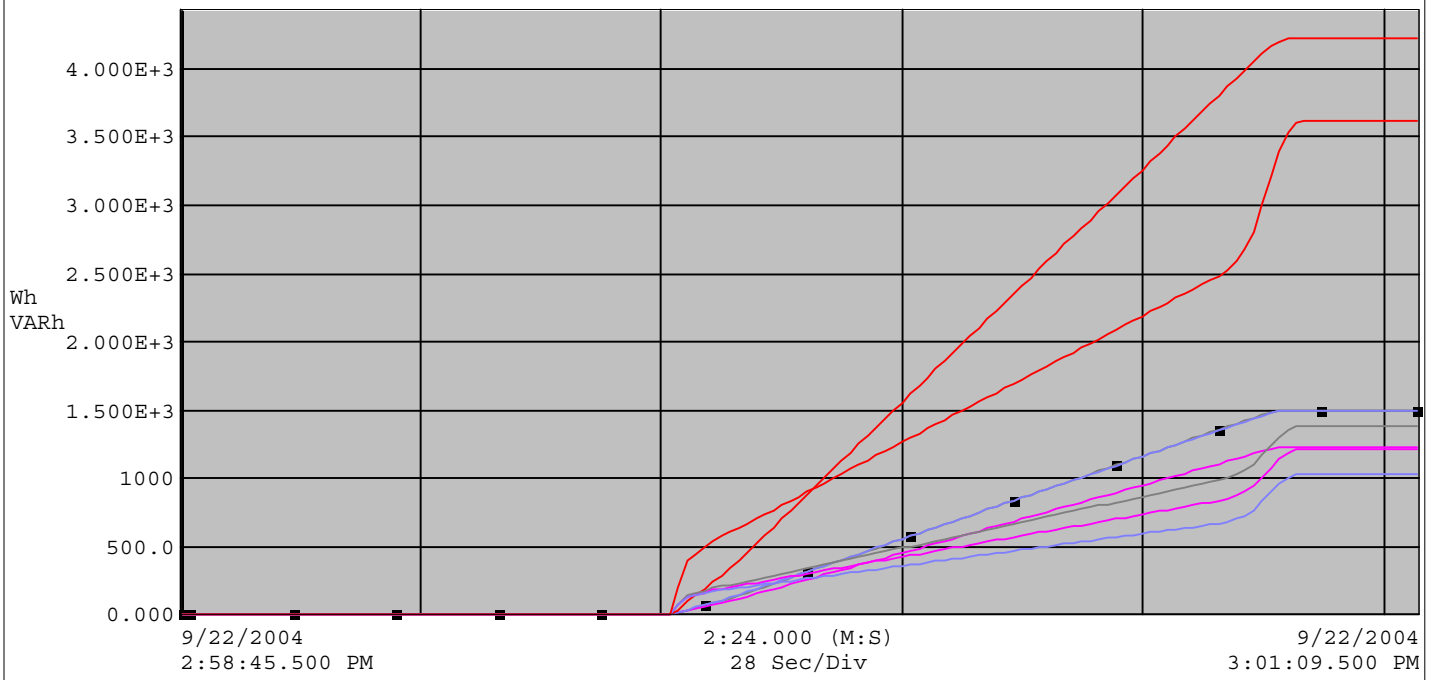
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/22/2004	2:58:45.500 PM	37.07E+3	0.000	81.52E+3	W
W Line2	9/22/2004	2:58:45.500 PM	30.51E+3	0.000	71.29E+3	W
W Line3	9/22/2004	2:58:45.500 PM	37.07E+3	0.000	85.51E+3	W
W Sum of Phases	9/22/2004	2:58:45.500 PM	104.6E+3	0.000	236.8E+3	W
VAR Line1	9/22/2004	2:58:45.500 PM	34.17E+3	0.000	258.3E+3	VAR
VAR Line2	9/22/2004	2:58:45.500 PM	30.02E+3	0.000	249.7E+3	VAR
VAR Line3	9/22/2004	2:58:45.500 PM	25.60E+3	0.000	243.1E+3	VAR
VAR Sum of Phases	9/22/2004	2:58:45.500 PM	89.80E+3	0.000	751.2E+3	VAR

9/22/2004 - 2:58:45.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

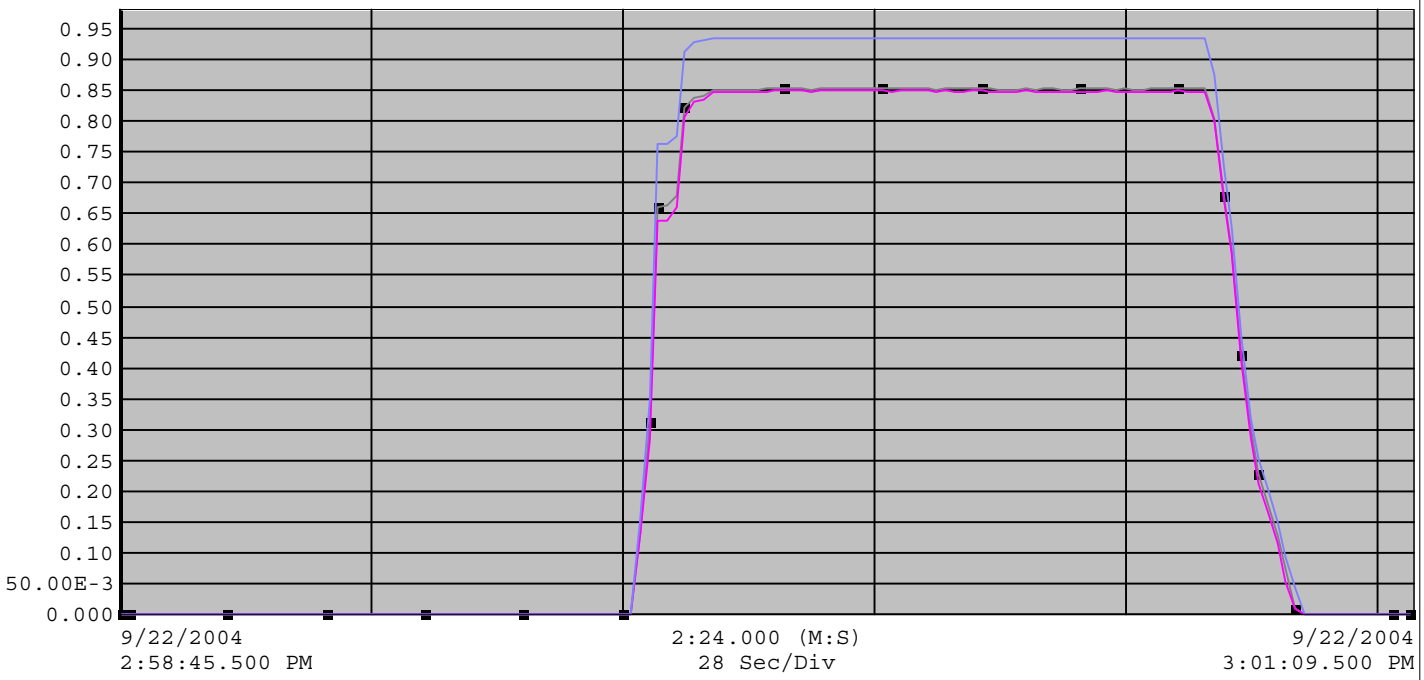
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/22/2004	2:58:45.500 PM	529.7	0.000	1.493E+3	Wh
W-hours Line2	9/22/2004	2:58:45.500 PM	433.7	0.000	1.229E+3	Wh
W-hours Line3	9/22/2004	2:58:45.500 PM	529.5	0.000	1.493E+3	Wh
W-hours Sum of Phases	9/22/2004	2:58:45.500 PM	1.493E+3	0.000	4.215E+3	Wh
VAR-hours Line1	9/22/2004	2:58:45.500 PM	451.8	0.000	1.376E+3	VARh
VAR-hours Line2	9/22/2004	2:58:45.500 PM	391.3	0.000	1.209E+3	VARh
VAR-hours Line3	9/22/2004	2:58:45.500 PM	327.6	0.000	1.031E+3	VARh
VAR-hours Sum of Phases	9/22/2004	2:58:45.500 PM	1.171E+3	0.000	3.617E+3	VARh

9/22/2004 - 2:58:45.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/22/2004	2:58:45.500 PM	0.386	0.000	0.851	
PF Line2	9/22/2004	2:58:45.500 PM	0.383	0.000	0.848	
PF Line3	9/22/2004	2:58:45.500 PM	0.424	0.000	0.932	

9/22/2004 - 2:58:45.000 PM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: X:\Route 16 WWPS\092204-Rte 16 WWPS - Pump 3.dvb

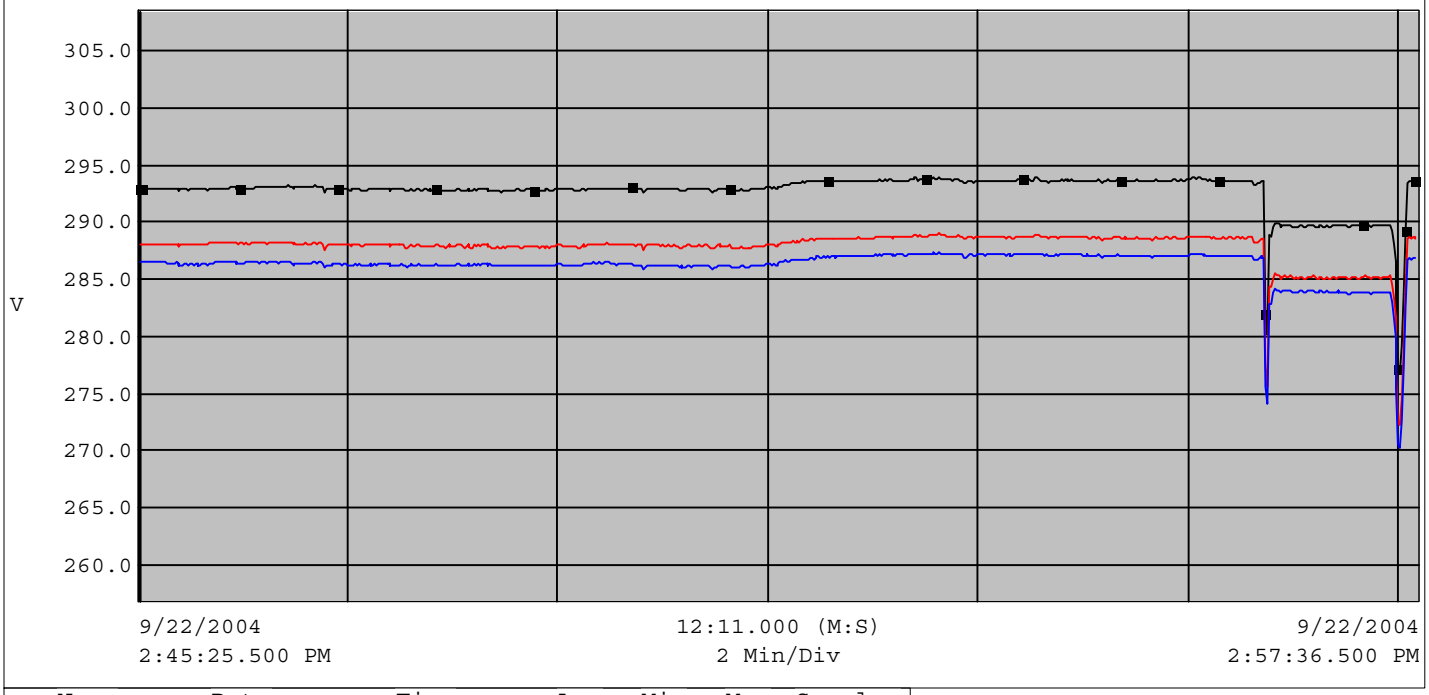
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Route 16 WWPS - Pump 3 ,

Comments
Recorded at MCC BUS tie. Operated Pump 3 to record data and waveform. This was not an operational cycle.

092204 - Rte 16 WWPS - Pump 4

Recording Start Date	9/22/2004 - 2:45:25 PM
Recording Duration	12:11 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

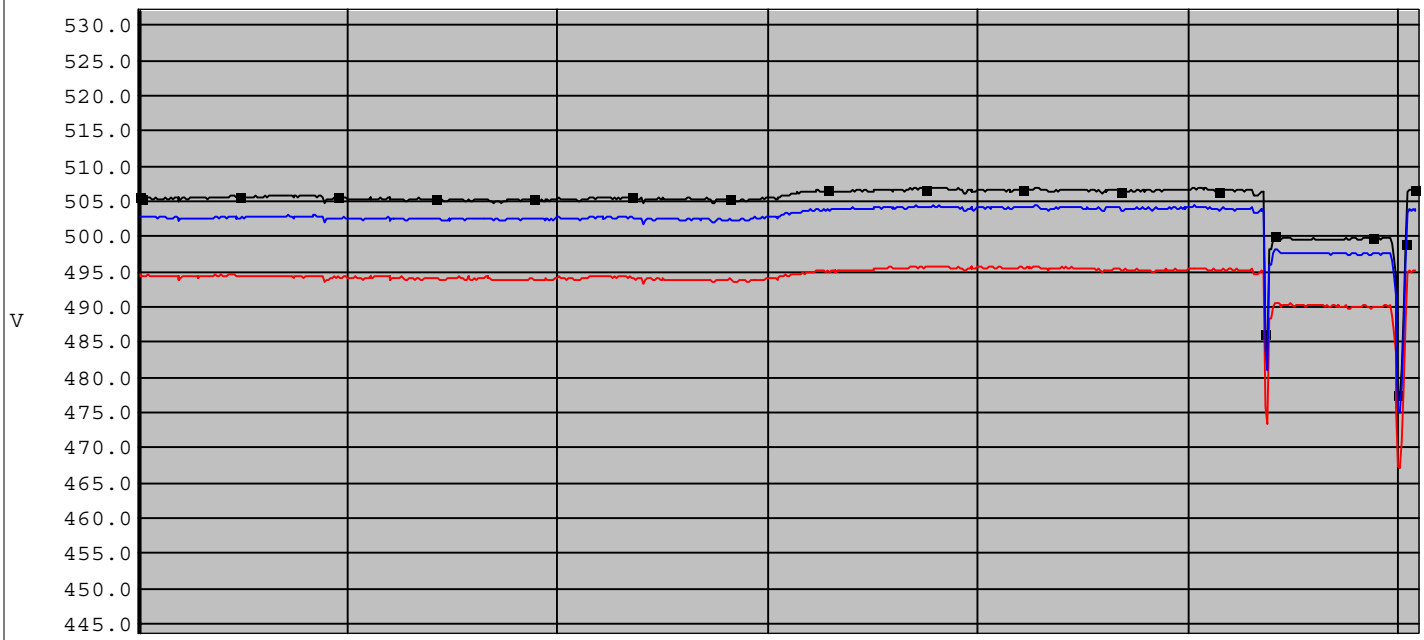
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/22/2004	2:45:25.500 PM	292.7	276.7	293.8	732
Vrms Line2	9/22/2004	2:45:25.500 PM	287.7	272.1	288.9	732
Vrms Line3	9/22/2004	2:45:25.500 PM	286.1	270.2	287.3	732

9/22/2004 - 2:45:25.000 PM
Val
292.9 — Vrms Line1
288.0 — Vrms Line2
286.4 — Vrms Line3

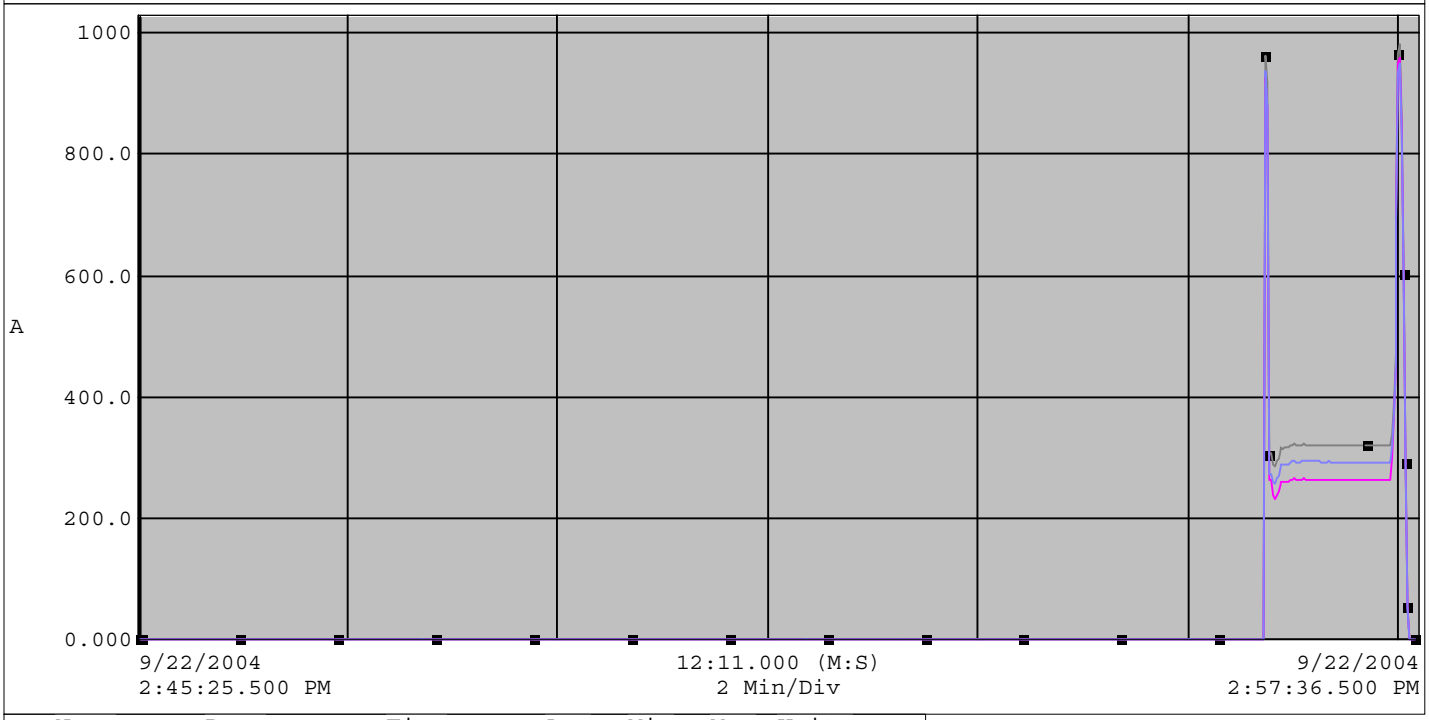
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/22/2004	2:45:25.500 PM	504.9	477.0	506.8	V
Urms Line2	9/22/2004	2:45:25.500 PM	493.8	466.8	495.7	V
Urms Line3	9/22/2004	2:45:25.500 PM	502.2	474.8	504.2	V

9/22/2004 - 2:45:25.000 PM
Val
505.3 — Urms Line1
494.3 — Urms Line2
502.7 — Urms Line3

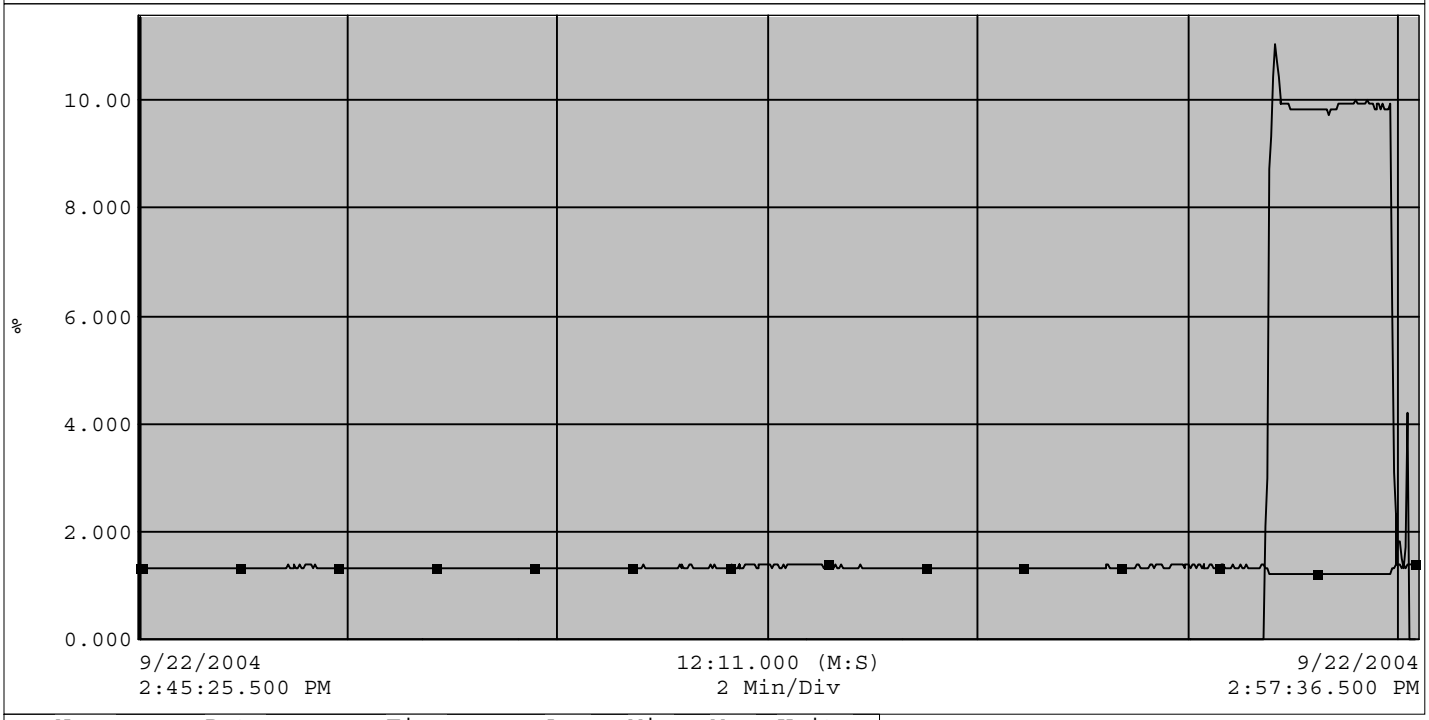
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/22/2004	2:45:25.500 PM	40.65	0.000	978.7	A
Arms Line2	9/22/2004	2:45:25.500 PM	34.93	0.000	957.3	A
Arms Line3	9/22/2004	2:45:25.500 PM	37.59	0.000	948.8	A

9/22/2004 - 2:45:25.000 PM
Val
0.000 Arms Line1
0.000 Arms Line2
0.000 Arms Line3

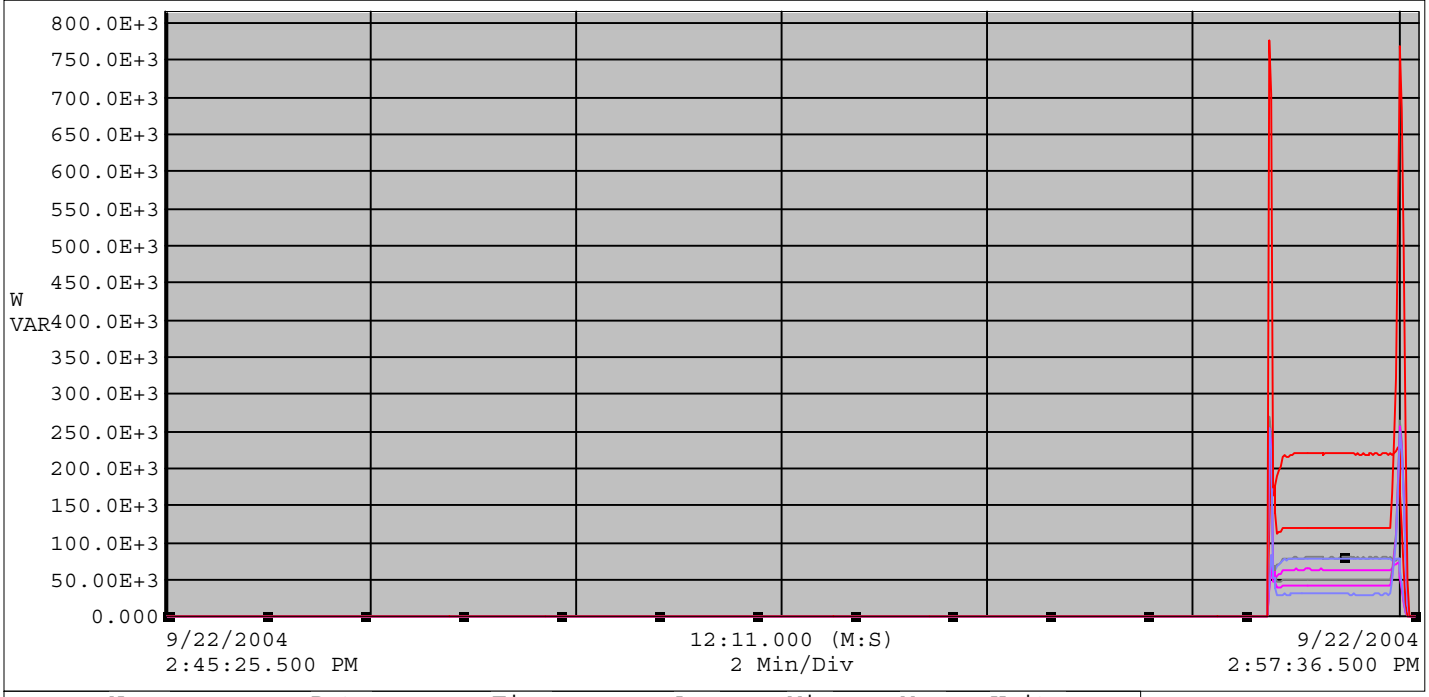
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/22/2004	2:45:25.500 PM	1.306	1.200	1.400	%
Aunb(IEEE)	9/22/2004	2:45:25.500 PM	0.986	0.000	11.00	%

9/22/2004 - 2:45:25.000 PM
Val
1.300 ── Vunb(IEEE)
0.000 ── Aunb(IEEE)

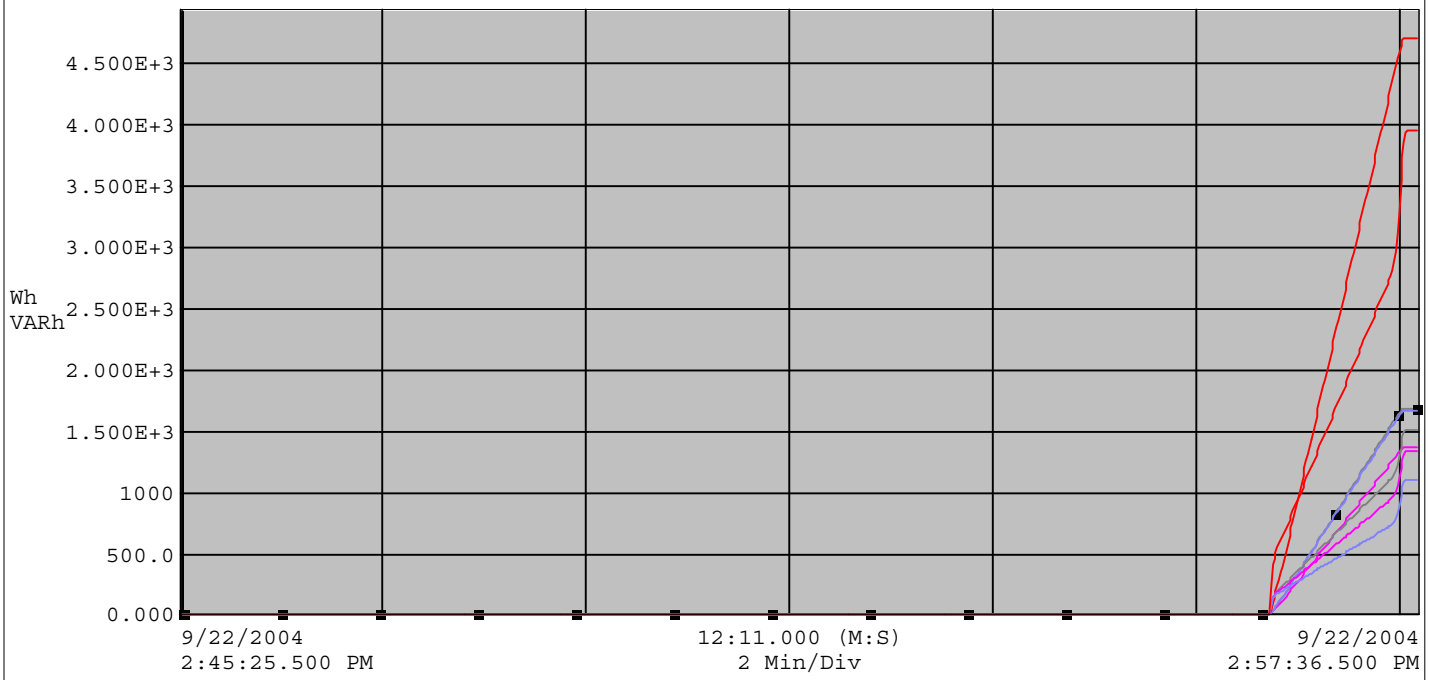
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/22/2004	2:45:25.500 PM	8.257E+3	-186.7	79.10E+3	W
W Line2	9/22/2004	2:45:25.500 PM	6.674E+3	0.000	72.33E+3	W
W Line3	9/22/2004	2:45:25.500 PM	8.158E+3	0.000	82.07E+3	W
W Sum of Phases	9/22/2004	2:45:25.500 PM	23.09E+3	0.000	227.6E+3	W
VAR Line1	9/22/2004	2:45:25.500 PM	7.416E+3	0.000	267.9E+3	VAR
VAR Line2	9/22/2004	2:45:25.500 PM	6.536E+3	0.000	255.4E+3	VAR
VAR Line3	9/22/2004	2:45:25.500 PM	5.416E+3	0.000	253.4E+3	VAR
VAR Sum of Phases	9/22/2004	2:45:25.500 PM	19.37E+3	0.000	775.8E+3	VAR

9/22/2004 - 2:45:25.000 PM
Val
0.000 W Line1
0.000 W Line2
0.000 W Line3
0.000 W Sum of Phases
0.000 VAR Line1
0.000 VAR Line2
0.000 VAR Line3
0.000 VAR Sum of Phases

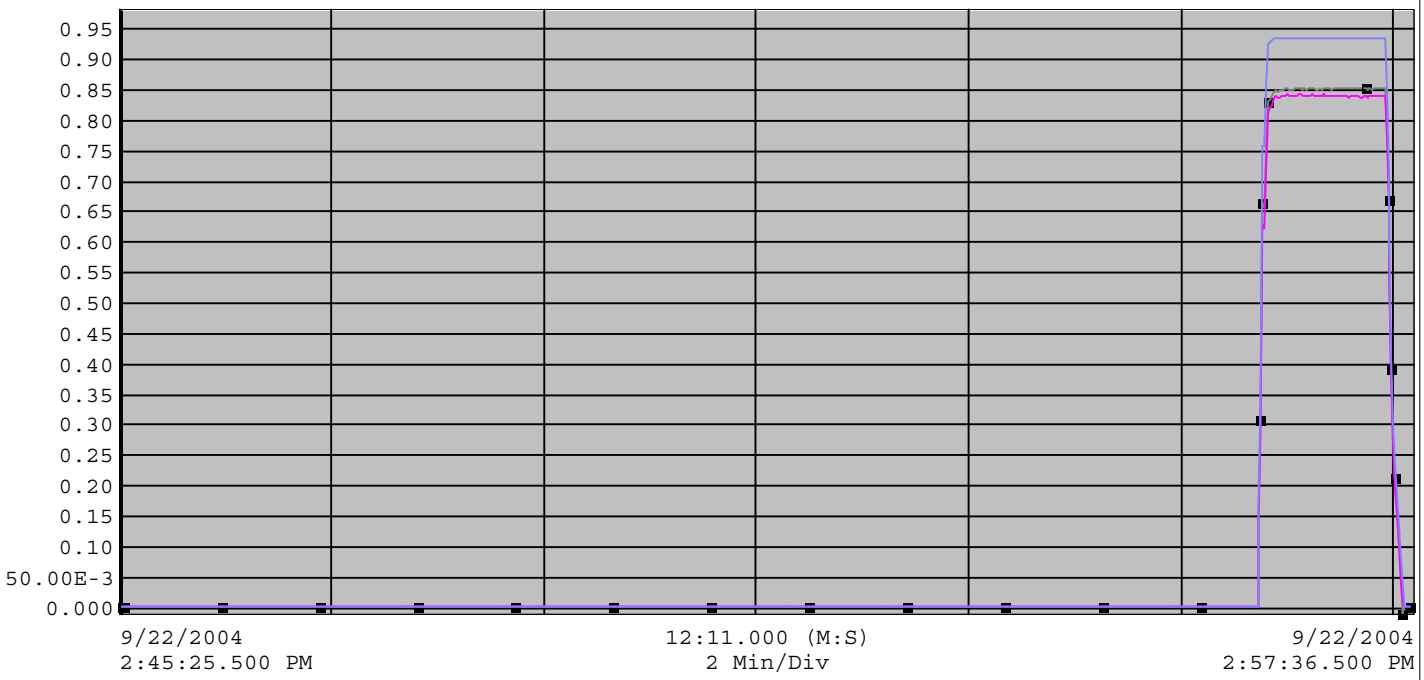
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/22/2004	2:45:25.500 PM	109.0	0.000	1.679E+3	Wh
W-hours Line2	9/22/2004	2:45:25.500 PM	87.51	0.000	1.357E+3	Wh
W-hours Line3	9/22/2004	2:45:25.500 PM	107.7	0.000	1.659E+3	Wh
W-hours Sum of Phases	9/22/2004	2:45:25.500 PM	304.2	0.000	4.695E+3	Wh
VAR-hours Line1	9/22/2004	2:45:25.500 PM	89.25	0.000	1.508E+3	VARh
VAR-hours Line2	9/22/2004	2:45:25.500 PM	77.32	0.000	1.329E+3	VARh
VAR-hours Line3	9/22/2004	2:45:25.500 PM	62.42	0.000	1.101E+3	VARh
VAR-hours Sum of Phases	9/22/2004	2:45:25.500 PM	229.0	0.000	3.938E+3	VARh

9/22/2004 - 2:45:25.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/22/2004	2:45:25.500 PM	85.56E-3	-12.00E-3	0.851	
PF Line2	9/22/2004	2:45:25.500 PM	84.25E-3	0.000	0.841	
PF Line3	9/22/2004	2:45:25.500 PM	94.23E-3	0.000	0.934	

9/22/2004 - 2:45:25.000 PM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: X:\Route 16 WWPS\092204-Rte 16 WWPS - Pump 4.dvb

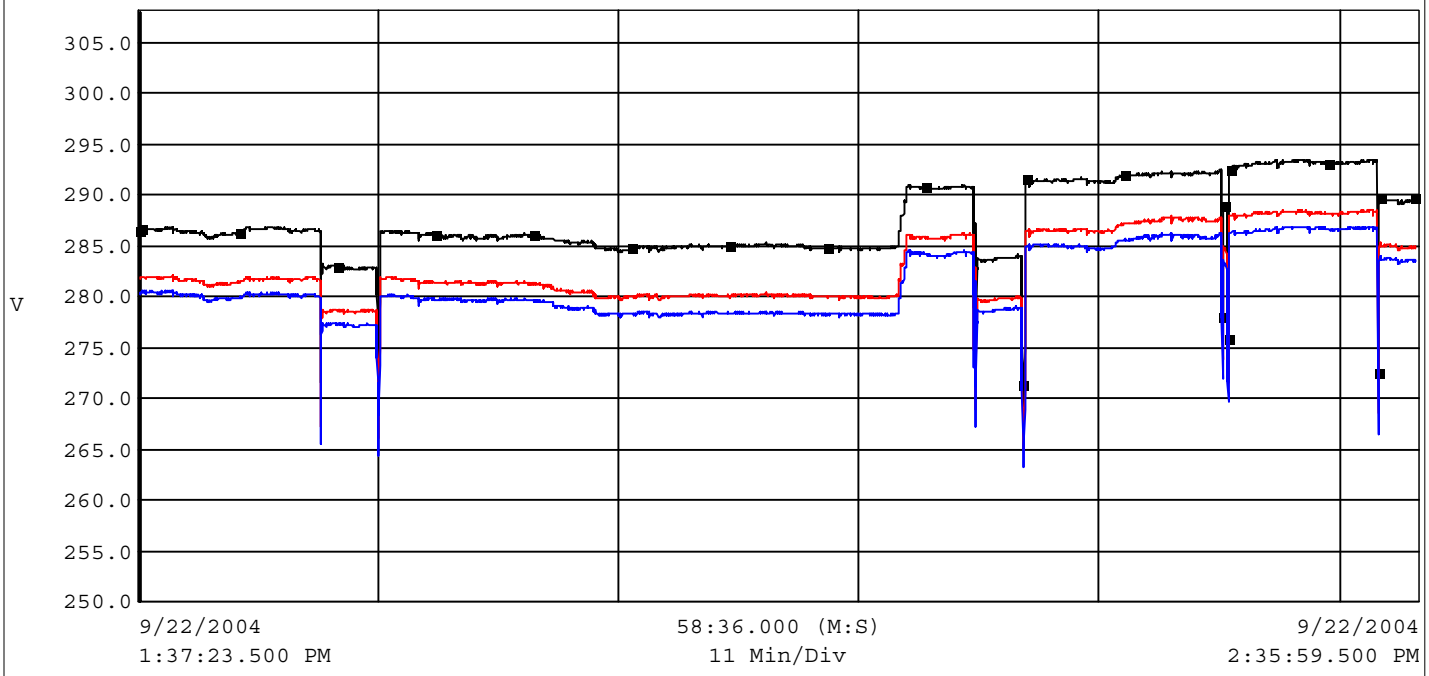
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Route 16 WWPS - Pump 4 ,

Comments
Recorded at BUS tie to MCC and operating only Pump 4 to record the load and other data. This is not an operational cycle.

Rte 16 WWPS - Pumps 3 and 4

Recording Start Date	9/22/2004 - 1:37:23 PM
Recording Duration	58:36 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

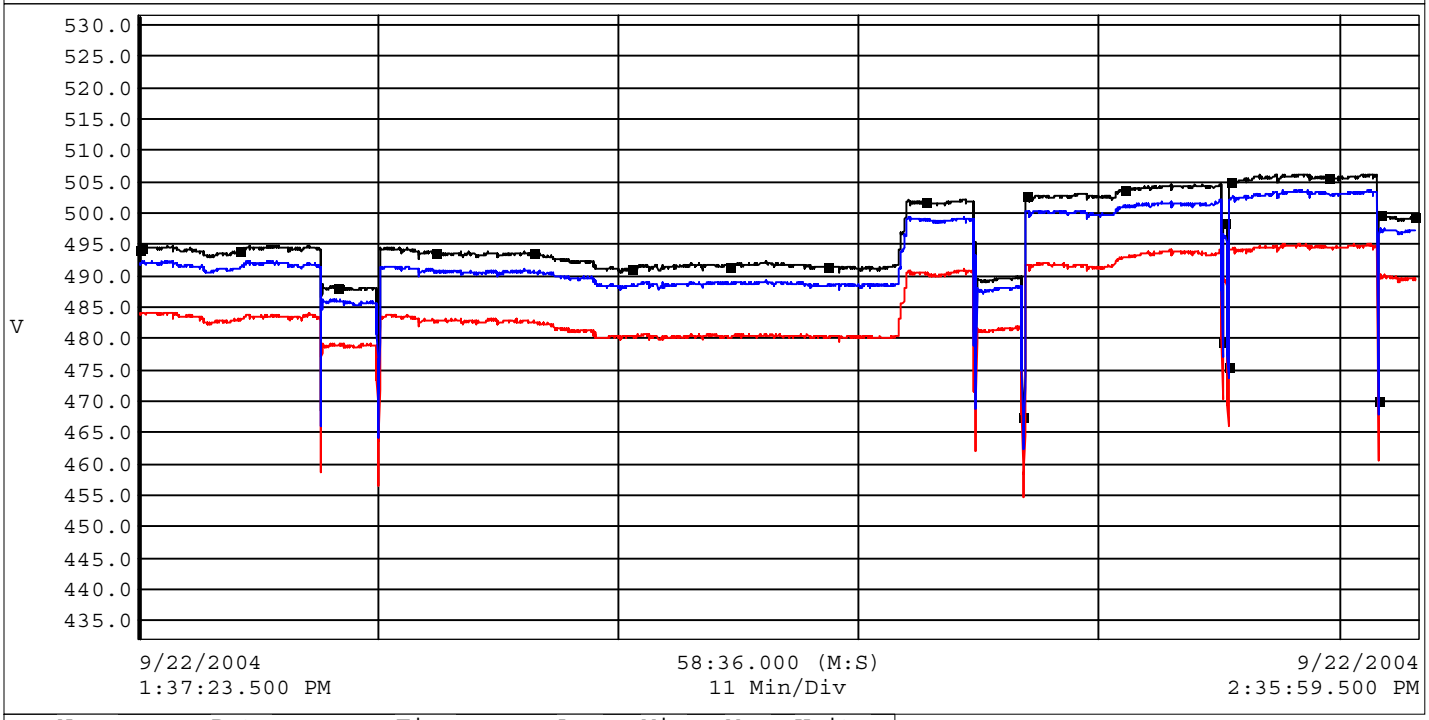
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/22/2004	1:37:23.500 PM	287.5	269.2	293.4	3517
Vrms Line2	9/22/2004	1:37:23.500 PM	282.7	264.8	288.4	3517
Vrms Line3	9/22/2004	1:37:23.500 PM	281.2	263.1	286.8	3517

9/22/2004 - 1:37:23.000 PM
Val
286.5 — Vrms Line1
281.7 — Vrms Line2
280.3 — Vrms Line3

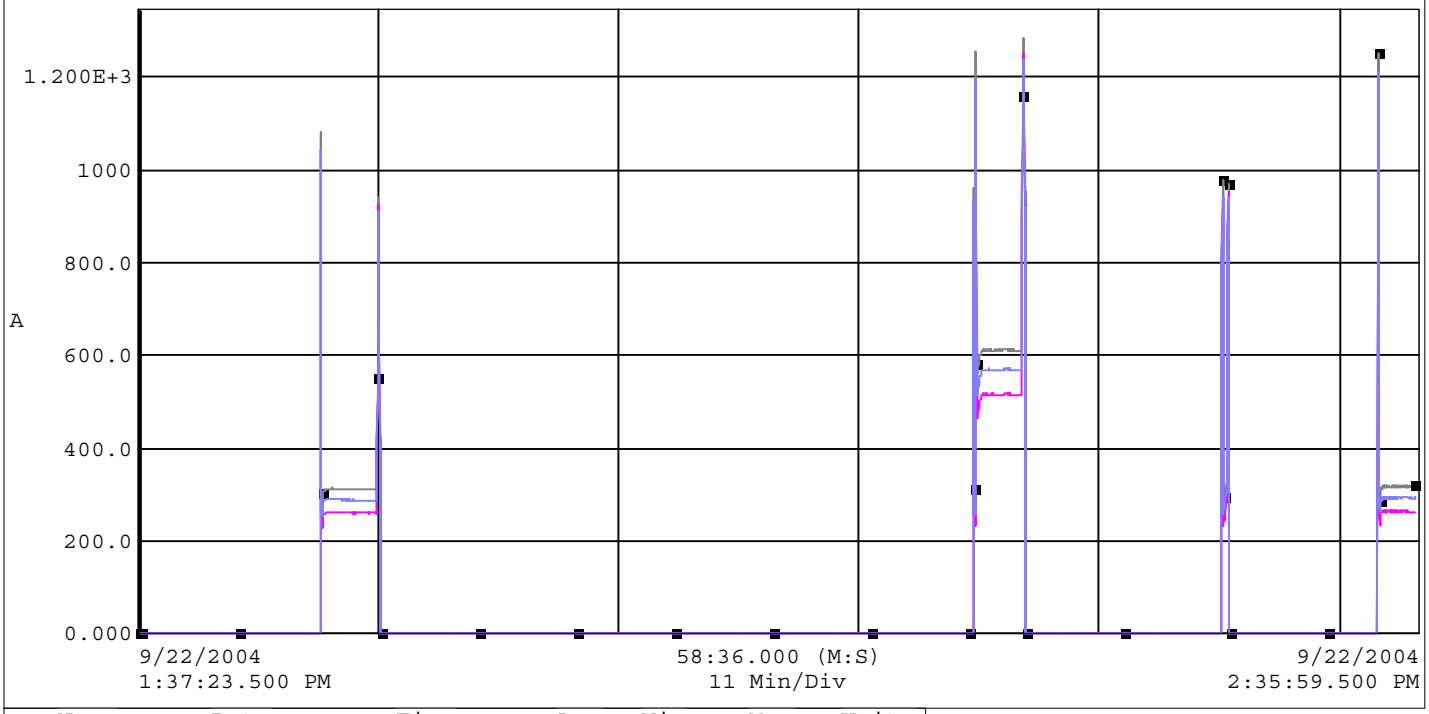
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/22/2004	1:37:23.500 PM	496.0	463.8	506.1	V
Urms Line2	9/22/2004	1:37:23.500 PM	485.3	454.6	495.0	V
Urms Line3	9/22/2004	1:37:23.500 PM	493.3	462.2	503.5	V

9/22/2004 - 1:37:23.000 PM
Val
494.1 Urms Line1
483.6 Urms Line2
491.8 Urms Line3

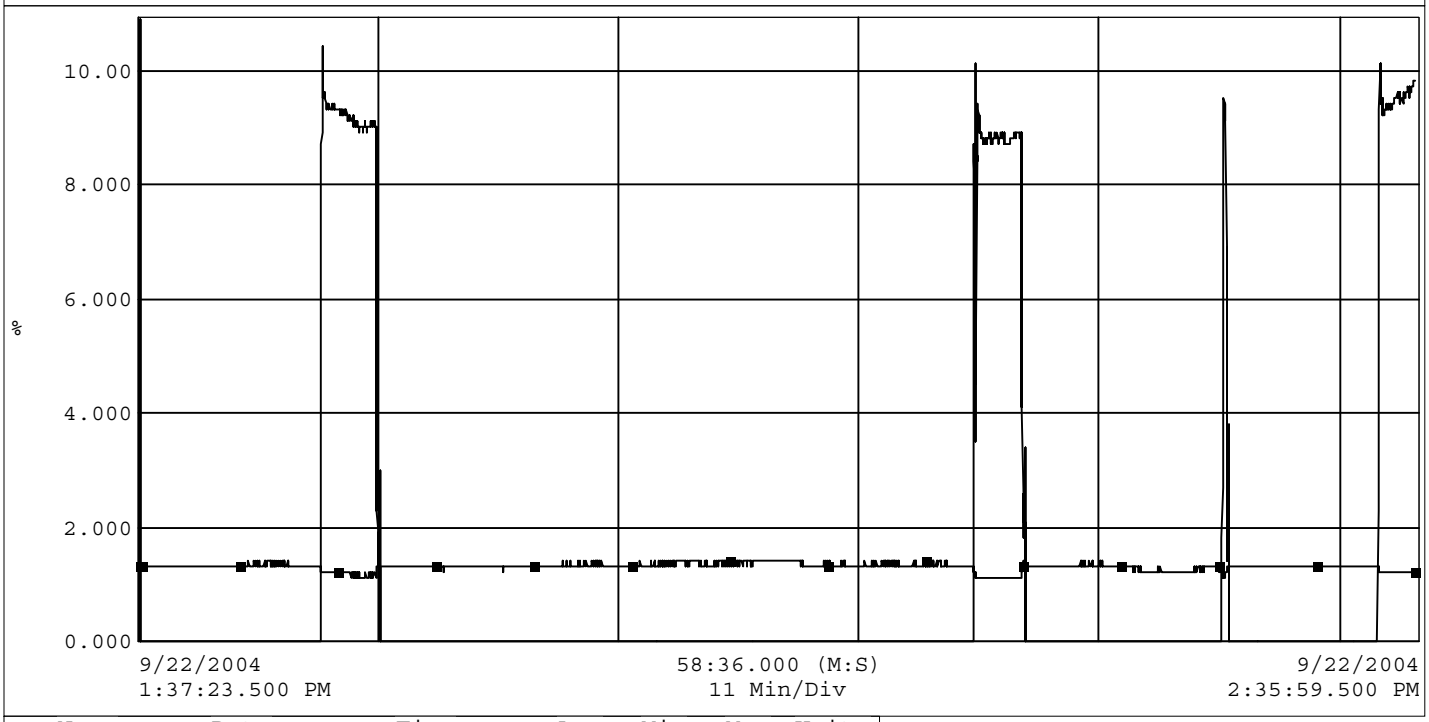
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/22/2004	1:37:23.500 PM	54.25	0.000	1.279E+3	A
Arms Line2	9/22/2004	1:37:23.500 PM	46.60	0.000	1.247E+3	A
Arms Line3	9/22/2004	1:37:23.500 PM	50.60	0.000	1.237E+3	A

9/22/2004 - 1:37:23.000 PM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

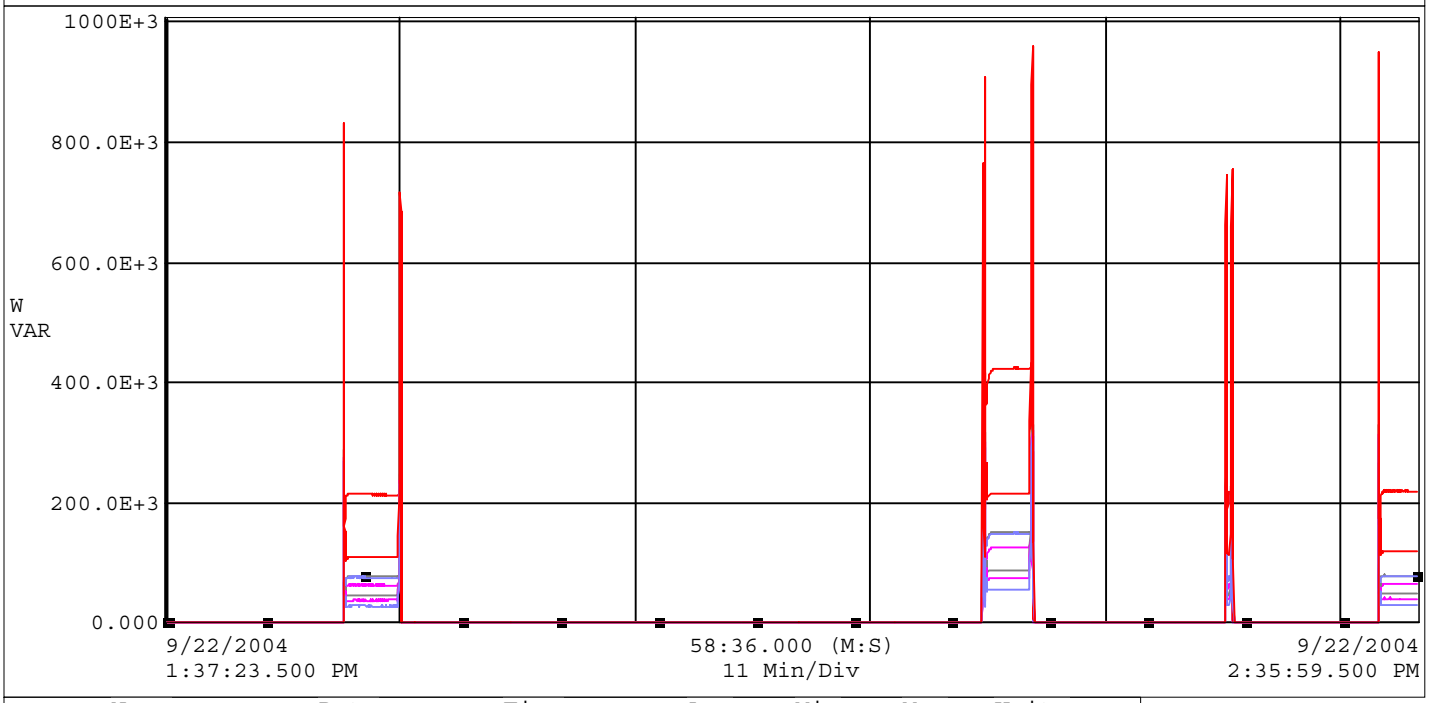
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/22/2004	1:37:23.500 PM	1.292	1.100	1.400	%
Aunb(IEEE)	9/22/2004	1:37:23.500 PM	1.062	0.000	10.40	%

9/22/2004 - 1:37:23.000 PM
Val
1.300 ── Vunb(IEEE)
0.000 ── Aunb(IEEE)

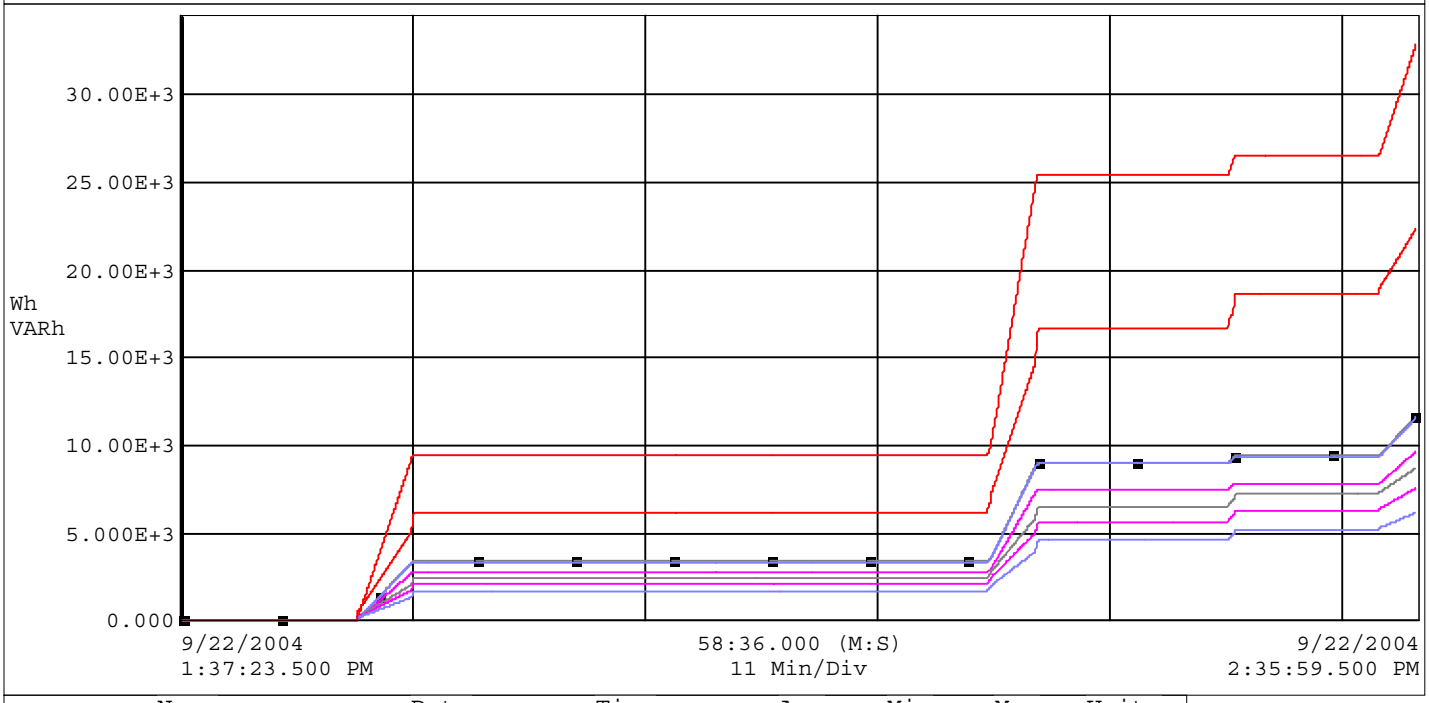
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/22/2004	1:37:23.500 PM	11.91E+3	0.000	150.4E+3	W
W Line2	9/22/2004	1:37:23.500 PM	9.849E+3	0.000	132.0E+3	W
W Line3	9/22/2004	1:37:23.500 PM	11.82E+3	0.000	150.1E+3	W
W Sum of Phases	9/22/2004	1:37:23.500 PM	33.57E+3	0.000	431.2E+3	W
VAR Line1	9/22/2004	1:37:23.500 PM	8.869E+3	0.000	330.3E+3	VAR
VAR Line2	9/22/2004	1:37:23.500 PM	7.692E+3	0.000	318.5E+3	VAR
VAR Line3	9/22/2004	1:37:23.500 PM	6.268E+3	0.000	309.4E+3	VAR
VAR Sum of Phases	9/22/2004	1:37:23.500 PM	22.83E+3	0.000	958.3E+3	VAR

9/22/2004 - 1:37:23.000 PM
Val
0.000 W Line1
0.000 W Line2
0.000 W Line3
0.000 W Sum of Phases
0.000 VAR Line1
0.000 VAR Line2
0.000 VAR Line3
0.000 VAR Sum of Phases

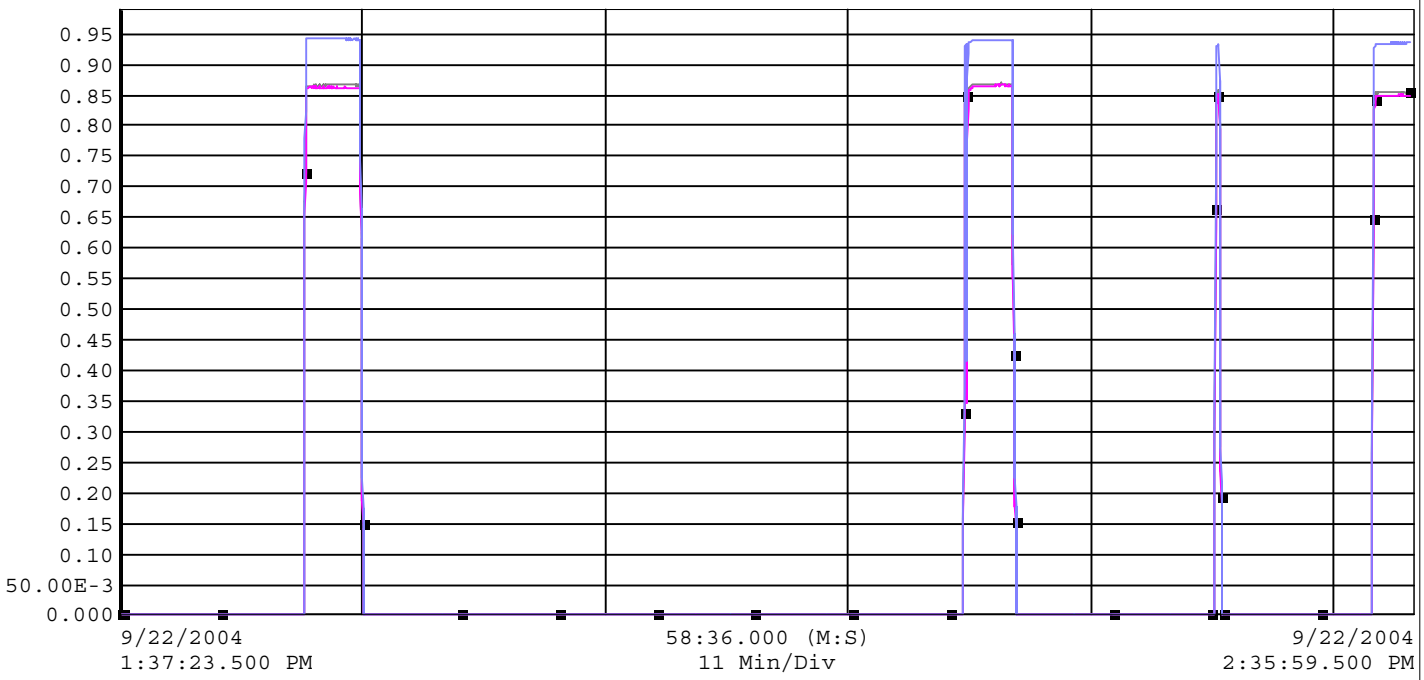
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/22/2004	1:37:23.500 PM	4.733E+3	0.000	11.63E+3	Wh
W-hours Line2	9/22/2004	1:37:23.500 PM	3.916E+3	0.000	9.622E+3	Wh
W-hours Line3	9/22/2004	1:37:23.500 PM	4.690E+3	0.000	11.54E+3	Wh
W-hours Sum of Phases	9/22/2004	1:37:23.500 PM	13.34E+3	0.000	32.80E+3	Wh
VAR-hours Line1	9/22/2004	1:37:23.500 PM	3.446E+3	0.000	8.665E+3	VARh
VAR-hours Line2	9/22/2004	1:37:23.500 PM	2.986E+3	0.000	7.515E+3	VARh
VAR-hours Line3	9/22/2004	1:37:23.500 PM	2.416E+3	0.000	6.124E+3	VARh
VAR-hours Sum of Phases	9/22/2004	1:37:23.500 PM	8.848E+3	0.000	22.30E+3	VARh

9/22/2004 - 1:37:23.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/22/2004	1:37:23.500 PM	0.100	0.000	0.868	
PF Line2	9/22/2004	1:37:23.500 PM	99.77E-3	0.000	0.865	
PF Line3	9/22/2004	1:37:23.500 PM	0.110	0.000	0.941	

9/22/2004 - 1:37:23.000 PM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Route 16 WWPS\092204-Rte 16 WWPS - Pumps 3 and 4.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Route 16 WWPS ,

Comments

Recorded at BUS tie section to the Motor MCC. Bubbler control system was being repaired during the recording period. GPA Meter 01-696-951, Demand 0.75 and KVARH Meter 93-180-522.

GWA Wastewater Pumping Station Assessment				
Station Name: SANTA ANA SUBDIVISION	**Weight**	**Condition**	**Weighted**	**Notes**
Date: NI		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.02	
Transformer Pole Condition and Grounding	2.0%	NI	0	
Transformer Connection Type	2.0%	NI	0	
Transformer Wiring Method	5.0%	NI	0	
Lightning Arrester Condition	5.0%	NI	0	
Metering Arrangement	1.0%	2	0.02	
Building Service Information	**10.0%**		0.15	
Main Disconnect	5.0%	2	0.1	
Grounding	2.5%	2	0.05	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.225	
Generator Condition	10.0%	1	0.1	
Generator Battery	5.0%	1	0.05	
Diesel Fuel Line Condition	2.5%	1	0.025	
Auto Transfer Switch	2.5%	2	0.05	
Primary Pump Motor Controls	**20.0%**		0.4	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Secondary Pump Motor Controls	**20.0%**		0.48	
Main Breaker	4.0%	2	0.08	
Motor Starter	4.0%	4	0.16	
Motor Protection (Overload and moisture)	4.0%	4	0.16	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	0	0	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.25	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	
	100%	**Assessment Value**		**1.6**

Comments: GPA power pole not observed.

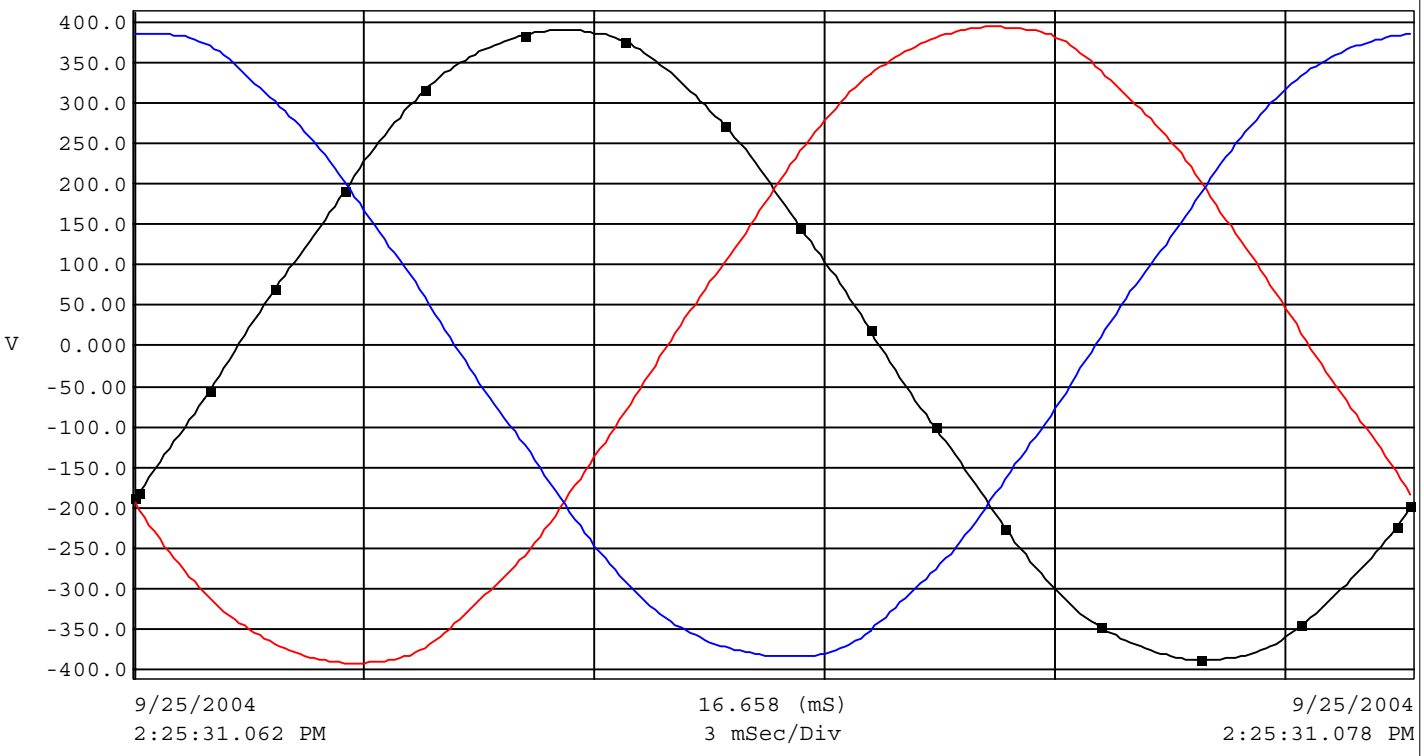
GWA Wastewater Pumping Station Assessment				
Station Name: SINAJANA	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.57	
Transformer Pole Condition and Grounding	2.0%	4	0.08	
Transformer Connection Type	2.0%	3	0.06	
Transformer Wiring Method	5.0%	4	0.2	
Lightning Arrester Condition	5.0%	4	0.2	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Secondary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.27	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.09	
Lighting and Power Devices	1.5%	3	0.045	
Sump Pump Controls	1.5%	3	0.045	
	100%	**Assessment Value**		**3.0**

Comments:

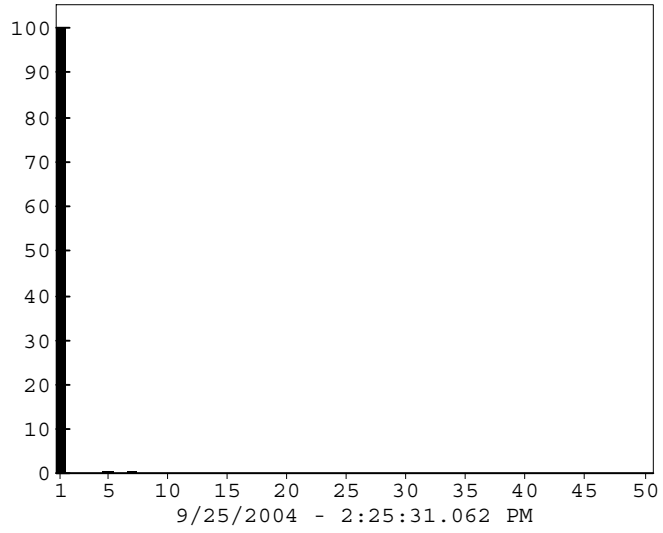
Sinajana WWPS Pump 1 Photo

Recording Start Date	9/25/2004 - 2:25:31 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	2:25:31.062 PM	16.658	278.1	V
Waveform V2	9/25/2004	2:25:31.062 PM	16.658	281.2	V
Waveform V3	9/25/2004	2:25:31.062 PM	16.658	276.3	V

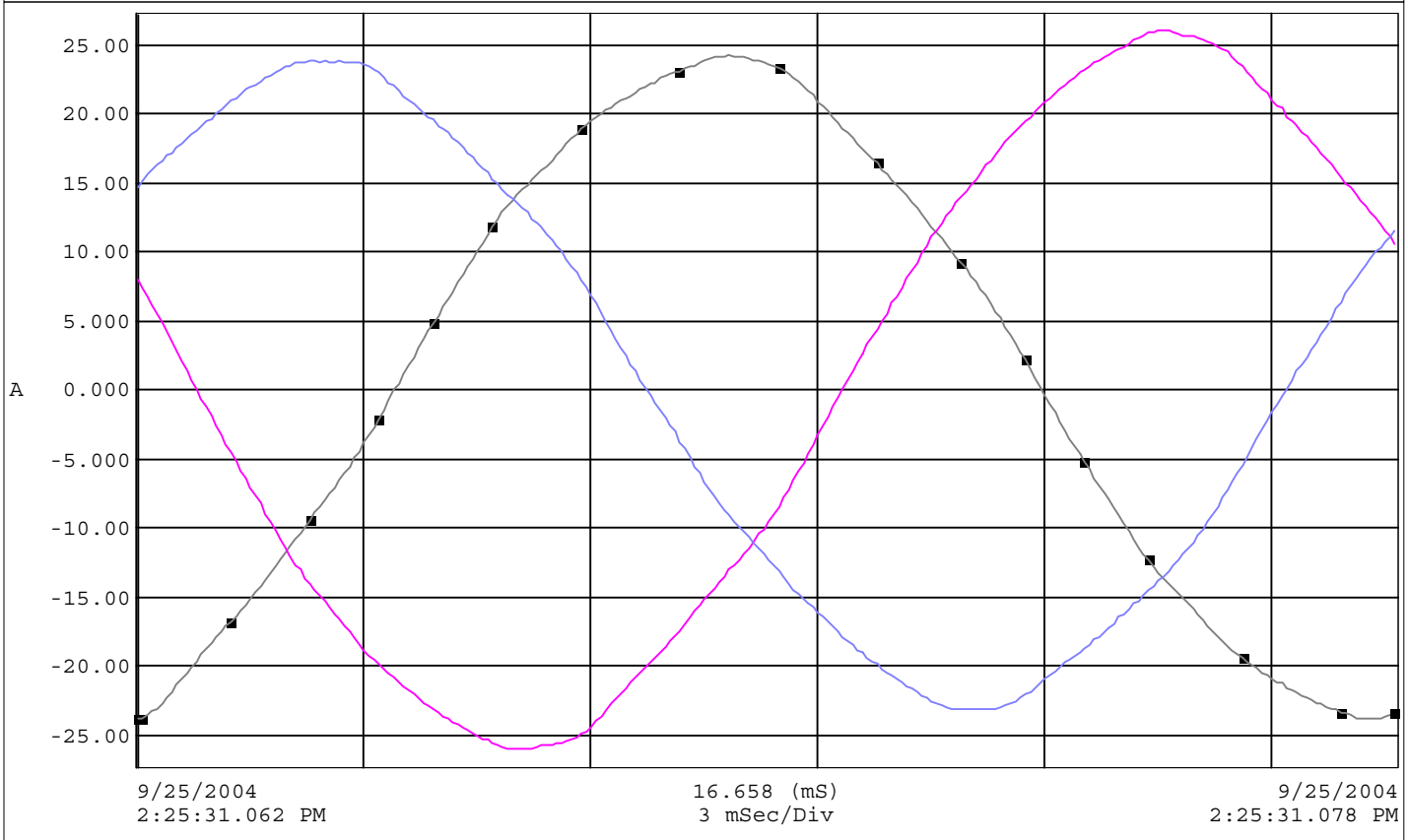


9/25/2004 - 2:25:31.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

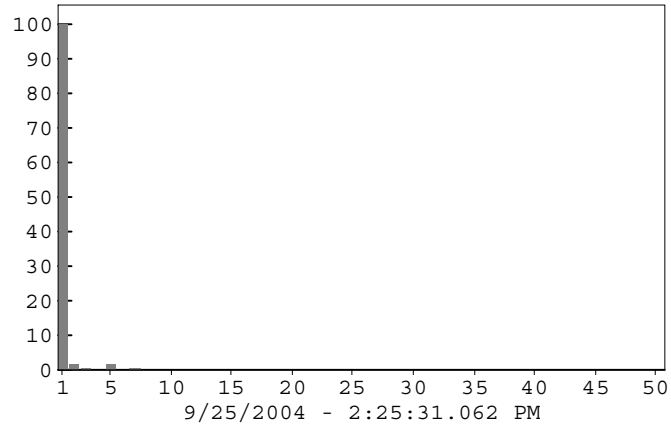
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	2:25:31.062 PM	16.658	16.67	A
Waveform I2	9/25/2004	2:25:31.062 PM	16.658	18.09	A
Waveform I3	9/25/2004	2:25:31.062 PM	16.658	16.34	A

Waveform I1
16.67 Arms, 3.15 %THD

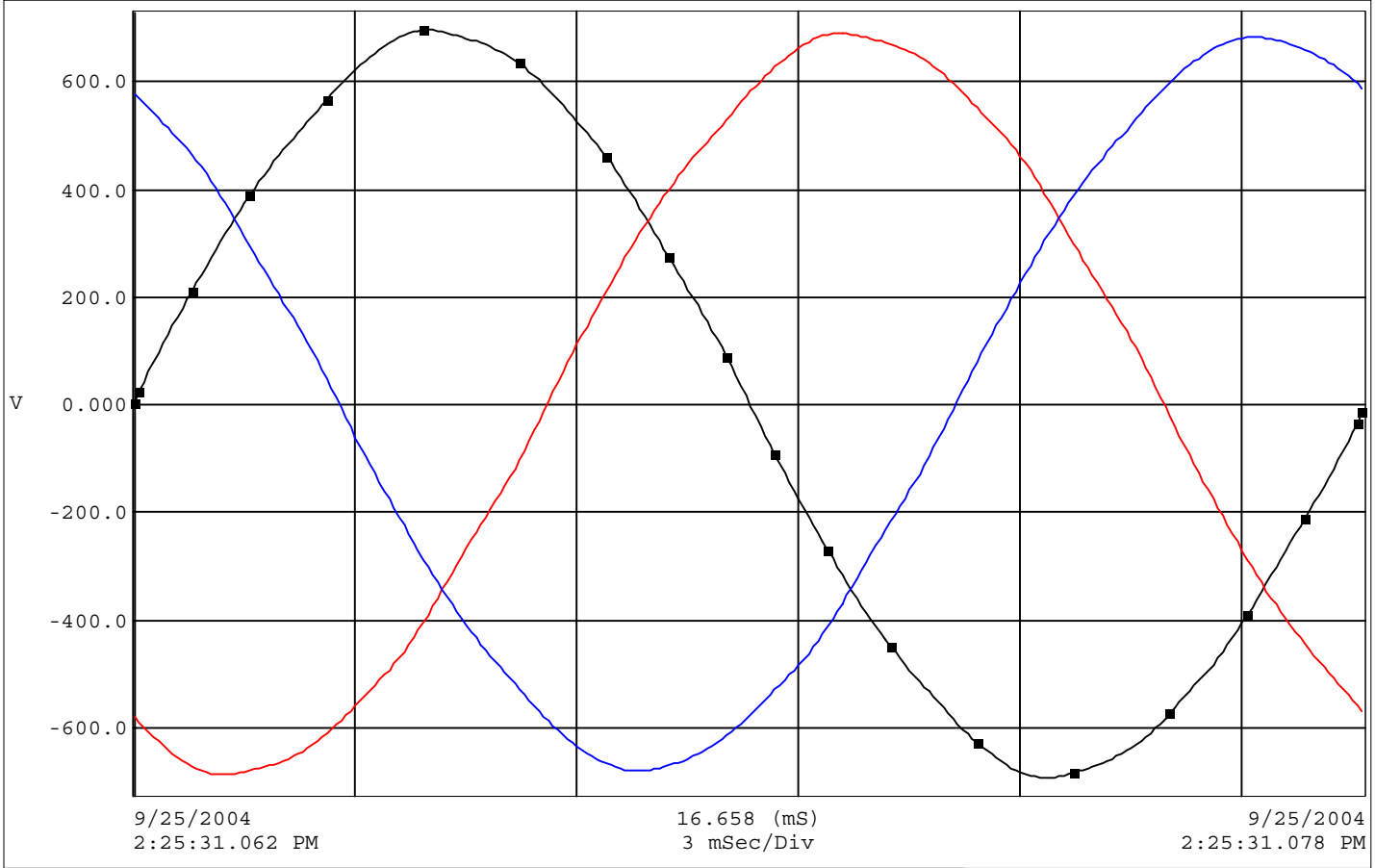


9/25/2004 - 2:25:31.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

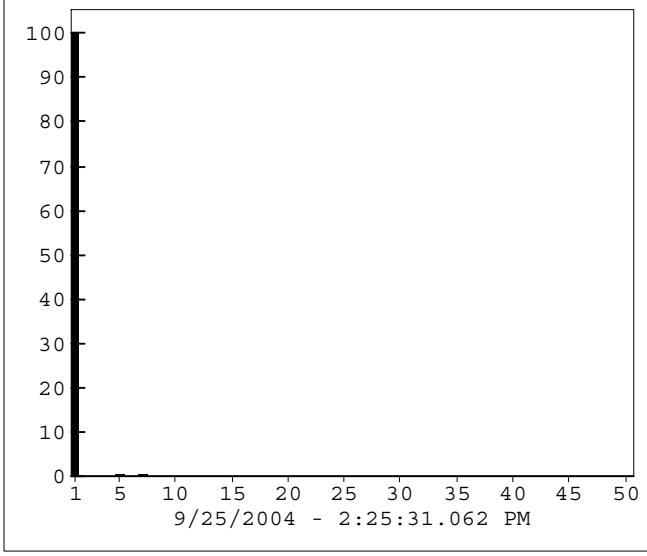
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	1.9	H19	0.2	H36	0.0
H03	0.7	H20	0.0	H37	0.0
H04	0.2	H21	0.0	H38	0.0
H05	2.2	H22	0.0	H39	0.0
H06	0.2	H23	0.1	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	0.3	H26	0.1	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	0.2	H28	0.1	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.1
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	2:25:31.062 PM	16.658	486.4	V
Waveform U2	9/25/2004	2:25:31.062 PM	16.658	482.9	V
Waveform U3	9/25/2004	2:25:31.062 PM	16.658	478.1	V

Waveform U1
486.41 Vrms, 1.02 %THD



9/25/2004 - 2:25:31.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 2:25:31 PM
Duration: 0:0.000 (M:S)
W: 3.326E+3 W
VAR: 3.335E+3 W
VA: 4.710E+3 W
Power Factor: 0.706
Displacement Power Factor: 0.707
TAN: 0.998
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Sinajana WWPs\092504 - Sinajana WWPS Pump 1 Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Sinajana WWPS Pump 1 Photo ,

Comments

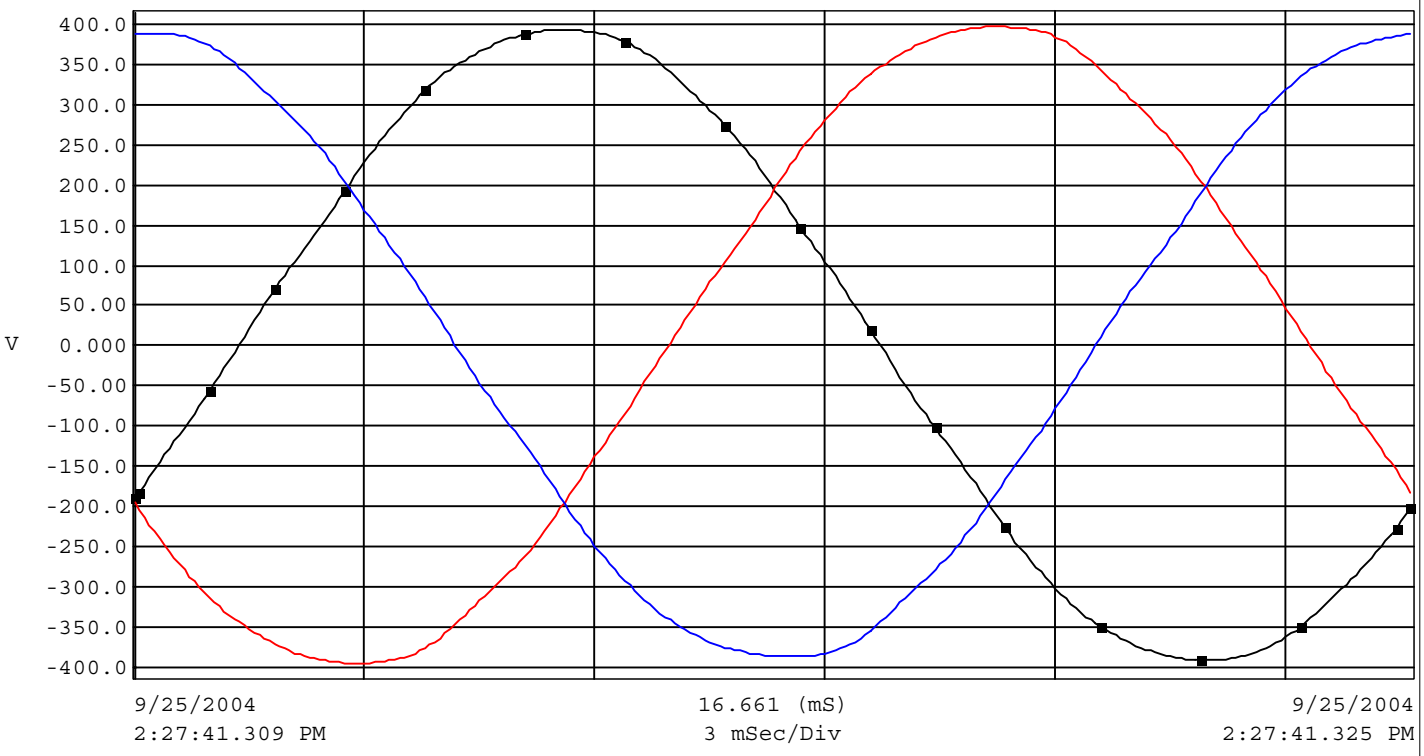
GPA Meter 72950750, 8.5 KW Demand.

Ball Float level control. ABS 12.6 KW submersible motor.

Sinajana WWPS Pump 2 Photo

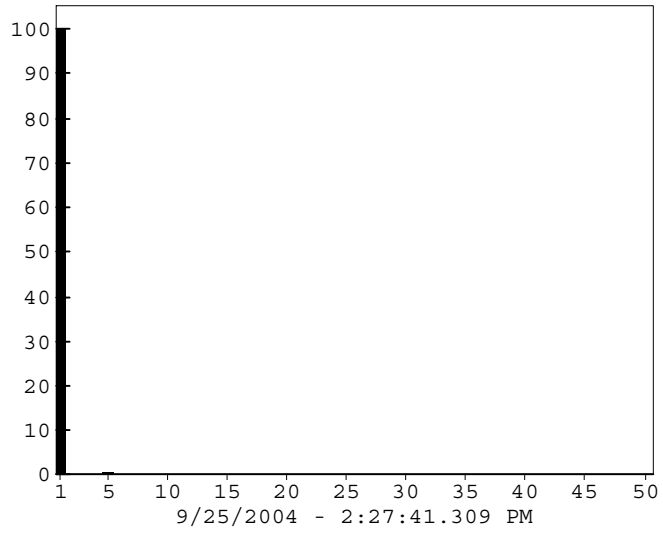
Recording Start Date	9/25/2004 - 2:27:41 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	2:27:41.309 PM	16.661	278.5	V
Waveform V2	9/25/2004	2:27:41.309 PM	16.661	281.7	V
Waveform V3	9/25/2004	2:27:41.309 PM	16.661	276.7	V

Waveform V1
278.49 Vrms, 0.94 %THD

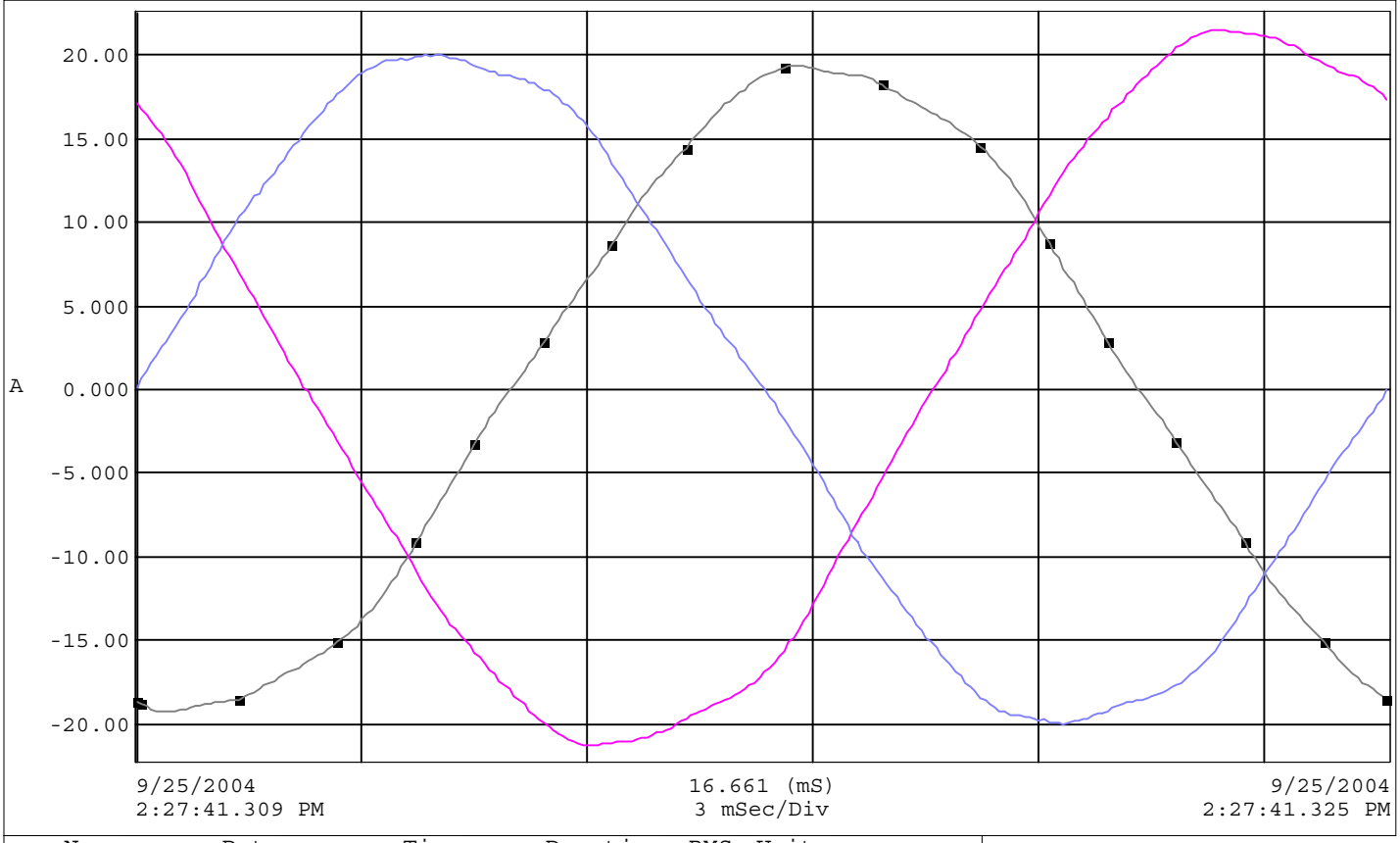


9/25/2004 - 2:27:41.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

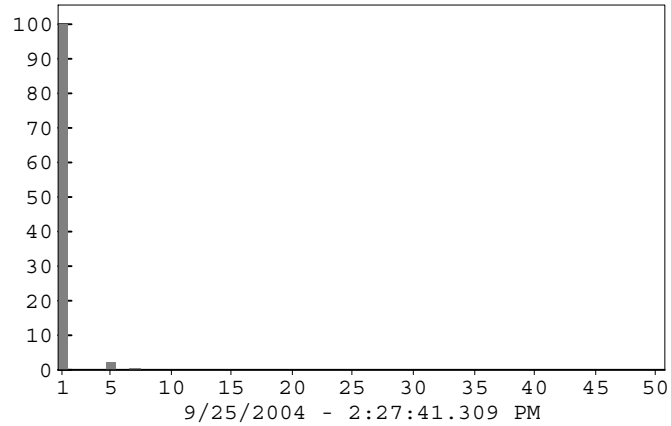
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	2:27:41.309 PM	16.661	13.62	A
Waveform I2	9/25/2004	2:27:41.309 PM	16.661	15.19	A
Waveform I3	9/25/2004	2:27:41.309 PM	16.661	14.16	A

Waveform I1
13.62 Arms, 2.50 %THD

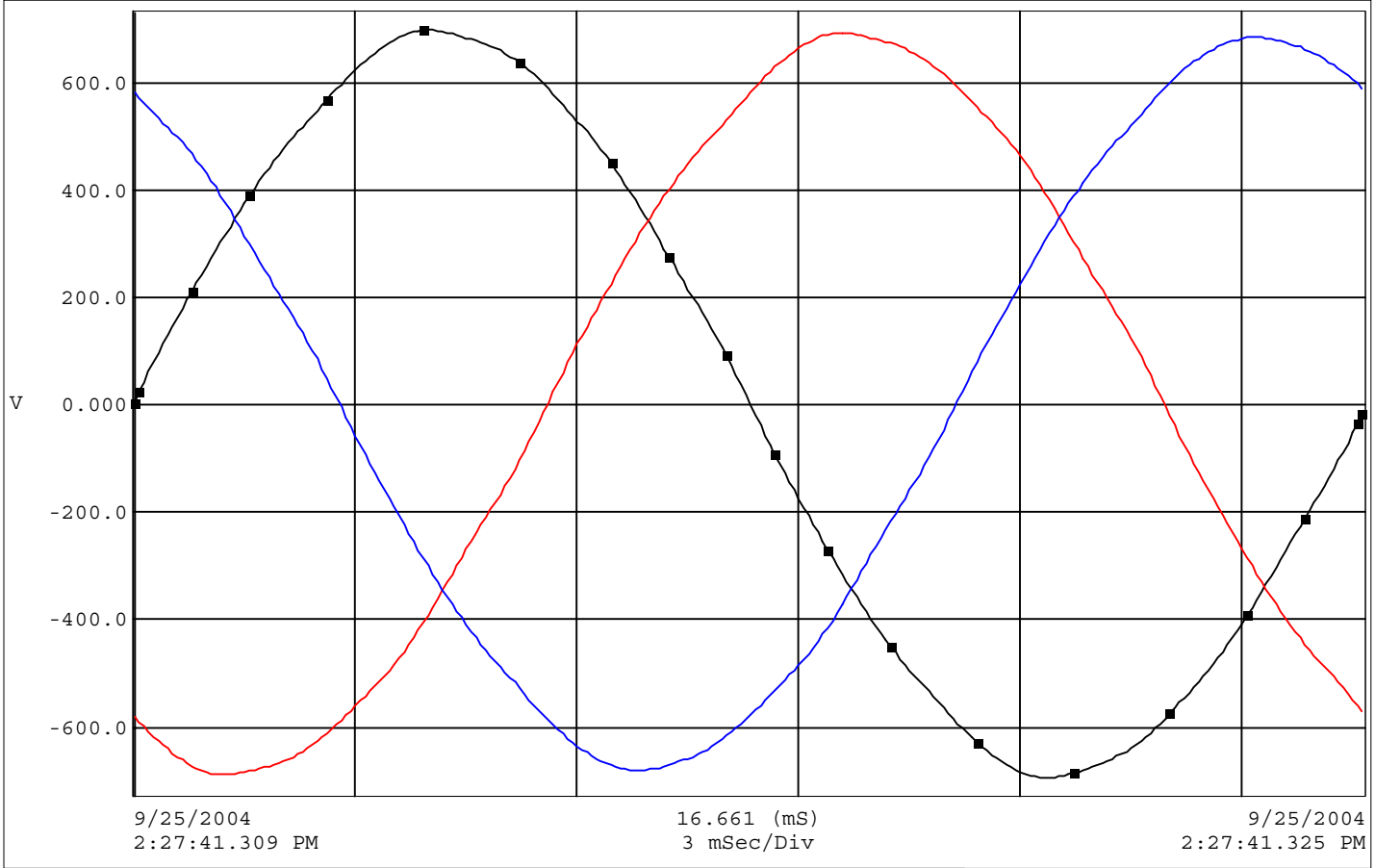


9/25/2004 - 2:27:41.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

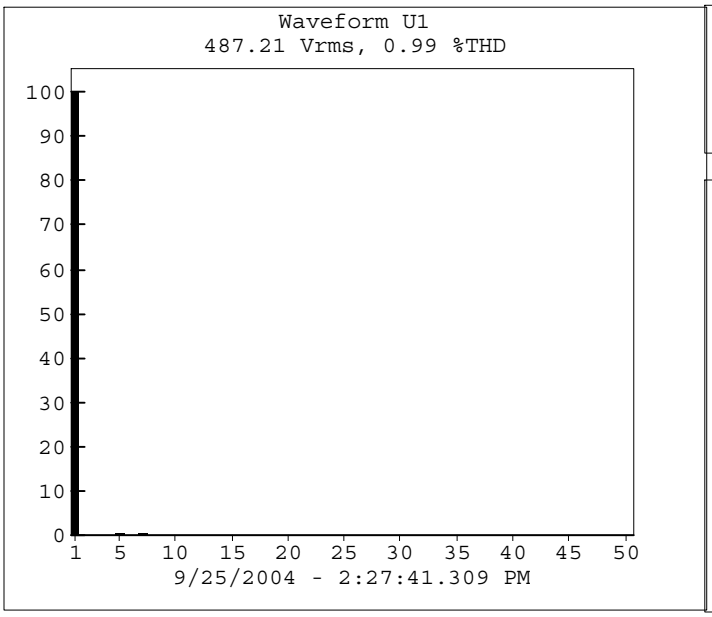
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.2	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	2:27:41.309 PM	16.661	487.2	V
Waveform U2	9/25/2004	2:27:41.309 PM	16.661	483.8	V
Waveform U3	9/25/2004	2:27:41.309 PM	16.661	478.6	V



9/25/2004 - 2:27:41.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 2:27:41 PM
Duration: 0:0.000 (M:S)
W: 734.0 W
VAR: 3.734E+3 W
VA: 3.805E+3 W
Power Factor: 0.193
Displacement Power Factor: 0.193
TAN: 5.085
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Sinajana WWPs\092504 - Sinajana WWPS Pump 2 Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Sinajana WWPS - Pump 2 Photo ,

Comments

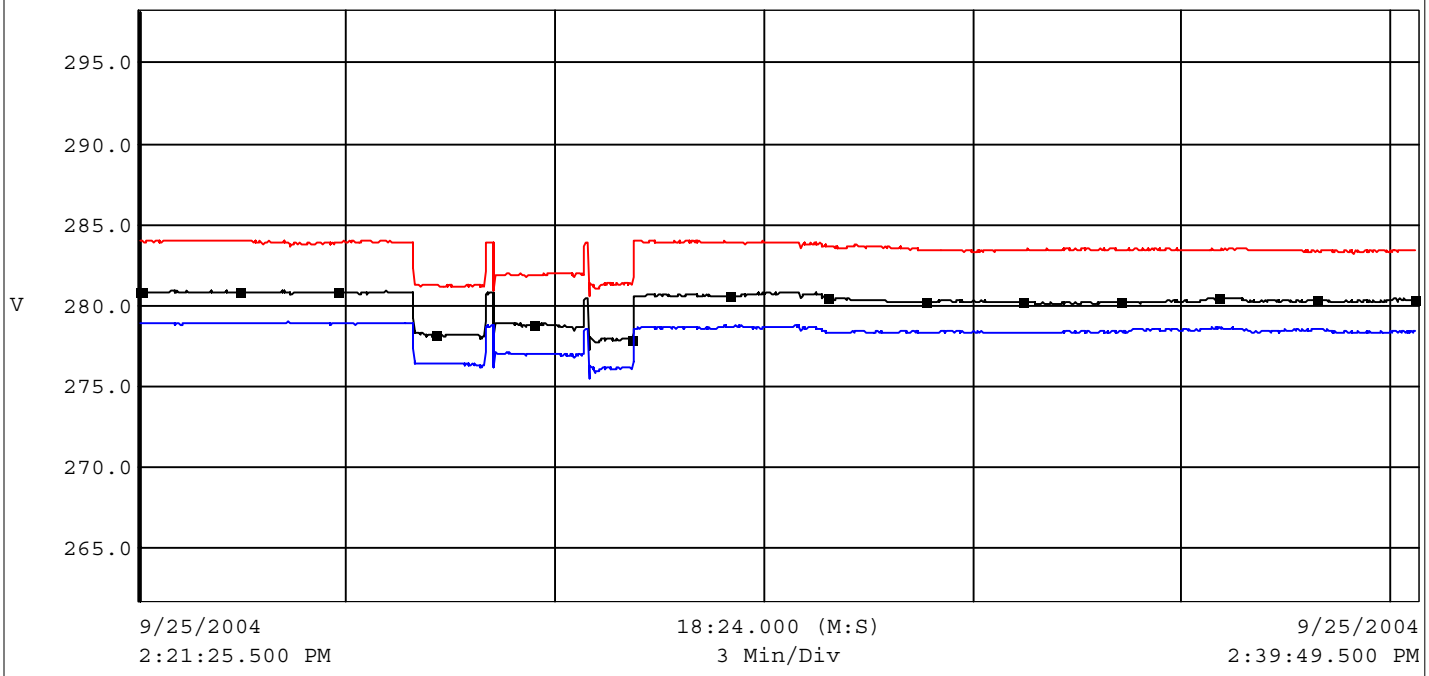
GPA Meter 72950750, Demand 8.5KW.

ABS 12.6 KW submersible pumps.

Sinajana WWPS Pump 1 and 2

Recording Start Date	9/25/2004 - 2:21:25 PM
Recording Duration	18:24 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Vrms

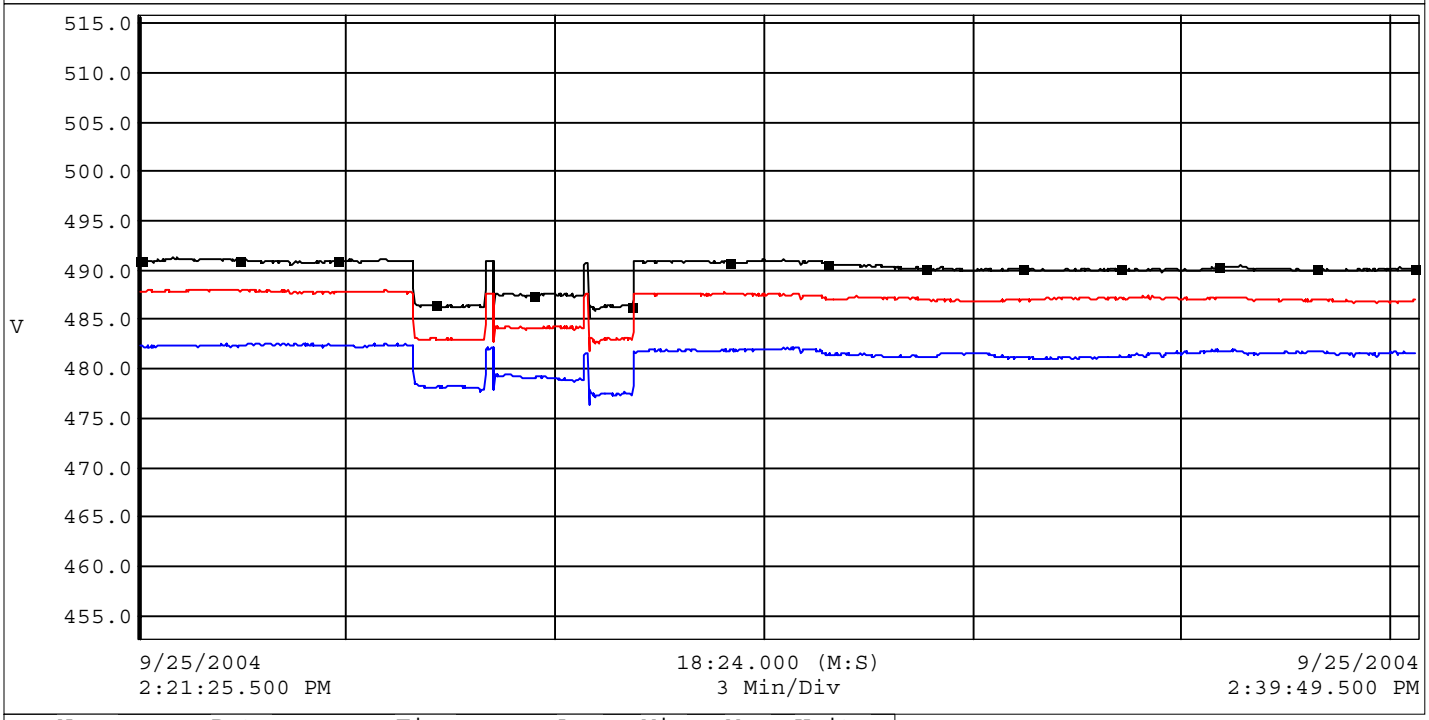


Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/25/2004	2:21:25.500 PM	280.1	277.2	280.9	1105
Vrms Line2	9/25/2004	2:21:25.500 PM	283.2	280.5	284.0	1105
Vrms Line3	9/25/2004	2:21:25.500 PM	278.2	275.4	279.0	1105

9/25/2004 - 2:21:25.000 PM

Val	
280.8	Vrms Line1
283.9	Vrms Line2
278.9	Vrms Line3

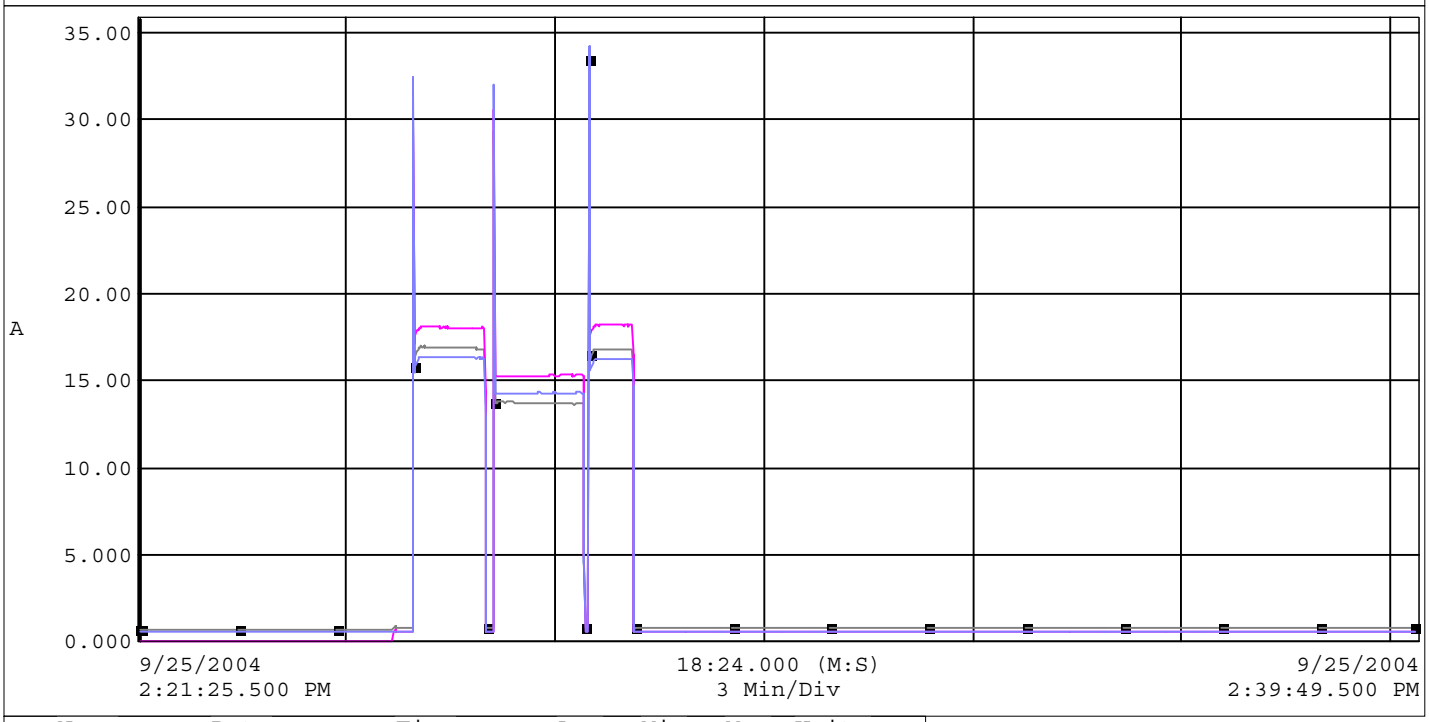
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/25/2004	2:21:25.500 PM	489.8	485.0	491.2	V
Urms Line2	9/25/2004	2:21:25.500 PM	486.6	481.7	488.0	V
Urms Line3	9/25/2004	2:21:25.500 PM	481.1	476.3	482.5	V

9/25/2004 - 2:21:25.000 PM
Val
490.8 Urms Line1
487.8 Urms Line2
482.3 Urms Line3

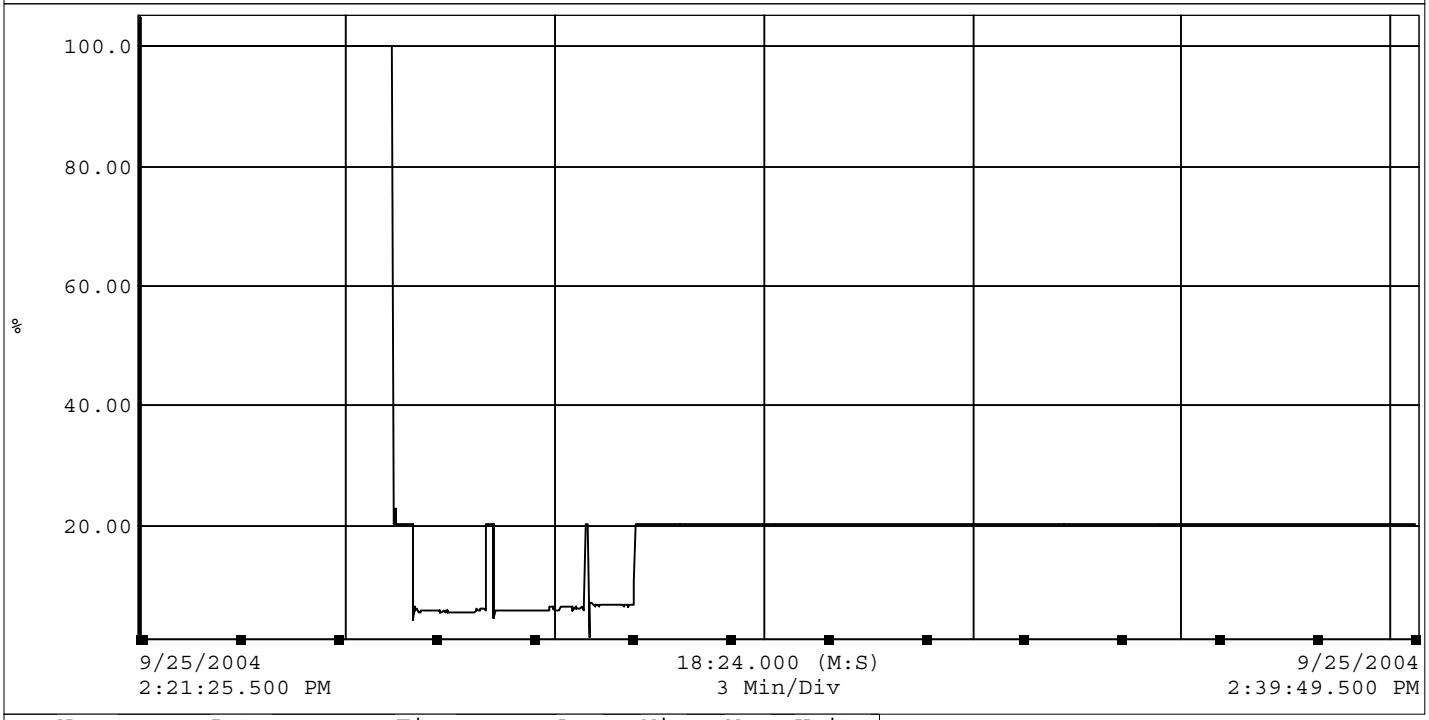
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/25/2004	2:21:25.500 PM	3.211	0.700	33.40	A
Arms Line2	9/25/2004	2:21:25.500 PM	3.163	0.000	33.50	A
Arms Line3	9/25/2004	2:21:25.500 PM	3.049	0.600	34.10	A

9/25/2004 - 2:21:25.000 PM
Val
0.700 — Arms Line1
0.000 — Arms Line2
0.600 — Arms Line3

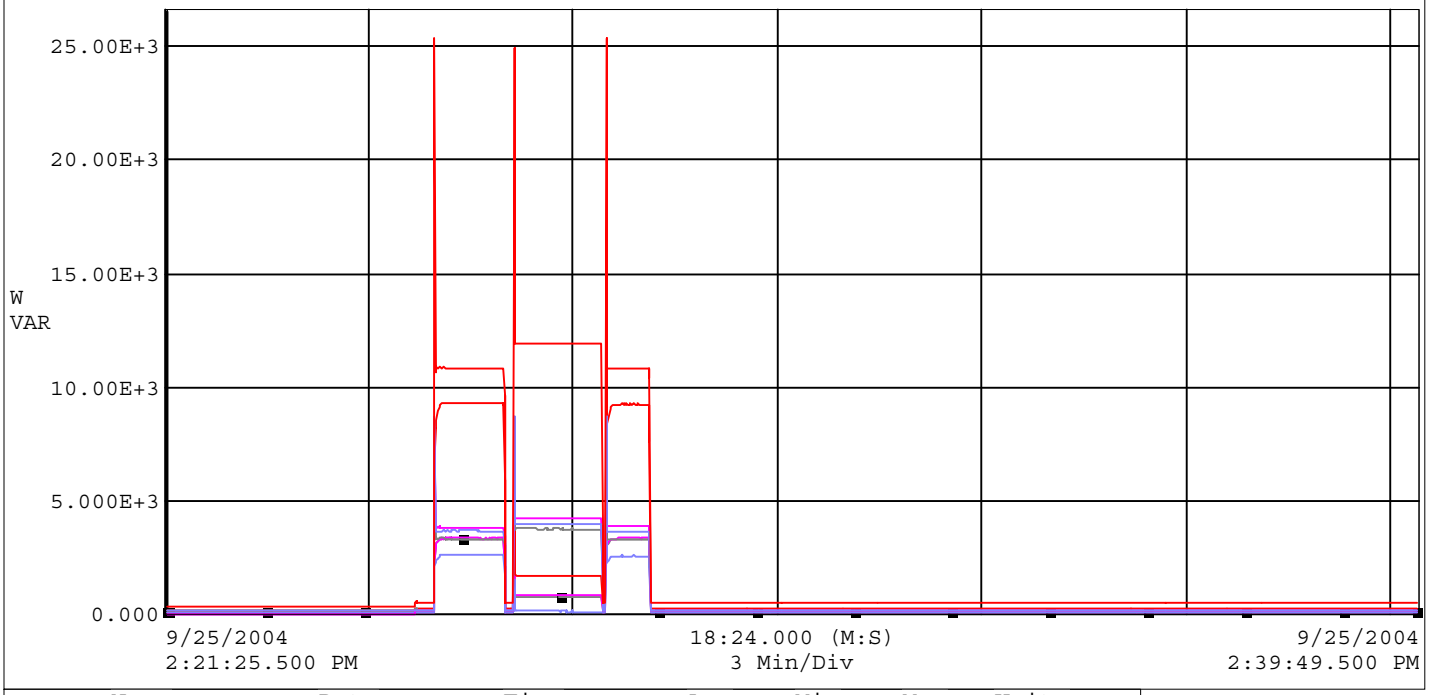
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/25/2004	2:21:25.500 PM	0.973	0.900	1.000	%
Aunb(IEEE)	9/25/2004	2:21:25.500 PM	33.61	1.300	100.0	%

9/25/2004 - 2:21:25.000 PM
Val
1.000 ── Vunb(IEEE)
100.0 ── Aunb(IEEE)

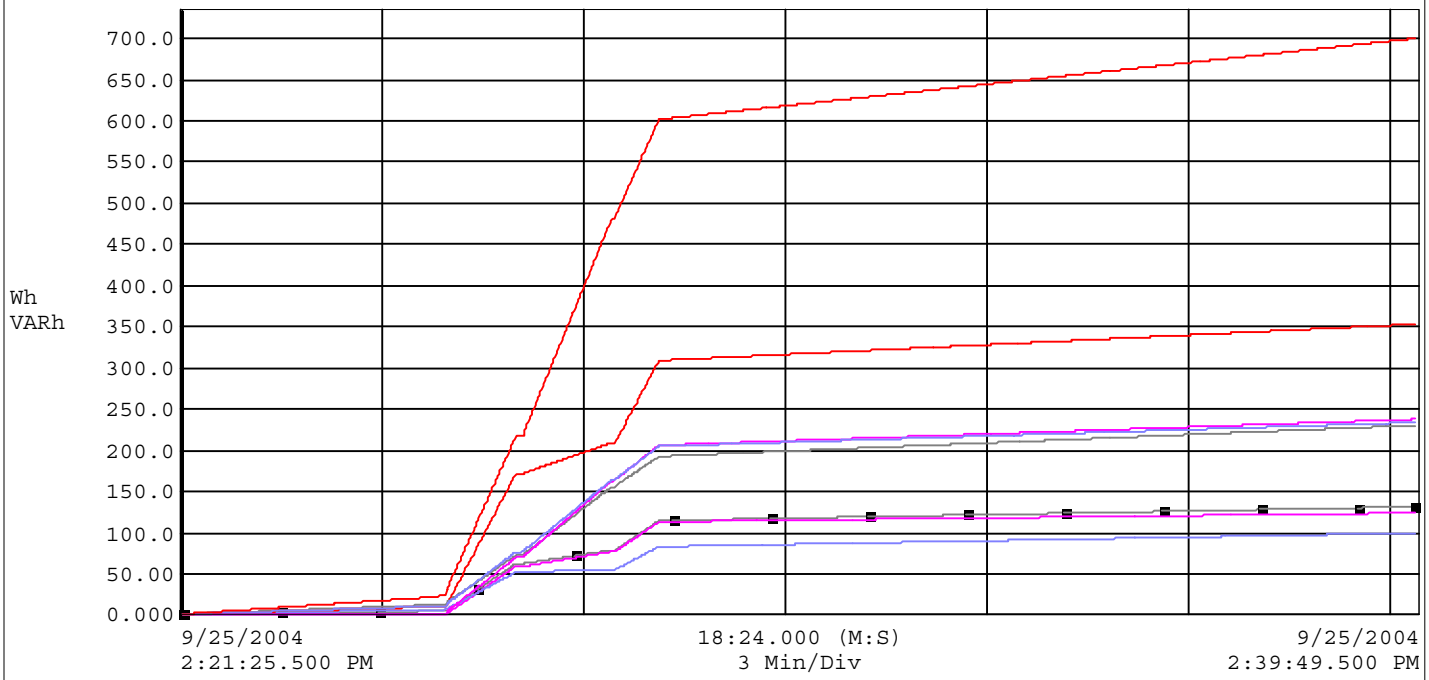
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/25/2004	2:21:25.500 PM	425.3	59.00	4.200E+3	W
W Line2	9/25/2004	2:21:25.500 PM	400.8	0.000	4.271E+3	W
W Line3	9/25/2004	2:21:25.500 PM	321.4	87.81	3.582E+3	W
W Sum of Phases	9/25/2004	2:21:25.500 PM	1.148E+3	147.0	12.05E+3	W
VAR Line1	9/25/2004	2:21:25.500 PM	747.5	180.0	8.308E+3	VAR
VAR Line2	9/25/2004	2:21:25.500 PM	771.4	0.000	8.358E+3	VAR
VAR Line3	9/25/2004	2:21:25.500 PM	758.9	146.7	8.726E+3	VAR
VAR Sum of Phases	9/25/2004	2:21:25.500 PM	2.278E+3	333.3	25.31E+3	VAR

9/25/2004 - 2:21:25.000 PM
Val
59.69 — W Line1
0.000 — W Line2
89.72 — W Line3
149.2 — W Sum of Phases
182.1 — VAR Line1
0.000 — VAR Line2
153.9 — VAR Line3
335.6 — VAR Sum of Phases

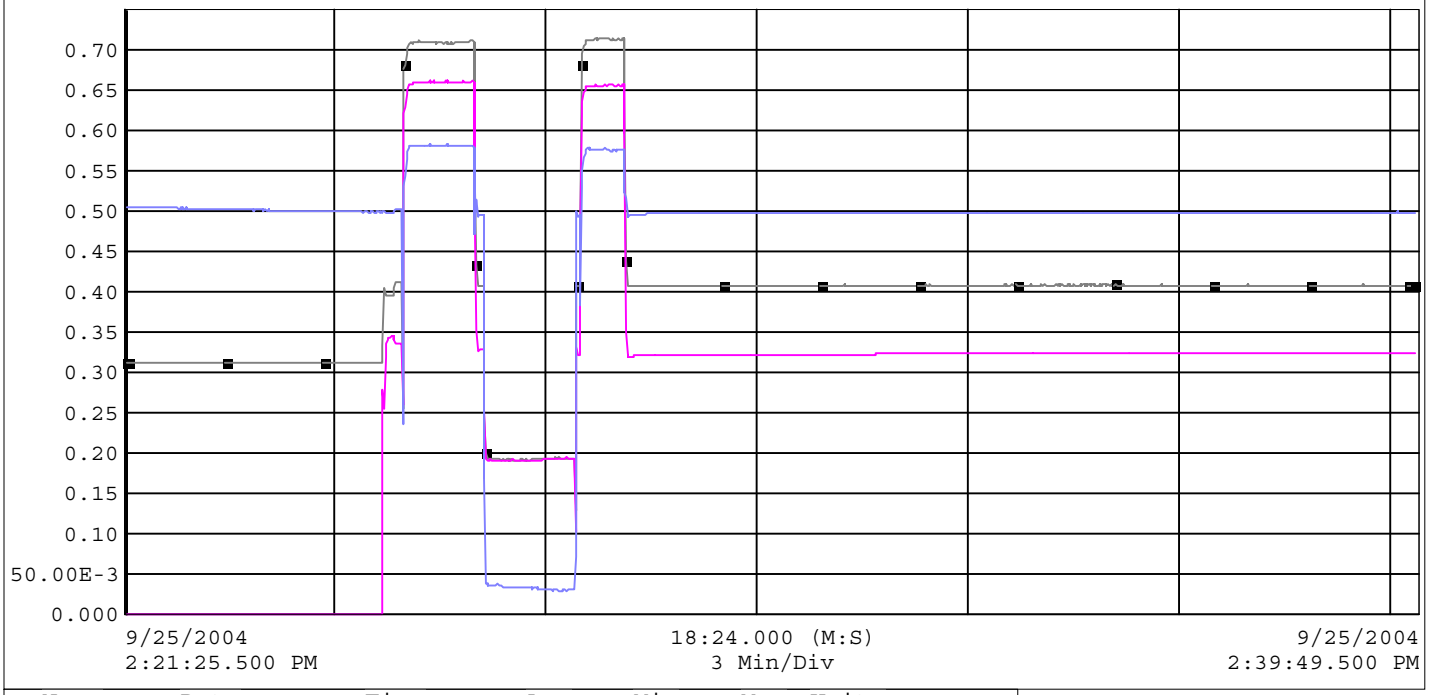
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/25/2004	2:21:25.500 PM	86.15	15.95E-3	130.5	Wh
W-hours Line2	9/25/2004	2:21:25.500 PM	82.51	0.000	123.0	Wh
W-hours Line3	9/25/2004	2:21:25.500 PM	64.31	24.11E-3	98.66	Wh
W-hours Sum of Phases	9/25/2004	2:21:25.500 PM	233.0	43.01E-3	352.2	Wh
VAR-hours Line1	9/25/2004	2:21:25.500 PM	148.0	49.03E-3	229.4	VARh
VAR-hours Line2	9/25/2004	2:21:25.500 PM	153.2	0.000	236.8	VARh
VAR-hours Line3	9/25/2004	2:21:25.500 PM	153.5	42.67E-3	232.9	VARh
VAR-hours Sum of Phases	9/25/2004	2:21:25.500 PM	454.8	85.36E-3	699.1	VARh

9/25/2004 - 2:21:25.000 PM
Val
15.95E-3 — W-hours Line1
0.000 — W-hours Line2
24.11E-3 — W-hours Line3
43.01E-3 — W-hours Sum of Phases
49.03E-3 — VAR-hours Line1
0.000 — VAR-hours Line2
42.67E-3 — VAR-hours Line3
85.36E-3 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/25/2004	2:21:25.500 PM	0.399	0.127	0.712	
PF Line2	9/25/2004	2:21:25.500 PM	0.278	0.000	0.659	
PF Line3	9/25/2004	2:21:25.500 PM	0.471	29.00E-3	0.581	

9/25/2004 - 2:21:25.000 PM
Val
0.312 — PF Line1
0.000 — PF Line2
0.504 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Sinajana WWPs\092504 - Sinajana WWPS Pump 1 and 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Sinajana WWPS - Pumps 1 and 2 ,

Comments

GPA Meter 72950750, 8.5 KW Demand.

Two submersi ble, 12.6 KW, 230/460 volt, 19.4/39 amp, 1750 RPM, ABS Pumps. Measured at feeder to the pump control panel. Ball Float Control.

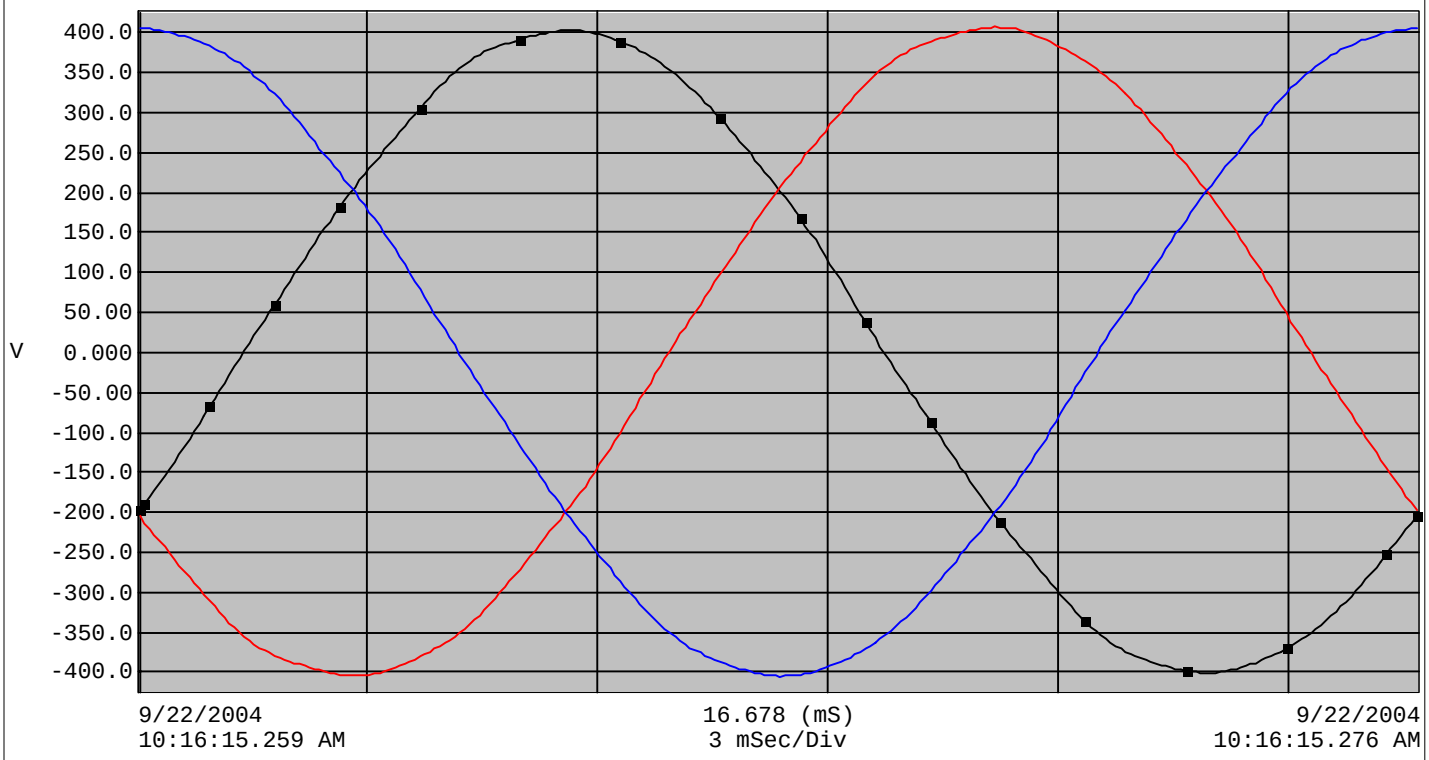
GWA Wastewater Pumping Station Assessment				
Station Name: SOUTHERN LINK	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/22/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.57	
Transformer Pole Condition and Grounding	2.0%	4	0.08	
Transformer Connection Type	2.0%	3	0.06	
Transformer Wiring Method	5.0%	4	0.2	
Lightning Arrester Condition	5.0%	4	0.2	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.475	
Generator Condition	10.0%	2	0.2	22
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	2	0.05	22
Primary Pump Motor Controls	**20.0%**		0.56	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Secondary Pump Motor Controls	**20.0%**		0.56	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	2	0.08	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.2	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	
	100%	**Assessment Value**		**2.7**

Comments:

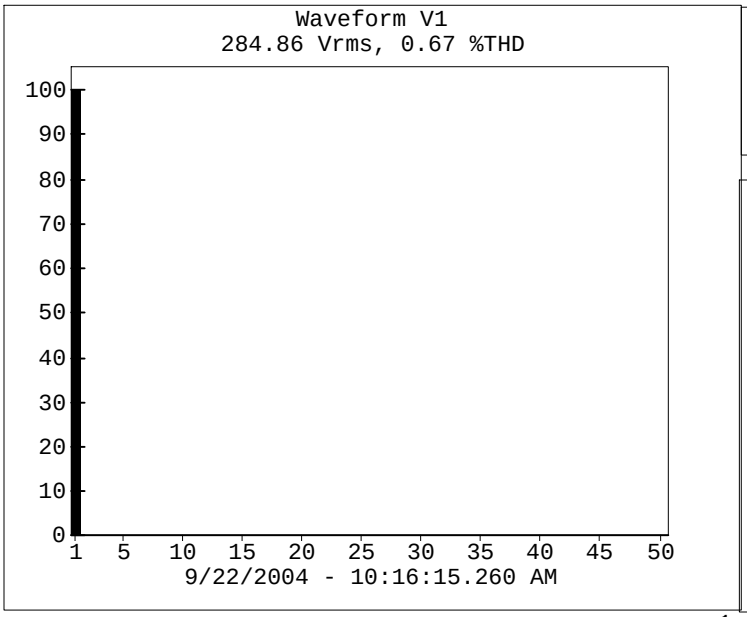
Southern Link WWPS - Pump 1 - Photo

Recording Start Date	9/22/2004 - 10:16:15 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/22/2004	10:16:15.259 AM	16.678	284.9	V
Waveform V2	9/22/2004	10:16:15.259 AM	16.678	287.0	V
Waveform V3	9/22/2004	10:16:15.259 AM	16.678	287.3	V



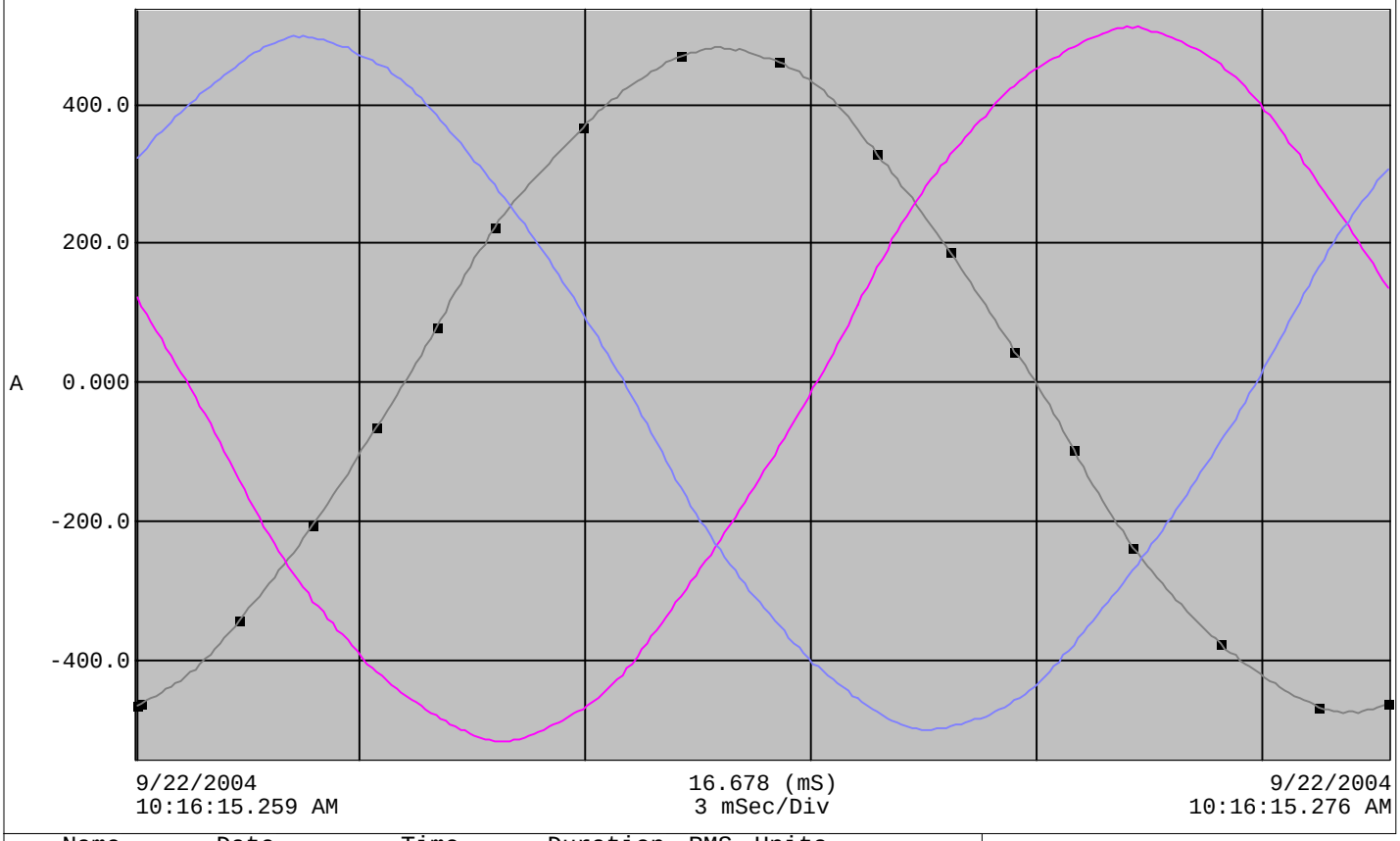
9/22/2004 - 10:16:15.000 AM

	Val	
—	-198.6	Waveform V1
—	-206.2	Waveform V2
—	404.3	Waveform V3

Waveform V1

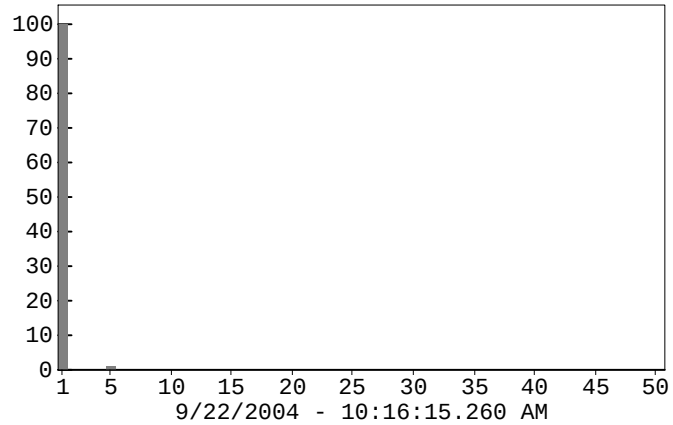
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.3	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/22/2004	10:16:15.259 AM	16.678	335.7	A
Waveform I2	9/22/2004	10:16:15.259 AM	16.678	360.8	A
Waveform I3	9/22/2004	10:16:15.259 AM	16.678	347.9	A

Waveform I1
335.74 Arms, 1.48 %THD



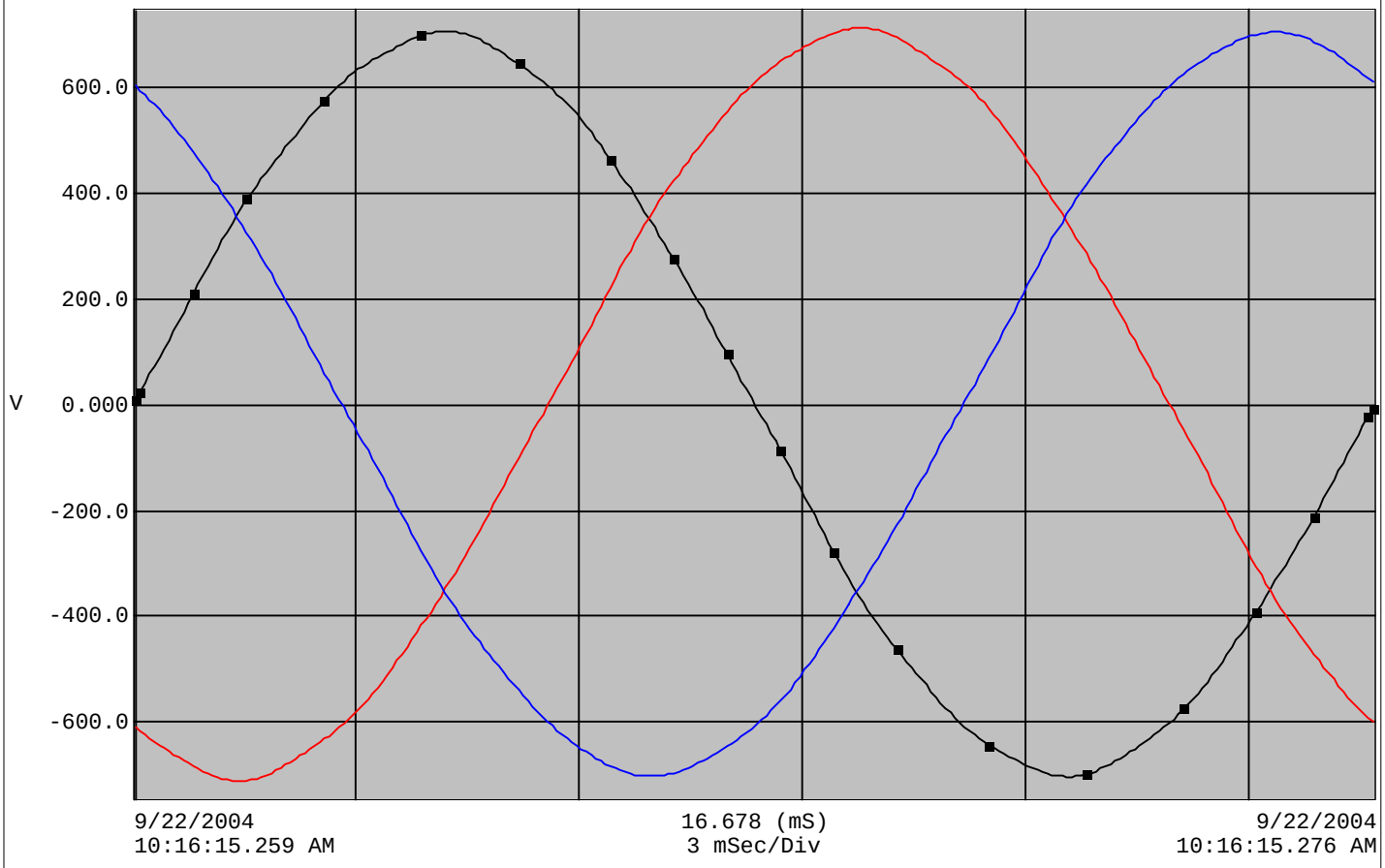
9/22/2004 - 10:16:15.000 AM

Val	
-465.5	Waveform I1
120.7	Waveform I2
322.3	Waveform I3

Waveform I1

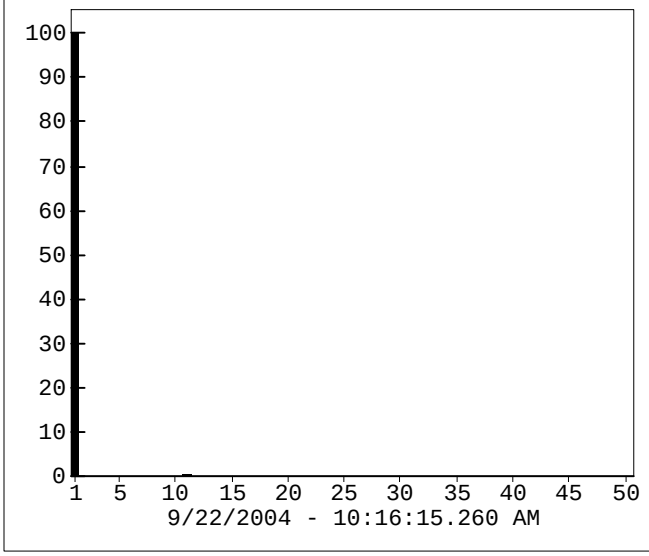
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.2	H19	0.1	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.2	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.2	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/22/2004	10:16:15.259 AM	16.678	494.5	V
Waveform U2	9/22/2004	10:16:15.259 AM	16.678	498.8	V
Waveform U3	9/22/2004	10:16:15.259 AM	16.678	494.8	V

Waveform U1
494.48 Vrms, 0.72 %THD



9/22/2004 - 10:16:15.000 AM

Val	
7.500	Waveform U1
-610.5	Waveform U2
602.9	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.3	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/22/2004
Start Time: 10:16:15 AM
Duration: 0:0.000 (M:S)
W: 64.01E+3 W
VAR: 69.33E+3 W
VA: 94.36E+3 W
Power Factor: 0.678
Displacement Power Factor: 0.678
TAN: 1.083
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Southern Link WWPS\092204-Southern Link WWPS - Pump 1 - Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Southern Link WWPS - Pump 1 ,

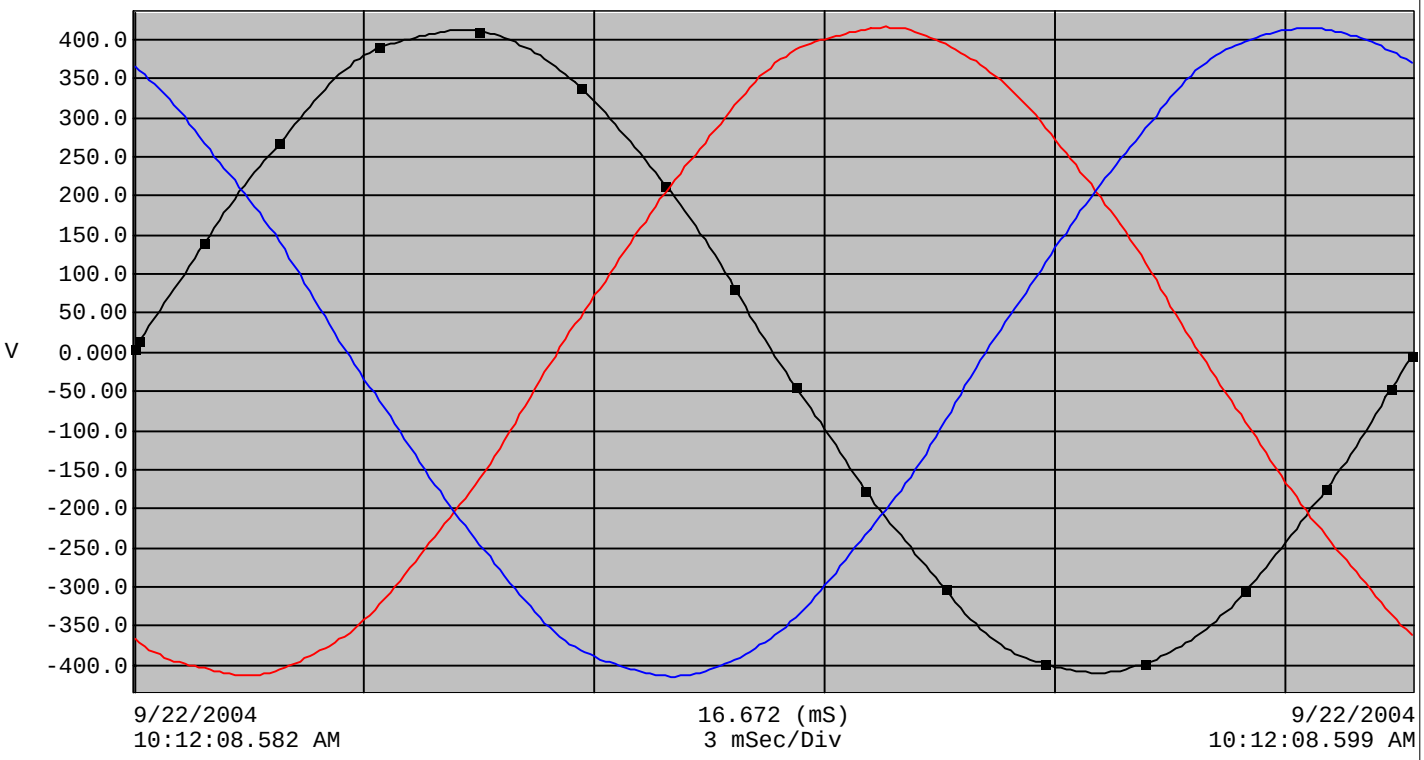
Comments

ABS 295 HP, 480 Volt, 380 amps, 1184 RPM.

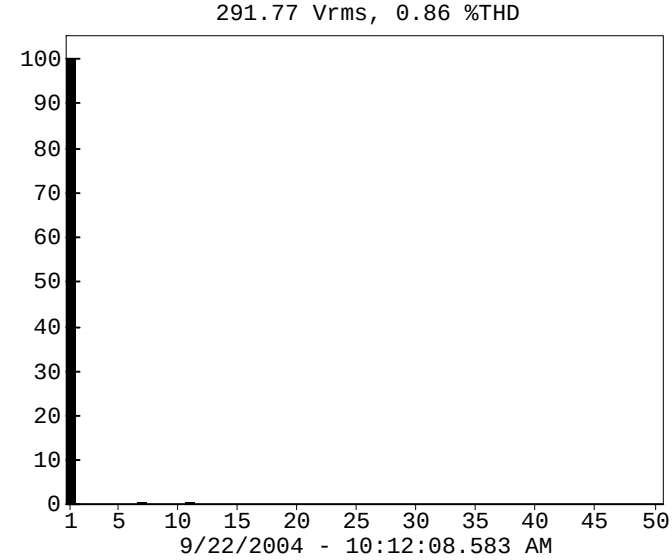
Southern Link WWPS - Pump 1 - NL Photo

Recording Start Date	9/22/2004 - 10:12:08 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/22/2004	10:12:08.582 AM	16.672	291.8	V
Waveform V2	9/22/2004	10:12:08.582 AM	16.672	293.6	V
Waveform V3	9/22/2004	10:12:08.582 AM	16.672	294.1	V



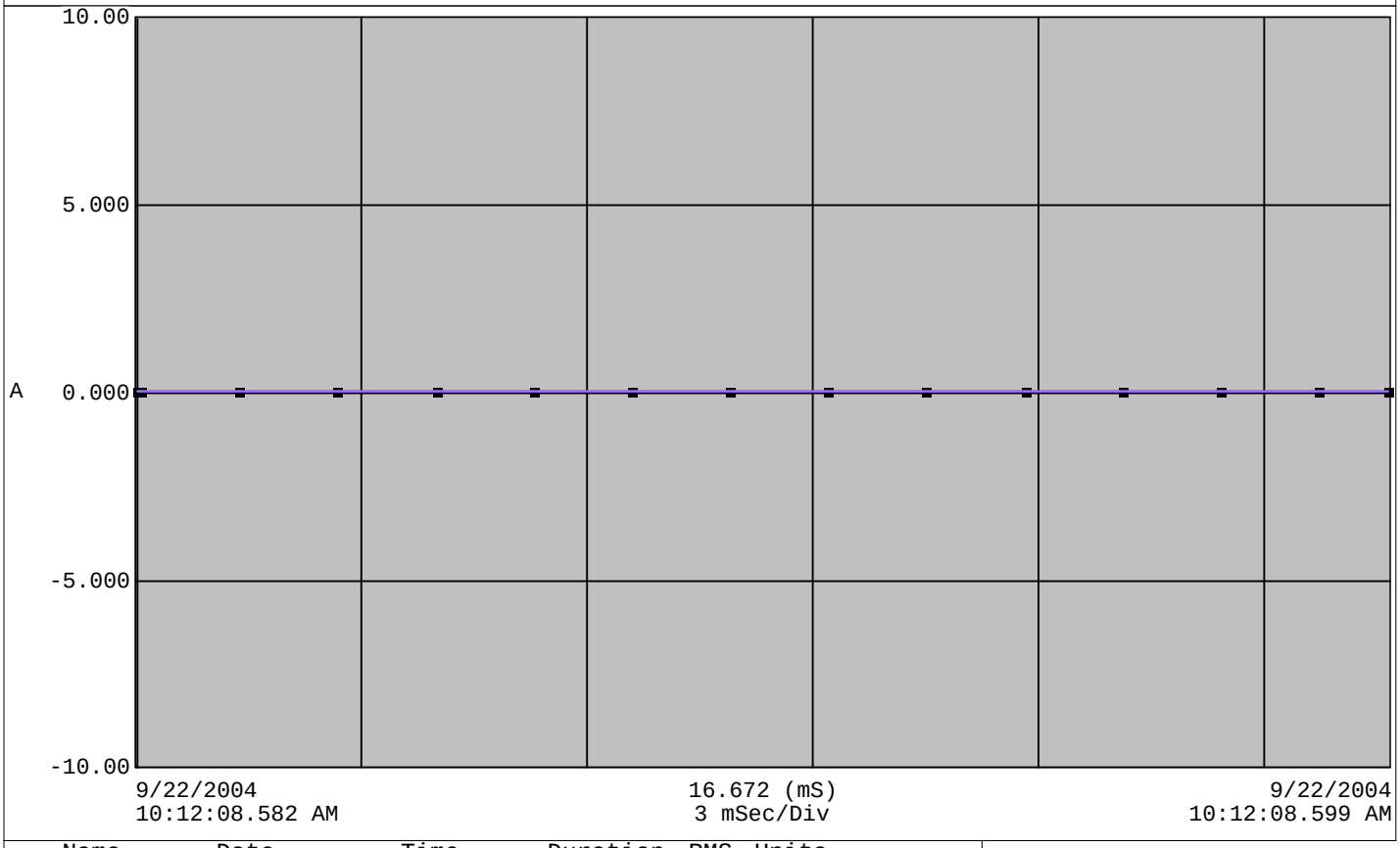
9/22/2004 - 10:12:08.000 AM

Val	
3.300	Waveform V1
-367.5	Waveform V2
363.7	Waveform V3

Waveform V1

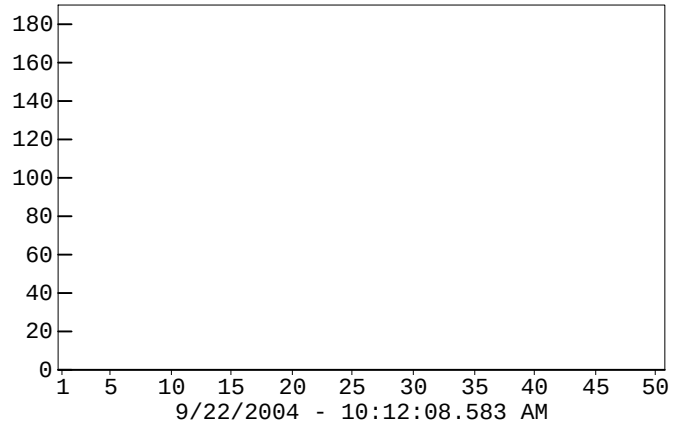
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.4	H22	0.0	H39	0.0
H06	0.2	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/22/2004	10:12:08.582 AM	16.672	0.000	A
Waveform I2	9/22/2004	10:12:08.582 AM	16.672	0.000	A
Waveform I3	9/22/2004	10:12:08.582 AM	16.672	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



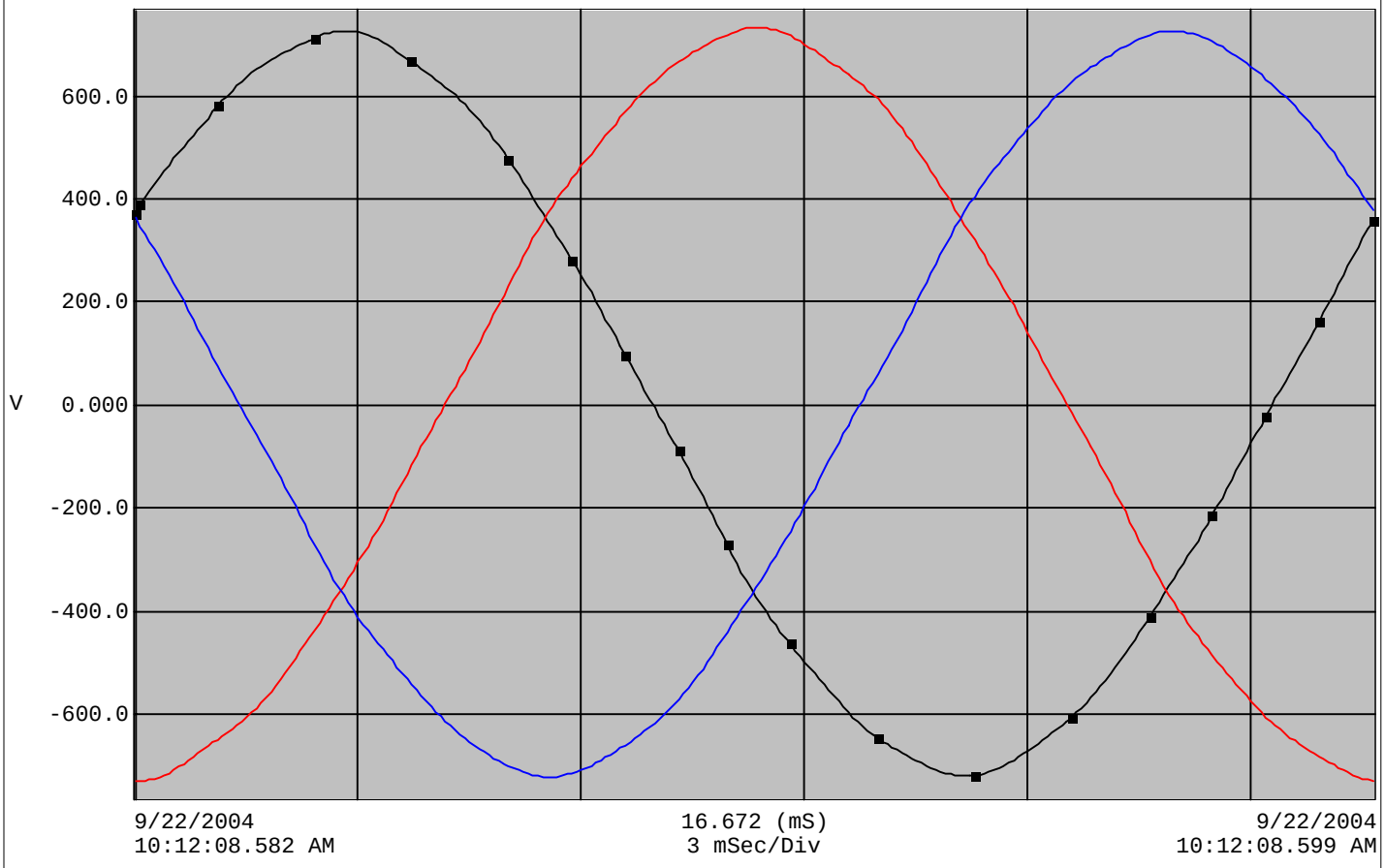
9/22/2004 - 10:12:08.000 AM

Val	
0.000	Waveform I1
0.000	Waveform I2
0.000	Waveform I3

Waveform I1

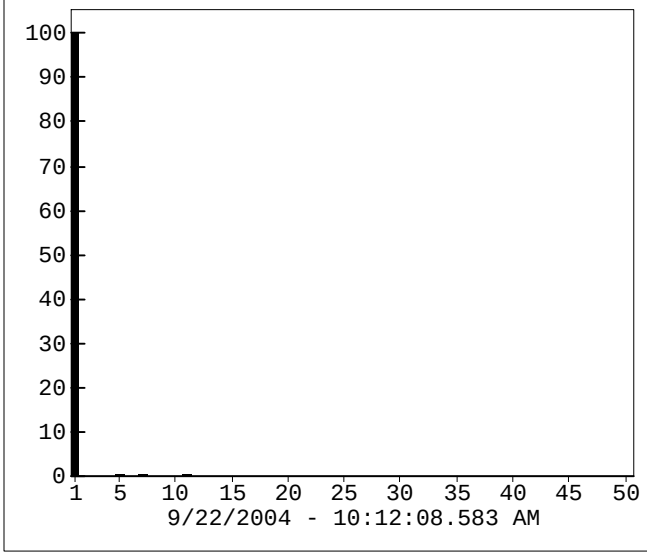
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/22/2004	10:12:08.582 AM	16.672	506.1	V
Waveform U2	9/22/2004	10:12:08.582 AM	16.672	510.3	V
Waveform U3	9/22/2004	10:12:08.582 AM	16.672	507.0	V

Waveform U1
506.05 Vrms, 0.91 %THD



9/22/2004 - 10:12:08.000 AM

Val	
370.8	Waveform U1
-731.2	Waveform U2
360.4	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.5	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/22/2004
Start Time: 10:12:08 AM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Southern Link WWPS\092204-Southern Link WWPS - Pump 1 - NL Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Southern Link WWPS - Pump 1 - No Load Photo ,

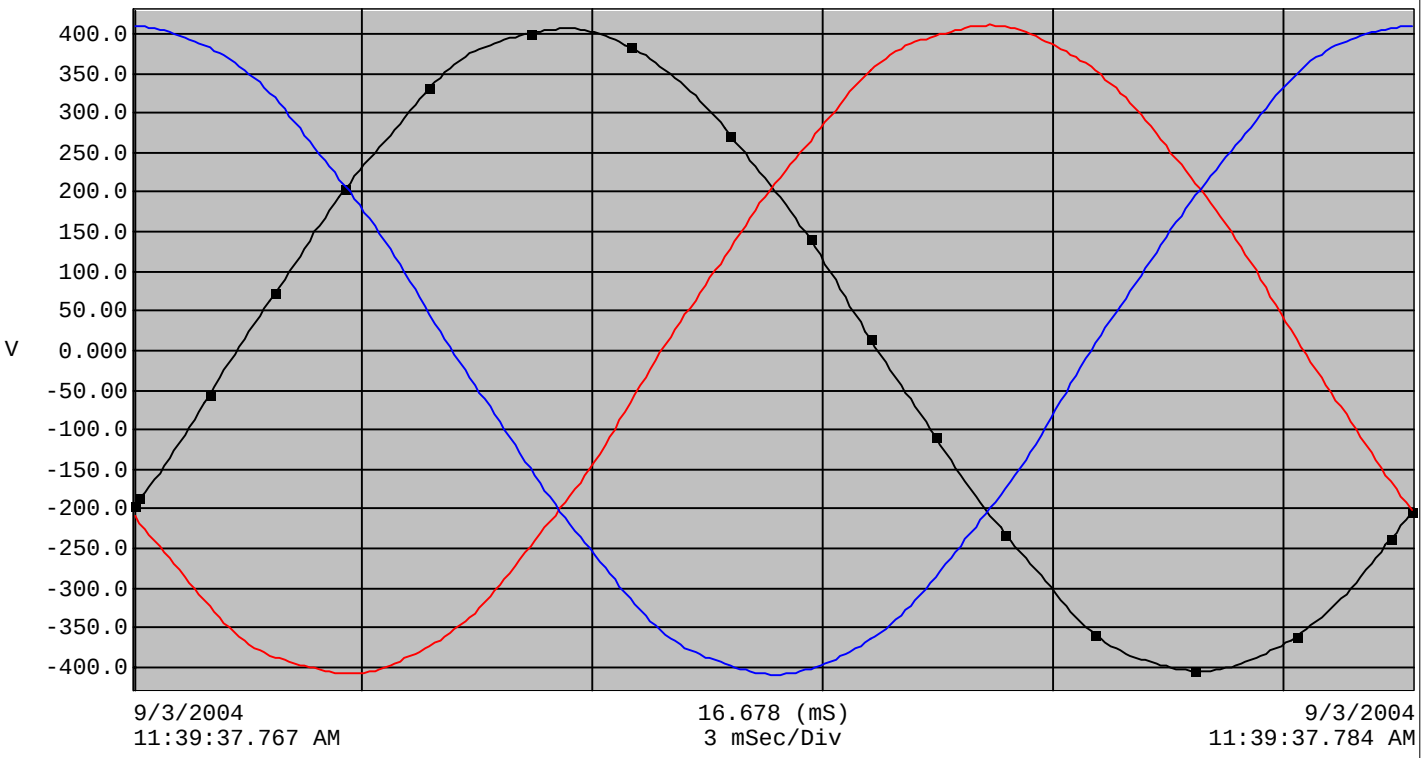
Comments

GPA Meter 04474961, 0.88 demand, 1200/5 CT Ratior, 57-889-639 KVARH Meter. ABS 295 HP, 480 volt, 380 amp, 1184 RPM Submersible motor.

Southern Link WWPS - Pump 1 - Photo

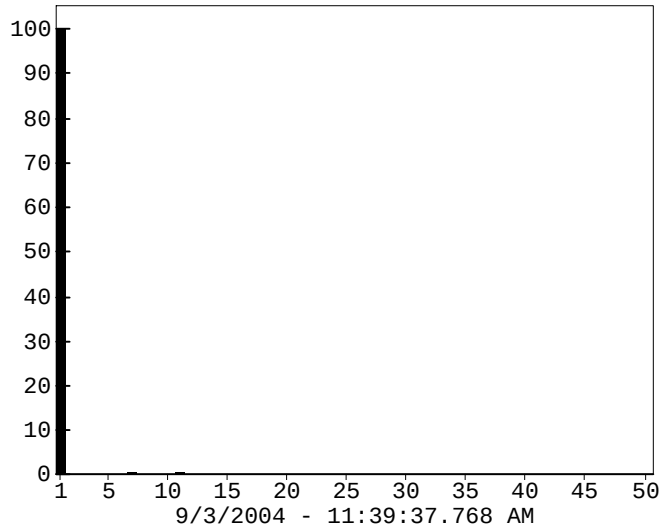
Recording Start Date	9/3/2004 - 11:39:37 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/3/2004	11:39:37.767 AM	16.678	287.5	V
Waveform V2	9/3/2004	11:39:37.767 AM	16.678	289.8	V
Waveform V3	9/3/2004	11:39:37.767 AM	16.678	290.1	V

Waveform V1
287.48 Vrms, 0.83 %THD



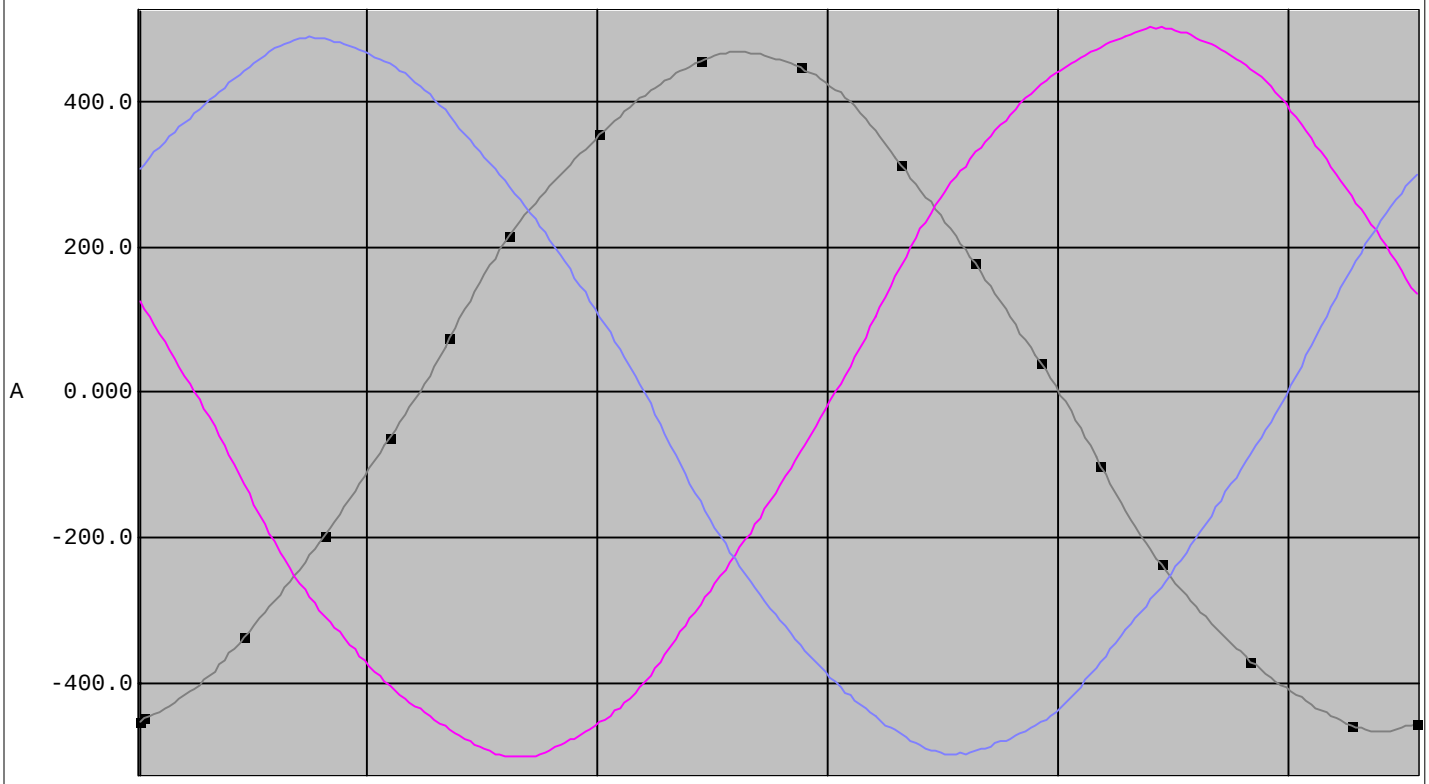
9/3/2004 - 11:39:37.000 AM

Val	
-197.5	Waveform V1
-210.8	Waveform V2
407.8	Waveform V3

Waveform V1

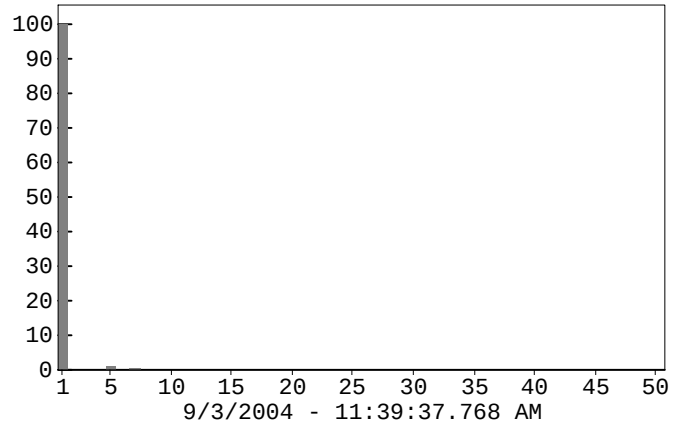
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.4	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.5	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/3/2004	11:39:37.767 AM	16.678	326.4	A
Waveform I2	9/3/2004	11:39:37.767 AM	16.678	351.7	A
Waveform I3	9/3/2004	11:39:37.767 AM	16.678	343.8	A

Waveform I1
326.41 Arms, 1.86 %THD



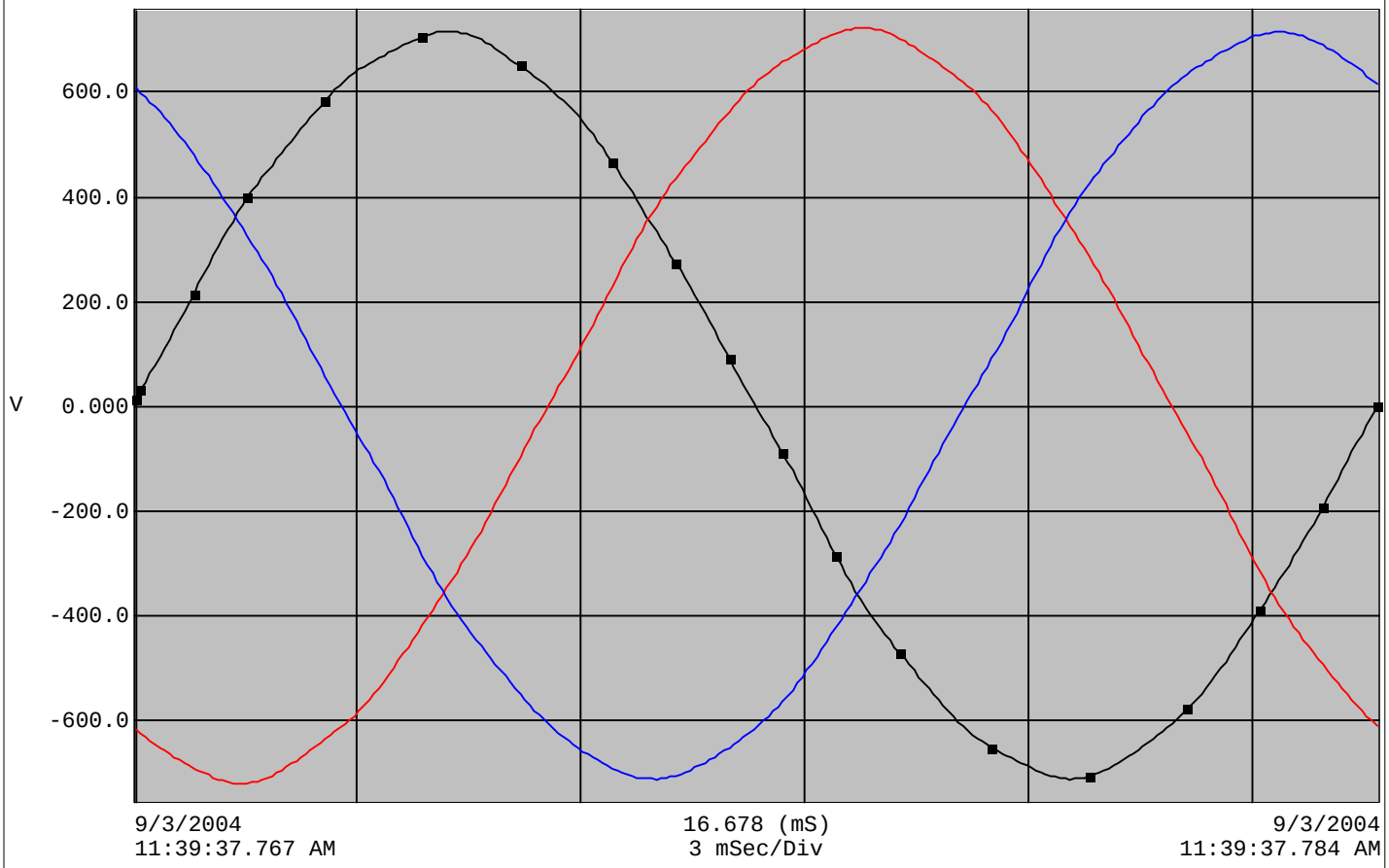
9/3/2004 - 11:39:37.000 AM

Val	
-454.3	Waveform I1
124.4	Waveform I2
304.9	Waveform I3

Waveform I1

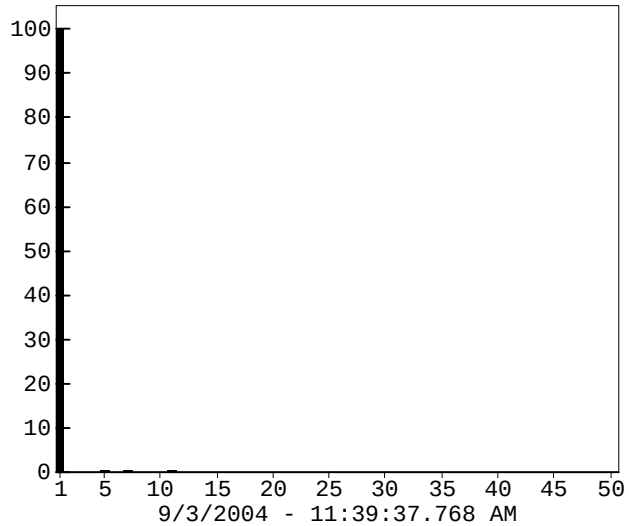
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.5	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.2	H21	0.0	H38	0.0
H05	1.5	H22	0.0	H39	0.0
H06	0.2	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.2	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/3/2004	11:39:37.767 AM	16.678	499.0	V
Waveform U2	9/3/2004	11:39:37.767 AM	16.678	503.8	V
Waveform U3	9/3/2004	11:39:37.767 AM	16.678	499.5	V

Waveform U1
499.04 Vrms, 0.87 %THD



9/3/2004 - 11:39:37.000 AM

	Val	
—	13.20	Waveform U1
—	-618.7	Waveform U2
—	605.4	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.4	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/3/2004
Start Time: 11:39:37 AM
Duration: 0:0.000 (M:S)
W: 63.63E+3 W
VAR: 70.31E+3 W
VA: 94.83E+3 W
Power Factor: 0.671
Displacement Power Factor: 0.671
TAN: 1.105
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Southern Link WWPS\090304-Southern Link WWPS - Pump 1 - Photo.dvb

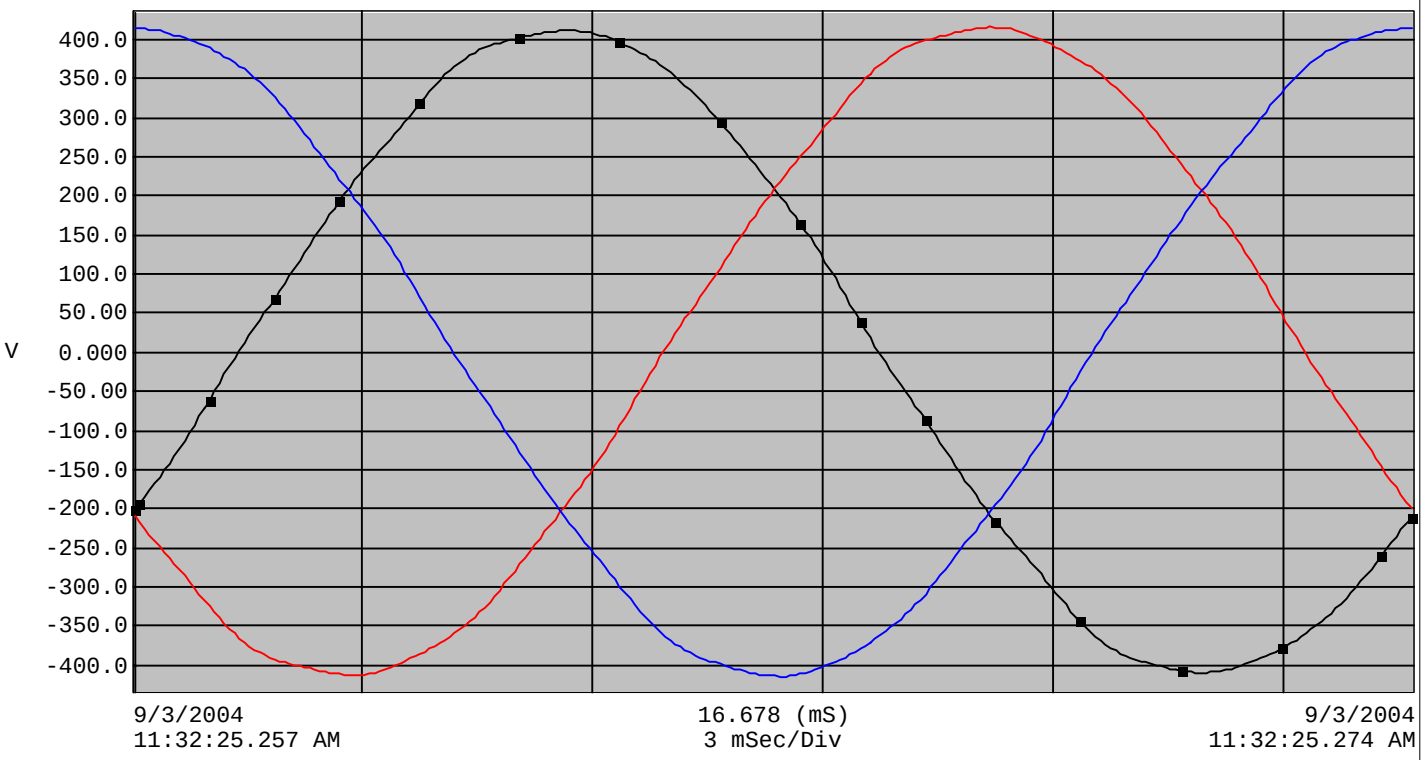
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Southern Link WWPS - Pump 1 - Photo ,

Comments
Measured at motor starter. 300 Hp ABS Pump. This is the operatonal pump.

Southern Link WWPS - Pump 2 - Photo

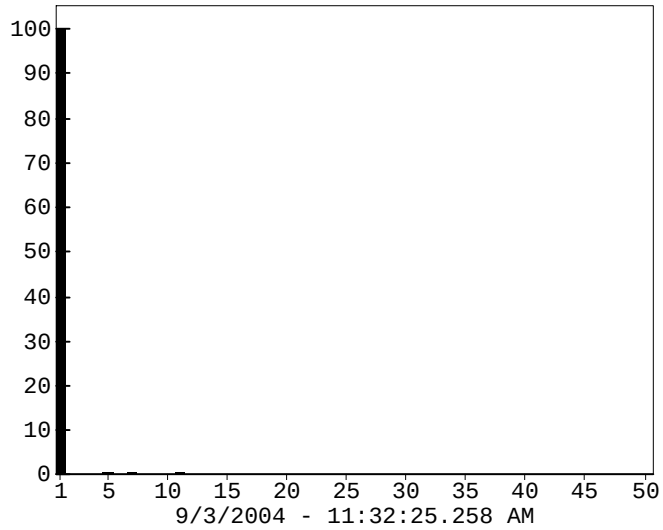
Recording Start Date	9/3/2004 - 11:32:25 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/3/2004	11:32:25.257 AM	16.678	291.8	V
Waveform V2	9/3/2004	11:32:25.257 AM	16.678	293.8	V
Waveform V3	9/3/2004	11:32:25.257 AM	16.678	294.5	V

Waveform V1
291.83 Vrms, 0.98 %THD



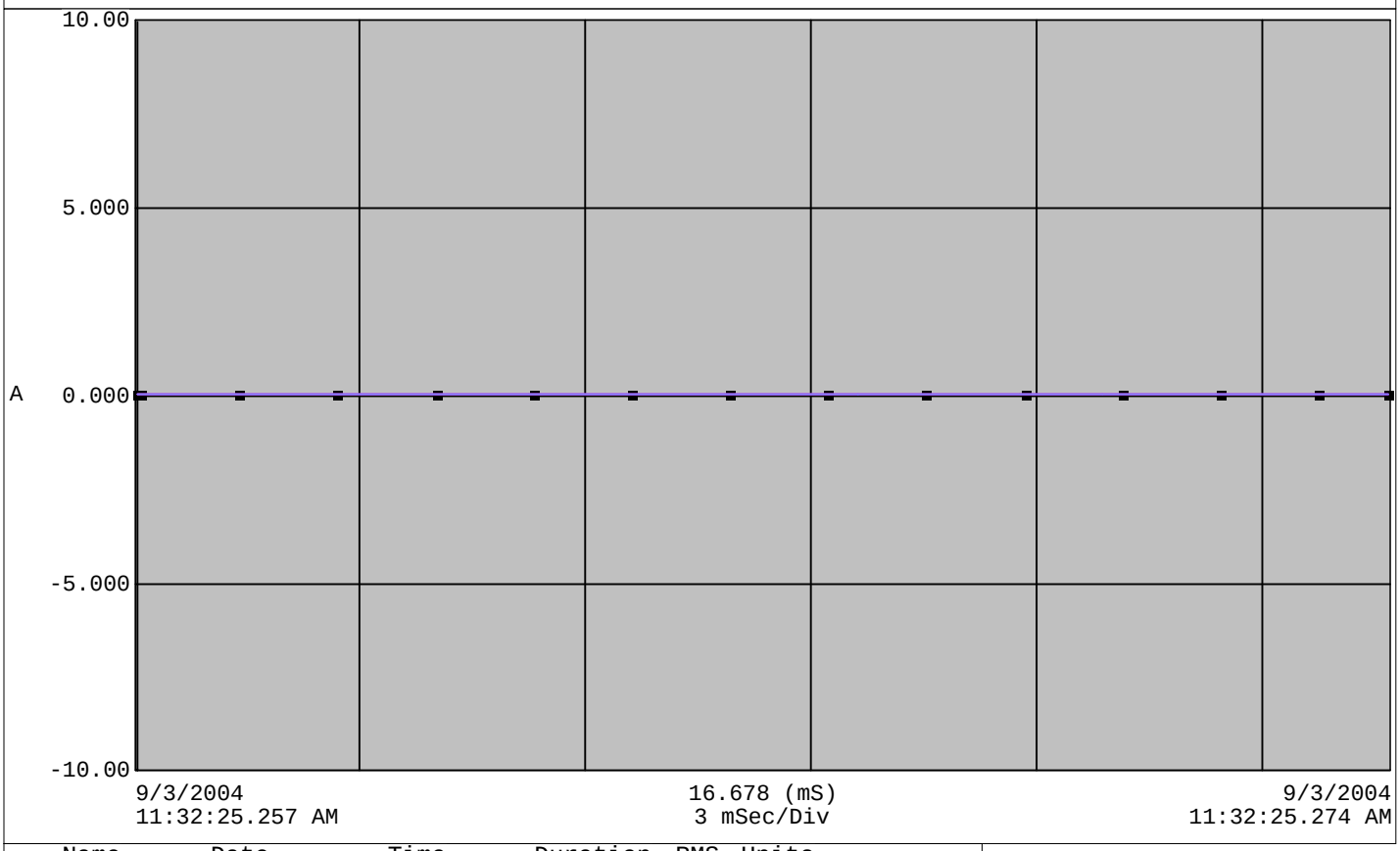
9/3/2004 - 11:32:25.000 AM

	Val	
—	-203.3	Waveform V1
—	-210.2	Waveform V2
—	413.1	Waveform V3

Waveform V1

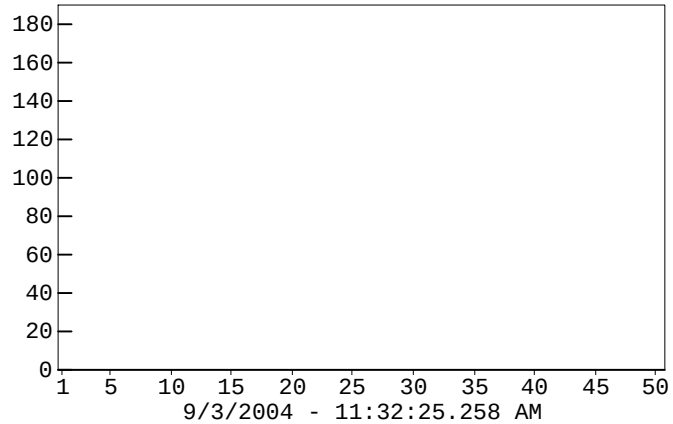
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.2	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/3/2004	11:32:25.257 AM	16.678	0.000	A
Waveform I2	9/3/2004	11:32:25.257 AM	16.678	0.000	A
Waveform I3	9/3/2004	11:32:25.257 AM	16.678	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



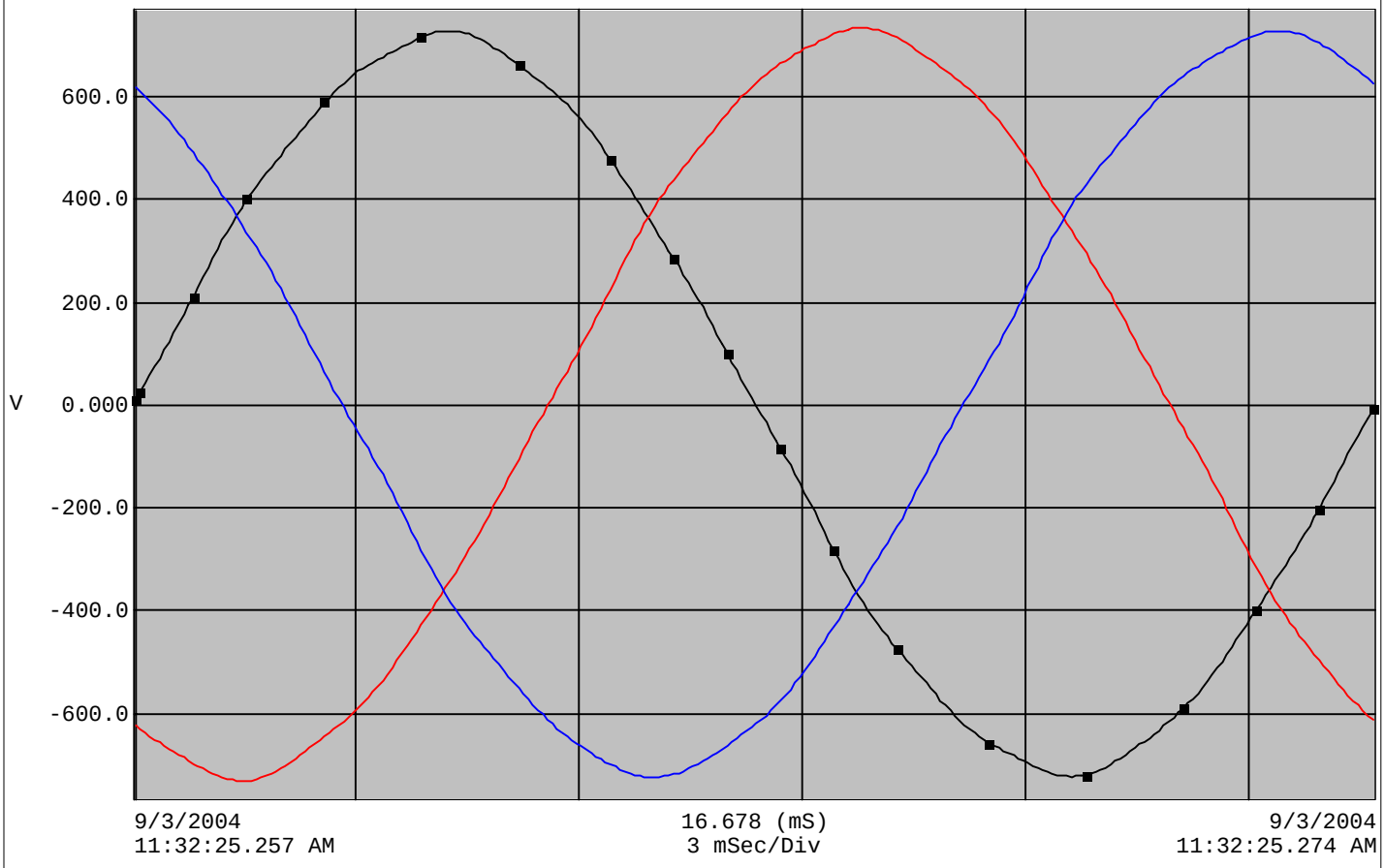
9/3/2004 - 11:32:25.000 AM

Val	
0.000	Waveform I1
0.000	Waveform I2
0.000	Waveform I3

Waveform I1

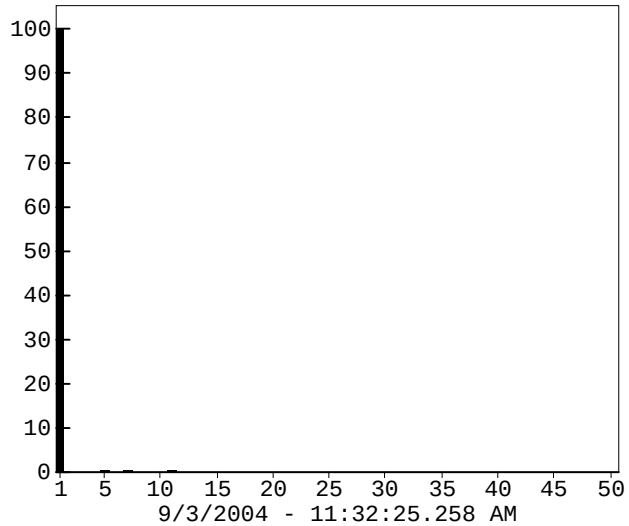
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/3/2004	11:32:25.257 AM	16.678	506.2	V
Waveform U2	9/3/2004	11:32:25.257 AM	16.678	511.0	V
Waveform U3	9/3/2004	11:32:25.257 AM	16.678	507.4	V

Waveform U1
506.20 Vrms, 1.01 %THD



9/3/2004 - 11:32:25.000 AM

	Val	
—	6.800	Waveform U1
—	-623.3	Waveform U2
—	616.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.6	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 9/3/2004
Start Time: 11:32:25 AM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Southern Link WWPS\090304-Southern Link WWPS - Pump 2 - Photo.dvb

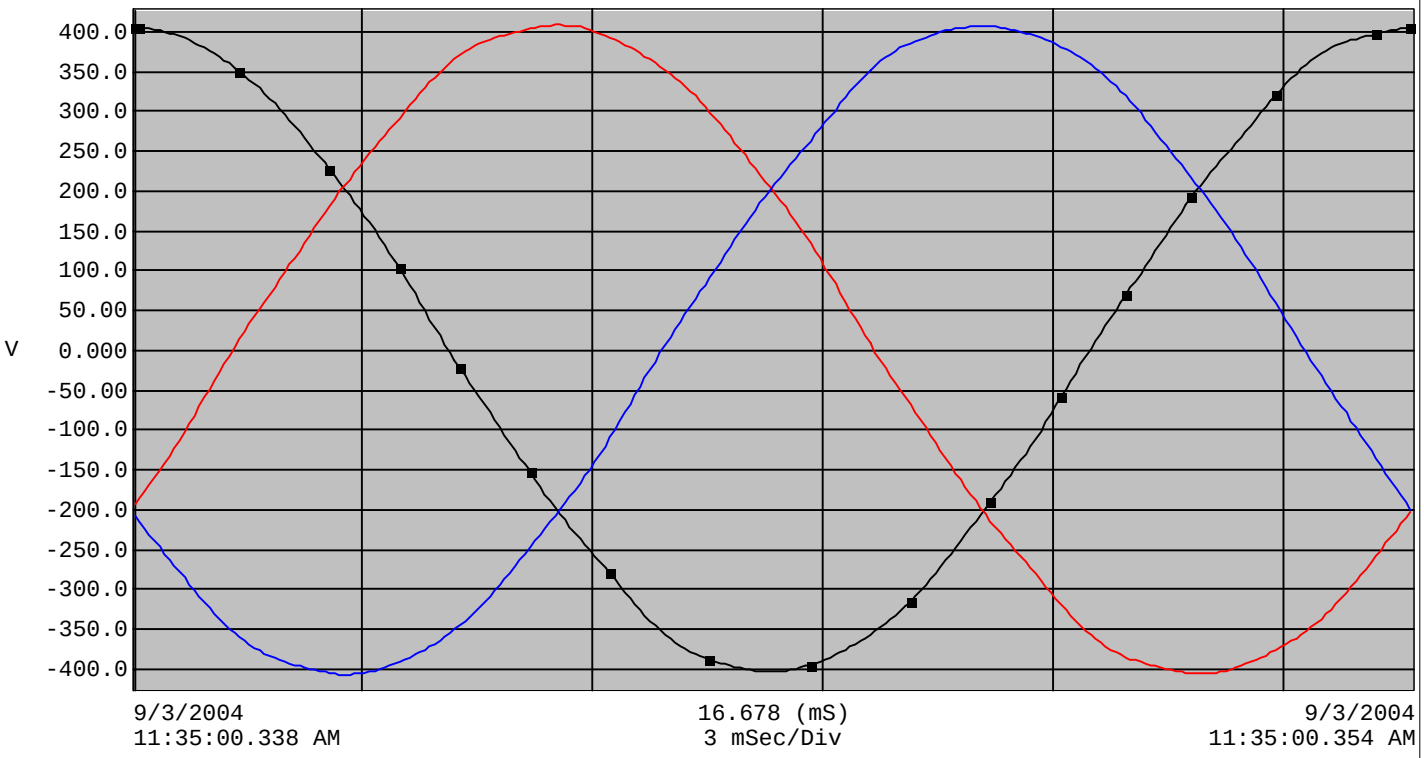
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Southern Link WWPS - Pump 2 -Photo ,

Comments
Measured at motor starter. Pump No. 2 - 300 HP. No Load Readings.

Southern Link WWPS - Pump 2 - Photo 2

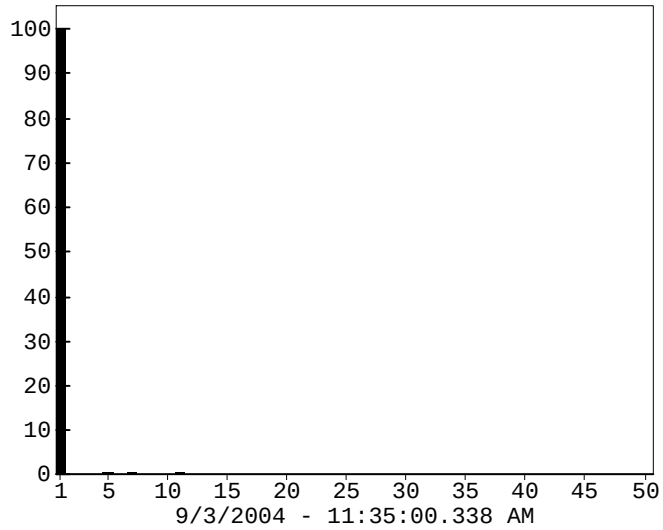
Recording Start Date	9/3/2004 - 11:35:00 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/3/2004	11:35:00.338 AM	16.678	286.8	V
Waveform V2	9/3/2004	11:35:00.338 AM	16.678	288.5	V
Waveform V3	9/3/2004	11:35:00.338 AM	16.678	288.9	V

Waveform V1
286.77 Vrms, 0.83 %THD

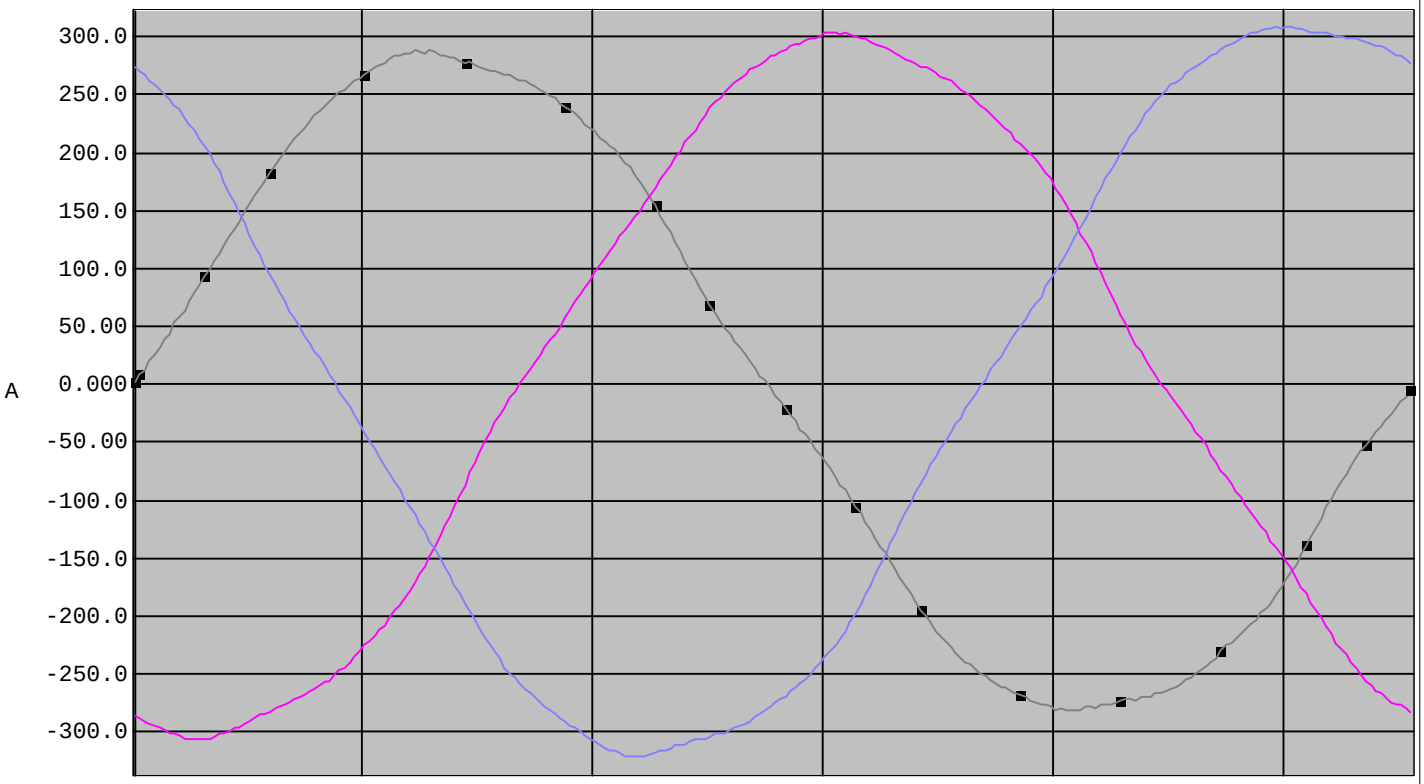


9/3/2004 - 11:35:00.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

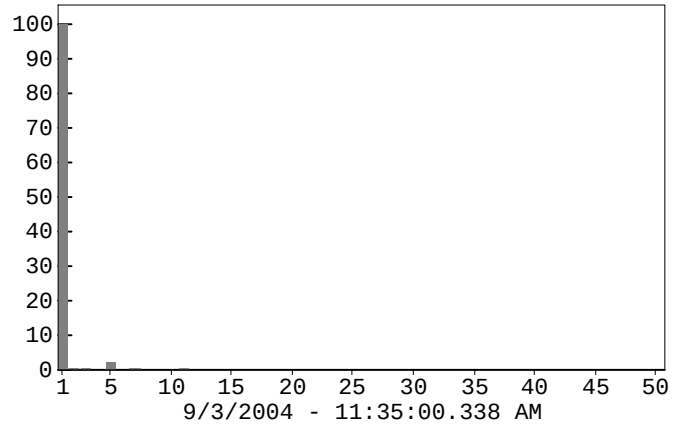
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.4	H22	0.0	H39	0.0
H06	0.2	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/3/2004	11:35:00.338 AM	16.678	201.1	A
Waveform I2	9/3/2004	11:35:00.338 AM	16.678	214.0	A
Waveform I3	9/3/2004	11:35:00.338 AM	16.678	225.6	A

Waveform I1
201.10 Arms, 3.29 %THD

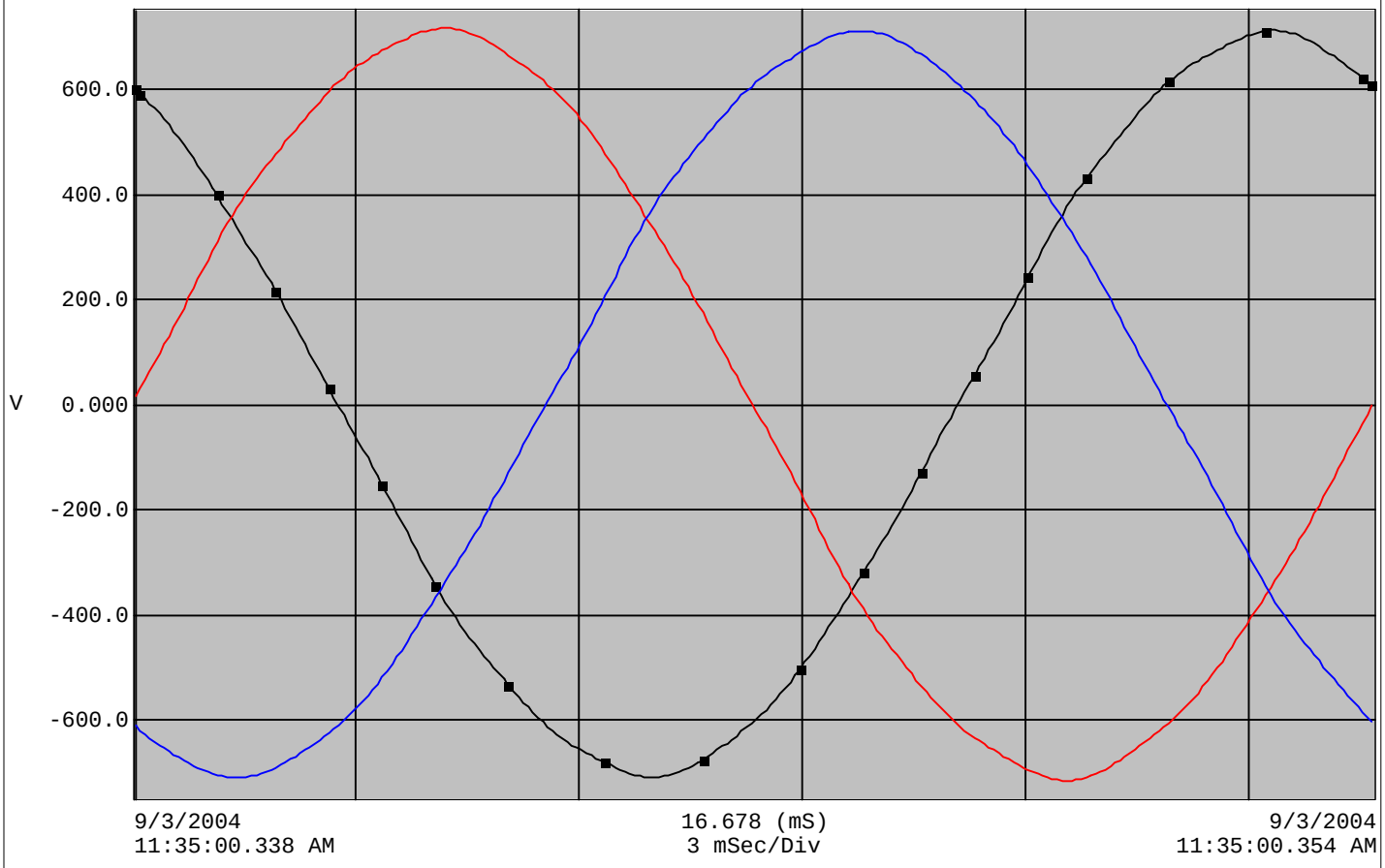


9/3/2004 - 11:35:00.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

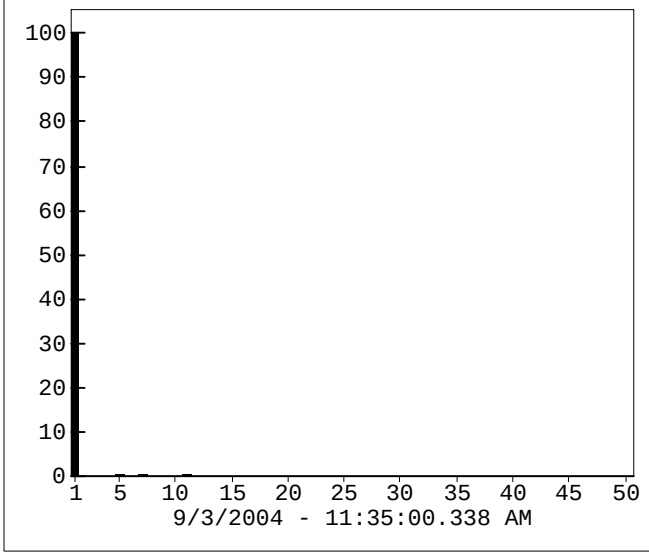
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.7	H19	0.0	H36	0.0
H03	0.9	H20	0.0	H37	0.1
H04	0.3	H21	0.0	H38	0.1
H05	2.8	H22	0.0	H39	0.0
H06	0.4	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.2	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.7	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/3/2004	11:35:00.338 AM	16.678	497.4	V
Waveform U2	9/3/2004	11:35:00.338 AM	16.678	501.4	V
Waveform U3	9/3/2004	11:35:00.338 AM	16.678	498.1	V

Waveform U1
497.40 Vrms, 0.85 %THD



9/3/2004 - 11:35:00.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	0.5	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.5	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/3/2004
Start Time: 11:35:00 AM
Duration: 0:0.000 (M:S)
W: 188.1 W
VAR: 57.60E+3 W
VA: 57.60E+3 W
Power Factor: 3.000E-3
Displacement Power Factor: 3.000E-3
TAN: 32.77
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Southern Link WWPS\090304-Southern Link WWPS - Pump 2 - Photo 2.dvb

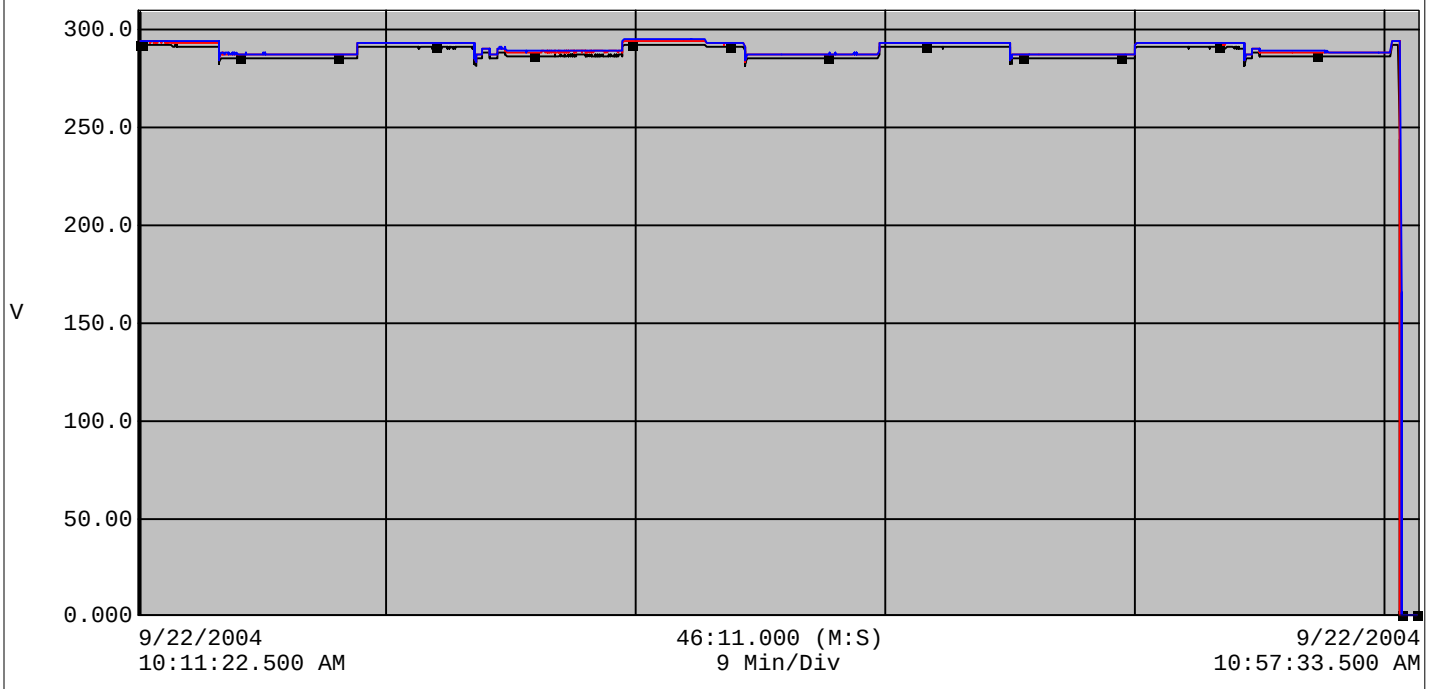
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Southern Link WWPS - Pump 2 - Photo 2 ,

Comments
Measured at motor starter. 300 HP ABS Submersible Pump. Pump not operational - impeller problem.

Southern Link WWPS - Pump 1

Recording Start Date	9/22/2004 - 10:11:22 AM
Recording Duration	46:11 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

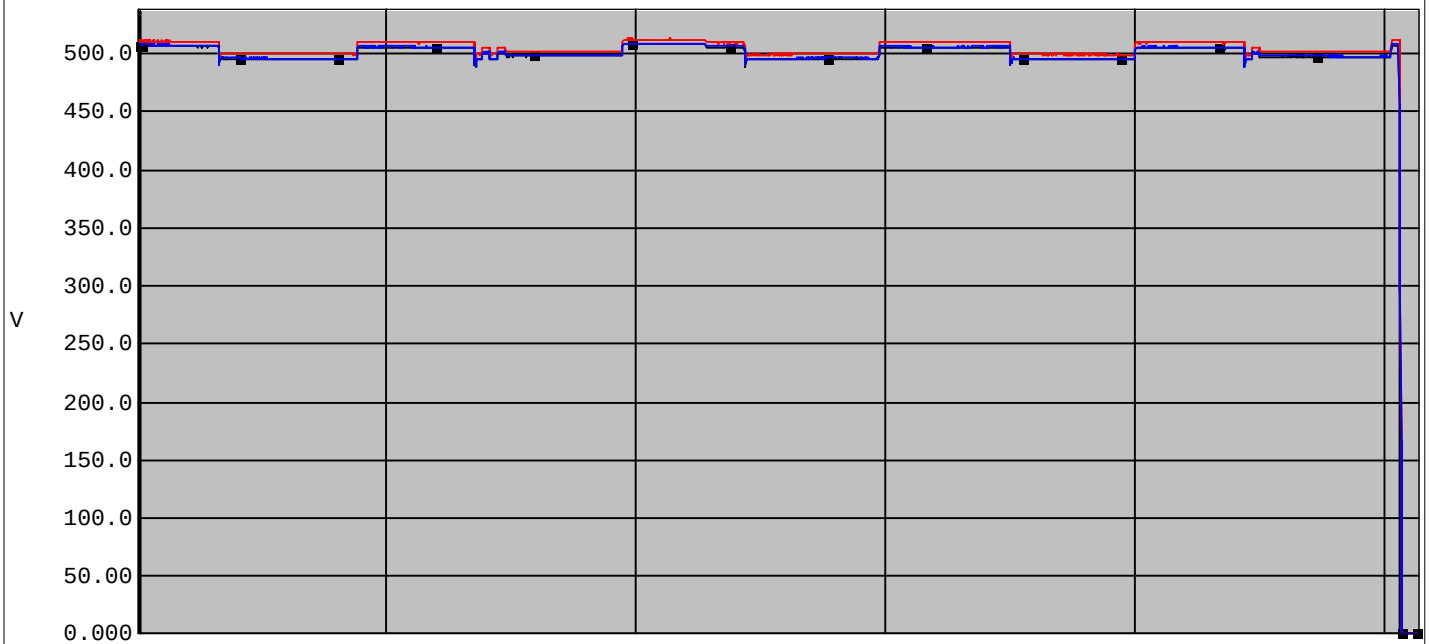
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/22/2004	10:11:22.500 AM	284.2	0.000	292.4	2772
Vrms Line2	9/22/2004	10:11:22.500 AM	286.4	0.000	294.4	2772
Vrms Line3	9/22/2004	10:11:22.500 AM	286.9	0.000	294.9	2772

9/22/2004 - 10:11:22.000 AM
Val
291.7 Vrms Line1
293.6 Vrms Line2
294.0 Vrms Line3

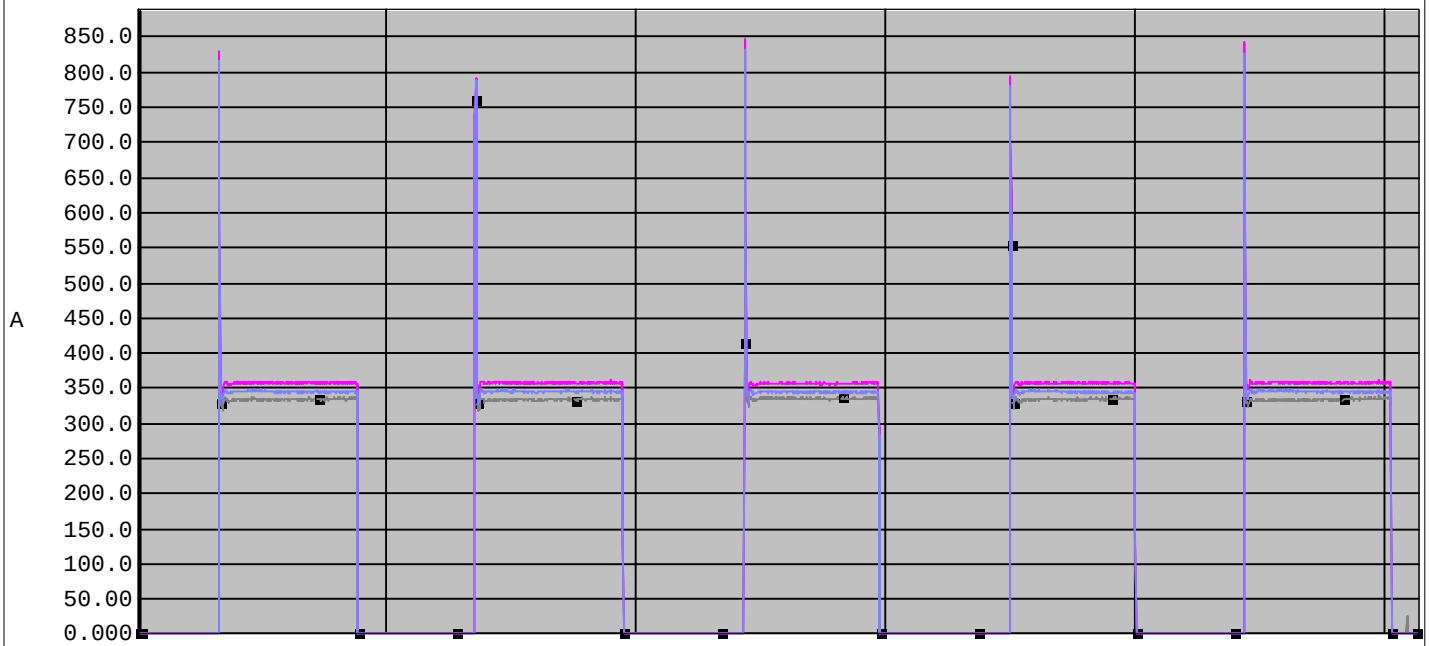
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/22/2004	10:11:22.500 AM	493.3	0.000	507.3	V
Urms Line2	9/22/2004	10:11:22.500 AM	497.9	0.000	511.8	V
Urms Line3	9/22/2004	10:11:22.500 AM	494.0	0.000	508.3	V

9/22/2004 - 10:11:22.000 AM
Val
506.0 Urms Line1
510.2 Urms Line2
506.9 Urms Line3

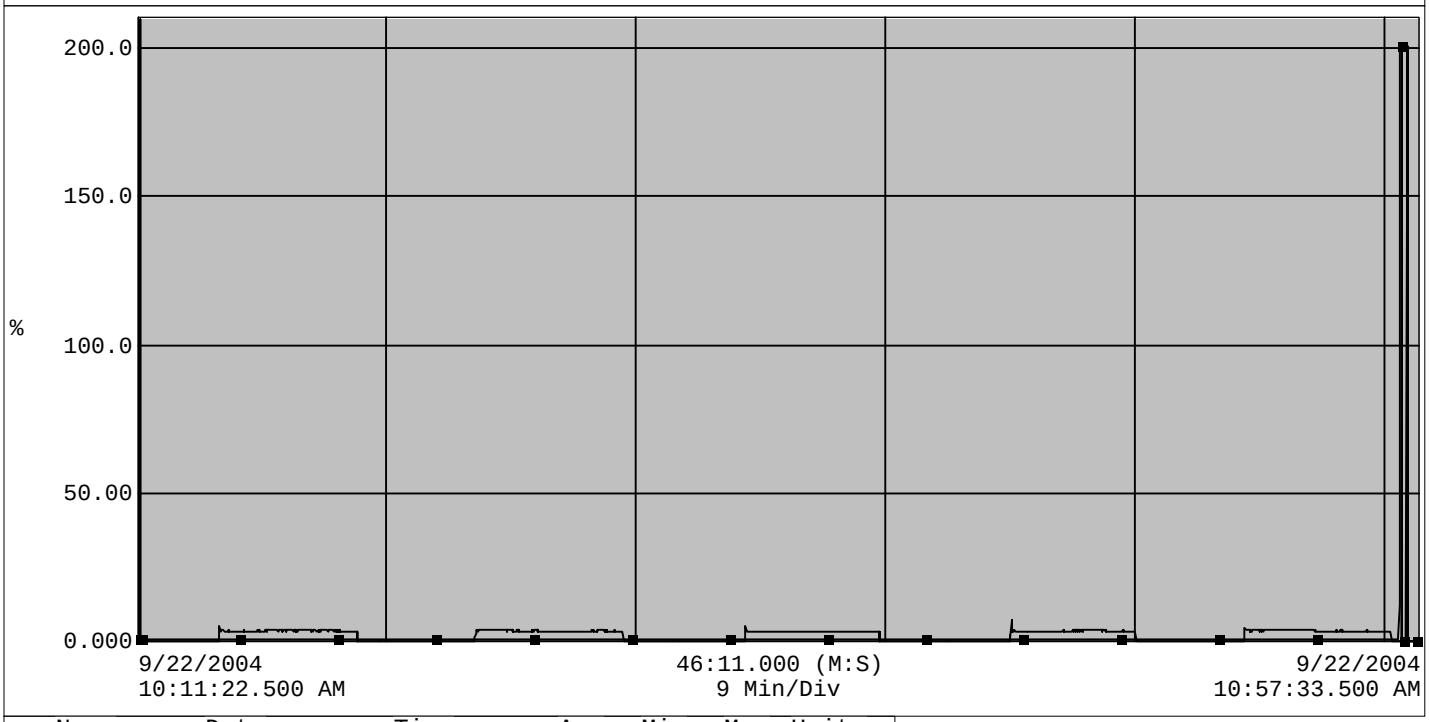
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/22/2004	10:11:22.500 AM	183.6	0.000	845.8	A
Arms Line2	9/22/2004	10:11:22.500 AM	196.2	0.000	843.6	A
Arms Line3	9/22/2004	10:11:22.500 AM	189.4	0.000	830.4	A

9/22/2004 - 10:11:22.000 AM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

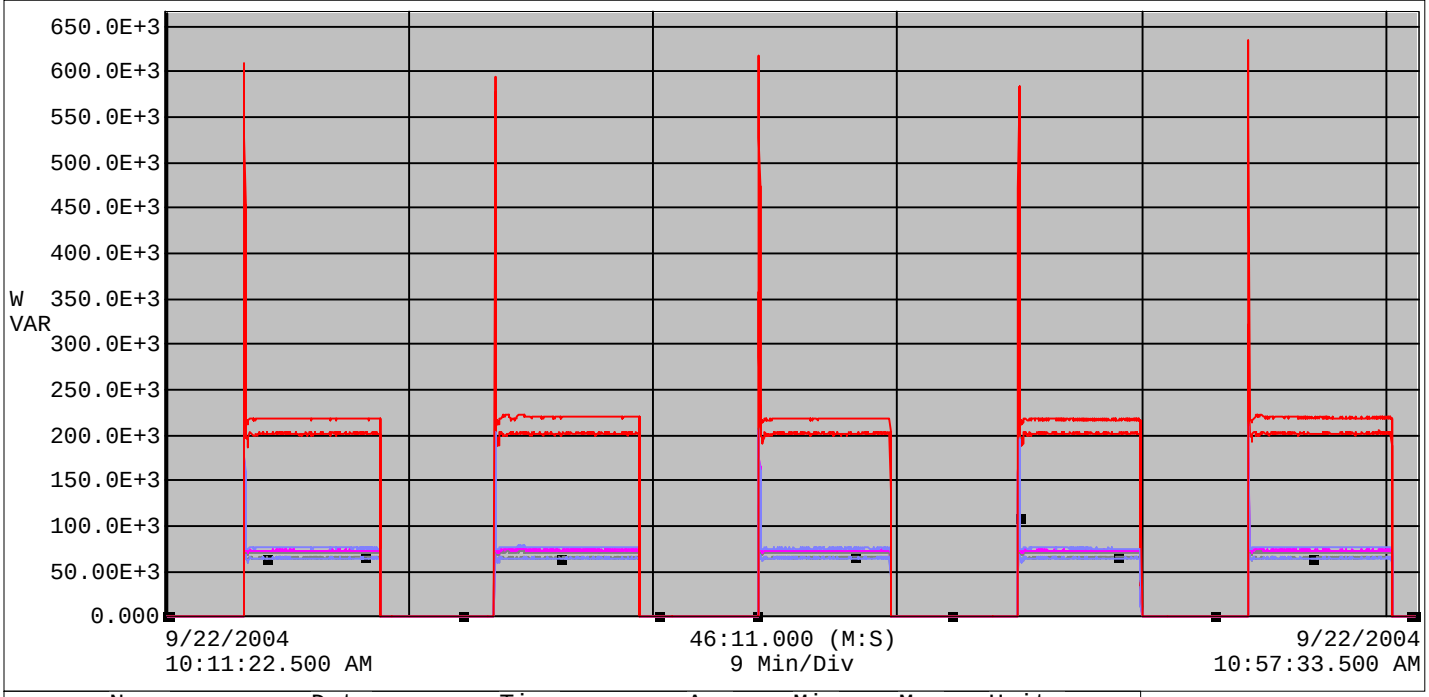
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/22/2004	10:11:22.500 AM	0.720	0.000	200.0	%
Aunb(IEEE)	9/22/2004	10:11:22.500 AM	2.033	0.000	200.0	%

9/22/2004 - 10:11:22.000 AM
Val
0.500 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

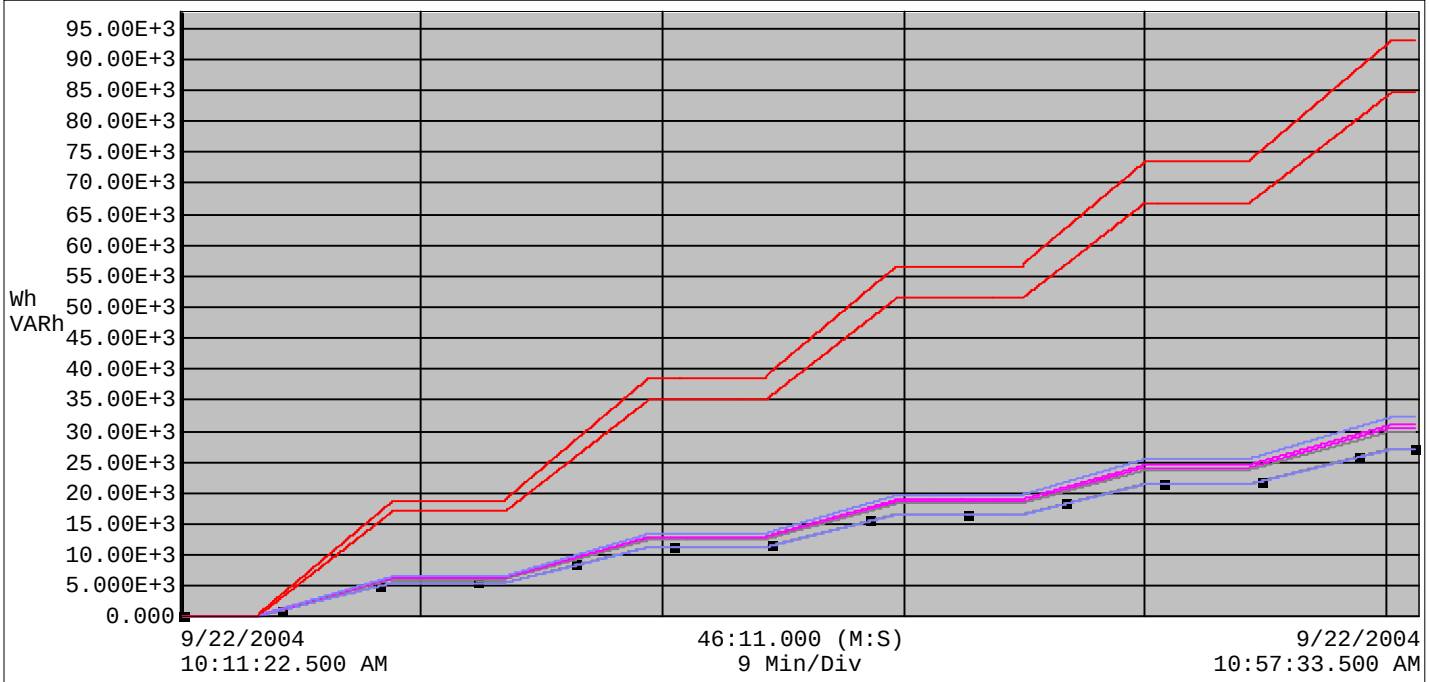
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/22/2004	10:11:22.500 AM	35.19E+3	0.000	116.8E+3	W
W Line2	9/22/2004	10:11:22.500 AM	39.54E+3	0.000	122.7E+3	W
W Line3	9/22/2004	10:11:22.500 AM	34.99E+3	0.000	117.0E+3	W
W Sum of Phases	9/22/2004	10:11:22.500 AM	109.7E+3	0.000	356.5E+3	W
VAR Line1	9/22/2004	10:11:22.500 AM	38.77E+3	0.000	212.4E+3	VAR
VAR Line2	9/22/2004	10:11:22.500 AM	40.16E+3	0.000	211.4E+3	VAR
VAR Line3	9/22/2004	10:11:22.500 AM	41.73E+3	0.000	209.9E+3	VAR
VAR Sum of Phases	9/22/2004	10:11:22.500 AM	120.7E+3	0.000	633.7E+3	VAR

9/22/2004 - 10:11:22.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

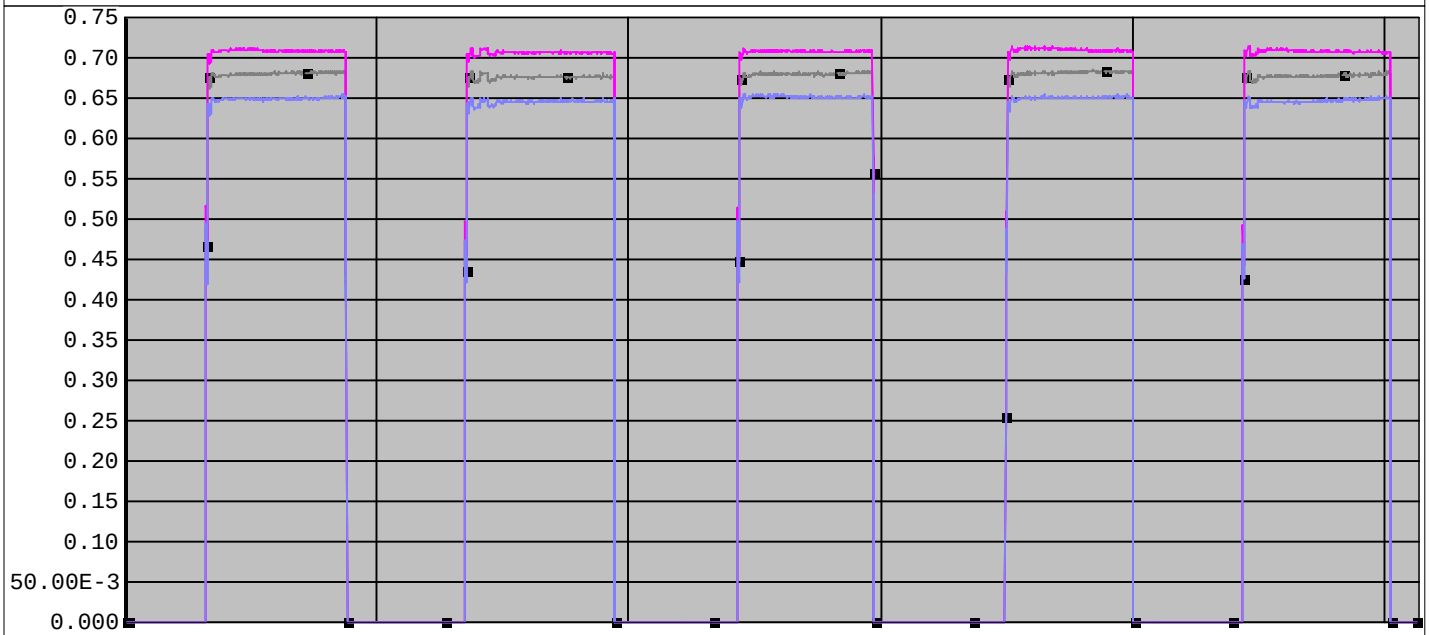
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/22/2004	10:11:22.500 AM	12.97E+3	0.000	27.09E+3	Wh
W-hours Line2	9/22/2004	10:11:22.500 AM	14.58E+3	0.000	30.45E+3	Wh
W-hours Line3	9/22/2004	10:11:22.500 AM	12.90E+3	0.000	26.94E+3	Wh
W-hours Sum of Phases	9/22/2004	10:11:22.500 AM	40.46E+3	0.000	84.48E+3	Wh
VAR-hours Line1	9/22/2004	10:11:22.500 AM	14.33E+3	0.000	29.86E+3	VARh
VAR-hours Line2	9/22/2004	10:11:22.500 AM	14.84E+3	0.000	30.92E+3	VARh
VAR-hours Line3	9/22/2004	10:11:22.500 AM	15.42E+3	0.000	32.13E+3	VARh
VAR-hours Sum of Phases	9/22/2004	10:11:22.500 AM	44.59E+3	0.000	92.91E+3	VARh

9/22/2004 - 10:11:22.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/22/2004	10:11:22.500 AM	0.367	0.000	0.684	
PF Line2	9/22/2004	10:11:22.500 AM	0.383	0.000	0.713	
PF Line3	9/22/2004	10:11:22.500 AM	0.351	0.000	0.654	

9/22/2004 - 10:11:22.000 AM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Southern Link WWPS\092204-Southern Link WWPS - Pump 1.dvb

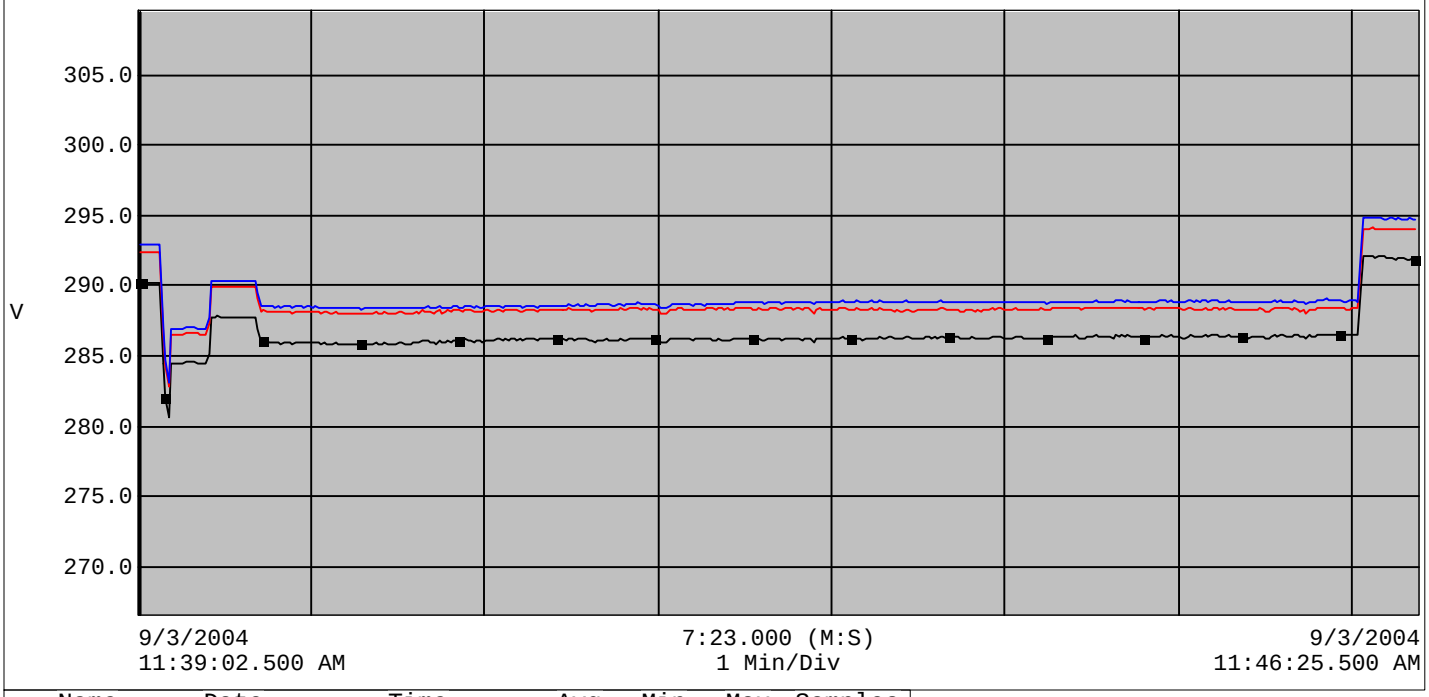
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Southern Link - Pump 1 ,

Comments
Recorded at motor starter. GPA Meter 04474961, 0.88 KW Demand, 1200/5 CT Ratio, 57-889-639 KVAR Meter. ABS Submersible Pump, 480 volt, 295 HP, 380 amp, 1184 RPM.

Southern Link WWPS - Pump 1

Recording Start Date	9/3/2004 - 11:39:02 AM
Recording Duration	7:23 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

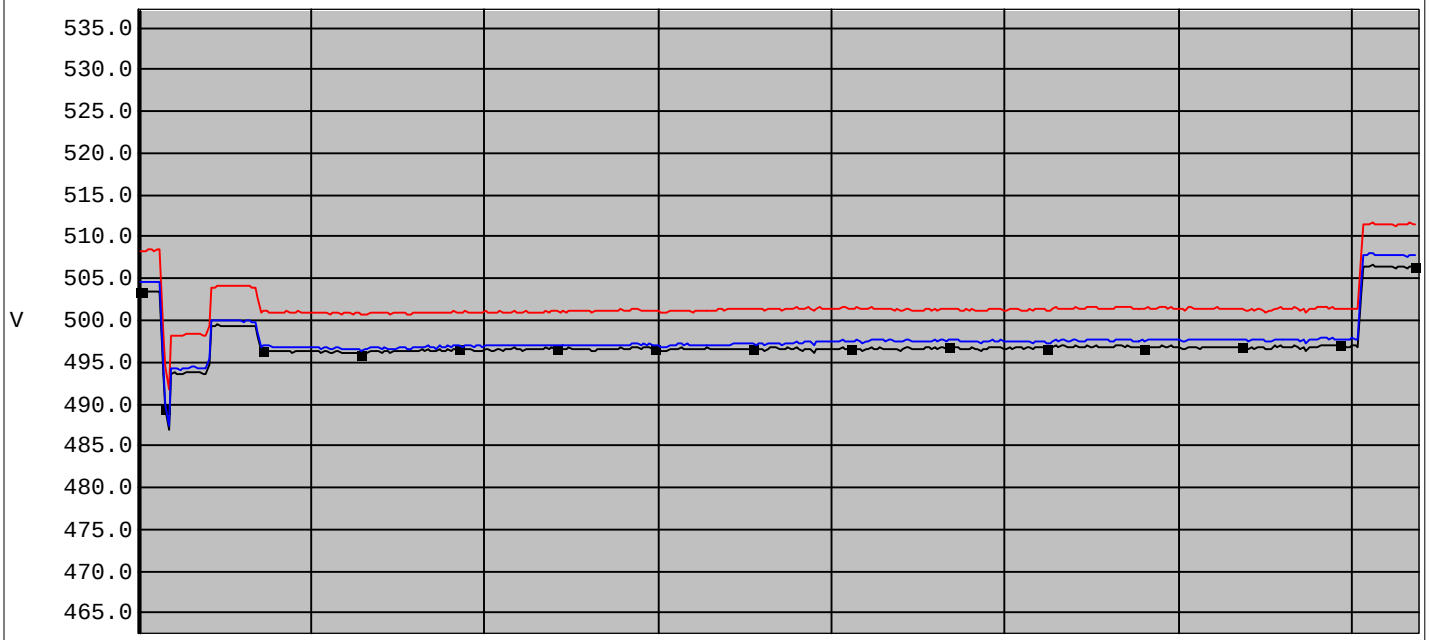
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/3/2004	11:39:02.500 AM	286.4	280.5	292.0	444
Vrms Line2	9/3/2004	11:39:02.500 AM	288.5	282.7	294.1	444
Vrms Line3	9/3/2004	11:39:02.500 AM	289.0	283.0	294.8	444

9/3/2004 - 11:39:02.000 AM
Val
290.1 — Vrms Line1
292.3 — Vrms Line2
292.8 — Vrms Line3

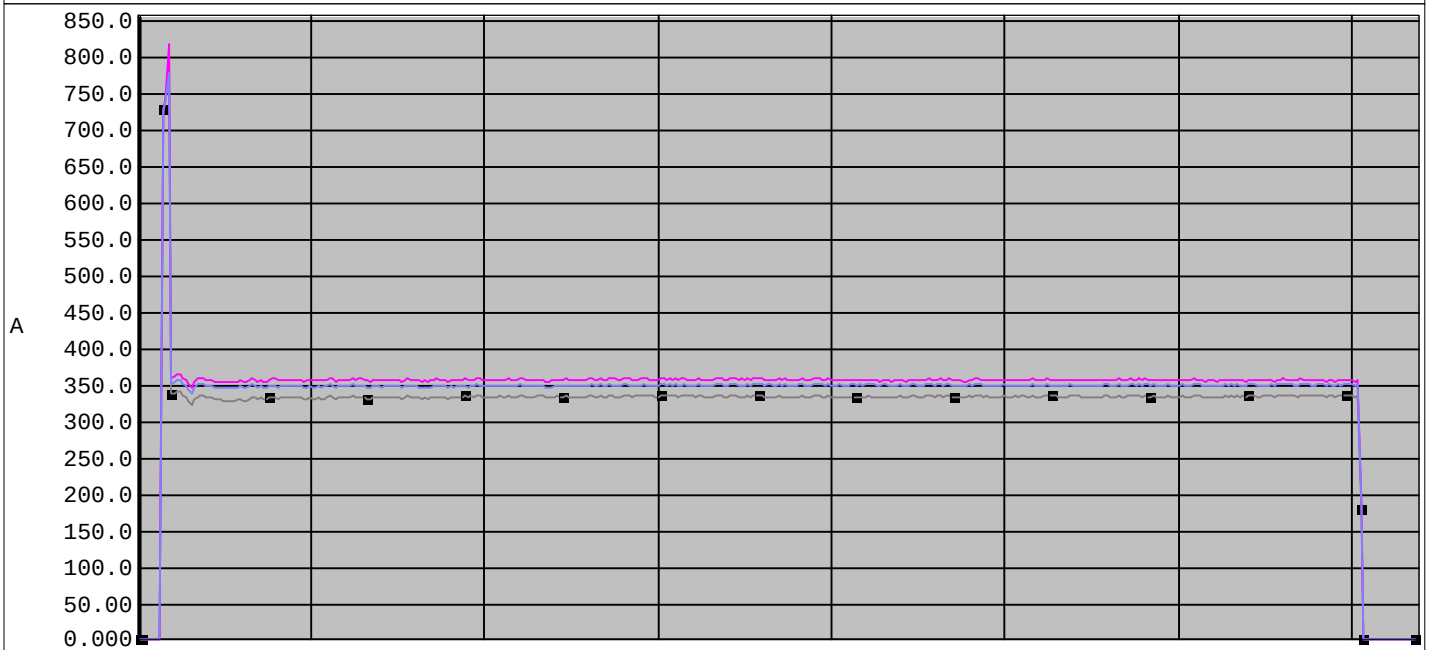
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/3/2004	11:39:02.500 AM	497.0	486.8	506.5	V
Urms Line2	9/3/2004	11:39:02.500 AM	501.7	491.7	511.5	V
Urms Line3	9/3/2004	11:39:02.500 AM	497.7	487.2	507.9	V

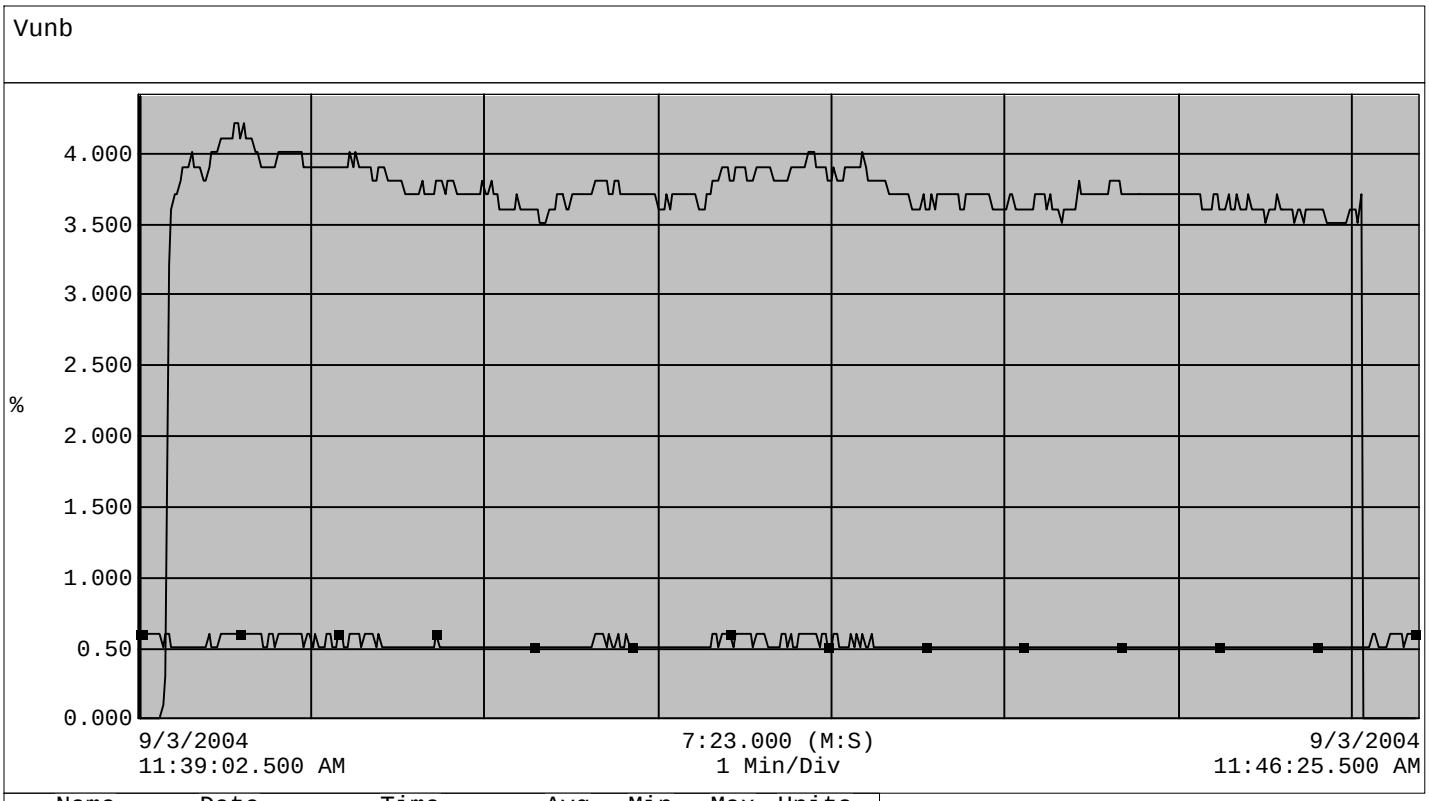
9/3/2004 - 11:39:02.000 AM
Val
503.3 Urms Line1
508.1 Urms Line2
504.4 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/3/2004	11:39:02.500 AM	315.2	0.000	779.8	A
Arms Line2	9/3/2004	11:39:02.500 AM	336.9	0.000	816.1	A
Arms Line3	9/3/2004	11:39:02.500 AM	329.8	0.000	777.3	A

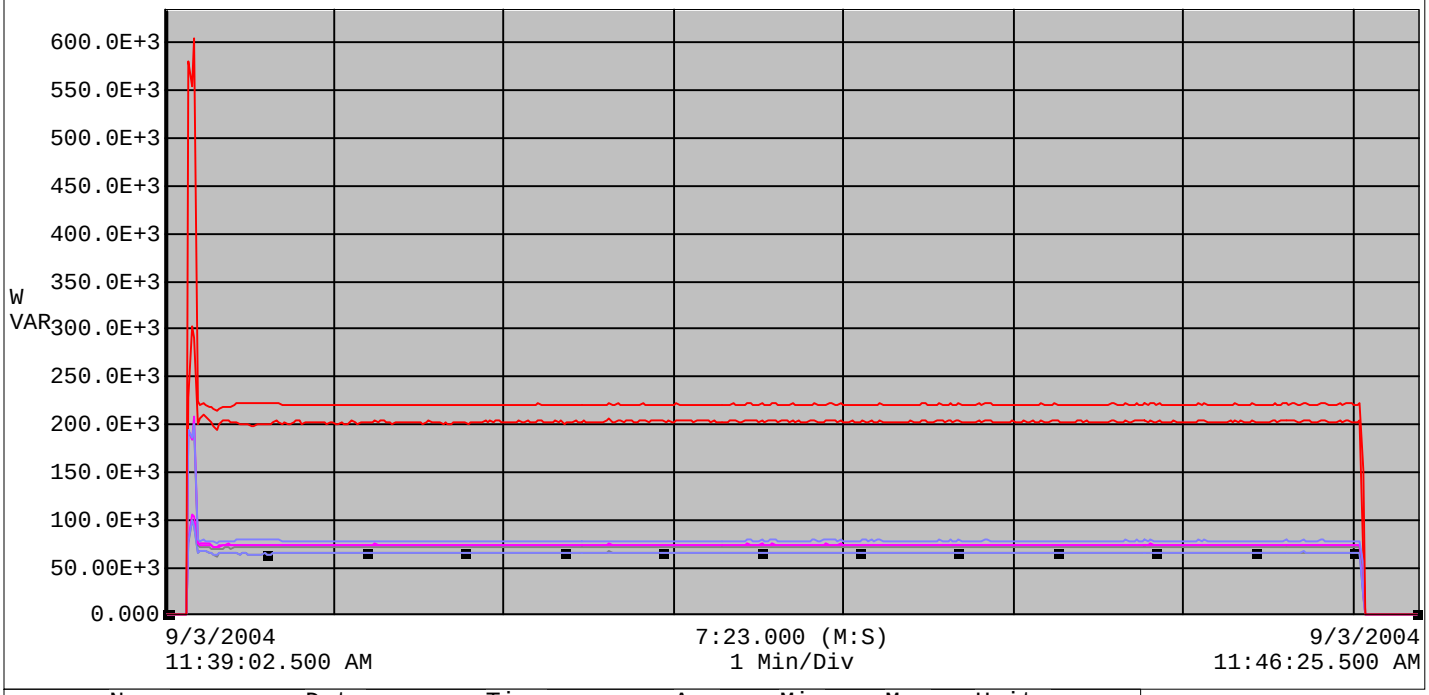
9/3/2004 - 11:39:02.000 AM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/3/2004	11:39:02.500 AM	0.524	0.500	0.600	%
Aunb(IEEE)	9/3/2004	11:39:02.500 AM	3.500	0.000	4.200	%

9/3/2004 - 11:39:02.000 AM
Val
0.600 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

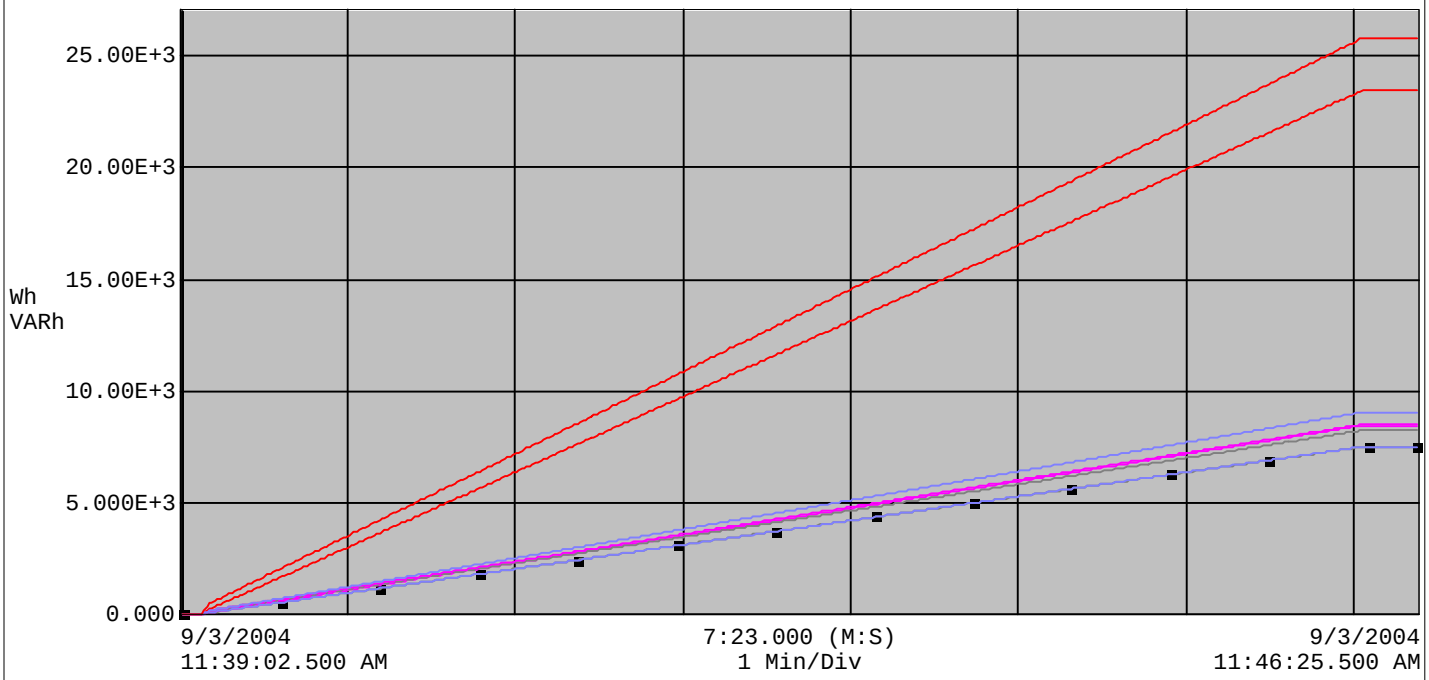
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/3/2004	11:39:02.500 AM	60.59E+3	0.000	97.83E+3	W
W Line2	9/3/2004	11:39:02.500 AM	68.37E+3	0.000	105.5E+3	W
W Line3	9/3/2004	11:39:02.500 AM	60.69E+3	0.000	98.86E+3	W
W Sum of Phases	9/3/2004	11:39:02.500 AM	189.7E+3	0.000	302.2E+3	W
VAR Line1	9/3/2004	11:39:02.500 AM	66.68E+3	0.000	197.7E+3	VAR
VAR Line2	9/3/2004	11:39:02.500 AM	68.80E+3	0.000	206.7E+3	VAR
VAR Line3	9/3/2004	11:39:02.500 AM	73.23E+3	0.000	199.1E+3	VAR
VAR Sum of Phases	9/3/2004	11:39:02.500 AM	208.7E+3	0.000	603.5E+3	VAR

9/3/2004 - 11:39:02.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

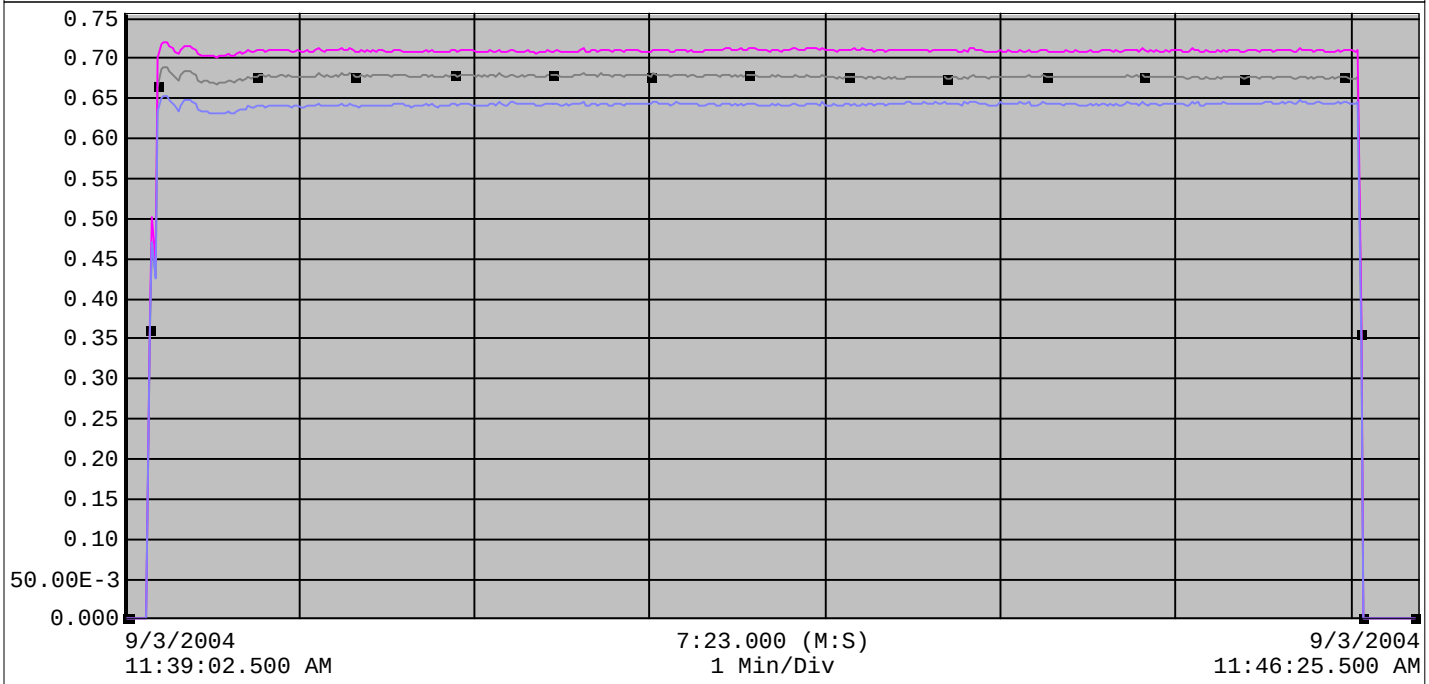
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/3/2004	11:39:02.500 AM	3.849E+3	0.000	7.473E+3	Wh
W-hours Line2	9/3/2004	11:39:02.500 AM	4.345E+3	0.000	8.432E+3	Wh
W-hours Line3	9/3/2004	11:39:02.500 AM	3.851E+3	0.000	7.485E+3	Wh
W-hours Sum of Phases	9/3/2004	11:39:02.500 AM	12.05E+3	0.000	23.39E+3	Wh
VAR-hours Line1	9/3/2004	11:39:02.500 AM	4.266E+3	0.000	8.224E+3	VARh
VAR-hours Line2	9/3/2004	11:39:02.500 AM	4.409E+3	0.000	8.486E+3	VARh
VAR-hours Line3	9/3/2004	11:39:02.500 AM	4.684E+3	0.000	9.032E+3	VARh
VAR-hours Sum of Phases	9/3/2004	11:39:02.500 AM	13.36E+3	0.000	25.74E+3	VARh

9/3/2004 - 11:39:02.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/3/2004	11:39:02.500 AM	0.633	0.000	0.687	
PF Line2	9/3/2004	11:39:02.500 AM	0.663	0.000	0.719	
PF Line3	9/3/2004	11:39:02.500 AM	0.600	0.000	0.653	

9/3/2004 - 11:39:02.000 AM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Southern Link WWPS\090304-Southern Link WWPS - Pump 1.dvb

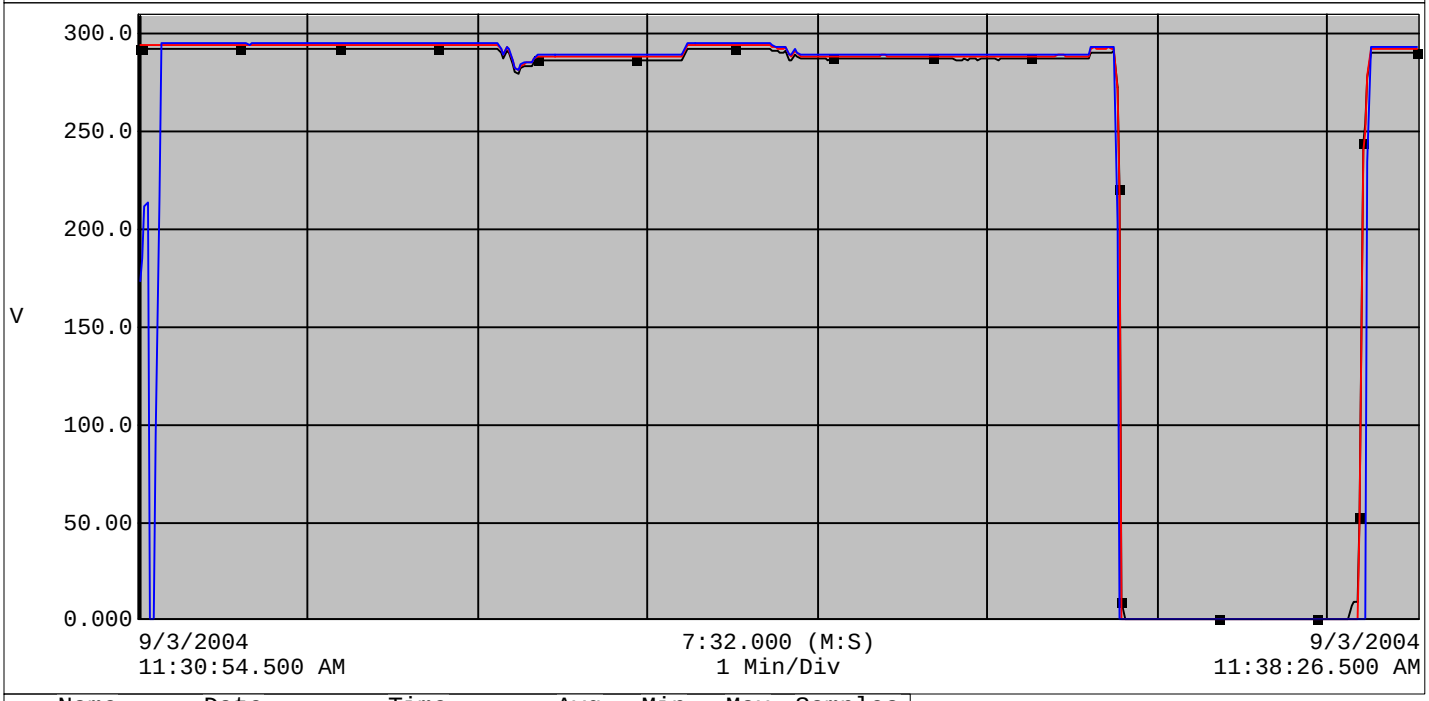
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Southern Link WWPS - Pump 1 ,

Comments
Measured at motor starter. Pump operational. One cycle operation after Pump 2 was shut down due to apparent impeller problem.

Southern Link WWPS - Pump 2

Recording Start Date	9/3/2004 - 11:30:54 AM
Recording Duration	7:32 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

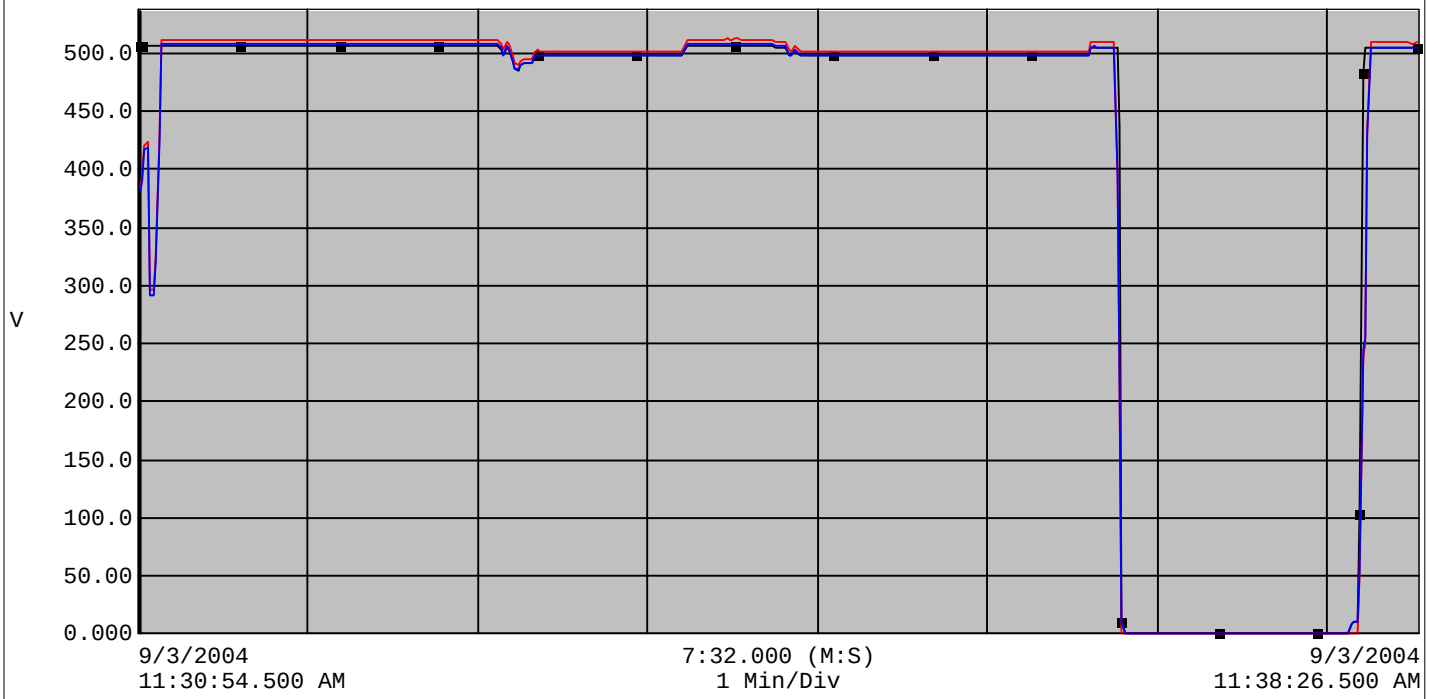
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/3/2004	11:30:54.500 AM	234.7	0.000	292.1	453
Vrms Line2	9/3/2004	11:30:54.500 AM	236.1	0.000	294.1	453
Vrms Line3	9/3/2004	11:30:54.500 AM	231.9	0.000	294.9	453

9/3/2004 - 11:30:54.000 AM
Val
291.8 Vrms Line1
293.8 Vrms Line2
173.1 Vrms Line3

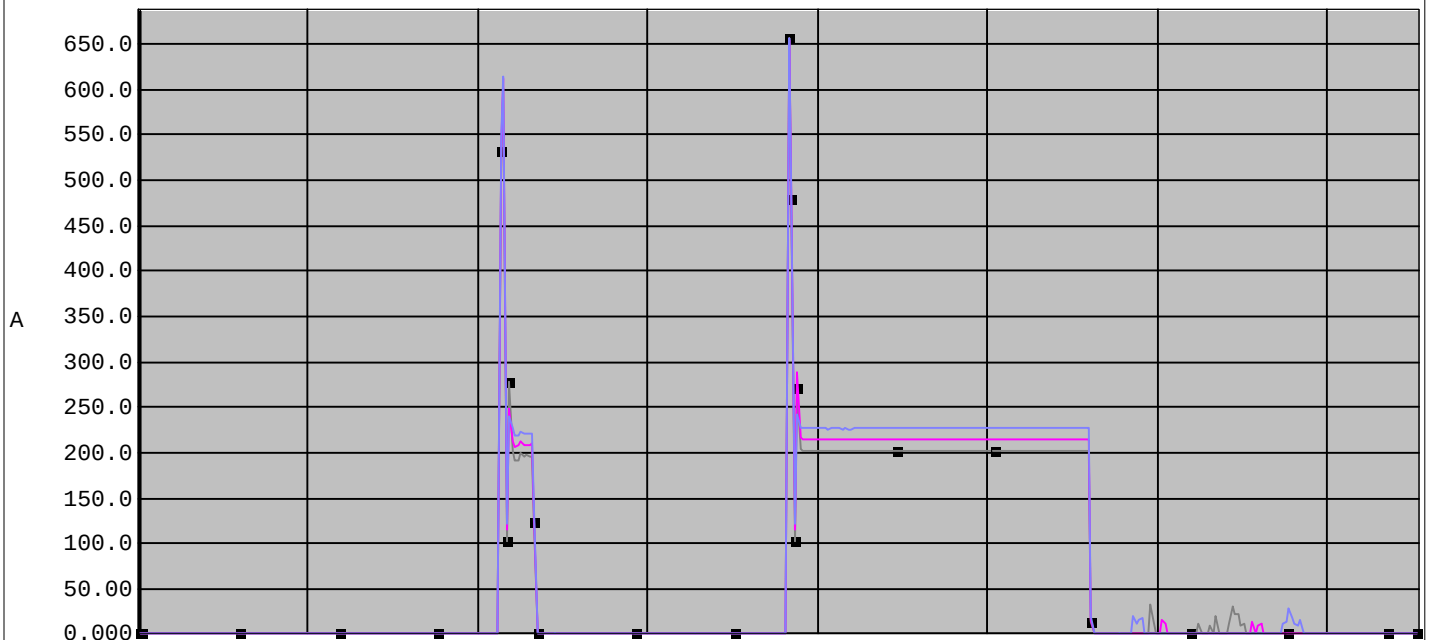
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/3/2004	11:30:54.500 AM	407.5	0.000	506.5	V
Urms Line2	9/3/2004	11:30:54.500 AM	406.5	0.000	511.5	V
Urms Line3	9/3/2004	11:30:54.500 AM	403.8	0.000	508.0	V

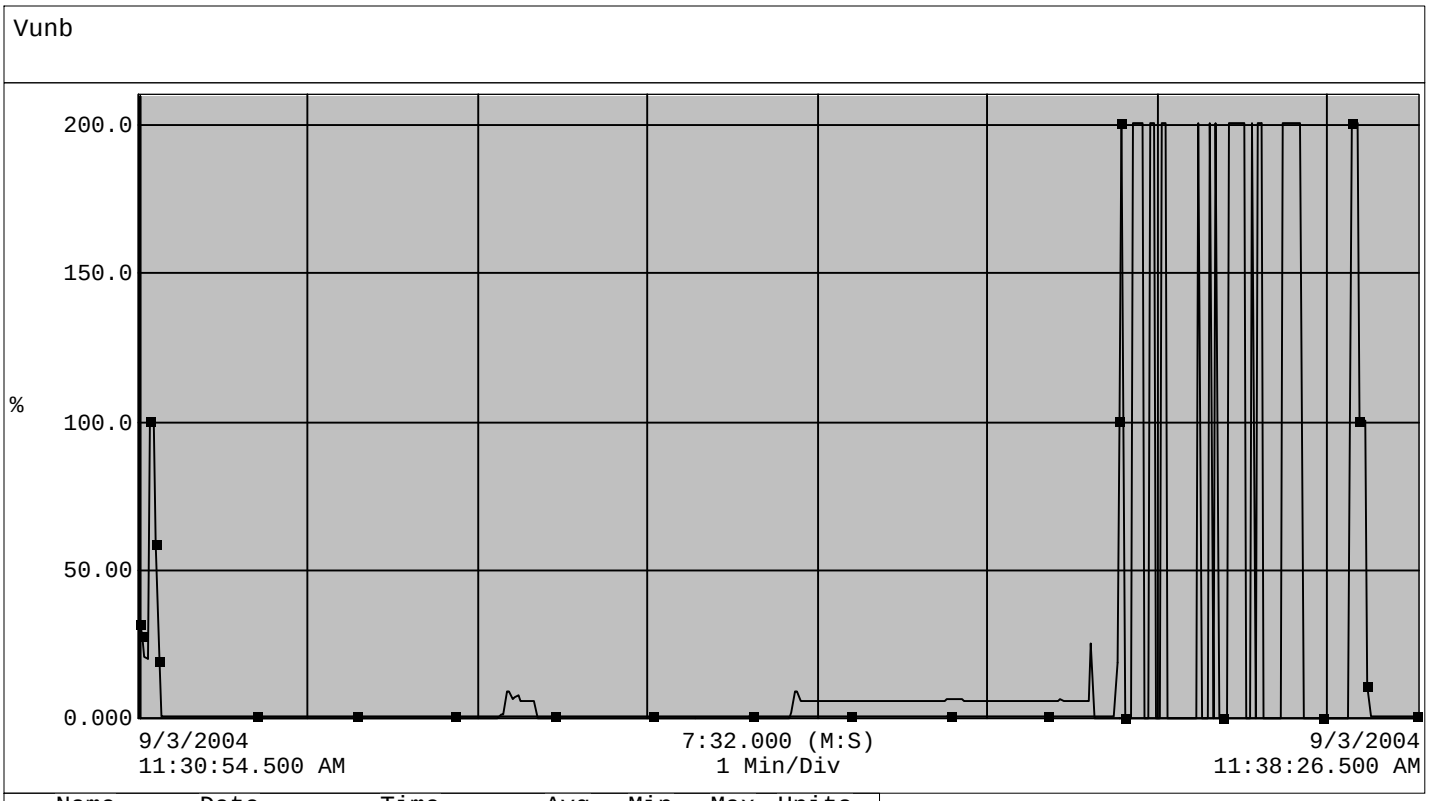
9/3/2004 - 11:30:54.000 AM
Val
506.0 Urms Line1
383.9 Urms Line2
379.7 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/3/2004	11:30:54.500 AM	56.45	0.000	654.7	A
Arms Line2	9/3/2004	11:30:54.500 AM	59.43	0.000	654.1	A
Arms Line3	9/3/2004	11:30:54.500 AM	62.65	0.000	654.7	A

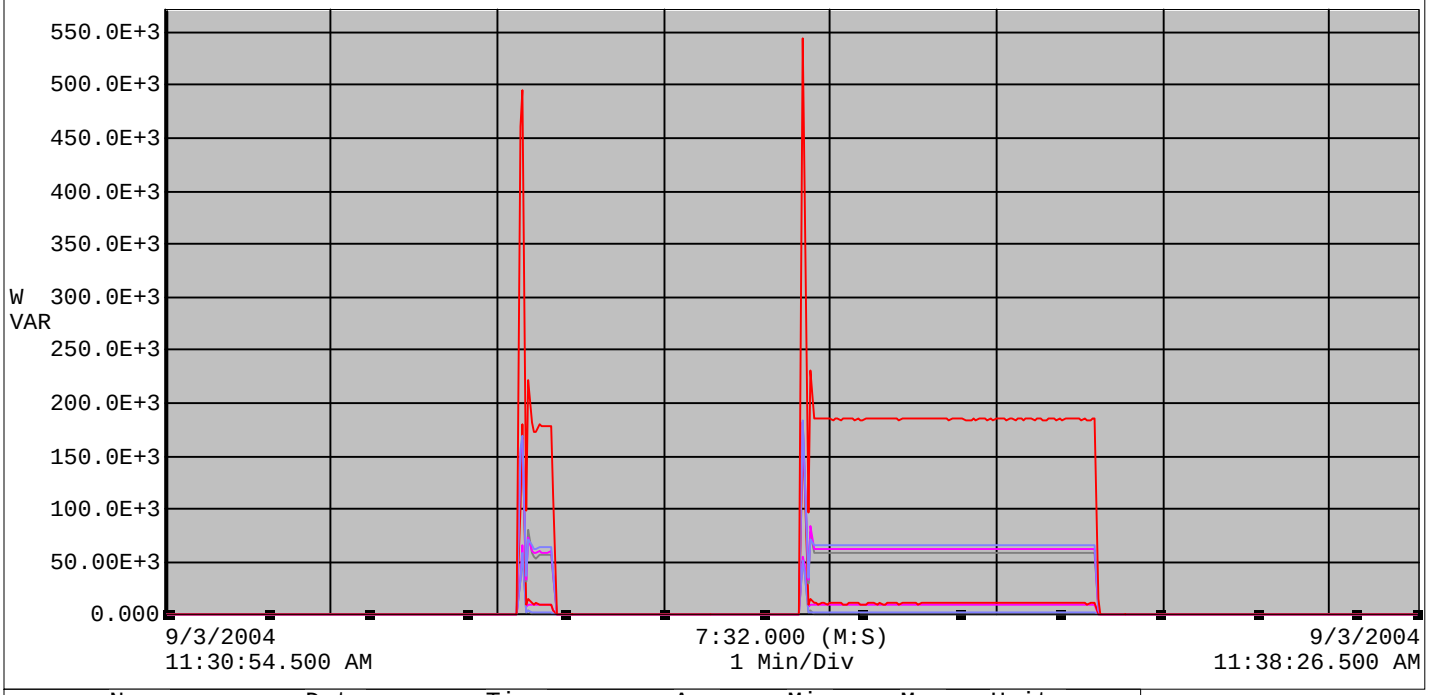
9/3/2004 - 11:30:54.000 AM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/3/2004	11:30:54.500 AM	3.940	0.000	200.0	%
Aunb(IEEE)	9/3/2004	11:30:54.500 AM	13.55	0.000	200.0	%

9/3/2004 - 11:30:54.000 AM
Val
31.60 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

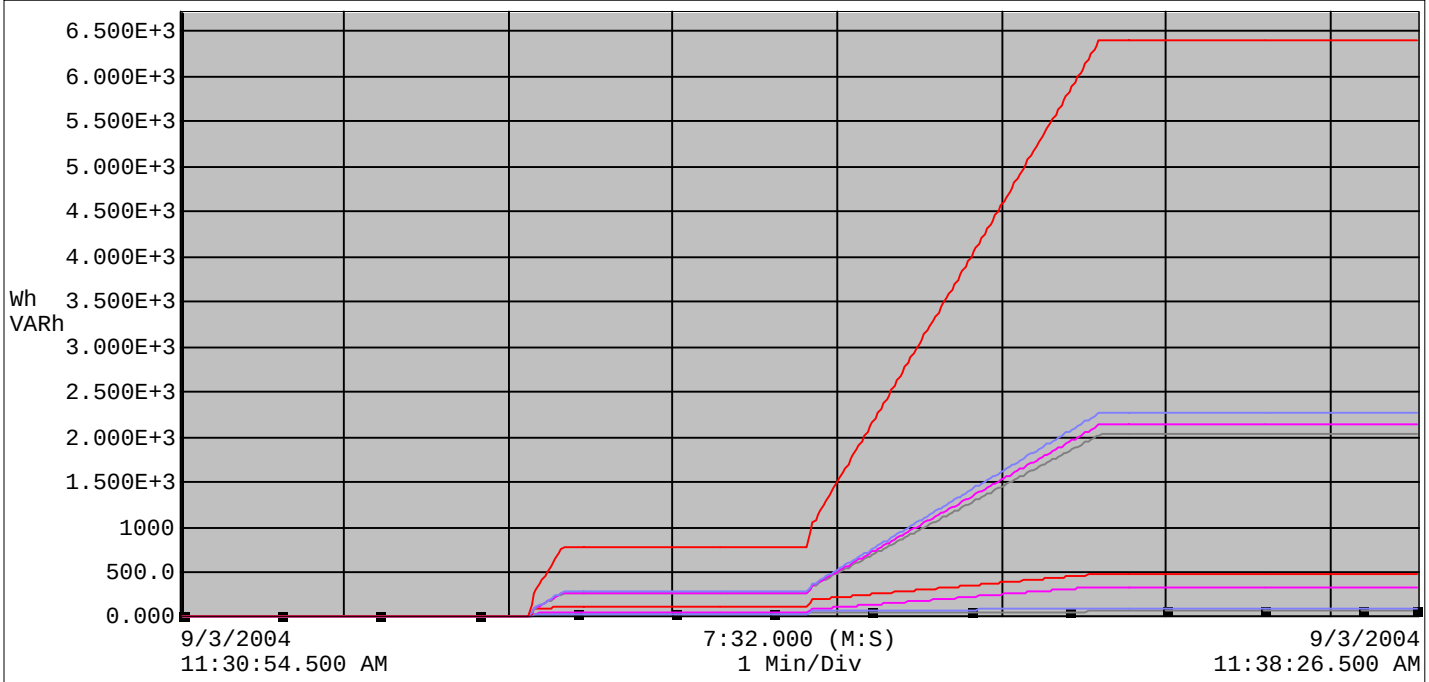
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/3/2004	11:30:54.500 AM	425.1	-201.0	56.45E+3	W
W Line2	9/3/2004	11:30:54.500 AM	2.611E+3	0.000	65.14E+3	W
W Line3	9/3/2004	11:30:54.500 AM	708.1	0.000	57.89E+3	W
W Sum of Phases	9/3/2004	11:30:54.500 AM	3.744E+3	0.000	179.5E+3	W
VAR Line1	9/3/2004	11:30:54.500 AM	16.00E+3	0.000	180.5E+3	VAR
VAR Line2	9/3/2004	11:30:54.500 AM	16.88E+3	0.000	180.7E+3	VAR
VAR Line3	9/3/2004	11:30:54.500 AM	17.92E+3	0.000	182.1E+3	VAR
VAR Sum of Phases	9/3/2004	11:30:54.500 AM	50.80E+3	0.000	543.3E+3	VAR

9/3/2004 - 11:30:54.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

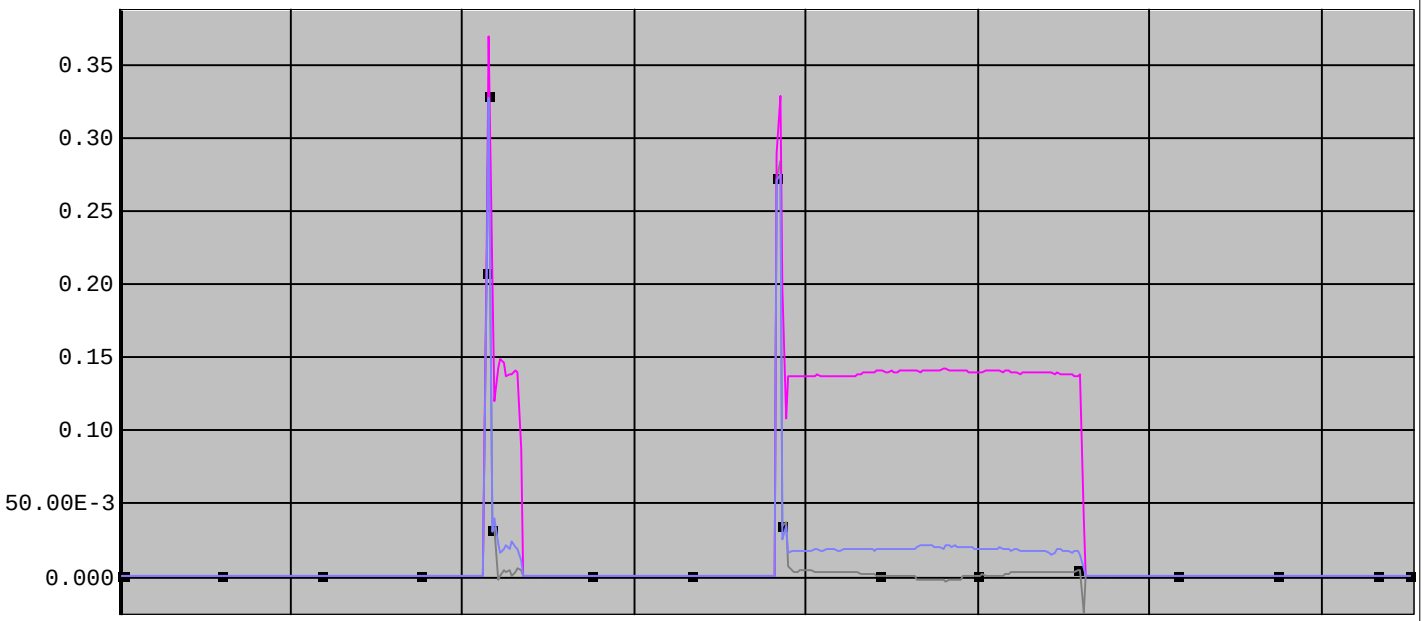
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/3/2004	11:30:54.500 AM	31.89	0.000	53.50	Wh
W-hours Line2	9/3/2004	11:30:54.500 AM	143.1	0.000	328.6	Wh
W-hours Line3	9/3/2004	11:30:54.500 AM	46.20	0.000	89.11	Wh
W-hours Sum of Phases	9/3/2004	11:30:54.500 AM	221.2	0.000	471.1	Wh
VAR-hours Line1	9/3/2004	11:30:54.500 AM	844.6	0.000	2.014E+3	VARh
VAR-hours Line2	9/3/2004	11:30:54.500 AM	888.2	0.000	2.124E+3	VARh
VAR-hours Line3	9/3/2004	11:30:54.500 AM	940.6	0.000	2.255E+3	VARh
VAR-hours Sum of Phases	9/3/2004	11:30:54.500 AM	2.673E+3	0.000	6.392E+3	VARh

9/3/2004 - 11:30:54.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/3/2004	11:30:54.500 AM	2.943E-3	-25.00E-3	0.328	
PF Line2	9/3/2004	11:30:54.500 AM	38.38E-3	0.000	0.369	
PF Line3	9/3/2004	11:30:54.500 AM	7.188E-3	0.000	0.327	

9/3/2004 - 11:30:54.000 AM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Southern Link WWPS\090304-Southern Link WWPS - Pump 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Southern Link WWPS - Pump 2 ,

Comments
Measured at motor starter. 300 HP ABS Submersible Motor. Motor KW low. Apparent impeller not operational.

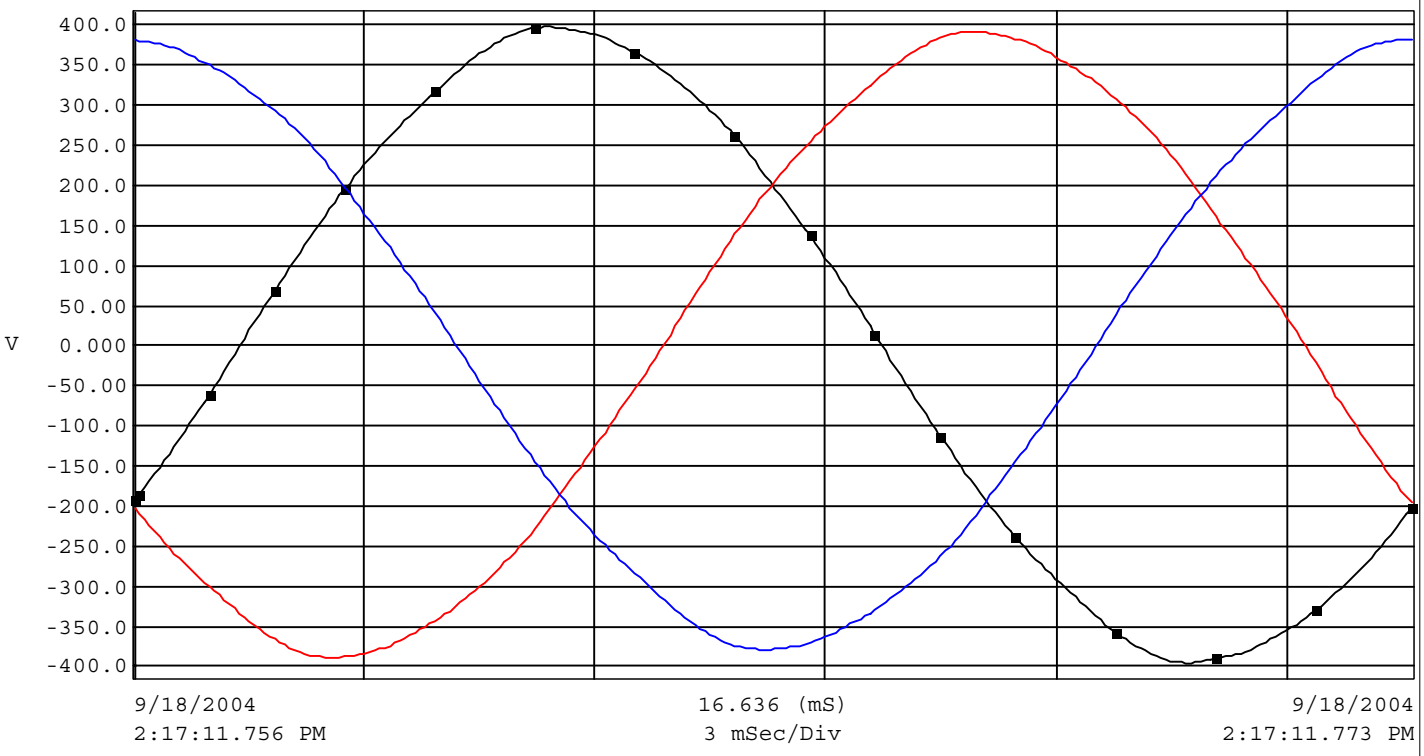
GWA Wastewater Pumping Station Assessment				
Station Name: TAI MANGILAO	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/18/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.38	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	2	0.1	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Secondary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.22	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.045	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	1	0.015	
	100%	**Assessment Value**		**2.7**

Comments: Heavy corrosion at old MCC

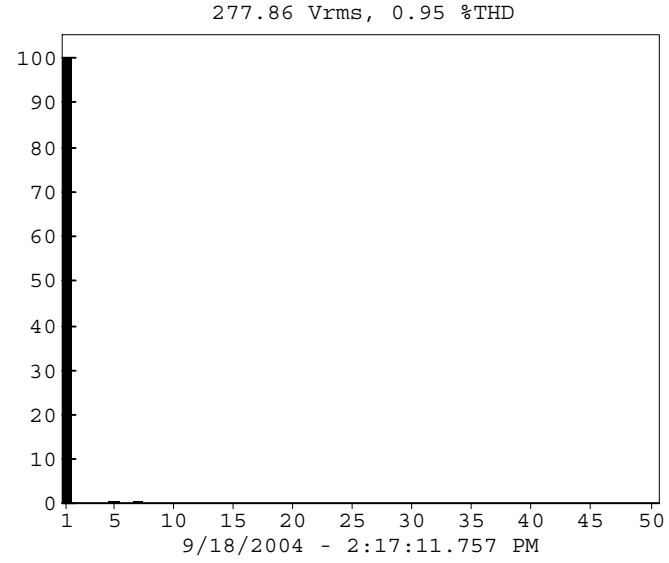
Tai Mangilao - Pump 2 - Photo

Recording Start Date	9/18/2004 - 2:17:11 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.11 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/18/2004	2:17:11.756 PM	16.636	277.9	V
Waveform V2	9/18/2004	2:17:11.756 PM	16.636	273.4	V
Waveform V3	9/18/2004	2:17:11.756 PM	16.636	267.1	V



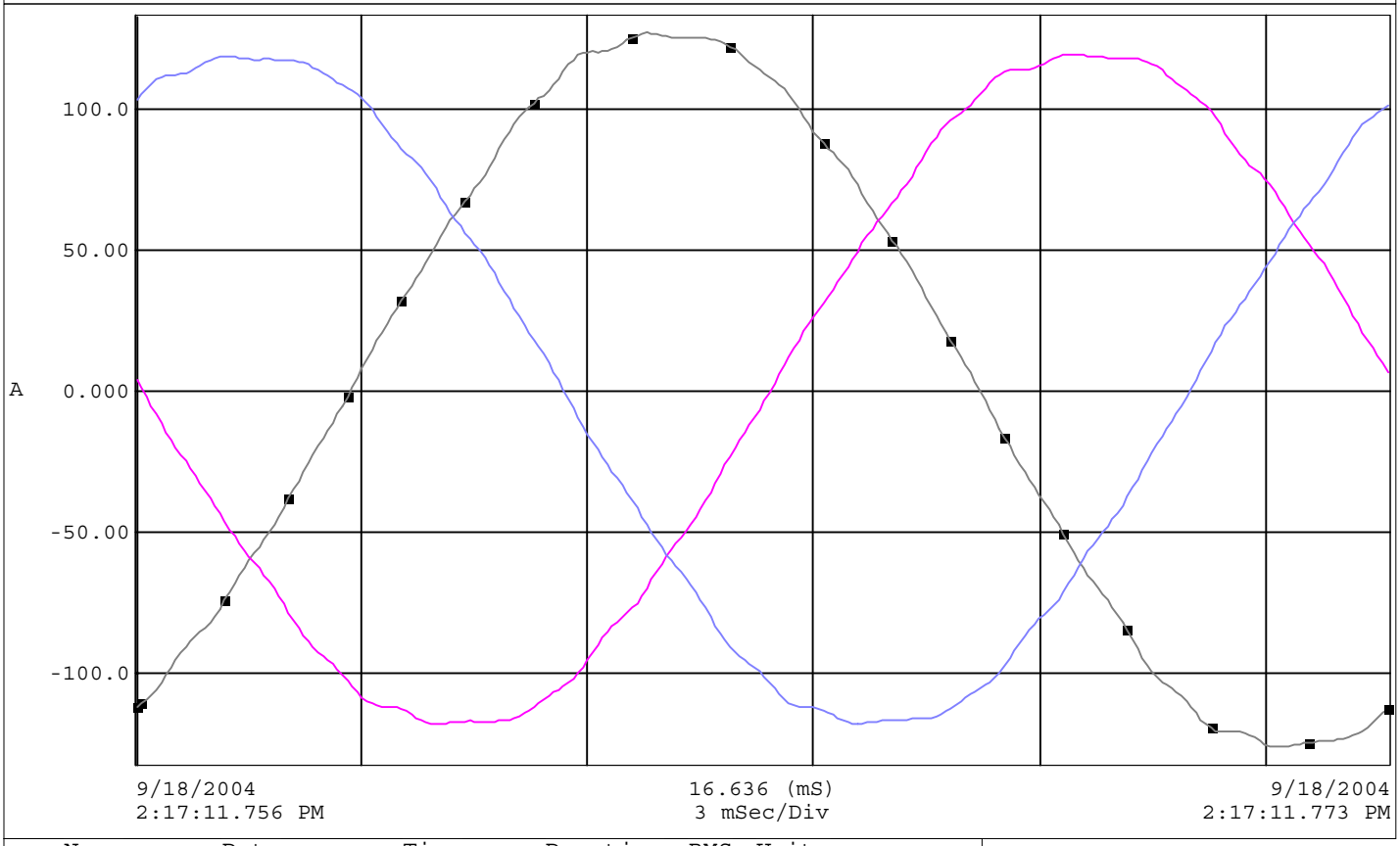
9/18/2004 - 2:17:11.000 PM

	Val
Waveform V1	-194.8
Waveform V2	-204.2
Waveform V3	379.6

Waveform V1

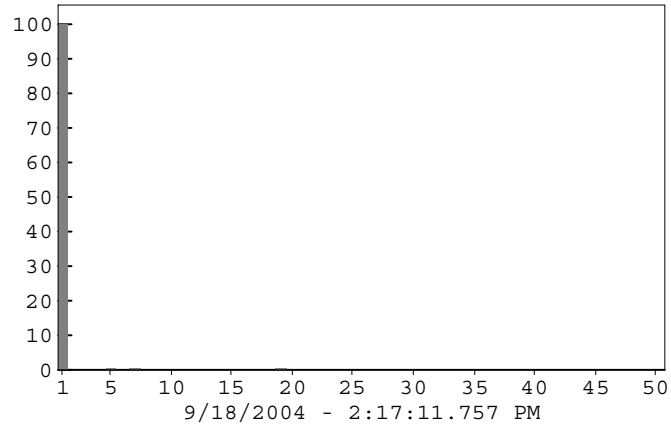
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.11 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/18/2004	2:17:11.756 PM	16.636	89.79	A
Waveform I2	9/18/2004	2:17:11.756 PM	16.636	84.71	A
Waveform I3	9/18/2004	2:17:11.756 PM	16.636	84.66	A

Waveform I1
89.79 Arms, 1.43 %THD



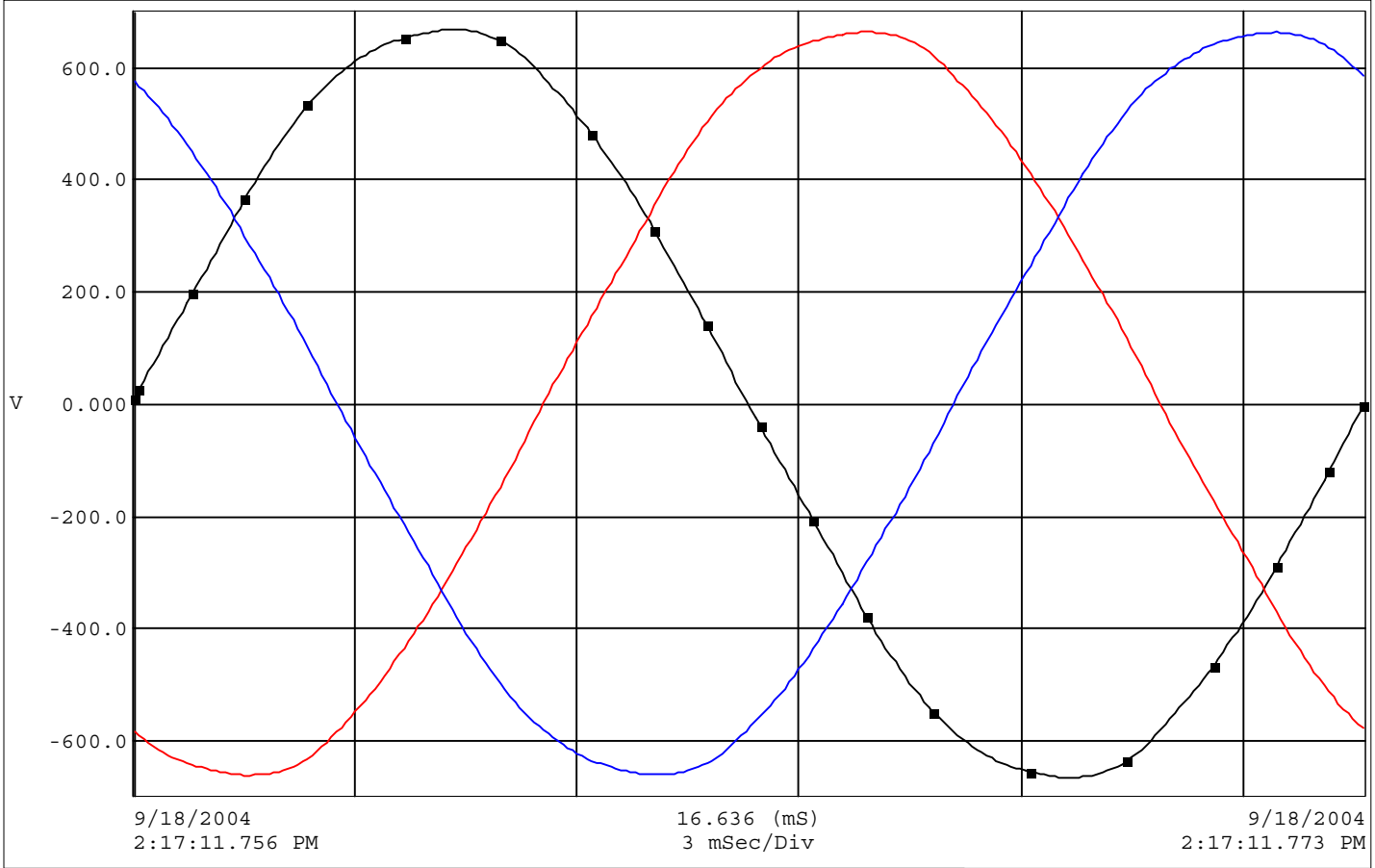
9/18/2004 - 2:17:11.000 PM

Val	
-112.2	Waveform I1
3.700	Waveform I2
102.5	Waveform I3

Waveform I1

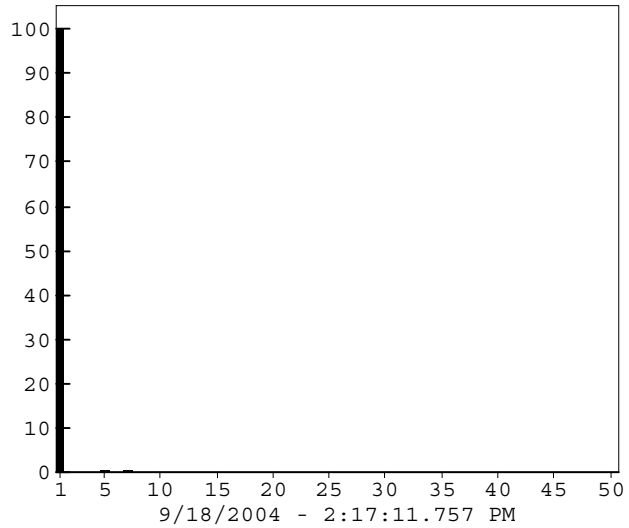
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.2	H19	0.8	H36	0.0
H03	0.3	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	0.6	H22	0.1	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.11 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/18/2004	2:17:11.756 PM	16.636	474.1	V
Waveform U2	9/18/2004	2:17:11.756 PM	16.636	472.3	V
Waveform U3	9/18/2004	2:17:11.756 PM	16.636	470.9	V

Waveform U1
474.11 Vrms, 1.01 %THD



9/18/2004 - 2:17:11.000 PM

Val	
9.300	Waveform U1
-583.9	Waveform U2
574.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/18/2004
Start Time: 2:17:11 PM
Duration: 0:0.000 (M:S)
W: 21.18E+3 W
VAR: 13.05E+3 W
VA: 24.88E+3 W
Power Factor: 0.851
Displacement Power Factor: 0.851
TAN: 0.616
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Tai Mangilao WWPS\091804 - Tai Mangilao - Pump 2 - Photo.dvb

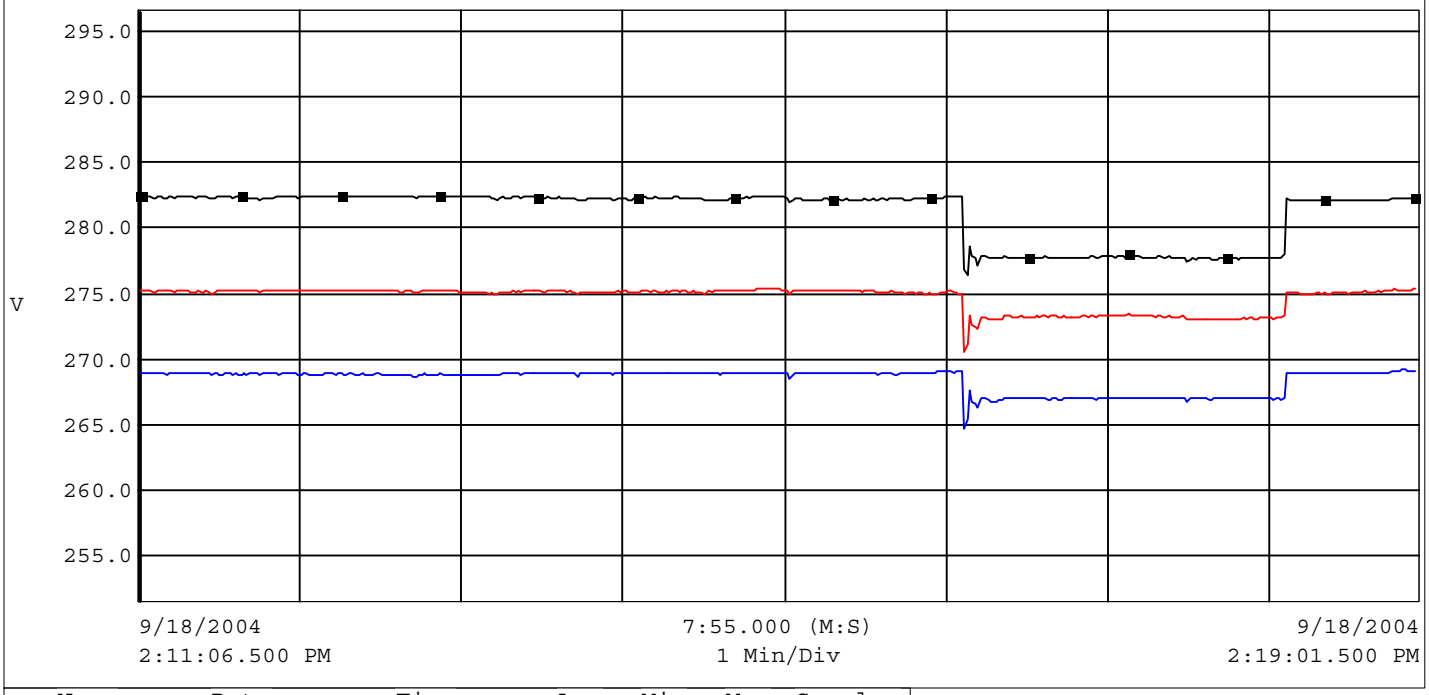
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Tai Mangilao WWPS - Pump 2 Photo ,

Comments
GPA Meter 76-788-675, 92.7 KW, ABS Submersible Motor, 480 Volts.

Tai Mangilao - Pump 2

Recording Start Date	9/18/2004 - 2:11:06 PM
Recording Duration	7:55 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Vrms

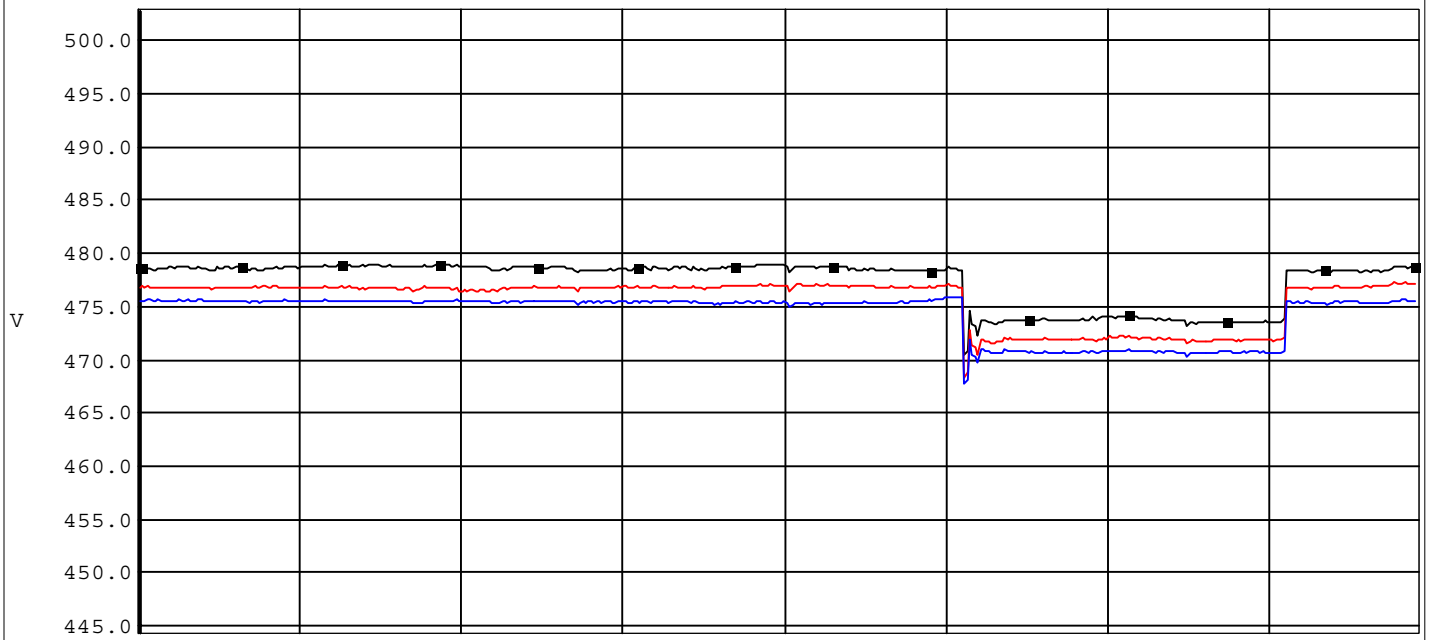


Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/18/2004	2:11:06.500 PM	281.1	276.4	282.4	476
Vrms Line2	9/18/2004	2:11:06.500 PM	274.6	270.5	275.3	476
Vrms Line3	9/18/2004	2:11:06.500 PM	268.3	264.7	269.1	476

9/18/2004 - 2:11:06.000 PM

Val	
282.3	Vrms Line1
275.1	Vrms Line2
268.8	Vrms Line3

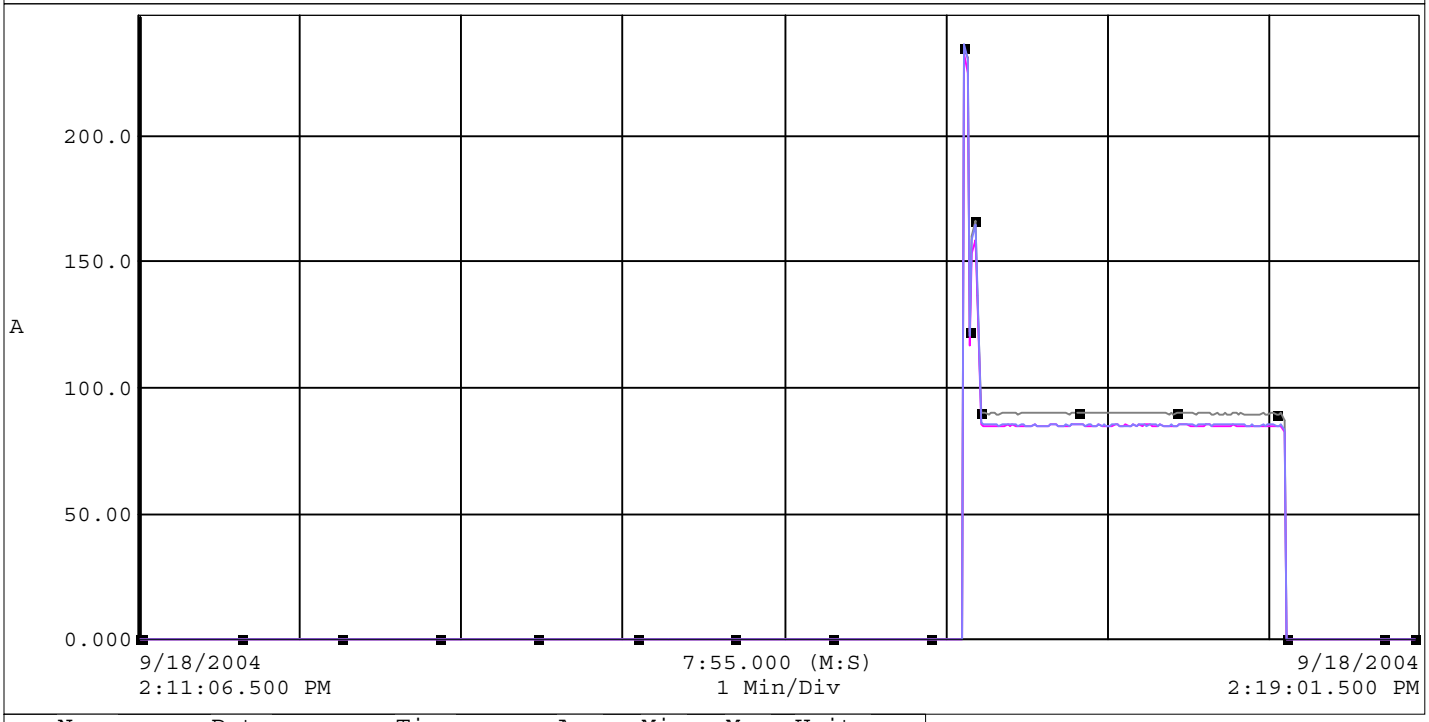
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/18/2004	2:11:06.500 PM	477.3	470.3	478.9	V
Urms Line2	9/18/2004	2:11:06.500 PM	475.5	468.2	477.2	V
Urms Line3	9/18/2004	2:11:06.500 PM	474.2	467.6	475.8	V

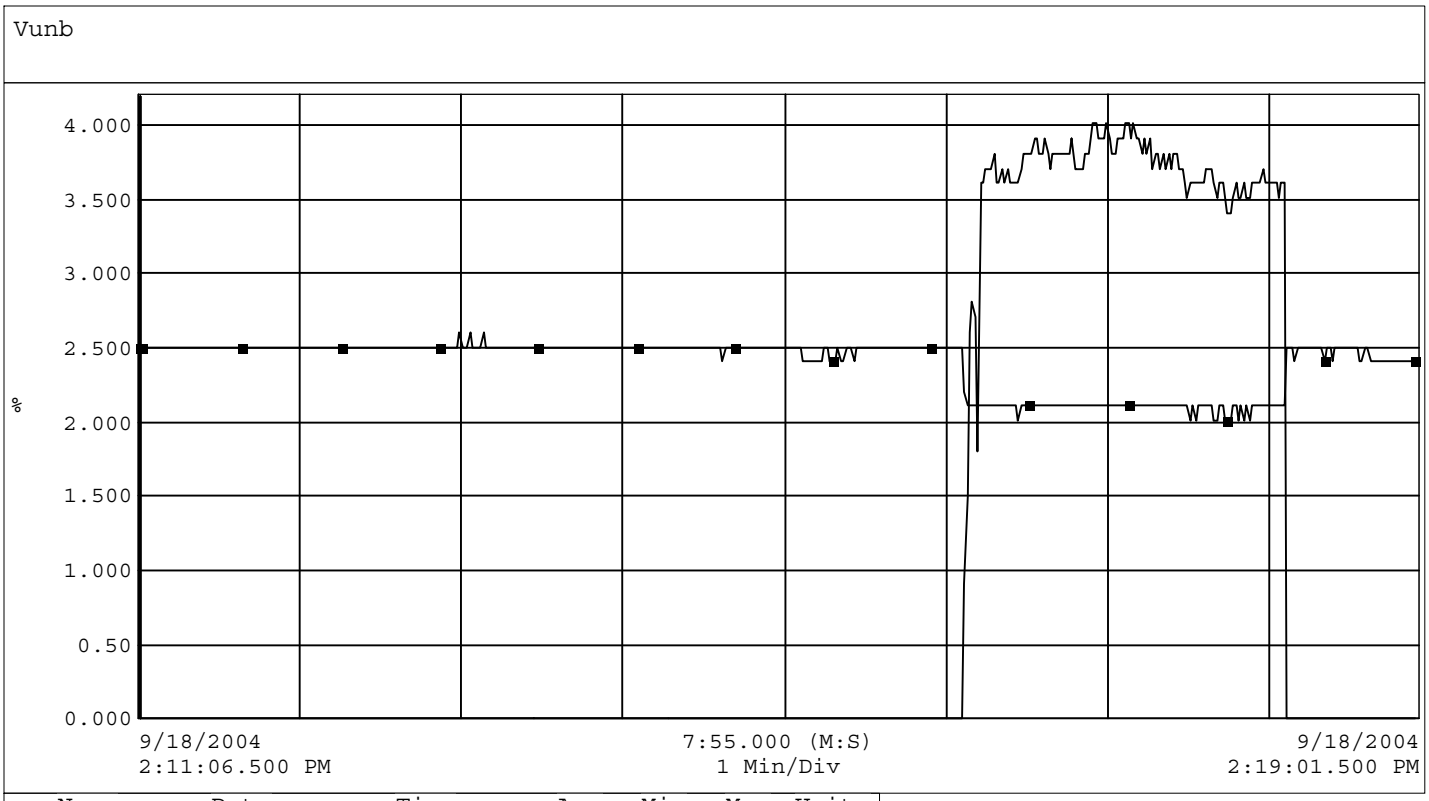
9/18/2004 - 2:11:06.000 PM
Val
478.5 — Urms Line1
476.7 — Urms Line2
475.5 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/18/2004	2:11:06.500 PM	23.64	0.000	234.0	A
Arms Line2	9/18/2004	2:11:06.500 PM	22.40	0.000	231.6	A
Arms Line3	9/18/2004	2:11:06.500 PM	22.50	0.000	235.4	A

9/18/2004 - 2:11:06.000 PM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3

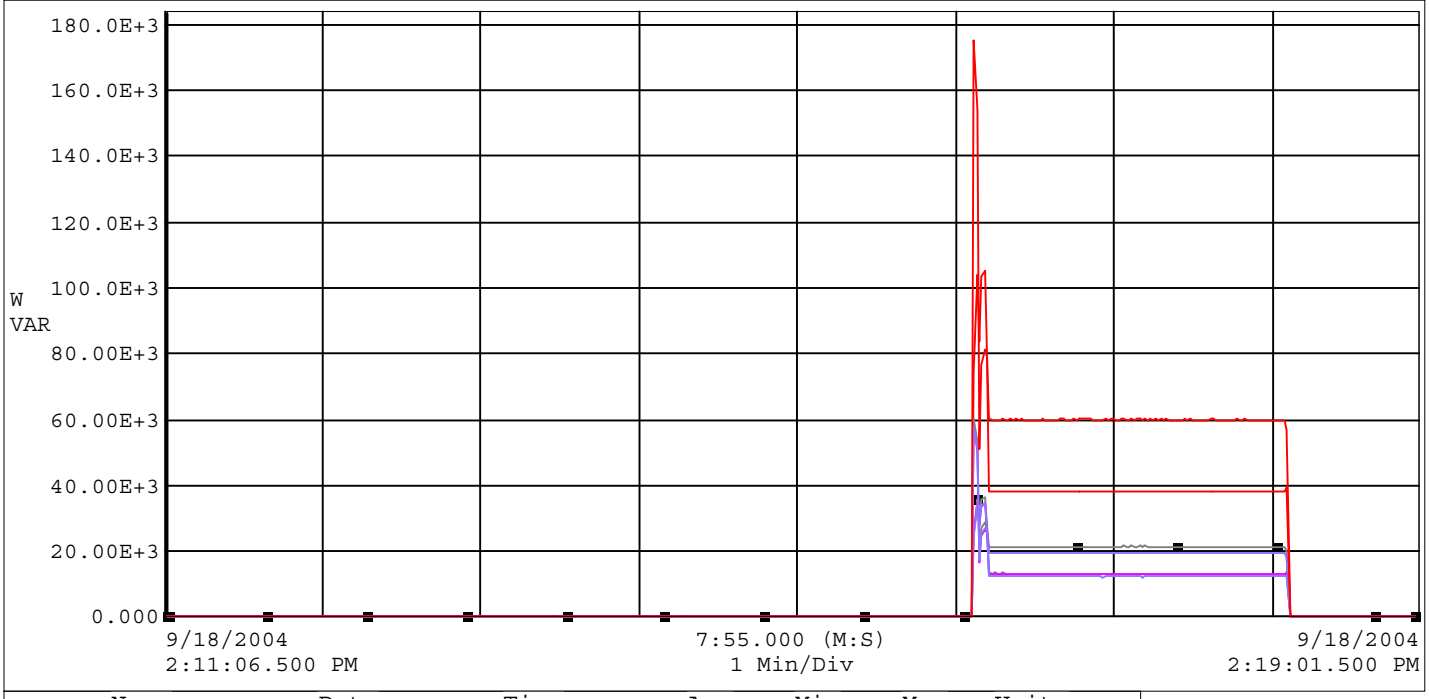


Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/18/2004	2:11:06.500 PM	2.390	2.000	2.600	%
Aunb(IEEE)	9/18/2004	2:11:06.500 PM	0.917	0.000	4.000	%

9/18/2004 - 2:11:06.000 PM
Val
2.500 ── Vunb(IEEE)
0.000 ── Aunb(IEEE)

Appendix 1K - Electrical

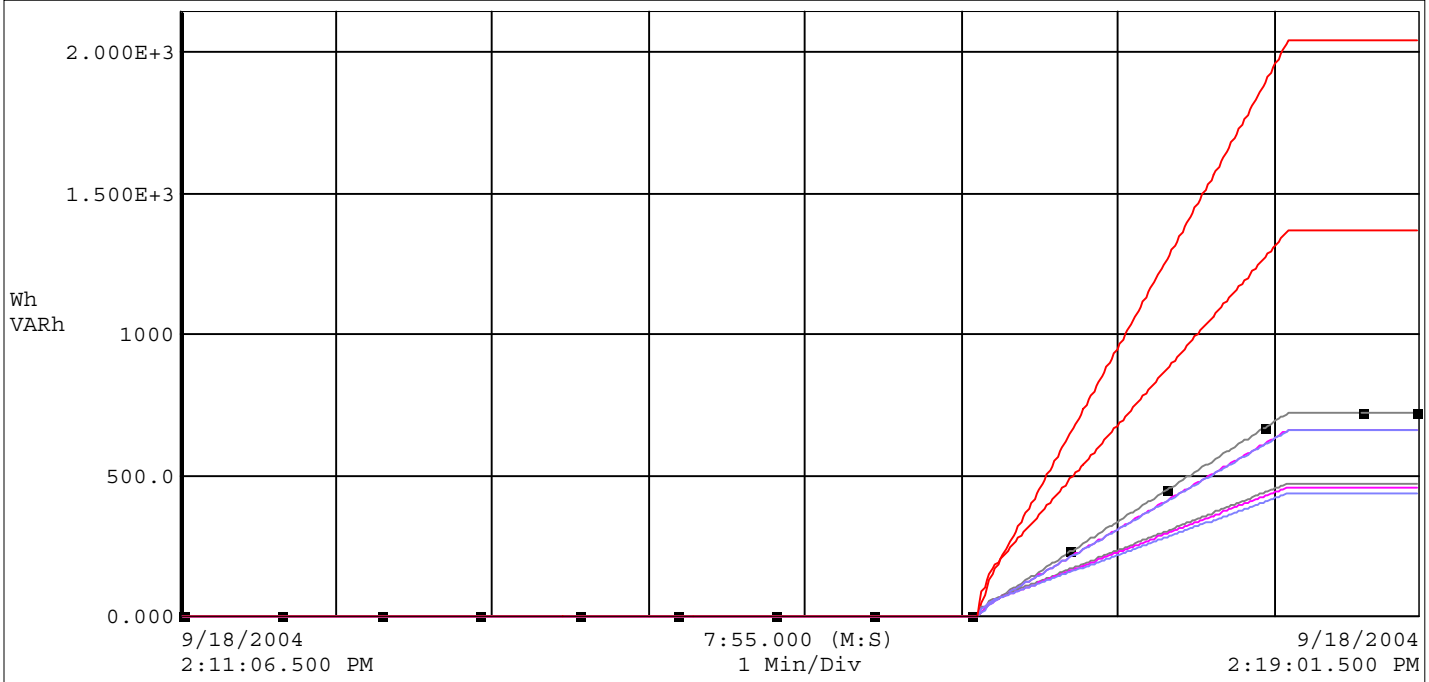
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/18/2004	2:11:06.500 PM	5.459E+3	0.000	36.25E+3	W
W Line2	9/18/2004	2:11:06.500 PM	4.998E+3	0.000	34.48E+3	W
W Line3	9/18/2004	2:11:06.500 PM	4.970E+3	0.000	34.64E+3	W
W Sum of Phases	9/18/2004	2:11:06.500 PM	15.43E+3	0.000	105.2E+3	W
VAR Line1	9/18/2004	2:11:06.500 PM	3.573E+3	0.000	59.82E+3	VAR
VAR Line2	9/18/2004	2:11:06.500 PM	3.469E+3	0.000	57.41E+3	VAR
VAR Line3	9/18/2004	2:11:06.500 PM	3.304E+3	0.000	57.56E+3	VAR
VAR Sum of Phases	9/18/2004	2:11:06.500 PM	10.35E+3	0.000	174.8E+3	VAR

9/18/2004 - 2:11:06.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

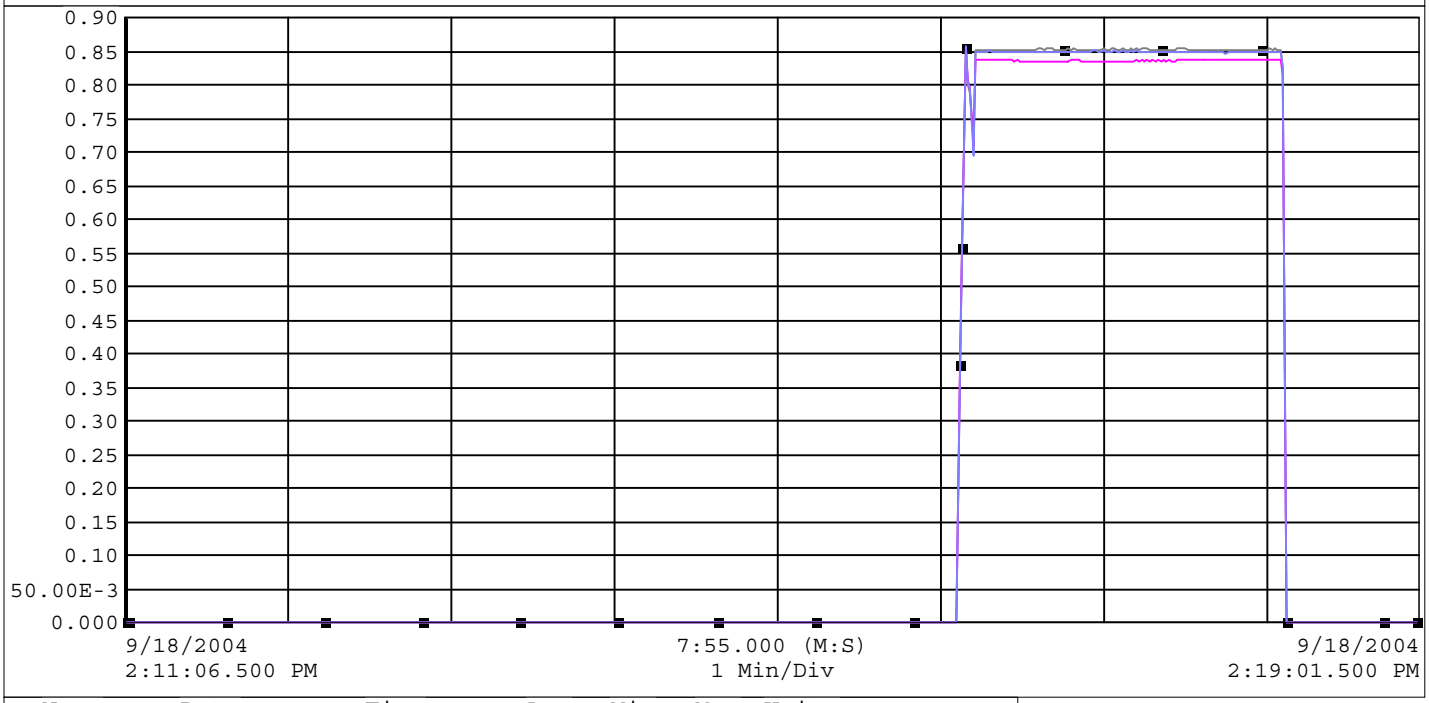
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/18/2004	2:11:06.500 PM	168.2	0.000	721.8	Wh
W-hours Line2	9/18/2004	2:11:06.500 PM	154.2	0.000	660.8	Wh
W-hours Line3	9/18/2004	2:11:06.500 PM	153.3	0.000	657.1	Wh
W-hours Sum of Phases	9/18/2004	2:11:06.500 PM	475.7	0.000	2.040E+3	Wh
VAR-hours Line1	9/18/2004	2:11:06.500 PM	113.2	0.000	472.4	VARh
VAR-hours Line2	9/18/2004	2:11:06.500 PM	109.7	0.000	458.7	VARh
VAR-hours Line3	9/18/2004	2:11:06.500 PM	104.9	0.000	436.9	VARh
VAR-hours Sum of Phases	9/18/2004	2:11:06.500 PM	327.8	0.000	1.368E+3	VARh

9/18/2004 - 2:11:06.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/18/2004	2:11:06.500 PM	0.212	0.000	0.852	
PF Line2	9/18/2004	2:11:06.500 PM	0.209	0.000	0.856	
PF Line3	9/18/2004	2:11:06.500 PM	0.212	0.000	0.855	

9/18/2004 - 2:11:06.000 PM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Tai Mangilao WWPS\091804 - Tai Mangilao - Pump 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Tai Mangilao WWPS - Pump 2 ,

Comments

Station powered from GPA delta system. Meter number 76-788-675, demand 0.33. Three ABS 92.1 KW submersible pumps. Electro-rod level controls. Recorded only Pump 2. Pump draw down, short operating time. Station flood during heavy rain and drain plugged.

GWA Wastewater Pumping Station Assessment				
Station Name: TALOFOFO	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 12/02/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.43	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.175	
Main Disconnect	5.0%	2	0.1	11
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.325	
Generator Condition	10.0%	2	0.2	22
Generator Battery	5.0%	0	0	21
Diesel Fuel Line Condition	2.5%	2	0.05	
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Secondary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	2	0.08	
Phase Monitor	4.0%	4	0.16	
Chlorination Motor Starter	**2.0%**		0.04	
Main Breaker and Starter	1.0%	2	0.02	
Motor Starter	1.0%	2	0.02	
Pump Controls	**10.0%**		0.22	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.03	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	0	0	
	100%	**Assessment Value**		**2.4**

Comments:

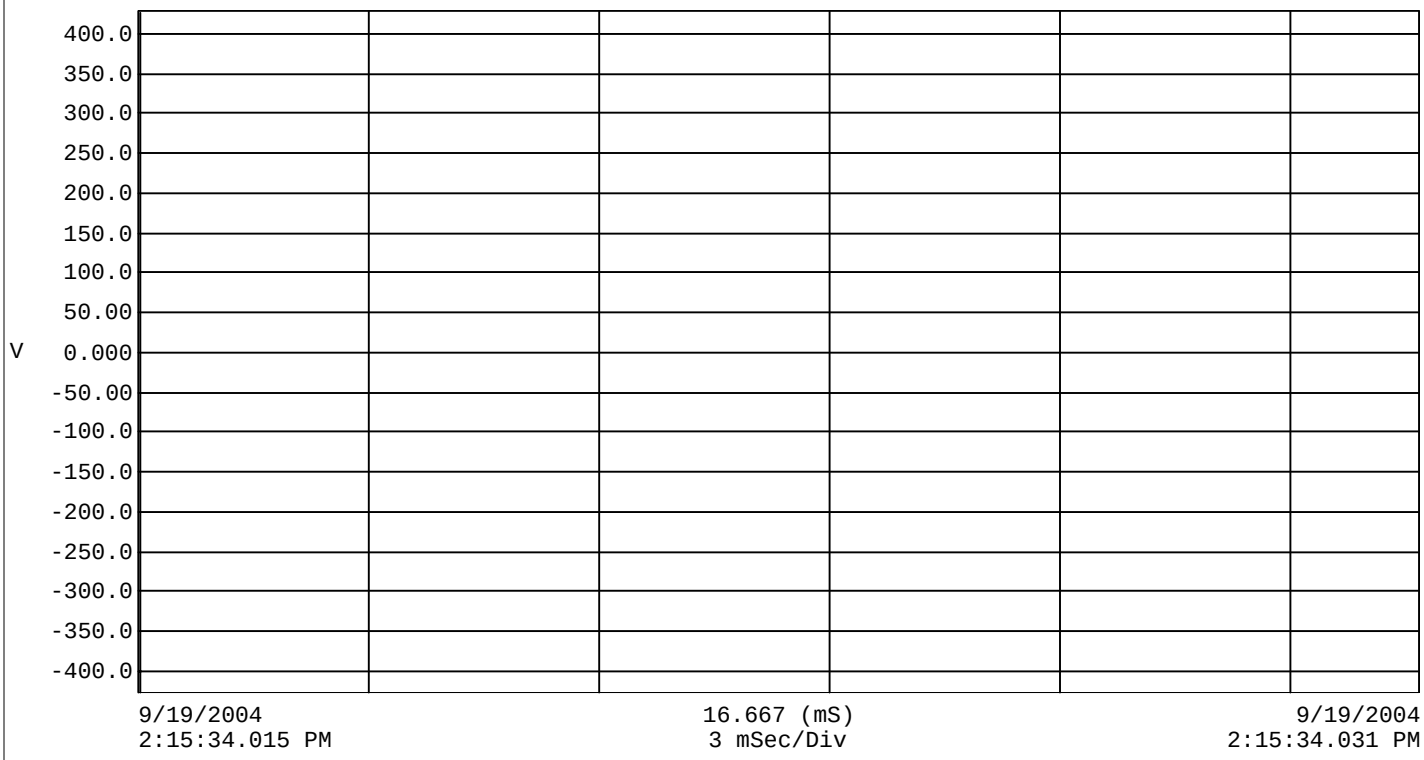
GWA Wastewater Pumping Station Assessment				
Station Name: YIGO	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/20/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.43	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	2	0.04	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Primary Pump Motor Controls	**20.0%**		0.44	
Main Breaker	4.0%	2	0.08	31
Motor Starter	4.0%	2	0.08	31
Motor Protection (Overload and moisture)	4.0%	2	0.08	31
Wiring	4.0%	2	0.08	31
Phase Monitor	4.0%	3	0.12	
Secondary Pump Motor Controls	**20.0%**		0.44	
Main Breaker	4.0%	2	0.08	31
Motor Starter	4.0%	2	0.08	31
Motor Protection (Overload and moisture)	4.0%	2	0.08	31
Wiring	4.0%	2	0.08	31
Phase Monitor	4.0%	3	0.12	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	
Motor Starter	1.0%	0	0	
Pump Controls	**10.0%**		0.25	
Level	5.0%	3	0.15	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**3.0%**		0.06	
Lighting and Power Devices	1.5%	2	0.03	
Sump Pump Controls	1.5%	2	0.03	
	100%	**Assessment Value**		**2.4**

Comments:

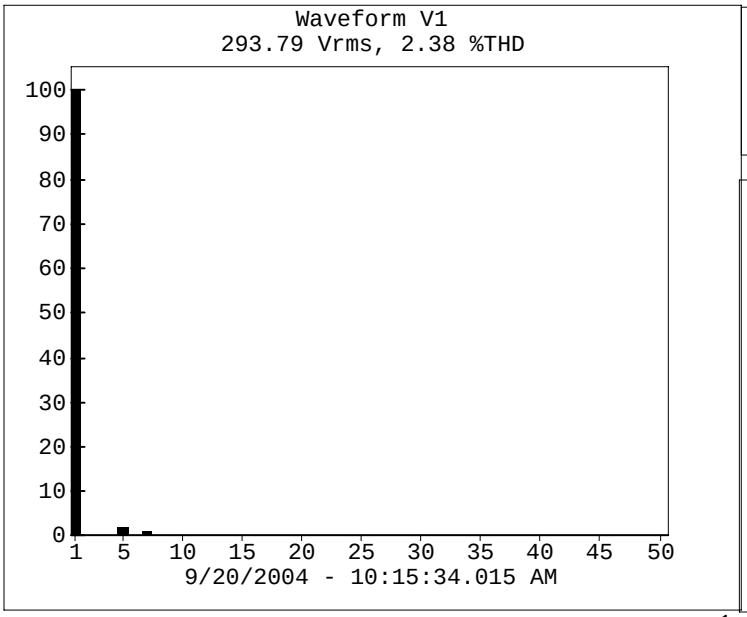
YIGO WWPS
Pump 1 No Load

Recording Start Date	9/20/2004 - 10:15:34 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/20/2004	10:15:34.015 AM	16.667	293.8	V
Waveform V2	9/20/2004	10:15:34.015 AM	16.667	293.7	V
Waveform V3	9/20/2004	10:15:34.015 AM	16.667	294.3	V

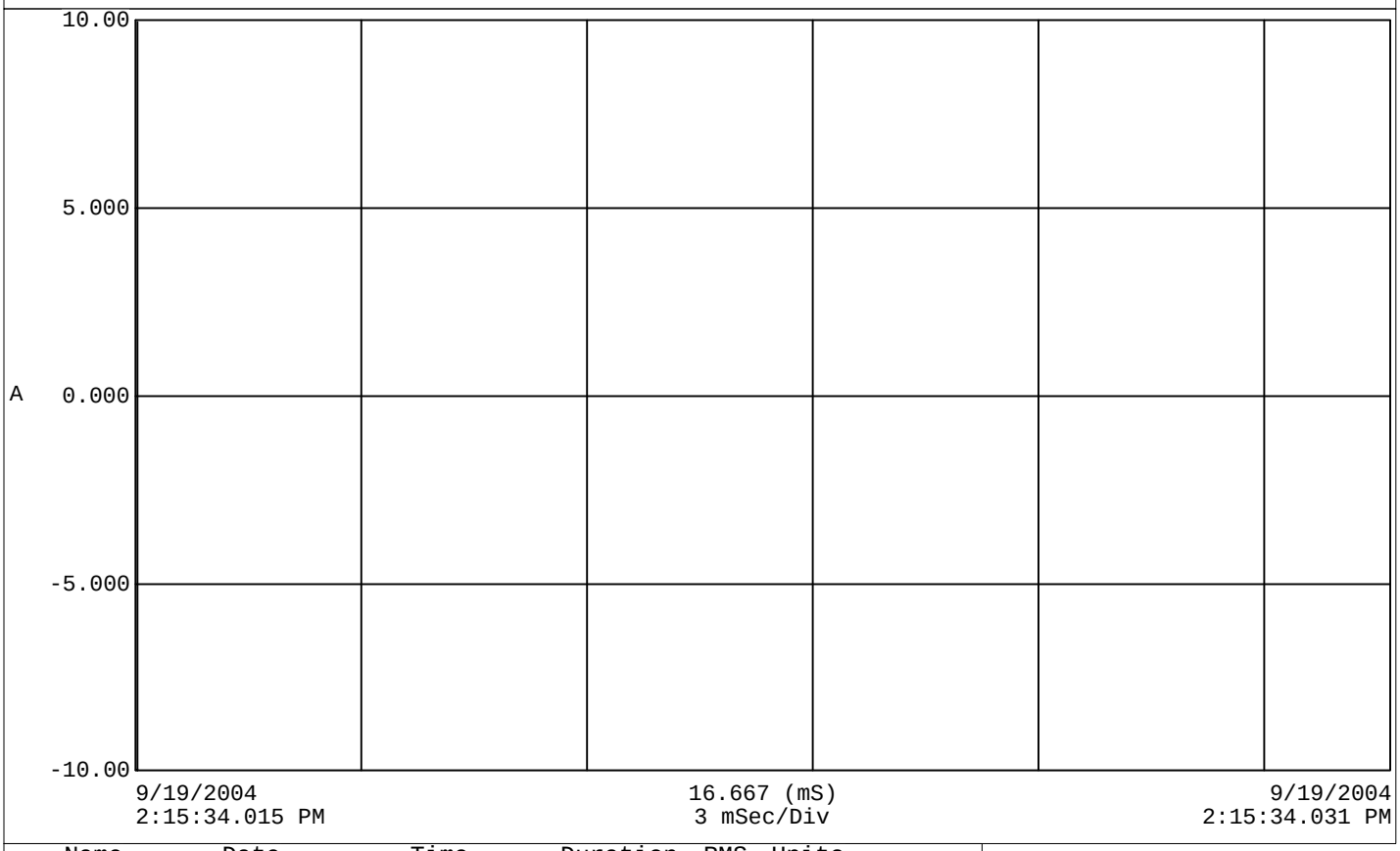


9/19/2004 - 2:15:34.015 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

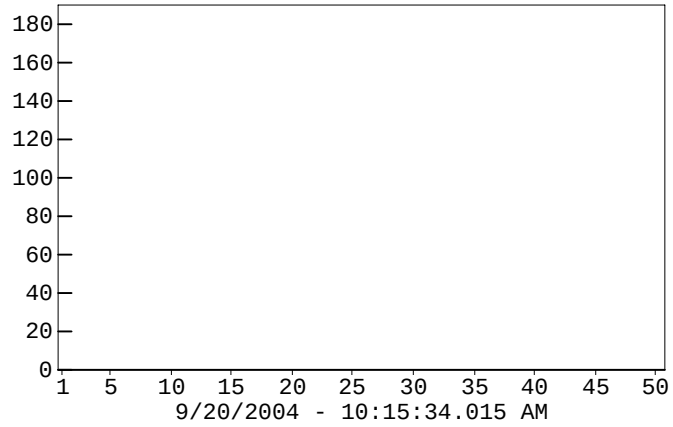
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/20/2004	10:15:34.015 AM	16.667	0.000	A
Waveform I2	9/20/2004	10:15:34.015 AM	16.667	0.000	A
Waveform I3	9/20/2004	10:15:34.015 AM	16.667	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD

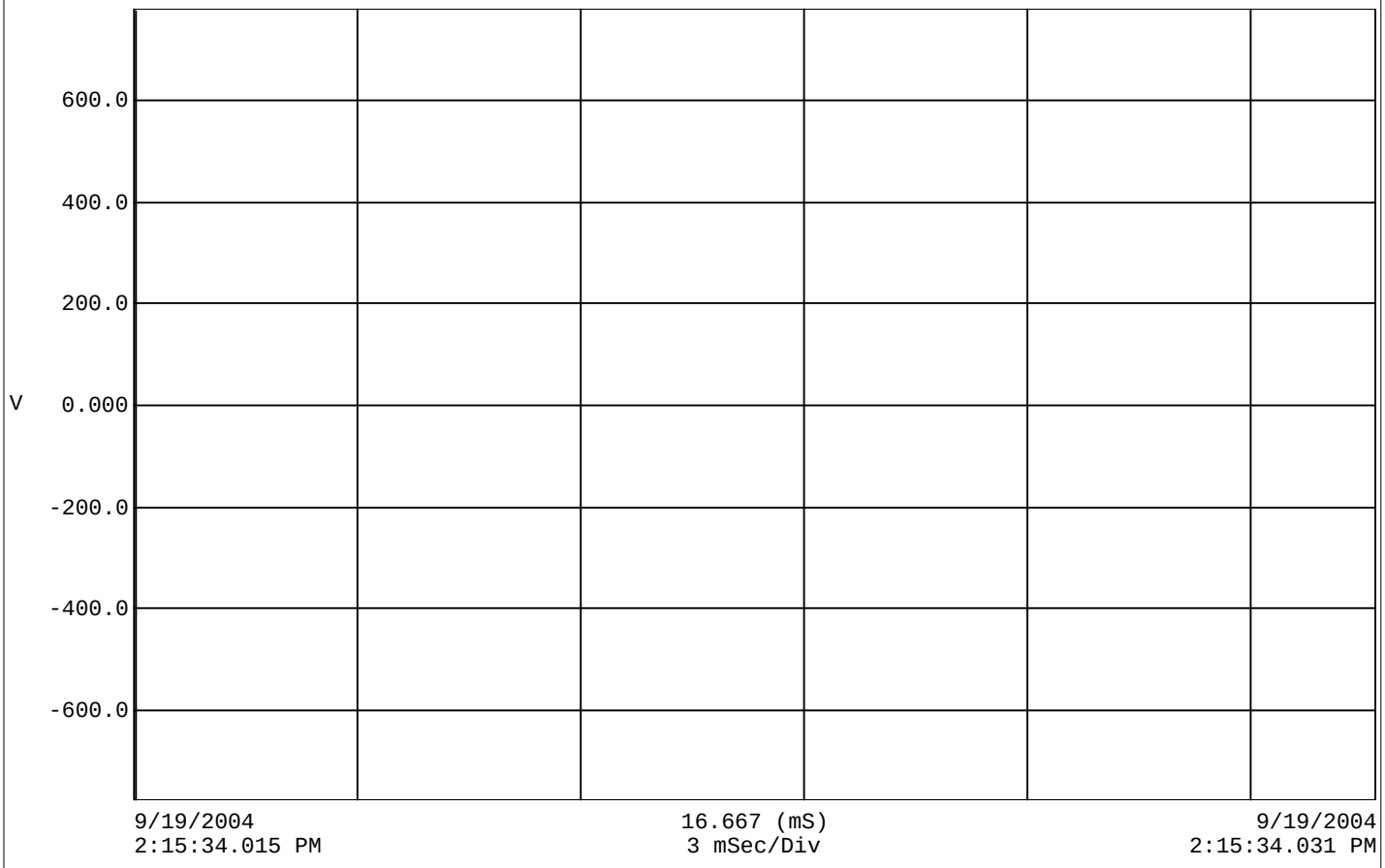


9/19/2004 - 2:15:34.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

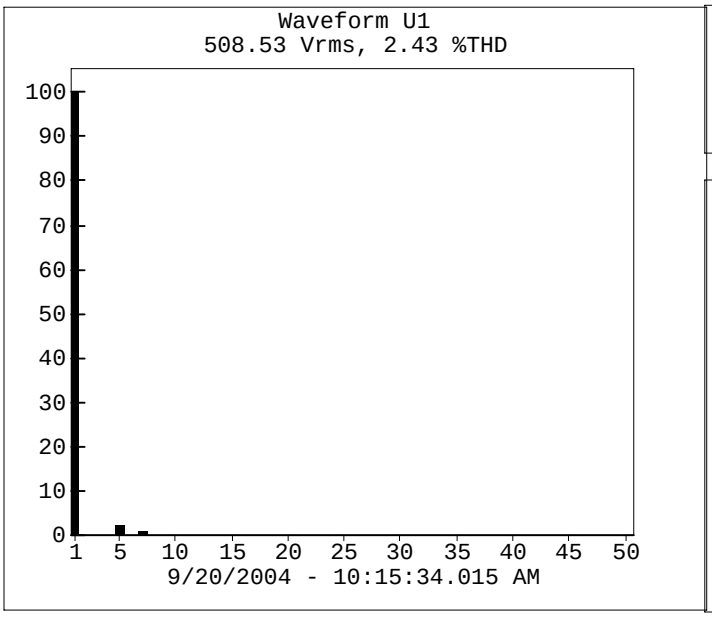
Waveform I1

	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/20/2004	10:15:34.015 AM	16.667	508.5	V
Waveform U2	9/20/2004	10:15:34.015 AM	16.667	509.4	V
Waveform U3	9/20/2004	10:15:34.015 AM	16.667	509.5	V



9/19/2004 - 2:15:34.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/20/2004
Start Time: 10:15:34 AM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Yigo WWPS\092004 - Yigo WWPS - Pump 1-Photo1.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Yigo WWPS - Pump 1 - No Load Photo ,

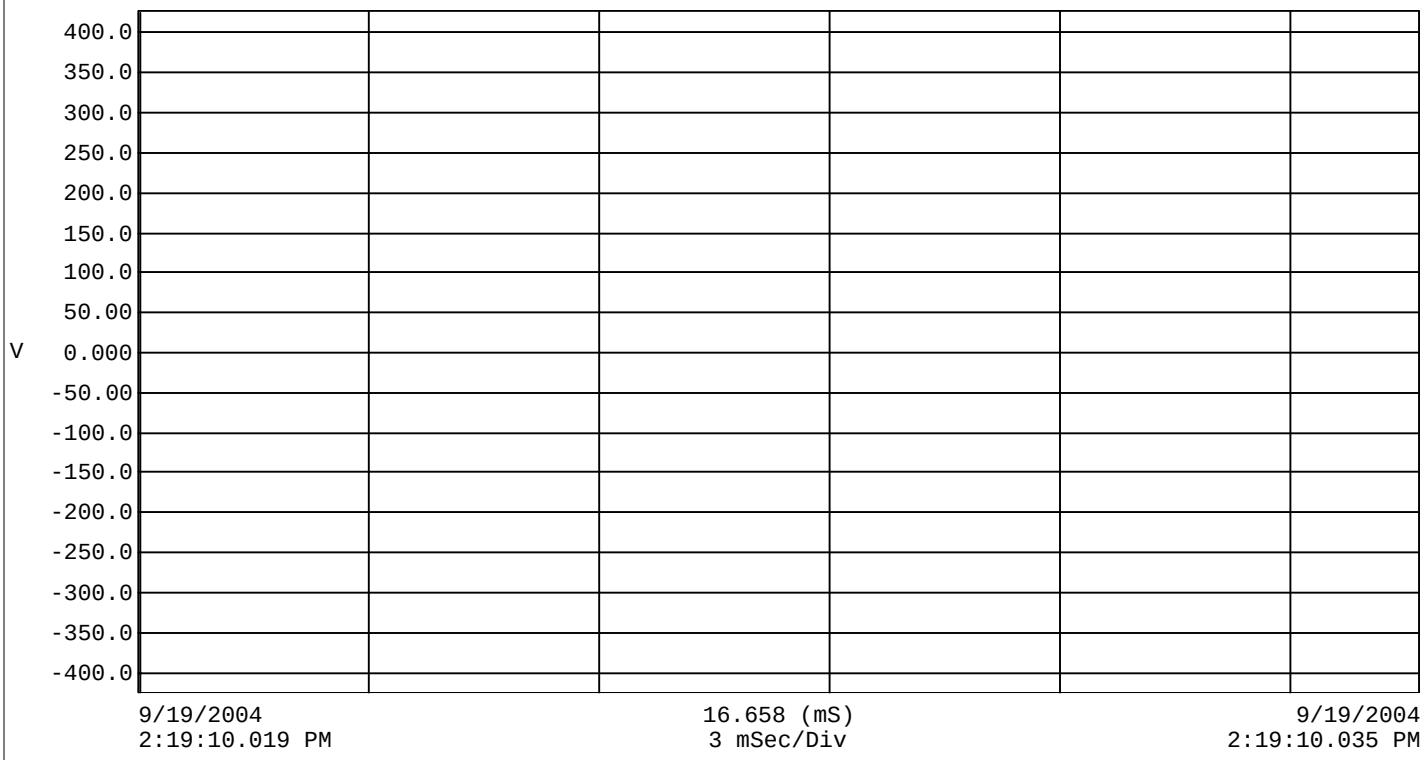
Comments
GPA meter 04474930, Demand 0.92, CT Ratio 200:5.

AEMC® INSTRUMENTS

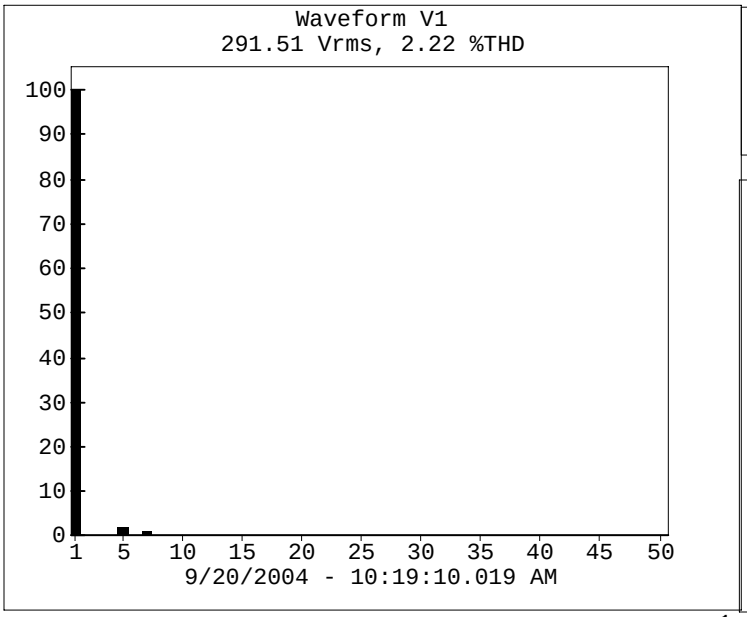
YIGO WWPS
Pump 1

Recording Start Date	9/20/2004 - 10:19:10 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/20/2004	10:19:10.019 AM	16.658	291.5	V
Waveform V2	9/20/2004	10:19:10.019 AM	16.658	292.3	V
Waveform V3	9/20/2004	10:19:10.019 AM	16.658	292.2	V

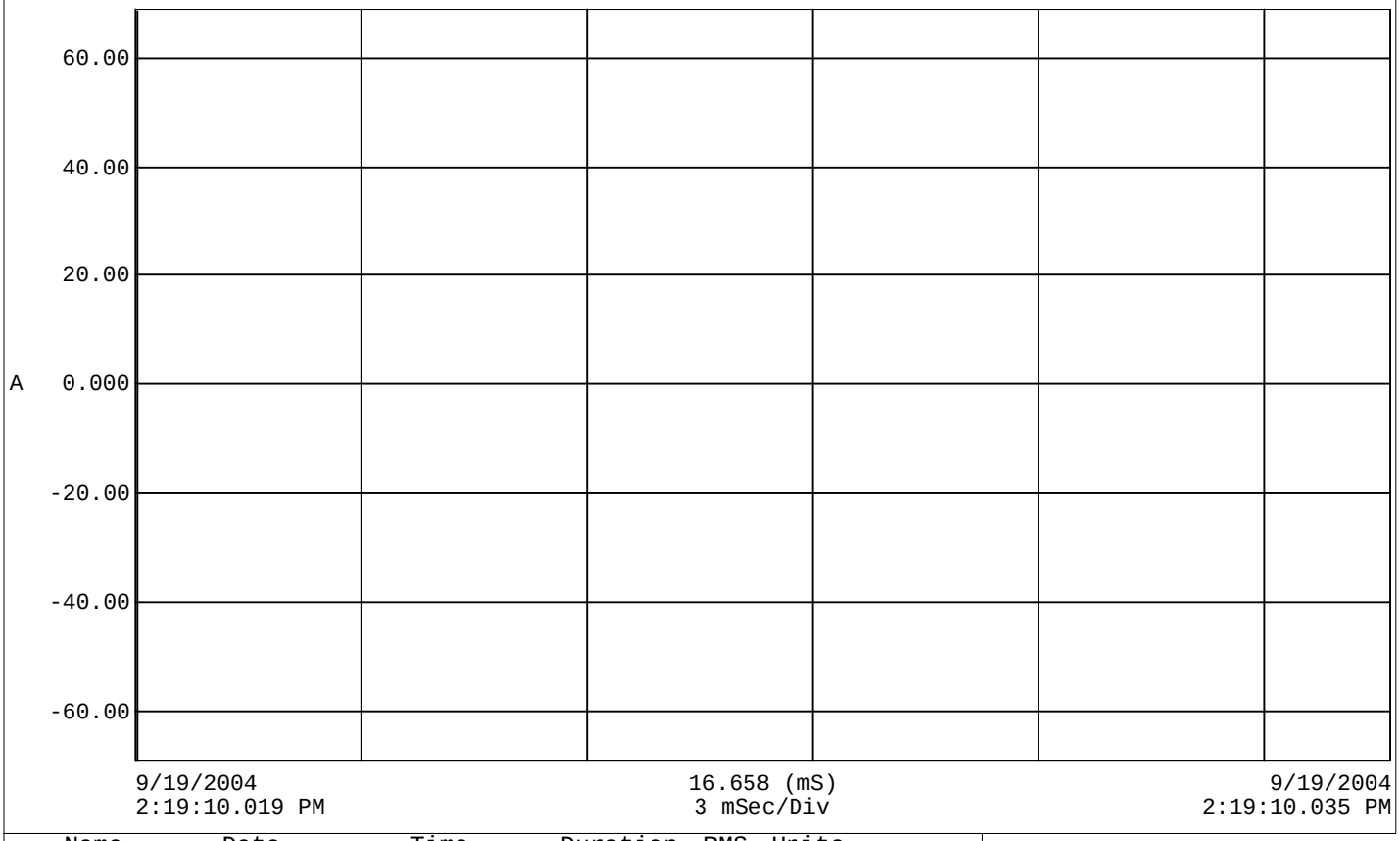


9/19/2004 - 2:19:10.019 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

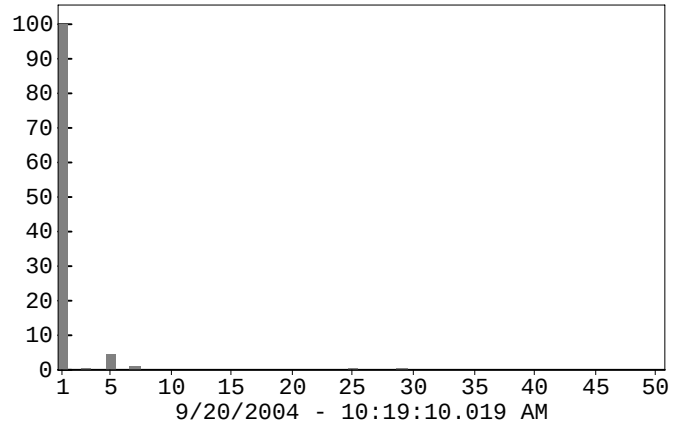
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/20/2004	10:19:10.019 AM	16.658	44.10	A
Waveform I2	9/20/2004	10:19:10.019 AM	16.658	42.89	A
Waveform I3	9/20/2004	10:19:10.019 AM	16.658	45.19	A

Waveform I1
44.10 Arms, 5.04 %THD

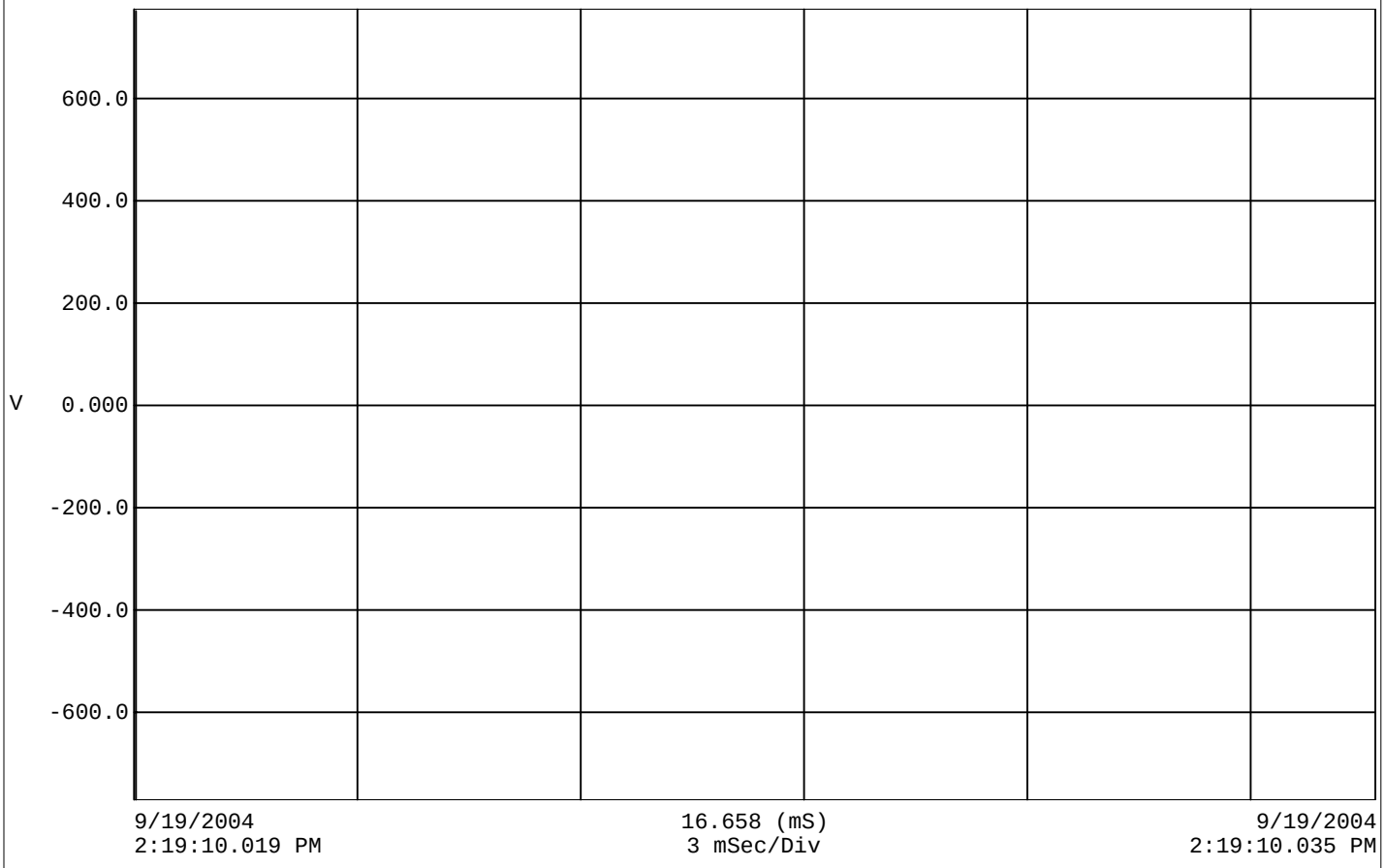


9/19/2004 - 2:19:10.019 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

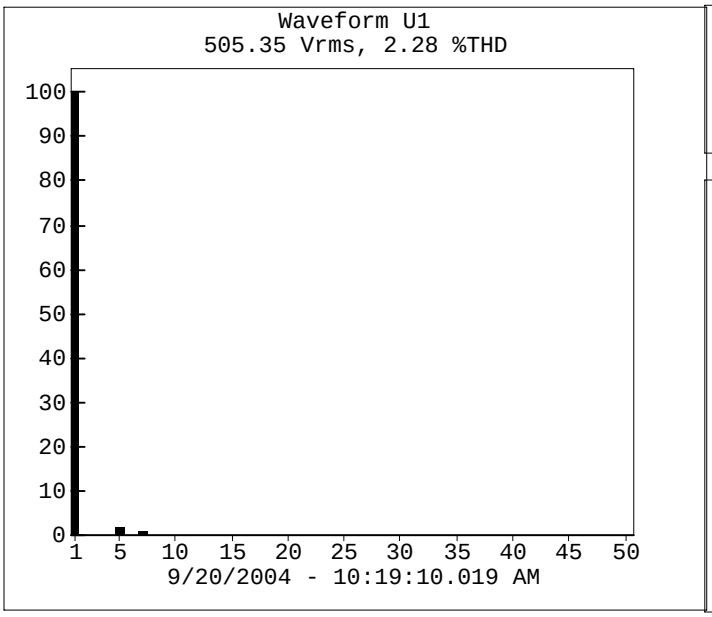
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.4	H19	0.1	H36	0.0
H03	0.7	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	4.5	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.4	H24	0.2	H41	0.0
H08	0.0	H25	1.1	H42	0.0
H09	0.3	H26	0.2	H43	0.0
H10	0.0	H27	0.2	H44	0.0
H11	0.3	H28	0.2	H45	0.0
H12	0.0	H29	0.8	H46	0.0
H13	0.4	H30	0.2	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/20/2004	10:19:10.019 AM	16.658	505.4	V
Waveform U2	9/20/2004	10:19:10.019 AM	16.658	506.5	V
Waveform U3	9/20/2004	10:19:10.019 AM	16.658	505.5	V



9/19/2004 - 2:19:10.019 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/20/2004
Start Time: 10:19:10 AM
Duration: 0:0.000 (M:S)
W: 32.30E+3 W
VAR: 22.21E+3 W
VA: 39.21E+3 W
Power Factor: 2.472
Displacement Power Factor: 2.476
TAN: 2.052
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Yigo WWPS\092004 - Yigo WWPS - Pump 1-Photo2.dvb

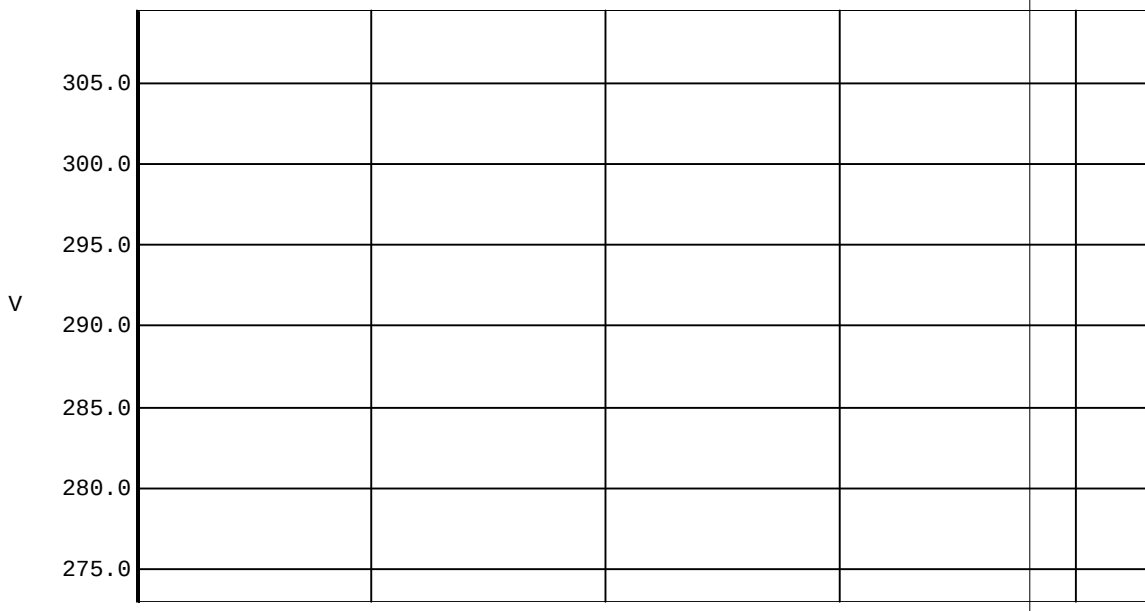
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Yigo WWPS - Pump 1 Photo ,

Comments
GPA Power 04474930, Demand 0.92, 200:5 CT Ratio. Pump 1 and 2, 60 HP Fairbanks Morse Submersible pumps. Station Floods during heavy storms. Pump 1 operational.

YIGO WWPS
Pump 1

Recording Start Date	9/20/2004 - 10:17:47 AM
Recording Duration	32:43 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

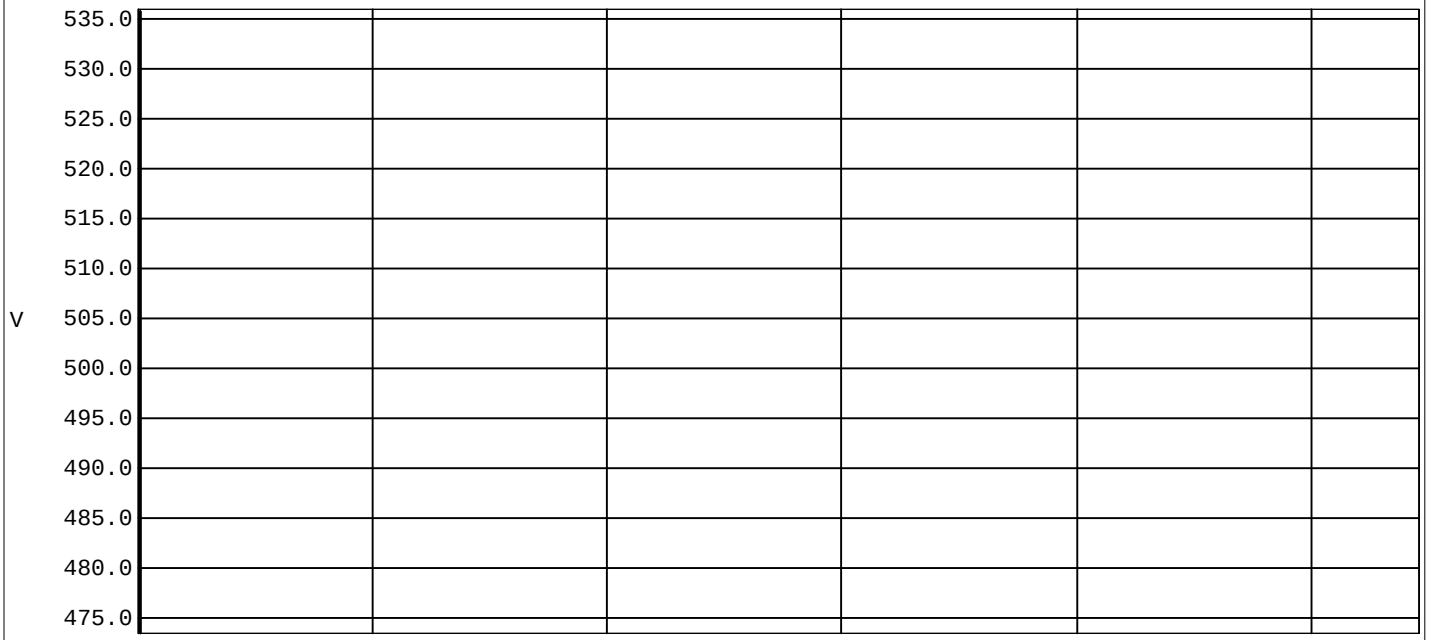
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/20/2004	10:17:47.500 AM	293.2	287.3	294.5	1964
Vrms Line2	9/20/2004	10:17:47.500 AM	293.3	287.9	294.3	1964
Vrms Line3	9/20/2004	10:17:47.500 AM	293.6	287.9	294.7	1964

9/19/2004 - 2:17:47.500 PM
Val
X.XX — Vrms Line1
X.XX — Vrms Line2
X.XX — Vrms Line3

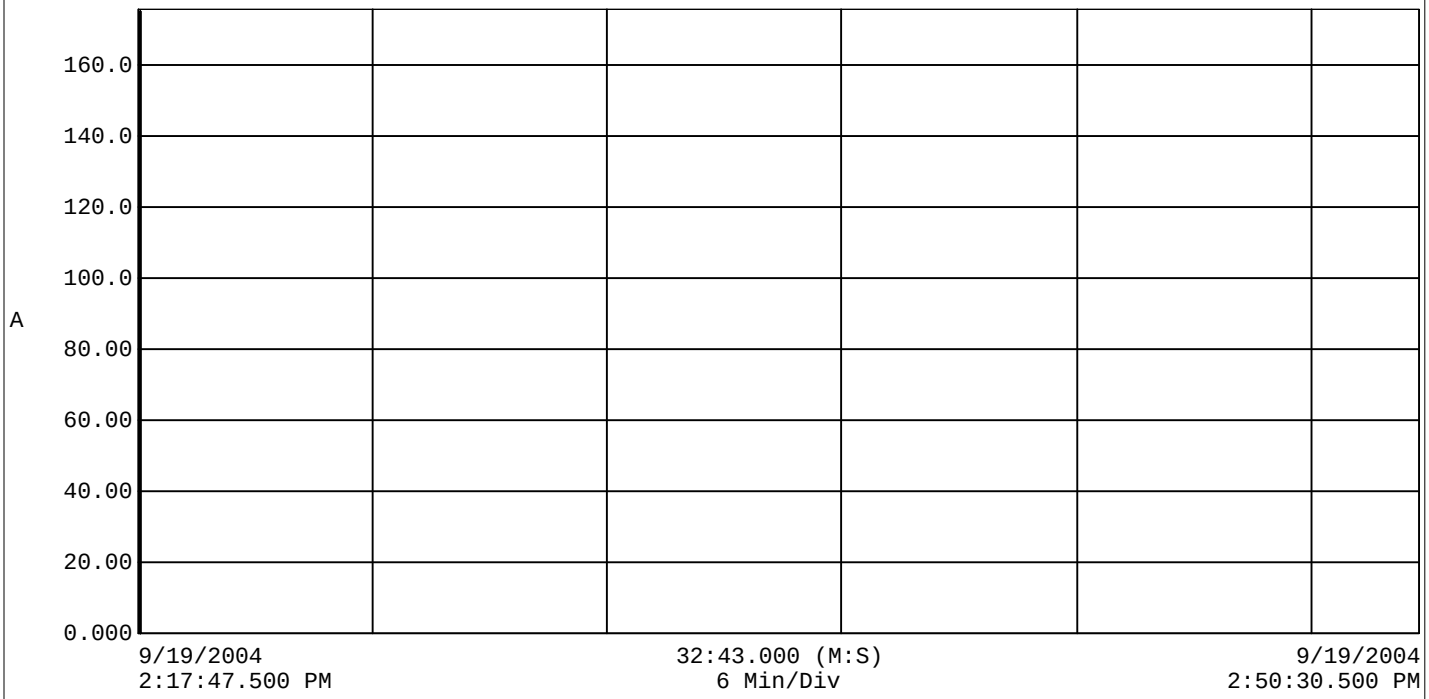
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/20/2004	10:17:47.500 AM	507.7	498.4	509.5	V
Urms Line2	9/20/2004	10:17:47.500 AM	508.4	498.5	510.4	V
Urms Line3	9/20/2004	10:17:47.500 AM	508.2	498.2	510.0	V

9/19/2004 - 2:17:47.500 PM
Val
X.XX — Urms Line1
X.XX — Urms Line2
X.XX — Urms Line3

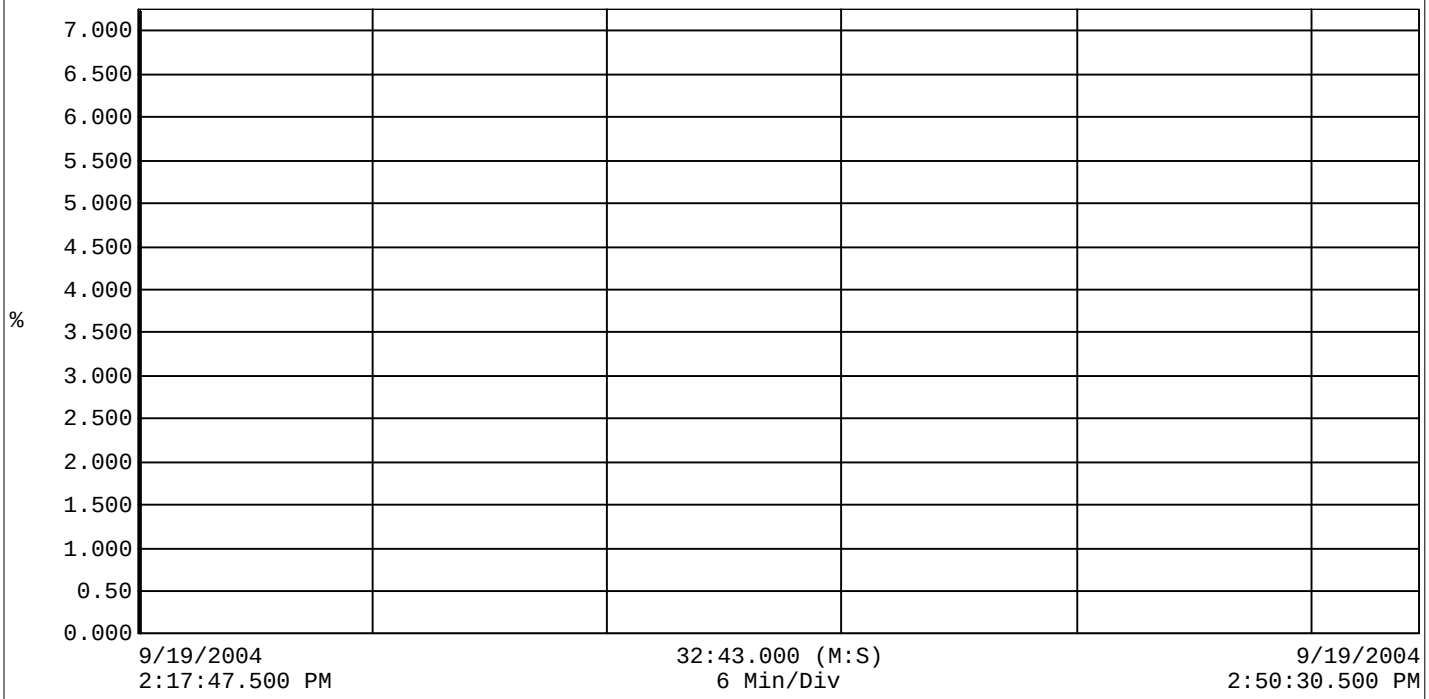
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/20/2004	10:17:47.500 AM	12.52	0.000	163.6	A
Arms Line2	9/20/2004	10:17:47.500 AM	12.04	0.000	162.6	A
Arms Line3	9/20/2004	10:17:47.500 AM	12.77	0.000	167.2	A

9/19/2004 - 2:17:47.500 PM
Val
X.XX — Arms Line1
X.XX — Arms Line2
X.XX — Arms Line3

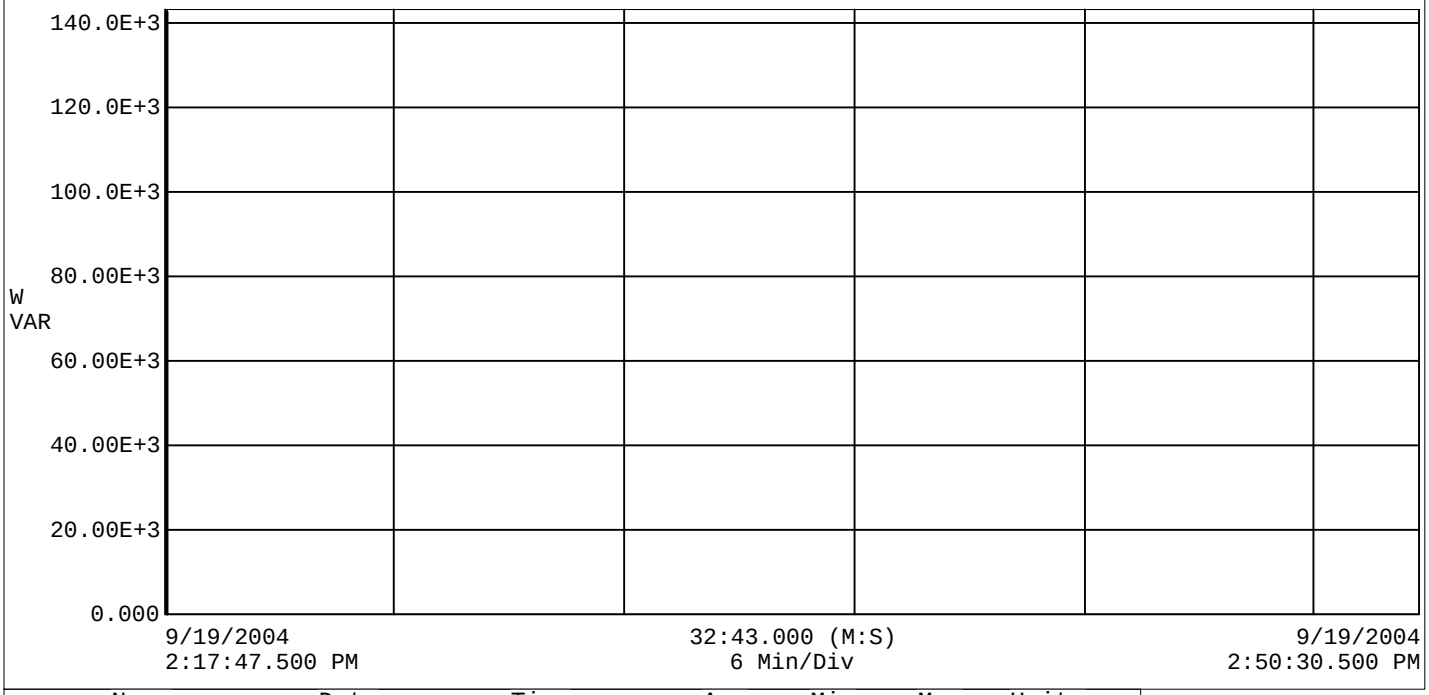
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/20/2004	10:17:47.500 AM	90.63E-3	0.000	0.200	%
Aunb(IEEE)	9/20/2004	10:17:47.500 AM	0.909	0.000	6.900	%

9/19/2004 - 2:17:47.500 PM
Val
X.XX —— Vunb(IEEE)
X.XX —— Aunb(IEEE)

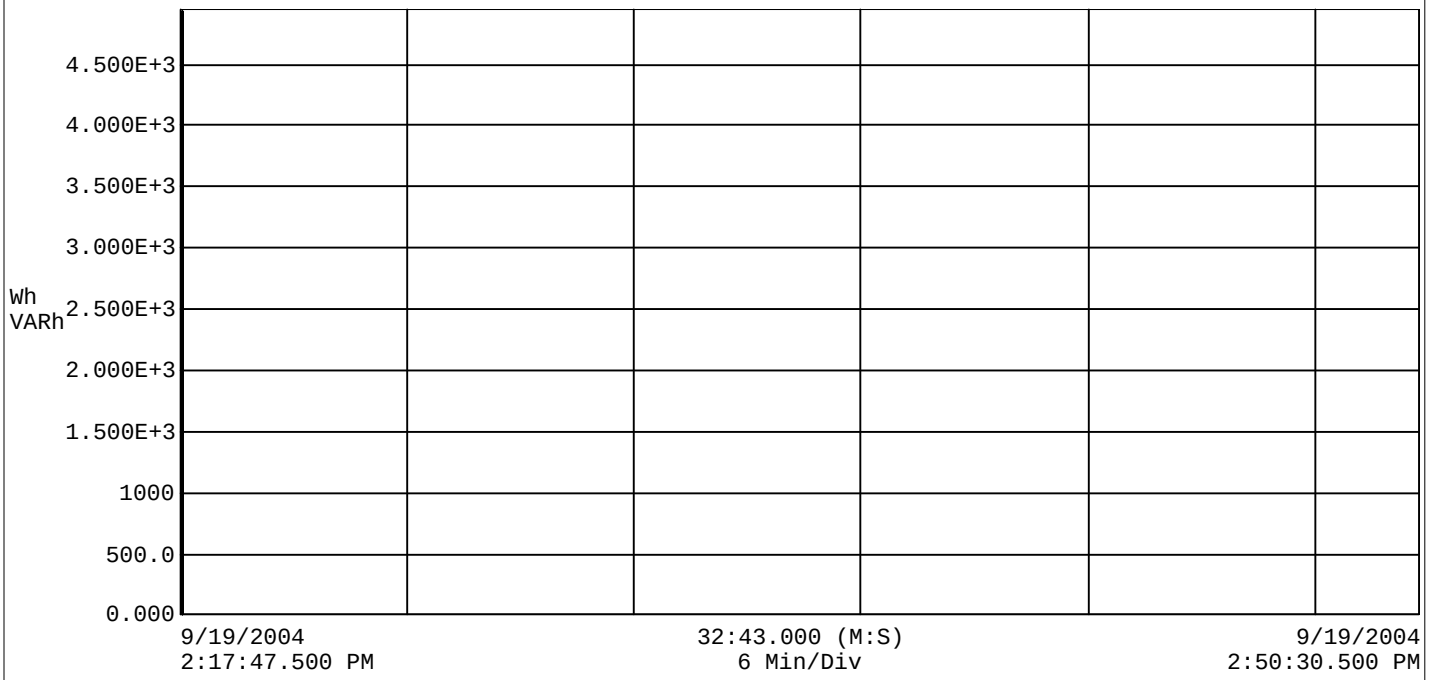
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/20/2004	10:17:47.500 AM	2.885E+3	0.000	16.95E+3	W
W Line2	9/20/2004	10:17:47.500 AM	2.845E+3	0.000	17.38E+3	W
W Line3	9/20/2004	10:17:47.500 AM	2.894E+3	0.000	16.20E+3	W
W Sum of Phases	9/20/2004	10:17:47.500 AM	8.625E+3	0.000	50.47E+3	W
VAR Line1	9/20/2004	10:17:47.500 AM	2.172E+3	0.000	45.08E+3	VAR
VAR Line2	9/20/2004	10:17:47.500 AM	1.994E+3	0.000	44.87E+3	VAR
VAR Line3	9/20/2004	10:17:47.500 AM	2.288E+3	0.000	46.27E+3	VAR
VAR Sum of Phases	9/20/2004	10:17:47.500 AM	6.454E+3	0.000	136.0E+3	VAR

9/19/2004 - 2:17:47.500 PM
Val
X.XX — W Line1
X.XX — W Line2
X.XX — W Line3
X.XX — W Sum of Phases
X.XX — VAR Line1
X.XX — VAR Line2
X.XX — VAR Line3
X.XX — VAR Sum of Phases

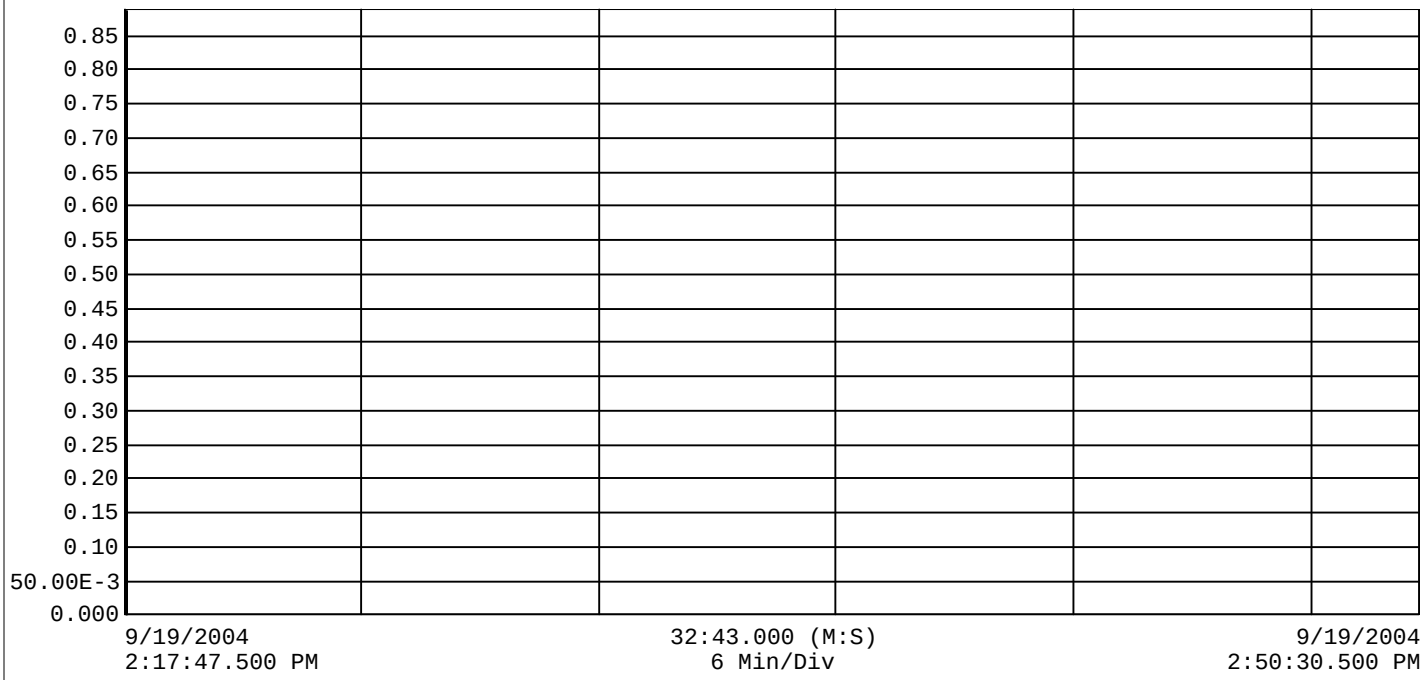
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/20/2004	10:17:47.500 AM	773.2	0.000	1.574E+3	Wh
W-hours Line2	9/20/2004	10:17:47.500 AM	764.2	0.000	1.552E+3	Wh
W-hours Line3	9/20/2004	10:17:47.500 AM	774.6	0.000	1.579E+3	Wh
W-hours Sum of Phases	9/20/2004	10:17:47.500 AM	2.312E+3	0.000	4.705E+3	Wh
VAR-hours Line1	9/20/2004	10:17:47.500 AM	581.7	0.000	1.185E+3	VARh
VAR-hours Line2	9/20/2004	10:17:47.500 AM	536.3	0.000	1.088E+3	VARh
VAR-hours Line3	9/20/2004	10:17:47.500 AM	615.5	0.000	1.248E+3	VARh
VAR-hours Sum of Phases	9/20/2004	10:17:47.500 AM	1.733E+3	0.000	3.521E+3	VARh

9/19/2004 - 2:17:47.500 PM
Val
X.XX — W-hours Line1
X.XX — W-hours Line2
X.XX — W-hours Line3
X.XX — W-hours Sum of Phases
X.XX — VAR-hours Line1
X.XX — VAR-hours Line2
X.XX — VAR-hours Line3
X.XX — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/20/2004	10:17:47.500 AM	0.221	0.000	0.825	
PF Line2	9/20/2004	10:17:47.500 AM	0.226	0.000	0.845	
PF Line3	9/20/2004	10:17:47.500 AM	0.217	0.000	0.813	

9/19/2004 - 2:17:47.500 PM
Val
X.XX — PF Line1
X.XX — PF Line2
X.XX — PF Line3

Trend Summary Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Yigo WWPS\092004 - Yigo WWPS - Pump 1.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Yigo WWPS - Pump 1 ,

Comments

GPA Meter 04474930, Demand 0.92 (200:5 CT Ratio). Station has two of three Fairbanks Morse 60 HP, 460 Volt, submersible pumps. Only pump 1 in operation during this test. Pump 2 is turned off. Station was flooded during the last typhoon. Motor Control Center and Control Panel were submerged.

GPA 200 KW Generator in separate building.

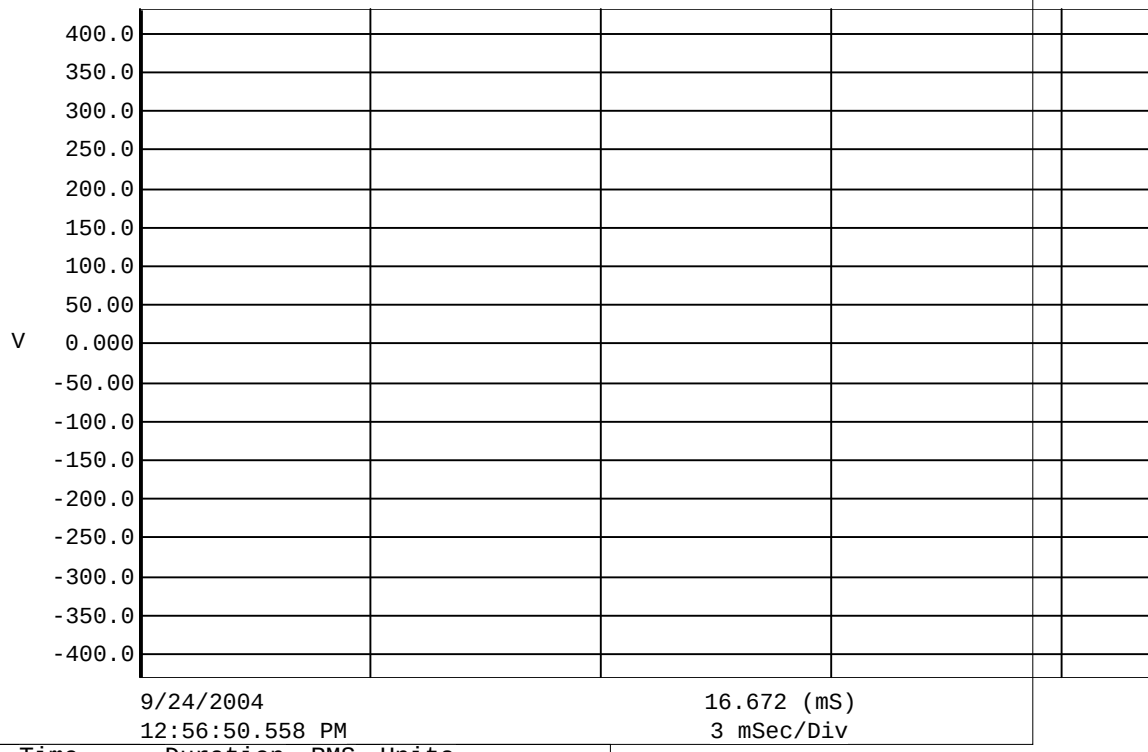
GWA Wastewater Pumping Station Assessment				
Station Name: YPAO	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**15.0%**		0.55	
Transformer Pole Condition and Grounding	2.0%	3	0.06	
Transformer Connection Type	2.0%	3	0.06	
Transformer Wiring Method	5.0%	4	0.2	
Lightning Arrester Condition	5.0%	4	0.2	
Metering Arrangement	1.0%	3	0.03	
Building Service Information	**10.0%**		0.225	
Main Disconnect	5.0%	3	0.15	
Grounding	2.5%	3	0.075	
Surge Protection	2.5%	0	0	
Standby Generator	**20.0%**		0.225	
Generator Condition	10.0%	1	0.1	22
Generator Battery	5.0%	1	0.05	22
Diesel Fuel Line Condition	2.5%	1	0.025	22
Auto Transfer Switch	2.5%	2	0.05	
Primary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Secondary Pump Motor Controls	**20.0%**		0.6	
Main Breaker	4.0%	3	0.12	
Motor Starter	4.0%	3	0.12	
Motor Protection (Overload and moisture)	4.0%	3	0.12	
Wiring	4.0%	3	0.12	
Phase Monitor	4.0%	3	0.12	
Chlorination Motor Starter	**2.0%**		0	
Main Breaker and Starter	1.0%	0	0	45
Motor Starter	1.0%	0	0	45
Pump Controls	**10.0%**		0.22	
Level	5.0%	2	0.1	
Alarms	3.0%	2	0.06	
Automatic Controls	2.0%	3	0.06	
Building Electrical	**3.0%**		0.015	
Lighting and Power Devices	1.5%	1	0.015	
Sump Pump Controls	1.5%	0	0	45
	100%	**Assessment Value**		**2.4**

Comments:

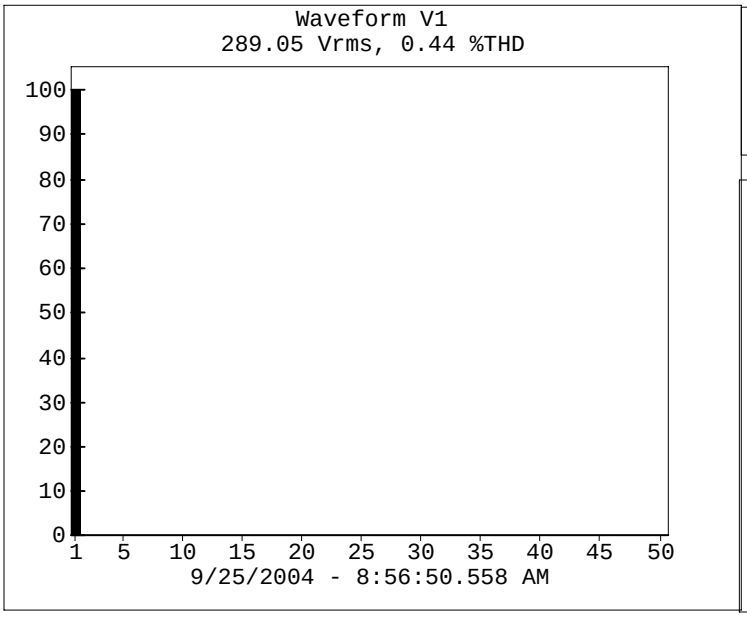
Ypao WWPS Pump 1

Recording Start Date	9/25/2004 - 8:56:50 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	8:56:50.558 AM	16.672	289.0	V
Waveform V2	9/25/2004	8:56:50.558 AM	16.672	287.1	V
Waveform V3	9/25/2004	8:56:50.558 AM	16.672	289.8	V

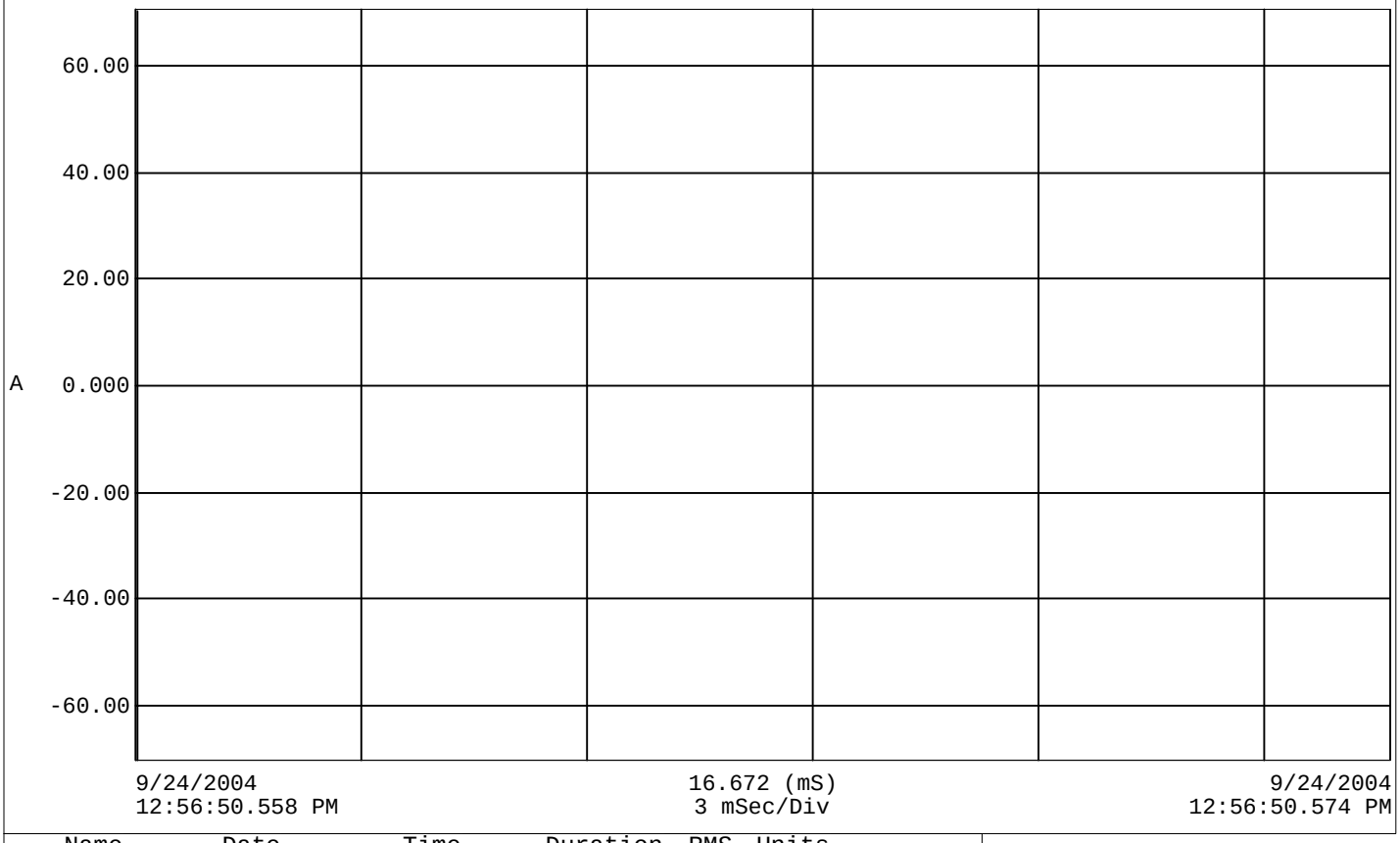


9/24/2004 - 12:56:50.558 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

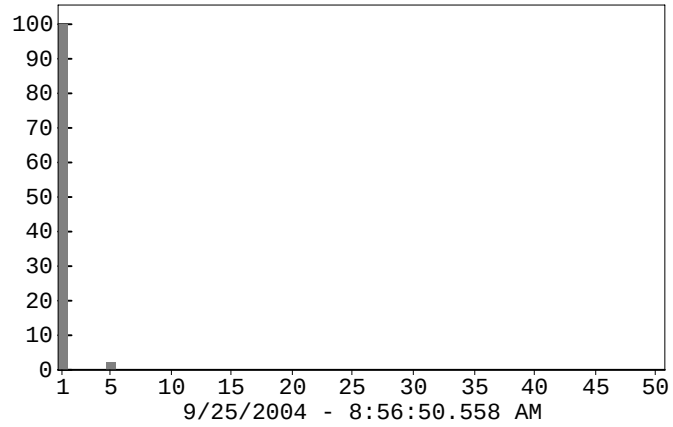
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.3	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.3	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	8:56:50.558 AM	16.672	43.45	A
Waveform I2	9/25/2004	8:56:50.558 AM	16.672	41.27	A
Waveform I3	9/25/2004	8:56:50.558 AM	16.672	46.47	A

Waveform I1
43.45 Arms, 2.54 %THD

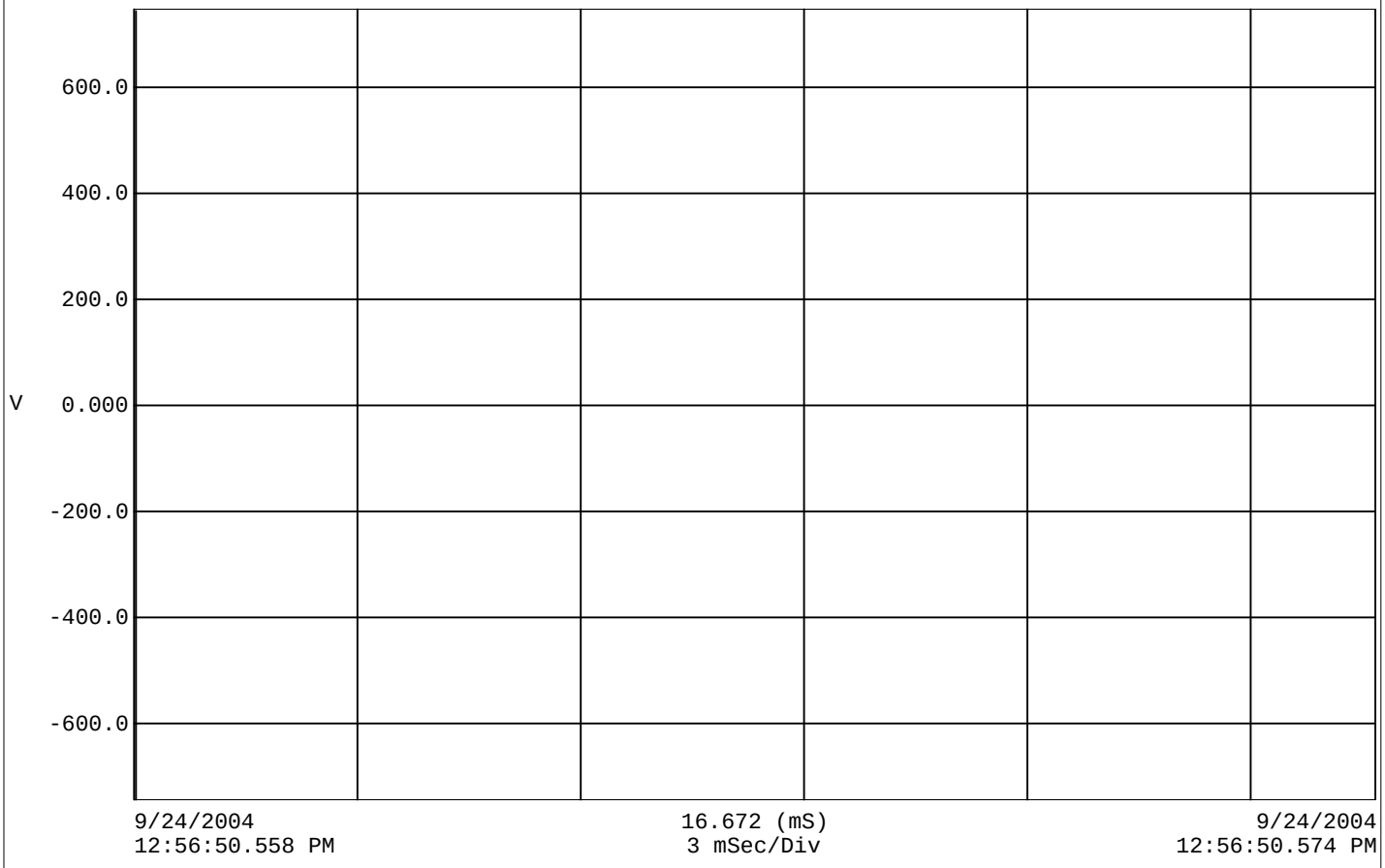


9/24/2004 - 12:56:50.558 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

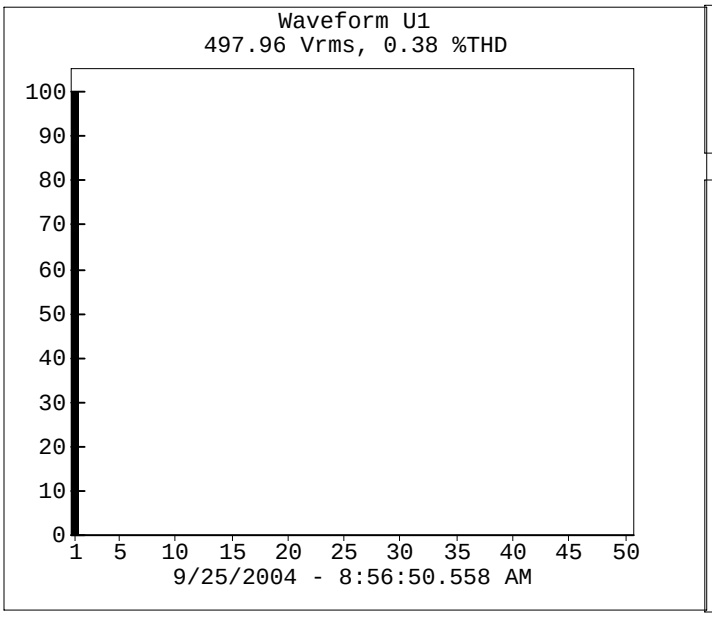
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.4	H19	0.3	H36	0.0
H03	0.5	H20	0.1	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	2.3	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.3	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.5	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	8:56:50.558 AM	16.672	498.0	V
Waveform U2	9/25/2004	8:56:50.558 AM	16.672	499.6	V
Waveform U3	9/25/2004	8:56:50.558 AM	16.672	502.4	V



9/24/2004 - 12:56:50.558 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.2	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/25/2004
Start Time: 8:56:50 AM
Duration: 0:0.000 (M:S)
W: 27.79E+3 W
VAR: 25.81E+3 W
VA: 37.95E+3 W
Power Factor: 2.199
Displacement Power Factor: 2.199
TAN: 2.786
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Ypao WWPS\092504- Ypao WWPS Pump 1 Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Ypao WWPS - Pump 1 Photo ,

Comments

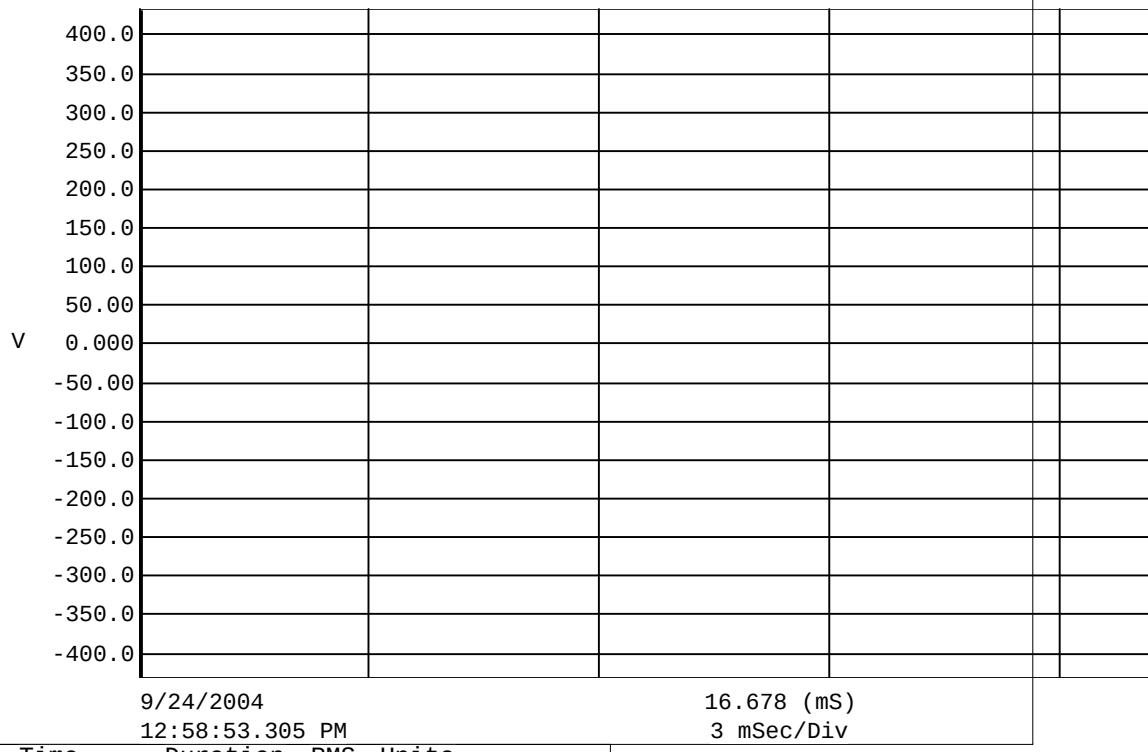
GPA Meter 03-586-281, Demand of 0.81 (Multiplier ?). KVARH Meter 79-788-226.

Bubbler system.

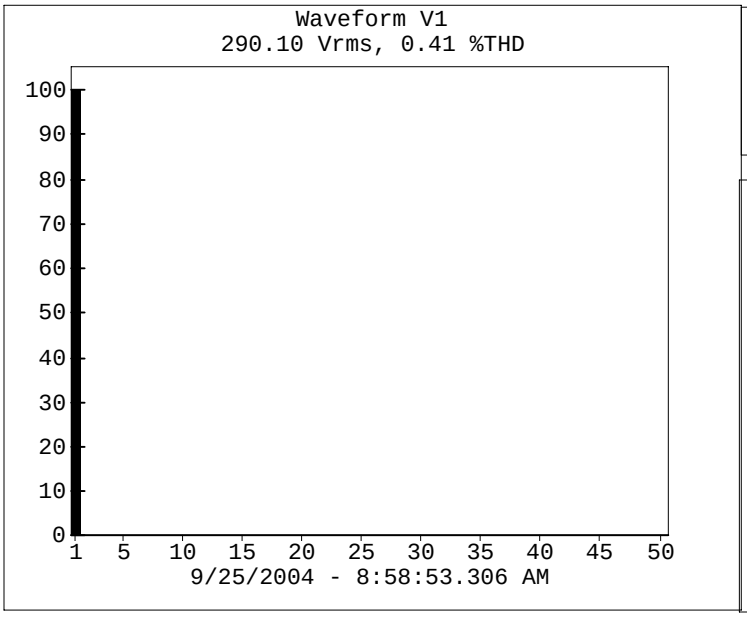
Ypao WWPS Pump 1

Recording Start Date	9/25/2004 - 8:58:53 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/25/2004	8:58:53.305 AM	16.678	290.1	V
Waveform V2	9/25/2004	8:58:53.305 AM	16.678	288.3	V
Waveform V3	9/25/2004	8:58:53.305 AM	16.678	290.6	V

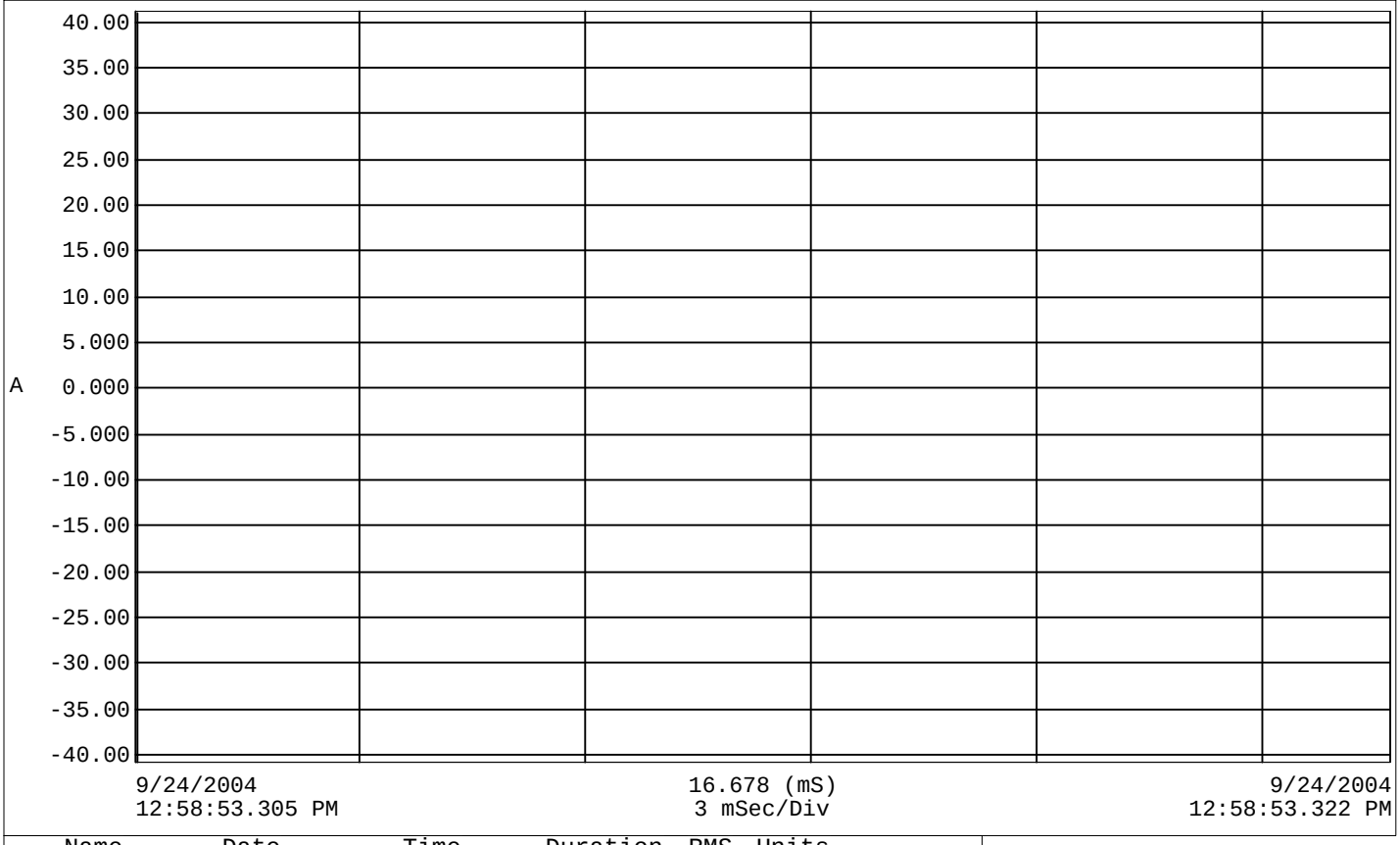


9/24/2004 - 12:58:53.305 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

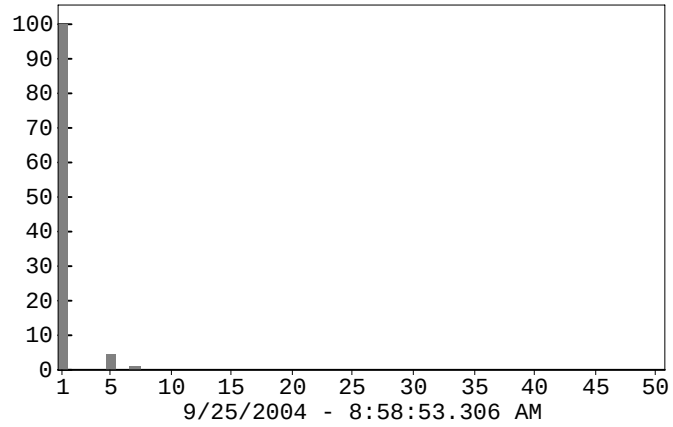
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.3	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/25/2004	8:58:53.305 AM	16.678	27.49	A
Waveform I2	9/25/2004	8:58:53.305 AM	16.678	24.41	A
Waveform I3	9/25/2004	8:58:53.305 AM	16.678	28.13	A

Waveform I1
27.49 Arms, 4.84 %THD

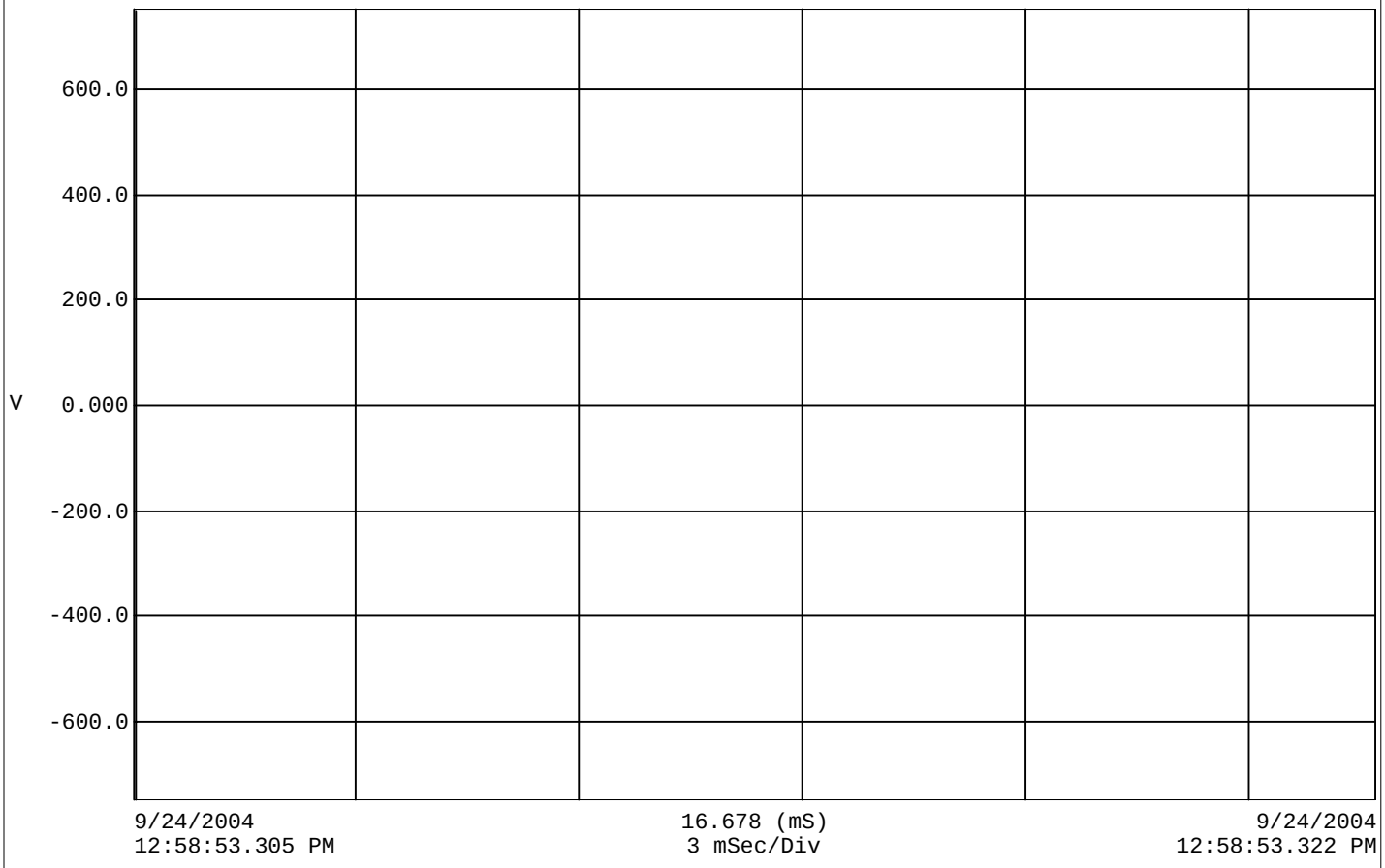


9/24/2004 - 12:58:53.305 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

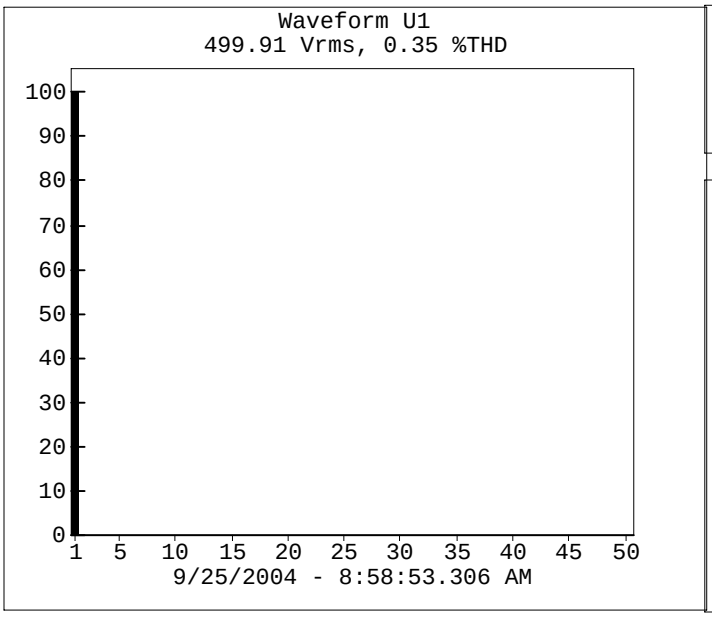
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.2	H19	0.2	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	4.6	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/25/2004	8:58:53.305 AM	16.678	499.9	V
Waveform U2	9/25/2004	8:58:53.305 AM	16.678	501.3	V
Waveform U3	9/25/2004	8:58:53.305 AM	16.678	504.1	V



9/24/2004 - 12:58:53.305 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.2	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 9/25/2004
Start Time: 8:58:53 AM
Duration: 0:0.000 (M:S)
W: 1.498E+3 W
VAR: 23.13E+3 W
VA: 23.19E+3 W
Power Factor: 0.196
Displacement Power Factor: 0.196
TAN: 54.57
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Ypao WWPS\092504- Ypao WWPS Pump 2 Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Ypao WWPS - Pump 2 Photo ,

Comments

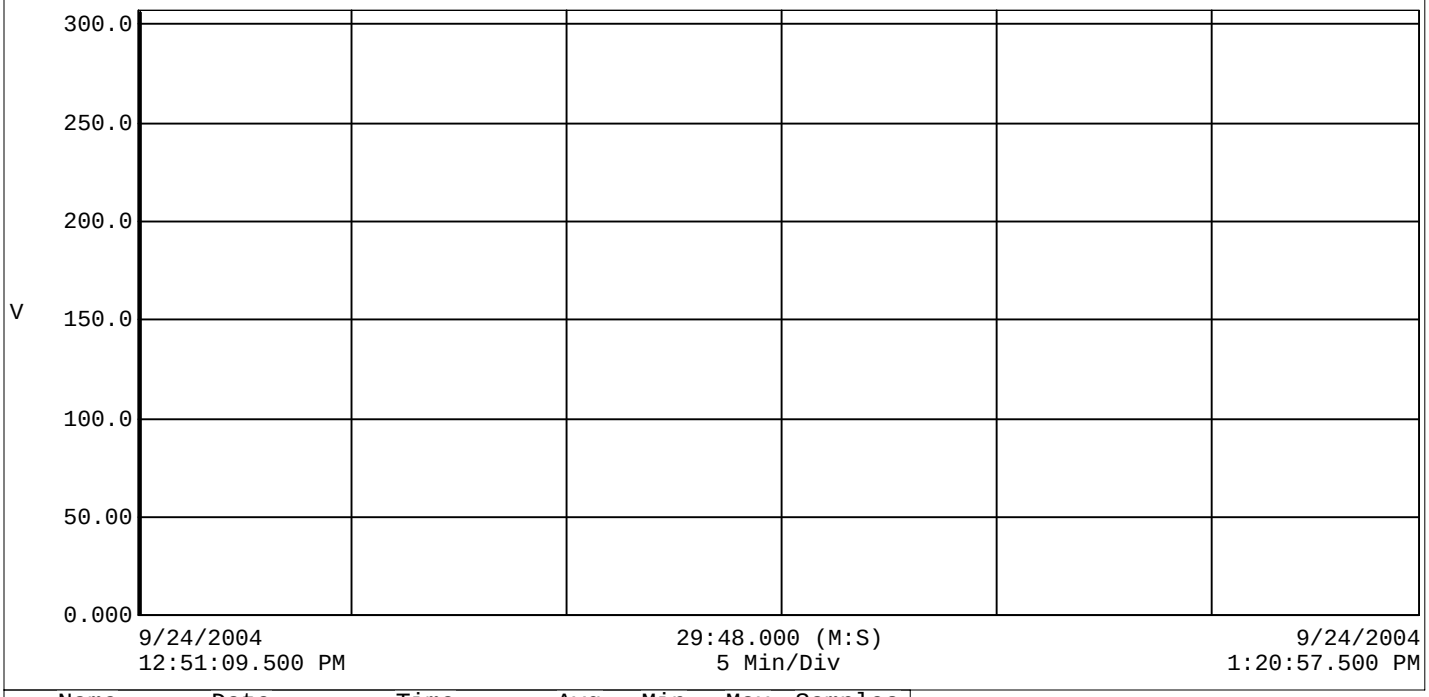
GPA Meter 03-586-281, Demand 0.81 kw (MULTIPLIER ?). KVARH Meter 79-788-226.

Bubbler system. Measured at pump control panel feeder.

Ypao WWPS Pumps 1 and 2

Recording Start Date	9/25/2004 - 8:51:09 AM
Recording Duration	29:48 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

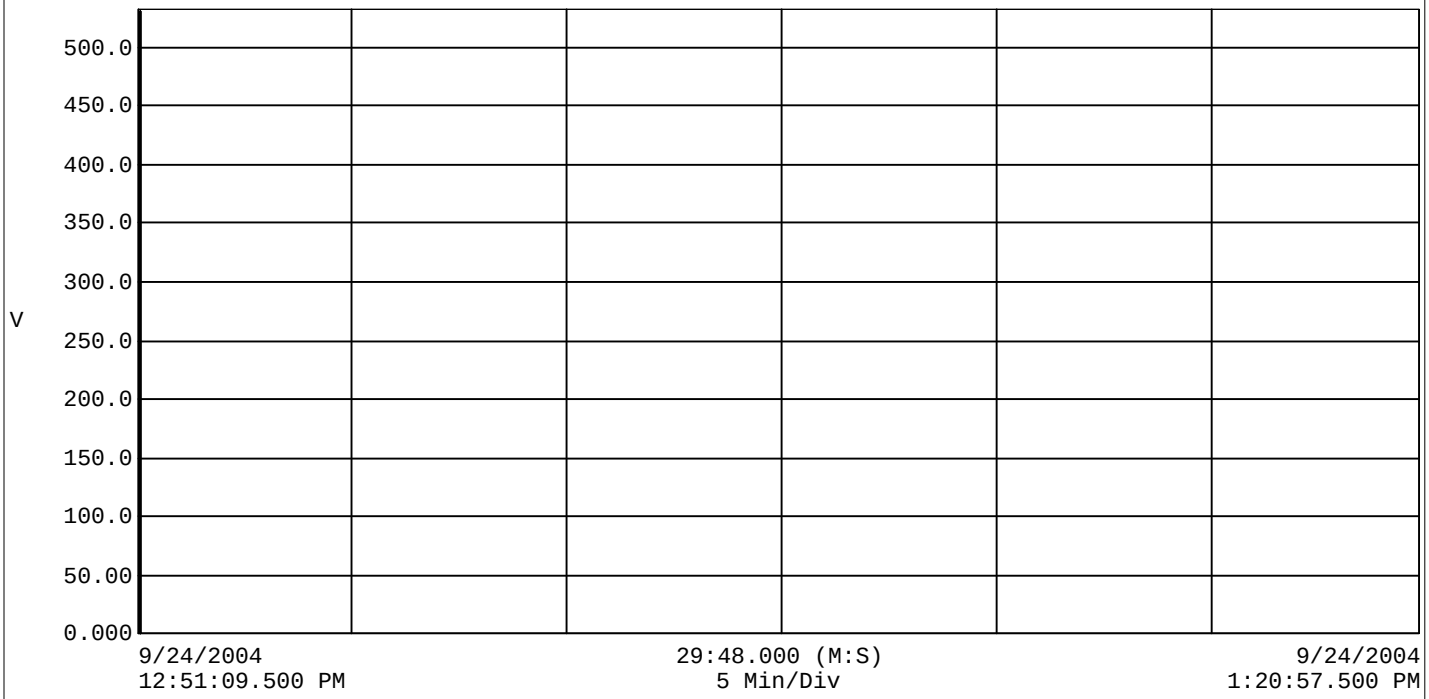
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/25/2004	8:51:09.500 AM	287.7	0.000	292.1	1789
Vrms Line2	9/25/2004	8:51:09.500 AM	287.4	0.000	290.8	1789
Vrms Line3	9/25/2004	8:51:09.500 AM	288.3	0.000	291.4	1789

9/24/2004 - 12:51:09.500 PM
Val
X.XX — Vrms Line1
X.XX — Vrms Line2
X.XX — Vrms Line3

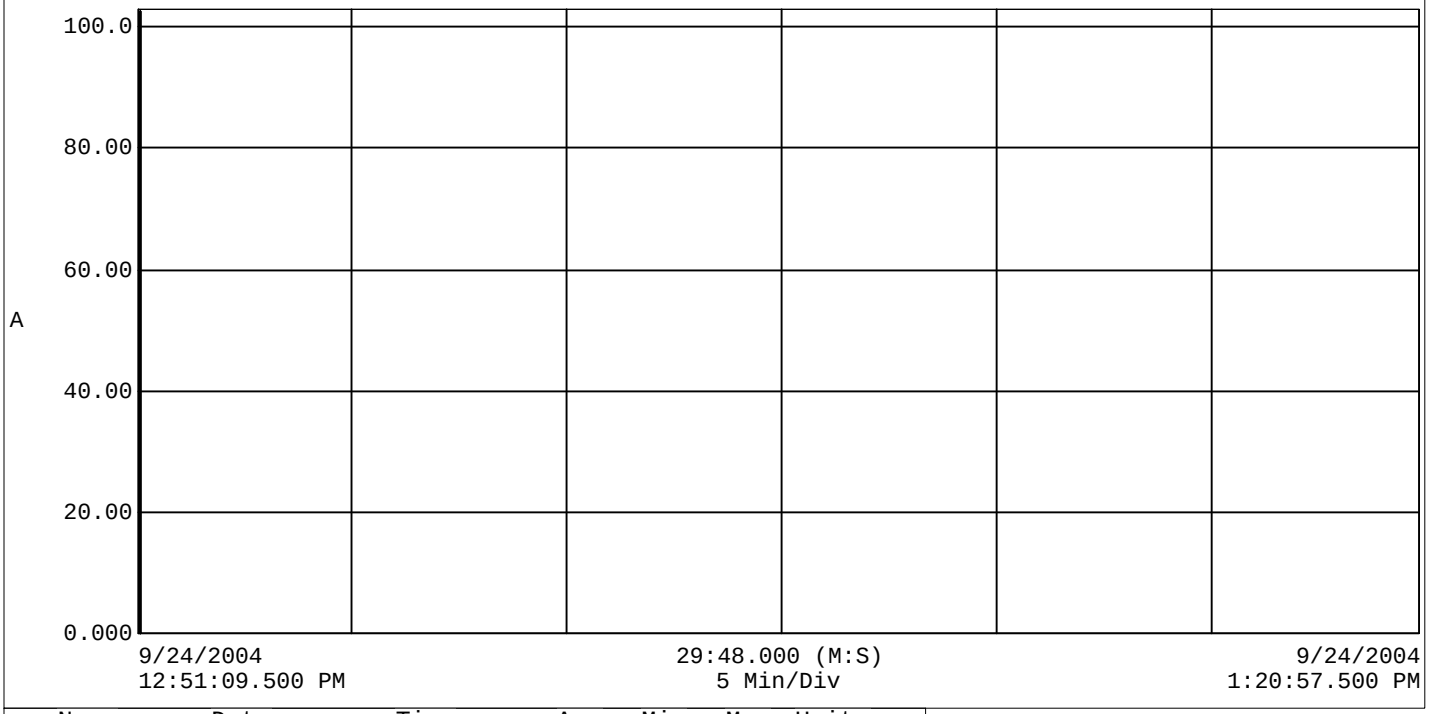
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/25/2004	8:51:09.500 AM	497.5	287.4	505.8	V
Urms Line2	9/25/2004	8:51:09.500 AM	498.4	0.000	502.2	V
Urms Line3	9/25/2004	8:51:09.500 AM	500.2	0.000	506.1	V

9/24/2004 - 12:51:09.500 PM
Val
X.XX — Urms Line1
X.XX — Urms Line2
X.XX — Urms Line3

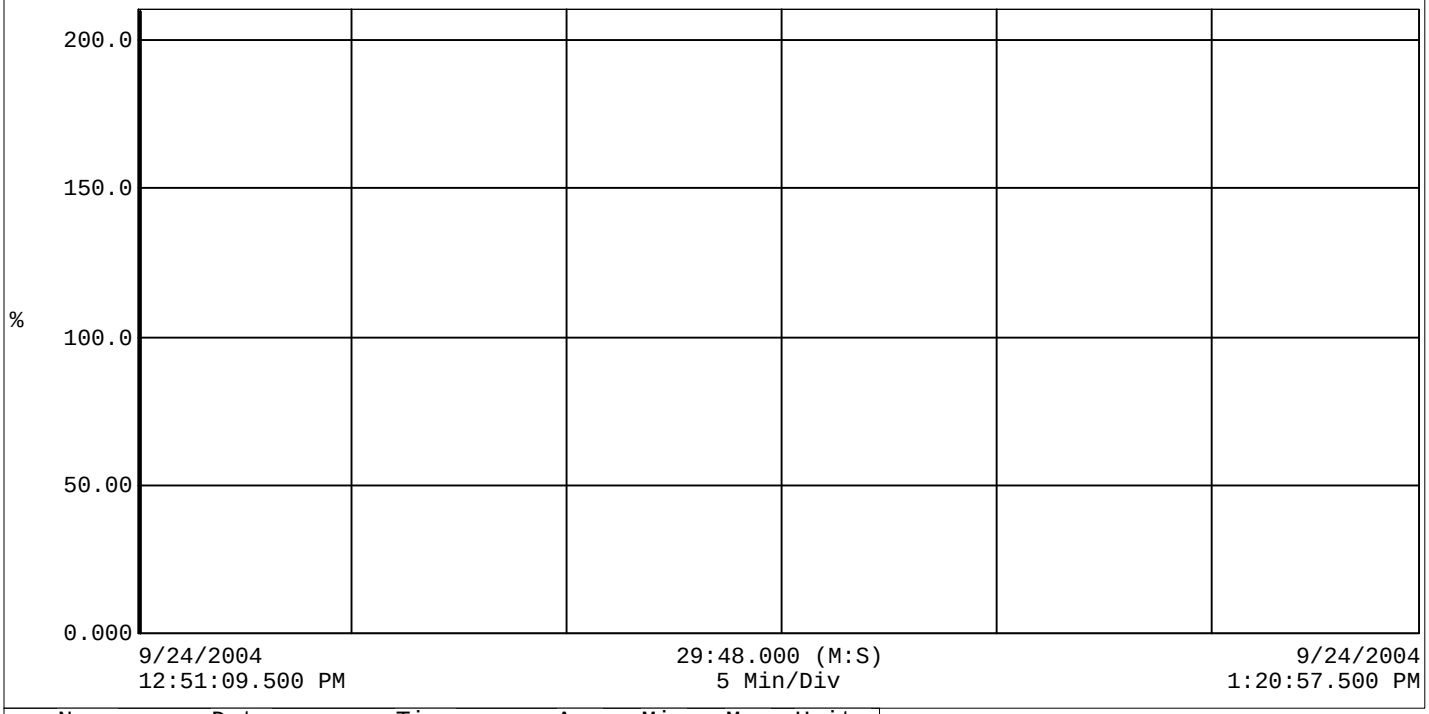
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/25/2004	8:51:09.500 AM	22.88	0.000	97.80	A
Arms Line2	9/25/2004	8:51:09.500 AM	21.68	0.000	96.90	A
Arms Line3	9/25/2004	8:51:09.500 AM	23.78	0.000	97.50	A

9/24/2004 - 12:51:09.500 PM
Val
X.XX — Arms Line1
X.XX — Arms Line2
X.XX — Arms Line3

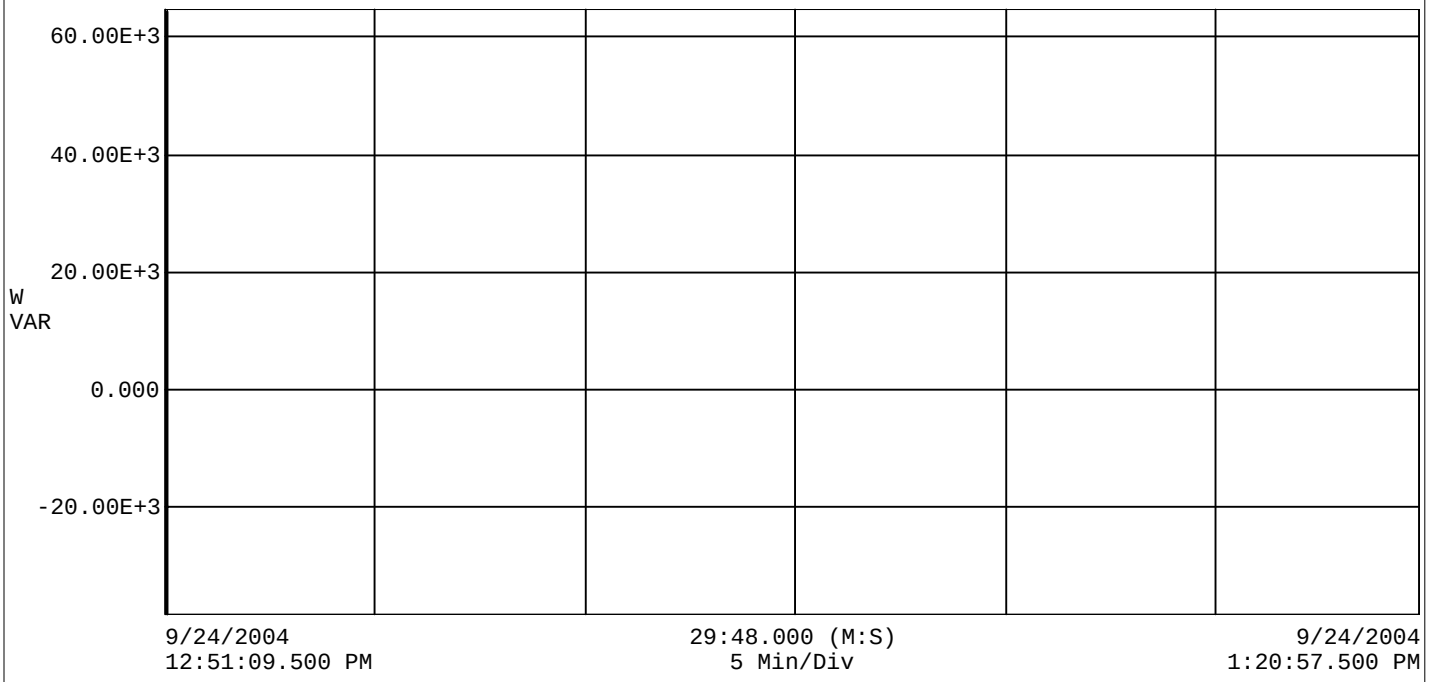
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/25/2004	8:51:09.500 AM	1.853	0.500	200.0	%
Aunb(IEEE)	9/25/2004	8:51:09.500 AM	4.385	0.000	110.4	%

9/24/2004 - 12:51:09.500 PM
Val
X.XX —— Vunb(IEEE)
X.XX —— Aunb(IEEE)

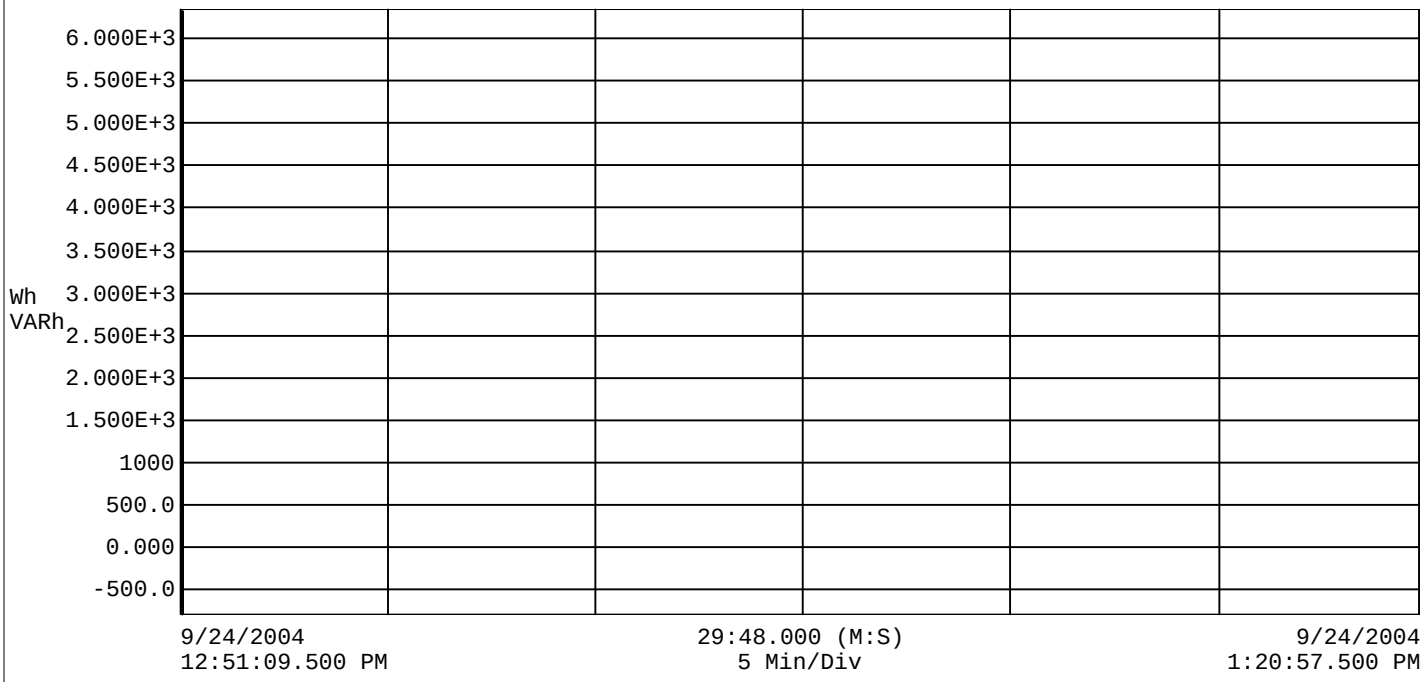
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/25/2004	8:51:09.500 AM	1.848E+3	-24.95E+3	10.38E+3	W
W Line2	9/25/2004	8:51:09.500 AM	3.162E+3	-11.30E+3	10.29E+3	W
W Line3	9/25/2004	8:51:09.500 AM	3.231E+3	-12.86E+3	15.44E+3	W
W Sum of Phases	9/25/2004	8:51:09.500 AM	8.240E+3	-36.47E+3	31.31E+3	W
VAR Line1	9/25/2004	8:51:09.500 AM	4.317E+3	-1.084E+3	20.82E+3	VAR
VAR Line2	9/25/2004	8:51:09.500 AM	3.572E+3	-26.63E+3	19.41E+3	VAR
VAR Line3	9/25/2004	8:51:09.500 AM	4.251E+3	-13.18E+3	23.24E+3	VAR
VAR Sum of Phases	9/25/2004	8:51:09.500 AM	12.14E+3	-9.512E+3	61.48E+3	VAR

9/24/2004 - 12:51:09.500 PM
Val
X.XX — W Line1
X.XX — W Line2
X.XX — W Line3
X.XX — W Sum of Phases
X.XX — VAR Line1
X.XX — VAR Line2
X.XX — VAR Line3
X.XX — VAR Sum of Phases

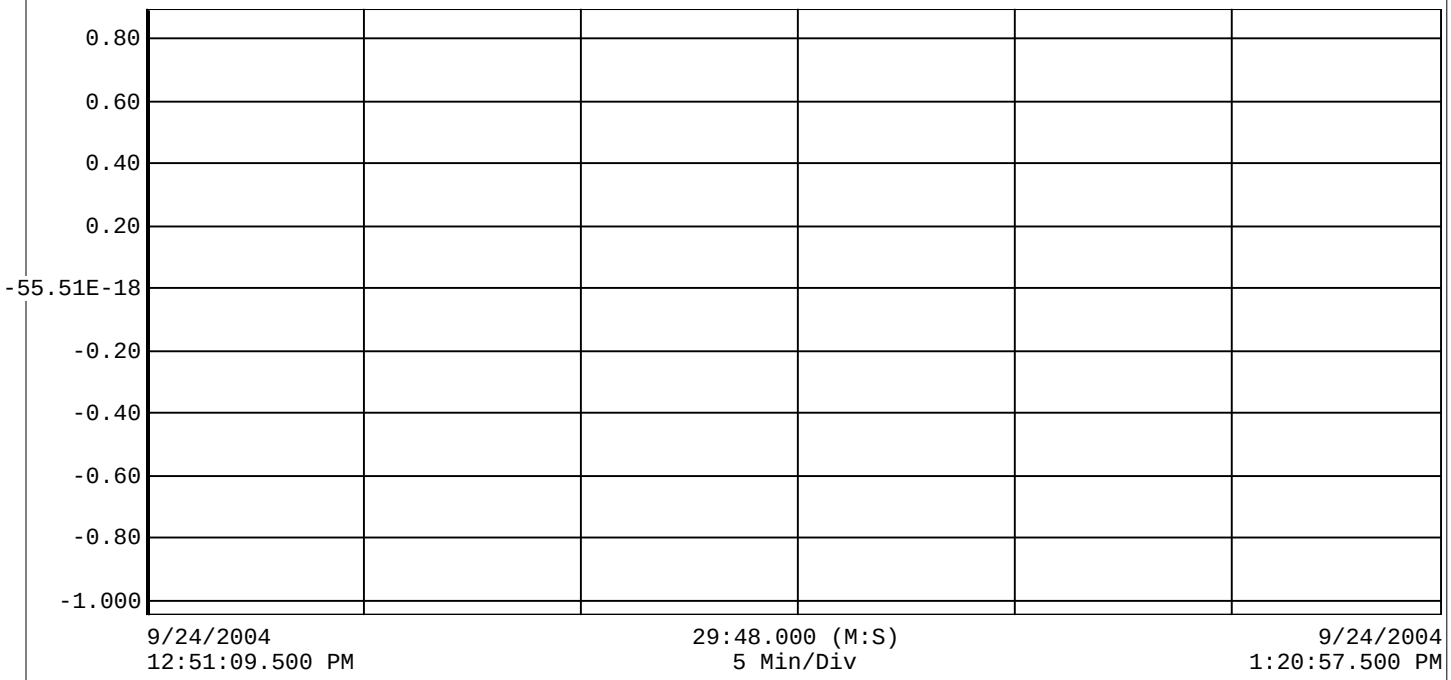
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/25/2004	8:51:09.500 AM	320.0	-597.6	918.3	Wh
W-hours Line2	9/25/2004	8:51:09.500 AM	888.4	-165.8	1.571E+3	Wh
W-hours Line3	9/25/2004	8:51:09.500 AM	884.4	-163.9	1.606E+3	Wh
W-hours Sum of Phases	9/25/2004	8:51:09.500 AM	2.093E+3	-767.9	4.095E+3	Wh
VAR-hours Line1	9/25/2004	8:51:09.500 AM	1.346E+3	0.000	2.145E+3	VARh
VAR-hours Line2	9/25/2004	8:51:09.500 AM	1.077E+3	-180.8	1.775E+3	VARh
VAR-hours Line3	9/25/2004	8:51:09.500 AM	1.305E+3	0.000	2.113E+3	VARh
VAR-hours Sum of Phases	9/25/2004	8:51:09.500 AM	3.728E+3	-33.14	6.033E+3	VARh

9/24/2004 - 12:51:09.500 PM
Val
X.XX — W-hours Line1
X.XX — W-hours Line2
X.XX — W-hours Line3
X.XX — W-hours Sum of Phases
X.XX — VAR-hours Line1
X.XX — VAR-hours Line2
X.XX — VAR-hours Line3
X.XX — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/25/2004	8:51:09.500 AM	0.154	-0.999	0.822	
PF Line2	9/25/2004	8:51:09.500 AM	0.269	-0.939	0.849	
PF Line3	9/25/2004	8:51:09.500 AM	0.245	-0.958	0.832	

9/24/2004 - 12:51:09.500 PM
Val
X.XX — PF Line1
X.XX — PF Line2
X.XX — PF Line3

Trend Summary Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Ypao WWPS\092504- Ypao WWPS Pump 1 and 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Tony Capacia ,	Ypao WWPS - Pumps 1 and 2 ,

Comments

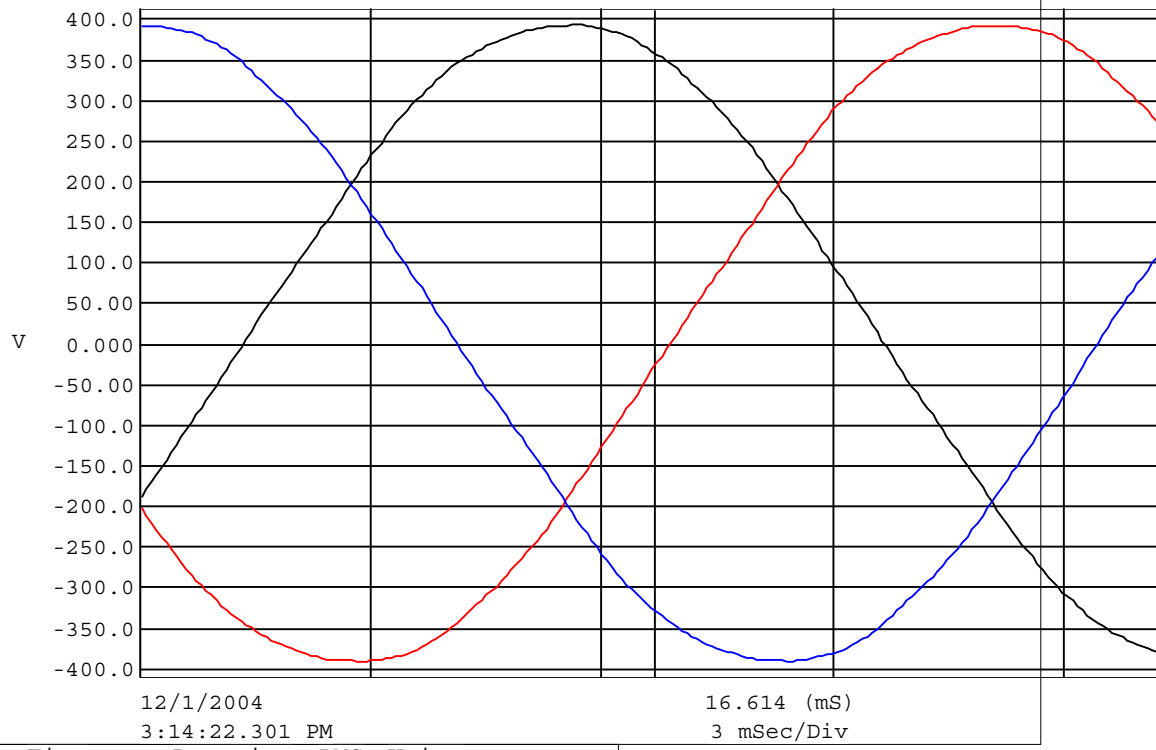
GPA Meter 03-586-281 (Demand of 0.81) and KVARH Meter 79-788-226.

Bubbler Control. Two submersible motors in dry well (partially submerged).

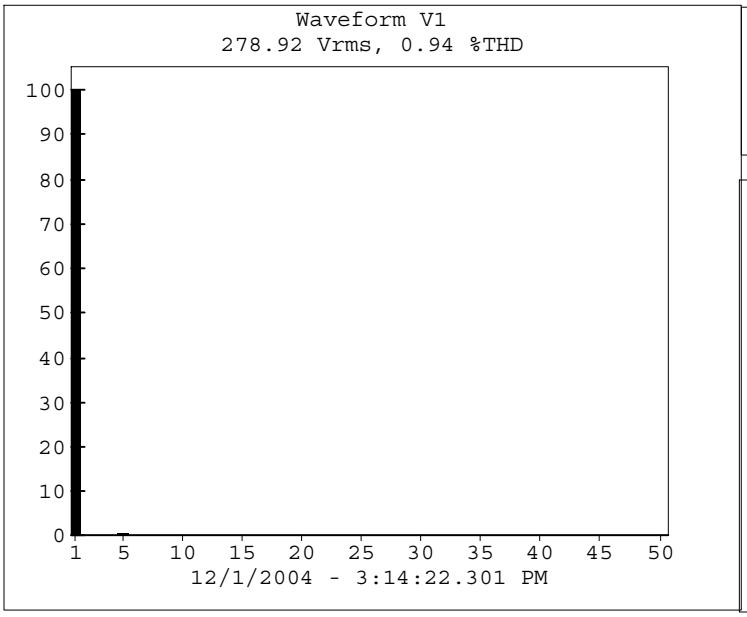
Agana WWTF
Utility Infeed Section

Recording Start Date	12/1/2004 - 3:14:22 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.19 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	12/1/2004	3:14:22.301 PM	16.614	278.9	V
Waveform V2	12/1/2004	3:14:22.301 PM	16.614	279.2	V
Waveform V3	12/1/2004	3:14:22.301 PM	16.614	279.1	V



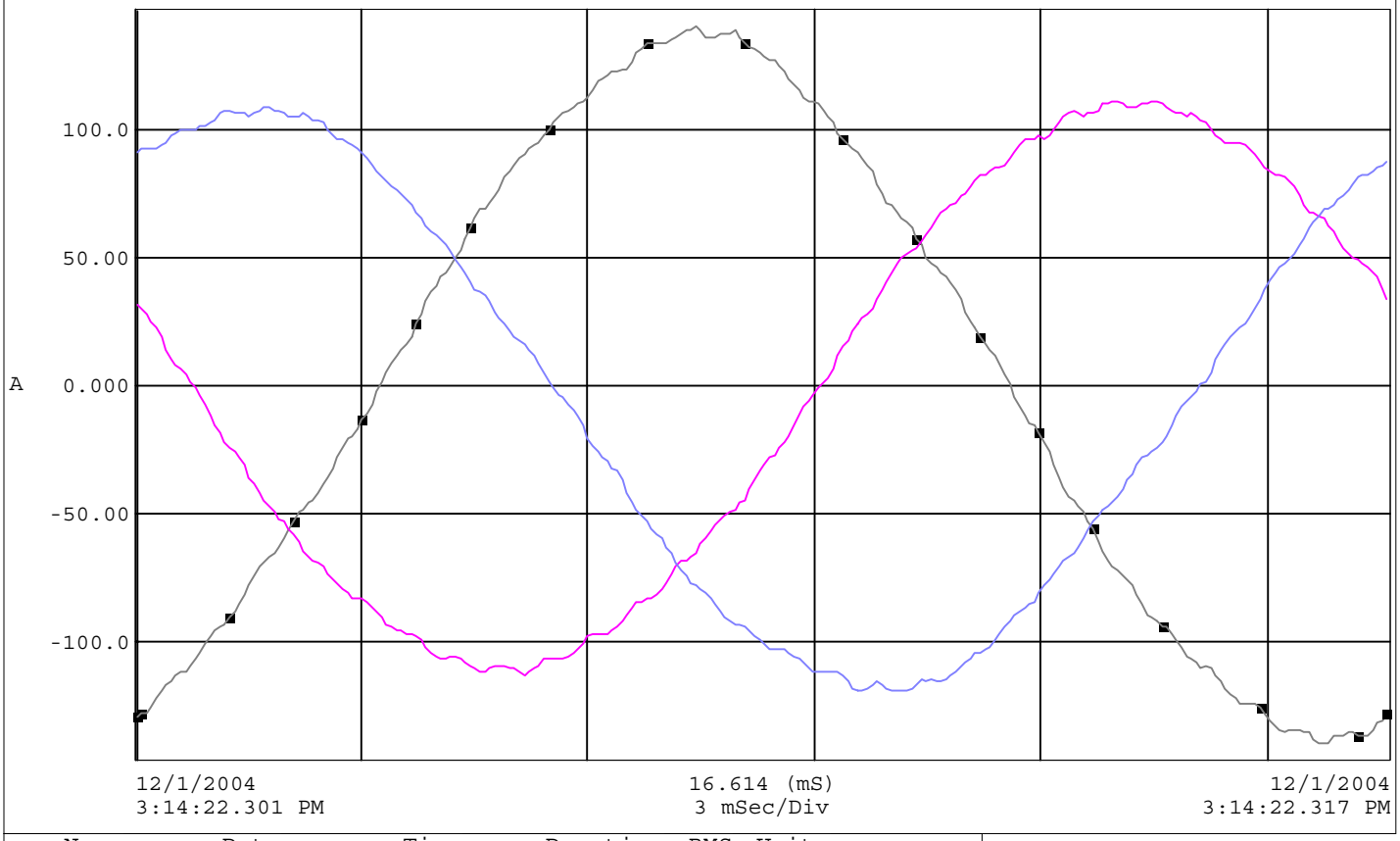
12/1/2004 - 3:14:22.006 PM

	Val	
—	355.9	Waveform V1
—	-24.40	Waveform V2
—	-331.7	Waveform V3

Waveform V1

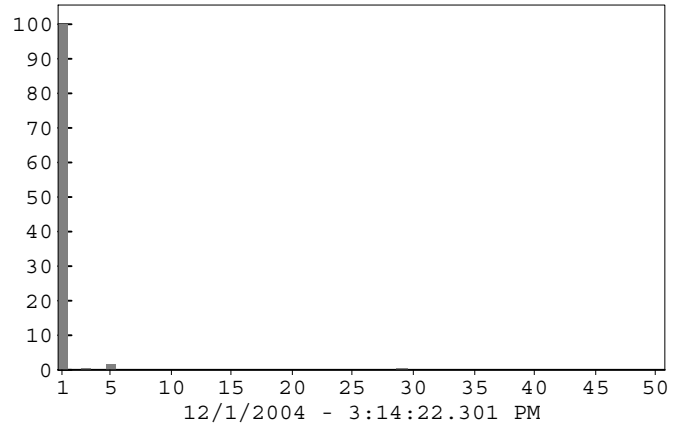
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.19 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	12/1/2004	3:14:22.301 PM	16.614	95.49	A
Waveform I2	12/1/2004	3:14:22.301 PM	16.614	78.39	A
Waveform I3	12/1/2004	3:14:22.301 PM	16.614	79.62	A

Waveform I1
95.49 Arms, 2.33 %THD

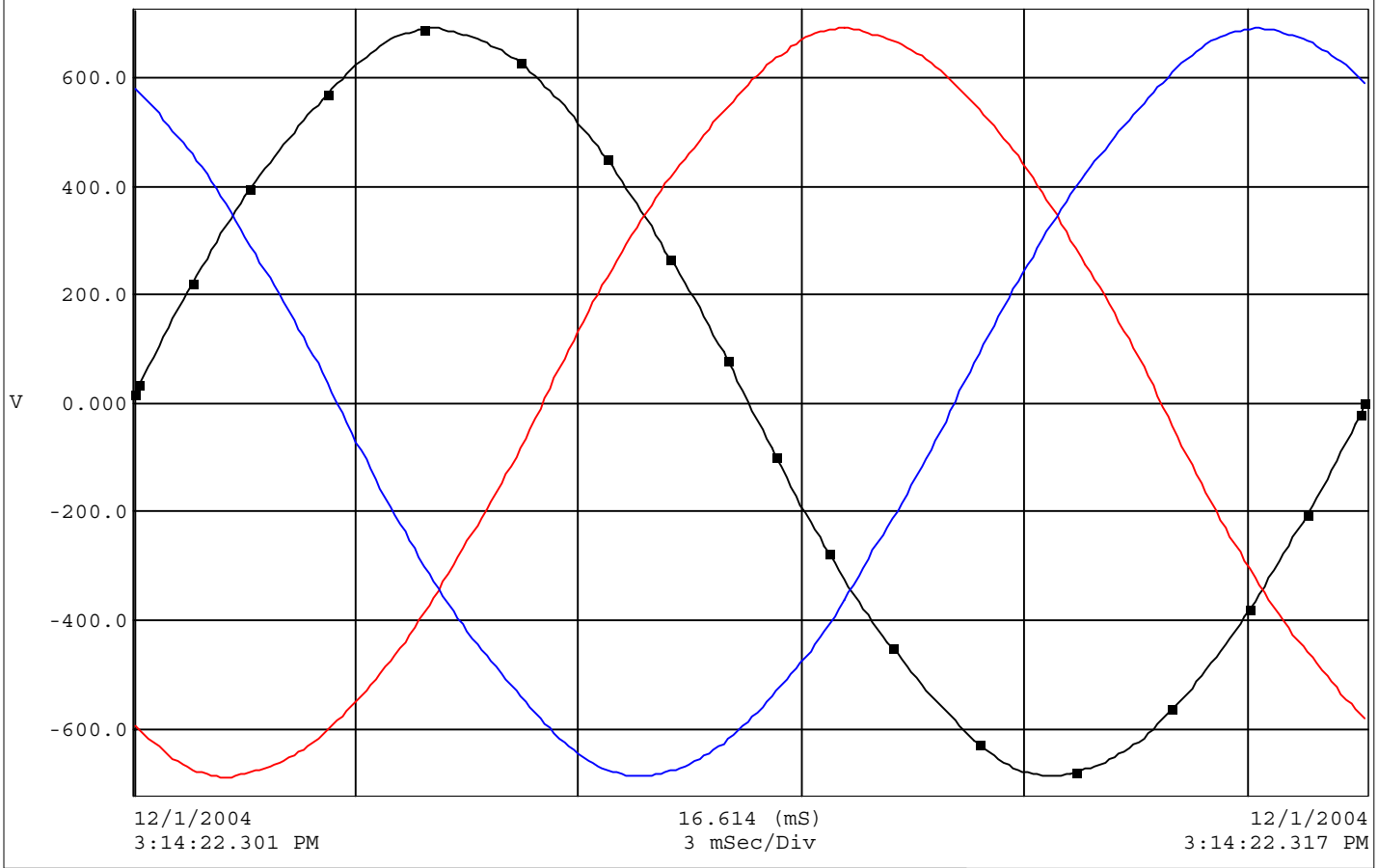


12/1/2004 - 3:14:22.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

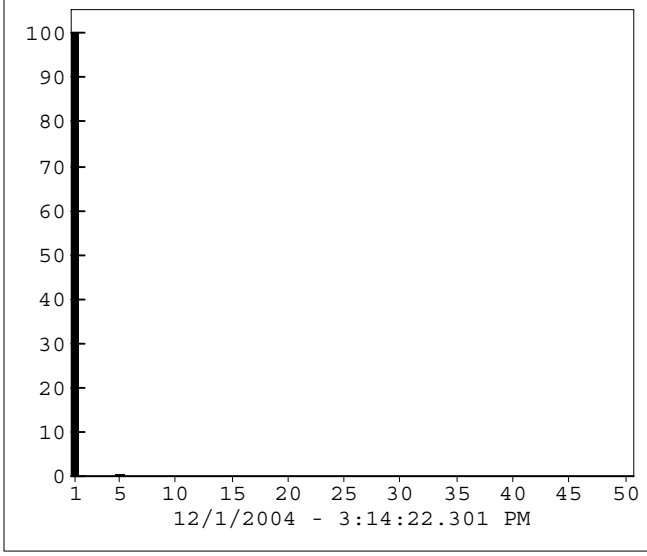
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.2	H19	0.0	H36	0.1
H03	0.9	H20	0.0	H37	0.1
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.1	H23	0.1	H40	0.1
H07	0.2	H24	0.1	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	0.2	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.1
H11	0.3	H28	0.2	H45	0.0
H12	0.1	H29	1.1	H46	0.1
H13	0.2	H30	0.2	H47	0.1
H14	0.0	H31	0.1	H48	0.1
H15	0.1	H32	0.1	H49	0.0
H16	0.1	H33	0.1	H50	0.1
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.19 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	12/1/2004	3:14:22.301 PM	16.614	483.3	V
Waveform U2	12/1/2004	3:14:22.301 PM	16.614	483.8	V
Waveform U3	12/1/2004	3:14:22.301 PM	16.614	483.2	V

Waveform U1
483.27 Vrms, 0.97 %THD



12/1/2004 - 3:14:22.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 12/1/2004
Start Time: 3:14:22 PM
Duration: 0:0.000 (M:S)
W: 51.25E+3 W
VAR: 44.70E+3 W
VA: 68.31E+3 W
Power Factor: 2.251
Displacement Power Factor: 2.252
TAN: 2.655
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Agana WWTP\120204-Agana WWTF Main-Photo.dvb

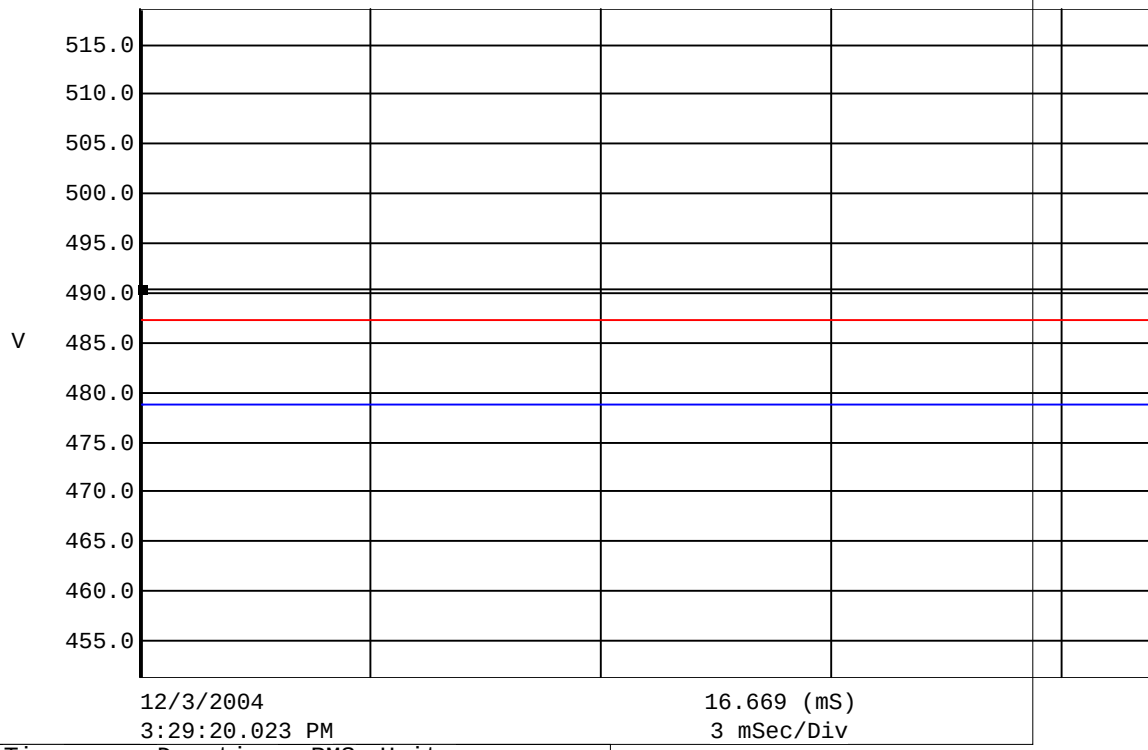
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Agana WWTF - Main - Photo ,

Comments
Recorded at main infeed cables to plant, (5) 500 MCM conductors.480 Volts, Three Phase, Three Wire

Agat WWTF
Blower Bldg Main

Recording Start Date	12/3/2004 - 3:25:18 PM
Recording Duration	44:21 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel NameUrms Line1
PercentDatapointsWithinLimits0.000 %
UpperLimit0.000



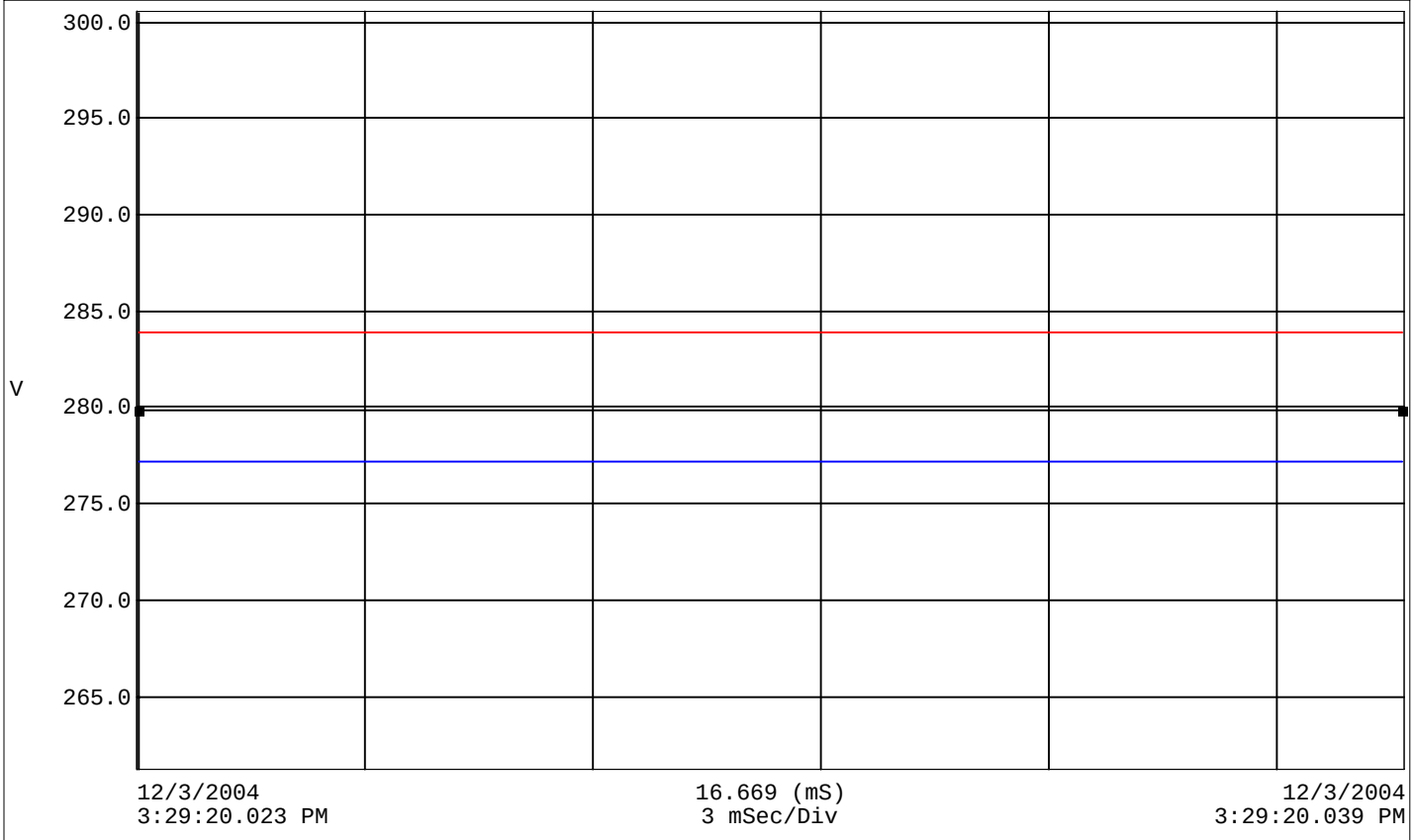
Name	Date	Time	Duration	RMS	Units
Urms Line1	12/3/2004	3:25:18.500 PM	44:21.000	491.4	V
Urms Line2	12/3/2004	3:25:18.500 PM	44:21.000	488.9	V
Urms Line3	12/3/2004	3:25:18.500 PM	44:21.000	480.3	V

No waveform data available.

12/3/2004 - 3:29:20.000 PM
Val
X.XX — Urms Line1
X.XX — Urms Line2
X.XX — Urms Line3

No waveform data available.

Channel NameVrms Line1
PercentDatapointsWithinLimits0.000 %
UpperLimit0.000



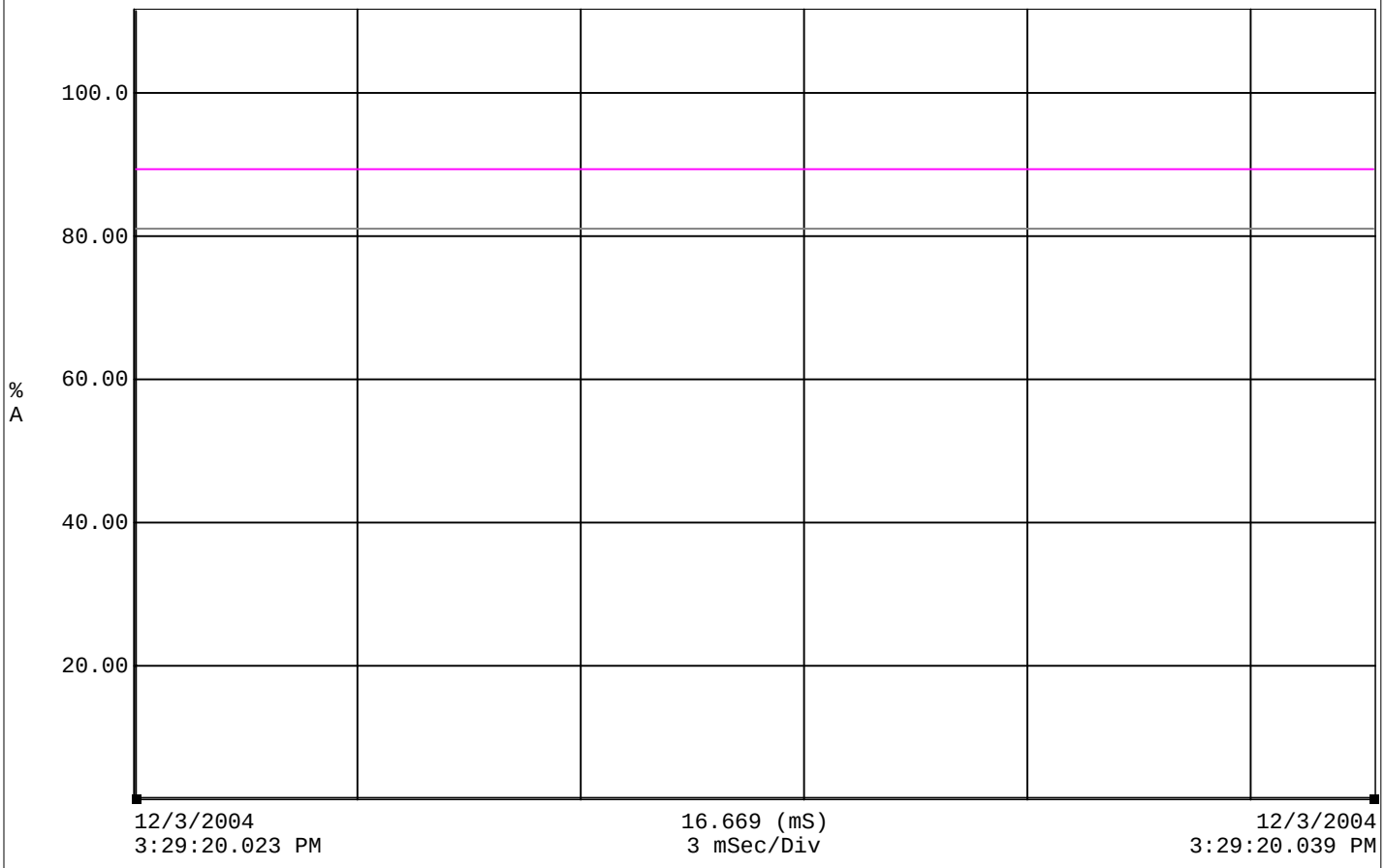
Name	Date	Time	Duration	RMS	Units
Vrms Line1	12/3/2004	3:25:18.500 PM	44:21.000	280.4	V
Vrms Line2	12/3/2004	3:25:18.500 PM	44:21.000	284.6	V
Vrms Line3	12/3/2004	3:25:18.500 PM	44:21.000	278.2	V

No waveform data available.

12/3/2004 - 3:29:20.000 PM
Val
X.XX — Vrms Line1
X.XX — Vrms Line2
X.XX — Vrms Line3

No waveform data available.

Channel NameVunb(IEC)
PercentDatapointsWithinLimits0.000 %
UpperLimit0.000



Name	Date	Time	Duration	RMS	Units
Vunb(IEC)	12/3/2004	3:25:18.500 PM	44:21.000	1.329	%
Arms Line1	12/3/2004	3:25:18.500 PM	44:21.000	82.49	A
Arms Line2	12/3/2004	3:25:18.500 PM	44:21.000	91.54	A

No waveform data available.

12/3/2004 - 3:29:20.000 PM
Val
X.XX — Vunb(IEC)
X.XX — Arms Line1
X.XX — Arms Line2

No waveform data available.

Photo:

Name
W Line3
W Sum of Phases
VAR Line1
VAR Line2

Channel Name VAR Line2

Photo Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Agat WWTF\120304-Agat Old Blower Bldg Main.dvb

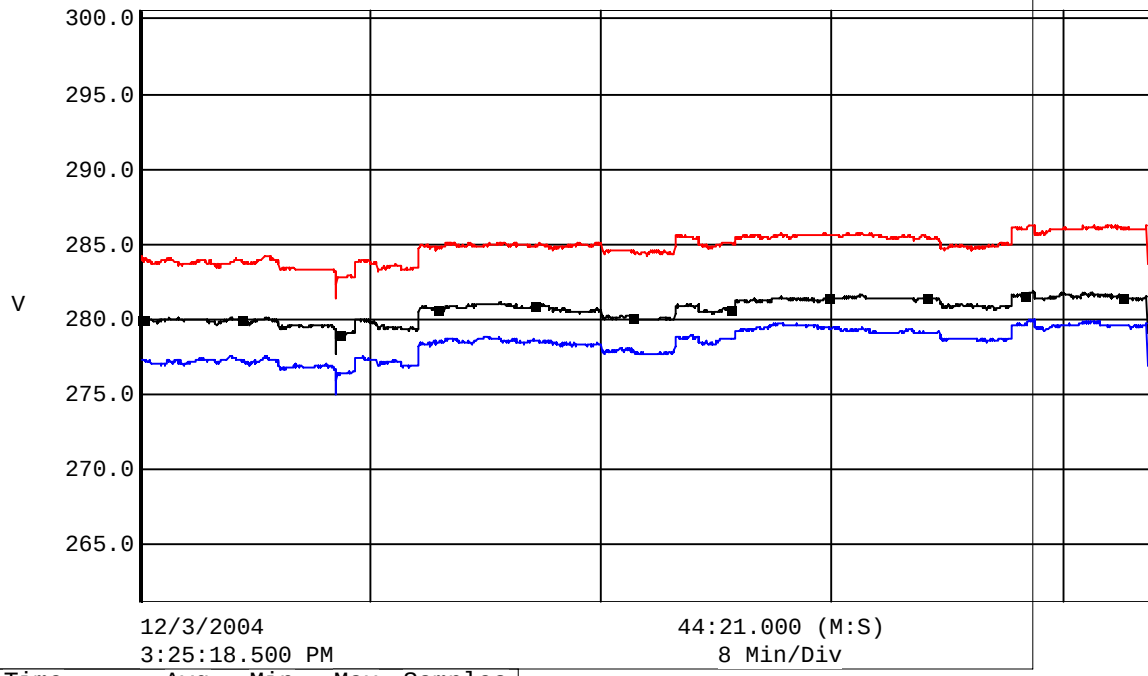
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Agat WWTF - Blower Building Main ,

Comments
Recorded at the blower building main breaker, 600 amps, 460 volts.

Agat WWTF
Blower Bldg Main

Recording Start Date	12/3/2004 - 3:25:18 PM
Recording Duration	44:21 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

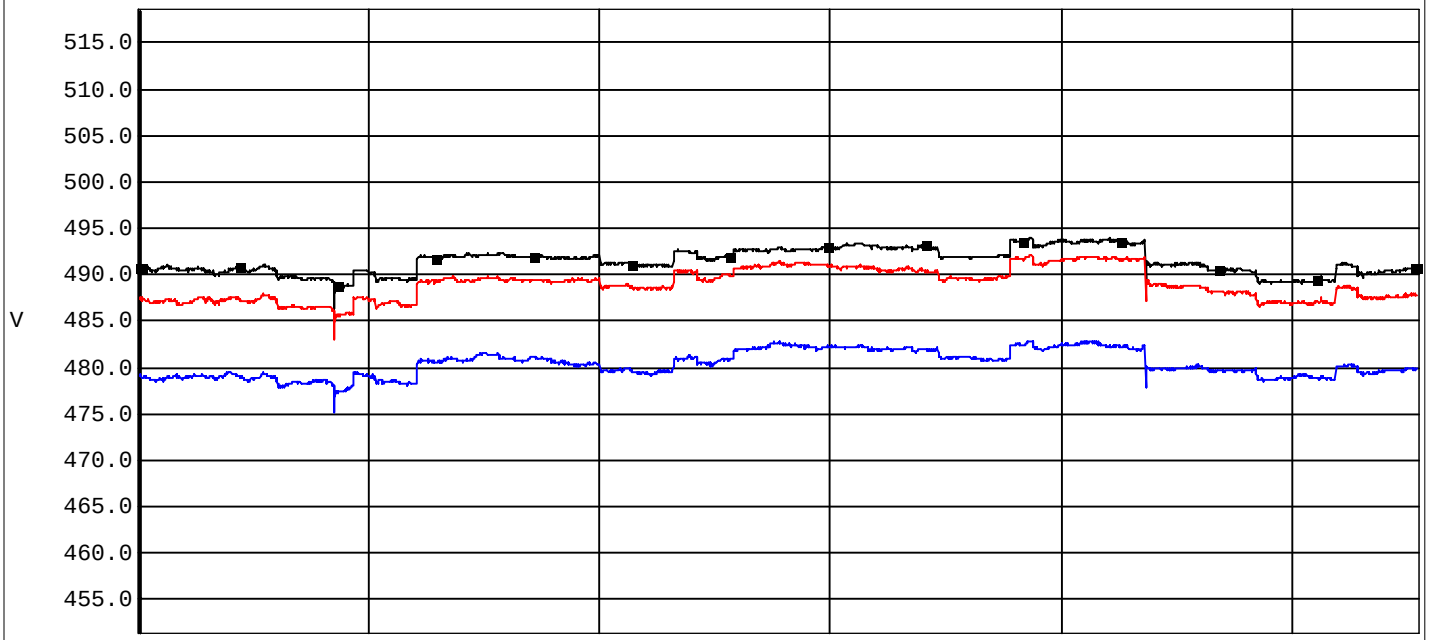
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	12/3/2004	3:25:18.500 PM	280.4	277.6	281.8	2662
Vrms Line2	12/3/2004	3:25:18.500 PM	284.6	281.4	286.2	2662
Vrms Line3	12/3/2004	3:25:18.500 PM	278.2	274.9	279.9	2662

12/3/2004 - 3:25:18.000 PM
Val
280.0 Vrms Line1
284.0 Vrms Line2
277.3 Vrms Line3

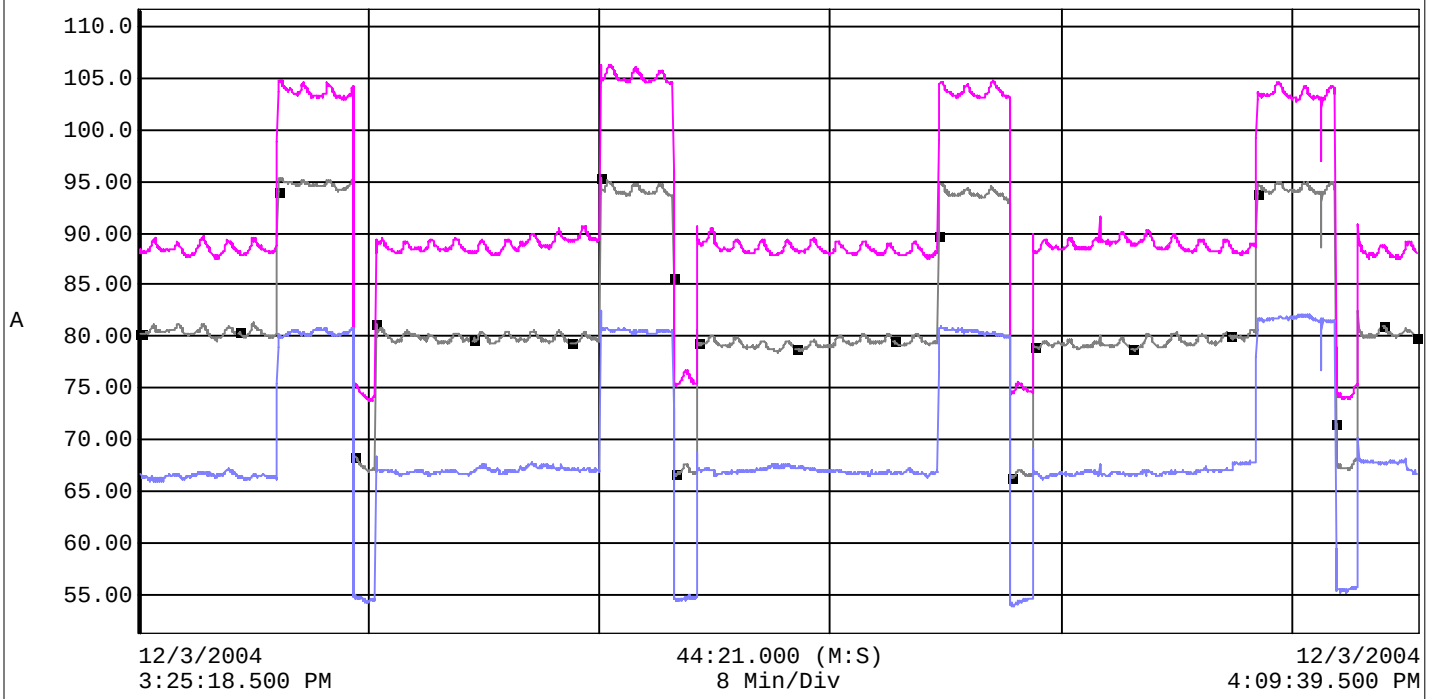
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	12/3/2004	3:25:18.500 PM	491.3	486.3	493.8	V
Urms Line2	12/3/2004	3:25:18.500 PM	488.9	483.0	492.0	V
Urms Line3	12/3/2004	3:25:18.500 PM	480.3	475.0	482.8	V

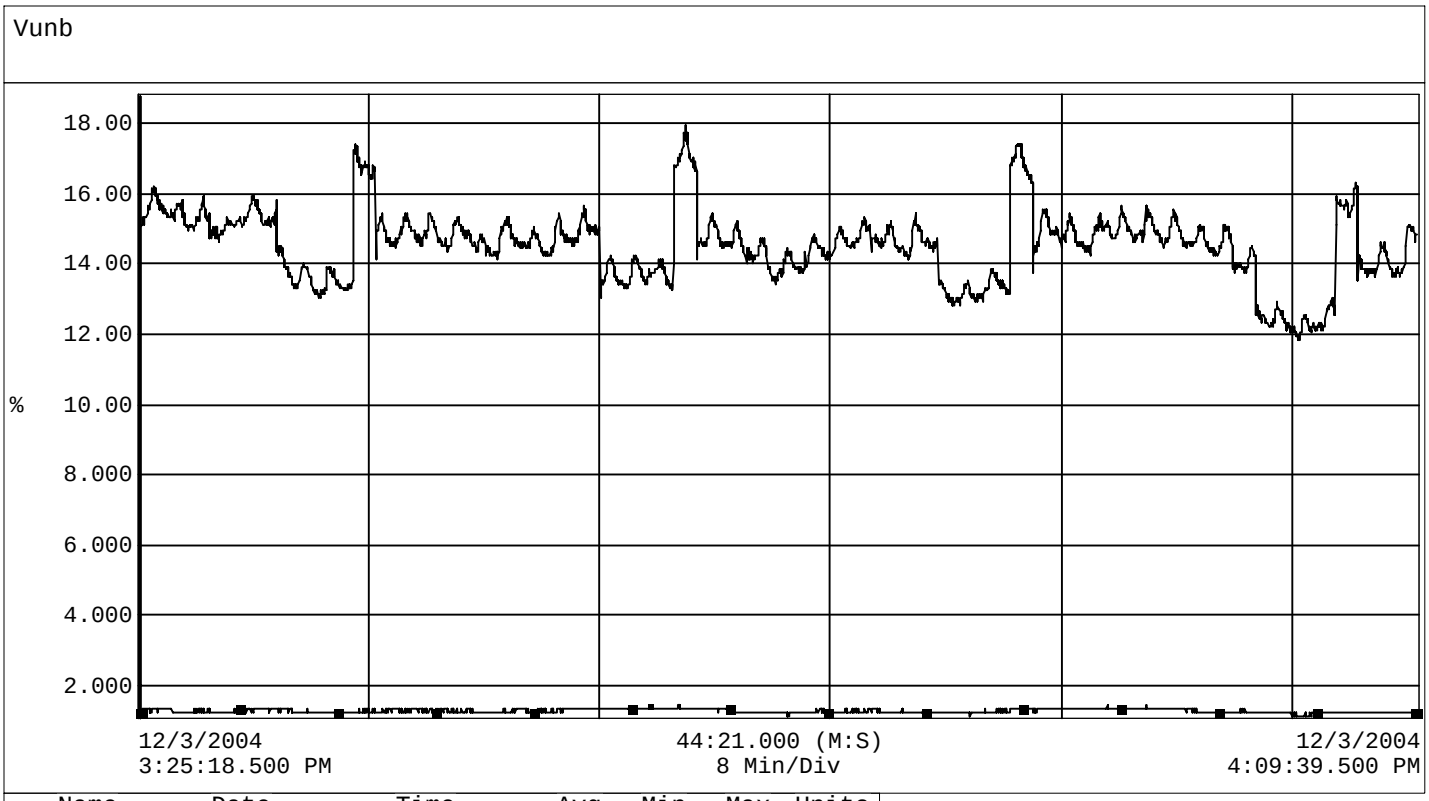
12/3/2004 - 3:25:18.000 PM
Val
490.7 Urms Line1
487.5 Urms Line2
479.0 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	12/3/2004	3:25:18.500 PM	82.16	66.20	95.30	A
Arms Line2	12/3/2004	3:25:18.500 PM	91.20	73.70	106.3	A
Arms Line3	12/3/2004	3:25:18.500 PM	69.20	53.80	82.30	A

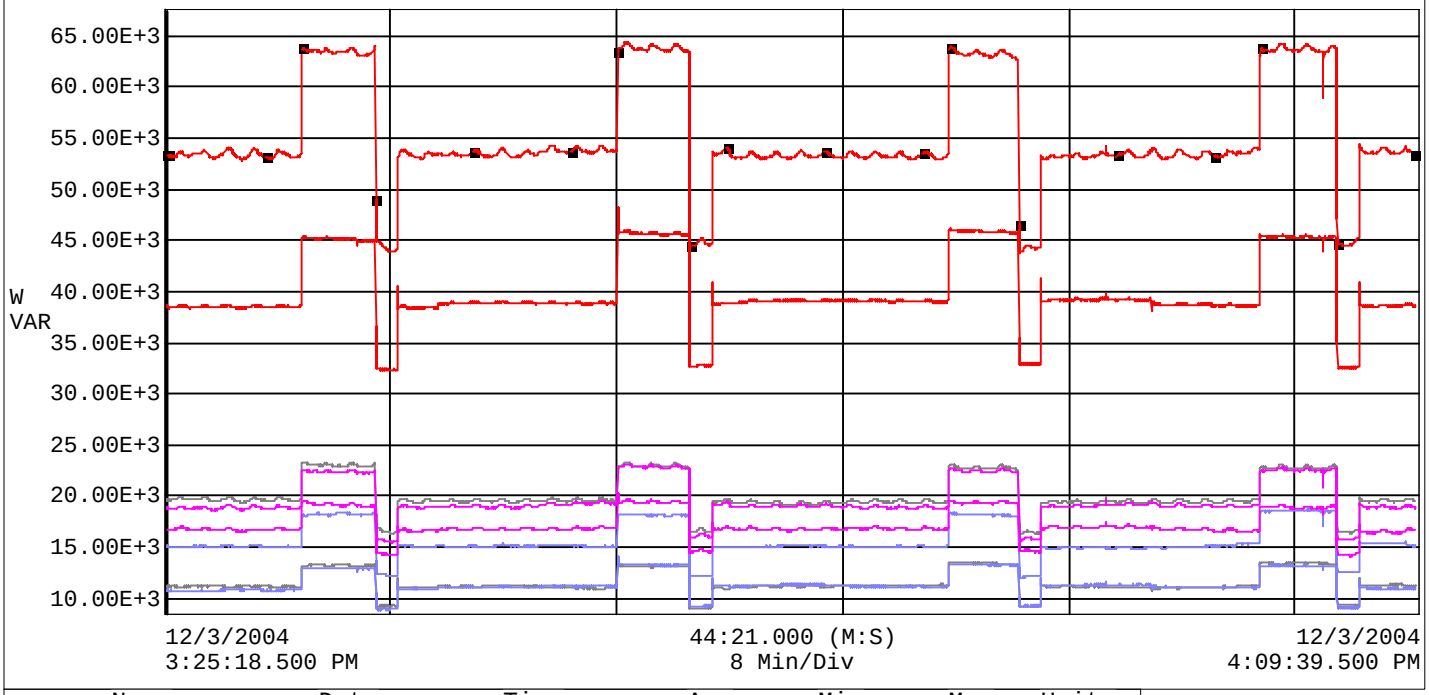
12/3/2004 - 3:25:18.000 PM
Val
80.20 — Arms Line1
88.30 — Arms Line2
66.60 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	12/3/2004	3:25:18.500 PM	1.242	1.100	1.400	%
Aunb(IEEE)	12/3/2004	3:25:18.500 PM	14.49	11.80	17.90	%

12/3/2004 - 3:25:18.000 PM
Val
1.300 —— Vunb(IEEE)
15.00 —— Aunb(IEEE)

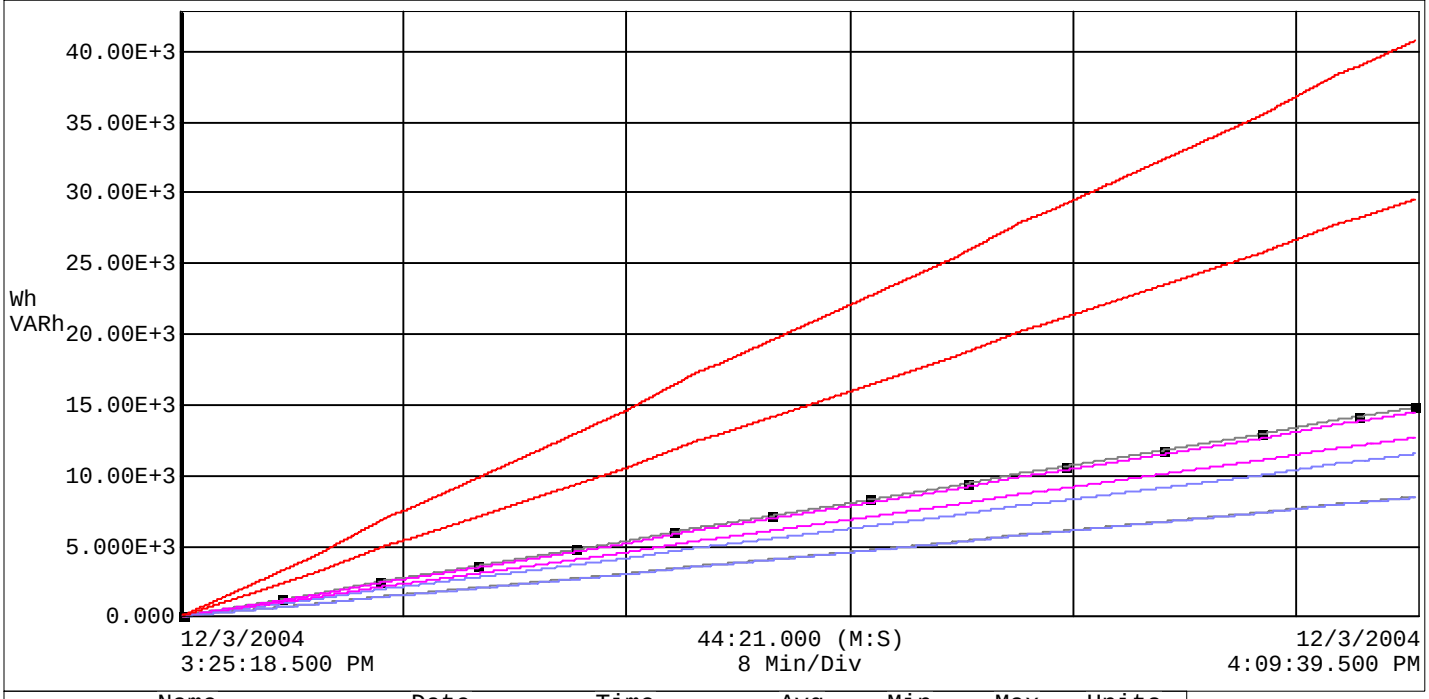
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	12/3/2004	3:25:18.500 PM	20.00E+3	16.22E+3	23.22E+3	W
W Line2	12/3/2004	3:25:18.500 PM	19.52E+3	15.37E+3	23.04E+3	W
W Line3	12/3/2004	3:25:18.500 PM	15.55E+3	11.96E+3	18.59E+3	W
W Sum of Phases	12/3/2004	3:25:18.500 PM	55.07E+3	43.72E+3	64.27E+3	W
VAR Line1	12/3/2004	3:25:18.500 PM	11.43E+3	8.880E+3	13.95E+3	VAR
VAR Line2	12/3/2004	3:25:18.500 PM	17.09E+3	14.05E+3	20.08E+3	VAR
VAR Line3	12/3/2004	3:25:18.500 PM	11.35E+3	8.788E+3	14.06E+3	VAR
VAR Sum of Phases	12/3/2004	3:25:18.500 PM	39.88E+3	32.16E+3	48.09E+3	VAR

12/3/2004 - 3:25:18.000 PM
Val
19.52E+3 — W Line1
18.78E+3 — W Line2
15.01E+3 — W Line3
53.31E+3 — W Sum of Phases
11.11E+3 — VAR Line1
16.64E+3 — VAR Line2
10.74E+3 — VAR Line3
38.50E+3 — VAR Sum of Phases

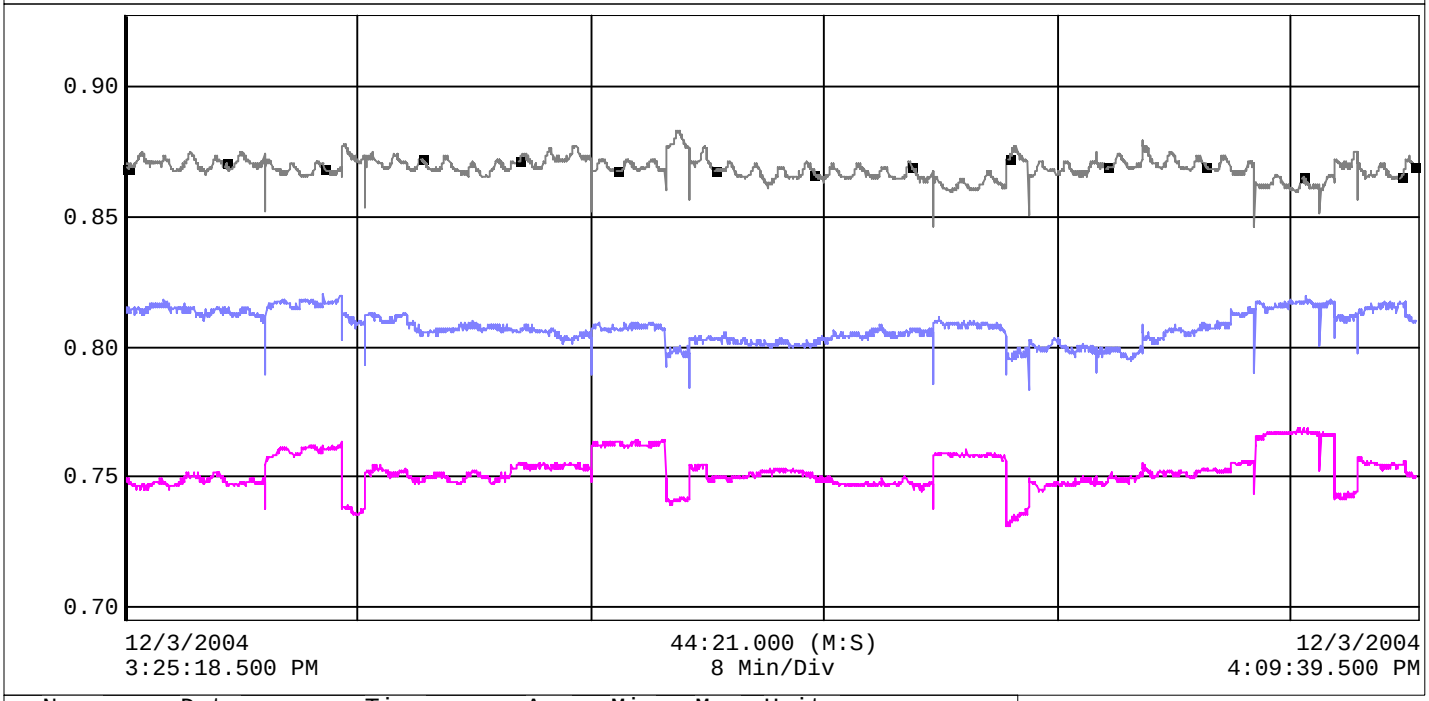
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	12/3/2004	3:25:18.500 PM	7.405E+3	5.417	14.79E+3	Wh
W-hours Line2	12/3/2004	3:25:18.500 PM	7.210E+3	5.287	14.44E+3	Wh
W-hours Line3	12/3/2004	3:25:18.500 PM	5.734E+3	4.210	11.50E+3	Wh
W-hours Sum of Phases	12/3/2004	3:25:18.500 PM	20.35E+3	14.91	40.72E+3	Wh
VAR-hours Line1	12/3/2004	3:25:18.500 PM	4.218E+3	3.096	8.455E+3	VARh
VAR-hours Line2	12/3/2004	3:25:18.500 PM	6.325E+3	4.629	12.64E+3	VARh
VAR-hours Line3	12/3/2004	3:25:18.500 PM	4.177E+3	3.074	8.393E+3	VARh
VAR-hours Sum of Phases	12/3/2004	3:25:18.500 PM	14.72E+3	10.80	29.49E+3	VARh

12/3/2004 - 3:25:18.000 PM
Val
5.417 — W-hours Line1
5.287 — W-hours Line2
4.210 — W-hours Line3
14.91 — W-hours Sum of Phases
3.096 — VAR-hours Line1
4.629 — VAR-hours Line2
3.074 — VAR-hours Line3
10.80 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	12/3/2004	3:25:18.500 PM	0.868	0.846	0.883	
PF Line2	12/3/2004	3:25:18.500 PM	0.752	0.731	0.768	
PF Line3	12/3/2004	3:25:18.500 PM	0.807	0.783	0.820	

12/3/2004 - 3:25:18.000 PM
Val
0.869 — PF Line1
0.748 — PF Line2
0.813 — PF Line3

Trend Summary Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Agat WWTF\120304-Agat Old Blower Bldg Main.dvb

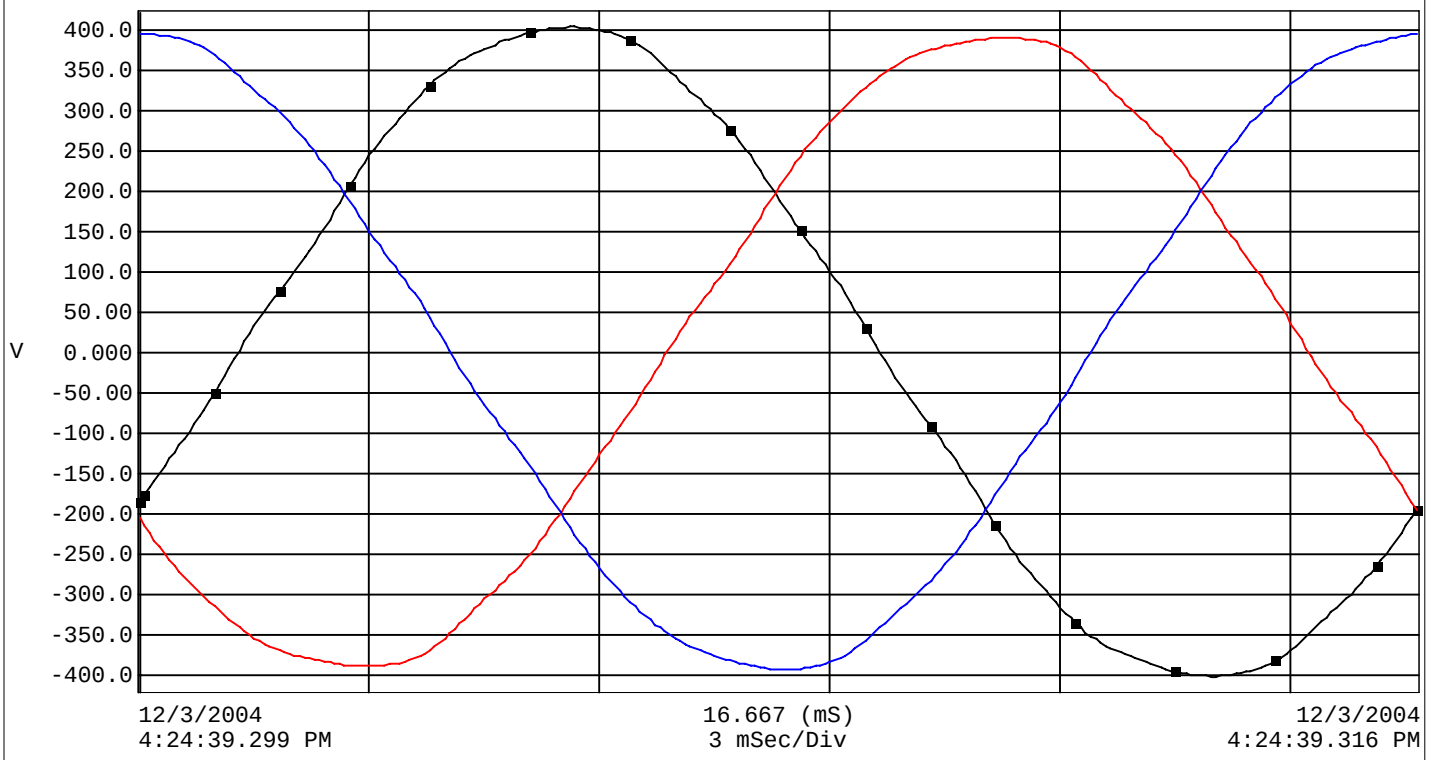
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Agat WWTF - Blower Building Main ,

Comments
Recorded at the blower building main breaker, 600 amps, 460 volts.

Agat WWTF
Blower No. 2

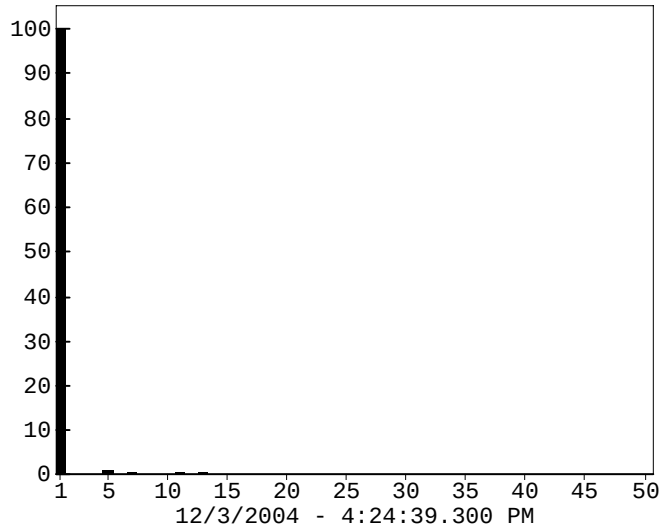
Recording Start Date	12/3/2004 - 4:24:39 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	12/3/2004	4:24:39.299 PM	16.667	285.6	V
Waveform V2	12/3/2004	4:24:39.299 PM	16.667	278.1	V
Waveform V3	12/3/2004	4:24:39.299 PM	16.667	279.8	V

Waveform V1
285.56 Vrms, 1.41 %THD



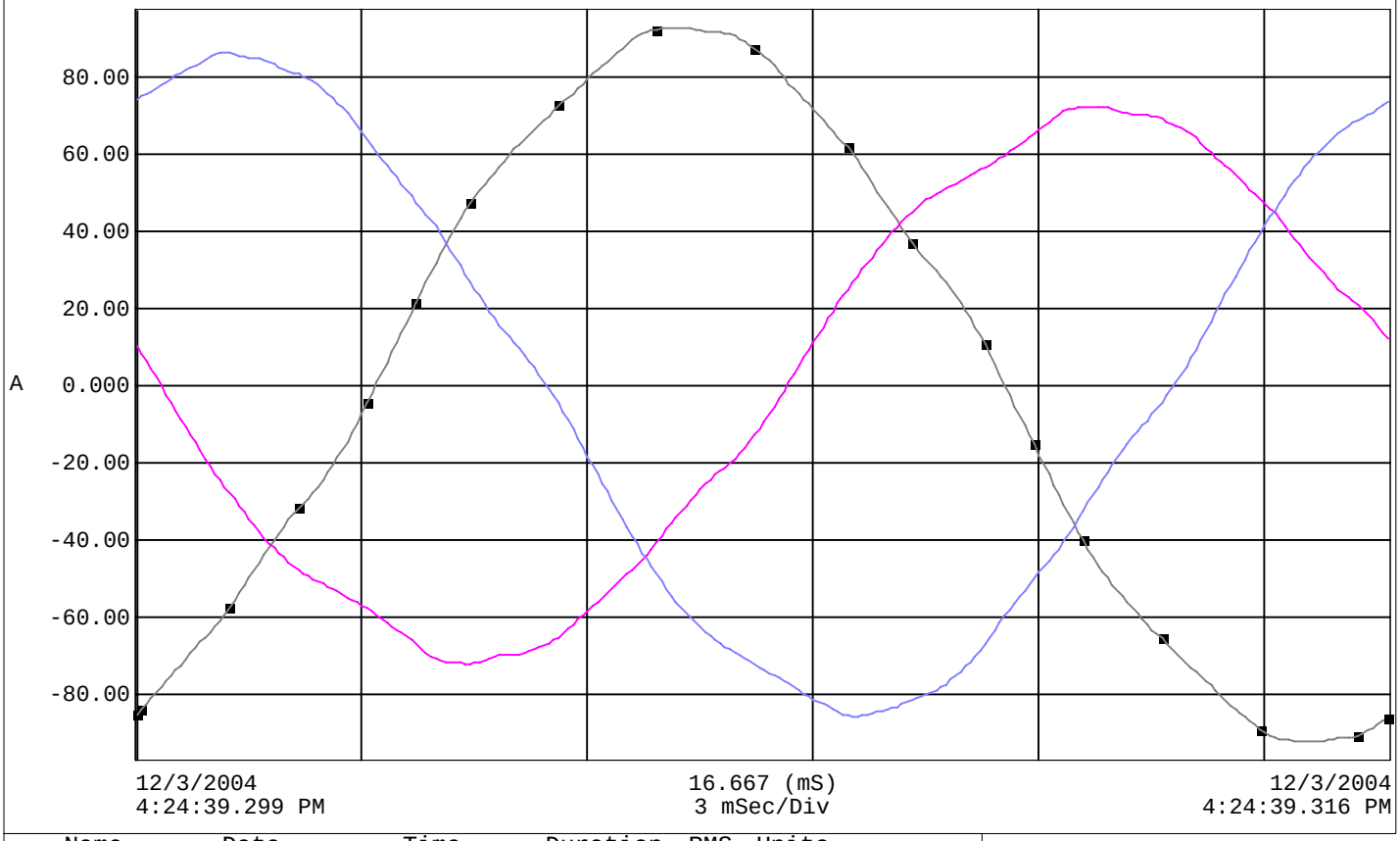
12/3/2004 - 4:24:39.000 PM

Val	
-187.3	Waveform V1
-206.0	Waveform V2
393.0	Waveform V3

Waveform V1

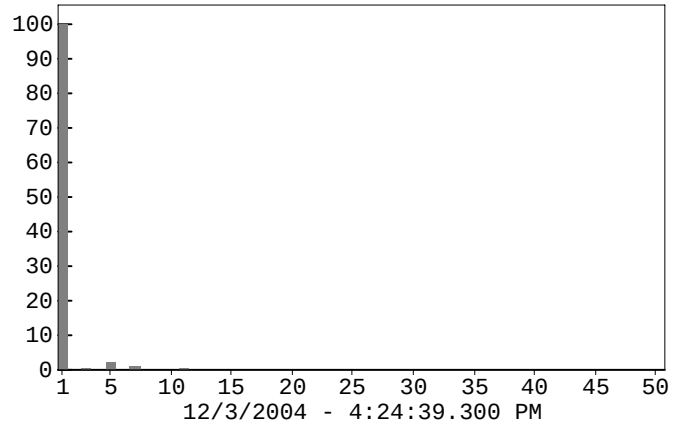
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.5	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	12/3/2004	4:24:39.299 PM	16.667	64.90	A
Waveform I2	12/3/2004	4:24:39.299 PM	16.667	50.20	A
Waveform I3	12/3/2004	4:24:39.299 PM	16.667	59.86	A

Waveform I1
64.90 Arms, 2.94 %THD



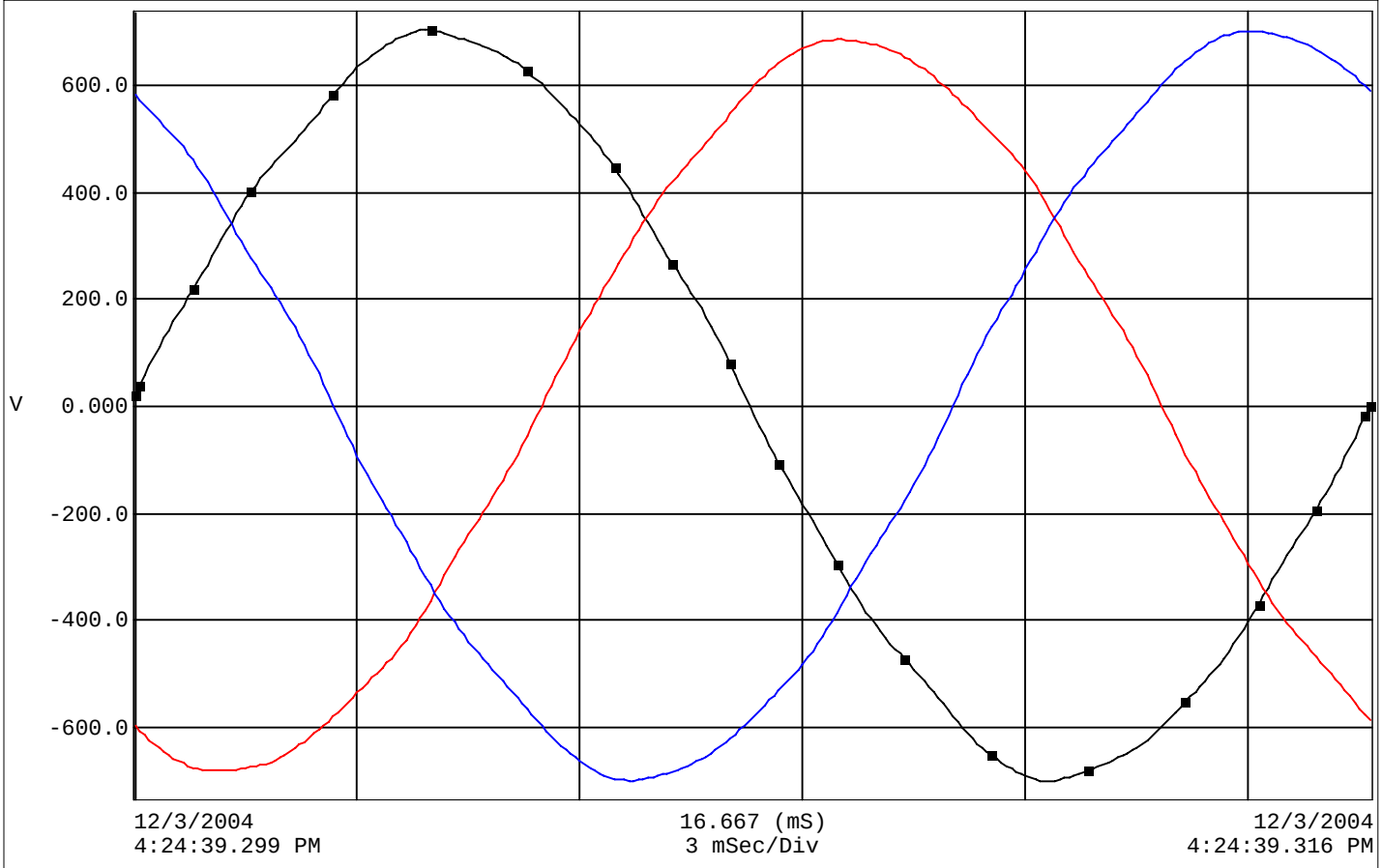
12/3/2004 - 4:24:39.000 PM

Val	
-85.50	Waveform I1
10.10	Waveform I2
74.20	Waveform I3

Waveform I1

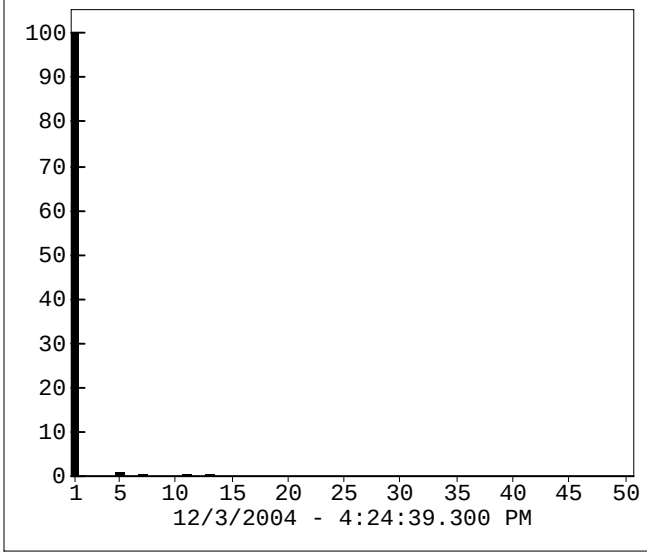
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.7	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.0	H29	0.2	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	12/3/2004	4:24:39.299 PM	16.667	489.2	V
Waveform U2	12/3/2004	4:24:39.299 PM	16.667	480.4	V
Waveform U3	12/3/2004	4:24:39.299 PM	16.667	491.4	V

Waveform U1
489.25 Vrms, 1.47 %THD



12/3/2004 - 4:24:39.000 PM
Val
18.60 — Waveform U1
-599.0 — Waveform U2
580.4 — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.5	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 12/3/2004
Start Time: 4:24:39 PM
Duration: 0:0.000 (M:S)
W: 40.23E+3 W
VAR: 27.98E+3 W
VA: 49.18E+3 W
Power Factor: 2.455
Displacement Power Factor: 2.456
TAN: 2.101
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Agat WWTF\120304-Agat WWTF Blower No 2-Photo.dvb

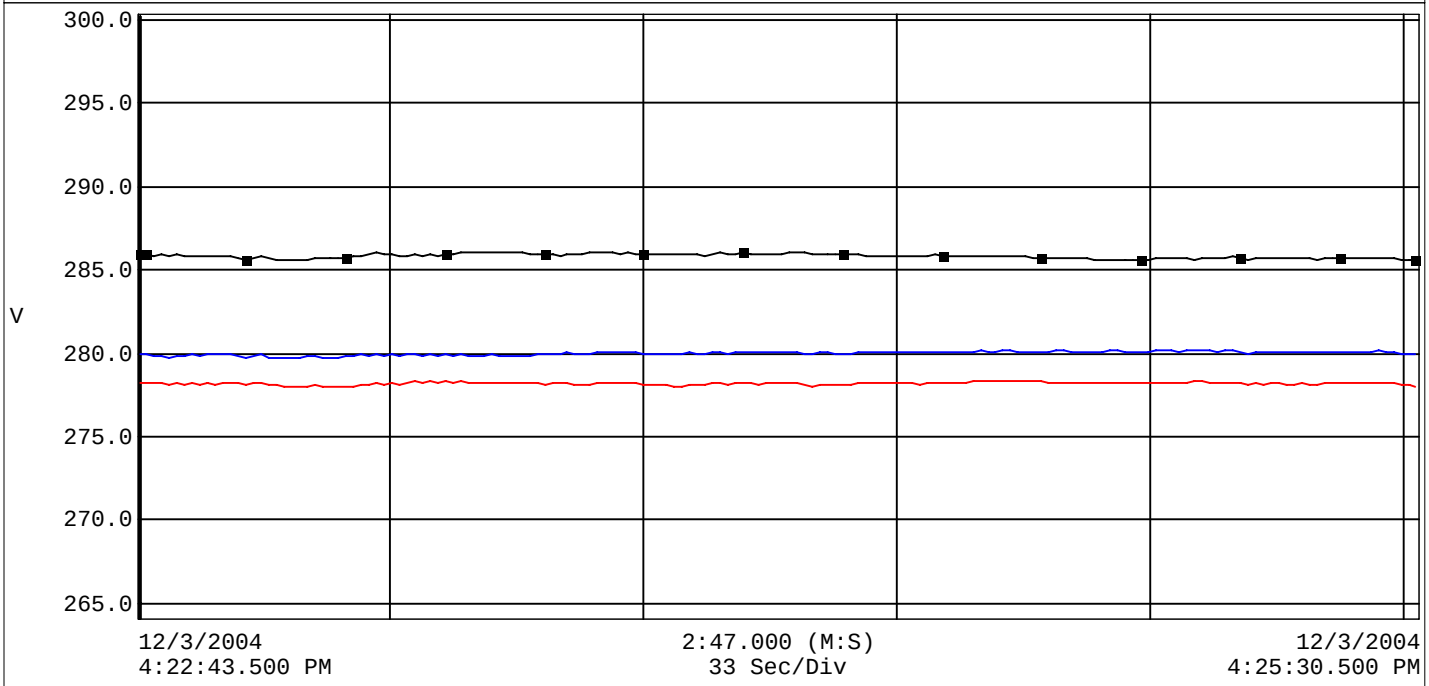
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Agat WWTF - Blower No. 2 ,

Comments
Recorded at motor starter overload relay, 75 HP, 460 votls.

Agat WWTF
Blower No. 2

Recording Start Date	12/3/2004 - 4:22:43 PM
Recording Duration	2:47 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

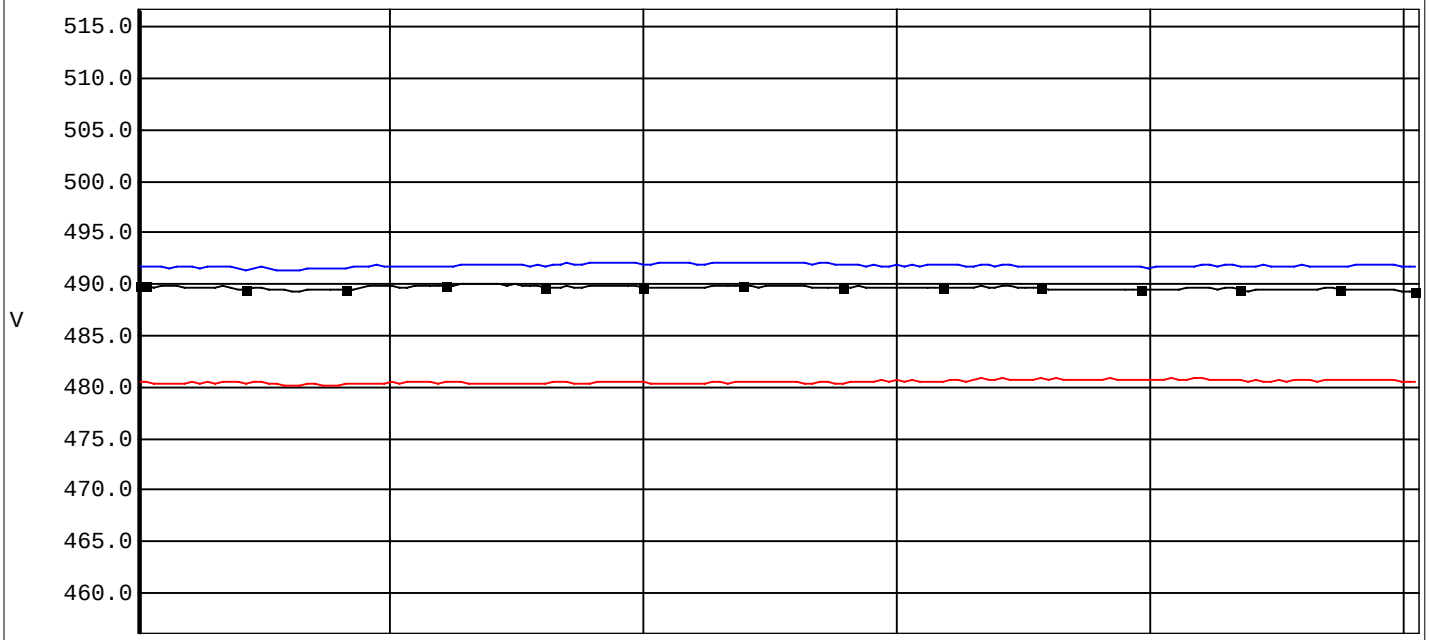
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	12/3/2004	4:22:43.500 PM	285.8	285.6	286.0	168
Vrms Line2	12/3/2004	4:22:43.500 PM	278.2	277.9	278.3	168
Vrms Line3	12/3/2004	4:22:43.500 PM	279.9	279.7	280.1	168

12/3/2004 - 4:22:43.000 PM
Val
285.9 — Vrms Line1
278.2 — Vrms Line2
279.9 — Vrms Line3

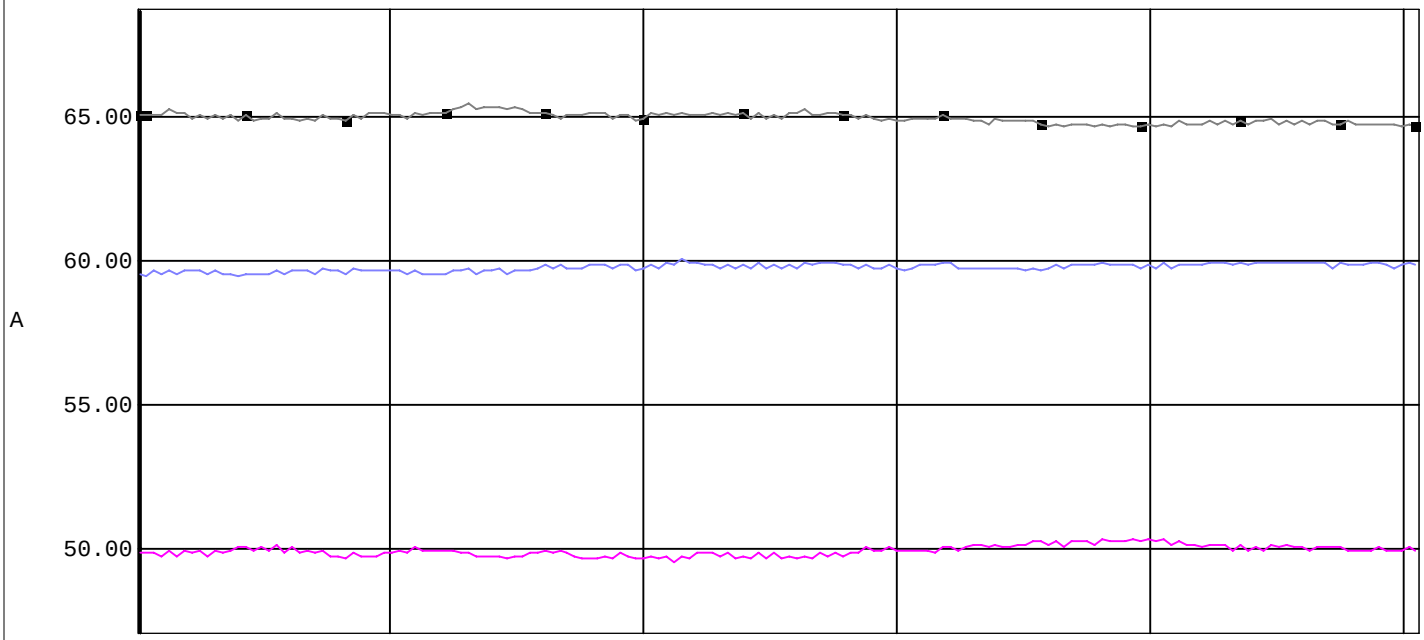
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	12/3/2004	4:22:43.500 PM	489.5	489.1	490.0	V
Urms Line2	12/3/2004	4:22:43.500 PM	480.5	480.0	480.8	V
Urms Line3	12/3/2004	4:22:43.500 PM	491.7	491.2	492.0	V

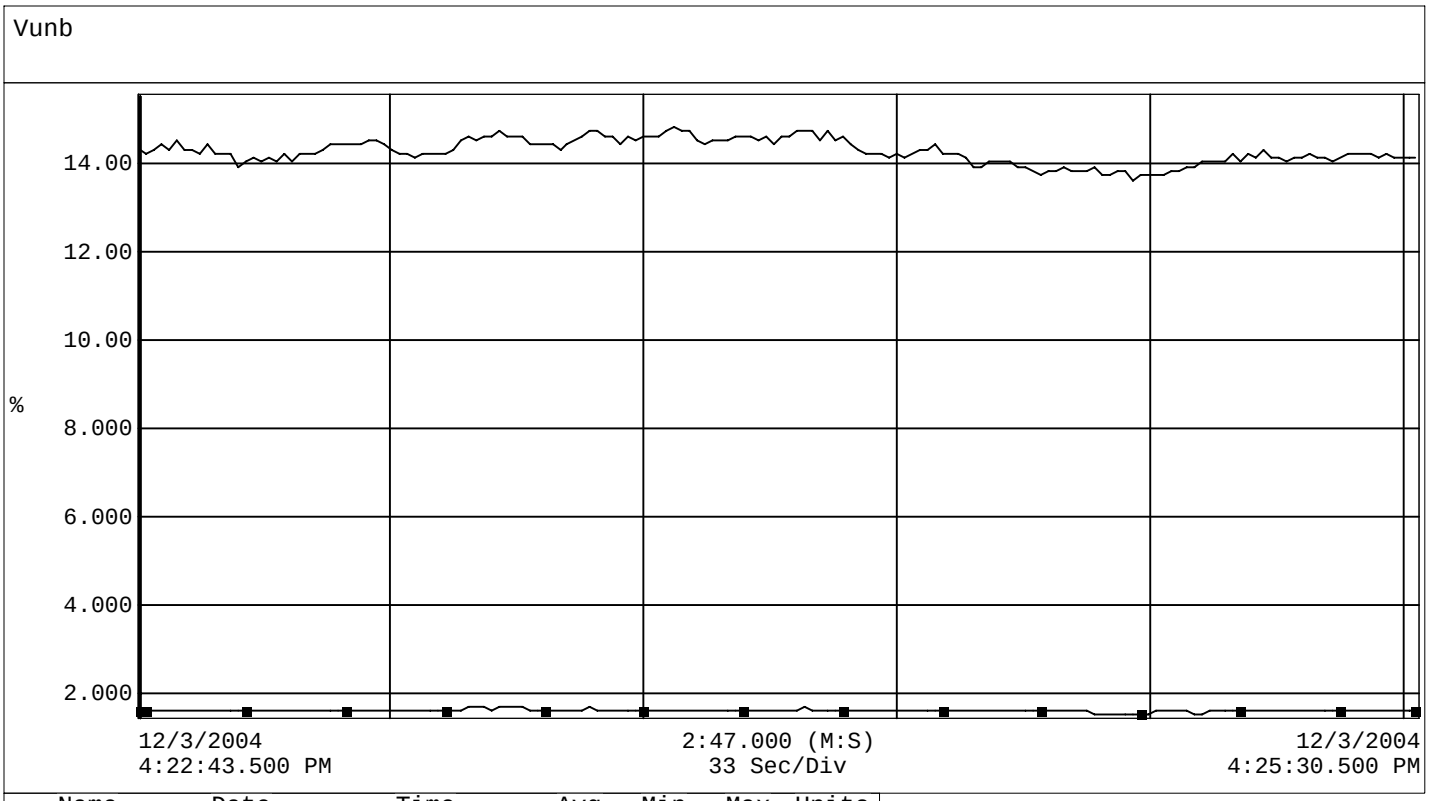
12/3/2004 - 4:22:43.000 PM
Val
489.7 — Urms Line1
480.4 — Urms Line2
491.7 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	12/3/2004	4:22:43.500 PM	64.91	64.60	65.40	A
Arms Line2	12/3/2004	4:22:43.500 PM	49.89	49.50	50.30	A
Arms Line3	12/3/2004	4:22:43.500 PM	59.72	59.40	60.00	A

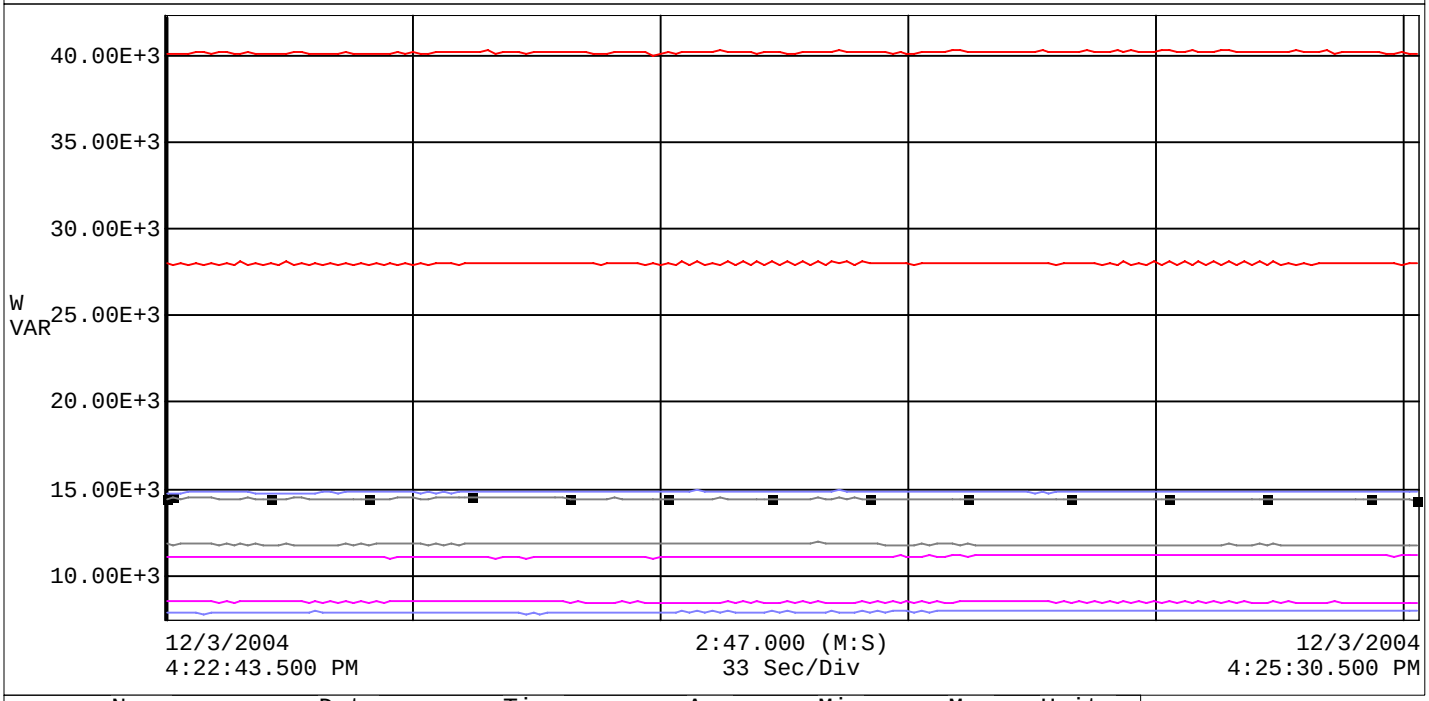
12/3/2004 - 4:22:43.000 PM
Val
65.00 — Arms Line1
49.80 — Arms Line2
59.50 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	12/3/2004	4:22:43.500 PM	1.599	1.500	1.700	%
Aunb(IEEE)	12/3/2004	4:22:43.500 PM	14.24	13.60	14.80	%

12/3/2004 - 4:22:43.000 PM
Val
1.600 —— Vunb(IEEE)
14.30 —— Aunb(IEEE)

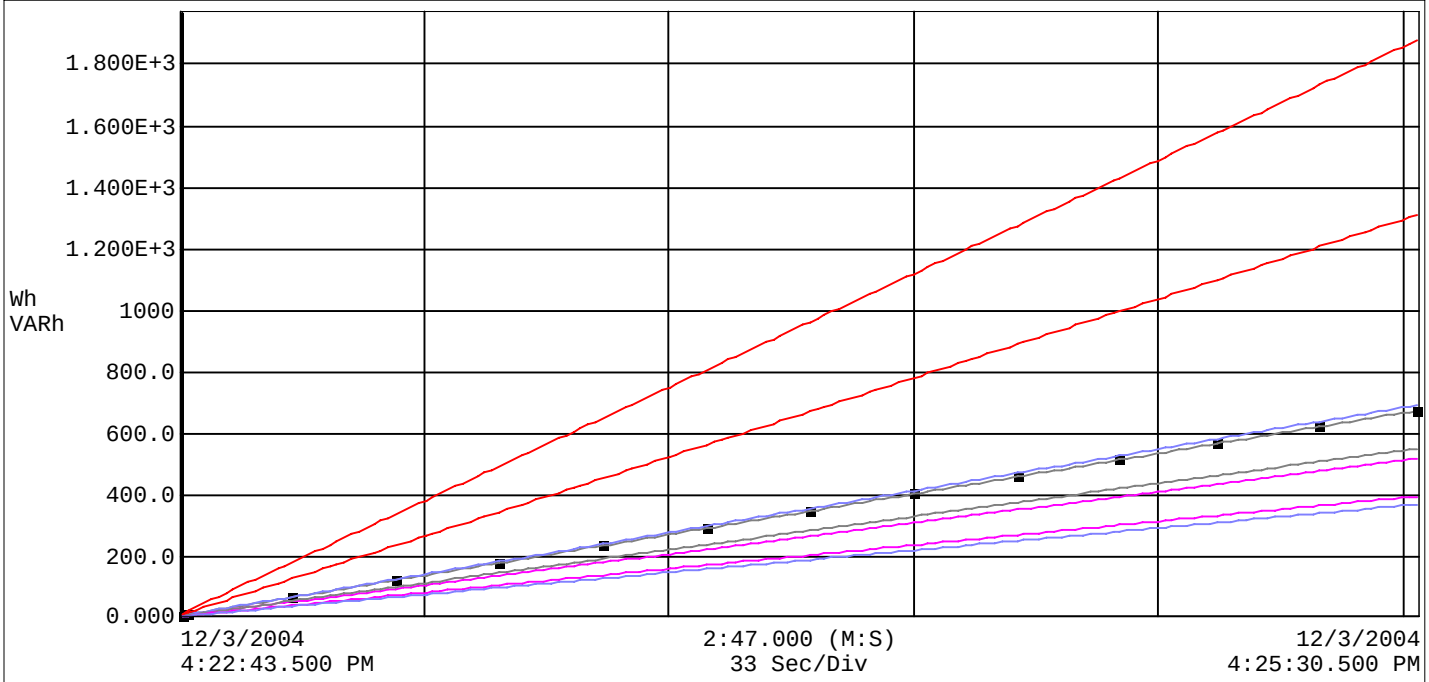
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	12/3/2004	4:22:43.500 PM	14.37E+3	14.27E+3	14.50E+3	W
W Line2	12/3/2004	4:22:43.500 PM	11.04E+3	10.93E+3	11.17E+3	W
W Line3	12/3/2004	4:22:43.500 PM	14.76E+3	14.69E+3	14.85E+3	W
W Sum of Phases	12/3/2004	4:22:43.500 PM	40.17E+3	40.00E+3	40.29E+3	W
VAR Line1	12/3/2004	4:22:43.500 PM	11.73E+3	11.62E+3	11.84E+3	VAR
VAR Line2	12/3/2004	4:22:43.500 PM	8.404E+3	8.326E+3	8.477E+3	VAR
VAR Line3	12/3/2004	4:22:43.500 PM	7.839E+3	7.733E+3	7.957E+3	VAR
VAR Sum of Phases	12/3/2004	4:22:43.500 PM	27.98E+3	27.83E+3	28.09E+3	VAR

12/3/2004 - 4:22:43.000 PM
Val
14.39E+3 — W Line1
10.97E+3 — W Line2
14.70E+3 — W Line3
40.06E+3 — W Sum of Phases
11.77E+3 — VAR Line1
8.457E+3 — VAR Line2
7.787E+3 — VAR Line3
28.01E+3 — VAR Sum of Phases

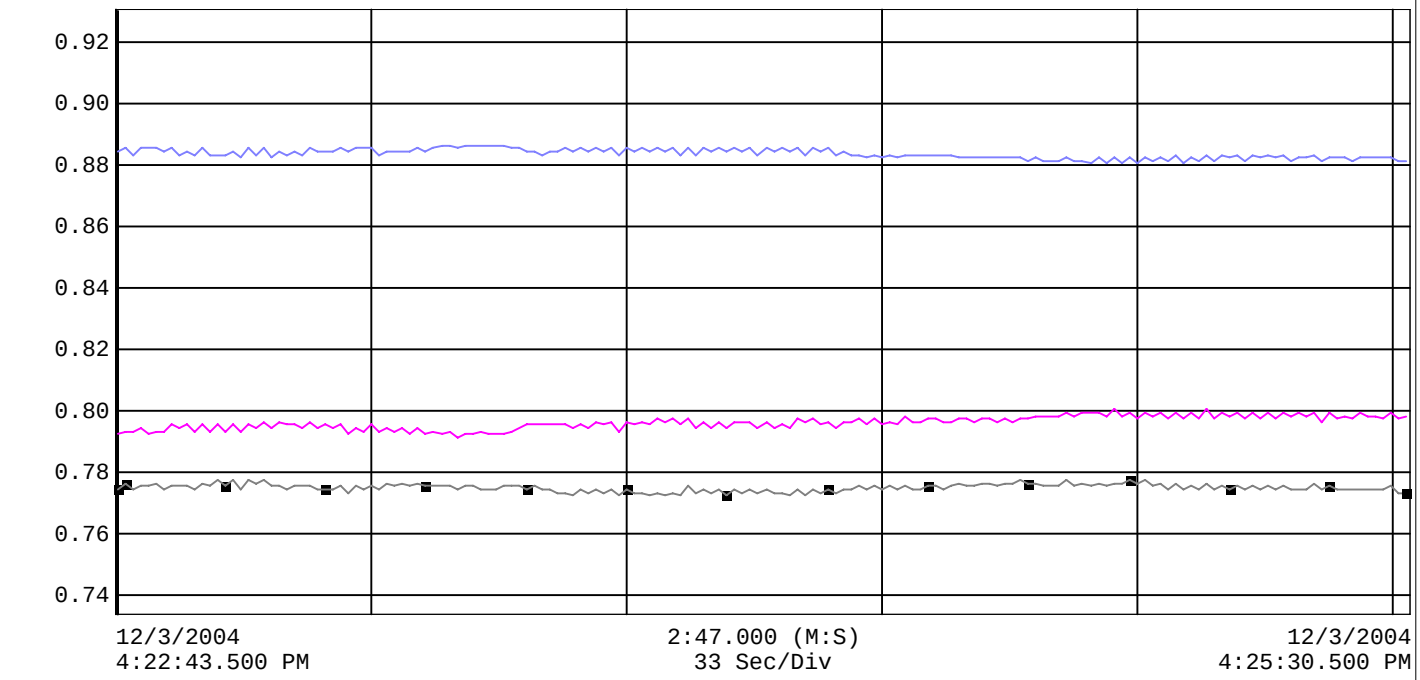
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	12/3/2004	4:22:43.500 PM	337.6	3.991	670.5	Wh
W-hours Line2	12/3/2004	4:22:43.500 PM	258.6	3.051	515.3	Wh
W-hours Line3	12/3/2004	4:22:43.500 PM	346.4	4.080	689.0	Wh
W-hours Sum of Phases	12/3/2004	4:22:43.500 PM	942.6	11.10	1.875E+3	Wh
VAR-hours Line1	12/3/2004	4:22:43.500 PM	275.7	3.276	547.6	VARh
VAR-hours Line2	12/3/2004	4:22:43.500 PM	197.5	2.346	392.2	VARh
VAR-hours Line3	12/3/2004	4:22:43.500 PM	183.3	2.166	365.8	VARh
VAR-hours Sum of Phases	12/3/2004	4:22:43.500 PM	656.5	7.770	1.306E+3	VARh

12/3/2004 - 4:22:43.000 PM
Val
3.991 — W-hours Line1
3.051 — W-hours Line2
4.080 — W-hours Line3
11.10 — W-hours Sum of Phases
3.276 — VAR-hours Line1
2.346 — VAR-hours Line2
2.166 — VAR-hours Line3
7.770 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	12/3/2004	4:22:43.500 PM	0.775	0.772	0.777	
PF Line2	12/3/2004	4:22:43.500 PM	0.796	0.791	0.800	
PF Line3	12/3/2004	4:22:43.500 PM	0.883	0.880	0.886	

12/3/2004 - 4:22:43.000 PM
Val
0.774 — PF Line1
0.792 — PF Line2
0.884 — PF Line3

Trend Summary Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Agat WWTF\120304-Agat WWTF Blower No 2.dvb

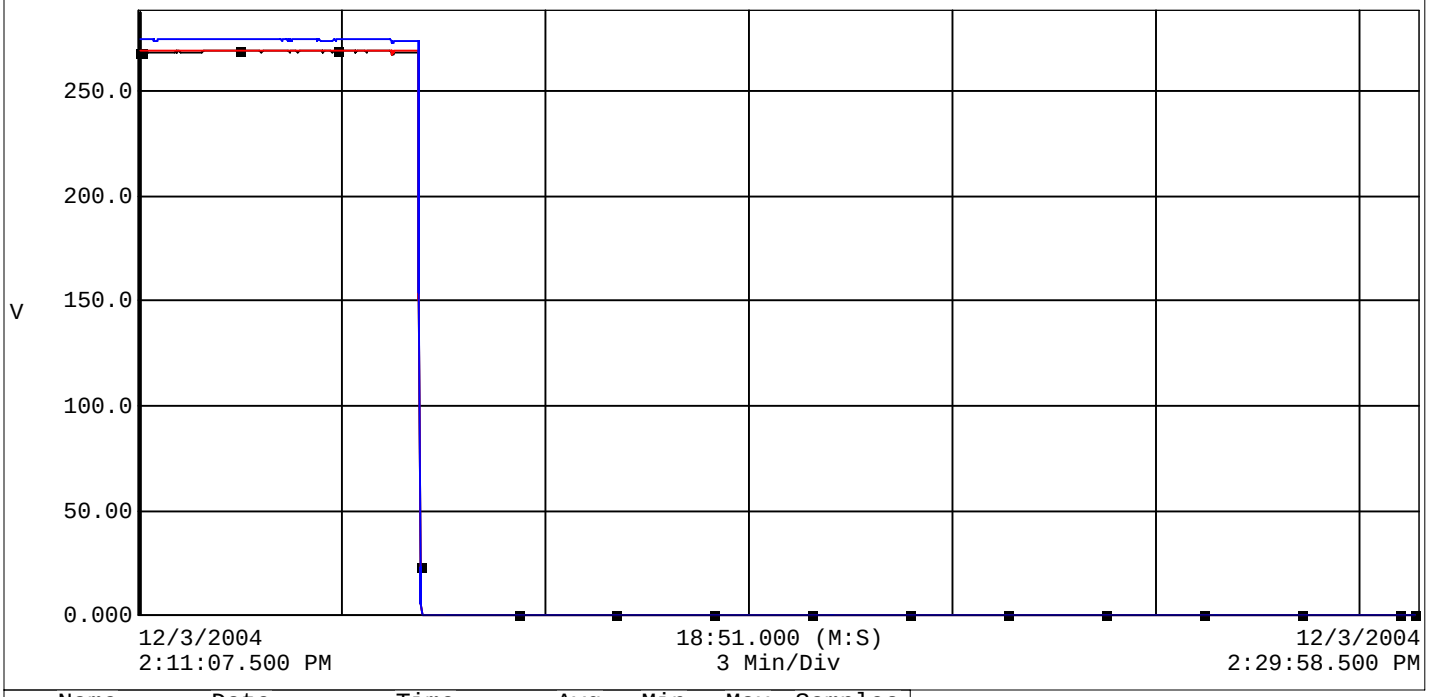
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Agat WWTF - Blower No. 2 ,

Comments
Recorded at motor starter overload relay for Blower No. 2, 75 HP, 460 volts.

Agat WWTF Pump Stn Pump No. 5

Recording Start Date	12/3/2004 - 2:11:07 PM
Recording Duration	18:51 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

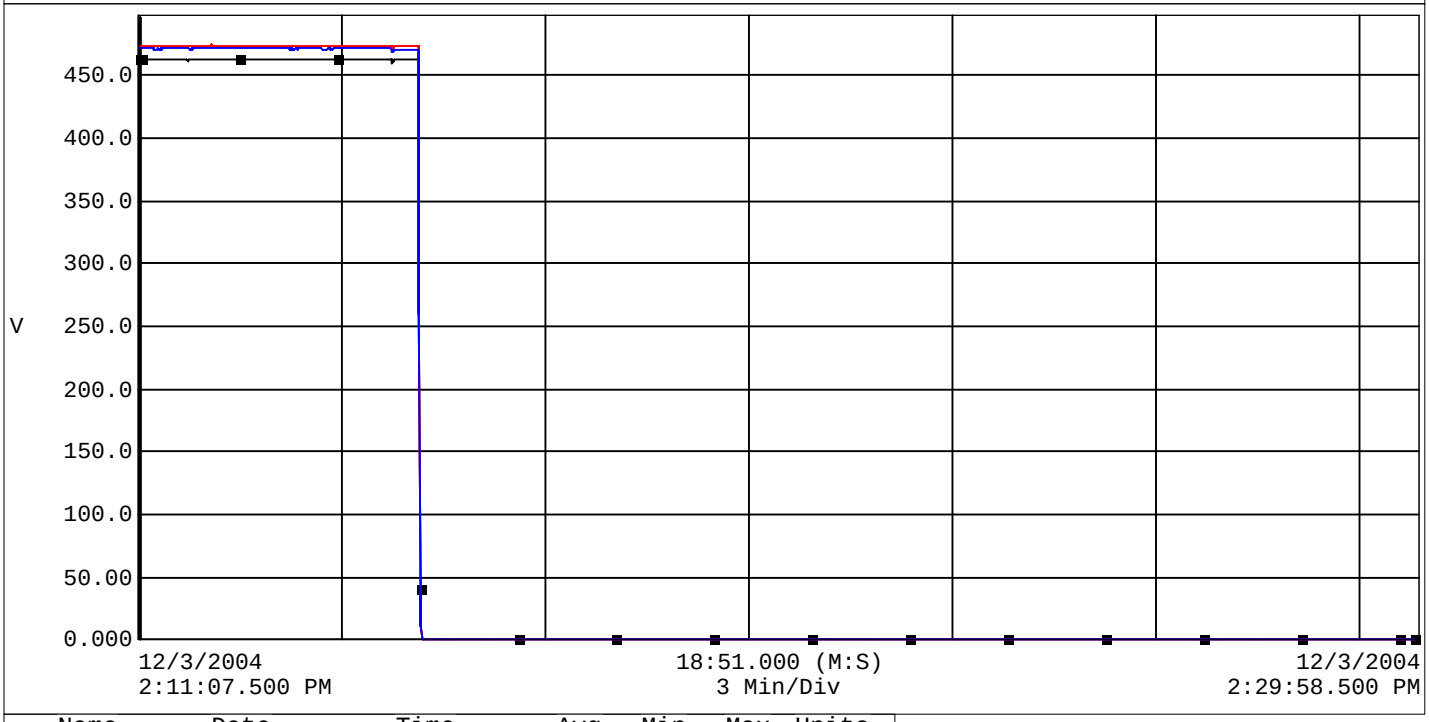
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	12/3/2004	2:11:07.500 PM	58.93	0.000	268.6	1132
Vrms Line2	12/3/2004	2:11:07.500 PM	59.00	0.000	268.8	1132
Vrms Line3	12/3/2004	2:11:07.500 PM	60.16	0.000	274.2	1132

12/3/2004 - 2:11:07.000 PM
Val
268.2 — Vrms Line1
268.4 — Vrms Line2
273.9 — Vrms Line3

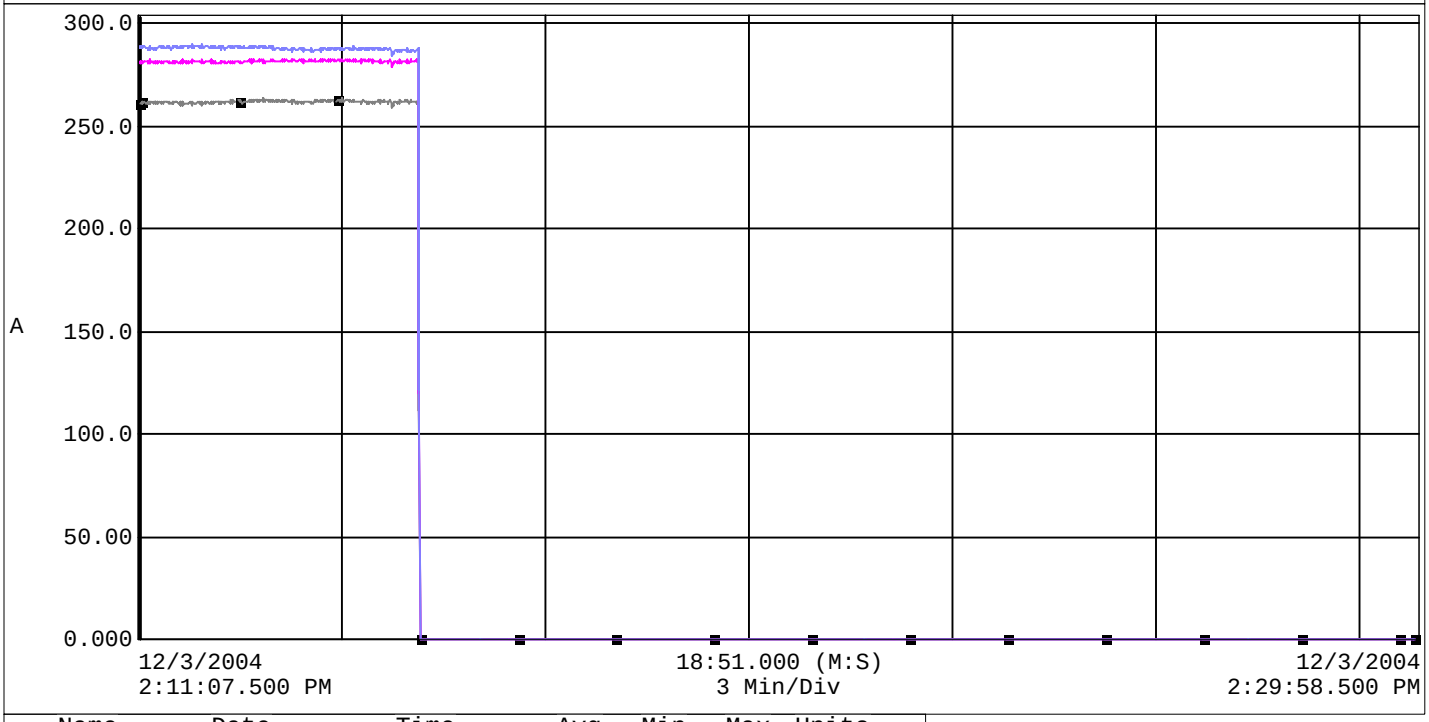
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	12/3/2004	2:11:07.500 PM	101.4	0.000	461.9	V
Urms Line2	12/3/2004	2:11:07.500 PM	103.8	0.000	473.1	V
Urms Line3	12/3/2004	2:11:07.500 PM	103.3	0.000	470.9	V

12/3/2004 - 2:11:07.000 PM
Val
461.1 Urms Line1
472.3 Urms Line2
470.2 Urms Line3

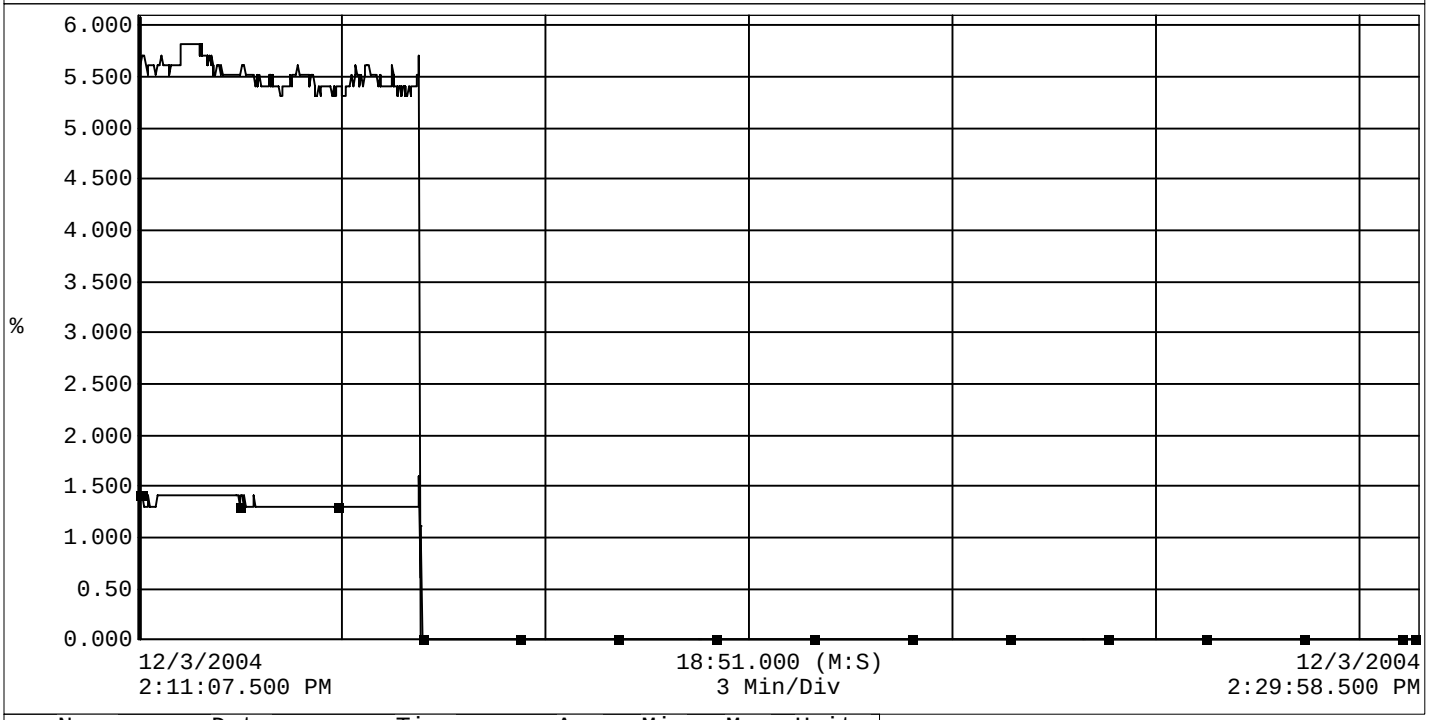
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	12/3/2004	2:11:07.500 PM	57.34	0.000	262.9	A
Arms Line2	12/3/2004	2:11:07.500 PM	61.65	0.000	282.3	A
Arms Line3	12/3/2004	2:11:07.500 PM	63.05	0.000	288.9	A

12/3/2004 - 2:11:07.000 PM
Val
261.5 — Arms Line1
280.9 — Arms Line2
288.6 — Arms Line3

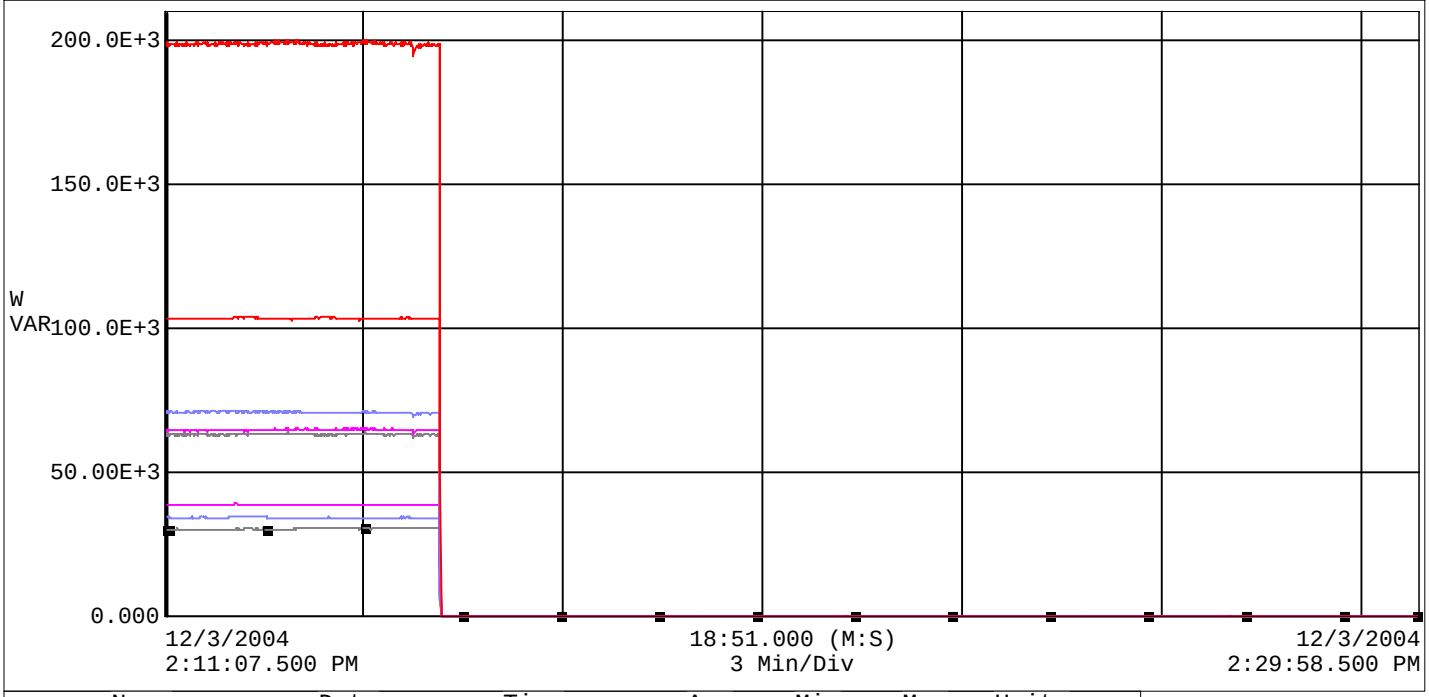
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	12/3/2004	2:11:07.500 PM	0.295	0.000	1.600	%
Aunb(IEEE)	12/3/2004	2:11:07.500 PM	1.211	0.000	5.800	%

12/3/2004 - 2:11:07.000 PM
Val
1.400 —— Vunb(IEEE)
5.600 —— Aunb(IEEE)

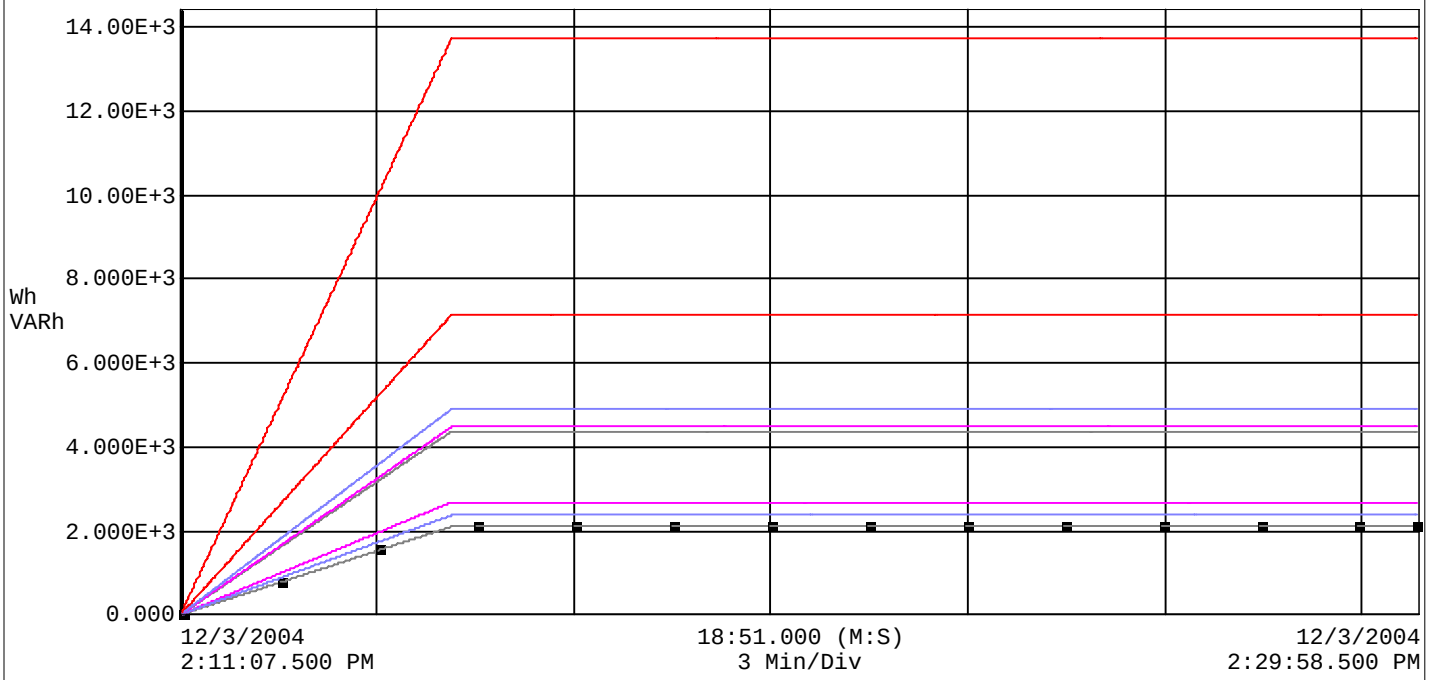
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	12/3/2004	2:11:07.500 PM	6.655E+3	0.000	30.64E+3	W
W Line2	12/3/2004	2:11:07.500 PM	8.504E+3	0.000	39.02E+3	W
W Line3	12/3/2004	2:11:07.500 PM	7.509E+3	0.000	34.59E+3	W
W Sum of Phases	12/3/2004	2:11:07.500 PM	22.67E+3	0.000	104.0E+3	W
VAR Line1	12/3/2004	2:11:07.500 PM	13.86E+3	0.000	63.68E+3	VAR
VAR Line2	12/3/2004	2:11:07.500 PM	14.19E+3	0.000	65.29E+3	VAR
VAR Line3	12/3/2004	2:11:07.500 PM	15.54E+3	0.000	71.34E+3	VAR
VAR Sum of Phases	12/3/2004	2:11:07.500 PM	43.59E+3	0.000	200.0E+3	VAR

12/3/2004 - 2:11:07.000 PM
Val
30.17E+3 — W Line1
38.82E+3 — W Line2
34.38E+3 — W Line3
103.4E+3 — W Sum of Phases
63.29E+3 — VAR Line1
64.61E+3 — VAR Line2
71.18E+3 — VAR Line3
199.1E+3 — VAR Sum of Phases

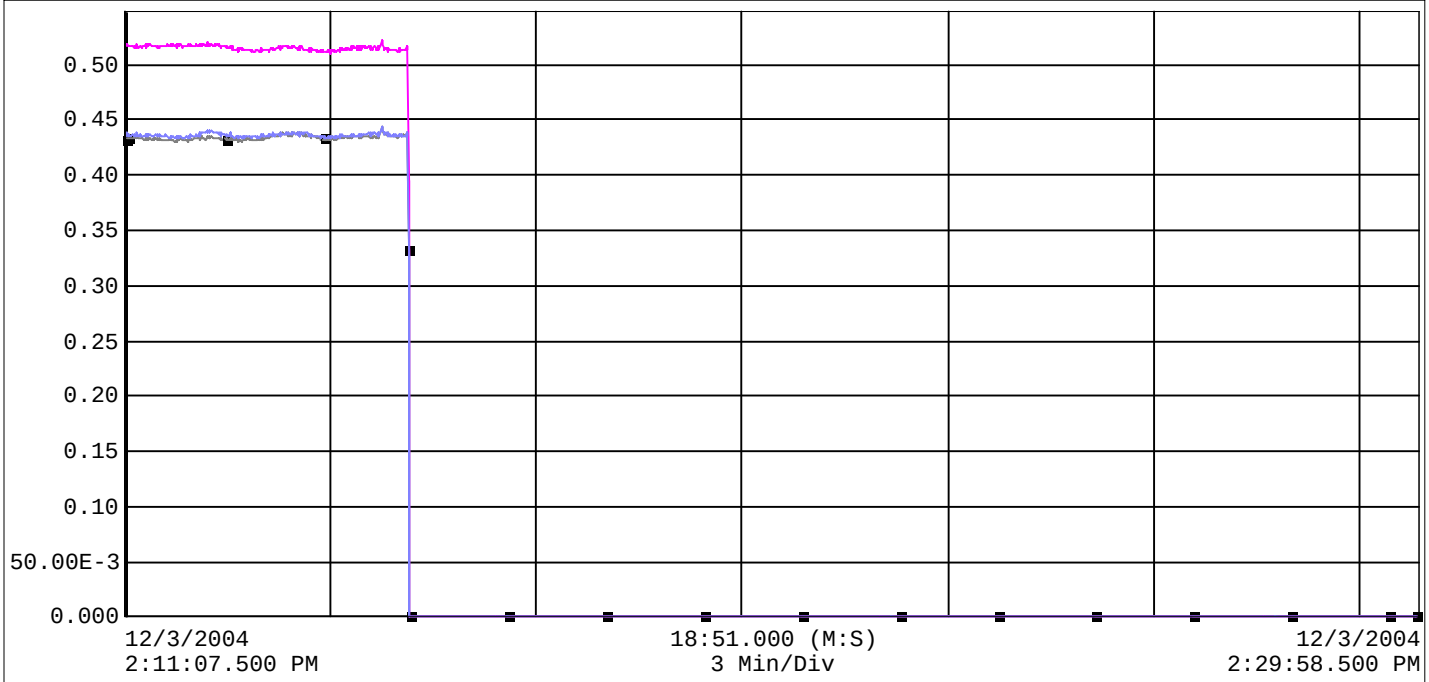
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	12/3/2004	2:11:07.500 PM	1.864E+3	8.367	2.093E+3	Wh
W-hours Line2	12/3/2004	2:11:07.500 PM	2.382E+3	10.77	2.674E+3	Wh
W-hours Line3	12/3/2004	2:11:07.500 PM	2.104E+3	9.584	2.361E+3	Wh
W-hours Sum of Phases	12/3/2004	2:11:07.500 PM	6.350E+3	28.72	7.128E+3	Wh
VAR-hours Line1	12/3/2004	2:11:07.500 PM	3.881E+3	17.55	4.357E+3	VARh
VAR-hours Line2	12/3/2004	2:11:07.500 PM	3.975E+3	17.98	4.463E+3	VARh
VAR-hours Line3	12/3/2004	2:11:07.500 PM	4.352E+3	19.83	4.885E+3	VARh
VAR-hours Sum of Phases	12/3/2004	2:11:07.500 PM	12.21E+3	55.21	13.71E+3	VARh

12/3/2004 - 2:11:07.000 PM
Val
8.367 — W-hours Line1
10.77 — W-hours Line2
9.584 — W-hours Line3
28.72 — W-hours Sum of Phases
17.55 — VAR-hours Line1
17.98 — VAR-hours Line2
19.83 — VAR-hours Line3
55.21 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	12/3/2004	2:11:07.500 PM	95.16E-3	0.000	0.443	
PF Line2	12/3/2004	2:11:07.500 PM	0.113	0.000	0.521	
PF Line3	12/3/2004	2:11:07.500 PM	95.65E-3	0.000	0.442	

12/3/2004 - 2:11:07.000 PM
Val
0.430 — PF Line1
0.515 — PF Line2
0.435 — PF Line3

Trend Summary Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Agat WWTF\120304-Agat Transfer Pump 5.dvb

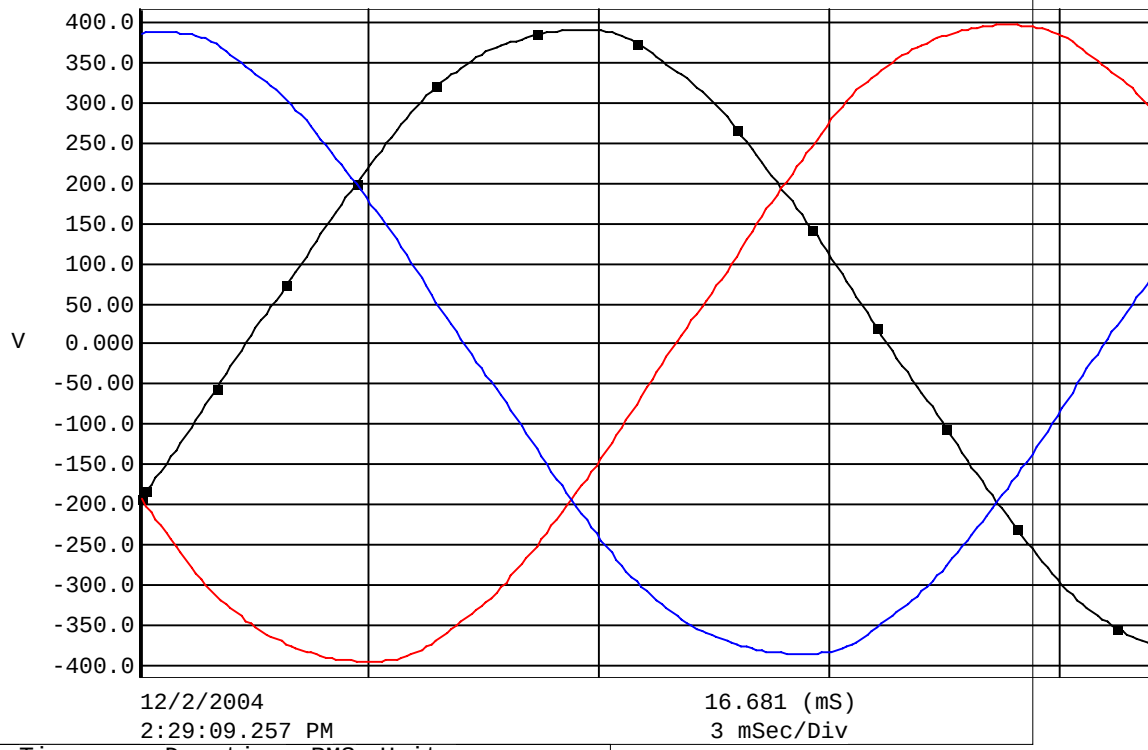
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Agat WWTF - Transfer Pump No. 5 ,

Comments
Recorded at the motor starter. Motor rated at 220 HP, 179.2 amps, 460 volts.

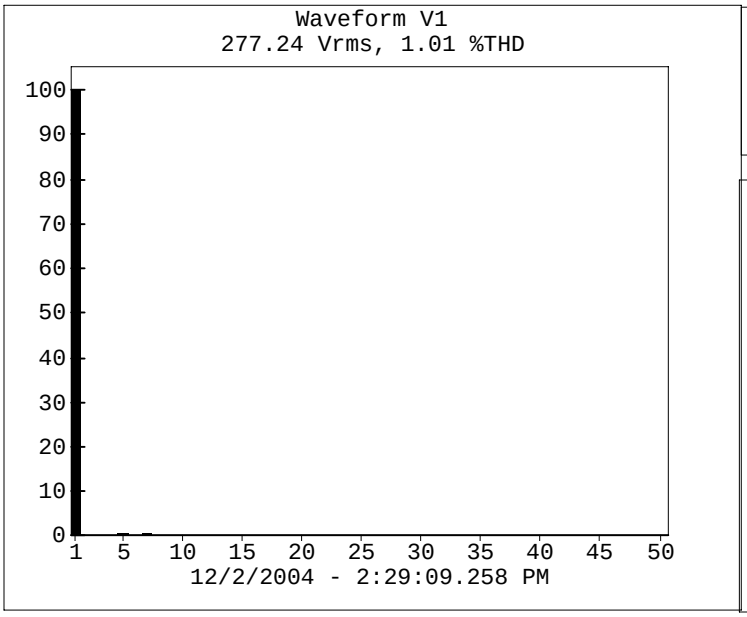
Baza Gardens WWTF
Blower No. 3

Recording Start Date	12/2/2004 - 2:29:09 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	12/2/2004	2:29:09.257 PM	16.681	277.2	V
Waveform V2	12/2/2004	2:29:09.257 PM	16.681	281.6	V
Waveform V3	12/2/2004	2:29:09.257 PM	16.681	276.4	V



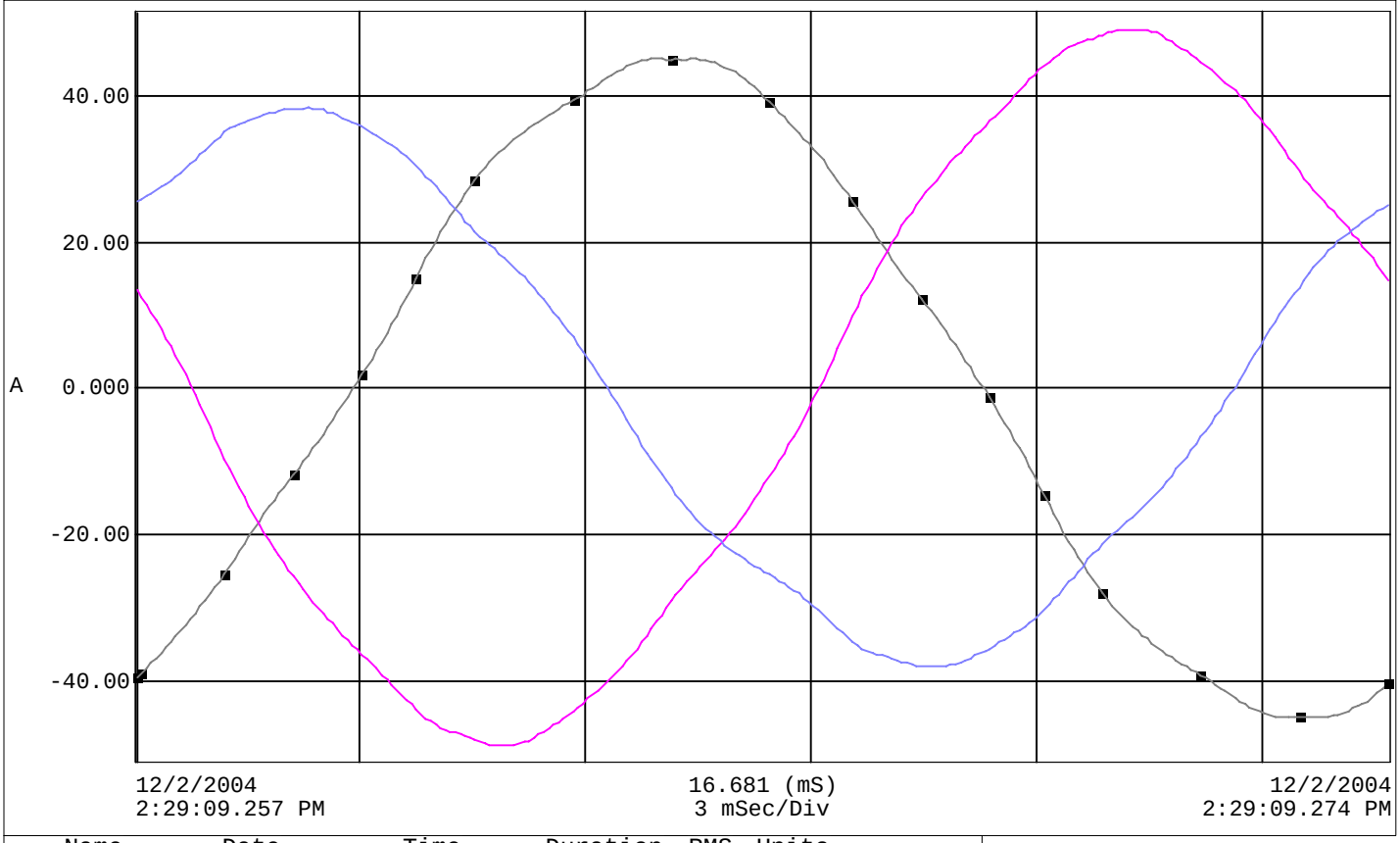
12/2/2004 - 2:29:09.000 PM

Val	
-192.4	Waveform V1
-193.1	Waveform V2
385.2	Waveform V3

Waveform V1

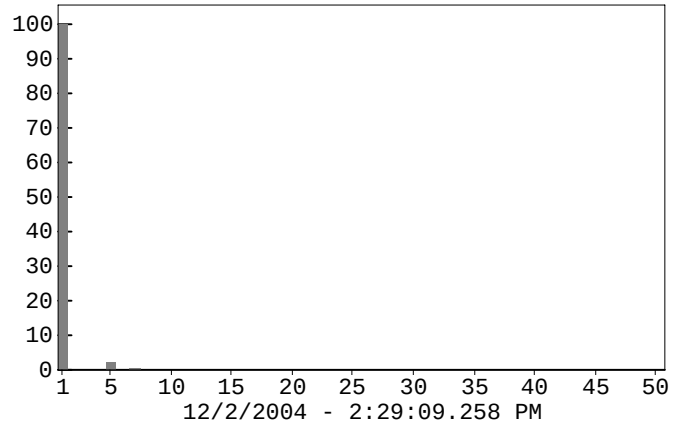
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.95 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	12/2/2004	2:29:09.257 PM	16.681	31.81	A
Waveform I2	12/2/2004	2:29:09.257 PM	16.681	33.90	A
Waveform I3	12/2/2004	2:29:09.257 PM	16.681	26.26	A

Waveform I1
31.81 Arms, 2.80 %THD



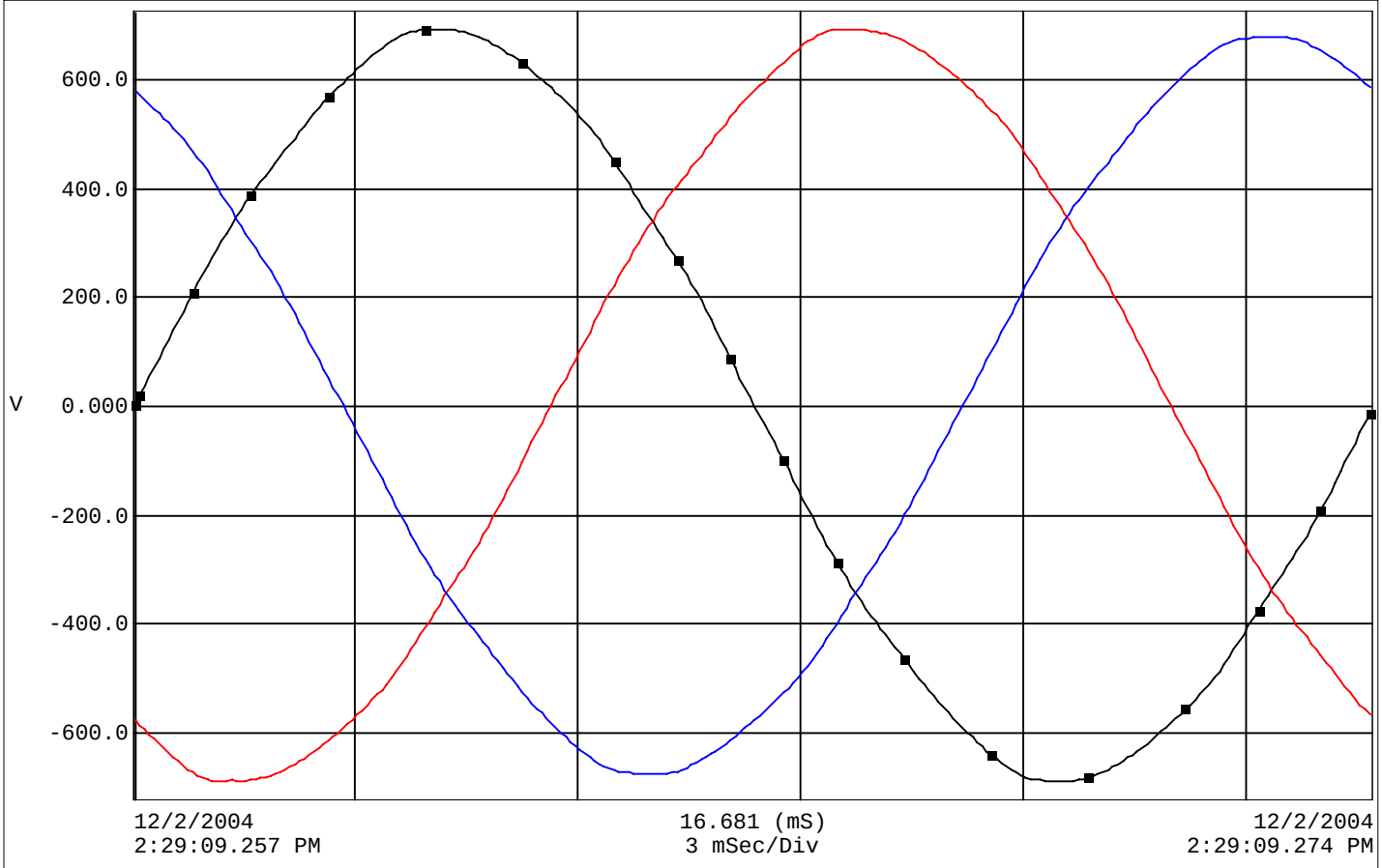
12/2/2004 - 2:29:09.000 PM

Val	
-39.70	Waveform I1
13.40	Waveform I2
25.30	Waveform I3

Waveform I1

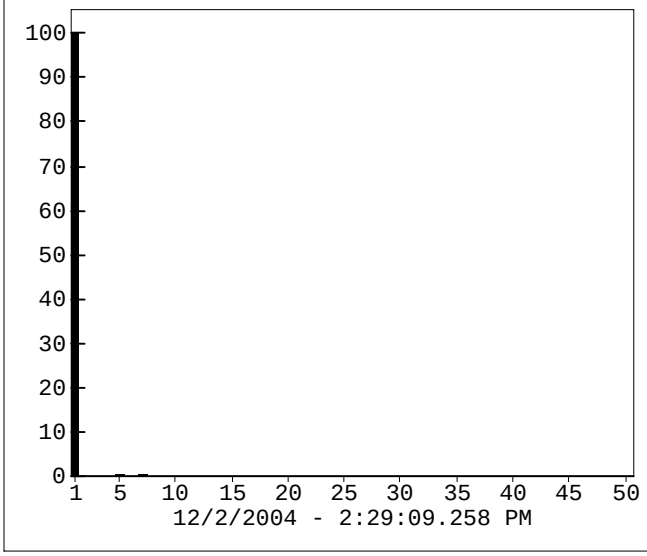
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.3	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.6	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	12/2/2004	2:29:09.257 PM	16.681	485.8	V
Waveform U2	12/2/2004	2:29:09.257 PM	16.681	484.3	V
Waveform U3	12/2/2004	2:29:09.257 PM	16.681	476.6	V

Waveform U1
485.81 Vrms, 1.06 %THD



12/2/2004 - 2:29:09.000 PM

	Val	
—	0.700	Waveform U1
—	-578.4	Waveform U2
—	577.7	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 12/2/2004
Start Time: 2:29:09 PM
Duration: 0:0.000 (M:S)
W: 19.40E+3 W
VAR: 16.20E+3 W
VA: 25.41E+3 W
Power Factor: 2.287
Displacement Power Factor: 2.288
TAN: 2.554
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Baza Gardens WWTF\120204-Baza Gardens Blower 3 - Photo.dvb

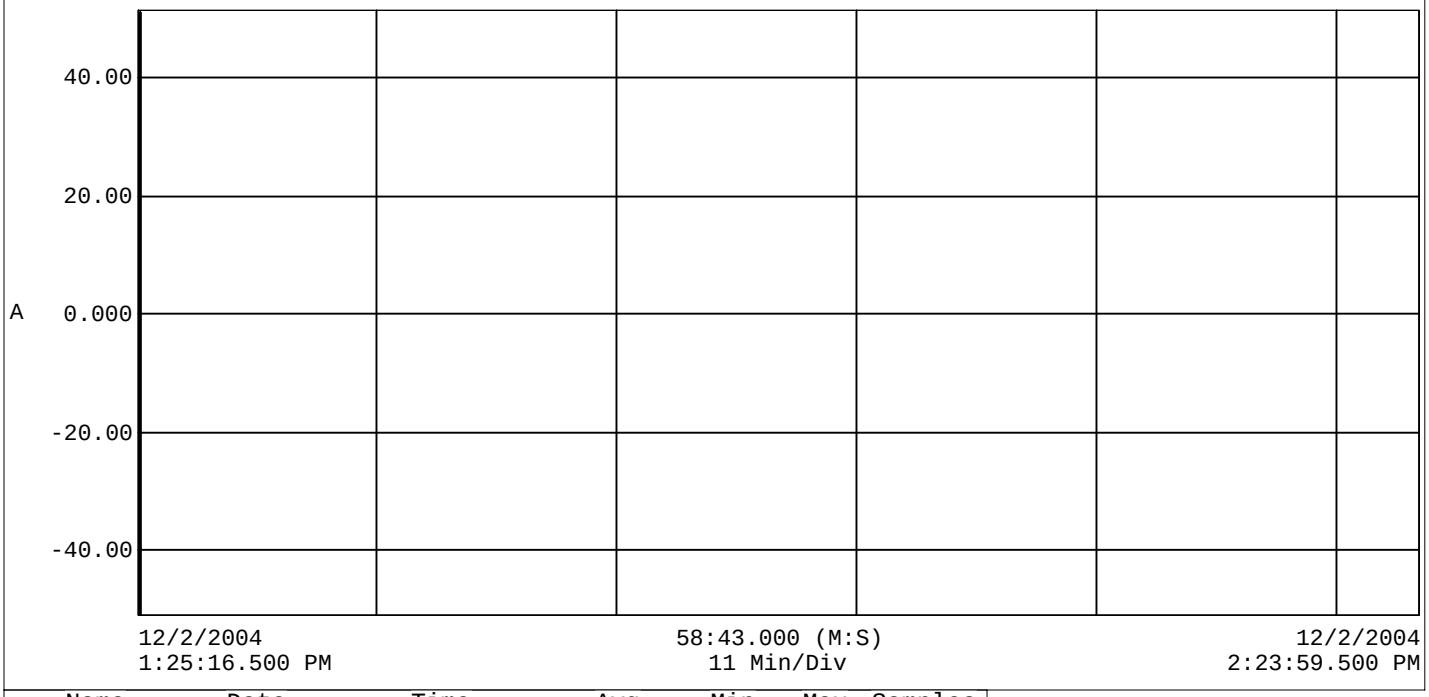
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Baza Gardens Blower No. 3 Photo ,

Comments
Recorded at motor starter overload heater, 50 HP, 480 volts.

Baza Gardens WWTF
Blower No. 3

Recording Start Date	12/2/2004 - 2:29:09 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

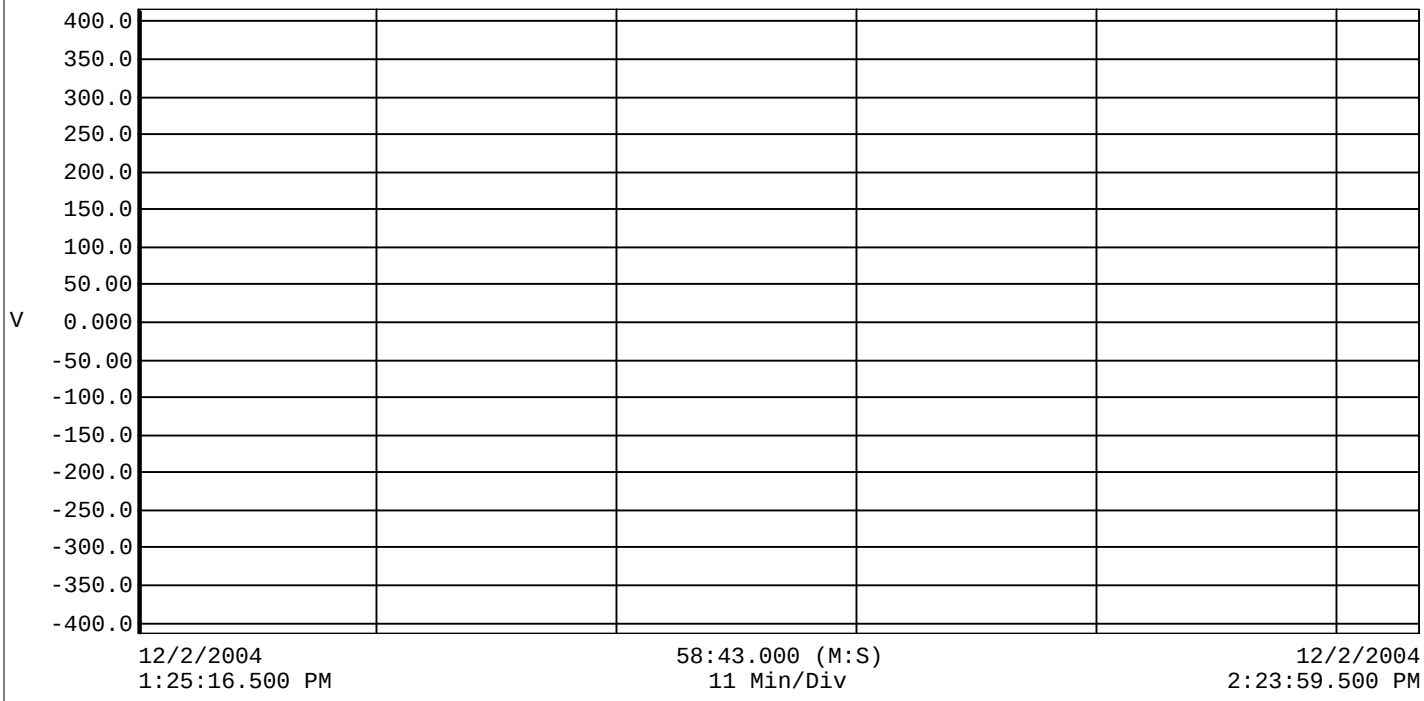
Channel Name Waveform I1



Name	Date	Time	Avg	Min	Max	Samples
Waveform I1	12/2/2004	2:29:09.257 PM	37.50E-3	-45.00	44.80	256
Waveform I2	12/2/2004	2:29:09.257 PM	60.16E-3	-48.70	48.90	256
Waveform I3	12/2/2004	2:29:09.257 PM	18.36E-3	-38.10	38.20	256

12/2/2004 - 1:25:16.500 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

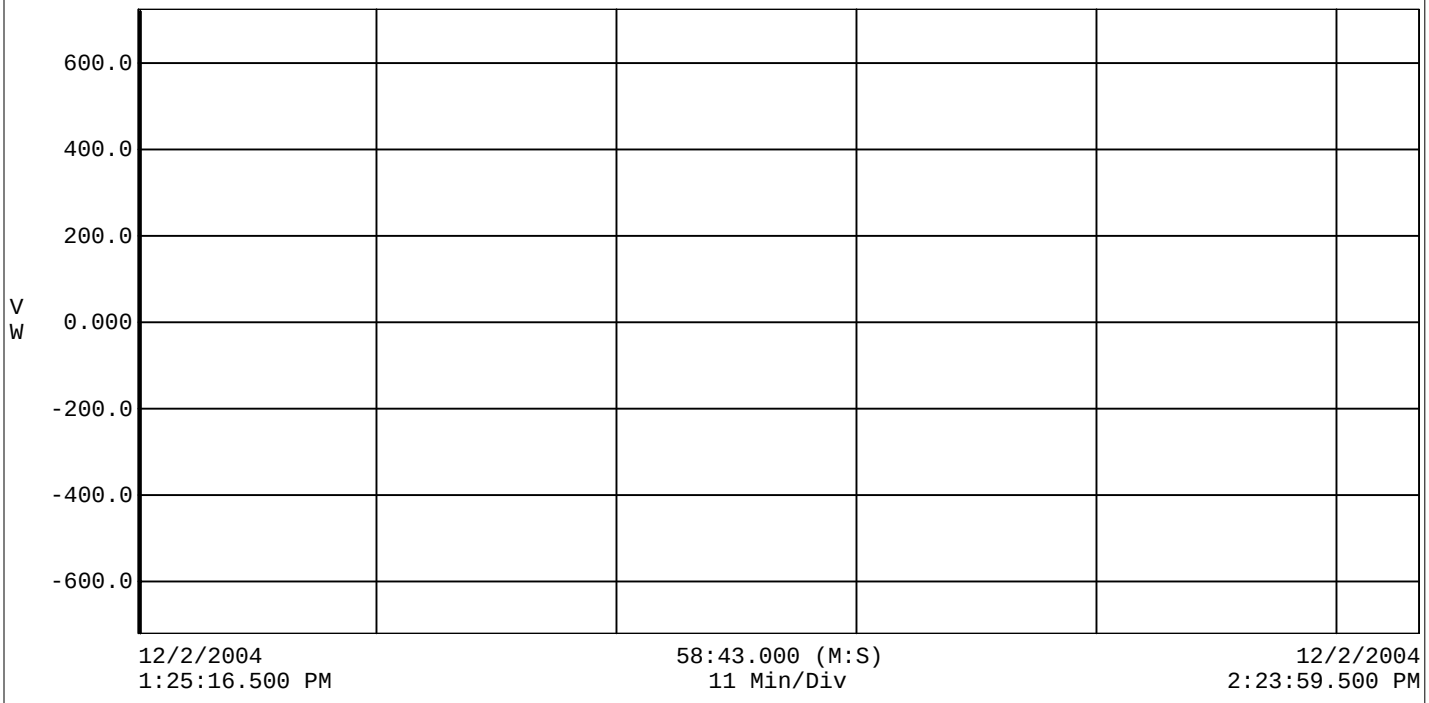
Channel Name Waveform V1



Name	Date	Time	Avg	Min	Max	Units
Waveform V1	12/2/2004	2:29:09.257 PM	-56.64E-3	-389.3	389.2	V
Waveform V2	12/2/2004	2:29:09.257 PM	-89.06E-3	-395.5	395.5	V
Waveform V3	12/2/2004	2:29:09.257 PM	-40.63E-3	-386.4	386.3	V

12/2/2004 - 1:25:16.500 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

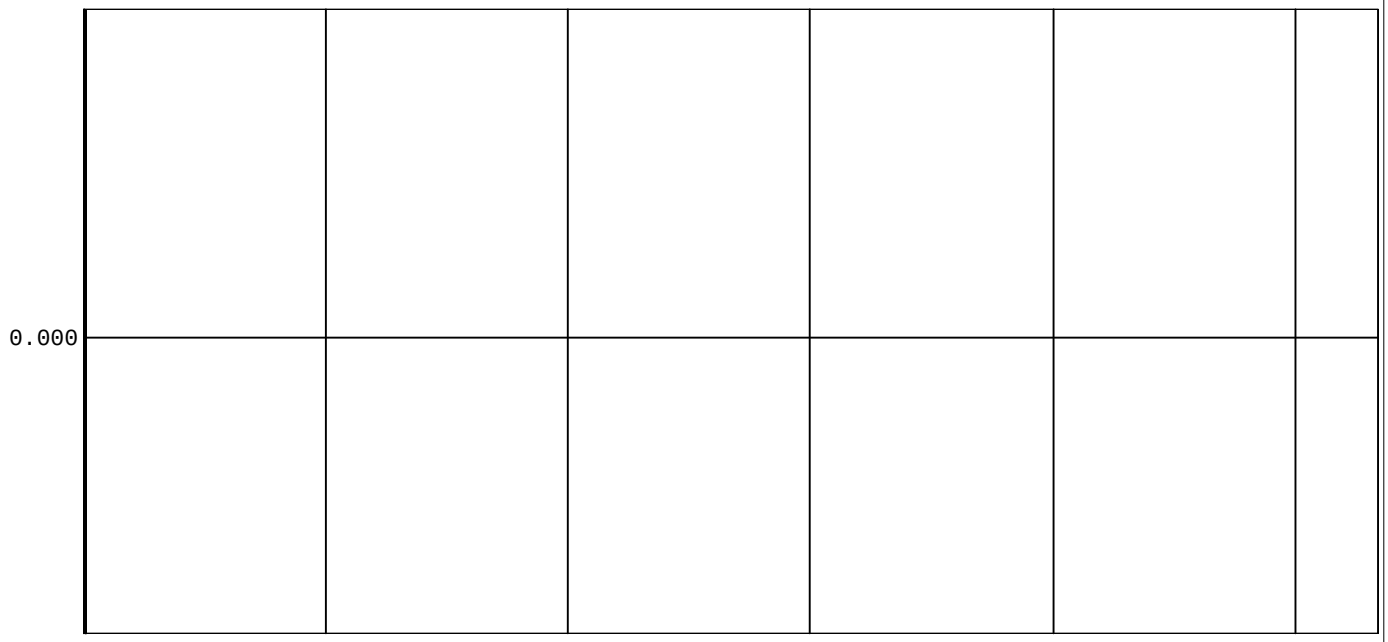
Channel Name Waveform U2



Name	Date	Time	Avg	Min	Max	Units
Waveform U2	12/2/2004	2:29:09.257 PM	-50.39E-3	-689.4	689.4	V
Waveform U3	12/2/2004	2:29:09.257 PM	15.23E-3	-677.2	677.6	V
Energy Line1	12/2/2004	2:29:09.000 PM	0.000	0.000	0.000	W

12/2/2004 - 1:25:16.500 PM
Val
X.XX — Waveform U2
X.XX — Waveform U3
X.XX — Energy Line1

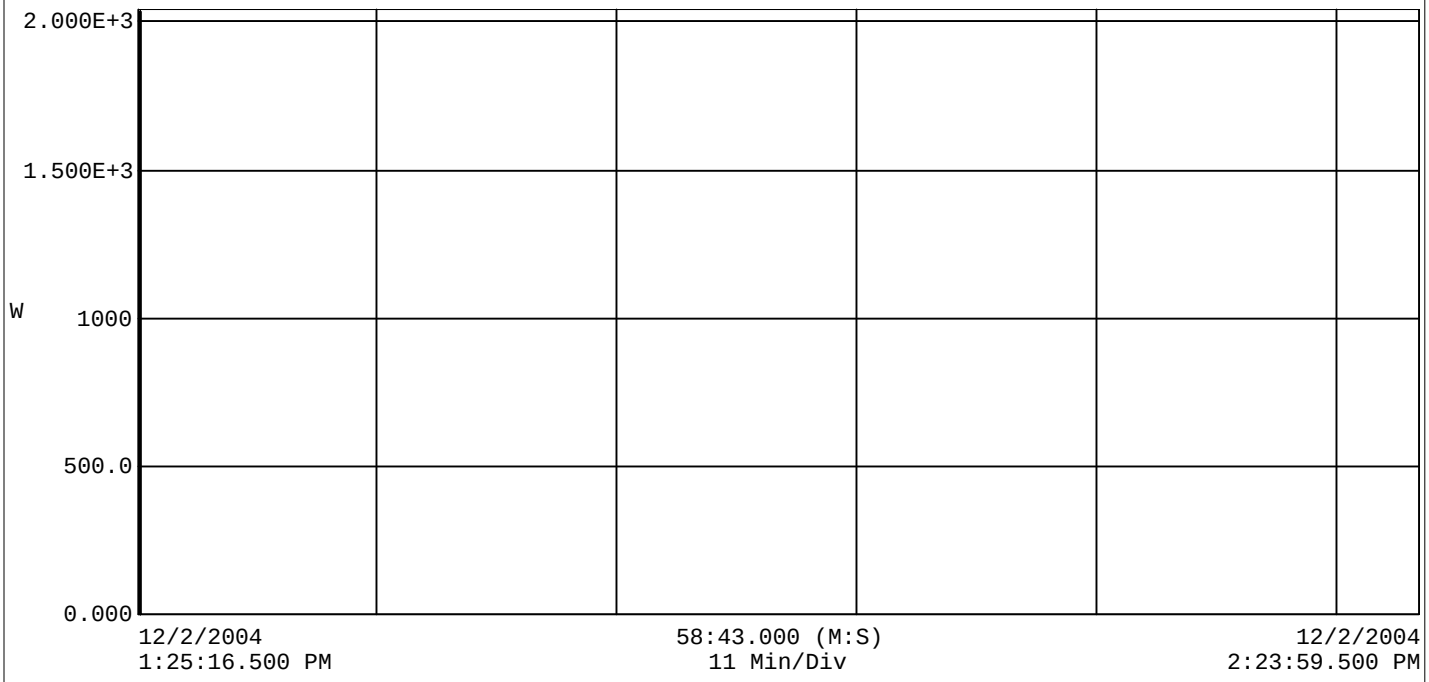
Vunb



Name	Date	Time	Avg	Min	Max	Units

12/2/2004 - 1:25:16.500 PM
Val
X.XX —— (null)
X.XX —— (null)

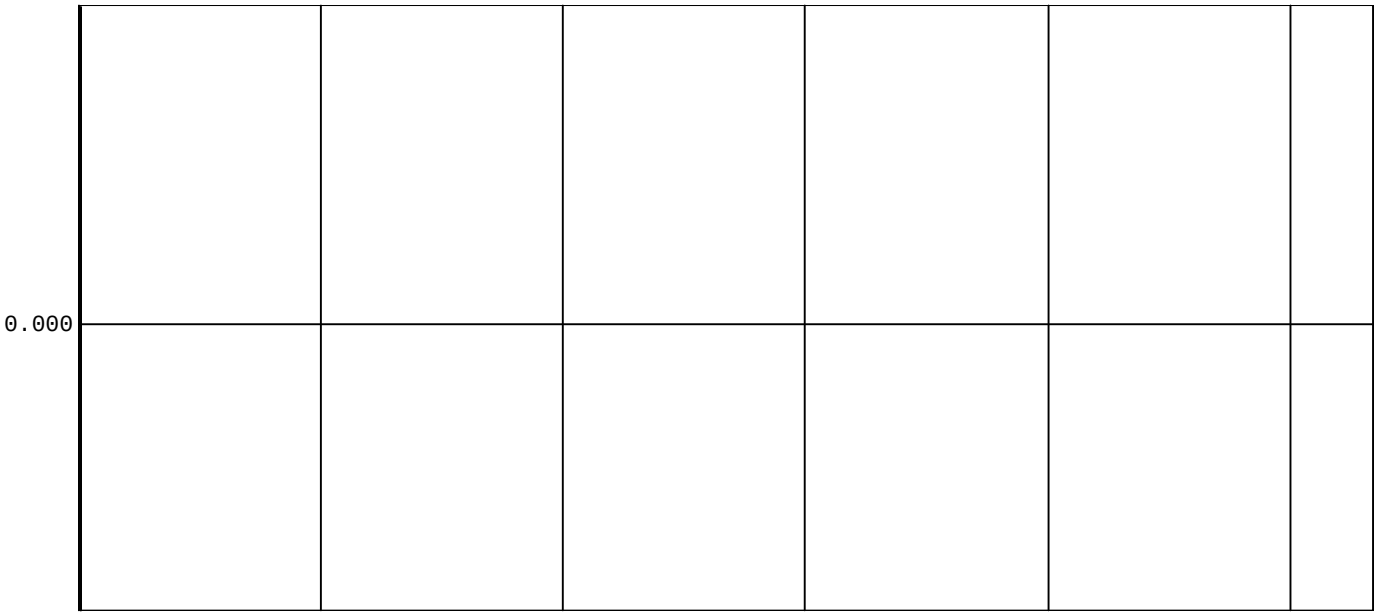
Channel Name Power Line2



Name	Date	Time	Avg	Min	Max	Units
Energy Line3	12/2/2004	2:29:09.000 PM	0.000	0.000	0.000	W
Energy Sum of Phases	12/2/2004	2:29:09.000 PM	0.000	0.000	0.000	W
Power Line1	12/2/2004	2:29:09.000 PM	743.2	743.2	743.2	W
Power Line2	12/2/2004	2:29:09.000 PM	680.1	680.1	680.1	W
Power Line3	12/2/2004	2:29:09.000 PM	516.6	516.6	516.6	W
Power Sum of Phases	12/2/2004	2:29:09.000 PM	1.940E+3	1.940E+3	1.940E+3	W

12/2/2004 - 1:25:16.500 PM
Val
X.XX — Energy Line3
X.XX — Energy Sum of Phases
X.XX — Power Line1
X.XX — Power Line2
X.XX — Power Line3
X.XX — Power Sum of Phases
X.XX — (null)
X.XX — (null)

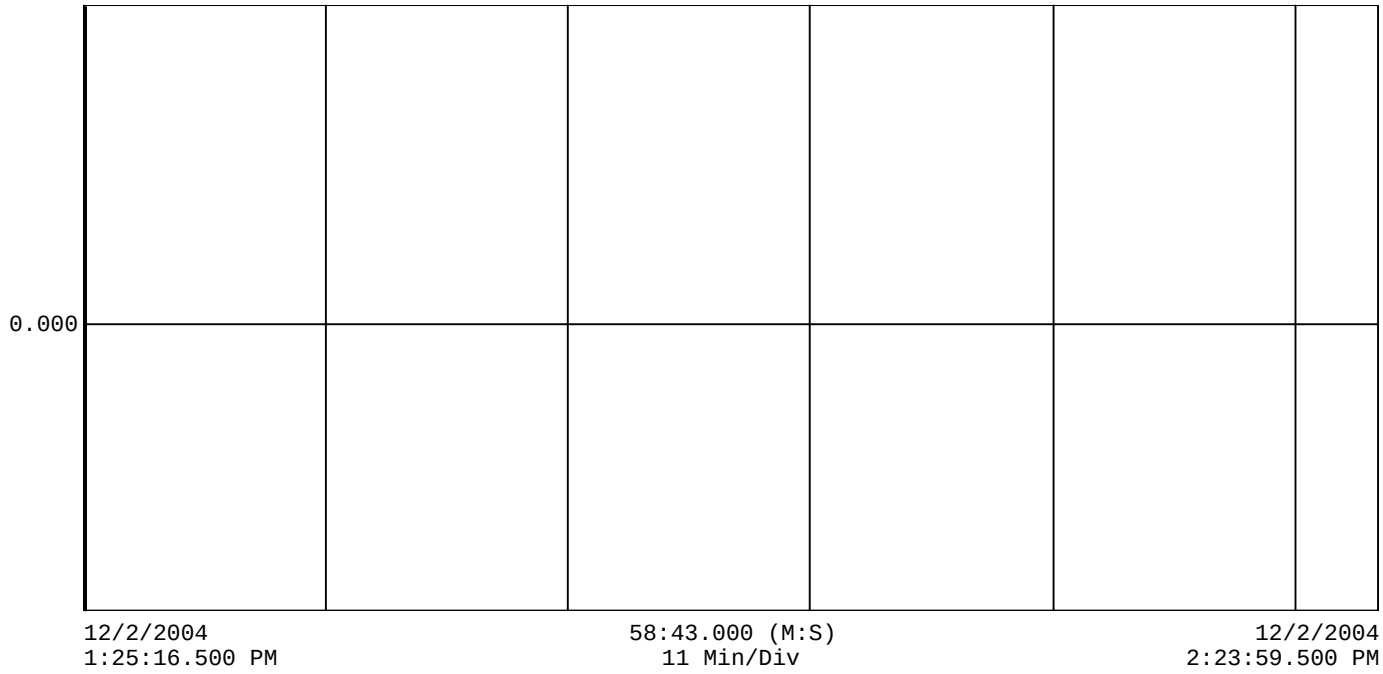
W-hours
VoltageRatio:
CurrentRatio:



Name	Date	Time	Avg	Min	Max	Units

12/2/2004 - 1:25:16.500 PM
Val
X.XX —— (null)
X.XX —— (null)
X.XX —— (null)
X.XX —— (null)
X.XX —— (null)
X.XX —— (null)
X.XX —— (null)
X.XX —— (null)

PF
VoltageRatio:
CurrentRatio:



Name	Date	Time	Avg	Min	Max	Units

12/2/2004 - 1:25:16.500 PM
Val
X.XX —— (null)
X.XX —— (null)
X.XX —— (null)

Trend Summary Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Baza Gardens WWTF\120204-Baza Gardens Blower 3 - Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Baza Gardens Blower No. 3 Photo ,

Comments

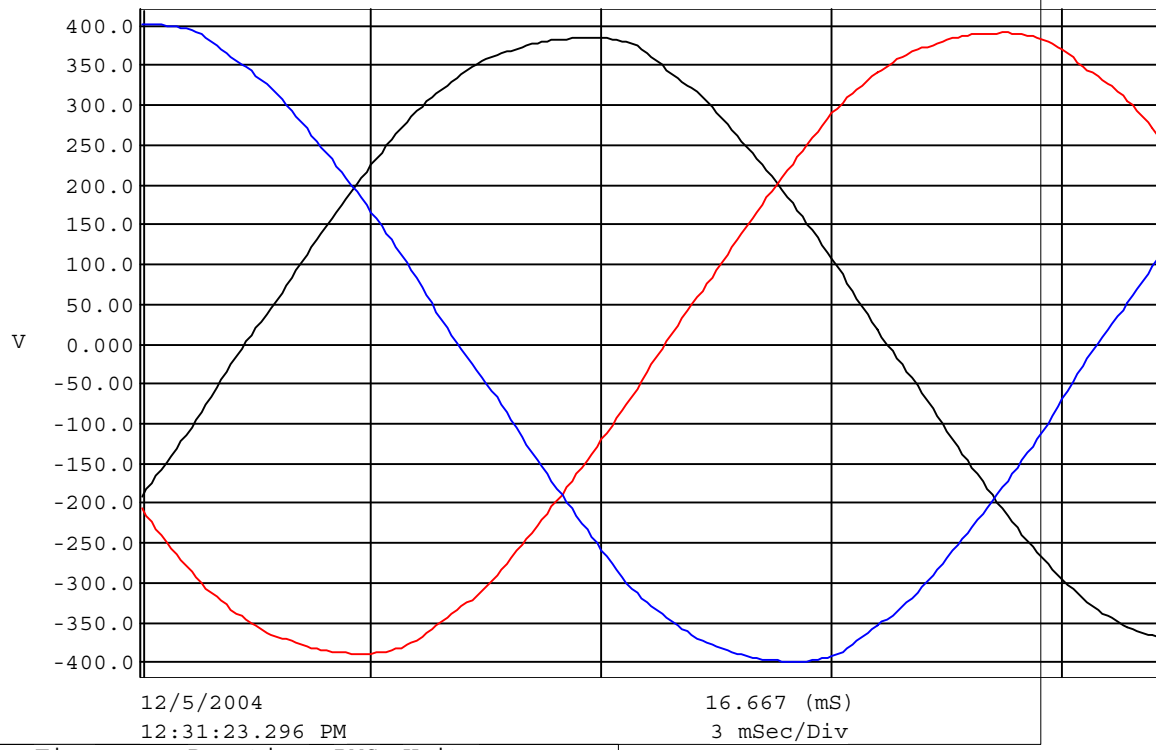
Recorded at motor starter overload heater, 50 HP, 480 volts.

Approximately 50% loaded.

Inarajan WWTF
Plant Main

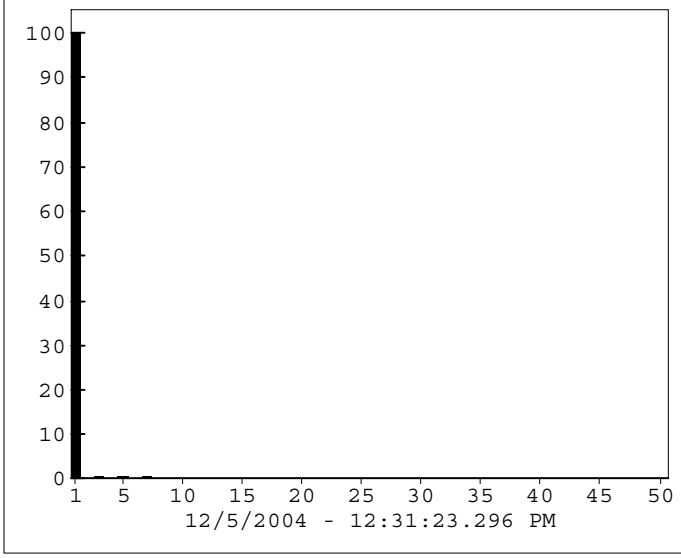
Recording Start Date	12/5/2004 - 12:31:23 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	12/5/2004	12:31:23.296 PM	16.667	274.4	V
Waveform V2	12/5/2004	12:31:23.296 PM	16.667	277.1	V
Waveform V3	12/5/2004	12:31:23.296 PM	16.667	283.9	V

Waveform V1
274.42 Vrms, 1.18 %THD



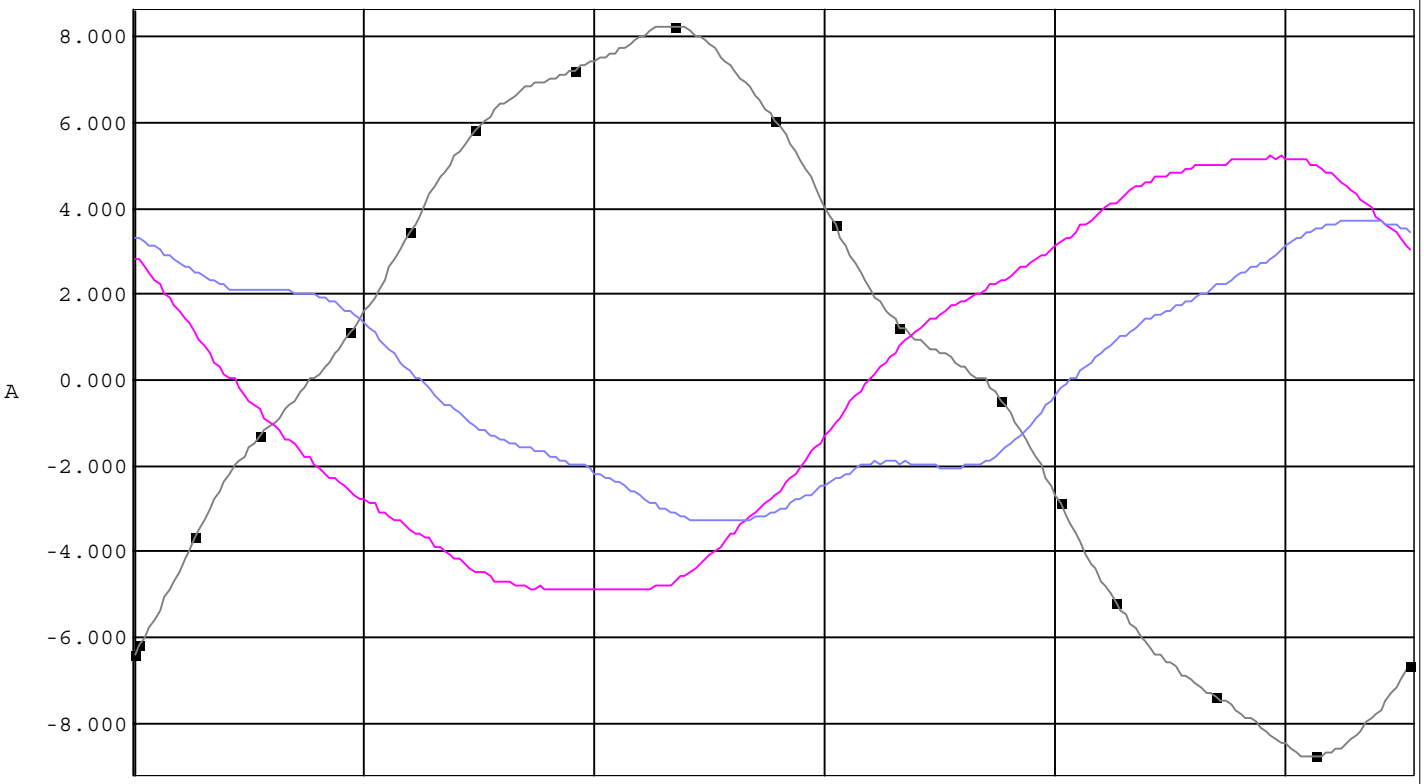
12/5/2004 - 12:31:23.000 PM

Val	
-184.3	Waveform V1
-216.2	Waveform V2
399.8	Waveform V3

Waveform V1

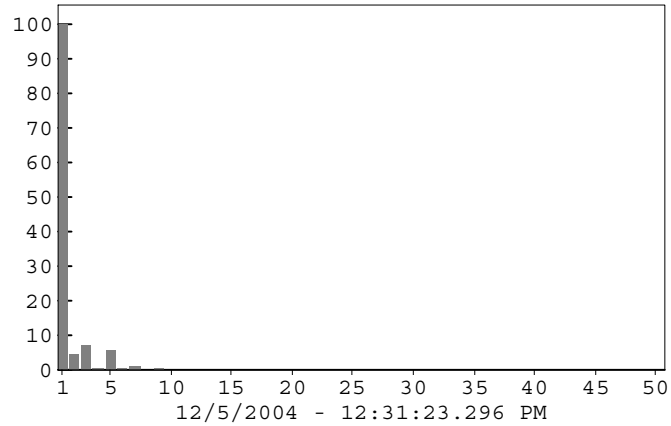
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	12/5/2004	12:31:23.296 PM	16.667	5.591	A
Waveform I2	12/5/2004	12:31:23.296 PM	16.667	3.585	A
Waveform I3	12/5/2004	12:31:23.296 PM	16.667	2.304	A

Waveform I1
5.59 Arms, 10.67 %THD

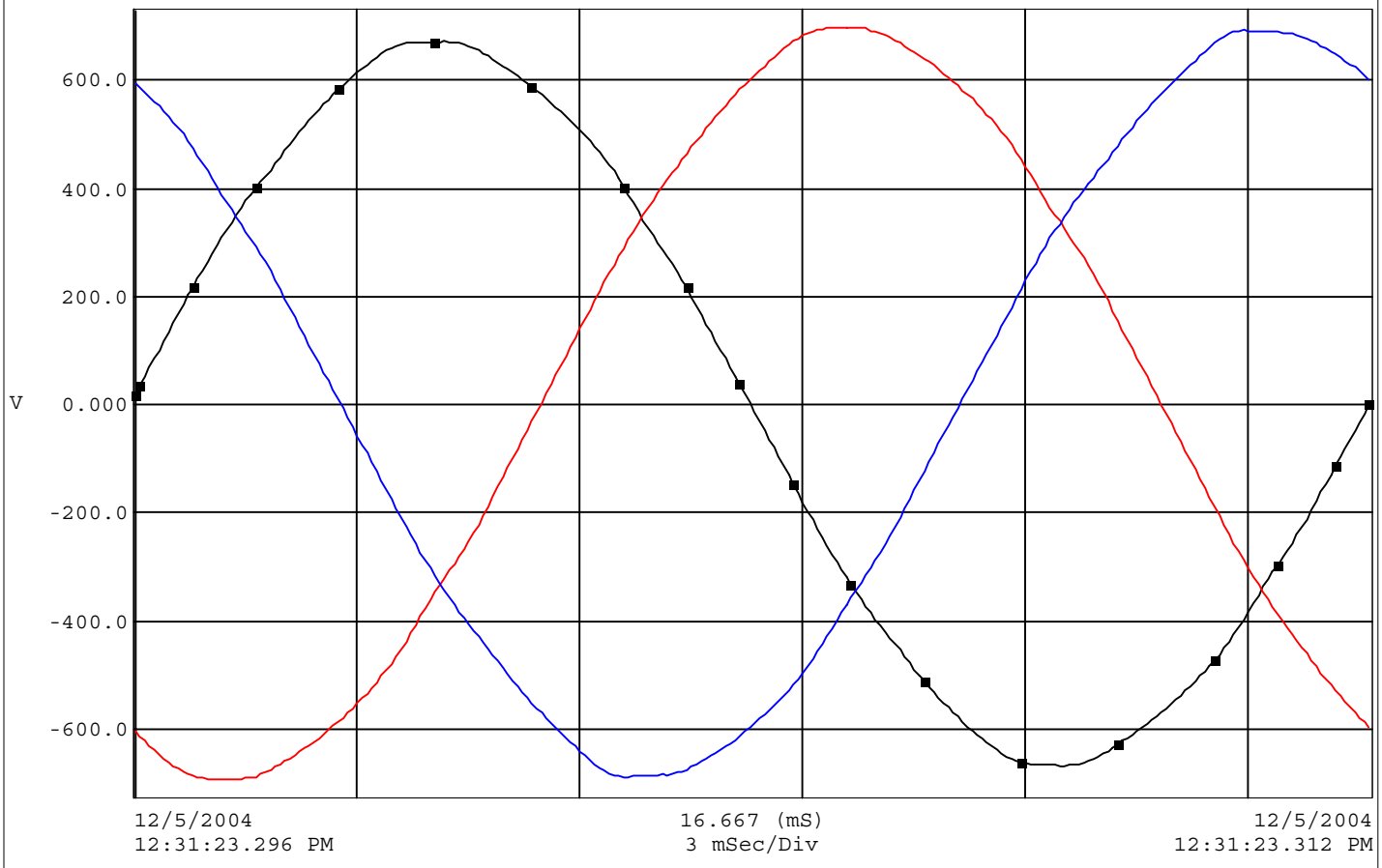


12/5/2004 - 12:31:23.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

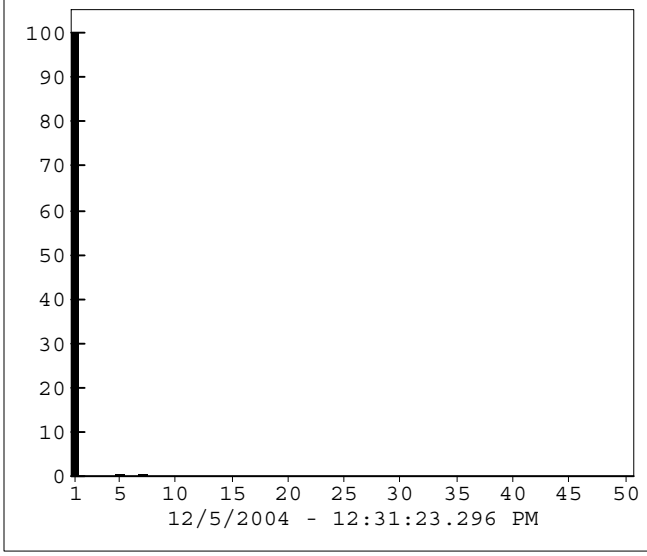
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	4.6	H19	0.0	H36	0.1
H03	7.4	H20	0.1	H37	0.1
H04	1.0	H21	0.0	H38	0.0
H05	5.8	H22	0.1	H39	0.1
H06	0.6	H23	0.1	H40	0.1
H07	1.2	H24	0.1	H41	0.0
H08	0.3	H25	0.0	H42	0.1
H09	0.7	H26	0.1	H43	0.0
H10	0.1	H27	0.0	H44	0.1
H11	0.4	H28	0.1	H45	0.0
H12	0.1	H29	0.1	H46	0.1
H13	0.1	H30	0.1	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.1
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	12/5/2004	12:31:23.296 PM	16.667	472.3	V
Waveform U2	12/5/2004	12:31:23.296 PM	16.667	489.8	V
Waveform U3	12/5/2004	12:31:23.296 PM	16.667	485.0	V

Waveform U1
472.34 Vrms, 1.04 %THD



12/5/2004 - 12:31:23.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.7	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 12/5/2004
Start Time: 12:31:23 PM
Duration: 0:0.000 (M:S)
W: 2.524E+3 W
VAR: 1.351E+3 W
VA: 3.216E+3 W
Power Factor: 2.345
Displacement Power Factor: 2.361
TAN: 2.308
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Inarajan WWTF\120504-Inarajan WWTF-Photo.dvb

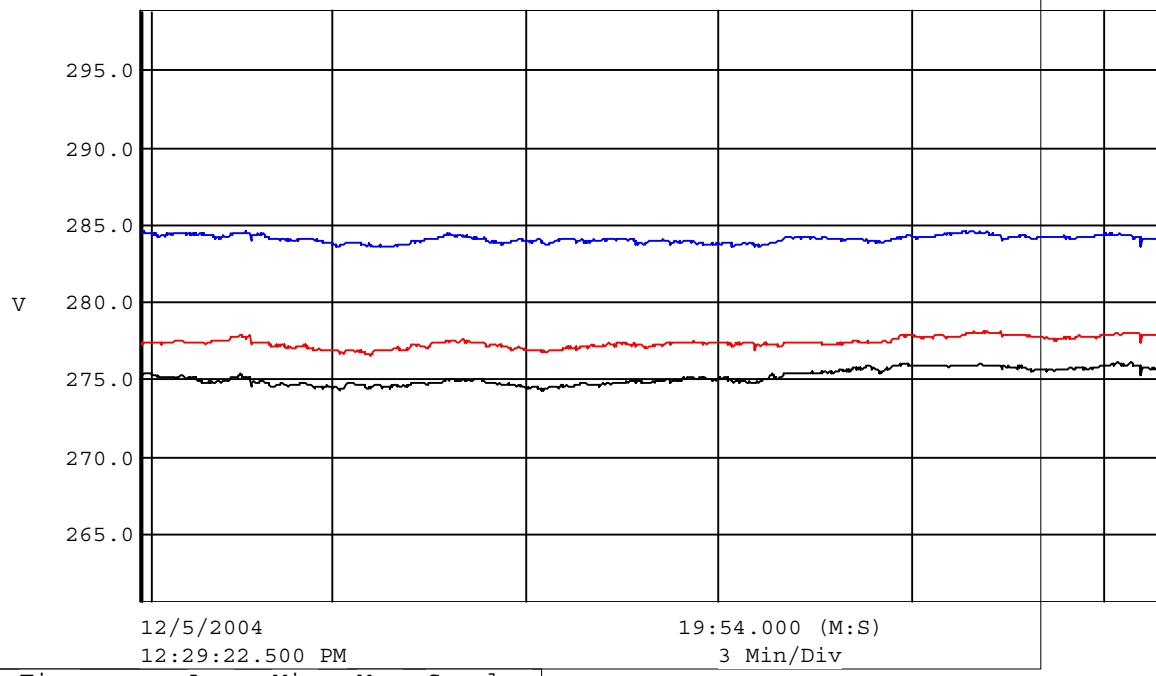
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Inarajan WWTF - Photo ,

Comments
Recorded at the manual transfer switch for the plant, 480 volts.

Inarajan WWTF
Plant Main

Recording Start Date	12/5/2004 - 12:29:22 PM
Recording Duration	19:54 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

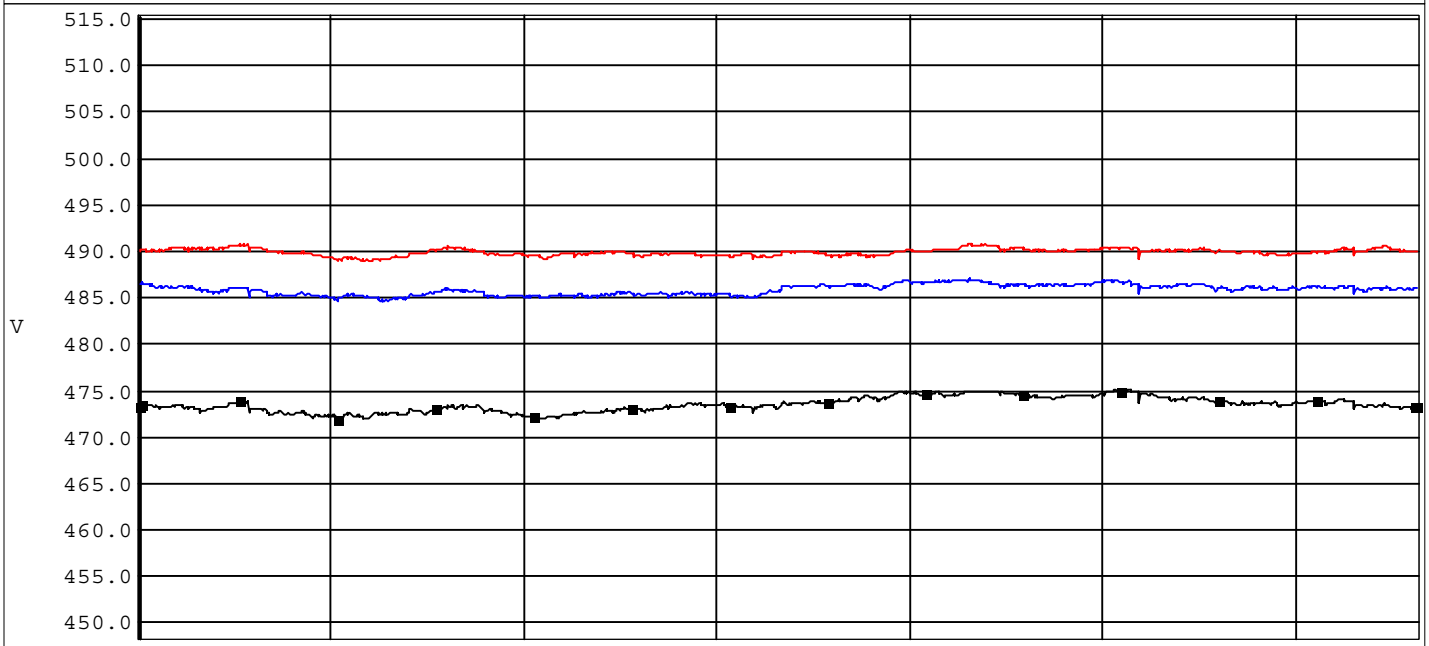
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	12/5/2004	12:29:22.500 PM	275.2	274.3	276.1	1195
Vrms Line2	12/5/2004	12:29:22.500 PM	277.4	276.5	278.1	1195
Vrms Line3	12/5/2004	12:29:22.500 PM	284.1	283.5	284.6	1195

12/5/2004 - 12:29:33.000 PM
Val
275.2 — Vrms Line1
277.4 — Vrms Line2
284.4 — Vrms Line3

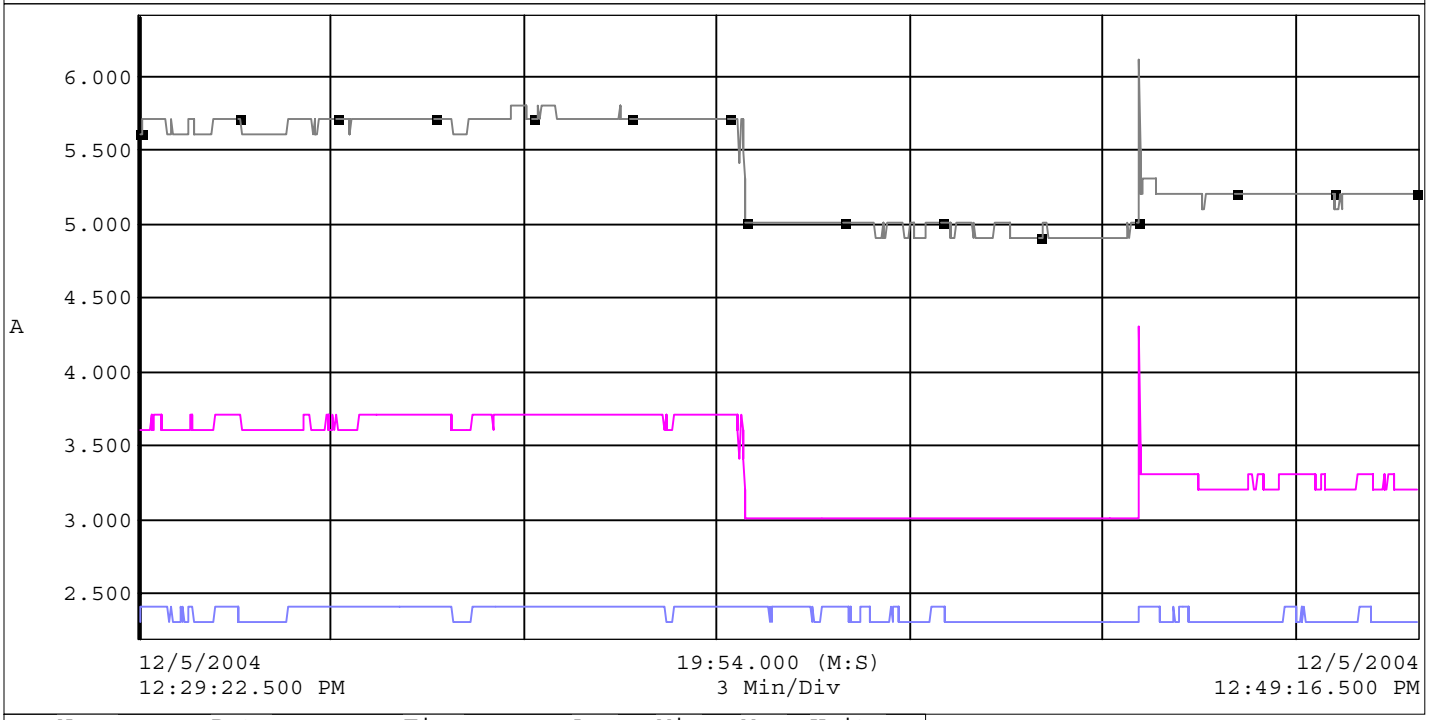
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	12/5/2004	12:29:22.500 PM	473.4	471.7	475.1	V
Urms Line2	12/5/2004	12:29:22.500 PM	489.8	488.8	490.8	V
Urms Line3	12/5/2004	12:29:22.500 PM	485.8	484.6	486.9	V

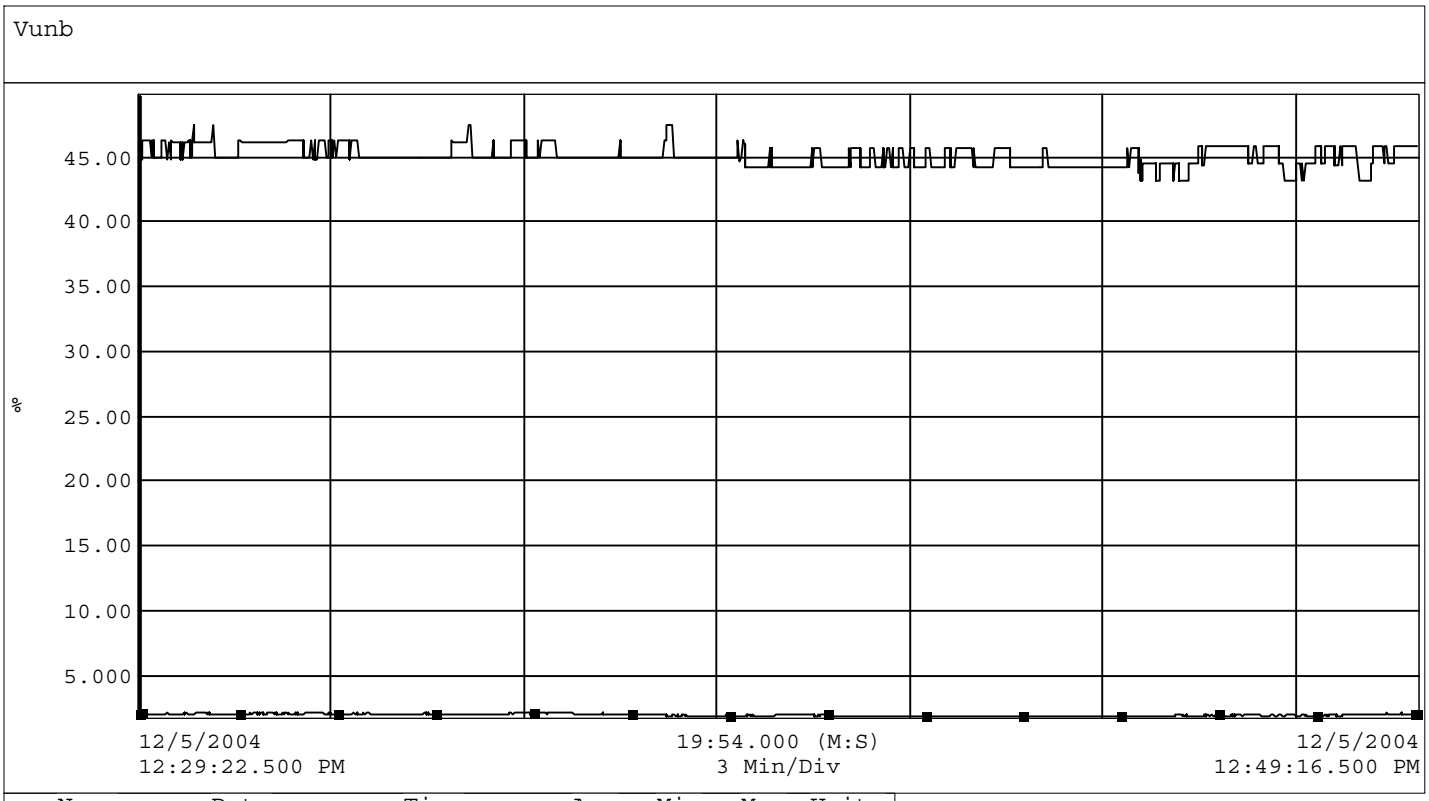
12/5/2004 - 12:29:22.000 PM
Val
473.2 — Urms Line1
490.0 — Urms Line2
486.3 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	12/5/2004	12:29:22.500 PM	5.357	4.900	6.100	A
Arms Line2	12/5/2004	12:29:22.500 PM	3.370	3.000	4.300	A
Arms Line3	12/5/2004	12:29:22.500 PM	2.353	2.300	2.400	A

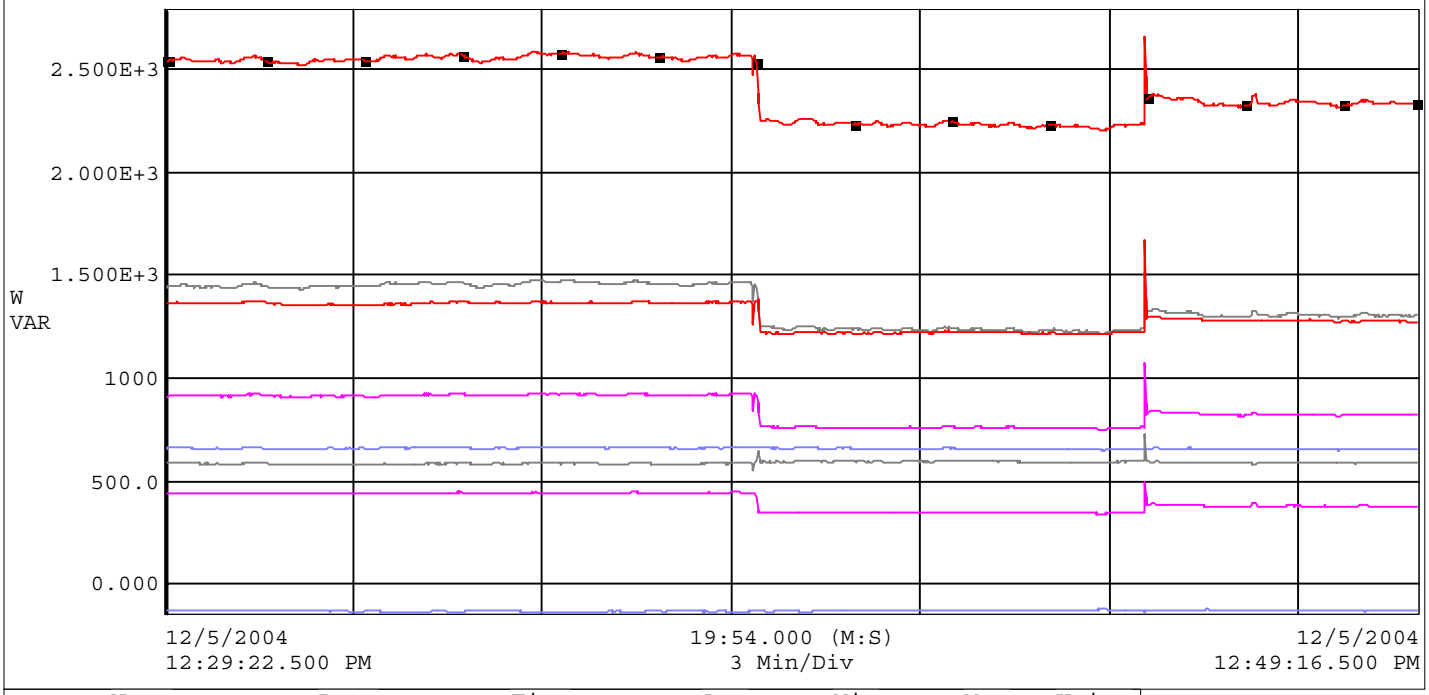
12/5/2004 - 12:29:22.000 PM
Val
5.600 — Arms Line1
3.600 — Arms Line2
2.300 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	12/5/2004	12:29:22.500 PM	1.866	1.700	2.000	%
Aunb(IEEE)	12/5/2004	12:29:22.500 PM	45.01	43.10	47.40	%

12/5/2004 - 12:29:22.000 PM
Val
1.900 ── Vunb(IEEE)
46.10 ── Aunb(IEEE)

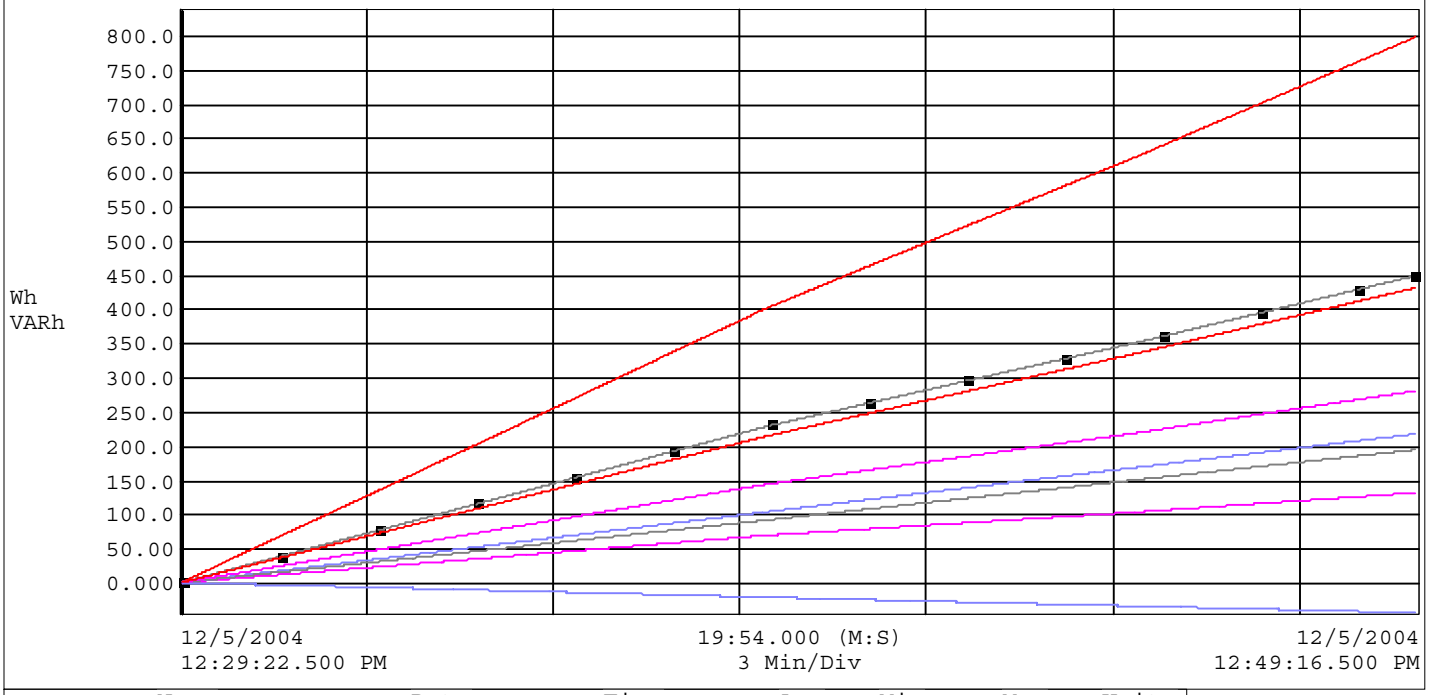
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	12/5/2004	12:29:22.500 PM	1.352E+3	1.213E+3	1.506E+3	W
W Line2	12/5/2004	12:29:22.500 PM	396.2	338.9	491.1	W
W Line3	12/5/2004	12:29:22.500 PM	655.1	646.9	665.4	W
W Sum of Phases	12/5/2004	12:29:22.500 PM	2.403E+3	2.199E+3	2.652E+3	W
VAR Line1	12/5/2004	12:29:22.500 PM	585.7	553.5	728.3	VAR
VAR Line2	12/5/2004	12:29:22.500 PM	844.9	747.5	1.072E+3	VAR
VAR Line3	12/5/2004	12:29:22.500 PM	-132.4	-142.2	-125.0	VAR
VAR Sum of Phases	12/5/2004	12:29:22.500 PM	1.298E+3	1.210E+3	1.664E+3	VAR

12/5/2004 - 12:29:22.000 PM
Val
1.438E+3 — W Line1
437.7 — W Line2
655.3 — W Line3
2.531E+3 — W Sum of Phases
583.1 — VAR Line1
906.6 — VAR Line2
-130.5 — VAR Line3
1.359E+3 — VAR Sum of Phases

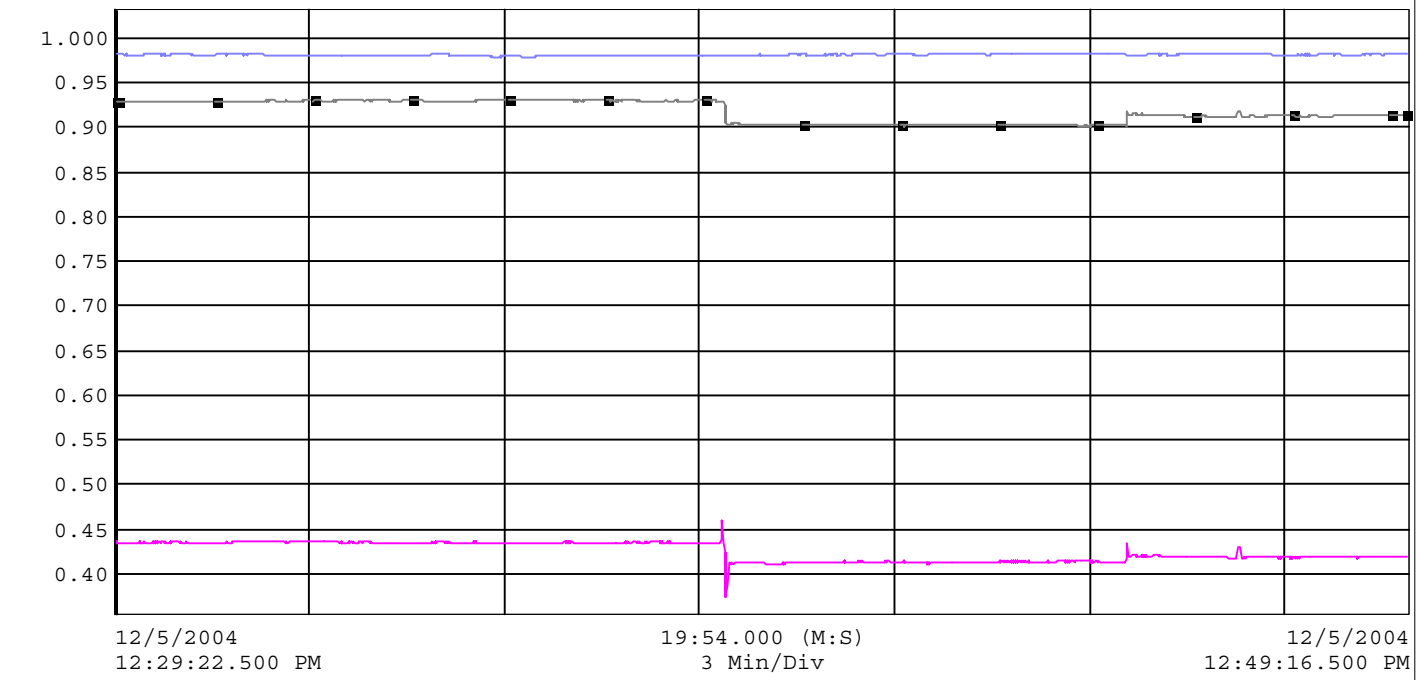
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	12/5/2004	12:29:22.500 PM	231.5	0.397	448.7	Wh
W-hours Line2	12/5/2004	12:29:22.500 PM	68.85	0.120	131.5	Wh
W-hours Line3	12/5/2004	12:29:22.500 PM	109.0	0.179	217.4	Wh
W-hours Sum of Phases	12/5/2004	12:29:22.500 PM	409.4	0.706	797.7	Wh
VAR-hours Line1	12/5/2004	12:29:22.500 PM	96.99	0.160	194.4	VARh
VAR-hours Line2	12/5/2004	12:29:22.500 PM	145.0	0.248	280.5	VARh
VAR-hours Line3	12/5/2004	12:29:22.500 PM	-22.14	-43.94	-34.94E-3	VARh
VAR-hours Sum of Phases	12/5/2004	12:29:22.500 PM	219.8	0.382	431.0	VARh

12/5/2004 - 12:29:22.000 PM
Val
0.397 — W-hours Line1
0.120 — W-hours Line2
0.179 — W-hours Line3
0.706 — W-hours Sum of Phases
0.160 — VAR-hours Line1
0.248 — VAR-hours Line2
-34.94E-3 — VAR-hours Line3
0.382 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	12/5/2004	12:29:22.500 PM	0.916	0.900	0.930	
PF Line2	12/5/2004	12:29:22.500 PM	0.424	0.372	0.459	
PF Line3	12/5/2004	12:29:22.500 PM	0.980	0.978	0.982	

12/5/2004 - 12:29:22.000 PM
Val
0.927 PF Line1
0.435 PF Line2
0.981 PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Inarajan WWTF\120504-Inarajan WWTF.dvb

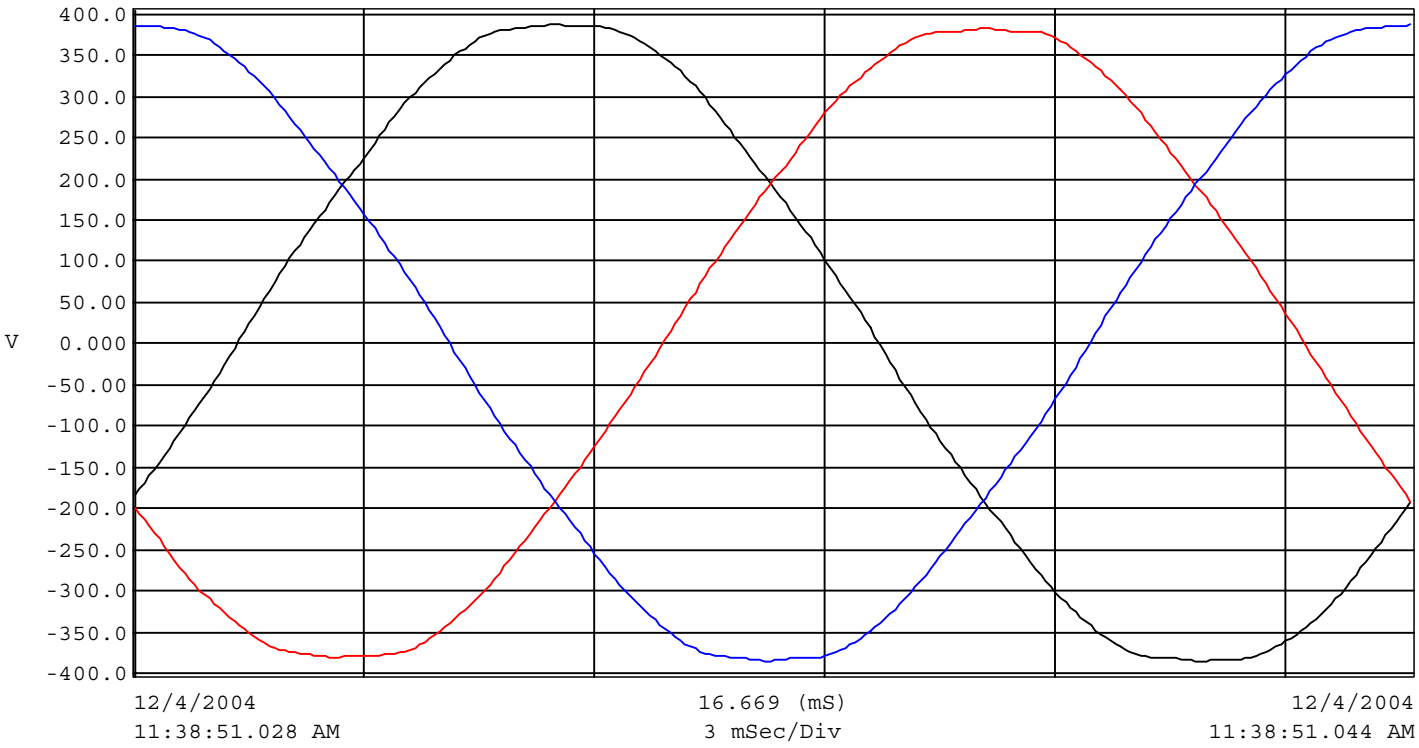
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Inarajan WWTF ,

Comments
Recorded at the manual transfer switch., 460 volts, 3 phase

Northern WWTF
Plant Main

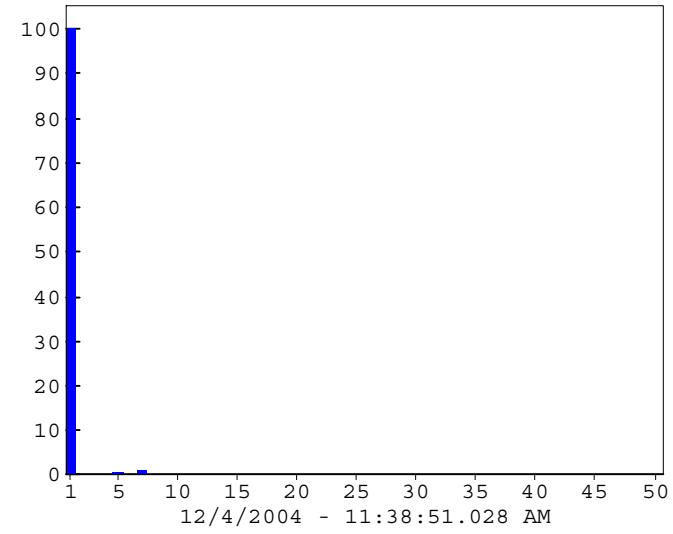
Recording Start Date	12/4/2004 - 11:38:51 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	12/4/2004	11:38:51.028 AM	16.669	277.7	V
Waveform V2	12/4/2004	11:38:51.028 AM	16.669	274.2	V
Waveform V3	12/4/2004	11:38:51.028 AM	16.669	277.2	V

Waveform V3
277.18 Vrms, 1.32 %THD

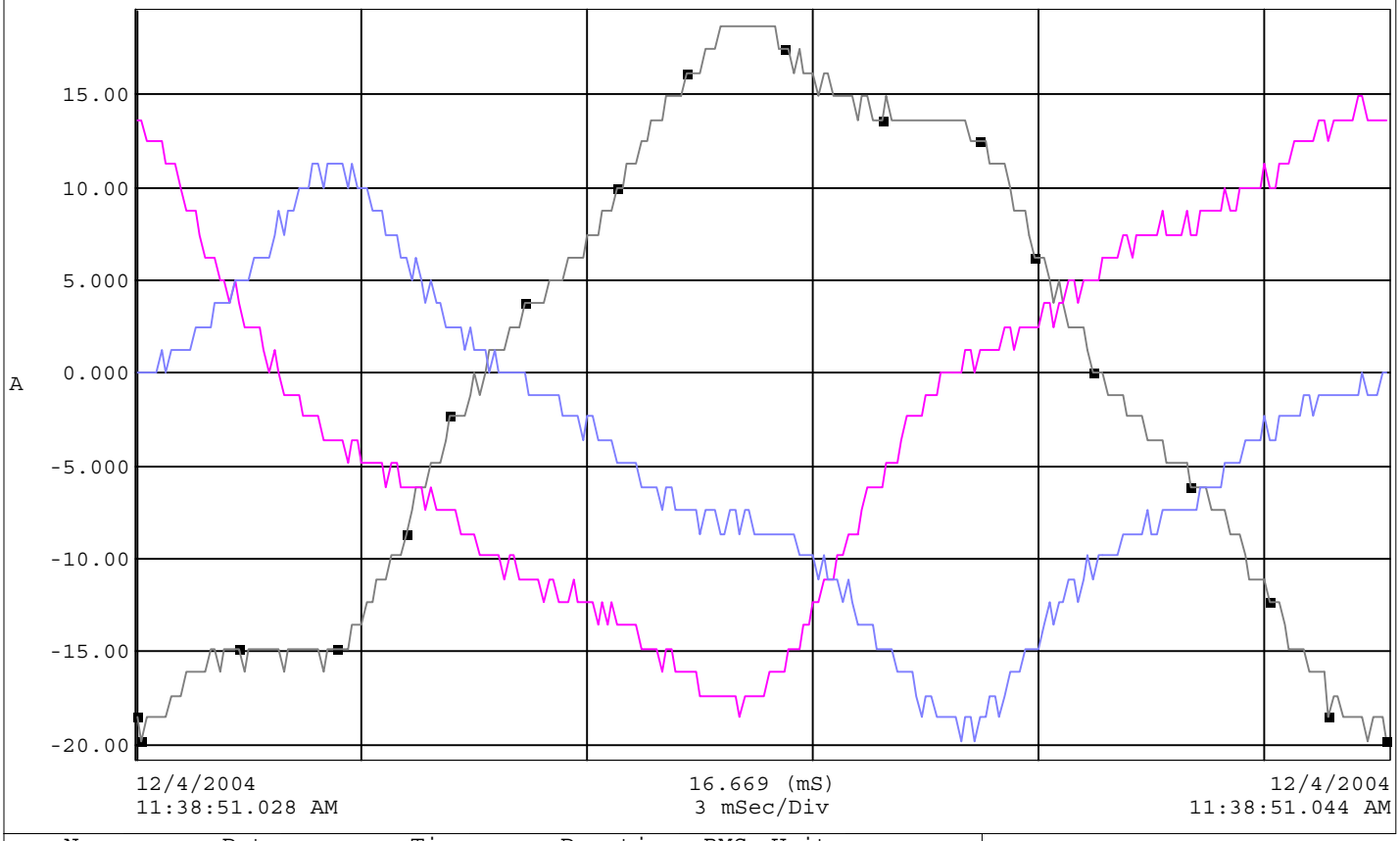


12/4/2004 - 11:38:51.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V3

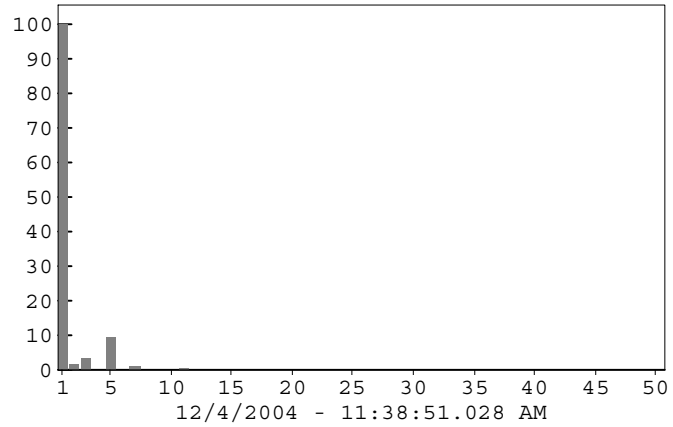
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	12/4/2004	11:38:51.028 AM	16.669	12.65	A
Waveform I2	12/4/2004	11:38:51.028 AM	16.669	9.930	A
Waveform I3	12/4/2004	11:38:51.028 AM	16.669	9.024	A

Waveform I1
12.65 Arms, 10.61 %THD

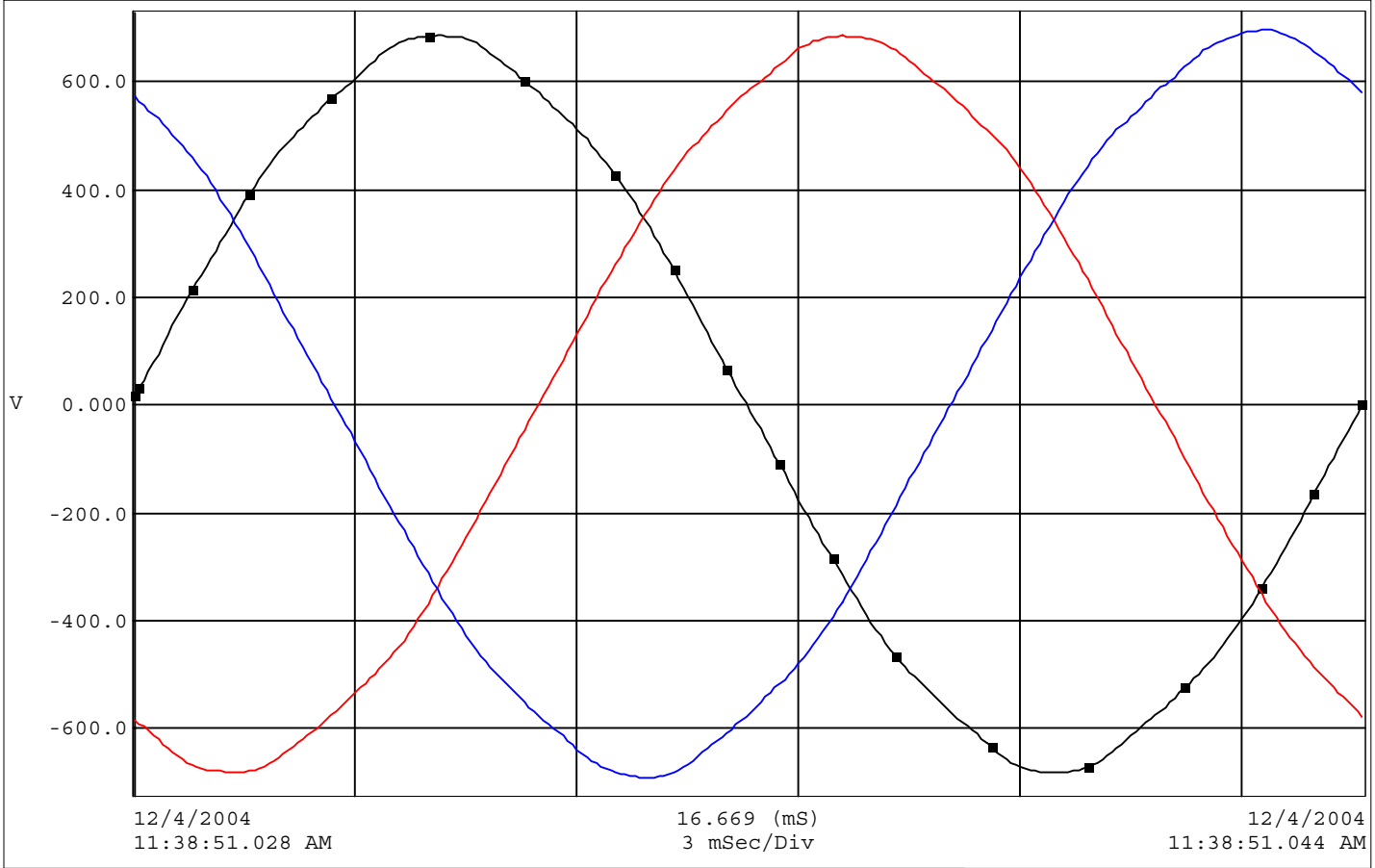


12/4/2004 - 11:38:51.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

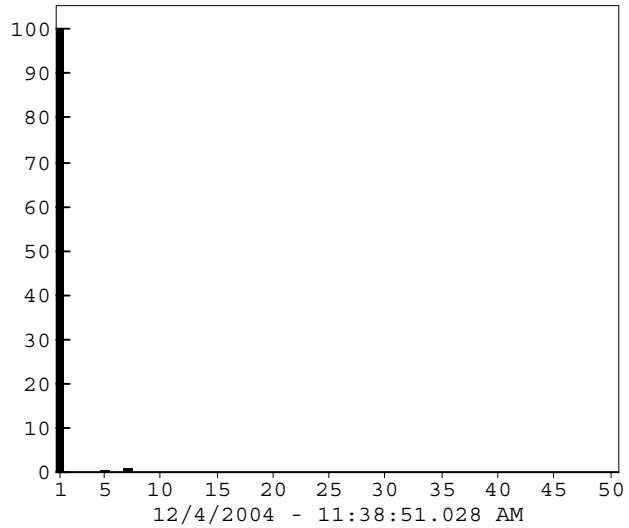
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.3
H02	1.9	H19	0.1	H36	0.1
H03	3.5	H20	0.2	H37	0.3
H04	0.5	H21	0.4	H38	0.2
H05	9.6	H22	0.3	H39	0.2
H06	0.3	H23	0.1	H40	0.3
H07	1.1	H24	0.1	H41	0.1
H08	0.2	H25	0.5	H42	0.2
H09	0.1	H26	0.1	H43	0.3
H10	0.3	H27	0.3	H44	0.2
H11	0.9	H28	0.3	H45	0.2
H12	0.4	H29	0.1	H46	0.2
H13	0.2	H30	0.2	H47	0.2
H14	0.3	H31	0.2	H48	0.1
H15	0.1	H32	0.5	H49	0.2
H16	0.4	H33	0.2	H50	0.2
H17	0.2	H34	0.5		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	12/4/2004	11:38:51.028 AM	16.669	477.0	V
Waveform U2	12/4/2004	11:38:51.028 AM	16.669	477.2	V
Waveform U3	12/4/2004	11:38:51.028 AM	16.669	482.0	V

Waveform U1
476.98 Vrms, 1.34 %THD



12/4/2004 - 11:38:51.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 12/4/2004
Start Time: 11:38:51 AM
Duration: 0:0.000 (M:S)
W: 2.323E+3 W
VAR: 8.352E+3 W
VA: 8.835E+3 W
Power Factor: 0.782
Displacement Power Factor: 0.888
TAN: -28.33
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Northern WWTF\120404-Northern WWTF Main-Photo.dvb

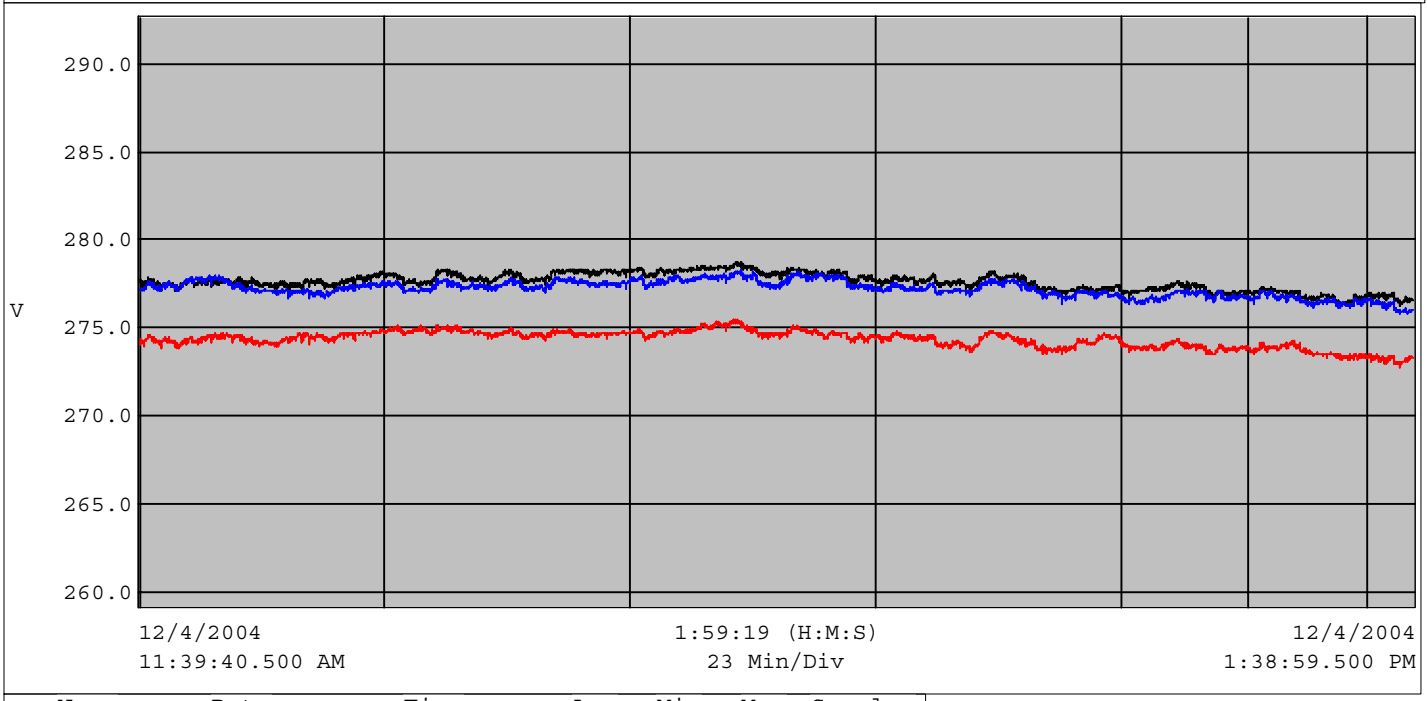
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Northern District WWTF - Main Breaker - Photo ,

Comments
Recorded at Main Breaker to the Plant, 800A, 480 Volts

Northern WWTF
Plant Main

Recording Start Date	12/4/2004 - 11:39:40 AM
Recording Duration	1:59:19 (h:m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

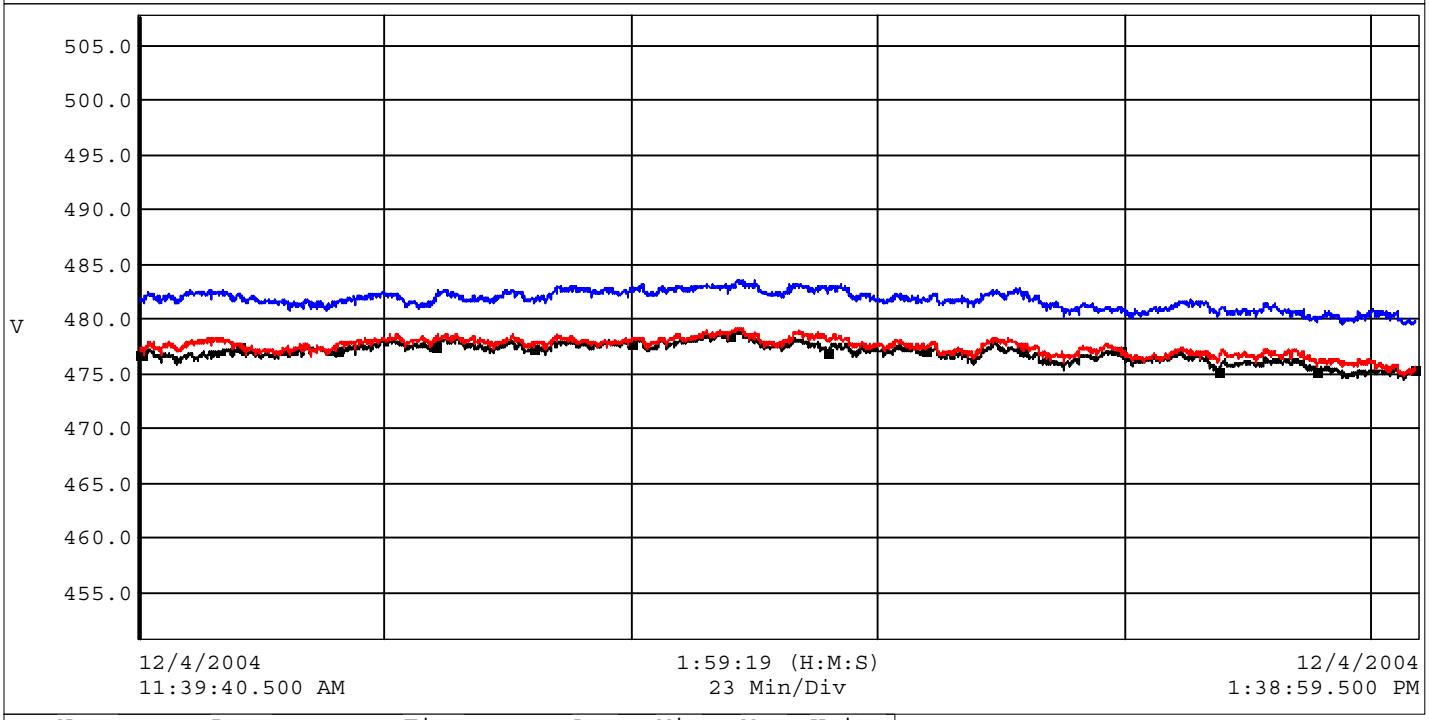
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	12/4/2004	11:39:40.500 AM	277.6	276.2	278.7	7160
Vrms Line2	12/4/2004	11:39:40.500 AM	274.3	272.7	275.4	7160
Vrms Line3	12/4/2004	11:39:40.500 AM	277.2	275.7	278.2	7160

12/4/2004 - 1:24:03.000 PM
Val
276.9 — Vrms Line1
273.6 — Vrms Line2
276.5 — Vrms Line3

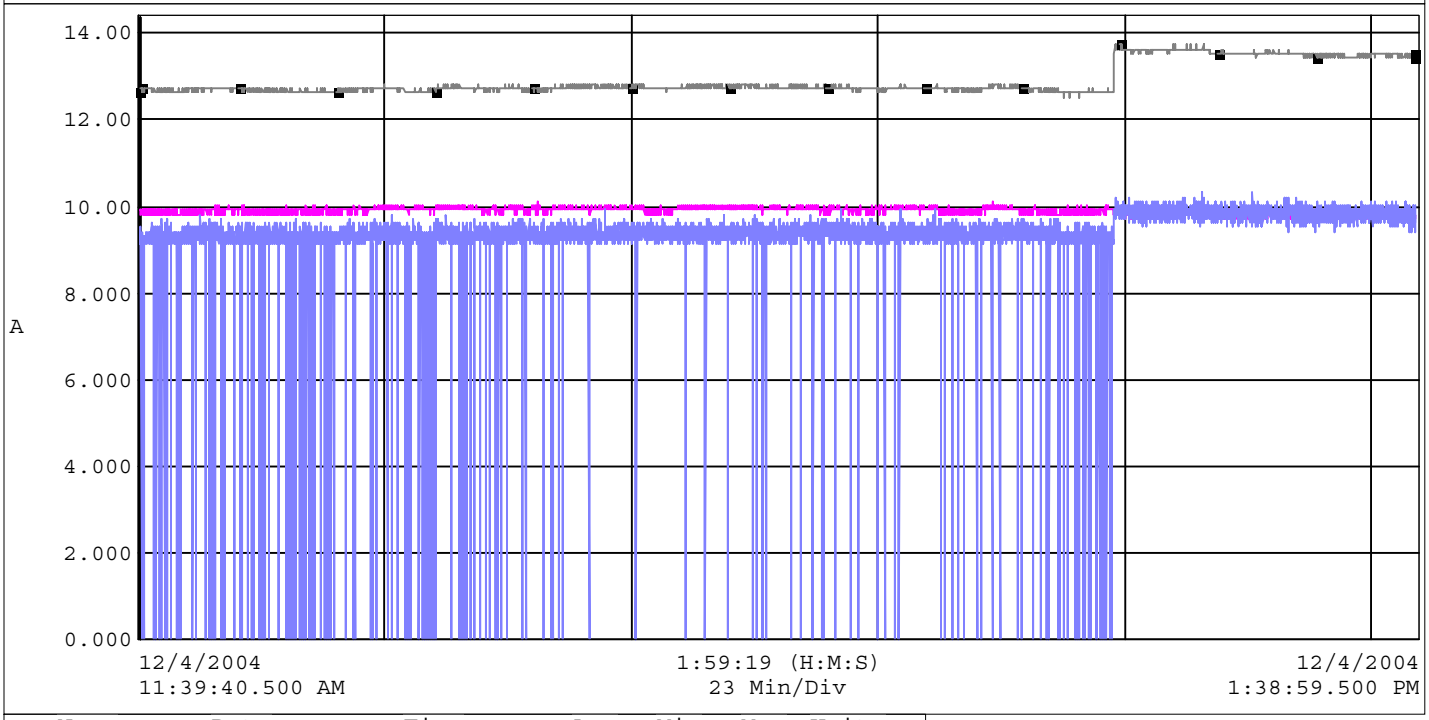
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	12/4/2004	11:39:40.500 AM	476.9	474.4	478.9	V
Urms Line2	12/4/2004	11:39:40.500 AM	477.4	474.7	479.1	V
Urms Line3	12/4/2004	11:39:40.500 AM	481.7	479.4	483.5	V

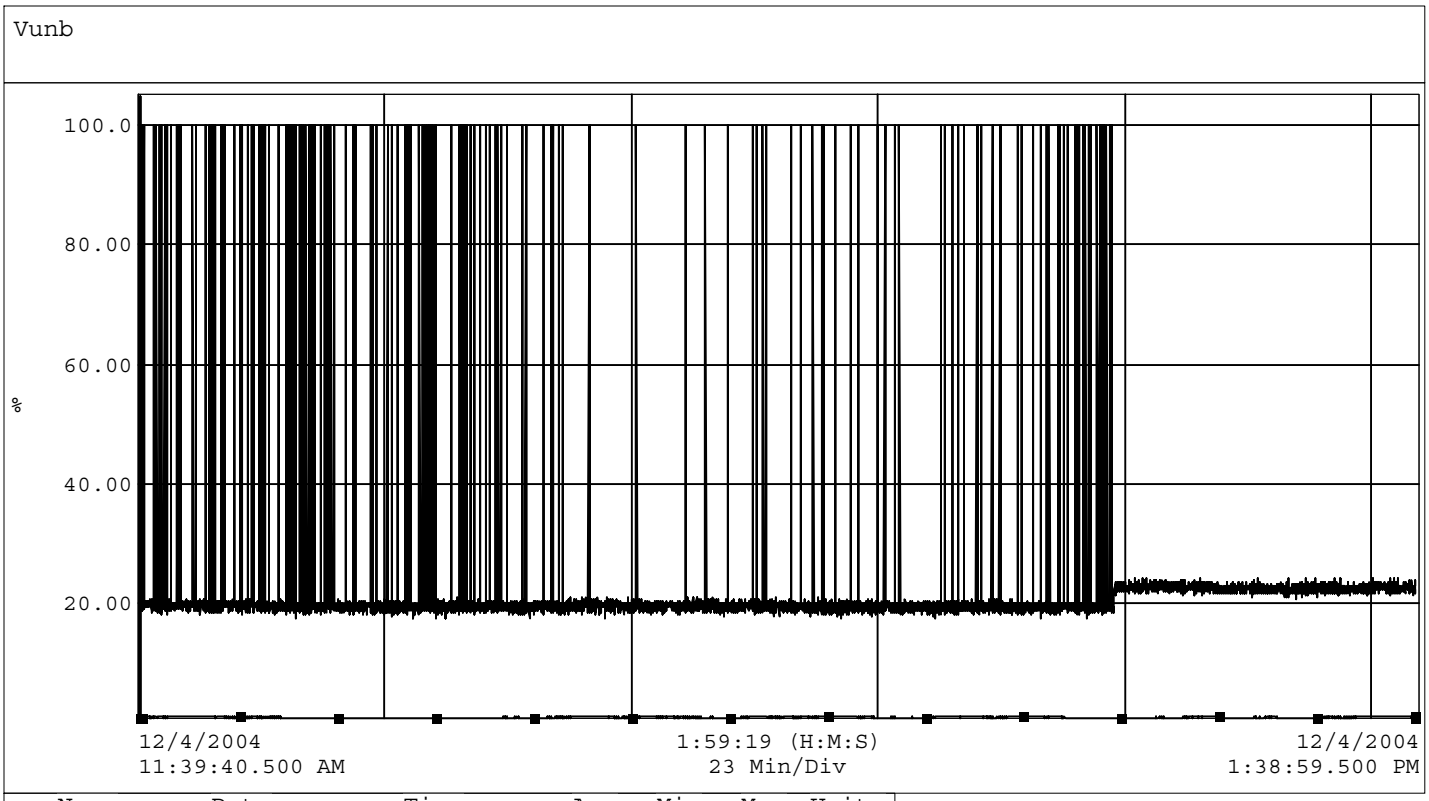
12/4/2004 - 11:39:40.000 AM
Val
476.6 — Urms Line1
477.0 — Urms Line2
481.6 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	12/4/2004	11:39:40.500 AM	12.88	12.50	13.70	A
Arms Line2	12/4/2004	11:39:40.500 AM	9.867	9.700	10.10	A
Arms Line3	12/4/2004	11:39:40.500 AM	9.214	0.000	10.30	A

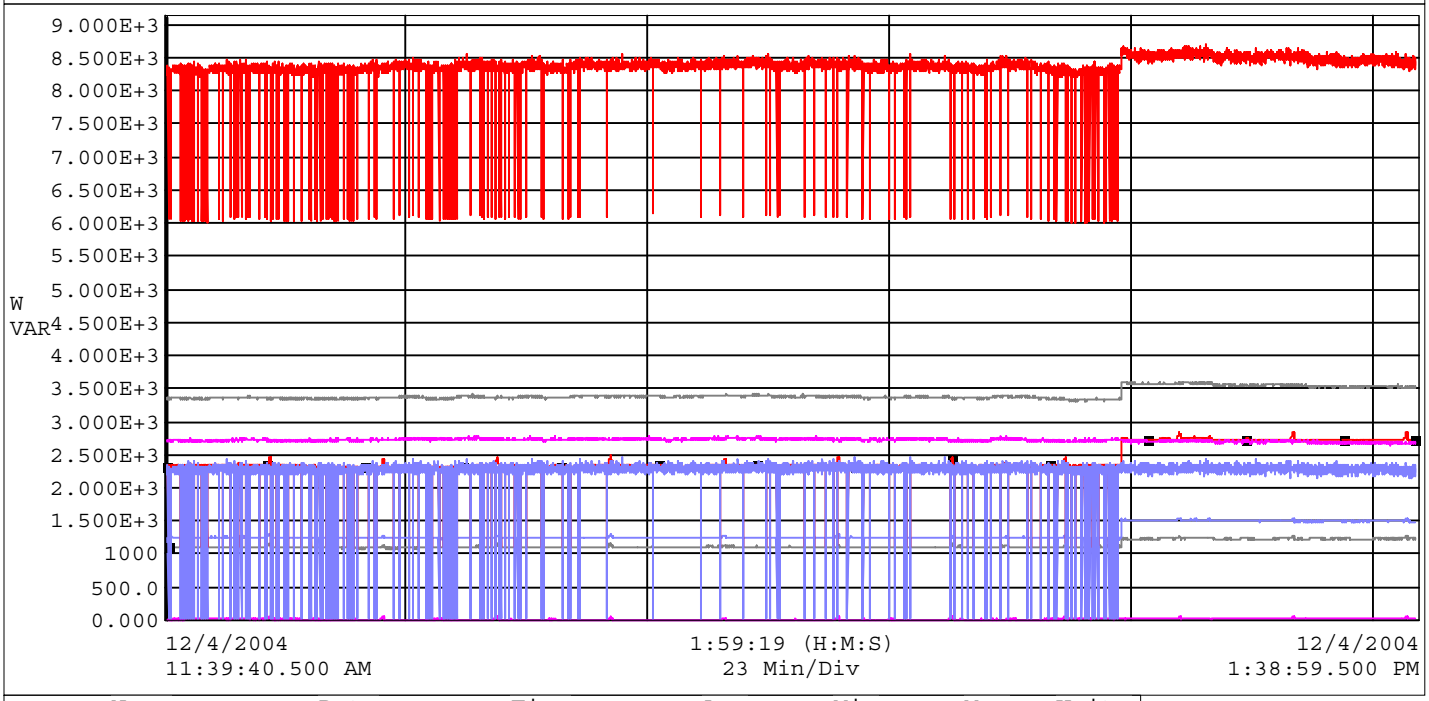
12/4/2004 - 11:39:40.000 AM
Val
12.60 — Arms Line1
9.800 — Arms Line2
9.200 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	12/4/2004	11:39:40.500 AM	0.742	0.600	0.900	%
Aunb(IEEE)	12/4/2004	11:39:40.500 AM	22.02	17.20	100.0	%

12/4/2004 - 11:39:40.000 AM
Val
0.800 ── Vunb(IEEE)
19.60 ── Aunb(IEEE)

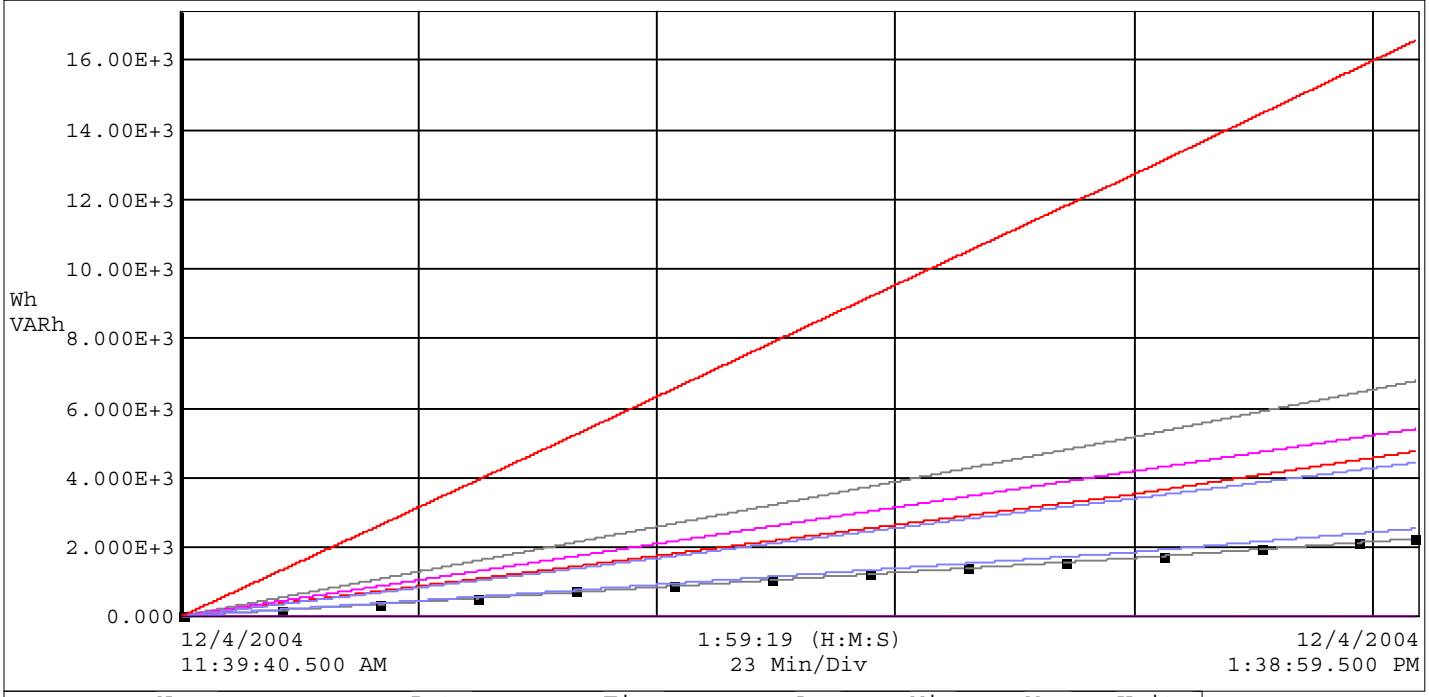
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	12/4/2004	11:39:40.500 AM	1.119E+3	1.063E+3	1.265E+3	W
W Line2	12/4/2004	11:39:40.500 AM	-0.989	-14.67	49.60	W
W Line3	12/4/2004	11:39:40.500 AM	1.264E+3	0.000	1.535E+3	W
W Sum of Phases	12/4/2004	11:39:40.500 AM	2.382E+3	1.060E+3	2.837E+3	W
VAR Line1	12/4/2004	11:39:40.500 AM	3.396E+3	3.292E+3	3.594E+3	VAR
VAR Line2	12/4/2004	11:39:40.500 AM	2.706E+3	2.637E+3	2.776E+3	VAR
VAR Line3	12/4/2004	11:39:40.500 AM	2.218E+3	0.000	2.446E+3	VAR
VAR Sum of Phases	12/4/2004	11:39:40.500 AM	8.319E+3	5.985E+3	8.687E+3	VAR

12/4/2004 - 11:39:40.000 AM
Val
1.082E+3 — W Line1
-2.210 — W Line2
1.238E+3 — W Line3
2.317E+3 — W Sum of Phases
3.339E+3 — VAR Line1
2.695E+3 — VAR Line2
2.222E+3 — VAR Line3
8.255E+3 — VAR Sum of Phases

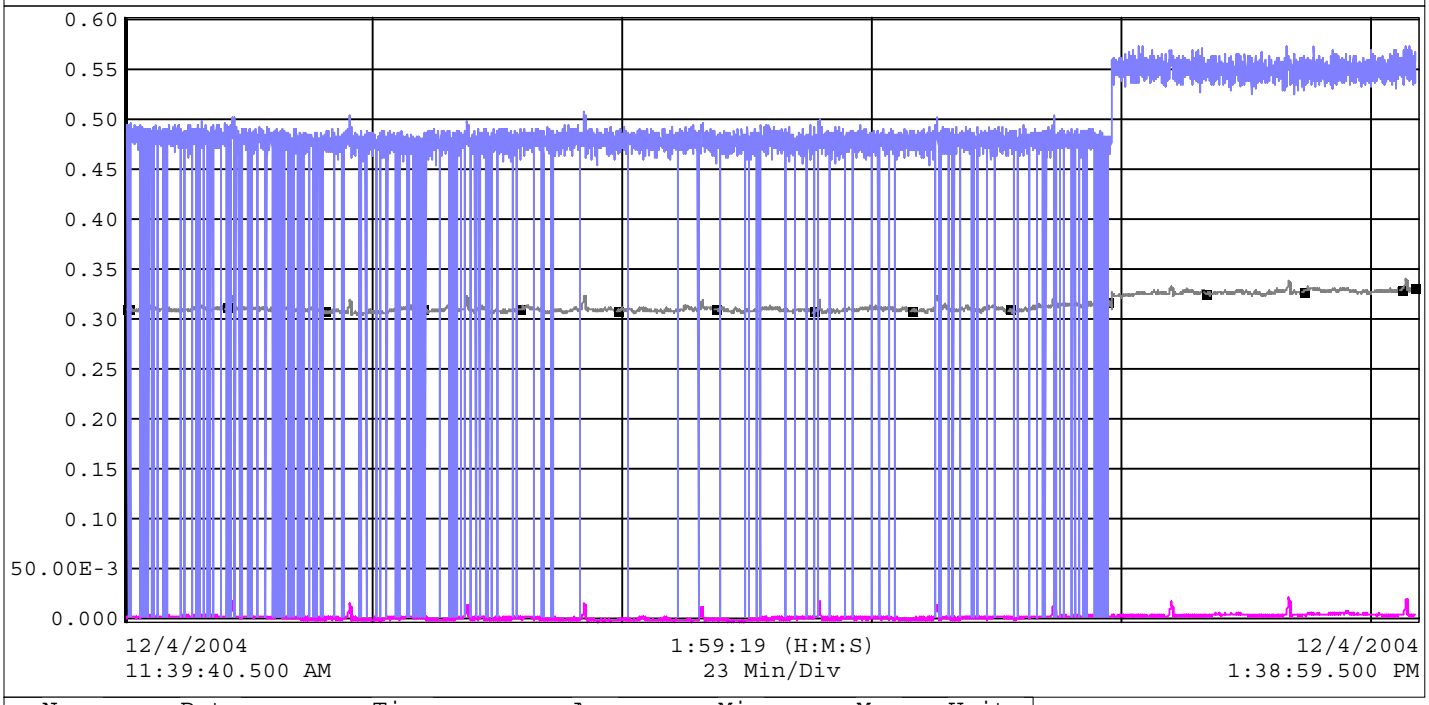
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	12/4/2004	11:39:40.500 AM	1.088E+3	0.272	2.225E+3	Wh
W-hours Line2	12/4/2004	11:39:40.500 AM	-2.734	-5.482	0.451	Wh
W-hours Line3	12/4/2004	11:39:40.500 AM	1.200E+3	0.307	2.515E+3	Wh
W-hours Sum of Phases	12/4/2004	11:39:40.500 AM	2.286E+3	0.578	4.738E+3	Wh
VAR-hours Line1	12/4/2004	11:39:40.500 AM	3.345E+3	0.825	6.754E+3	VARh
VAR-hours Line2	12/4/2004	11:39:40.500 AM	2.697E+3	0.821	5.381E+3	VARh
VAR-hours Line3	12/4/2004	11:39:40.500 AM	2.184E+3	0.673	4.411E+3	VARh
VAR-hours Sum of Phases	12/4/2004	11:39:40.500 AM	8.226E+3	2.525	16.55E+3	VARh

12/4/2004 - 11:39:40.000 AM
Val
0.272 — W-hours Line1
-510.3E-6 — W-hours Line2
0.307 — W-hours Line3
0.578 — W-hours Sum of Phases
0.825 — VAR-hours Line1
0.821 — VAR-hours Line2
0.673 — VAR-hours Line3
2.525 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	12/4/2004	11:39:40.500 AM	0.313	0.303	0.339	
PF Line2	12/4/2004	11:39:40.500 AM	-197.6E-6	-5.000E-3	19.00E-3	
PF Line3	12/4/2004	11:39:40.500 AM	0.482	0.000	0.572	

12/4/2004 - 11:39:40.000 AM
Val
0.308 — PF Line1
0.000 — PF Line2
0.487 — PF Line3

Trend Summary Report

Database: X:\Northern WWTF\120404-Northern WWTF Main.dvb

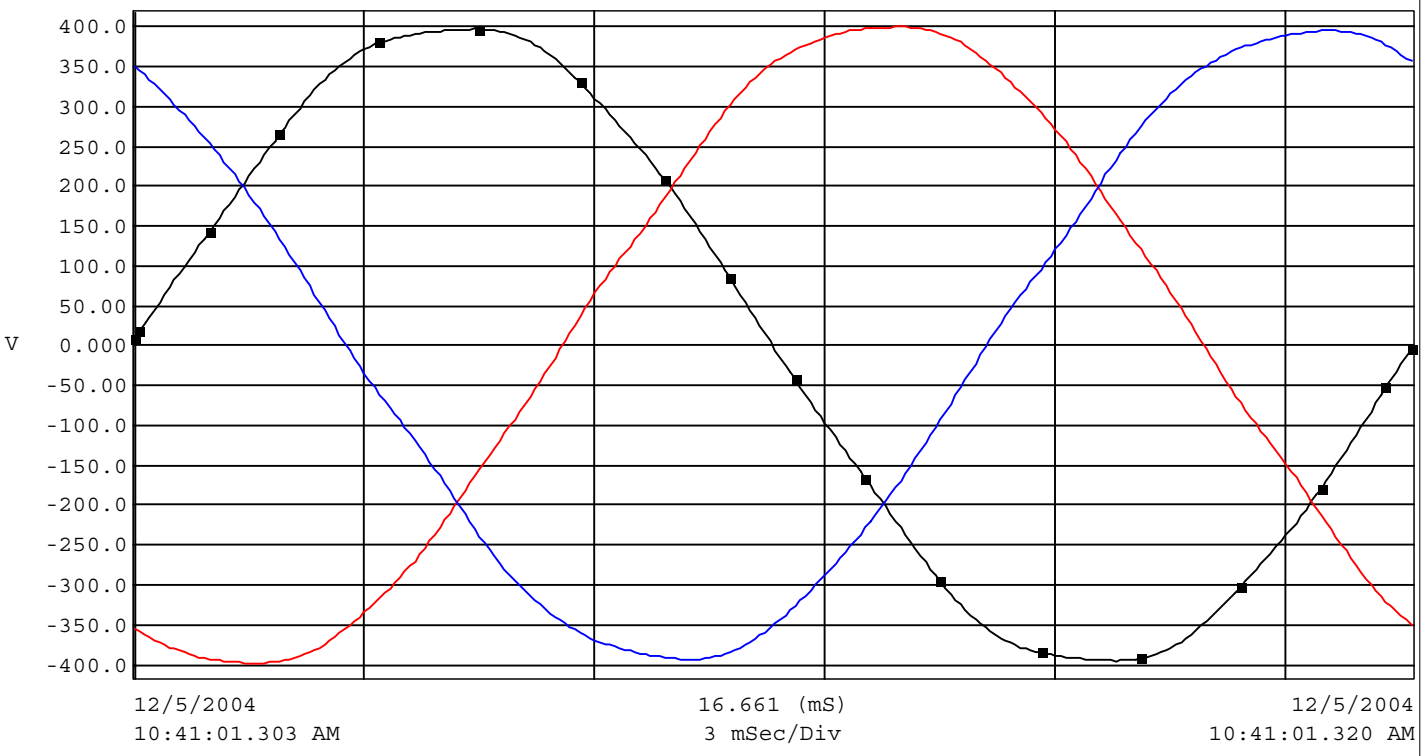
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Northern WWTF Main ,

Comments
Recorded at the Utiiity Main Breaker for the Plant, 800 amps, 480 volts.

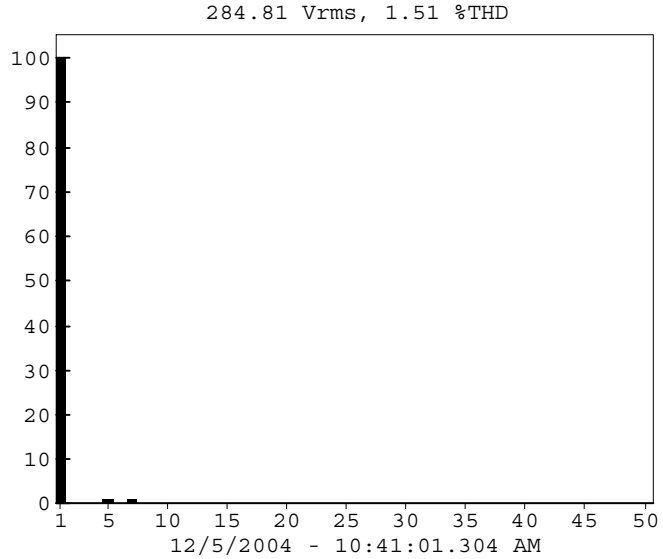
Umatac WWTF
Aeration Blower 2 Photo

Recording Start Date	12/5/2004 - 10:41:01 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	12/5/2004	10:41:01.303 AM	16.661	284.8	V
Waveform V2	12/5/2004	10:41:01.303 AM	16.661	285.7	V
Waveform V3	12/5/2004	10:41:01.303 AM	16.661	281.8	V



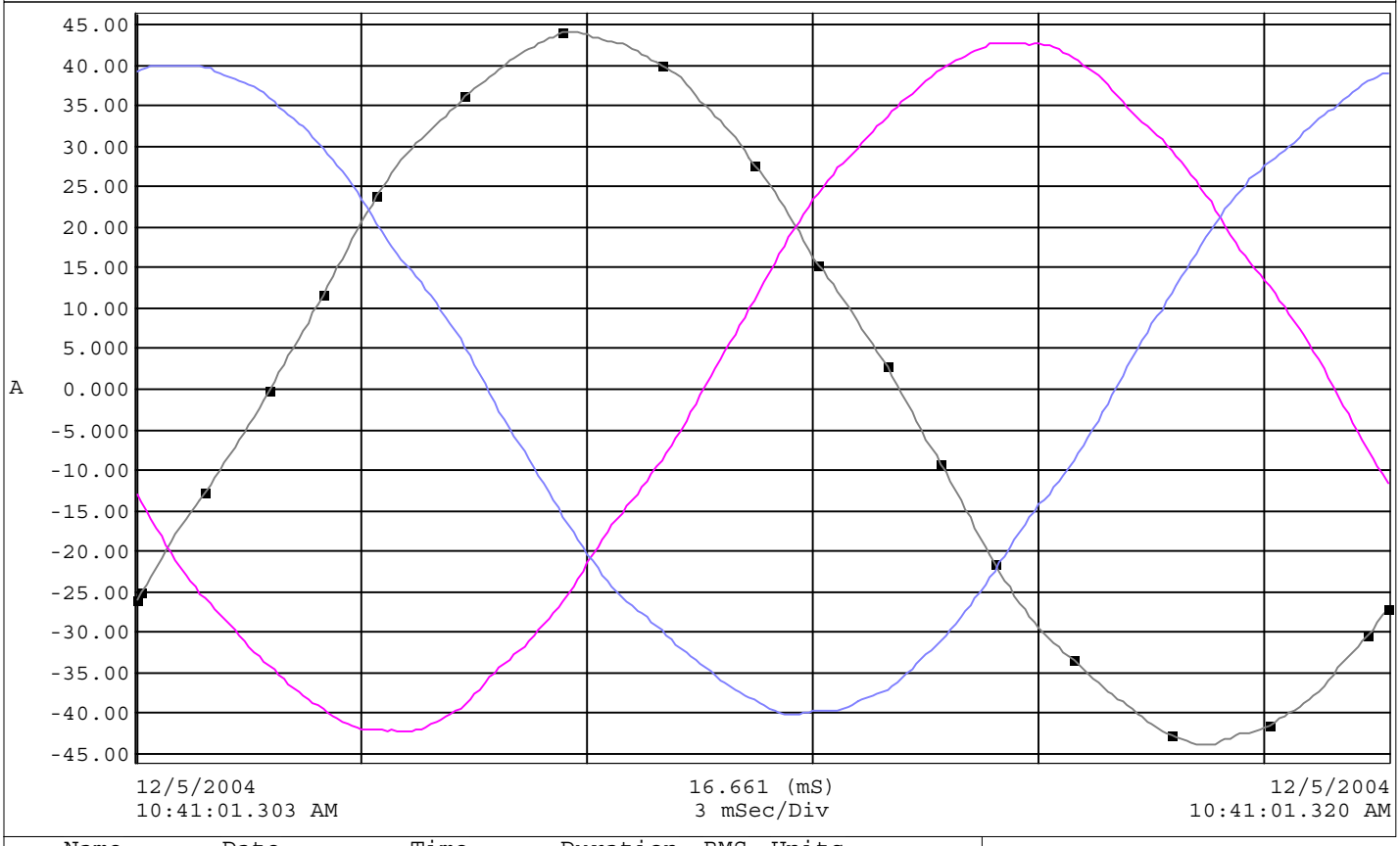
12/5/2004 - 10:41:01.000 AM

Val	
6.000	Waveform V1
-355.7	Waveform V2
350.0	Waveform V3

Waveform V1

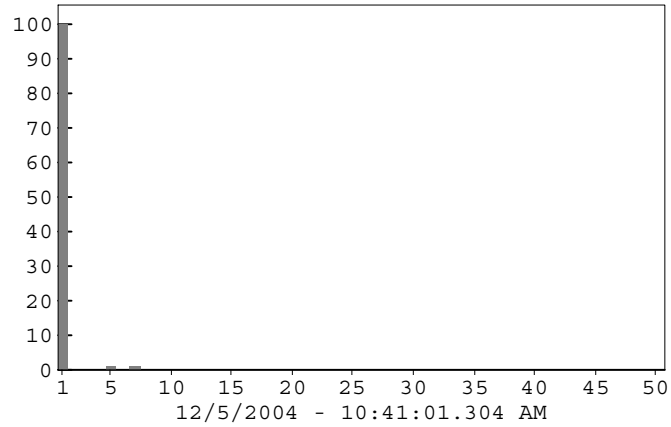
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	12/5/2004	10:41:01.303 AM	16.661	30.70	A
Waveform I2	12/5/2004	10:41:01.303 AM	16.661	29.71	A
Waveform I3	12/5/2004	10:41:01.303 AM	16.661	28.32	A

Waveform I1
30.70 Arms, 1.78 %THD



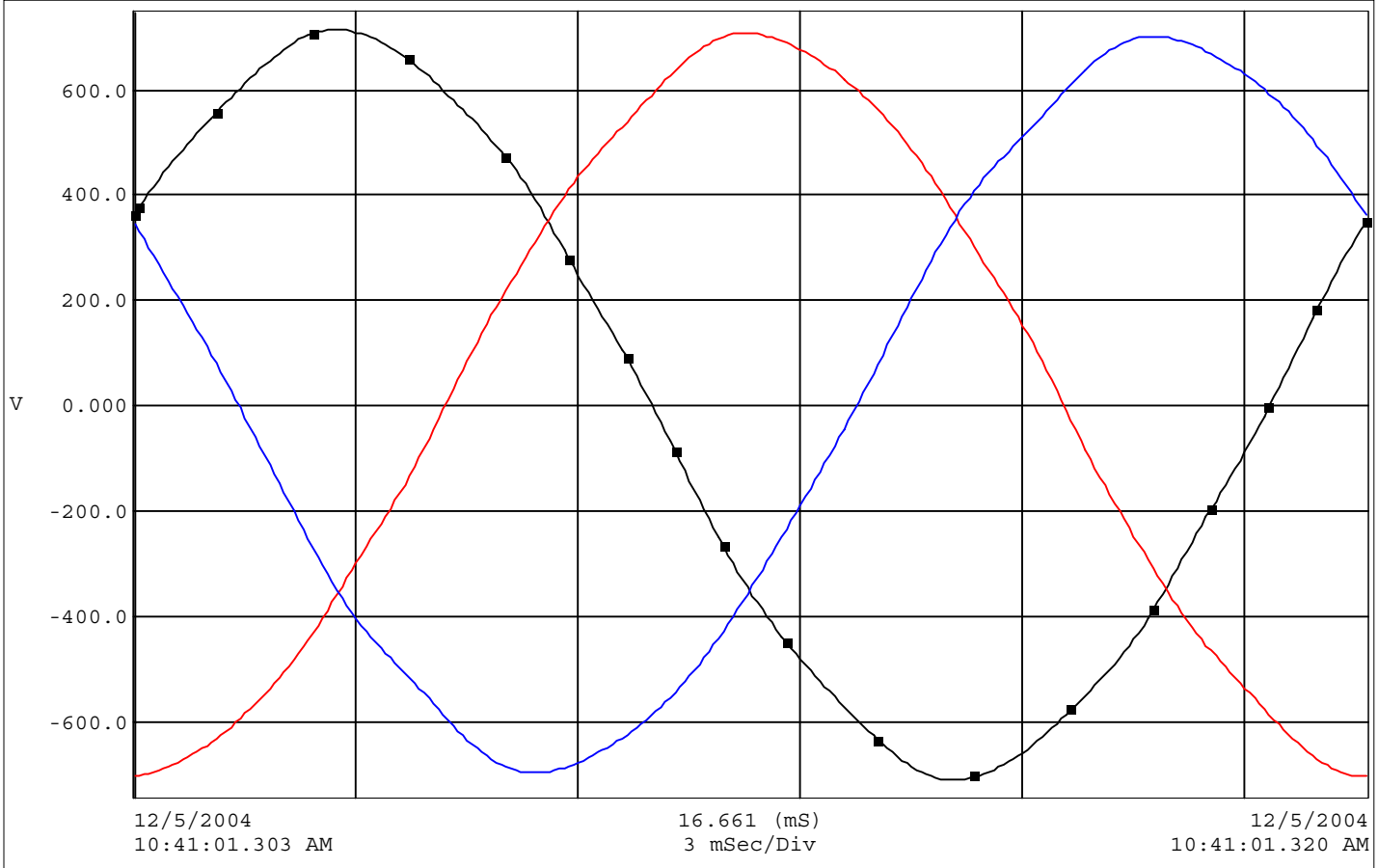
12/5/2004 - 10:41:01.000 AM

Val	
-26.00	Waveform I1
-13.00	Waveform I2
39.00	Waveform I3

Waveform I1

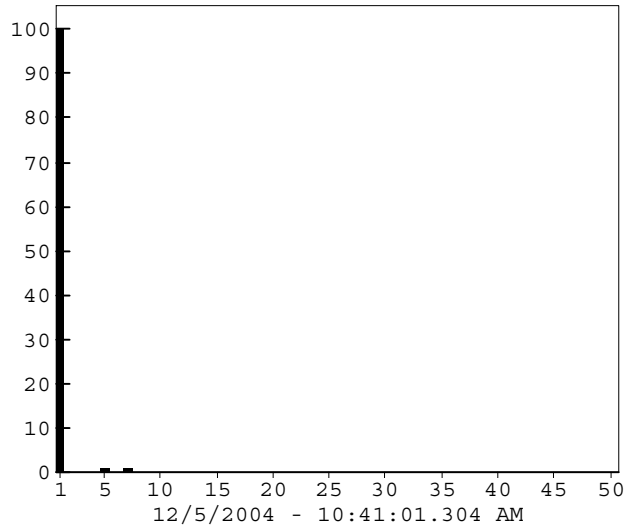
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	1.2	H22	0.1	H39	0.0
H06	0.1	H23	0.2	H40	0.0
H07	1.1	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	12/5/2004	10:41:01.303 AM	16.661	496.1	V
Waveform U2	12/5/2004	10:41:01.303 AM	16.661	491.1	V
Waveform U3	12/5/2004	10:41:01.303 AM	16.661	489.2	V

Waveform U1
496.13 Vrms, 1.50 %THD



12/5/2004 - 10:41:01.000 AM

	Val	
—	361.8	Waveform U1
—	-705.7	Waveform U2
—	343.9	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 12/5/2004
Start Time: 10:41:01 AM
Duration: 0:0.000 (M:S)
W: 19.23E+3 W
VAR: 16.17E+3 W
VA: 25.13E+3 W
Power Factor: 2.294
Displacement Power Factor: 2.296
TAN: 2.525
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Umatac WWTF\120504-Aeration Blower 2-Photo.dvb

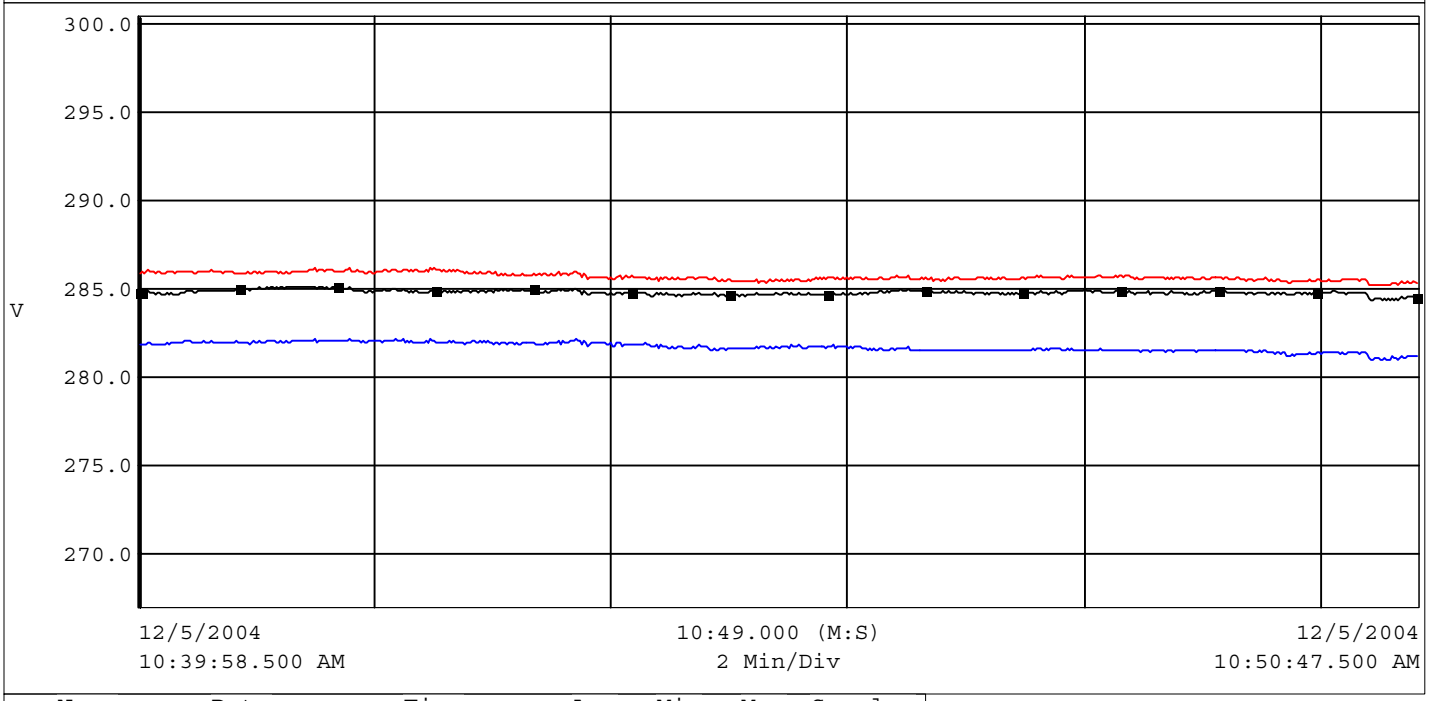
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Aerator No. 2 - Photo ,

Comments
Recorded at the motor starter overload relay, 25 HP.

Umatac WWTF
Aeration Blower No. 2

Recording Start Date	12/5/2004 - 10:39:58 AM
Recording Duration	10:49 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

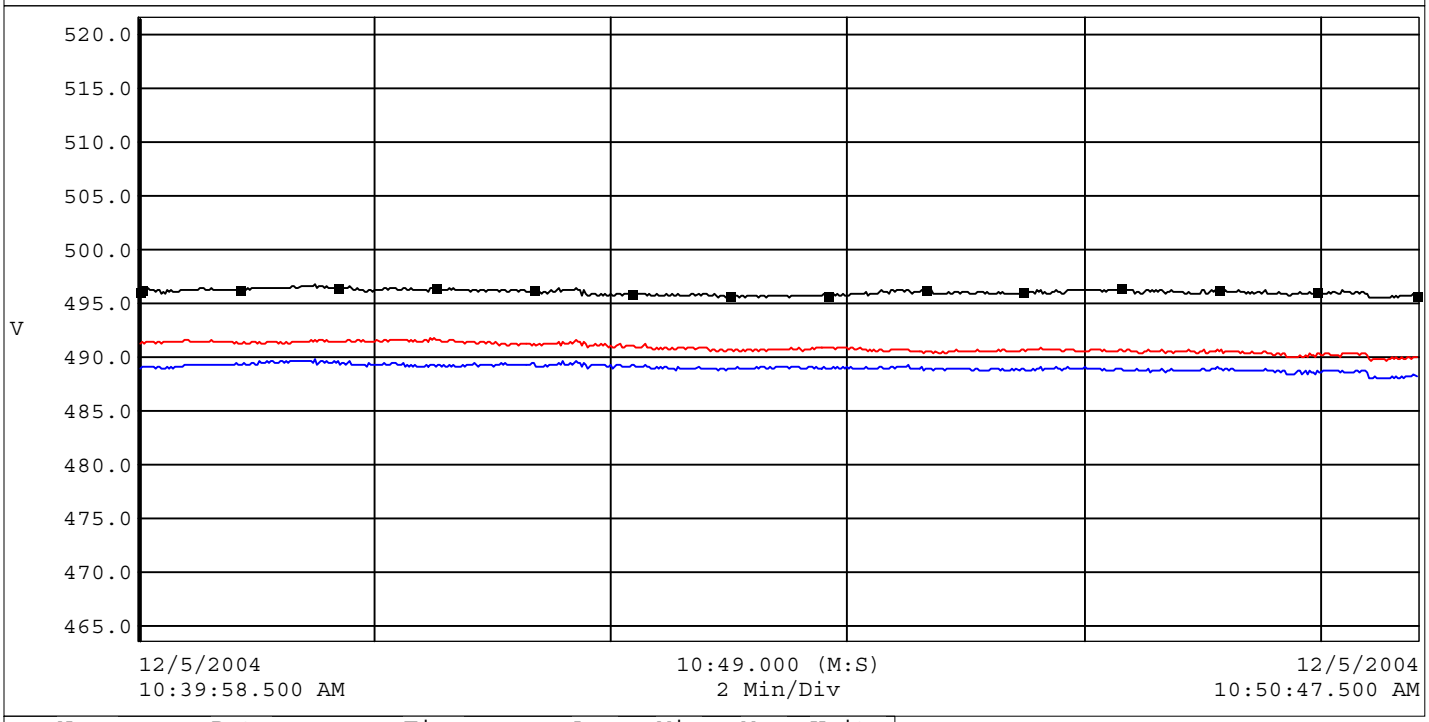
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	12/5/2004	10:39:58.500 AM	284.7	284.3	285.1	650
Vrms Line2	12/5/2004	10:39:58.500 AM	285.6	285.2	286.1	650
Vrms Line3	12/5/2004	10:39:58.500 AM	281.6	280.9	282.1	650

12/5/2004 - 10:39:58.000 AM
Val
284.7 — Vrms Line1
285.8 — Vrms Line2
281.8 — Vrms Line3

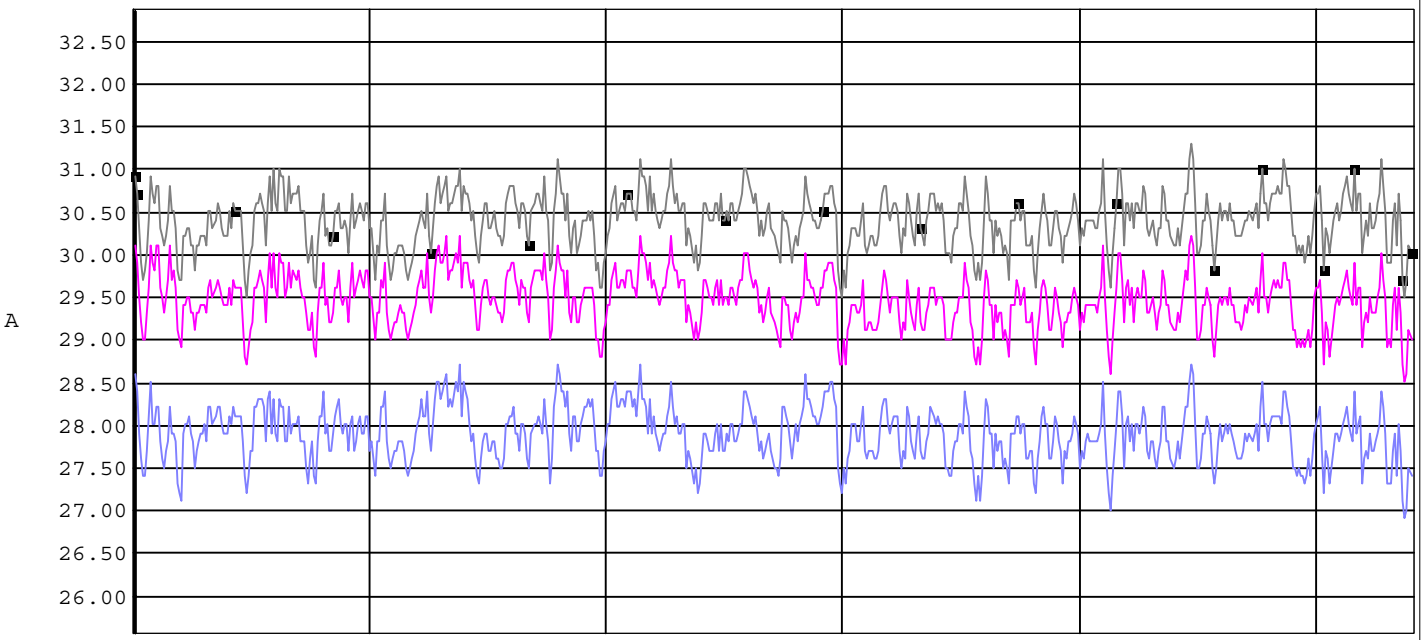
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	12/5/2004	10:39:58.500 AM	496.0	495.4	496.7	V
Urms Line2	12/5/2004	10:39:58.500 AM	490.8	489.6	491.7	V
Urms Line3	12/5/2004	10:39:58.500 AM	488.9	487.9	489.7	V

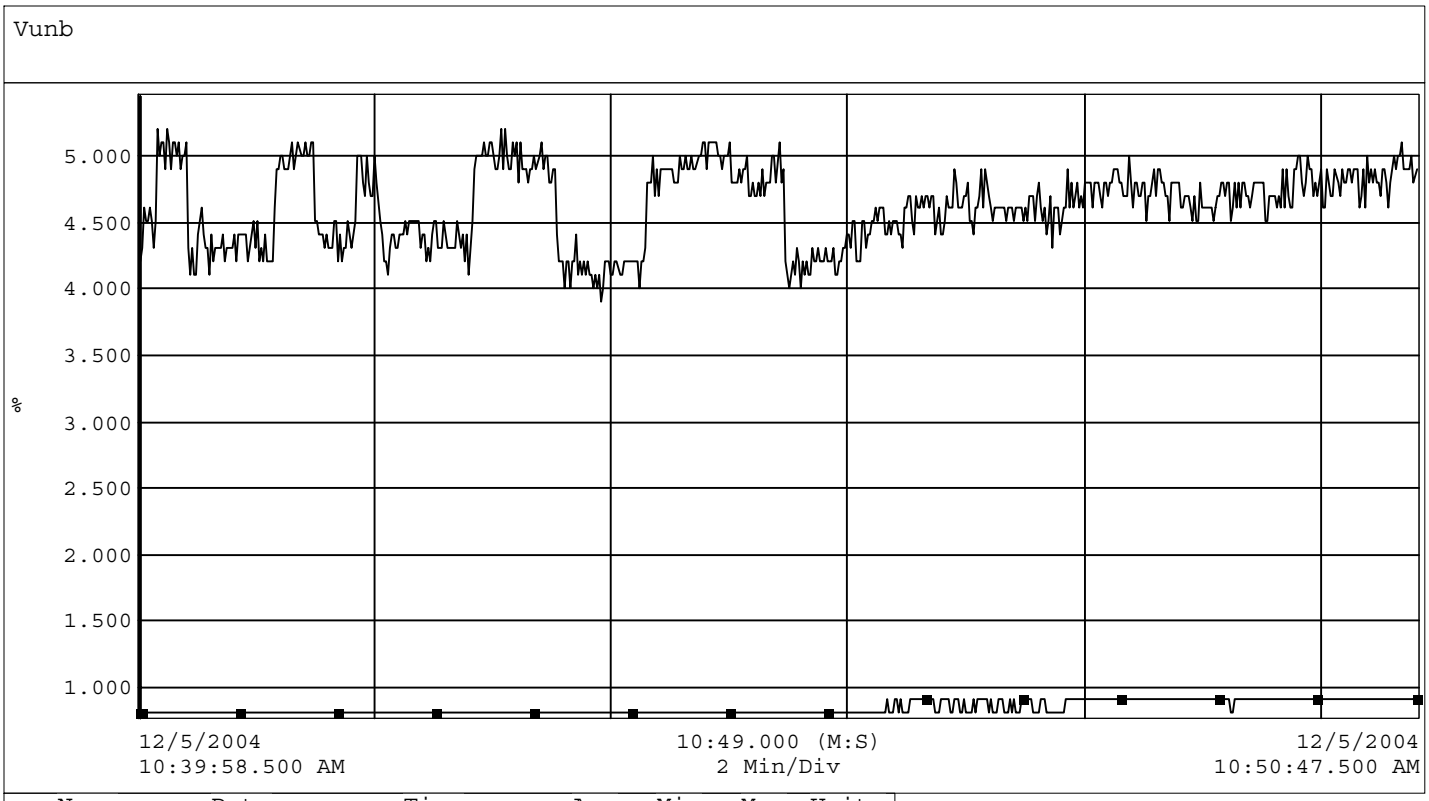
12/5/2004 - 10:39:58.000 AM
Val
496.0 — Urms Line1
491.2 — Urms Line2
488.9 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	12/5/2004	10:39:58.500 AM	30.38	29.50	31.30	A
Arms Line2	12/5/2004	10:39:58.500 AM	29.45	28.50	30.20	A
Arms Line3	12/5/2004	10:39:58.500 AM	27.89	26.90	28.70	A

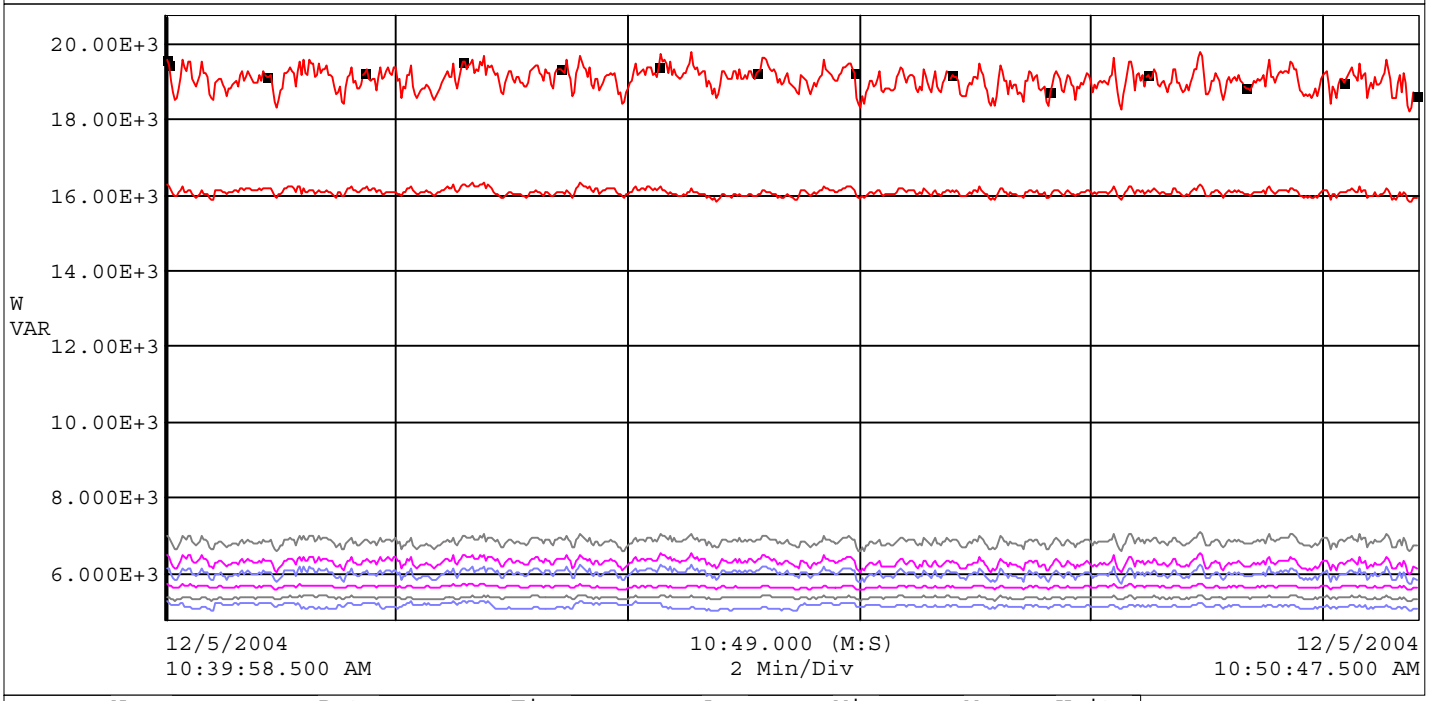
12/5/2004 - 10:39:58.000 AM
Val
30.90 — Arms Line1
30.10 — Arms Line2
28.60 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	12/5/2004	10:39:58.500 AM	0.835	0.800	0.900	%
Aunb(IEEE)	12/5/2004	10:39:58.500 AM	4.621	3.900	5.200	%

12/5/2004 - 10:39:58.000 AM
Val
0.800 ── Vunb(IEEE)
4.200 ── Aunb(IEEE)

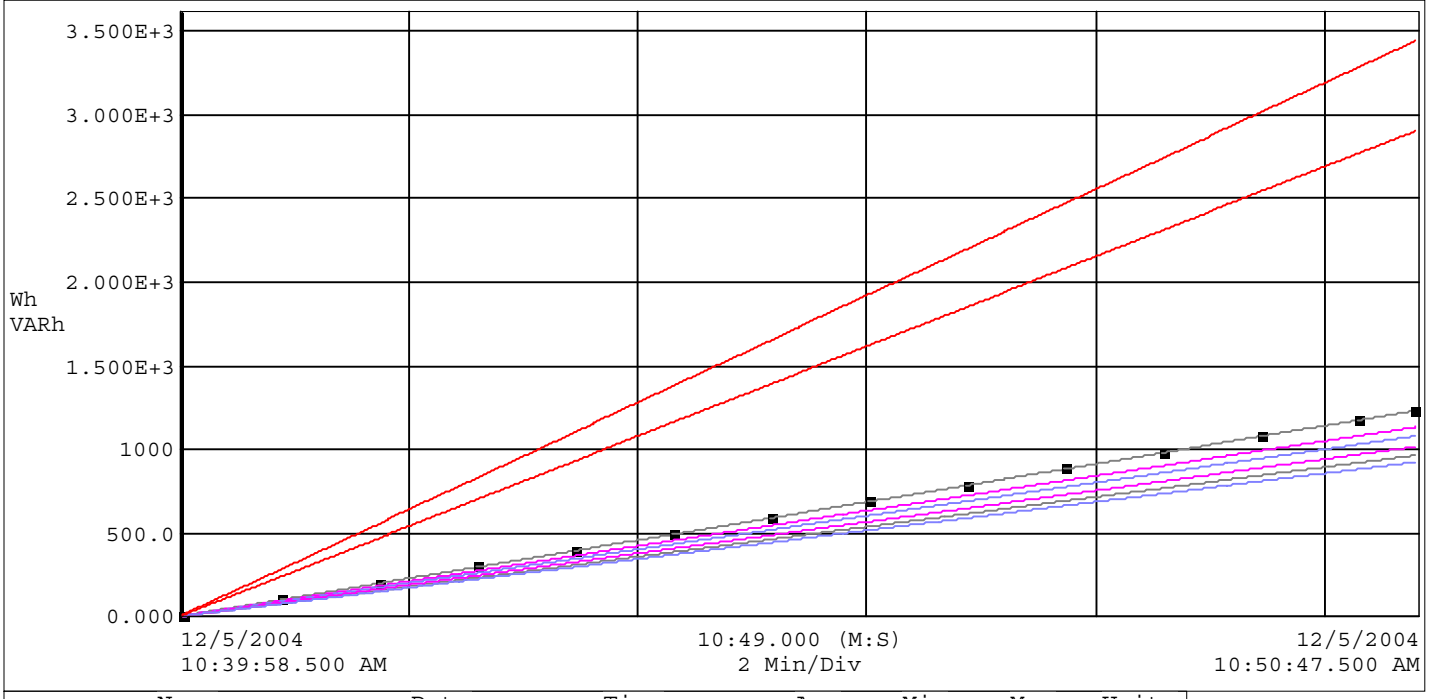
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	12/5/2004	10:39:58.500 AM	6.811E+3	6.546E+3	7.071E+3	W
W Line2	12/5/2004	10:39:58.500 AM	6.261E+3	5.960E+3	6.507E+3	W
W Line3	12/5/2004	10:39:58.500 AM	5.968E+3	5.680E+3	6.210E+3	W
W Sum of Phases	12/5/2004	10:39:58.500 AM	19.04E+3	18.20E+3	19.75E+3	W
VAR Line1	12/5/2004	10:39:58.500 AM	5.333E+3	5.249E+3	5.406E+3	VAR
VAR Line2	12/5/2004	10:39:58.500 AM	5.619E+3	5.540E+3	5.692E+3	VAR
VAR Line3	12/5/2004	10:39:58.500 AM	5.108E+3	4.979E+3	5.238E+3	VAR
VAR Sum of Phases	12/5/2004	10:39:58.500 AM	16.06E+3	15.79E+3	16.31E+3	VAR

12/5/2004 - 10:39:58.000 AM
Val
6.972E+3 — W Line1
6.459E+3 — W Line2
6.125E+3 — W Line3
19.56E+3 — W Sum of Phases
5.357E+3 — VAR Line1
5.677E+3 — VAR Line2
5.216E+3 — VAR Line3
16.25E+3 — VAR Sum of Phases

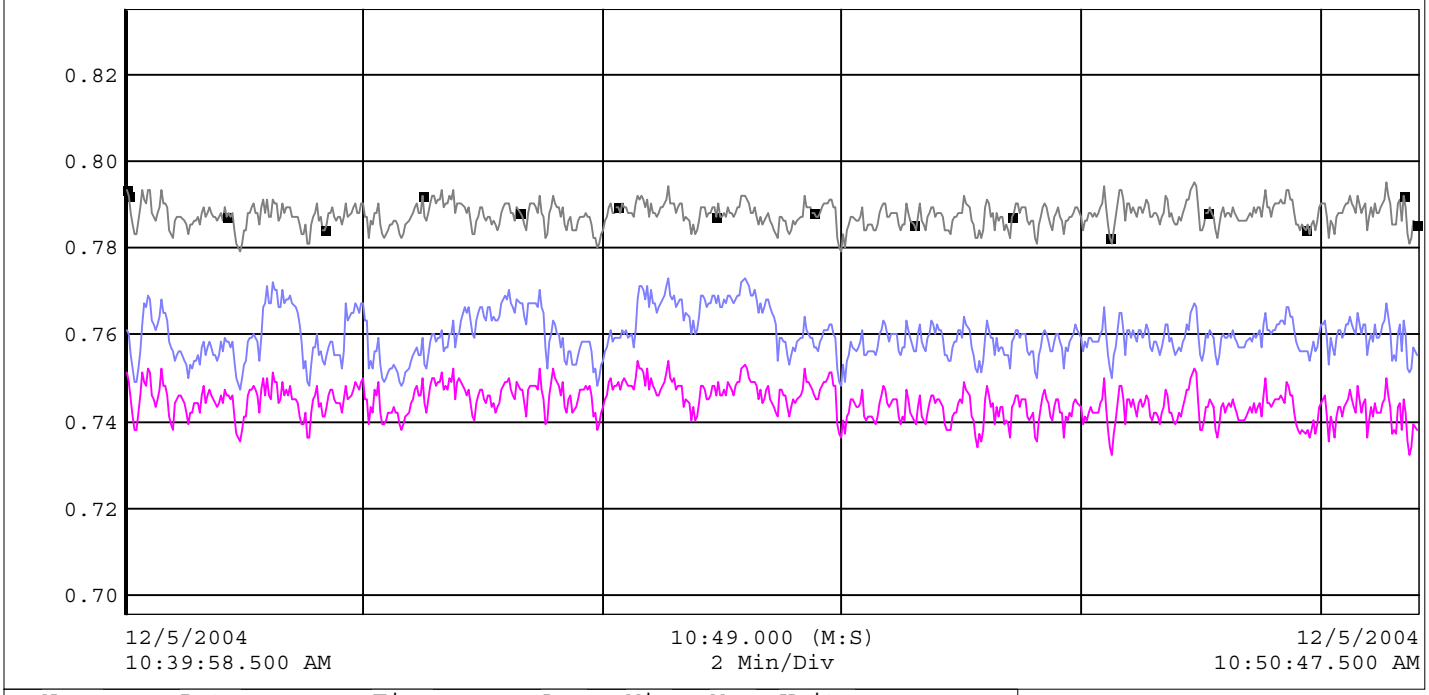
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	12/5/2004	10:39:58.500 AM	615.7	1.952	1.230E+3	Wh
W-hours Line2	12/5/2004	10:39:58.500 AM	567.7	1.794	1.130E+3	Wh
W-hours Line3	12/5/2004	10:39:58.500 AM	540.6	1.710	1.078E+3	Wh
W-hours Sum of Phases	12/5/2004	10:39:58.500 AM	1.724E+3	5.456	3.438E+3	Wh
VAR-hours Line1	12/5/2004	10:39:58.500 AM	482.2	1.499	962.9	VARh
VAR-hours Line2	12/5/2004	10:39:58.500 AM	508.3	1.579	1.014E+3	VARh
VAR-hours Line3	12/5/2004	10:39:58.500 AM	462.5	1.436	922.3	VARh
VAR-hours Sum of Phases	12/5/2004	10:39:58.500 AM	1.453E+3	4.513	2.900E+3	VARh

12/5/2004 - 10:39:58.000 AM
Val
1.952 — W-hours Line1
1.794 — W-hours Line2
1.710 — W-hours Line3
5.456 — W-hours Sum of Phases
1.499 — VAR-hours Line1
1.579 — VAR-hours Line2
1.436 — VAR-hours Line3
4.513 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	12/5/2004	10:39:58.500 AM	0.787	0.779	0.795	
PF Line2	12/5/2004	10:39:58.500 AM	0.744	0.732	0.754	
PF Line3	12/5/2004	10:39:58.500 AM	0.760	0.747	0.773	

12/5/2004 - 10:39:58.000 AM
Val
0.793 — PF Line1
0.751 — PF Line2
0.761 — PF Line3

Trend Summary Report

Database: X:\Umatac WWTF\120504-Aeration Blower 2.dvb

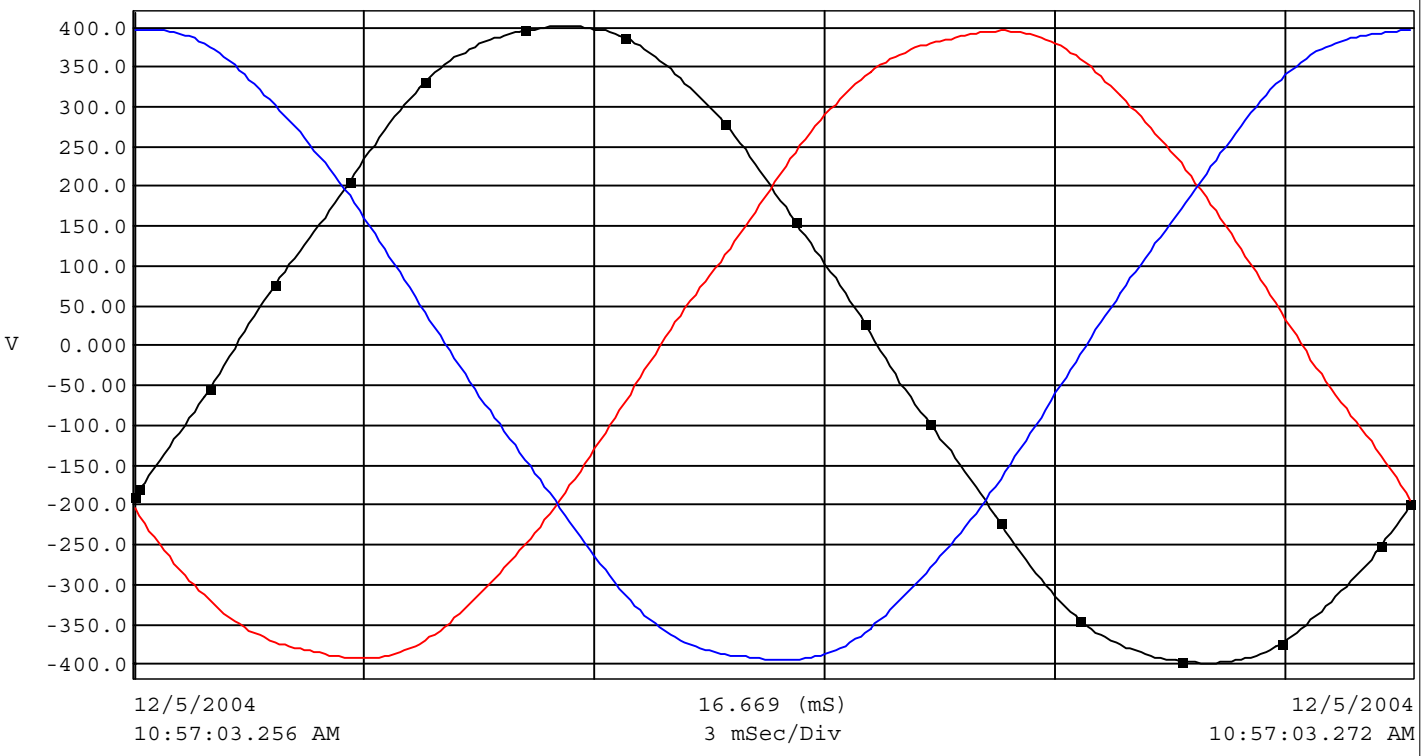
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Aeration Blower 2 at Umatac WWTF ,

Comments
Recorded at the motor starter overload, 25 HP motor,

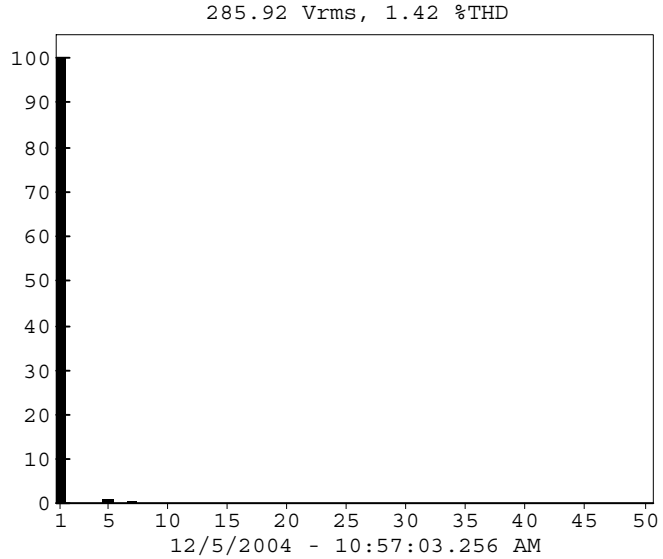
Umatac WWTF Effluent Pump 1 Photo

Recording Start Date	12/5/2004 - 10:57:03 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	12/5/2004	10:57:03.256 AM	16.669	285.9	V
Waveform V2	12/5/2004	10:57:03.256 AM	16.669	281.5	V
Waveform V3	12/5/2004	10:57:03.256 AM	16.669	284.4	V

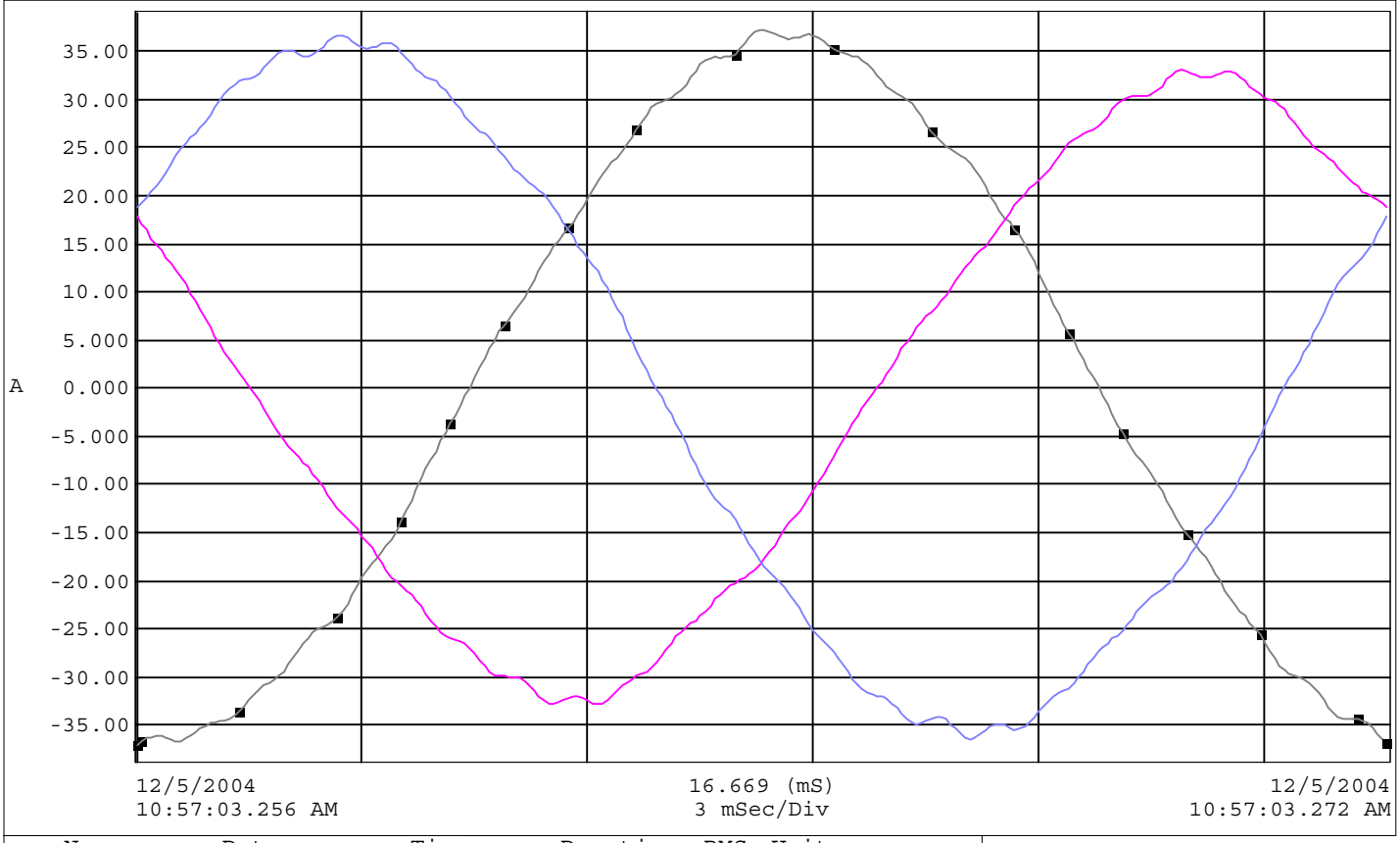


12/5/2004 - 10:57:03.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	12/5/2004	10:57:03.256 AM	16.669	25.82	A
Waveform I2	12/5/2004	10:57:03.256 AM	16.669	22.33	A
Waveform I3	12/5/2004	10:57:03.256 AM	16.669	25.36	A

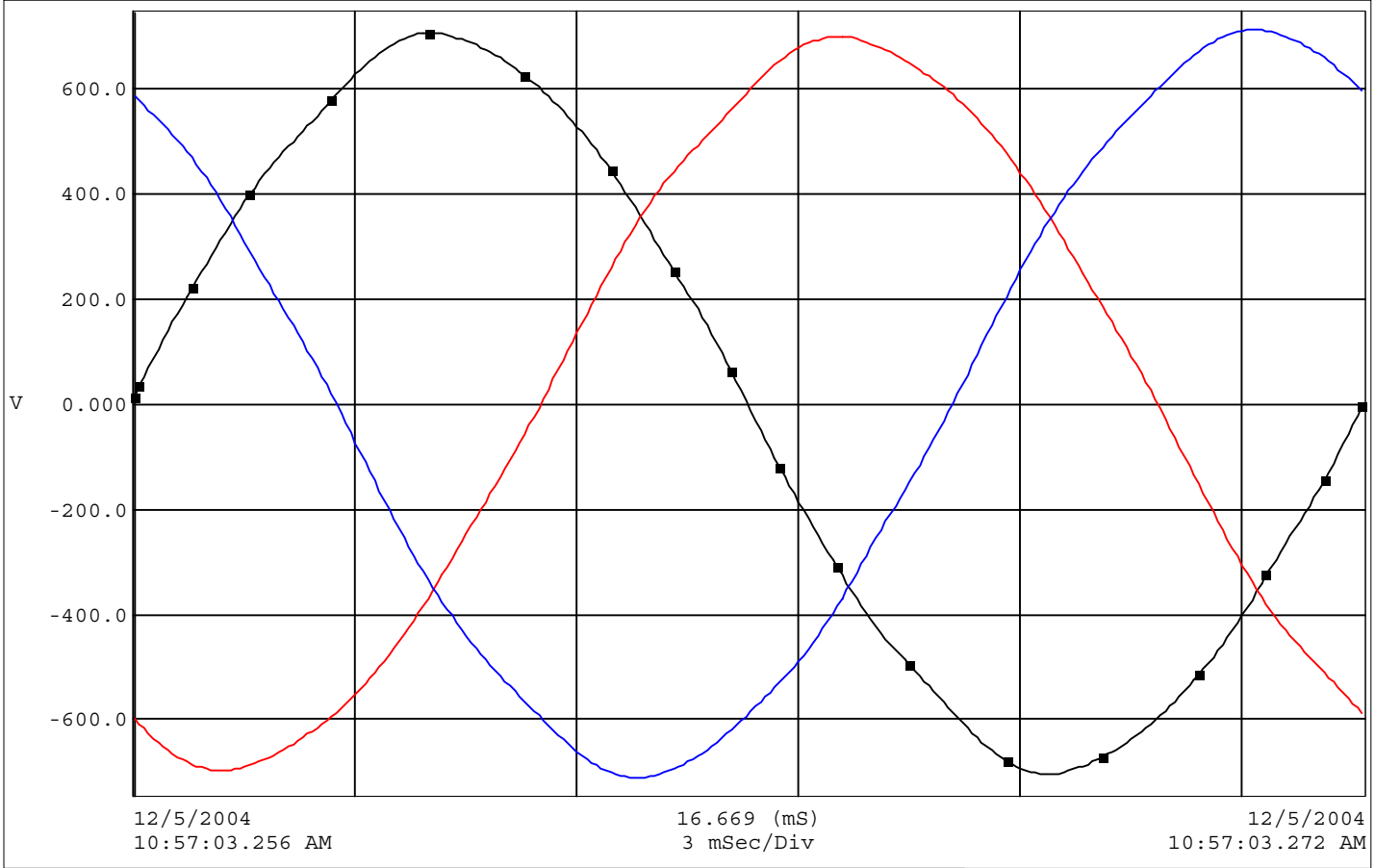
Waveform I1
25.82 Arms, 2.05 %THD

12/5/2004 - 10:57:03.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

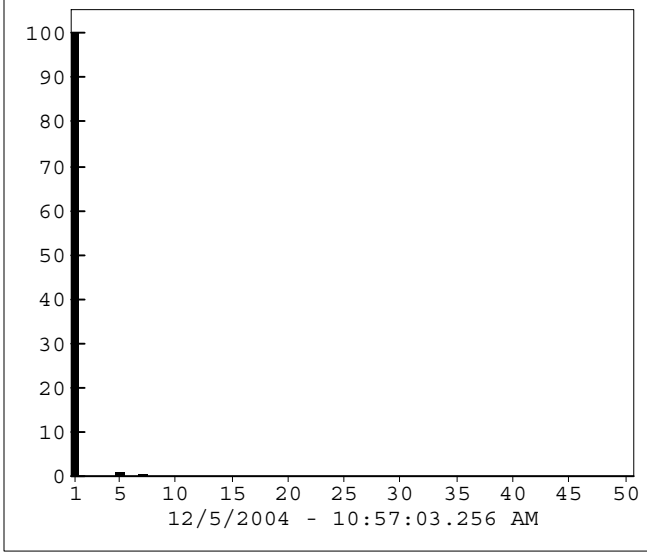
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.2	H19	0.4	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.2	H38	0.0
H05	1.2	H22	0.1	H39	0.0
H06	0.0	H23	0.8	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.7	H42	0.0
H09	0.3	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	12/5/2004	10:57:03.256 AM	16.669	490.9	V
Waveform U2	12/5/2004	10:57:03.256 AM	16.669	488.3	V
Waveform U3	12/5/2004	10:57:03.256 AM	16.669	496.2	V

Waveform U1
490.87 Vrms, 1.41 %THD



12/5/2004 - 10:57:03.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 12/5/2004
Start Time: 10:57:03 AM
Duration: 0:0.000 (M:S)
W: 8.815E+3 W
VAR: 18.92E+3 W
VA: 20.89E+3 W
Power Factor: 1.267
Displacement Power Factor: 1.268
TAN: 6.500
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Umatac WWTF\120504-Effluent Pump 1-Photo.dvb

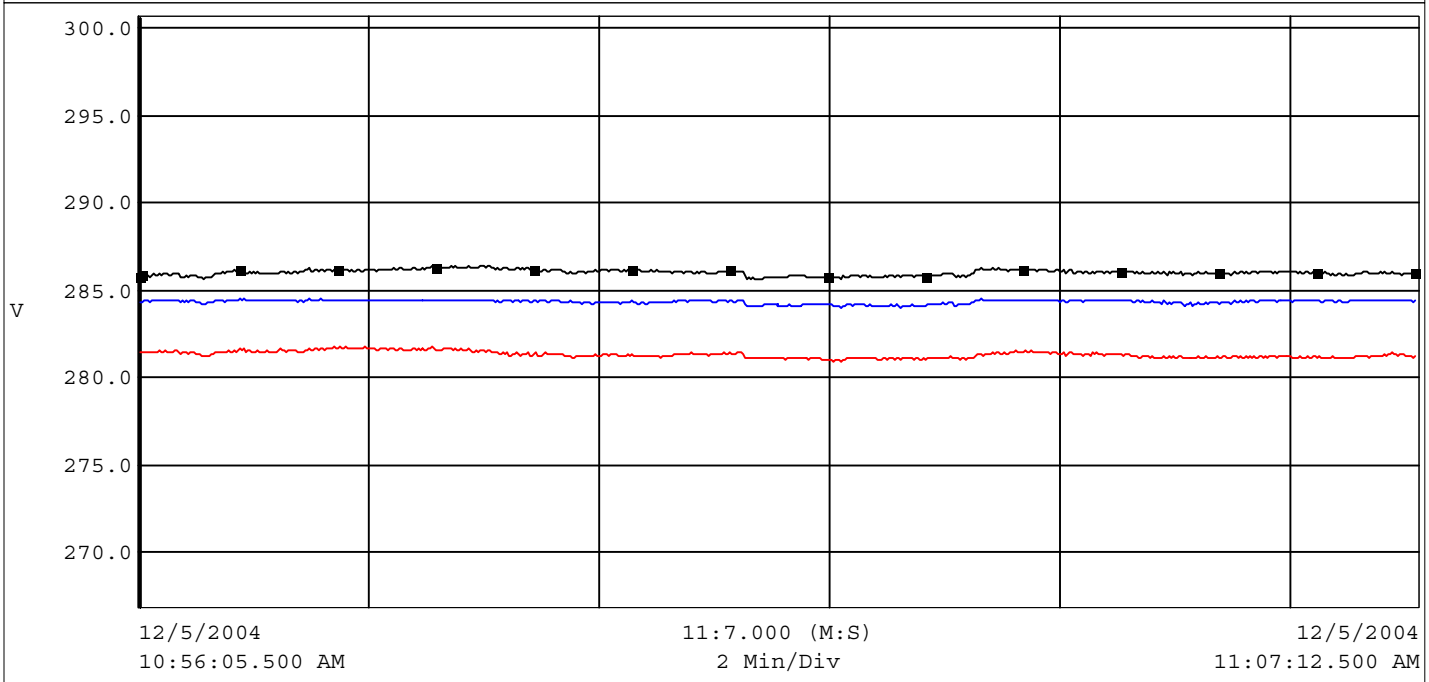
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Effluent Pump 1 - Photo ,

Comments
Recorded at the motor starter overload relay, 20 HP

Umatac WWTF Effluent Pump 1

Recording Start Date	12/5/2004 - 10:56:05 AM
Recording Duration	11:07 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

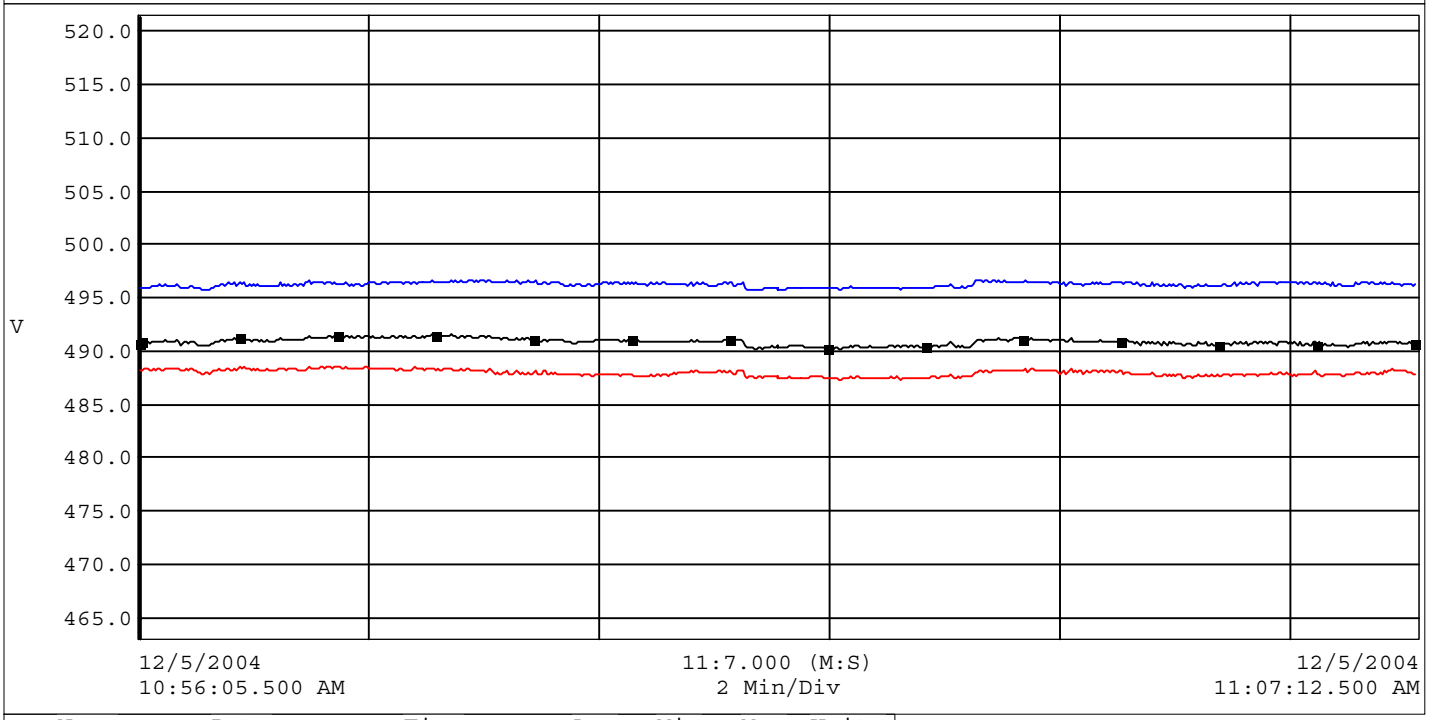
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	12/5/2004	10:56:05.500 AM	286.0	285.6	286.3	668
Vrms Line2	12/5/2004	10:56:05.500 AM	281.3	280.8	281.7	668
Vrms Line3	12/5/2004	10:56:05.500 AM	284.2	283.9	284.5	668

12/5/2004 - 10:56:05.000 AM
Val
285.7 — Vrms Line1
281.4 — Vrms Line2
284.2 — Vrms Line3

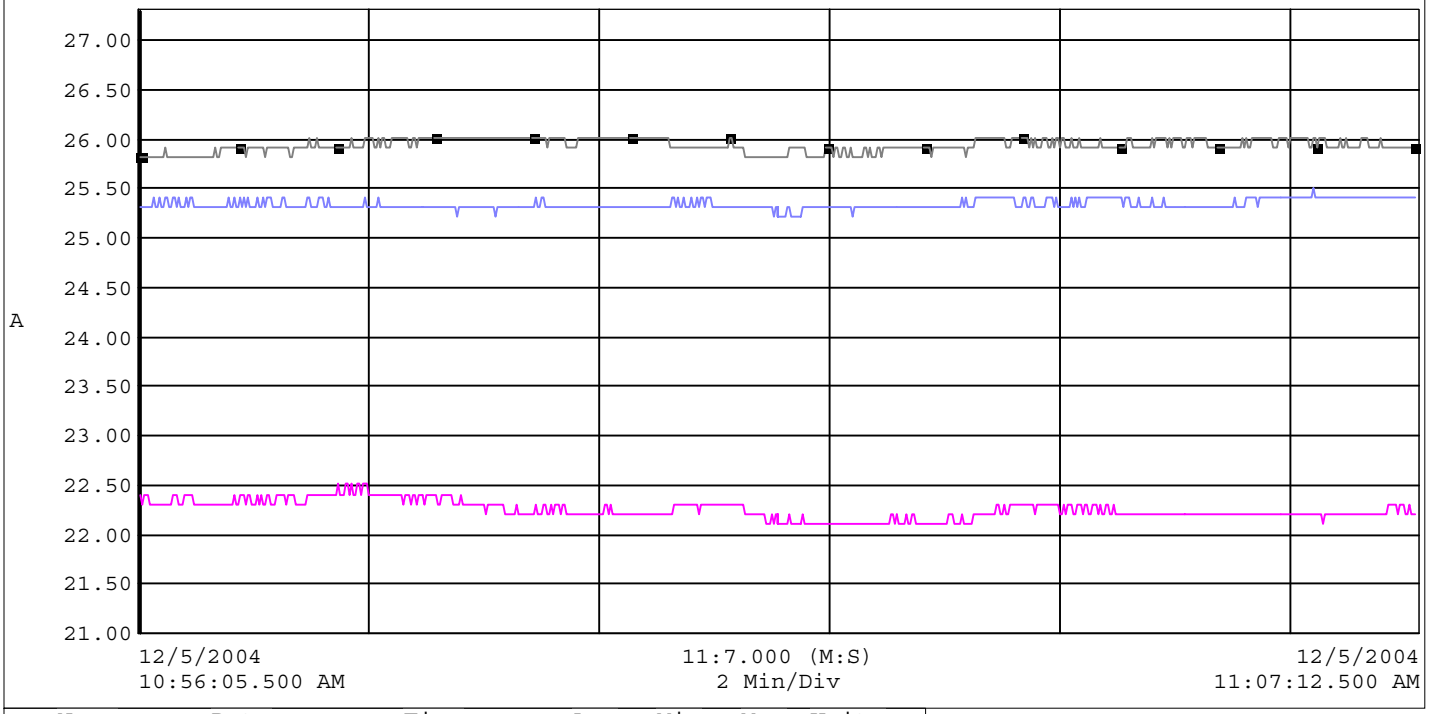
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	12/5/2004	10:56:05.500 AM	490.8	490.0	491.5	V
Urms Line2	12/5/2004	10:56:05.500 AM	487.8	487.2	488.5	V
Urms Line3	12/5/2004	10:56:05.500 AM	496.2	495.6	496.6	V

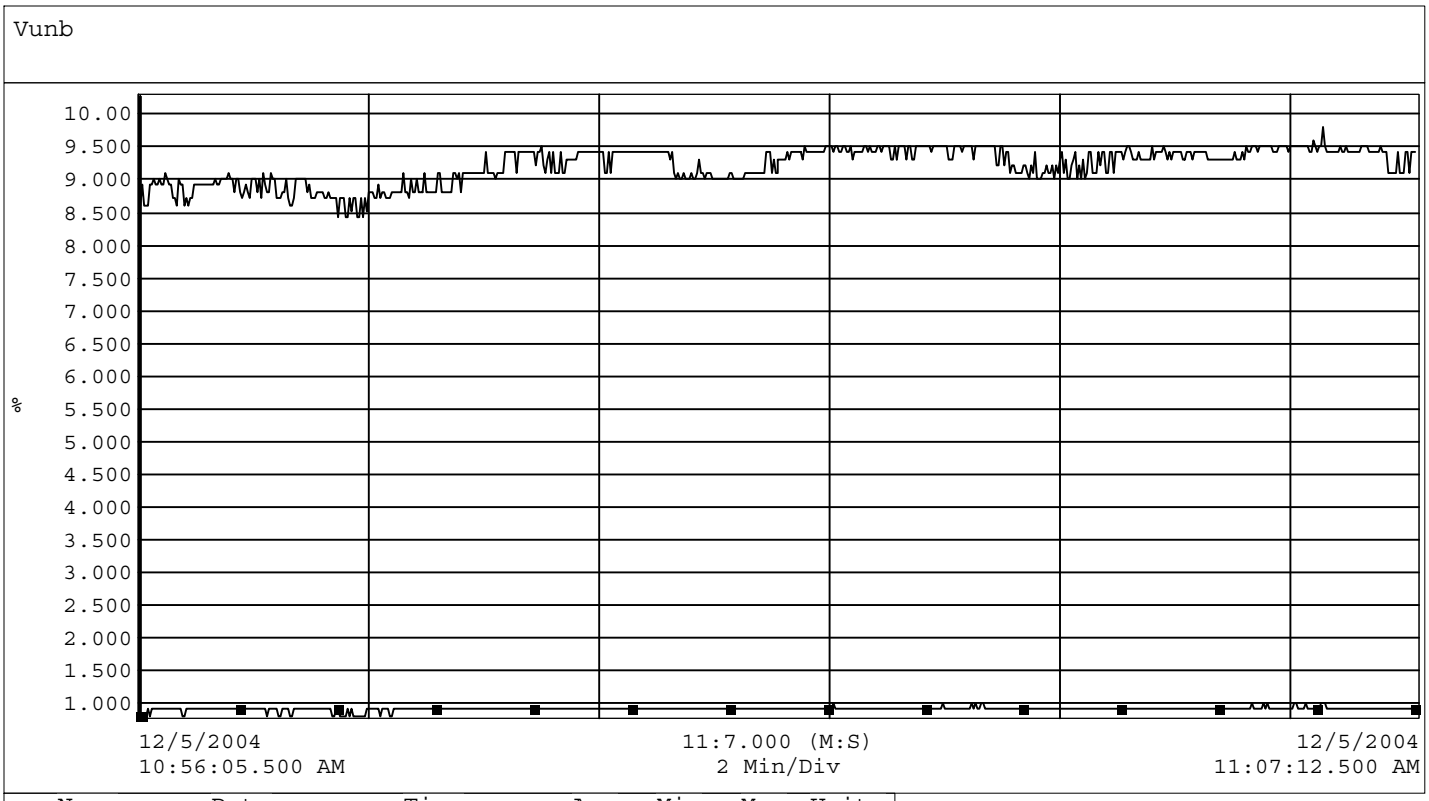
12/5/2004 - 10:56:05.000 AM
Val
490.6 — Urms Line1
488.1 — Urms Line2
495.8 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	12/5/2004	10:56:05.500 AM	25.92	25.80	26.00	A
Arms Line2	12/5/2004	10:56:05.500 AM	22.25	22.10	22.50	A
Arms Line3	12/5/2004	10:56:05.500 AM	25.33	25.20	25.50	A

12/5/2004 - 10:56:05.000 AM
Val
25.80 — Arms Line1
22.40 — Arms Line2
25.30 — Arms Line3

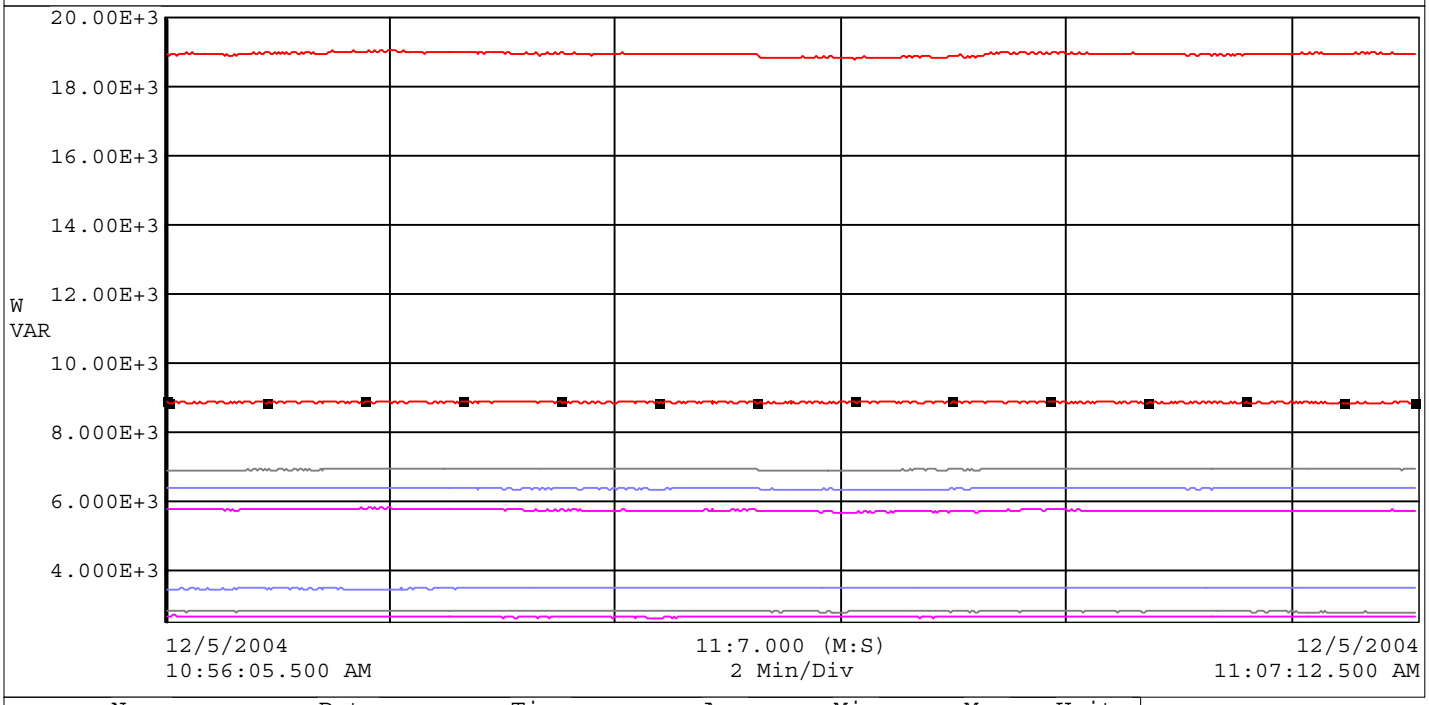


Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	12/5/2004	10:56:05.500 AM	0.898	0.800	1.000	%
Aunb(IEEE)	12/5/2004	10:56:05.500 AM	9.196	8.400	9.800	%

12/5/2004 - 10:56:05.000 AM
Val
0.800 ── Vunb(IEEE)
8.600 ── Aunb(IEEE)

Appendix 1K - Electrical

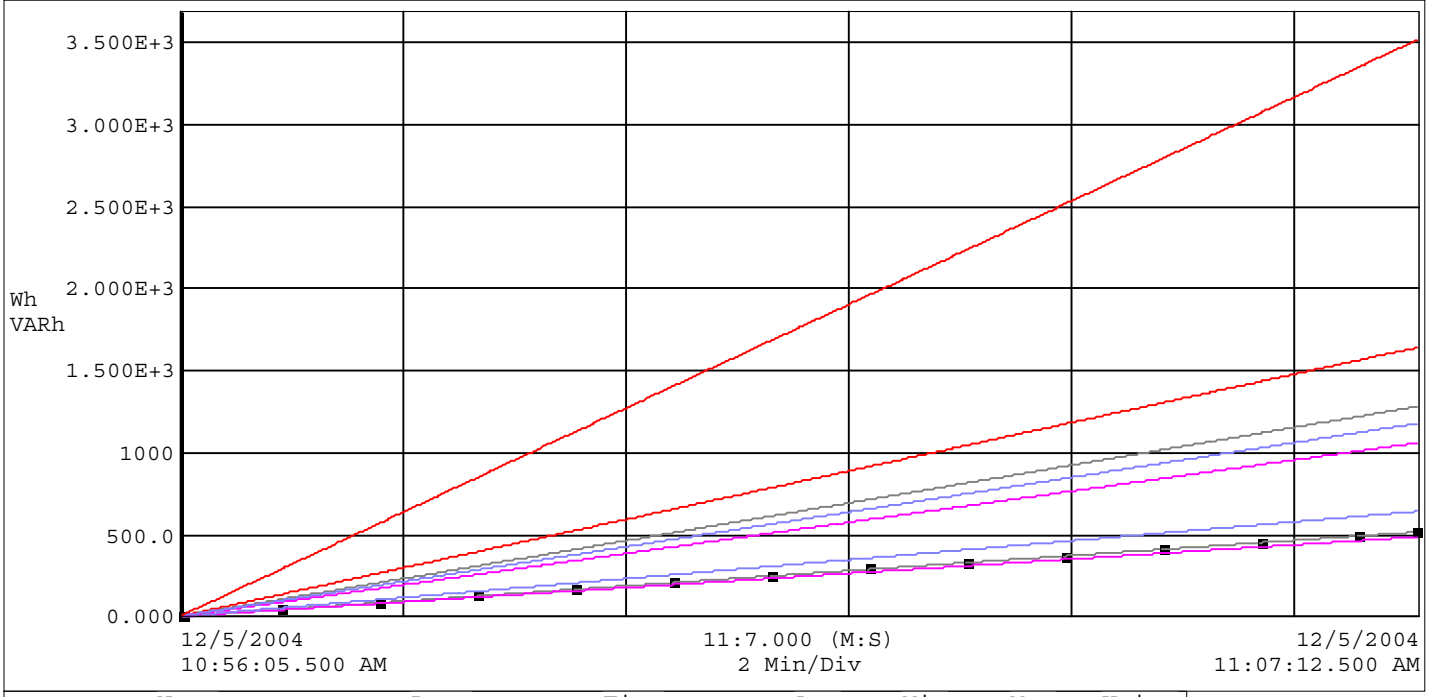
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	12/5/2004	10:56:05.500 AM	2.765E+3	2.736E+3	2.797E+3	W
W Line2	12/5/2004	10:56:05.500 AM	2.606E+3	2.576E+3	2.644E+3	W
W Line3	12/5/2004	10:56:05.500 AM	3.441E+3	3.402E+3	3.467E+3	W
W Sum of Phases	12/5/2004	10:56:05.500 AM	8.812E+3	8.788E+3	8.840E+3	W
VAR Line1	12/5/2004	10:56:05.500 AM	6.878E+3	6.822E+3	6.916E+3	VAR
VAR Line2	12/5/2004	10:56:05.500 AM	5.689E+3	5.626E+3	5.763E+3	VAR
VAR Line3	12/5/2004	10:56:05.500 AM	6.324E+3	6.282E+3	6.362E+3	VAR
VAR Sum of Phases	12/5/2004	10:56:05.500 AM	18.89E+3	18.75E+3	19.00E+3	VAR

12/5/2004 - 10:56:05.000 AM
Val
2.764E+3 — W Line1
2.638E+3 — W Line2
3.409E+3 — W Line3
8.810E+3 — W Sum of Phases
6.827E+3 — VAR Line1
5.710E+3 — VAR Line2
6.332E+3 — VAR Line3
18.87E+3 — VAR Sum of Phases

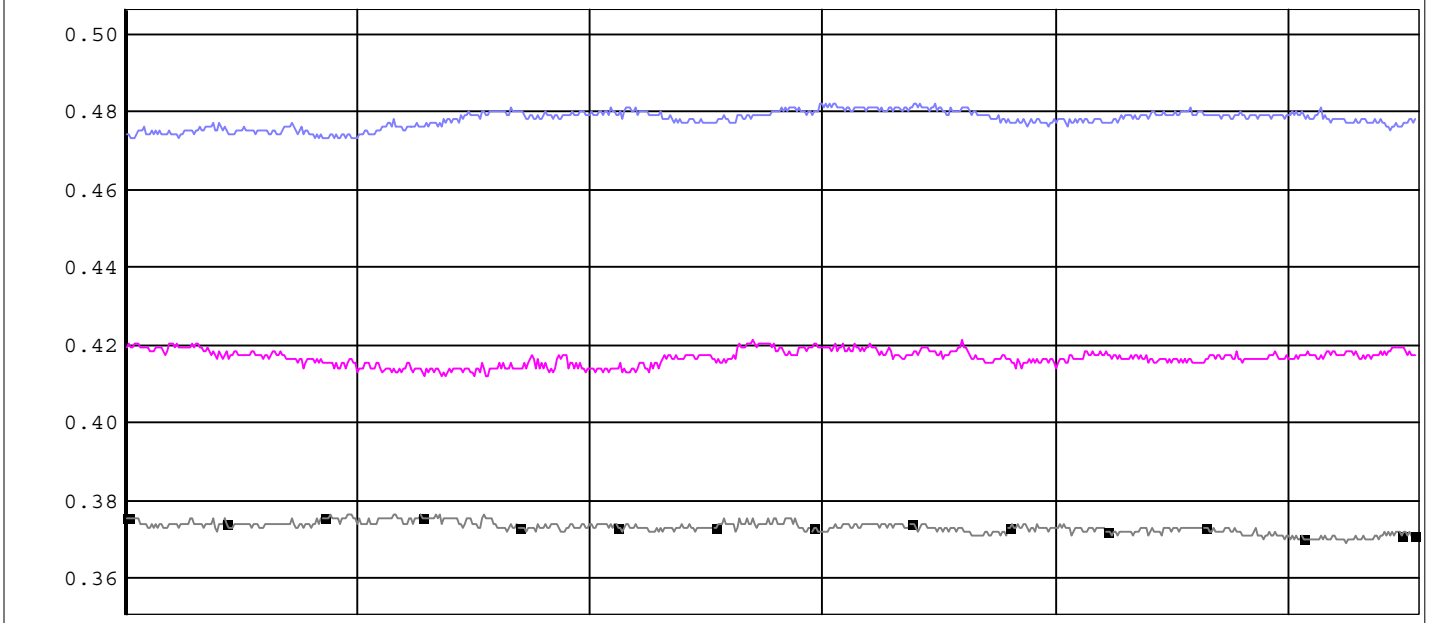
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	12/5/2004	10:56:05.500 AM	257.3	0.768	513.2	Wh
W-hours Line2	12/5/2004	10:56:05.500 AM	242.4	0.738	483.5	Wh
W-hours Line3	12/5/2004	10:56:05.500 AM	319.2	0.955	638.5	Wh
W-hours Sum of Phases	12/5/2004	10:56:05.500 AM	818.9	2.445	1.635E+3	Wh
VAR-hours Line1	12/5/2004	10:56:05.500 AM	638.8	1.909	1.276E+3	VARh
VAR-hours Line2	12/5/2004	10:56:05.500 AM	529.5	1.579	1.056E+3	VARh
VAR-hours Line3	12/5/2004	10:56:05.500 AM	587.7	1.755	1.174E+3	VARh
VAR-hours Sum of Phases	12/5/2004	10:56:05.500 AM	1.756E+3	5.242	3.505E+3	VARh

12/5/2004 - 10:56:05.000 AM
Val
0.768 — W-hours Line1
0.738 — W-hours Line2
0.955 — W-hours Line3
2.445 — W-hours Sum of Phases
1.909 — VAR-hours Line1
1.579 — VAR-hours Line2
1.755 — VAR-hours Line3
5.242 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	12/5/2004	10:56:05.500 AM	0.373	0.369	0.376	
PF Line2	12/5/2004	10:56:05.500 AM	0.416	0.412	0.421	
PF Line3	12/5/2004	10:56:05.500 AM	0.478	0.473	0.482	

12/5/2004 - 10:56:05.000 AM
Val
0.375 — PF Line1
0.419 — PF Line2
0.474 — PF Line3

Trend Summary Report

Database: X:\Umatac WWTF\120504-Effluent Pump 1.dvb

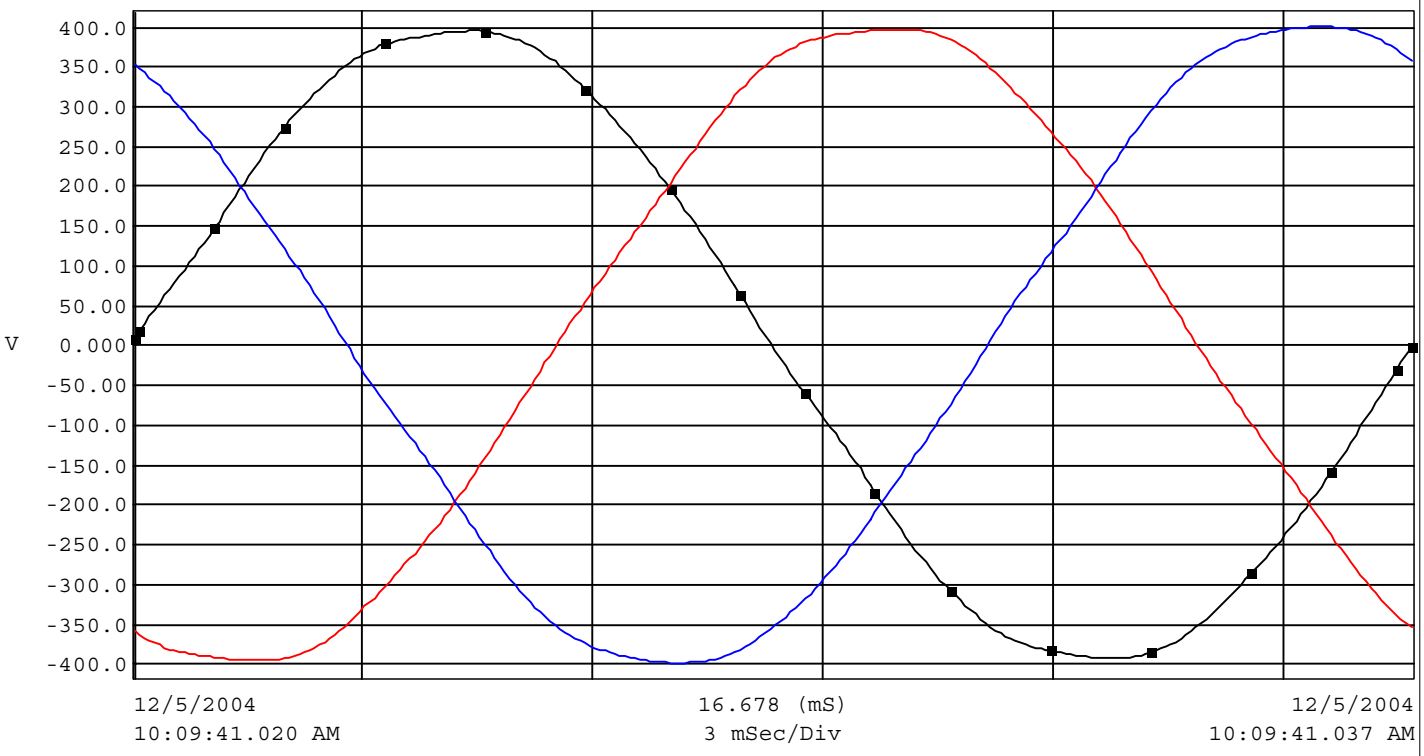
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Effluent Pump 1 - (PS-19) ,

Comments
Recorded at motor starter overload heater, 20 HP

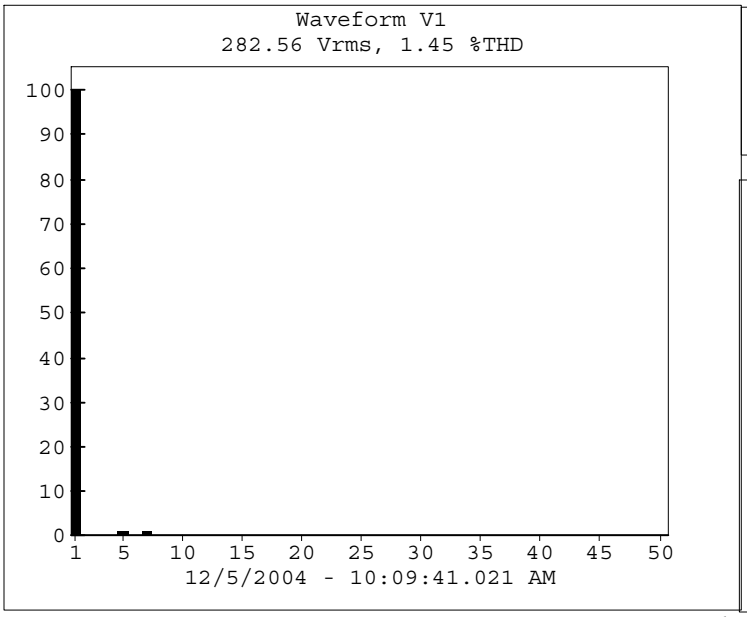
Umatac WWTF
PS-13 Main

Recording Start Date	12/5/2004 - 10:09:41 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	12/5/2004	10:09:41.020 AM	16.678	282.6	V
Waveform V2	12/5/2004	10:09:41.020 AM	16.678	285.2	V
Waveform V3	12/5/2004	10:09:41.020 AM	16.678	286.1	V



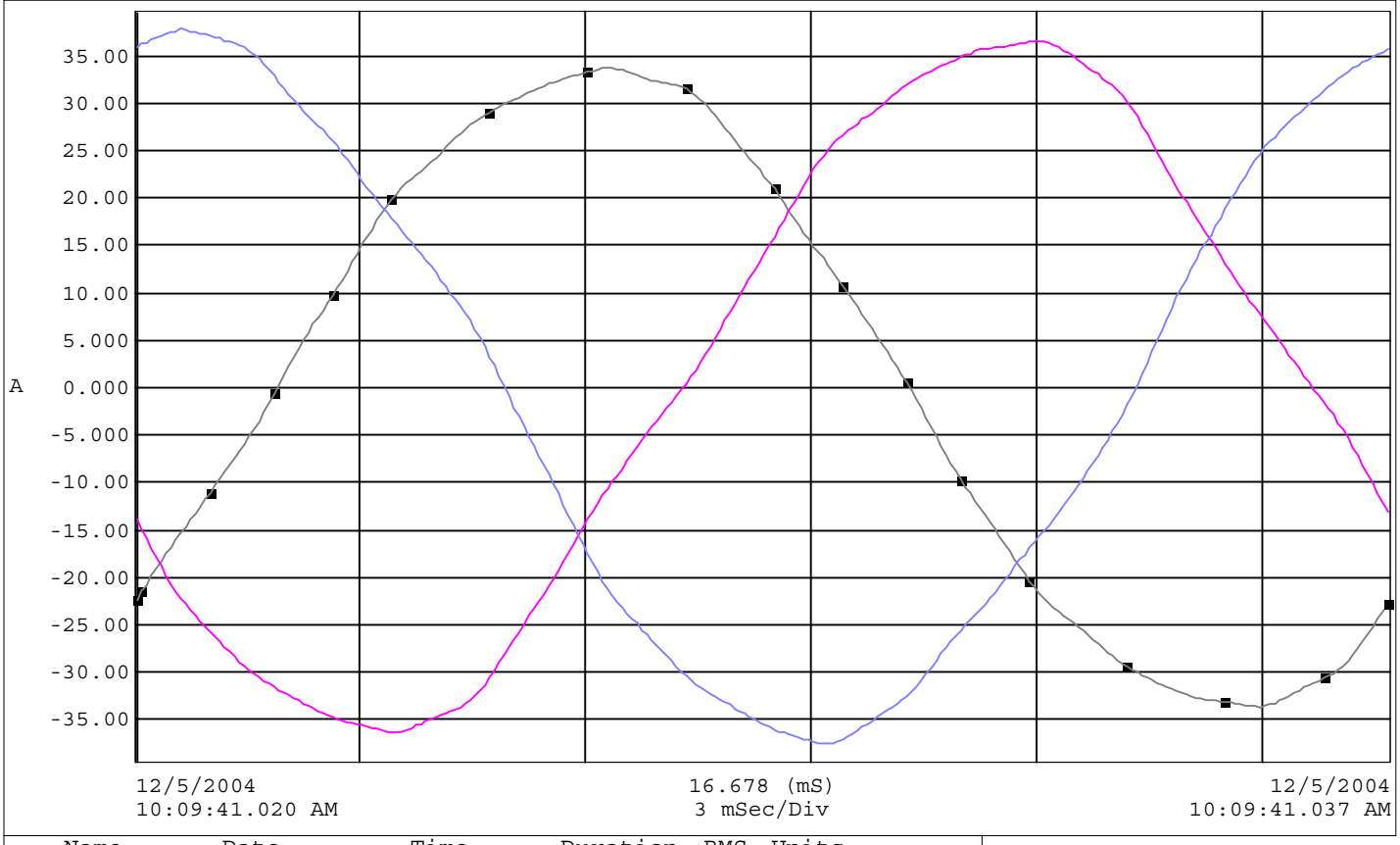
12/5/2004 - 10:09:41.000 AM

Val	
7.000	Waveform V1
-360.5	Waveform V2
353.0	Waveform V3

Waveform V1

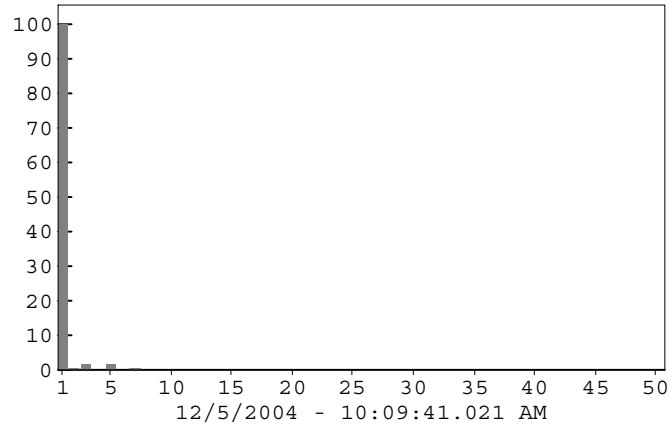
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	12/5/2004	10:09:41.020 AM	16.678	23.99	A
Waveform I2	12/5/2004	10:09:41.020 AM	16.678	25.49	A
Waveform I3	12/5/2004	10:09:41.020 AM	16.678	26.23	A

Waveform I1
23.99 Arms, 3.00 %THD



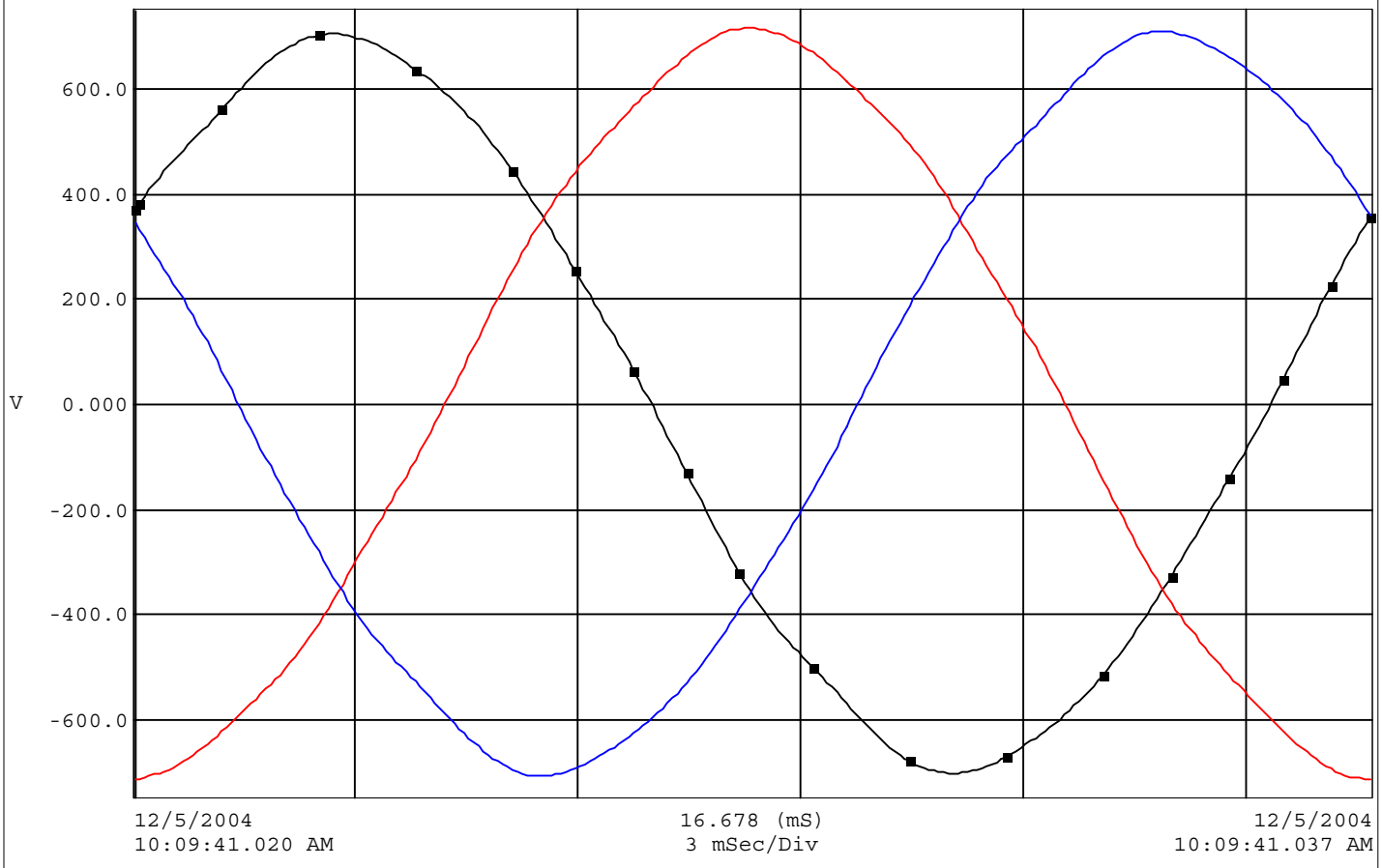
12/5/2004 - 10:09:41.000 AM

	Val	
—	-22.50	Waveform I1
—	-14.00	Waveform I2
—	35.90	Waveform I3

Waveform I1

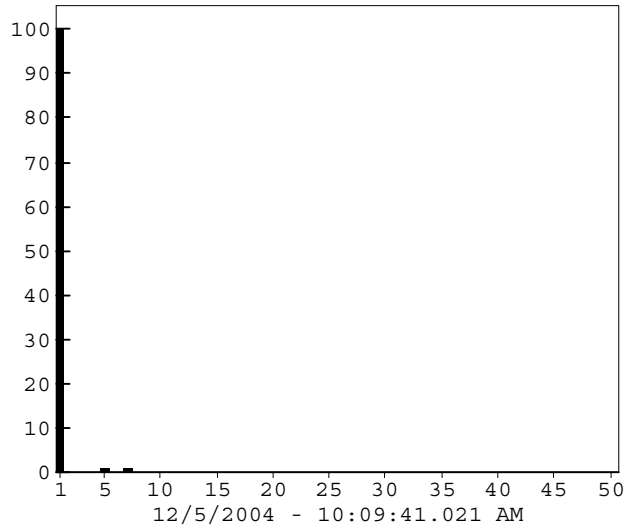
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.6	H19	0.1	H36	0.0
H03	2.1	H20	0.1	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	1.7	H22	0.1	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.4	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.4	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	12/5/2004	10:09:41.020 AM	16.678	490.4	V
Waveform U2	12/5/2004	10:09:41.020 AM	16.678	496.6	V
Waveform U3	12/5/2004	10:09:41.020 AM	16.678	491.9	V

Waveform U1
490.44 Vrms, 1.49 %THD



12/5/2004 - 10:09:41.000 AM

	Val	
—	367.5	Waveform U1
—	-713.5	Waveform U2
—	345.9	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 12/5/2004
Start Time: 10:09:41 AM
Duration: 0:0.000 (M:S)
W: 16.28E+3 W
VAR: 14.05E+3 W
VA: 21.53E+3 W
Power Factor: 2.269
Displacement Power Factor: 2.271
TAN: 2.593
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\PS-13 Umatac\120504-PS 13 - Umatac WWTP-Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	PS-13 at Umatac WWTF-Photo ,

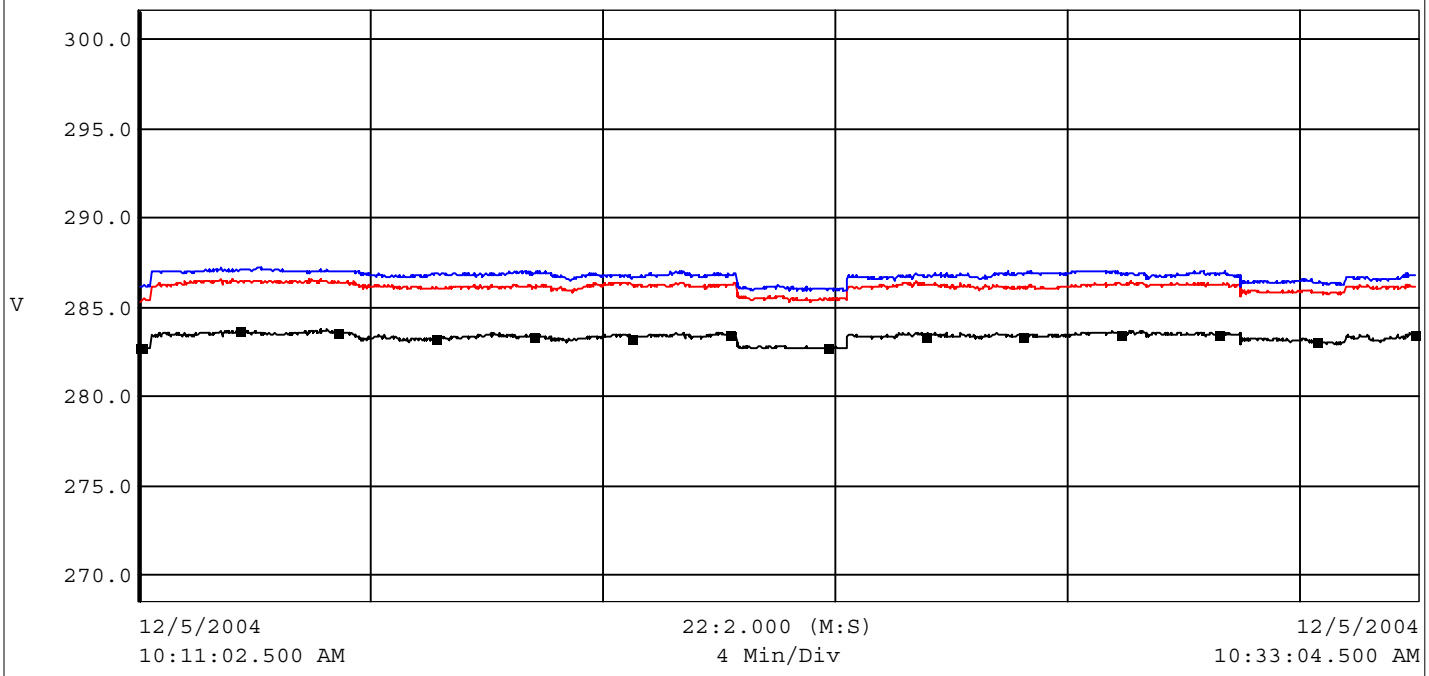
Comments
Recorded at the auto transfer switch

480 Volts, three phase power.

Umatac WWTF
PS-13 Main

Recording Start Date	12/5/2004 - 10:11:02 AM
Recording Duration	22:02 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

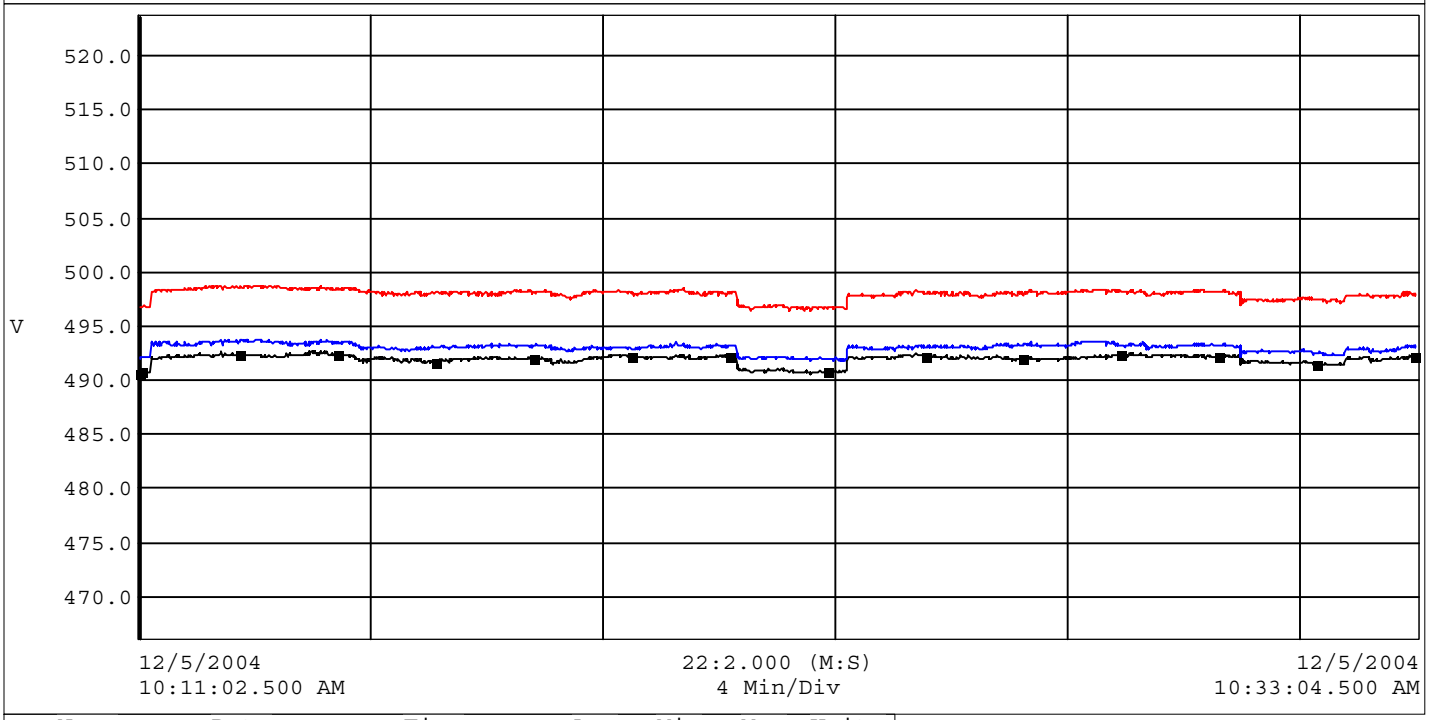
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	12/5/2004	10:11:02.500 AM	283.3	282.6	283.7	1323
Vrms Line2	12/5/2004	10:11:02.500 AM	286.1	285.2	286.5	1323
Vrms Line3	12/5/2004	10:11:02.500 AM	286.7	285.9	287.2	1323

12/5/2004 - 10:11:02.000 AM
Val
282.6 — Vrms Line1
285.2 — Vrms Line2
286.1 — Vrms Line3

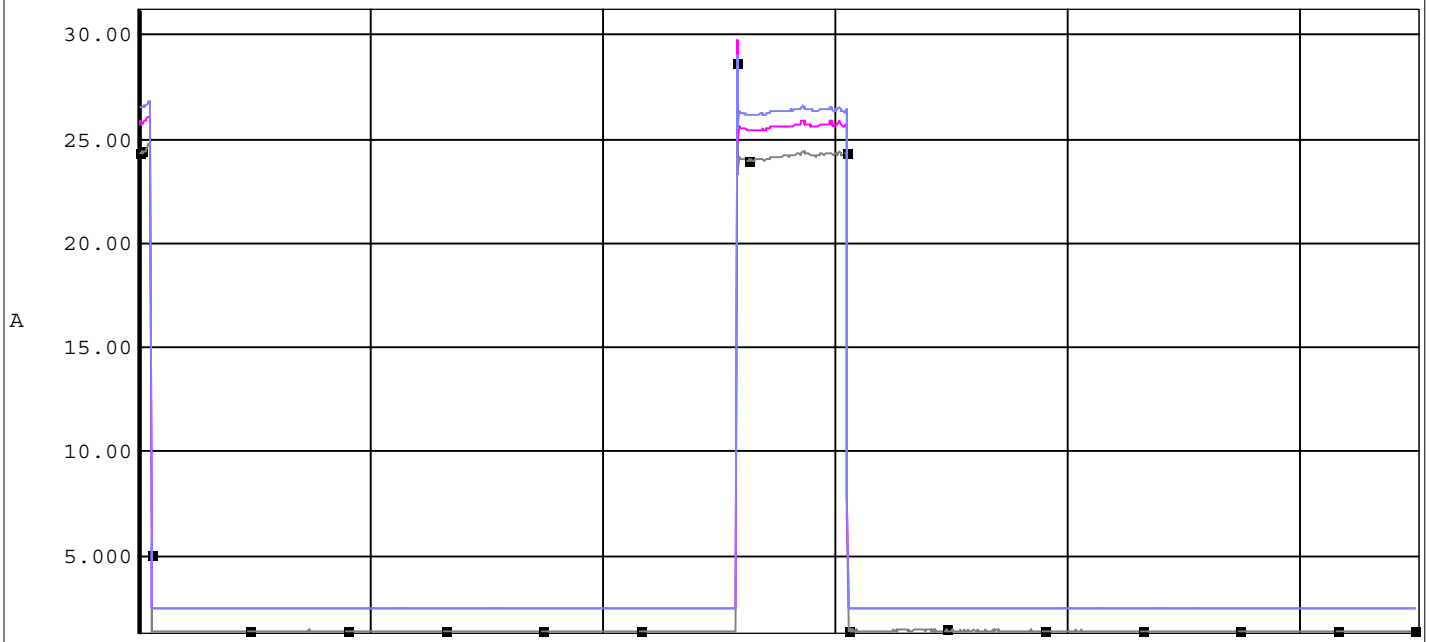
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	12/5/2004	10:11:02.500 AM	491.9	490.5	492.6	V
Urms Line2	12/5/2004	10:11:02.500 AM	497.8	496.4	498.7	V
Urms Line3	12/5/2004	10:11:02.500 AM	492.9	491.7	493.6	V

12/5/2004 - 10:11:02.000 AM
Val
490.5 — Urms Line1
496.6 — Urms Line2
491.9 — Urms Line3

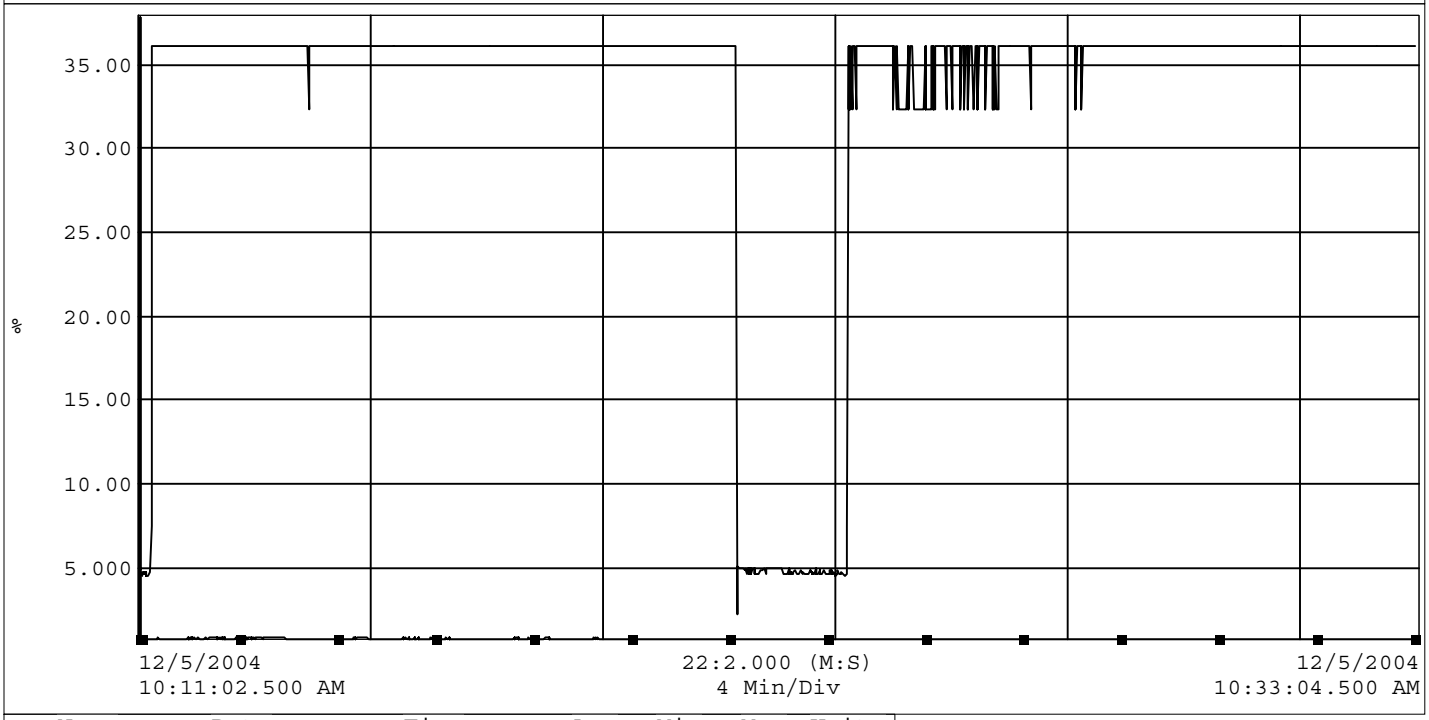
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	12/5/2004	10:11:02.500 AM	3.493	1.300	28.60	A
Arms Line2	12/5/2004	10:11:02.500 AM	4.620	2.400	29.70	A
Arms Line3	12/5/2004	10:11:02.500 AM	4.687	2.400	29.00	A

12/5/2004 - 10:11:02.000 AM
Val
24.40 — Arms Line1
25.80 — Arms Line2
26.50 — Arms Line3

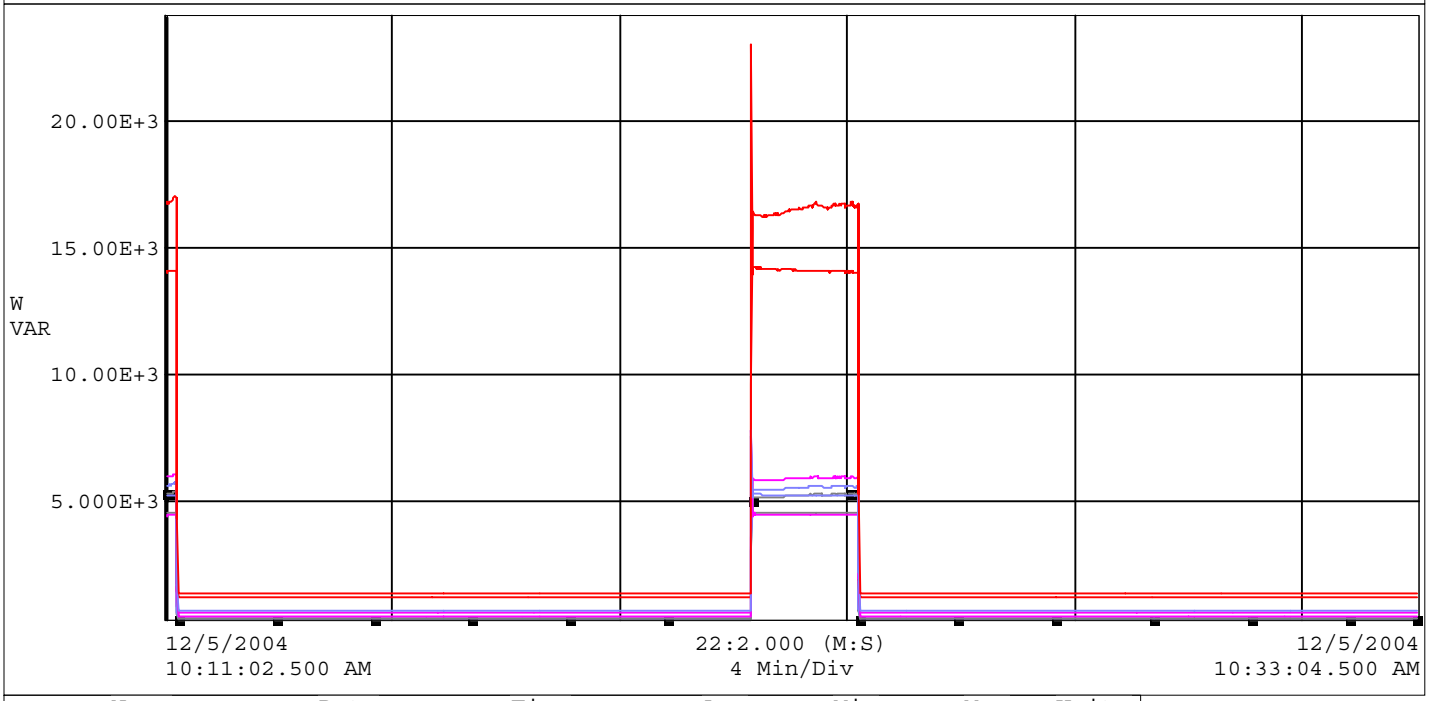
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	12/5/2004	10:11:02.500 AM	0.708	0.700	0.800	%
Aunb(IEEE)	12/5/2004	10:11:02.500 AM	32.91	2.100	36.10	%

12/5/2004 - 10:11:02.000 AM
Val
0.700 — Vunb(IEEE)
4.600 — Aunb(IEEE)

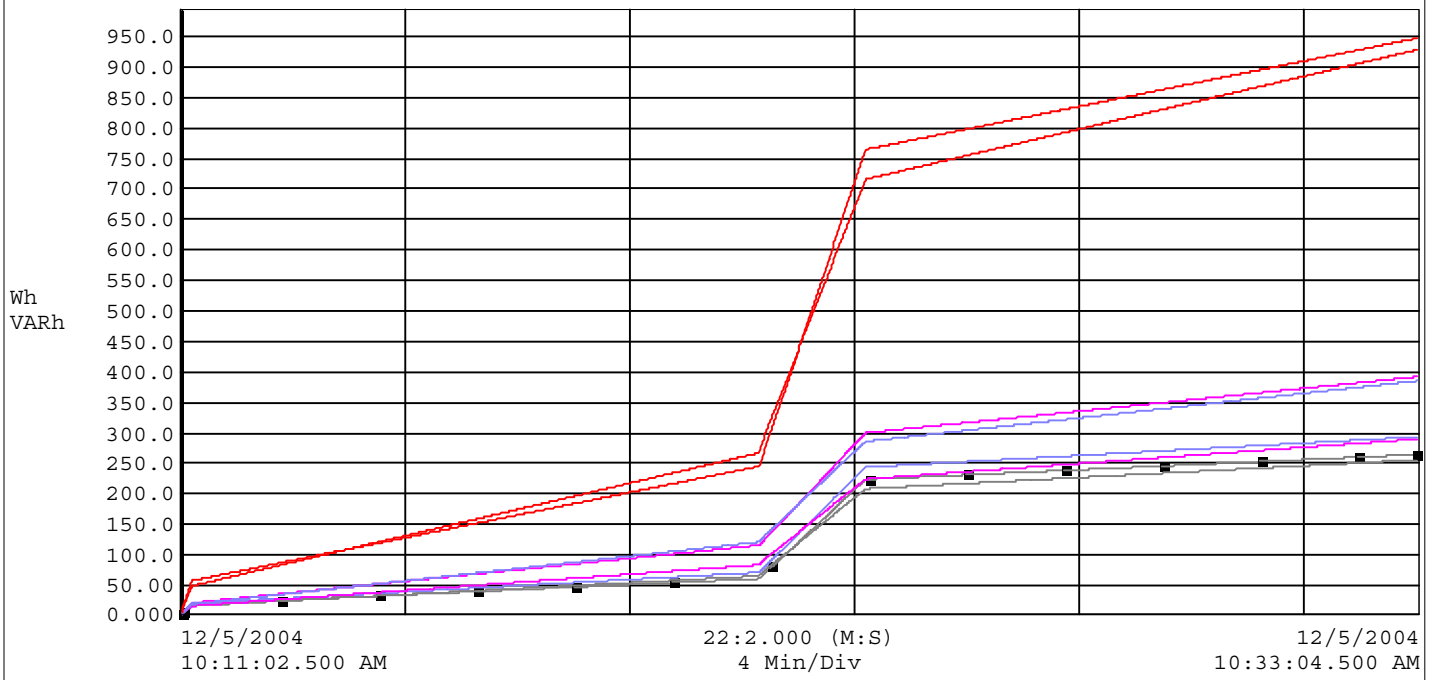
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	12/5/2004	10:11:02.500 AM	715.7	247.1	5.330E+3	W
W Line2	12/5/2004	10:11:02.500 AM	1.062E+3	558.1	5.998E+3	W
W Line3	12/5/2004	10:11:02.500 AM	794.3	301.9	5.659E+3	W
W Sum of Phases	12/5/2004	10:11:02.500 AM	2.572E+3	1.107E+3	16.99E+3	W
VAR Line1	12/5/2004	10:11:02.500 AM	691.7	284.9	7.517E+3	VAR
VAR Line2	12/5/2004	10:11:02.500 AM	784.5	394.5	7.737E+3	VAR
VAR Line3	12/5/2004	10:11:02.500 AM	1.044E+3	601.1	7.698E+3	VAR
VAR Sum of Phases	12/5/2004	10:11:02.500 AM	2.520E+3	1.281E+3	22.95E+3	VAR

12/5/2004 - 10:11:02.000 AM
Val
5.239E+3 — W Line1
5.912E+3 — W Line2
5.571E+3 — W Line3
16.72E+3 — W Sum of Phases
4.467E+3 — VAR Line1
4.363E+3 — VAR Line2
5.158E+3 — VAR Line3
13.99E+3 — VAR Sum of Phases

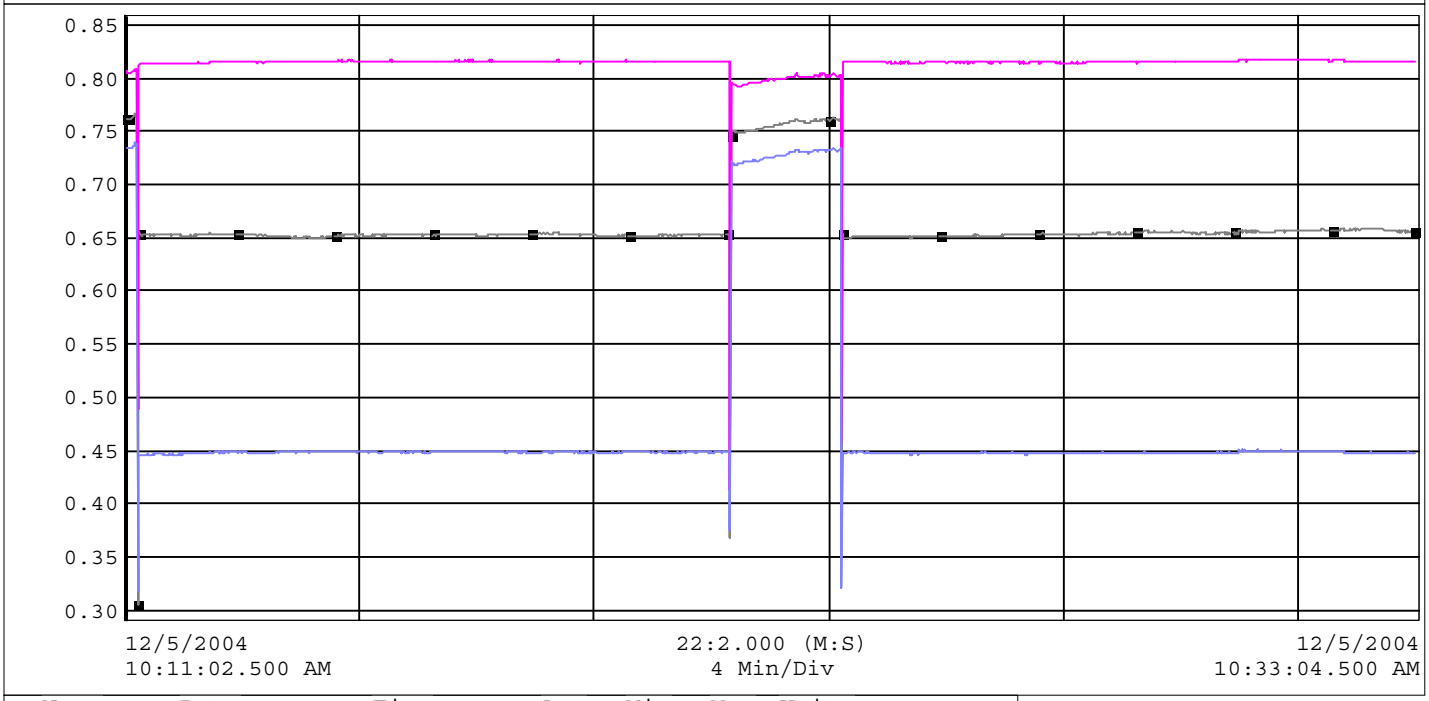
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	12/5/2004	10:11:02.500 AM	138.1	1.453	263.0	Wh
W-hours Line2	12/5/2004	10:11:02.500 AM	202.3	1.645	390.4	Wh
W-hours Line3	12/5/2004	10:11:02.500 AM	153.0	1.551	291.9	Wh
W-hours Sum of Phases	12/5/2004	10:11:02.500 AM	493.4	4.645	945.3	Wh
VAR-hours Line1	12/5/2004	10:11:02.500 AM	132.9	1.242	254.2	VARh
VAR-hours Line2	12/5/2004	10:11:02.500 AM	149.6	1.215	288.3	VARh
VAR-hours Line3	12/5/2004	10:11:02.500 AM	198.1	1.429	383.7	VARh
VAR-hours Sum of Phases	12/5/2004	10:11:02.500 AM	480.5	3.873	926.2	VARh

12/5/2004 - 10:11:02.000 AM
Val
1.453 — W-hours Line1
1.645 — W-hours Line2
1.551 — W-hours Line3
4.645 — W-hours Sum of Phases
1.242 — VAR-hours Line1
1.215 — VAR-hours Line2
1.429 — VAR-hours Line3
3.873 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	12/5/2004	10:11:02.500 AM	0.661	0.305	0.765	
PF Line2	12/5/2004	10:11:02.500 AM	0.812	0.412	0.817	
PF Line3	12/5/2004	10:11:02.500 AM	0.474	0.317	0.738	

12/5/2004 - 10:11:02.000 AM
Val
0.761 PF Line1
0.805 PF Line2
0.734 PF Line3

Trend Summary Report

Database: X:\PS-13 Umatac\120504-PS 13 - Umatac WWTP.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, :LLC ,	PS13 - WWPS at Umatac WWTF ,

Comments
Measured at the Autotransfer switch, 460 volts, 3 phase

Appendix 1K - Electrical

Station Name	Utility Service Information	Building Service Information	Standby Generator	Pump Motor Starter	Chlorination Motor Starter	Pump Instrumentation	Building Electrical	Assessment Value
A-01	0.45	0.45	0.575	0.7	0.13	0.05	0.12	2.5
A-02	0.5	0.45	0.6	0.75	0	0.065	0.15	2.5
A-03	0.5	0.45	0.575	0.75	0.13	0.05	0.15	2.6
A-05	0.475	0.45	0.575	0.5	0.12	0.085	0.1	2.3
A-06	0.5	0.45	0.575	0.55	0.12	0.1	0.1	2.4
A-08	0.5	0.45	0.6	0.55	0.12	0.13	0.15	2.5
A-09	0.5	0.45	0.575	0.65	0.14	0	0.13	2.4
A-10	0.475	0.45	0.275	0.7	0.14	0.05	0.1	2.2
A-14	0.5	0.45	0.6	0.75	0.14	0.02	0.1	2.6
A-15	0.475	0.45	0.575	0.8	0.14	0	0.15	2.6
A-18	0.55	0.45	0.6	0.75	0.14	0	0.15	2.6
A-21	0.425	0.4	0.6	0.75	0.14	0	0.12	2.4
A-28	0.5	0.35	0.6	0.5	0.12	0.055	0.15	2.3
A-29	0.55	0.45	0.6	0.7	0	0.07	0.15	2.5
A-30	0.5	0.35	0.425	0.6	0.12	0.035	0	2.0
A-31	0.55	0.45	0.6	0.55	0.12	0.03	0.12	2.4
AG-2A	0.5	0.45	0.475	0.8	0	0.07	0.13	2.4
D1-D2	0.5	0.45	0.6	0.75	0.14	0.03	0.15	2.6
D-04	0.5	0.4	0.575	0.75	0.14	0	0.15	2.5
D-07	0.5	0.45	0.6	0.75	0	0	0.15	2.5
D-08	0.5	0.45	0.575	0.55	0	0.015	0.15	2.2
D-10	0.45	0.45	0.6	0.55	0	0.015	0.15	2.2
D-11	0.275	0.45	0.6	0.55	0.12	0.015	0.15	2.2
D-12	0.5	0.45	0.6	0.55	0	0.03	0.15	2.3
D-13	0.45	0.45	0.6	0.65	0.14	0.015	0.15	2.5
D-14	0.5	0.35	0.6	0.5	0.07	0.035	0.15	2.2
D-15	0.5	0.45	0.6	0.55	0.07	0	0.15	2.3
D-16	0.475	0.45	0.6	0.75	0.14	0.05	0.15	2.6
D-19	0.35	0.45	0.575	0.75	0.03	0.08	0.15	2.4
D-20	0.4	0.45	0.575	0.5	0	0.05	0.13	2.1
D-21	0.5	0.45	0.6	0.75	0.14	0.035	0.13	2.6
D-22	0.5	0.45	0.35	0.6	0.14	0.02	0.15	2.2
EX-11	0.35	0.45	0.575	0.55	0.12	0.05	0.15	2.2
F-02	0.5	0.45	0.575	0.75	0.14	0.03	0.15	2.6
F-03	0.45	0.45	0.6	0.7	0	0.06	0.15	2.4
F-06	0.5	0.45	0.6	0.75	0.14	0.05	0.15	2.6
F-07	0.5	0.45	0.6	0.7	0	0.065	0.15	2.5
F-09	0.45	0.45	0.6	0.55	0	0.05	0.15	2.3
F-10	0.5	0.45	0.5	0.55	0.12	0.1	0.15	2.4
F-11	0.5	0.45	0.6	0.75	0.14	0.08	0	2.5
F-12	0.5	0.45	0.6	0.75	0.13	0.055	0.15	2.6
F-13	0.5	0.45	0.275	0.6	0.14	0.1	0.15	2.2
F-15	0.5	0.25	0.525	0.7	0.14	0.1	0.12	2.3
F-16	0.45	0.4	0.275	0.6	0.06	0.035	0.12	1.9
F-17	0.5	0.45	0.325	0.65	0.13	0.08	0.12	2.3
F-18	0.5	0.35	0.425	0.6	0.14	0.05	0.12	2.2
HCG2	0.45	0.5	0	0.55	0.08	0.05	0.24	1.9
M-02	0.475	0.45	0.6	0.7	0	0.05	0.15	2.4
M-03	0.2	0.45	0.575	0.75	0	0.045	0.15	2.2
M-06	0.425	0.45	0.6	0.55	0.07	0.05	0.15	2.3
M-09	0.475	0.45	0.5	0.75	0.14	0.06	0.15	2.5
M-15	0.6	0.45	0.55	0.6	0.12	0.085	0.1	2.5
M-17-B	0.525	0.6	0.575	0.75	0.12	0.05	0.12	2.7
M-18	0.55	0.45	0.45	0.6	0.12	0.1	0.1	2.4
M-20-A	0.55	0.45	0.5	0.7	0.12	0.055	0.12	2.5
M-23	0.6	0.45	0.5	0.75	0.11	0.085	0.1	2.6
Y-01	0.5	0.3	0.55	0.45	0.12	0.06	0.15	2.1
Y-02	0.5	0.3	0.55	0.55	0	0.045	0.15	2.1
Y-05	0.425	0.45	0.575	0.55	0.12	0.085	0.15	2.4
Y-06	0.5	0.45	0.6	0.55	0.12	0.08	0.15	2.5
Y-09	0.425	0.45	0.575	0.6	0.12	0.07	0.1	2.3
Y-10	0.45	0.45	0.45	0.7	0.11	0.1	0.1	2.4
Y-15	0.675	0.6	0.5	0.65	0.14	0.1	0.15	2.8
Y-17	0.65	0.3	0.6	0.75	0	0.1	0.15	2.6
Y-21-A	0.45	0.35	0.45	0.55	0.11	0.1	0.15	2.2
Y-23	0.6	0.45	0.35	0.7	0.14	0.1	0.15	2.5

Appendix 1K - Electrical

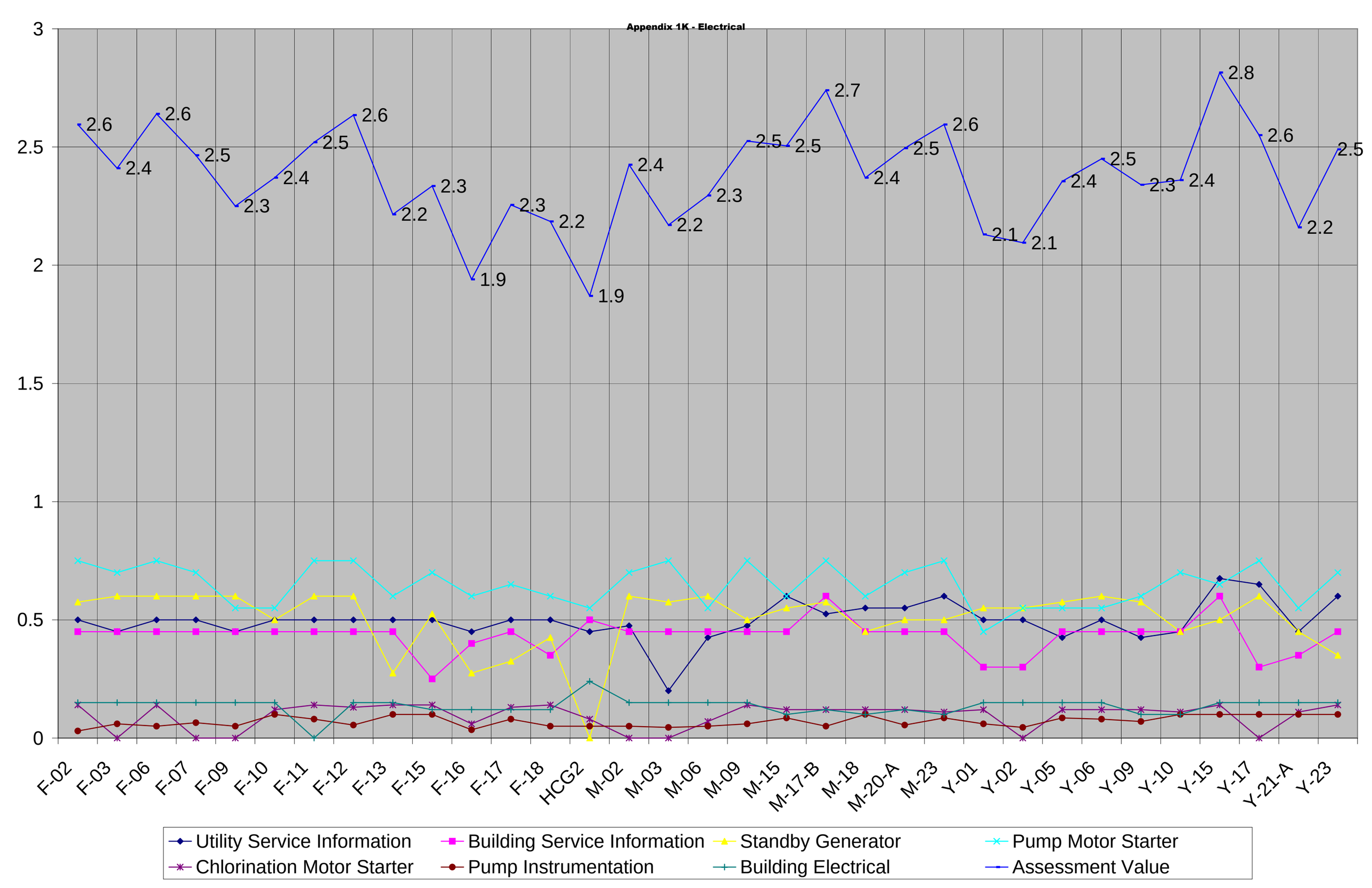
Range

3
2.5
2
1.5
1
0.5
0

2.5 2.5 2.6 2.3 2.4 2.5 2.4 2.2 2.6 2.6 2.6 2.4 2.3 2.5 2.0 2.4 2.4 2.6 2.5 2.5 2.2 2.2 2.2 2.3 2.5 2.2 2.3 2.6 2.4 2.1 2.6 2.2 2.2

A-01 A-02 A-03 A-05 A-06 A-08 A-09 A-10 A-14 A-15 A-18 A-21 A-28 A-29 A-30 A-31 AG-2A D1-D2 D-04 D-07 D-08 D-10 D-11 D-12 D-13 D-14 D-15 D-16 D-19 D-20 D-21 D-22 EX-11

Utility Service Information
Building Service Information
Standby Generator
Pump Motor Starter
Chlorination Motor Starter
Pump Instrumentation
Building Electrical
Assessment Value



Appendix 1K - Electrical
3
2.5
2
1.5
1
0.5
0
2.6
2.4
2.6
2.5
2.3
2.4
2.5
2.6
2.2
2.3
1.9
2.3
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2.4
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2.6
2.1
2.1
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2.4
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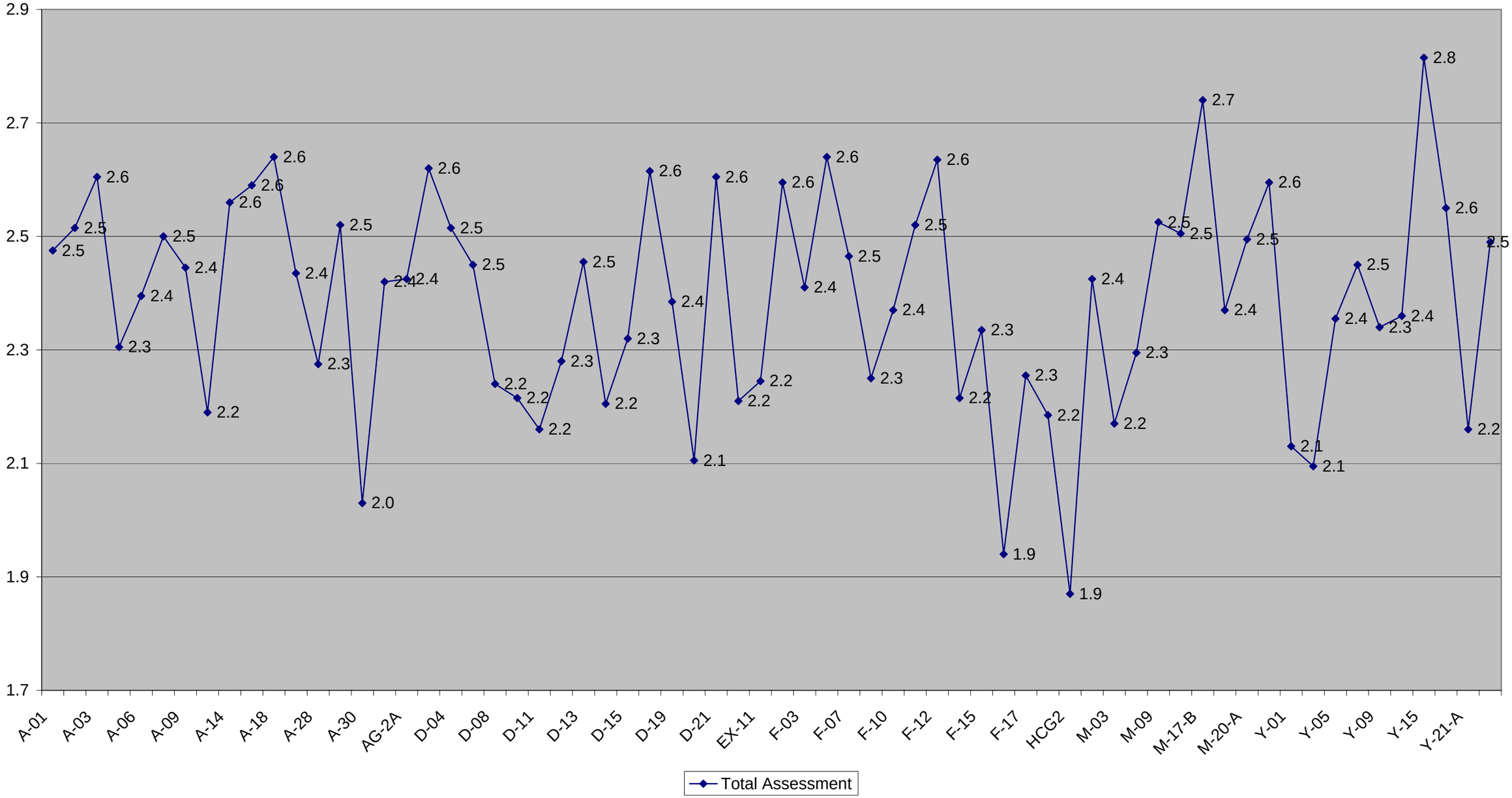
2.6
2.2
2.5
F-02
F-03
F-06
F-07
F-09
F-10
F-11
F-12
F-13
F-15
F-16
F-17
F-18
HCG2
M-02
M-03
M-06
M-09
M-15
M-17-B
M-18
M-20-A
M-23
Y-01
Y-02
Y-05
Y-06
Y-09
Y-10
Y-15
Y-17
Y-21-A
Y-23
Utility Service Information
Building Service Information
Standby Generator
Pump Motor Starter
Chlorination Motor Starter
Pump Instrumentation
Building Electrical
Assessment Value

Total Assessment

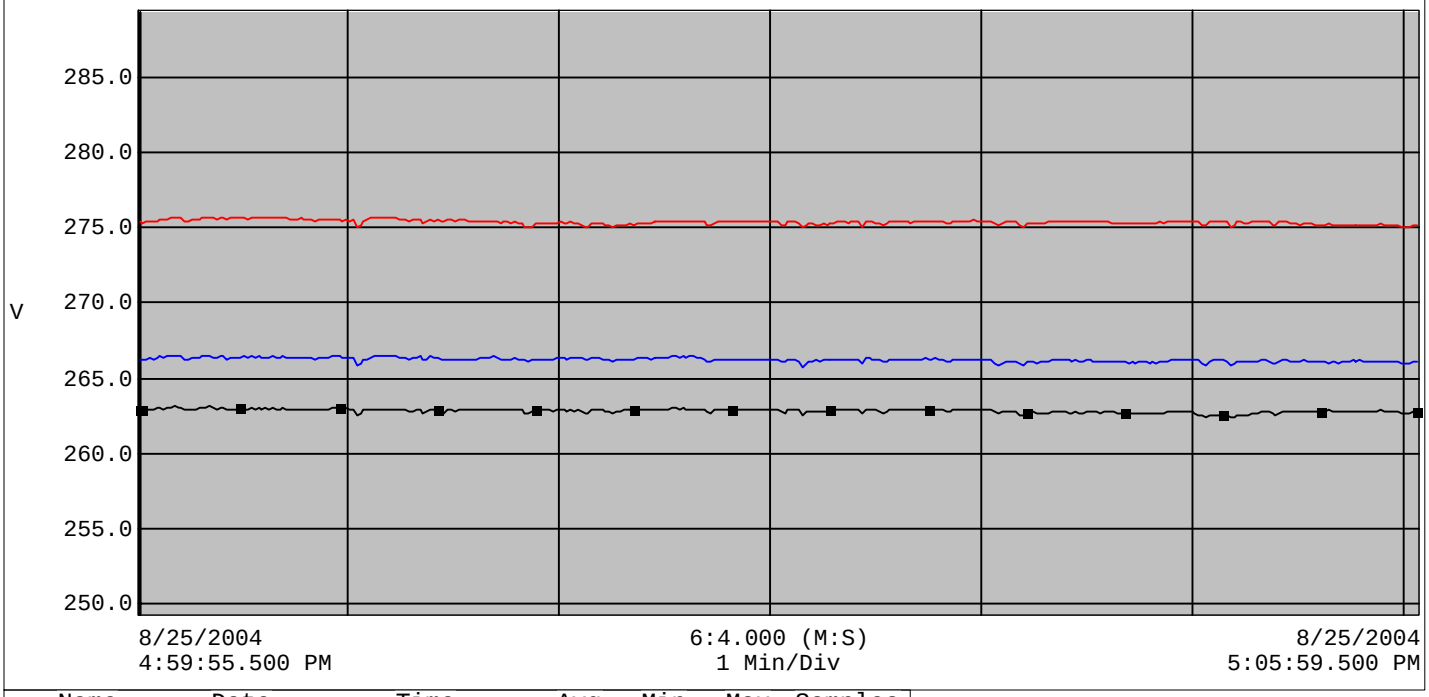


GWA Water Pumping Station Assessment				
Station Name: _A-01_____	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.45	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	2	0.1	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.7	
Main Breaker	5.0%	2	0.1	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.13	
Main Breaker	1.0%	2	0.02	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0.05	
Pressure	1.5%	1	0.015	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.12	
Lighting	3.0%	2	0.06	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.5**
Comments:				

WPS A-1 Station

Recording Start Date	8/25/2004 - 4:59:55 PM
Recording Duration	6:04 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

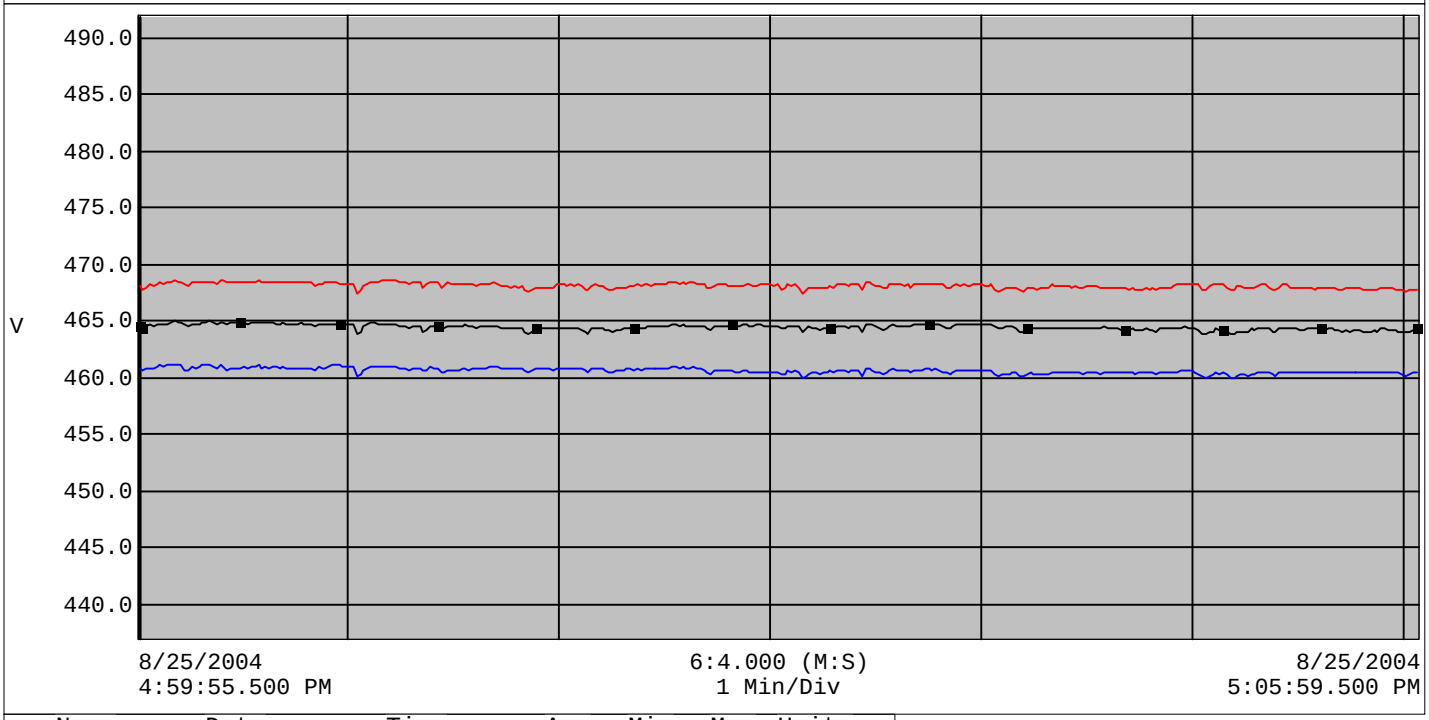
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/25/2004	4:59:55.500 PM	262.8	262.3	263.1	365
Vrms Line2	8/25/2004	4:59:55.500 PM	275.3	274.9	275.6	365
Vrms Line3	8/25/2004	4:59:55.500 PM	266.1	265.7	266.4	365

8/25/2004 - 4:59:55.000 PM
Val
262.9 — Vrms Line1
275.3 — Vrms Line2
266.2 — Vrms Line3

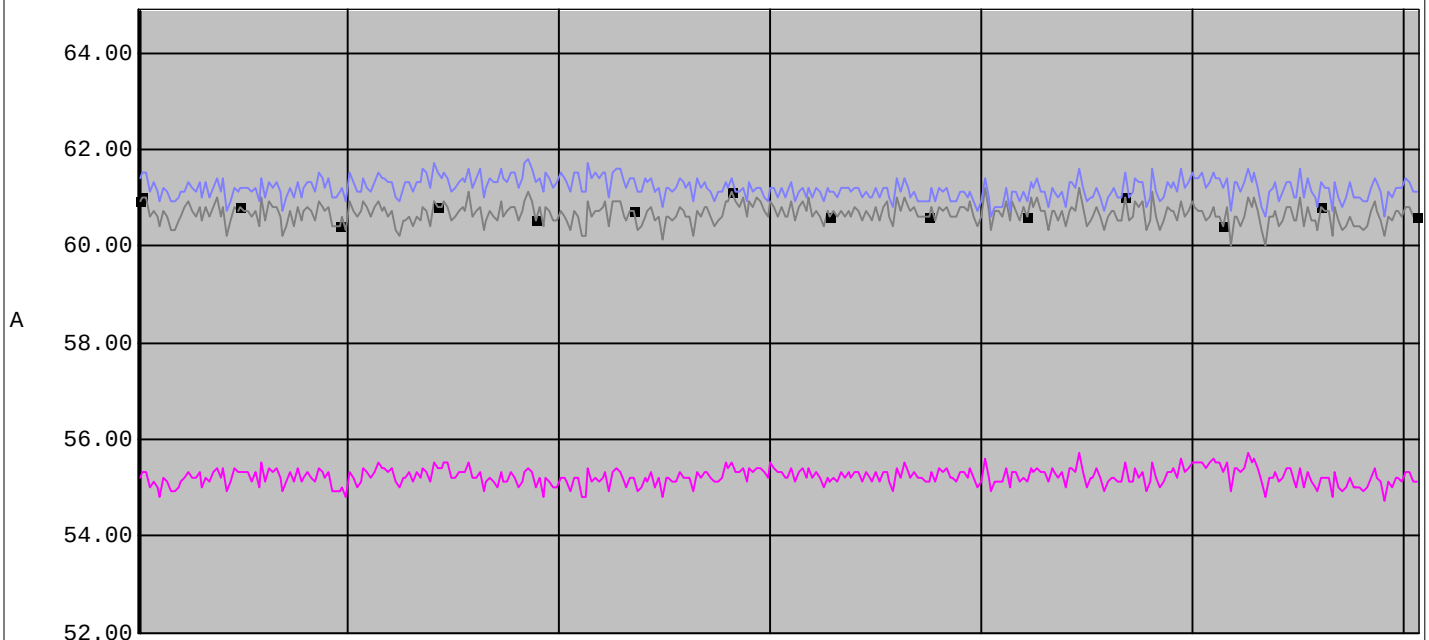
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/25/2004	4:59:55.500 PM	464.4	463.7	464.9	V
Urms Line2	8/25/2004	4:59:55.500 PM	468.0	467.3	468.5	V
Urms Line3	8/25/2004	4:59:55.500 PM	460.5	459.8	461.1	V

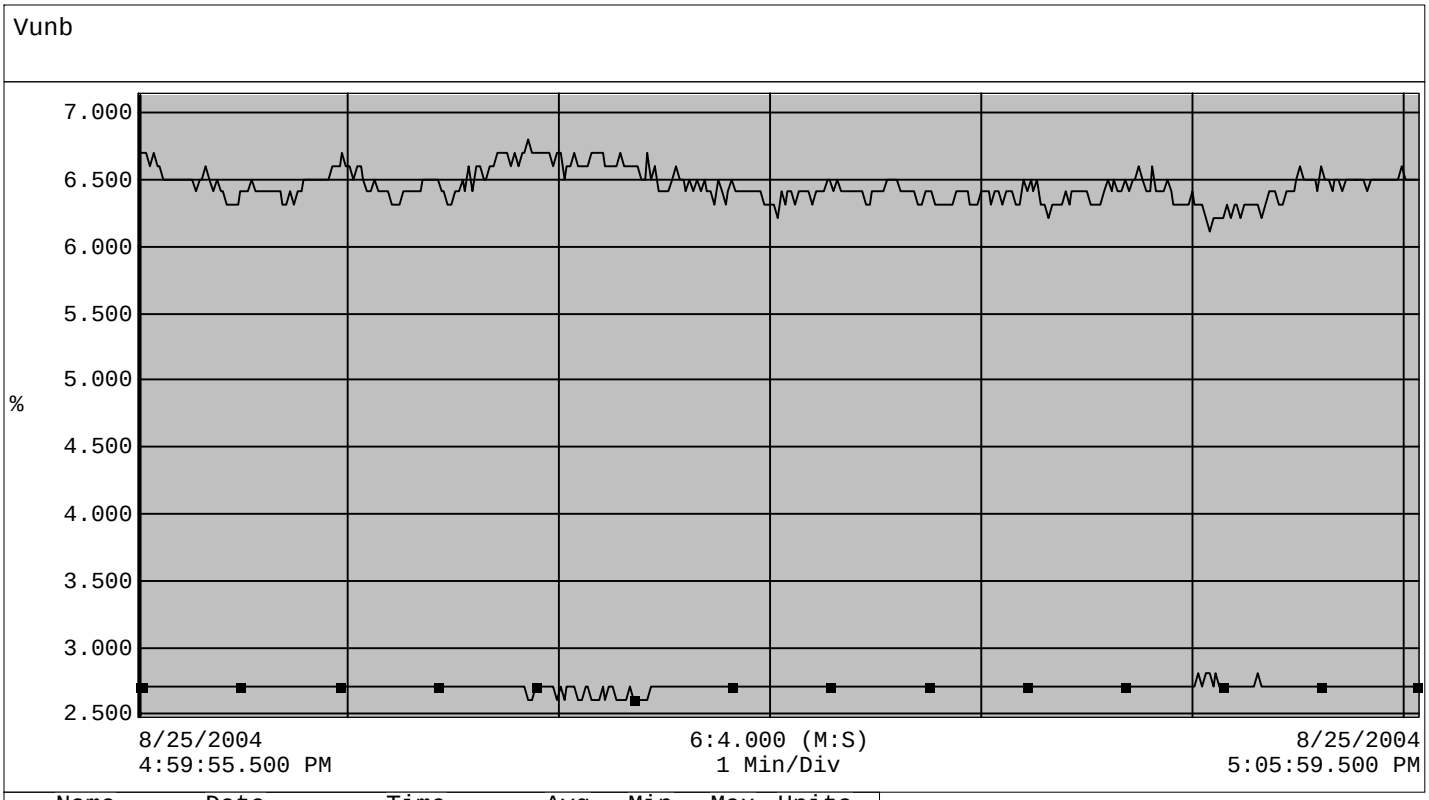
8/25/2004 - 4:59:55.000 PM
Val
464.4 Urms Line1
468.0 Urms Line2
460.8 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/25/2004	4:59:55.500 PM	60.65	60.00	61.20	A
Arms Line2	8/25/2004	4:59:55.500 PM	55.21	54.70	55.70	A
Arms Line3	8/25/2004	4:59:55.500 PM	61.18	60.60	61.80	A

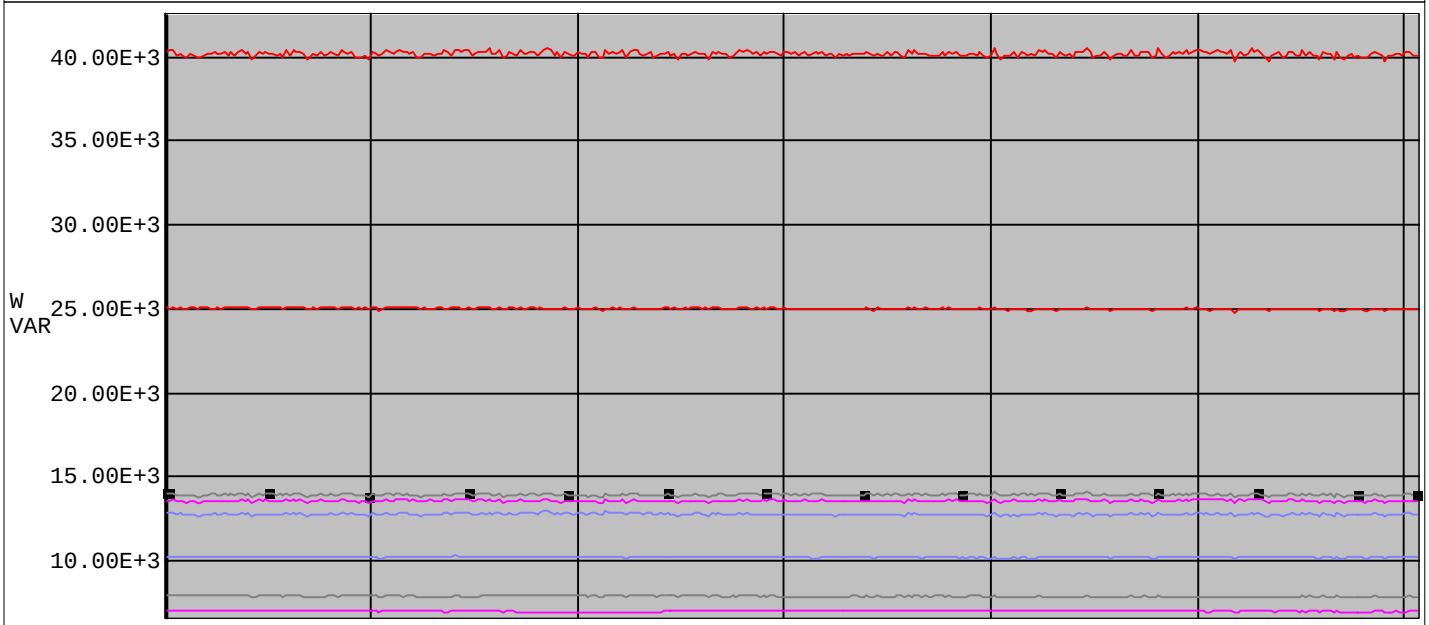
8/25/2004 - 4:59:55.000 PM
Val
60.90 — Arms Line1
55.20 — Arms Line2
61.40 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/25/2004	4:59:55.500 PM	2.696	2.600	2.800	%
Aunb(IEEE)	8/25/2004	4:59:55.500 PM	6.445	6.100	6.800	%

8/25/2004 - 4:59:55.000 PM
Val
2.700 —— Vunb(IEEE)
6.700 —— Aunb(IEEE)

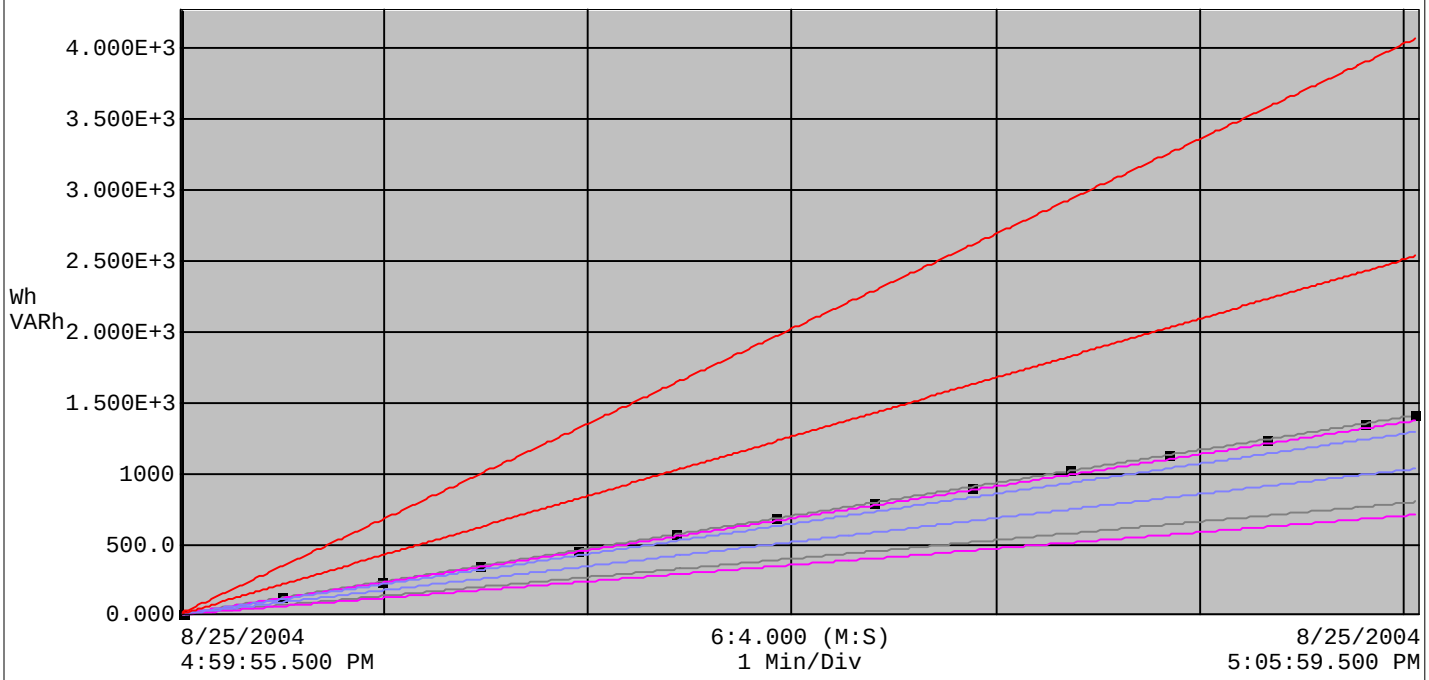
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/25/2004	4:59:55.500 PM	13.88E+3	13.72E+3	14.02E+3	W
W Line2	8/25/2004	4:59:55.500 PM	13.52E+3	13.37E+3	13.65E+3	W
W Line3	8/25/2004	4:59:55.500 PM	12.72E+3	12.54E+3	12.92E+3	W
W Sum of Phases	8/25/2004	4:59:55.500 PM	40.12E+3	39.67E+3	40.49E+3	W
VAR Line1	8/25/2004	4:59:55.500 PM	7.838E+3	7.727E+3	7.894E+3	VAR
VAR Line2	8/25/2004	4:59:55.500 PM	6.950E+3	6.871E+3	7.006E+3	VAR
VAR Line3	8/25/2004	4:59:55.500 PM	10.16E+3	10.07E+3	10.25E+3	VAR
VAR Sum of Phases	8/25/2004	4:59:55.500 PM	24.95E+3	24.75E+3	25.06E+3	VAR

8/25/2004 - 4:59:55.000 PM
Val
13.92E+3 — W Line1
13.52E+3 — W Line2
12.81E+3 — W Line3
40.25E+3 — W Sum of Phases
7.891E+3 — VAR Line1
6.933E+3 — VAR Line2
10.17E+3 — VAR Line3
24.99E+3 — VAR Sum of Phases

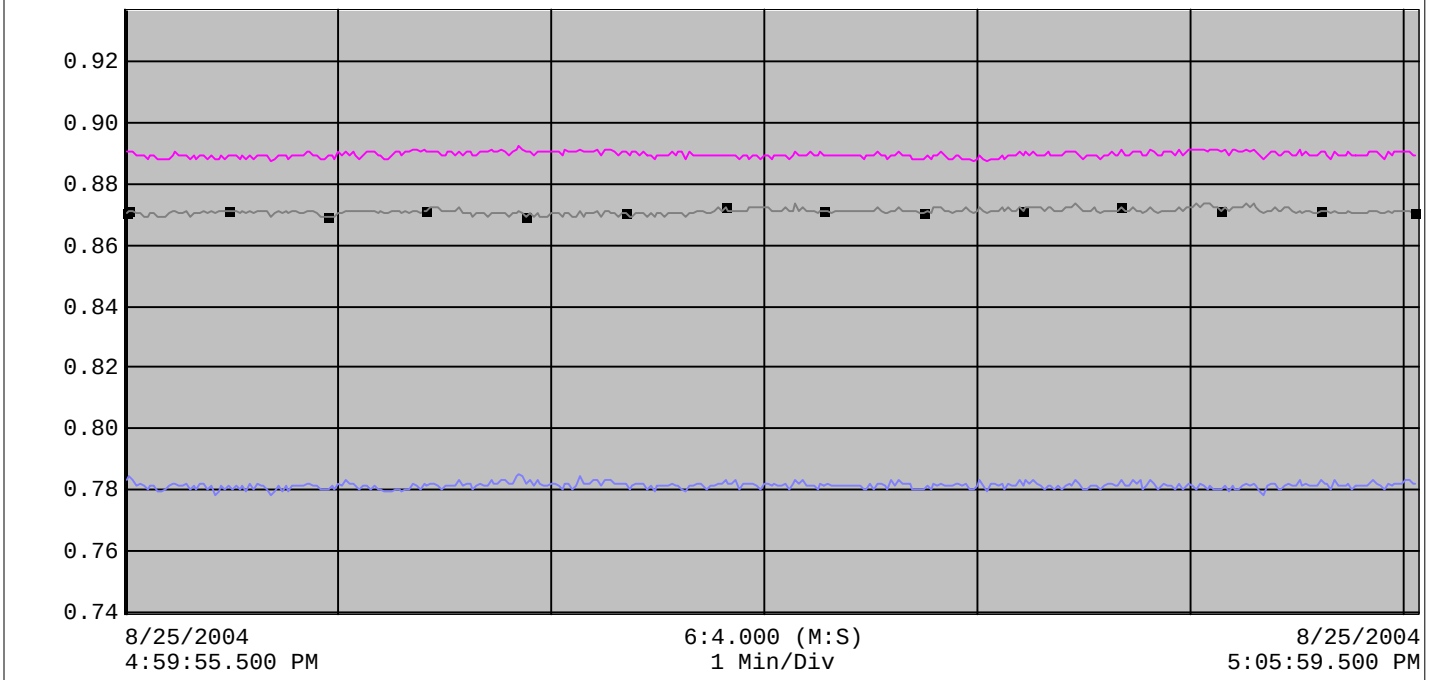
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/25/2004	4:59:55.500 PM	705.5	3.865	1.407E+3	Wh
W-hours Line2	8/25/2004	4:59:55.500 PM	687.1	3.765	1.370E+3	Wh
W-hours Line3	8/25/2004	4:59:55.500 PM	647.0	3.543	1.290E+3	Wh
W-hours Sum of Phases	8/25/2004	4:59:55.500 PM	2.040E+3	11.17	4.067E+3	Wh
VAR-hours Line1	8/25/2004	4:59:55.500 PM	398.9	2.183	794.7	VARh
VAR-hours Line2	8/25/2004	4:59:55.500 PM	353.5	1.936	704.7	VARh
VAR-hours Line3	8/25/2004	4:59:55.500 PM	517.1	2.831	1.031E+3	VARh
VAR-hours Sum of Phases	8/25/2004	4:59:55.500 PM	1.269E+3	6.949	2.530E+3	VARh

8/25/2004 - 4:59:55.000 PM
Val
3.865 — W-hours Line1
3.765 — W-hours Line2
3.543 — W-hours Line3
11.17 — W-hours Sum of Phases
2.183 — VAR-hours Line1
1.936 — VAR-hours Line2
2.831 — VAR-hours Line3
6.949 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/25/2004	4:59:55.500 PM	0.871	0.869	0.873	
PF Line2	8/25/2004	4:59:55.500 PM	0.889	0.887	0.892	
PF Line3	8/25/2004	4:59:55.500 PM	0.781	0.778	0.785	

8/25/2004 - 4:59:55.000 PM
Val
0.870 — PF Line1
0.890 — PF Line2
0.783 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\A1\082504-A1A.dvb

Operator	Test Site
Morikawa & Associates, LLC ,	GWA WPS A-1 ,

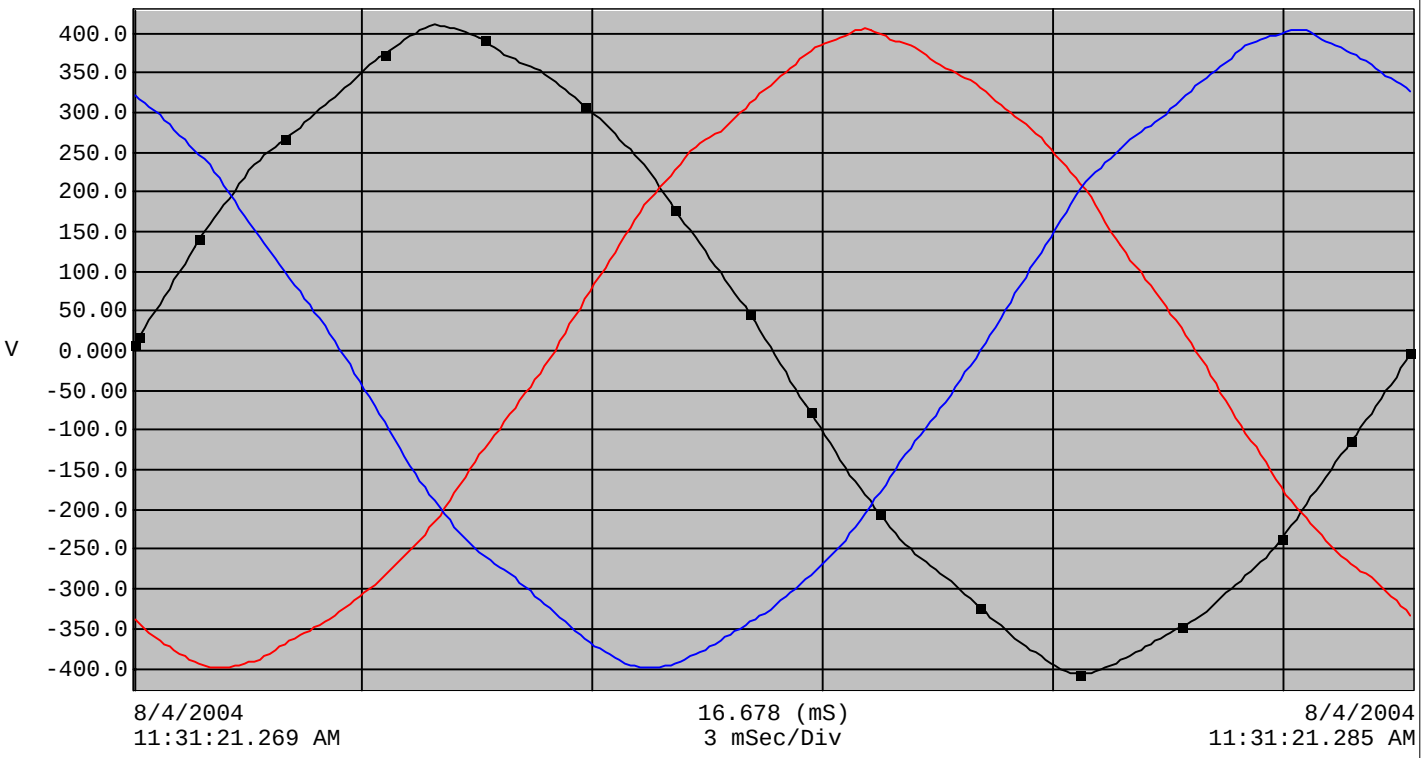
Comments
Recording after motor is operating

GWA Water Pumping Station Assessment				
Station Name: A-02	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/04/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.065	
Pressure	1.5%	2	0.03	52
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.5**
Comments:				

WPS A-2 Pump

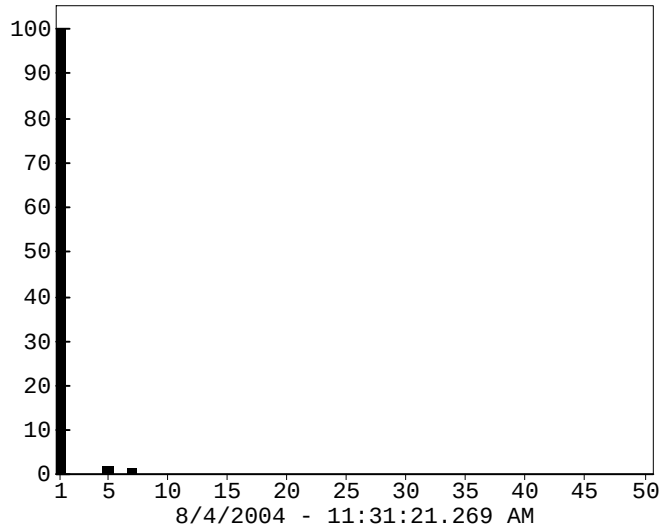
Recording Start Date	8/4/2004 - 11:31:21 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/4/2004	11:31:21.269 AM	16.678	277.9	V
Waveform V2	8/4/2004	11:31:21.269 AM	16.678	275.3	V
Waveform V3	8/4/2004	11:31:21.269 AM	16.678	275.5	V

Waveform V1
277.92 Vrms, 2.44 %THD

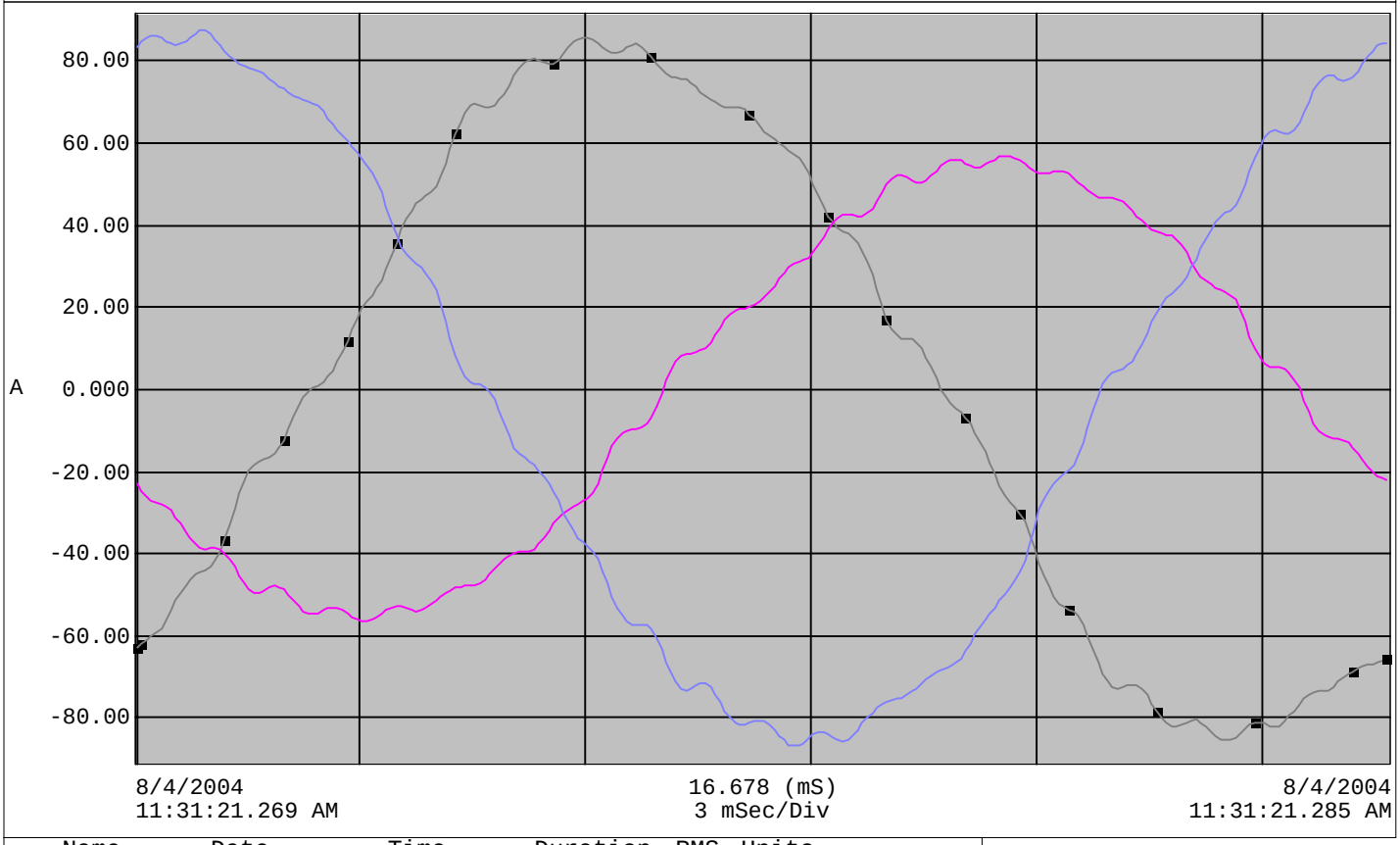


8/4/2004 - 11:31:21.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

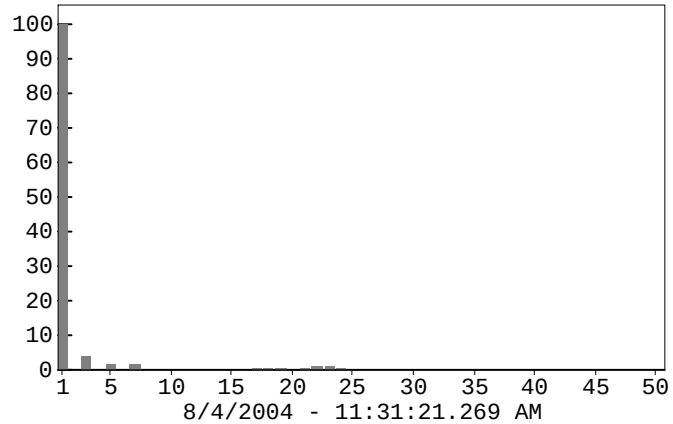
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.8	H22	0.1	H39	0.0
H06	0.1	H23	0.2	H40	0.0
H07	1.5	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/4/2004	11:31:21.269 AM	16.678	59.44	A
Waveform I2	8/4/2004	11:31:21.269 AM	16.678	39.32	A
Waveform I3	8/4/2004	11:31:21.269 AM	16.678	60.72	A

Waveform I1
59.44 Arms, 5.53 %THD

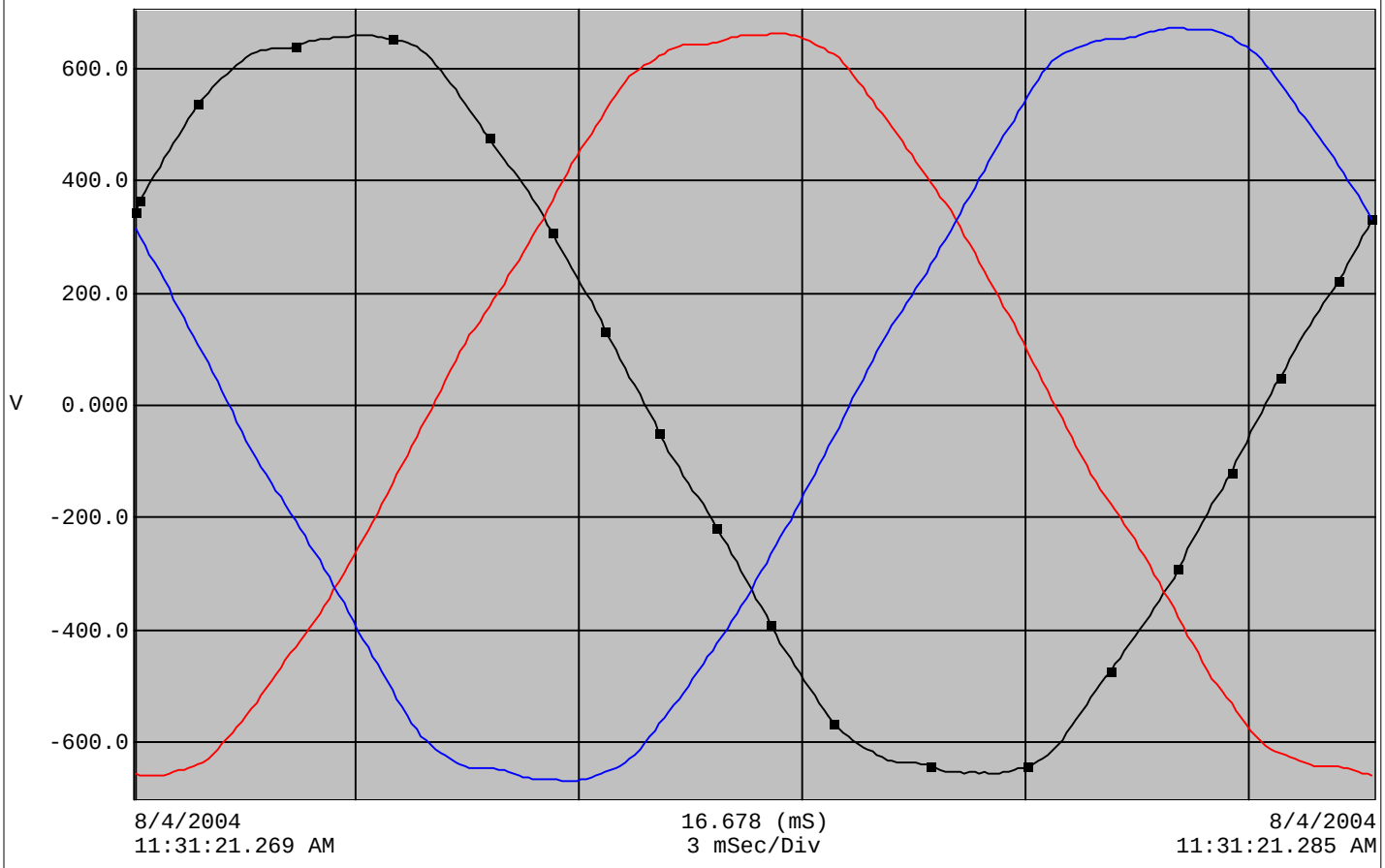


8/4/2004 - 11:31:21.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

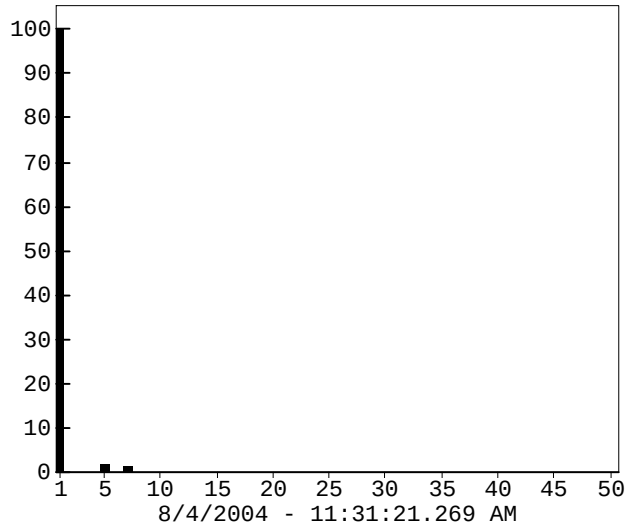
	(%)		(%)		(%)
H01	100.0	H18	0.8	H35	0.0
H02	0.2	H19	0.6	H36	0.1
H03	3.9	H20	0.2	H37	0.0
H04	0.1	H21	0.7	H38	0.0
H05	2.0	H22	1.5	H39	0.0
H06	0.0	H23	1.4	H40	0.1
H07	1.9	H24	0.7	H41	0.0
H08	0.1	H25	0.1	H42	0.1
H09	0.1	H26	0.2	H43	0.0
H10	0.1	H27	0.1	H44	0.1
H11	0.4	H28	0.2	H45	0.0
H12	0.2	H29	0.0	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.1	H31	0.1	H48	0.0
H15	0.2	H32	0.1	H49	0.0
H16	0.4	H33	0.1	H50	0.0
H17	0.6	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/4/2004	11:31:21.269 AM	16.678	475.5	V
Waveform U2	8/4/2004	11:31:21.269 AM	16.678	476.1	V
Waveform U3	8/4/2004	11:31:21.269 AM	16.678	483.7	V

Waveform U1
475.50 Vrms, 2.40 %THD



8/4/2004 - 11:31:21.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.8	H22	0.2	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/4/2004
Start Time: 11:31:21 AM
Duration: 0:0.000 (M:S)
W: 10.90E+3 W
VAR: 12.84E+3 W
VA: 16.84E+3 W
Power Factor: 0.647
Displacement Power Factor: 0.649
TAN: 1.172
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\A2\080404-A2-Photo1.dvb

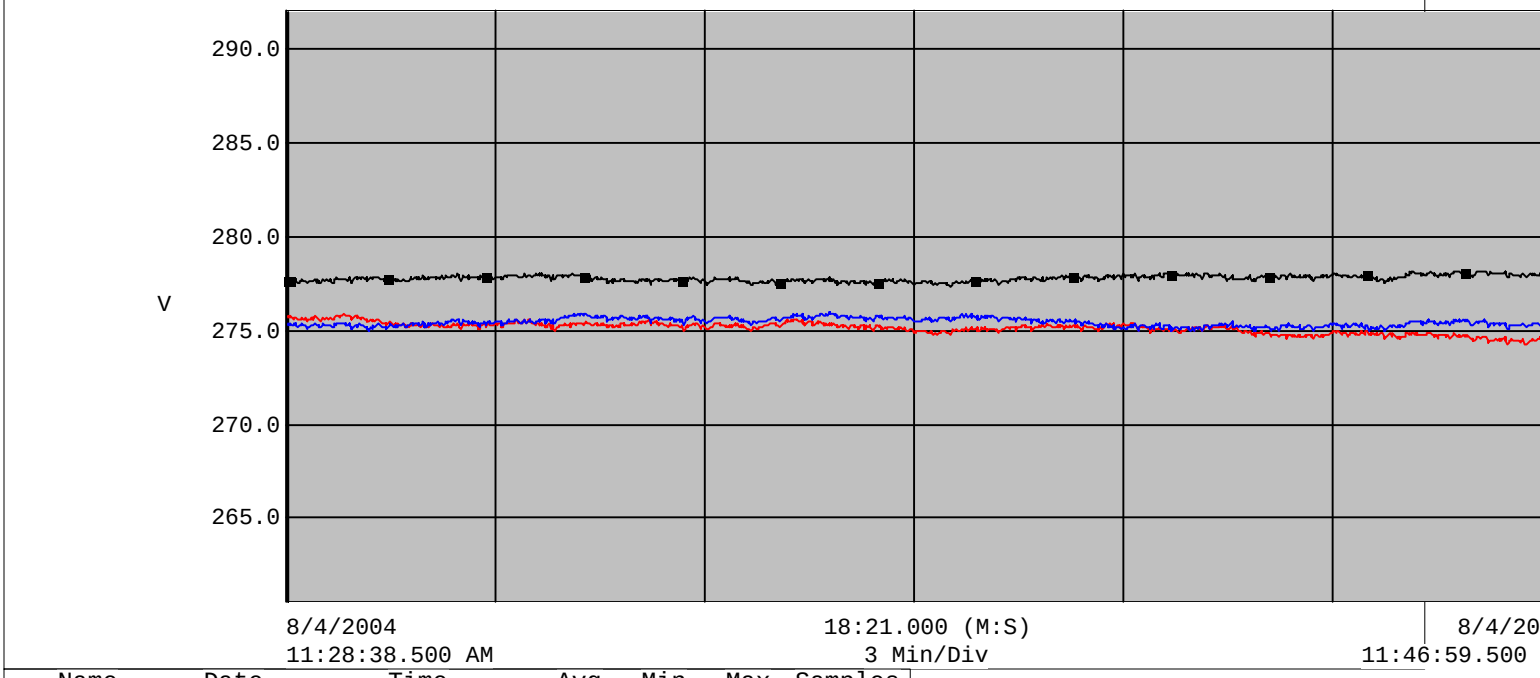
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS A-2 - Photo1 ,

Comments
Photo take at motor overload relay.

WPS A-2 Pump

Recording Start Date	8/4/2004 - 11:28:38 AM
Recording Duration	18:21 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

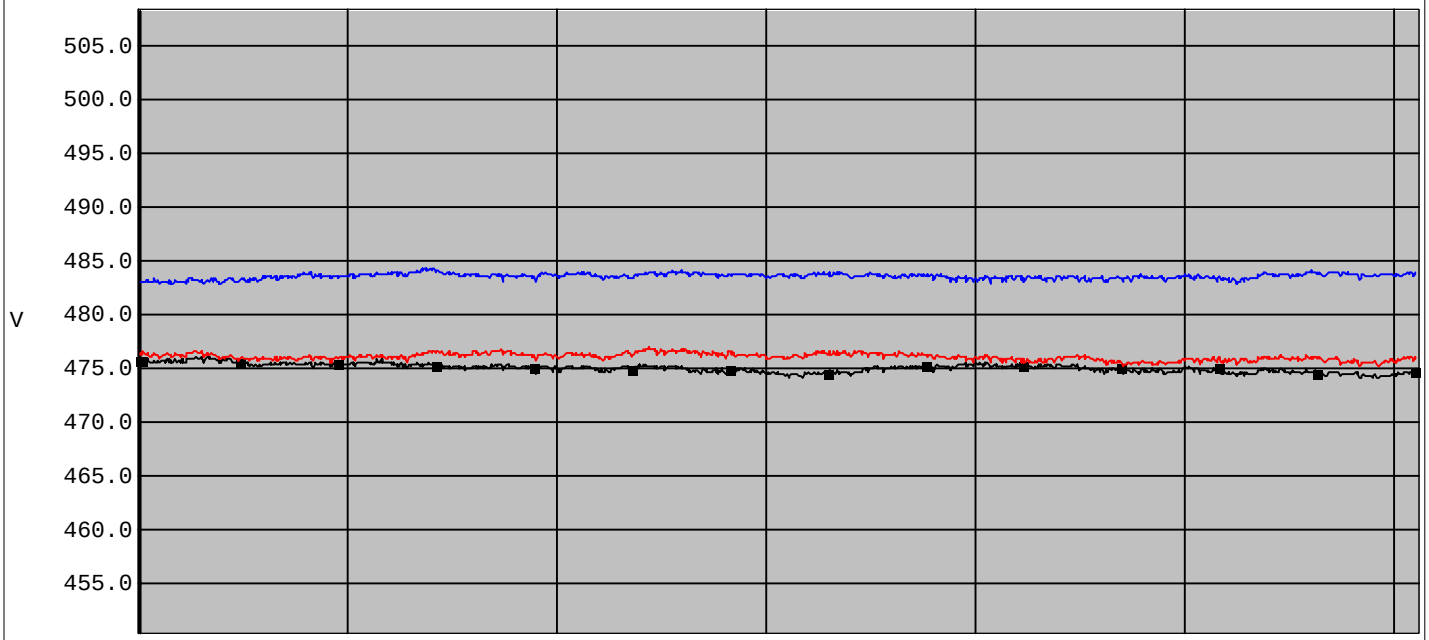
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/4/2004	11:28:38.500 AM	277.7	277.3	278.1	1102
Vrms Line2	8/4/2004	11:28:38.500 AM	275.0	274.2	275.8	1102
Vrms Line3	8/4/2004	11:28:38.500 AM	275.4	274.9	275.9	1102

8/4/2004 - 11:28:38.000 AM
Val
277.6 Vrms Line1
275.6 Vrms Line2
275.2 Vrms Line3

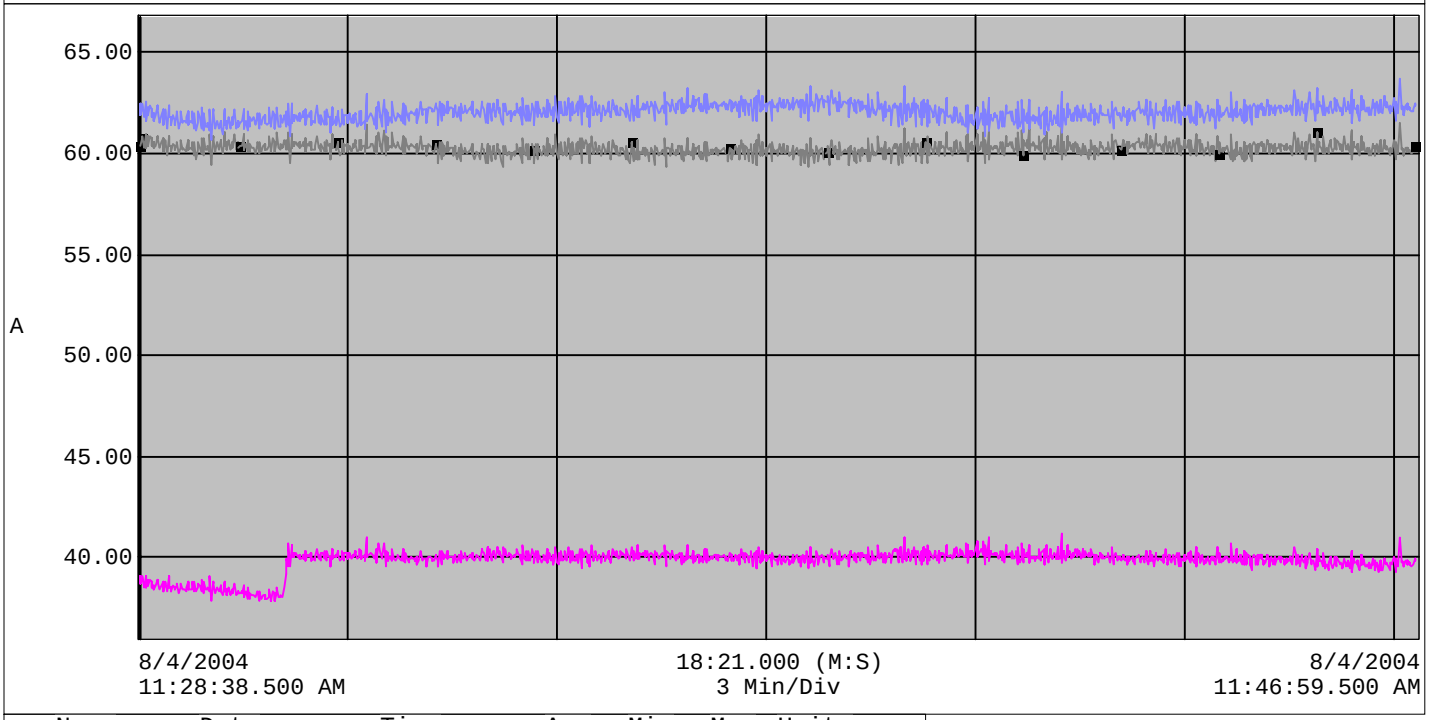
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/4/2004	11:28:38.500 AM	474.9	473.9	475.9	V
Urms Line2	8/4/2004	11:28:38.500 AM	475.9	475.0	476.8	V
Urms Line3	8/4/2004	11:28:38.500 AM	483.5	482.7	484.1	V

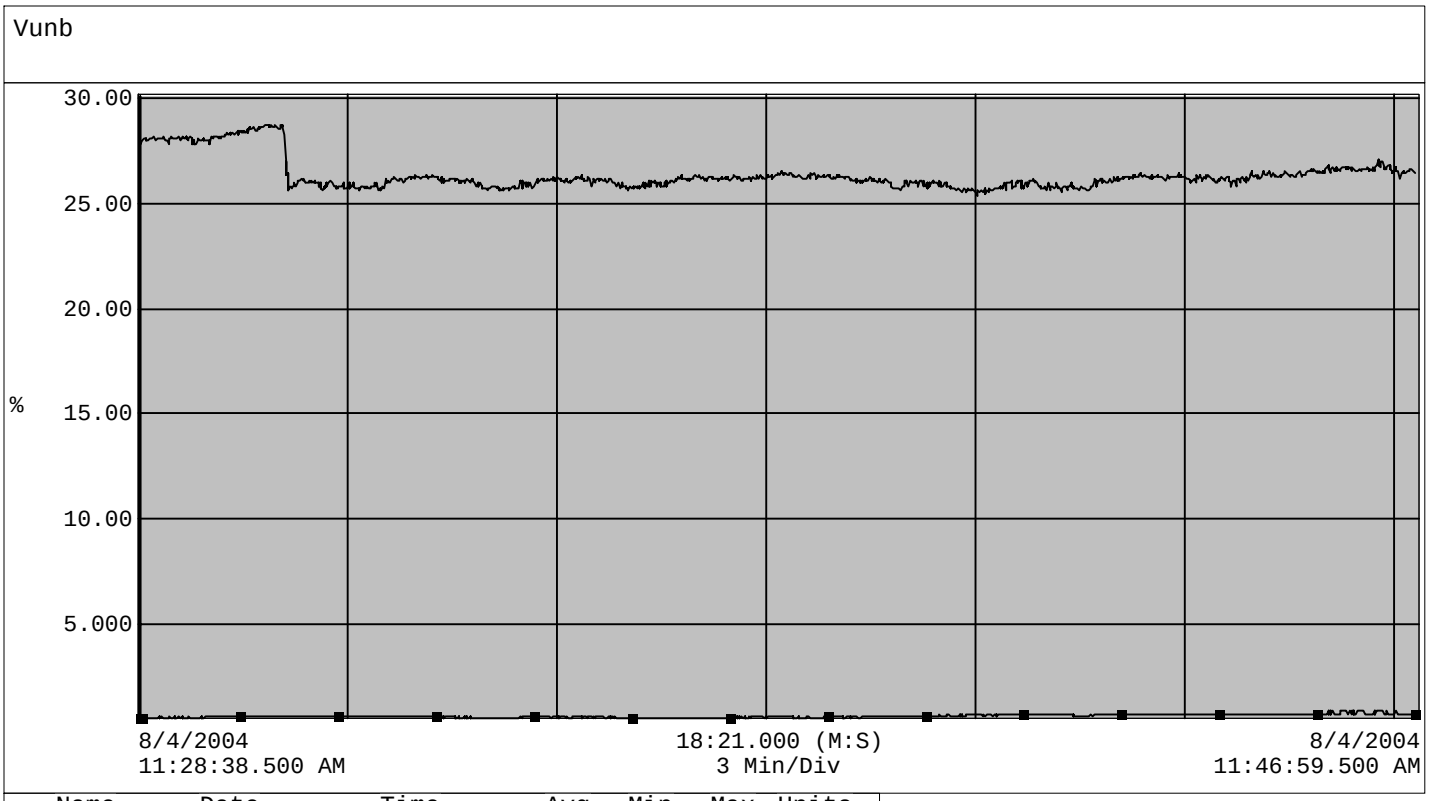
8/4/2004 - 11:28:38.000 AM
Val
475.6 Urms Line1
476.2 Urms Line2
483.0 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/4/2004	11:28:38.500 AM	60.18	59.30	61.50	A
Arms Line2	8/4/2004	11:28:38.500 AM	39.80	37.80	41.10	A
Arms Line3	8/4/2004	11:28:38.500 AM	61.99	60.60	63.60	A

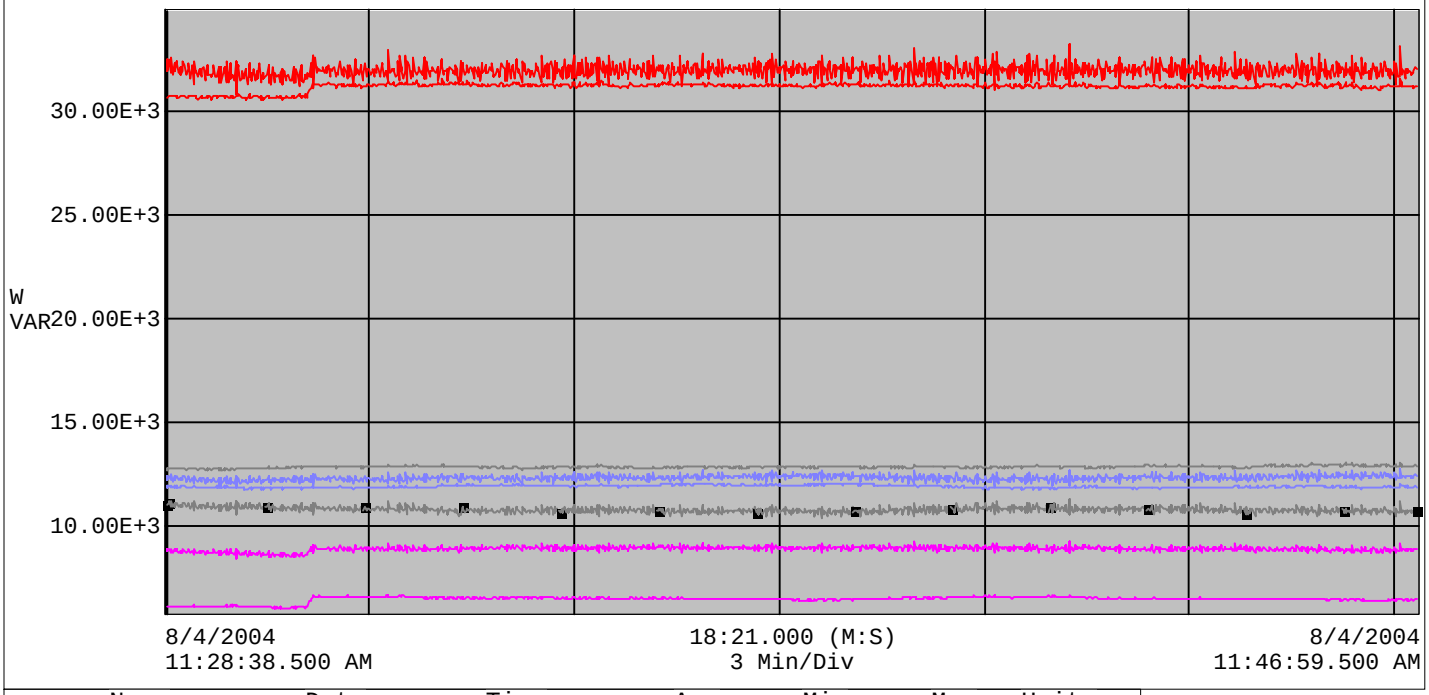
8/4/2004 - 11:28:38.000 AM
Val
60.80 — Arms Line1
39.00 — Arms Line2
62.40 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/4/2004	11:28:38.500 AM	0.612	0.500	0.800	%
Aunb(IEEE)	8/4/2004	11:28:38.500 AM	26.29	25.30	28.70	%

8/4/2004 - 11:28:38.000 AM
Val
0.500 —— Vunb(IEEE)
27.90 —— Aunb(IEEE)

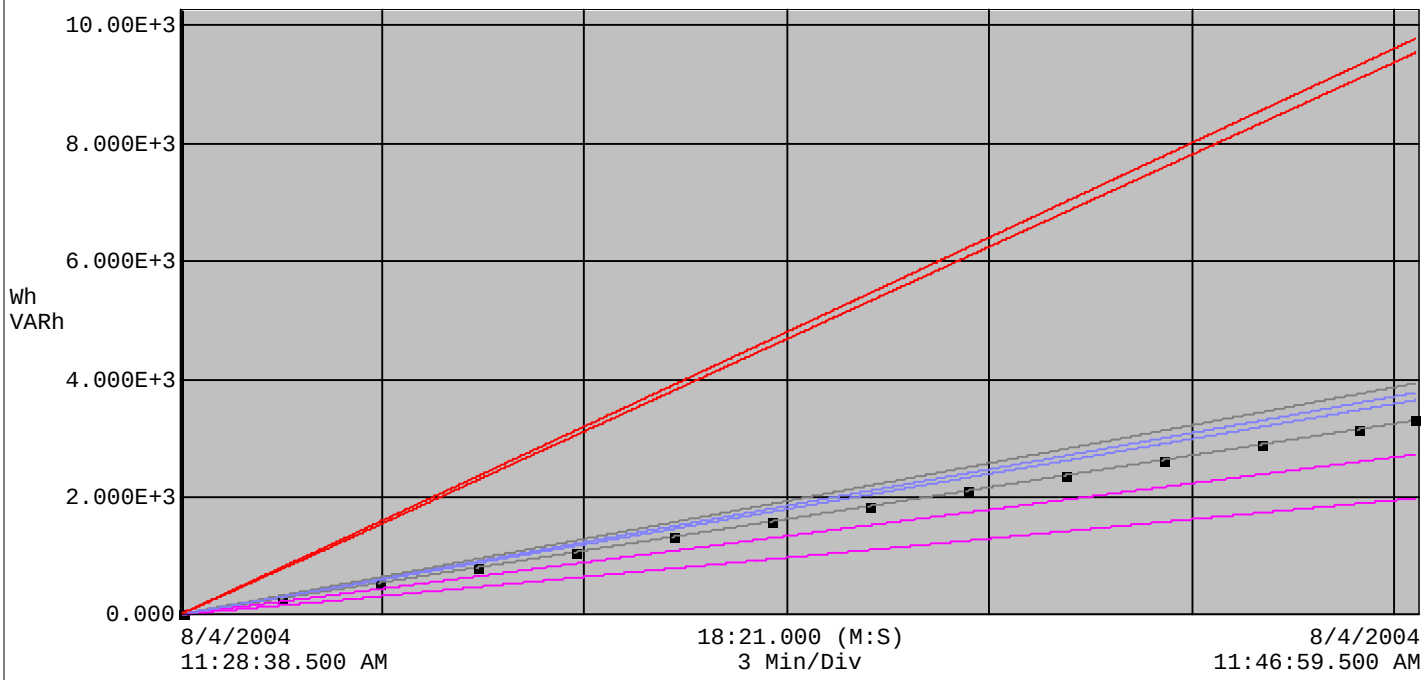
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/4/2004	11:28:38.500 AM	10.75E+3	10.36E+3	11.28E+3	W
W Line2	8/4/2004	11:28:38.500 AM	8.856E+3	8.425E+3	9.225E+3	W
W Line3	8/4/2004	11:28:38.500 AM	12.28E+3	11.79E+3	12.77E+3	W
W Sum of Phases	8/4/2004	11:28:38.500 AM	31.88E+3	30.74E+3	33.15E+3	W
VAR Line1	8/4/2004	11:28:38.500 AM	12.80E+3	12.65E+3	12.97E+3	VAR
VAR Line2	8/4/2004	11:28:38.500 AM	6.432E+3	6.009E+3	6.633E+3	VAR
VAR Line3	8/4/2004	11:28:38.500 AM	11.86E+3	11.72E+3	12.03E+3	VAR
VAR Sum of Phases	8/4/2004	11:28:38.500 AM	31.09E+3	30.50E+3	31.51E+3	VAR

8/4/2004 - 11:28:38.000 AM
Val
11.13E+3 — W Line1
8.876E+3 — W Line2
12.41E+3 — W Line3
32.41E+3 — W Sum of Phases
12.69E+3 — VAR Line1
6.054E+3 — VAR Line2
11.86E+3 — VAR Line3
30.61E+3 — VAR Sum of Phases

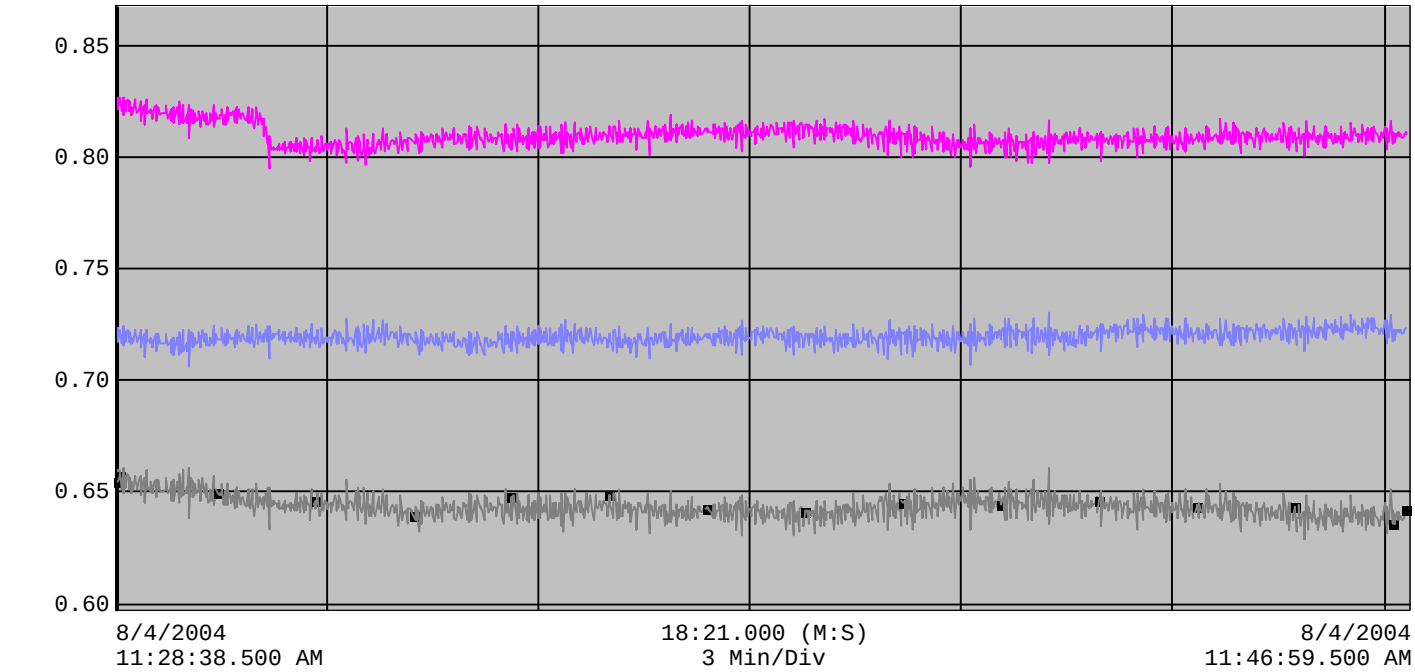
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/4/2004	11:28:38.500 AM	1.649E+3	3.113	3.290E+3	Wh
W-hours Line2	8/4/2004	11:28:38.500 AM	1.355E+3	2.482	2.711E+3	Wh
W-hours Line3	8/4/2004	11:28:38.500 AM	1.877E+3	3.441	3.758E+3	Wh
W-hours Sum of Phases	8/4/2004	11:28:38.500 AM	4.881E+3	8.935	9.759E+3	Wh
VAR-hours Line1	8/4/2004	11:28:38.500 AM	1.959E+3	3.468	3.919E+3	VARh
VAR-hours Line2	8/4/2004	11:28:38.500 AM	980.8	1.683	1.969E+3	VARh
VAR-hours Line3	8/4/2004	11:28:38.500 AM	1.817E+3	3.324	3.631E+3	VARh
VAR-hours Sum of Phases	8/4/2004	11:28:38.500 AM	4.757E+3	8.424	9.518E+3	VARh

8/4/2004 - 11:28:38.000 AM
Val
3.113 — W-hours Line1
2.482 — W-hours Line2
3.441 — W-hours Line3
8.935 — W-hours Sum of Phases
3.468 — VAR-hours Line1
1.683 — VAR-hours Line2
3.324 — VAR-hours Line3
8.424 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/4/2004	11:28:38.500 AM	0.643	0.628	0.660	
PF Line2	8/4/2004	11:28:38.500 AM	0.809	0.794	0.826	
PF Line3	8/4/2004	11:28:38.500 AM	0.719	0.706	0.730	

8/4/2004 - 11:28:38.000 AM
Val
0.659 — PF Line1
0.826 — PF Line2
0.723 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\A2\080404-A2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS A-2 ,

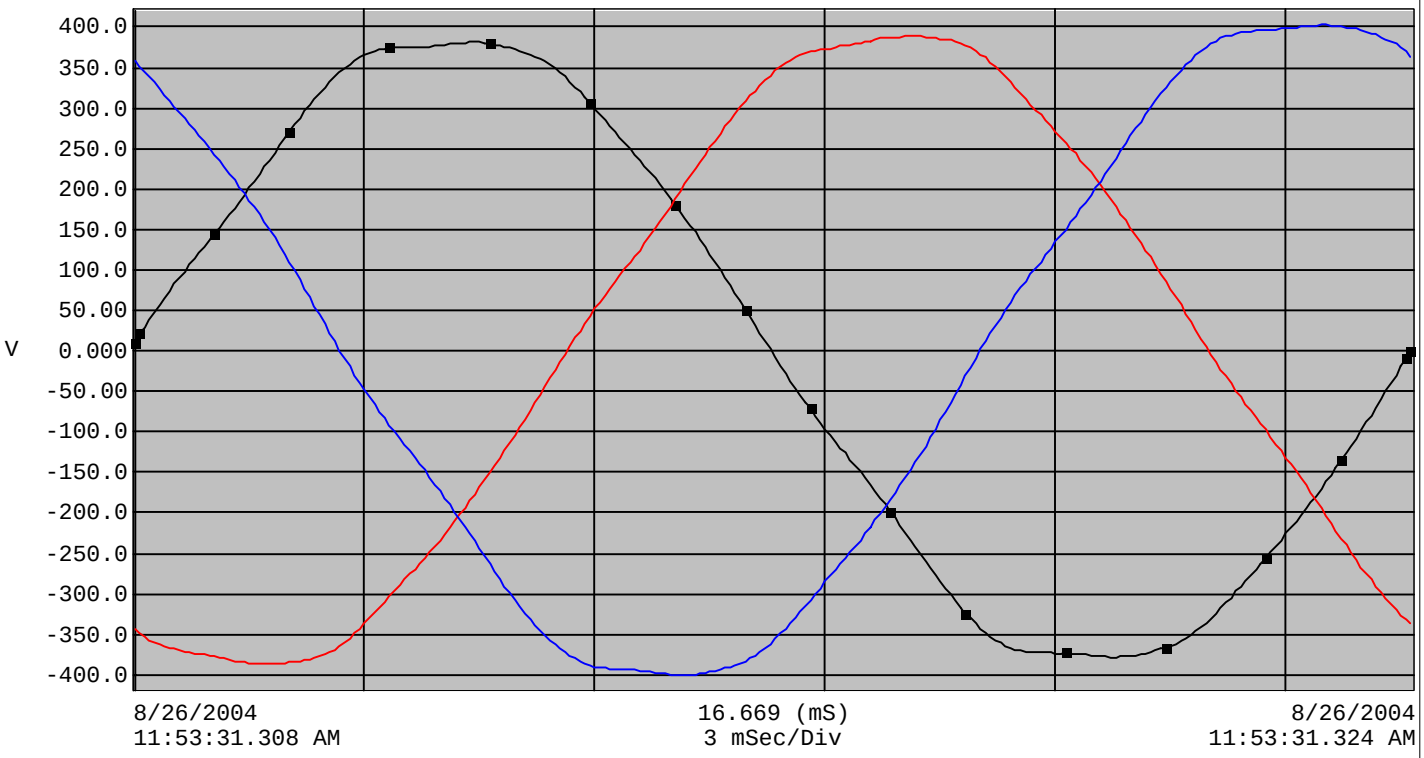
Comments
Recorded at motor starter overload relay.

GWA Water Pumping Station Assessment				
Station Name: A-03	**Weight**	**Condition**	**Weighted**	**Notes**
Date:08/26/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	2	0.1	2
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.13	
Main Breaker	1.0%	2	0.02	45
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0.05	
Pressure	1.5%	1	0.015	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.6**
Comments:				

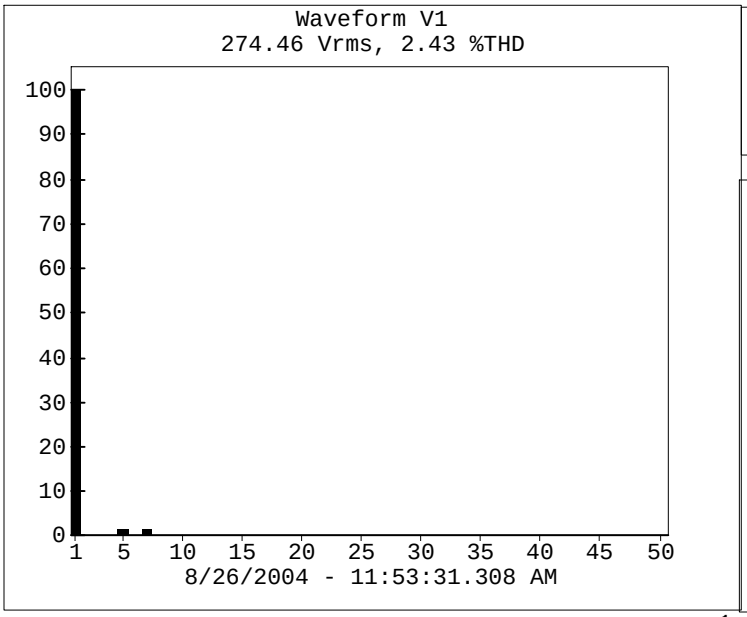
WPS A-3 Pump

Recording Start Date	8/26/2004 - 11:53:31 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/26/2004	11:53:31.308 AM	16.669	274.5	V
Waveform V2	8/26/2004	11:53:31.308 AM	16.669	278.9	V
Waveform V3	8/26/2004	11:53:31.308 AM	16.669	289.4	V

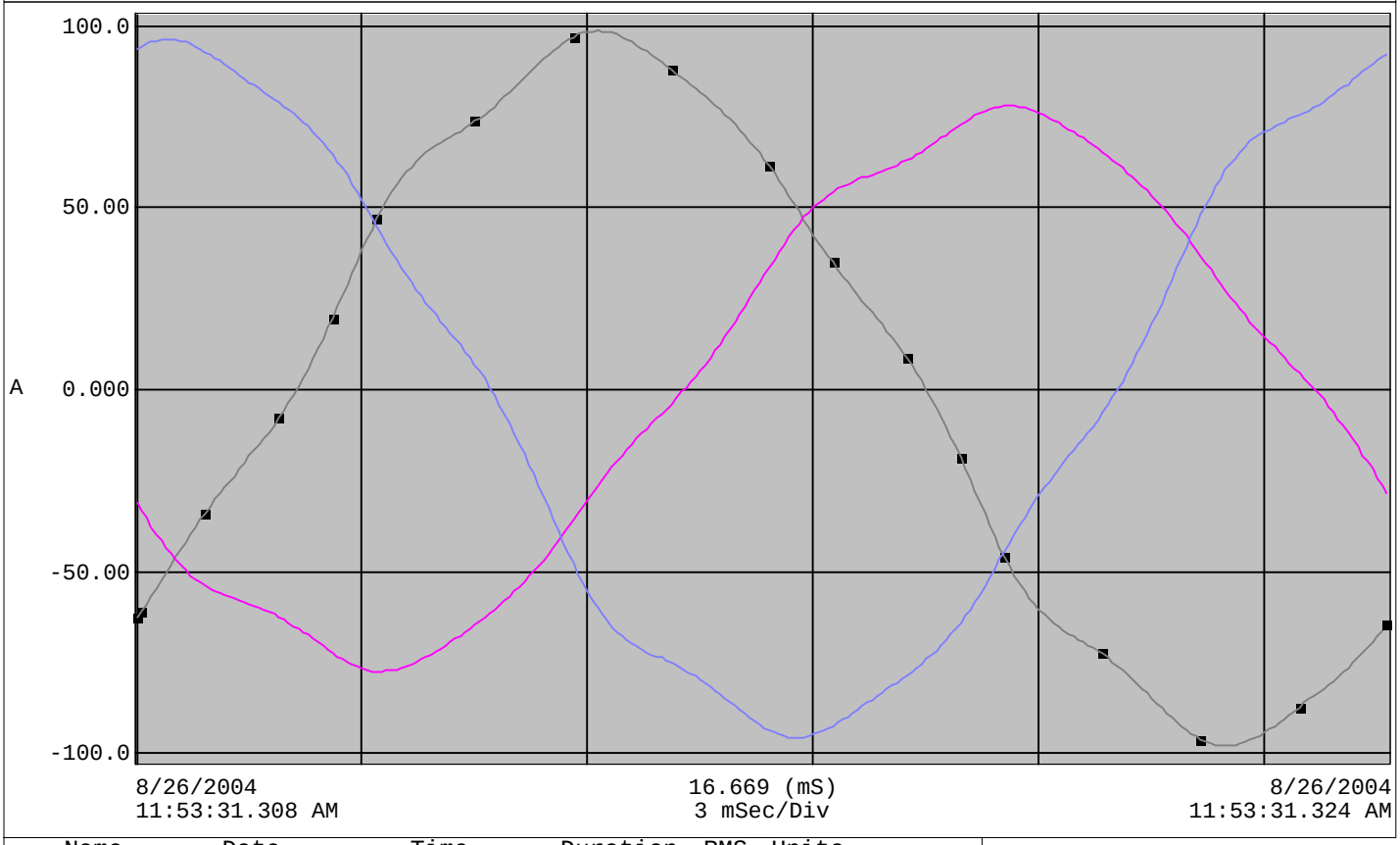


8/26/2004 - 11:53:31.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

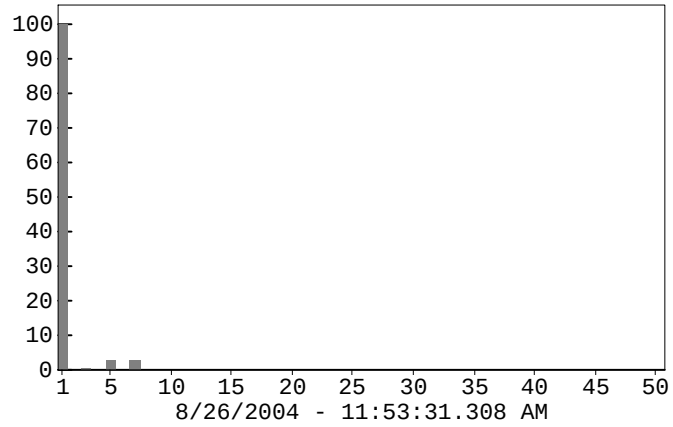
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/26/2004	11:53:31.308 AM	16.669	66.85	A
Waveform I2	8/26/2004	11:53:31.308 AM	16.669	52.85	A
Waveform I3	8/26/2004	11:53:31.308 AM	16.669	66.64	A

Waveform I1
66.85 Arms, 4.57 %THD

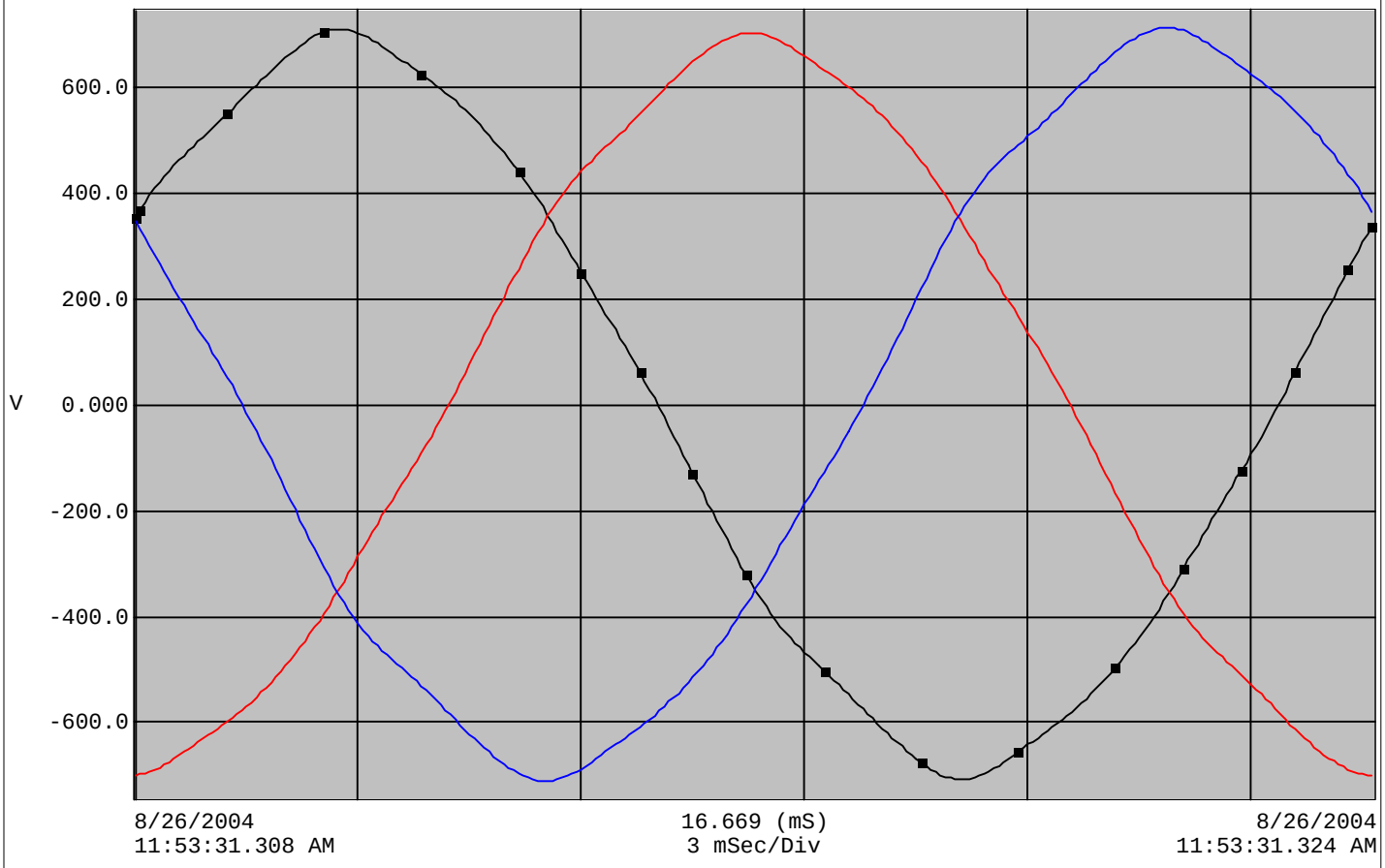


8/26/2004 - 11:53:31.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

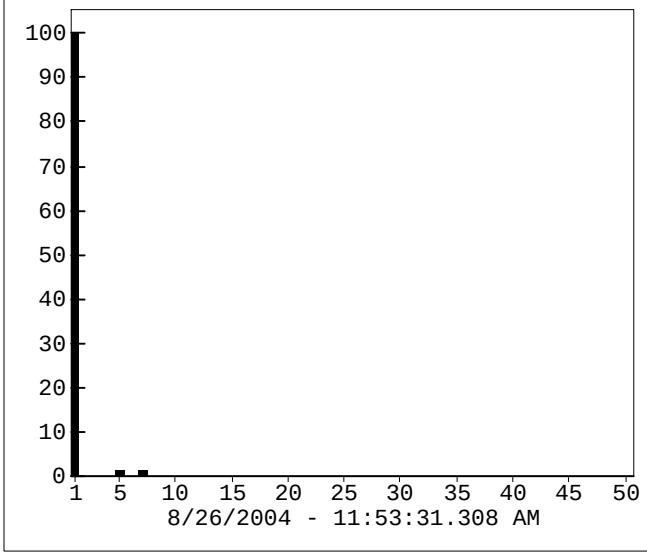
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	1.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	3.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	3.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/26/2004	11:53:31.308 AM	16.669	486.2	V
Waveform U2	8/26/2004	11:53:31.308 AM	16.669	483.2	V
Waveform U3	8/26/2004	11:53:31.308 AM	16.669	489.9	V

Waveform U1
486.24 Vrms, 2.27 %THD



8/26/2004 - 11:53:31.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.6	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 8/26/2004
Start Time: 11:53:31 AM
Duration: 0:0.000 (M:S)
W: 13.35E+3 W
VAR: 12.57E+3 W
VA: 18.34E+3 W
Power Factor: 0.728
Displacement Power Factor: 0.729
TAN: 0.940
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A3\082604-A3-Photo.dvb

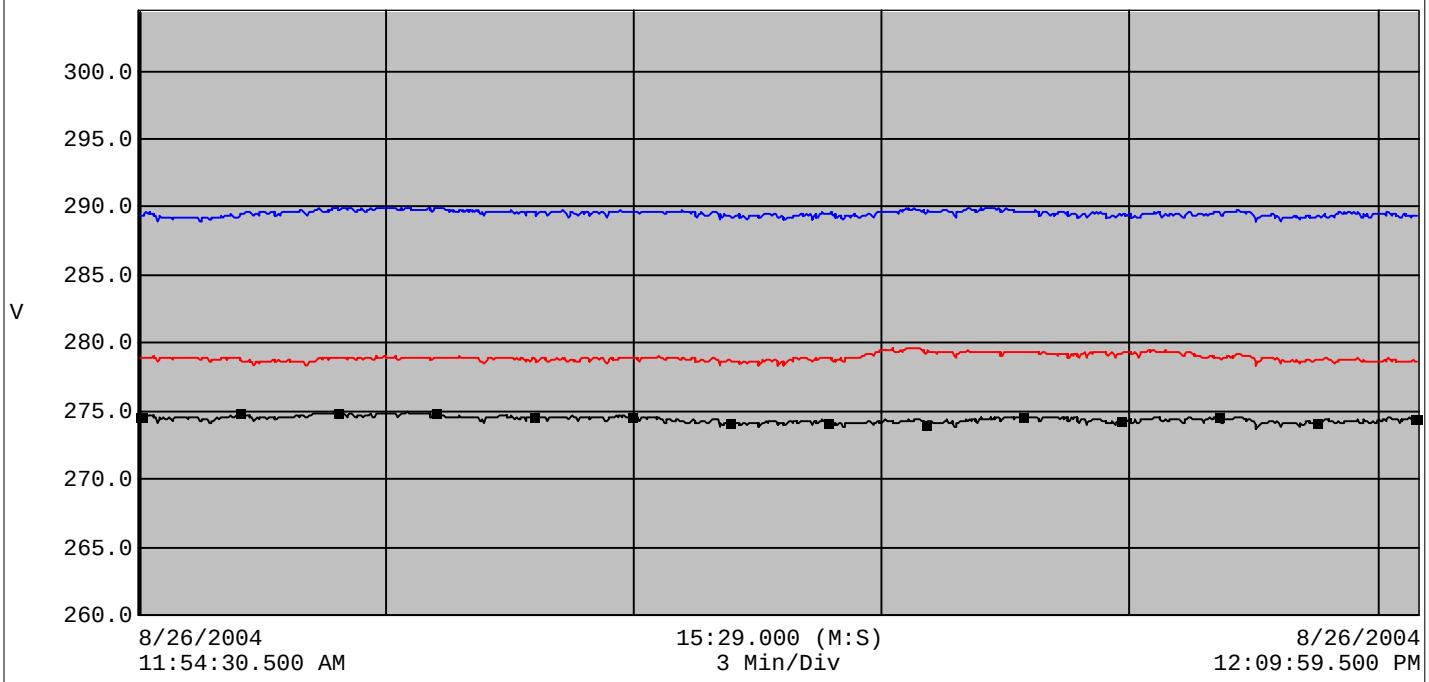
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa,PE and Victor Jardel ,	GWA WPS A-3 - Photo ,

Comments
Recorded at motor starter overload relay. 50 HP Deep Well Submersible Pump.

WPS A-3 Pump

Recording Start Date	8/26/2004 - 11:54:30 AM
Recording Duration	15:29 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

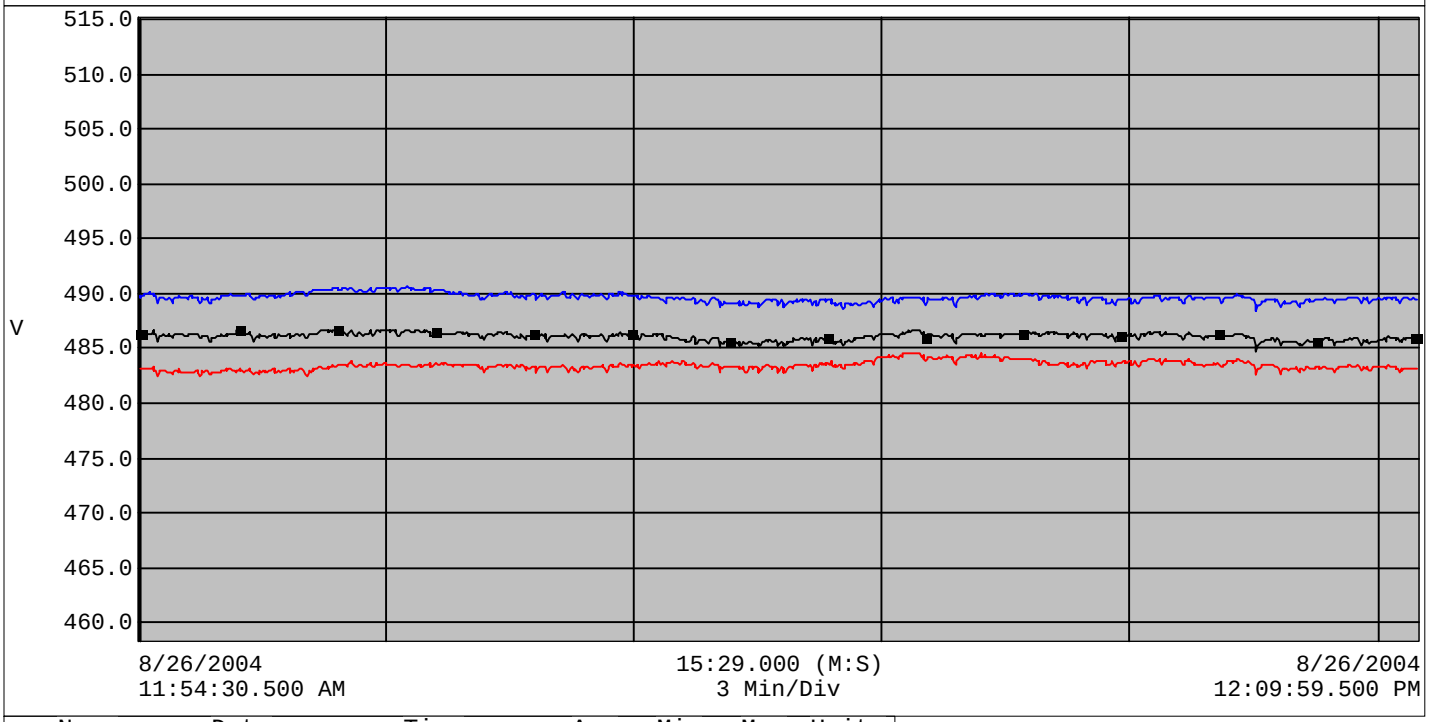
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/26/2004	11:54:30.500 AM	274.3	273.6	274.9	930
Vrms Line2	8/26/2004	11:54:30.500 AM	278.9	278.3	279.5	930
Vrms Line3	8/26/2004	11:54:30.500 AM	289.4	288.8	289.9	930

8/26/2004 - 11:54:30.000 AM
Val
274.5 — Vrms Line1
278.9 — Vrms Line2
289.3 — Vrms Line3

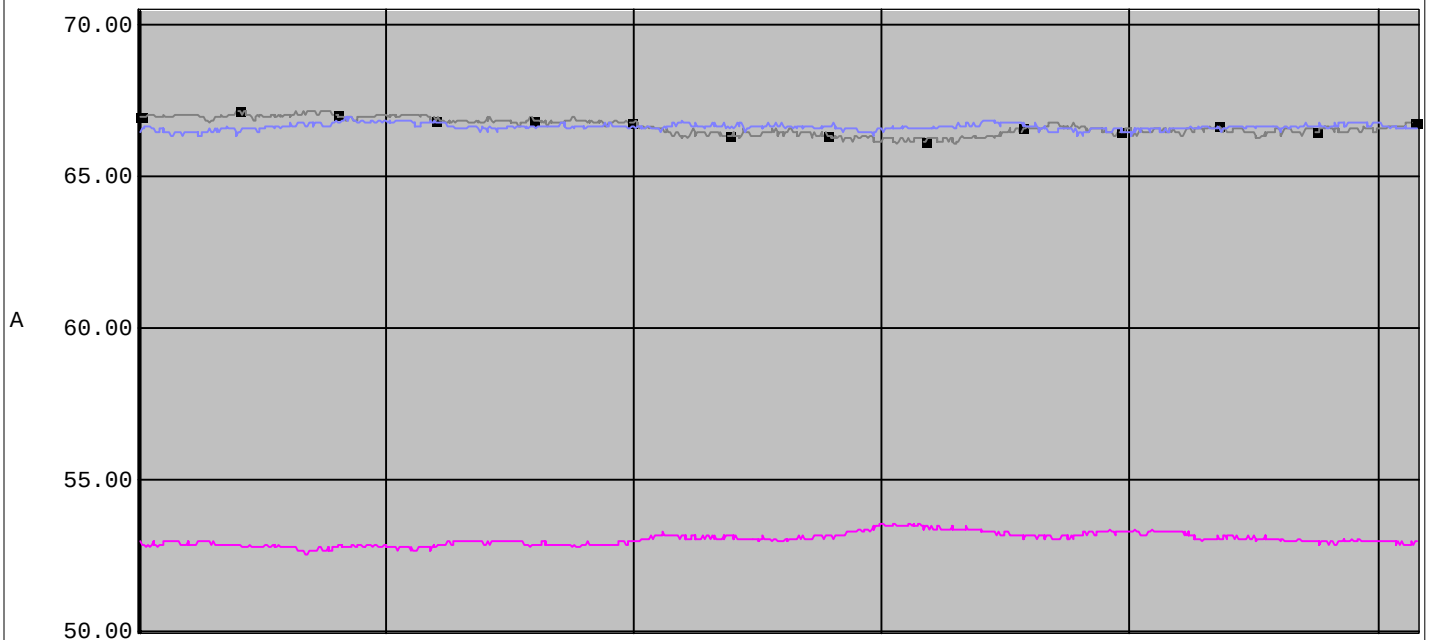
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/26/2004	11:54:30.500 AM	486.0	484.7	486.6	V
Urms Line2	8/26/2004	11:54:30.500 AM	483.4	482.3	484.5	V
Urms Line3	8/26/2004	11:54:30.500 AM	489.6	488.4	490.6	V

8/26/2004 - 11:54:30.000 AM
Val
486.4 — Urms Line1
483.0 — Urms Line2
489.7 — Urms Line3

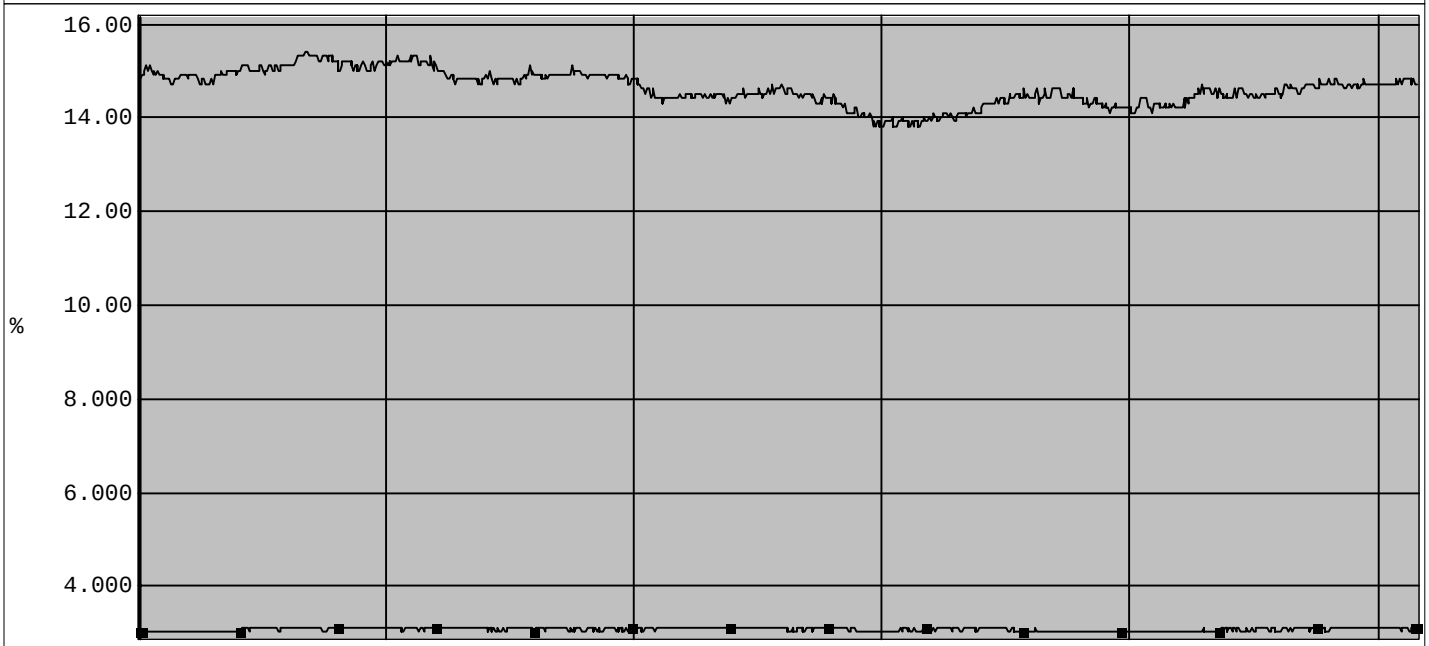
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/26/2004	11:54:30.500 AM	66.58	66.00	67.10	A
Arms Line2	8/26/2004	11:54:30.500 AM	52.97	52.50	53.50	A
Arms Line3	8/26/2004	11:54:30.500 AM	66.57	66.30	66.90	A

8/26/2004 - 11:54:30.000 AM
Val
67.00 — Arms Line1
52.90 — Arms Line2
66.40 — Arms Line3

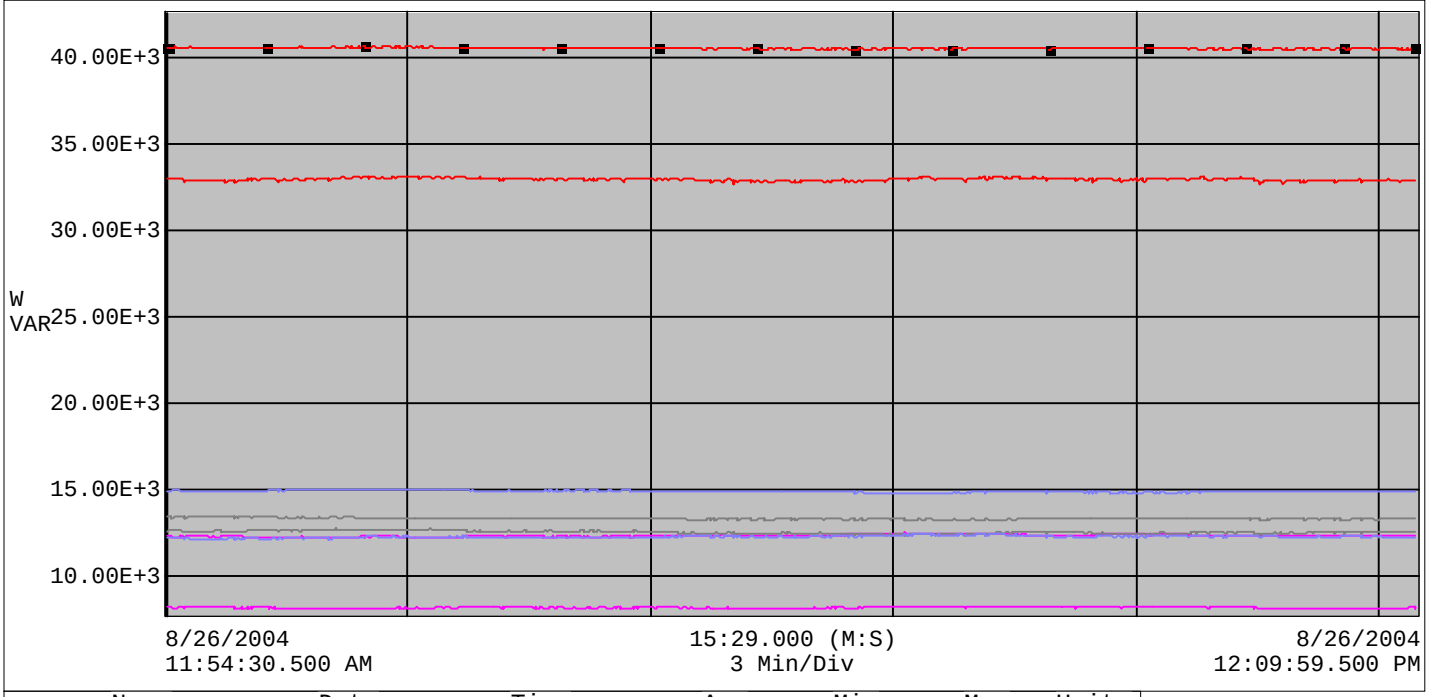
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/26/2004	11:54:30.500 AM	3.060	3.000	3.100	%
Aunb(IEEE)	8/26/2004	11:54:30.500 AM	14.62	13.80	15.40	%

8/26/2004 - 11:54:30.000 AM
Val
3.000 —— Vunb(IEEE)
14.80 —— Aunb(IEEE)

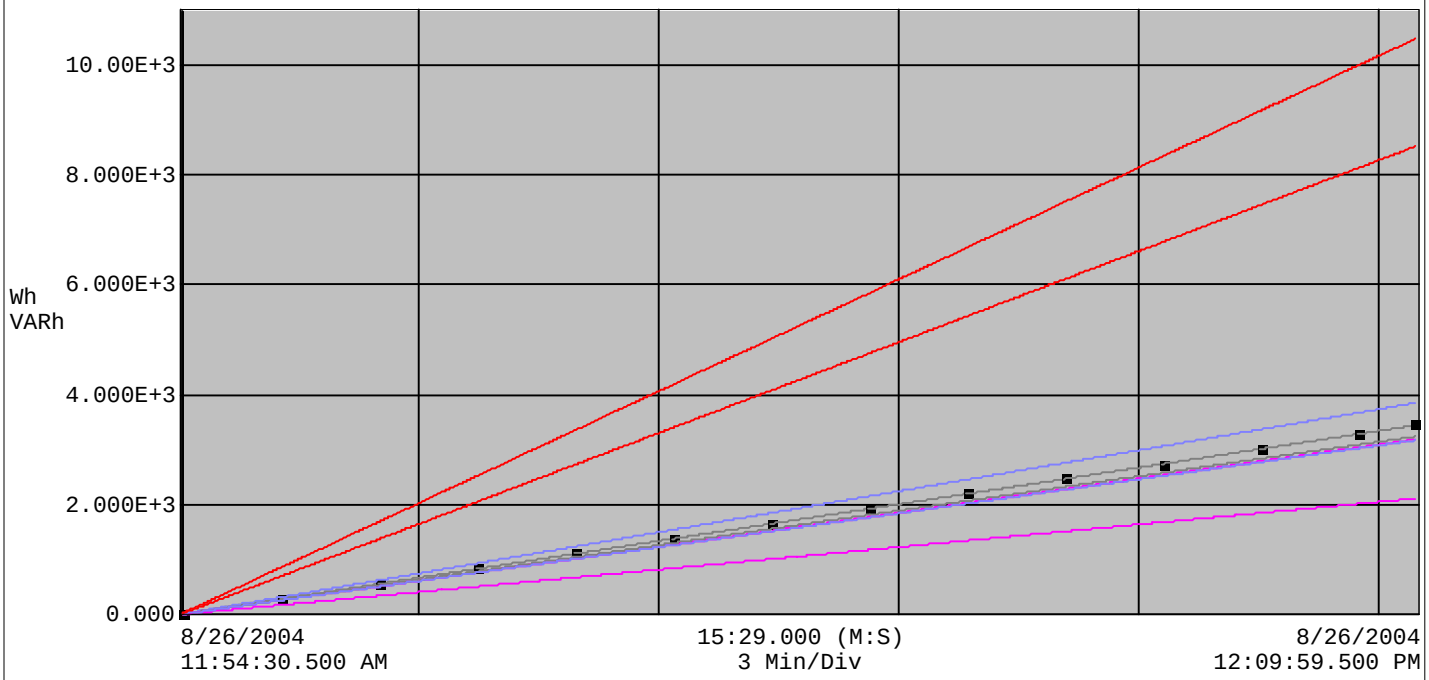
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/26/2004	11:54:30.500 AM	13.30E+3	13.21E+3	13.43E+3	W
W Line2	8/26/2004	11:54:30.500 AM	12.32E+3	12.18E+3	12.49E+3	W
W Line3	8/26/2004	11:54:30.500 AM	14.88E+3	14.74E+3	15.01E+3	W
W Sum of Phases	8/26/2004	11:54:30.500 AM	40.50E+3	40.37E+3	40.59E+3	W
VAR Line1	8/26/2004	11:54:30.500 AM	12.52E+3	12.33E+3	12.70E+3	VAR
VAR Line2	8/26/2004	11:54:30.500 AM	8.154E+3	8.050E+3	8.250E+3	VAR
VAR Line3	8/26/2004	11:54:30.500 AM	12.25E+3	12.08E+3	12.40E+3	VAR
VAR Sum of Phases	8/26/2004	11:54:30.500 AM	32.92E+3	32.61E+3	33.09E+3	VAR

8/26/2004 - 11:54:30.000 AM
Val
13.41E+3 — W Line1
12.27E+3 — W Line2
14.87E+3 — W Line3
40.55E+3 — W Sum of Phases
12.58E+3 — VAR Line1
8.184E+3 — VAR Line2
12.15E+3 — VAR Line3
32.92E+3 — VAR Sum of Phases

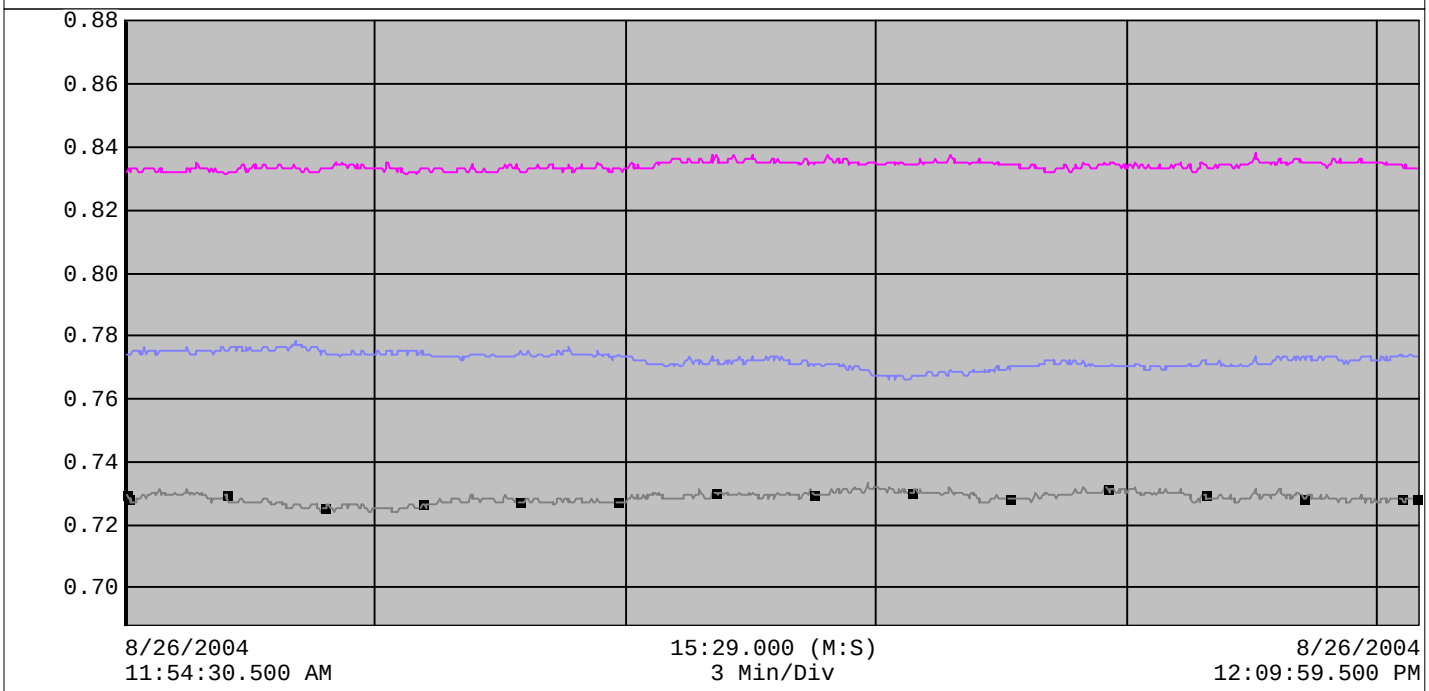
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/26/2004	11:54:30.500 AM	1.722E+3	3.776	3.436E+3	Wh
W-hours Line2	8/26/2004	11:54:30.500 AM	1.590E+3	3.399	3.182E+3	Wh
W-hours Line3	8/26/2004	11:54:30.500 AM	1.926E+3	4.105	3.843E+3	Wh
W-hours Sum of Phases	8/26/2004	11:54:30.500 AM	5.238E+3	11.17	10.46E+3	Wh
VAR-hours Line1	8/26/2004	11:54:30.500 AM	1.622E+3	3.454	3.233E+3	VARh
VAR-hours Line2	8/26/2004	11:54:30.500 AM	1.054E+3	2.250	2.107E+3	VARh
VAR-hours Line3	8/26/2004	11:54:30.500 AM	1.581E+3	3.379	3.163E+3	VARh
VAR-hours Sum of Phases	8/26/2004	11:54:30.500 AM	4.257E+3	9.083	8.503E+3	VARh

8/26/2004 - 11:54:30.000 AM
Val
3.776 — W-hours Line1
3.399 — W-hours Line2
4.105 — W-hours Line3
11.17 — W-hours Sum of Phases
3.454 — VAR-hours Line1
2.250 — VAR-hours Line2
3.379 — VAR-hours Line3
9.083 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/26/2004	11:54:30.500 AM	0.728	0.724	0.733	
PF Line2	8/26/2004	11:54:30.500 AM	0.834	0.831	0.838	
PF Line3	8/26/2004	11:54:30.500 AM	0.772	0.766	0.778	

8/26/2004 - 11:54:30.000 AM
Val
0.729 — PF Line1
0.832 — PF Line2
0.774 — PF Line3

Trend Summary Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A3\082604-A3.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS A-3 ,

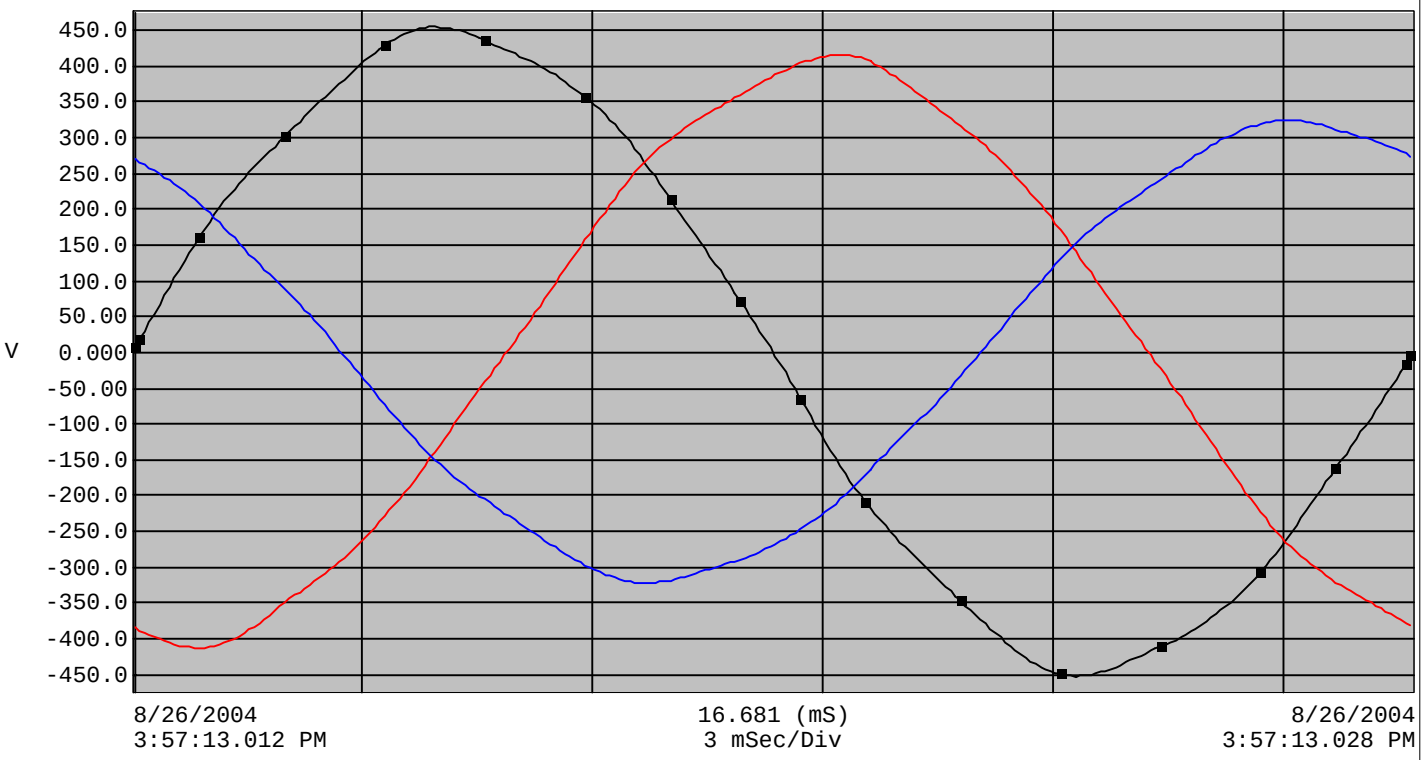
Comments
Recorded at Motor Starter overload relay. 50 HP deep well submersible motor.

GWA Water Pumping Station Assessment				
Station Name: A-05	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/26/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.475	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	2	0.05	7
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.5	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	2	0.1	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.085	
Pressure	1.5%	2	0.03	52
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**5.0%**		0.1	
Lighting	3.0%	2	0.06	
Power Devices	2.0%	2	0.04	
	100%	**Assessment Value**		**2.3**
Comments:				

WPS A-5 Pump

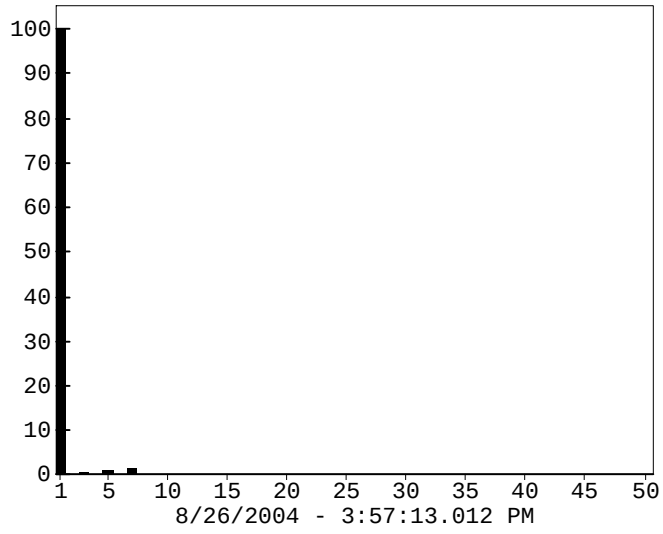
Recording Start Date	8/26/2004 - 3:57:13 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/26/2004	3:57:13.012 PM	16.681	315.8	V
Waveform V2	8/26/2004	3:57:13.012 PM	16.681	286.6	V
Waveform V3	8/26/2004	3:57:13.012 PM	16.681	225.5	V

Waveform V1
315.84 Vrms, 1.97 %THD

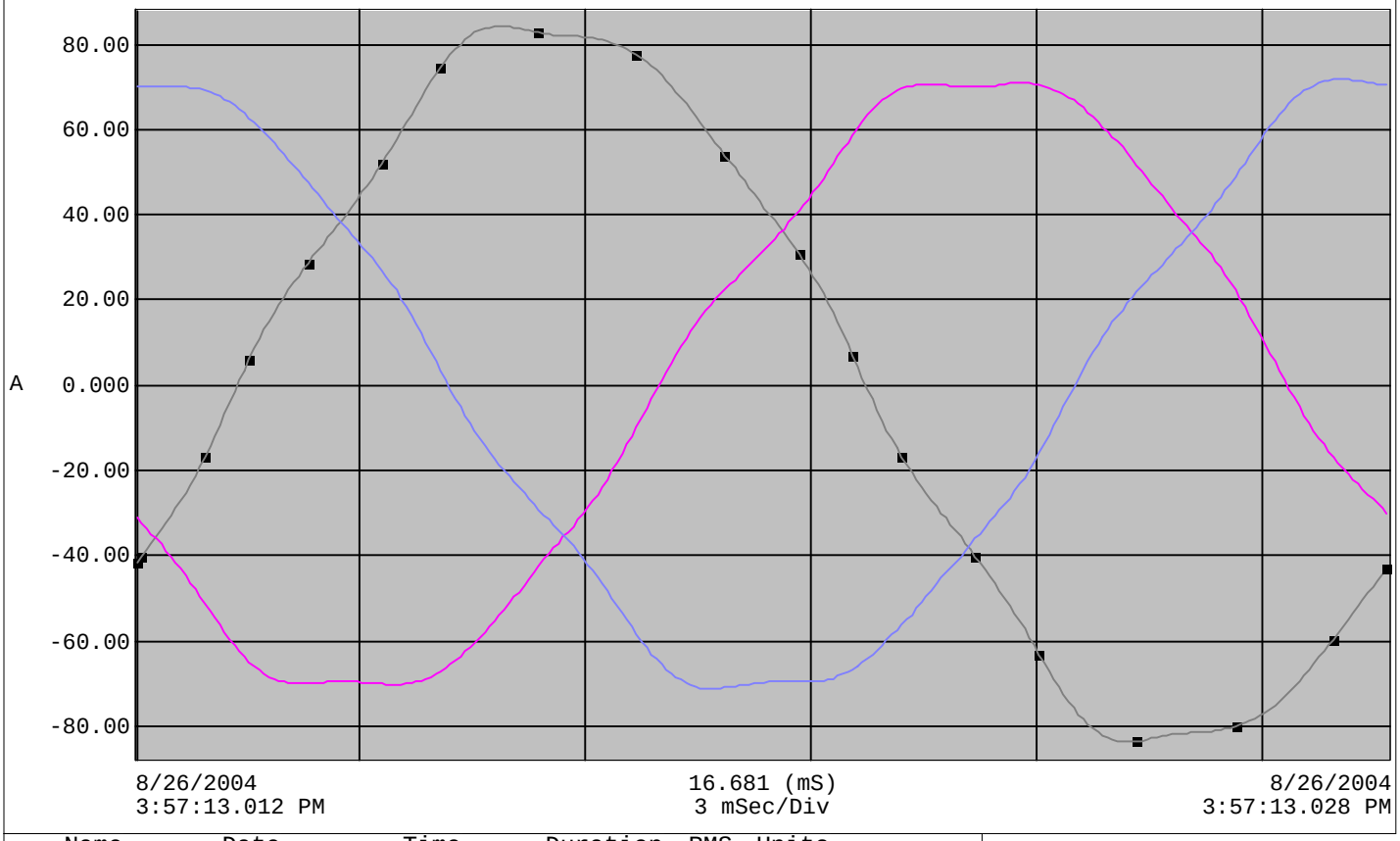


8/26/2004 - 3:57:13.000 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

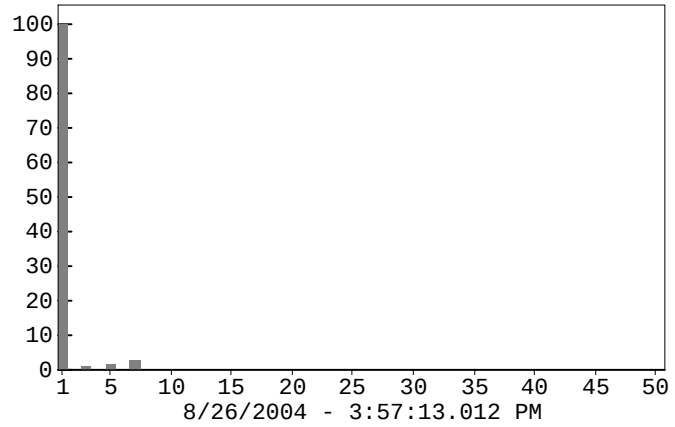
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.95 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/26/2004	3:57:13.012 PM	16.681	59.63	A
Waveform I2	8/26/2004	3:57:13.012 PM	16.681	51.11	A
Waveform I3	8/26/2004	3:57:13.012 PM	16.681	51.28	A

Waveform I1
59.63 Arms, 3.61 %THD

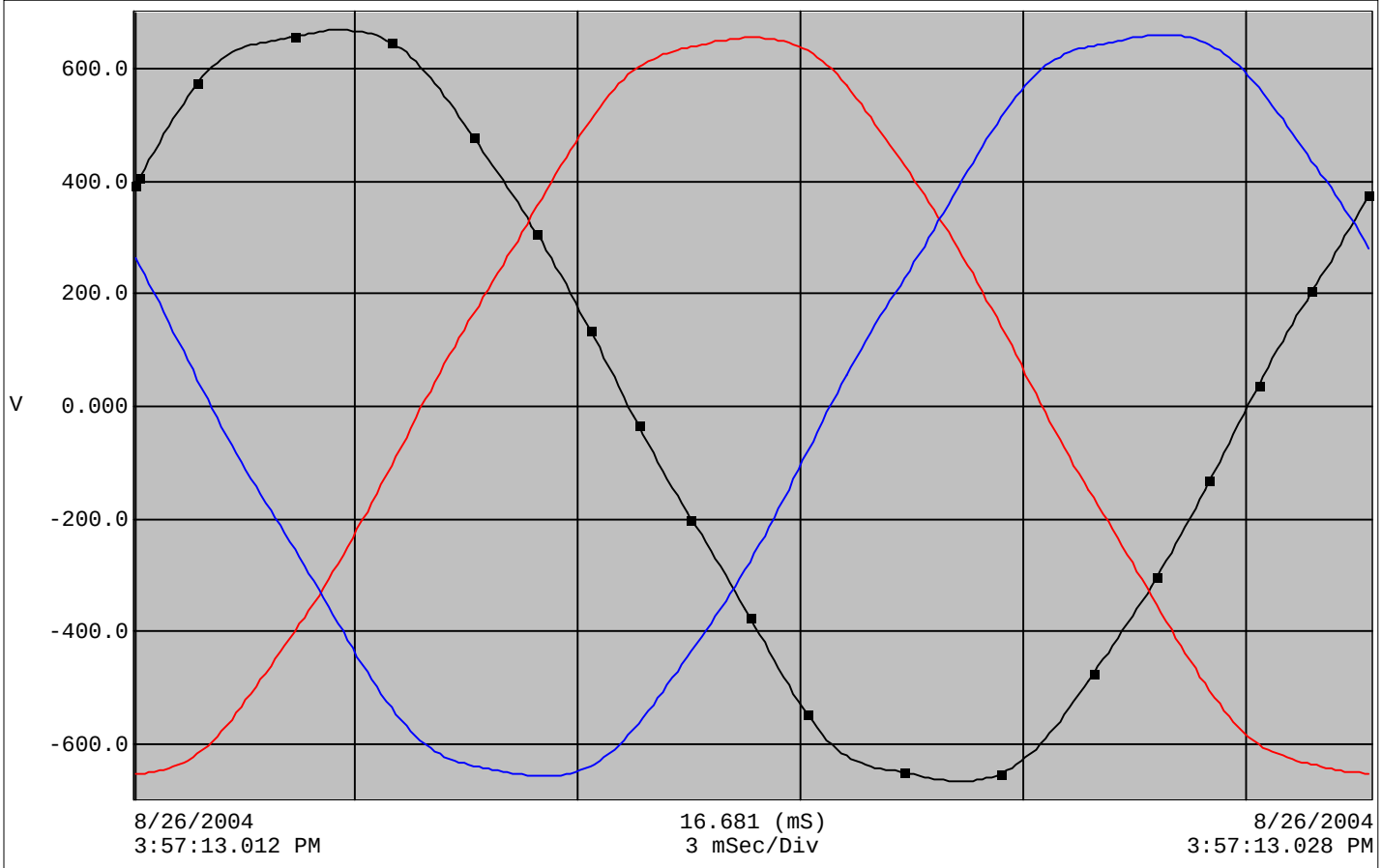


8/26/2004 - 3:57:13.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

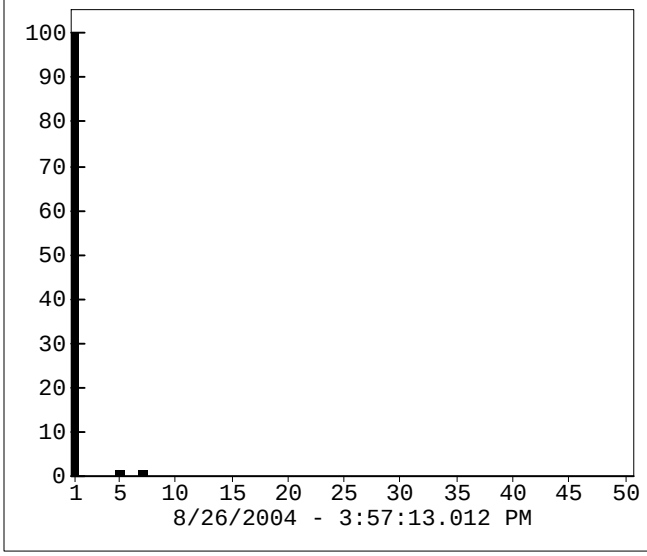
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	1.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	2.9	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/26/2004	3:57:13.012 PM	16.681	480.0	V
Waveform U2	8/26/2004	3:57:13.012 PM	16.681	470.8	V
Waveform U3	8/26/2004	3:57:13.012 PM	16.681	473.7	V

Waveform U1
479.97 Vrms, 2.08 %THD



8/26/2004 - 3:57:13.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/26/2004
Start Time: 3:57:13 PM
Duration: 0:0.000 (M:S)
W: 35.78E+3 W
VAR: 26.83E+3 W
VA: 45.11E+3 W
Power Factor: 2.369
Displacement Power Factor: 2.372
TAN: 2.340
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A5\082604-A5-Photo.dvb

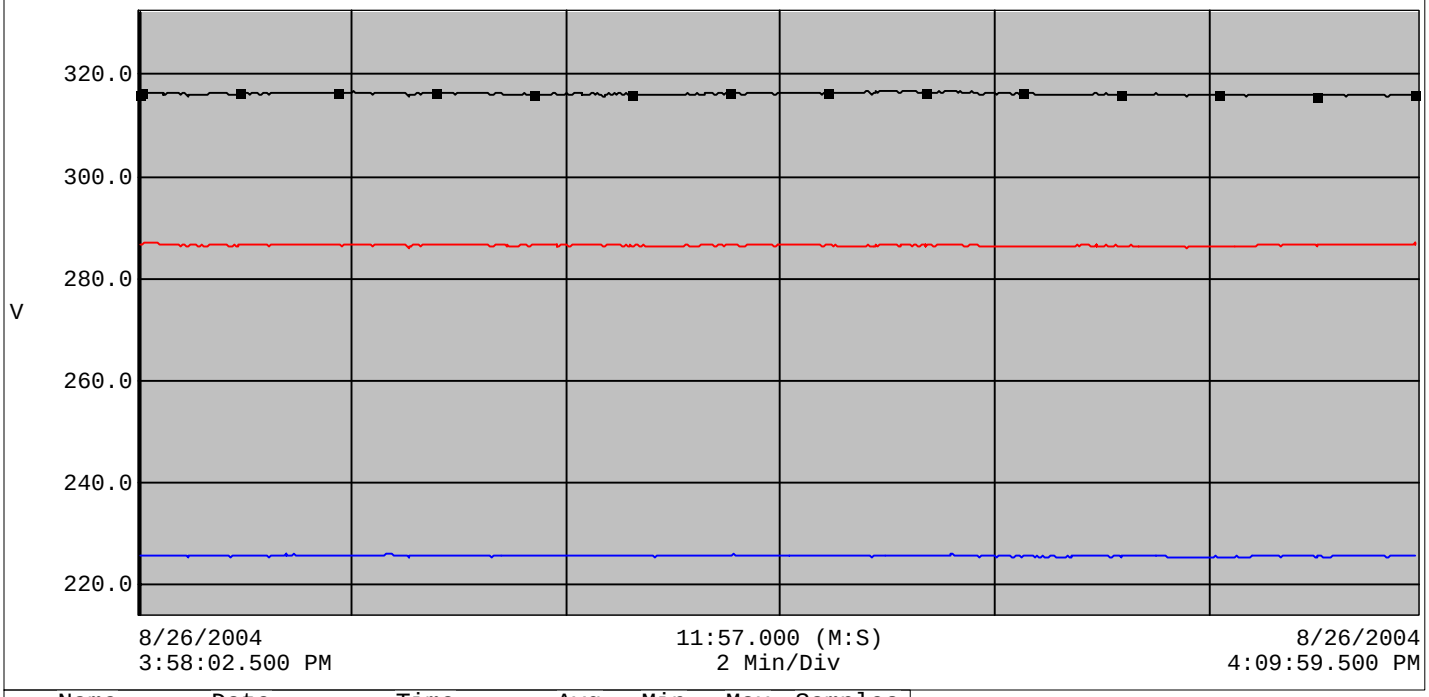
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS A-5 Photo ,

Comments
Recorded at the motor starter overload relay.

WPS A-5 Pump

Recording Start Date	8/26/2004 - 3:58:02 PM
Recording Duration	11:57 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

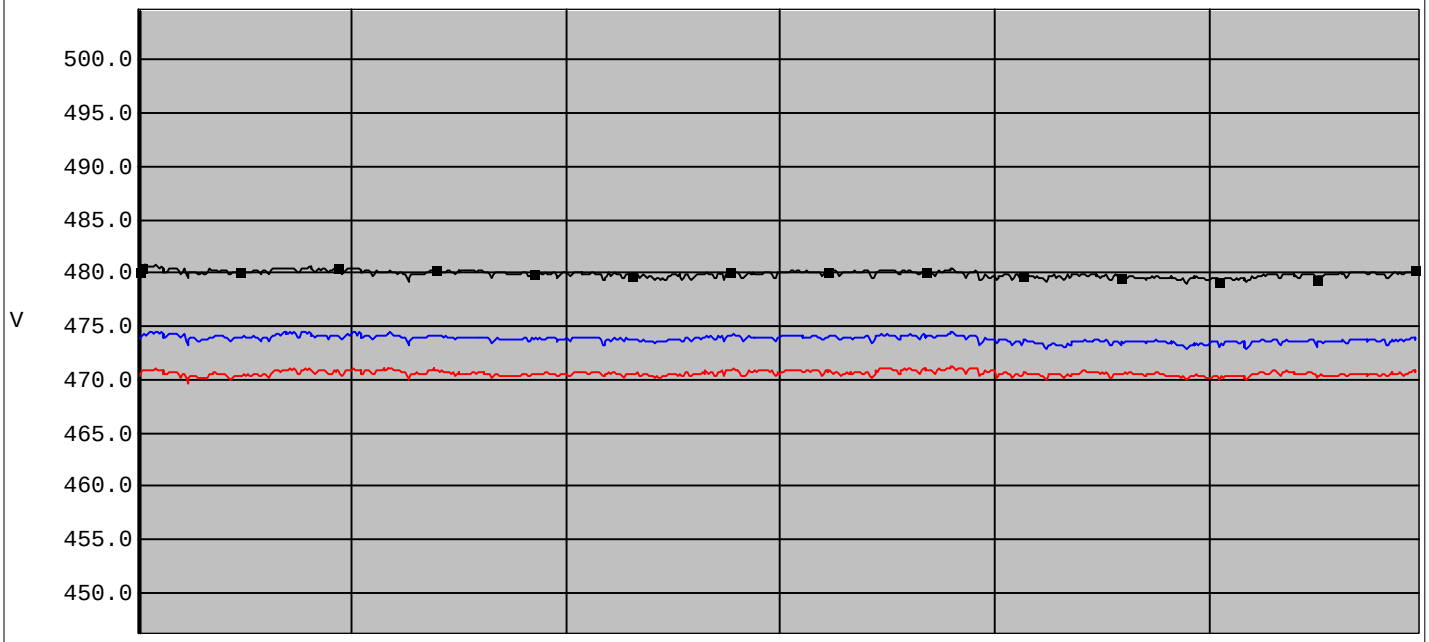
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/26/2004	3:58:02.500 PM	316.1	315.5	316.6	718
Vrms Line2	8/26/2004	3:58:02.500 PM	286.3	285.8	286.7	718
Vrms Line3	8/26/2004	3:58:02.500 PM	225.4	225.0	225.7	718

8/26/2004 - 3:58:02.000 PM
Val
315.9 — Vrms Line1
286.4 — Vrms Line2
225.4 — Vrms Line3

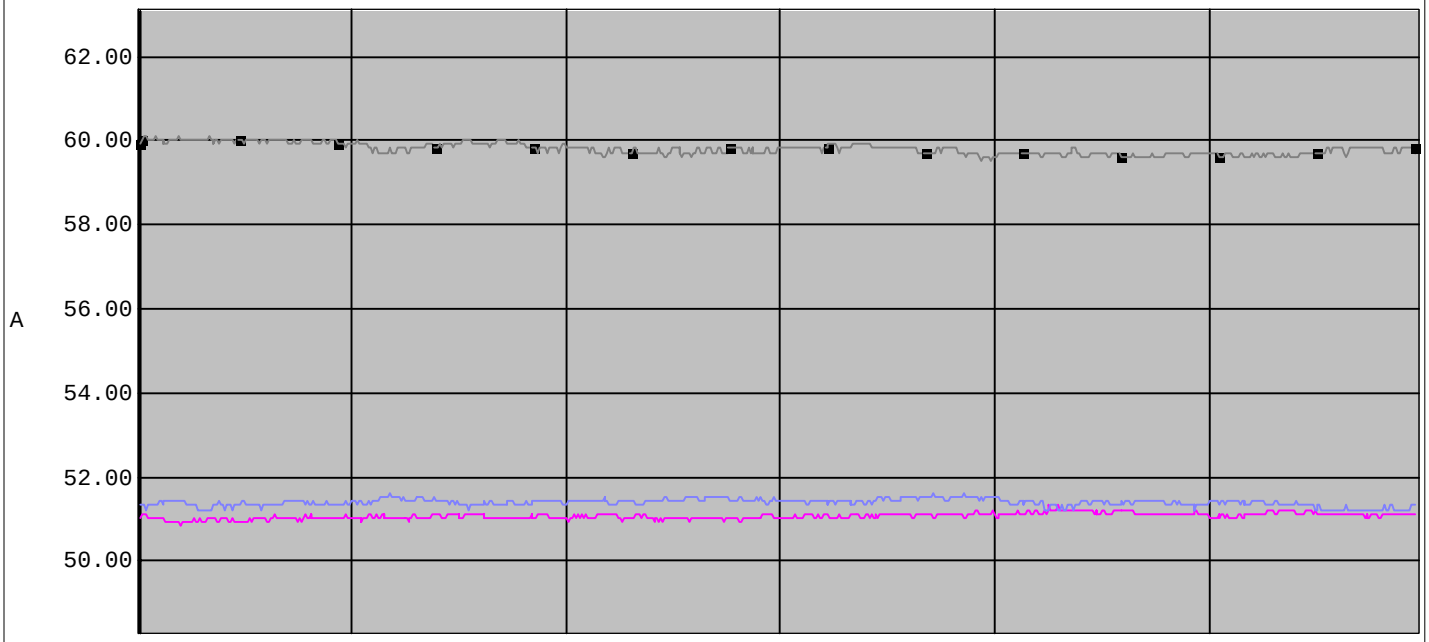
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/26/2004	3:58:02.500 PM	479.8	478.8	480.6	V
Urms Line2	8/26/2004	3:58:02.500 PM	470.5	469.6	471.1	V
Urms Line3	8/26/2004	3:58:02.500 PM	473.7	472.7	474.3	V

8/26/2004 - 3:58:02.000 PM
Val
479.9 — Urms Line1
470.3 — Urms Line2
473.7 — Urms Line3

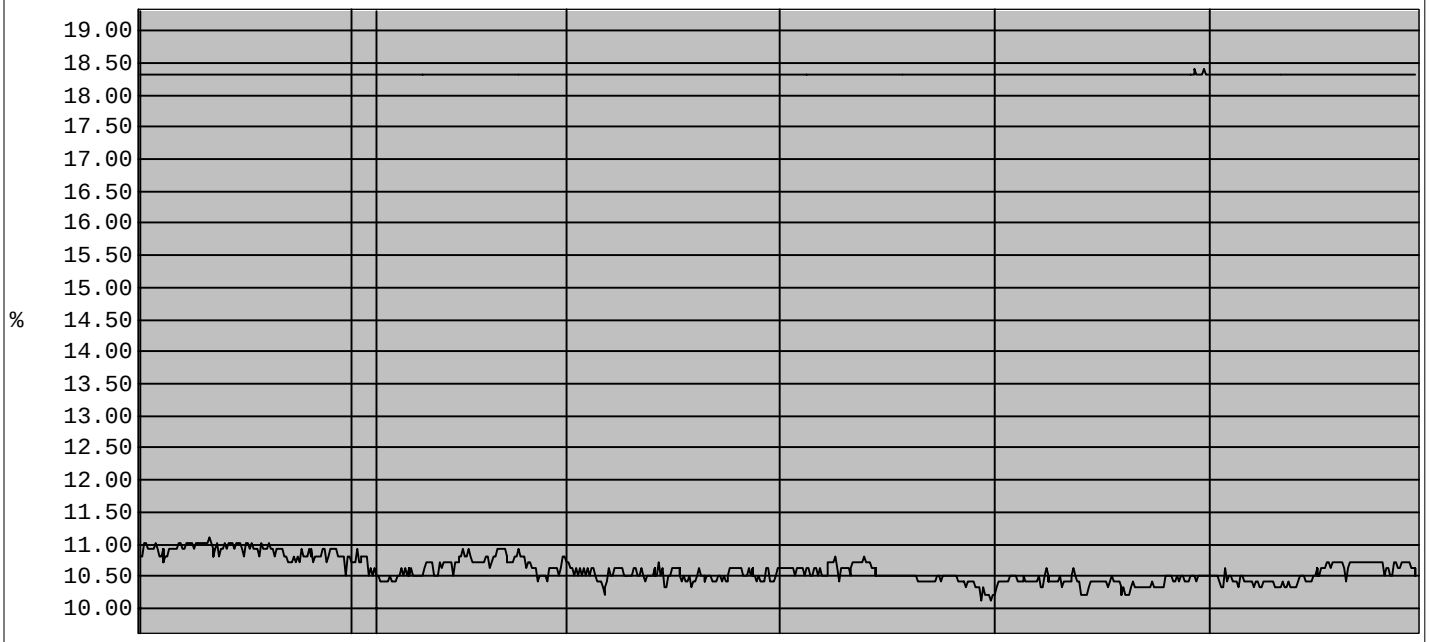
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/26/2004	3:58:02.500 PM	59.78	59.50	60.10	A
Arms Line2	8/26/2004	3:58:02.500 PM	51.05	50.80	51.30	A
Arms Line3	8/26/2004	3:58:02.500 PM	51.36	51.20	51.60	A

8/26/2004 - 3:58:02.000 PM
Val
59.90 — Arms Line1
51.00 — Arms Line2
51.30 — Arms Line3

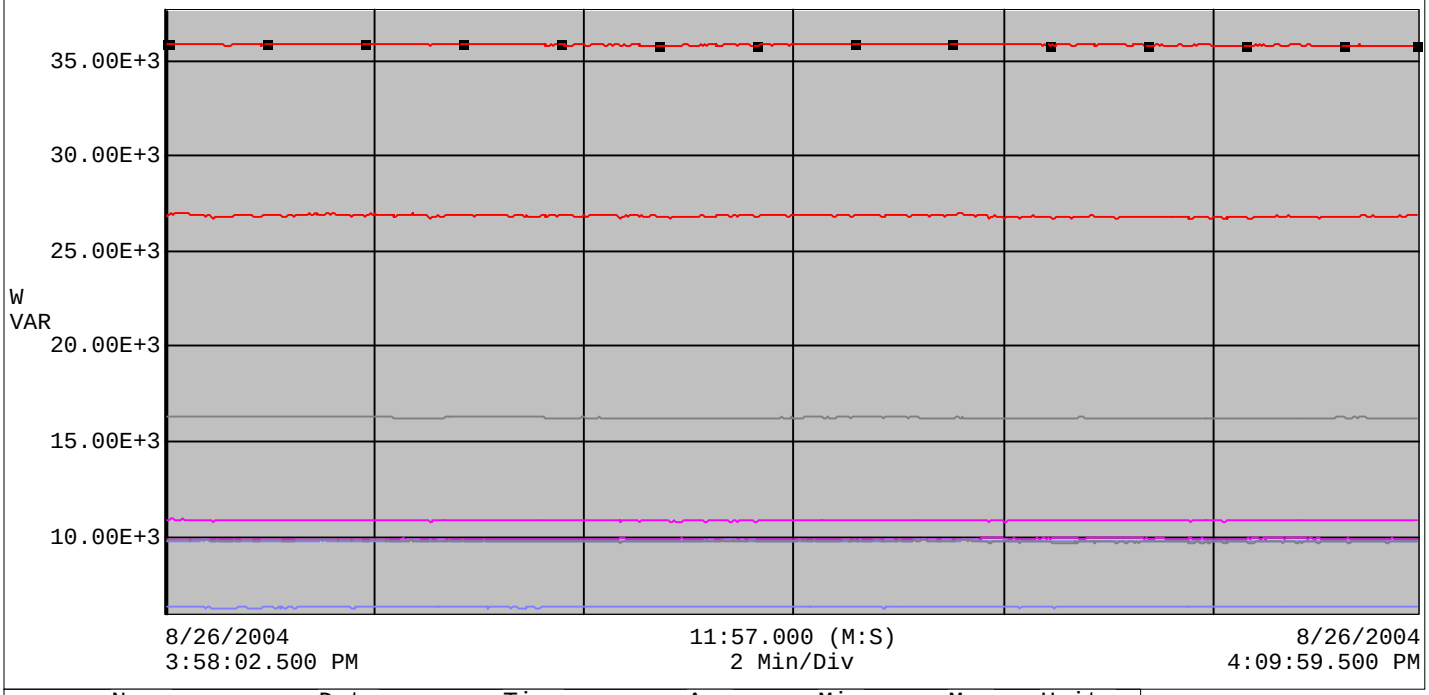
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/26/2004	3:58:02.500 PM	18.30	18.30	18.40	%
Aunb(IEEE)	8/26/2004	3:58:02.500 PM	10.58	10.10	11.10	%

8/26/2004 - 4:00:16.000 PM
Val
18.30 —— Vunb(IEEE)
10.50 —— Aunb(IEEE)

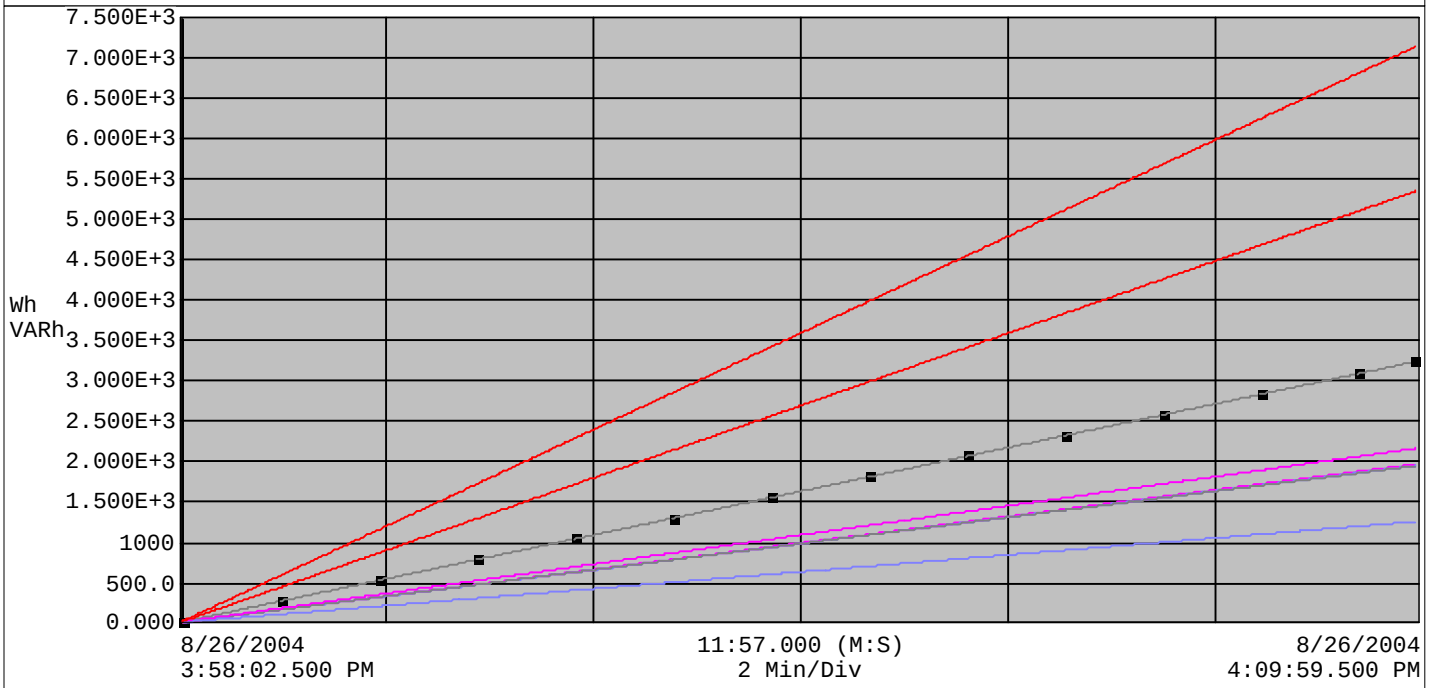
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/26/2004	3:58:02.500 PM	16.20E+3	16.13E+3	16.30E+3	W
W Line2	8/26/2004	3:58:02.500 PM	9.835E+3	9.777E+3	9.889E+3	W
W Line3	8/26/2004	3:58:02.500 PM	9.737E+3	9.687E+3	9.783E+3	W
W Sum of Phases	8/26/2004	3:58:02.500 PM	35.78E+3	35.72E+3	35.84E+3	W
VAR Line1	8/26/2004	3:58:02.500 PM	9.720E+3	9.601E+3	9.809E+3	VAR
VAR Line2	8/26/2004	3:58:02.500 PM	10.81E+3	10.73E+3	10.88E+3	VAR
VAR Line3	8/26/2004	3:58:02.500 PM	6.263E+3	6.190E+3	6.314E+3	VAR
VAR Sum of Phases	8/26/2004	3:58:02.500 PM	26.80E+3	26.60E+3	26.93E+3	VAR

8/26/2004 - 3:58:02.000 PM
Val
16.24E+3 — W Line1
9.821E+3 — W Line2
9.743E+3 — W Line3
35.81E+3 — W Sum of Phases
9.734E+3 — VAR Line1
10.81E+3 — VAR Line2
6.241E+3 — VAR Line3
26.78E+3 — VAR Sum of Phases

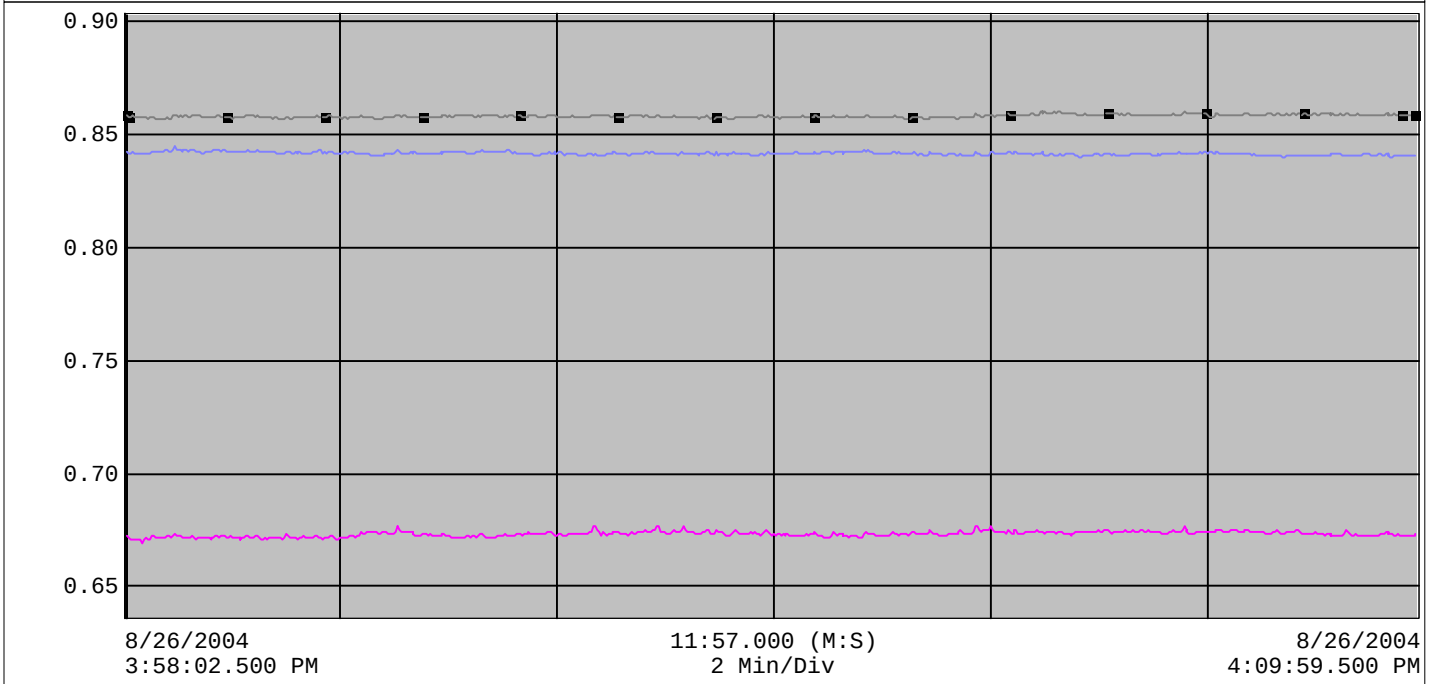
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/26/2004	3:58:02.500 PM	1.619E+3	4.537	3.232E+3	Wh
W-hours Line2	8/26/2004	3:58:02.500 PM	981.1	2.754	1.962E+3	Wh
W-hours Line3	8/26/2004	3:58:02.500 PM	973.0	2.726	1.942E+3	Wh
W-hours Sum of Phases	8/26/2004	3:58:02.500 PM	3.573E+3	10.02	7.136E+3	Wh
VAR-hours Line1	8/26/2004	3:58:02.500 PM	972.5	2.722	1.939E+3	VARh
VAR-hours Line2	8/26/2004	3:58:02.500 PM	1.080E+3	3.028	2.157E+3	VARh
VAR-hours Line3	8/26/2004	3:58:02.500 PM	625.1	1.716	1.249E+3	VARh
VAR-hours Sum of Phases	8/26/2004	3:58:02.500 PM	2.678E+3	7.503	5.344E+3	VARh

8/26/2004 - 3:58:02.000 PM
Val
4.537 — W-hours Line1
2.754 — W-hours Line2
2.726 — W-hours Line3
10.02 — W-hours Sum of Phases
2.722 — VAR-hours Line1
3.028 — VAR-hours Line2
1.716 — VAR-hours Line3
7.503 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/26/2004	3:58:02.500 PM	0.858	0.856	0.860	
PF Line2	8/26/2004	3:58:02.500 PM	0.673	0.669	0.676	
PF Line3	8/26/2004	3:58:02.500 PM	0.841	0.839	0.844	

8/26/2004 - 3:58:02.000 PM
Val
0.858 — PF Line1
0.672 — PF Line2
0.842 — PF Line3

Trend Summary Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A5\082604-A5.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS A-5 ,

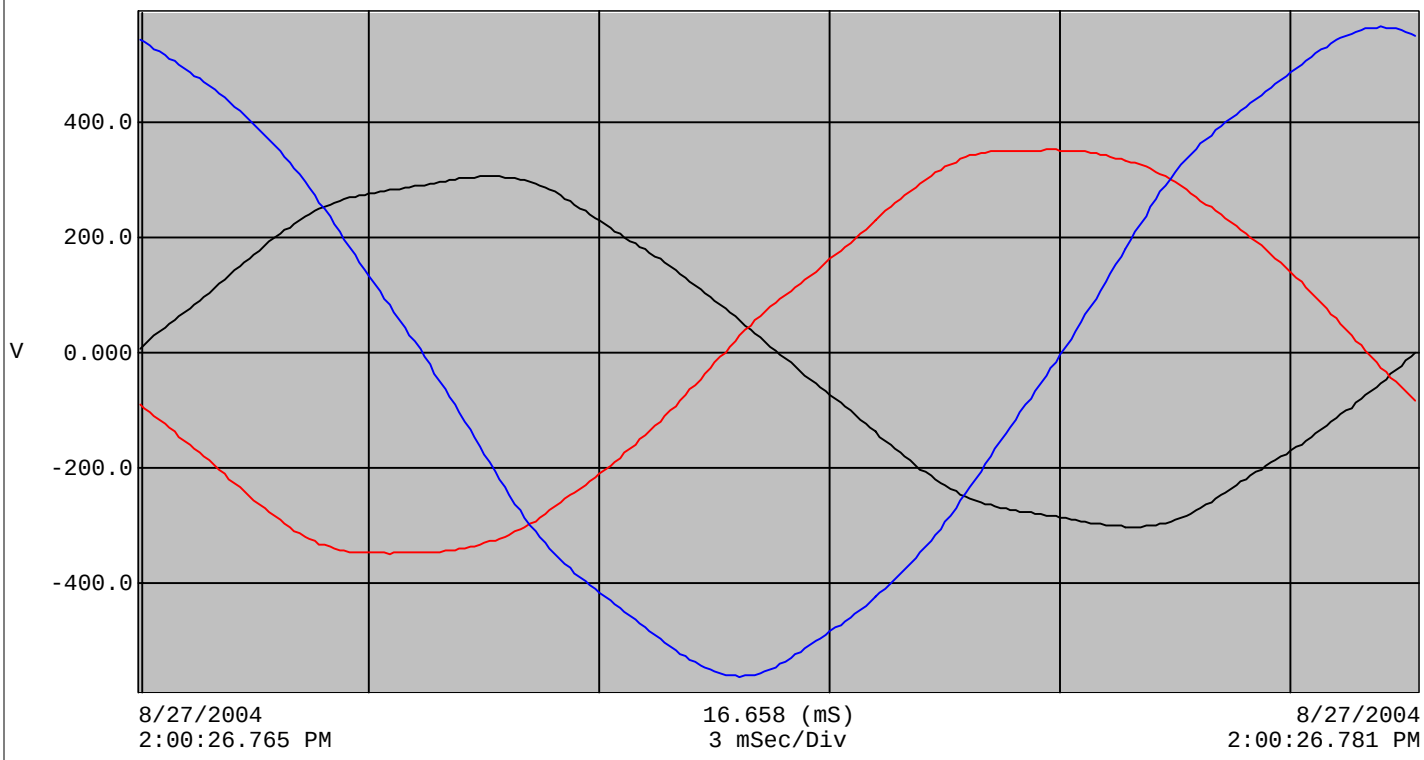
Comments
Recorded at the Motor Starter Overload Relay.

GWA Water Pumping Station Assessment				
Station Name: A-06	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/27/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.1	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	2	0.04	
Building Electrical	**5.0%**		0.1	
Lighting	3.0%	2	0.06	
Power Devices	2.0%	2	0.04	
	100%	**Assessment Value**		**2.4**
Comments:				

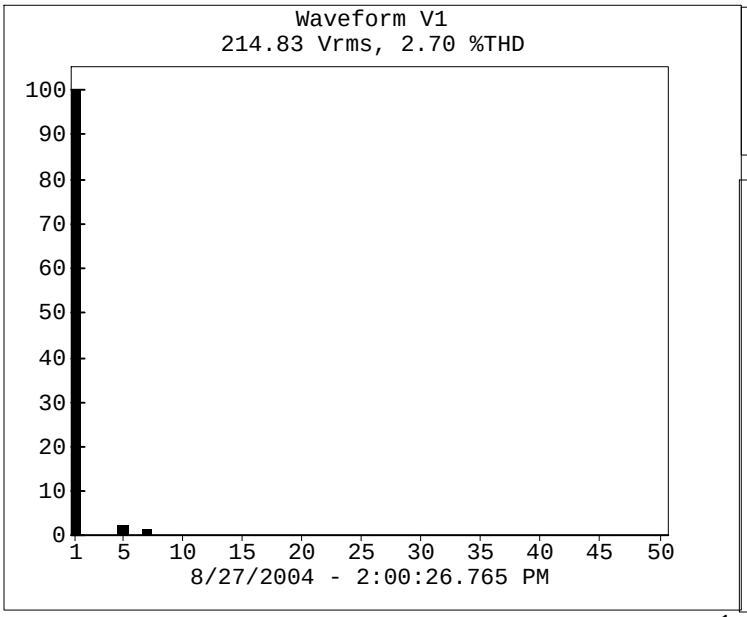
WPS A-6 Pump

Recording Start Date	8/27/2004 - 2:00:26 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/27/2004	2:00:26.765 PM	16.658	214.8	V
Waveform V2	8/27/2004	2:00:26.765 PM	16.658	252.1	V
Waveform V3	8/27/2004	2:00:26.765 PM	16.658	388.5	V



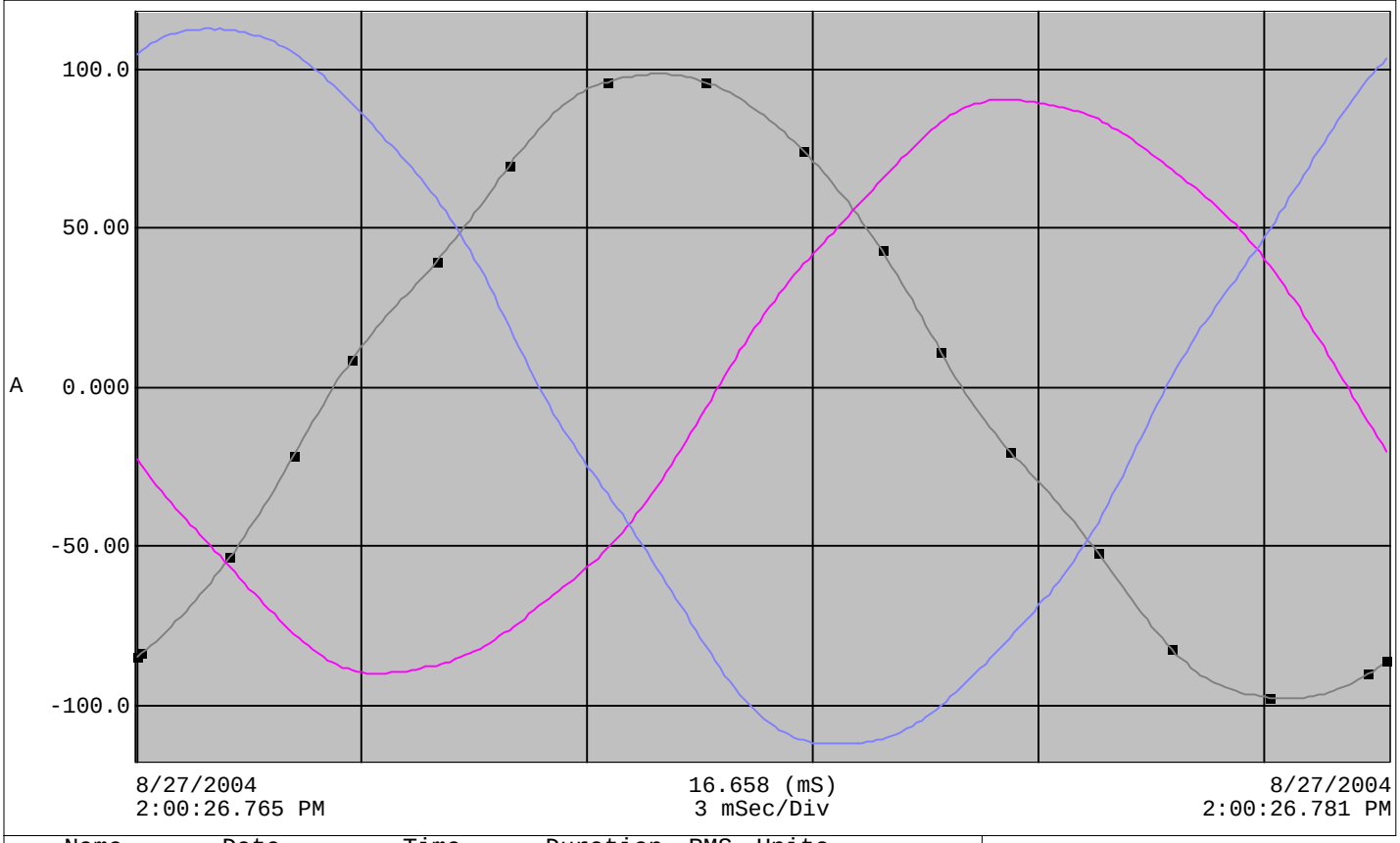
8/27/2004 - 2:00:26.000 PM

Val	
12.80	Waveform V1
-99.30	Waveform V2
536.9	Waveform V3

Waveform V1

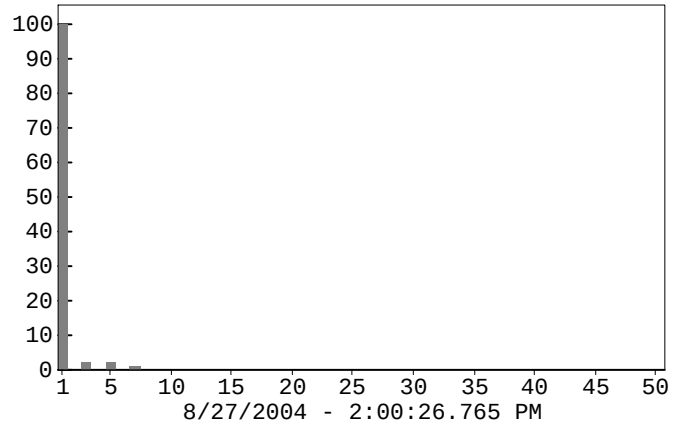
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/27/2004	2:00:26.765 PM	16.658	69.07	A
Waveform I2	8/27/2004	2:00:26.765 PM	16.658	64.05	A
Waveform I3	8/27/2004	2:00:26.765 PM	16.658	79.37	A

Waveform I1
69.07 Arms, 3.59 %THD

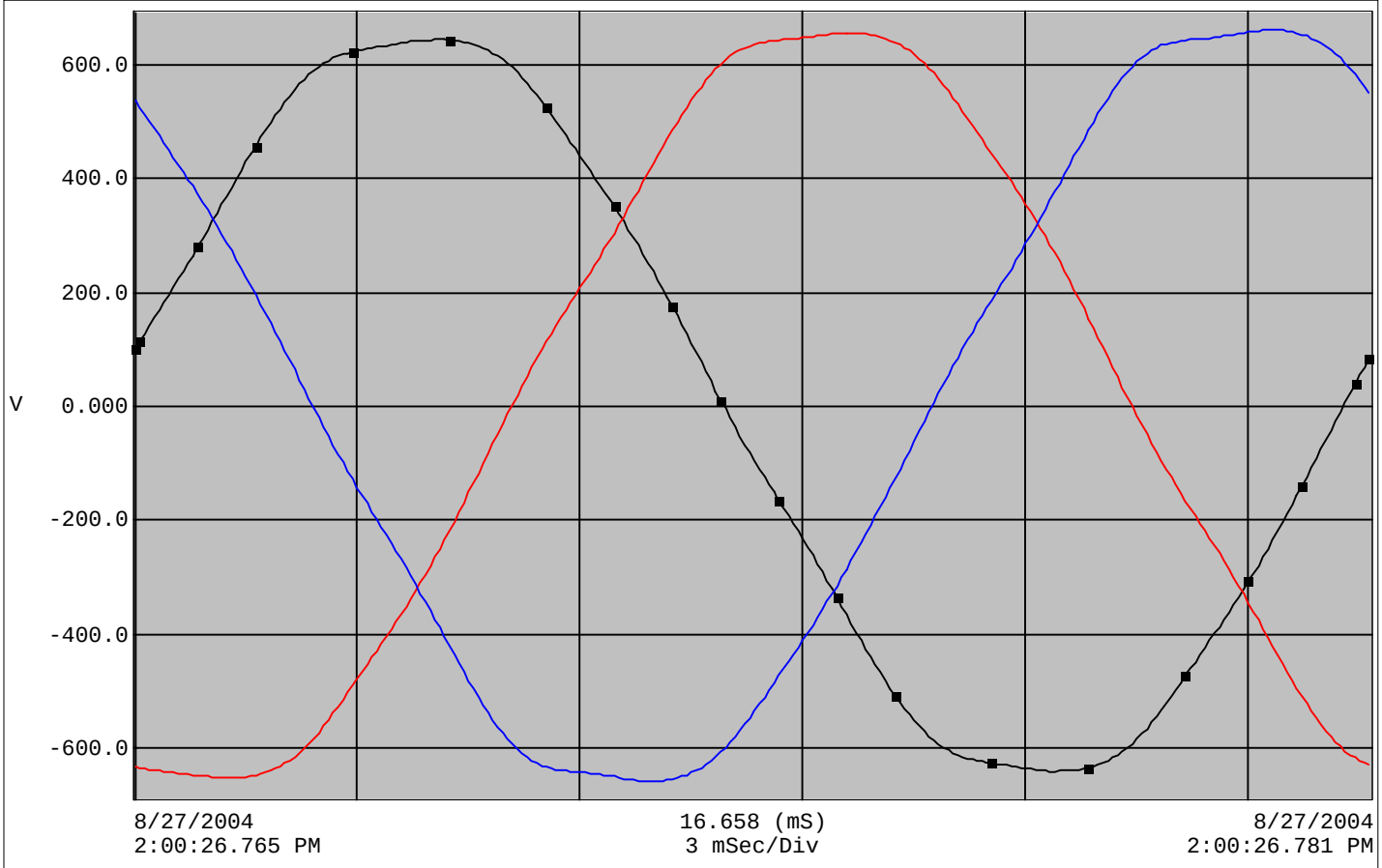


8/27/2004 - 2:00:26.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

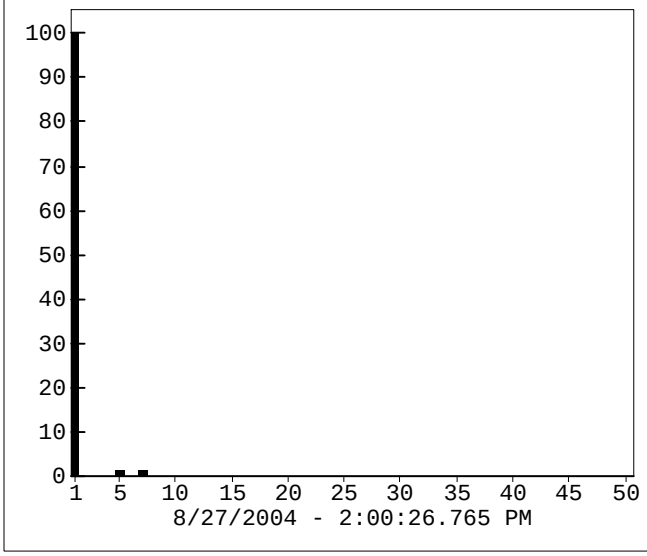
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	2.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/27/2004	2:00:26.765 PM	16.658	463.9	V
Waveform U2	8/27/2004	2:00:26.765 PM	16.658	473.5	V
Waveform U3	8/27/2004	2:00:26.765 PM	16.658	476.8	V

Waveform U1
463.85 Vrms, 2.18 %THD



8/27/2004 - 2:00:26.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 8/27/2004
Start Time: 2:00:26 PM
Duration: 0:0.000 (M:S)
W: 47.64E+3 W
VAR: 32.60E+3 W
VA: 61.78E+3 W
Power Factor: 2.276
Displacement Power Factor: 2.277
TAN: 2.587
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A6\082704-A6-Photo.dvb

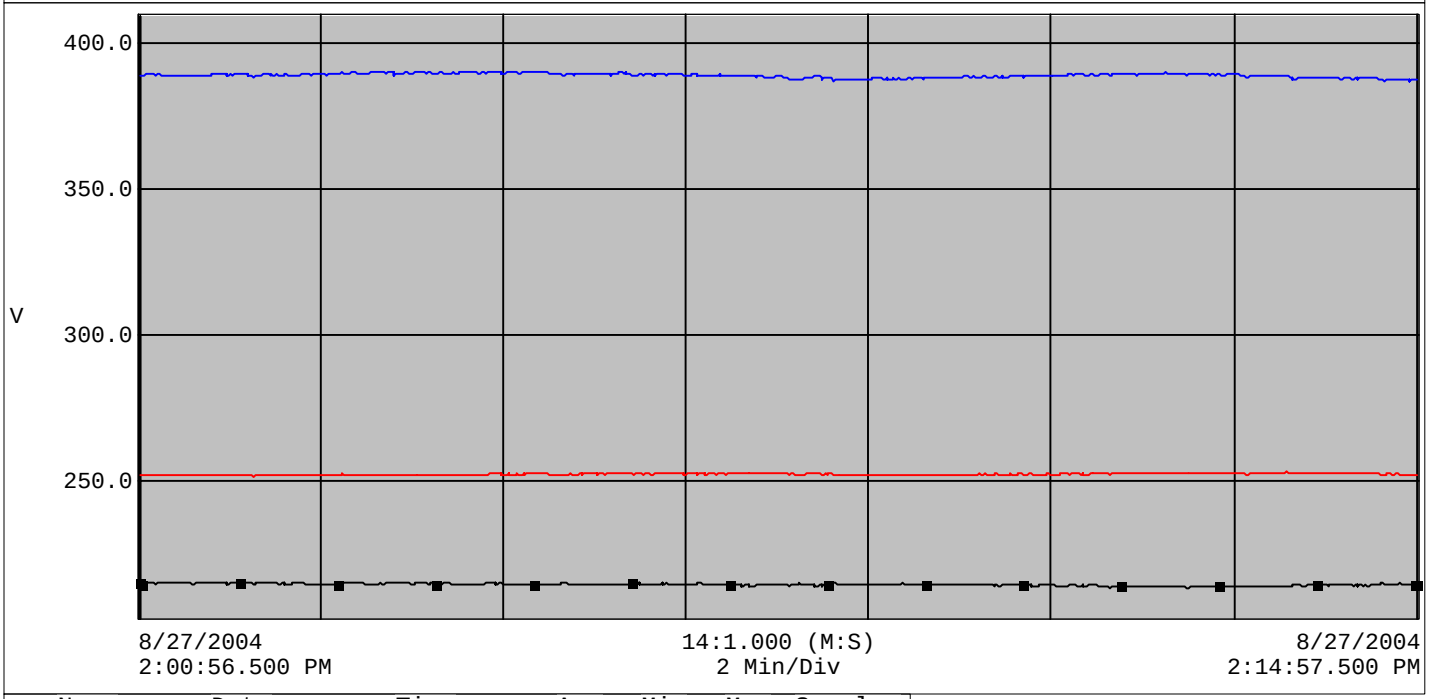
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS A-6 - Photo ,

Comments
Recorded at motor starter overload relay.

WPS A-6 Pump

Recording Start Date	8/27/2004 - 2:00:56 PM
Recording Duration	14:01 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

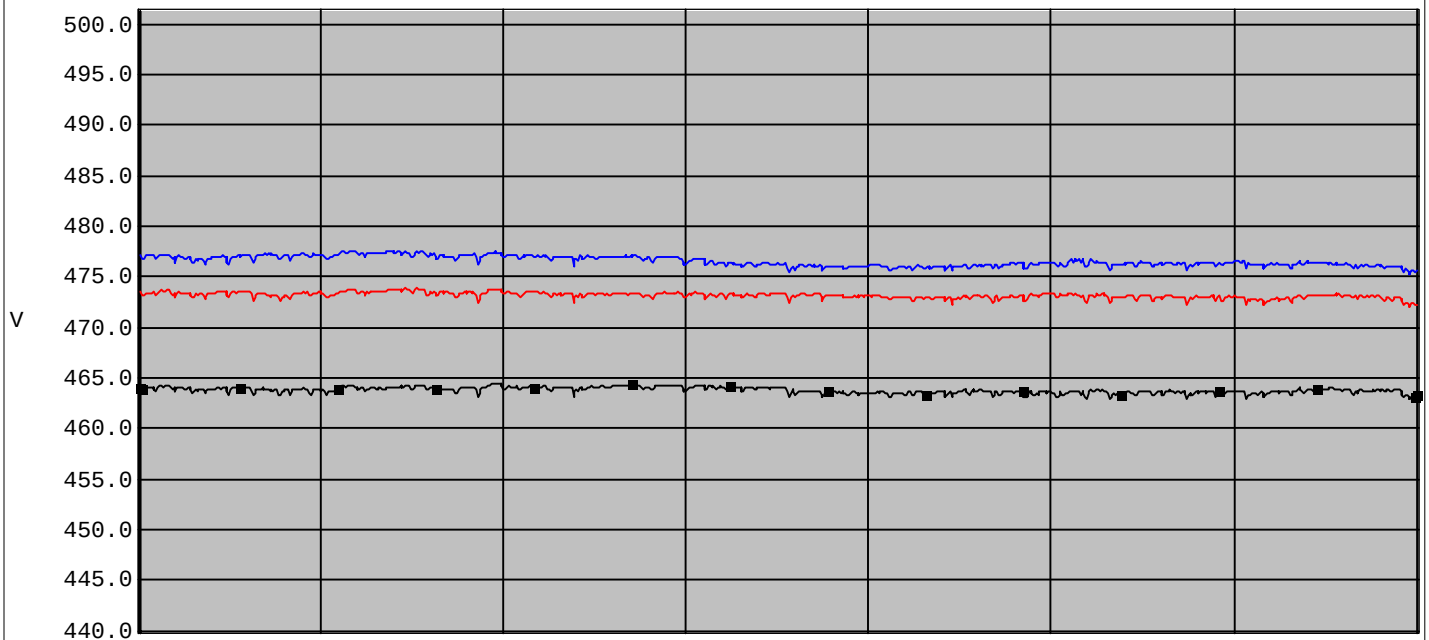
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/27/2004	2:00:56.500 PM	214.5	213.4	215.4	842
Vrms Line2	8/27/2004	2:00:56.500 PM	252.2	251.5	252.9	842
Vrms Line3	8/27/2004	2:00:56.500 PM	388.4	386.6	389.8	842

8/27/2004 - 2:00:56.000 PM
Val
215.0 Vrms Line1
252.1 Vrms Line2
388.6 Vrms Line3

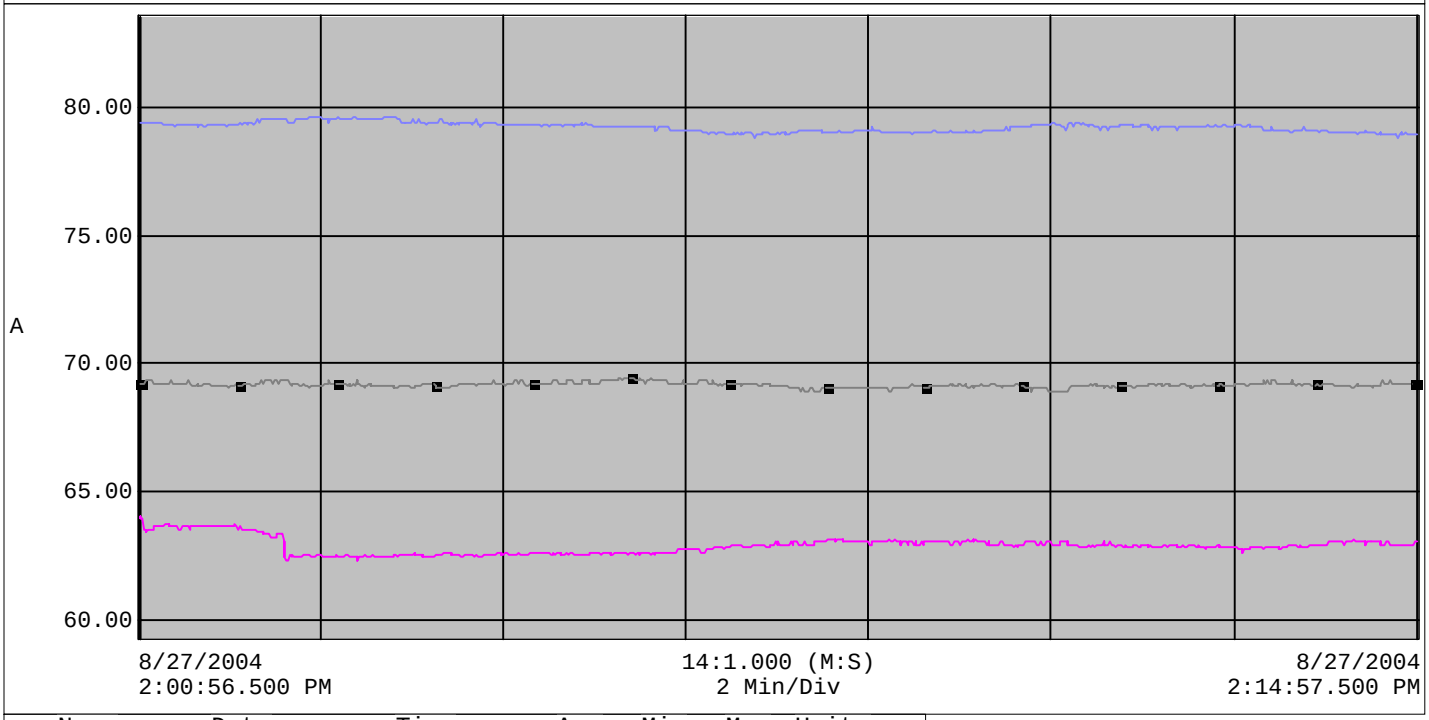
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/27/2004	2:00:56.500 PM	463.7	462.8	464.4	V
Urms Line2	8/27/2004	2:00:56.500 PM	473.1	472.0	473.8	V
Urms Line3	8/27/2004	2:00:56.500 PM	476.5	475.2	477.5	V

8/27/2004 - 2:00:56.000 PM
Val
464.0 Urms Line1
473.4 Urms Line2
477.0 Urms Line3

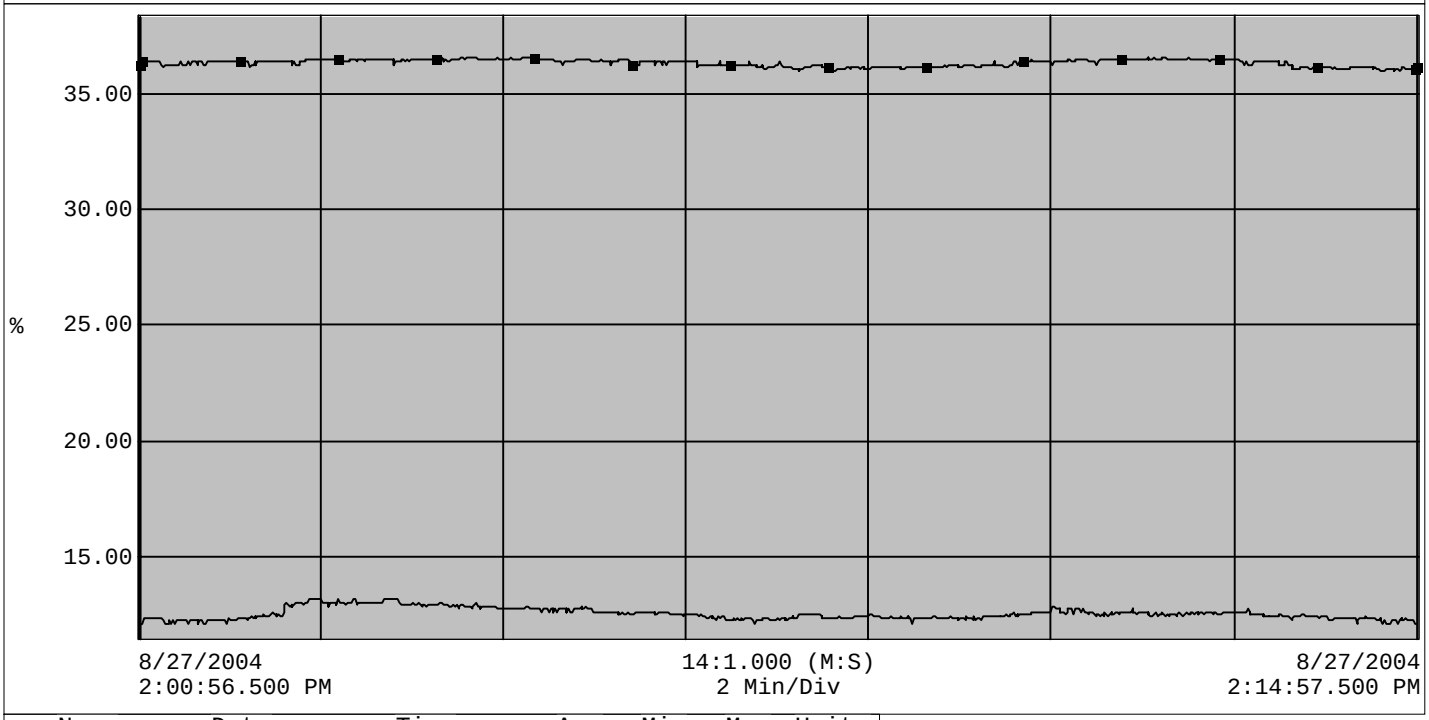
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/27/2004	2:00:56.500 PM	69.14	68.90	69.40	A
Arms Line2	8/27/2004	2:00:56.500 PM	62.85	62.30	64.00	A
Arms Line3	8/27/2004	2:00:56.500 PM	79.21	78.80	79.60	A

8/27/2004 - 2:00:56.000 PM
Val
69.20 — Arms Line1
64.00 — Arms Line2
79.40 — Arms Line3

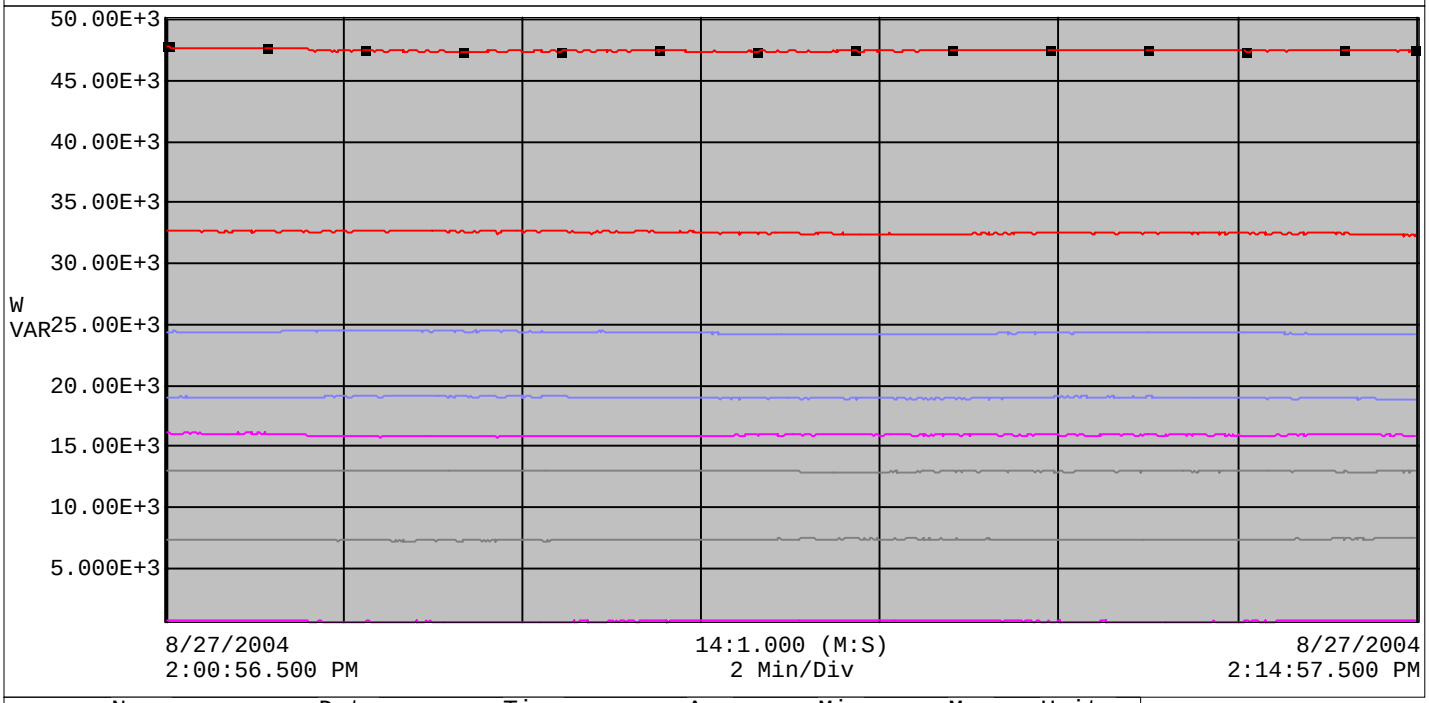
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/27/2004	2:00:56.500 PM	36.26	35.90	36.50	%
Aunb(IEEE)	8/27/2004	2:00:56.500 PM	12.51	12.00	13.10	%

8/27/2004 - 2:00:56.000 PM
Val
36.20 —— Vunb(IEEE)
12.00 —— Aunb(IEEE)

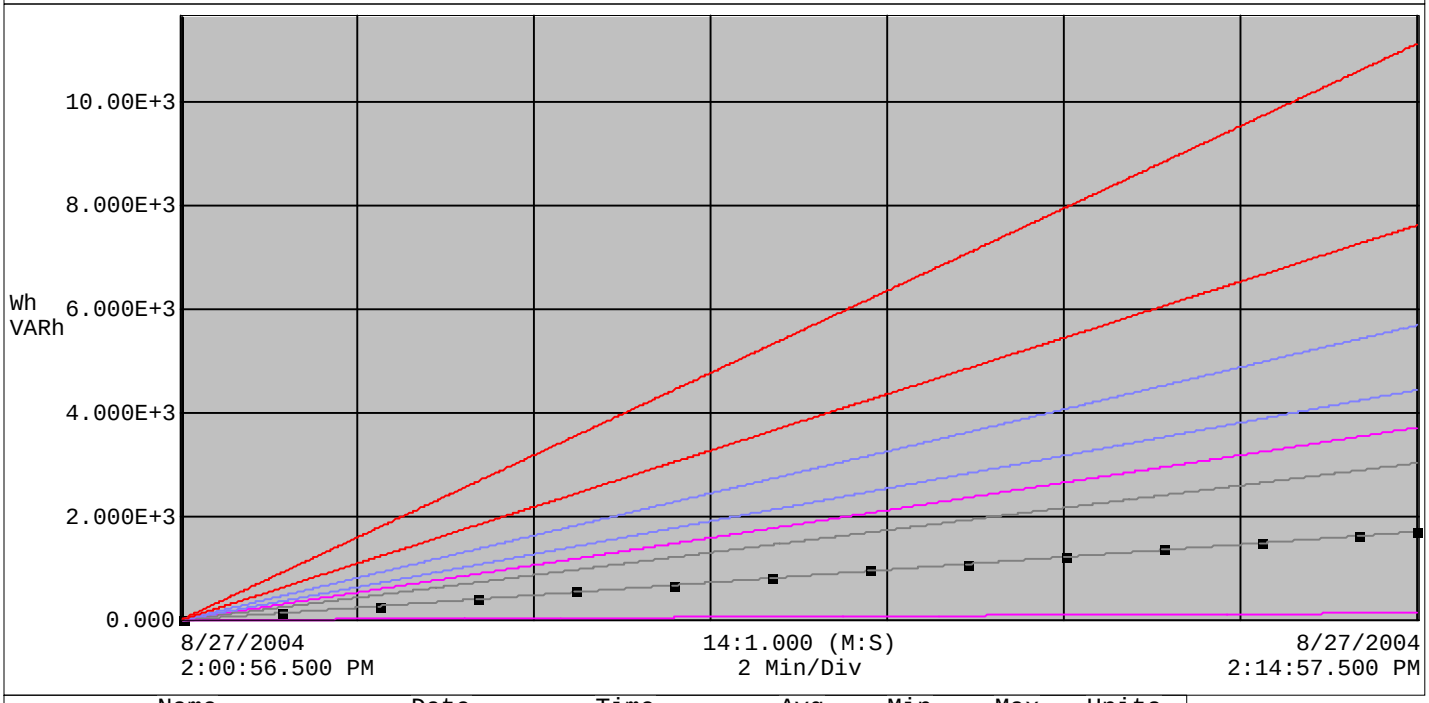
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/27/2004	2:00:56.500 PM	7.282E+3	7.181E+3	7.435E+3	W
W Line2	8/27/2004	2:00:56.500 PM	15.84E+3	15.69E+3	16.11E+3	W
W Line3	8/27/2004	2:00:56.500 PM	24.25E+3	24.05E+3	24.44E+3	W
W Sum of Phases	8/27/2004	2:00:56.500 PM	47.37E+3	47.27E+3	47.70E+3	W
VAR Line1	8/27/2004	2:00:56.500 PM	12.92E+3	12.80E+3	13.02E+3	VAR
VAR Line2	8/27/2004	2:00:56.500 PM	603.0	537.2	678.4	VAR
VAR Line3	8/27/2004	2:00:56.500 PM	18.93E+3	18.70E+3	19.10E+3	VAR
VAR Sum of Phases	8/27/2004	2:00:56.500 PM	32.46E+3	32.18E+3	32.66E+3	VAR

8/27/2004 - 2:00:56.000 PM
Val
7.272E+3 — W Line1
16.11E+3 — W Line2
24.31E+3 — W Line3
47.70E+3 — W Sum of Phases
12.98E+3 — VAR Line1
670.4 — VAR Line2
18.98E+3 — VAR Line3
32.63E+3 — VAR Sum of Phases

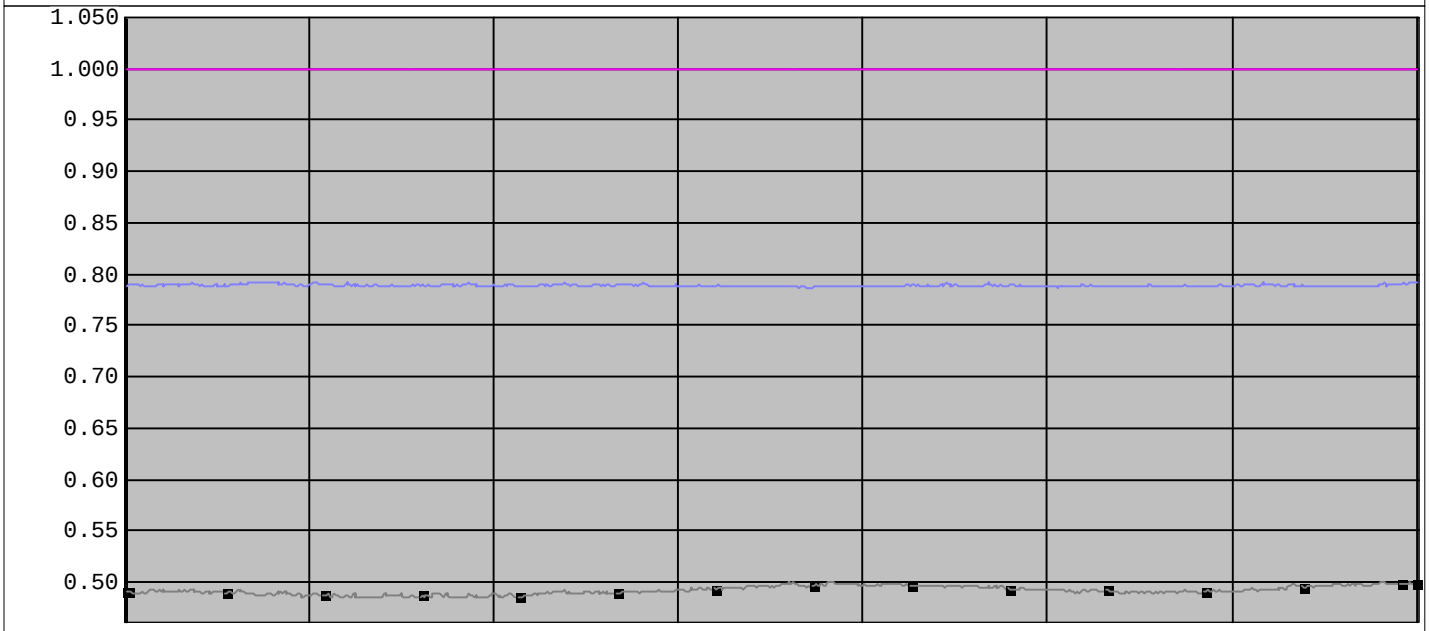
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/27/2004	2:00:56.500 PM	851.0	2.027	1.703E+3	Wh
W-hours Line2	8/27/2004	2:00:56.500 PM	1.854E+3	4.523	3.705E+3	Wh
W-hours Line3	8/27/2004	2:00:56.500 PM	2.843E+3	6.751	5.671E+3	Wh
W-hours Sum of Phases	8/27/2004	2:00:56.500 PM	5.549E+3	13.19	11.08E+3	Wh
VAR-hours Line1	8/27/2004	2:00:56.500 PM	1.516E+3	3.597	3.022E+3	VARh
VAR-hours Line2	8/27/2004	2:00:56.500 PM	70.51	0.185	141.0	VARh
VAR-hours Line3	8/27/2004	2:00:56.500 PM	2.219E+3	5.271	4.429E+3	VARh
VAR-hours Sum of Phases	8/27/2004	2:00:56.500 PM	3.806E+3	9.036	7.592E+3	VARh

8/27/2004 - 2:00:56.000 PM
Val
2.027 — W-hours Line1
4.523 — W-hours Line2
6.751 — W-hours Line3
13.19 — W-hours Sum of Phases
3.597 — VAR-hours Line1
0.185 — VAR-hours Line2
5.271 — VAR-hours Line3
9.036 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/27/2004	2:00:56.500 PM	0.491	0.484	0.500	
PF Line2	8/27/2004	2:00:56.500 PM	0.999	0.999	0.999	
PF Line3	8/27/2004	2:00:56.500 PM	0.788	0.786	0.791	

8/27/2004 - 2:00:56.000 PM
Val
0.489 — PF Line1
0.999 — PF Line2
0.788 — PF Line3

Trend Summary Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A6\082704-A6.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS A-6 ,

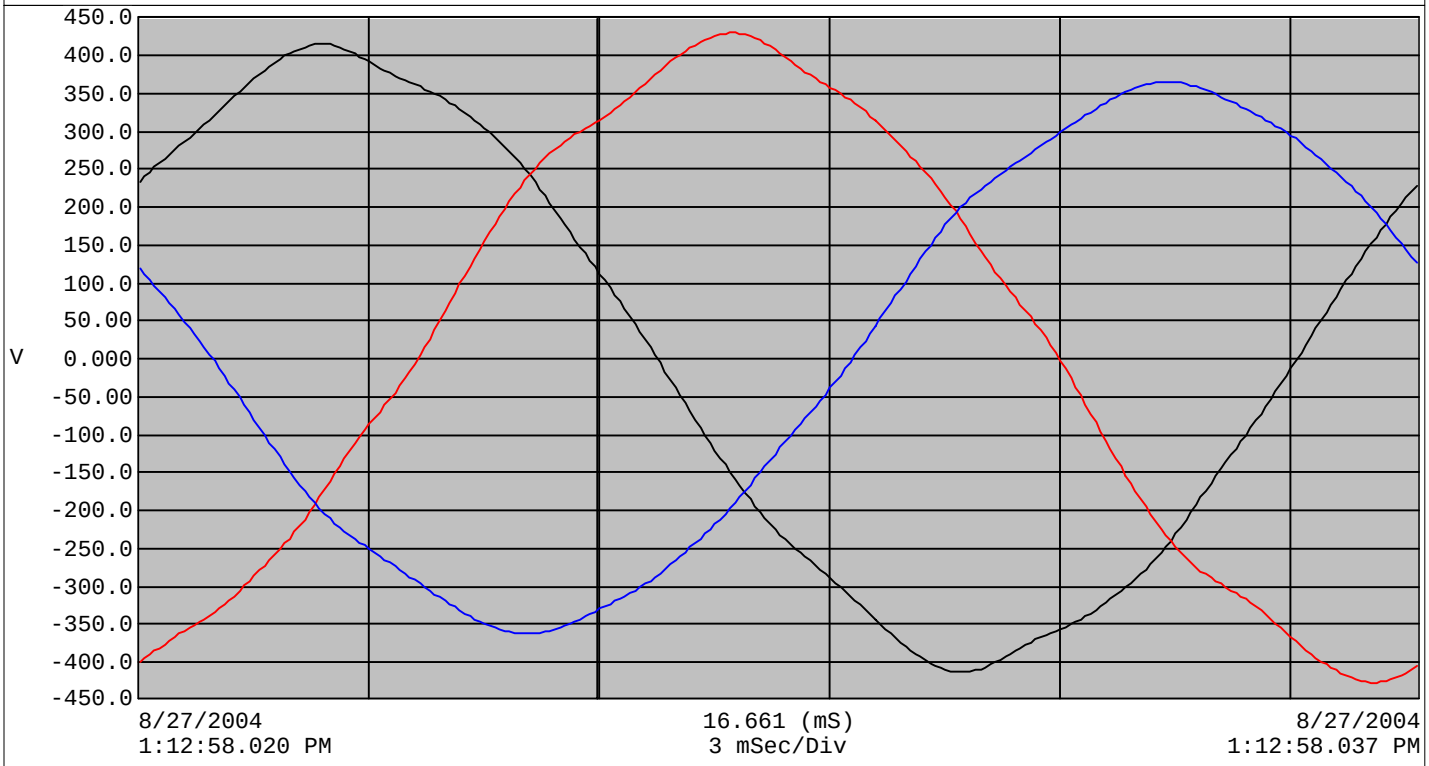
Comments
Recorded at motor starter overload relay.

GWA Water Pumping Station Assessment				
Station Name: A-08	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/27/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	3	0.15	
Wiring	5.0%	2	0.1	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.13	
Pressure	1.5%	3	0.045	52
Flow	1.5%	3	0.045	52
Automatic Controls	2.0%	2	0.04	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.5**
Comments:				

WPS A-8 Pump

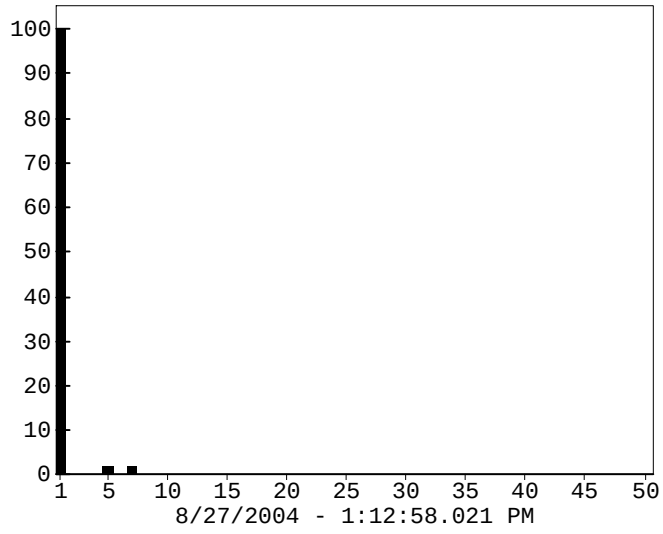
Recording Start Date	8/27/2004 - 1:12:58 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/27/2004	1:12:58.020 PM	16.661	284.0	V
Waveform V2	8/27/2004	1:12:58.020 PM	16.661	292.3	V
Waveform V3	8/27/2004	1:12:58.020 PM	16.661	252.7	V

Waveform V1
284.02 Vrms, 2.65 %THD



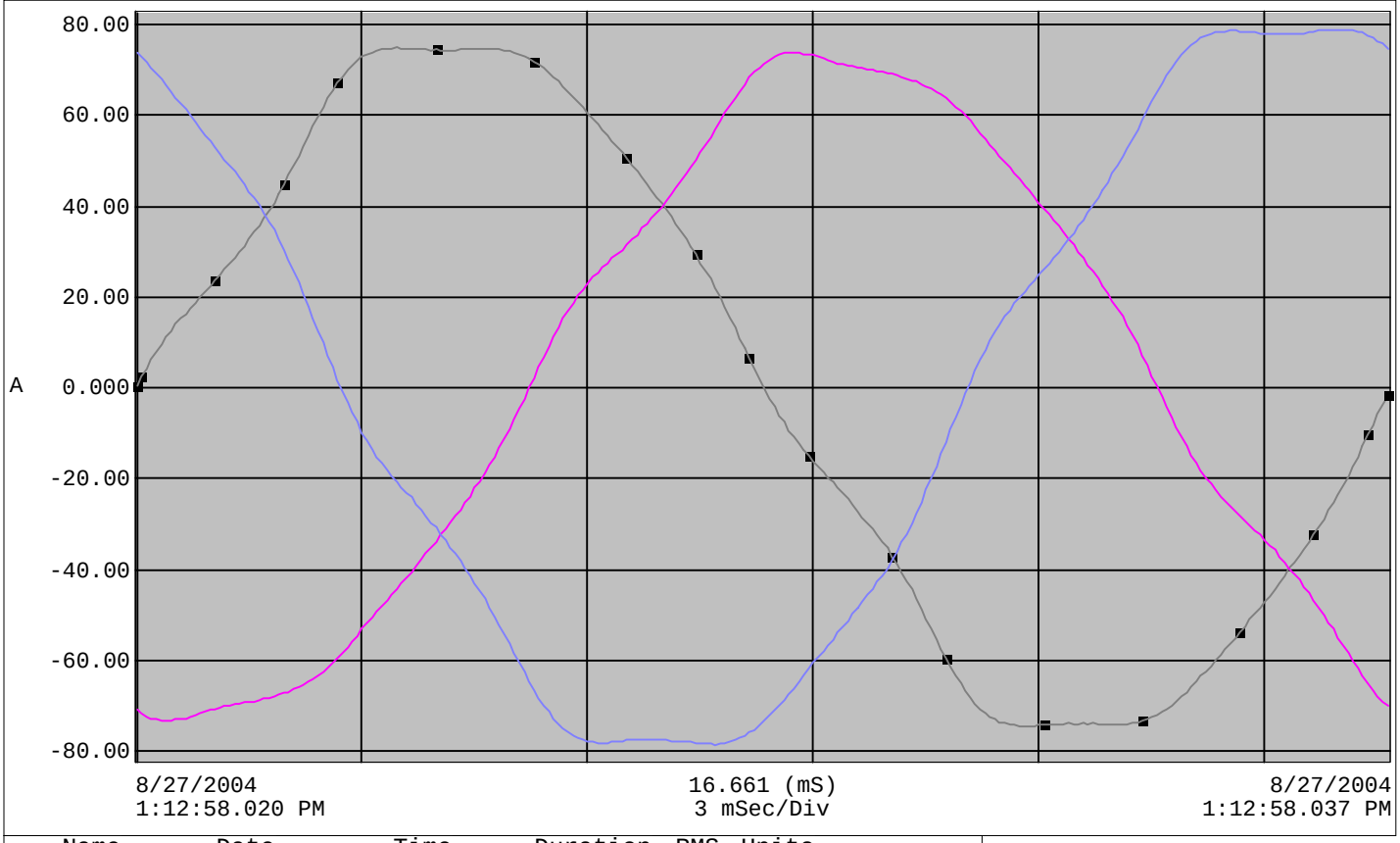
8/27/2004 - 1:12:58.006 PM

Val	
110.7	Waveform V1
314.1	Waveform V2
-331.3	Waveform V3

Waveform V1

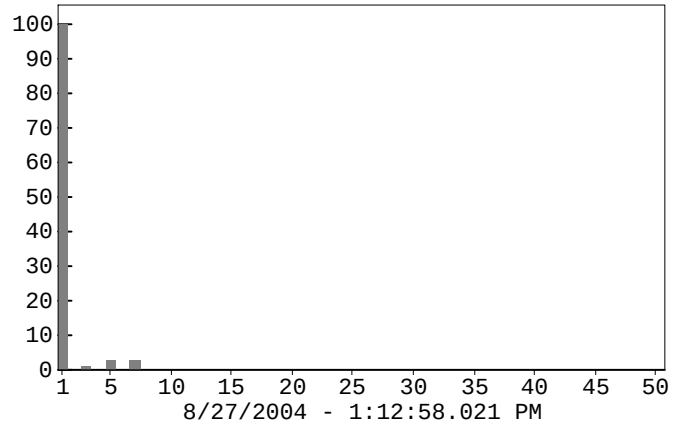
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/27/2004	1:12:58.020 PM	16.661	53.88	A
Waveform I2	8/27/2004	1:12:58.020 PM	16.661	51.25	A
Waveform I3	8/27/2004	1:12:58.020 PM	16.661	57.81	A

Waveform I1
53.88 Arms, 4.77 %THD



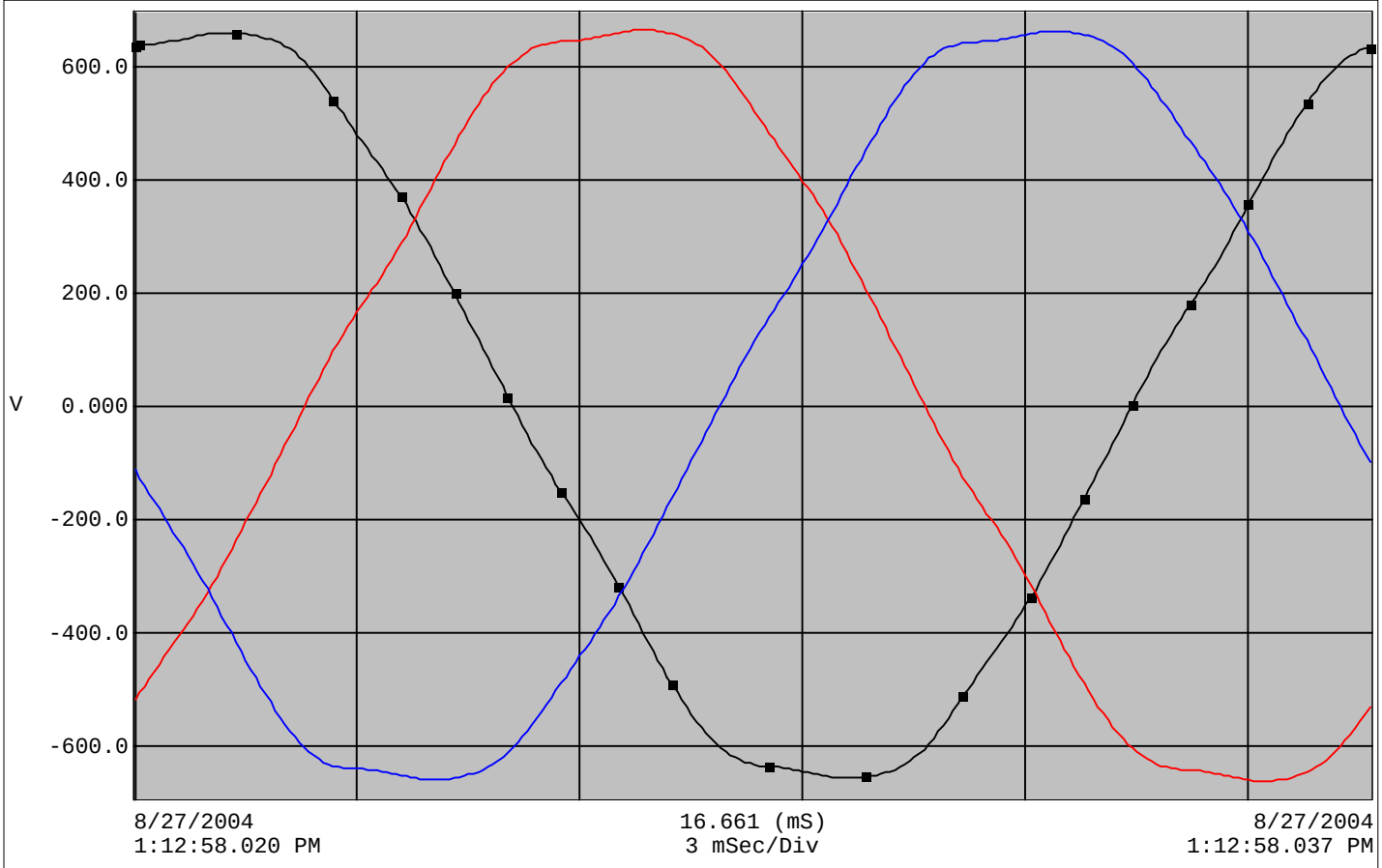
8/27/2004 - 1:12:58.000 PM

	Val	
—	0.100	Waveform I1
—	-71.10	Waveform I2
—	73.70	Waveform I3

Waveform I1

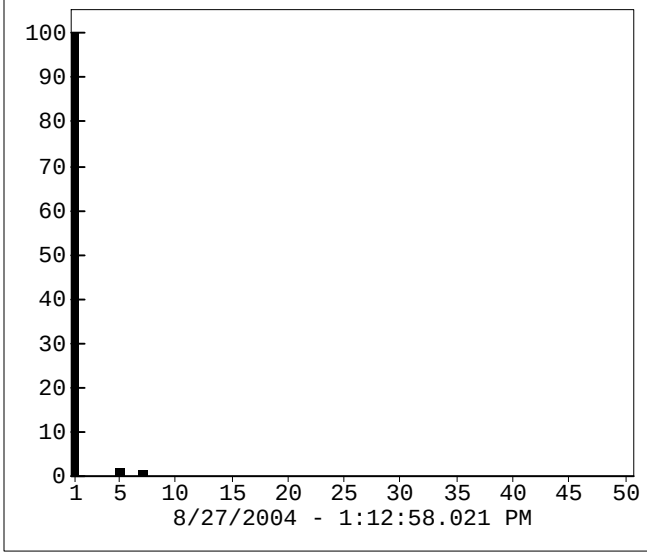
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	1.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	3.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	3.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/27/2004	1:12:58.020 PM	16.661	476.2	V
Waveform U2	8/27/2004	1:12:58.020 PM	16.661	478.7	V
Waveform U3	8/27/2004	1:12:58.020 PM	16.661	478.2	V

Waveform U1
476.22 Vrms, 2.62 %THD



8/27/2004 - 1:12:58.000 PM

Val	
635.1	Waveform U1
-520.8	Waveform U2
-114.3	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/27/2004
Start Time: 1:12:58 PM
Duration: 0:0.000 (M:S)
W: 35.00E+3 W
VAR: 27.99E+3 W
VA: 44.86E+3 W
Power Factor: 2.339
Displacement Power Factor: 2.343
TAN: 2.400
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A8\082704-A8-Photo.dvb

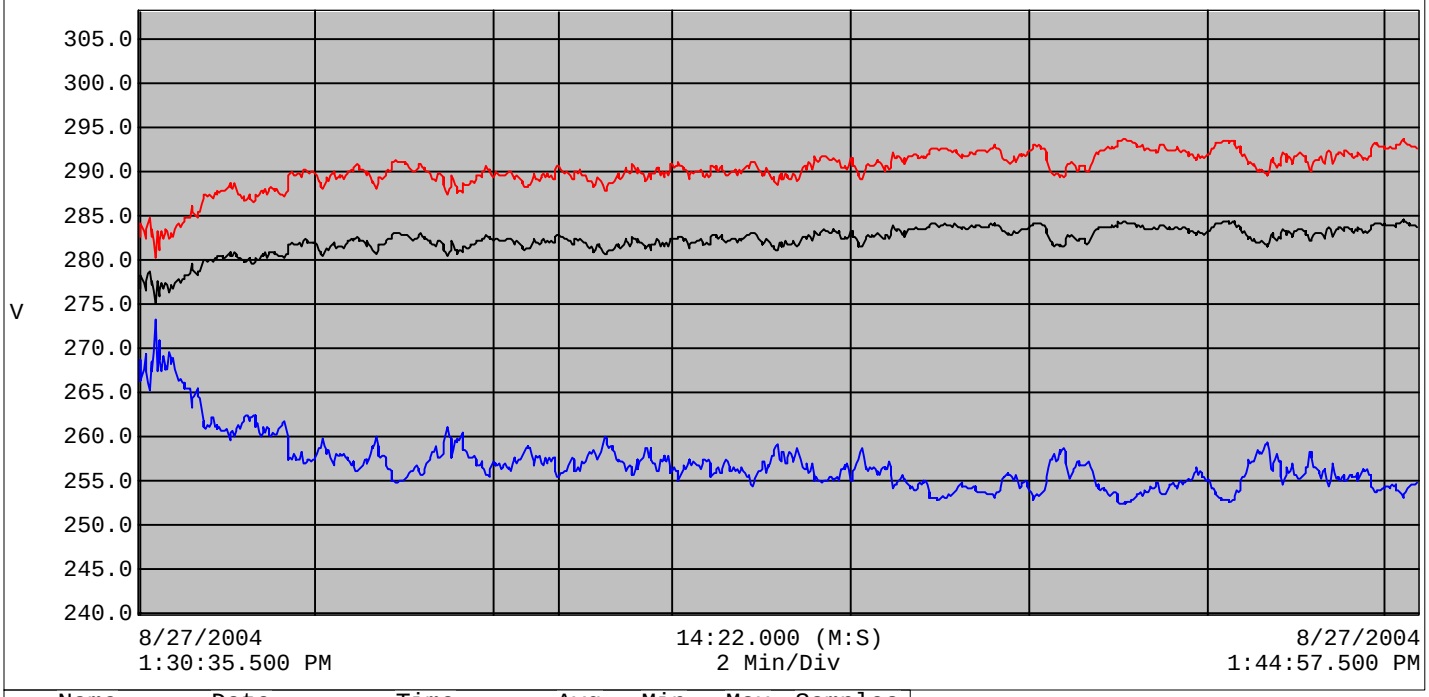
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa & Victor Jardel ,	GWA WPS A-8 Photo ,

Comments
Recorded at Pump Motor Starter Overload Relay.

WPS A-8 Pump

Recording Start Date	8/27/2004 - 1:30:35 PM
Recording Duration	14:22 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

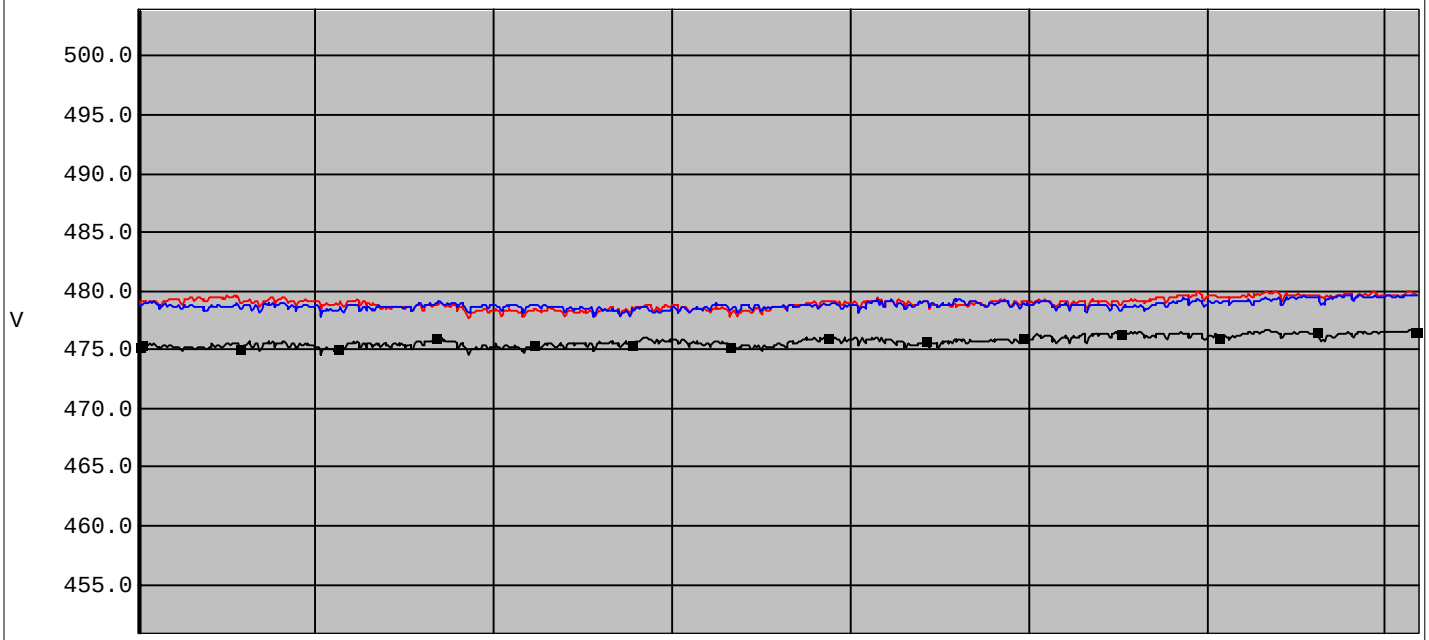
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/27/2004	1:30:35.500 PM	282.1	274.7	284.3	863
Vrms Line2	8/27/2004	1:30:35.500 PM	290.1	280.0	293.4	863
Vrms Line3	8/27/2004	1:30:35.500 PM	256.7	252.2	273.1	863

8/27/2004 - 1:35:19.000 PM
Val
282.5 Vrms Line1
290.1 Vrms Line2
255.7 Vrms Line3

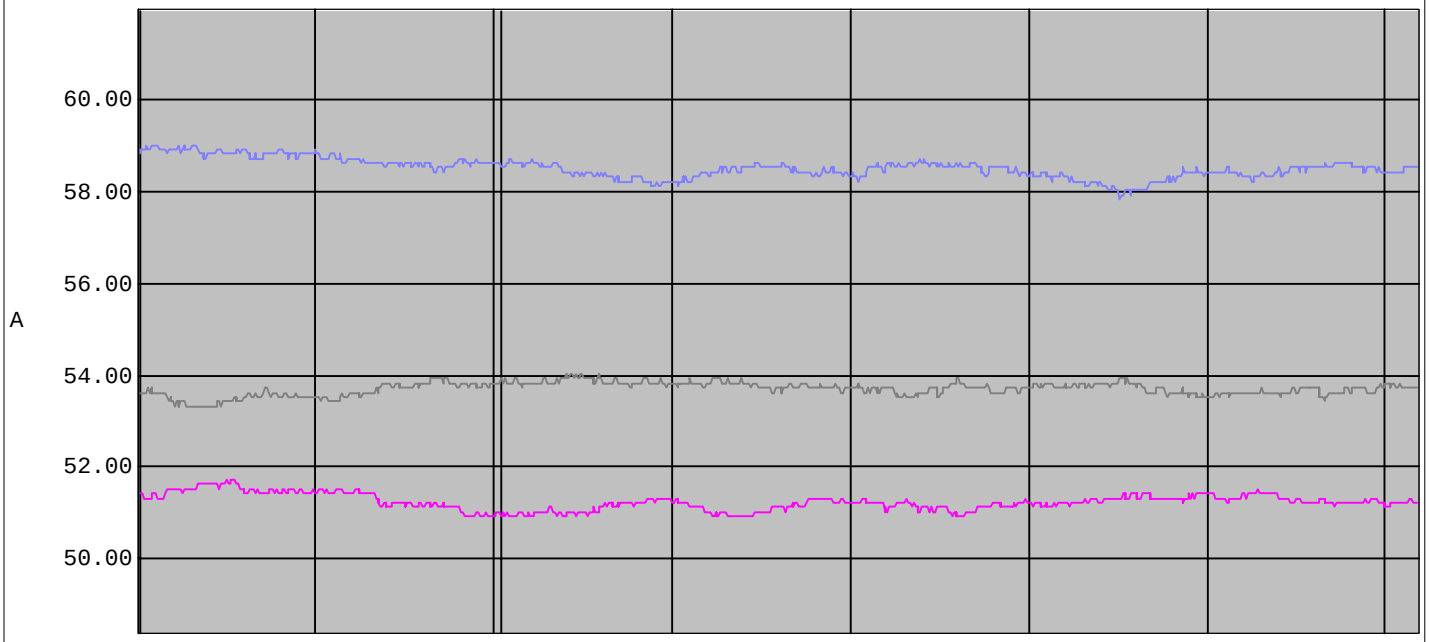
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/27/2004	1:30:35.500 PM	475.7	474.5	476.6	V
Urms Line2	8/27/2004	1:30:35.500 PM	478.9	477.6	479.9	V
Urms Line3	8/27/2004	1:30:35.500 PM	478.7	477.7	479.6	V

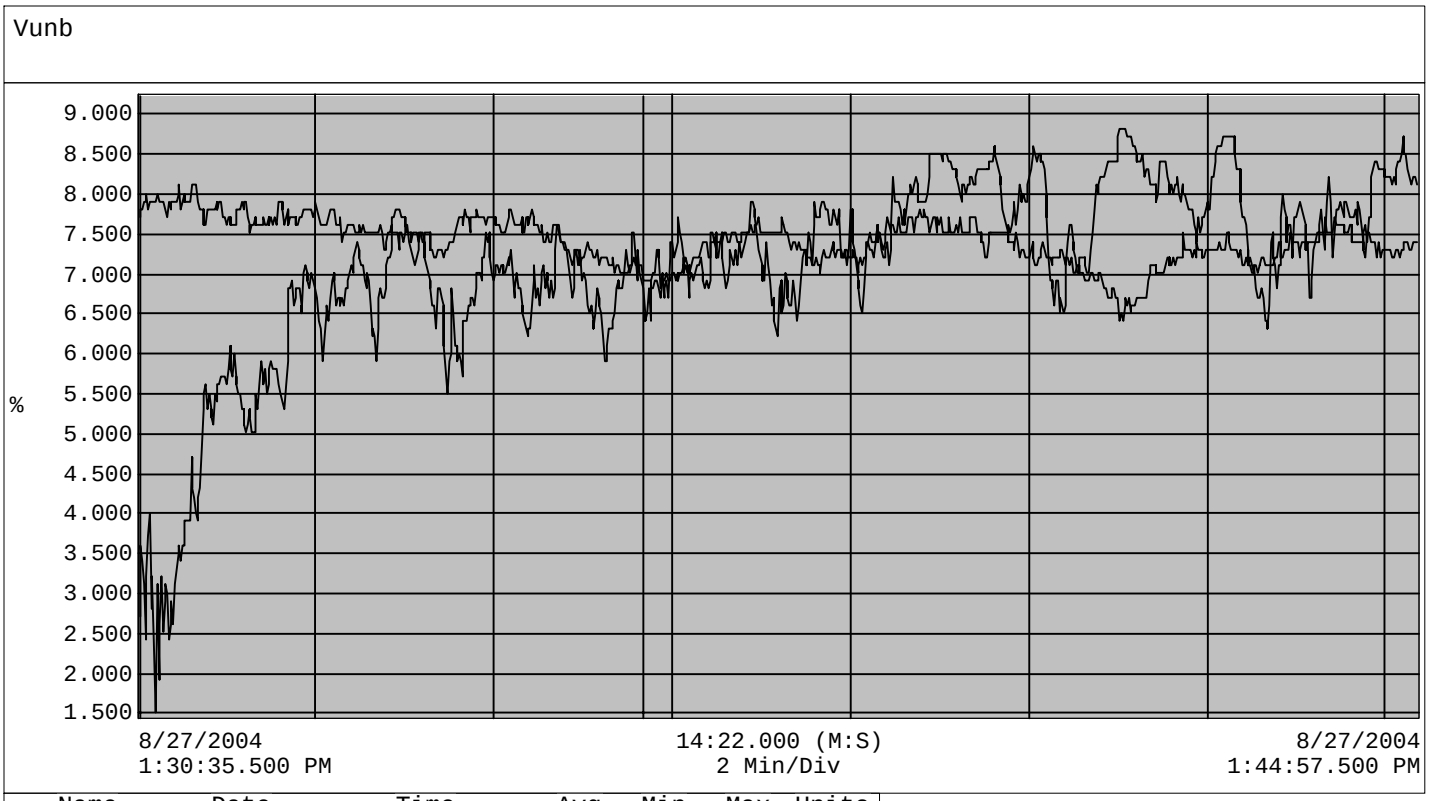
8/27/2004 - 1:30:35.000 PM
Val
475.1 Urms Line1
478.8 Urms Line2
478.6 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/27/2004	1:30:35.500 PM	53.68	53.30	54.00	A
Arms Line2	8/27/2004	1:30:35.500 PM	51.22	50.90	51.70	A
Arms Line3	8/27/2004	1:30:35.500 PM	58.48	57.80	59.00	A

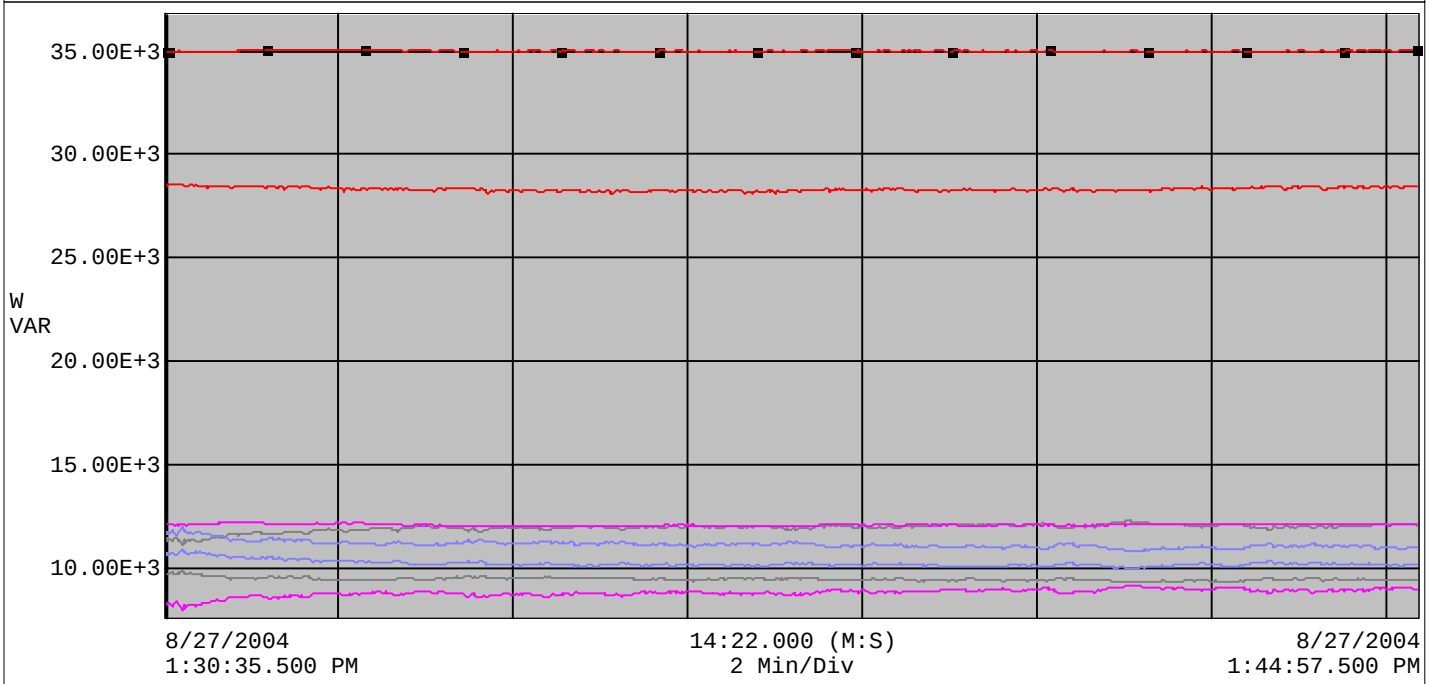
8/27/2004 - 1:34:40.000 PM
Val
53.80 — Arms Line1
50.90 — Arms Line2
58.50 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/27/2004	1:30:35.500 PM	7.086	1.500	8.800	%
Aunb(IEEE)	8/27/2004	1:30:35.500 PM	7.394	6.400	8.100	%

8/27/2004 - 1:36:16.000 PM
Val
6.500 —— Vunb(IEEE)
6.900 —— Aunb(IEEE)

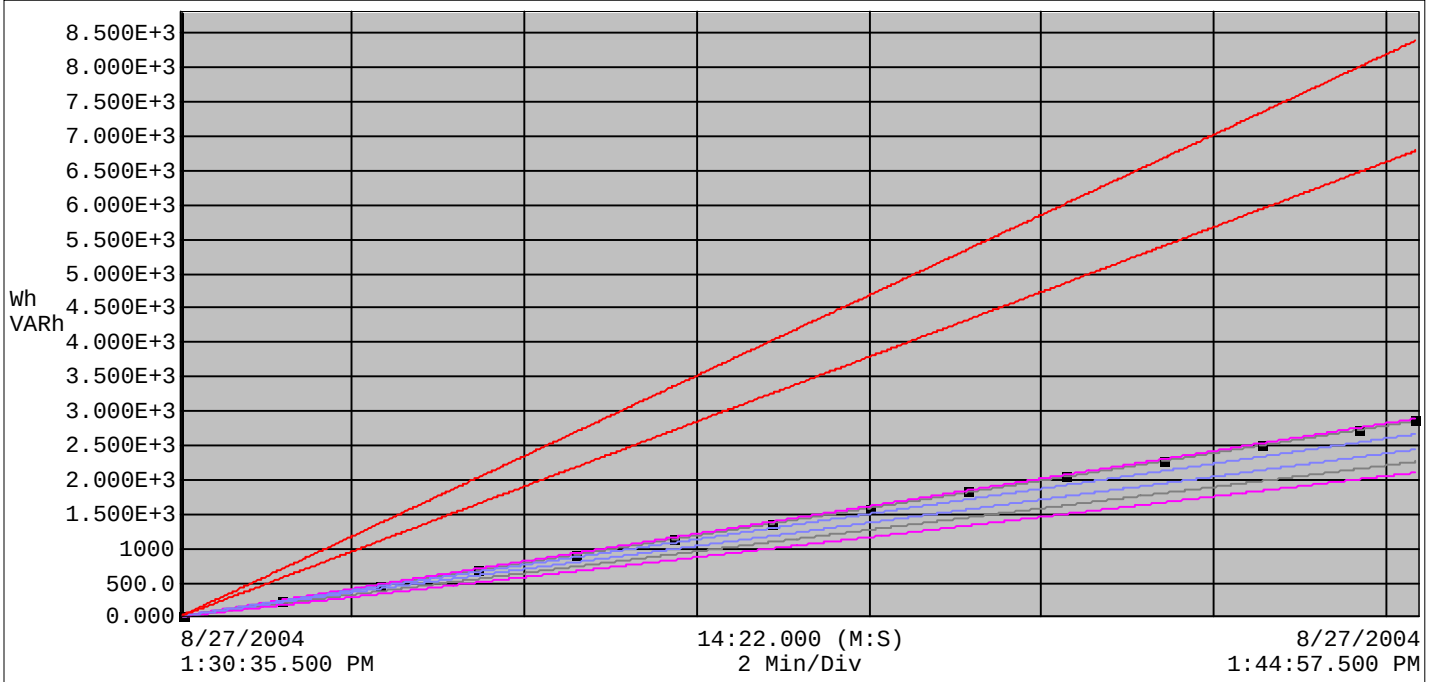
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/27/2004	1:30:35.500 PM	11.88E+3	11.01E+3	12.21E+3	W
W Line2	8/27/2004	1:30:35.500 PM	12.01E+3	11.91E+3	12.15E+3	W
W Line3	8/27/2004	1:30:35.500 PM	11.07E+3	10.73E+3	11.91E+3	W
W Sum of Phases	8/27/2004	1:30:35.500 PM	34.96E+3	34.91E+3	35.03E+3	W
VAR Line1	8/27/2004	1:30:35.500 PM	9.391E+3	9.223E+3	9.775E+3	VAR
VAR Line2	8/27/2004	1:30:35.500 PM	8.737E+3	7.887E+3	9.094E+3	VAR
VAR Line3	8/27/2004	1:30:35.500 PM	10.14E+3	9.870E+3	10.83E+3	VAR
VAR Sum of Phases	8/27/2004	1:30:35.500 PM	28.27E+3	28.05E+3	28.50E+3	VAR

8/27/2004 - 1:30:35.000 PM
Val
11.24E+3 — W Line1
12.02E+3 — W Line2
11.67E+3 — W Line3
34.94E+3 — W Sum of Phases
9.661E+3 — VAR Line1
8.125E+3 — VAR Line2
10.64E+3 — VAR Line3
28.43E+3 — VAR Sum of Phases

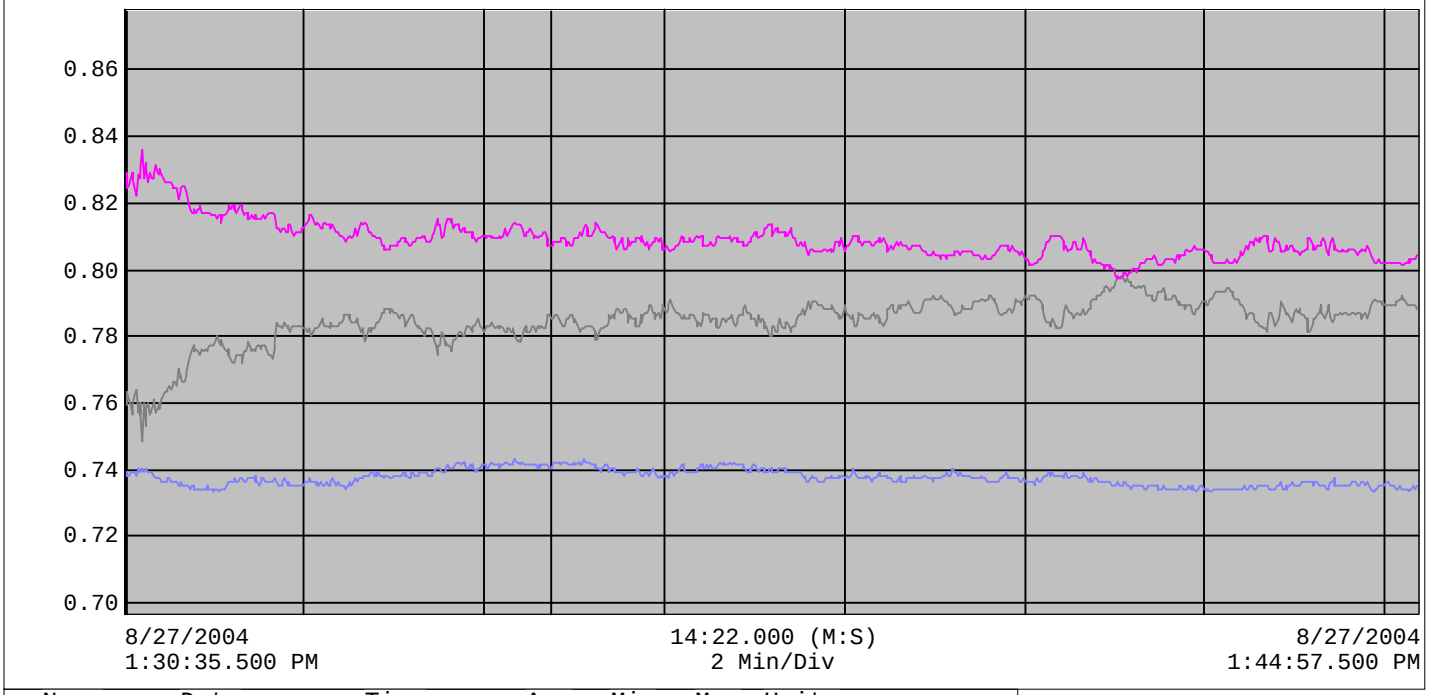
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/27/2004	1:30:35.500 PM	1.417E+3	3.129	2.848E+3	Wh
W-hours Line2	8/27/2004	1:30:35.500 PM	1.442E+3	3.340	2.880E+3	Wh
W-hours Line3	8/27/2004	1:30:35.500 PM	1.337E+3	3.239	2.654E+3	Wh
W-hours Sum of Phases	8/27/2004	1:30:35.500 PM	4.196E+3	9.720	8.381E+3	Wh
VAR-hours Line1	8/27/2004	1:30:35.500 PM	1.130E+3	2.680	2.251E+3	VARh
VAR-hours Line2	8/27/2004	1:30:35.500 PM	1.039E+3	2.237	2.094E+3	VARh
VAR-hours Line3	8/27/2004	1:30:35.500 PM	1.223E+3	2.968	2.431E+3	VARh
VAR-hours Sum of Phases	8/27/2004	1:30:35.500 PM	3.393E+3	7.860	6.777E+3	VARh

8/27/2004 - 1:30:35.000 PM
Val
3.129 — W-hours Line1
3.340 — W-hours Line2
3.239 — W-hours Line3
9.720 — W-hours Sum of Phases
2.680 — VAR-hours Line1
2.237 — VAR-hours Line2
2.968 — VAR-hours Line3
7.860 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/27/2004	1:30:35.500 PM	0.784	0.748	0.798	
PF Line2	8/27/2004	1:30:35.500 PM	0.809	0.797	0.836	
PF Line3	8/27/2004	1:30:35.500 PM	0.737	0.733	0.743	

8/27/2004 - 1:35:20.000 PM
Val
0.785 — PF Line1
0.807 — PF Line2
0.741 — PF Line3

Trend Summary Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A8\082704-A8.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS A-8 ,

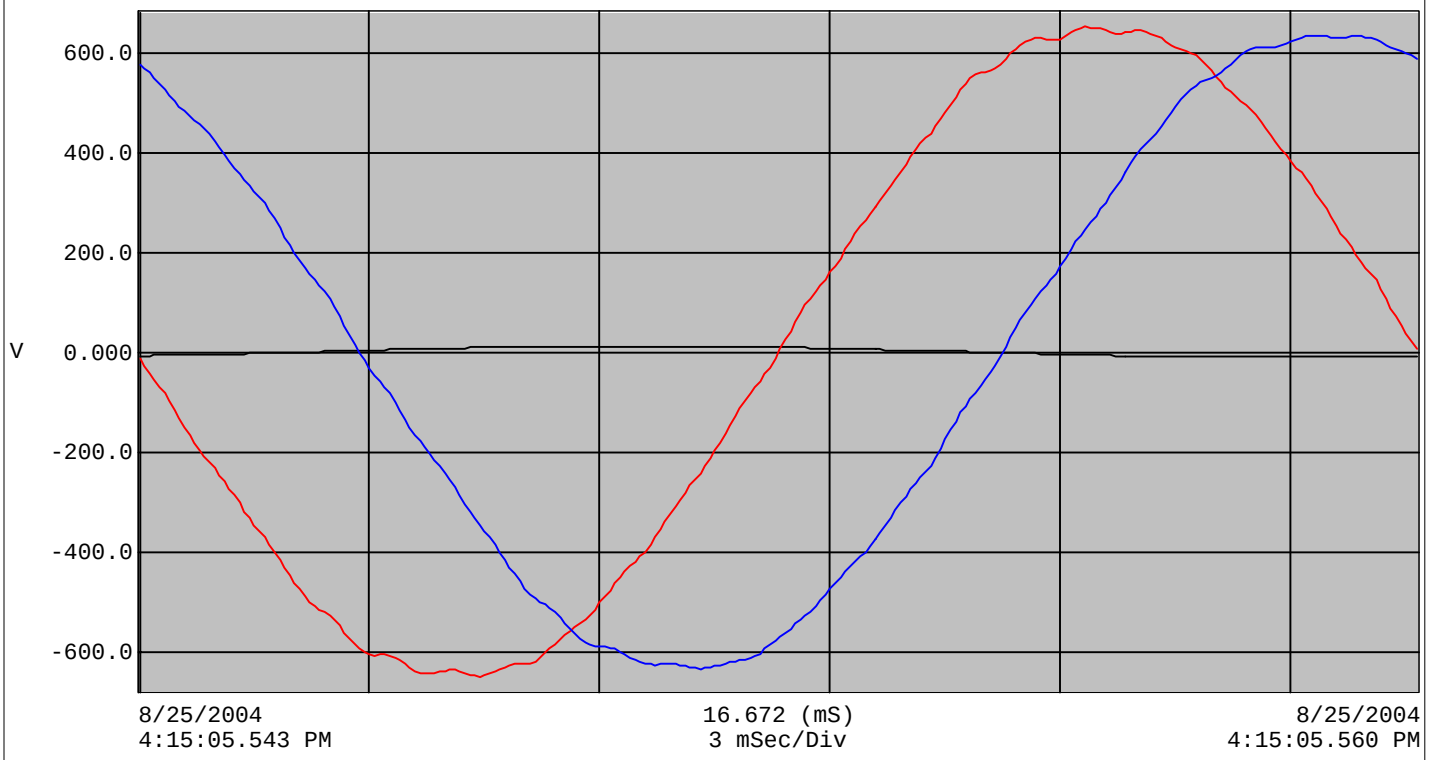
Comments
Recorded at the motor starter overload relay.

GWA Water Pumping Station Assessment				
Station Name: A-09	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.65	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	2	0.1	35
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0	
Pressure	1.5%	0	0	
Flow	1.5%	0	0	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.13	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	2	0.04	
	100%	**Assessment Value**		**2.4**
Comments:				

WPS A-9 Pump Operating with ground

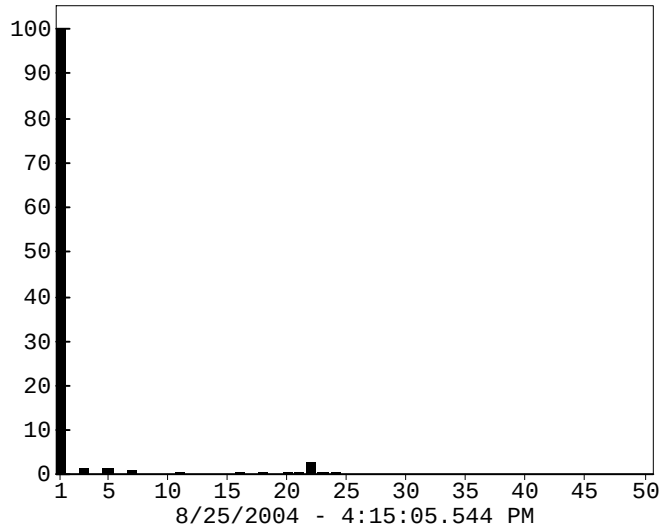
Recording Start Date	8/25/2004 - 4:15:05 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/25/2004	4:15:05.543 PM	16.672	7.906	V
Waveform V2	8/25/2004	4:15:05.543 PM	16.672	463.0	V
Waveform V3	8/25/2004	4:15:05.543 PM	16.672	453.3	V

Waveform V1
7.91 Vrms, 4.20 %THD

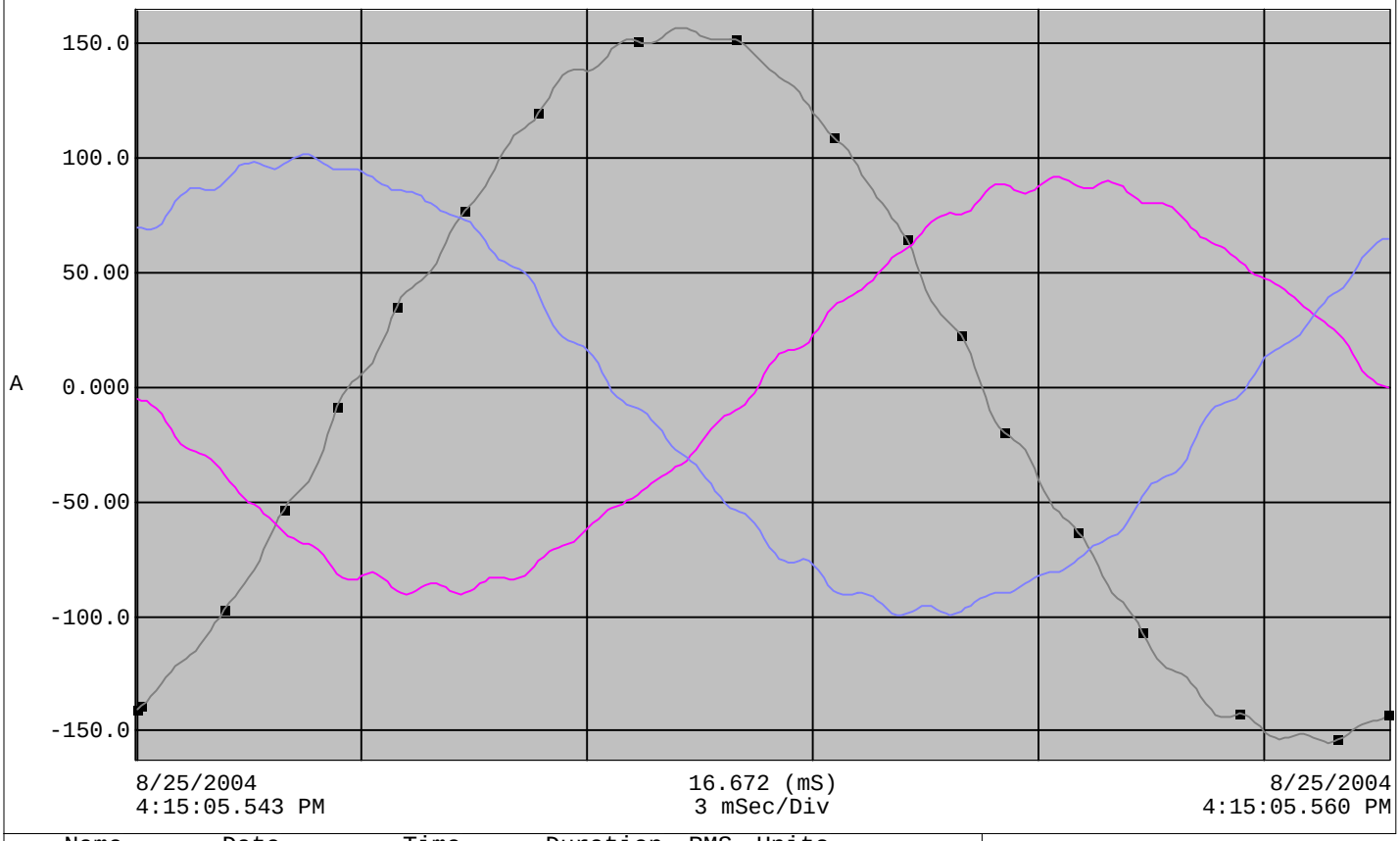


8/25/2004 - 4:15:05.000 PM
Val
-8.800 — Waveform V1
-14.40 — Waveform V2
576.5 — Waveform V3

Waveform V1

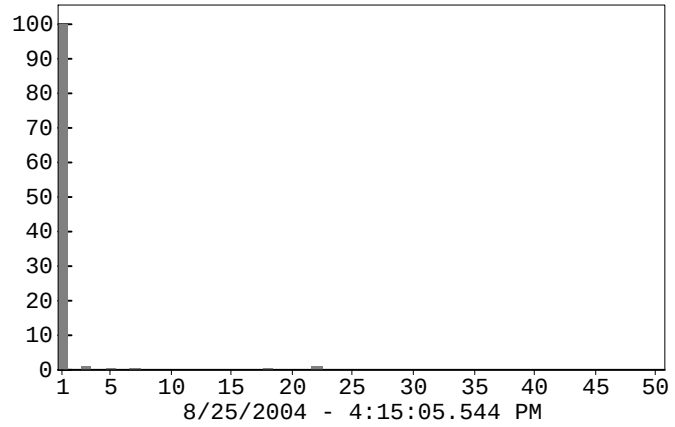
	(%)		(%)		(%)
H01	100.0	H18	0.5	H35	0.1
H02	0.2	H19	0.1	H36	0.1
H03	1.7	H20	0.4	H37	0.3
H04	0.1	H21	0.6	H38	0.1
H05	1.5	H22	2.8	H39	0.2
H06	0.2	H23	0.6	H40	0.1
H07	1.3	H24	0.6	H41	0.2
H08	0.1	H25	0.2	H42	0.1
H09	0.4	H26	0.0	H43	0.1
H10	0.1	H27	0.2	H44	0.1
H11	0.6	H28	0.1	H45	0.1
H12	0.2	H29	0.2	H46	0.1
H13	0.4	H30	0.2	H47	0.2
H14	0.2	H31	0.1	H48	0.1
H15	0.2	H32	0.1	H49	0.1
H16	0.7	H33	0.1	H50	0.1
H17	0.1	H34	0.1		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/25/2004	4:15:05.543 PM	16.672	109.5	A
Waveform I2	8/25/2004	4:15:05.543 PM	16.672	62.43	A
Waveform I3	8/25/2004	4:15:05.543 PM	16.672	69.60	A

Waveform I1
109.46 Arms, 2.61 %THD

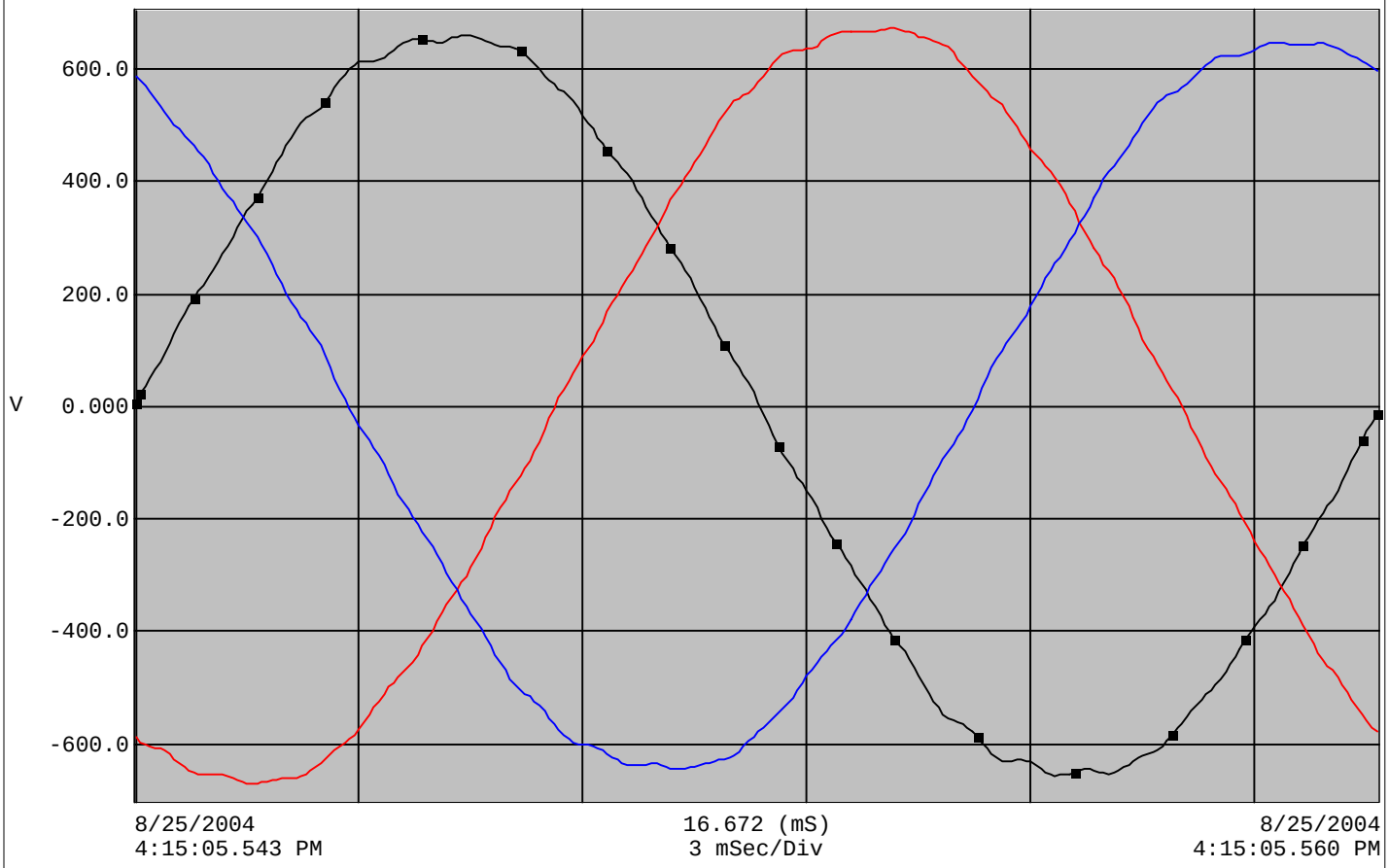


8/25/2004 - 4:15:05.000 PM
Val
-141.0 — Waveform I1
-5.300 — Waveform I2
68.80 — Waveform I3

Waveform I1

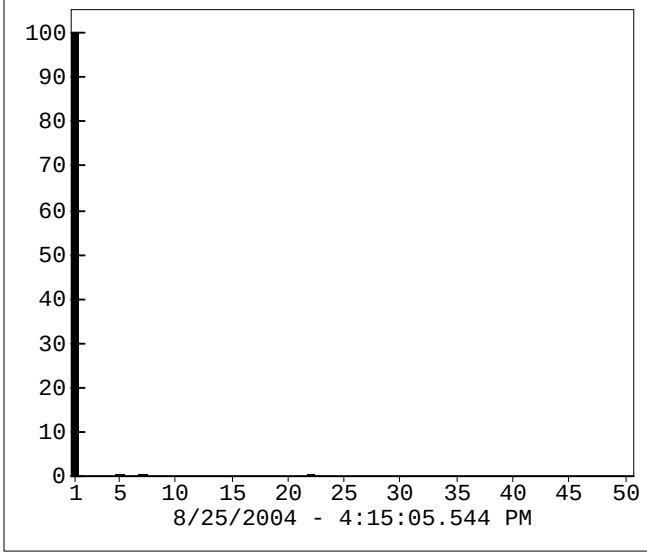
	(%)		(%)		(%)
H01	100.0	H18	0.7	H35	0.0
H02	0.1	H19	0.2	H36	0.0
H03	1.3	H20	0.2	H37	0.0
H04	0.0	H21	0.3	H38	0.0
H05	0.8	H22	1.5	H39	0.1
H06	0.0	H23	0.4	H40	0.0
H07	1.0	H24	0.4	H41	0.1
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.2	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.2	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.4	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/25/2004	4:15:05.543 PM	16.672	468.1	V
Waveform U2	8/25/2004	4:15:05.543 PM	16.672	478.3	V
Waveform U3	8/25/2004	4:15:05.543 PM	16.672	461.1	V

Waveform U1
468.13 Vrms, 1.45 %THD



8/25/2004 - 4:15:05.000 PM

Val	
5.500	Waveform U1
-590.9	Waveform U2
585.3	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.3	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	0.1	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	0.8	H22	0.7	H39	0.1
H06	0.0	H23	0.2	H40	0.0
H07	0.7	H24	0.2	H41	0.1
H08	0.0	H25	0.0	H42	0.1
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.2	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/25/2004
Start Time: 4:15:05 PM
Duration: 0:0.000 (M:S)
W: 37.45E+3 W
VAR: 29.28E+3 W
VA: 61.36E+3 W
Power Factor: 2.212
Displacement Power Factor: 2.213
TAN: 4.165
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A9\082504-A9-Photo.dvb

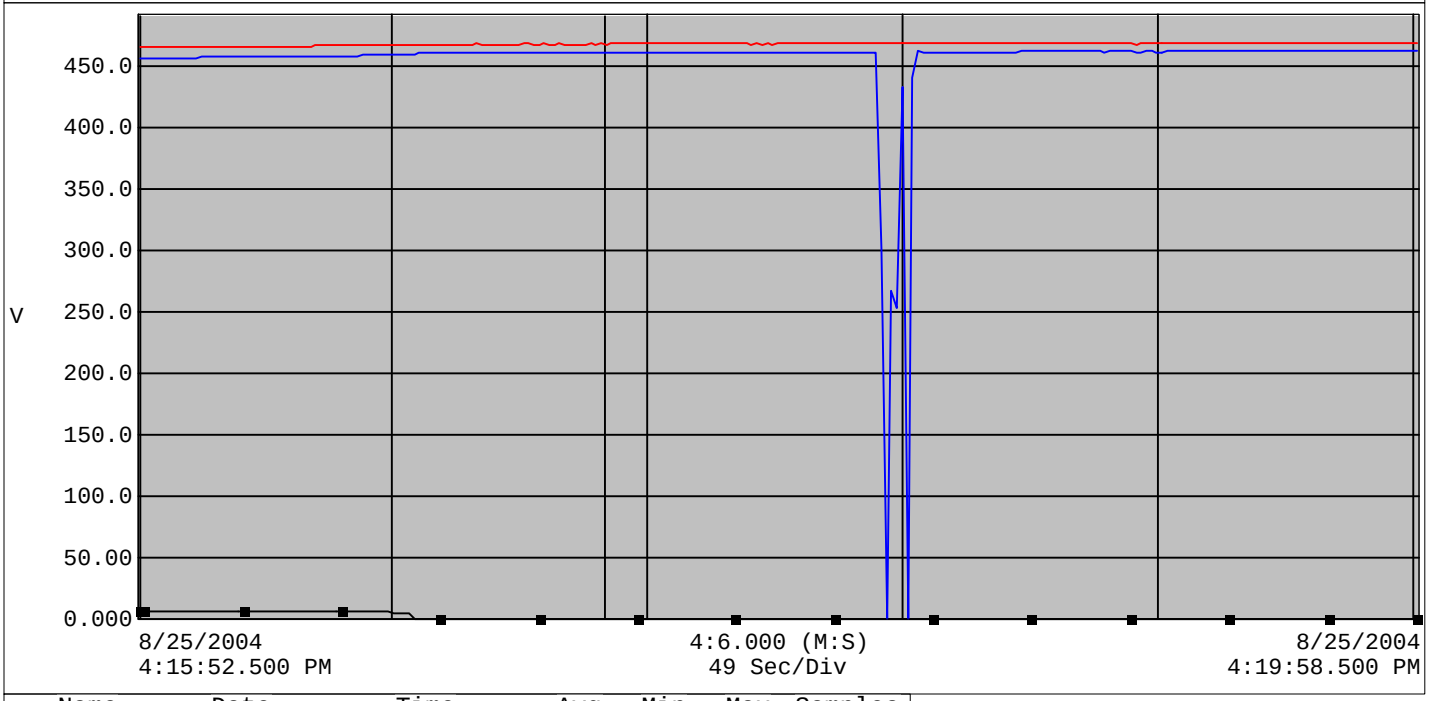
Operator	Test Site
Morikawa &Associates, LLC Lyman Morikawa ,	GWA WPS A-9 Photo ,

Comments
Transformer Delta Center Tap Grounded, Motor Grounded Pump operating with ground.

WPS A-9 Pump
Motor operated with ground

Recording Start Date	8/25/2004 - 4:15:52 PM
Recording Duration	4:06 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

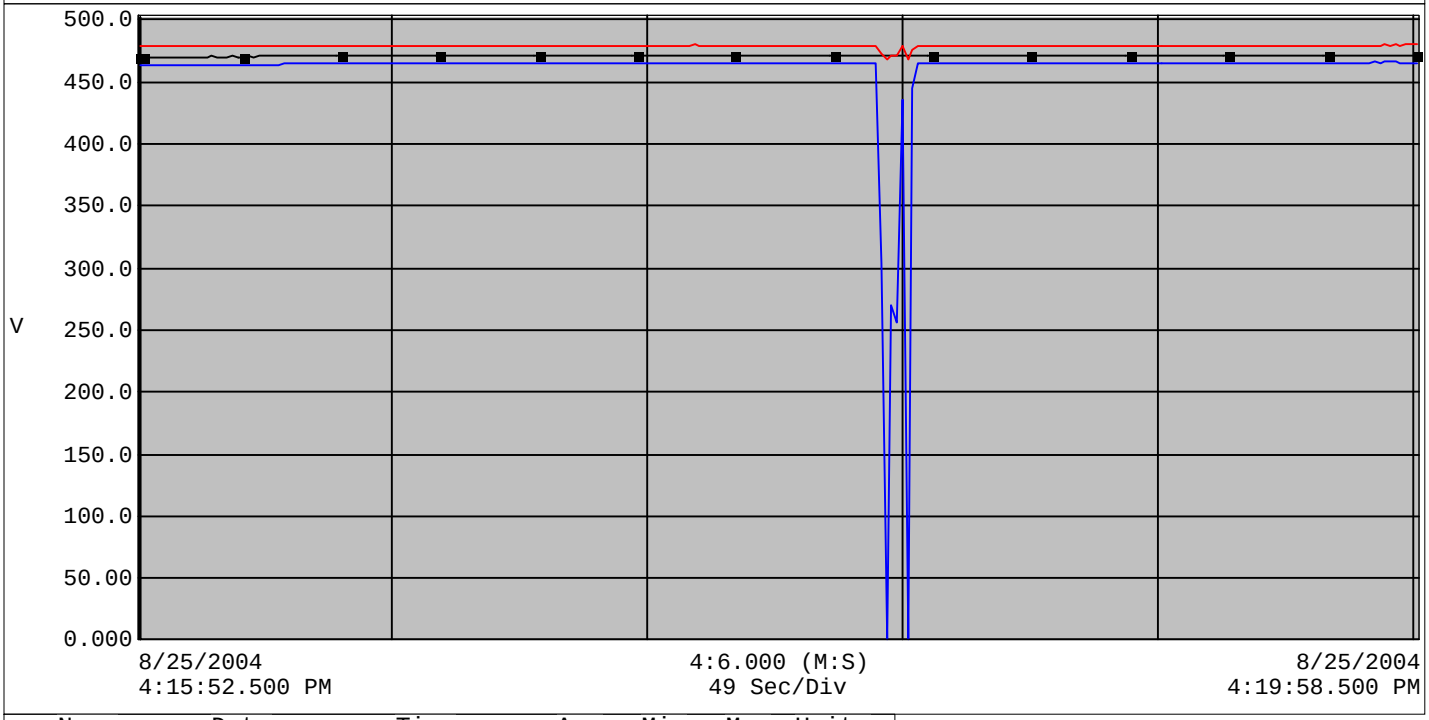
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/25/2004	4:15:52.500 PM	1.296	0.000	6.700	247
Vrms Line2	8/25/2004	4:15:52.500 PM	467.5	464.9	468.5	247
Vrms Line3	8/25/2004	4:15:52.500 PM	454.3	0.000	462.1	247

8/25/2004 - 4:17:22.000 PM
Val
0.000 — Vrms Line1
467.7 — Vrms Line2
460.9 — Vrms Line3

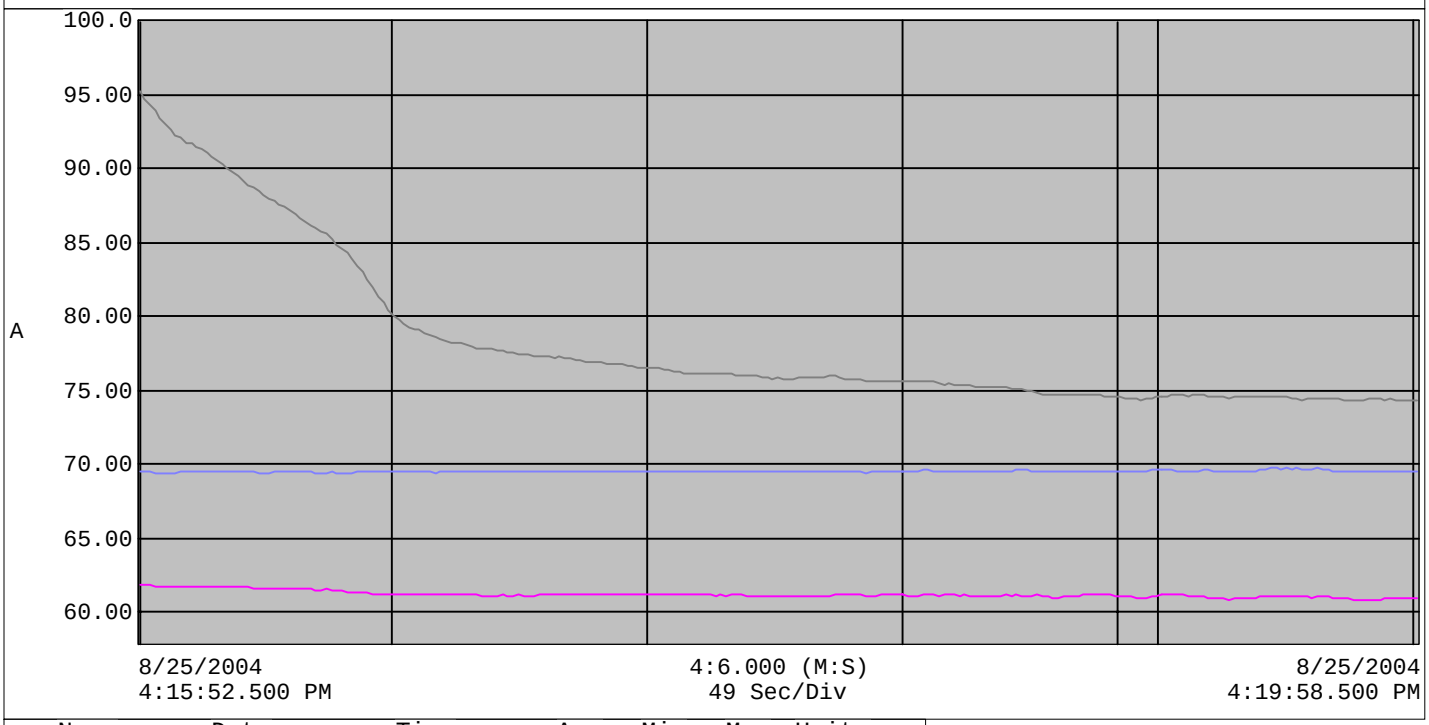
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/25/2004	4:15:52.500 PM	470.0	469.2	470.6	V
Urms Line2	8/25/2004	4:15:52.500 PM	478.4	467.5	478.9	V
Urms Line3	8/25/2004	4:15:52.500 PM	458.0	0.000	465.1	V

8/25/2004 - 4:15:52.000 PM
Val
469.2 Urms Line1
478.6 Urms Line2
462.6 Urms Line3

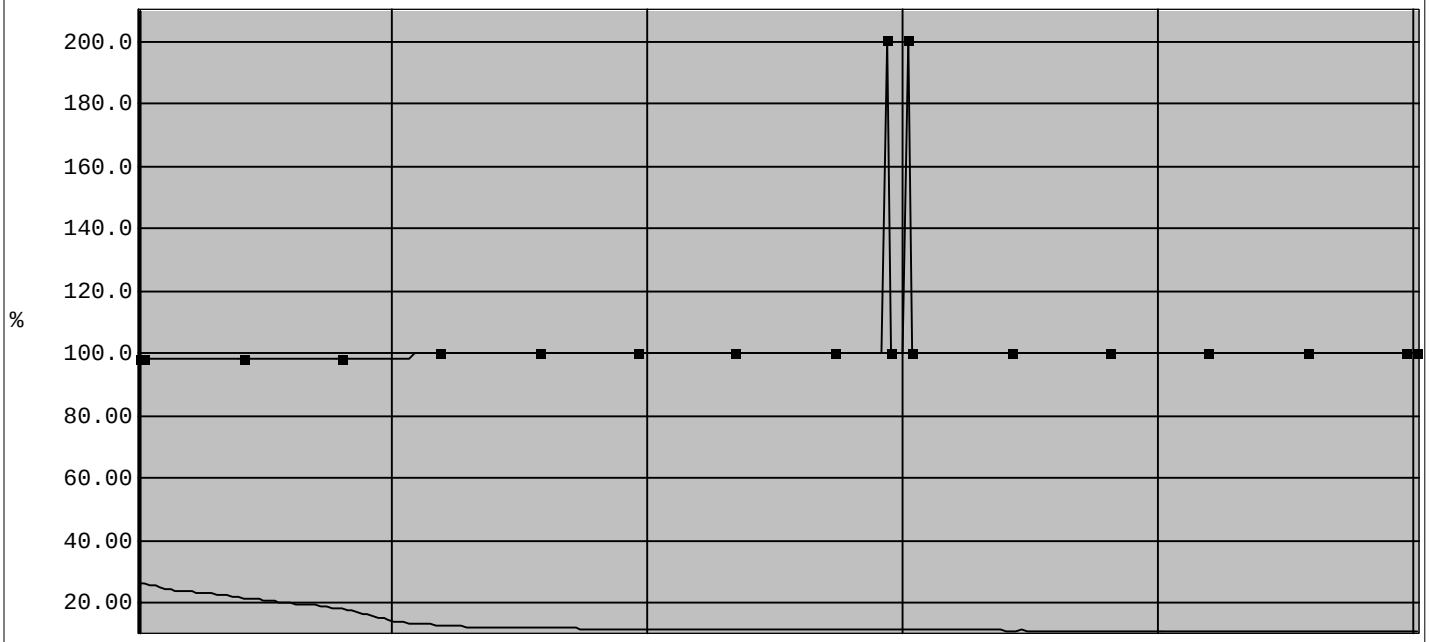
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/25/2004	4:15:52.500 PM	78.18	74.30	95.20	A
Arms Line2	8/25/2004	4:15:52.500 PM	61.13	60.80	61.80	A
Arms Line3	8/25/2004	4:15:52.500 PM	69.45	69.30	69.70	A

8/25/2004 - 4:19:01.000 PM
Val
74.50 — Arms Line1
61.00 — Arms Line2
69.50 — Arms Line3

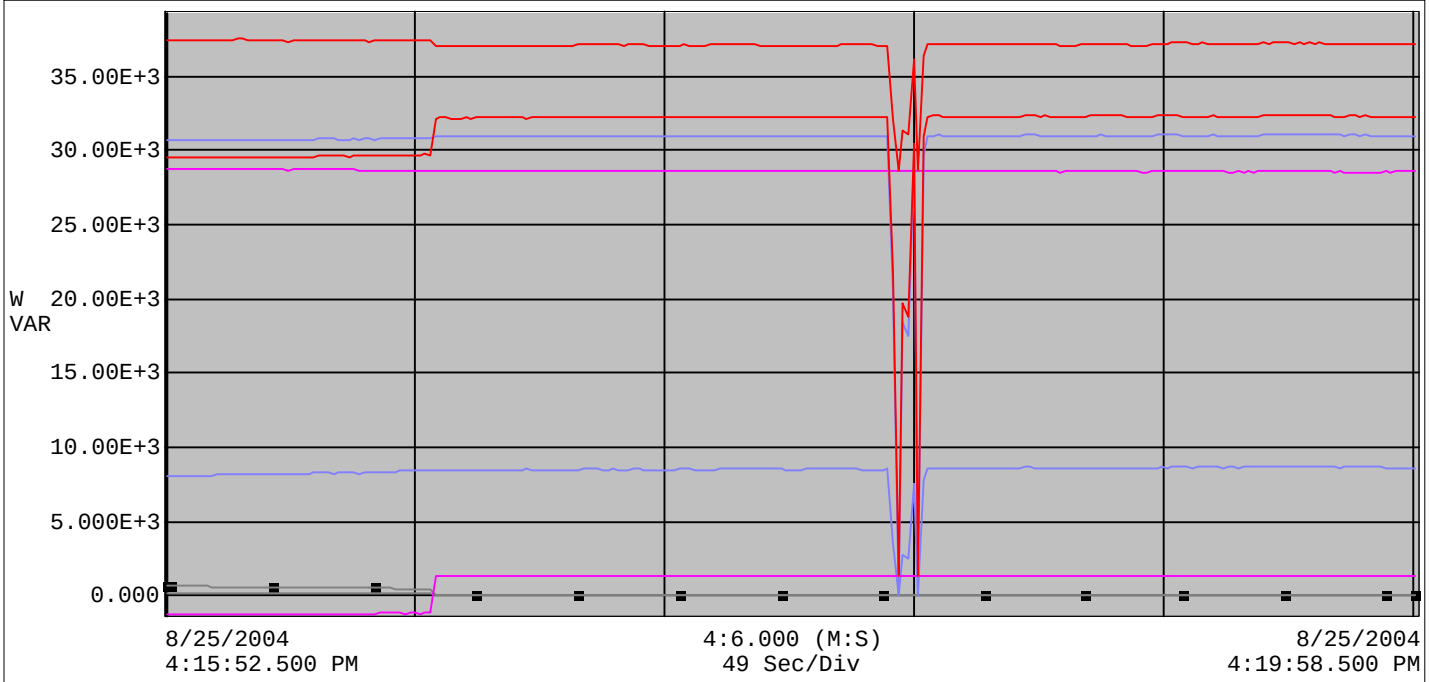
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/25/2004	4:15:52.500 PM	100.4	97.80	200.0	%
Aunb(IEEE)	8/25/2004	4:15:52.500 PM	13.11	10.60	26.10	%

8/25/2004 - 4:15:52.000 PM
Val
97.80 —— Vunb(IEEE)
26.10 —— Aunb(IEEE)

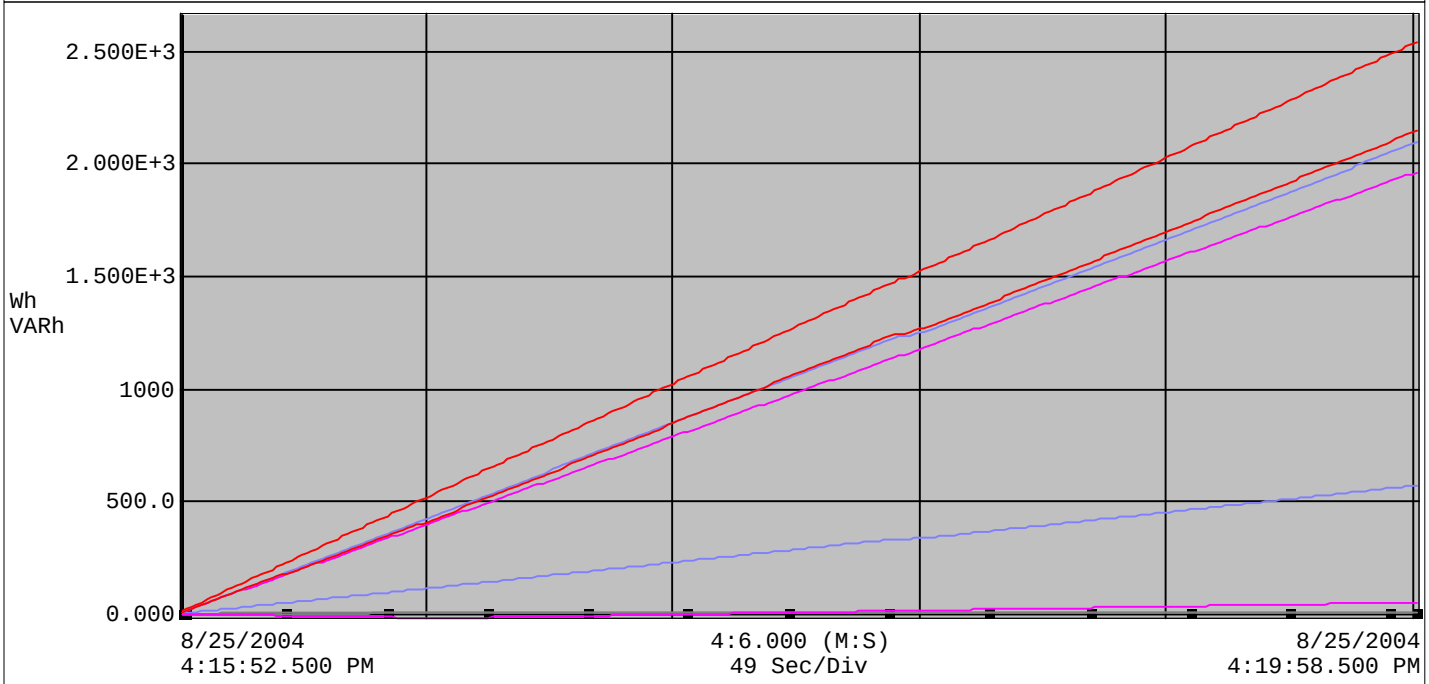
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/25/2004	4:15:52.500 PM	110.5	0.000	621.8	W
W Line2	8/25/2004	4:15:52.500 PM	28.55E+3	28.42E+3	28.72E+3	W
W Line3	8/25/2004	4:15:52.500 PM	8.296E+3	0.000	8.655E+3	W
W Sum of Phases	8/25/2004	4:15:52.500 PM	36.96E+3	28.54E+3	37.40E+3	W
VAR Line1	8/25/2004	4:15:52.500 PM	26.68	0.000	152.2	VAR
VAR Line2	8/25/2004	4:15:52.500 PM	731.9	-1.362E+3	1.334E+3	VAR
VAR Line3	8/25/2004	4:15:52.500 PM	30.44E+3	0.000	30.99E+3	VAR
VAR Sum of Phases	8/25/2004	4:15:52.500 PM	31.20E+3	1.277E+3	32.32E+3	VAR

8/25/2004 - 4:15:52.000 PM
Val
621.8 — W Line1
28.69E+3 — W Line2
8.005E+3 — W Line3
37.32E+3 — W Sum of Phases
152.2 — VAR Line1
-1.362E+3 — VAR Line2
30.62E+3 — VAR Line3
29.41E+3 — VAR Sum of Phases

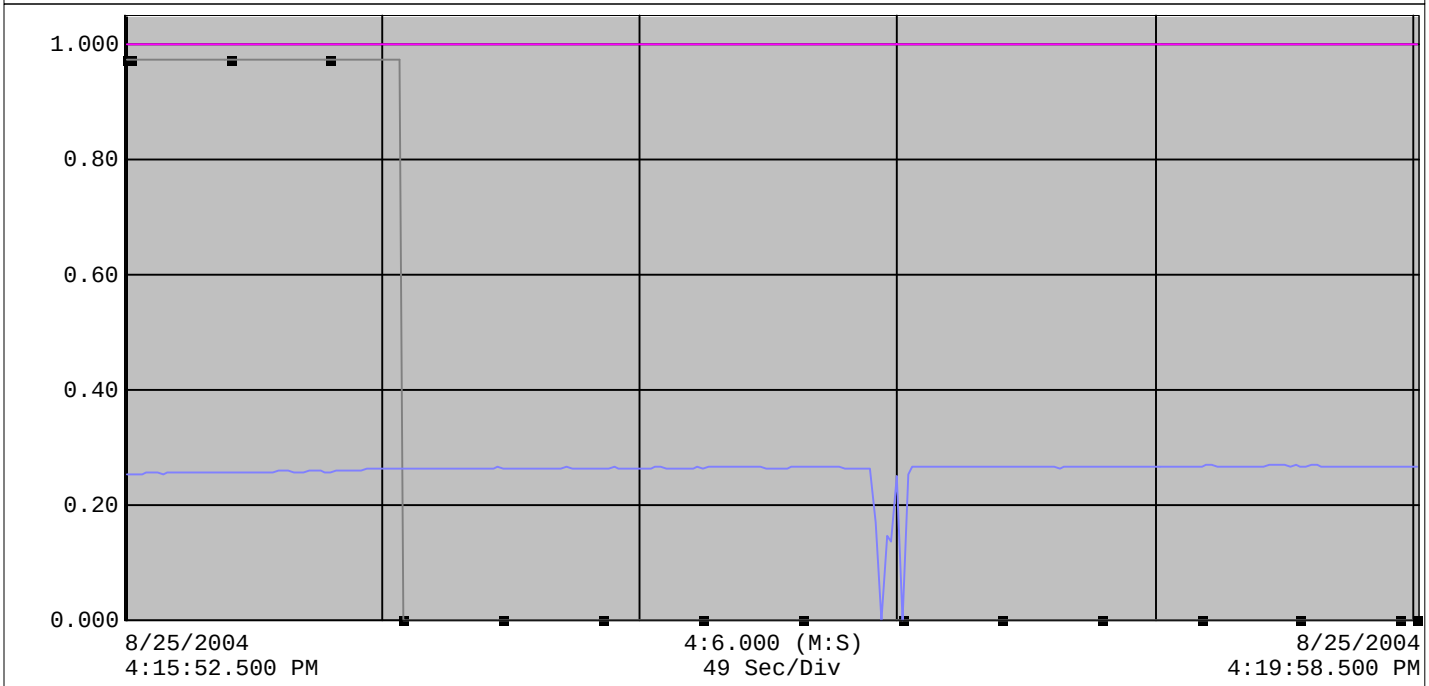
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/25/2004	4:15:52.500 PM	6.836	0.173	7.584	Wh
W-hours Line2	8/25/2004	4:15:52.500 PM	984.2	7.951	1.959E+3	Wh
W-hours Line3	8/25/2004	4:15:52.500 PM	283.9	2.224	569.2	Wh
W-hours Sum of Phases	8/25/2004	4:15:52.500 PM	1.275E+3	10.37	2.536E+3	Wh
VAR-hours Line1	8/25/2004	4:15:52.500 PM	1.651	42.29E-3	1.831	VARh
VAR-hours Line2	8/25/2004	4:15:52.500 PM	10.16	-18.94	50.22	VARh
VAR-hours Line3	8/25/2004	4:15:52.500 PM	1.049E+3	8.478	2.088E+3	VARh
VAR-hours Sum of Phases	8/25/2004	4:15:52.500 PM	1.061E+3	8.166	2.141E+3	VARh

8/25/2004 - 4:15:52.000 PM
Val
0.173 — W-hours Line1
7.951 — W-hours Line2
2.224 — W-hours Line3
10.37 — W-hours Sum of Phases
42.29E-3 — VAR-hours Line1
-0.376 — VAR-hours Line2
8.478 — VAR-hours Line3
8.166 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/25/2004	4:15:52.500 PM	0.209	0.000	0.973	
PF Line2	8/25/2004	4:15:52.500 PM	0.999	0.999	0.999	
PF Line3	8/25/2004	4:15:52.500 PM	0.260	0.000	0.269	

8/25/2004 - 4:15:52.000 PM
Val
0.971 — PF Line1
0.999 — PF Line2
0.253 — PF Line3

Trend Summary Report

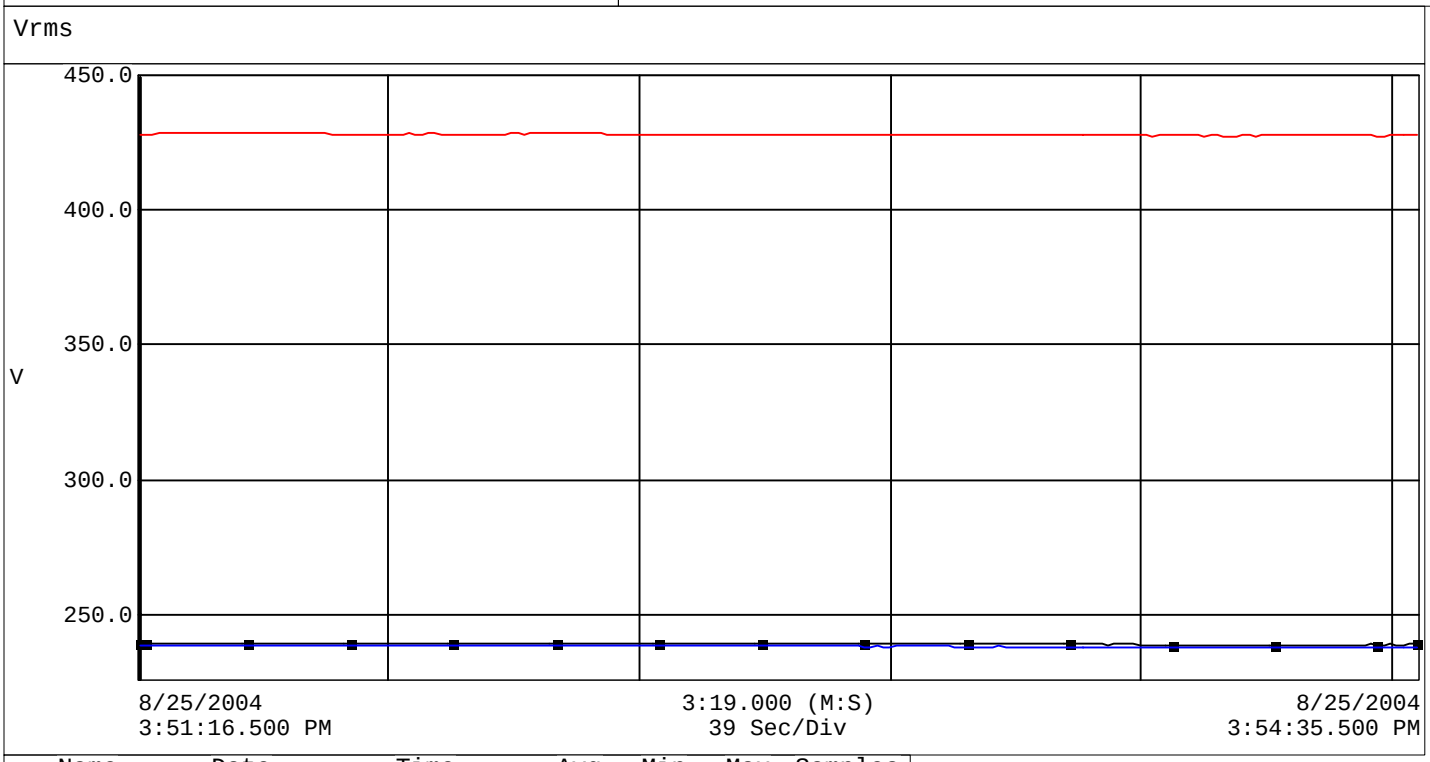
Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A9\082504-A9A.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa ,	GWA WPS A-9 ,

Comments
System Connected Delta Center tap grounded, at 480 volts. Motor grounded - phase A.

WPS A-9 Pump Not Operating

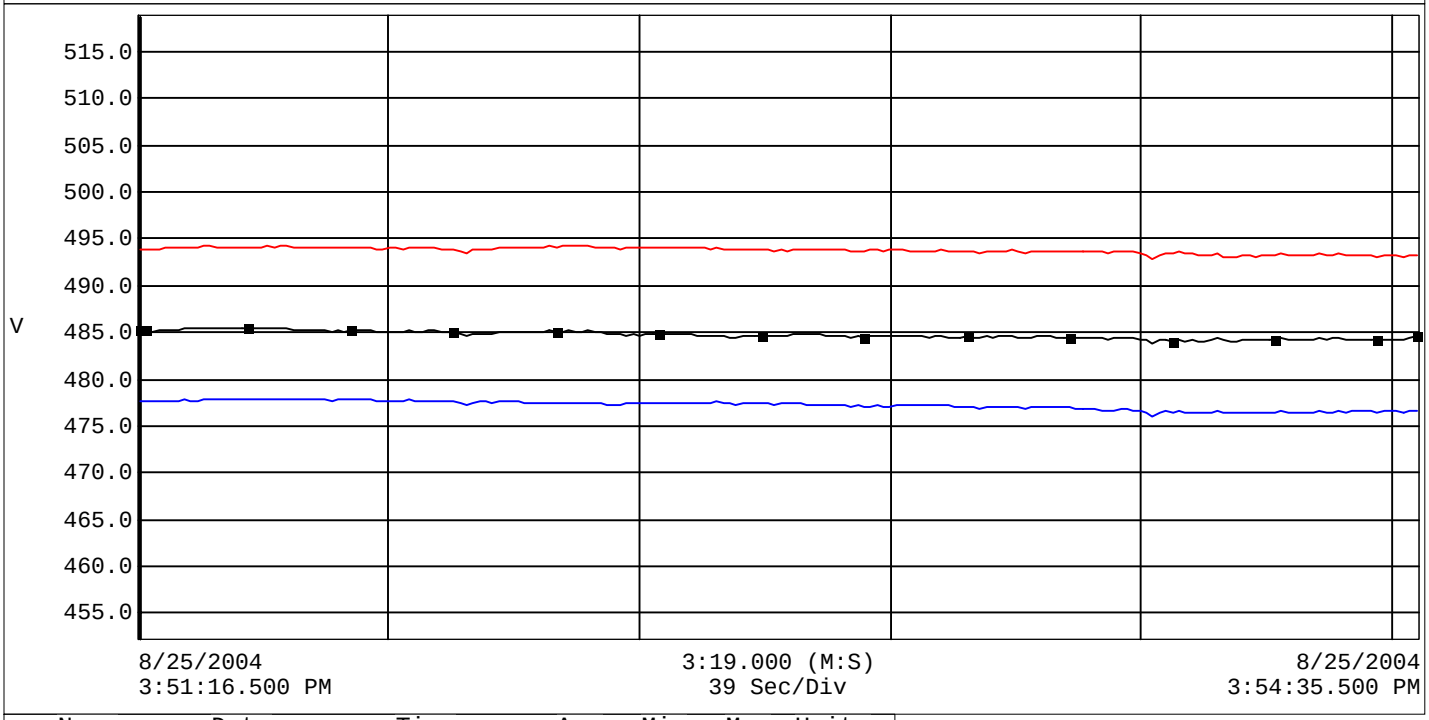
Recording Start Date	8/25/2004 - 3:51:16 PM
Recording Duration	3:19 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/25/2004	3:51:16.500 PM	239.0	238.4	239.4	200
Vrms Line2	8/25/2004	3:51:16.500 PM	427.4	426.6	427.9	200
Vrms Line3	8/25/2004	3:51:16.500 PM	238.1	237.5	238.5	200

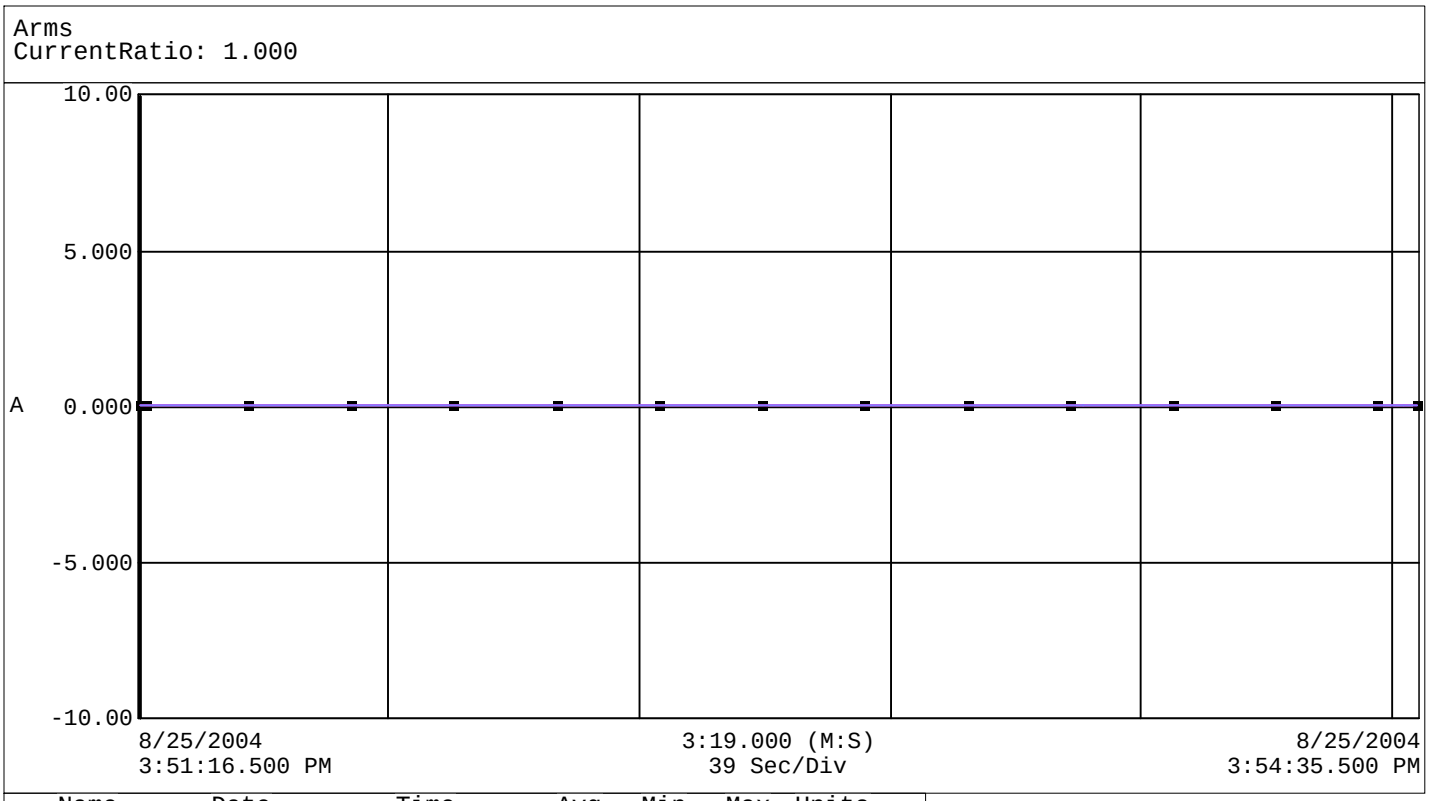
8/25/2004 - 3:51:16.000 PM
Val
239.3 Vrms Line1
427.6 Vrms Line2
238.3 Vrms Line3

Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/25/2004	3:51:16.500 PM	484.6	483.7	485.4	V
Urms Line2	8/25/2004	3:51:16.500 PM	493.7	492.7	494.1	V
Urms Line3	8/25/2004	3:51:16.500 PM	477.1	475.9	477.8	V

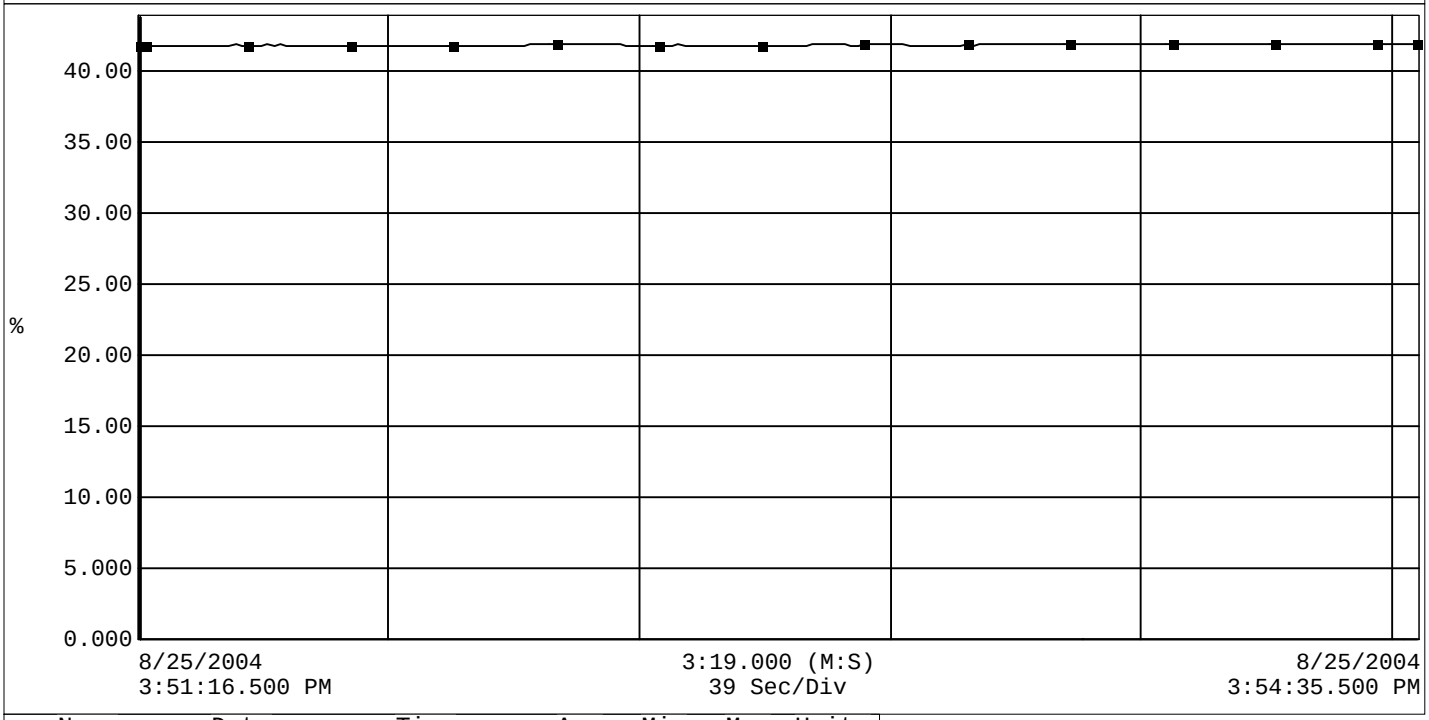
8/25/2004 - 3:51:16.000 PM
Val
485.1 Urms Line1
493.8 Urms Line2
477.6 Urms Line3



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	A
Arms Line2	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	A
Arms Line3	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	A

8/25/2004 - 3:51:16.000 PM
Val
0.000 Arms Line1
0.000 Arms Line2
0.000 Arms Line3

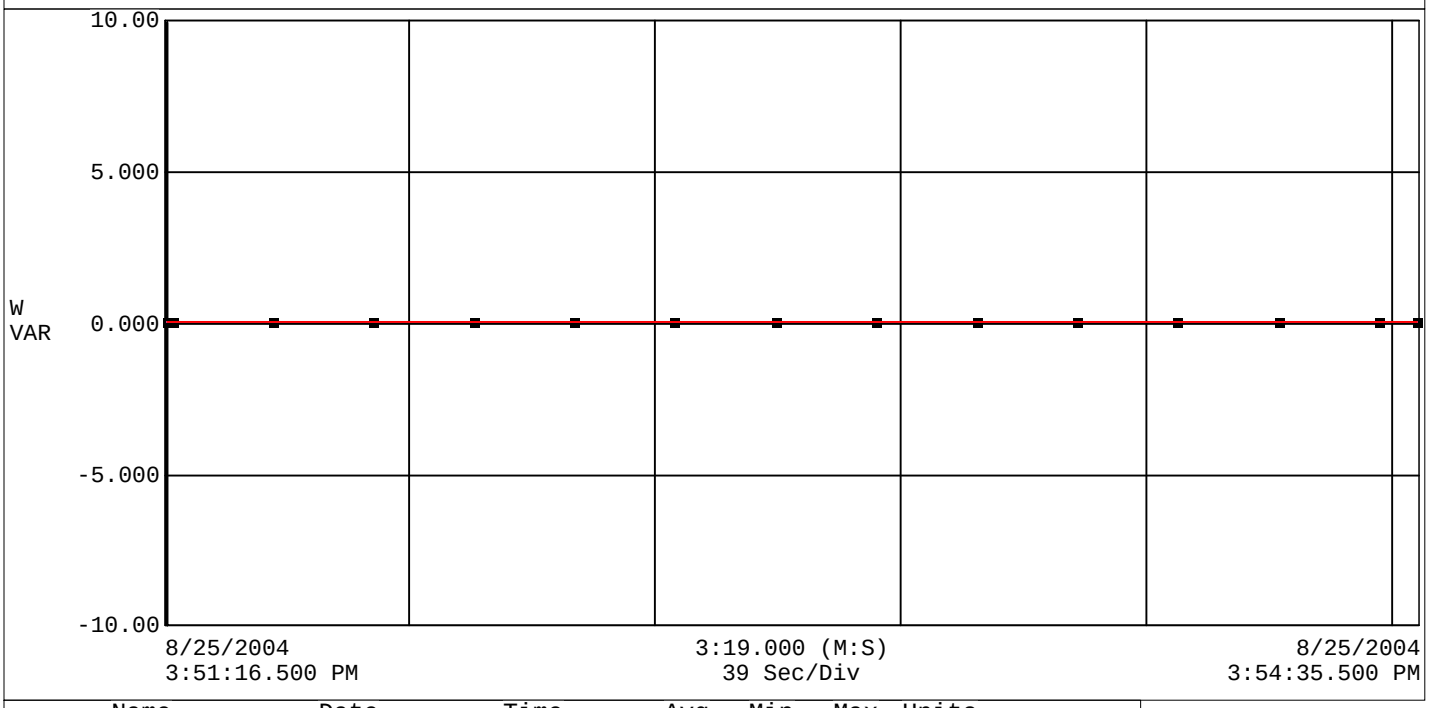
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/25/2004	3:51:16.500 PM	41.75	41.70	41.80	%
Aunb(IEEE)	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	%

8/25/2004 - 3:51:16.000 PM
Val
41.70 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

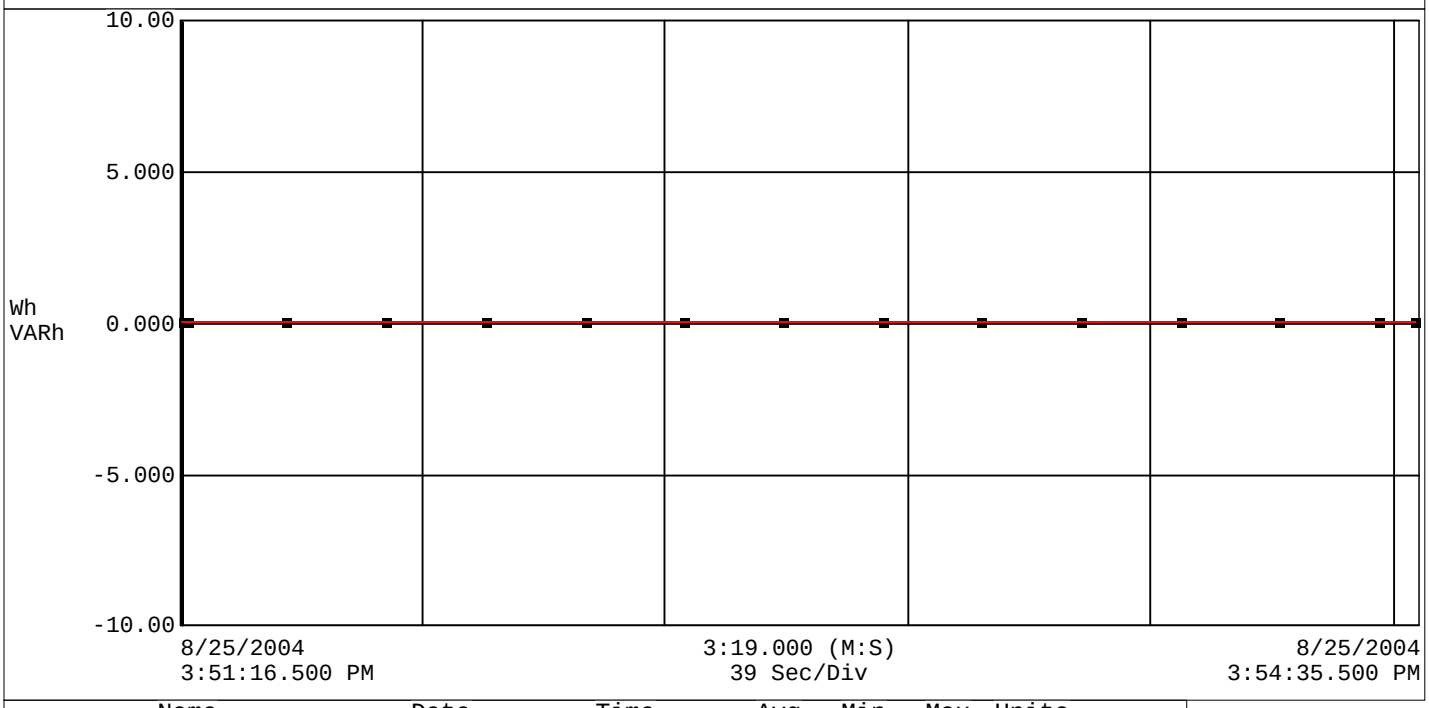
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	W
W Line2	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	W
W Line3	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	W
W Sum of Phases	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	W
VAR Line1	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	VAR
VAR Line2	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	VAR
VAR Line3	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	VAR
VAR Sum of Phases	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	VAR

8/25/2004 - 3:51:16.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

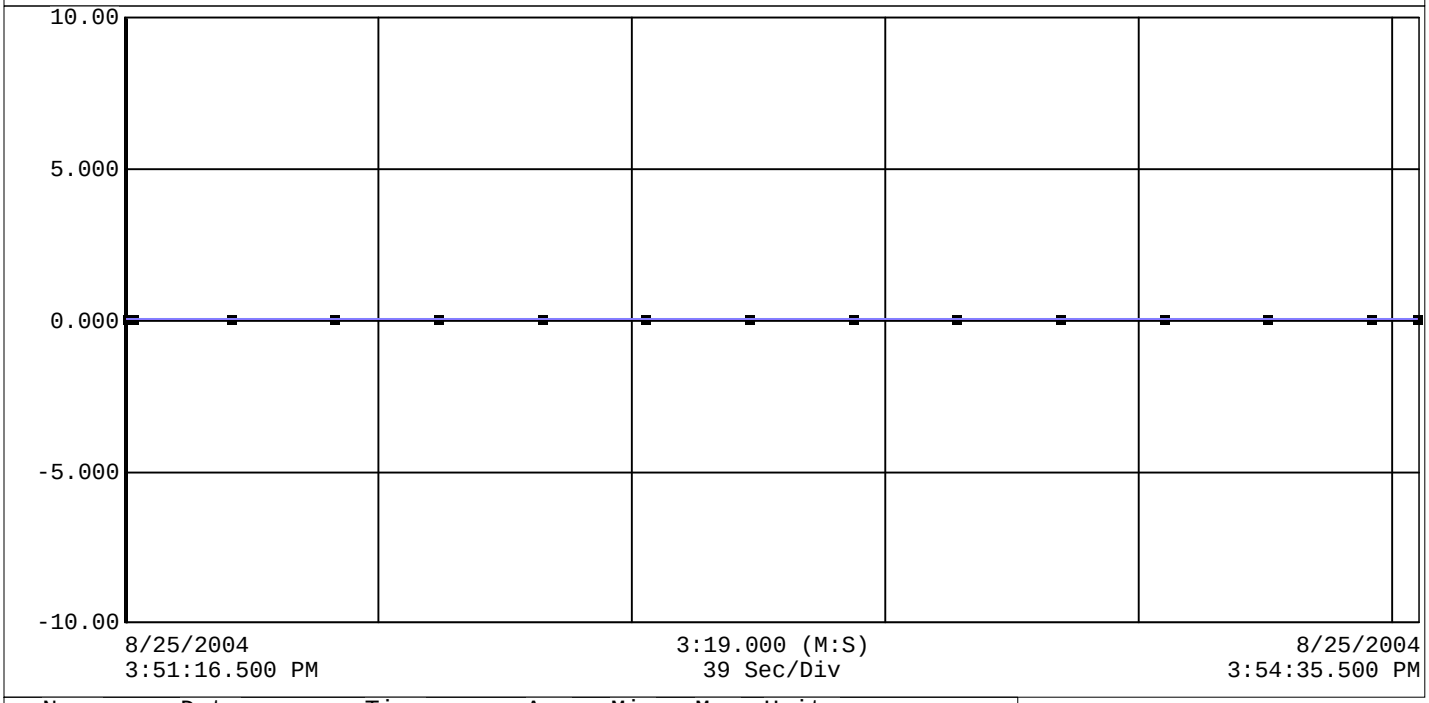
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	Wh
W-hours Line2	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	Wh
W-hours Line3	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	Wh
W-hours Sum of Phases	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	Wh
VAR-hours Line1	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	VARh
VAR-hours Line2	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	VARh
VAR-hours Line3	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	VARh
VAR-hours Sum of Phases	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	VARh

8/25/2004 - 3:51:16.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	
PF Line2	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	
PF Line3	8/25/2004	3:51:16.500 PM	0.000	0.000	0.000	

8/25/2004 - 3:51:16.000 PM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A9\082504-A9.dvb

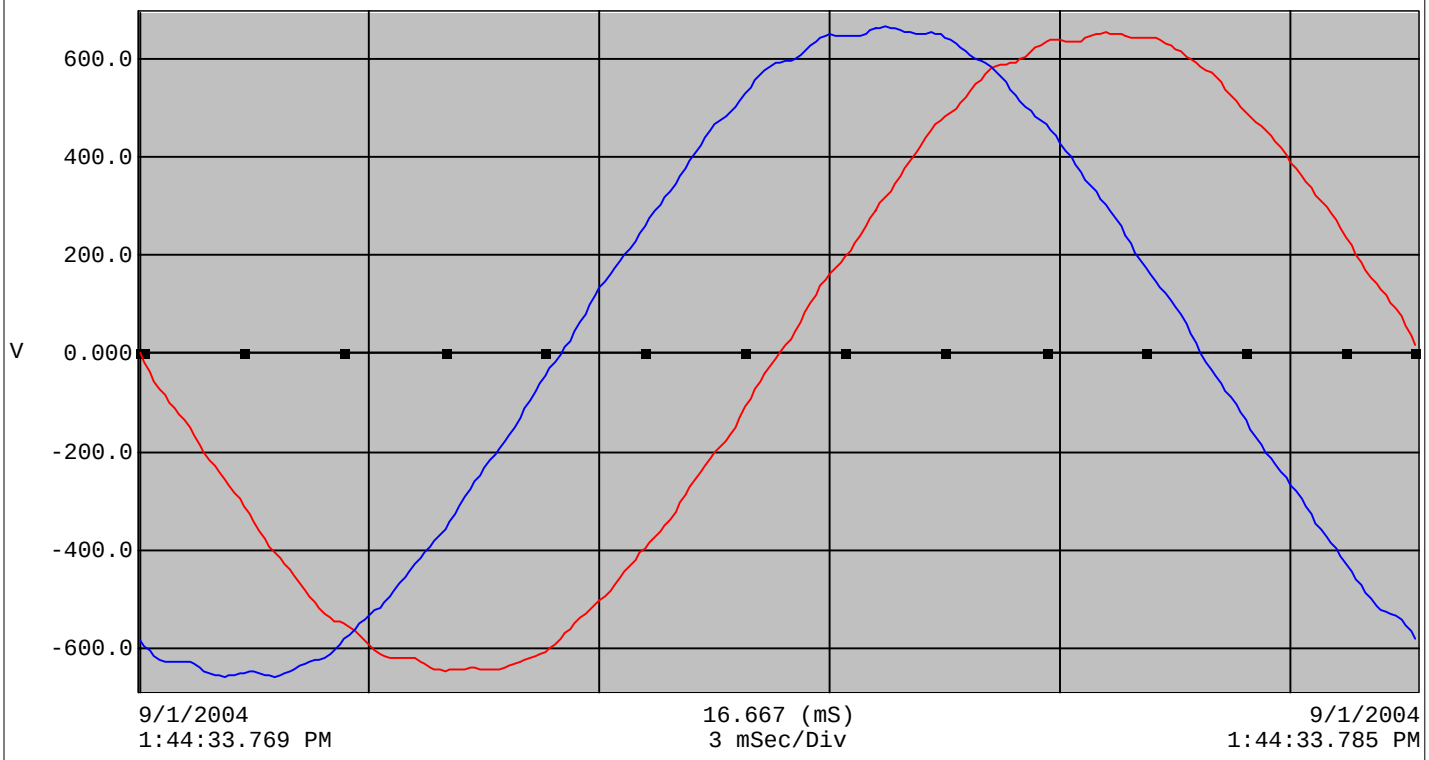
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa ,	GWA WPS A-9 ,

Comments
Transformer center tap grounded, motor grounded on phase A, 480 volts Motor not operational at this recording.

WPS A-9 Pump Motor Operating - 9/1/04

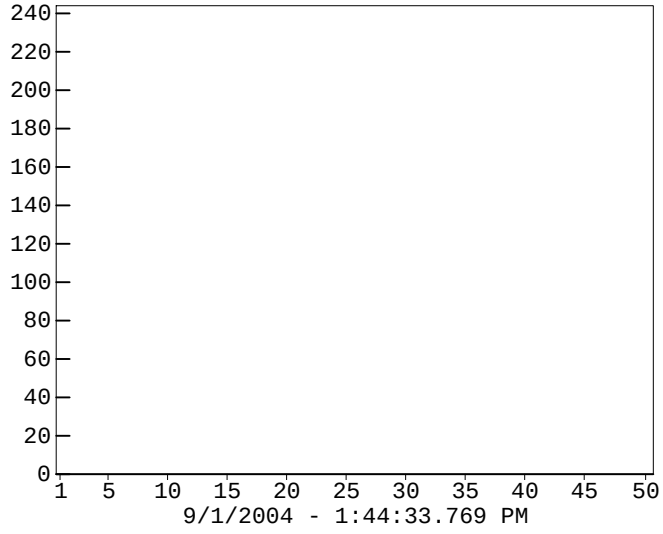
Recording Start Date	9/1/2004 - 1:44:33 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 0.000 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/1/2004	1:44:33.769 PM	16.667	0.000	V
Waveform V2	9/1/2004	1:44:33.769 PM	16.667	462.4	V
Waveform V3	9/1/2004	1:44:33.769 PM	16.667	469.2	V

Waveform V1
0.00 Vrms, 0.00 %THD

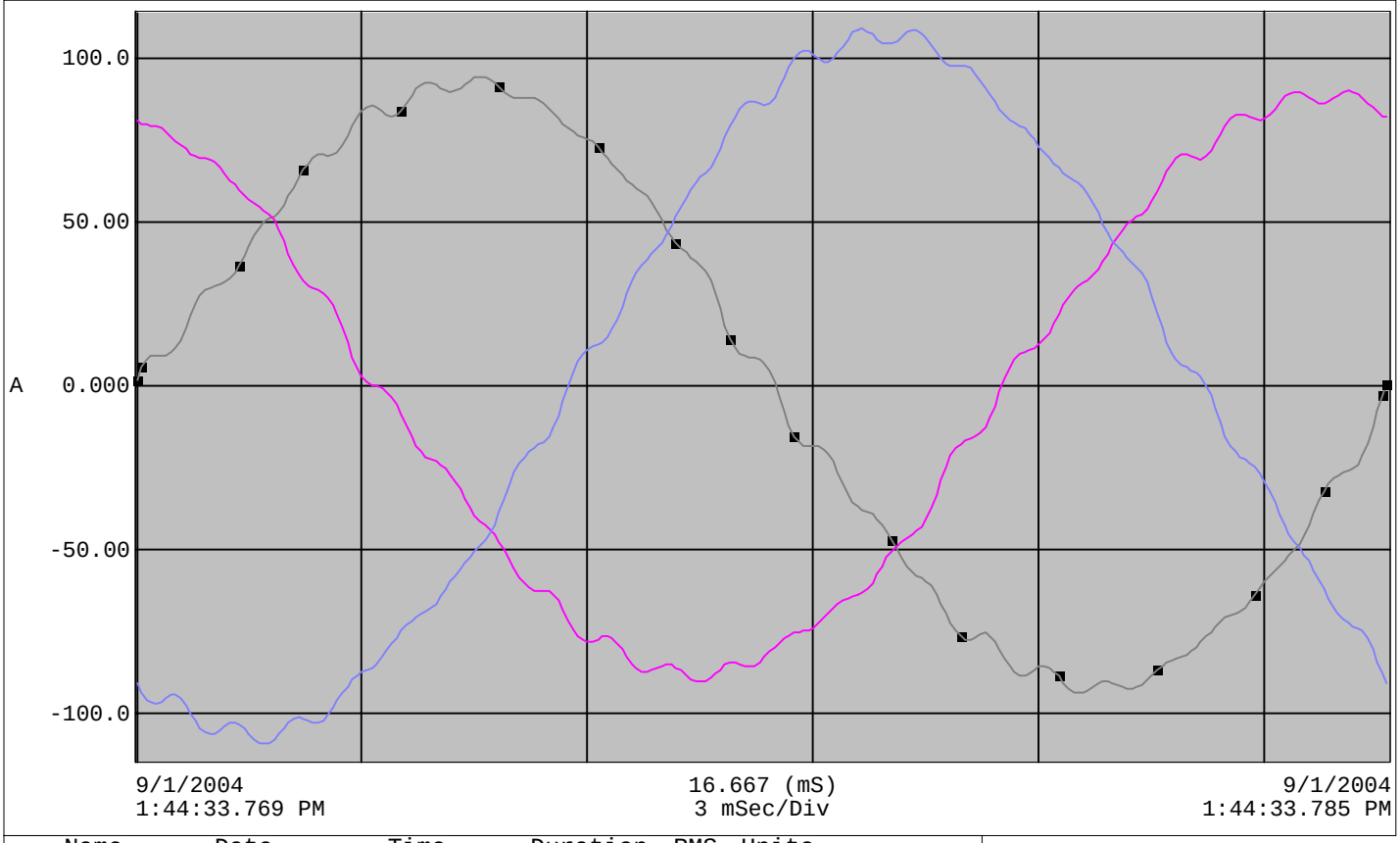


9/1/2004 - 1:44:33.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

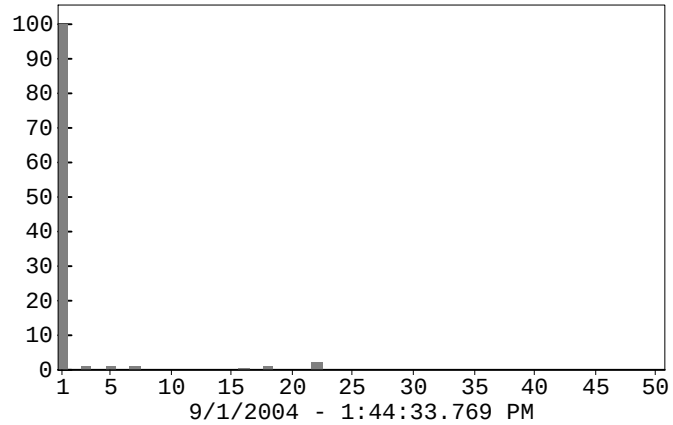
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Current
Frequency: 0.000 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/1/2004	1:44:33.769 PM	16.667	65.03	A
Waveform I2	9/1/2004	1:44:33.769 PM	16.667	62.61	A
Waveform I3	9/1/2004	1:44:33.769 PM	16.667	74.90	A

Waveform I1
65.03 Arms, 4.03 %THD

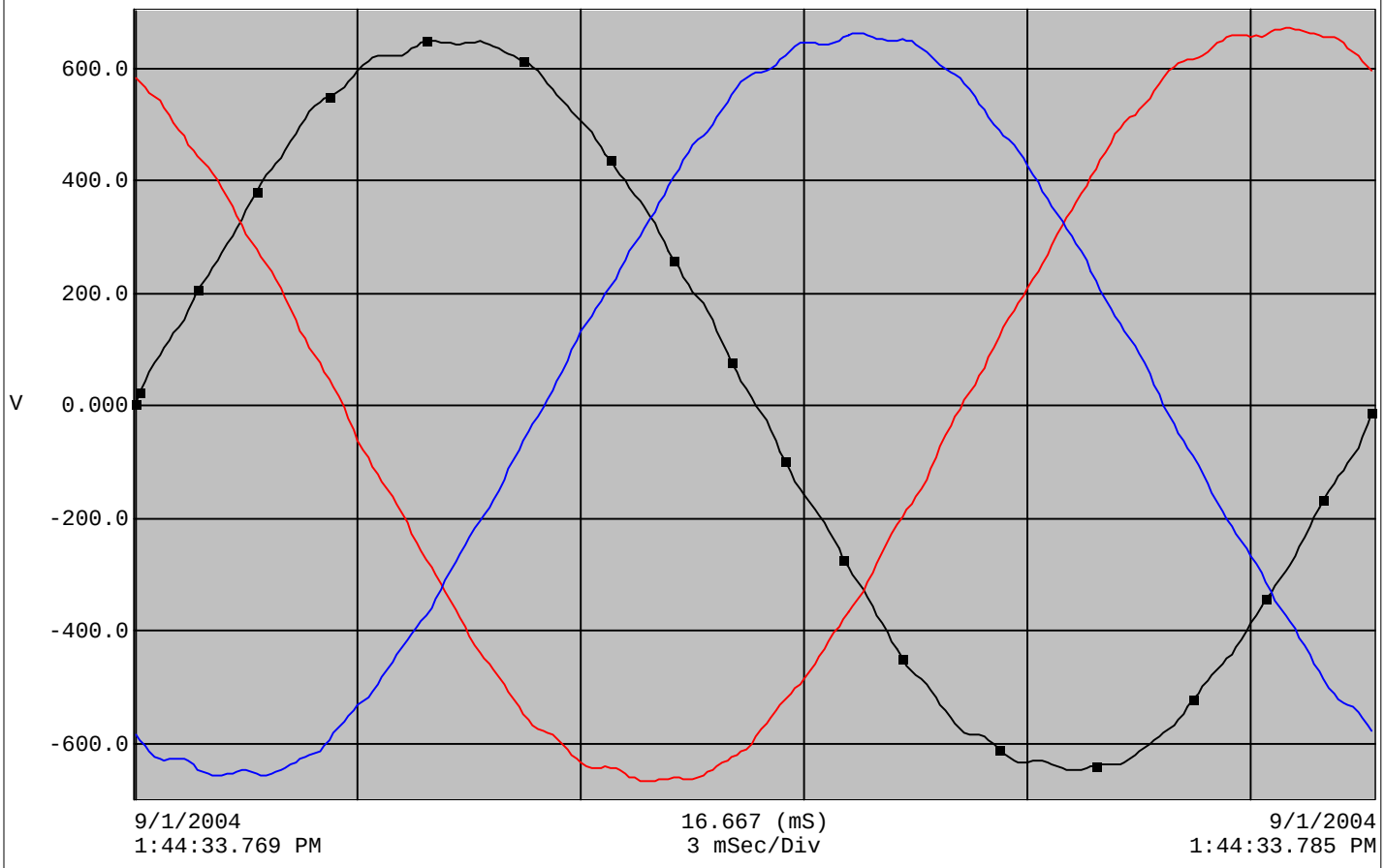


9/1/2004 - 1:44:33.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

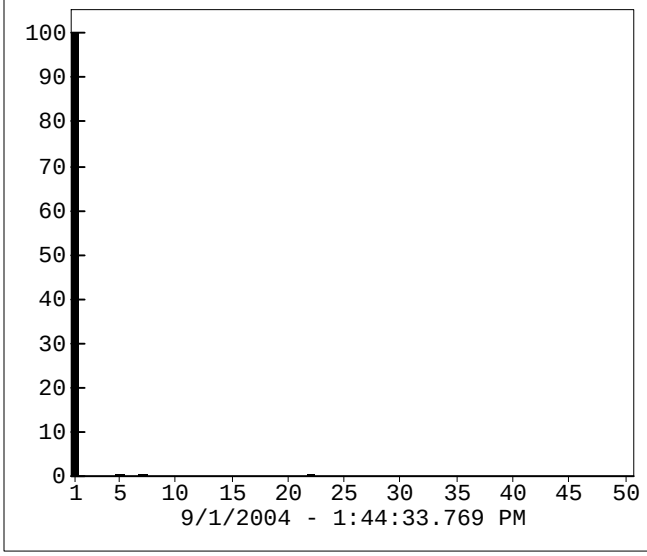
	(%)		(%)		(%)
H01	100.0	H18	1.5	H35	0.0
H02	0.1	H19	0.1	H36	0.1
H03	1.6	H20	0.4	H37	0.1
H04	0.1	H21	0.2	H38	0.1
H05	1.2	H22	2.4	H39	0.1
H06	0.1	H23	0.5	H40	0.0
H07	1.4	H24	0.5	H41	0.2
H08	0.1	H25	0.3	H42	0.1
H09	0.3	H26	0.2	H43	0.1
H10	0.2	H27	0.1	H44	0.1
H11	0.1	H28	0.0	H45	0.1
H12	0.5	H29	0.1	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.3	H31	0.1	H48	0.0
H15	0.3	H32	0.1	H49	0.0
H16	0.9	H33	0.0	H50	0.0
H17	0.2	H34	0.1		

Waveform - Voltage (U)
Frequency: 0.000 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/1/2004	1:44:33.769 PM	16.667	462.4	V
Waveform U2	9/1/2004	1:44:33.769 PM	16.667	476.4	V
Waveform U3	9/1/2004	1:44:33.769 PM	16.667	469.2	V

Waveform U1
462.40 Vrms, 1.45 %THD



9/1/2004 - 1:44:33.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.3	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	0.1	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	0.8	H22	0.7	H39	0.1
H06	0.0	H23	0.2	H40	0.0
H07	0.7	H24	0.2	H41	0.1
H08	0.0	H25	0.1	H42	0.1
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.2	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/1/2004
Start Time: 1:44:33 PM
Duration: 0:0.000 (M:S)
W: 44.70E+3 W
VAR: 31.23E+3 W
VA: 64.24E+3 W
Power Factor: 1.328
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

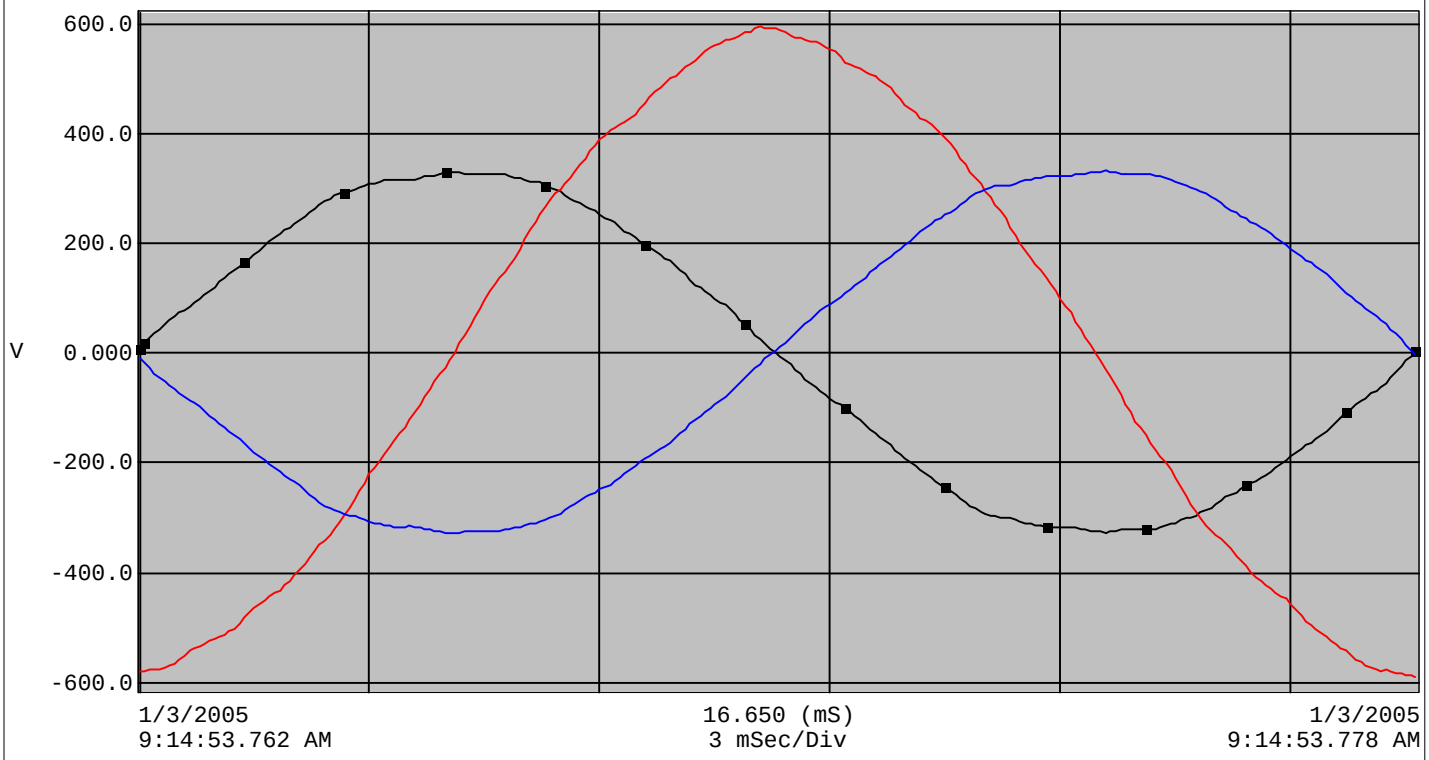
Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A9\090104-A9-Photo.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	Test Site GWA WPS A-9 - Photo ,

Comments
Measured at motor starter overload relay. GPA Meter 01-645-459 with a indicated demand of 0.64. Multiplier is not known. Transformer appear to be connected as a grounded center tap delta. Measured load was 44.70 KW, 70 % PF. Motor grounded but operational.

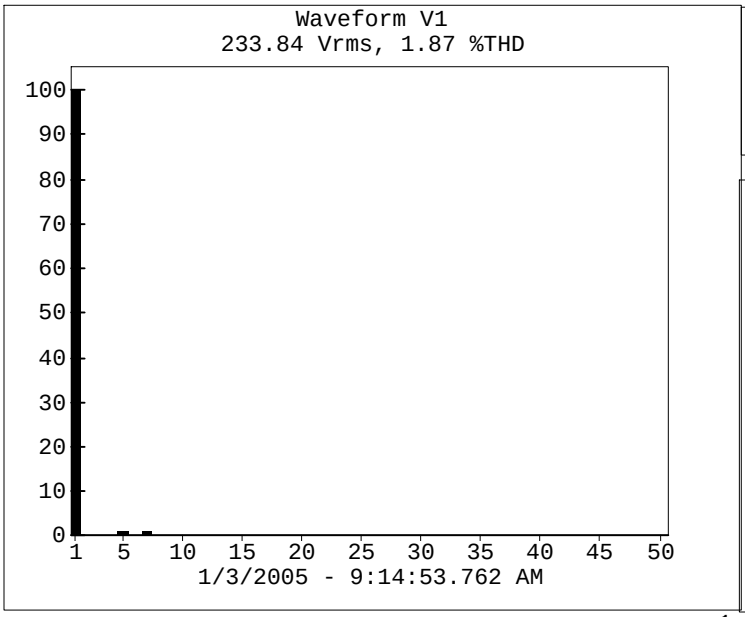
WPS A-9 New Motor - 1/3/05

Recording Start Date	1/3/2005 - 9:14:53 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.06 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	1/3/2005	9:14:53.762 AM	16.650	233.8	V
Waveform V2	1/3/2005	9:14:53.762 AM	16.650	408.1	V
Waveform V3	1/3/2005	9:14:53.762 AM	16.650	235.3	V

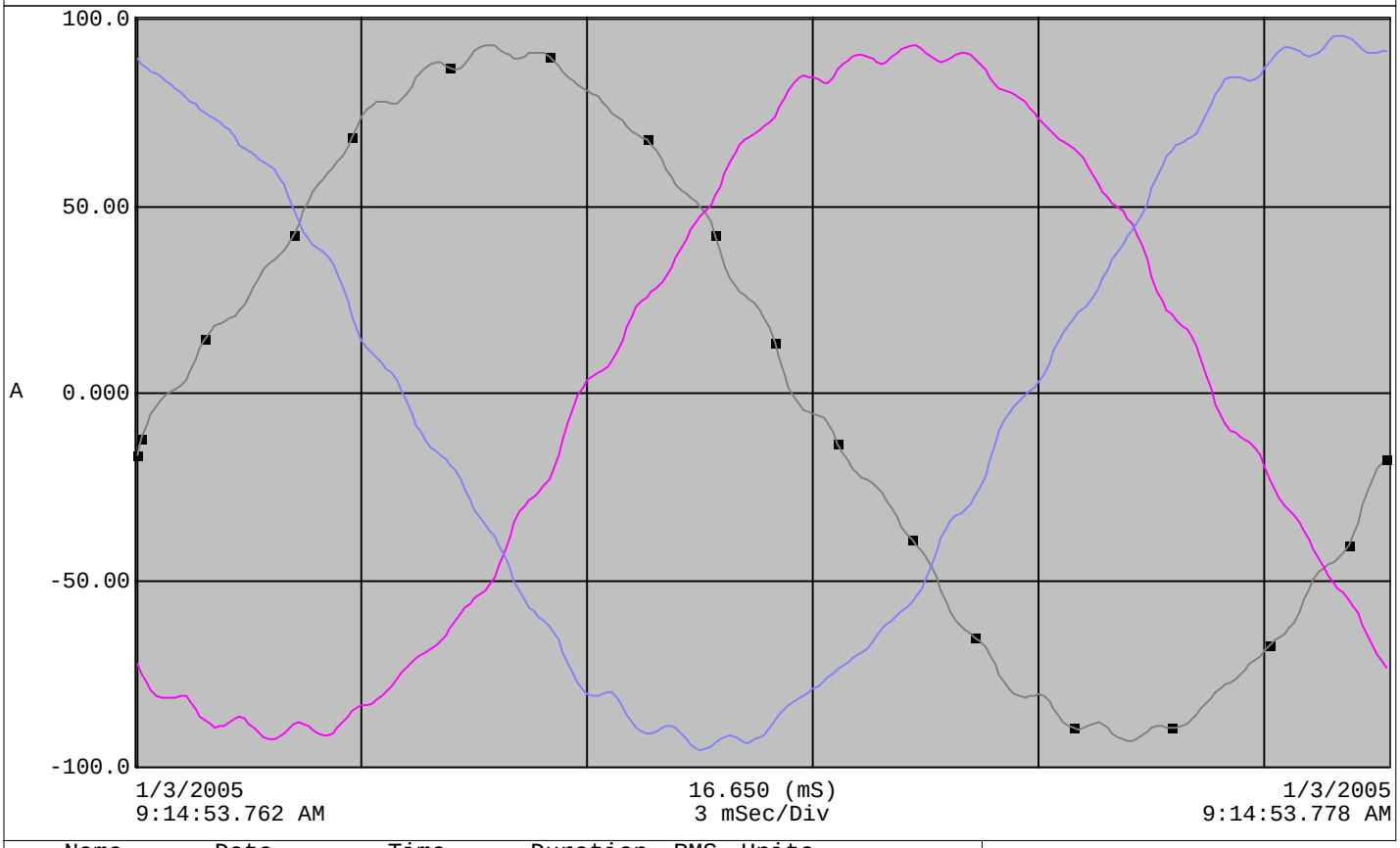


1/3/2005 - 9:14:53.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

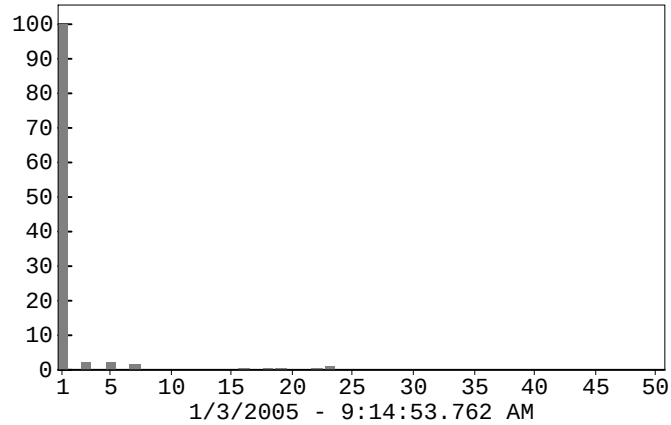
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.1	H19	0.2	H36	0.0
H03	0.2	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.2	H22	0.3	H39	0.0
H06	0.0	H23	0.4	H40	0.0
H07	1.2	H24	0.2	H41	0.0
H08	0.0	H25	0.1	H42	0.1
H09	0.2	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.1
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.06 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	1/3/2005	9:14:53.762 AM	16.650	63.81	A
Waveform I2	1/3/2005	9:14:53.762 AM	16.650	65.85	A
Waveform I3	1/3/2005	9:14:53.762 AM	16.650	66.04	A

Waveform I1
63.81 Arms, 4.53 %THD

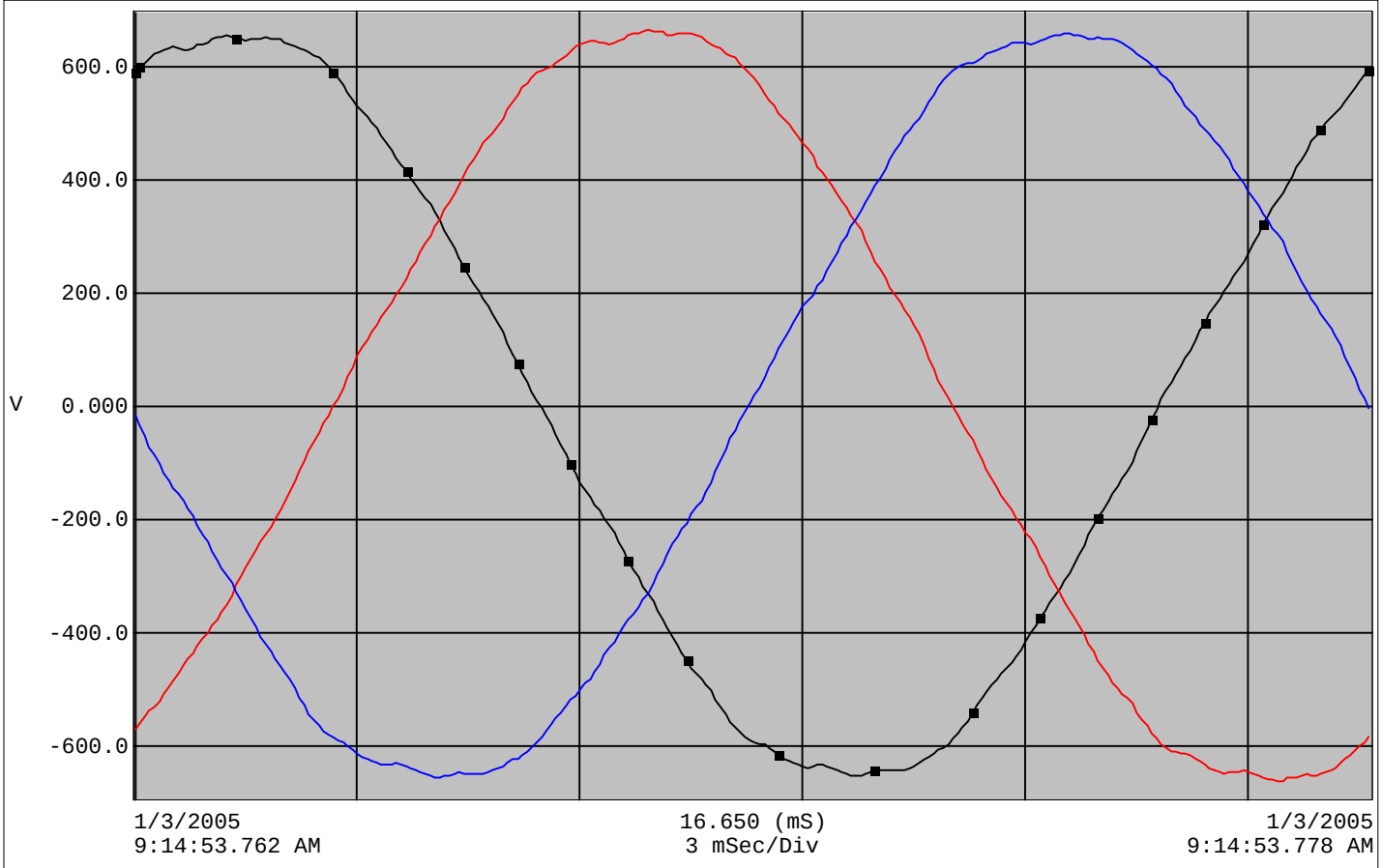


1/3/2005 - 9:14:53.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

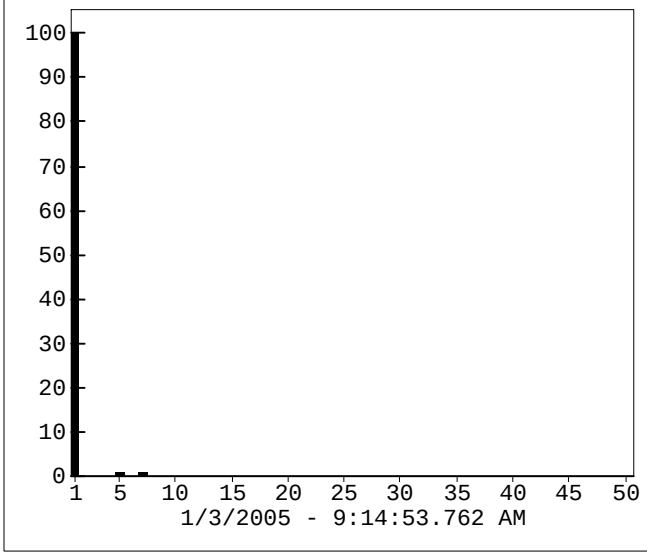
	(%)		(%)		(%)
H01	100.0	H18	0.8	H35	0.1
H02	0.4	H19	0.7	H36	0.1
H03	2.4	H20	0.1	H37	0.0
H04	0.2	H21	0.1	H38	0.0
H05	2.3	H22	1.1	H39	0.1
H06	0.1	H23	1.4	H40	0.1
H07	1.9	H24	0.5	H41	0.0
H08	0.1	H25	0.4	H42	0.2
H09	0.2	H26	0.3	H43	0.0
H10	0.1	H27	0.2	H44	0.0
H11	0.1	H28	0.2	H45	0.0
H12	0.3	H29	0.1	H46	0.1
H13	0.3	H30	0.1	H47	0.0
H14	0.3	H31	0.1	H48	0.1
H15	0.3	H32	0.1	H49	0.0
H16	0.6	H33	0.0	H50	0.1
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.06 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	1/3/2005	9:14:53.762 AM	16.650	467.0	V
Waveform U2	1/3/2005	9:14:53.762 AM	16.650	472.6	V
Waveform U3	1/3/2005	9:14:53.762 AM	16.650	469.1	V

Waveform U1
466.99 Vrms, 1.79 %THD



1/3/2005 - 9:14:53.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.1	H36	0.1
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.2	H22	0.3	H39	0.0
H06	0.0	H23	0.4	H40	0.1
H07	1.1	H24	0.1	H41	0.0
H08	0.0	H25	0.2	H42	0.1
H09	0.1	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.2	H28	0.1	H45	0.0
H12	0.0	H29	0.0	H46	0.1
H13	0.4	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 1/3/2005
Start Time: 9:14:53 AM
Duration: 0:0.000 (M:S)
W: 37.62E+3 W
VAR: 37.07E+3 W
VA: 57.39E+3 W
Power Factor: 1.922
Displacement Power Factor: 1.923
TAN: 5.658
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A9\010305-A9 Photo.dvb

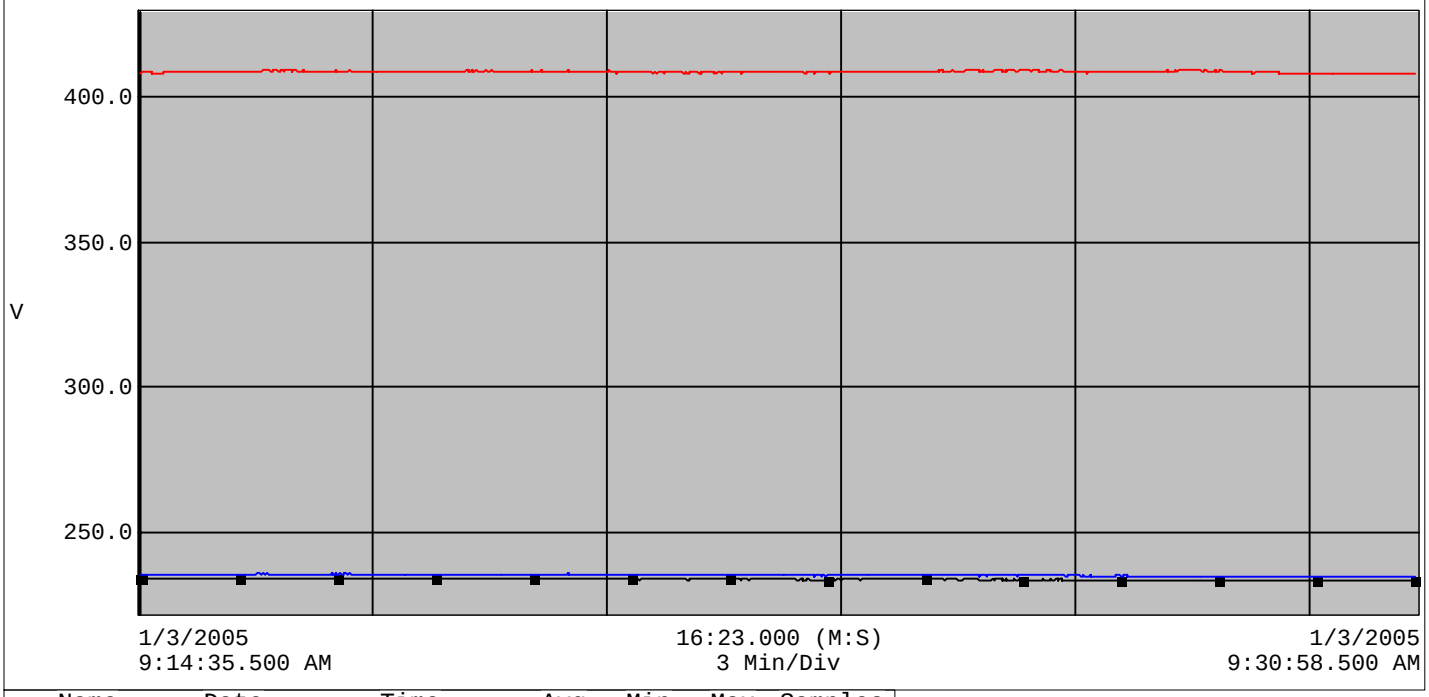
Operator	Test Site
GWA Victor Jardel ,	WPS A-9 ,

Comments
New Motor Installed.

WPS A-9 New Pump Motor - 1/03/05

Recording Start Date	1/3/2005 - 9:14:35 AM
Recording Duration	16:23 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

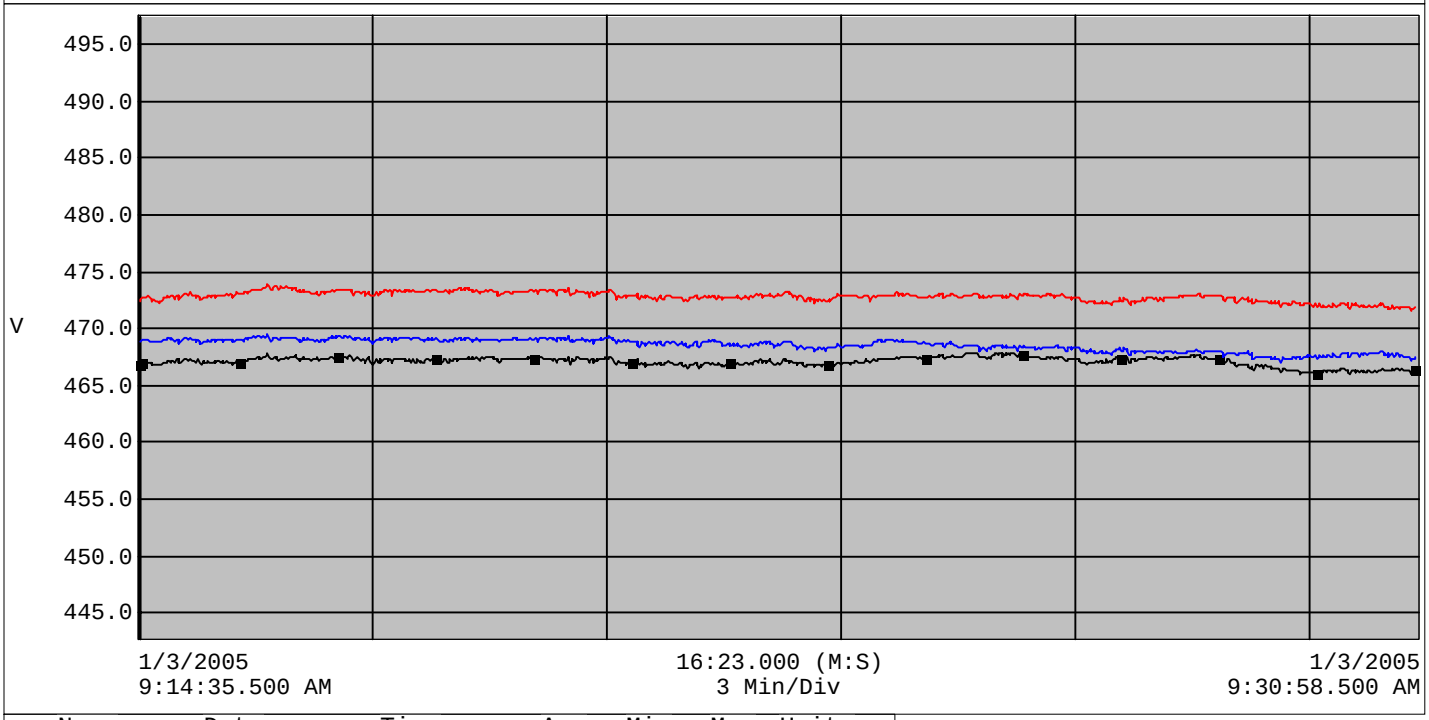
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	1/3/2005	9:14:35.500 AM	233.5	232.8	234.0	984
Vrms Line2	1/3/2005	9:14:35.500 AM	408.5	407.5	409.2	984
Vrms Line3	1/3/2005	9:14:35.500 AM	235.0	234.2	235.4	984

1/3/2005 - 9:14:35.000 AM
Val
233.6 — Vrms Line1
408.0 — Vrms Line2
235.1 — Vrms Line3

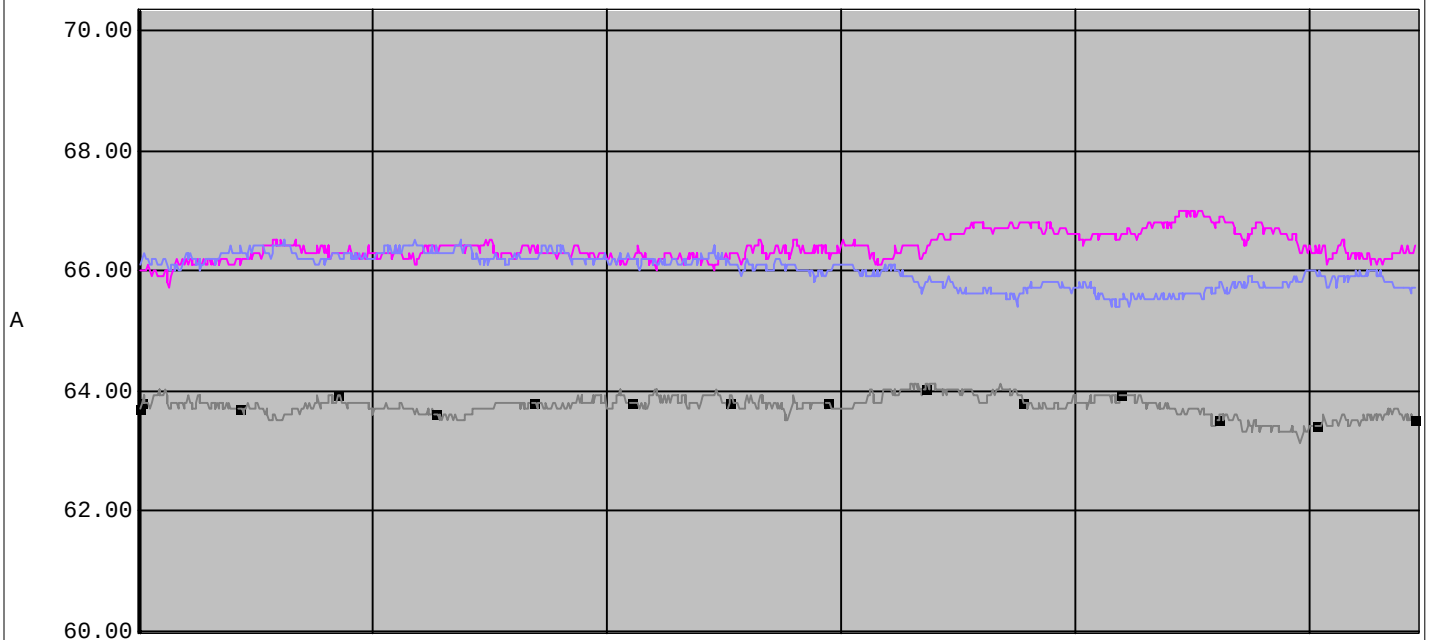
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	1/3/2005	9:14:35.500 AM	467.0	465.9	467.8	V
Urms Line2	1/3/2005	9:14:35.500 AM	472.8	471.4	473.8	V
Urms Line3	1/3/2005	9:14:35.500 AM	468.5	467.0	469.4	V

1/3/2005 - 9:14:35.000 AM
Val
466.8 Urms Line1
472.4 Urms Line2
468.7 Urms Line3

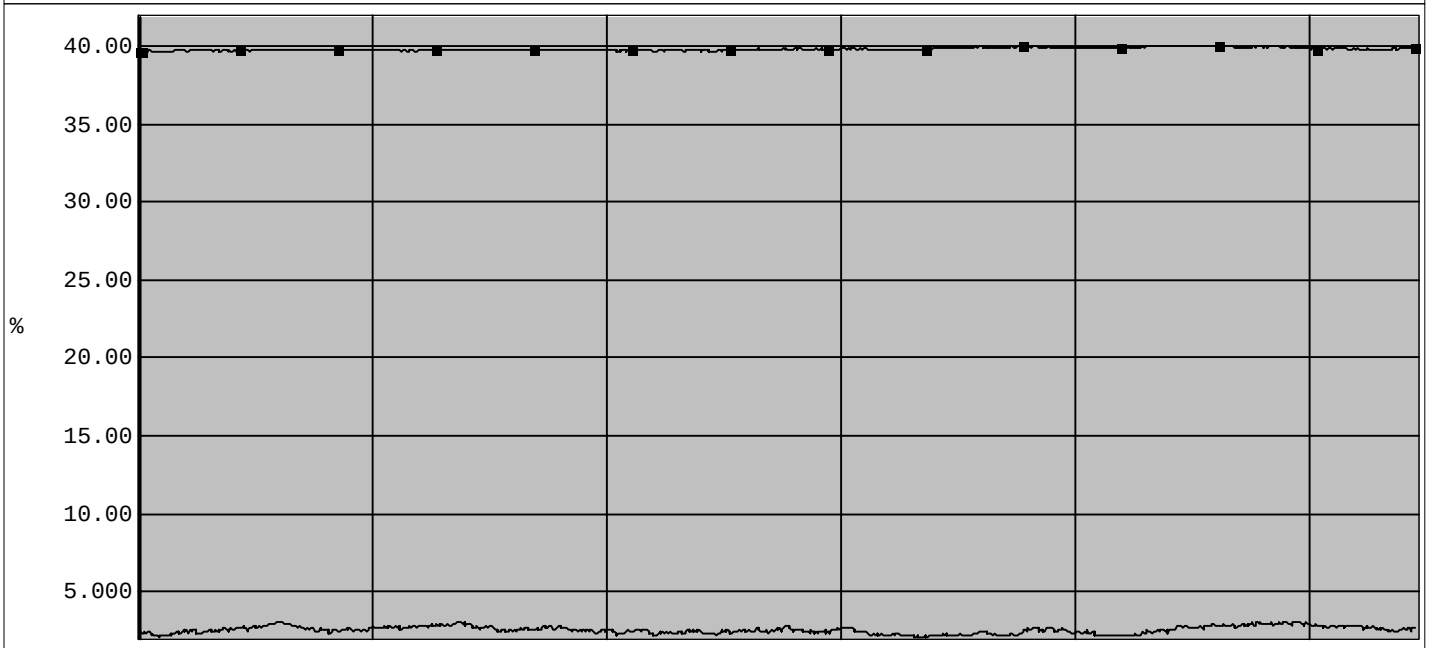
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	1/3/2005	9:14:35.500 AM	63.74	63.10	64.10	A
Arms Line2	1/3/2005	9:14:35.500 AM	66.39	65.70	67.00	A
Arms Line3	1/3/2005	9:14:35.500 AM	66.00	65.40	66.50	A

1/3/2005 - 9:14:35.000 AM
Val
63.80 — Arms Line1
66.00 — Arms Line2
66.10 — Arms Line3

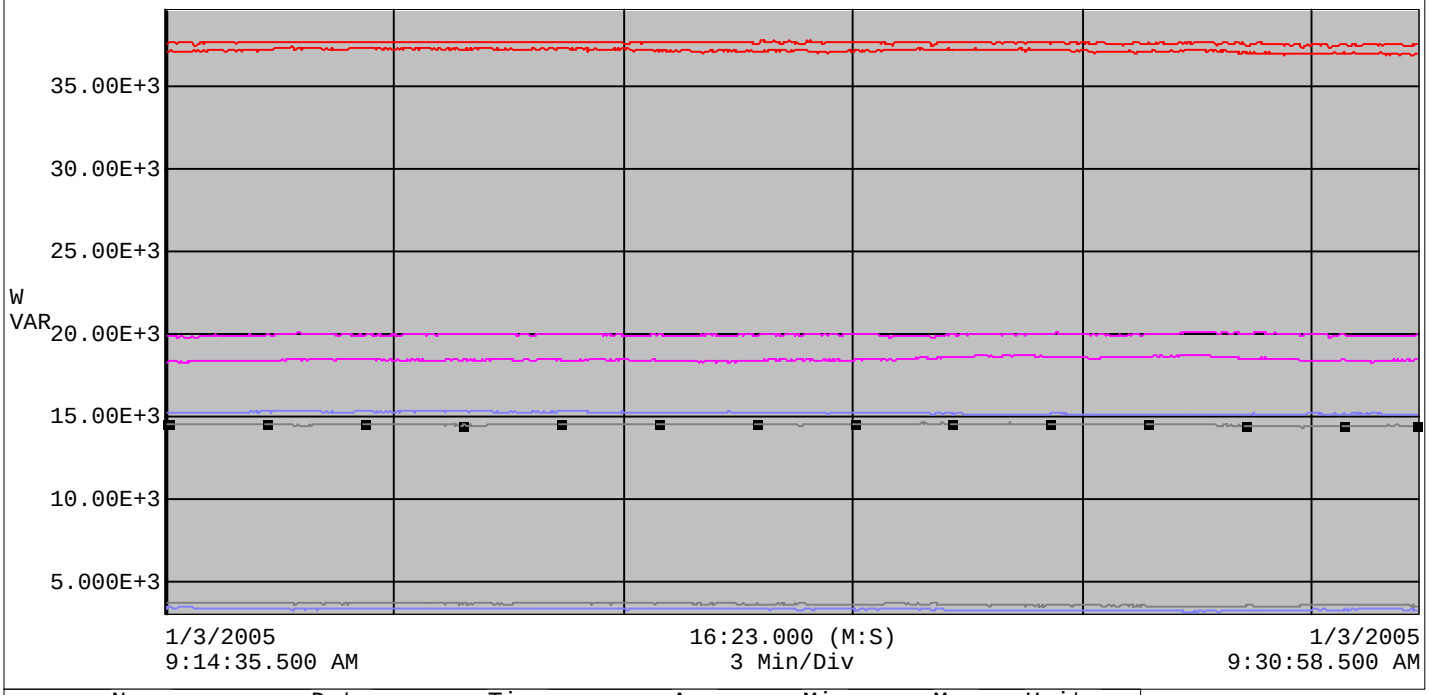
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	1/3/2005	9:14:35.500 AM	39.74	39.60	39.90	%
Aunb(IEEE)	1/3/2005	9:14:35.500 AM	2.500	2.000	3.000	%

1/3/2005 - 9:14:35.000 AM
Val
39.60 —— Vunb(IEEE)
2.300 —— Aunb(IEEE)

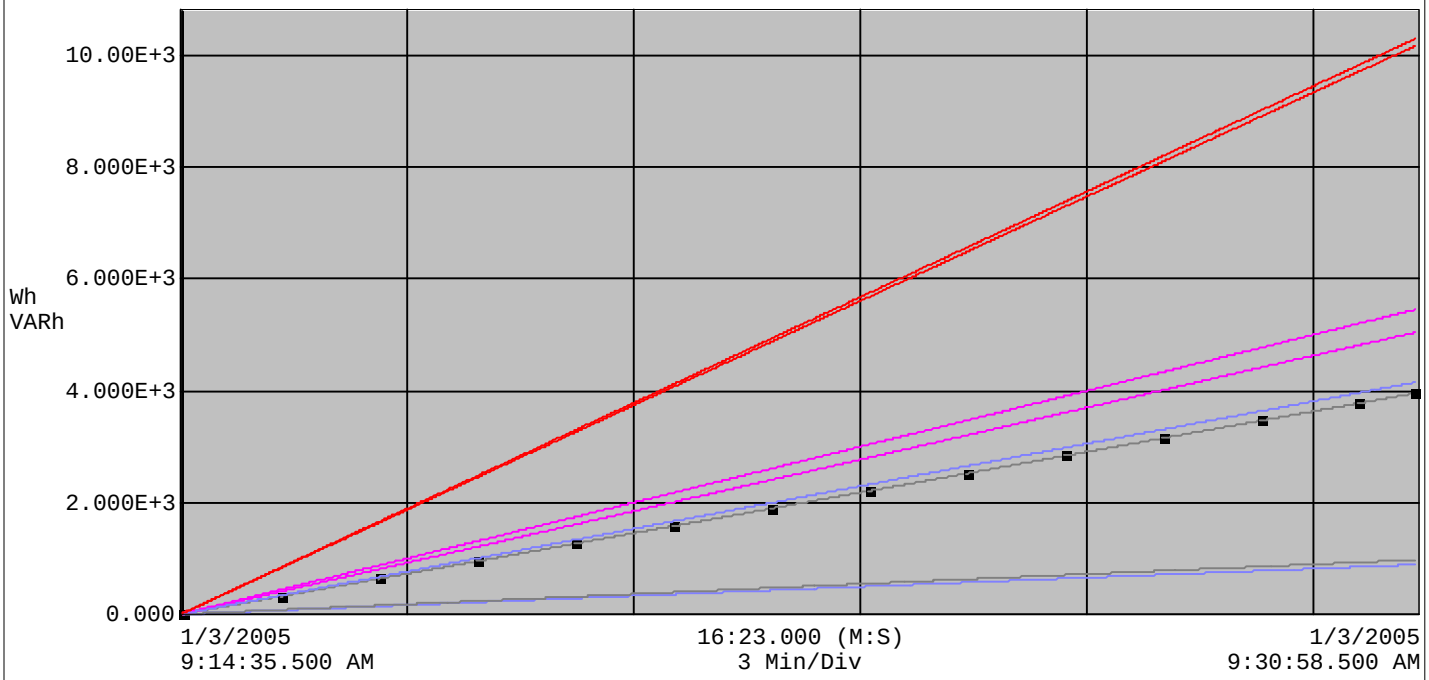
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	1/3/2005	9:14:35.500 AM	14.45E+3	14.28E+3	14.54E+3	W
W Line2	1/3/2005	9:14:35.500 AM	19.91E+3	19.68E+3	20.07E+3	W
W Line3	1/3/2005	9:14:35.500 AM	3.248E+3	3.104E+3	3.388E+3	W
W Sum of Phases	1/3/2005	9:14:35.500 AM	37.61E+3	37.32E+3	37.74E+3	W
VAR Line1	1/3/2005	9:14:35.500 AM	3.558E+3	3.397E+3	3.685E+3	VAR
VAR Line2	1/3/2005	9:14:35.500 AM	18.42E+3	18.22E+3	18.69E+3	VAR
VAR Line3	1/3/2005	9:14:35.500 AM	15.16E+3	15.01E+3	15.29E+3	VAR
VAR Sum of Phases	1/3/2005	9:14:35.500 AM	37.14E+3	36.82E+3	37.37E+3	VAR

1/3/2005 - 9:14:35.000 AM
Val
14.45E+3 — W Line1
19.78E+3 — W Line2
3.357E+3 — W Line3
37.59E+3 — W Sum of Phases
3.613E+3 — VAR Line1
18.25E+3 — VAR Line2
15.16E+3 — VAR Line3
37.03E+3 — VAR Sum of Phases

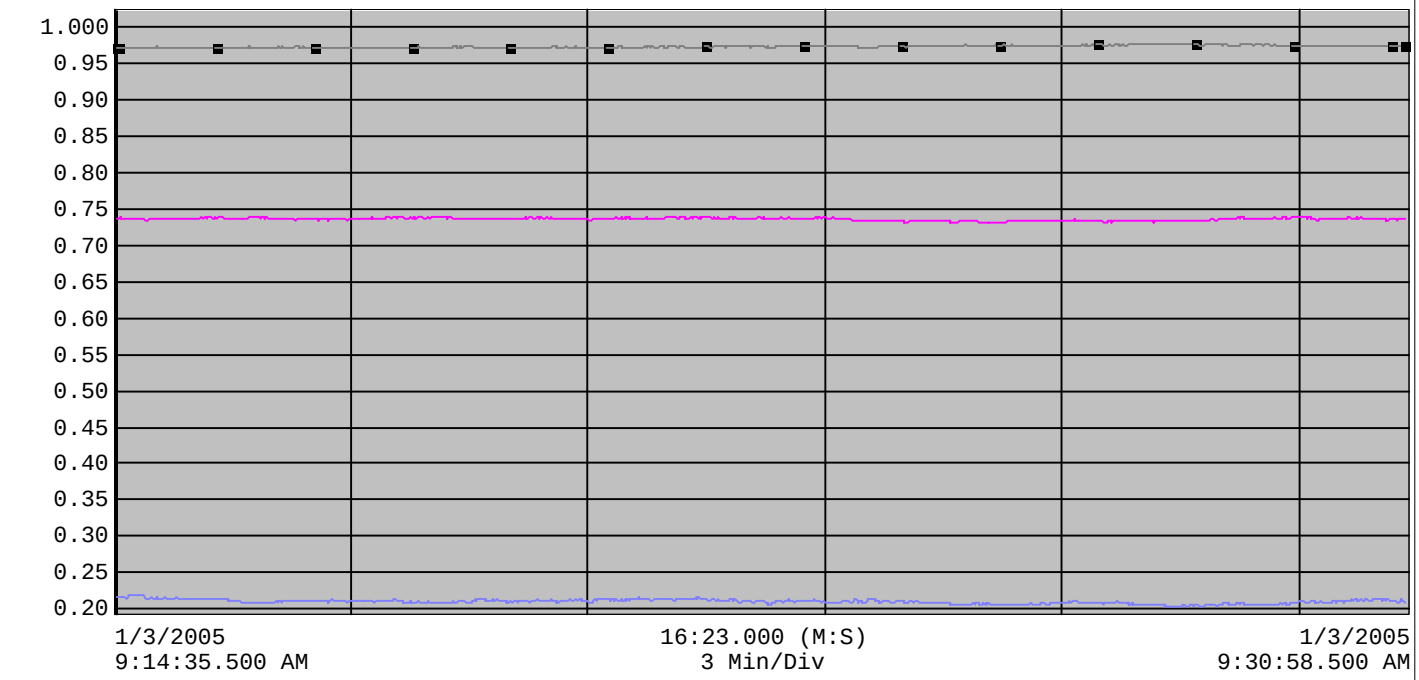
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	1/3/2005	9:14:35.500 AM	1.978E+3	3.978	3.950E+3	Wh
W-hours Line2	1/3/2005	9:14:35.500 AM	2.722E+3	5.480	5.441E+3	Wh
W-hours Line3	1/3/2005	9:14:35.500 AM	447.5	0.921	887.7	Wh
W-hours Sum of Phases	1/3/2005	9:14:35.500 AM	5.148E+3	10.35	10.28E+3	Wh
VAR-hours Line1	1/3/2005	9:14:35.500 AM	491.3	1.009	972.6	VARh
VAR-hours Line2	1/3/2005	9:14:35.500 AM	2.516E+3	5.071	5.035E+3	VARh
VAR-hours Line3	1/3/2005	9:14:35.500 AM	2.079E+3	4.174	4.144E+3	VARh
VAR-hours Sum of Phases	1/3/2005	9:14:35.500 AM	5.086E+3	10.22	10.15E+3	VARh

1/3/2005 - 9:14:35.000 AM
Val
3.978 — W-hours Line1
5.480 — W-hours Line2
0.921 — W-hours Line3
10.35 — W-hours Sum of Phases
1.009 — VAR-hours Line1
5.071 — VAR-hours Line2
4.174 — VAR-hours Line3
10.22 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	1/3/2005	9:14:35.500 AM	0.971	0.969	0.973	
PF Line2	1/3/2005	9:14:35.500 AM	0.734	0.730	0.737	
PF Line3	1/3/2005	9:14:35.500 AM	0.209	0.202	0.218	

1/3/2005 - 9:14:35.000 AM
Val
0.970 — PF Line1
0.735 — PF Line2
0.216 — PF Line3

Trend Summary Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A9\010305-A9.dvb

Operator	Test Site
GWA Victor Jardel ,	WPS A9 ,

Comments
New Pump Motor Installed.

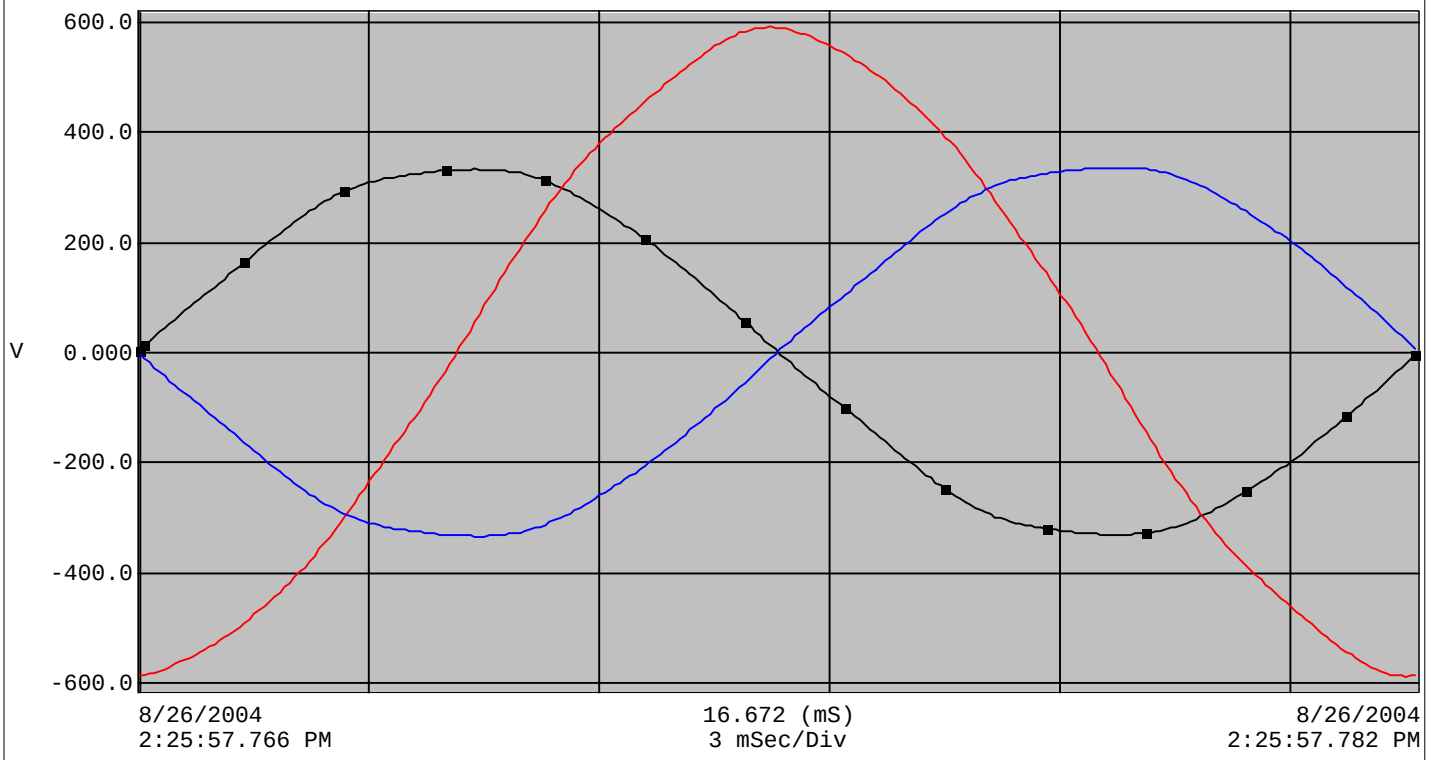
GWA Water Pumping Station Assessment				
Station Name: A-10	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/26/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.475	
Transformer Pole Condition and Grounding	2.5%	2	0.05	4
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.275	
Generator Condition	10.0%	1	0.1	20
Generator Battery	5.0%	1	0.05	20
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.7	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	3	0.15	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0.05	
Pressure	1.5%	2	0.03	52
Flow	1.5%	0	0	
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.1	
Lighting	3.0%	2	0.06	
Power Devices	2.0%	2	0.04	
	100%	**Assessment Value**		**2.2**

Comments: GROUNDED DELTA TRANSFORMER BANK

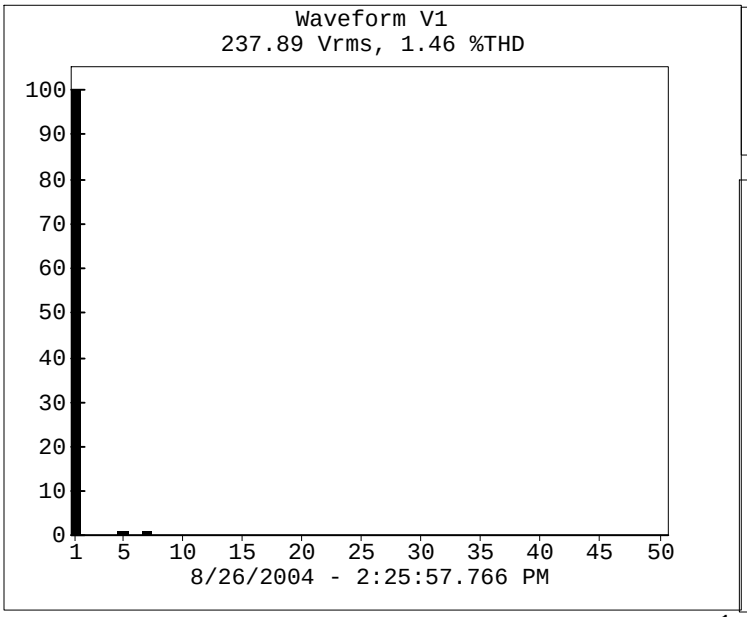
WPS A-10 Pump 8/26/04

Recording Start Date	8/26/2004 - 2:25:57 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/26/2004	2:25:57.766 PM	16.672	237.9	V
Waveform V2	8/26/2004	2:25:57.766 PM	16.672	409.8	V
Waveform V3	8/26/2004	2:25:57.766 PM	16.672	239.9	V

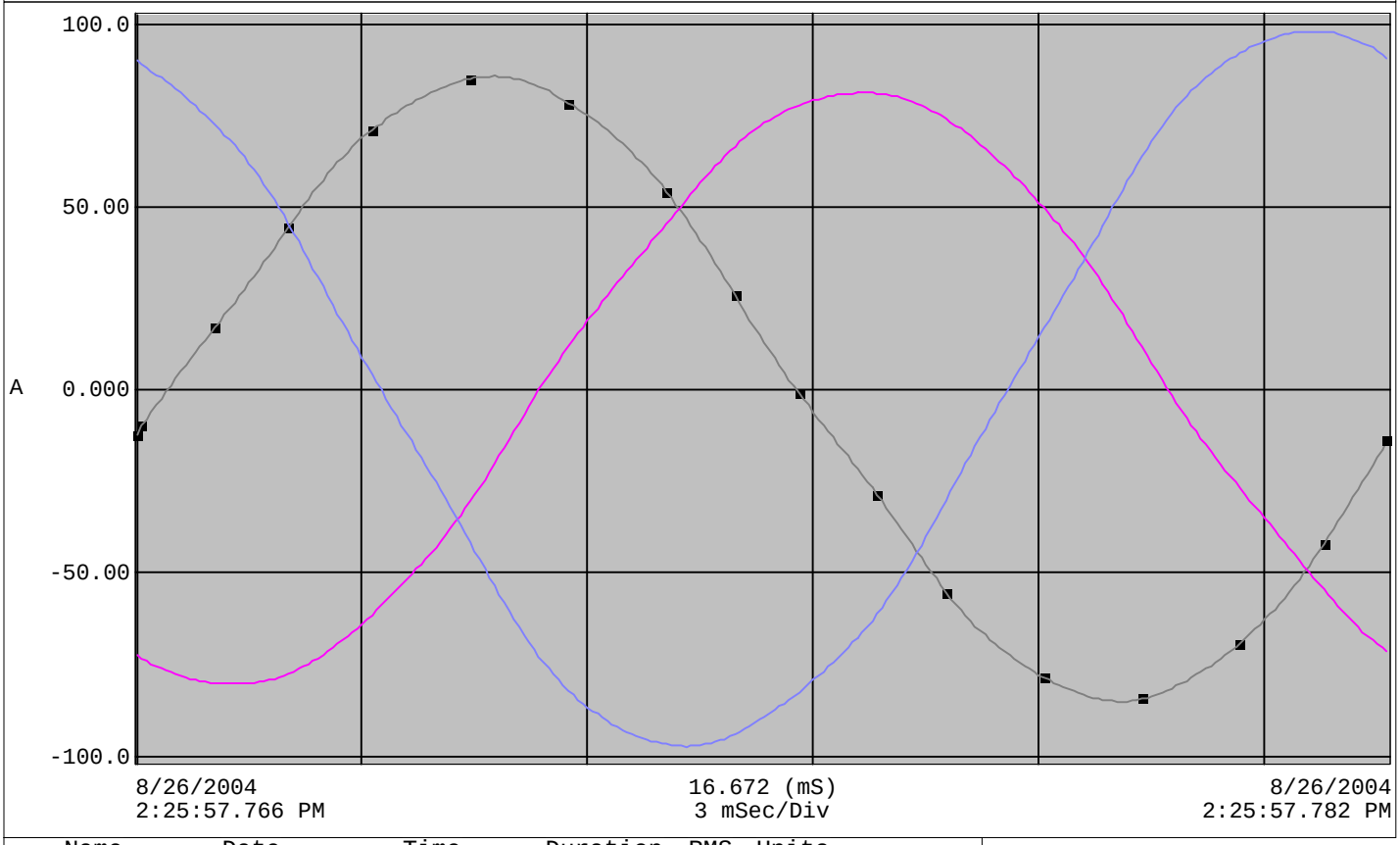


8/26/2004 - 2:25:57.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

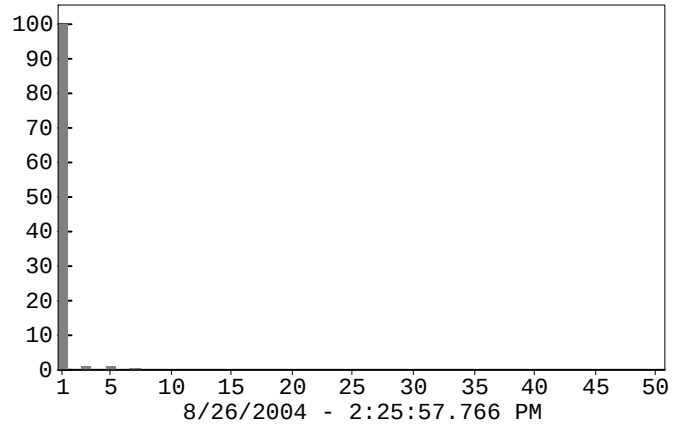
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/26/2004	2:25:57.766 PM	16.672	59.79	A
Waveform I2	8/26/2004	2:25:57.766 PM	16.672	57.37	A
Waveform I3	8/26/2004	2:25:57.766 PM	16.672	69.59	A

Waveform I1
59.79 Arms, 2.28 %THD

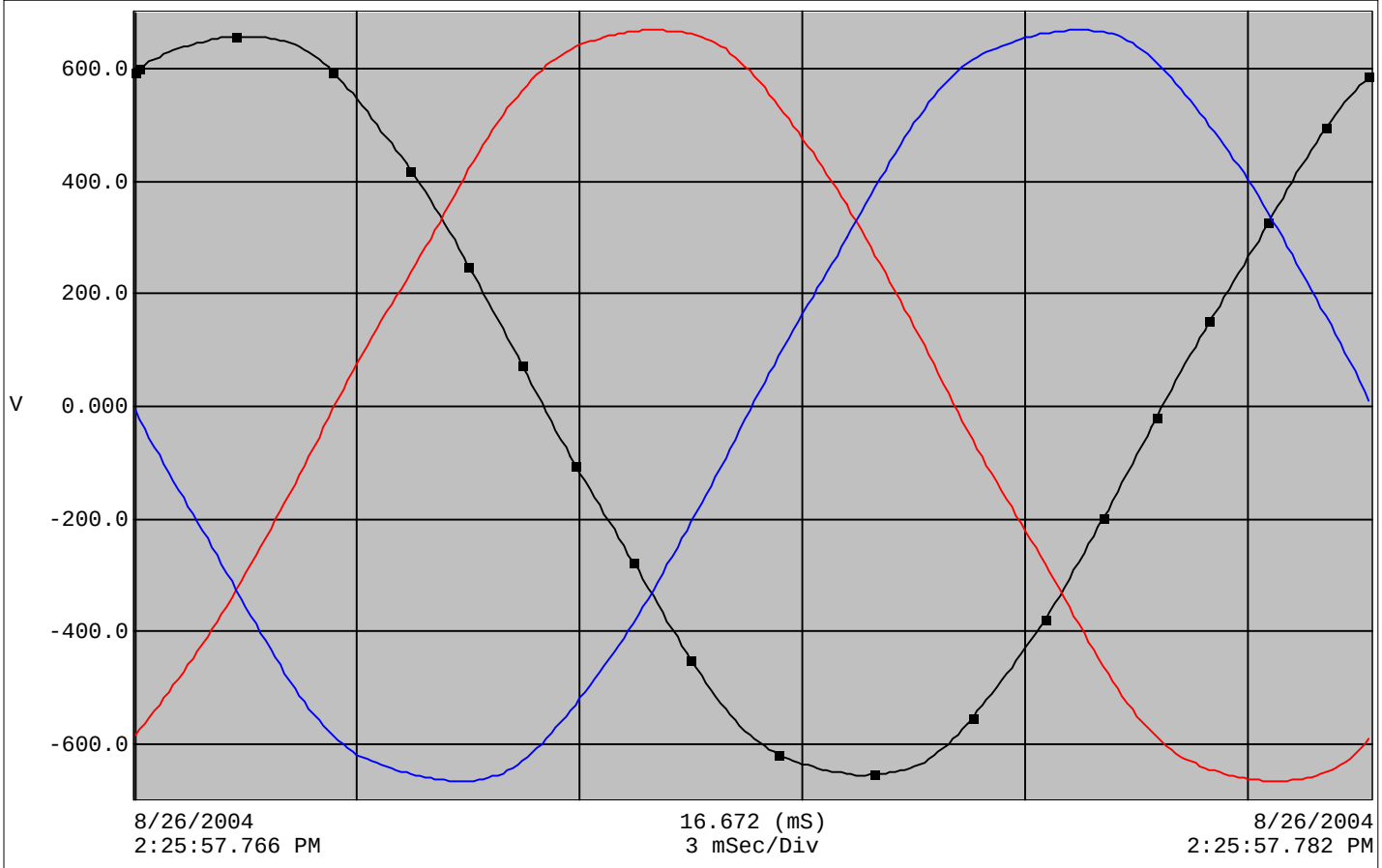


8/26/2004 - 2:25:57.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

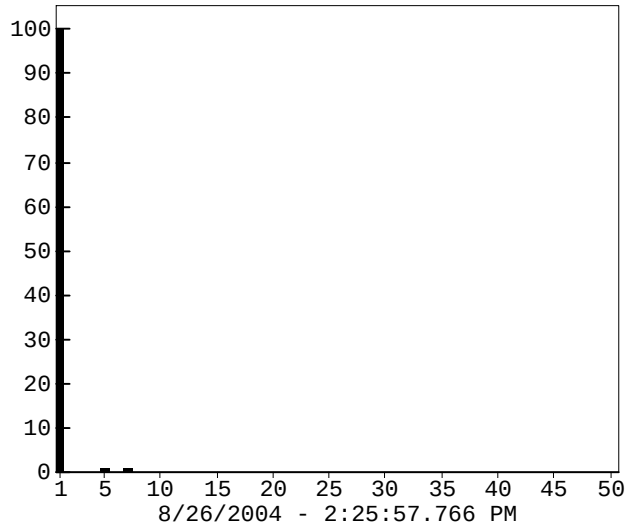
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	1.6	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/26/2004	2:25:57.766 PM	16.672	470.2	V
Waveform U2	8/26/2004	2:25:57.766 PM	16.672	478.5	V
Waveform U3	8/26/2004	2:25:57.766 PM	16.672	477.8	V

Waveform U1
470.20 Vrms, 1.39 %THD



8/26/2004 - 2:25:57.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/26/2004
Start Time: 2:25:57 PM
Duration: 0:0.000 (M:S)
W: 40.39E+3 W
VAR: 29.58E+3 W
VA: 54.46E+3 W
Power Factor: 2.204
Displacement Power Factor: 2.204
TAN: 3.479
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A10\082604-A10-Photo.dvb

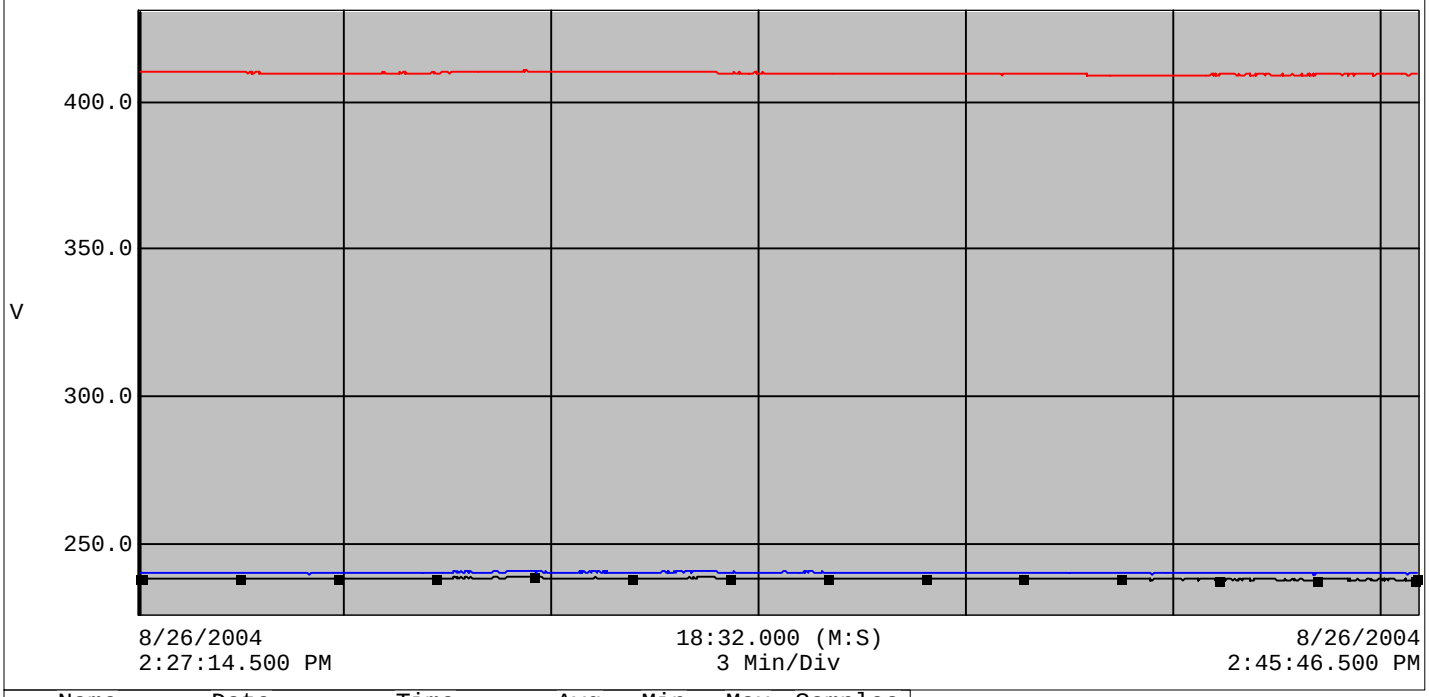
Operator	Test Site
Morikawa, & Associates, LLC Lyman Morikawa, PE ,	GWA WPS A-10 - Photo ,

Comments
Measured at motor starter overload relay. Generator under repair. Grounded Delta, 480 Volts.

WPS A-10 Pump 8/26/04

Recording Start Date	8/26/2004 - 2:27:14 PM
Recording Duration	18:32 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

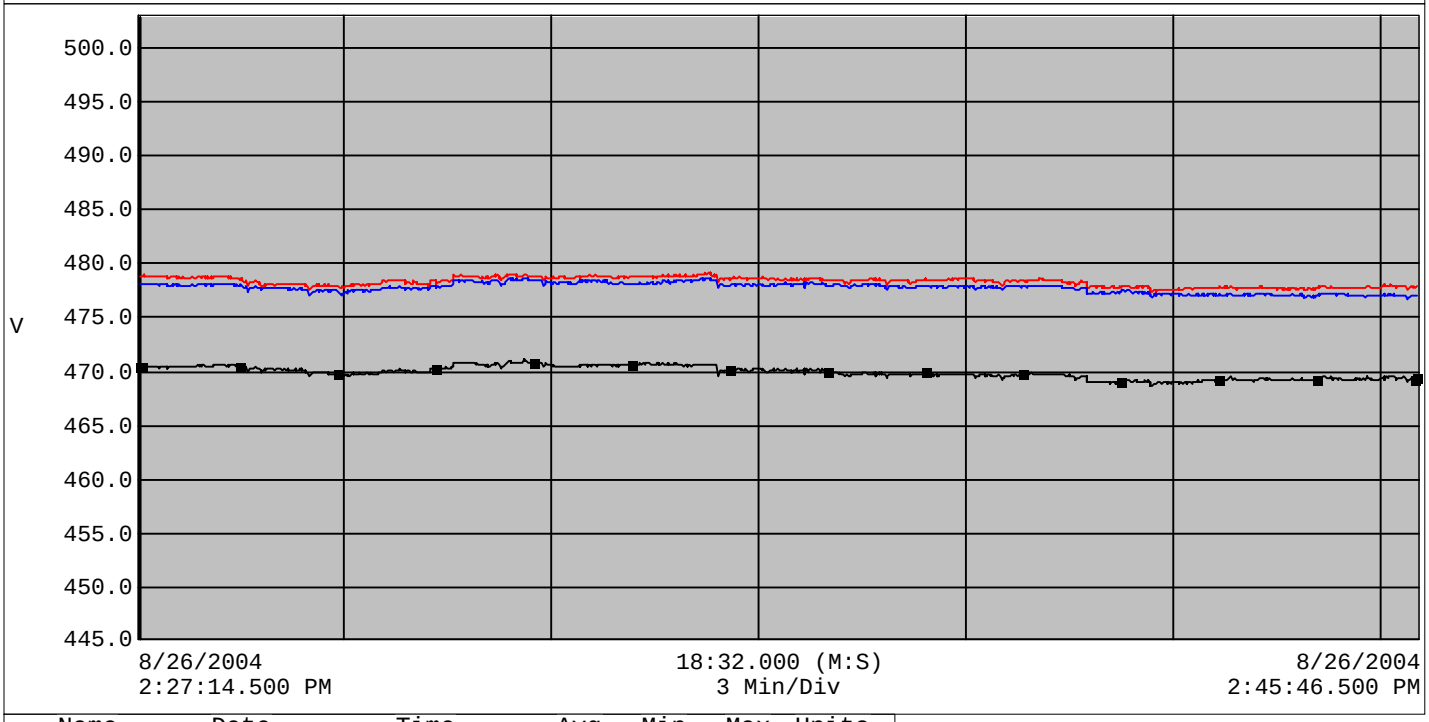
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/26/2004	2:27:14.500 PM	237.8	237.3	238.3	1113
Vrms Line2	8/26/2004	2:27:14.500 PM	409.5	408.4	410.3	1113
Vrms Line3	8/26/2004	2:27:14.500 PM	239.9	239.4	240.3	1113

8/26/2004 - 2:27:14.000 PM
Val
238.0 — Vrms Line1
409.9 — Vrms Line2
240.0 — Vrms Line3

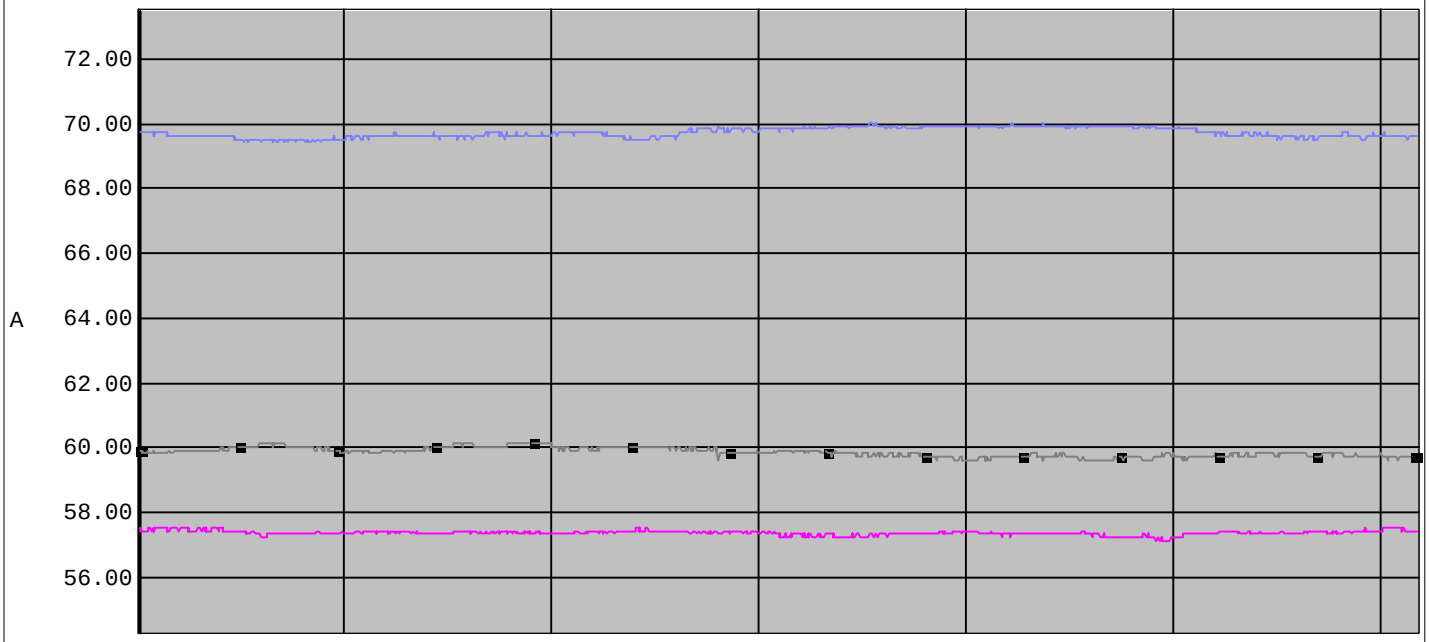
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/26/2004	2:27:14.500 PM	469.8	468.5	471.0	V
Urms Line2	8/26/2004	2:27:14.500 PM	478.2	477.3	479.0	V
Urms Line3	8/26/2004	2:27:14.500 PM	477.7	476.6	478.6	V

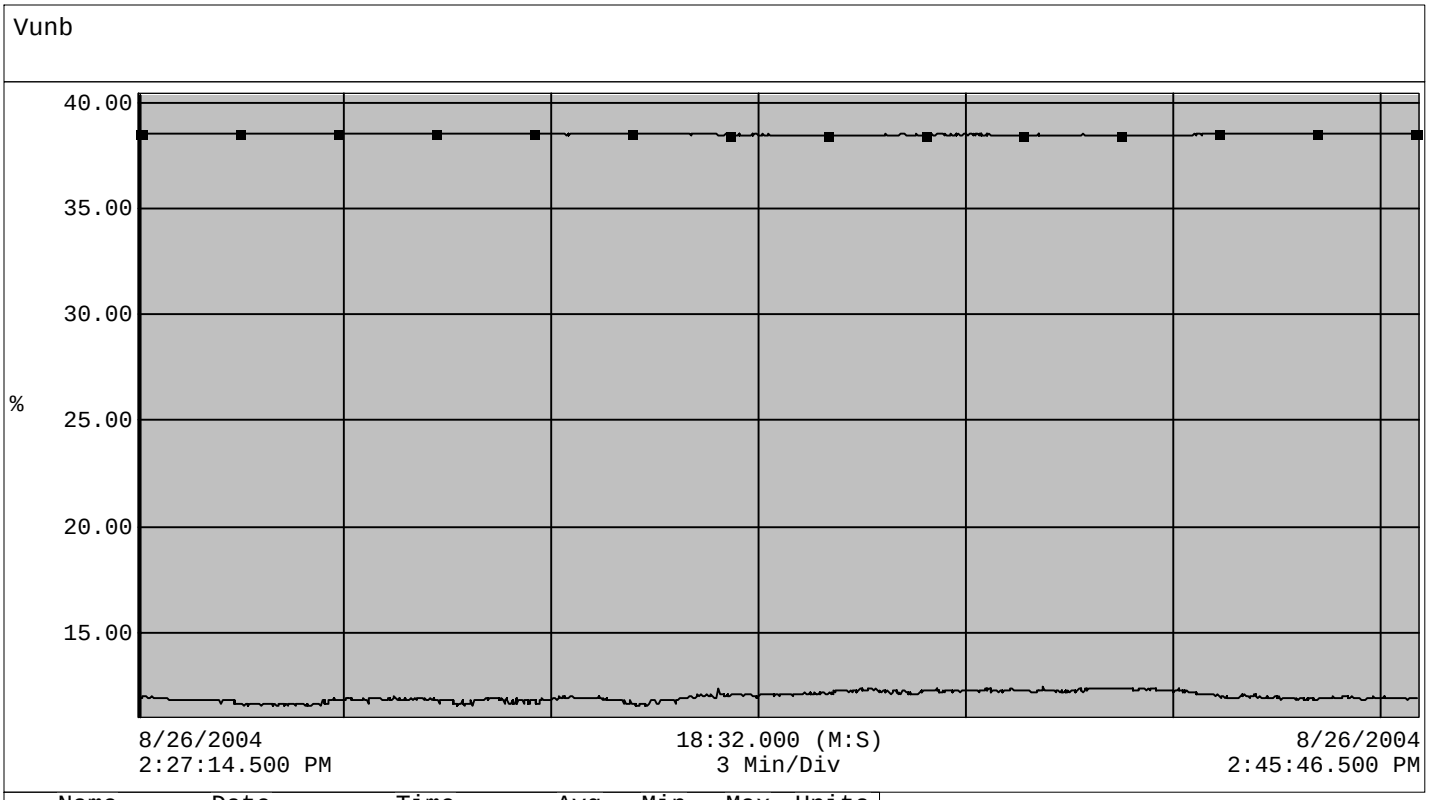
8/26/2004 - 2:27:14.000 PM
Val
470.3 Urms Line1
478.7 Urms Line2
478.0 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/26/2004	2:27:14.500 PM	59.84	59.60	60.10	A
Arms Line2	8/26/2004	2:27:14.500 PM	57.34	57.10	57.50	A
Arms Line3	8/26/2004	2:27:14.500 PM	69.70	69.40	70.00	A

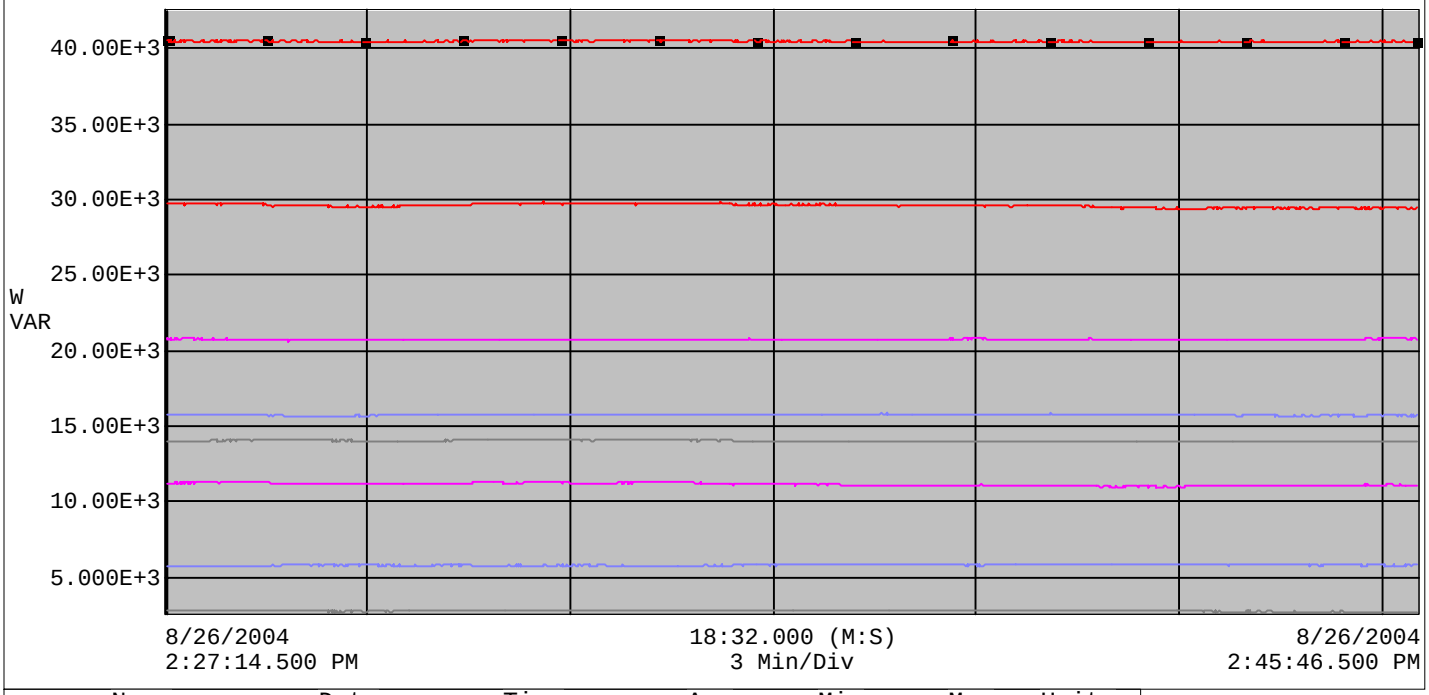
8/26/2004 - 2:27:14.000 PM
Val
59.90 — Arms Line1
57.40 — Arms Line2
69.70 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/26/2004	2:27:14.500 PM	38.47	38.40	38.50	%
Aunb(IEEE)	8/26/2004	2:27:14.500 PM	11.89	11.50	12.40	%

8/26/2004 - 2:27:14.000 PM
Val
38.50 —— Vunb(IEEE)
11.80 —— Aunb(IEEE)

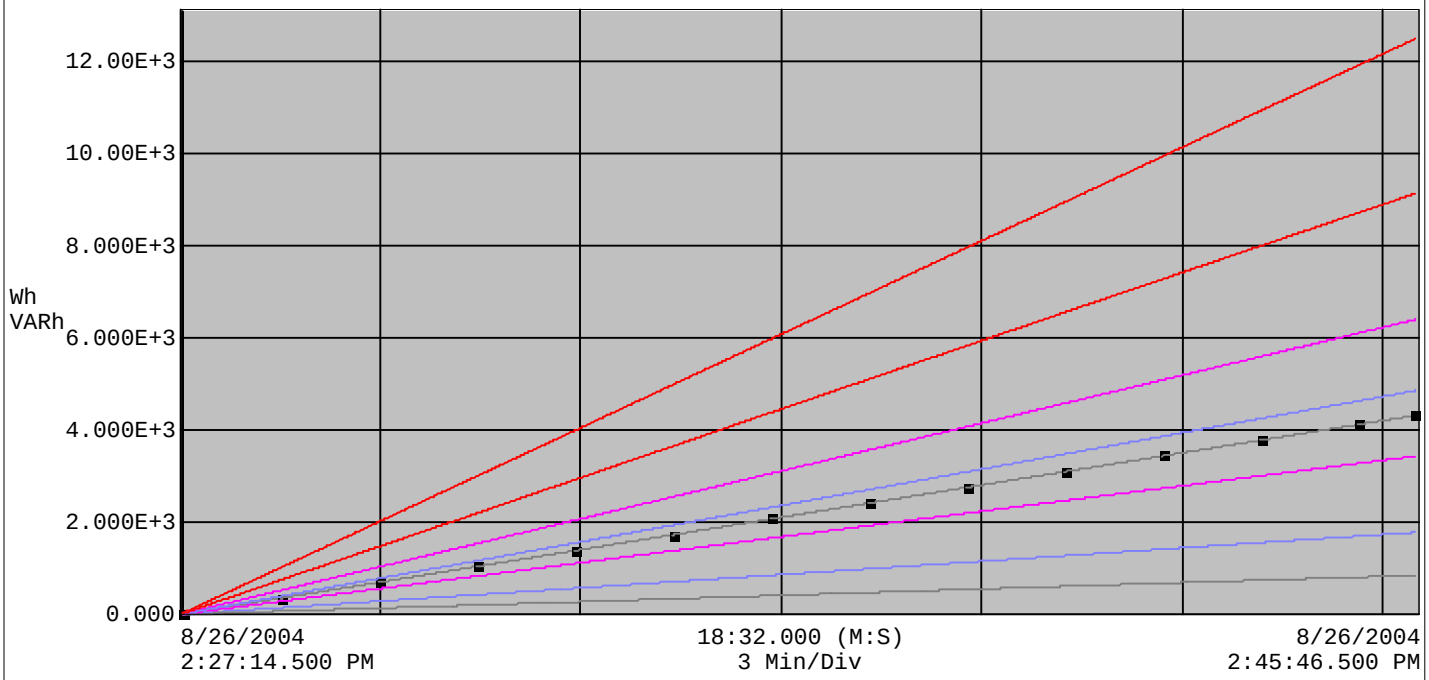
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/26/2004	2:27:14.500 PM	13.97E+3	13.89E+3	14.06E+3	W
W Line2	8/26/2004	2:27:14.500 PM	20.68E+3	20.58E+3	20.77E+3	W
W Line3	8/26/2004	2:27:14.500 PM	5.751E+3	5.695E+3	5.829E+3	W
W Sum of Phases	8/26/2004	2:27:14.500 PM	40.40E+3	40.34E+3	40.48E+3	W
VAR Line1	8/26/2004	2:27:14.500 PM	2.733E+3	2.633E+3	2.801E+3	VAR
VAR Line2	8/26/2004	2:27:14.500 PM	11.10E+3	10.89E+3	11.27E+3	VAR
VAR Line3	8/26/2004	2:27:14.500 PM	15.70E+3	15.59E+3	15.78E+3	VAR
VAR Sum of Phases	8/26/2004	2:27:14.500 PM	29.54E+3	29.28E+3	29.74E+3	VAR

8/26/2004 - 2:27:14.000 PM
Val
13.98E+3 — W Line1
20.71E+3 — W Line2
5.720E+3 — W Line3
40.42E+3 — W Sum of Phases
2.732E+3 — VAR Line1
11.18E+3 — VAR Line2
15.72E+3 — VAR Line3
29.63E+3 — VAR Sum of Phases

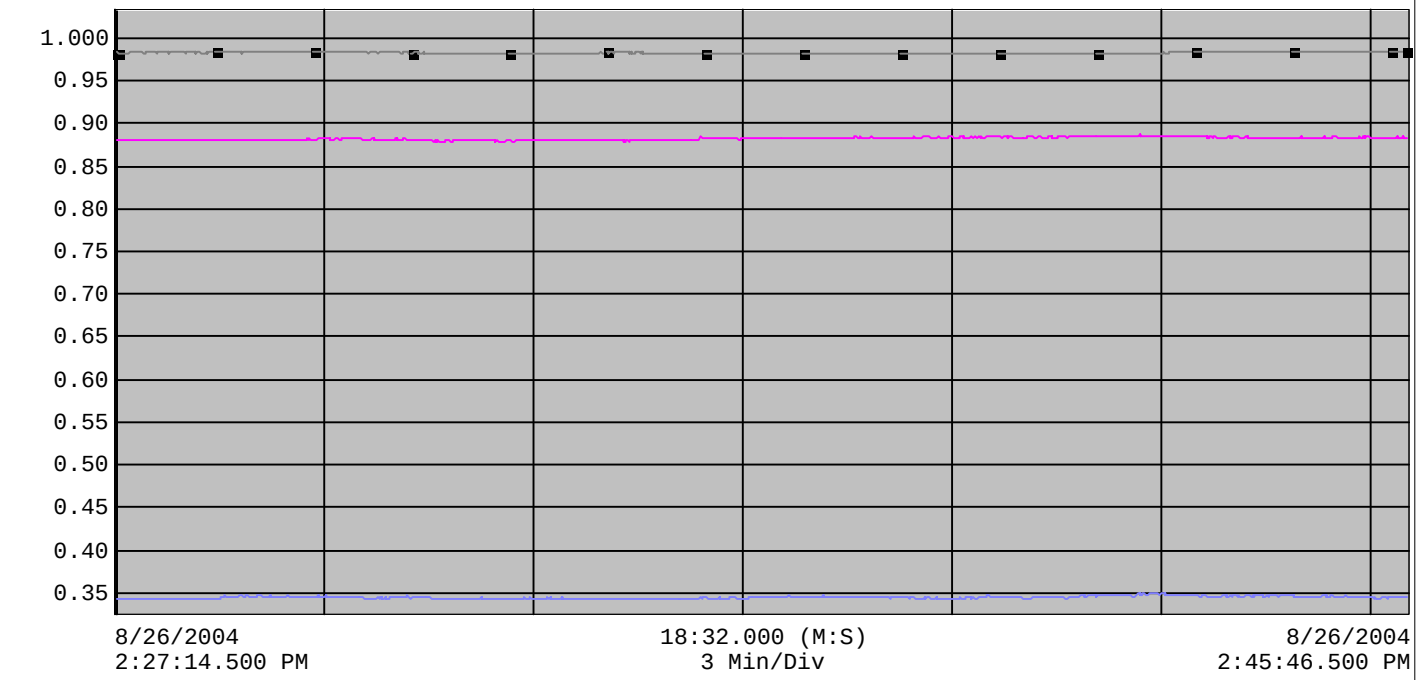
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/26/2004	2:27:14.500 PM	2.164E+3	3.821	4.318E+3	Wh
W-hours Line2	8/26/2004	2:27:14.500 PM	3.200E+3	5.660	6.395E+3	Wh
W-hours Line3	8/26/2004	2:27:14.500 PM	888.4	1.574	1.778E+3	Wh
W-hours Sum of Phases	8/26/2004	2:27:14.500 PM	6.252E+3	11.06	12.49E+3	Wh
VAR-hours Line1	8/26/2004	2:27:14.500 PM	423.7	0.748	844.8	VARh
VAR-hours Line2	8/26/2004	2:27:14.500 PM	1.724E+3	3.144	3.433E+3	VARh
VAR-hours Line3	8/26/2004	2:27:14.500 PM	2.429E+3	4.296	4.853E+3	VARh
VAR-hours Sum of Phases	8/26/2004	2:27:14.500 PM	4.577E+3	8.361	9.131E+3	VARh

8/26/2004 - 2:27:14.000 PM
Val
3.821 — W-hours Line1
5.660 — W-hours Line2
1.574 — W-hours Line3
11.06 — W-hours Sum of Phases
0.748 — VAR-hours Line1
3.144 — VAR-hours Line2
4.296 — VAR-hours Line3
8.361 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/26/2004	2:27:14.500 PM	0.981	0.980	0.983	
PF Line2	8/26/2004	2:27:14.500 PM	0.881	0.878	0.885	
PF Line3	8/26/2004	2:27:14.500 PM	0.344	0.341	0.349	

8/26/2004 - 2:27:14.000 PM
Val
0.981 — PF Line1
0.880 — PF Line2
0.342 — PF Line3

Trend Summary Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A10\082604-A10.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS A-10 ,

Comments
Measured at motor starter overload relay. GPA Grounded Delta at transformer, 480 volts station.

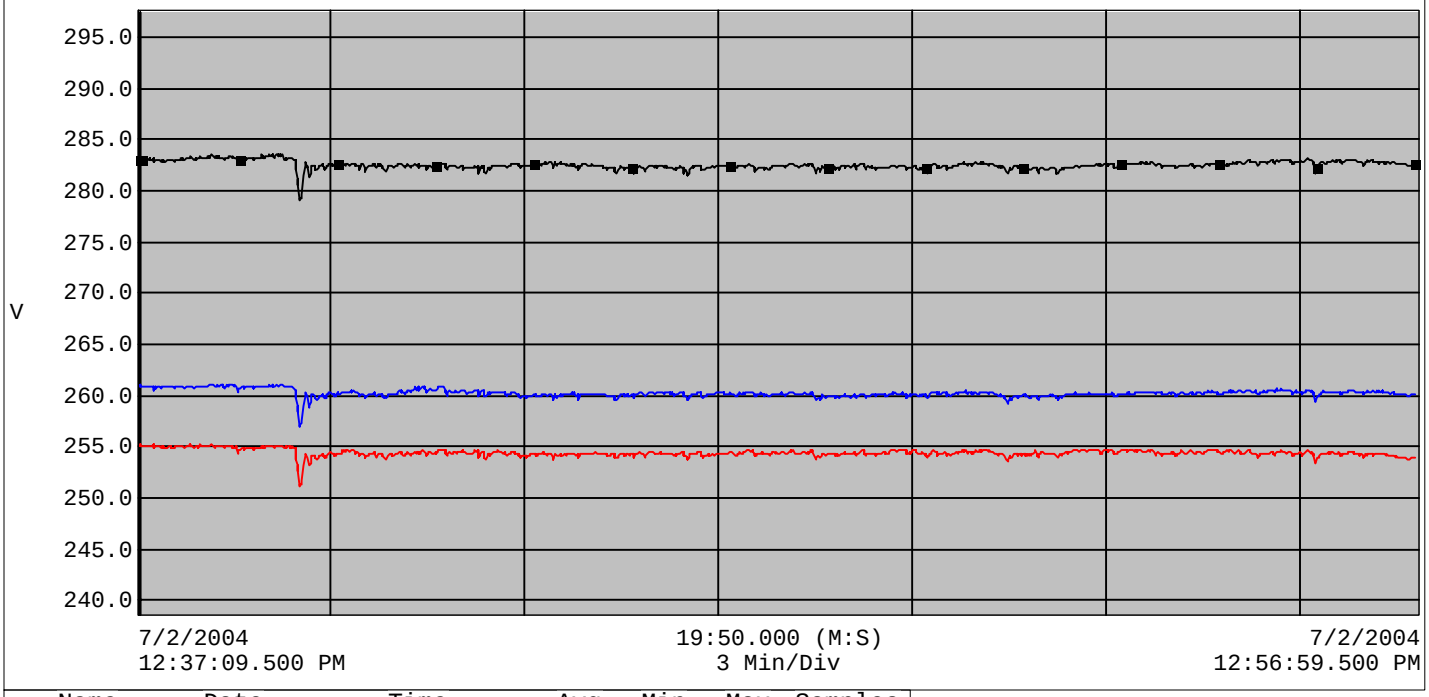
GWA Water Pumping Station Assessment				
Station Name: A-14	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/02/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0.02	
Pressure	1.5%	0	0	
Flow	1.5%	0	0	
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.1	
Lighting	3.0%	2	0.06	
Power Devices	2.0%	2	0.04	
	100%	**Assessment Value**		**2.6**

Comments:

WPS A-14 Pump

Recording Start Date	7/2/2004 - 12:37:09 PM
Recording Duration	19:50 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

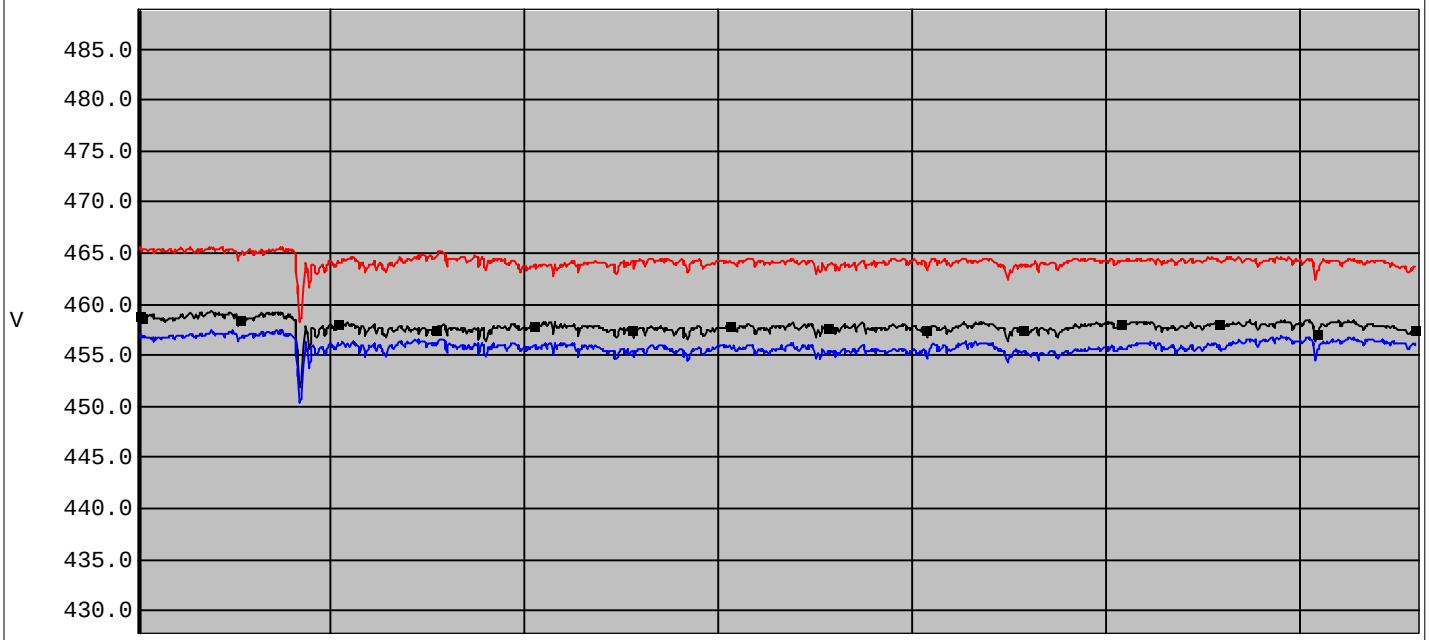
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/2/2004	12:37:09.500 PM	282.4	278.9	283.4	1191
Vrms Line2	7/2/2004	12:37:09.500 PM	254.3	251.0	255.1	1191
Vrms Line3	7/2/2004	12:37:09.500 PM	260.2	256.9	261.0	1191

7/2/2004 - 12:37:09.000 PM
Val
283.2 Vrms Line1
255.1 Vrms Line2
260.9 Vrms Line3

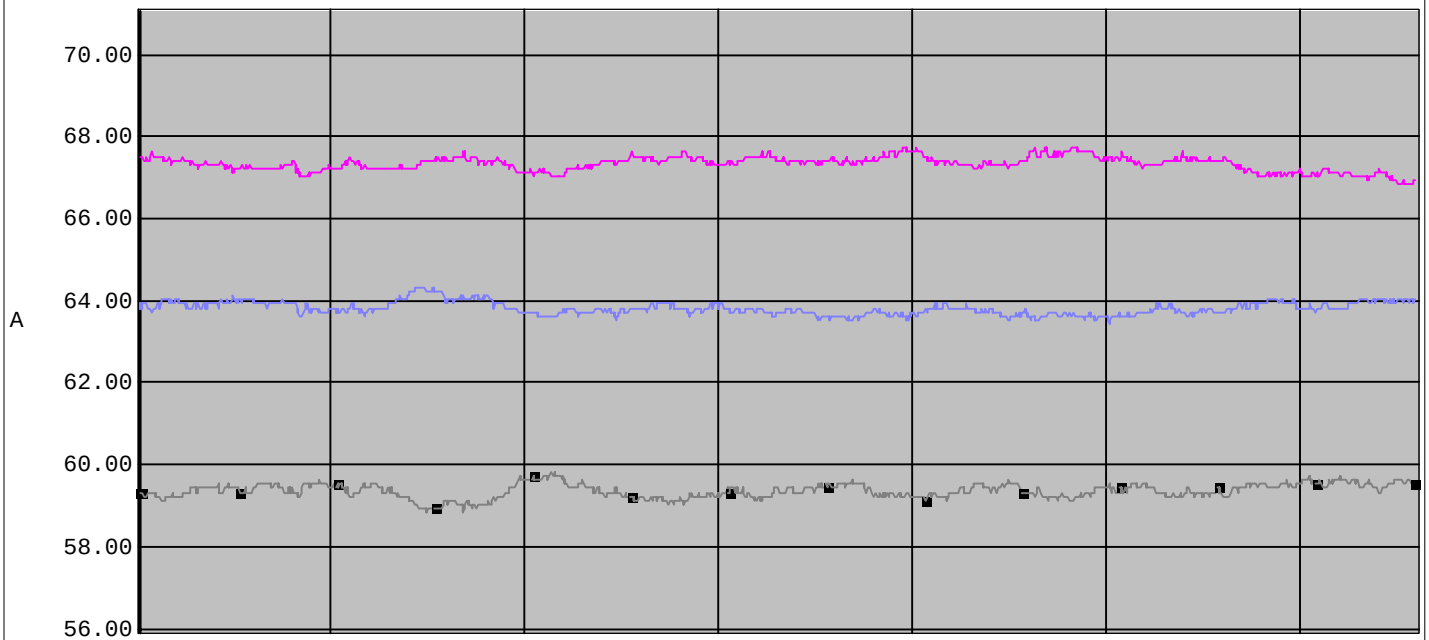
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/2/2004	12:37:09.500 PM	457.7	451.8	459.2	V
Urms Line2	7/2/2004	12:37:09.500 PM	464.1	458.2	465.5	V
Urms Line3	7/2/2004	12:37:09.500 PM	455.8	450.2	457.4	V

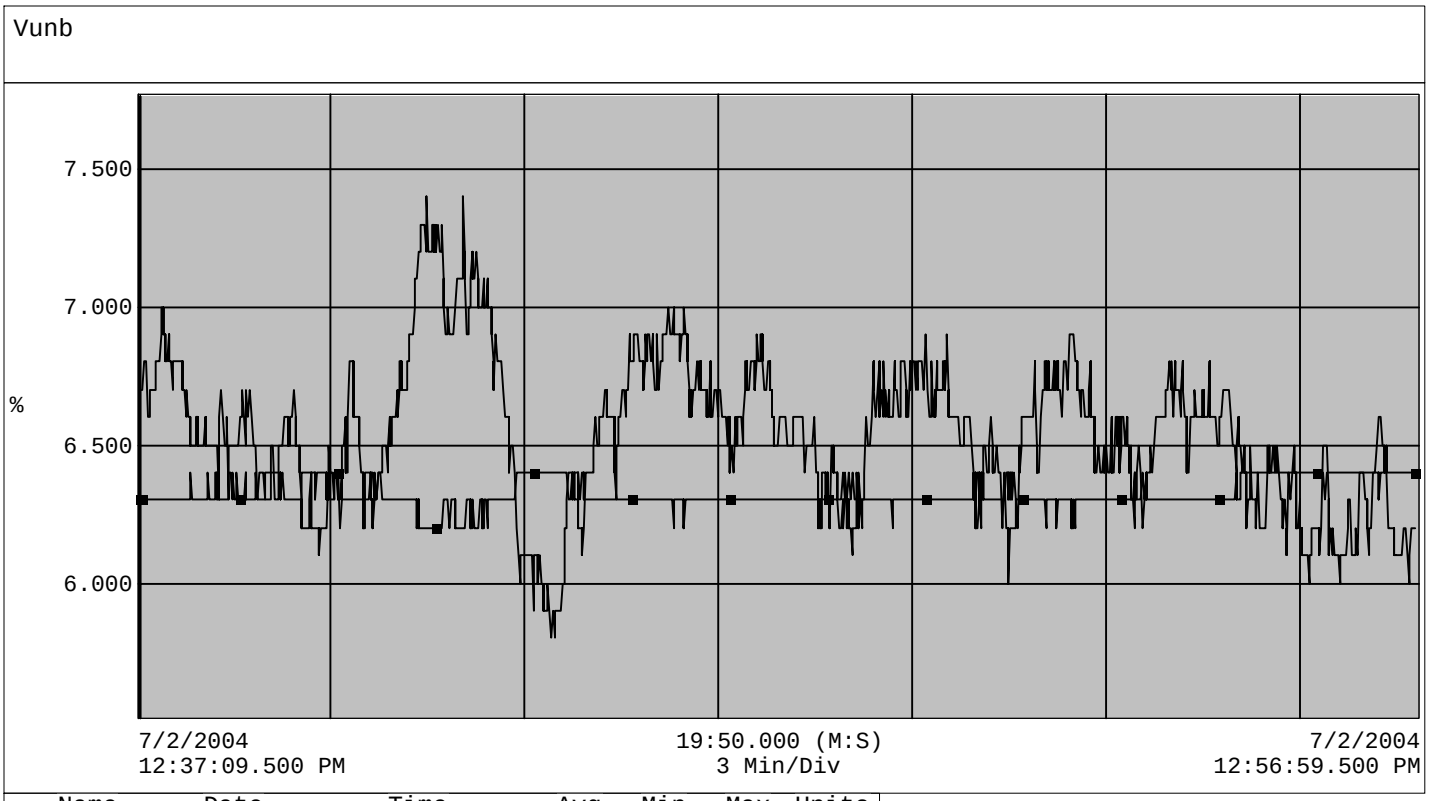
7/2/2004 - 12:37:09.000 PM
Val
458.9 — Urms Line1
465.5 — Urms Line2
457.0 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/2/2004	12:37:09.500 PM	59.33	58.80	59.80	A
Arms Line2	7/2/2004	12:37:09.500 PM	67.32	66.80	67.70	A
Arms Line3	7/2/2004	12:37:09.500 PM	63.80	63.40	64.30	A

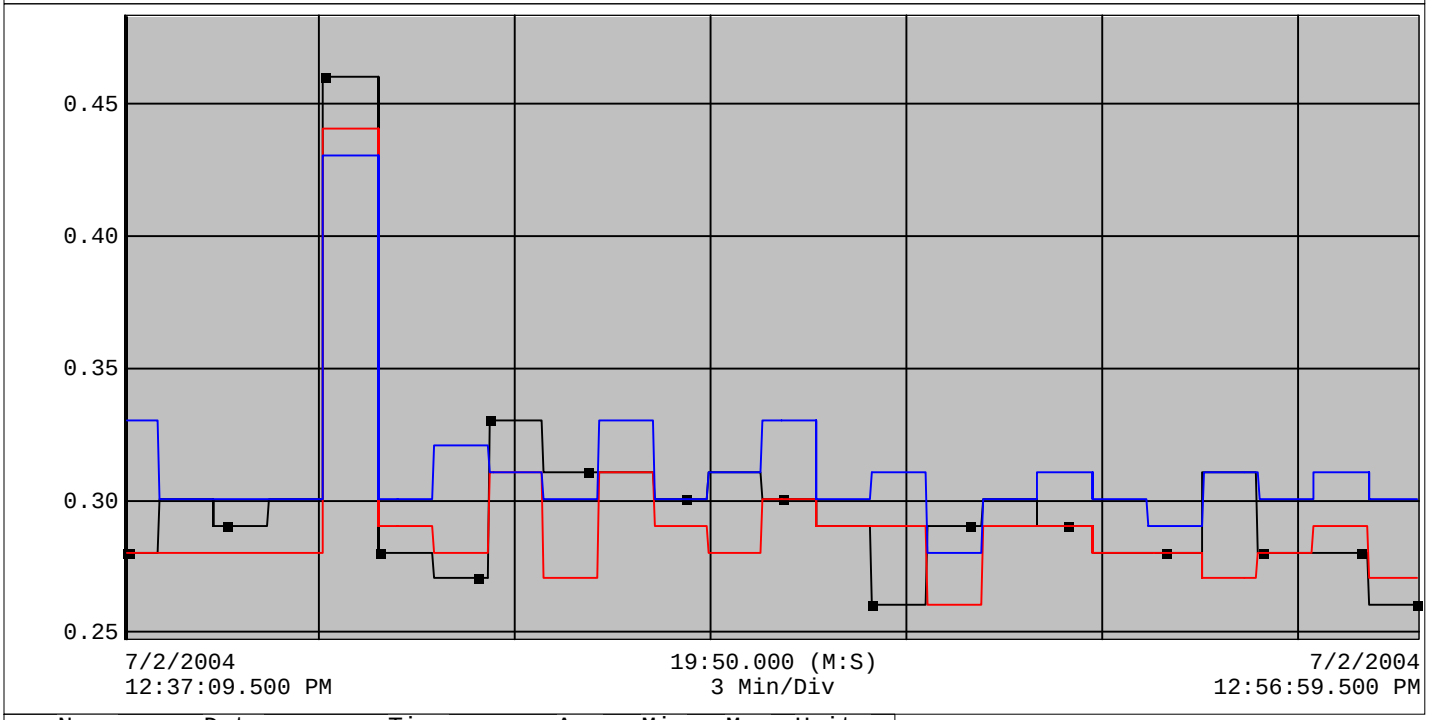
7/2/2004 - 12:37:09.000 PM
Val
59.30 — Arms Line1
67.50 — Arms Line2
63.90 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/2/2004	12:37:09.500 PM	6.322	6.200	6.400	%
Aunb(IEEE)	7/2/2004	12:37:09.500 PM	6.537	5.800	7.400	%

7/2/2004 - 12:37:09.000 PM
Val
6.300 —— Vunb(IEEE)
6.700 —— Aunb(IEEE)

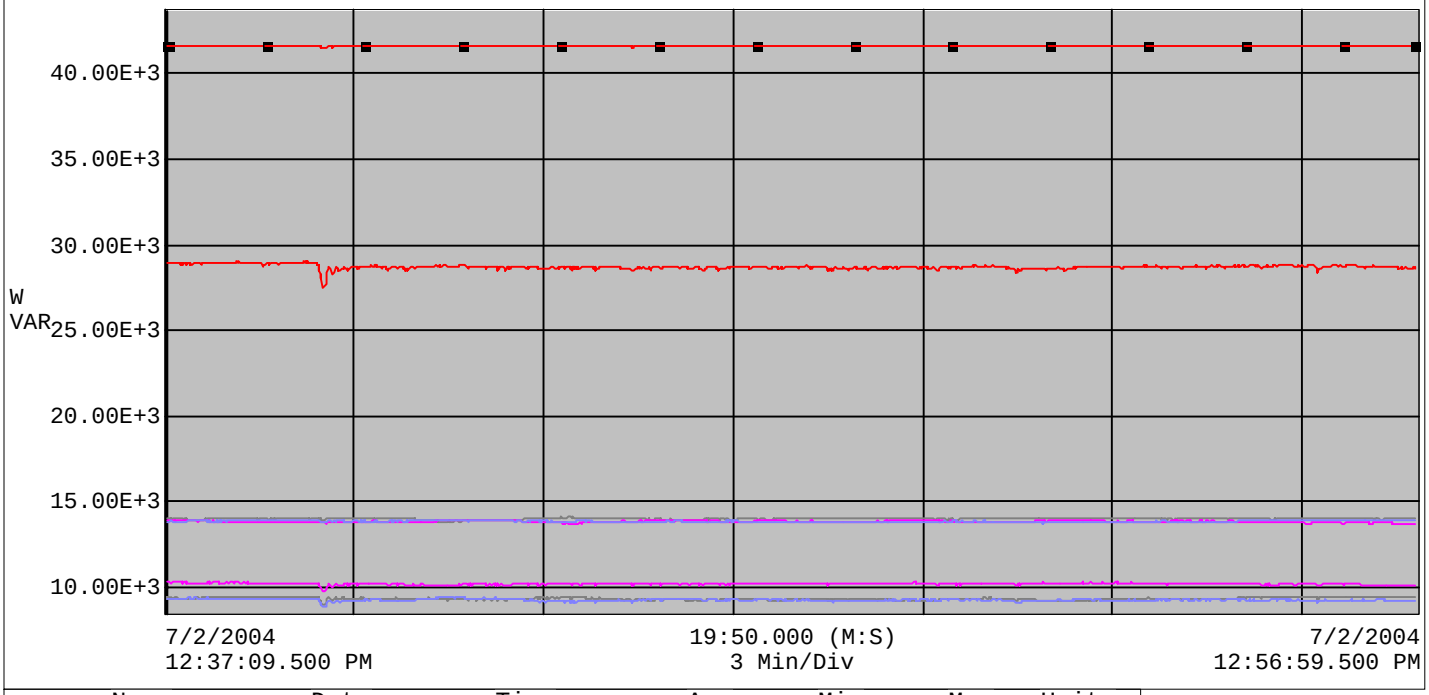
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/2/2004	12:37:09.500 PM	0.299	0.260	0.460	
Vflk Line2	7/2/2004	12:37:09.500 PM	0.291	0.260	0.440	
Vflk Line3	7/2/2004	12:37:09.500 PM	0.311	0.280	0.430	

7/2/2004 - 12:37:09.000 PM
Val
0.280 Vflk Line1
0.280 Vflk Line2
0.330 Vflk Line3

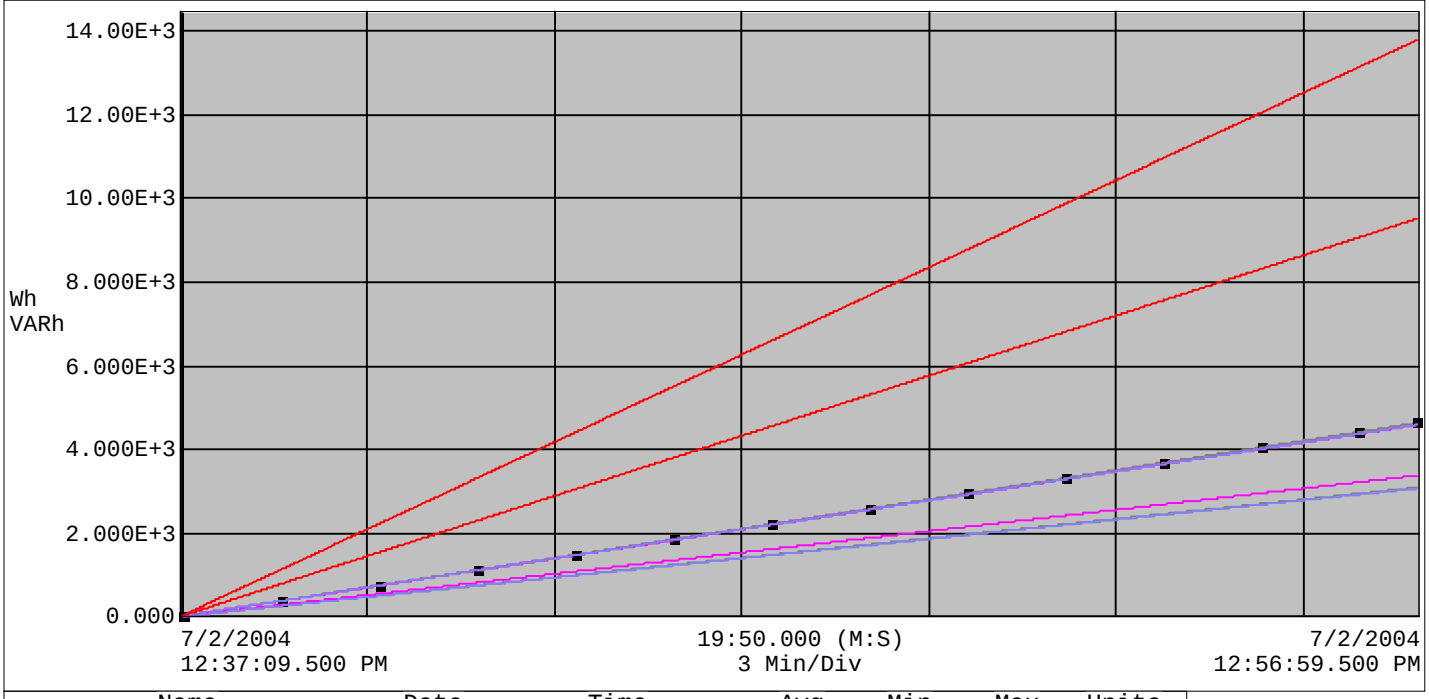
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/2/2004	12:37:09.500 PM	13.95E+3	13.79E+3	14.06E+3	W
W Line2	7/2/2004	12:37:09.500 PM	13.79E+3	13.66E+3	13.91E+3	W
W Line3	7/2/2004	12:37:09.500 PM	13.80E+3	13.70E+3	13.92E+3	W
W Sum of Phases	7/2/2004	12:37:09.500 PM	41.54E+3	41.40E+3	41.59E+3	W
VAR Line1	7/2/2004	12:37:09.500 PM	9.289E+3	8.916E+3	9.442E+3	VAR
VAR Line2	7/2/2004	12:37:09.500 PM	10.15E+3	9.741E+3	10.27E+3	VAR
VAR Line3	7/2/2004	12:37:09.500 PM	9.216E+3	8.819E+3	9.383E+3	VAR
VAR Sum of Phases	7/2/2004	12:37:09.500 PM	28.66E+3	27.48E+3	28.97E+3	VAR

7/2/2004 - 12:37:09.000 PM
Val
13.94E+3 — W Line1
13.82E+3 — W Line2
13.81E+3 — W Line3
41.58E+3 — W Sum of Phases
9.354E+3 — VAR Line1
10.25E+3 — VAR Line2
9.326E+3 — VAR Line3
28.93E+3 — VAR Sum of Phases

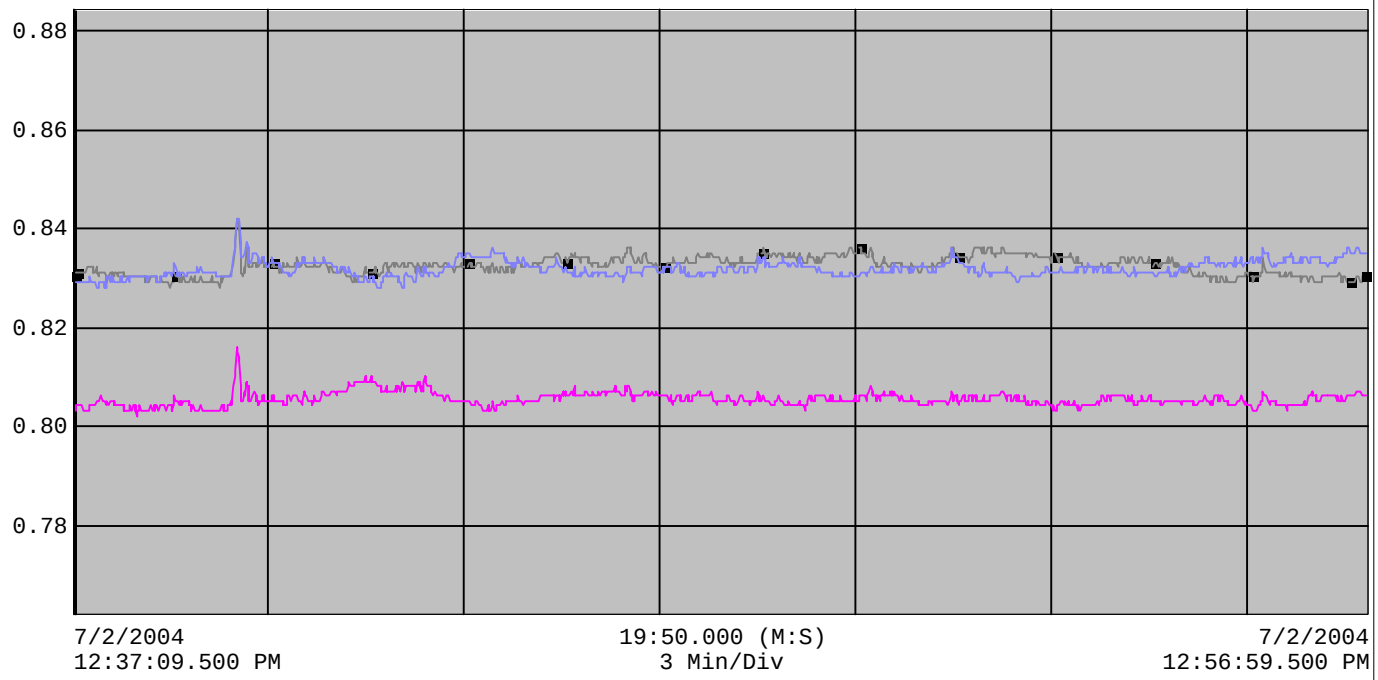
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/2/2004	12:37:09.500 PM	2.308E+3	3.943	4.614E+3	Wh
W-hours Line2	7/2/2004	12:37:09.500 PM	2.284E+3	3.898	4.561E+3	Wh
W-hours Line3	7/2/2004	12:37:09.500 PM	2.286E+3	3.903	4.567E+3	Wh
W-hours Sum of Phases	7/2/2004	12:37:09.500 PM	6.877E+3	11.74	13.74E+3	Wh
VAR-hours Line1	7/2/2004	12:37:09.500 PM	1.538E+3	2.626	3.073E+3	VARh
VAR-hours Line2	7/2/2004	12:37:09.500 PM	1.681E+3	2.870	3.358E+3	VARh
VAR-hours Line3	7/2/2004	12:37:09.500 PM	1.528E+3	2.605	3.049E+3	VARh
VAR-hours Sum of Phases	7/2/2004	12:37:09.500 PM	4.746E+3	8.101	9.480E+3	VARh

7/2/2004 - 12:37:09.000 PM
Val
3.943 — W-hours Line1
3.898 — W-hours Line2
3.903 — W-hours Line3
11.74 — W-hours Sum of Phases
2.626 — VAR-hours Line1
2.870 — VAR-hours Line2
2.605 — VAR-hours Line3
8.101 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/2/2004	12:37:09.500 PM	0.832	0.828	0.842	
PF Line2	7/2/2004	12:37:09.500 PM	0.805	0.802	0.816	
PF Line3	7/2/2004	12:37:09.500 PM	0.832	0.828	0.842	

7/2/2004 - 12:37:09.000 PM
Val
0.830 — PF Line1
0.803 — PF Line2
0.829 — PF Line3

Trend Summary Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A14\070204-A14.dvb

Operator	Test Site
Morikawa & Associates, LLC and Victor Jardel ,	WPS A-14 ,

Comments
Recorded at the motor starter overload relay.

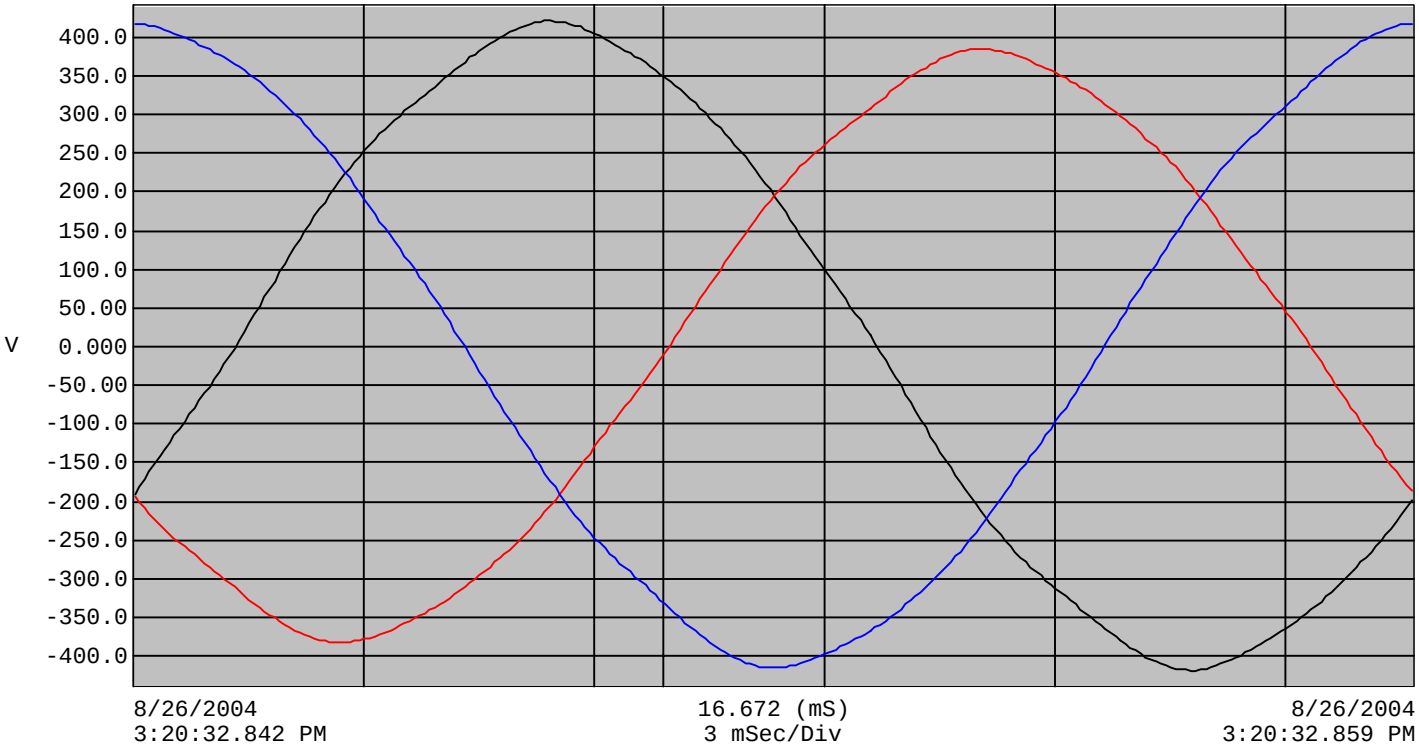
GWA Water Pumping Station Assessment				
Station Name: A-15	**Weight**	**Condition**	**Weighted**	**Notes**
Date:08/26/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.475	
Transformer Pole Condition and Grounding	2.5%	4	0.1	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	4	0.2	
Lightning Arrester Condition	5.0%	0	0	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.8	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	3	0.15	
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0	
Pressure	1.5%	0	0	
Flow	1.5%	0	0	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.6**

Comments:

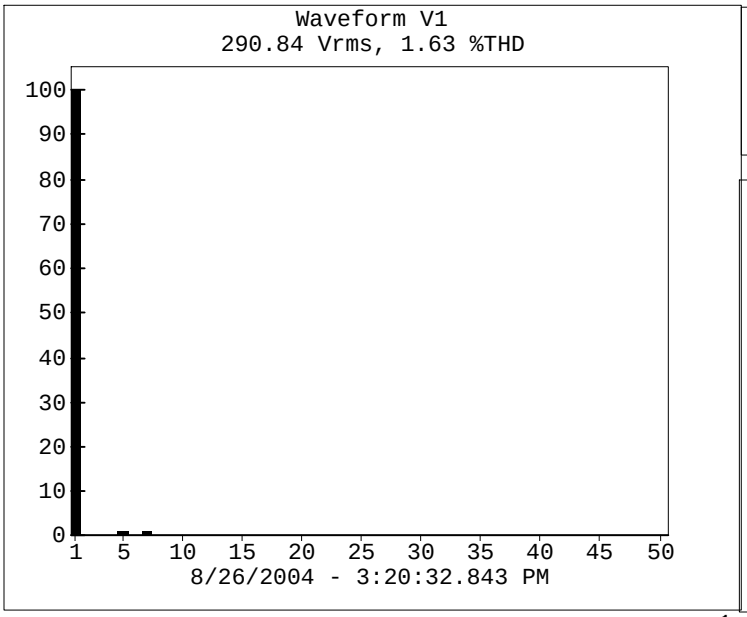
WPS A-15 Pump

Recording Start Date	8/26/2004 - 3:20:32 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/26/2004	3:20:32.842 PM	16.672	290.8	V
Waveform V2	8/26/2004	3:20:32.842 PM	16.672	266.2	V
Waveform V3	8/26/2004	3:20:32.842 PM	16.672	289.3	V



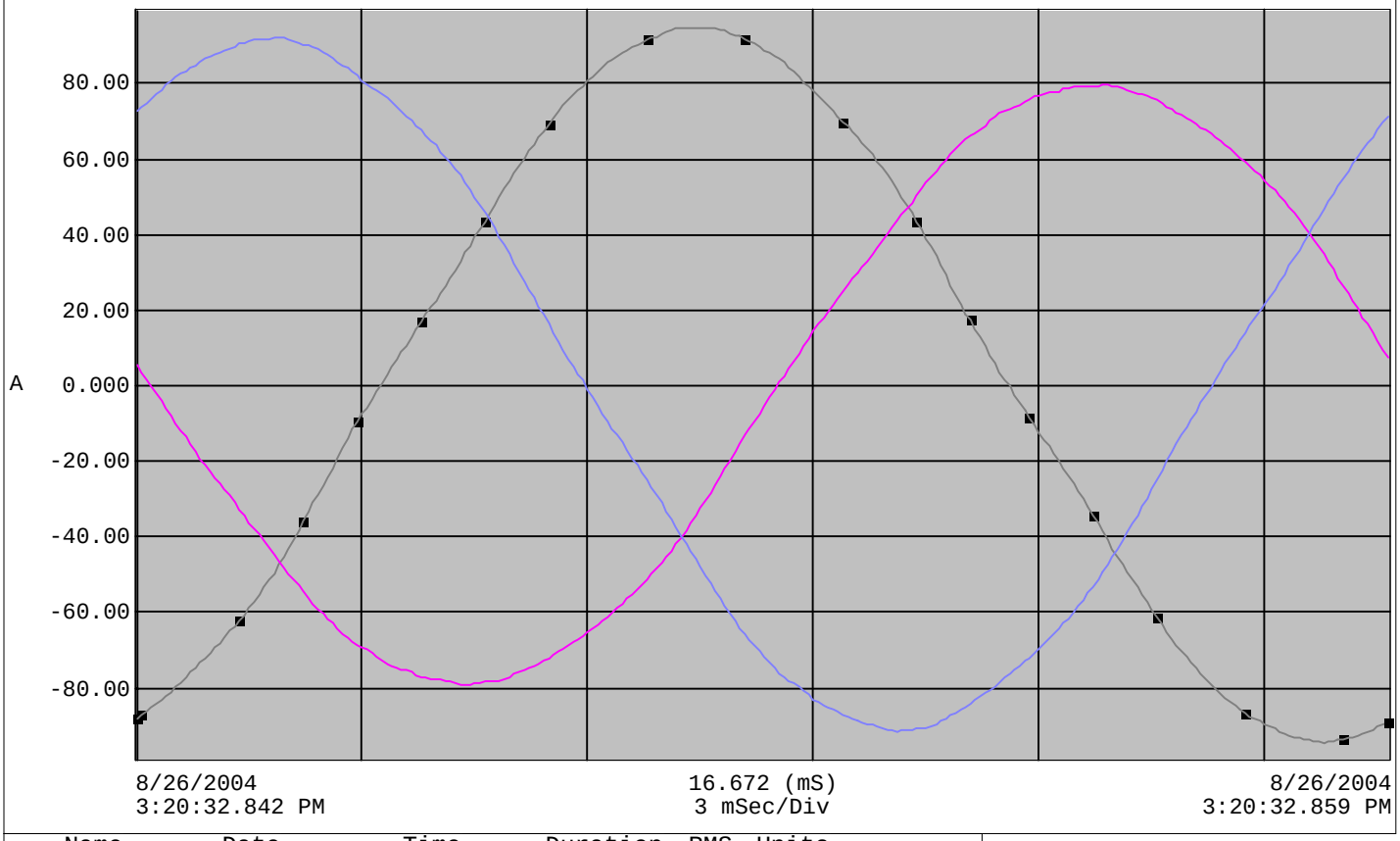
8/26/2004 - 3:20:32.006 PM

Val	
347.1	Waveform V1
-8.500	Waveform V2
-334.2	Waveform V3

Waveform V1

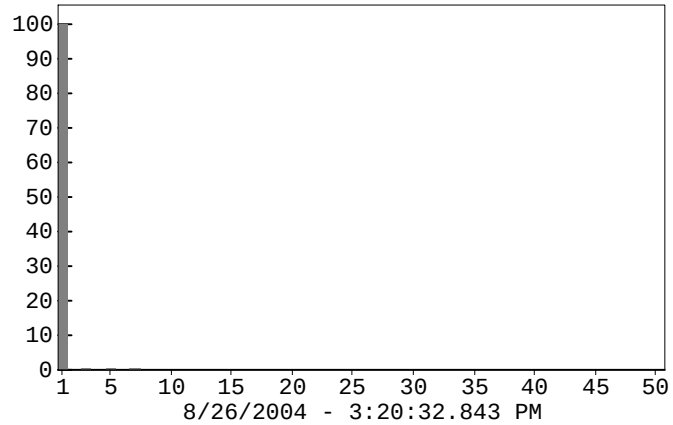
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/26/2004	3:20:32.842 PM	16.672	66.32	A
Waveform I2	8/26/2004	3:20:32.842 PM	16.672	56.48	A
Waveform I3	8/26/2004	3:20:32.842 PM	16.672	64.51	A

Waveform I1
66.32 Arms, 1.77 %THD



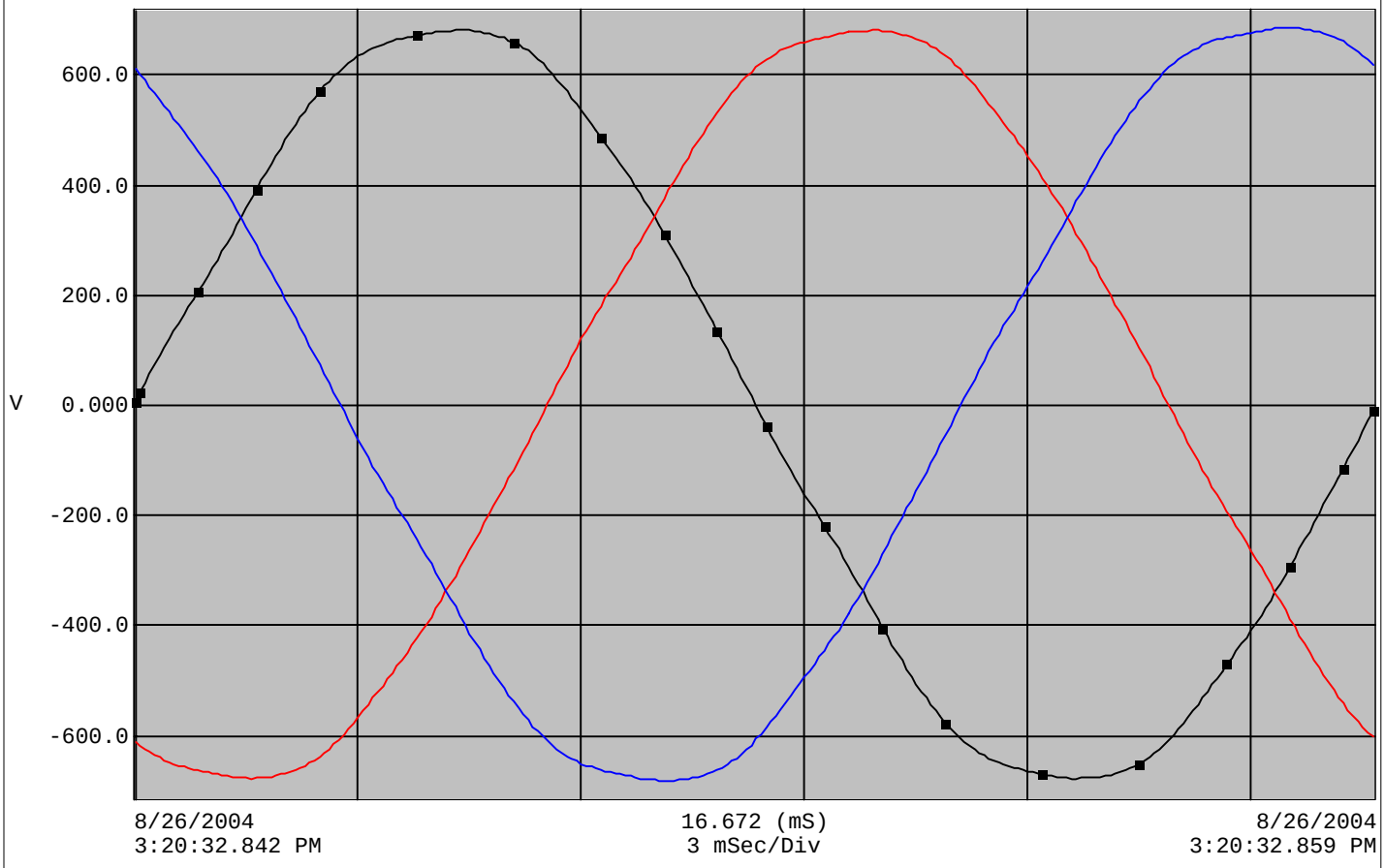
8/26/2004 - 3:20:32.000 PM

Val	
-88.50	Waveform I1
5.200	Waveform I2
72.60	Waveform I3

Waveform I1

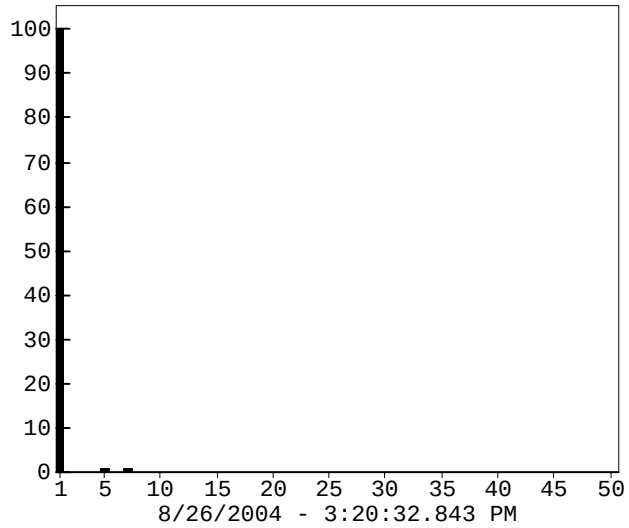
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.1
H03	1.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/26/2004	3:20:32.842 PM	16.672	487.6	V
Waveform U2	8/26/2004	3:20:32.842 PM	16.672	487.2	V
Waveform U3	8/26/2004	3:20:32.842 PM	16.672	490.4	V

Waveform U1
487.58 Vrms, 1.63 %THD



8/26/2004 - 3:20:32.000 PM

	Val	
—	3.600	Waveform U1
—	-612.2	Waveform U2
—	608.6	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/26/2004
Start Time: 3:20:32 PM
Duration: 0:0.000 (M:S)
W: 41.33E+3 W
VAR: 32.99E+3 W
VA: 52.98E+3 W
Power Factor: 2.349
Displacement Power Factor: 2.349
TAN: 2.386
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A15\082604-A15-Photo.dvb

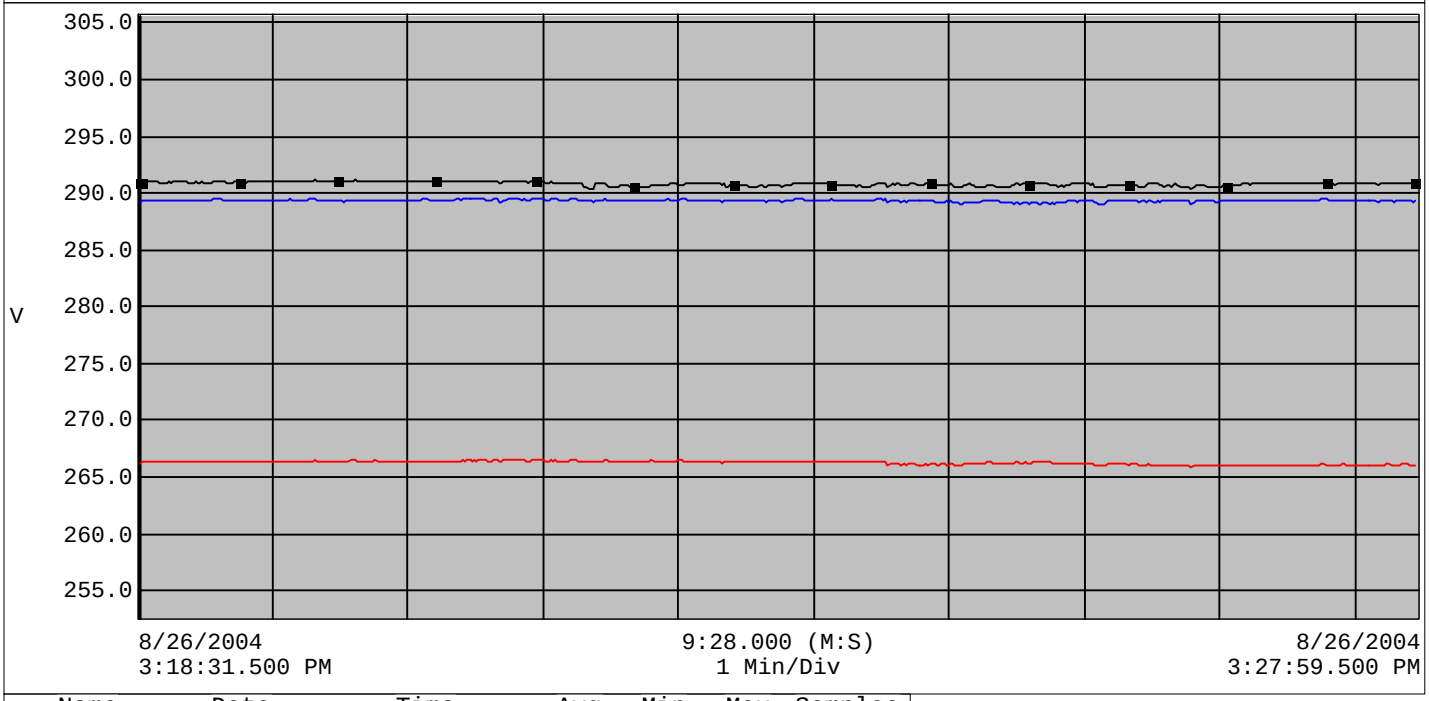
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS A-15 Photo ,

Comments
Recorded at motor starter overload relay.

WPS A-15 Pump

Recording Start Date	8/26/2004 - 3:18:31 PM
Recording Duration	9:28 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

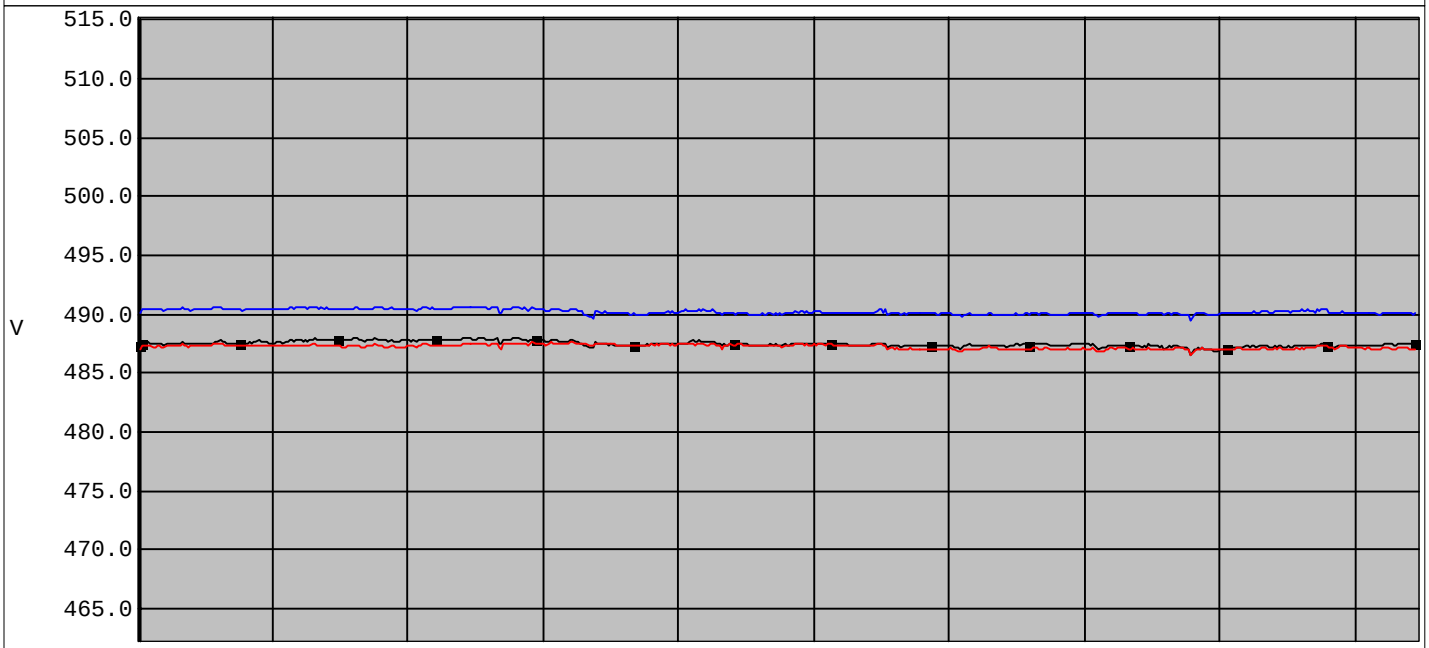
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/26/2004	3:18:31.500 PM	290.7	290.2	291.1	569
Vrms Line2	8/26/2004	3:18:31.500 PM	266.2	265.7	266.4	569
Vrms Line3	8/26/2004	3:18:31.500 PM	289.2	288.9	289.5	569

8/26/2004 - 3:18:31.000 PM
Val
290.7 — Vrms Line1
266.1 — Vrms Line2
289.1 — Vrms Line3

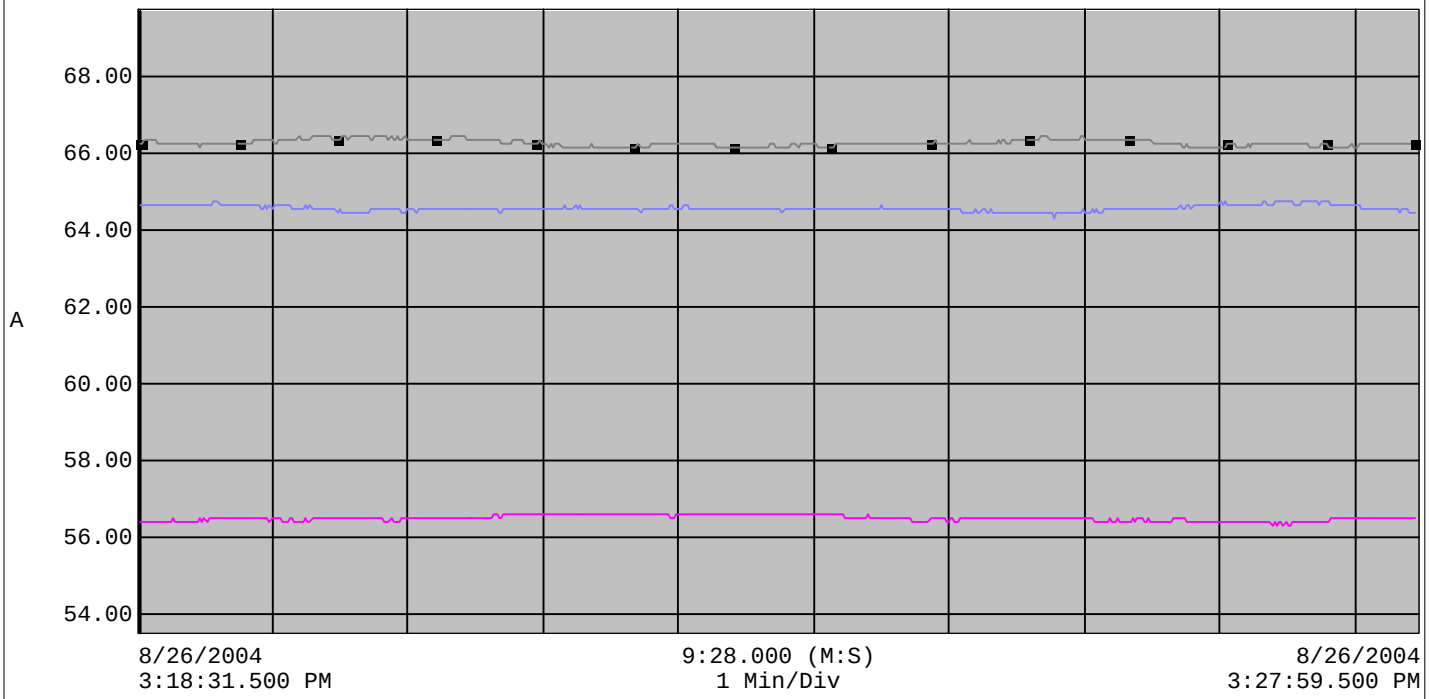
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/26/2004	3:18:31.500 PM	487.4	486.5	487.9	V
Urms Line2	8/26/2004	3:18:31.500 PM	487.2	486.5	487.6	V
Urms Line3	8/26/2004	3:18:31.500 PM	490.2	489.4	490.6	V

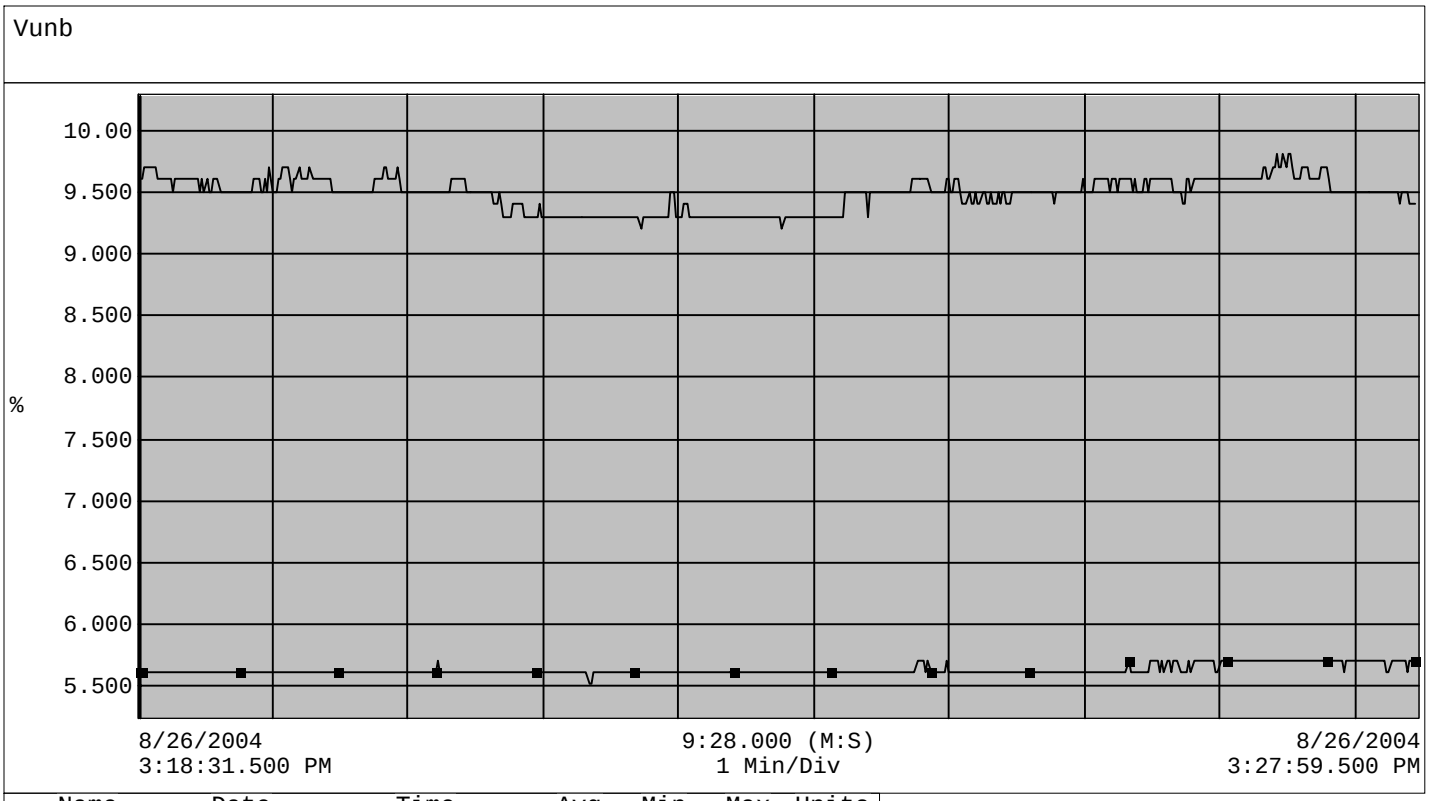
8/26/2004 - 3:18:31.000 PM
Val
487.2 Urms Line1
487.0 Urms Line2
490.1 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/26/2004	3:18:31.500 PM	66.22	66.10	66.40	A
Arms Line2	8/26/2004	3:18:31.500 PM	56.50	56.30	56.60	A
Arms Line3	8/26/2004	3:18:31.500 PM	64.52	64.30	64.70	A

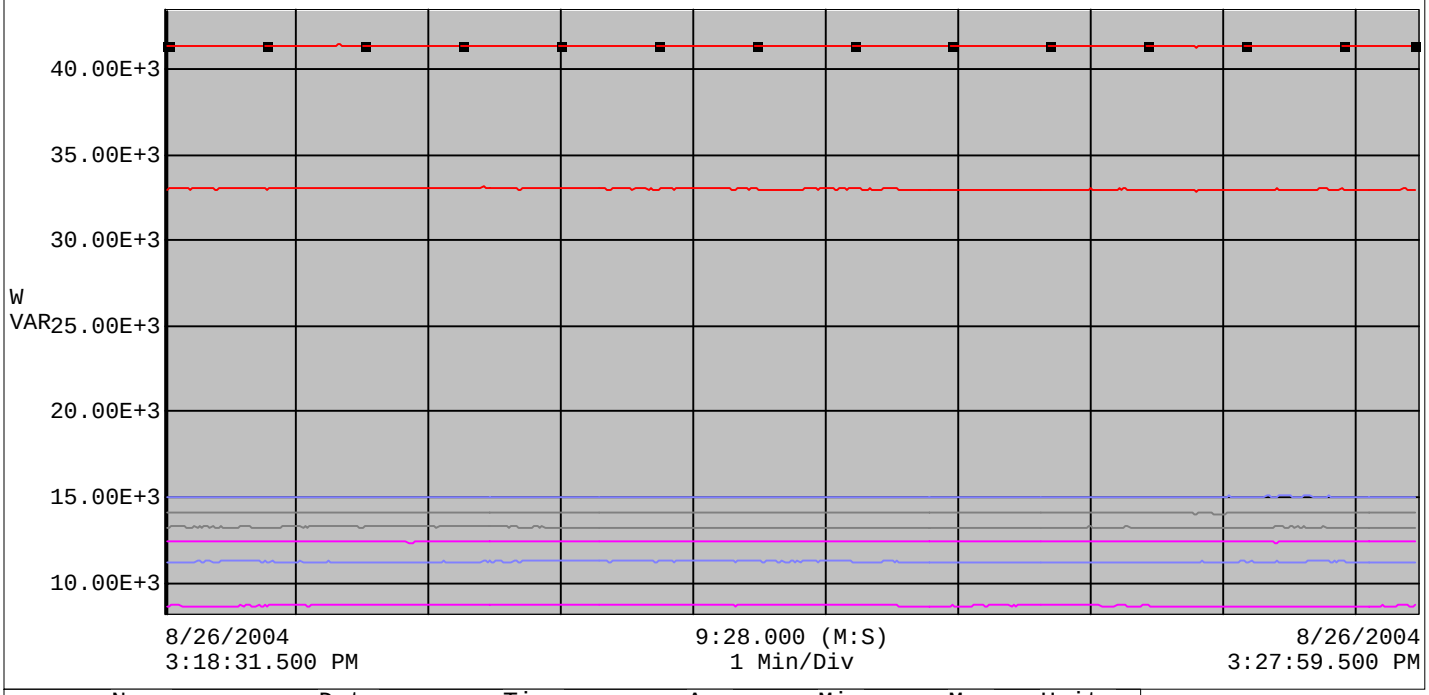
8/26/2004 - 3:18:31.000 PM
Val
66.20 — Arms Line1
56.40 — Arms Line2
64.60 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/26/2004	3:18:31.500 PM	5.620	5.500	5.700	%
Aunb(IEEE)	8/26/2004	3:18:31.500 PM	9.483	9.200	9.800	%

8/26/2004 - 3:18:31.000 PM
Val
5.600 —— Vunb(IEEE)
9.600 —— Aunb(IEEE)

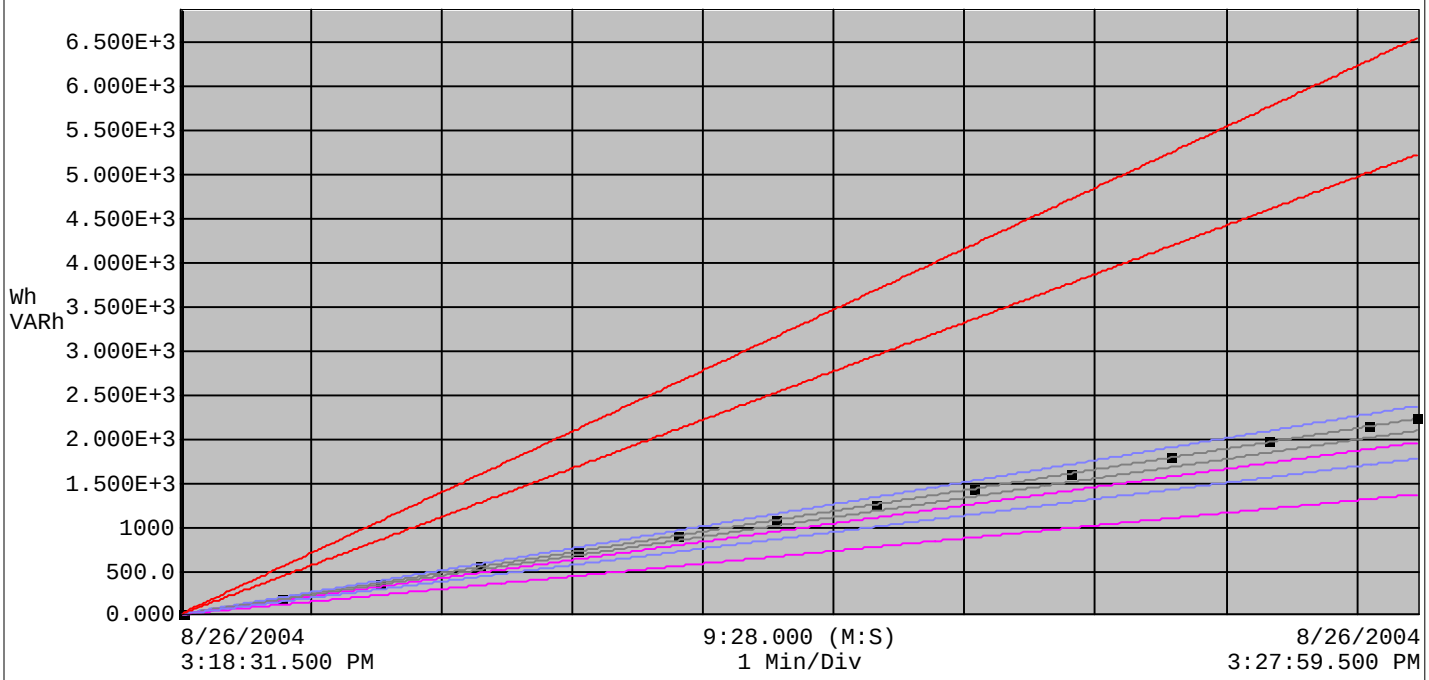
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/26/2004	3:18:31.500 PM	14.03E+3	13.98E+3	14.10E+3	W
W Line2	8/26/2004	3:18:31.500 PM	12.33E+3	12.30E+3	12.38E+3	W
W Line3	8/26/2004	3:18:31.500 PM	14.95E+3	14.91E+3	15.01E+3	W
W Sum of Phases	8/26/2004	3:18:31.500 PM	41.32E+3	41.25E+3	41.37E+3	W
VAR Line1	8/26/2004	3:18:31.500 PM	13.18E+3	13.10E+3	13.24E+3	VAR
VAR Line2	8/26/2004	3:18:31.500 PM	8.605E+3	8.522E+3	8.661E+3	VAR
VAR Line3	8/26/2004	3:18:31.500 PM	11.17E+3	11.10E+3	11.23E+3	VAR
VAR Sum of Phases	8/26/2004	3:18:31.500 PM	32.95E+3	32.77E+3	33.07E+3	VAR

8/26/2004 - 3:18:31.000 PM
Val
14.02E+3 — W Line1
12.33E+3 — W Line2
14.97E+3 — W Line3
41.33E+3 — W Sum of Phases
13.17E+3 — VAR Line1
8.576E+3 — VAR Line2
11.17E+3 — VAR Line3
32.91E+3 — VAR Sum of Phases

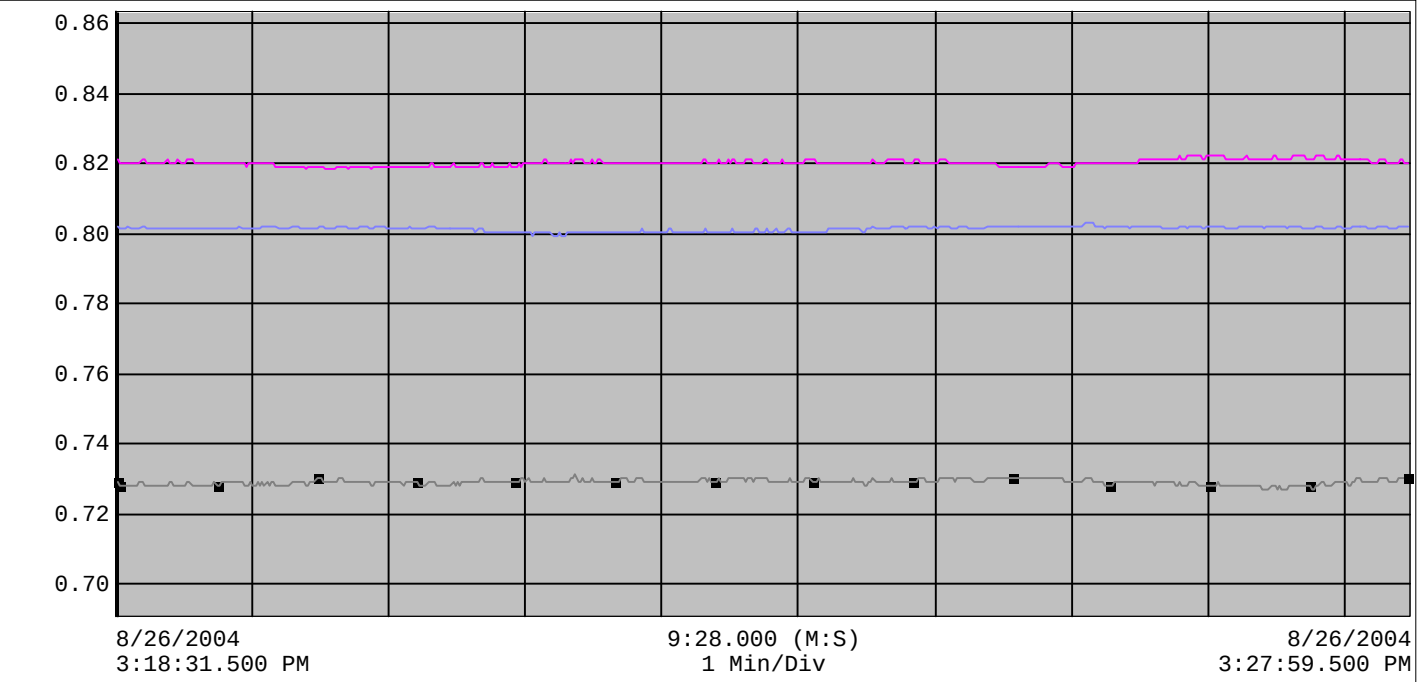
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/26/2004	3:18:31.500 PM	1.111E+3	3.927	2.218E+3	Wh
W-hours Line2	8/26/2004	3:18:31.500 PM	976.5	3.451	1.949E+3	Wh
W-hours Line3	8/26/2004	3:18:31.500 PM	1.183E+3	4.183	2.363E+3	Wh
W-hours Sum of Phases	8/26/2004	3:18:31.500 PM	3.271E+3	11.56	6.530E+3	Wh
VAR-hours Line1	8/26/2004	3:18:31.500 PM	1.044E+3	3.688	2.083E+3	VARh
VAR-hours Line2	8/26/2004	3:18:31.500 PM	682.0	2.366	1.360E+3	VARh
VAR-hours Line3	8/26/2004	3:18:31.500 PM	884.6	3.125	1.765E+3	VARh
VAR-hours Sum of Phases	8/26/2004	3:18:31.500 PM	2.610E+3	9.220	5.209E+3	VARh

8/26/2004 - 3:18:31.000 PM
Val
3.927 — W-hours Line1
3.451 — W-hours Line2
4.183 — W-hours Line3
11.56 — W-hours Sum of Phases
3.688 — VAR-hours Line1
2.366 — VAR-hours Line2
3.125 — VAR-hours Line3
9.220 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/26/2004	3:18:31.500 PM	0.729	0.727	0.731	
PF Line2	8/26/2004	3:18:31.500 PM	0.820	0.818	0.822	
PF Line3	8/26/2004	3:18:31.500 PM	0.801	0.799	0.803	

8/26/2004 - 3:18:31.000 PM
Val
0.729 — PF Line1
0.821 — PF Line2
0.802 — PF Line3

Trend Summary Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A15\082604-A15.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS A-15 ,

Comments
Recorded at the motor starter overload relay.

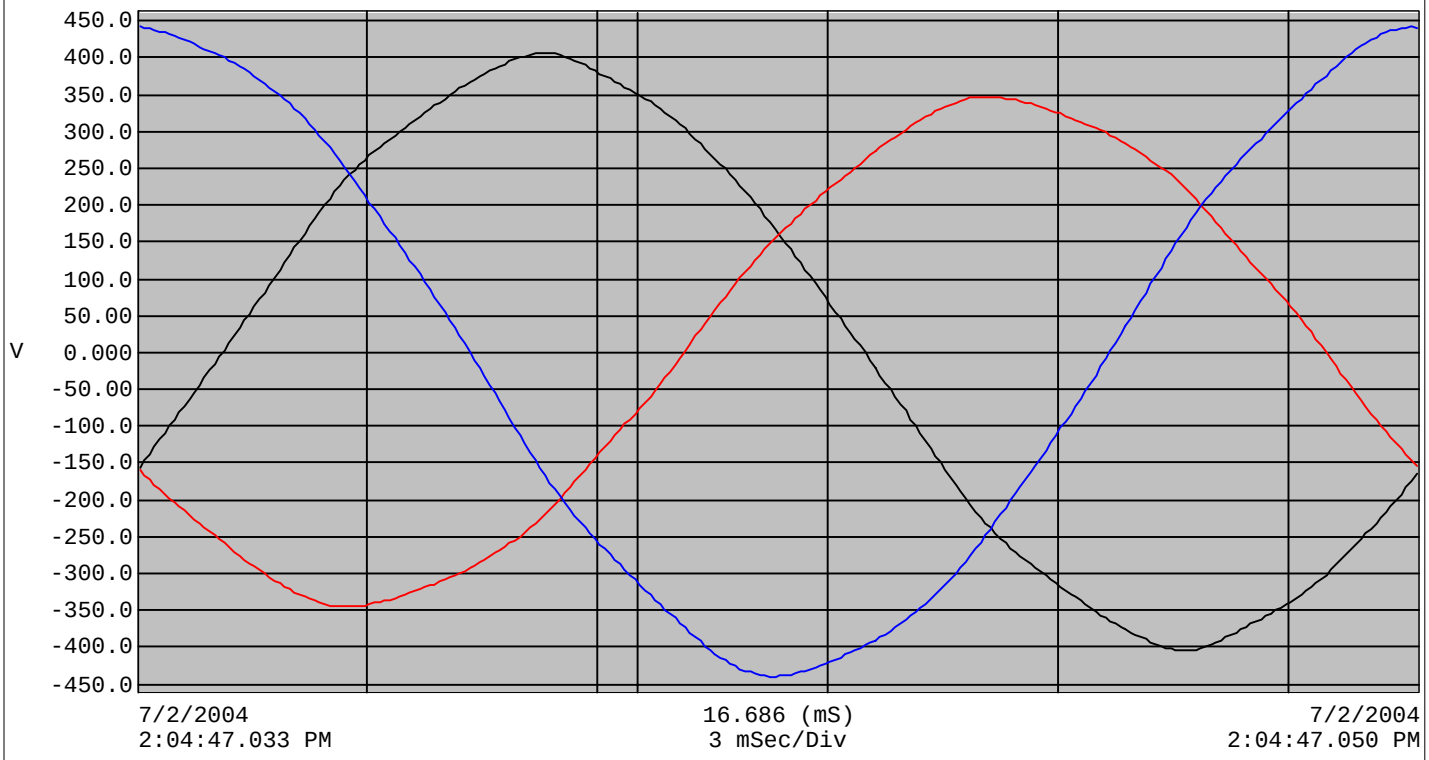
GWA Water Pumping Station Assessment				
Station Name: A-18	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/26/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.55	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0	
Pressure	1.5%	0	0	
Flow	1.5%	0	0	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.6**

Comments:

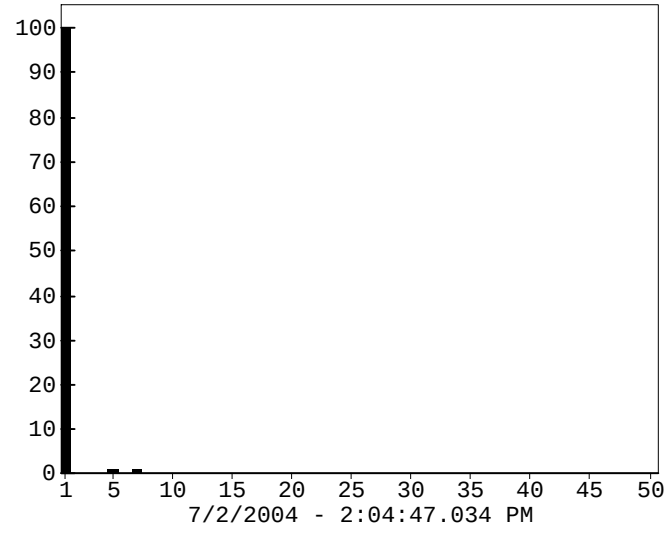
WPS A-18 Pump

Recording Start Date	7/2/2004 - 2:04:47 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/2/2004	2:04:47.033 PM	16.686	280.1	V
Waveform V2	7/2/2004	2:04:47.033 PM	16.686	242.2	V
Waveform V3	7/2/2004	2:04:47.033 PM	16.686	307.6	V



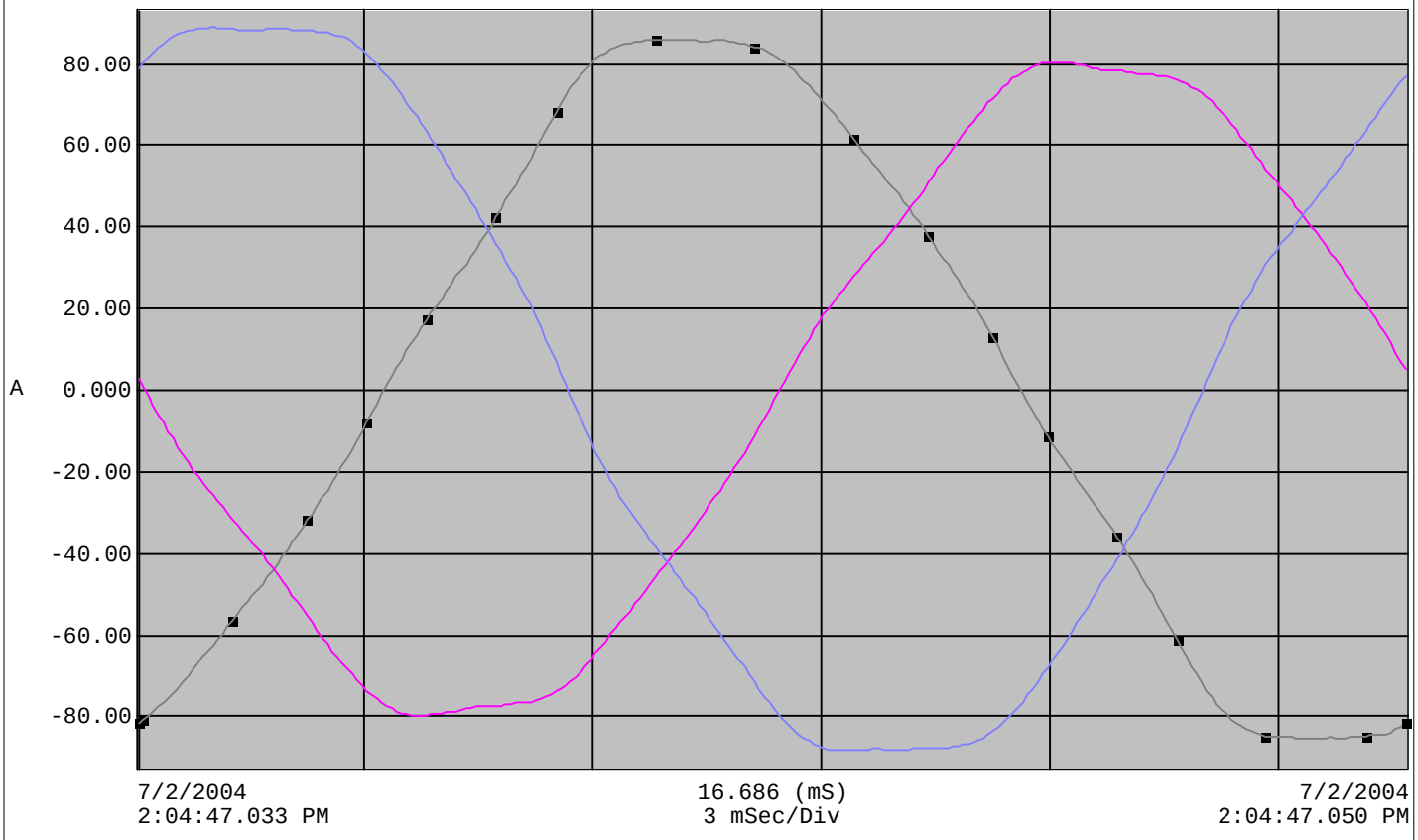
7/2/2004 - 2:04:47.006 PM

Val	
347.1	Waveform V1
-77.60	Waveform V2
-316.4	Waveform V3

Waveform V1

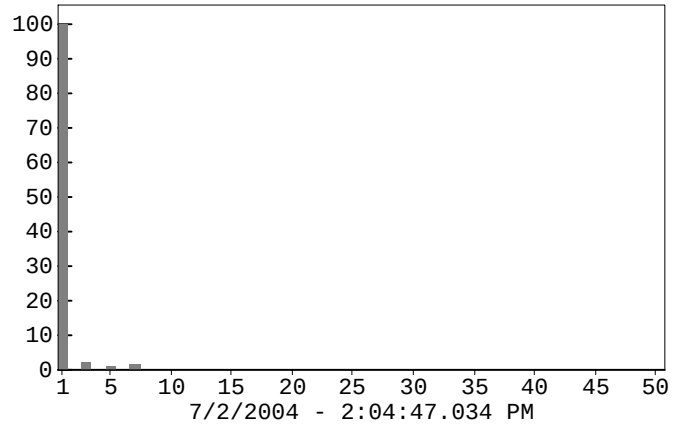
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/2/2004	2:04:47.033 PM	16.686	61.60	A
Waveform I2	7/2/2004	2:04:47.033 PM	16.686	56.92	A
Waveform I3	7/2/2004	2:04:47.033 PM	16.686	65.48	A

Waveform I1
61.60 Arms, 3.73 %THD



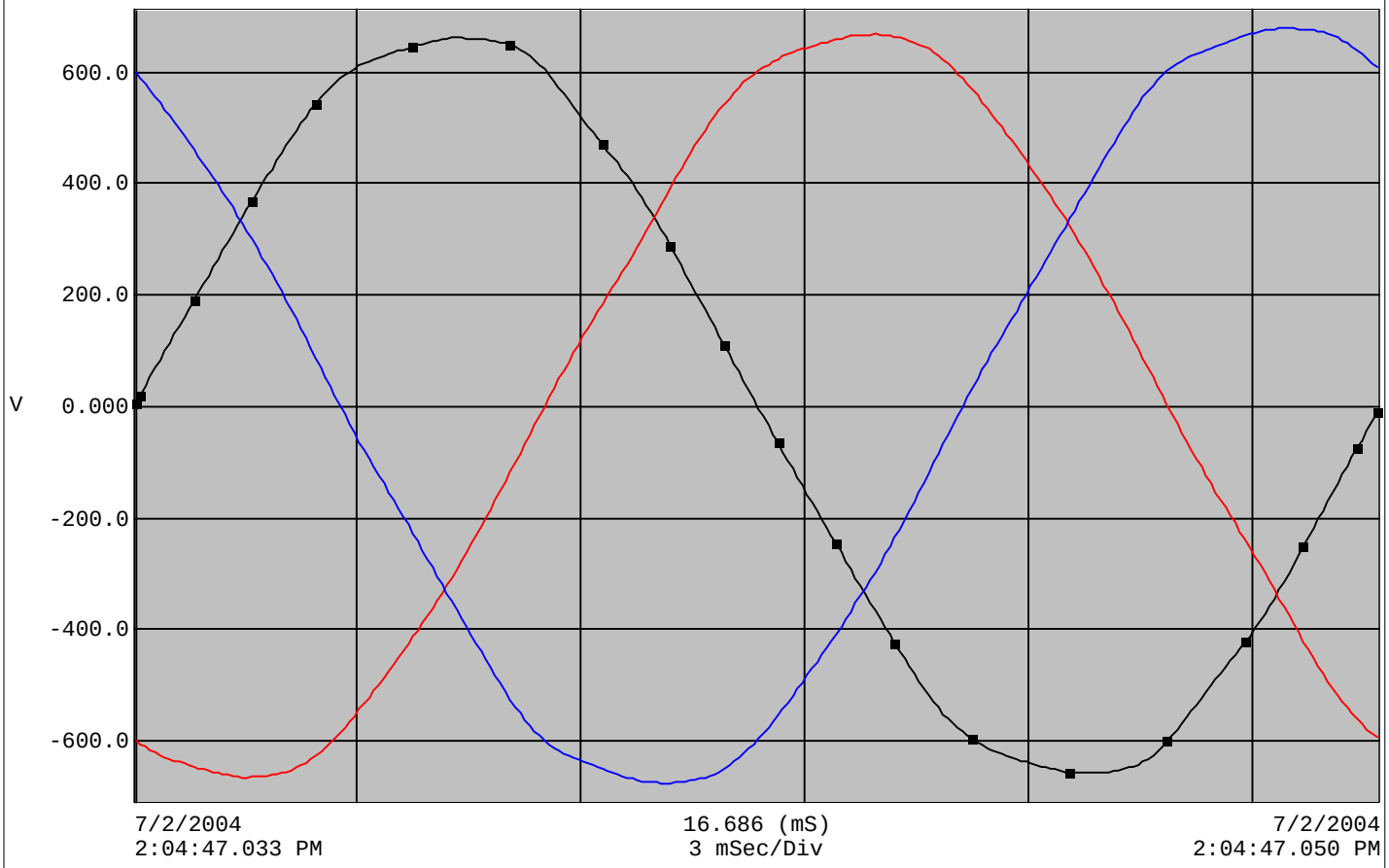
7/2/2004 - 2:04:47.000 PM

Val	
-81.80	Waveform I1
2.800	Waveform I2
78.50	Waveform I3

Waveform I1

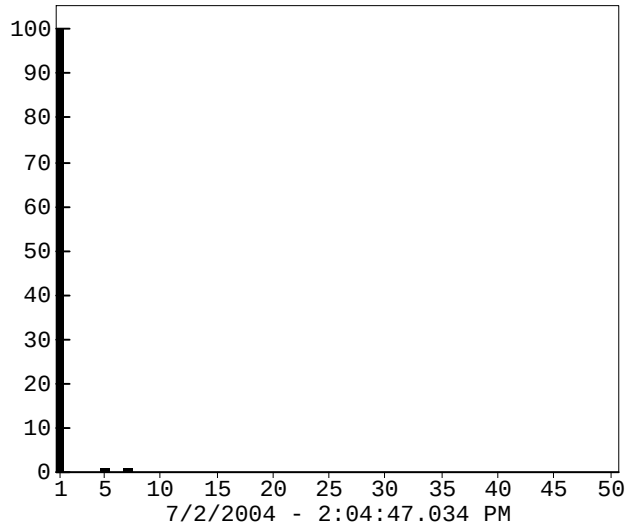
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	2.6	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.6	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	2.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/2/2004	2:04:47.033 PM	16.686	473.1	V
Waveform U2	7/2/2004	2:04:47.033 PM	16.686	476.2	V
Waveform U3	7/2/2004	2:04:47.033 PM	16.686	484.0	V

Waveform U1
473.14 Vrms, 1.68 %THD



7/2/2004 - 2:04:47.000 PM

	Val	
—	3.800	Waveform U1
—	-601.3	Waveform U2
—	597.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/2/2004
Start Time: 2:04:47 PM
Duration: 0:0.000 (M:S)
W: 41.26E+3 W
VAR: 29.46E+3 W
VA: 51.16E+3 W
Power Factor: 2.423
Displacement Power Factor: 2.425
TAN: 2.195
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

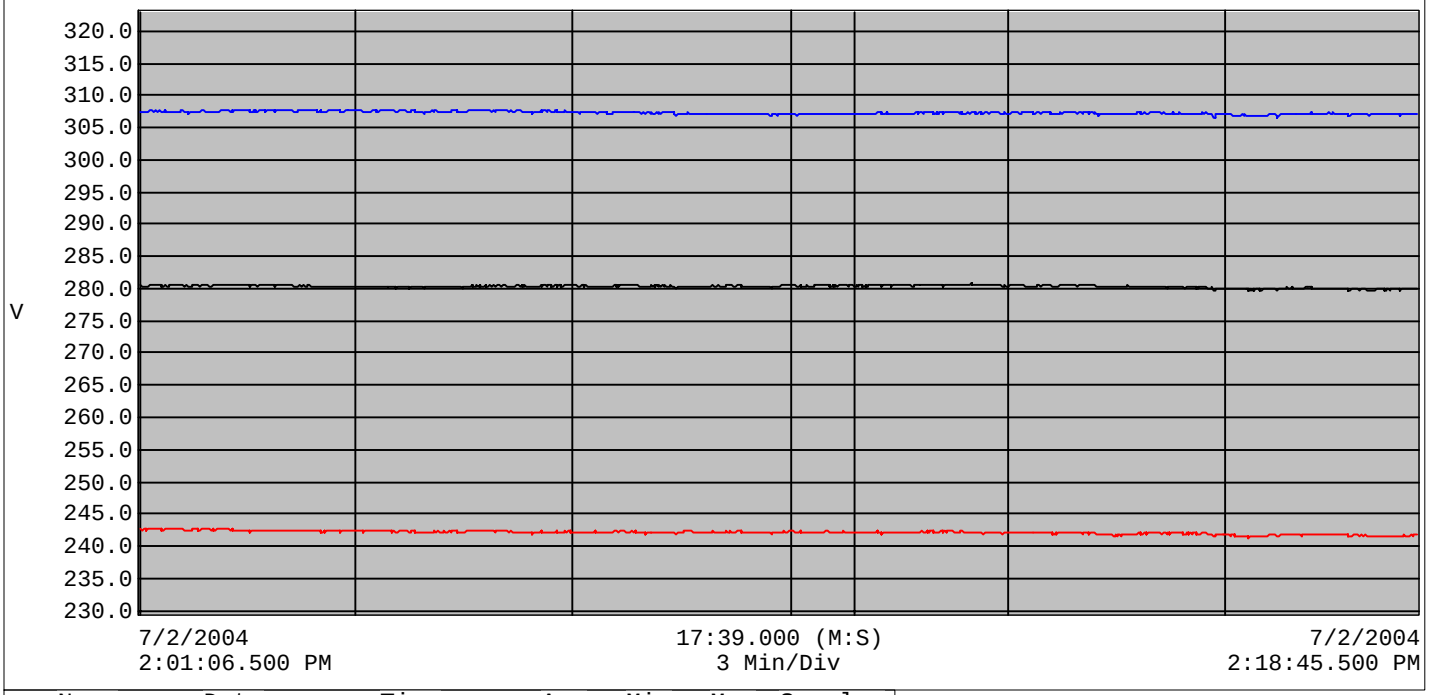
Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A18\070204-A18-Photo1.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE ,	Test Site GWA WPS A-18 ,

Comments
Recorded at motor starter overload relay.

WPS A-18 Pump

Recording Start Date	7/2/2004 - 2:01:06 PM
Recording Duration	17:39 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

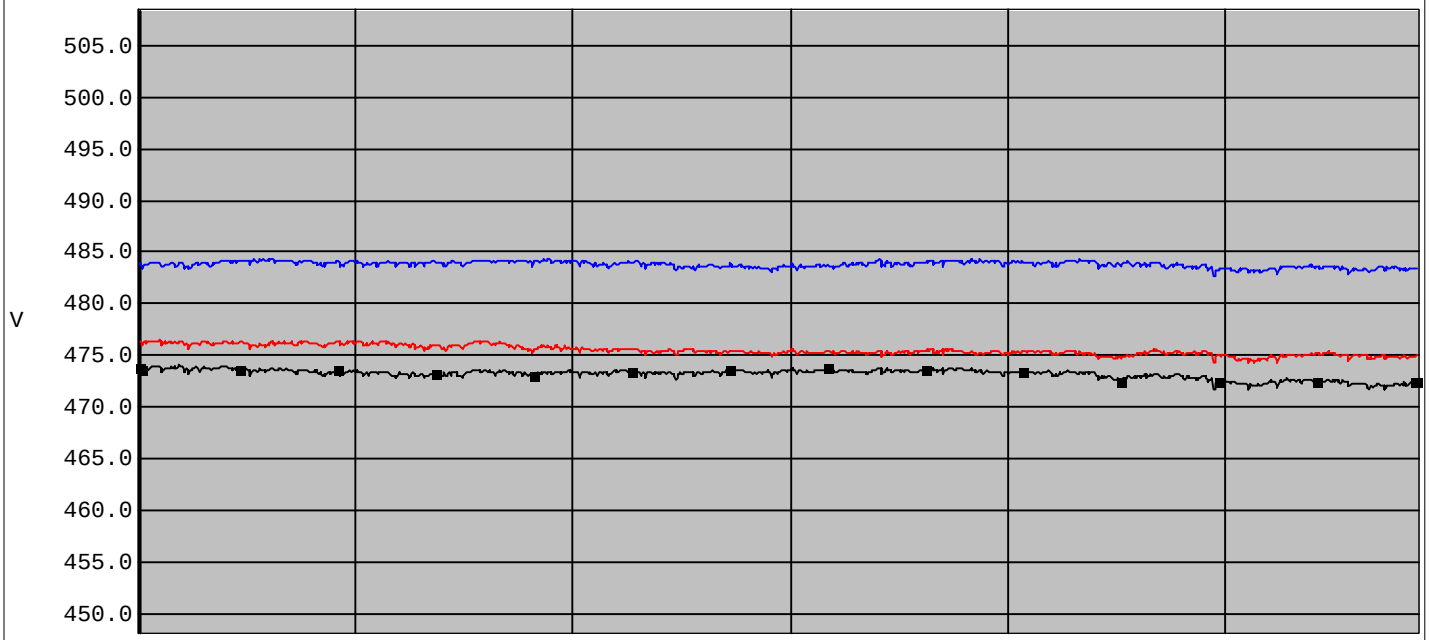
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/2/2004	2:01:06.500 PM	280.2	279.4	280.6	1060
Vrms Line2	7/2/2004	2:01:06.500 PM	242.0	241.2	242.6	1060
Vrms Line3	7/2/2004	2:01:06.500 PM	307.2	306.5	307.7	1060

7/2/2004 - 2:11:00.000 PM
Val
280.2 — Vrms Line1
242.0 — Vrms Line2
307.0 — Vrms Line3

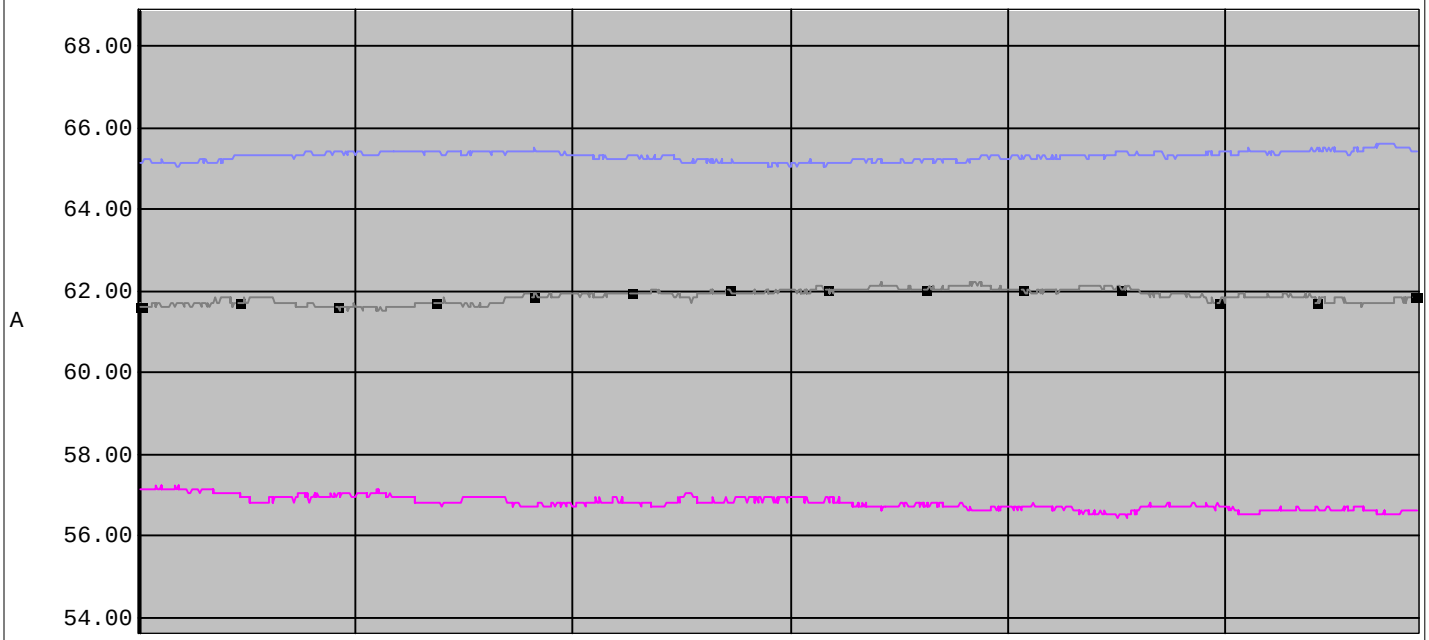
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/2/2004	2:01:06.500 PM	473.1	471.6	474.0	V
Urms Line2	7/2/2004	2:01:06.500 PM	475.4	474.2	476.4	V
Urms Line3	7/2/2004	2:01:06.500 PM	483.7	482.6	484.2	V

7/2/2004 - 2:01:06.000 PM
Val
473.7 — Urms Line1
476.2 — Urms Line2
483.8 — Urms Line3

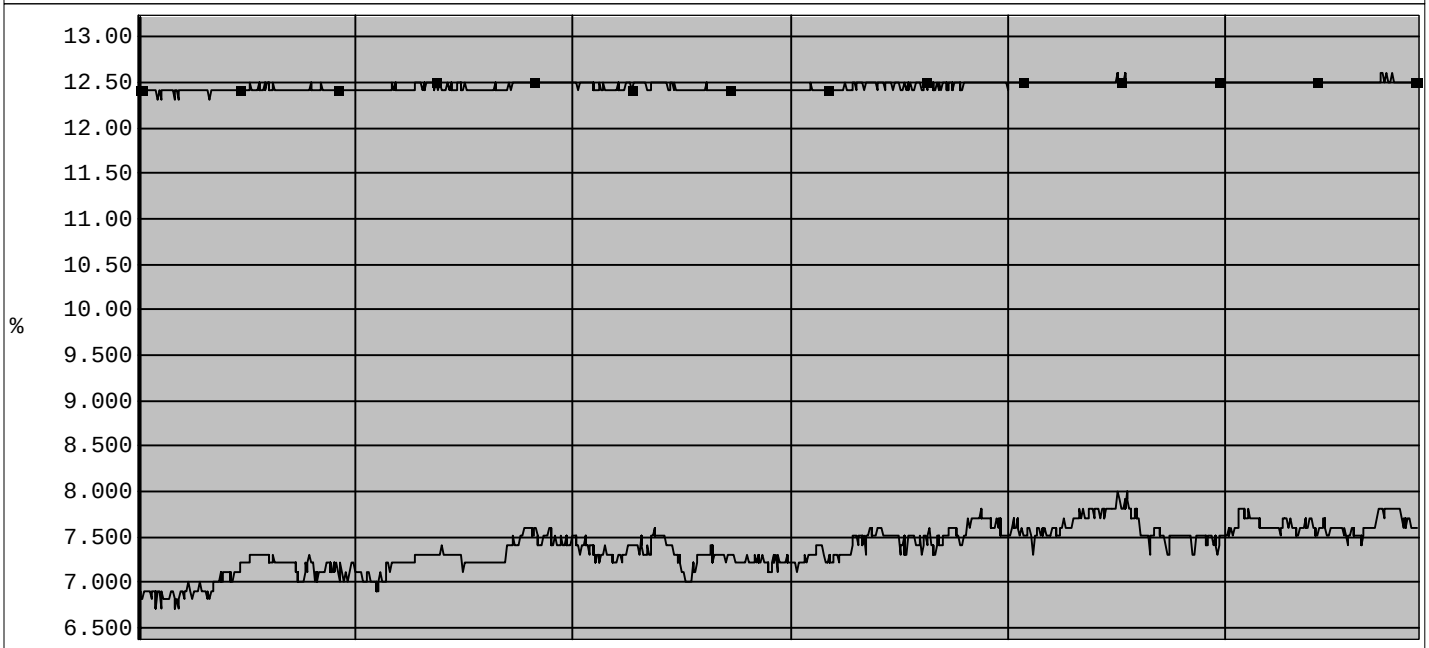
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/2/2004	2:01:06.500 PM	61.84	61.50	62.20	A
Arms Line2	7/2/2004	2:01:06.500 PM	56.78	56.40	57.20	A
Arms Line3	7/2/2004	2:01:06.500 PM	65.28	65.00	65.60	A

7/2/2004 - 2:01:06.000 PM
Val
61.70 — Arms Line1
57.10 — Arms Line2
65.10 — Arms Line3

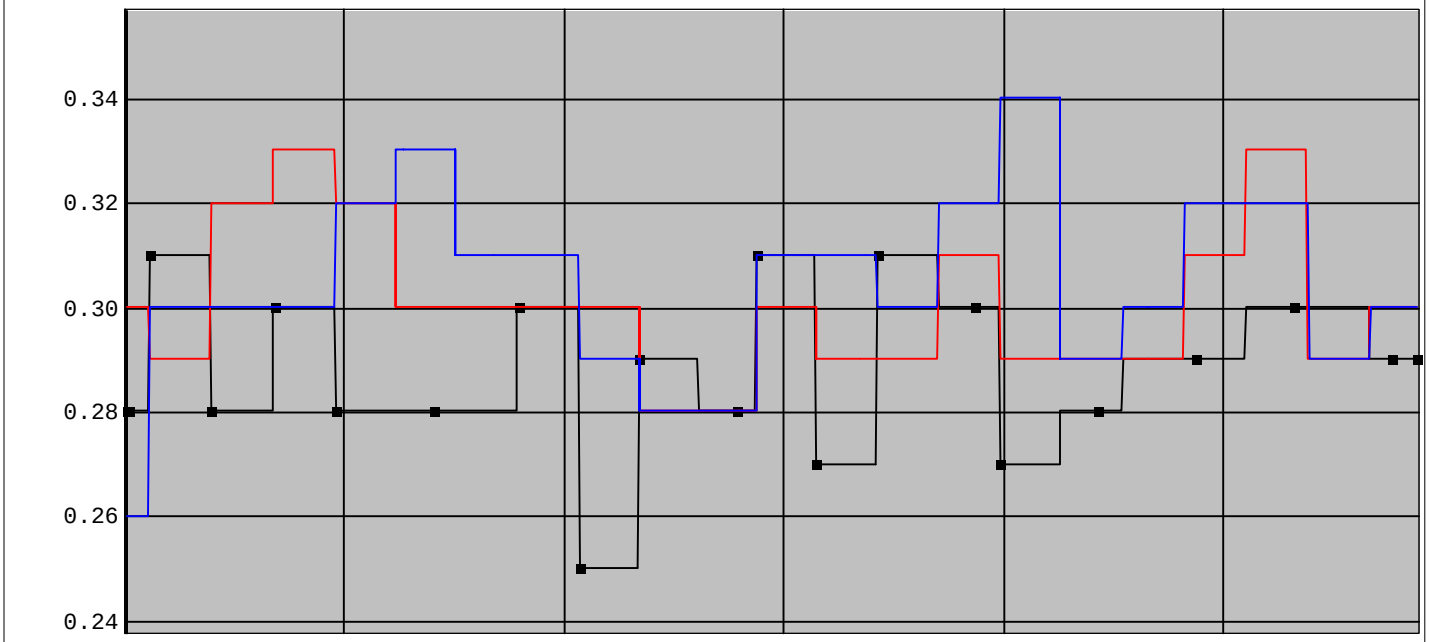
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/2/2004	2:01:06.500 PM	12.46	12.30	12.60	%
Aunb(IEEE)	7/2/2004	2:01:06.500 PM	7.378	6.700	8.000	%

7/2/2004 - 2:01:06.000 PM
Val
12.40 —— Vunb(IEEE)
6.900 —— Aunb(IEEE)

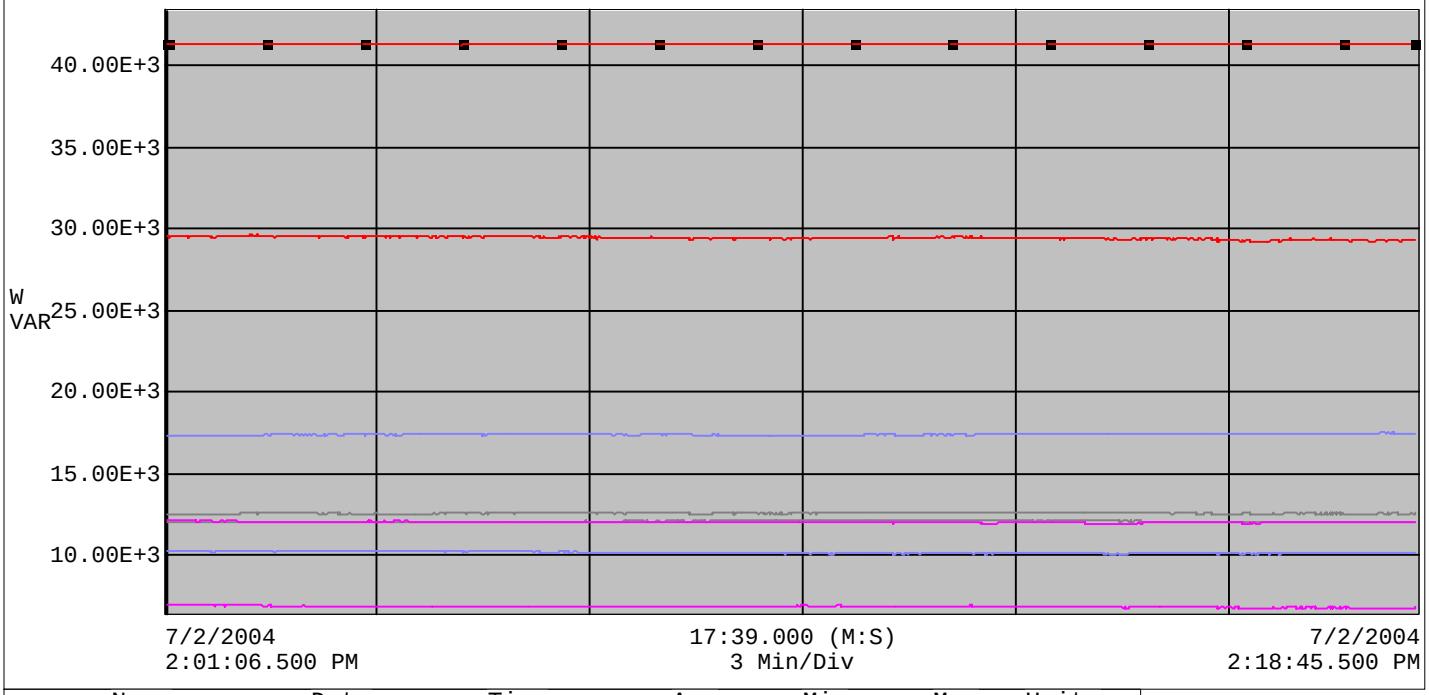
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/2/2004	2:01:06.500 PM	0.289	0.250	0.310	
Vflk Line2	7/2/2004	2:01:06.500 PM	0.301	0.280	0.330	
Vflk Line3	7/2/2004	2:01:06.500 PM	0.305	0.260	0.340	

7/2/2004 - 2:01:06.000 PM
Val
0.280 Vflk Line1
0.300 Vflk Line2
0.260 Vflk Line3

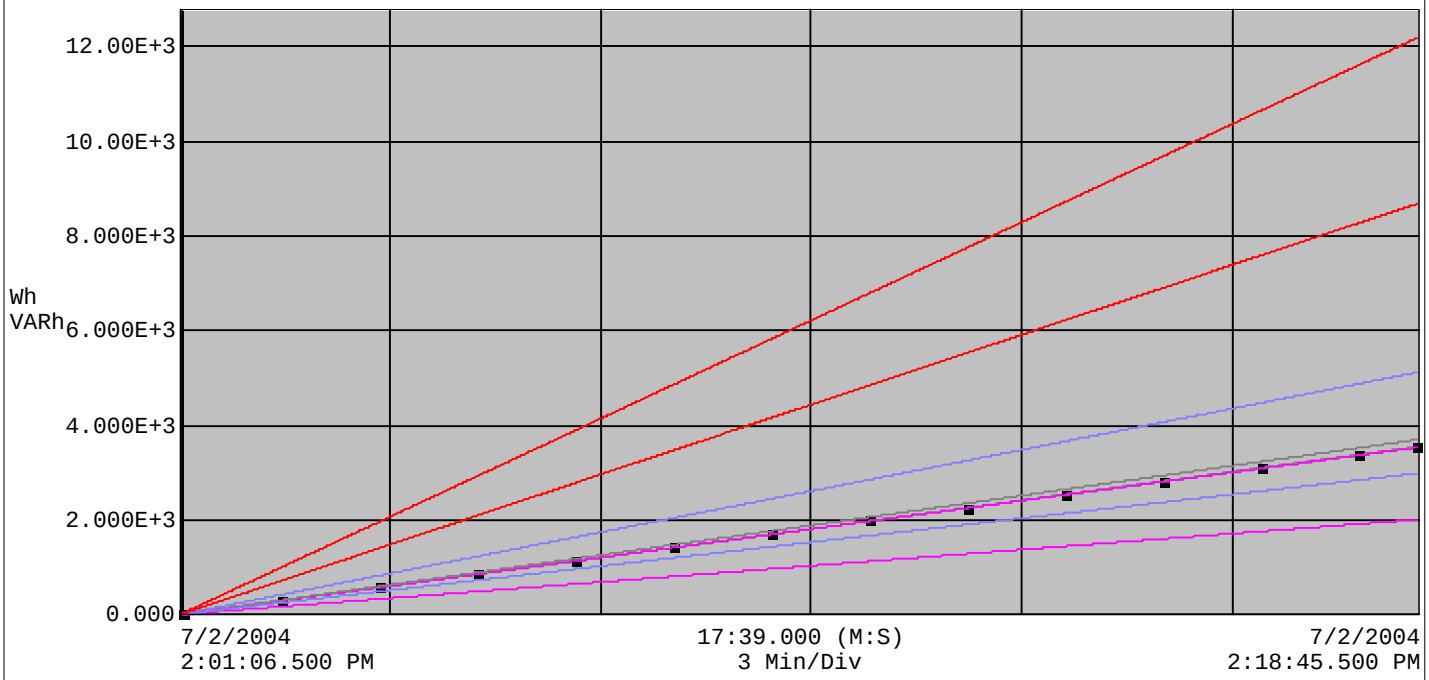
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/2/2004	2:01:06.500 PM	11.99E+3	11.90E+3	12.08E+3	W
W Line2	7/2/2004	2:01:06.500 PM	11.95E+3	11.86E+3	12.04E+3	W
W Line3	7/2/2004	2:01:06.500 PM	17.33E+3	17.21E+3	17.45E+3	W
W Sum of Phases	7/2/2004	2:01:06.500 PM	41.27E+3	41.19E+3	41.31E+3	W
VAR Line1	7/2/2004	2:01:06.500 PM	12.50E+3	12.40E+3	12.60E+3	VAR
VAR Line2	7/2/2004	2:01:06.500 PM	6.787E+3	6.638E+3	6.901E+3	VAR
VAR Line3	7/2/2004	2:01:06.500 PM	10.09E+3	9.975E+3	10.23E+3	VAR
VAR Sum of Phases	7/2/2004	2:01:06.500 PM	29.38E+3	29.08E+3	29.56E+3	VAR

7/2/2004 - 2:01:06.000 PM
Val
11.97E+3 — W Line1
12.01E+3 — W Line2
17.24E+3 — W Line3
41.23E+3 — W Sum of Phases
12.47E+3 — VAR Line1
6.872E+3 — VAR Line2
10.17E+3 — VAR Line3
29.51E+3 — VAR Sum of Phases

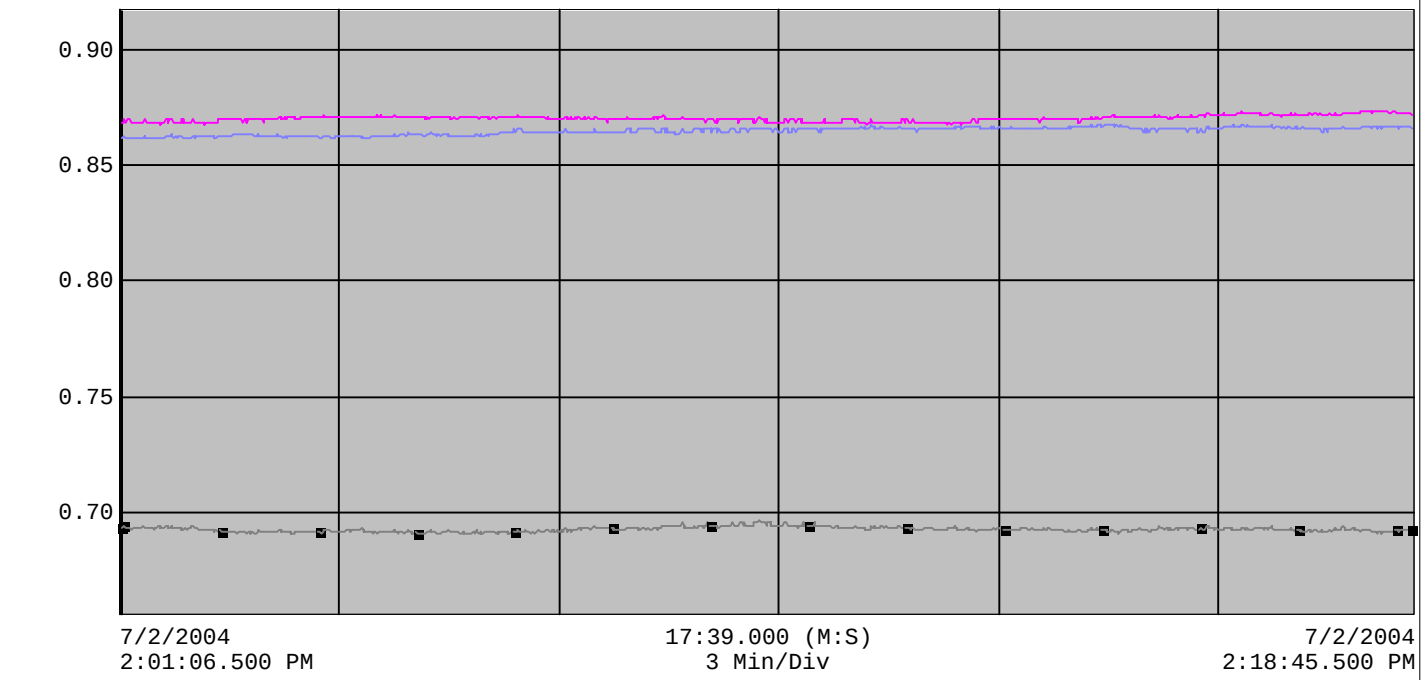
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/2/2004	2:01:06.500 PM	1.766E+3	3.341	3.531E+3	Wh
W-hours Line2	7/2/2004	2:01:06.500 PM	1.763E+3	3.328	3.518E+3	Wh
W-hours Line3	7/2/2004	2:01:06.500 PM	2.551E+3	4.827	5.102E+3	Wh
W-hours Sum of Phases	7/2/2004	2:01:06.500 PM	6.081E+3	11.50	12.15E+3	Wh
VAR-hours Line1	7/2/2004	2:01:06.500 PM	1.842E+3	3.483	3.682E+3	VARh
VAR-hours Line2	7/2/2004	2:01:06.500 PM	1.003E+3	1.891	1.999E+3	VARh
VAR-hours Line3	7/2/2004	2:01:06.500 PM	1.491E+3	2.811	2.972E+3	VARh
VAR-hours Sum of Phases	7/2/2004	2:01:06.500 PM	4.337E+3	8.186	8.652E+3	VARh

7/2/2004 - 2:01:06.000 PM
Val
3.341 — W-hours Line1
3.328 — W-hours Line2
4.827 — W-hours Line3
11.50 — W-hours Sum of Phases
3.483 — VAR-hours Line1
1.891 — VAR-hours Line2
2.811 — VAR-hours Line3
8.186 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/2/2004	2:01:06.500 PM	0.692	0.690	0.696	
PF Line2	7/2/2004	2:01:06.500 PM	0.870	0.867	0.873	
PF Line3	7/2/2004	2:01:06.500 PM	0.864	0.861	0.867	

7/2/2004 - 2:01:06.000 PM
Val
0.693 — PF Line1
0.868 — PF Line2
0.861 — PF Line3

Trend Summary Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A18\070204-A18.dvb

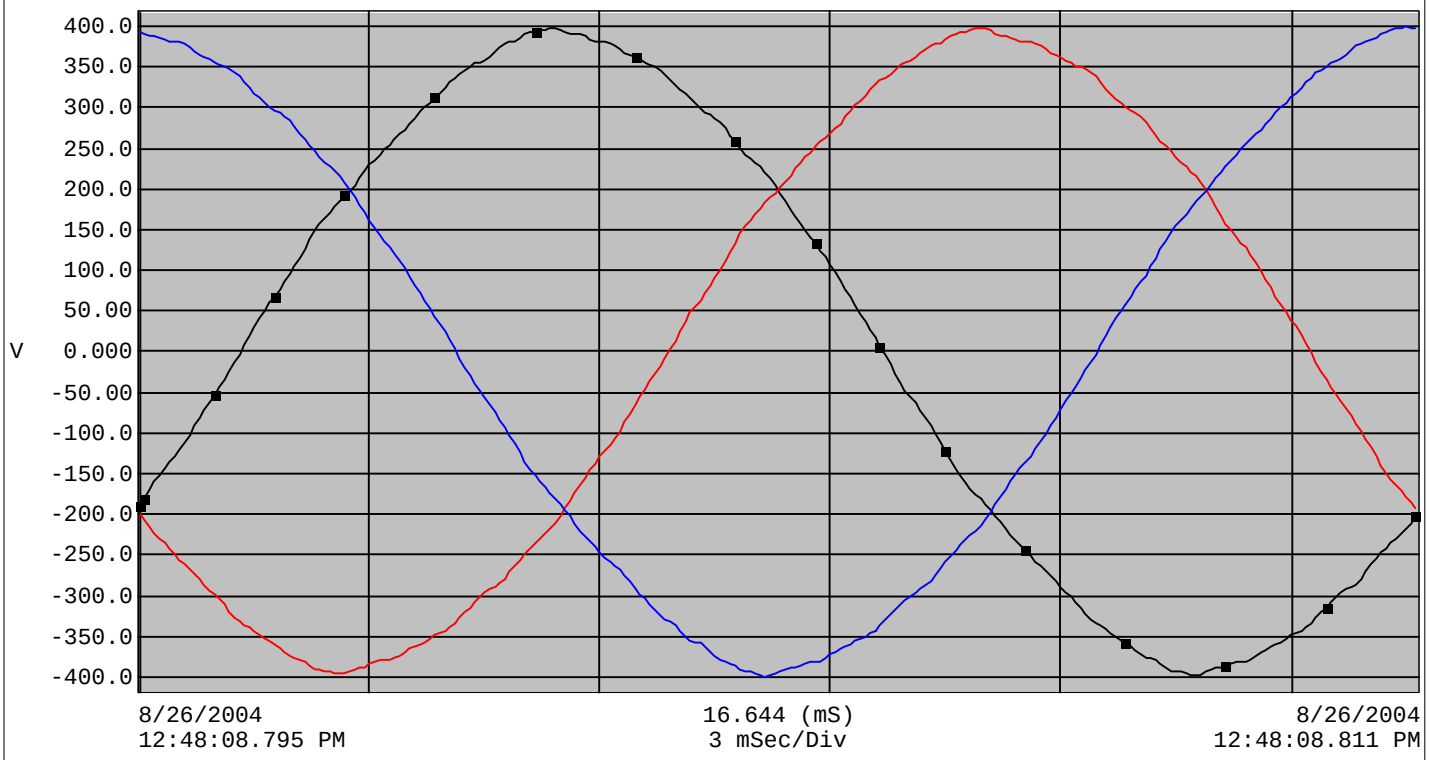
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS A-18 Route 15 ,

Comments
Recorded at motor starter overload relay.

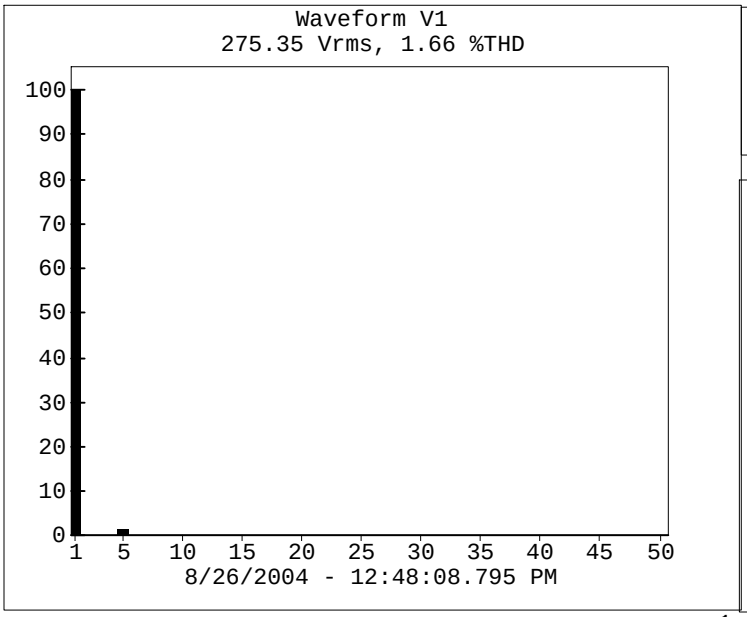
WPS A-18 Pump 8/26/04

Recording Start Date	8/26/2004 - 12:48:08 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/26/2004	12:48:08.795 PM	16.644	275.3	V
Waveform V2	8/26/2004	12:48:08.795 PM	16.644	274.4	V
Waveform V3	8/26/2004	12:48:08.795 PM	16.644	274.8	V

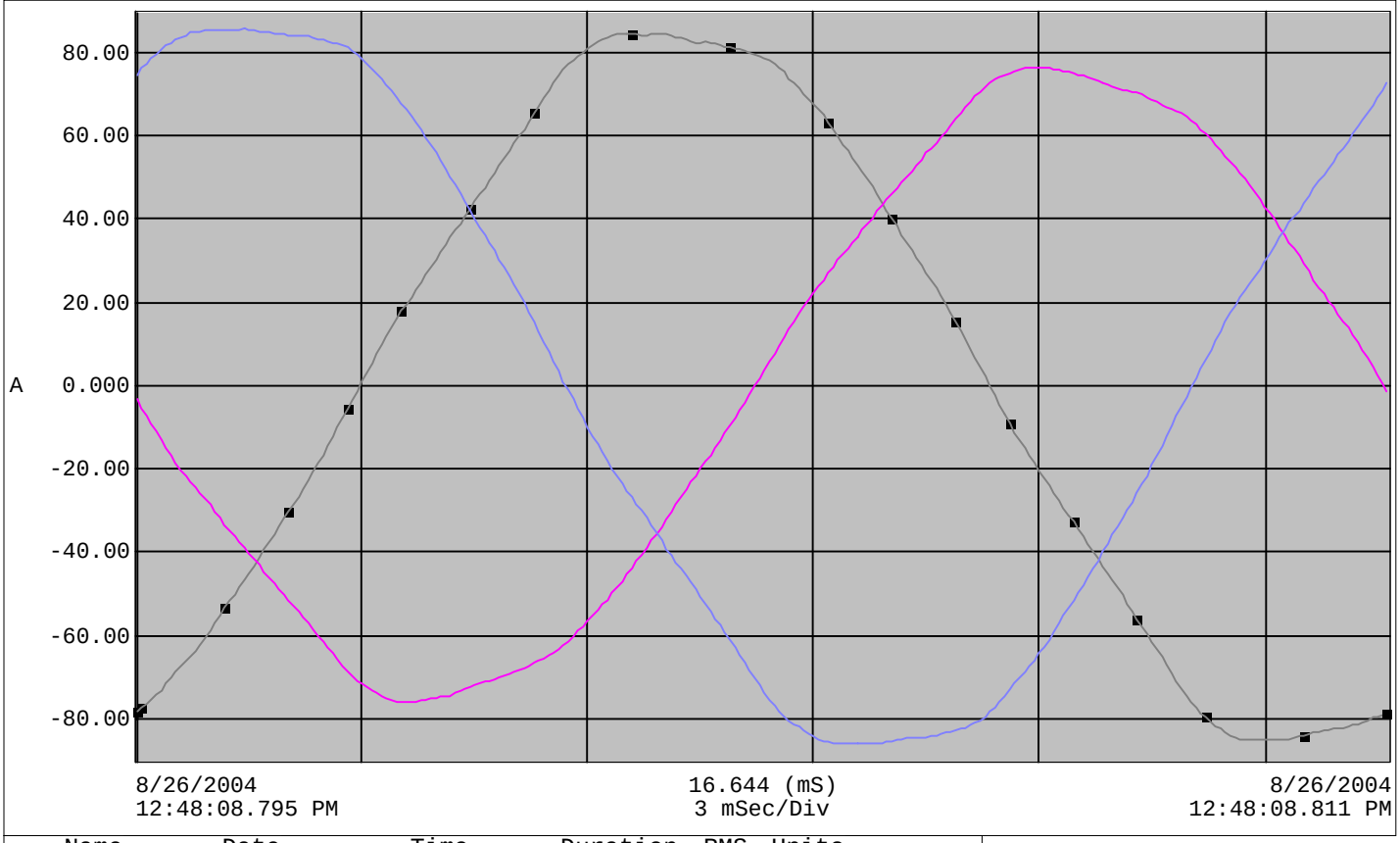


8/26/2004 - 12:48:08.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

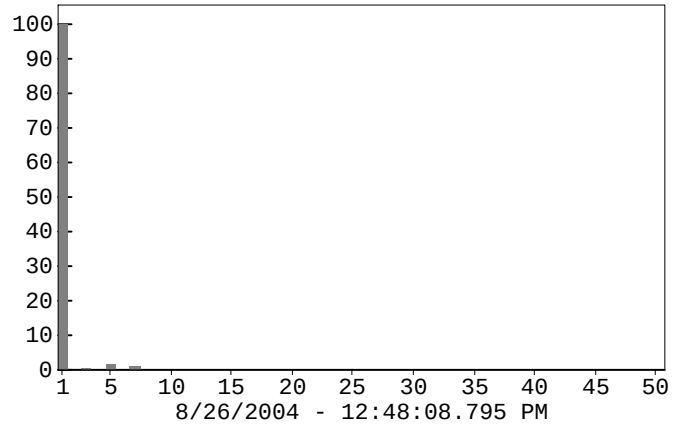
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.2	H19	0.2	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.4	H40	0.0
H07	0.4	H24	0.1	H41	0.0
H08	0.0	H25	0.3	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.3	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.4	H30	0.0	H47	0.2
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.2
H16	0.0	H33	0.1	H50	0.0
H17	0.2	H34	0.1		

Waveform - Current
Frequency: 60.08 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/26/2004	12:48:08.795 PM	16.644	60.73	A
Waveform I2	8/26/2004	12:48:08.795 PM	16.644	53.29	A
Waveform I3	8/26/2004	12:48:08.795 PM	16.644	62.19	A

Waveform I1
60.73 Arms, 2.70 %THD

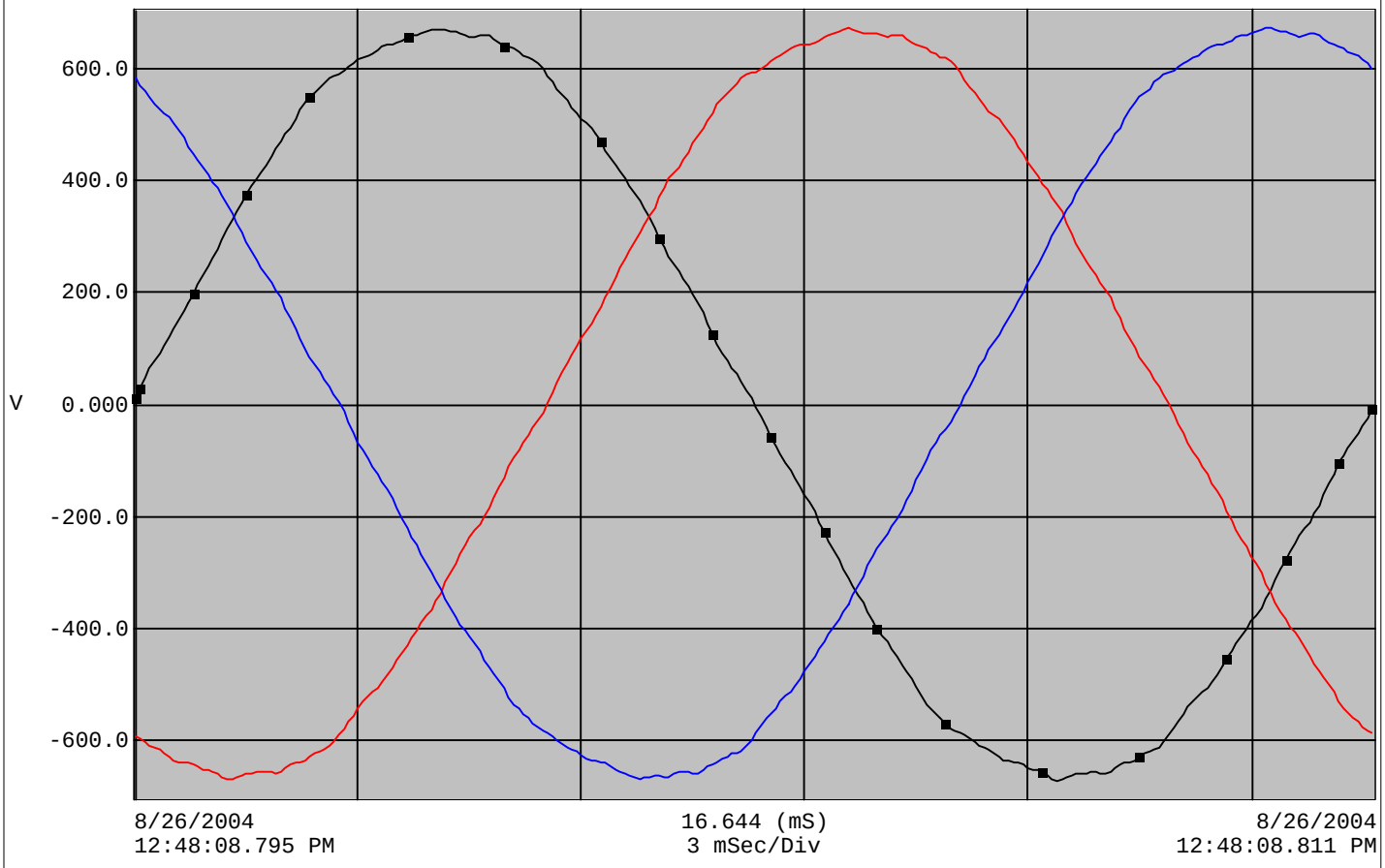


8/26/2004 - 12:48:08.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

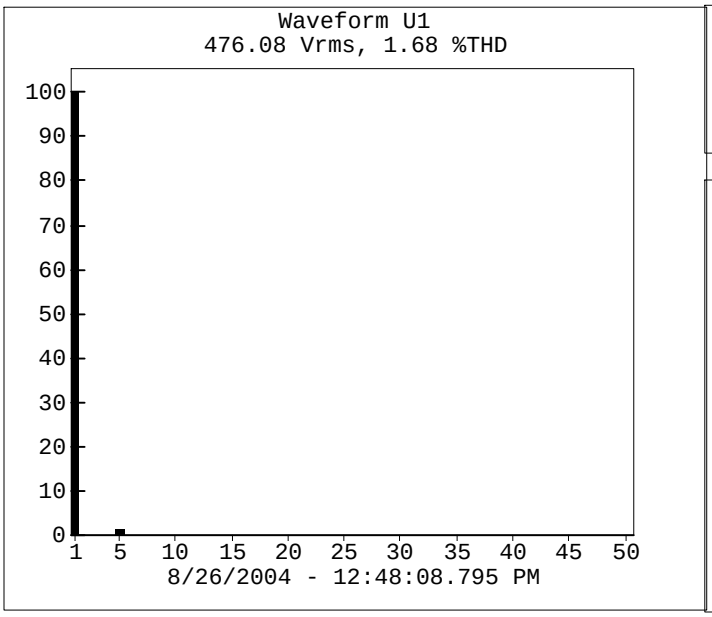
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.4	H19	0.0	H36	0.0
H03	0.8	H20	0.0	H37	0.0
H04	0.3	H21	0.0	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	1.6	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/26/2004	12:48:08.795 PM	16.644	476.1	V
Waveform U2	8/26/2004	12:48:08.795 PM	16.644	476.0	V
Waveform U3	8/26/2004	12:48:08.795 PM	16.644	476.1	V



8/26/2004 - 12:48:08.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.2	H19	0.2	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.4	H40	0.0
H07	0.4	H24	0.1	H41	0.0
H08	0.1	H25	0.3	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.3	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.3	H30	0.1	H47	0.2
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.1
H16	0.0	H33	0.1	H50	0.0
H17	0.2	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/26/2004
Start Time: 12:48:08 PM
Duration: 0:0.000 (M:S)
W: 40.42E+3 W
VAR: 26.85E+3 W
VA: 48.59E+3 W
Power Factor: 2.501
Displacement Power Factor: 2.502
TAN: 1.983
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A18\082604-A18-Photo.dvb

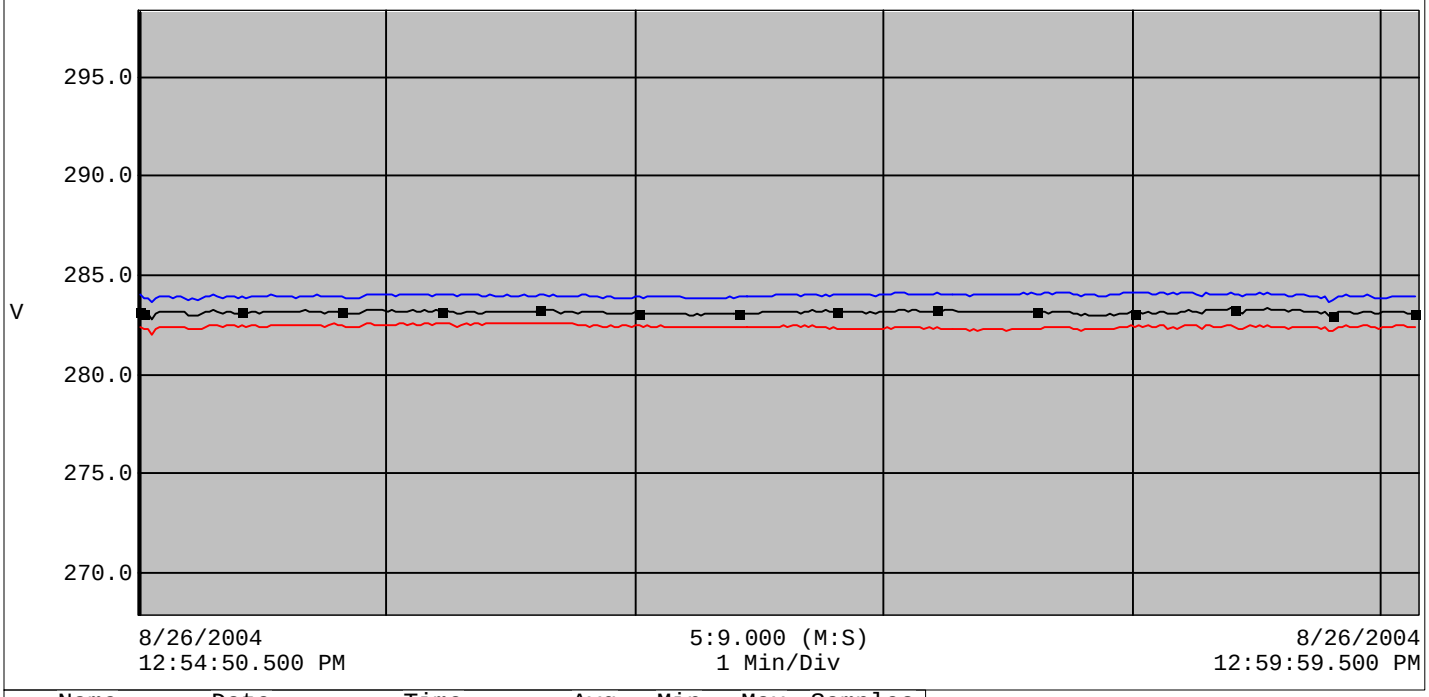
Operator	Test Site
Morikawa & Associates, LLC Victor Jardel and Lyman Morikawa,PE ,	GWA WPS - A-18 Photo ,

Comments
Recorded at motor starter overload relay.

WPS A-18 Pump 8/26/04

Recording Start Date	8/26/2004 - 12:54:50 PM
Recording Duration	5:09 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

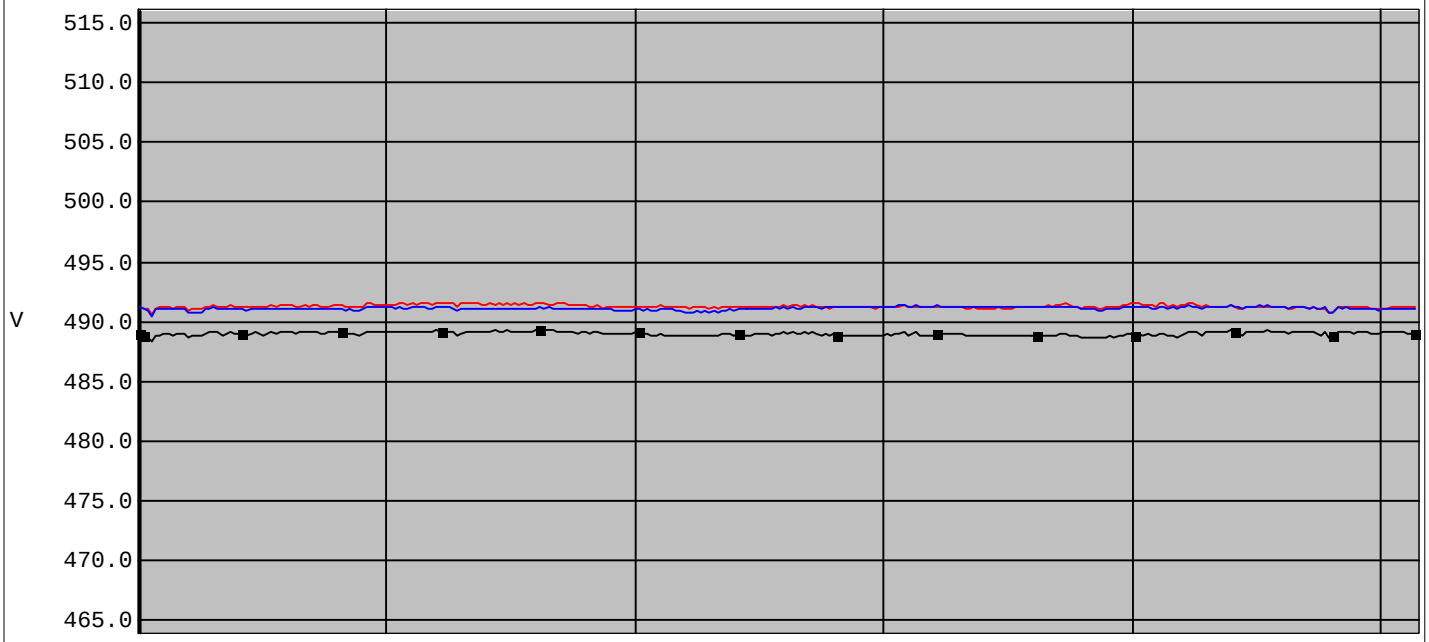
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/26/2004	12:54:50.500 PM	283.1	282.7	283.3	310
Vrms Line2	8/26/2004	12:54:50.500 PM	282.3	281.9	282.5	310
Vrms Line3	8/26/2004	12:54:50.500 PM	283.9	283.6	284.1	310

8/26/2004 - 12:54:50.000 PM
Val
283.1 — Vrms Line1
282.3 — Vrms Line2
284.0 — Vrms Line3

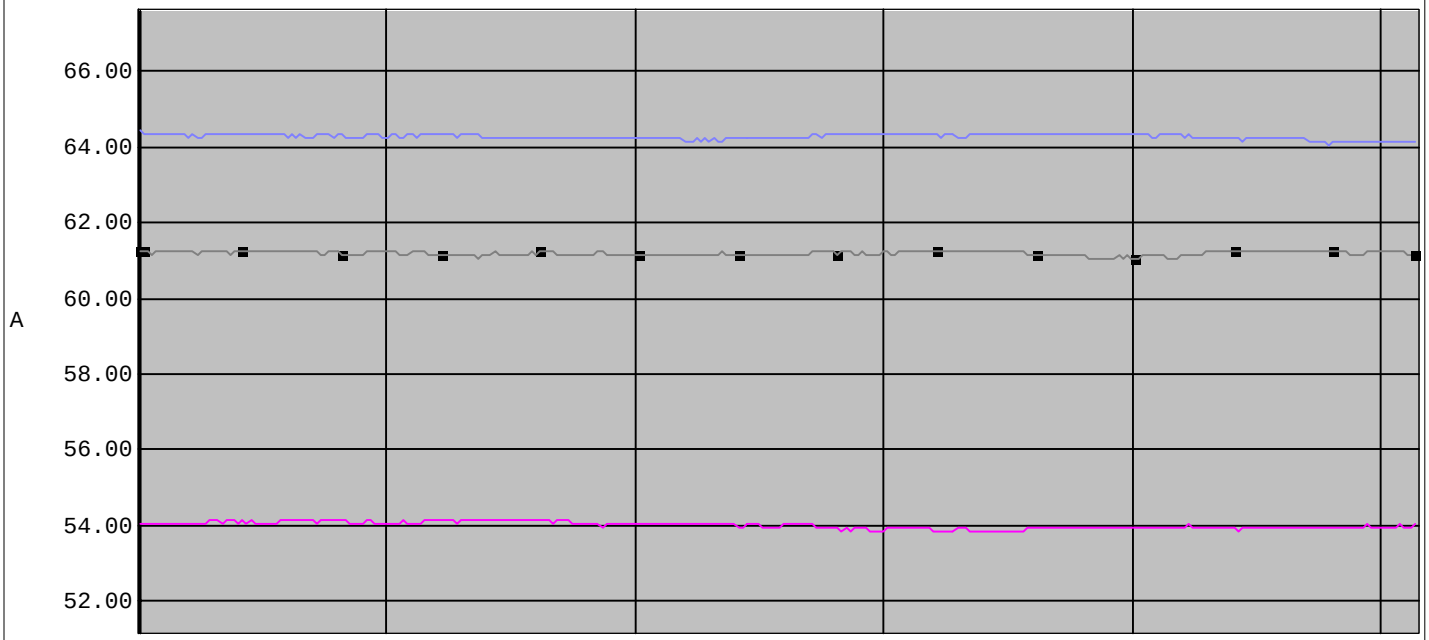
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/26/2004	12:54:50.500 PM	488.9	488.2	489.2	V
Urms Line2	8/26/2004	12:54:50.500 PM	491.2	490.5	491.5	V
Urms Line3	8/26/2004	12:54:50.500 PM	491.0	490.4	491.3	V

8/26/2004 - 12:54:50.000 PM
Val
488.9 Urms Line1
491.2 Urms Line2
491.1 Urms Line3

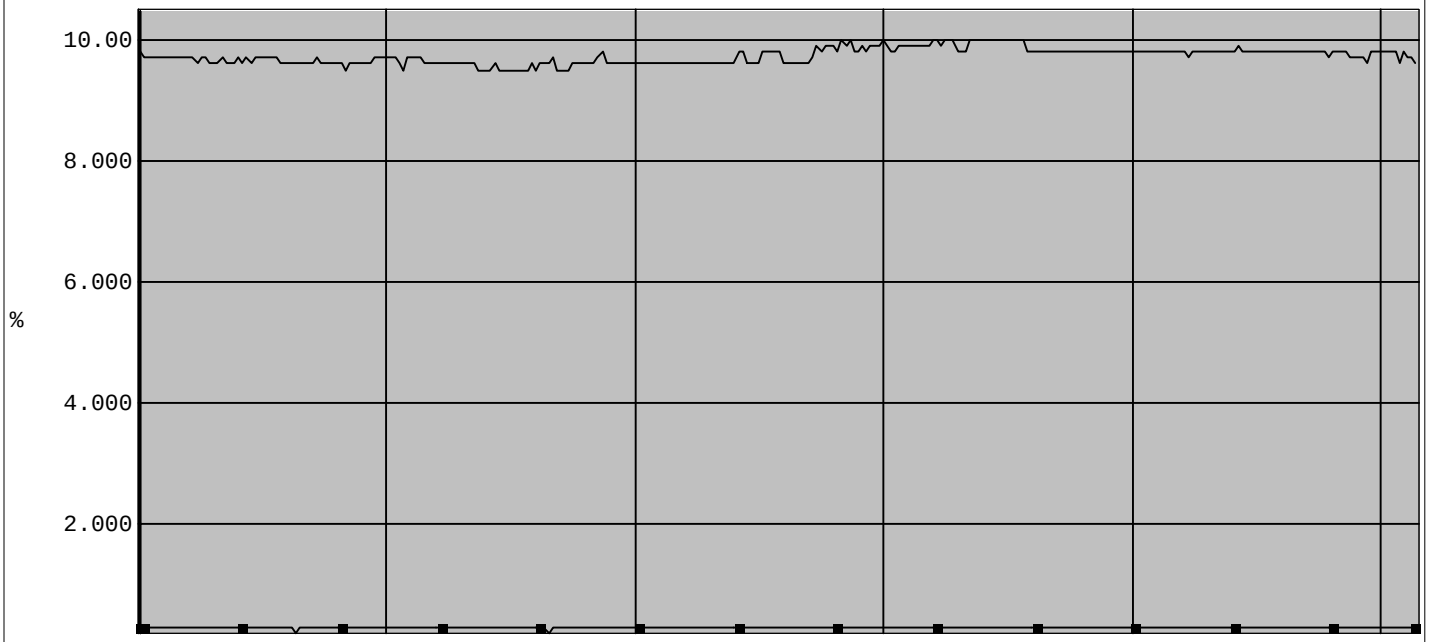
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/26/2004	12:54:50.500 PM	61.14	61.00	61.20	A
Arms Line2	8/26/2004	12:54:50.500 PM	53.96	53.80	54.10	A
Arms Line3	8/26/2004	12:54:50.500 PM	64.24	64.00	64.40	A

8/26/2004 - 12:54:50.000 PM
Val
61.20 — Arms Line1
54.00 — Arms Line2
64.40 — Arms Line3

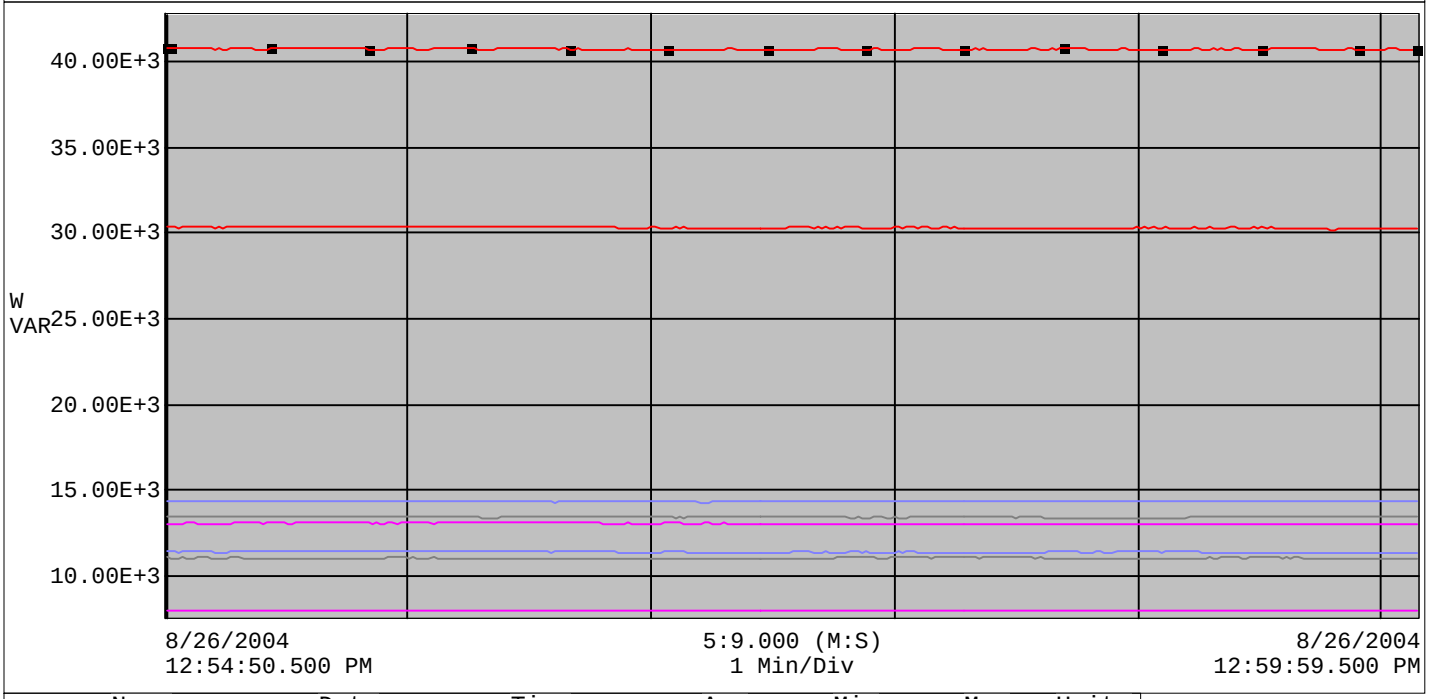
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/26/2004	12:54:50.500 PM	0.299	0.200	0.300	%
Aunb(IEEE)	8/26/2004	12:54:50.500 PM	9.722	9.500	10.00	%

8/26/2004 - 12:54:50.000 PM
Val
0.300 —— Vunb(IEEE)
9.800 —— Aunb(IEEE)

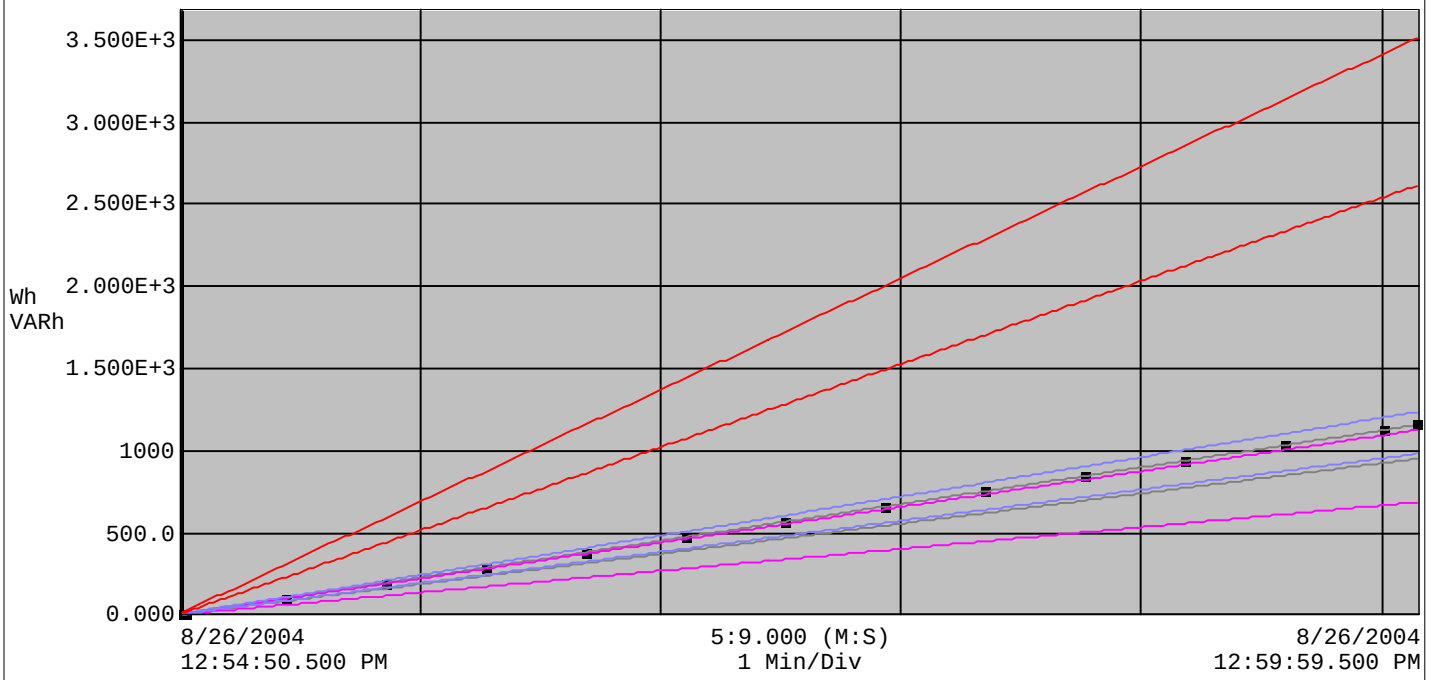
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/26/2004	12:54:50.500 PM	13.37E+3	13.32E+3	13.40E+3	W
W Line2	8/26/2004	12:54:50.500 PM	13.01E+3	12.97E+3	13.05E+3	W
W Line3	8/26/2004	12:54:50.500 PM	14.28E+3	14.25E+3	14.33E+3	W
W Sum of Phases	8/26/2004	12:54:50.500 PM	40.66E+3	40.63E+3	40.70E+3	W
VAR Line1	8/26/2004	12:54:50.500 PM	10.99E+3	10.95E+3	11.03E+3	VAR
VAR Line2	8/26/2004	12:54:50.500 PM	7.928E+3	7.874E+3	7.975E+3	VAR
VAR Line3	8/26/2004	12:54:50.500 PM	11.34E+3	11.24E+3	11.38E+3	VAR
VAR Sum of Phases	8/26/2004	12:54:50.500 PM	30.26E+3	30.09E+3	30.35E+3	VAR

8/26/2004 - 12:54:50.000 PM
Val
13.37E+3 — W Line1
13.02E+3 — W Line2
14.31E+3 — W Line3
40.69E+3 — W Sum of Phases
11.03E+3 — VAR Line1
7.944E+3 — VAR Line2
11.38E+3 — VAR Line3
30.35E+3 — VAR Sum of Phases

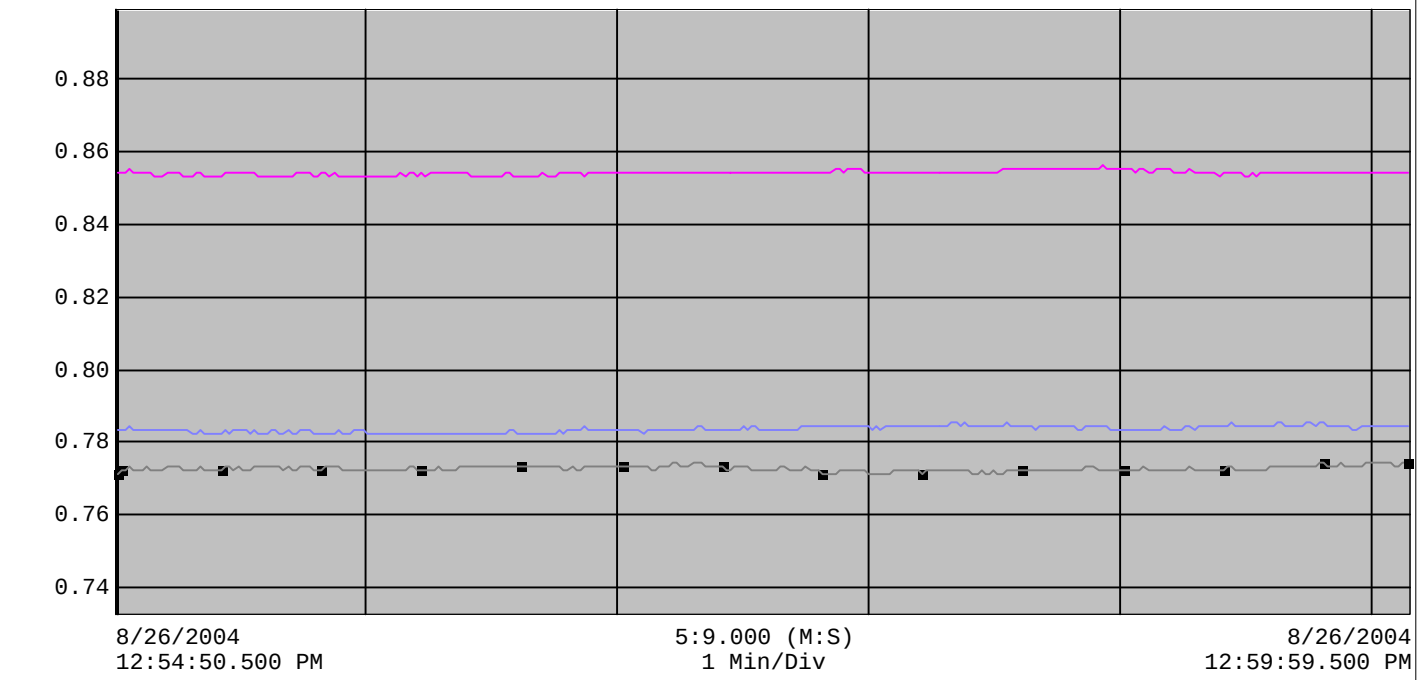
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/26/2004	12:54:50.500 PM	577.5	3.725	1.151E+3	Wh
W-hours Line2	8/26/2004	12:54:50.500 PM	562.2	3.624	1.120E+3	Wh
W-hours Line3	8/26/2004	12:54:50.500 PM	616.8	3.980	1.230E+3	Wh
W-hours Sum of Phases	8/26/2004	12:54:50.500 PM	1.757E+3	11.33	3.502E+3	Wh
VAR-hours Line1	8/26/2004	12:54:50.500 PM	474.8	3.063	946.6	VARh
VAR-hours Line2	8/26/2004	12:54:50.500 PM	342.9	2.209	682.7	VARh
VAR-hours Line3	8/26/2004	12:54:50.500 PM	490.2	3.159	976.4	VARh
VAR-hours Sum of Phases	8/26/2004	12:54:50.500 PM	1.308E+3	8.430	2.606E+3	VARh

8/26/2004 - 12:54:50.000 PM
Val
3.725 — W-hours Line1
3.624 — W-hours Line2
3.980 — W-hours Line3
11.33 — W-hours Sum of Phases
3.063 — VAR-hours Line1
2.209 — VAR-hours Line2
3.159 — VAR-hours Line3
8.430 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/26/2004	12:54:50.500 PM	0.772	0.771	0.774	
PF Line2	8/26/2004	12:54:50.500 PM	0.854	0.853	0.856	
PF Line3	8/26/2004	12:54:50.500 PM	0.783	0.782	0.785	

8/26/2004 - 12:54:50.000 PM
Val
0.771 — PF Line1
0.854 — PF Line2
0.783 — PF Line3

Trend Summary Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A18\082604-A18.dvb

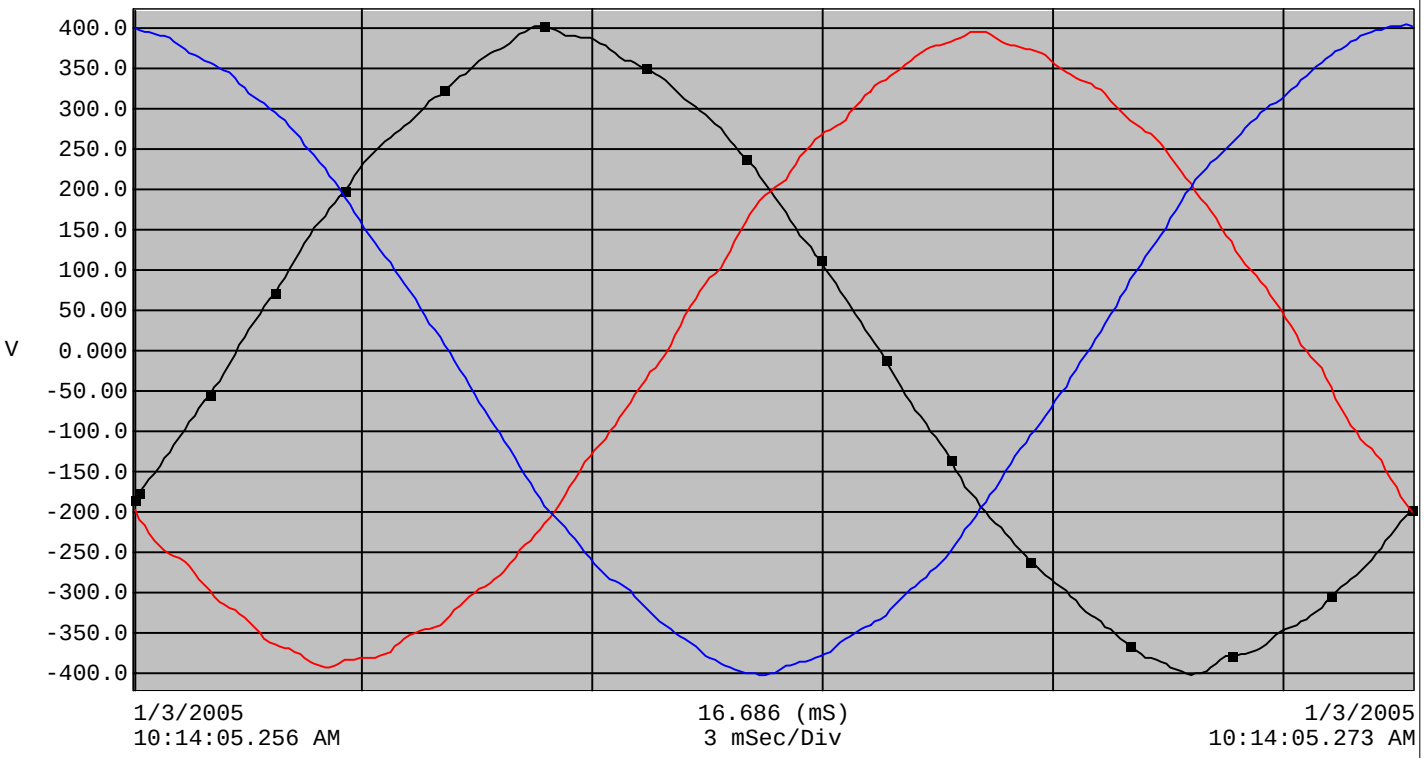
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS A-18 ,

Comments
Recorded at motor starter overload relay.

WPS A-18 Pump 1/3/05

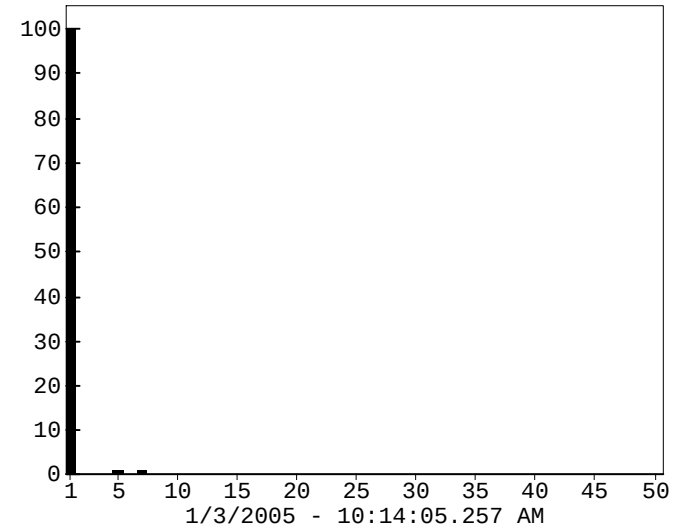
Recording Start Date	1/3/2005 - 10:14:05 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	1/3/2005	10:14:05.256 AM	16.686	274.3	V
Waveform V2	1/3/2005	10:14:05.256 AM	16.686	270.5	V
Waveform V3	1/3/2005	10:14:05.256 AM	16.686	278.4	V

Waveform V1
274.31 Vrms, 1.76 %THD



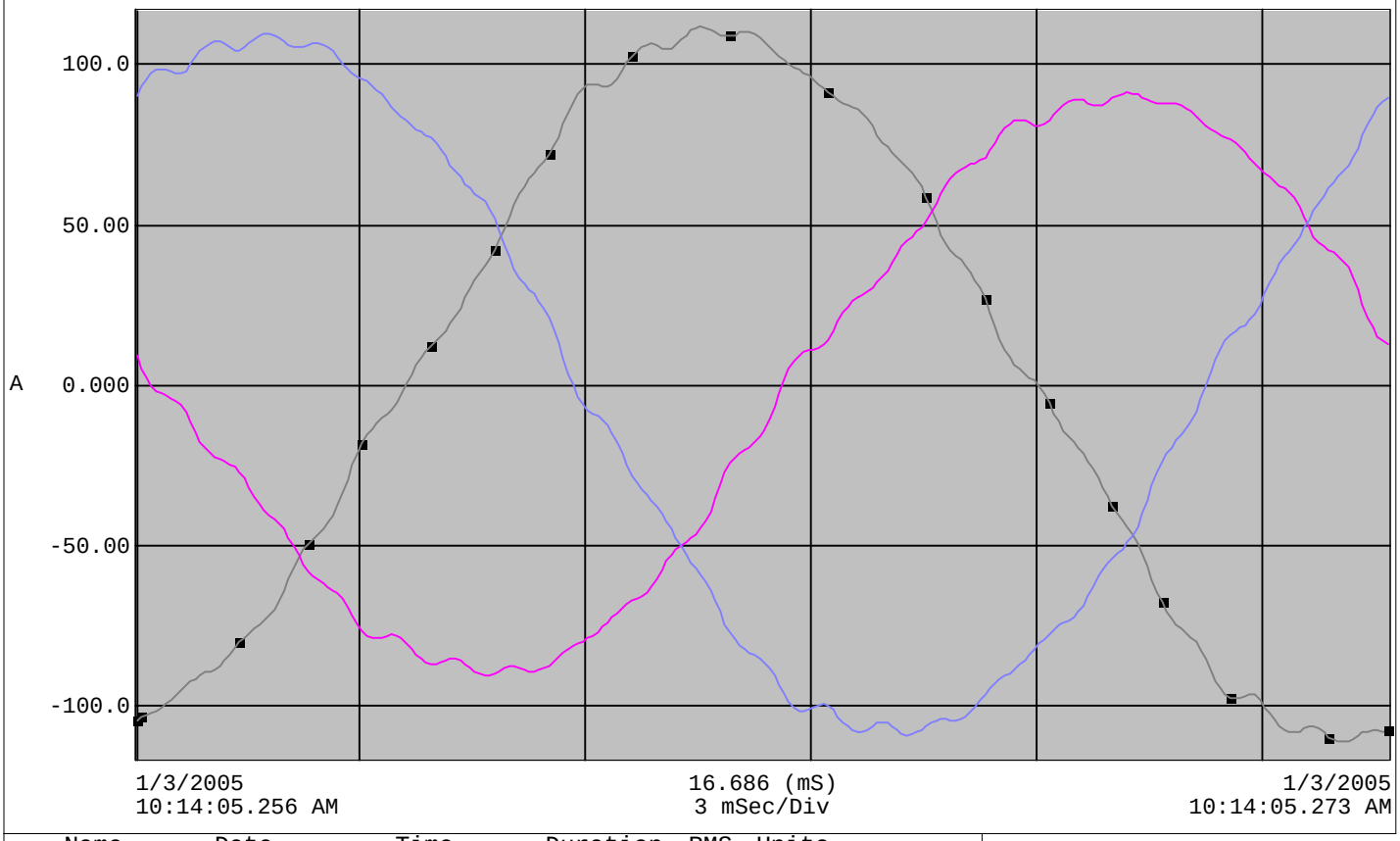
1/3/2005 - 10:14:05.000 AM

Val	
-186.3	Waveform V1
-199.1	Waveform V2
397.1	Waveform V3

Waveform V1

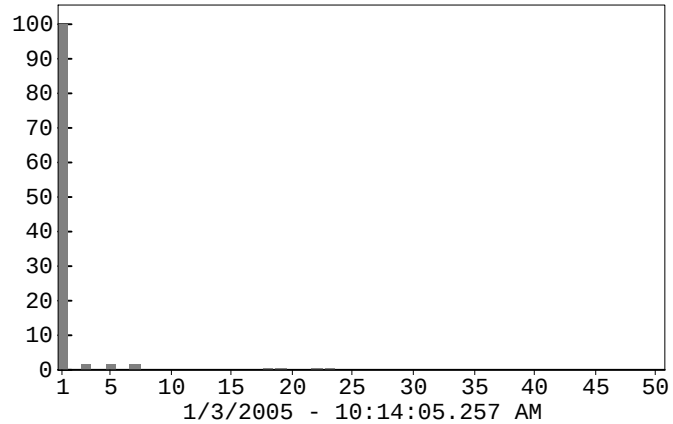
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.2	H36	0.1
H03	0.2	H20	0.1	H37	0.0
H04	0.0	H21	0.2	H38	0.0
H05	1.2	H22	0.4	H39	0.0
H06	0.1	H23	0.2	H40	0.1
H07	1.1	H24	0.2	H41	0.0
H08	0.0	H25	0.1	H42	0.1
H09	0.2	H26	0.1	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	1/3/2005	10:14:05.256 AM	16.686	77.58	A
Waveform I2	1/3/2005	10:14:05.256 AM	16.686	63.60	A
Waveform I3	1/3/2005	10:14:05.256 AM	16.686	77.34	A

Waveform I1
77.58 Arms, 3.78 %THD



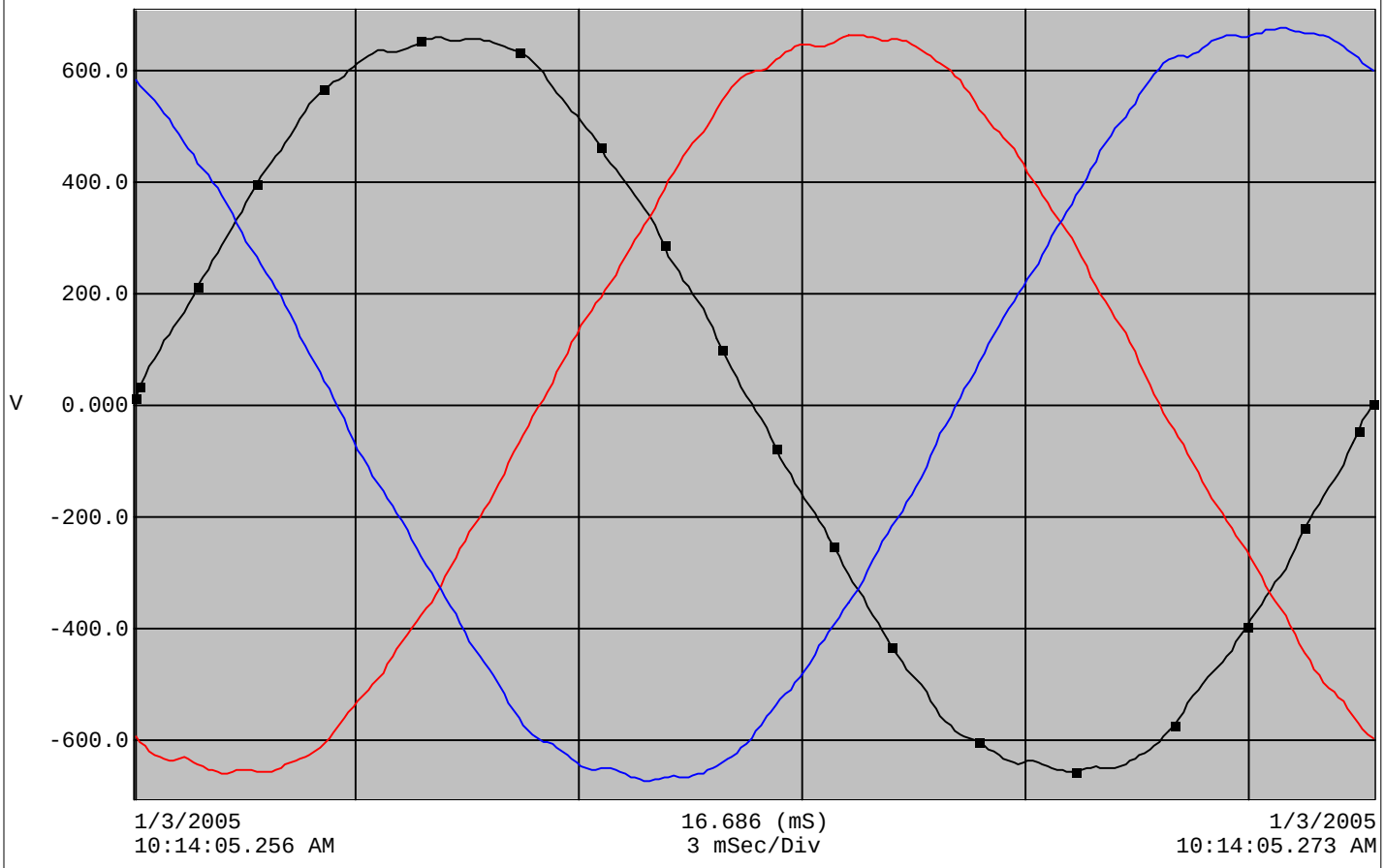
1/3/2005 - 10:14:05.000 AM

Val	
-104.7	Waveform I1
8.800	Waveform I2
89.90	Waveform I3

Waveform I1

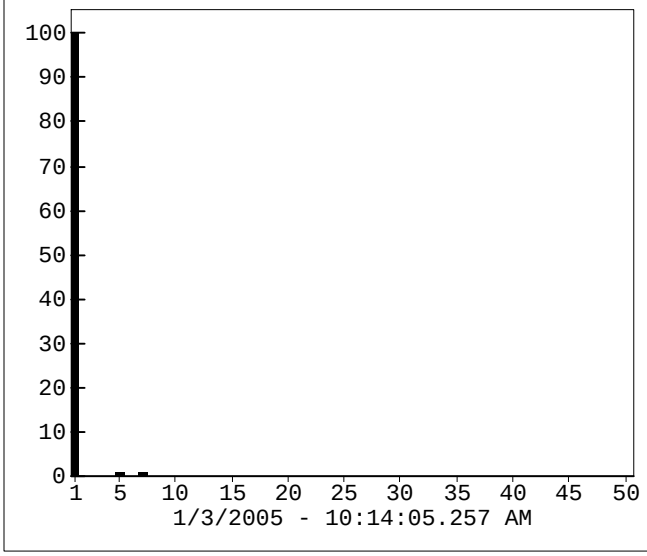
	(%)		(%)		(%)
H01	100.0	H18	0.7	H35	0.0
H02	0.1	H19	0.6	H36	0.1
H03	1.8	H20	0.3	H37	0.0
H04	0.0	H21	0.4	H38	0.0
H05	1.9	H22	1.1	H39	0.0
H06	0.1	H23	0.9	H40	0.1
H07	1.9	H24	0.4	H41	0.0
H08	0.1	H25	0.1	H42	0.2
H09	0.2	H26	0.1	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	0.2	H28	0.1	H45	0.0
H12	0.1	H29	0.1	H46	0.1
H13	0.3	H30	0.0	H47	0.0
H14	0.1	H31	0.1	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.2	H33	0.0	H50	0.0
H17	0.5	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	1/3/2005	10:14:05.256 AM	16.686	471.4	V
Waveform U2	1/3/2005	10:14:05.256 AM	16.686	472.5	V
Waveform U3	1/3/2005	10:14:05.256 AM	16.686	482.0	V

Waveform U1
471.44 Vrms, 1.74 %THD



1/3/2005 - 10:14:05.000 AM

	Val	
—	12.70	Waveform U1
—	-596.2	Waveform U2
—	583.4	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.2	H36	0.1
H03	0.2	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.1	H22	0.4	H39	0.0
H06	0.0	H23	0.4	H40	0.0
H07	1.0	H24	0.2	H41	0.0
H08	0.0	H25	0.1	H42	0.1
H09	0.2	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.2	H28	0.1	H45	0.0
H12	0.0	H29	0.0	H46	0.1
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 1/3/2005
Start Time: 10:14:05 AM
Duration: 0:0.000 (M:S)
W: 14.15E+3 W
VAR: 15.95E+3 W
VA: 21.33E+3 W
Power Factor: 0.664
Displacement Power Factor: 0.664
TAN: 1.126
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A18\010305-A18 Photo.dvb

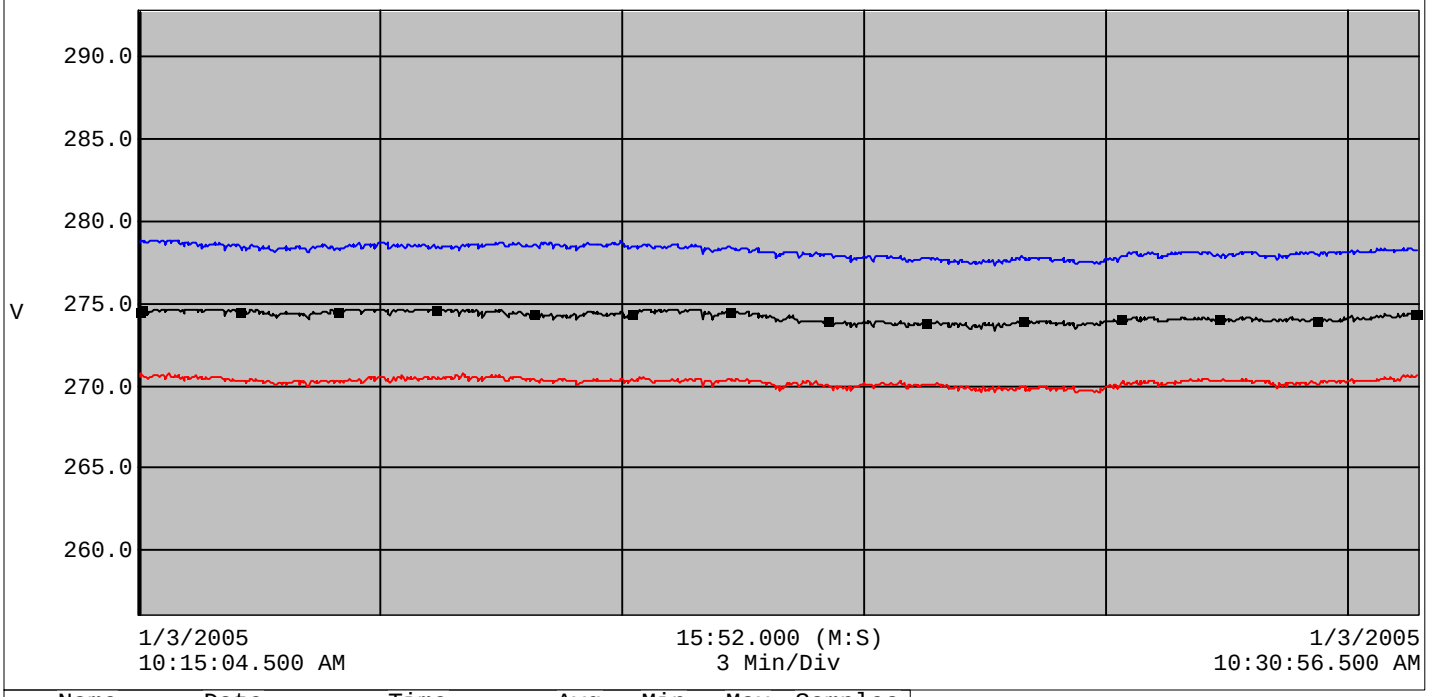
Operator	Test Site
GWA Victor Jardel ,	WPS A-18 Photo ,

Comments
Recorded at motor starter overload relay.

WPS A-18 Pump 1/03/05

Recording Start Date	1/3/2005 - 10:15:04 AM
Recording Duration	15:52 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

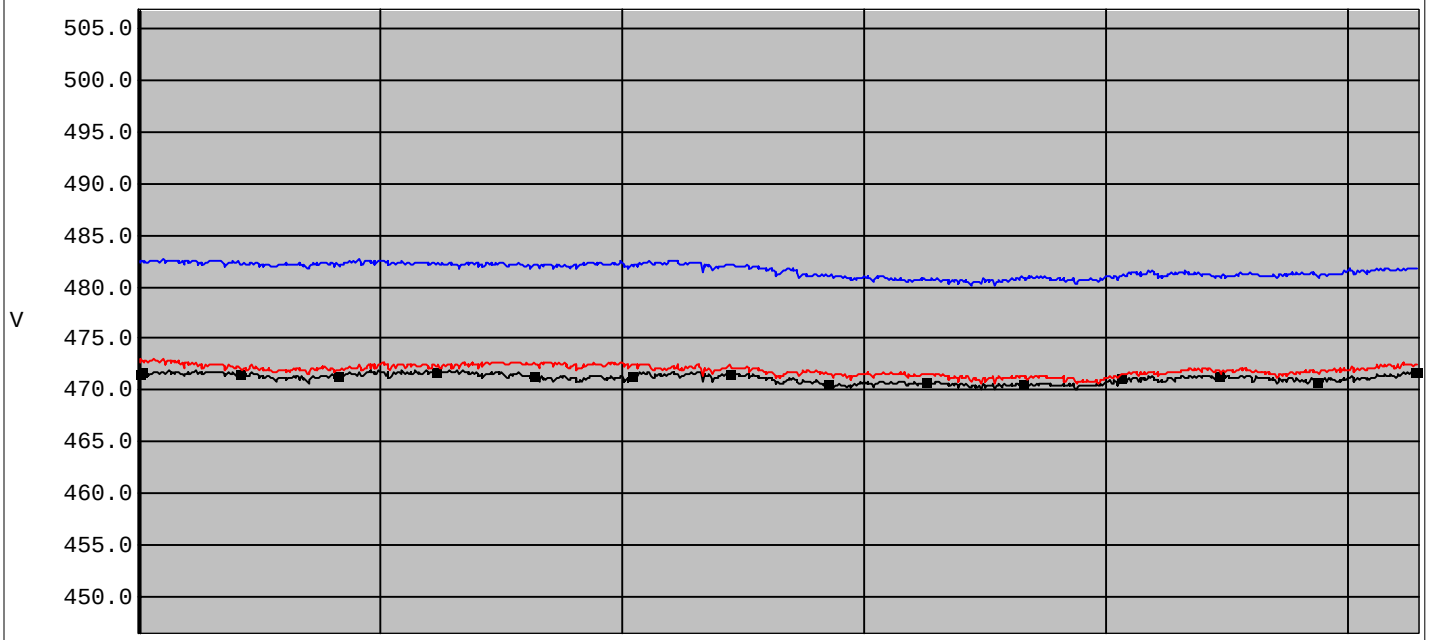
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	1/3/2005	10:15:04.500 AM	274.1	273.3	274.6	953
Vrms Line2	1/3/2005	10:15:04.500 AM	270.2	269.5	270.7	953
Vrms Line3	1/3/2005	10:15:04.500 AM	278.1	277.2	278.8	953

1/3/2005 - 10:15:04.000 AM
Val
274.4 — Vrms Line1
270.5 — Vrms Line2
278.6 — Vrms Line3

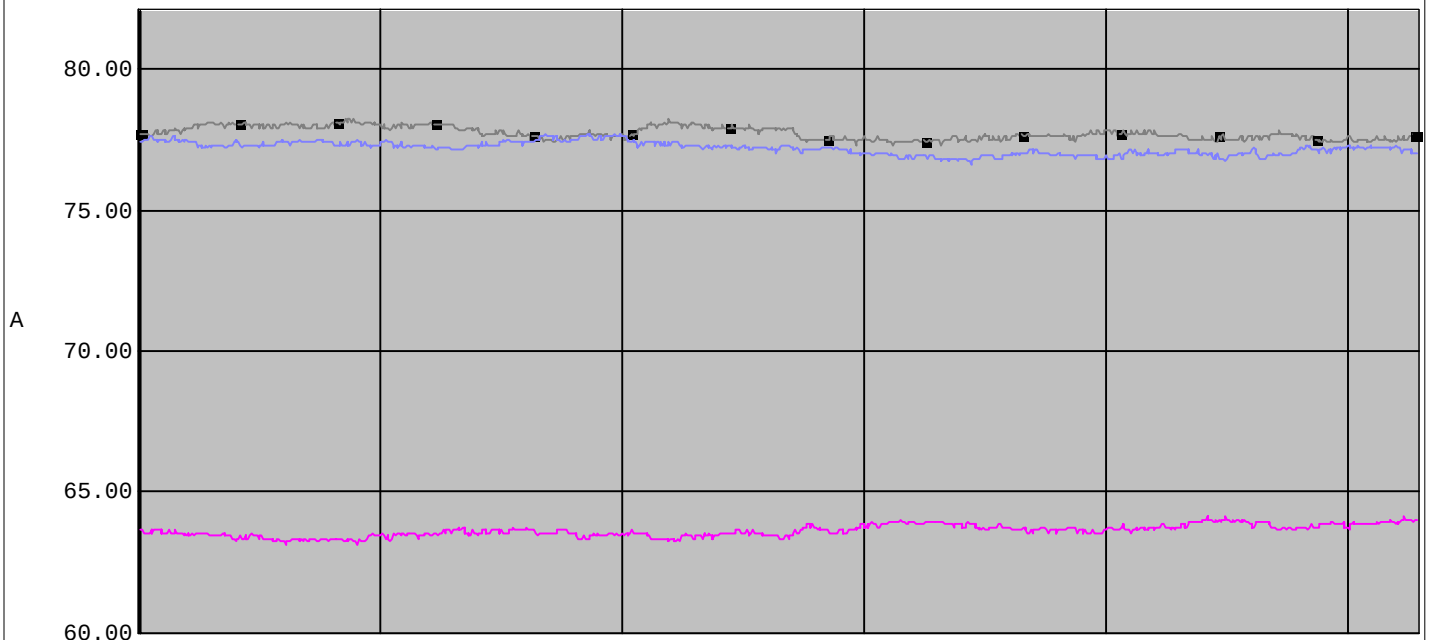
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	1/3/2005	10:15:04.500 AM	471.0	469.9	471.8	V
Urms Line2	1/3/2005	10:15:04.500 AM	471.8	470.5	472.9	V
Urms Line3	1/3/2005	10:15:04.500 AM	481.5	480.0	482.6	V

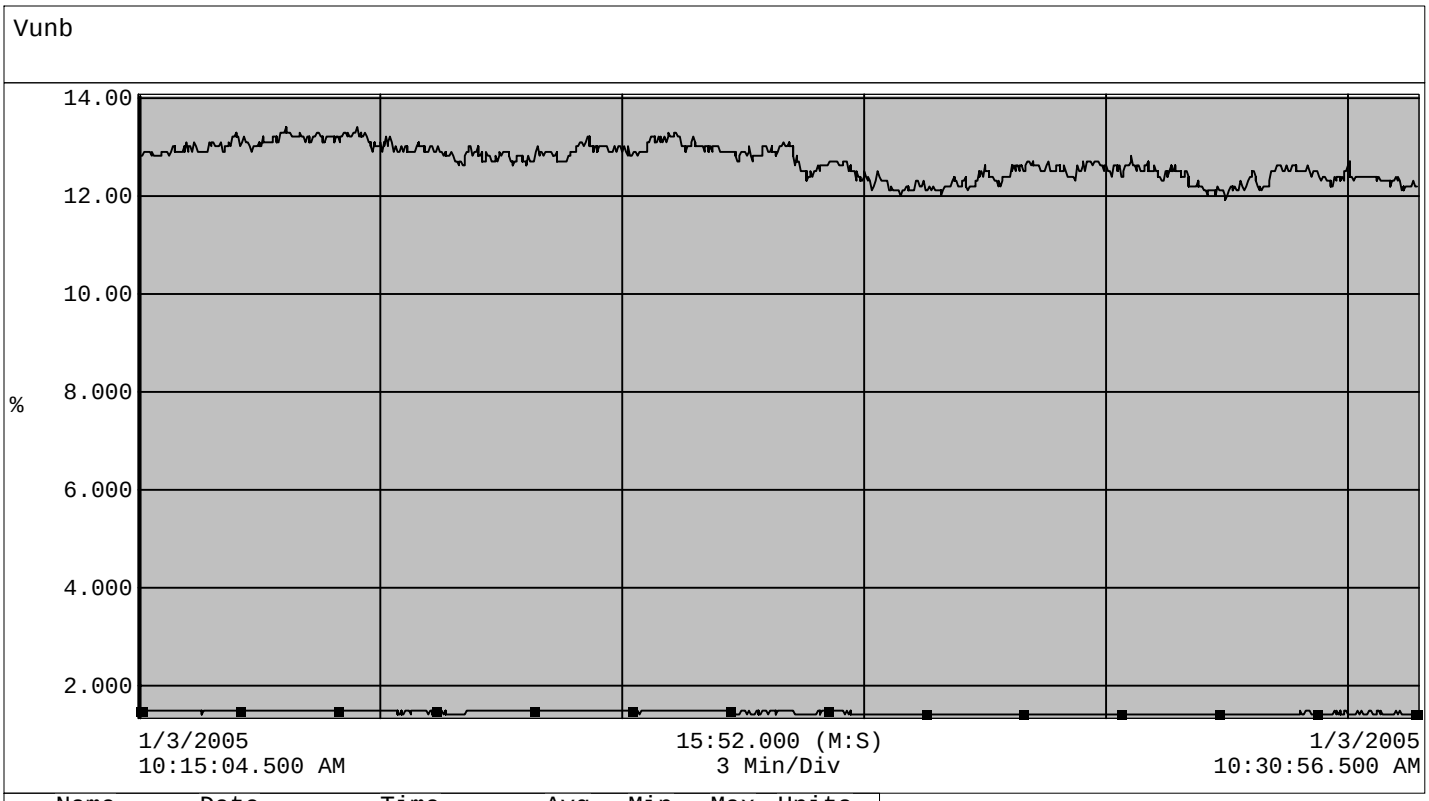
1/3/2005 - 10:15:04.000 AM
Val
471.5 Urms Line1
472.6 Urms Line2
482.2 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	1/3/2005	10:15:04.500 AM	77.72	77.30	78.20	A
Arms Line2	1/3/2005	10:15:04.500 AM	63.58	63.10	64.10	A
Arms Line3	1/3/2005	10:15:04.500 AM	77.17	76.60	77.70	A

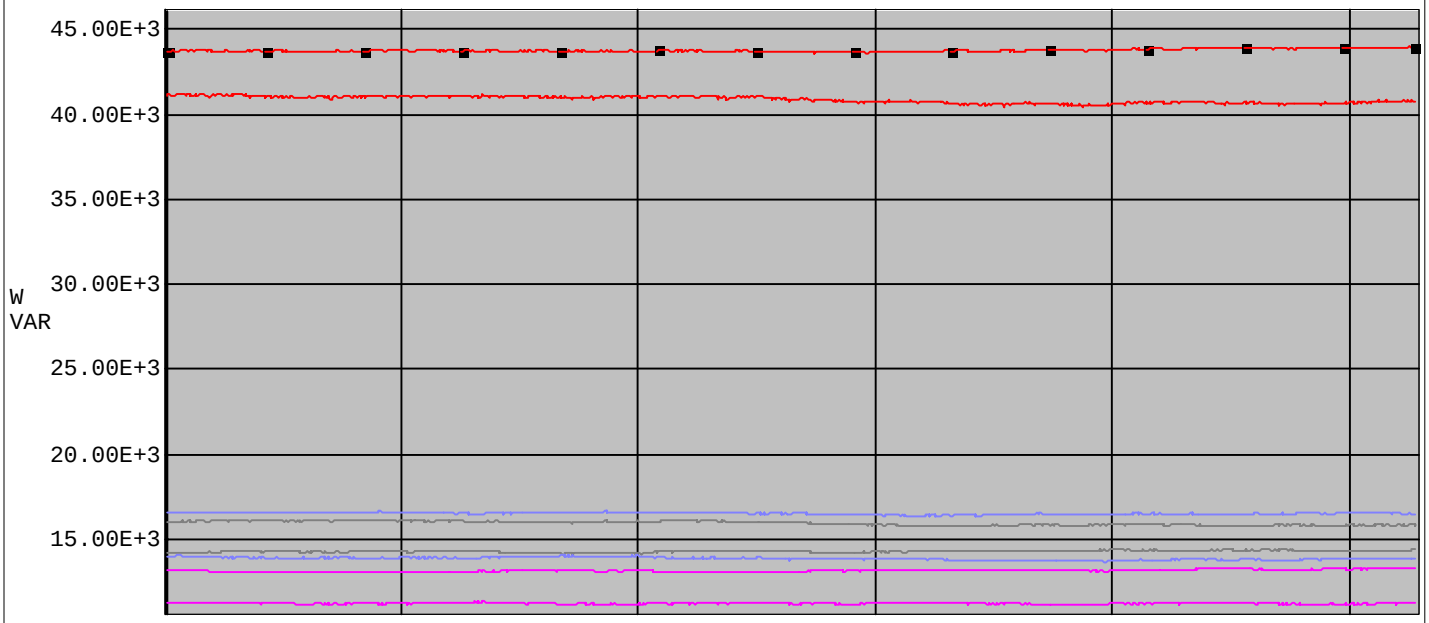
1/3/2005 - 10:15:04.000 AM
Val
77.70 — Arms Line1
63.60 — Arms Line2
77.40 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	1/3/2005	10:15:04.500 AM	1.452	1.400	1.500	%
Aunb(IEEE)	1/3/2005	10:15:04.500 AM	12.69	11.90	13.40	%

1/3/2005 - 10:15:04.000 AM
Val
1.500 —— Vunb(IEEE)
12.80 —— Aunb(IEEE)

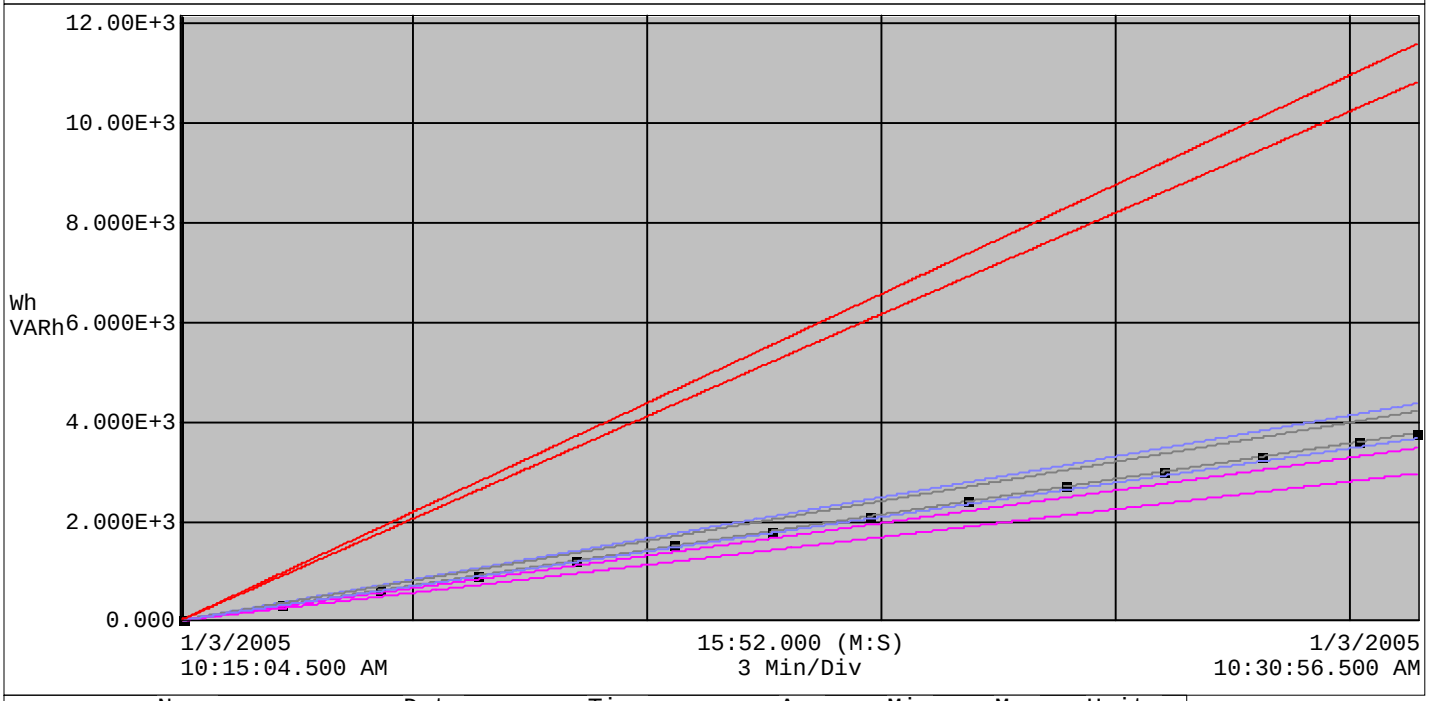
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	1/3/2005	10:15:04.500 AM	14.21E+3	14.06E+3	14.34E+3	W
W Line2	1/3/2005	10:15:04.500 AM	13.07E+3	12.94E+3	13.22E+3	W
W Line3	1/3/2005	10:15:04.500 AM	16.44E+3	16.28E+3	16.57E+3	W
W Sum of Phases	1/3/2005	10:15:04.500 AM	43.72E+3	43.55E+3	43.93E+3	W
VAR Line1	1/3/2005	10:15:04.500 AM	15.87E+3	15.66E+3	16.07E+3	VAR
VAR Line2	1/3/2005	10:15:04.500 AM	11.15E+3	11.06E+3	11.27E+3	VAR
VAR Line3	1/3/2005	10:15:04.500 AM	13.79E+3	13.58E+3	13.98E+3	VAR
VAR Sum of Phases	1/3/2005	10:15:04.500 AM	40.82E+3	40.37E+3	41.16E+3	VAR

1/3/2005 - 10:15:04.000 AM
Val
14.14E+3 — W Line1
13.08E+3 — W Line2
16.46E+3 — W Line3
43.68E+3 — W Sum of Phases
15.95E+3 — VAR Line1
11.19E+3 — VAR Line2
13.93E+3 — VAR Line3
41.06E+3 — VAR Sum of Phases

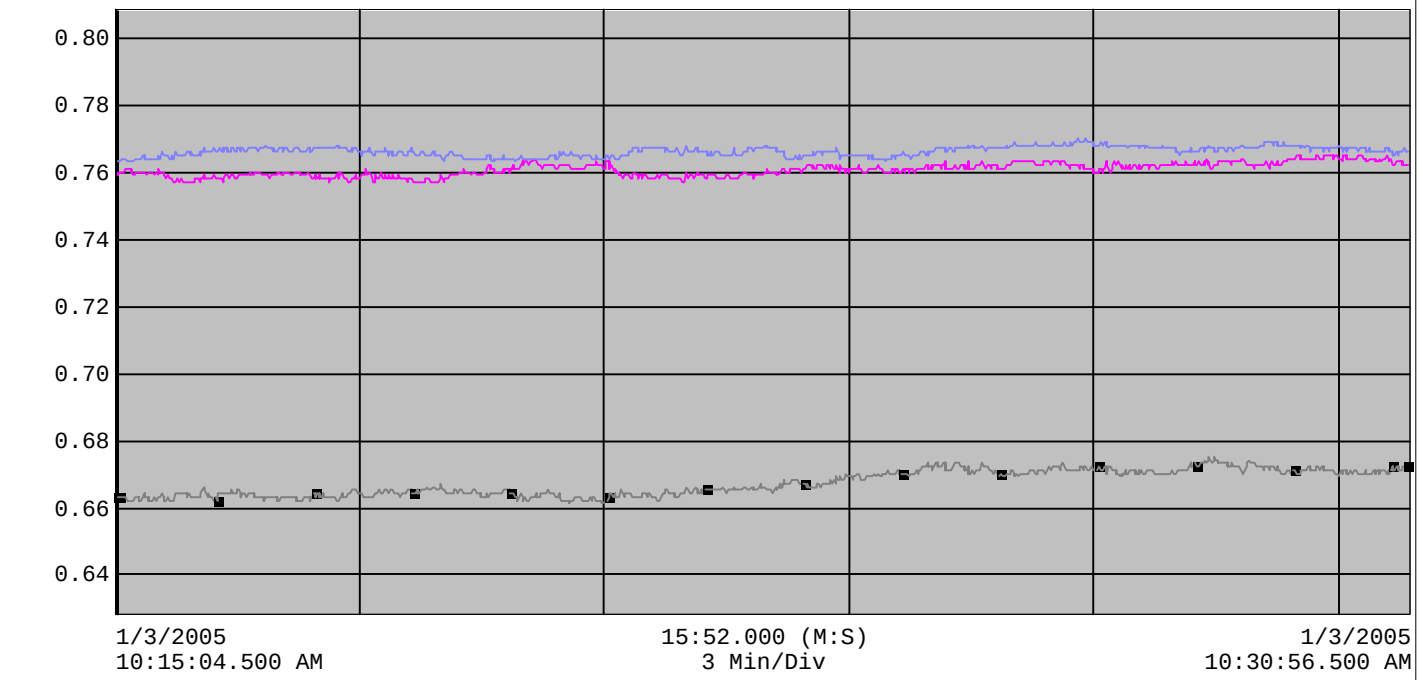
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	1/3/2005	10:15:04.500 AM	1.880E+3	3.903	3.762E+3	Wh
W-hours Line2	1/3/2005	10:15:04.500 AM	1.727E+3	3.589	3.459E+3	Wh
W-hours Line3	1/3/2005	10:15:04.500 AM	2.181E+3	4.517	4.353E+3	Wh
W-hours Sum of Phases	1/3/2005	10:15:04.500 AM	5.789E+3	12.01	11.57E+3	Wh
VAR-hours Line1	1/3/2005	10:15:04.500 AM	2.111E+3	4.488	4.201E+3	VARh
VAR-hours Line2	1/3/2005	10:15:04.500 AM	1.478E+3	3.063	2.952E+3	VARh
VAR-hours Line3	1/3/2005	10:15:04.500 AM	1.832E+3	3.901	3.652E+3	VARh
VAR-hours Sum of Phases	1/3/2005	10:15:04.500 AM	5.421E+3	11.54	10.81E+3	VARh

1/3/2005 - 10:15:04.000 AM
Val
3.903 — W-hours Line1
3.589 — W-hours Line2
4.517 — W-hours Line3
12.01 — W-hours Sum of Phases
4.488 — VAR-hours Line1
3.063 — VAR-hours Line2
3.901 — VAR-hours Line3
11.54 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	1/3/2005	10:15:04.500 AM	0.667	0.661	0.675	
PF Line2	1/3/2005	10:15:04.500 AM	0.761	0.757	0.765	
PF Line3	1/3/2005	10:15:04.500 AM	0.766	0.763	0.770	

1/3/2005 - 10:15:04.000 AM
Val
0.663 — PF Line1
0.760 — PF Line2
0.763 — PF Line3

Trend Summary Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A18\010305-A18.dvb

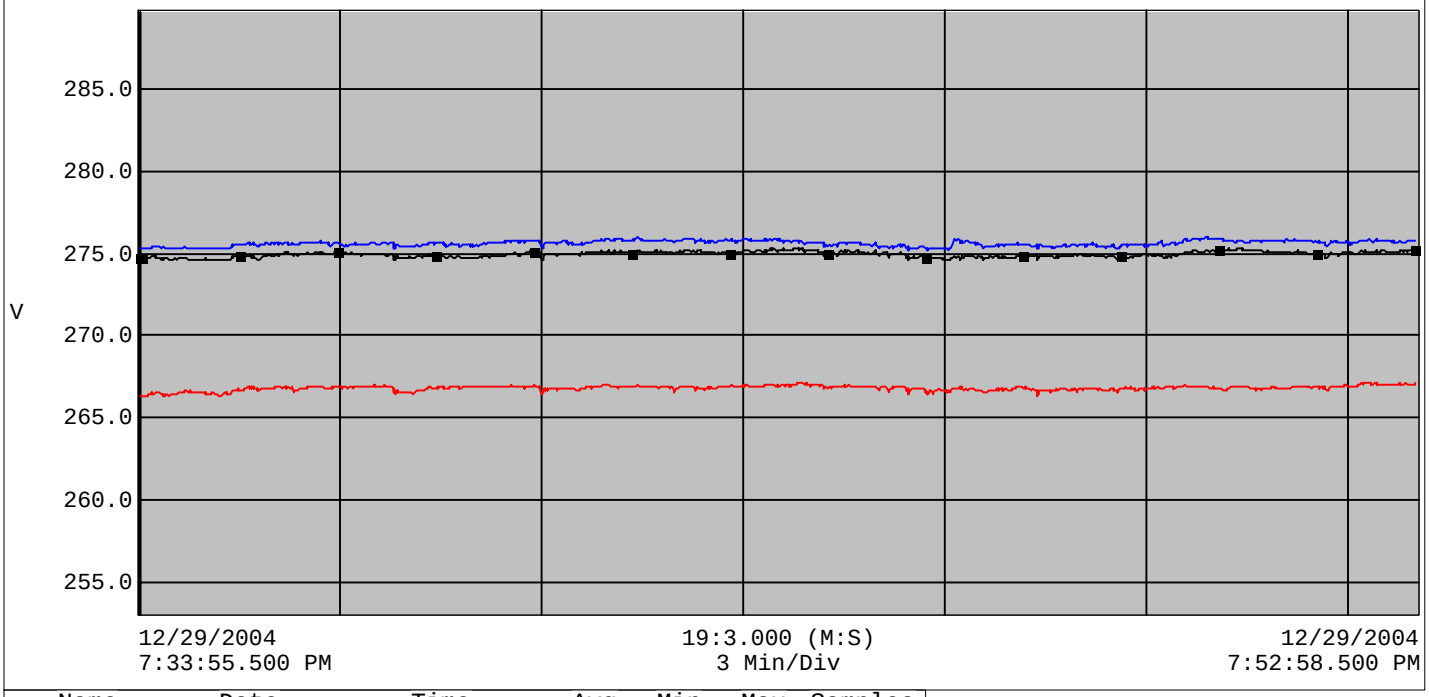
Operator	Test Site
GWA Victor Jardel ,	WPS A18 ,

Comments
Recorded at motor starter overload relay.

WPS A-18 Pump 12/29/04

Recording Start Date	12/29/2004 - 7:33:55 PM
Recording Duration	19:03 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

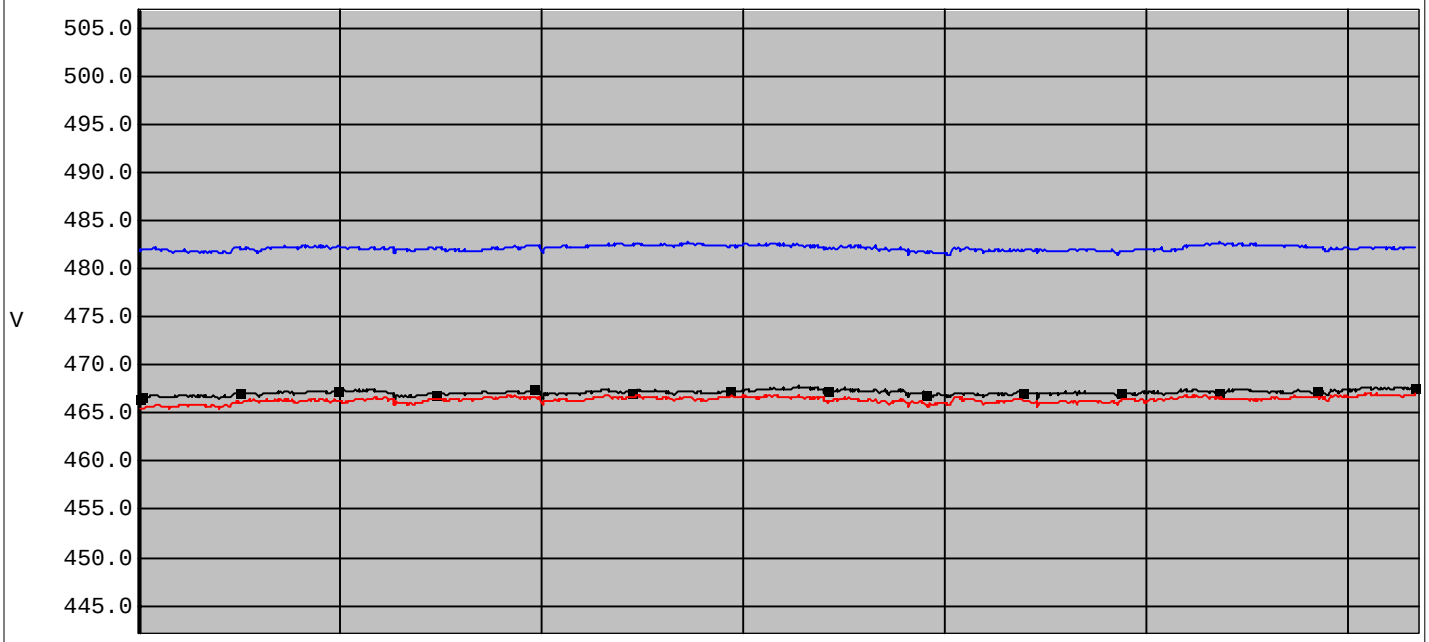
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	12/29/2004	7:33:55.500 PM	274.9	274.5	275.2	1144
Vrms Line2	12/29/2004	7:33:55.500 PM	266.7	266.3	267.1	1144
Vrms Line3	12/29/2004	7:33:55.500 PM	275.6	275.1	275.9	1144

12/29/2004 - 7:33:55.000 PM
Val
274.7 — Vrms Line1
266.3 — Vrms Line2
275.3 — Vrms Line3

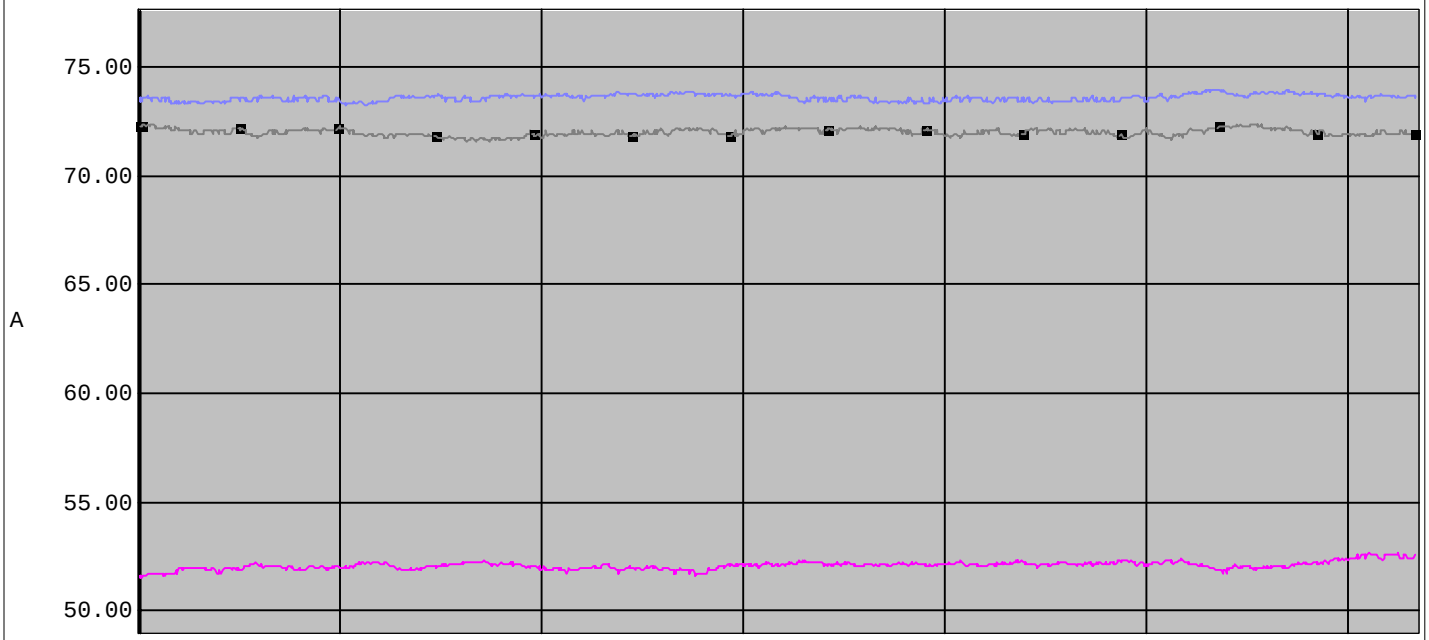
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	12/29/2004	7:33:55.500 PM	467.0	466.4	467.7	V
Urms Line2	12/29/2004	7:33:55.500 PM	466.3	465.3	467.0	V
Urms Line3	12/29/2004	7:33:55.500 PM	482.1	481.3	482.7	V

12/29/2004 - 7:33:55.000 PM
Val
466.5 — Urms Line1
465.4 — Urms Line2
481.9 — Urms Line3

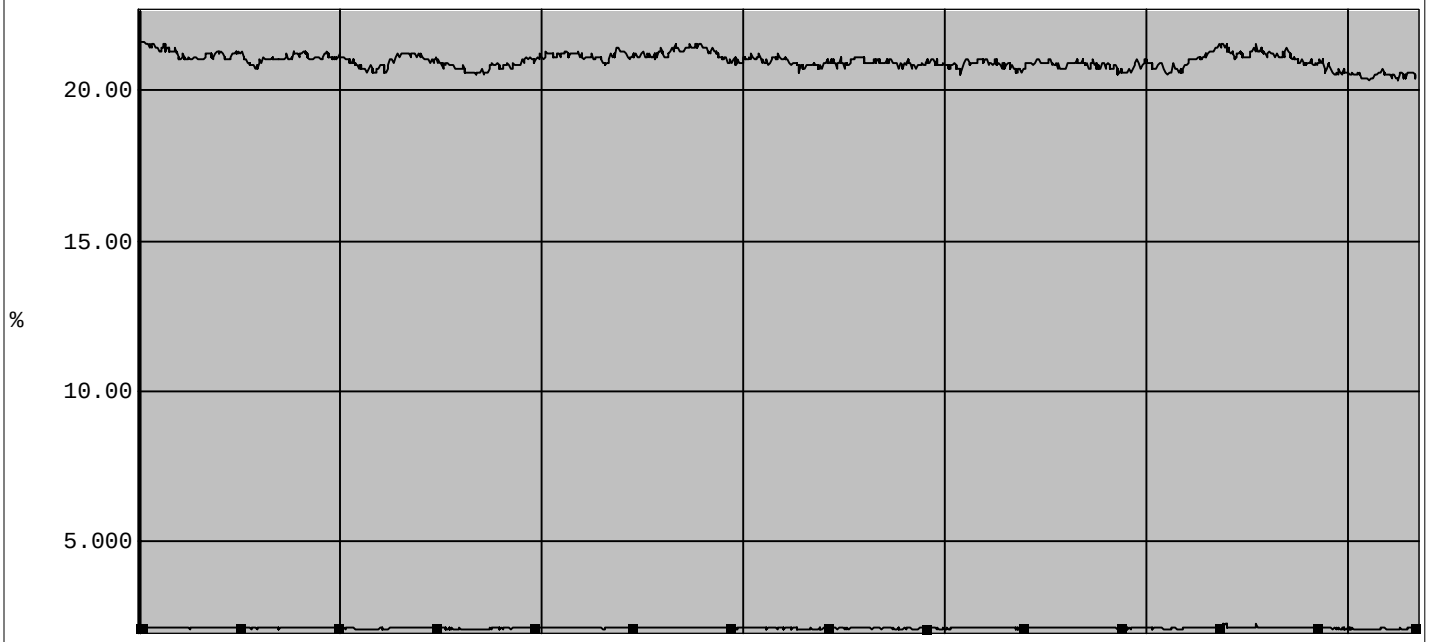
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	12/29/2004	7:33:55.500 PM	71.95	71.50	72.30	A
Arms Line2	12/29/2004	7:33:55.500 PM	52.04	51.50	52.60	A
Arms Line3	12/29/2004	7:33:55.500 PM	73.53	73.20	73.90	A

12/29/2004 - 7:33:55.000 PM
Val
72.30 — Arms Line1
51.60 — Arms Line2
73.50 — Arms Line3

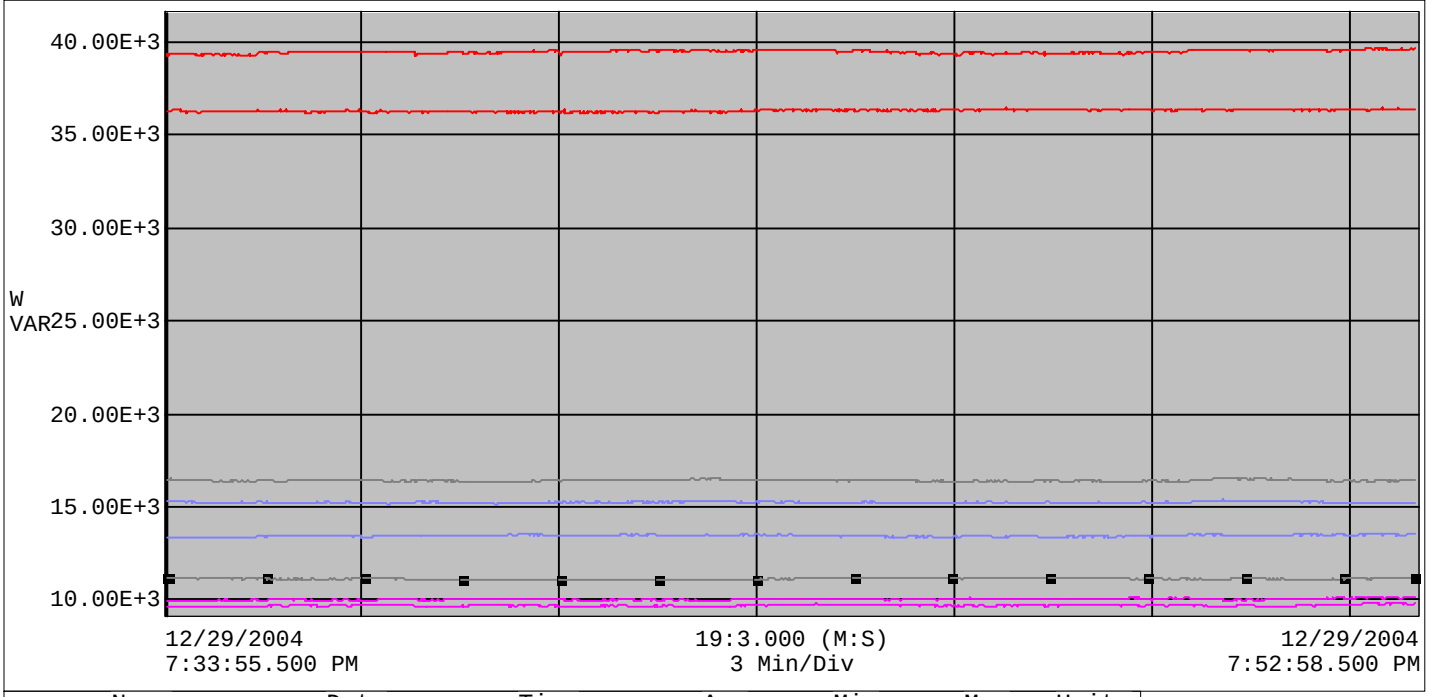
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	12/29/2004	7:33:55.500 PM	2.080	2.000	2.200	%
Aunb(IEEE)	12/29/2004	7:33:55.500 PM	20.96	20.30	21.60	%

12/29/2004 - 7:33:55.000 PM
Val
2.100 —— Vunb(IEEE)
21.60 —— Aunb(IEEE)

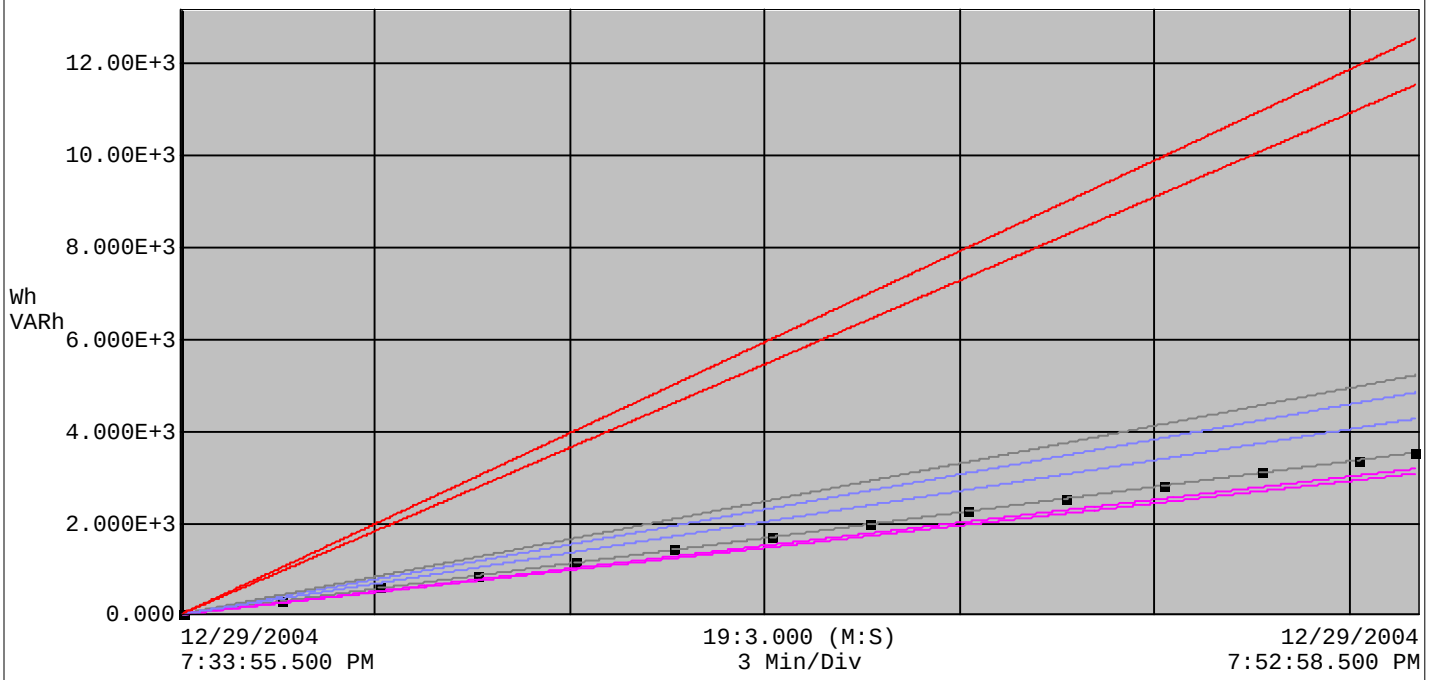
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	12/29/2004	7:33:55.500 PM	11.08E+3	10.99E+3	11.18E+3	W
W Line2	12/29/2004	7:33:55.500 PM	9.980E+3	9.855E+3	10.09E+3	W
W Line3	12/29/2004	7:33:55.500 PM	15.20E+3	15.10E+3	15.33E+3	W
W Sum of Phases	12/29/2004	7:33:55.500 PM	36.26E+3	36.11E+3	36.40E+3	W
VAR Line1	12/29/2004	7:33:55.500 PM	16.38E+3	16.25E+3	16.50E+3	VAR
VAR Line2	12/29/2004	7:33:55.500 PM	9.649E+3	9.548E+3	9.777E+3	VAR
VAR Line3	12/29/2004	7:33:55.500 PM	13.40E+3	13.28E+3	13.50E+3	VAR
VAR Sum of Phases	12/29/2004	7:33:55.500 PM	39.43E+3	39.19E+3	39.61E+3	VAR

12/29/2004 - 7:33:55.000 PM
Val
11.13E+3 — W Line1
9.863E+3 — W Line2
15.26E+3 — W Line3
36.26E+3 — W Sum of Phases
16.44E+3 — VAR Line1
9.548E+3 — VAR Line2
13.29E+3 — VAR Line3
39.28E+3 — VAR Sum of Phases

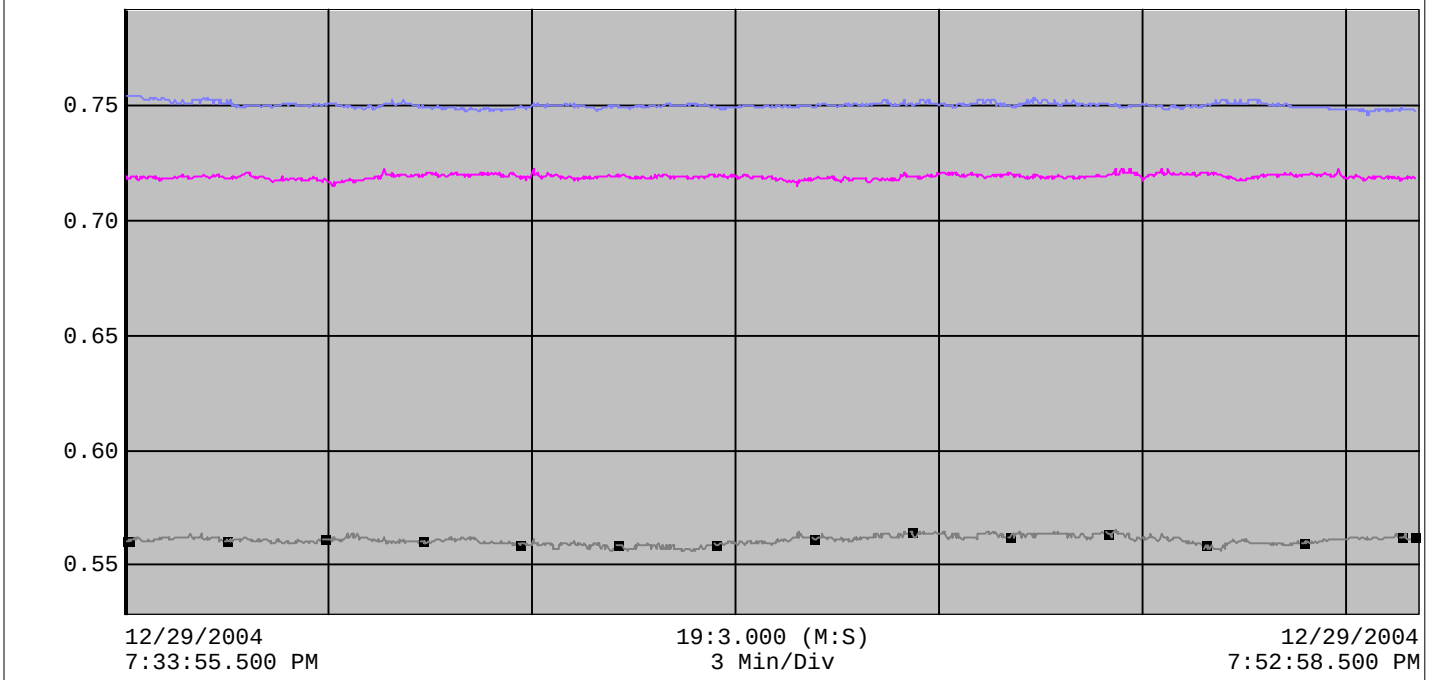
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	12/29/2004	7:33:55.500 PM	1.762E+3	3.118	3.523E+3	Wh
W-hours Line2	12/29/2004	7:33:55.500 PM	1.585E+3	2.710	3.171E+3	Wh
W-hours Line3	12/29/2004	7:33:55.500 PM	2.416E+3	4.274	4.829E+3	Wh
W-hours Sum of Phases	12/29/2004	7:33:55.500 PM	5.763E+3	10.20	11.52E+3	Wh
VAR-hours Line1	12/29/2004	7:33:55.500 PM	2.604E+3	4.606	5.204E+3	VARh
VAR-hours Line2	12/29/2004	7:33:55.500 PM	1.533E+3	2.620	3.066E+3	VARh
VAR-hours Line3	12/29/2004	7:33:55.500 PM	2.130E+3	3.640	4.259E+3	VARh
VAR-hours Sum of Phases	12/29/2004	7:33:55.500 PM	6.267E+3	11.09	12.53E+3	VARh

12/29/2004 - 7:33:55.000 PM
Val
3.118 — W-hours Line1
2.710 — W-hours Line2
4.274 — W-hours Line3
10.20 — W-hours Sum of Phases
4.606 — VAR-hours Line1
2.620 — VAR-hours Line2
3.640 — VAR-hours Line3
11.09 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	12/29/2004	7:33:55.500 PM	0.561	0.556	0.565	
PF Line2	12/29/2004	7:33:55.500 PM	0.719	0.715	0.722	
PF Line3	12/29/2004	7:33:55.500 PM	0.750	0.746	0.754	

12/29/2004 - 7:33:55.000 PM
Val
0.561 — PF Line1
0.719 — PF Line2
0.754 — PF Line3

Trend Summary Report

Database: C:\Program Files\DataView\DataFiles\PowerPad\Guam Data\A18\122904-A18.dvb

Operator	Test Site
GWA Victor Jardel ,	WPS A-18 ,

Comments
Recorded at motor starter overload relay.

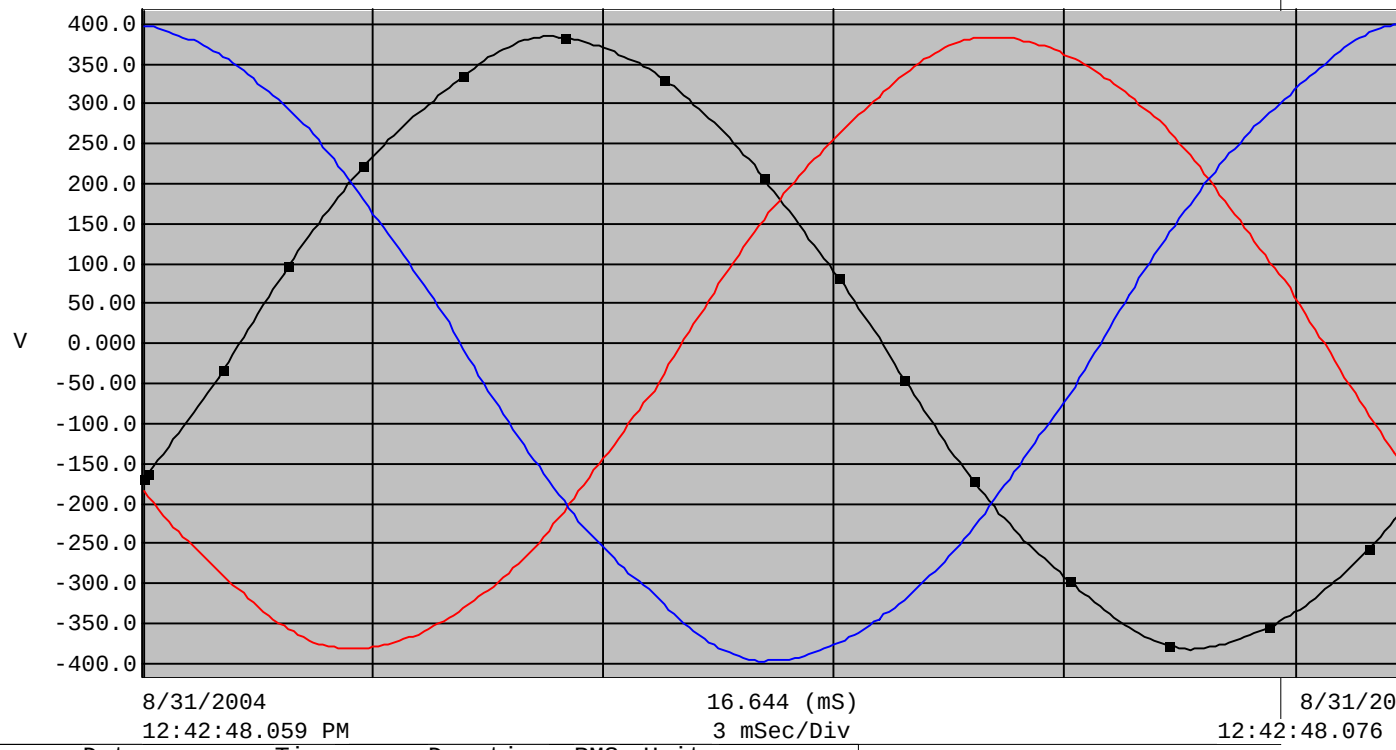
GWA Water Pumping Station Assessment				
Station Name: A-21	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/31/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.425	
Transformer Pole Condition and Grounding	2.5%	2	0.05	4, 8
Transformer Connection Type	5.0%	2	0.1	8
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	2	0.1	2
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.4	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	2	0.1	14
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0	
Pressure	1.5%	0	0	
Flow	1.5%	0	0	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.12	
Lighting	3.0%	2	0.06	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.4**

Comments:

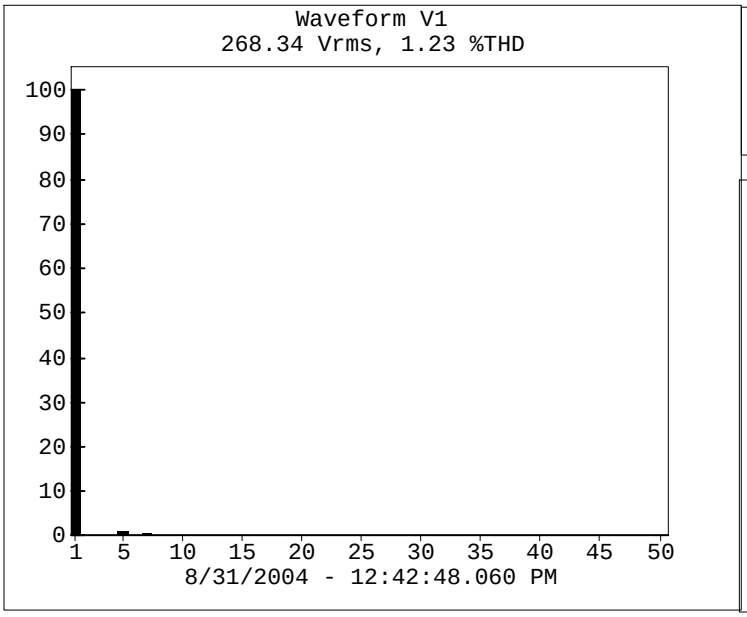
GWA WPS A-21 Photo Report

Recording Start Date	8/31/2004 - 12:42:48 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/31/2004	12:42:48.059 PM	16.644	268.3	V
Waveform V2	8/31/2004	12:42:48.059 PM	16.644	269.6	V
Waveform V3	8/31/2004	12:42:48.059 PM	16.644	279.3	V



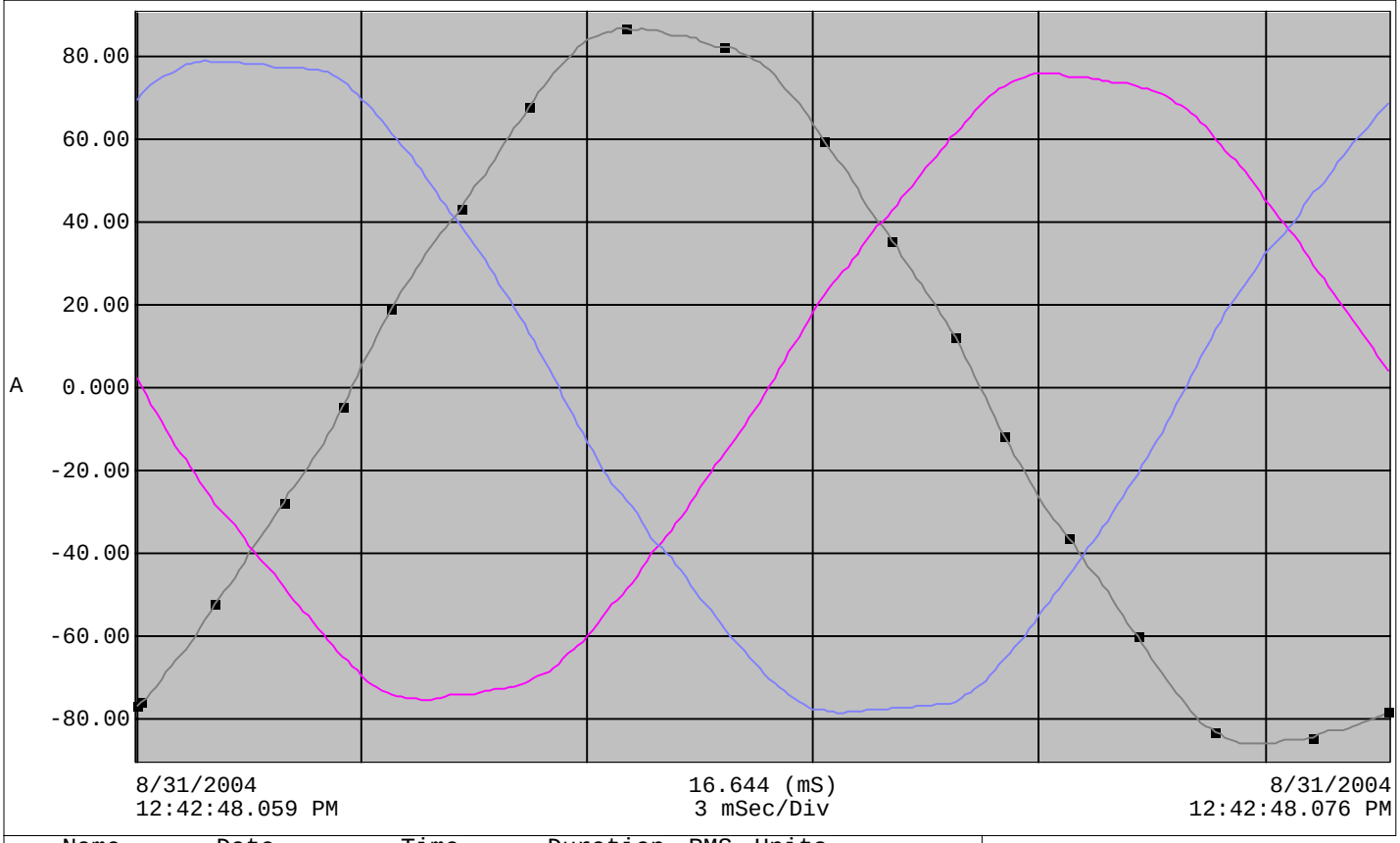
8/31/2004 - 12:42:48.000 PM

Val	
-172.1	Waveform V1
-186.3	Waveform V2
395.6	Waveform V3

Waveform V1

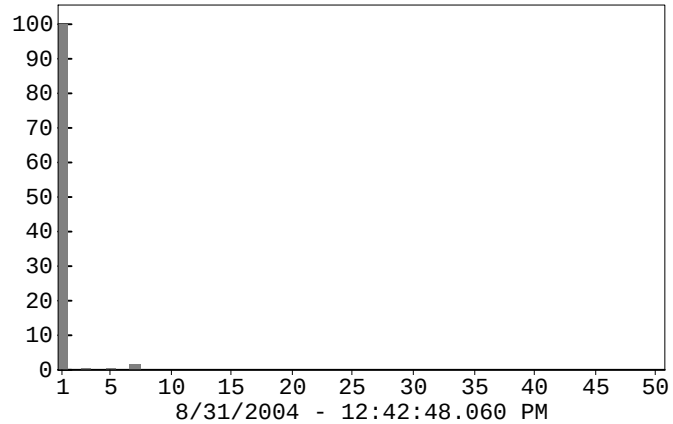
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Current
Frequency: 60.08 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/31/2004	12:42:48.059 PM	16.644	61.16	A
Waveform I2	8/31/2004	12:42:48.059 PM	16.644	53.58	A
Waveform I3	8/31/2004	12:42:48.059 PM	16.644	56.96	A

Waveform I1
61.16 Arms, 2.45 %THD



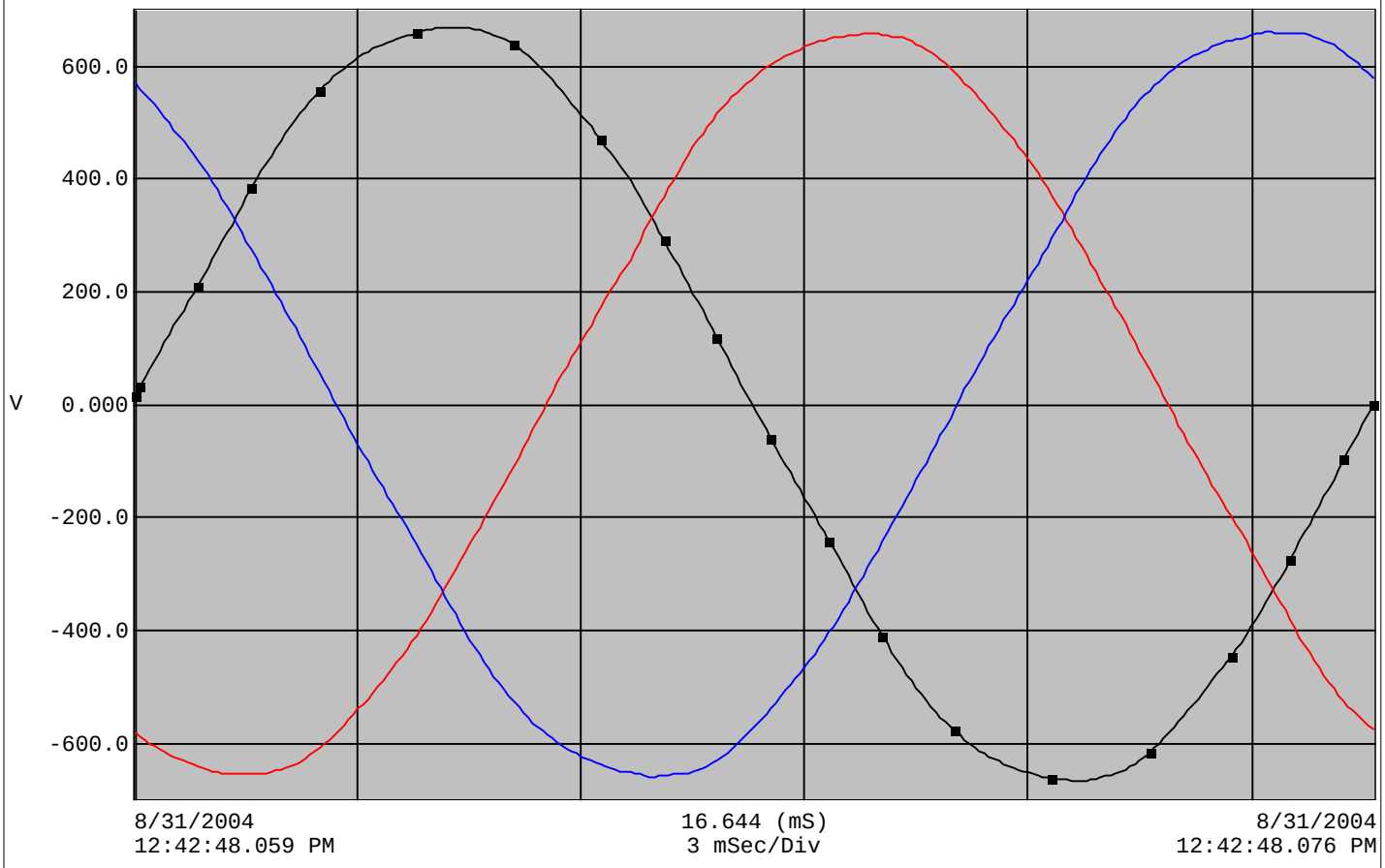
8/31/2004 - 12:42:48.000 PM

Val	
-76.90	Waveform I1
1.900	Waveform I2
69.00	Waveform I3

Waveform I1

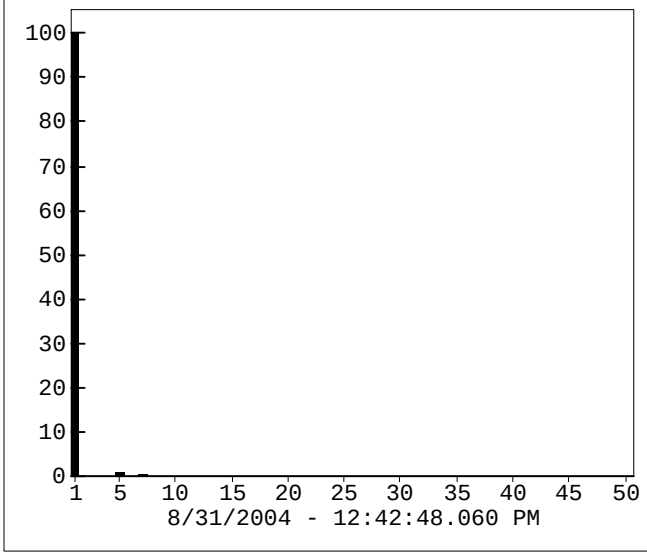
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.0	H19	0.1	H36	0.0
H03	1.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	2.0	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.3	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.1	H34	0.2		

Waveform - Voltage (U)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/31/2004	12:42:48.059 PM	16.644	476.0	V
Waveform U2	8/31/2004	12:42:48.059 PM	16.644	468.7	V
Waveform U3	8/31/2004	12:42:48.059 PM	16.644	470.1	V

Waveform U1
475.99 Vrms, 1.16 %THD



8/31/2004 - 12:42:48.000 PM

	Val	
—	14.20	Waveform U1
—	-581.9	Waveform U2
—	567.7	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/31/2004
Start Time: 12:42:48 PM
Duration: 0:0.000 (M:S)
W: 13.54E+3 W
VAR: 9.283E+3 W
VA: 16.41E+3 W
Power Factor: 0.825
Displacement Power Factor: 0.825
TAN: 0.685
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\A21\083104-A21-Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS A-21 - Photo ,

Comments

Recorded at motor starter overload relay. (3) 50 KVA Transformer bank connected open delta (third transformer not connected). Phase monitor installed. GPA meter 02-465-797 with a indicated demand of 43.04 KW. Measured load of 39.45 KW.

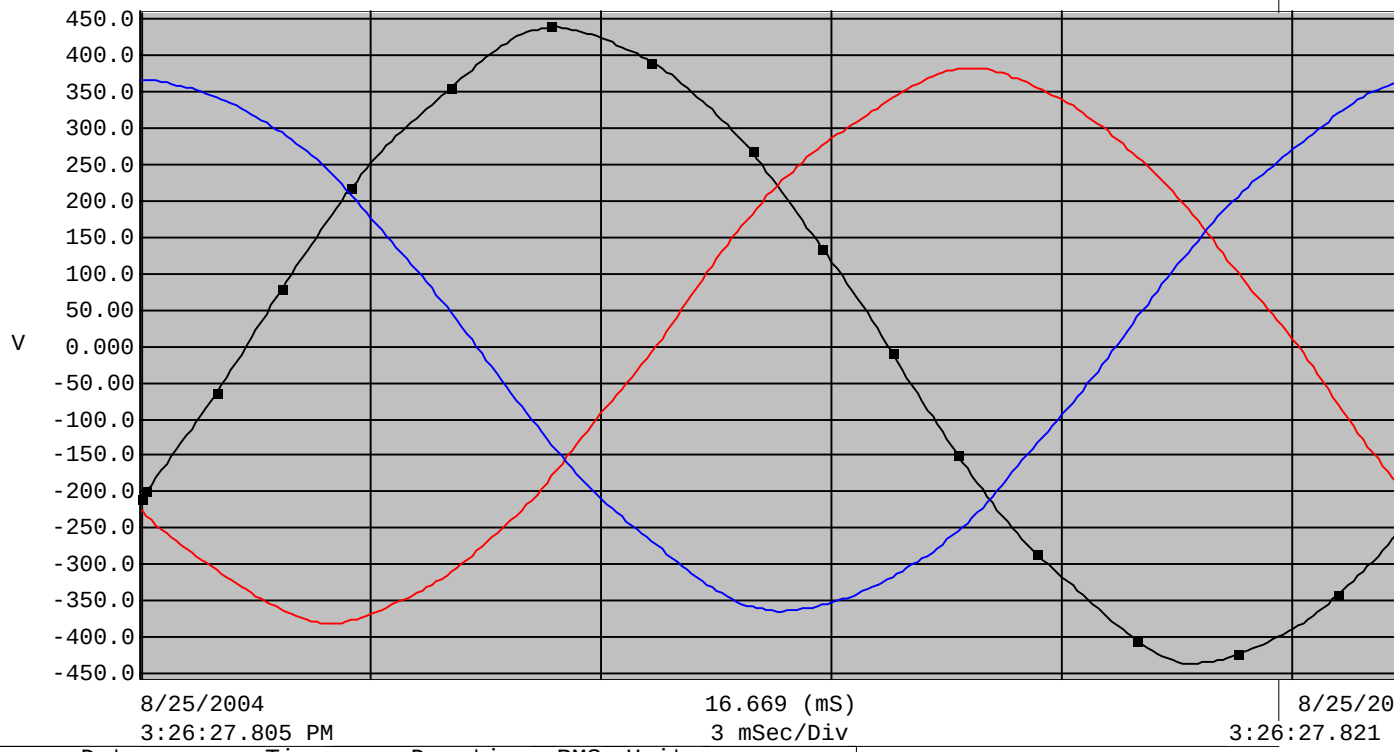
GWA Water Pumping Station Assessment				
Station Name: A-28	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.35	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	1	0.05	13
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.5	
Main Breaker	5.0%	2	0.1	36
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.055	
Pressure	1.5%	1	0.015	
Flow	1.5%	0	0	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.3**

Comments:

GWA WPS A-28 Photo Report

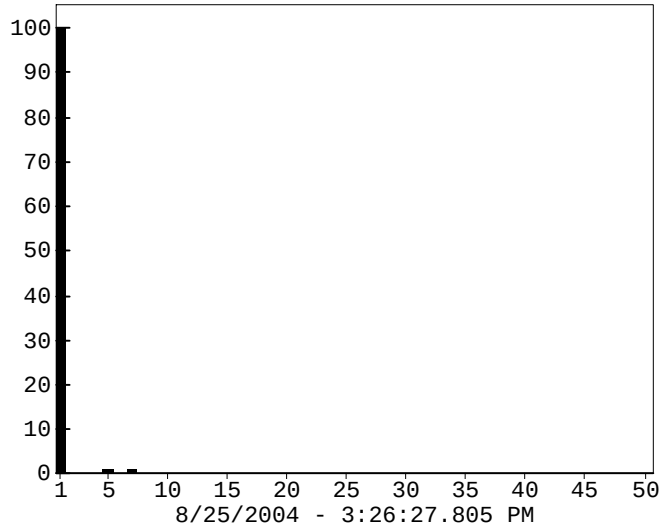
Recording Start Date	8/25/2004 - 3:26:27 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/25/2004	3:26:27.805 PM	16.669	304.5	V
Waveform V2	8/25/2004	3:26:27.805 PM	16.669	265.5	V
Waveform V3	8/25/2004	3:26:27.805 PM	16.669	255.9	V

Waveform V1
304.50 Vrms, 1.37 %THD

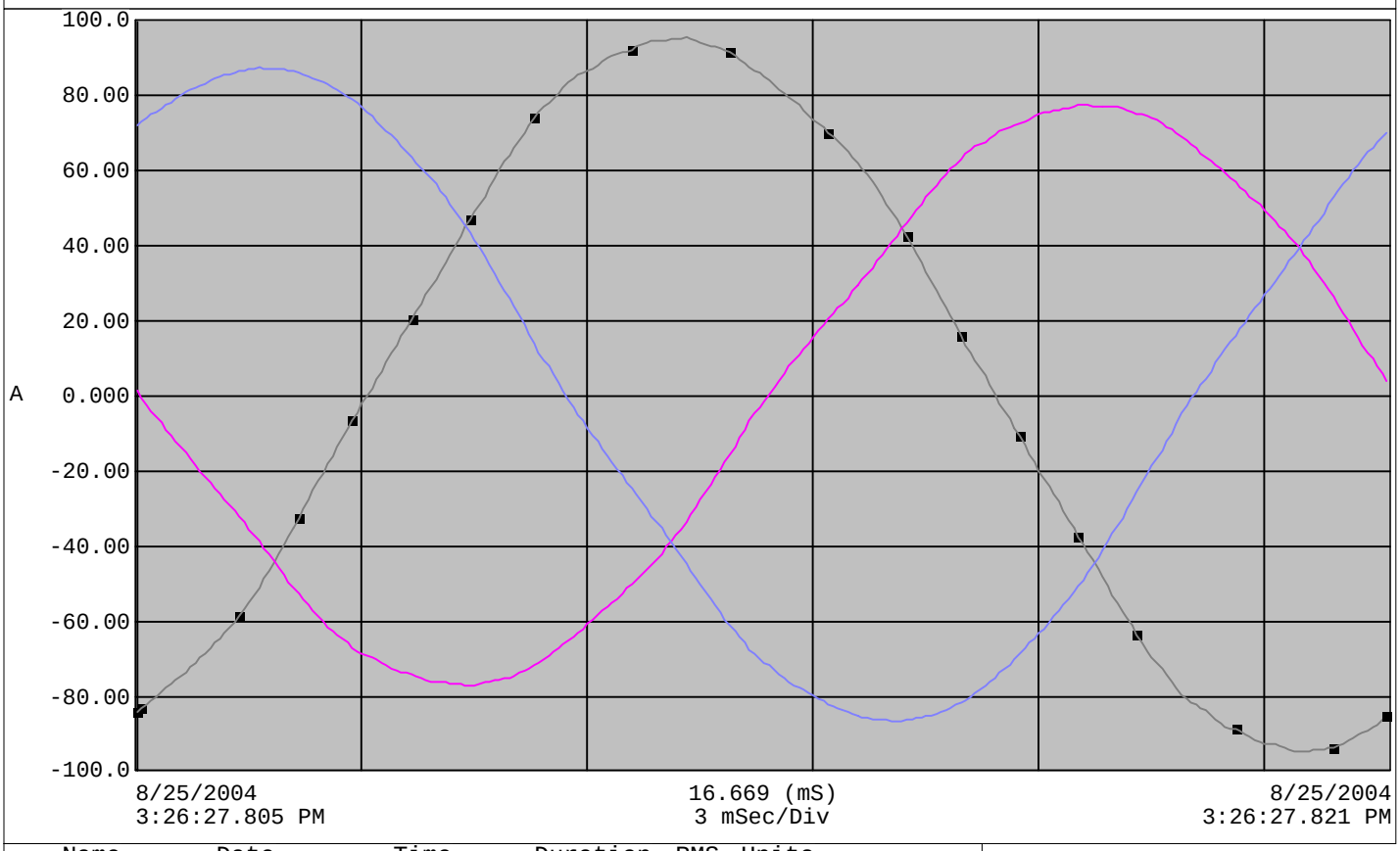


8/25/2004 - 3:26:27.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

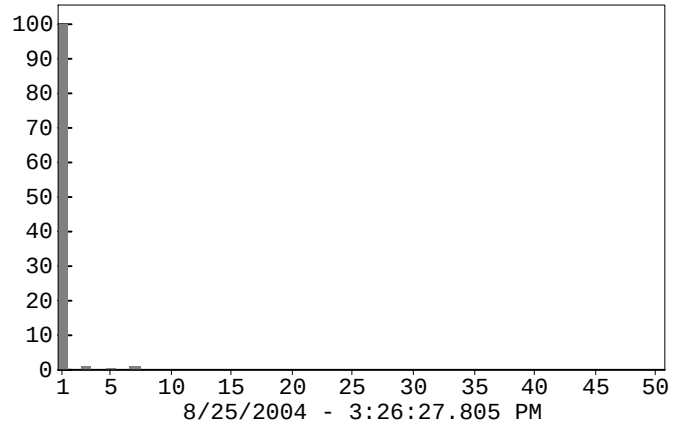
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/25/2004	3:26:27.805 PM	16.669	67.12	A
Waveform I2	8/25/2004	3:26:27.805 PM	16.669	54.22	A
Waveform I3	8/25/2004	3:26:27.805 PM	16.669	61.19	A

Waveform I1
67.12 Arms, 2.18 %THD

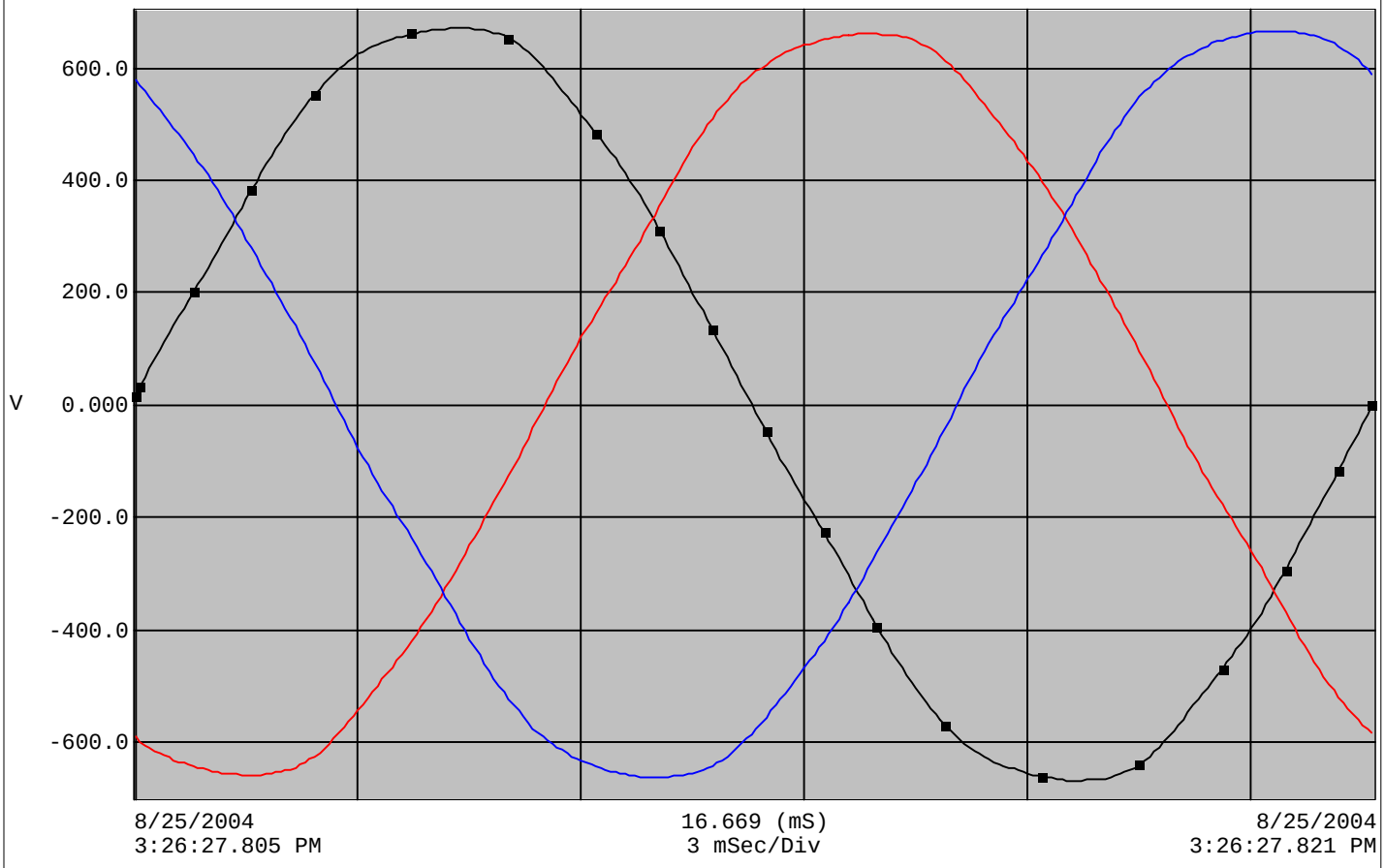


8/25/2004 - 3:26:27.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

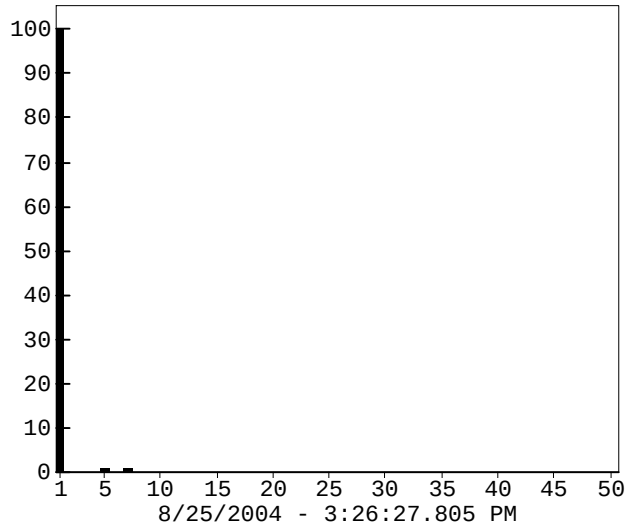
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.1
H03	1.7	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.1	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.2		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/25/2004	3:26:27.805 PM	16.669	479.6	V
Waveform U2	8/25/2004	3:26:27.805 PM	16.669	472.6	V
Waveform U3	8/25/2004	3:26:27.805 PM	16.669	475.0	V

Waveform U1
479.58 Vrms, 1.40 %THD



8/25/2004 - 3:26:27.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/25/2004
Start Time: 3:26:27 PM
Duration: 0:0.000 (M:S)
W: 16.44E+3 W
VAR: 12.19E+3 W
VA: 20.46E+3 W
Power Factor: 0.803
Displacement Power Factor: 0.803
TAN: 0.741
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\A28\082504-A28A-Photo.dvb

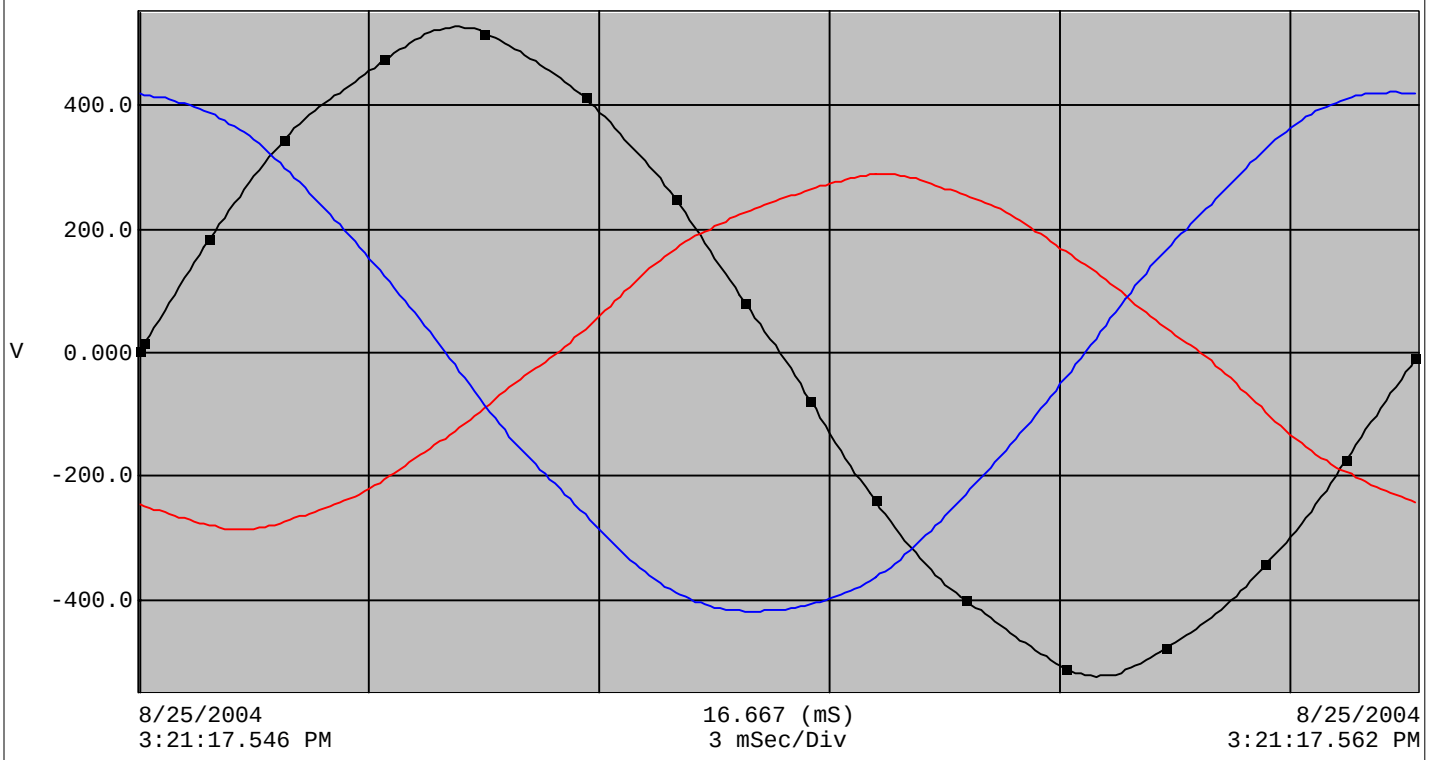
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS A-28 - Photo 2 ,

Comments

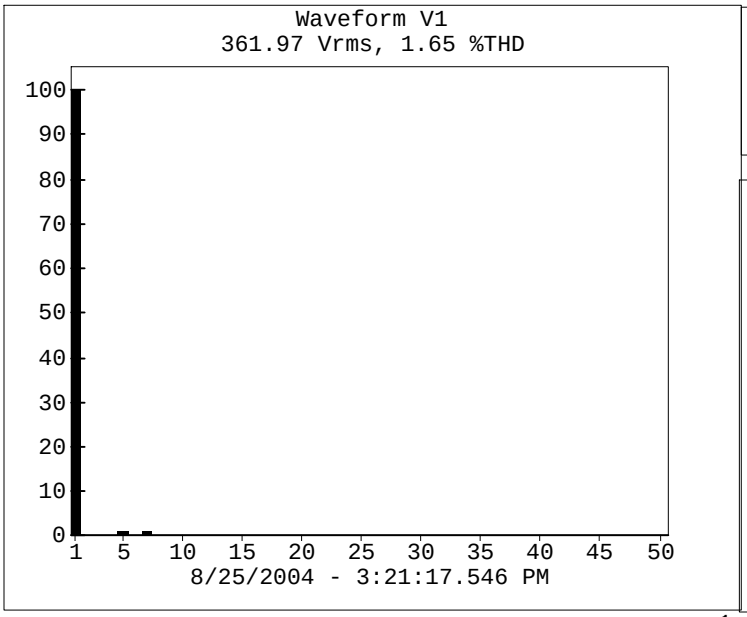
WPS A-28 - No Load Photo Report

Recording Start Date	8/25/2004 - 3:21:17 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/25/2004	3:21:17.546 PM	16.667	362.0	V
Waveform V2	8/25/2004	3:21:17.546 PM	16.667	199.2	V
Waveform V3	8/25/2004	3:21:17.546 PM	16.667	299.1	V

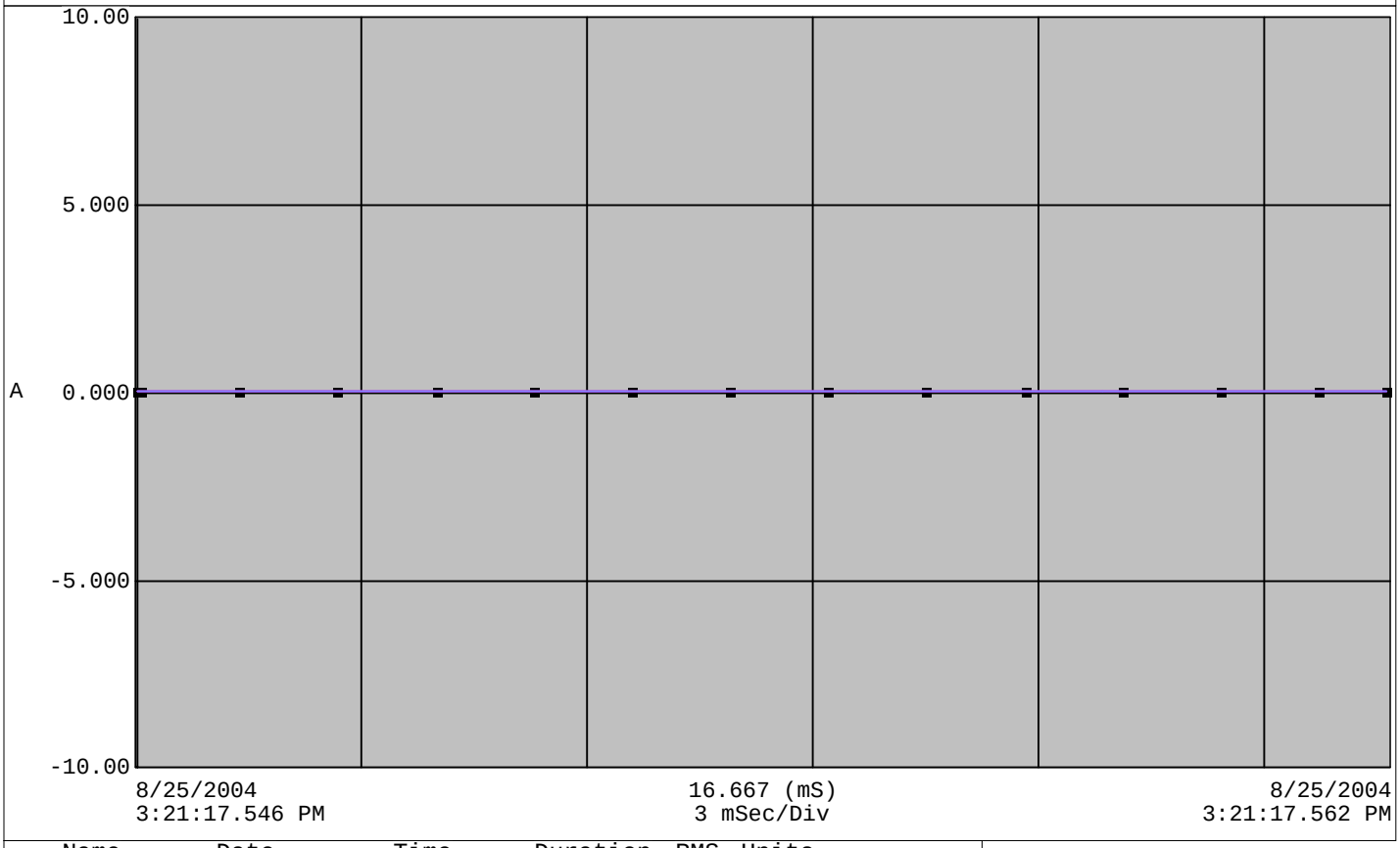


8/25/2004 - 3:21:17.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

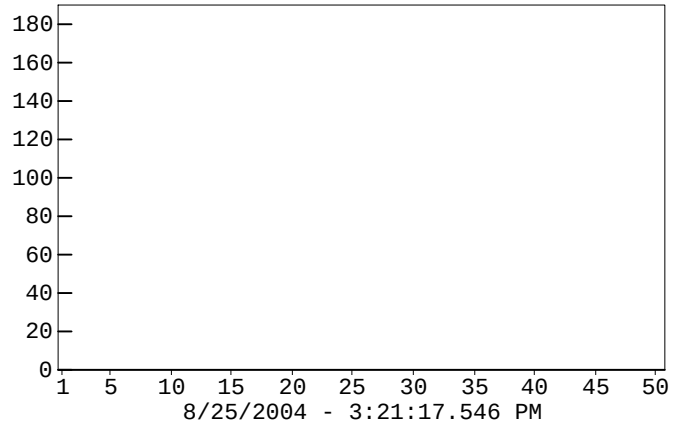
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/25/2004	3:21:17.546 PM	16.667	0.000	A
Waveform I2	8/25/2004	3:21:17.546 PM	16.667	0.000	A
Waveform I3	8/25/2004	3:21:17.546 PM	16.667	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD

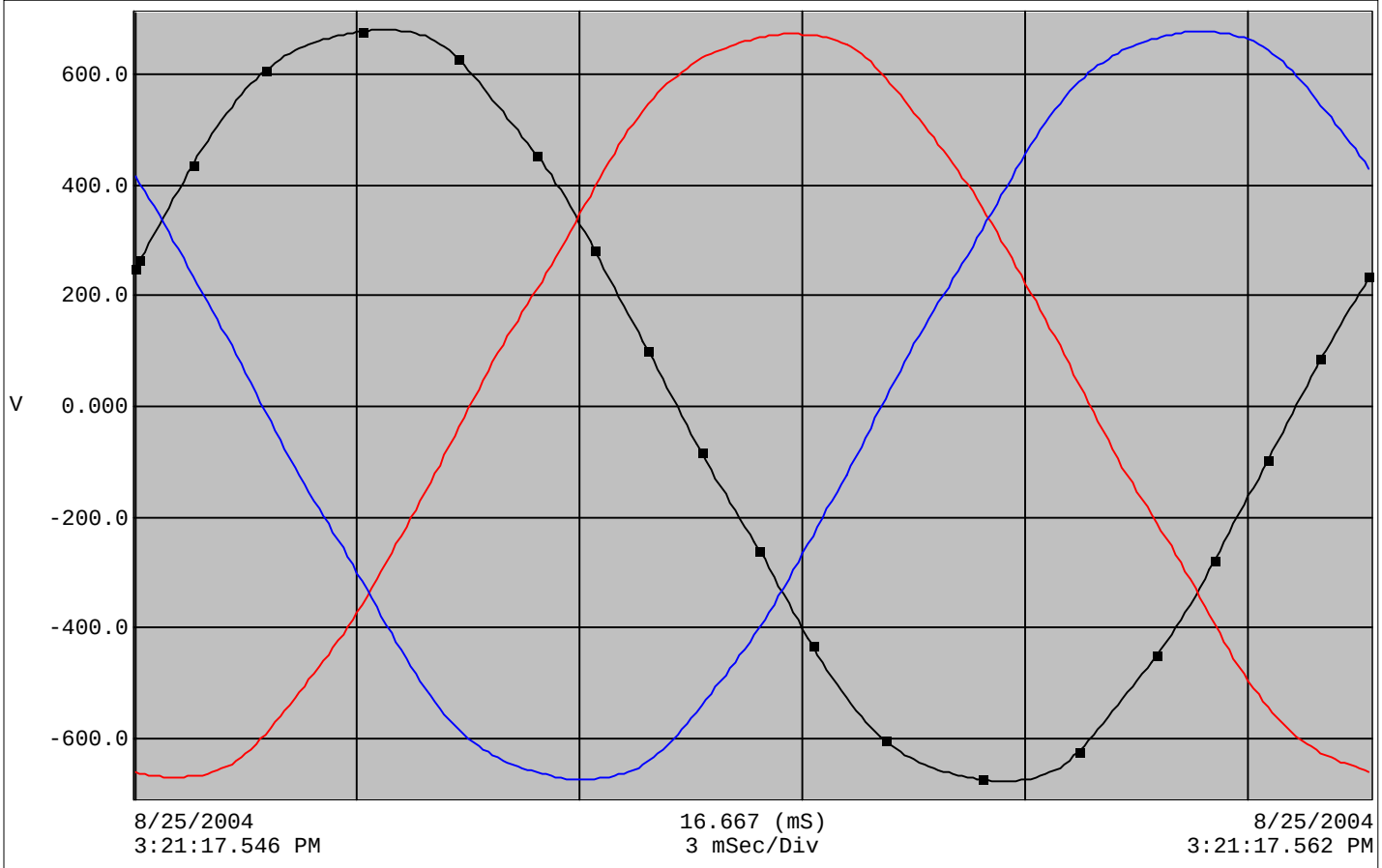


8/25/2004 - 3:21:17.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

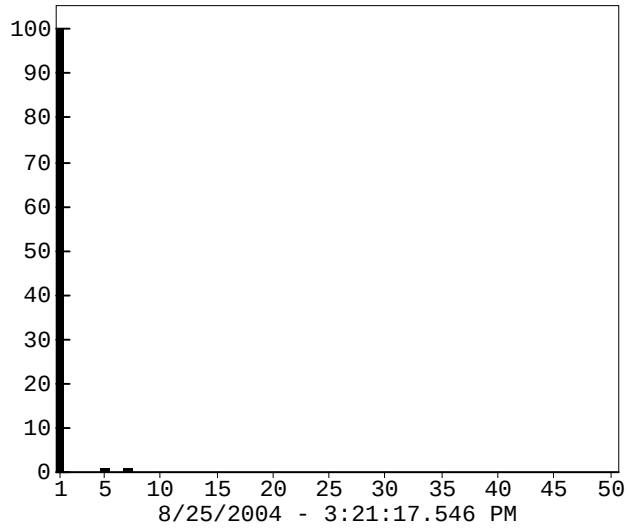
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/25/2004	3:21:17.546 PM	16.667	486.3	V
Waveform U2	8/25/2004	3:21:17.546 PM	16.667	481.4	V
Waveform U3	8/25/2004	3:21:17.546 PM	16.667	483.6	V

Waveform U1
486.26 Vrms, 1.44 %THD



8/25/2004 - 3:21:17.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/25/2004
Start Time: 3:21:17 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\A28\082504-A28-Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa ,	GWA WPS A-28 ,

Comments

GWA Water Pumping Station Assessment				
Station Name: A-29	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 02/08/05		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.55	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.7	
Main Breaker	5.0%	2	0.1	36
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.07	
Pressure	1.5%	1	0.015	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.5**

Comments:

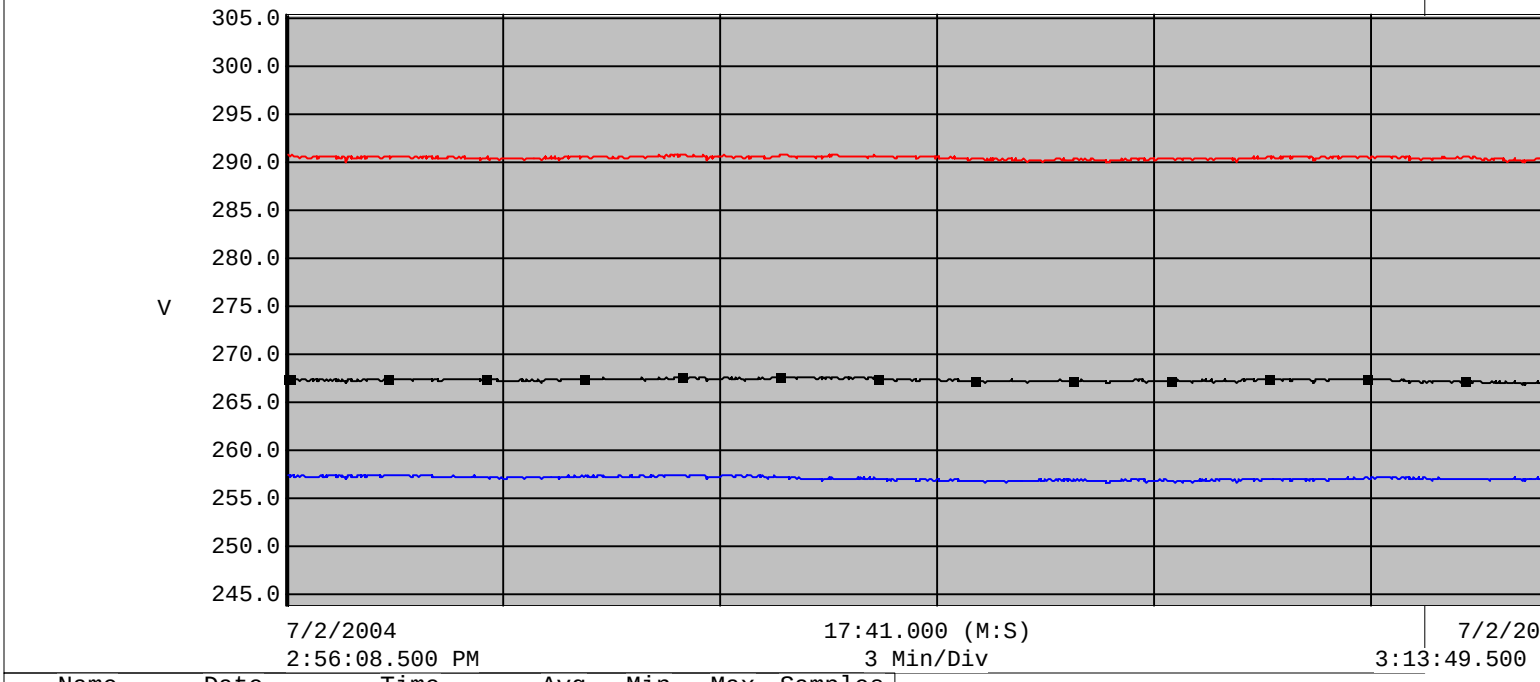
GWA Water Pumping Station Assessment				
Station Name: A-30	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/02/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.35	
Main Disconnect	10.0%	2	0.2	15
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.425	
Generator Condition	10.0%	2	0.2	22
Generator Battery	5.0%	2	0.1	22
Diesel Fuel Line Condition	2.5%	2	0.05	22
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.6	
Main Breaker	5.0%	2	0.1	36
Motor Starter	5.0%	2	0.1	31
Overload Relay	5.0%	2	0.1	31
Wiring	5.0%	2	0.1	37
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.035	
Pressure	1.5%	1	0.015	
Flow	1.5%	0	0	
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0	
Lighting	3.0%	0	0	
Power Devices	2.0%	0	0	
	100%	**Assessment Value**		**2.0**

Comments:

GWA A-30 Pump

Recording Start Date	7/2/2004 - 2:56:08 PM
Recording Duration	17:41 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

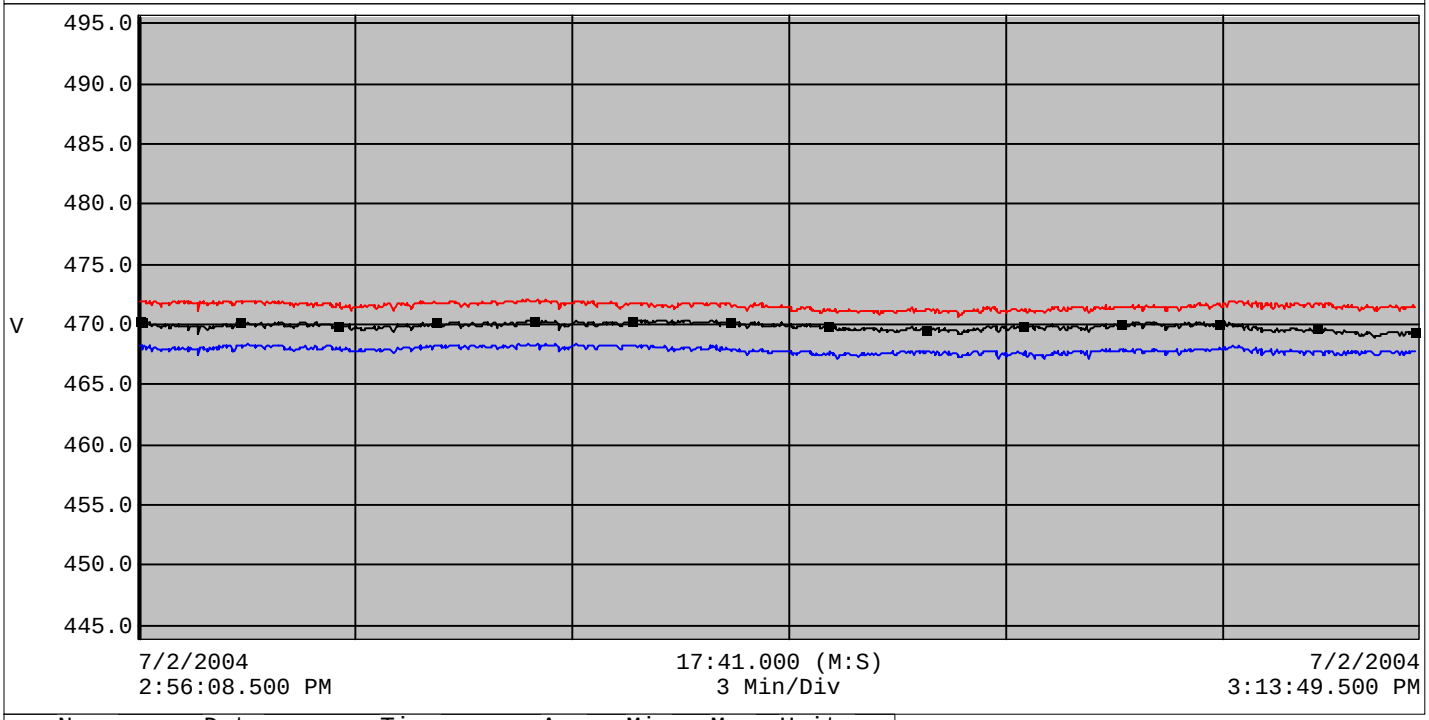
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/2/2004	2:56:08.500 PM	267.2	266.7	267.5	1062
Vrms Line2	7/2/2004	2:56:08.500 PM	290.3	289.9	290.7	1062
Vrms Line3	7/2/2004	2:56:08.500 PM	256.9	256.5	257.3	1062

7/2/2004 - 2:56:08.000 PM
Val
267.4 — Vrms Line1
290.6 — Vrms Line2
257.3 — Vrms Line3

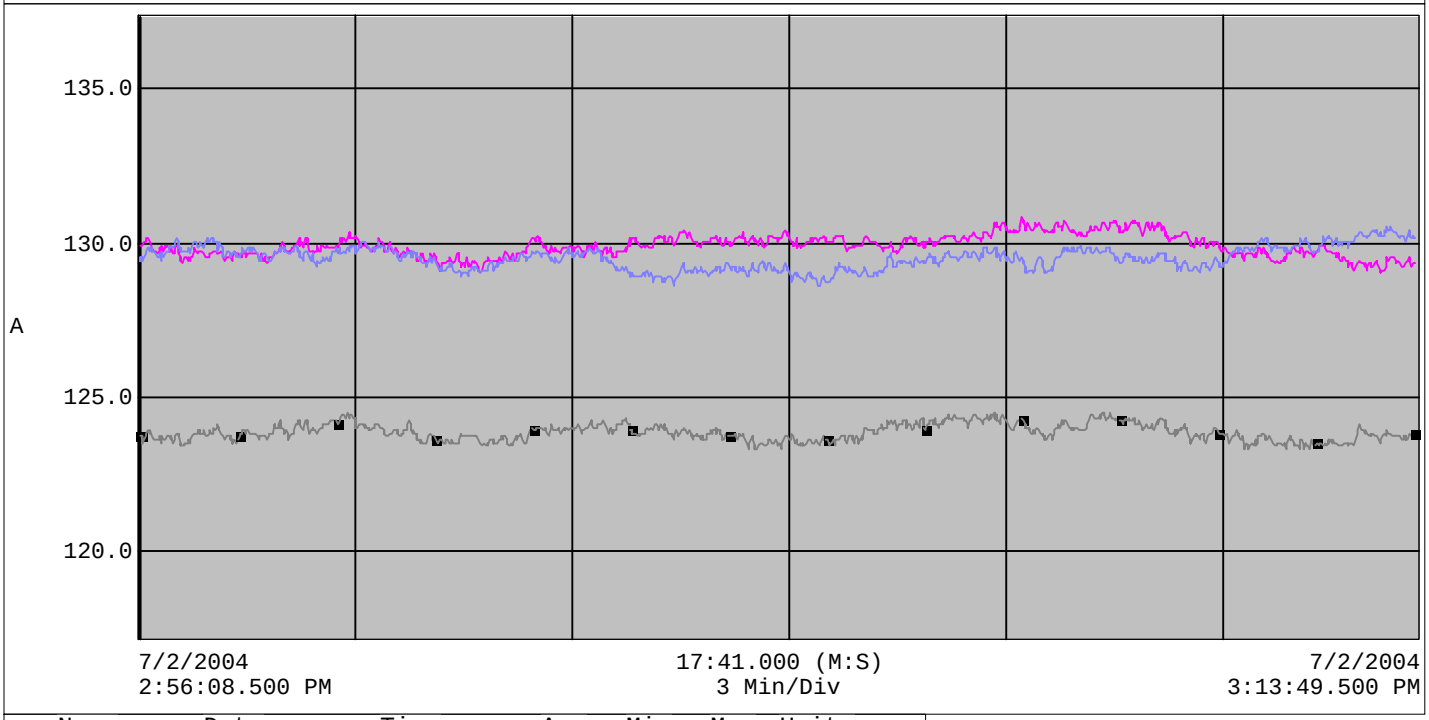
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/2/2004	2:56:08.500 PM	469.7	468.8	470.3	V
Urms Line2	7/2/2004	2:56:08.500 PM	471.4	470.6	472.0	V
Urms Line3	7/2/2004	2:56:08.500 PM	467.8	467.1	468.3	V

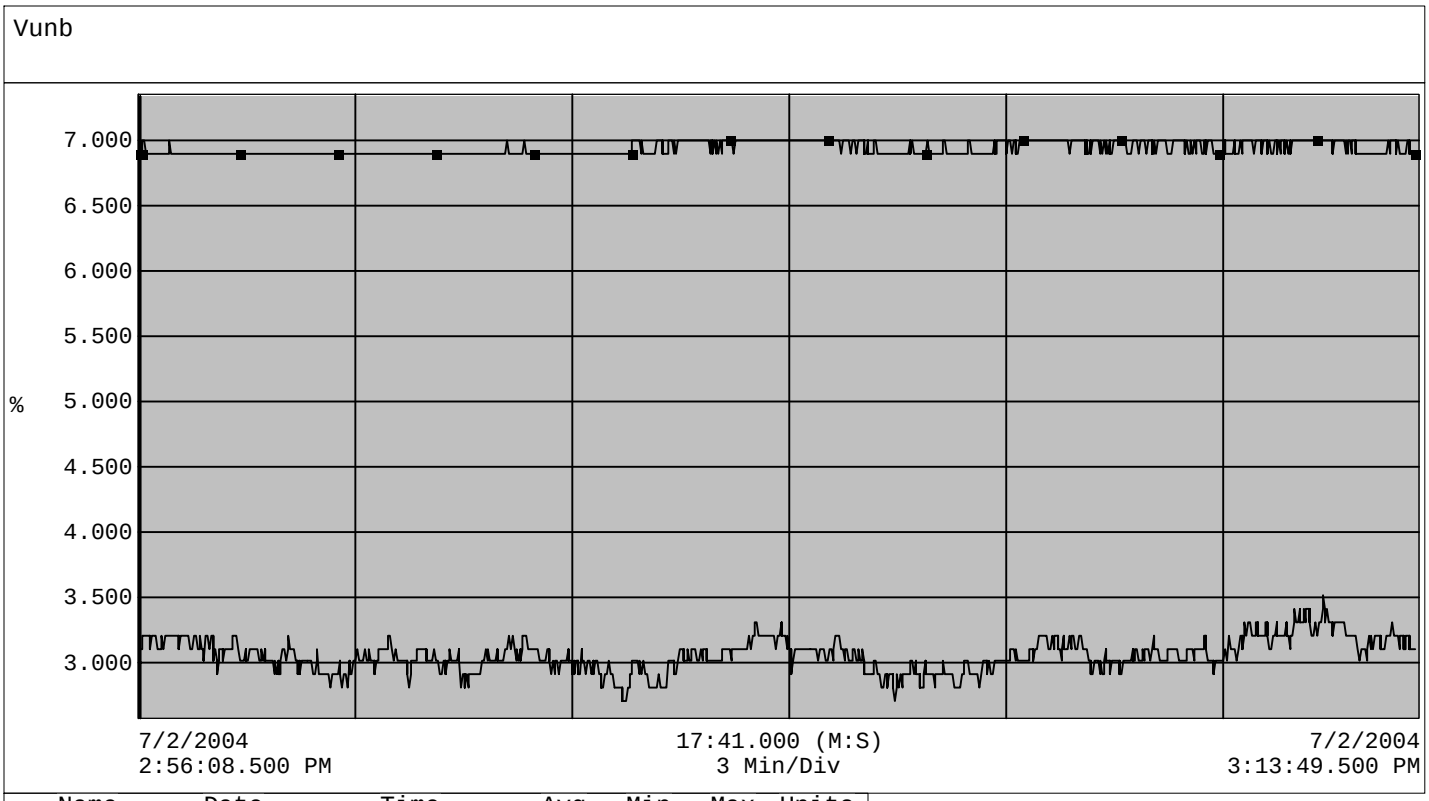
7/2/2004 - 2:56:08.000 PM
Val
470.2 Urms Line1
471.9 Urms Line2
468.2 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/2/2004	2:56:08.500 PM	123.8	123.3	124.5	A
Arms Line2	7/2/2004	2:56:08.500 PM	129.9	129.0	130.8	A
Arms Line3	7/2/2004	2:56:08.500 PM	129.5	128.6	130.5	A

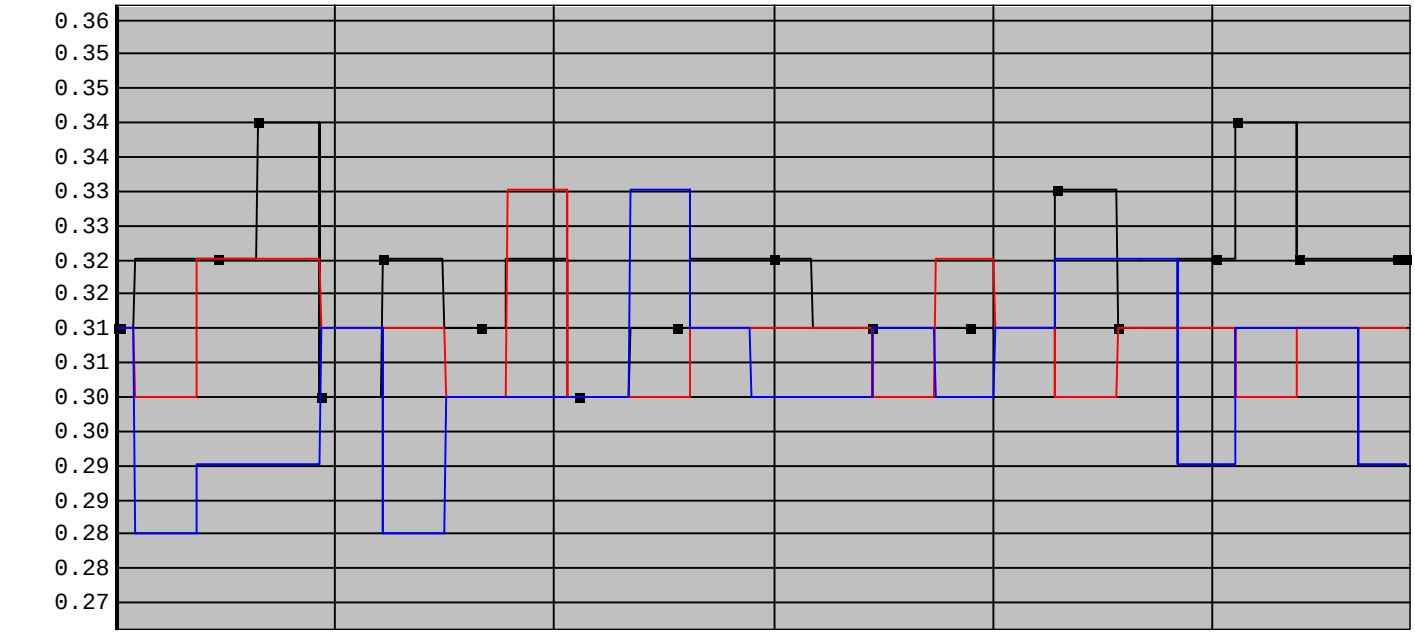
7/2/2004 - 2:56:08.000 PM
Val
123.8 — Arms Line1
129.9 — Arms Line2
129.5 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/2/2004	2:56:08.500 PM	6.939	6.900	7.000	%
Aunb(IEEE)	7/2/2004	2:56:08.500 PM	3.049	2.700	3.500	%

7/2/2004 - 2:56:08.000 PM
Val
6.900 —— Vunb(IEEE)
3.100 —— Aunb(IEEE)

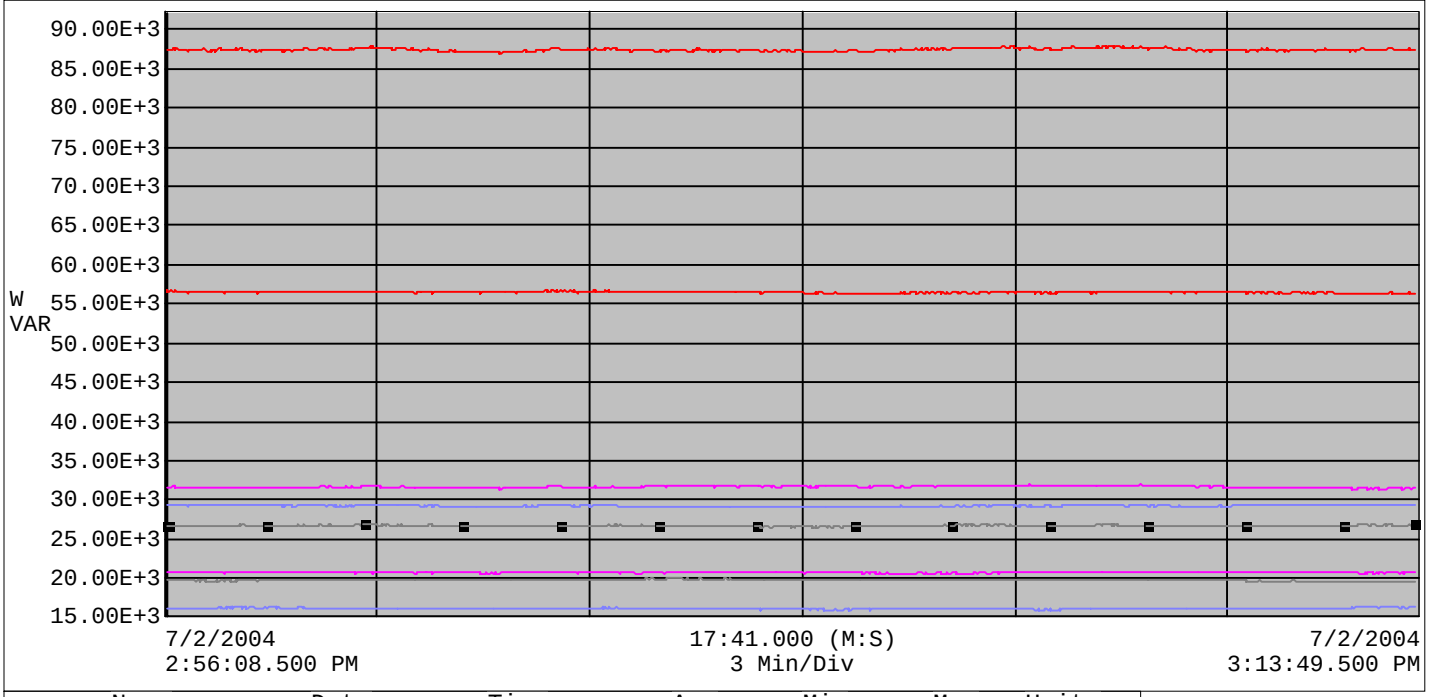
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/2/2004	2:56:08.500 PM	0.317	0.300	0.340	
Vflk Line2	7/2/2004	2:56:08.500 PM	0.309	0.300	0.330	
Vflk Line3	7/2/2004	2:56:08.500 PM	0.303	0.280	0.330	

7/2/2004 - 2:56:08.000 PM
Val
0.310 Vflk Line1
0.310 Vflk Line2
0.310 Vflk Line3

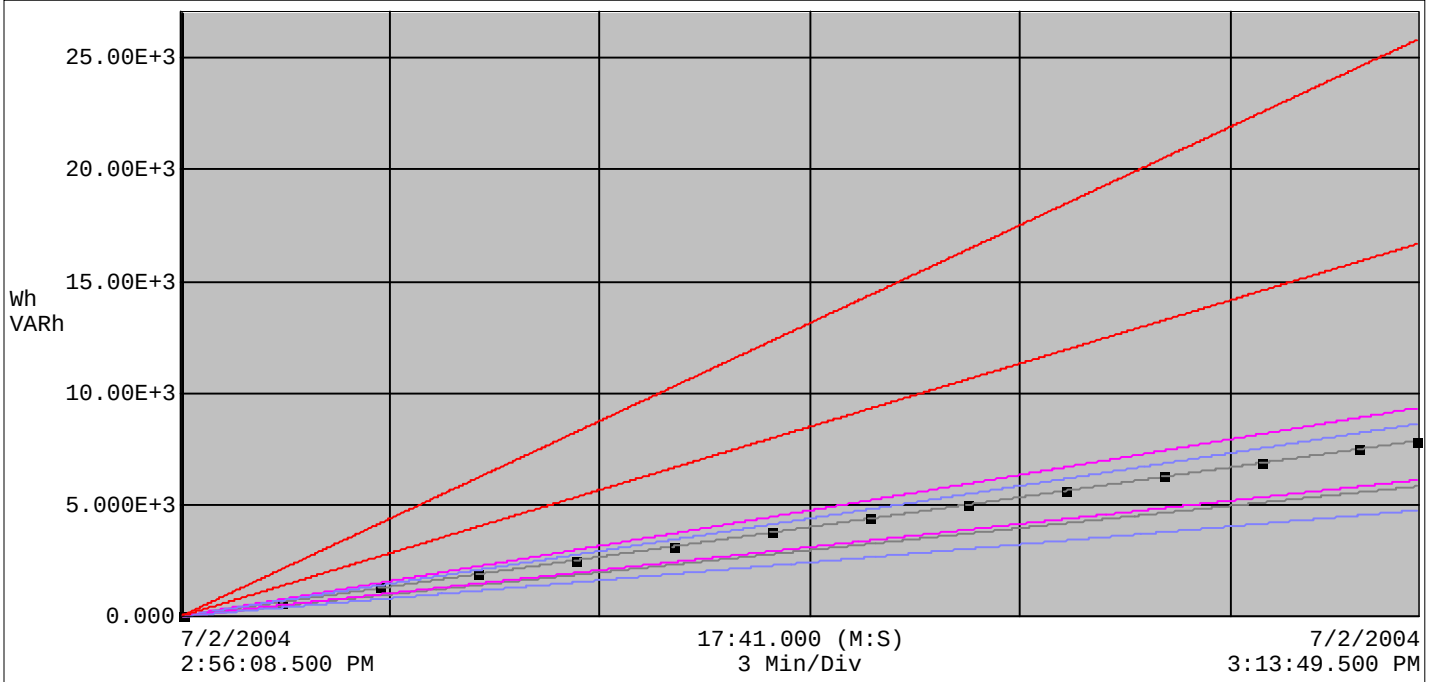
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/2/2004	2:56:08.500 PM	26.59E+3	26.40E+3	26.76E+3	W
W Line2	7/2/2004	2:56:08.500 PM	31.56E+3	31.26E+3	31.84E+3	W
W Line3	7/2/2004	2:56:08.500 PM	29.14E+3	28.92E+3	29.35E+3	W
W Sum of Phases	7/2/2004	2:56:08.500 PM	87.28E+3	86.83E+3	87.76E+3	W
VAR Line1	7/2/2004	2:56:08.500 PM	19.69E+3	19.41E+3	19.88E+3	VAR
VAR Line2	7/2/2004	2:56:08.500 PM	20.63E+3	20.46E+3	20.75E+3	VAR
VAR Line3	7/2/2004	2:56:08.500 PM	16.06E+3	15.85E+3	16.23E+3	VAR
VAR Sum of Phases	7/2/2004	2:56:08.500 PM	56.37E+3	56.13E+3	56.62E+3	VAR

7/2/2004 - 2:56:08.000 PM
Val
26.59E+3 — W Line1
31.56E+3 — W Line2
29.17E+3 — W Line3
87.31E+3 — W Sum of Phases
19.72E+3 — VAR Line1
20.71E+3 — VAR Line2
16.12E+3 — VAR Line3
56.55E+3 — VAR Sum of Phases

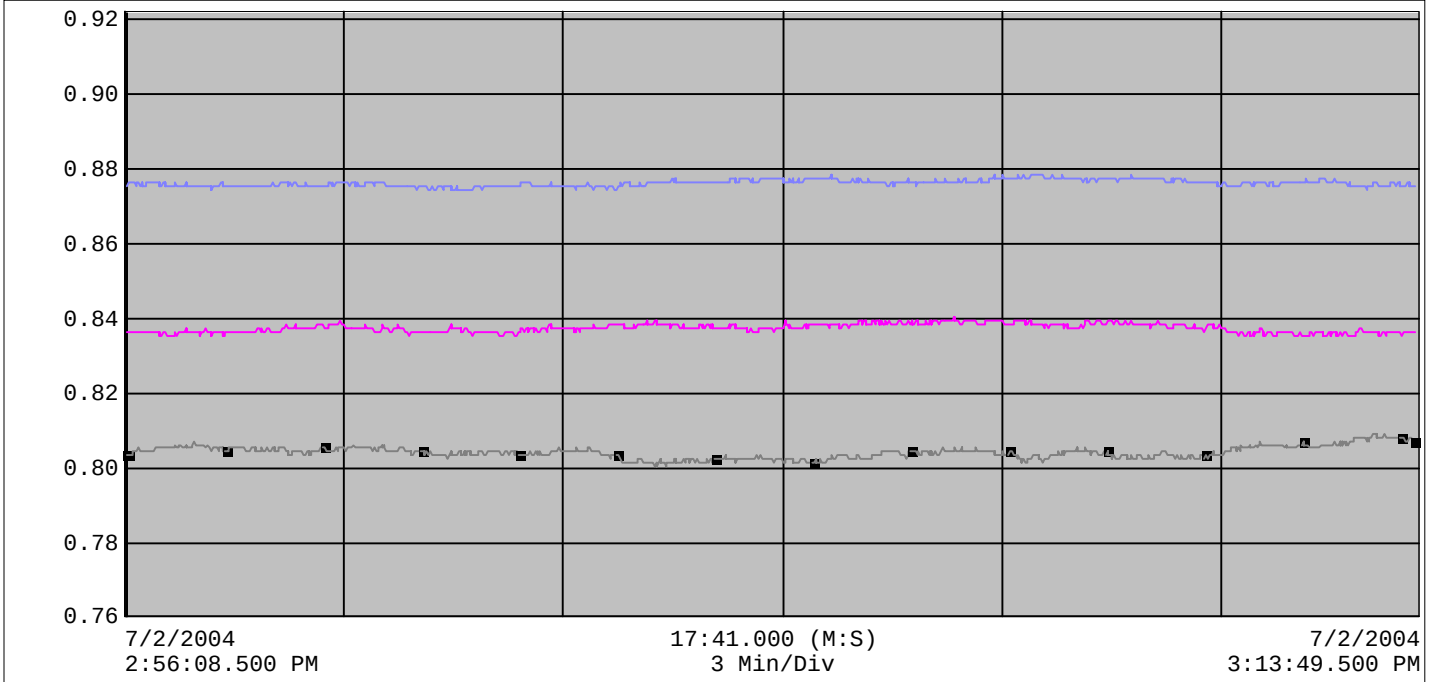
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/2/2004	2:56:08.500 PM	3.926E+3	7.421	7.844E+3	Wh
W-hours Line2	7/2/2004	2:56:08.500 PM	4.658E+3	8.808	9.310E+3	Wh
W-hours Line3	7/2/2004	2:56:08.500 PM	4.300E+3	8.132	8.595E+3	Wh
W-hours Sum of Phases	7/2/2004	2:56:08.500 PM	12.88E+3	24.36	25.75E+3	Wh
VAR-hours Line1	7/2/2004	2:56:08.500 PM	2.908E+3	5.495	5.807E+3	VARh
VAR-hours Line2	7/2/2004	2:56:08.500 PM	3.046E+3	5.758	6.086E+3	VARh
VAR-hours Line3	7/2/2004	2:56:08.500 PM	2.372E+3	4.481	4.737E+3	VARh
VAR-hours Sum of Phases	7/2/2004	2:56:08.500 PM	8.327E+3	15.73	16.63E+3	VARh

7/2/2004 - 2:56:08.000 PM
Val
7.421 — W-hours Line1
8.808 — W-hours Line2
8.132 — W-hours Line3
24.36 — W-hours Sum of Phases
5.495 — VAR-hours Line1
5.758 — VAR-hours Line2
4.481 — VAR-hours Line3
15.73 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/2/2004	2:56:08.500 PM	0.804	0.800	0.809	
PF Line2	7/2/2004	2:56:08.500 PM	0.837	0.835	0.840	
PF Line3	7/2/2004	2:56:08.500 PM	0.876	0.874	0.878	

7/2/2004 - 2:56:08.000 PM
Val
0.803 — PF Line1
0.836 — PF Line2
0.875 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\A30\070204-A30.dvb	
Operator ,	Test Site ,
Comments	

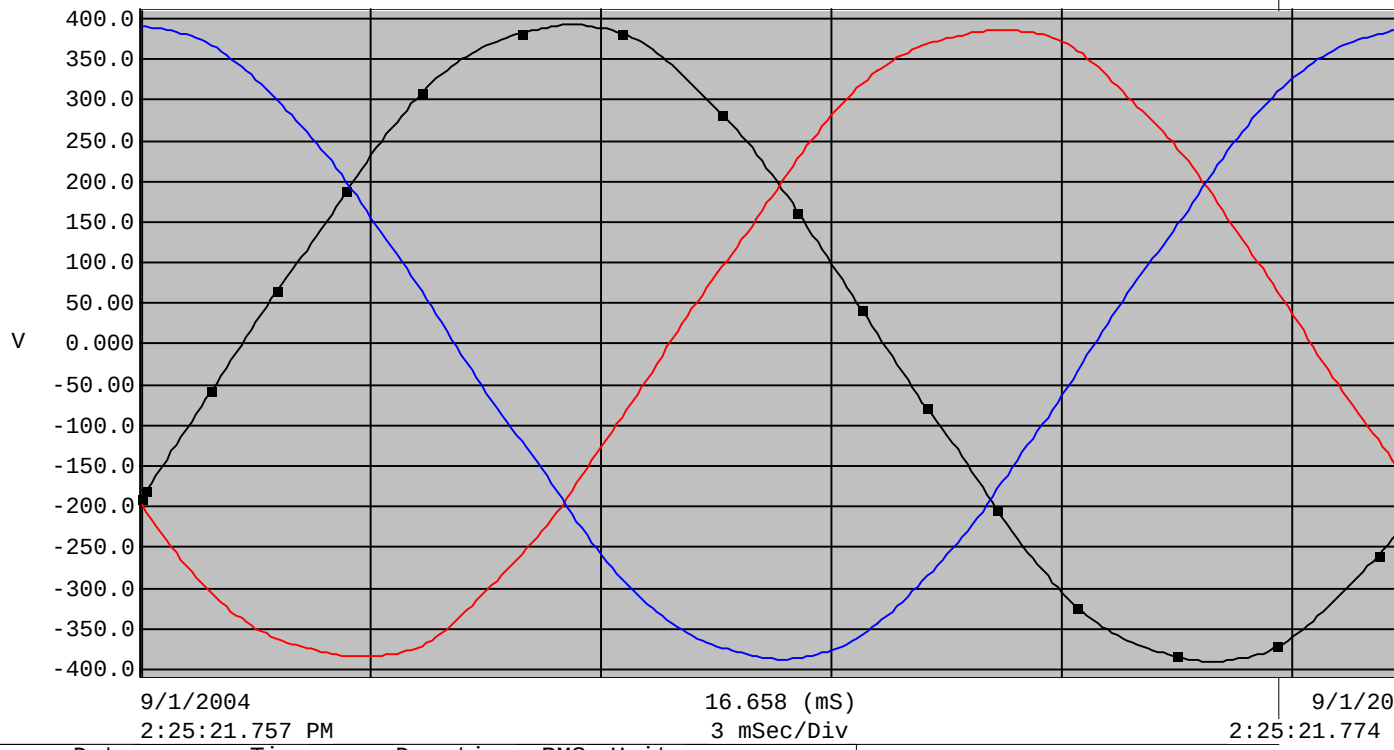
GWA Water Pumping Station Assessment				
Station Name: A-31	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/31/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.55	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	3	0.15	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.03	
Pressure	1.5%	1	0.015	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.12	
Lighting	3.0%	2	0.06	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.4**

Comments:

WPS A-31 Photo Report

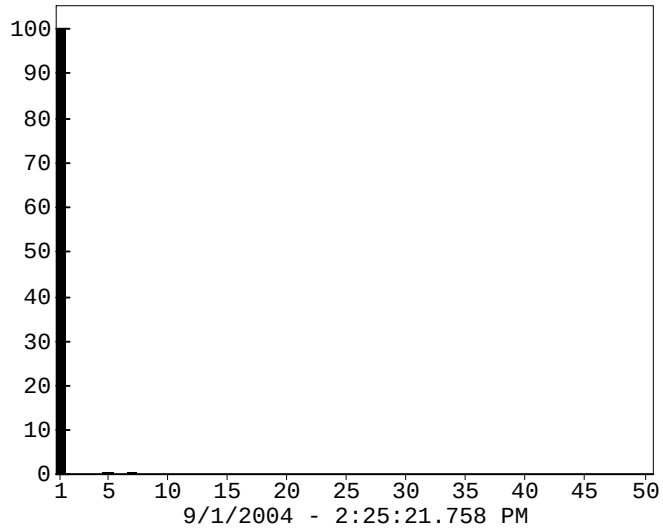
Recording Start Date	9/1/2004 - 2:25:21 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/1/2004	2:25:21.757 PM	16.658	278.4	V
Waveform V2	9/1/2004	2:25:21.757 PM	16.658	274.9	V
Waveform V3	9/1/2004	2:25:21.757 PM	16.658	276.2	V

Waveform V1
278.43 Vrms, 1.18 %THD



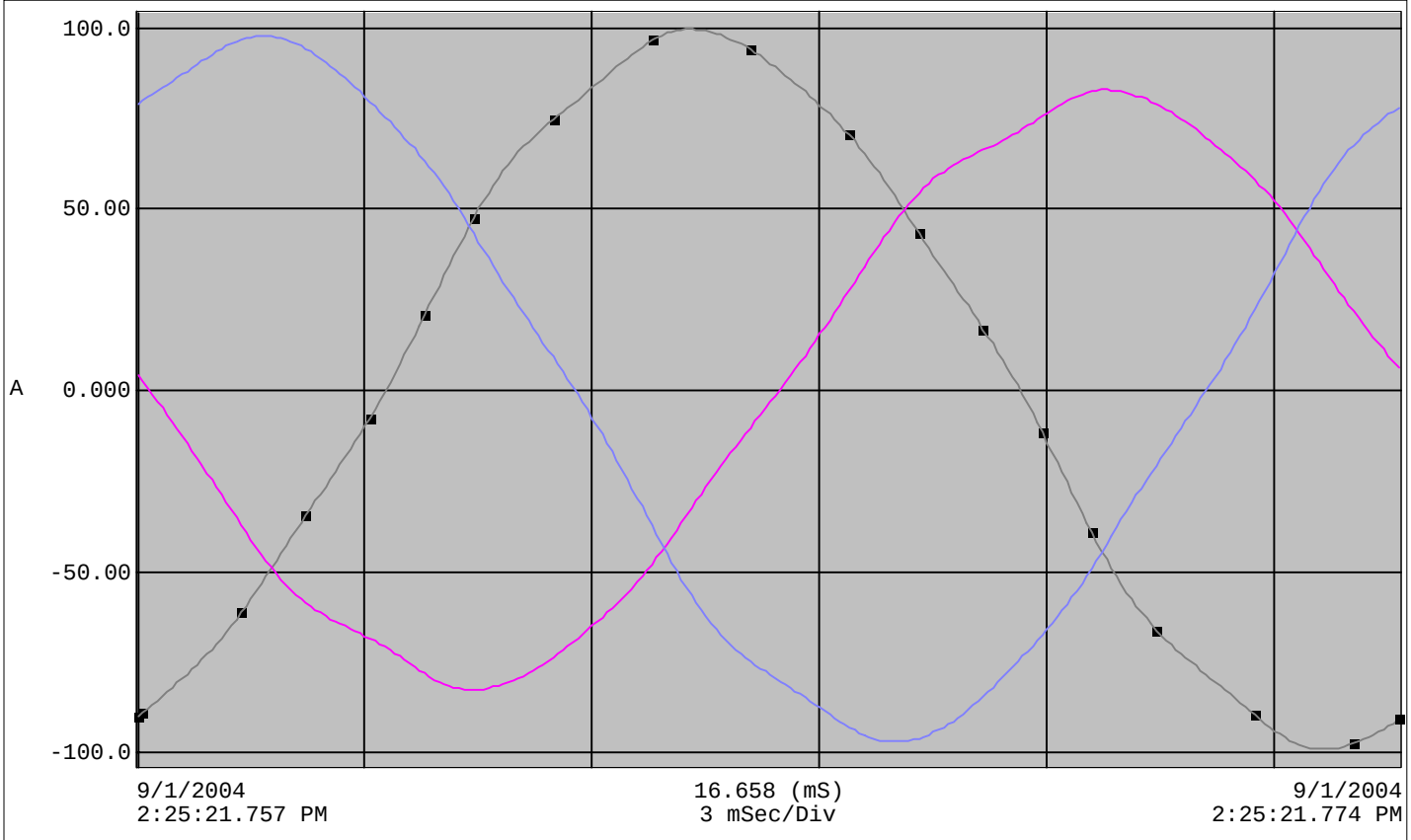
9/1/2004 - 2:25:21.000 PM

Val	
-190.7	Waveform V1
-198.2	Waveform V2
388.4	Waveform V3

Waveform V1

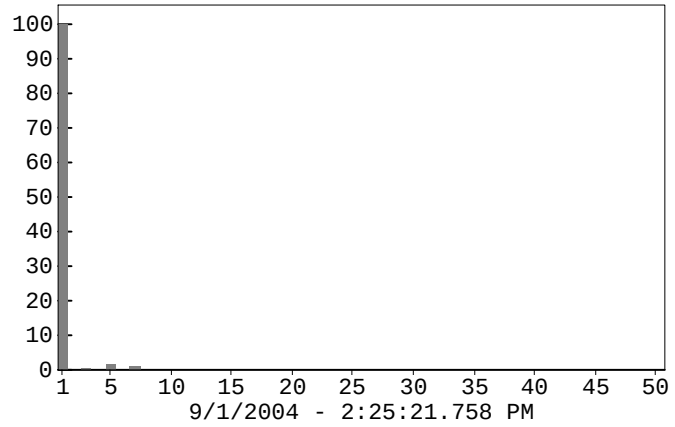
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/1/2004	2:25:21.757 PM	16.658	69.17	A
Waveform I2	9/1/2004	2:25:21.757 PM	16.658	57.25	A
Waveform I3	9/1/2004	2:25:21.757 PM	16.658	67.55	A

Waveform I1
69.17 Arms, 2.60 %THD

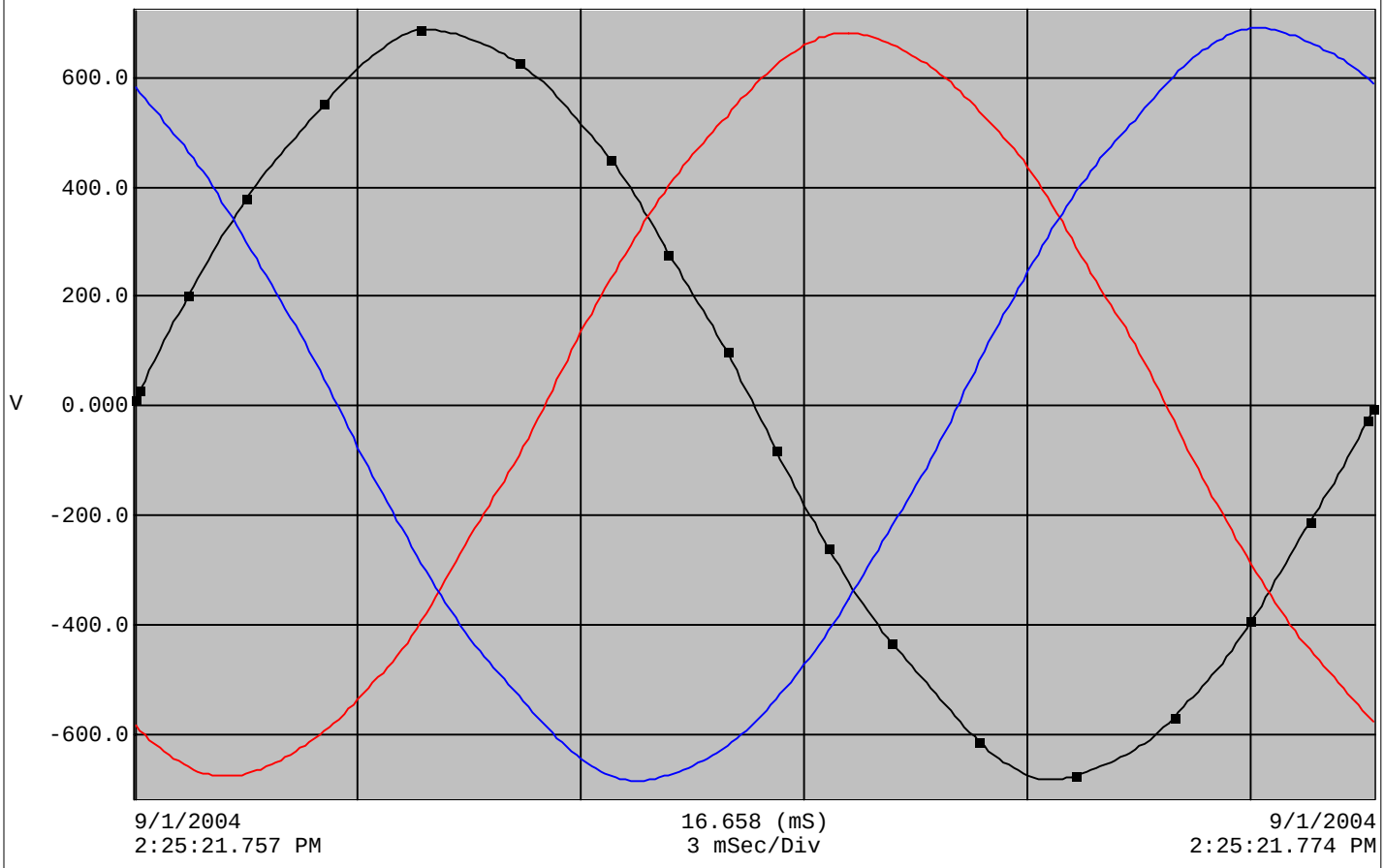


9/1/2004 - 2:25:21.000 PM
Val
-90.00 Waveform I1
3.900 Waveform I2
78.80 Waveform I3

Waveform I1

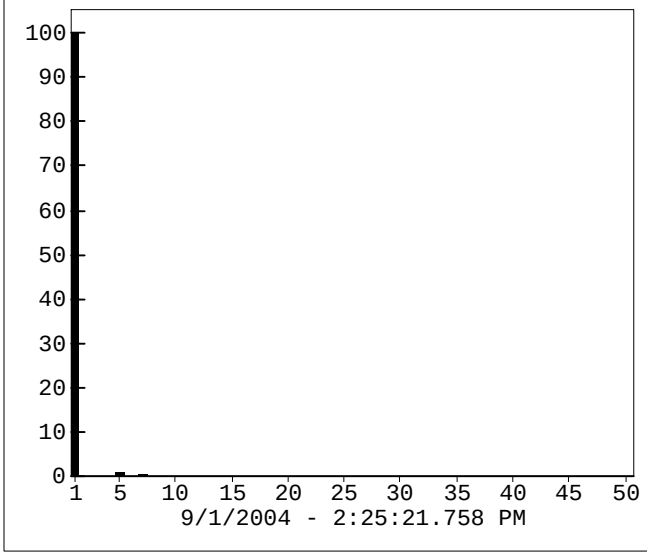
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	1.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/1/2004	2:25:21.757 PM	16.658	479.4	V
Waveform U2	9/1/2004	2:25:21.757 PM	16.658	475.6	V
Waveform U3	9/1/2004	2:25:21.757 PM	16.658	481.7	V

Waveform U1
479.40 Vrms, 1.27 %THD



9/1/2004 - 2:25:21.000 PM

	Val	
—	7.400	Waveform U1
—	-586.7	Waveform U2
—	579.2	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/1/2004
Start Time: 2:25:21 PM
Duration: 0:0.000 (M:S)
W: 14.70E+3 W
VAR: 12.41E+3 W
VA: 19.24E+3 W
Power Factor: 0.764
Displacement Power Factor: 0.765
TAN: 0.843
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\A31\090104-A31-Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS A-31 - Photo ,

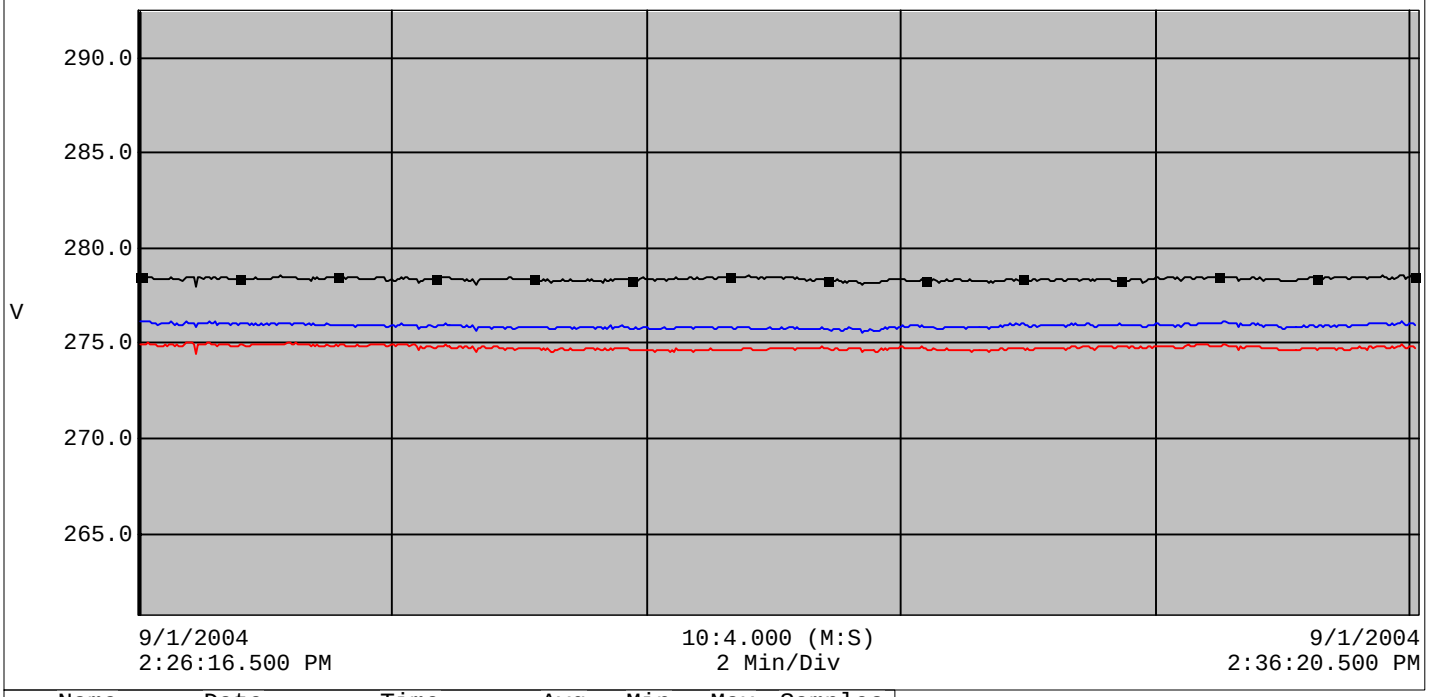
Comments

Measured at motor starter overload relay. 50 HP motor with a measured load of 43.04 KW, 80.5% PF. Meter 86248611 with an indicated demand of 48.5 KW.

WPS A-31

Recording Start Date	9/1/2004 - 2:26:16 PM
Recording Duration	10:04 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

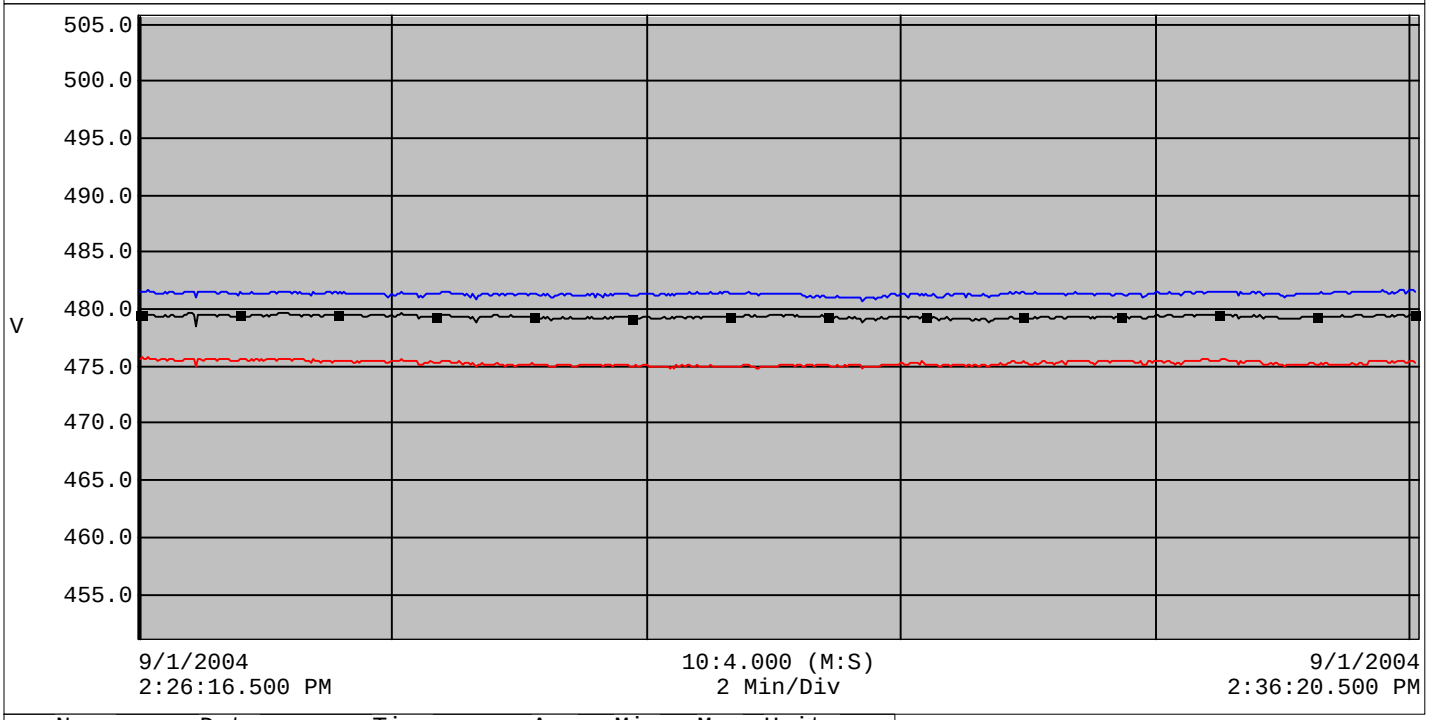
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/1/2004	2:26:16.500 PM	278.3	277.9	278.5	605
Vrms Line2	9/1/2004	2:26:16.500 PM	274.7	274.4	275.0	605
Vrms Line3	9/1/2004	2:26:16.500 PM	275.9	275.5	276.1	605

9/1/2004 - 2:26:16.000 PM
Val
278.4 Vrms Line1
274.9 Vrms Line2
276.1 Vrms Line3

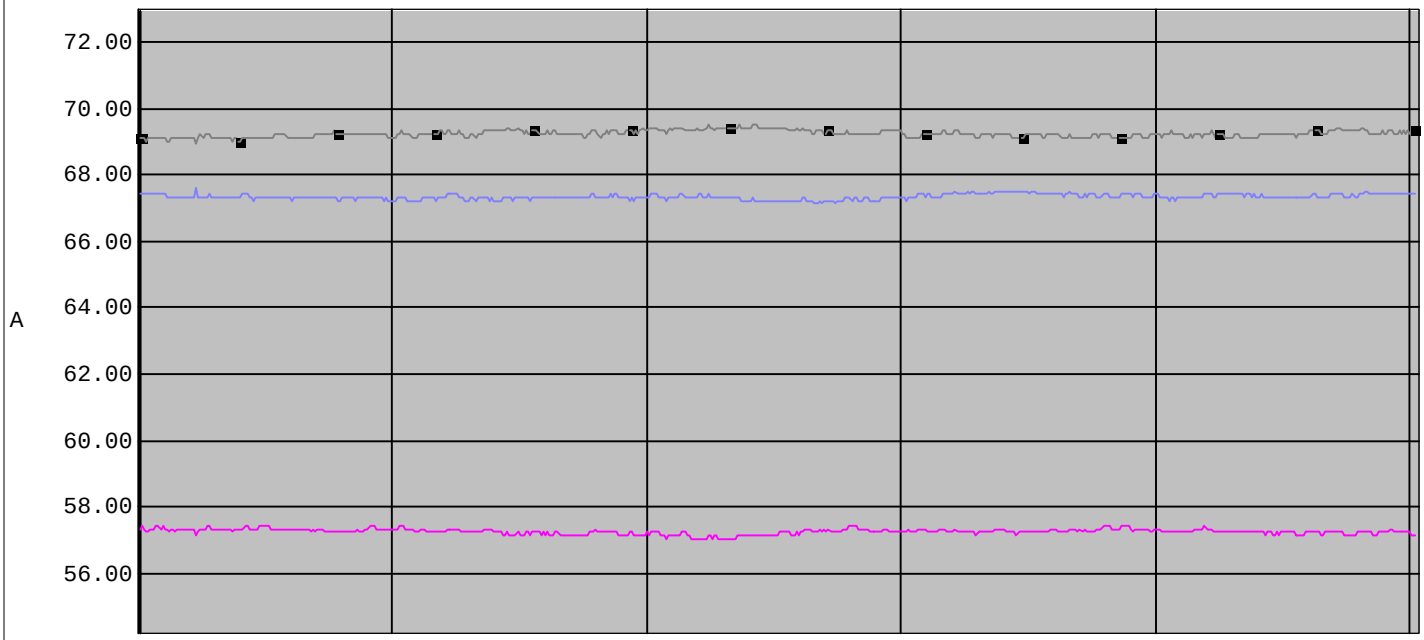
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/1/2004	2:26:16.500 PM	479.3	478.4	479.6	V
Urms Line2	9/1/2004	2:26:16.500 PM	475.2	474.7	475.7	V
Urms Line3	9/1/2004	2:26:16.500 PM	481.2	480.6	481.6	V

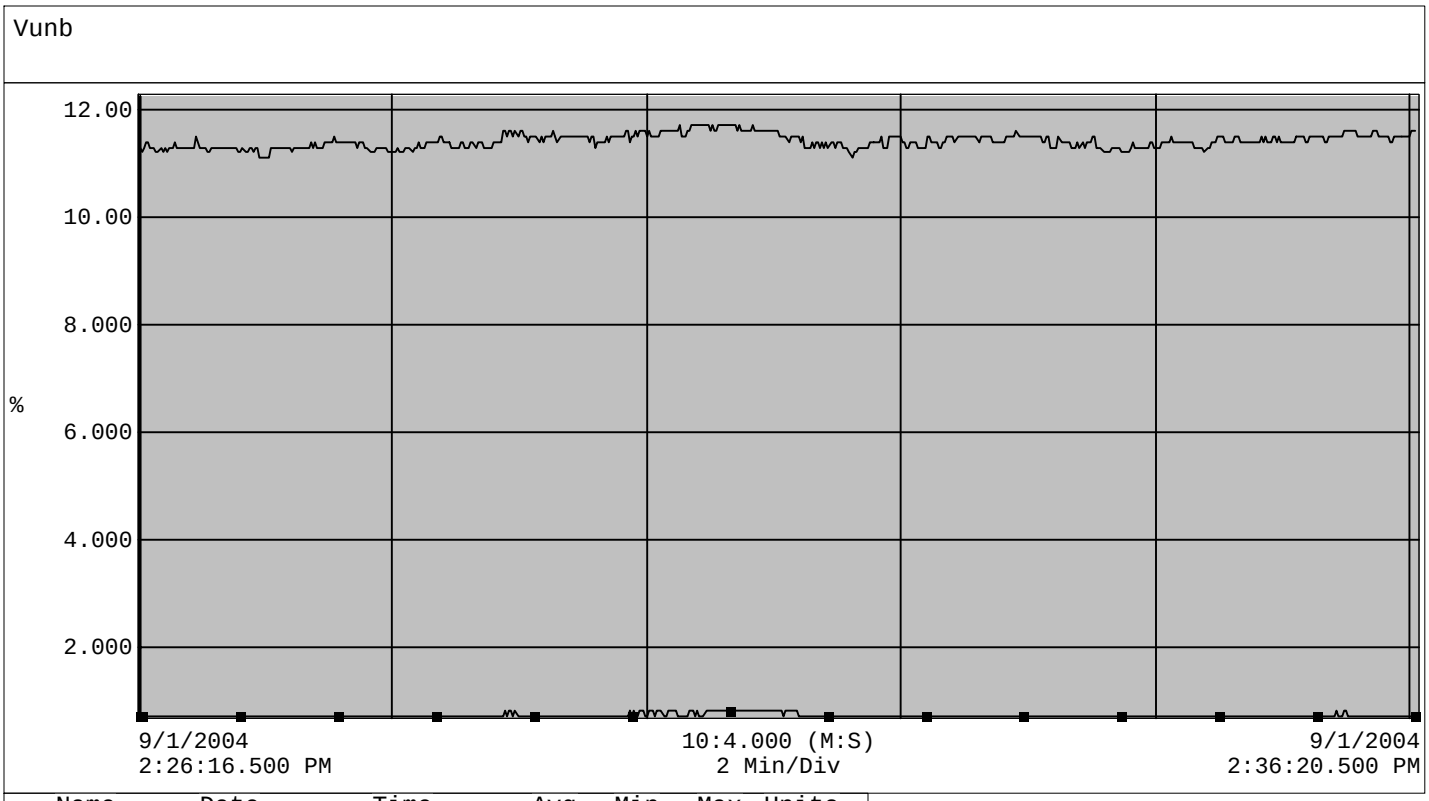
9/1/2004 - 2:26:16.000 PM
Val
479.4 Urms Line1
475.6 Urms Line2
481.5 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/1/2004	2:26:16.500 PM	69.21	68.90	69.50	A
Arms Line2	9/1/2004	2:26:16.500 PM	57.22	57.00	57.40	A
Arms Line3	9/1/2004	2:26:16.500 PM	67.32	67.10	67.60	A

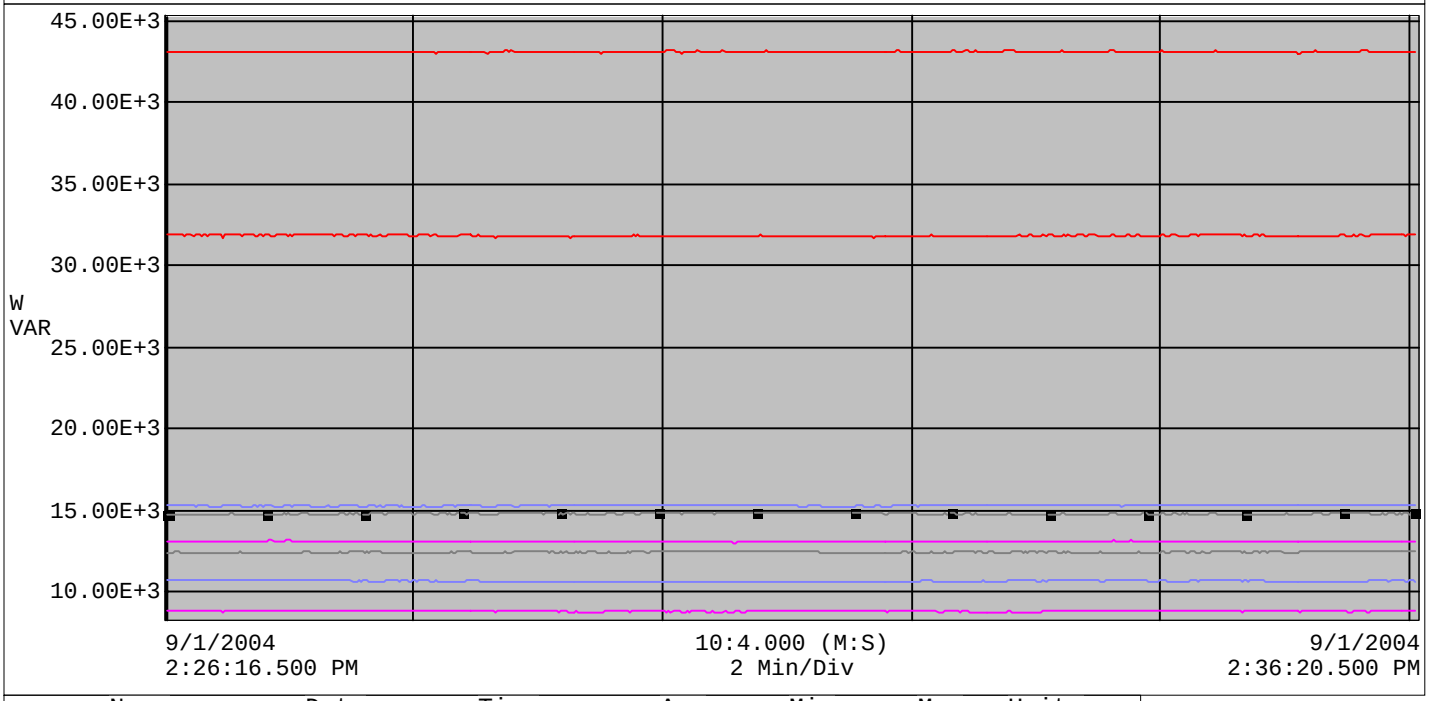
9/1/2004 - 2:26:16.000 PM
Val
69.10 — Arms Line1
57.30 — Arms Line2
67.40 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/1/2004	2:26:16.500 PM	0.711	0.700	0.800	%
Aunb(IEEE)	9/1/2004	2:26:16.500 PM	11.42	11.10	11.70	%

9/1/2004 - 2:26:16.000 PM
Val
0.700 —— Vunb(IEEE)
11.30 —— Aunb(IEEE)

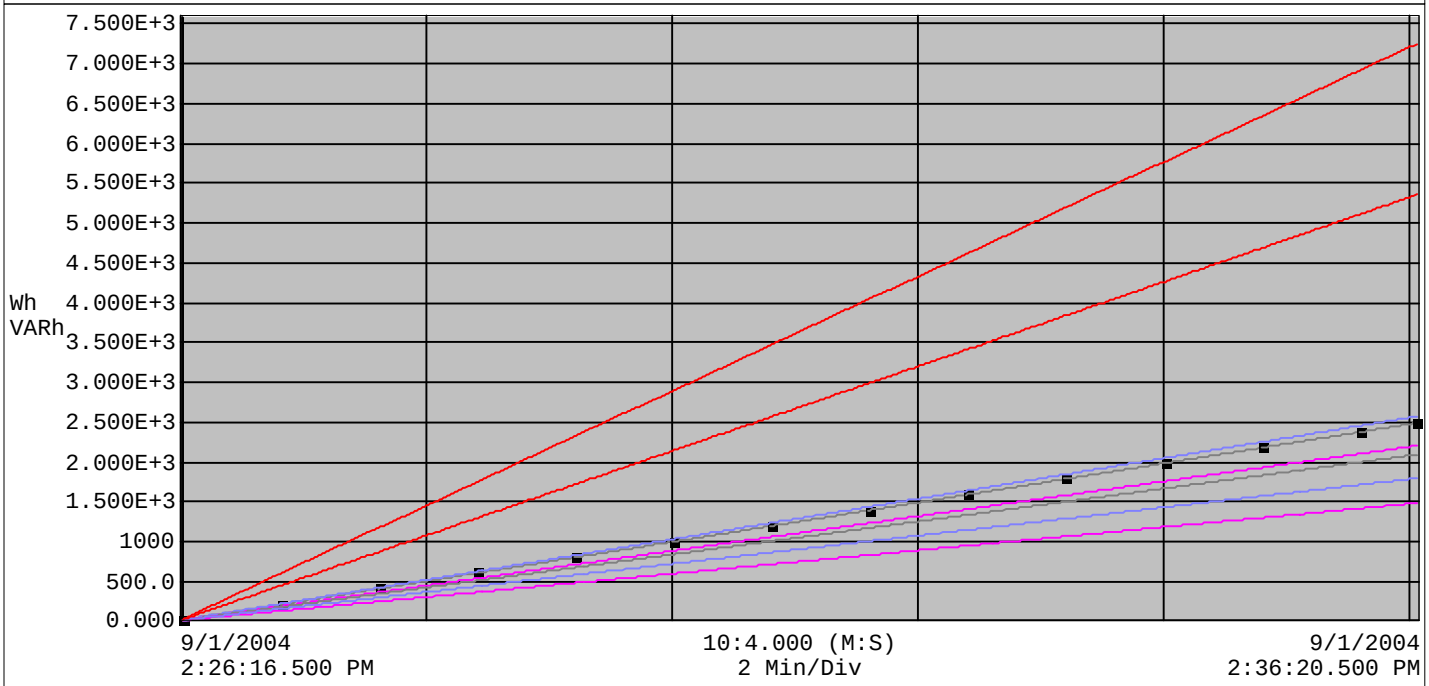
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/1/2004	2:26:16.500 PM	14.75E+3	14.65E+3	14.82E+3	W
W Line2	9/1/2004	2:26:16.500 PM	13.05E+3	12.98E+3	13.11E+3	W
W Line3	9/1/2004	2:26:16.500 PM	15.23E+3	15.18E+3	15.30E+3	W
W Sum of Phases	9/1/2004	2:26:16.500 PM	43.03E+3	42.94E+3	43.10E+3	W
VAR Line1	9/1/2004	2:26:16.500 PM	12.39E+3	12.33E+3	12.46E+3	VAR
VAR Line2	9/1/2004	2:26:16.500 PM	8.766E+3	8.652E+3	8.809E+3	VAR
VAR Line3	9/1/2004	2:26:16.500 PM	10.62E+3	10.53E+3	10.69E+3	VAR
VAR Sum of Phases	9/1/2004	2:26:16.500 PM	31.78E+3	31.66E+3	31.87E+3	VAR

9/1/2004 - 2:26:16.000 PM
Val
14.72E+3 — W Line1
13.09E+3 — W Line2
15.24E+3 — W Line3
43.05E+3 — W Sum of Phases
12.38E+3 — VAR Line1
8.786E+3 — VAR Line2
10.68E+3 — VAR Line3
31.85E+3 — VAR Sum of Phases

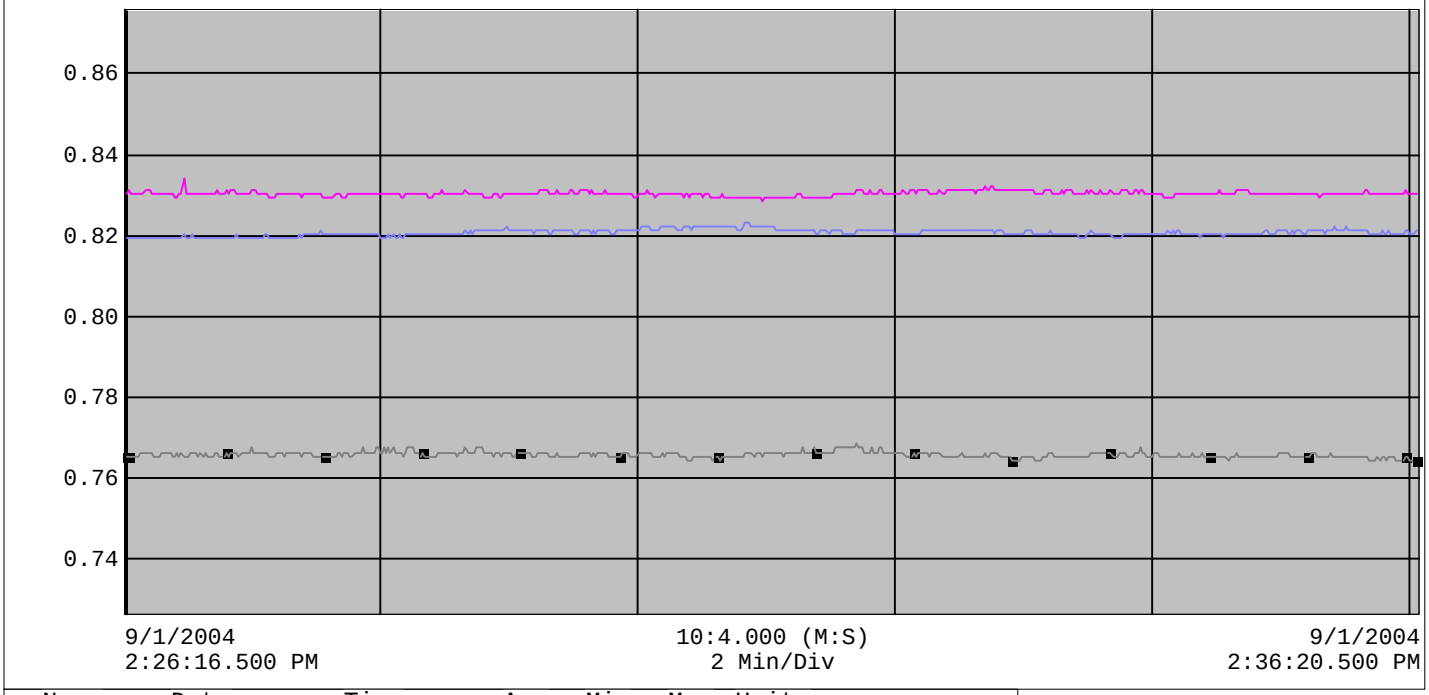
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/1/2004	2:26:16.500 PM	1.241E+3	4.084	2.478E+3	Wh
W-hours Line2	9/1/2004	2:26:16.500 PM	1.098E+3	3.614	2.193E+3	Wh
W-hours Line3	9/1/2004	2:26:16.500 PM	1.282E+3	4.219	2.560E+3	Wh
W-hours Sum of Phases	9/1/2004	2:26:16.500 PM	3.621E+3	11.92	7.231E+3	Wh
VAR-hours Line1	9/1/2004	2:26:16.500 PM	1.043E+3	3.433	2.083E+3	VARh
VAR-hours Line2	9/1/2004	2:26:16.500 PM	738.1	2.428	1.473E+3	VARh
VAR-hours Line3	9/1/2004	2:26:16.500 PM	893.9	2.941	1.784E+3	VARh
VAR-hours Sum of Phases	9/1/2004	2:26:16.500 PM	2.675E+3	8.802	5.341E+3	VARh

9/1/2004 - 2:26:16.000 PM
Val
4.084 — W-hours Line1
3.614 — W-hours Line2
4.219 — W-hours Line3
11.92 — W-hours Sum of Phases
3.433 — VAR-hours Line1
2.428 — VAR-hours Line2
2.941 — VAR-hours Line3
8.802 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/1/2004	2:26:16.500 PM	0.765	0.764	0.768	
PF Line2	9/1/2004	2:26:16.500 PM	0.830	0.828	0.834	
PF Line3	9/1/2004	2:26:16.500 PM	0.820	0.819	0.823	

9/1/2004 - 2:26:16.000 PM
Val
0.765 — PF Line1
0.830 — PF Line2
0.819 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\A31\090104-A31.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS A-31 ,

Comments
Recorded at motor starter overload relay. Measured demand at 43.04 KW, 80.5% power factor. GPA Meter 86248611 with a indicated demand of 48.5 KW. System Connected grounded WYE.

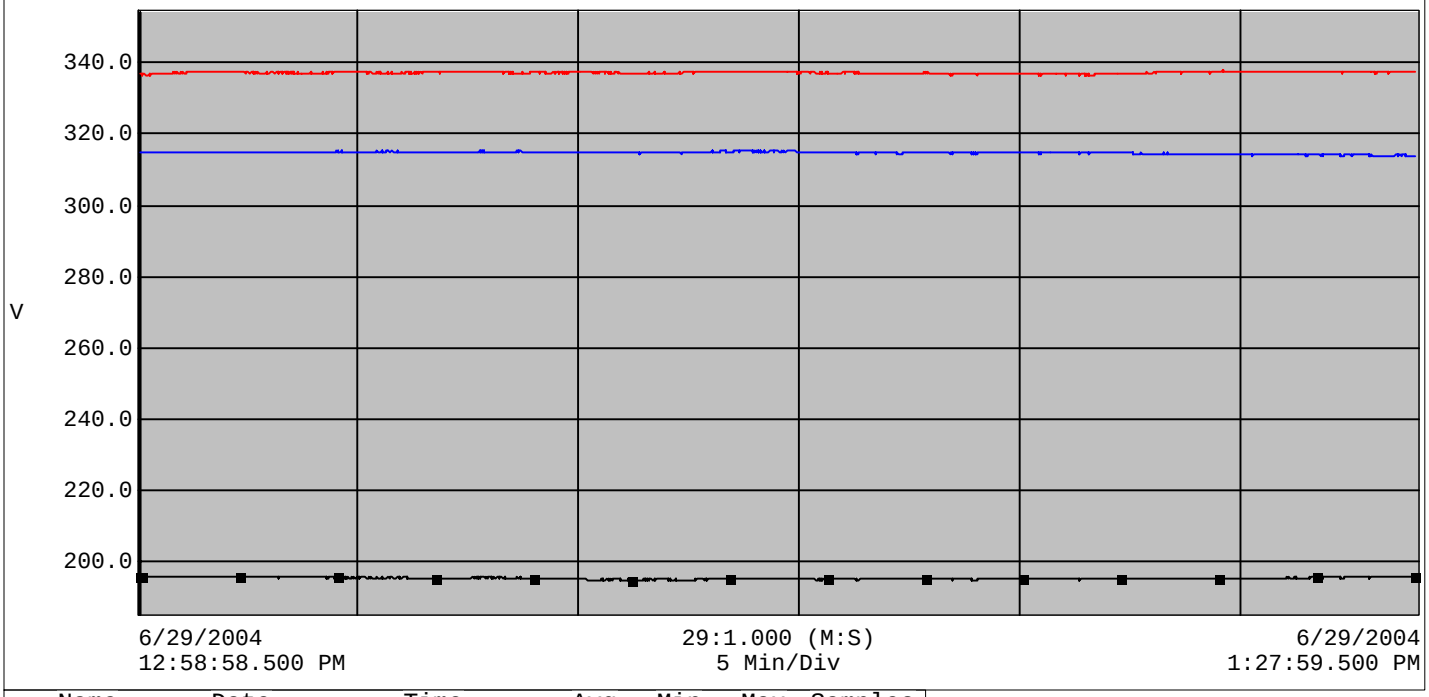
GWA Water Pumping Station Assessment				
Station Name: AG-2A	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 06/29/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.475	
Generator Condition	10.0%	2	0.2	22
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.8	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	3	0.15	
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.07	
Pressure	1.5%	0	0	
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	2	0.04	
Building Electrical	**5.0%**		0.13	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	2	0.04	
	100%	**Assessment Value**		**2.4**

Comments:

WPS AGA2

Recording Start Date	6/29/2004 - 12:58:58 PM
Recording Duration	29:01 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

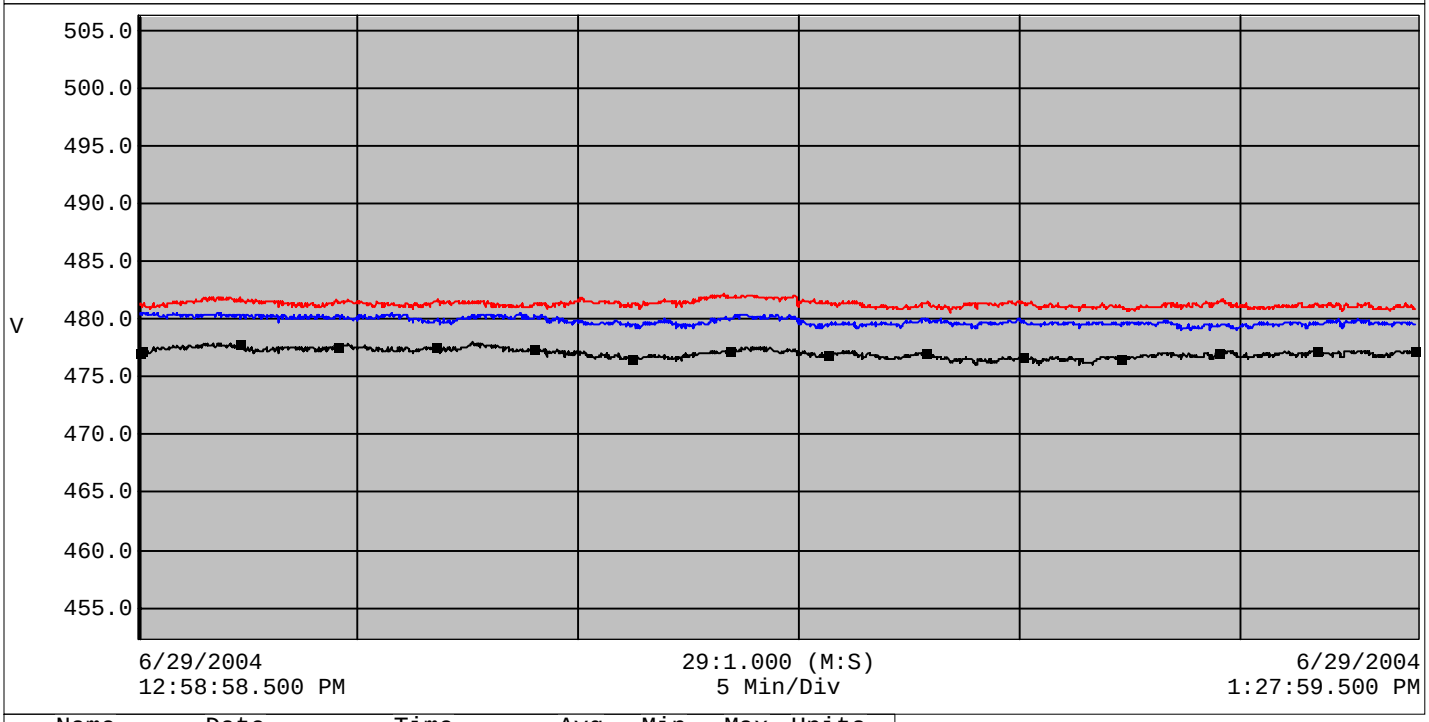
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	6/29/2004	12:58:58.500 PM	195.0	194.4	195.6	1742
Vrms Line2	6/29/2004	12:58:58.500 PM	337.0	336.3	337.6	1742
Vrms Line3	6/29/2004	12:58:58.500 PM	314.5	313.5	315.0	1742

6/29/2004 - 12:58:58.000 PM
Val
195.5 Vrms Line1
336.5 Vrms Line2
314.6 Vrms Line3

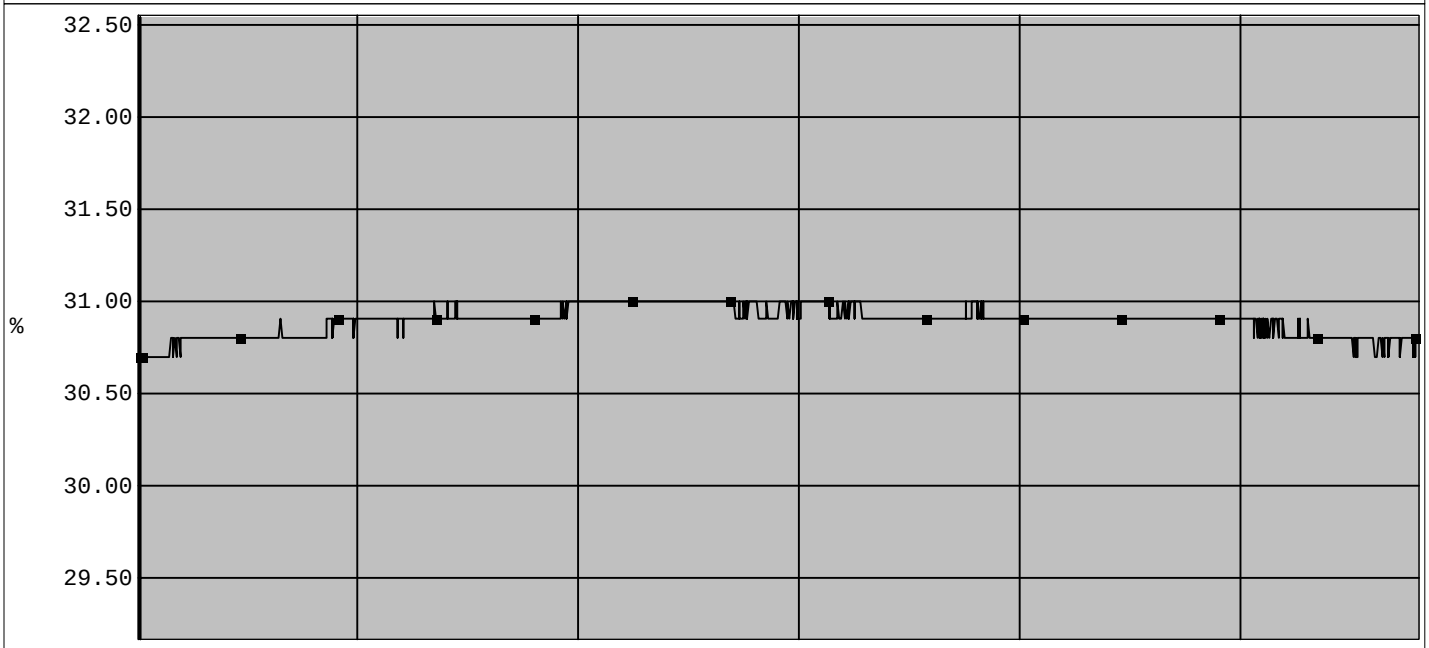
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	6/29/2004	12:58:58.500 PM	477.0	476.0	477.9	V
Urms Line2	6/29/2004	12:58:58.500 PM	481.2	480.5	482.1	V
Urms Line3	6/29/2004	12:58:58.500 PM	479.7	479.0	480.5	V

6/29/2004 - 12:58:58.000 PM
Val
477.0 Urms Line1
481.1 Urms Line2
480.3 Urms Line3

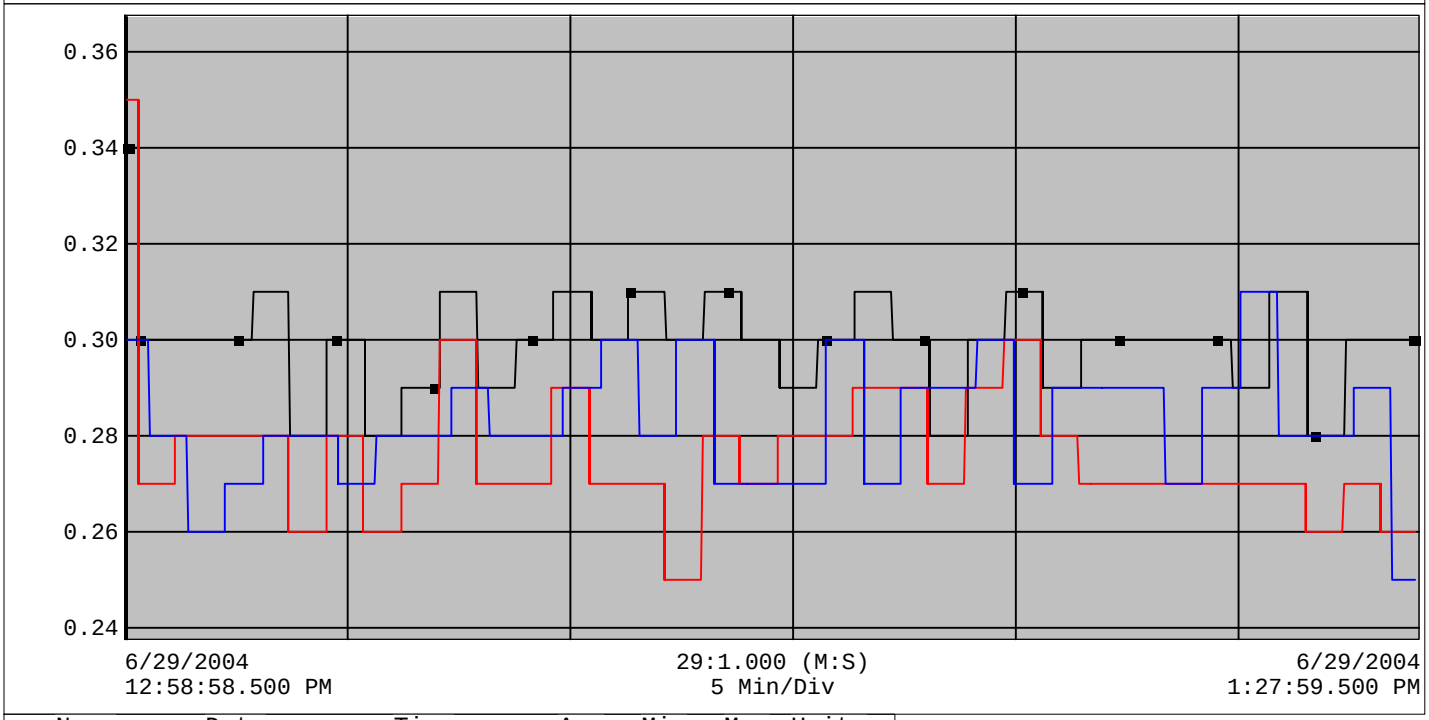
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	6/29/2004	12:58:58.500 PM	30.89	30.70	31.00	%

6/29/2004 - 12:58:58.000 PM
Val
30.70 —— Vunb(IEEE)

Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	6/29/2004	12:58:58.500 PM	0.299	0.280	0.340	
Vflk Line2	6/29/2004	12:58:58.500 PM	0.275	0.250	0.350	
Vflk Line3	6/29/2004	12:58:58.500 PM	0.283	0.250	0.310	

6/29/2004 - 12:58:58.000 PM
Val
0.340 Vflk Line1
0.350 Vflk Line2
0.300 Vflk Line3

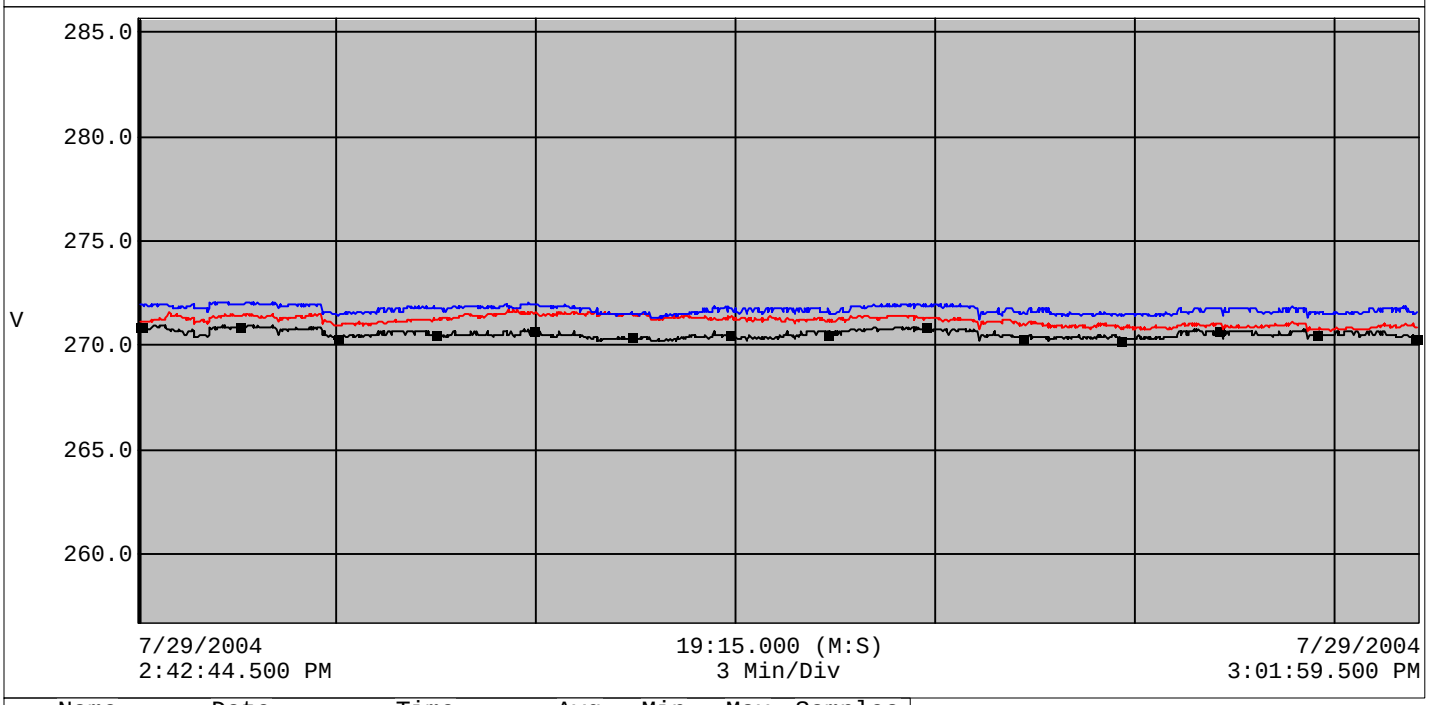
Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\AG2A\062904-AGA2.dvb	
Operator ,	Test Site ,
Comments	

WPS AG2A

Recording Start Date	7/29/2004 - 2:42:44 PM
Recording Duration	19:15 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

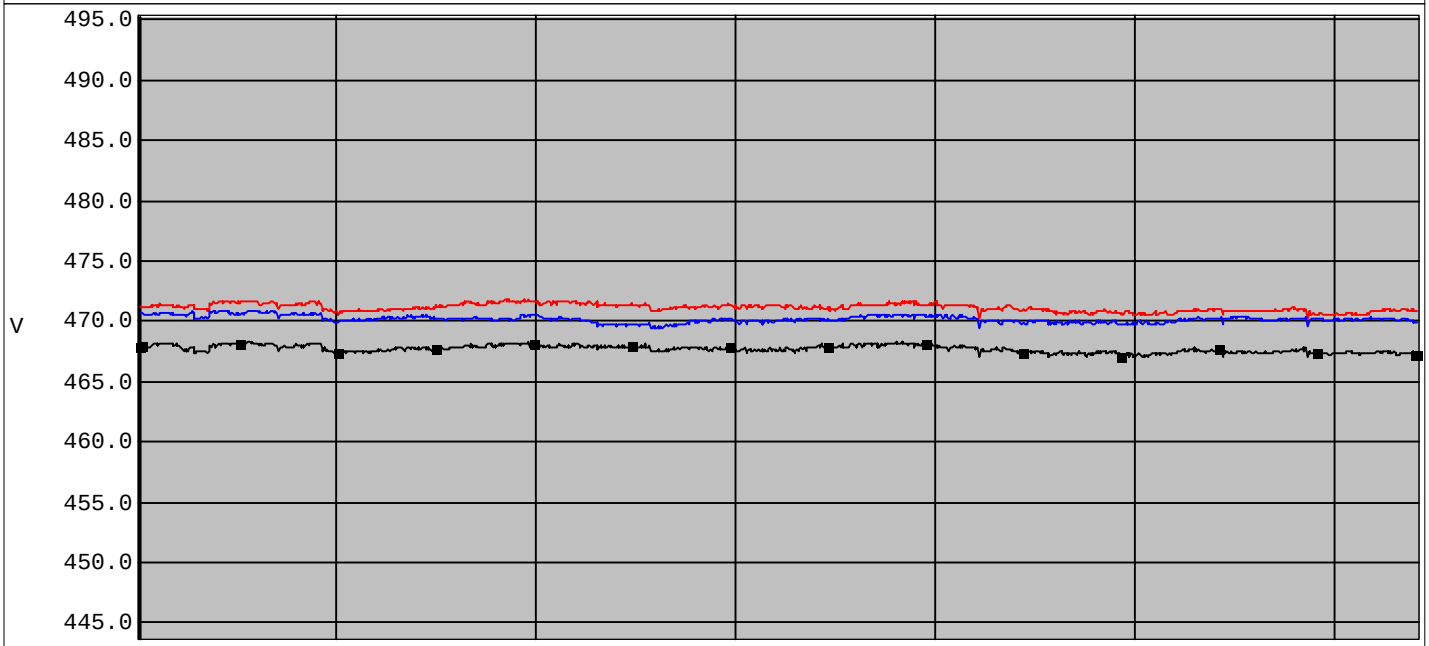
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/29/2004	2:42:44.500 PM	270.5	270.2	270.9	1156
Vrms Line2	7/29/2004	2:42:44.500 PM	271.2	270.6	271.7	1156
Vrms Line3	7/29/2004	2:42:44.500 PM	271.7	271.2	272.0	1156

7/29/2004 - 2:42:44.000 PM
Val
270.9 — Vrms Line1
271.1 — Vrms Line2
271.9 — Vrms Line3

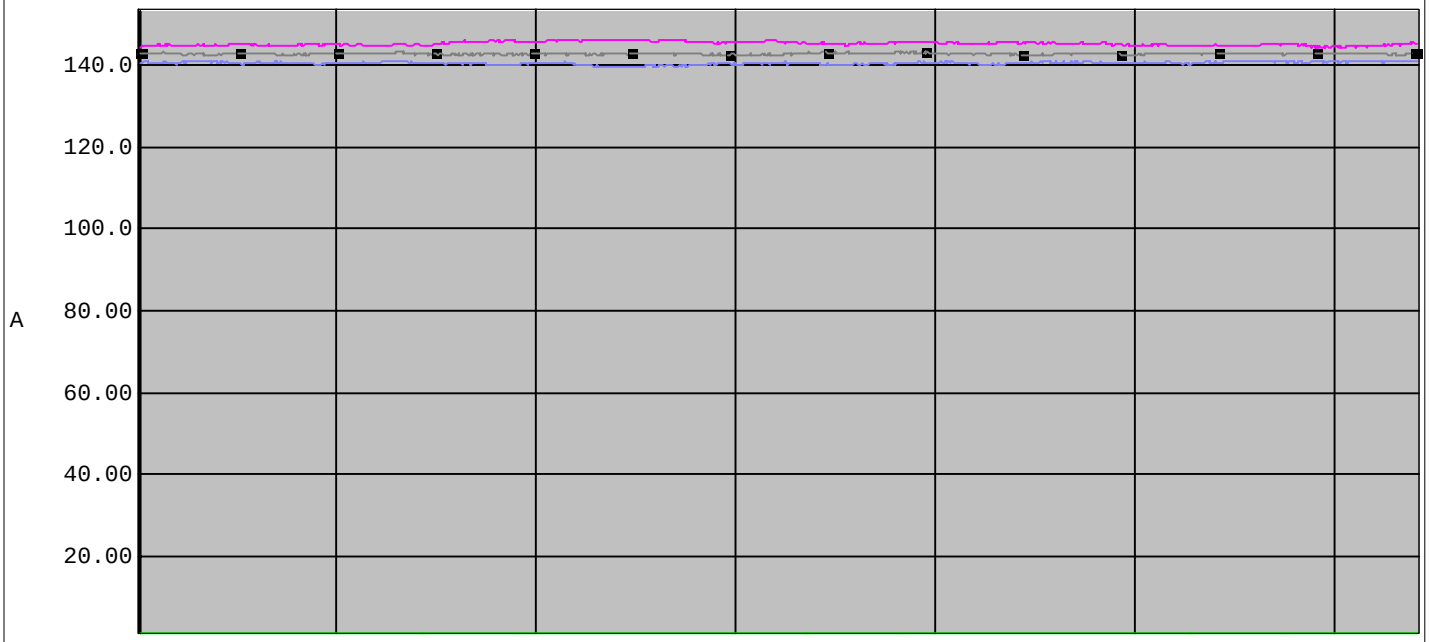
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/29/2004	2:42:44.500 PM	467.6	466.9	468.2	V
Urms Line2	7/29/2004	2:42:44.500 PM	471.0	470.2	471.7	V
Urms Line3	7/29/2004	2:42:44.500 PM	470.1	469.3	470.8	V

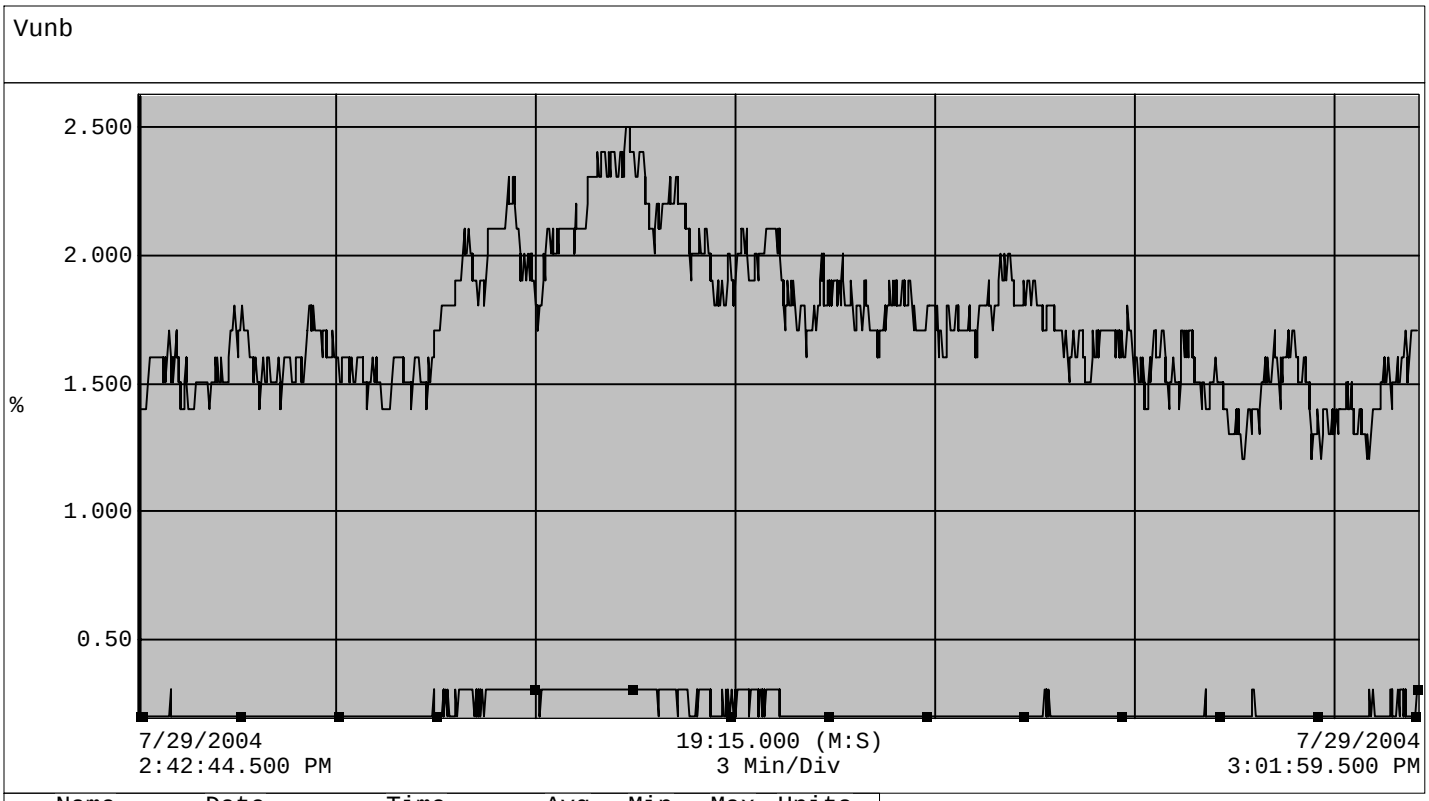
7/29/2004 - 2:42:44.000 PM
Val
467.8 Urms Line1
471.1 Urms Line2
470.6 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/29/2004	2:42:44.500 PM	142.7	142.2	143.2	A
Arms Line2	7/29/2004	2:42:44.500 PM	145.2	144.3	146.3	A
Arms Line3	7/29/2004	2:42:44.500 PM	140.4	139.4	141.1	A
Arms Neutral	7/29/2004	2:42:44.500 PM	0.800	0.800	0.800	A

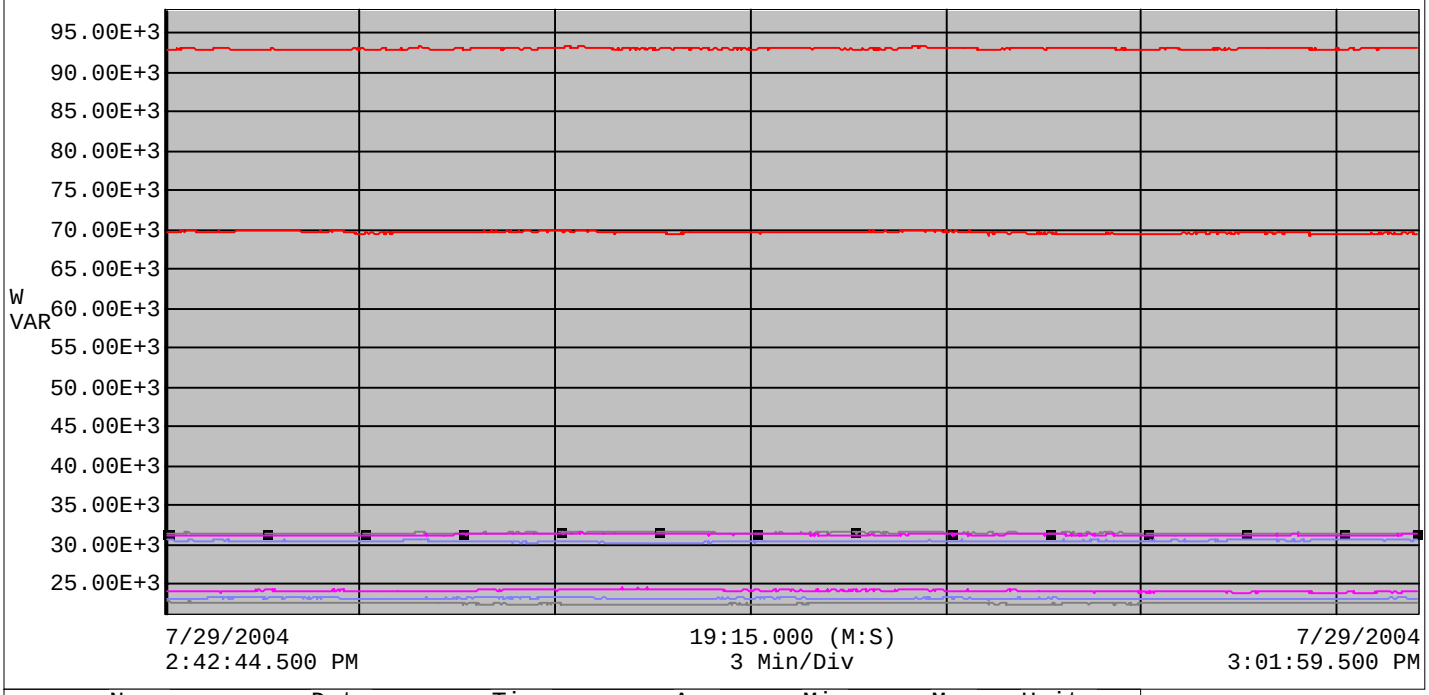
7/29/2004 - 2:42:44.000 PM
Val
142.7 — Arms Line1
144.3 — Arms Line2
140.6 — Arms Line3
0.800 — Arms Neutral



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/29/2004	2:42:44.500 PM	0.224	0.200	0.300	%
Aunb(IEEE)	7/29/2004	2:42:44.500 PM	1.733	1.200	2.500	%

7/29/2004 - 2:42:44.000 PM
Val
0.200 —— Vunb(IEEE)
1.400 —— Aunb(IEEE)

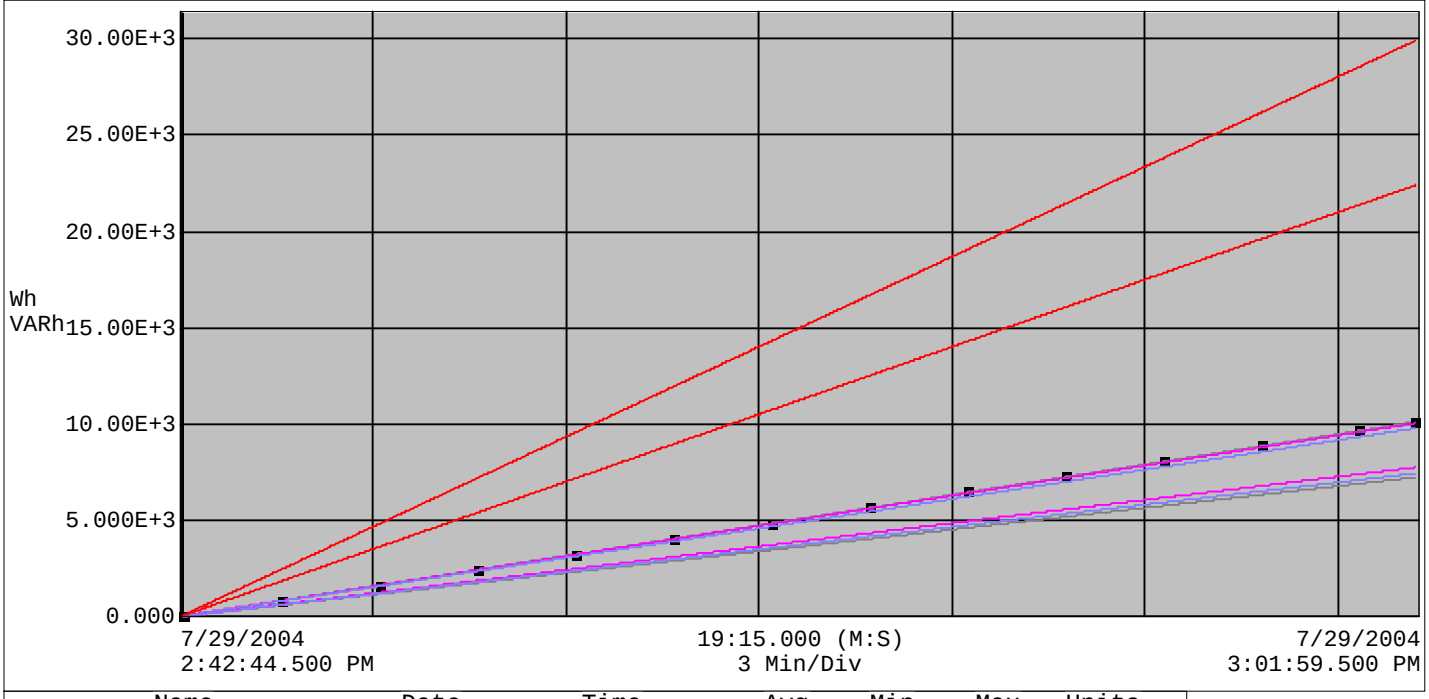
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/29/2004	2:42:44.500 PM	31.40E+3	31.24E+3	31.56E+3	W
W Line2	7/29/2004	2:42:44.500 PM	31.18E+3	30.96E+3	31.46E+3	W
W Line3	7/29/2004	2:42:44.500 PM	30.37E+3	30.02E+3	30.62E+3	W
W Sum of Phases	7/29/2004	2:42:44.500 PM	92.95E+3	92.69E+3	93.26E+3	W
VAR Line1	7/29/2004	2:42:44.500 PM	22.46E+3	22.17E+3	22.67E+3	VAR
VAR Line2	7/29/2004	2:42:44.500 PM	24.05E+3	23.79E+3	24.37E+3	VAR
VAR Line3	7/29/2004	2:42:44.500 PM	23.09E+3	22.89E+3	23.27E+3	VAR
VAR Sum of Phases	7/29/2004	2:42:44.500 PM	69.60E+3	69.21E+3	69.91E+3	VAR

7/29/2004 - 2:42:44.000 PM
Val
31.30E+3 — W Line1
30.96E+3 — W Line2
30.46E+3 — W Line3
92.72E+3 — W Sum of Phases
22.67E+3 — VAR Line1
23.93E+3 — VAR Line2
23.09E+3 — VAR Line3
69.69E+3 — VAR Sum of Phases

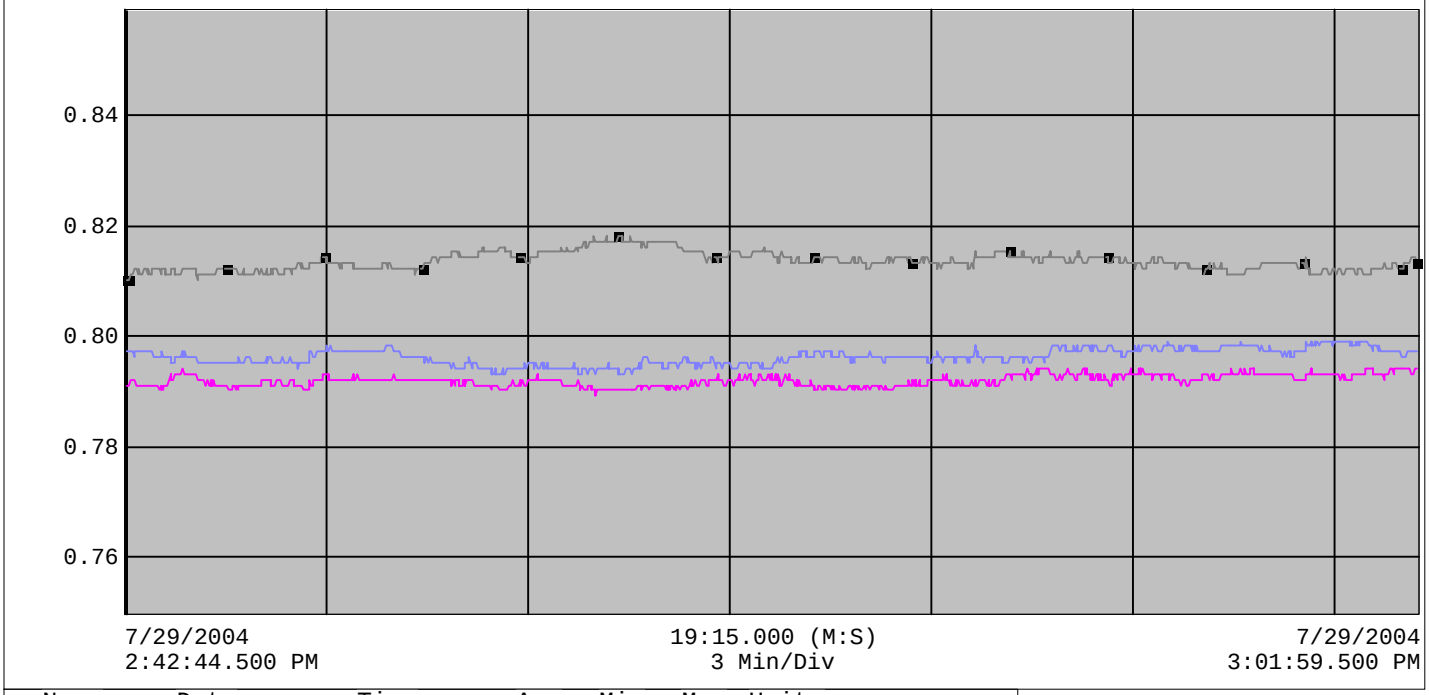
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/29/2004	2:42:44.500 PM	5.046E+3	8.616	10.08E+3	Wh
W-hours Line2	7/29/2004	2:42:44.500 PM	5.012E+3	8.556	10.01E+3	Wh
W-hours Line3	7/29/2004	2:42:44.500 PM	4.876E+3	8.333	9.752E+3	Wh
W-hours Sum of Phases	7/29/2004	2:42:44.500 PM	14.93E+3	25.51	29.85E+3	Wh
VAR-hours Line1	7/29/2004	2:42:44.500 PM	3.609E+3	6.383	7.212E+3	VARh
VAR-hours Line2	7/29/2004	2:42:44.500 PM	3.870E+3	6.599	7.723E+3	VARh
VAR-hours Line3	7/29/2004	2:42:44.500 PM	3.713E+3	6.336	7.415E+3	VARh
VAR-hours Sum of Phases	7/29/2004	2:42:44.500 PM	11.19E+3	19.10	22.35E+3	VARh

7/29/2004 - 2:42:44.000 PM
Val
8.616 — W-hours Line1
8.556 — W-hours Line2
8.333 — W-hours Line3
25.51 — W-hours Sum of Phases
6.383 — VAR-hours Line1
6.599 — VAR-hours Line2
6.336 — VAR-hours Line3
19.10 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/29/2004	2:42:44.500 PM	0.813	0.810	0.818	
PF Line2	7/29/2004	2:42:44.500 PM	0.792	0.789	0.794	
PF Line3	7/29/2004	2:42:44.500 PM	0.796	0.793	0.799	

7/29/2004 - 2:42:44.000 PM
Val
0.810 — PF Line1
0.791 — PF Line2
0.797 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\AG2A\072904-AG2A.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA- WPS - AG2A ,

Comments

GWA Water Pumping Station Assessment				
Station Name: D1-D2	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 10/20/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0.03	
Pressure	1.5%	1	0.015	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.6**

Comments:

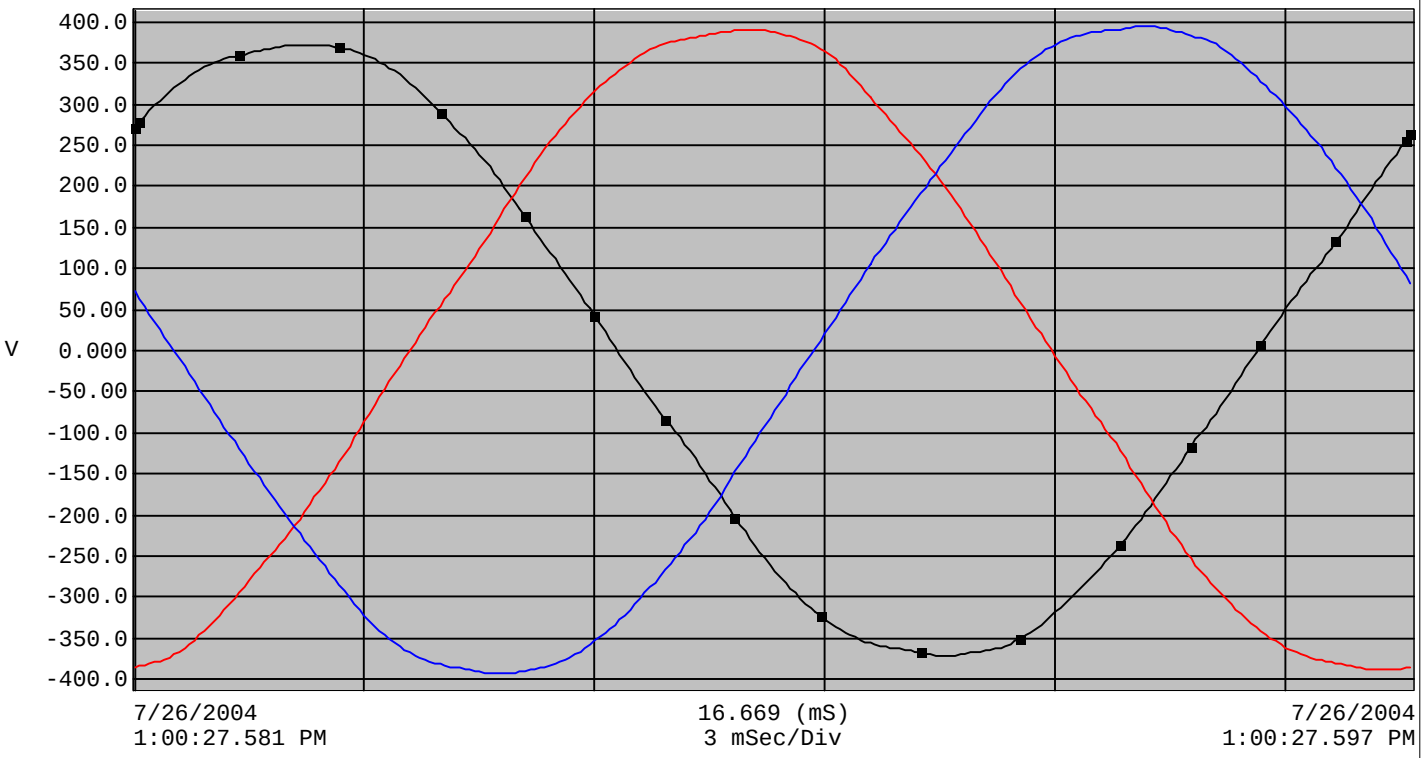
GWA Water Pumping Station Assessment				
Station Name: D-04	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/26/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.4	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	2	0.1	14
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0	
Pressure	1.5%	0	0	
Flow	1.5%	0	0	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.5**

Comments:

WPS D-4 - Photo2

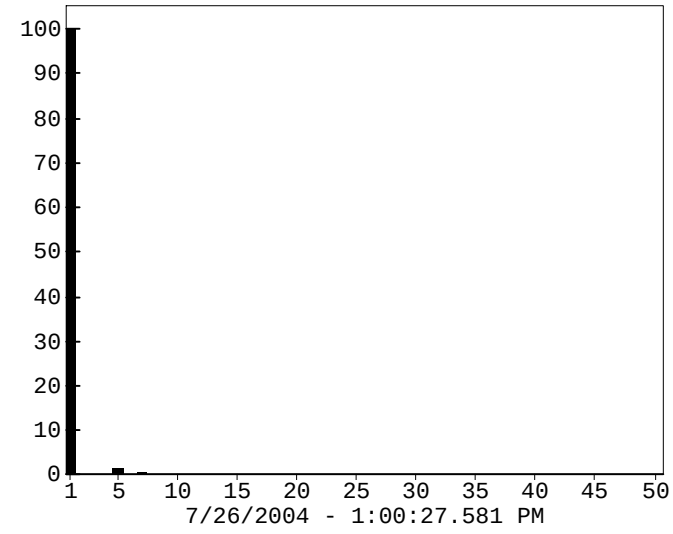
Recording Start Date	7/26/2004 - 1:00:27 PM
Recording Duration	42 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/26/2004	1:00:27.581 PM	16.669	266.8	V
Waveform V1	7/26/2004	1:00:39.513 PM	16.669	266.7	V
Waveform V1	7/26/2004	1:01:02.009 PM	16.669	267.6	V
Waveform V1	7/26/2004	1:01:06.016 PM	16.667	267.5	V
Waveform V1	7/26/2004	1:01:09.503 PM	16.667	267.2	V
Waveform V2	7/26/2004	1:00:27.581 PM	16.669	279.5	V
Waveform V2	7/26/2004	1:00:39.513 PM	16.669	279.5	V
Waveform V2	7/26/2004	1:01:02.009 PM	16.669	280.7	V

Waveform V1
266.78 Vrms, 1.65 %THD

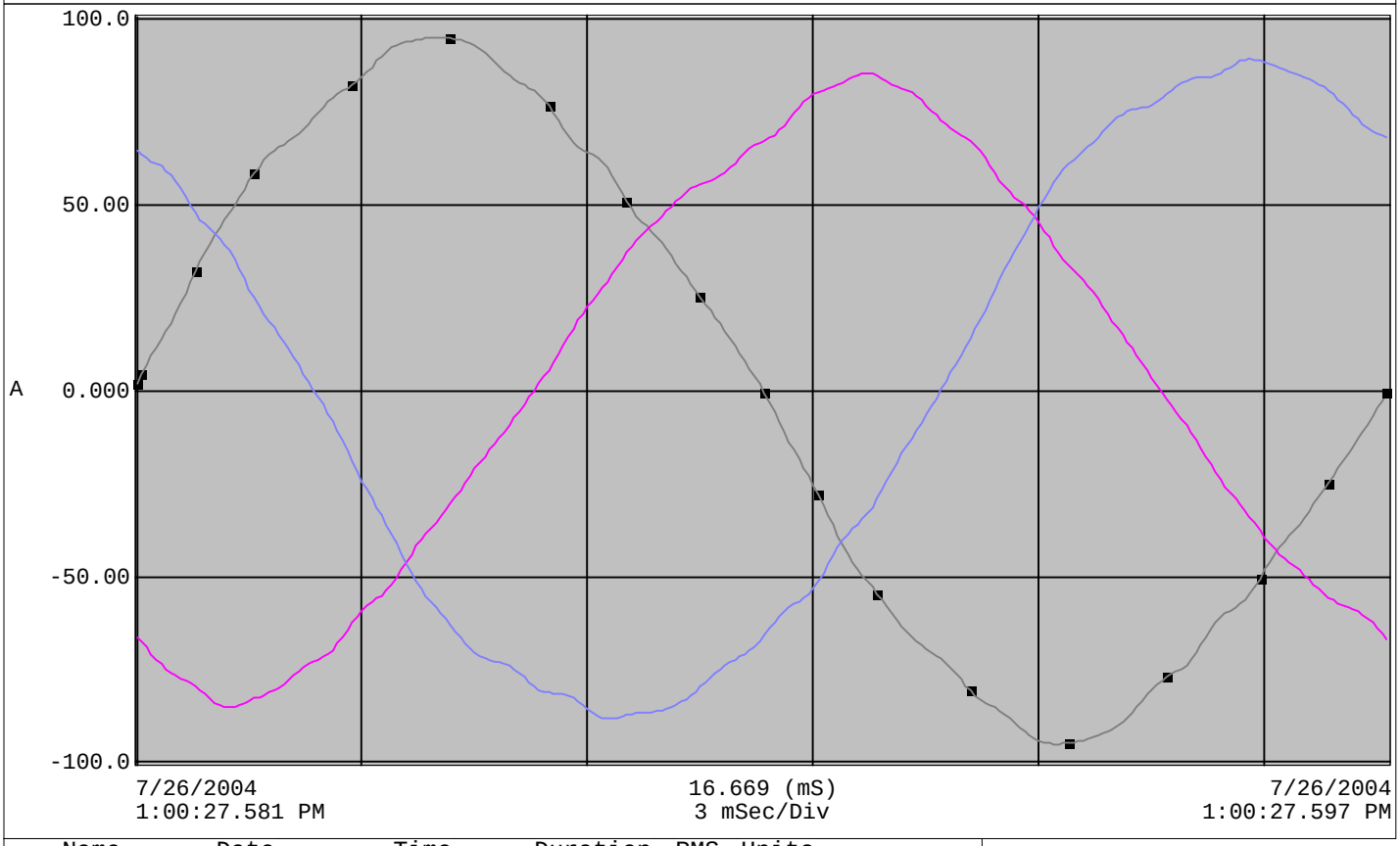


7/26/2004 - 1:00:27.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

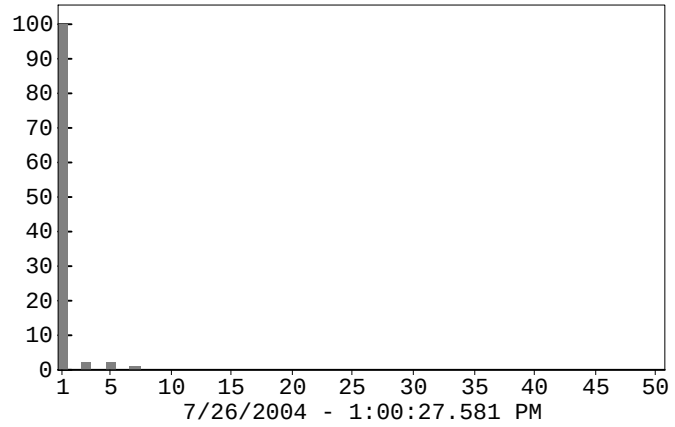
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/26/2004	1:00:27.581 PM	16.669	65.09	A
Waveform I1	7/26/2004	1:00:39.513 PM	16.669	65.22	A
Waveform I1	7/26/2004	1:01:02.009 PM	16.669	65.34	A
Waveform I1	7/26/2004	1:01:06.016 PM	16.667	65.57	A
Waveform I1	7/26/2004	1:01:09.503 PM	16.667	65.46	A
Waveform I2	7/26/2004	1:00:27.581 PM	16.669	56.39	A
Waveform I2	7/26/2004	1:00:39.513 PM	16.669	56.25	A
Waveform I2	7/26/2004	1:01:02.009 PM	16.669	56.55	A

Waveform I1
65.09 Arms, 3.66 %THD

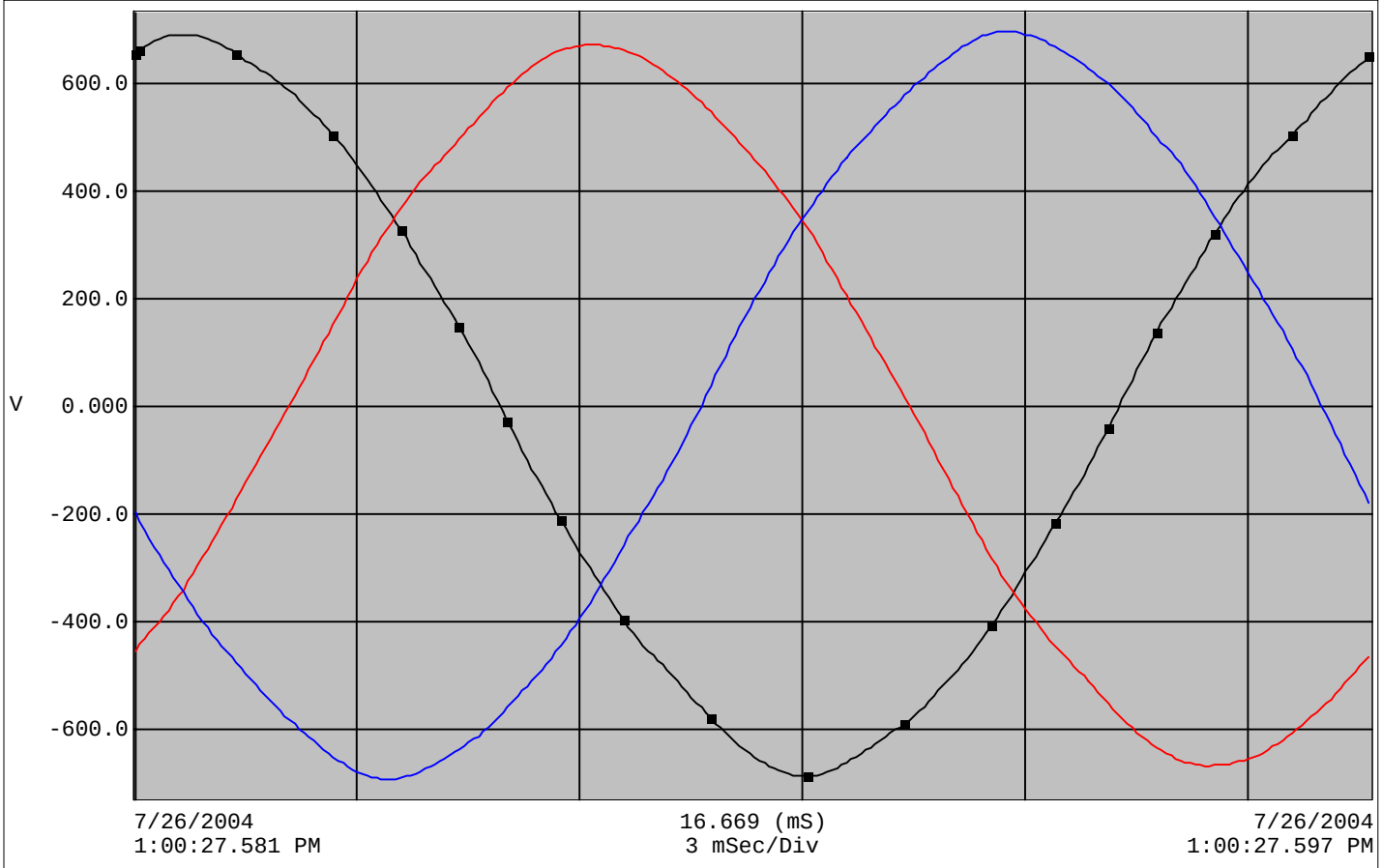


7/26/2004 - 1:00:27.000 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

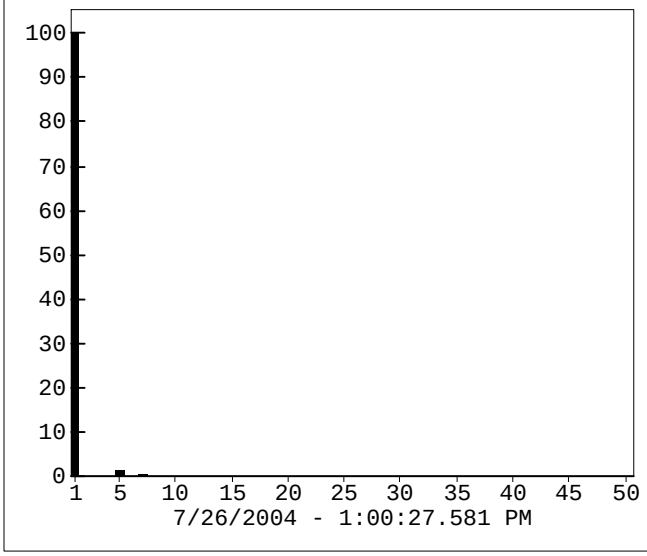
	(%)		(%)		(%)
H01	100.0	H18	0.5	H35	0.0
H02	0.1	H19	0.5	H36	0.0
H03	2.3	H20	0.2	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	2.3	H22	0.4	H39	0.0
H06	0.1	H23	0.3	H40	0.0
H07	1.2	H24	0.2	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	0.1	H26	0.1	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.2	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/26/2004	1:00:27.581 PM	16.669	478.0	V
Waveform U1	7/26/2004	1:00:39.513 PM	16.669	478.0	V
Waveform U1	7/26/2004	1:01:02.009 PM	16.669	479.9	V
Waveform U1	7/26/2004	1:01:06.016 PM	16.667	479.6	V
Waveform U1	7/26/2004	1:01:09.503 PM	16.667	479.1	V
Waveform U2	7/26/2004	1:00:27.581 PM	16.669	468.7	V
Waveform U2	7/26/2004	1:00:39.513 PM	16.669	468.6	V
Waveform U2	7/26/2004	1:01:02.009 PM	16.669	470.5	V

Waveform U1
478.04 Vrms, 1.63 %THD



7/26/2004 - 1:00:27.000 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line1
Power Line1
Power Line1
Power Line1
Power Line2
Power Line2
Power Line2
Power Line2
Power Line2
Power Line3
Power Line3

```
Start Date: 7/26/2004
Start Time: 1:00:27 PM
Duration: 0:0.000 (M:S)
W: 13.12E+3 W
VAR: 11.42E+3 W
VA: 17.40E+3 W
Power Factor: 0.754
Displacement Power Factor: 0.755
TAN: 0.868
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D4\072604-D4-Photo2.dvb

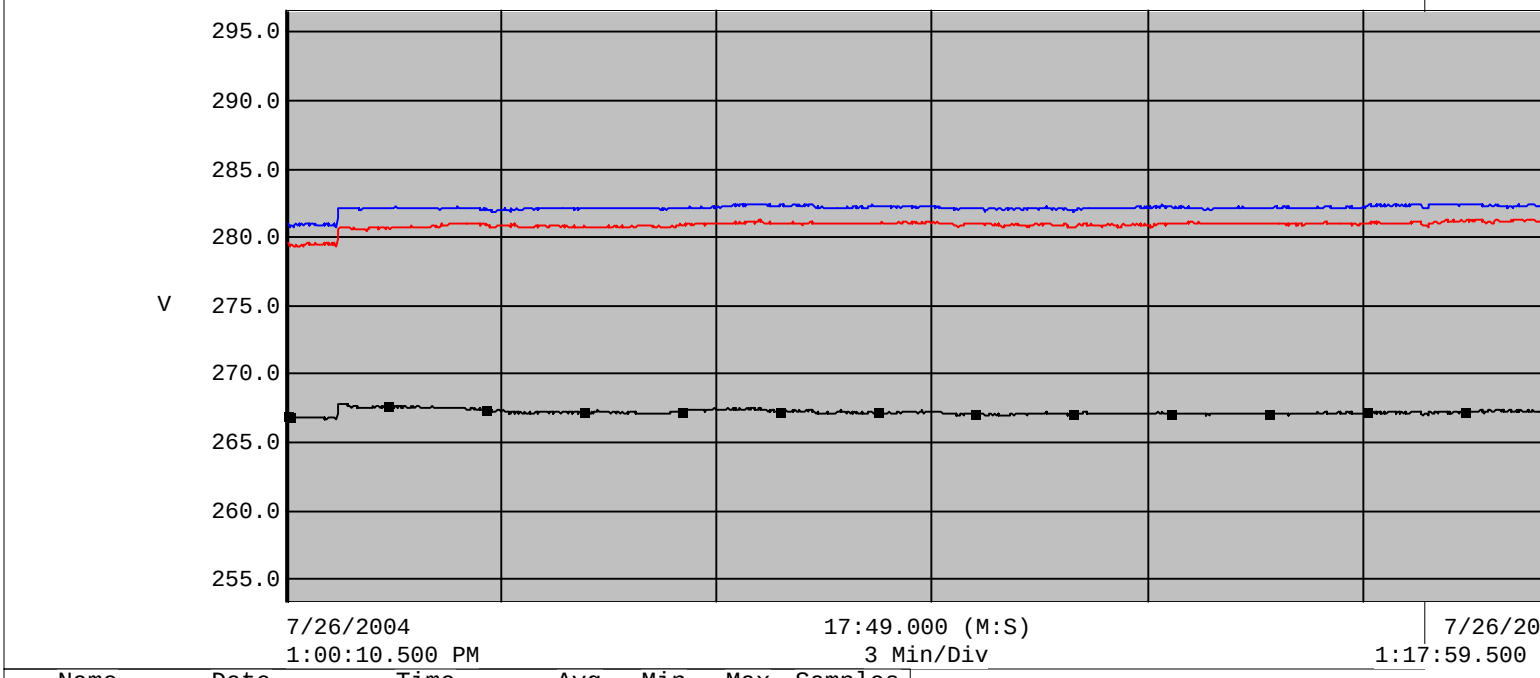
Operator	Test Site
Morikawa & Associates, LCC Lyman Morikawa, PE ,	GWA WPS - D4 ,

Comments

WPS D-4

Recording Start Date	7/26/2004 - 1:00:10 PM
Recording Duration	17:49 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

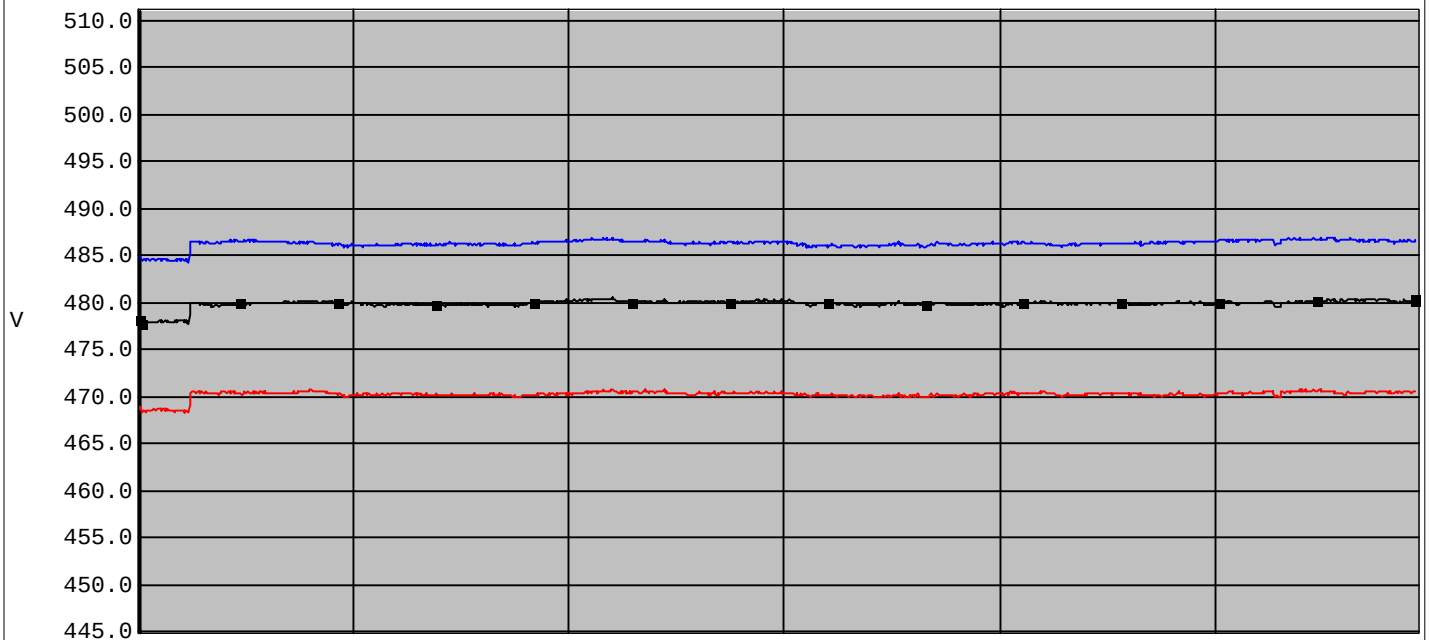
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/26/2004	1:00:10.500 PM	267.2	266.6	267.7	1070
Vrms Line2	7/26/2004	1:00:10.500 PM	280.8	279.2	281.2	1070
Vrms Line3	7/26/2004	1:00:10.500 PM	282.1	280.7	282.4	1070

7/26/2004 - 1:00:10.000 PM
Val
266.9 Vrms Line1
279.5 Vrms Line2
281.0 Vrms Line3

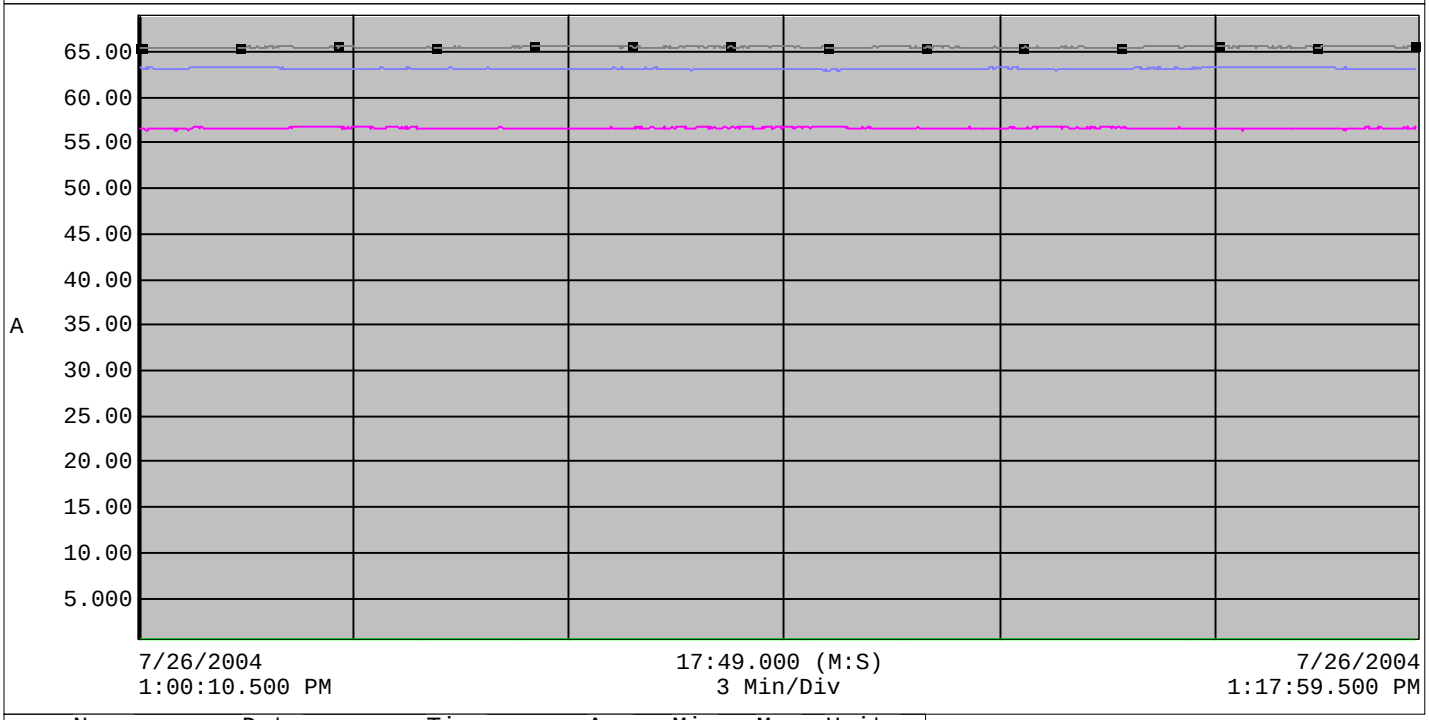
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/26/2004	1:00:10.500 PM	479.8	477.7	480.4	V
Urms Line2	7/26/2004	1:00:10.500 PM	470.1	468.2	470.7	V
Urms Line3	7/26/2004	1:00:10.500 PM	486.2	484.2	486.7	V

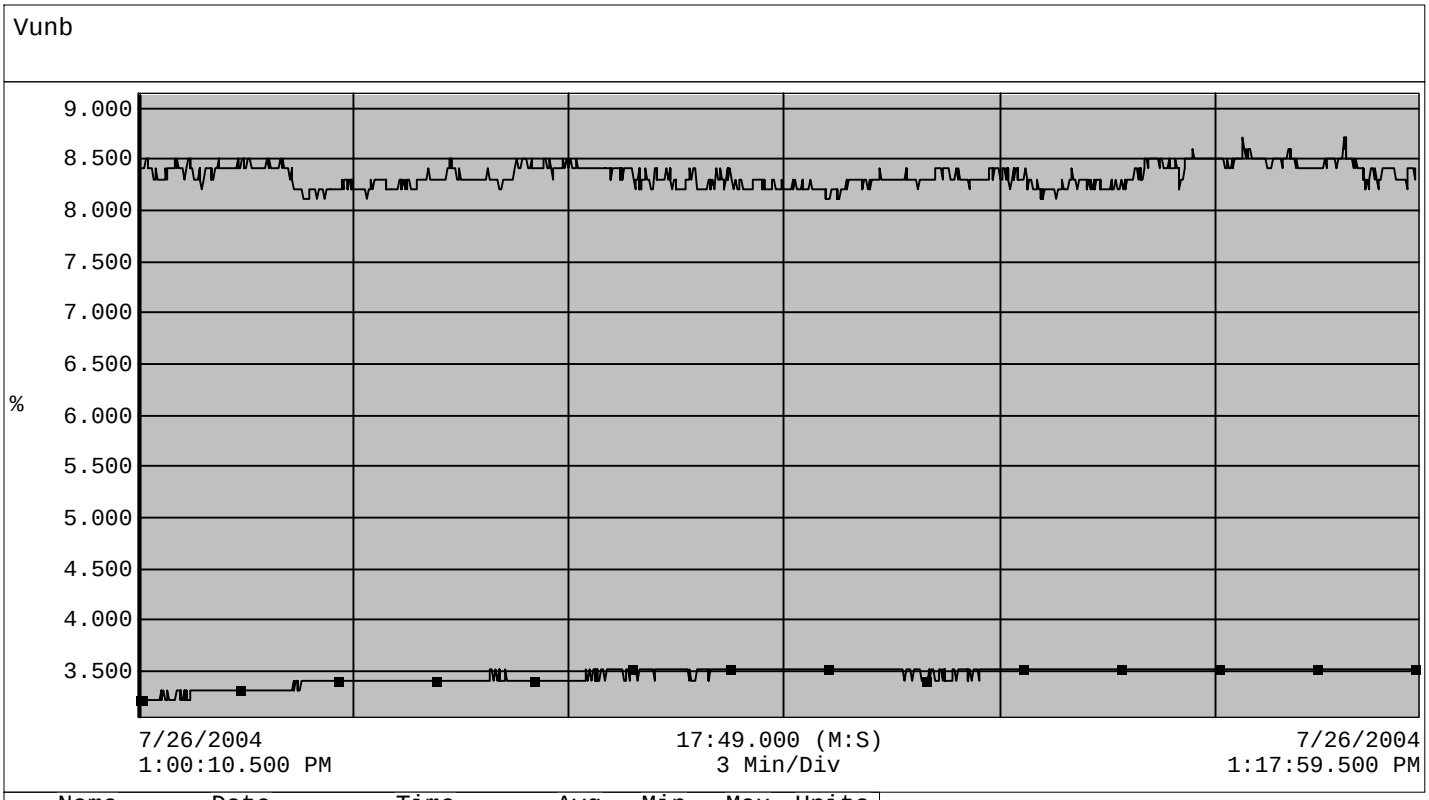
7/26/2004 - 1:00:10.000 PM
Val
478.1 Urms Line1
468.8 Urms Line2
484.7 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/26/2004	1:00:10.500 PM	65.44	65.20	65.60	A
Arms Line2	7/26/2004	1:00:10.500 PM	56.51	56.30	56.70	A
Arms Line3	7/26/2004	1:00:10.500 PM	63.00	62.80	63.20	A
Arms Neutral	7/26/2004	1:00:10.500 PM	0.400	0.400	0.400	A

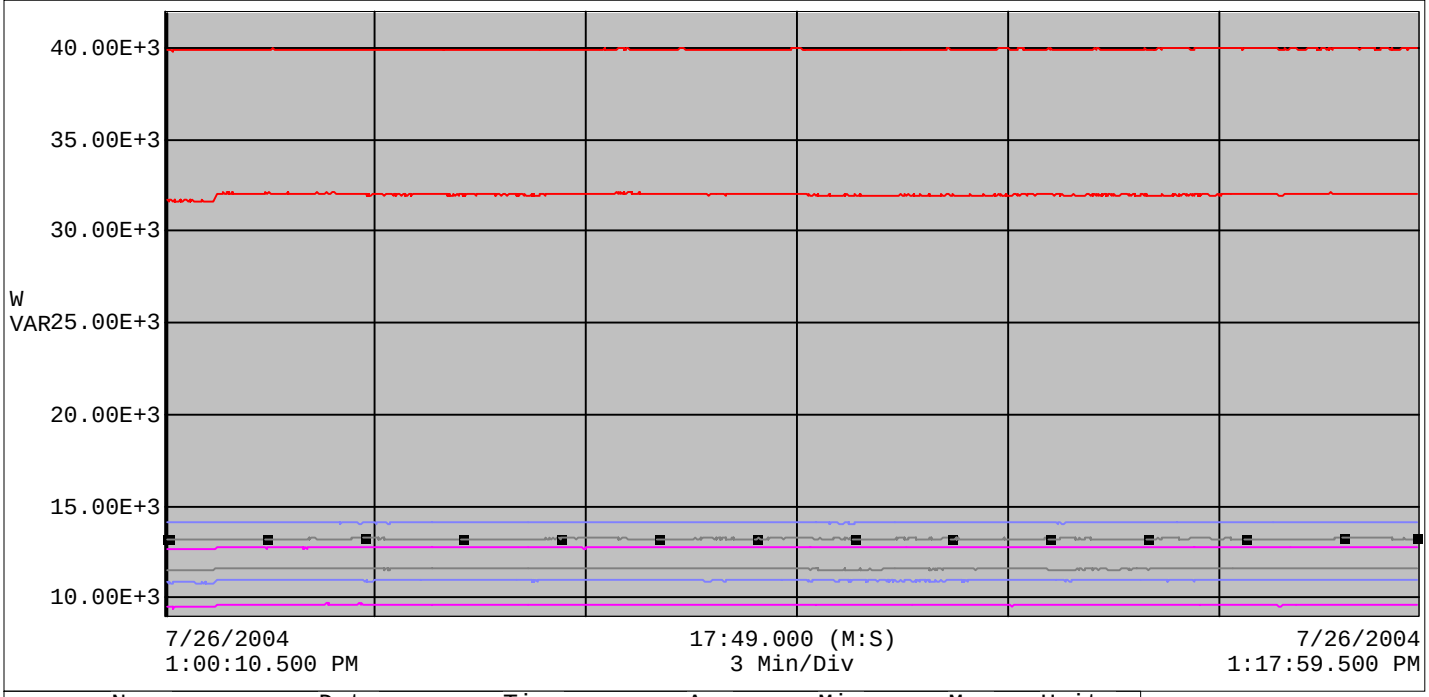
7/26/2004 - 1:00:10.000 PM
Val
65.30 — Arms Line1
56.40 — Arms Line2
63.10 — Arms Line3
0.400 — Arms Neutral



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/26/2004	1:00:10.500 PM	3.446	3.200	3.500	%
Aunb(IEEE)	7/26/2004	1:00:10.500 PM	8.334	8.100	8.700	%

7/26/2004 - 1:00:10.000 PM
Val
3.200 —— Vunb(IEEE)
8.400 —— Aunb(IEEE)

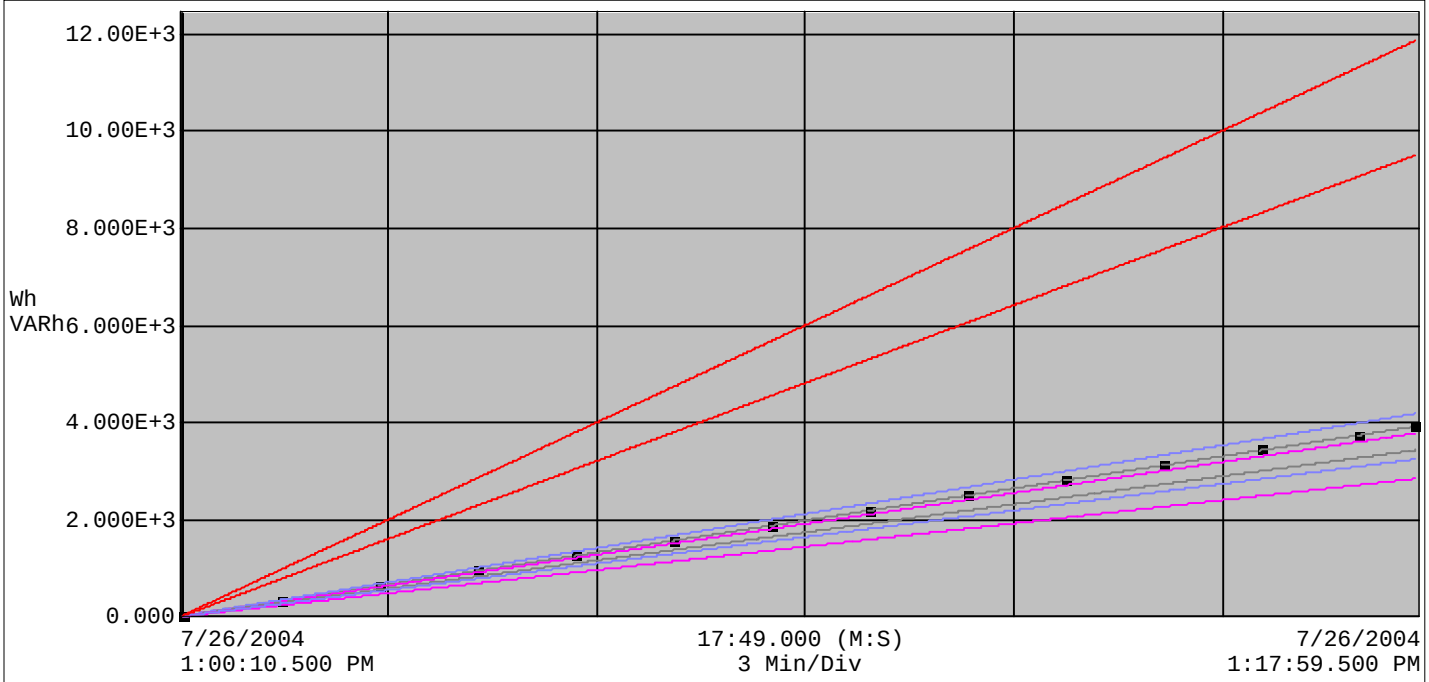
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/26/2004	1:00:10.500 PM	13.16E+3	13.11E+3	13.20E+3	W
W Line2	7/26/2004	1:00:10.500 PM	12.68E+3	12.60E+3	12.72E+3	W
W Line3	7/26/2004	1:00:10.500 PM	14.04E+3	13.99E+3	14.10E+3	W
W Sum of Phases	7/26/2004	1:00:10.500 PM	39.88E+3	39.79E+3	39.95E+3	W
VAR Line1	7/26/2004	1:00:10.500 PM	11.51E+3	11.41E+3	11.58E+3	VAR
VAR Line2	7/26/2004	1:00:10.500 PM	9.546E+3	9.389E+3	9.607E+3	VAR
VAR Line3	7/26/2004	1:00:10.500 PM	10.88E+3	10.72E+3	10.95E+3	VAR
VAR Sum of Phases	7/26/2004	1:00:10.500 PM	31.94E+3	31.53E+3	32.06E+3	VAR

7/26/2004 - 1:00:10.000 PM
Val
13.13E+3 — W Line1
12.64E+3 — W Line2
14.06E+3 — W Line3
39.83E+3 — W Sum of Phases
11.44E+3 — VAR Line1
9.436E+3 — VAR Line2
10.79E+3 — VAR Line3
31.67E+3 — VAR Sum of Phases

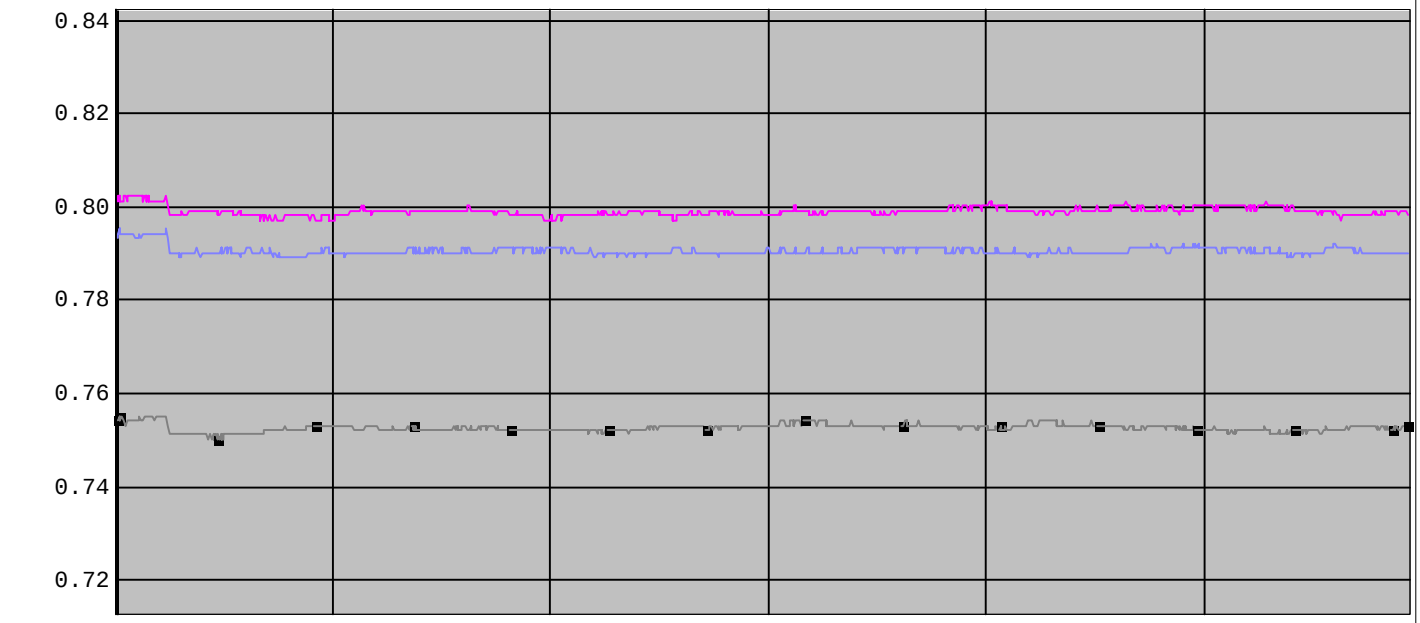
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/26/2004	1:00:10.500 PM	1.957E+3	3.700	3.910E+3	Wh
W-hours Line2	7/26/2004	1:00:10.500 PM	1.885E+3	3.565	3.768E+3	Wh
W-hours Line3	7/26/2004	1:00:10.500 PM	2.089E+3	3.949	4.174E+3	Wh
W-hours Sum of Phases	7/26/2004	1:00:10.500 PM	5.930E+3	11.21	11.85E+3	Wh
VAR-hours Line1	7/26/2004	1:00:10.500 PM	1.713E+3	3.133	3.422E+3	VARh
VAR-hours Line2	7/26/2004	1:00:10.500 PM	1.420E+3	2.598	2.837E+3	VARh
VAR-hours Line3	7/26/2004	1:00:10.500 PM	1.618E+3	2.962	3.235E+3	VARh
VAR-hours Sum of Phases	7/26/2004	1:00:10.500 PM	4.751E+3	8.693	9.495E+3	VARh

7/26/2004 - 1:00:10.000 PM
Val
3.700 — W-hours Line1
3.565 — W-hours Line2
3.949 — W-hours Line3
11.21 — W-hours Sum of Phases
3.133 — VAR-hours Line1
2.598 — VAR-hours Line2
2.962 — VAR-hours Line3
8.693 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/26/2004	1:00:10.500 PM	0.753	0.750	0.755	
PF Line2	7/26/2004	1:00:10.500 PM	0.799	0.797	0.802	
PF Line3	7/26/2004	1:00:10.500 PM	0.790	0.789	0.795	

7/26/2004 - 1:00:10.000 PM
Val
0.754 — PF Line1
0.801 — PF Line2
0.793 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D4\072604-D4.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS-D4 ,

Comments

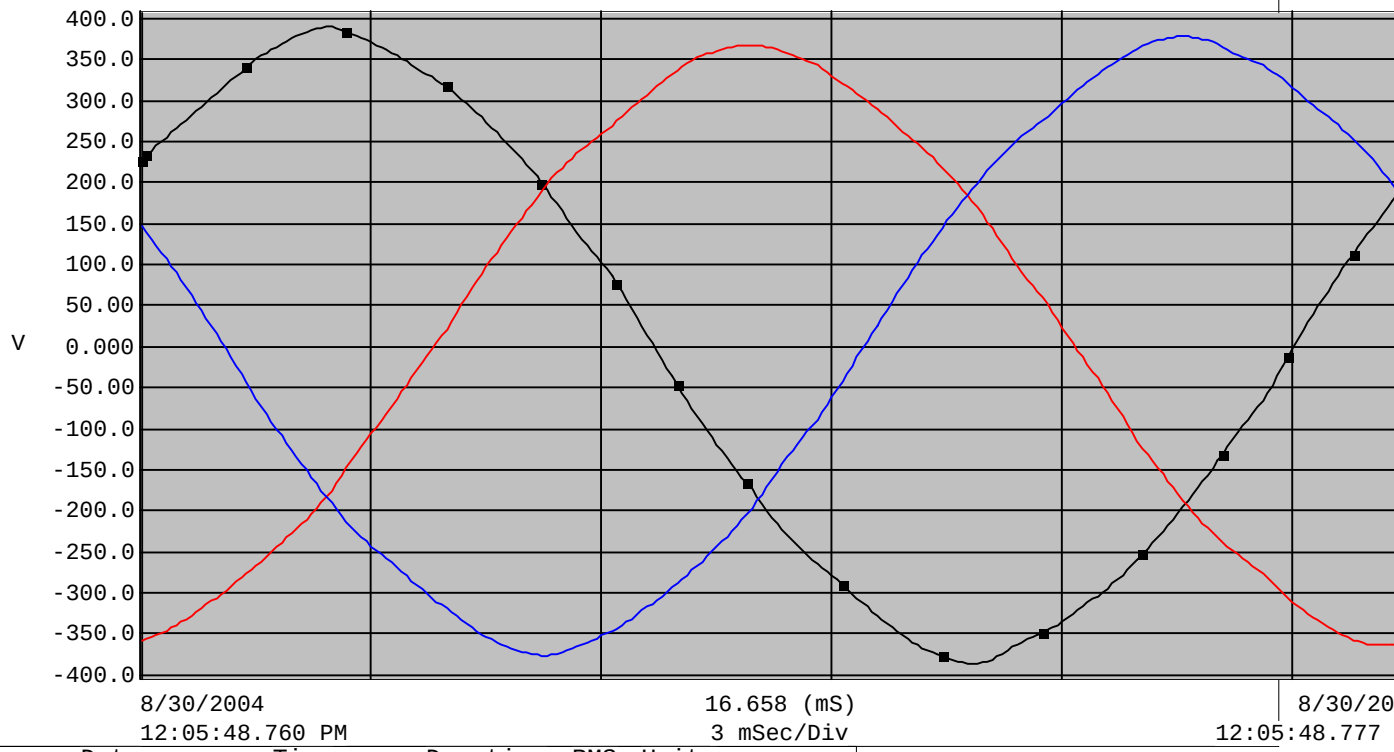
GWA Water Pumping Station Assessment				
Station Name: D-07	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0	
Pressure	1.5%	0	0	
Flow	1.5%	0	0	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.5**

Comments:

WPS D-7 Photo Report

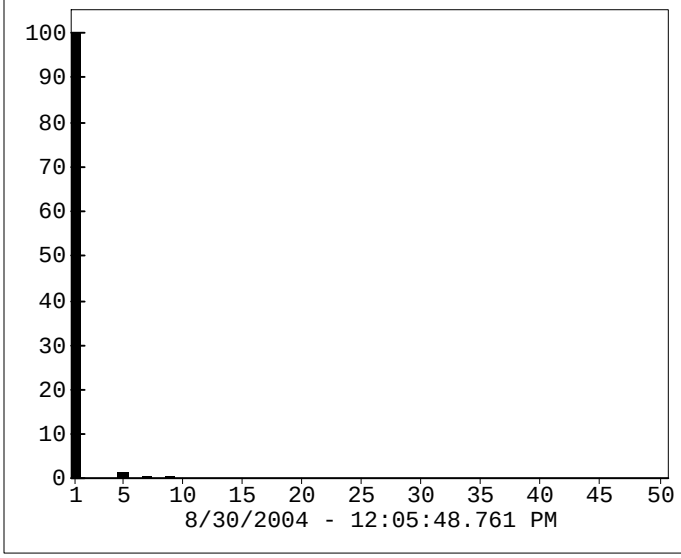
Recording Start Date	8/30/2004 - 12:05:48 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/30/2004	12:05:48.760 PM	16.658	265.8	V
Waveform V2	8/30/2004	12:05:48.760 PM	16.658	254.0	V
Waveform V3	8/30/2004	12:05:48.760 PM	16.658	261.1	V

Waveform V1
265.79 Vrms, 1.98 %THD



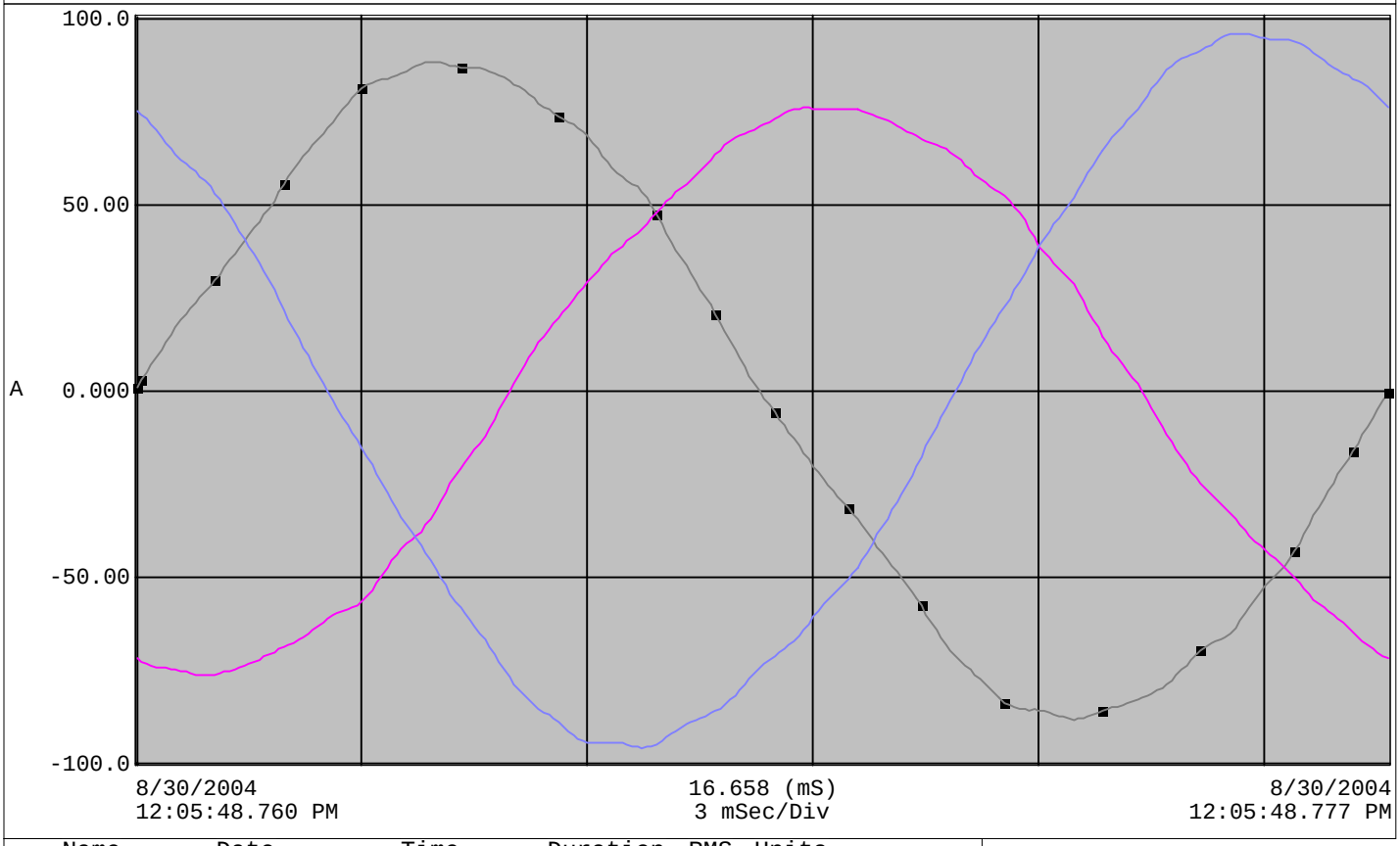
8/30/2004 - 12:05:48.000 PM

Val	
224.3	Waveform V1
-358.8	Waveform V2
145.1	Waveform V3

Waveform V1

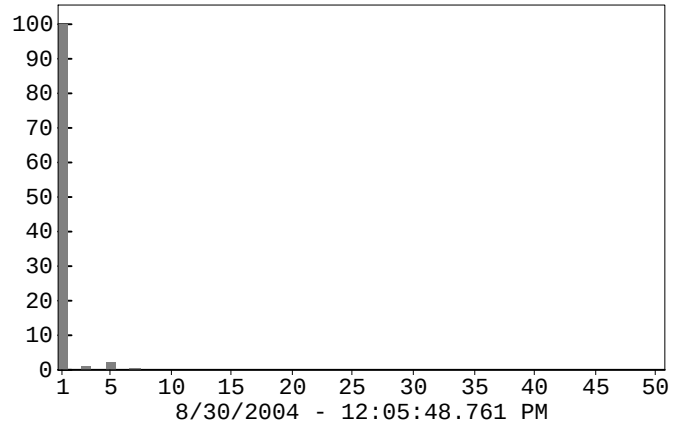
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.7	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/30/2004	12:05:48.760 PM	16.658	61.48	A
Waveform I2	8/30/2004	12:05:48.760 PM	16.658	54.02	A
Waveform I3	8/30/2004	12:05:48.760 PM	16.658	67.18	A

Waveform I1
61.48 Arms, 3.01 %THD



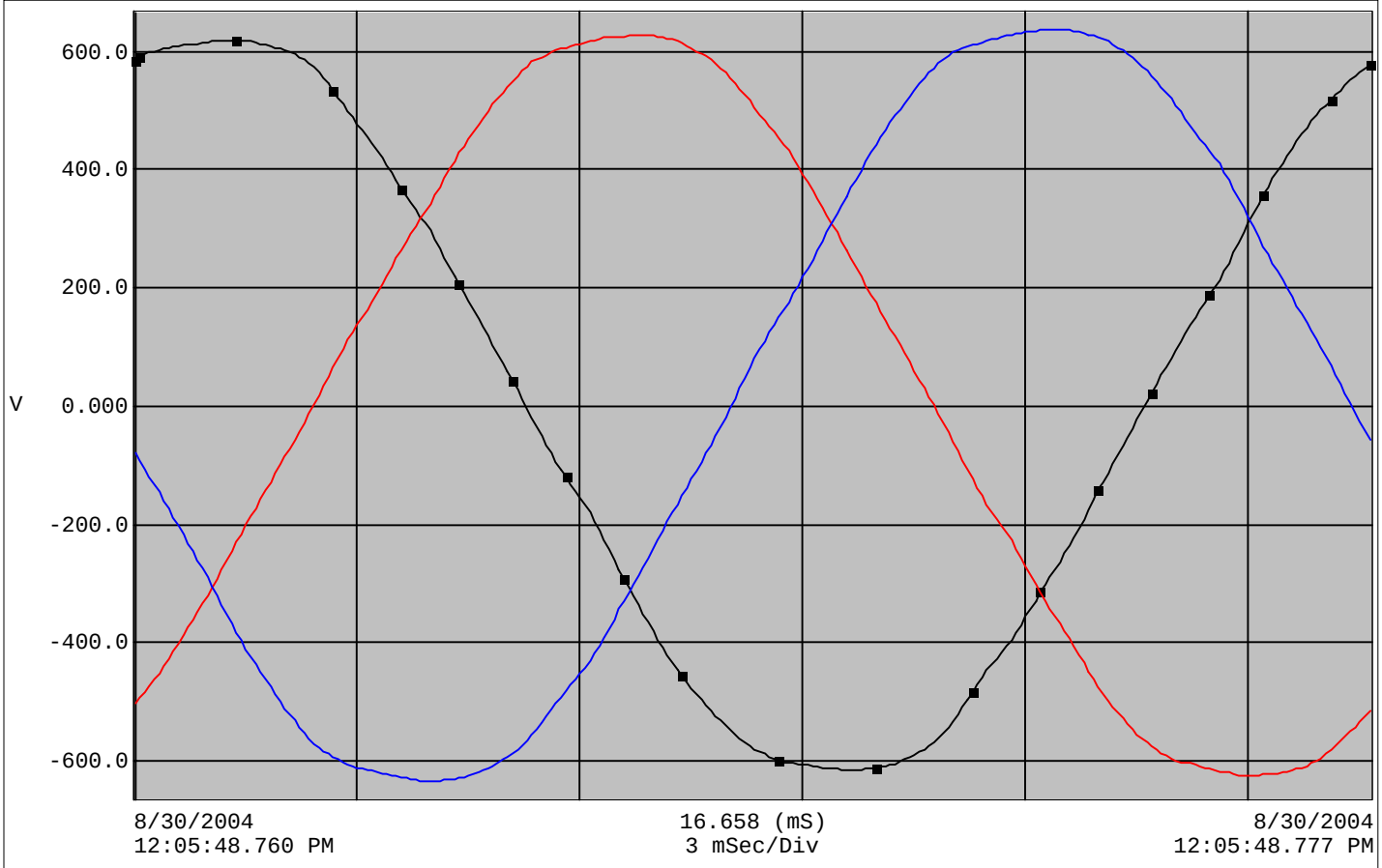
8/30/2004 - 12:05:48.000 PM

	Val	
—	0.800	Waveform I1
—	-72.00	Waveform I2
—	75.30	Waveform I3

Waveform I1

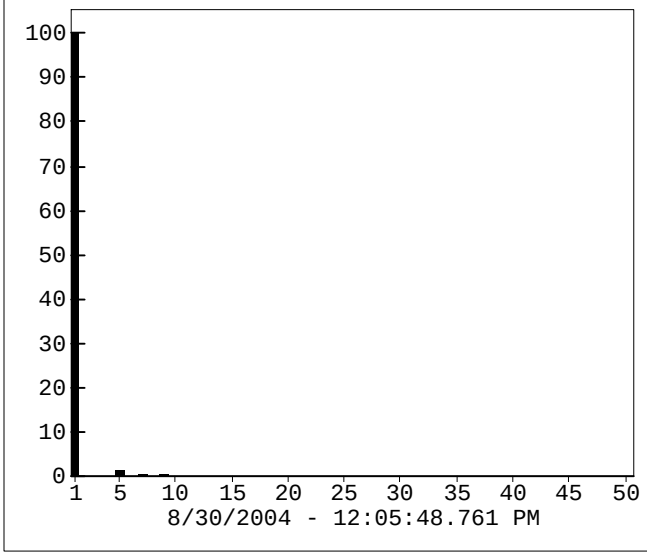
	(%)		(%)		(%)
H01	100.0	H18	0.5	H35	0.0
H02	0.1	H19	0.3	H36	0.0
H03	1.4	H20	0.0	H37	0.0
H04	0.1	H21	0.2	H38	0.0
H05	2.4	H22	0.3	H39	0.0
H06	0.2	H23	0.1	H40	0.0
H07	0.7	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.3	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/30/2004	12:05:48.760 PM	16.658	445.5	V
Waveform U2	8/30/2004	12:05:48.760 PM	16.658	448.9	V
Waveform U3	8/30/2004	12:05:48.760 PM	16.658	458.2	V

Waveform U1
445.51 Vrms, 1.94 %THD



8/30/2004 - 12:05:48.000 PM

	Val	
—	583.2	Waveform U1
—	-504.0	Waveform U2
—	-79.20	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.6	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.7	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/30/2004
Start Time: 12:05:48 PM
Duration: 0:0.000 (M:S)
W: 13.09E+3 W
VAR: 9.770E+3 W
VA: 16.33E+3 W
Power Factor: 0.801
Displacement Power Factor: 0.802
TAN: 0.745
VoltageRatio: 1.000
CurrentRatio: 1.000
```

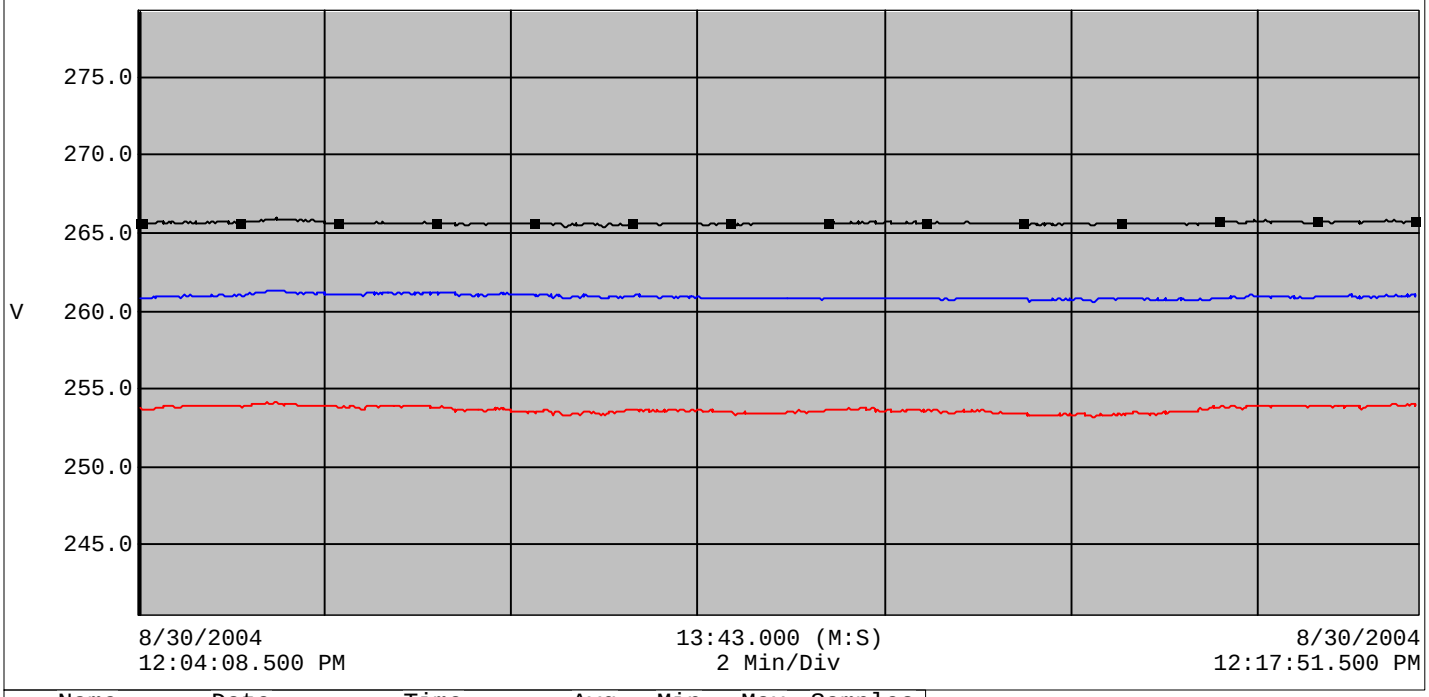
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D7\083004-D7-Photo.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	Test Site GWA WPS D-7 ,
Comments	

WPS D-7

Recording Start Date	8/30/2004 - 12:04:08 PM
Recording Duration	13:43 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

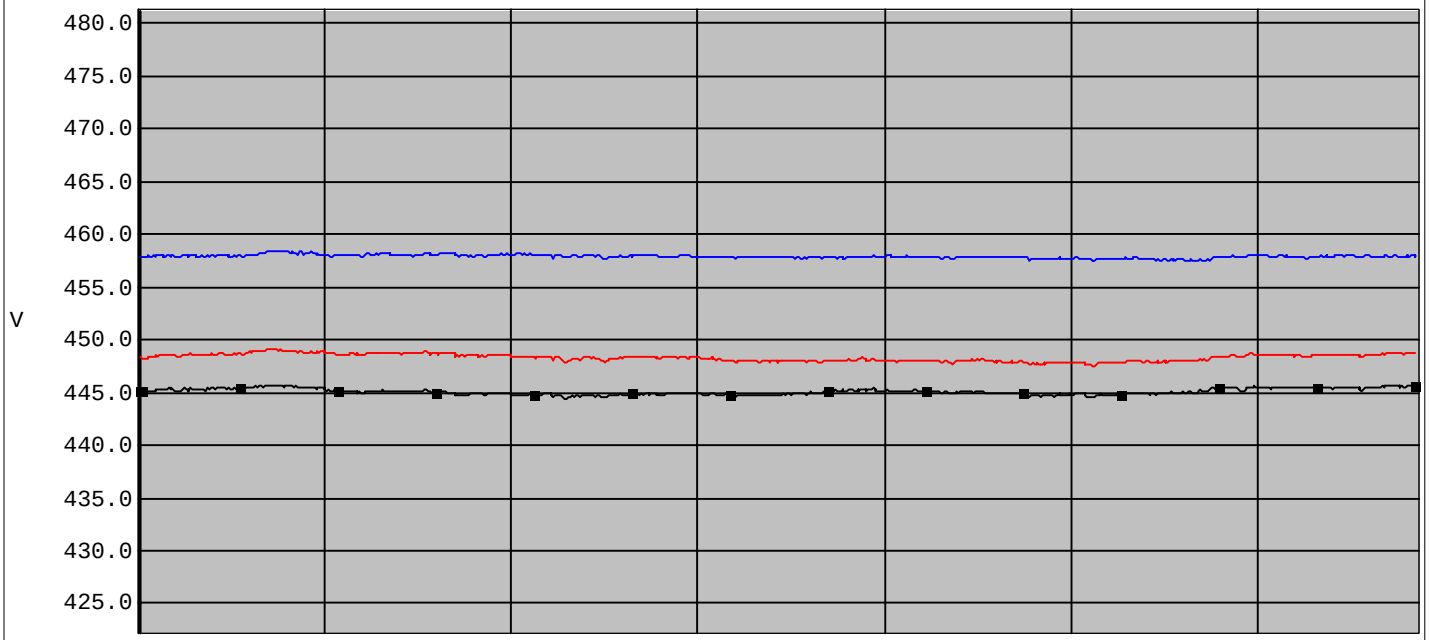
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/30/2004	12:04:08.500 PM	265.6	265.3	265.9	824
Vrms Line2	8/30/2004	12:04:08.500 PM	253.6	253.1	254.1	824
Vrms Line3	8/30/2004	12:04:08.500 PM	260.8	260.5	261.2	824

8/30/2004 - 12:04:08.000 PM
Val
265.6 — Vrms Line1
253.7 — Vrms Line2
260.8 — Vrms Line3

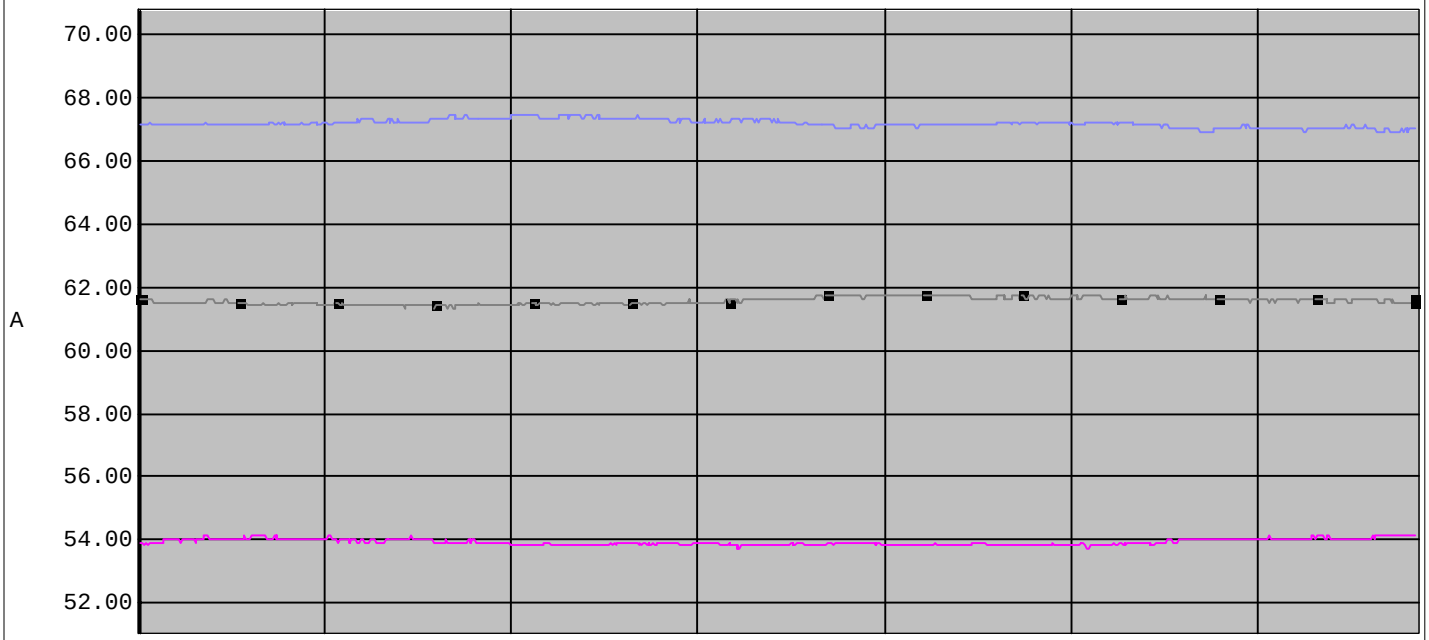
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/30/2004	12:04:08.500 PM	445.0	444.3	445.6	V
Urms Line2	8/30/2004	12:04:08.500 PM	448.2	447.3	449.1	V
Urms Line3	8/30/2004	12:04:08.500 PM	457.8	457.3	458.3	V

8/30/2004 - 12:04:08.000 PM
Val
445.1 Urms Line1
448.2 Urms Line2
457.8 Urms Line3

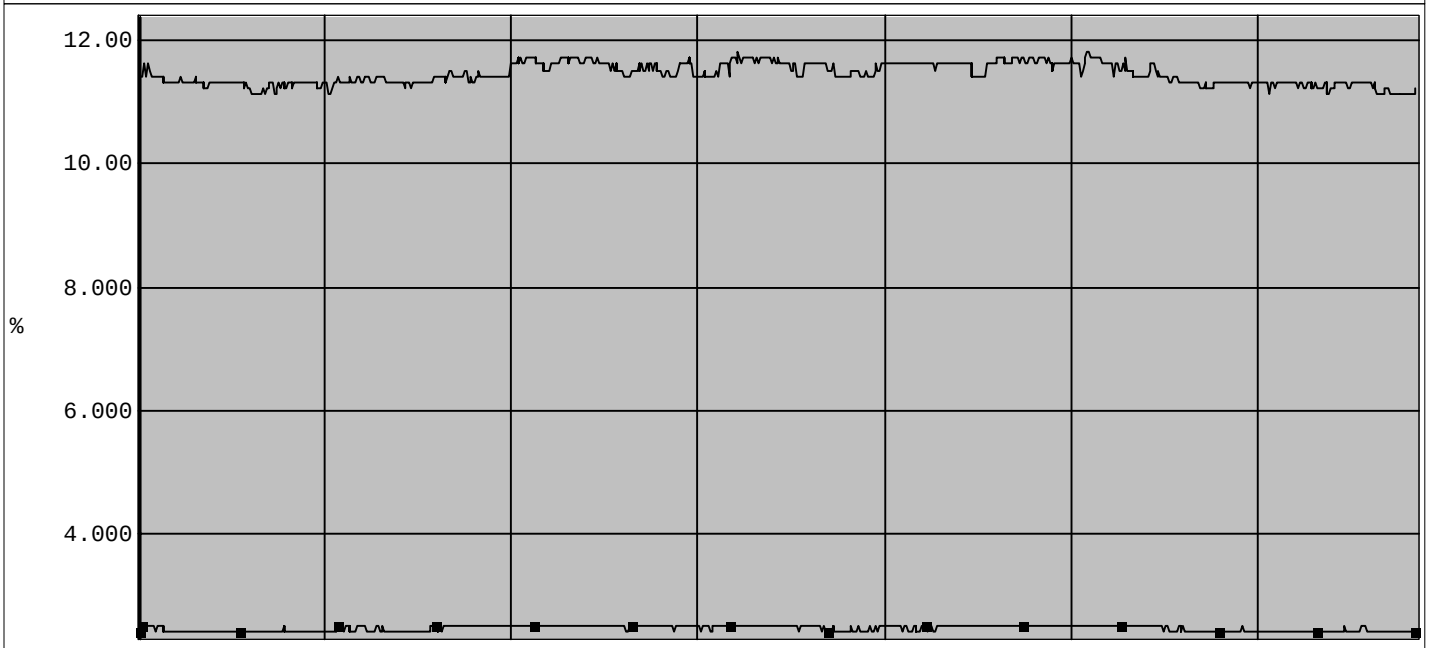
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/30/2004	12:04:08.500 PM	61.55	61.30	61.70	A
Arms Line2	8/30/2004	12:04:08.500 PM	53.91	53.70	54.10	A
Arms Line3	8/30/2004	12:04:08.500 PM	67.15	66.90	67.40	A

8/30/2004 - 12:04:08.000 PM
Val
61.60 — Arms Line1
53.90 — Arms Line2
67.10 — Arms Line3

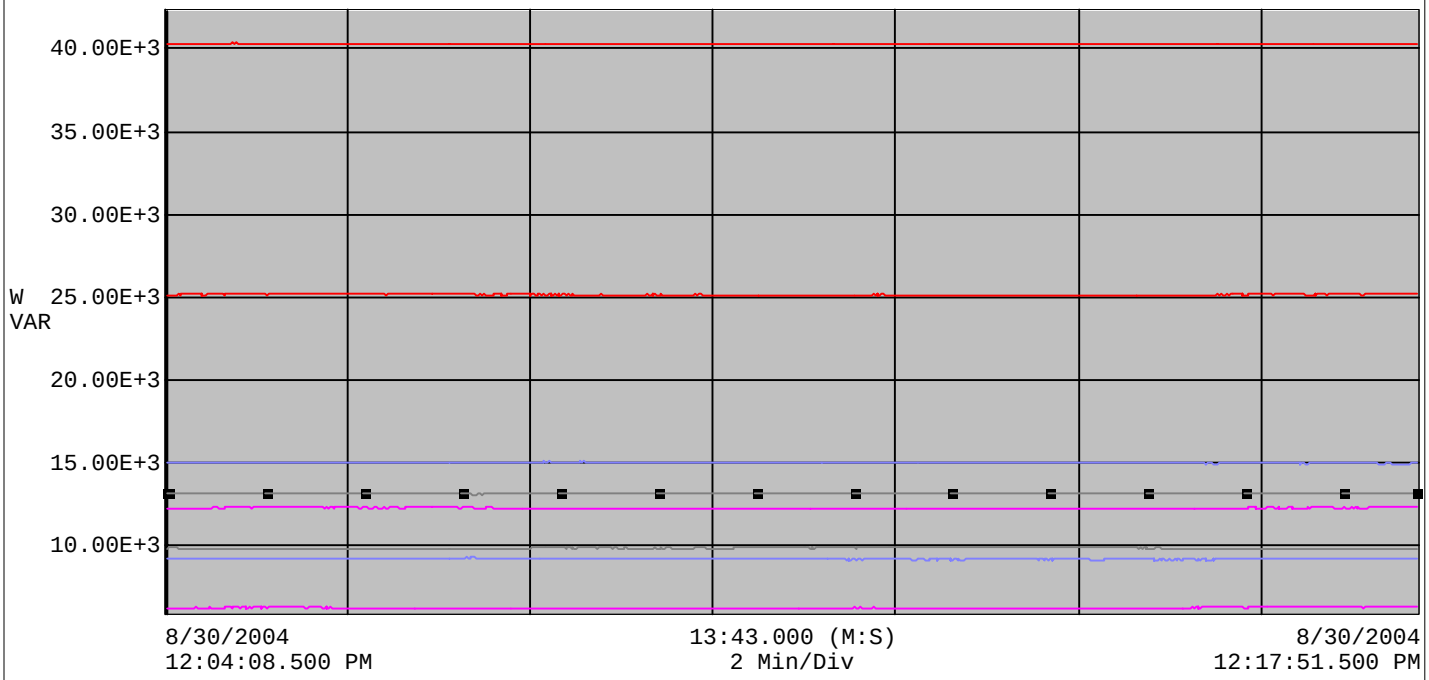
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/30/2004	12:04:08.500 PM	2.456	2.400	2.500	%
Aunb(IEEE)	8/30/2004	12:04:08.500 PM	11.44	11.10	11.80	%

8/30/2004 - 12:04:08.000 PM
Val
2.400 —— Vunb(IEEE)
11.40 —— Aunb(IEEE)

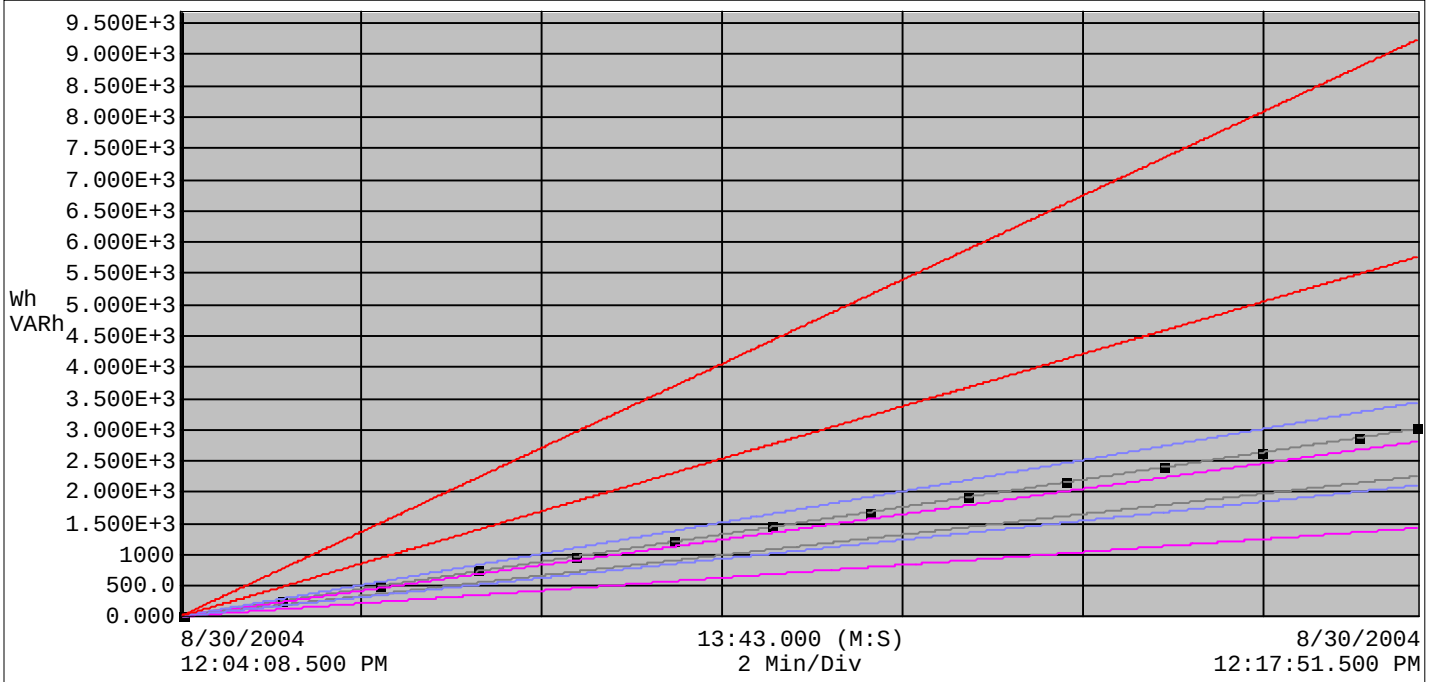
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/30/2004	12:04:08.500 PM	13.09E+3	13.03E+3	13.15E+3	W
W Line2	8/30/2004	12:04:08.500 PM	12.20E+3	12.14E+3	12.26E+3	W
W Line3	8/30/2004	12:04:08.500 PM	14.94E+3	14.88E+3	15.01E+3	W
W Sum of Phases	8/30/2004	12:04:08.500 PM	40.24E+3	40.20E+3	40.30E+3	W
VAR Line1	8/30/2004	12:04:08.500 PM	9.783E+3	9.739E+3	9.820E+3	VAR
VAR Line2	8/30/2004	12:04:08.500 PM	6.169E+3	6.092E+3	6.242E+3	VAR
VAR Line3	8/30/2004	12:04:08.500 PM	9.139E+3	9.073E+3	9.213E+3	VAR
VAR Sum of Phases	8/30/2004	12:04:08.500 PM	25.09E+3	25.00E+3	25.17E+3	VAR

8/30/2004 - 12:04:08.000 PM
Val
13.11E+3 — W Line1
12.20E+3 — W Line2
14.93E+3 — W Line3
40.24E+3 — W Sum of Phases
9.783E+3 — VAR Line1
6.180E+3 — VAR Line2
9.126E+3 — VAR Line3
25.09E+3 — VAR Sum of Phases

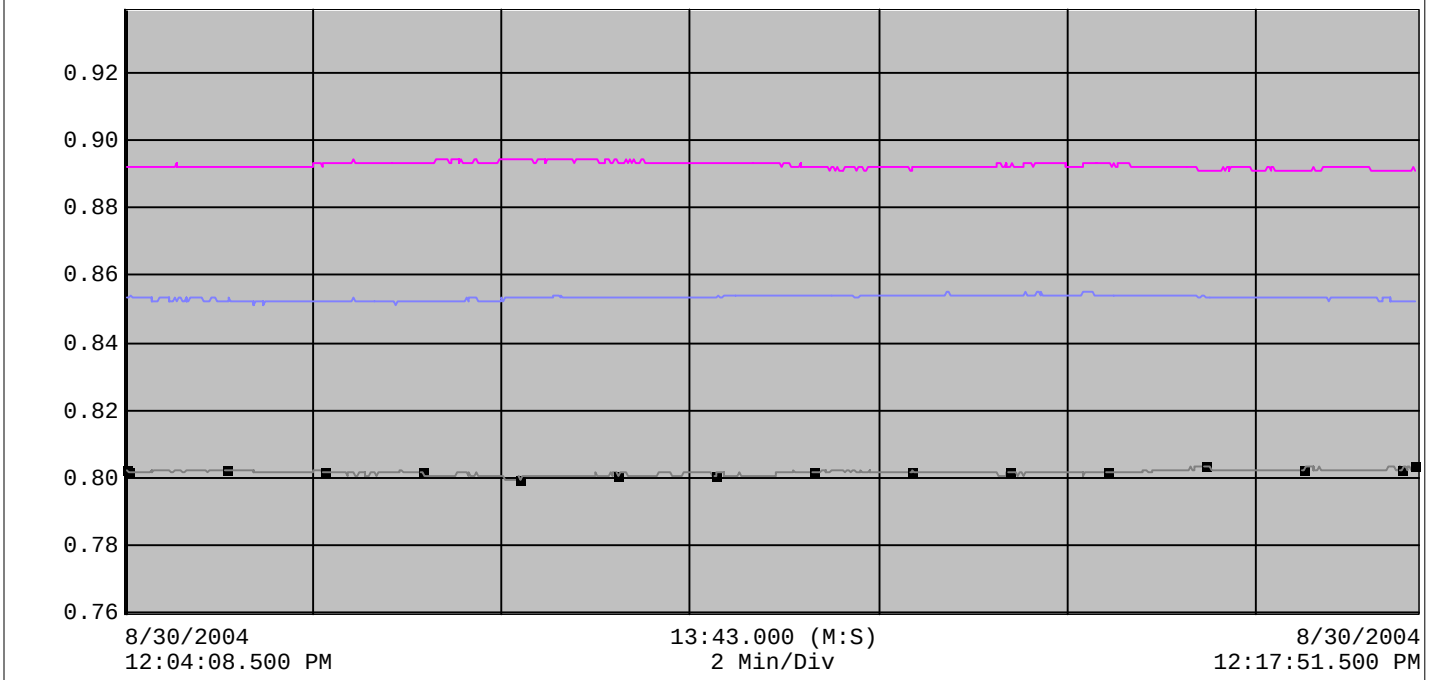
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/30/2004	12:04:08.500 PM	1.499E+3	3.659	2.997E+3	Wh
W-hours Line2	8/30/2004	12:04:08.500 PM	1.399E+3	3.410	2.793E+3	Wh
W-hours Line3	8/30/2004	12:04:08.500 PM	1.713E+3	4.176	3.420E+3	Wh
W-hours Sum of Phases	8/30/2004	12:04:08.500 PM	4.611E+3	11.24	9.211E+3	Wh
VAR-hours Line1	8/30/2004	12:04:08.500 PM	1.121E+3	2.734	2.239E+3	VARh
VAR-hours Line2	8/30/2004	12:04:08.500 PM	706.2	1.724	1.412E+3	VARh
VAR-hours Line3	8/30/2004	12:04:08.500 PM	1.049E+3	2.554	2.092E+3	VARh
VAR-hours Sum of Phases	8/30/2004	12:04:08.500 PM	2.876E+3	7.011	5.743E+3	VARh

8/30/2004 - 12:04:08.000 PM
Val
3.659 — W-hours Line1
3.410 — W-hours Line2
4.176 — W-hours Line3
11.24 — W-hours Sum of Phases
2.734 — VAR-hours Line1
1.724 — VAR-hours Line2
2.554 — VAR-hours Line3
7.011 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/30/2004	12:04:08.500 PM	0.801	0.799	0.803	
PF Line2	8/30/2004	12:04:08.500 PM	0.892	0.891	0.894	
PF Line3	8/30/2004	12:04:08.500 PM	0.853	0.851	0.855	

8/30/2004 - 12:04:08.000 PM
Val
0.802 — PF Line1
0.892 — PF Line2
0.853 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D7\083004-D7.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS D-7 ,

Comments

Recorded at motor starter overload relay. Timemark C269 Phase Monitor, 50 HP motor. Voltage at this station low. Service for Stations D7 and D8 from the same transformer bank through a disconnect switch located on Route 16. GPA Meter 02 465 808 with a demand reading of 41.64 KW.

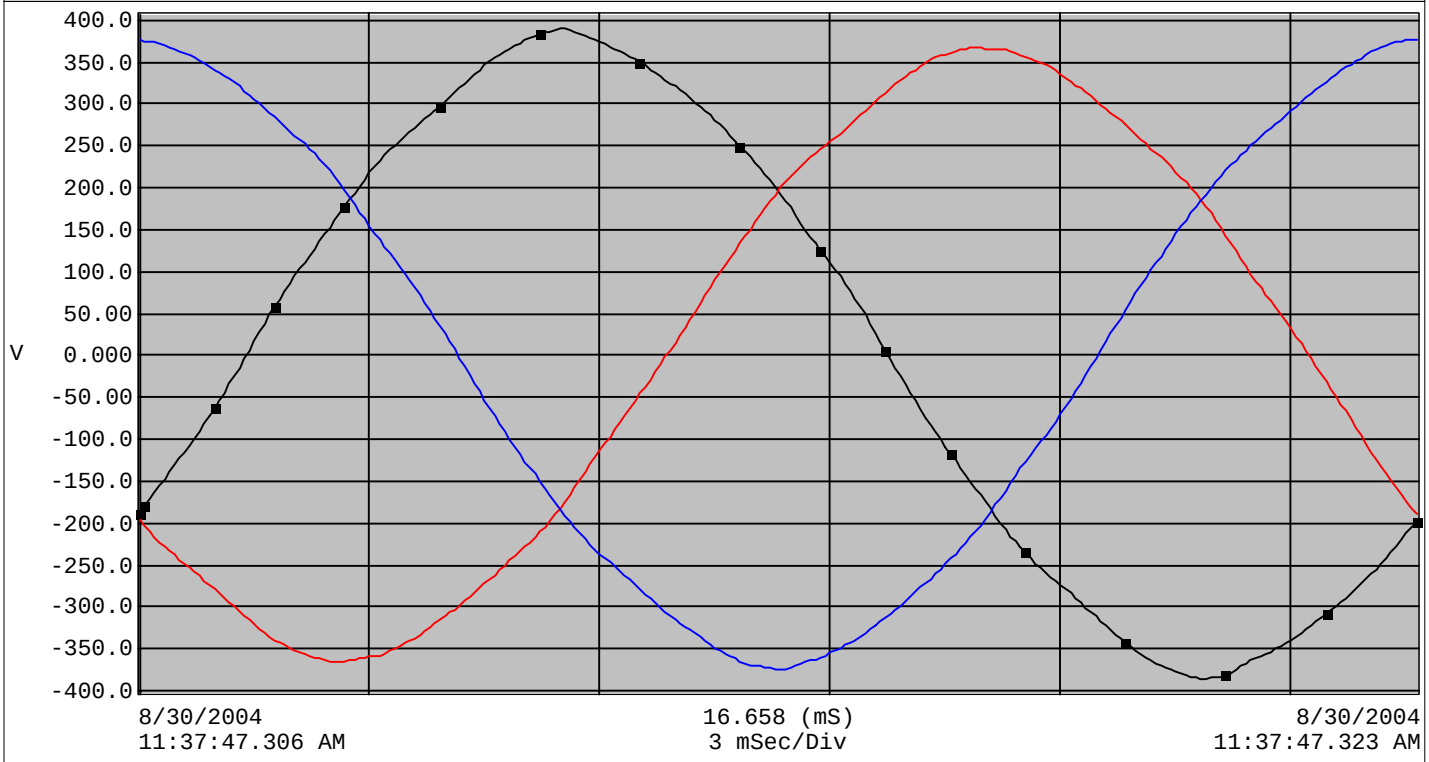
GWA Water Pumping Station Assessment				
Station Name: D-08	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.015	
Pressure	1.5%	0	0	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.2**

Comments:

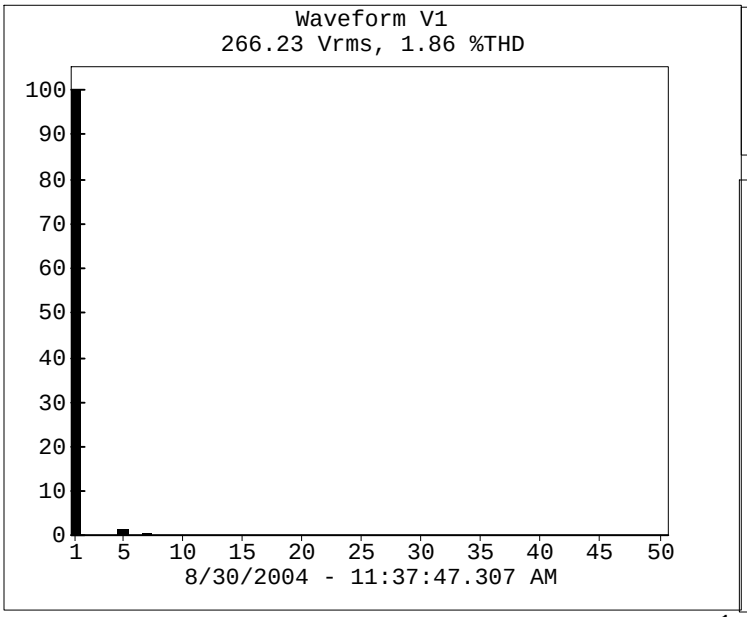
WPS D-8 Photo Report

Recording Start Date	8/30/2004 - 11:37:47 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/30/2004	11:37:47.306 AM	16.658	266.2	V
Waveform V2	8/30/2004	11:37:47.306 AM	16.658	254.7	V
Waveform V3	8/30/2004	11:37:47.306 AM	16.658	260.5	V



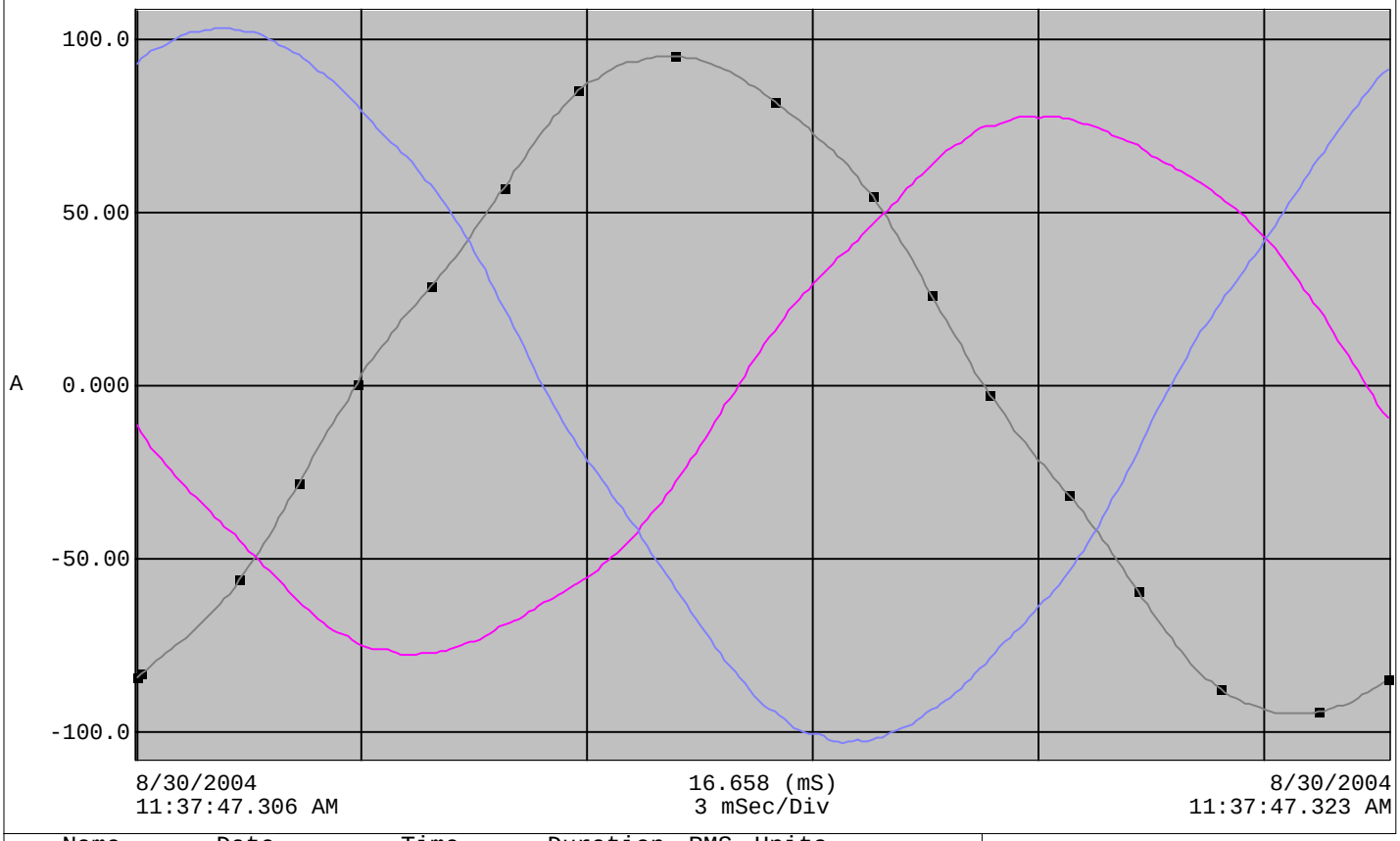
8/30/2004 - 11:37:47.000 AM

Val	
-189.4	Waveform V1
-197.8	Waveform V2
374.1	Waveform V3

Waveform V1

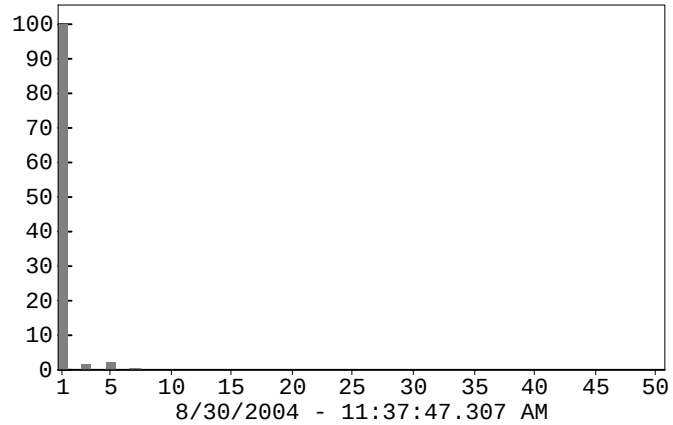
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.6	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/30/2004	11:37:47.306 AM	16.658	66.35	A
Waveform I2	8/30/2004	11:37:47.306 AM	16.658	55.08	A
Waveform I3	8/30/2004	11:37:47.306 AM	16.658	72.05	A

Waveform I1
66.35 Arms, 3.40 %THD

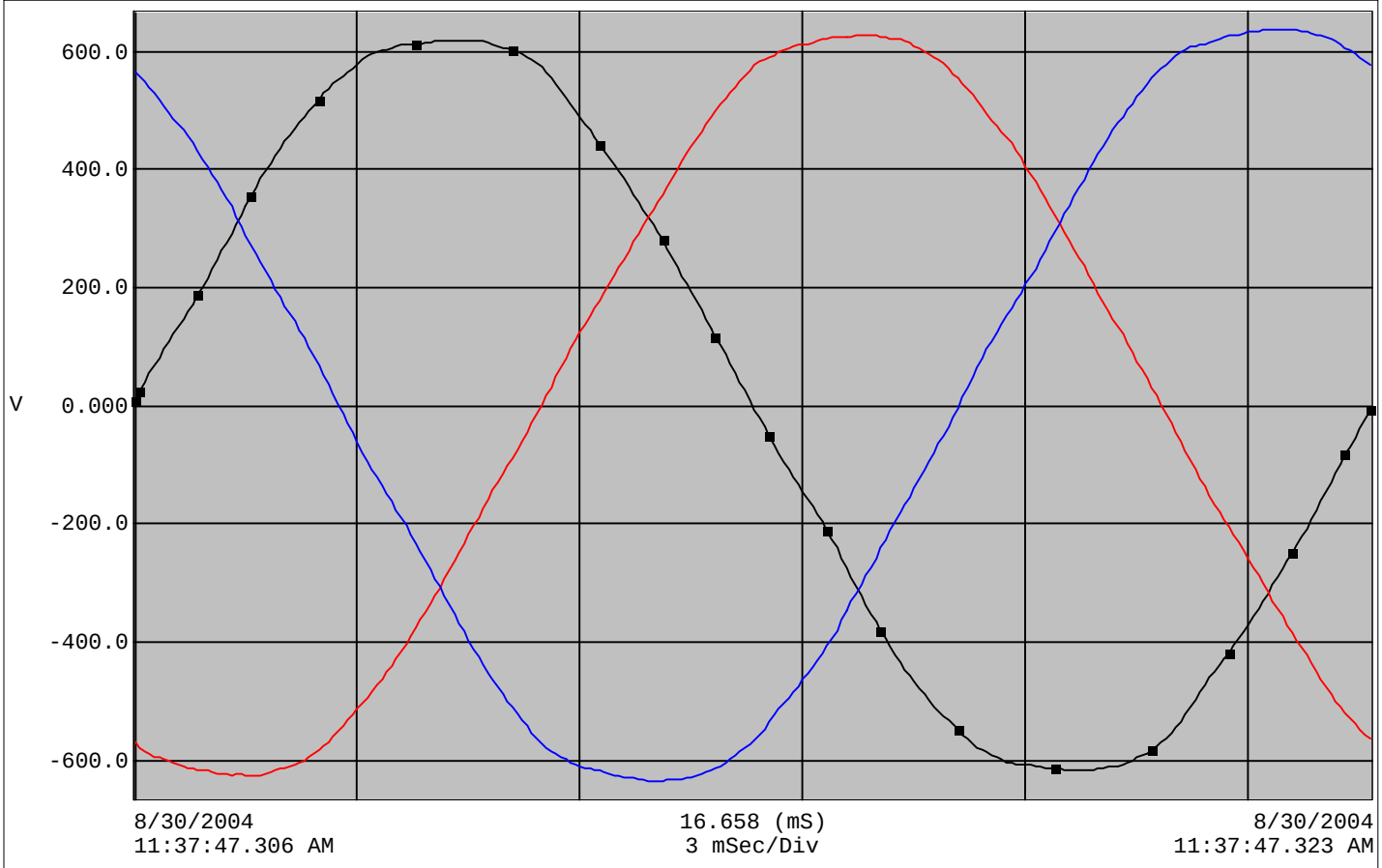


8/30/2004 - 11:37:47.000 AM
Val
-84.10 — Waveform I1
-11.80 — Waveform I2
92.60 — Waveform I3

Waveform I1

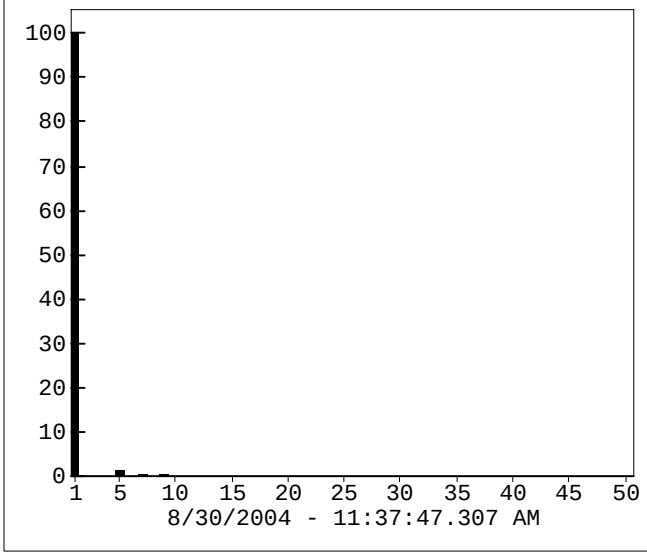
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.0	H19	0.0	H36	0.1
H03	1.7	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/30/2004	11:37:47.306 AM	16.658	445.9	V
Waveform U2	8/30/2004	11:37:47.306 AM	16.658	449.1	V
Waveform U3	8/30/2004	11:37:47.306 AM	16.658	458.4	V

Waveform U1
445.86 Vrms, 1.87 %THD



8/30/2004 - 11:37:47.000 AM

	Val	
—	8.400	Waveform U1
—	-572.0	Waveform U2
—	563.6	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.6	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.1	H50	0.0
H17	0.1	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/30/2004
Start Time: 11:37:47 AM
Duration: 0:0.000 (M:S)
W: 14.46E+3 W
VAR: 10.14E+3 W
VA: 17.66E+3 W
Power Factor: 0.819
Displacement Power Factor: 0.819
TAN: 0.700
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D8\083004-D8-Photo.dvb

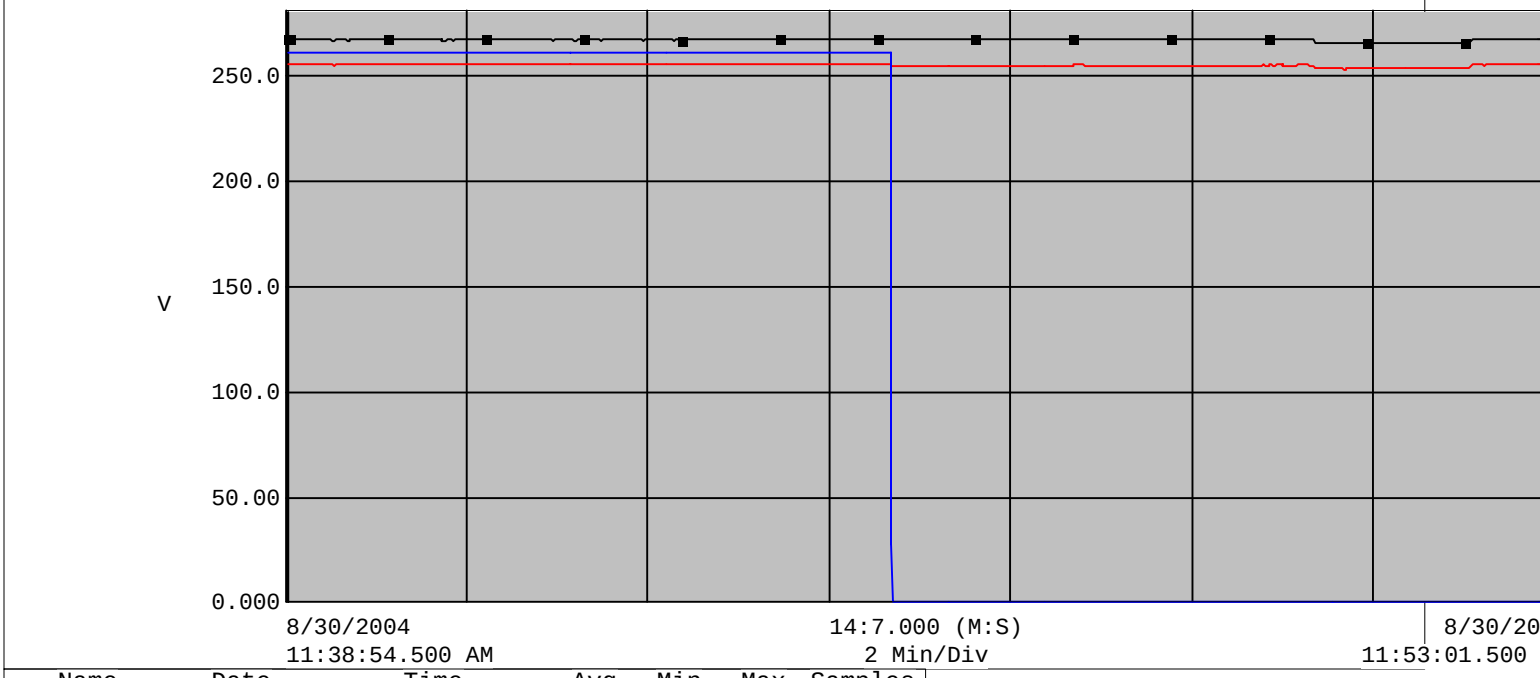
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS D-8 ,

Comments

WPS D-8

Recording Start Date	8/30/2004 - 11:38:54 AM
Recording Duration	14:07 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

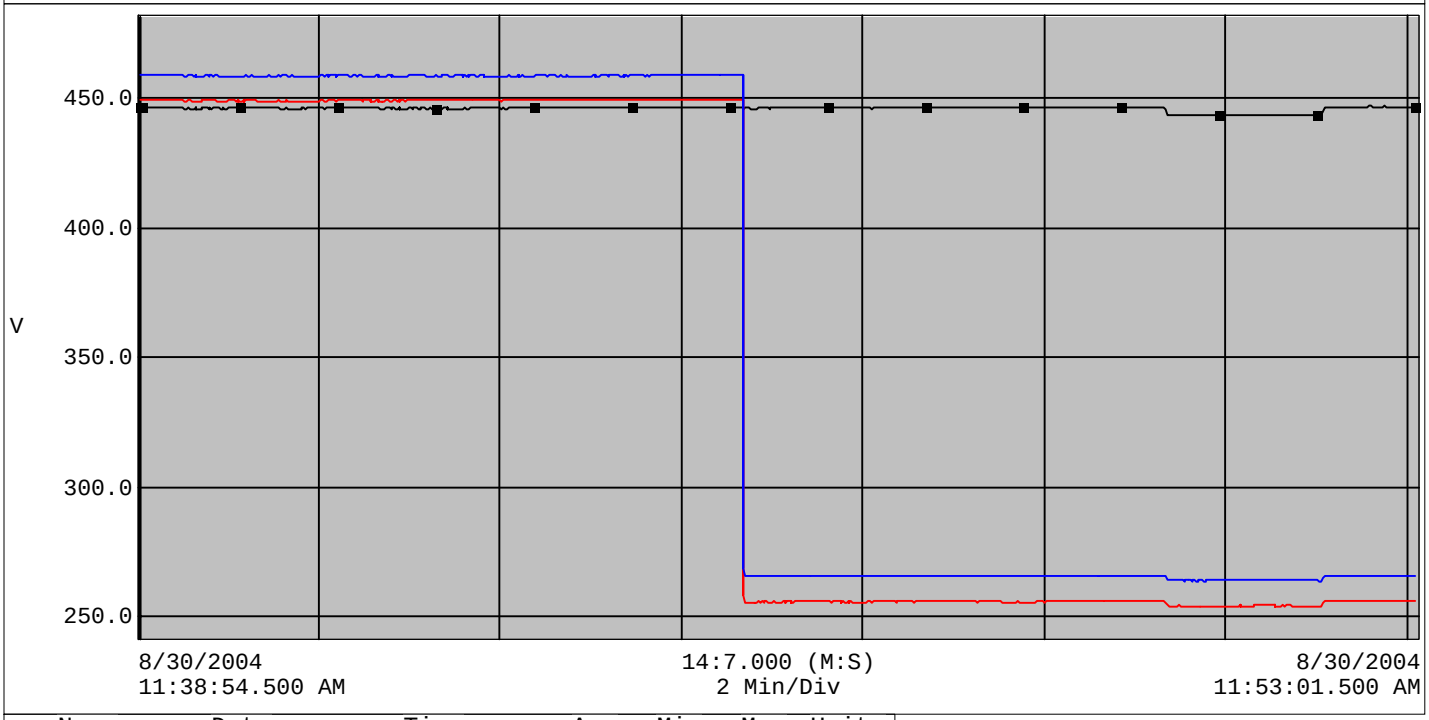
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/30/2004	11:38:54.500 AM	266.2	264.7	266.8	848
Vrms Line2	8/30/2004	11:38:54.500 AM	254.1	252.3	254.7	848
Vrms Line3	8/30/2004	11:38:54.500 AM	123.1	0.000	260.5	848

8/30/2004 - 11:38:54.000 AM
Val
266.3 — Vrms Line1
254.5 — Vrms Line2
260.4 — Vrms Line3

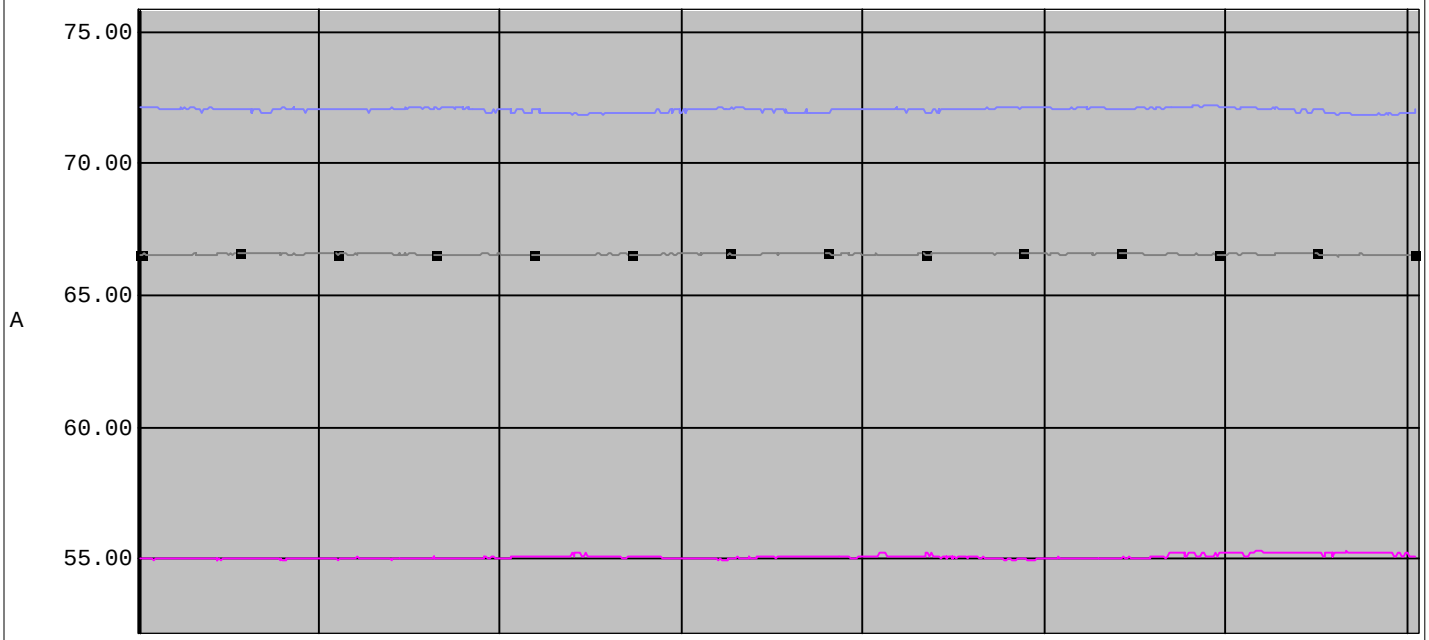
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/30/2004	11:38:54.500 AM	445.4	442.6	446.3	V
Urms Line2	8/30/2004	11:38:54.500 AM	346.7	253.7	449.0	V
Urms Line3	8/30/2004	11:38:54.500 AM	356.3	263.5	458.5	V

8/30/2004 - 11:38:54.000 AM
Val
445.7 Urms Line1
448.8 Urms Line2
458.4 Urms Line3

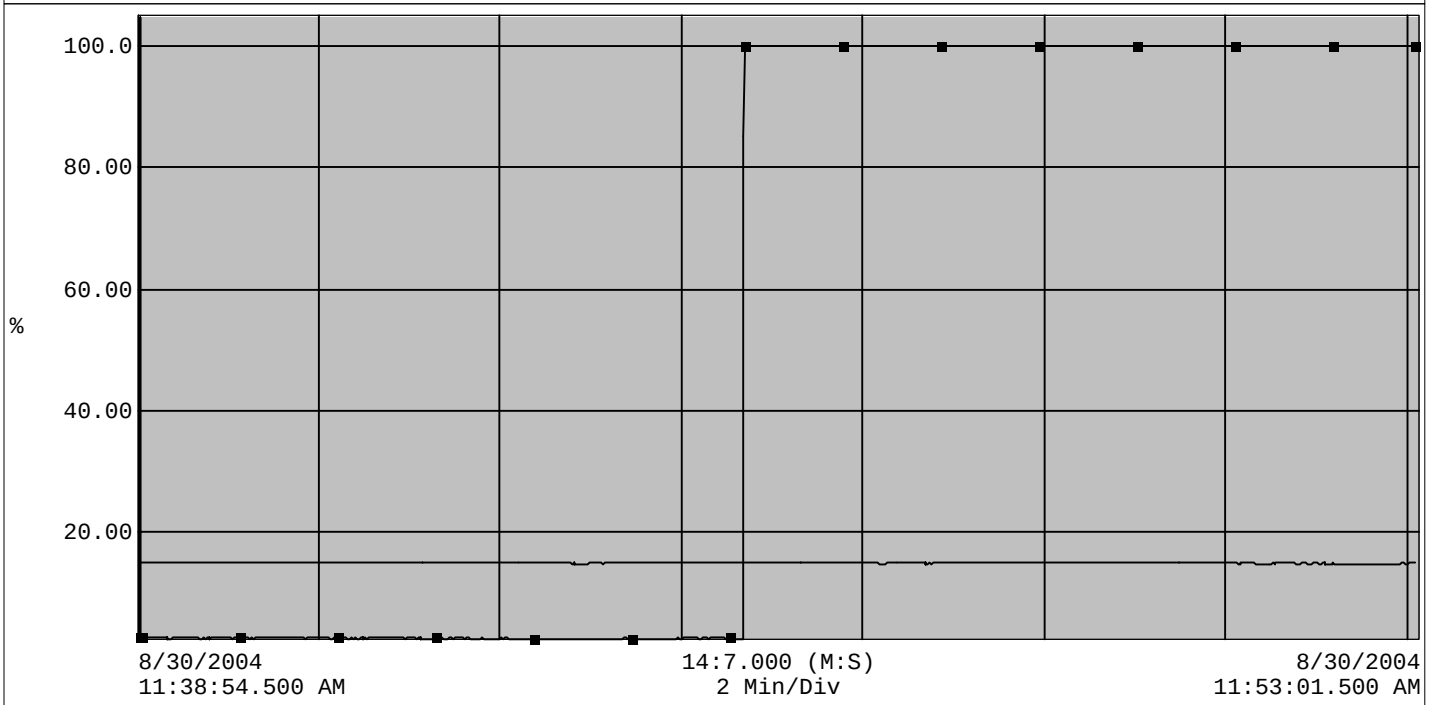
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/30/2004	11:38:54.500 AM	66.55	66.40	66.60	A
Arms Line2	8/30/2004	11:38:54.500 AM	55.06	54.90	55.30	A
Arms Line3	8/30/2004	11:38:54.500 AM	71.99	71.80	72.20	A

8/30/2004 - 11:38:54.000 AM
Val
66.50 — Arms Line1
55.00 — Arms Line2
72.10 — Arms Line3

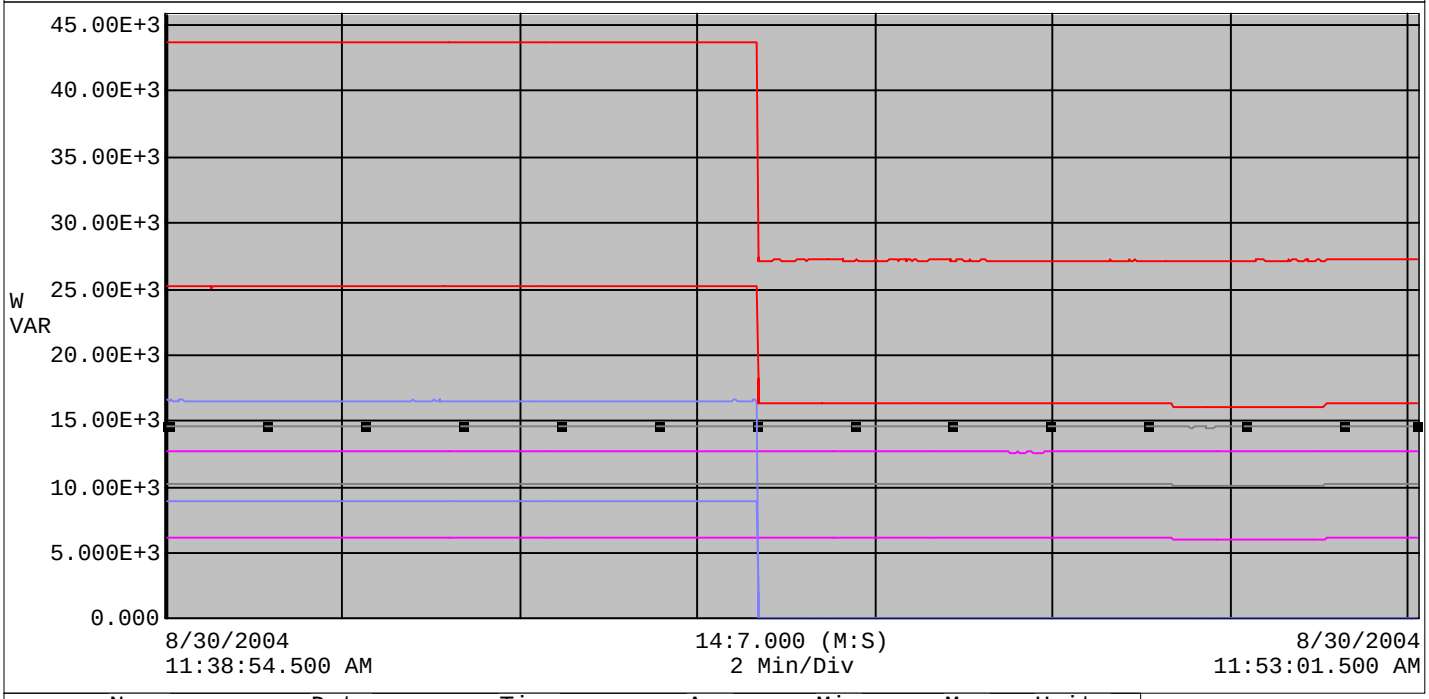
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/30/2004	11:38:54.500 AM	53.76	2.200	100.0	%
Aunb(IEEE)	8/30/2004	11:38:54.500 AM	14.68	14.40	14.90	%

8/30/2004 - 11:38:54.000 AM
Val
2.300 —— Vunb(IEEE)
14.80 —— Aunb(IEEE)

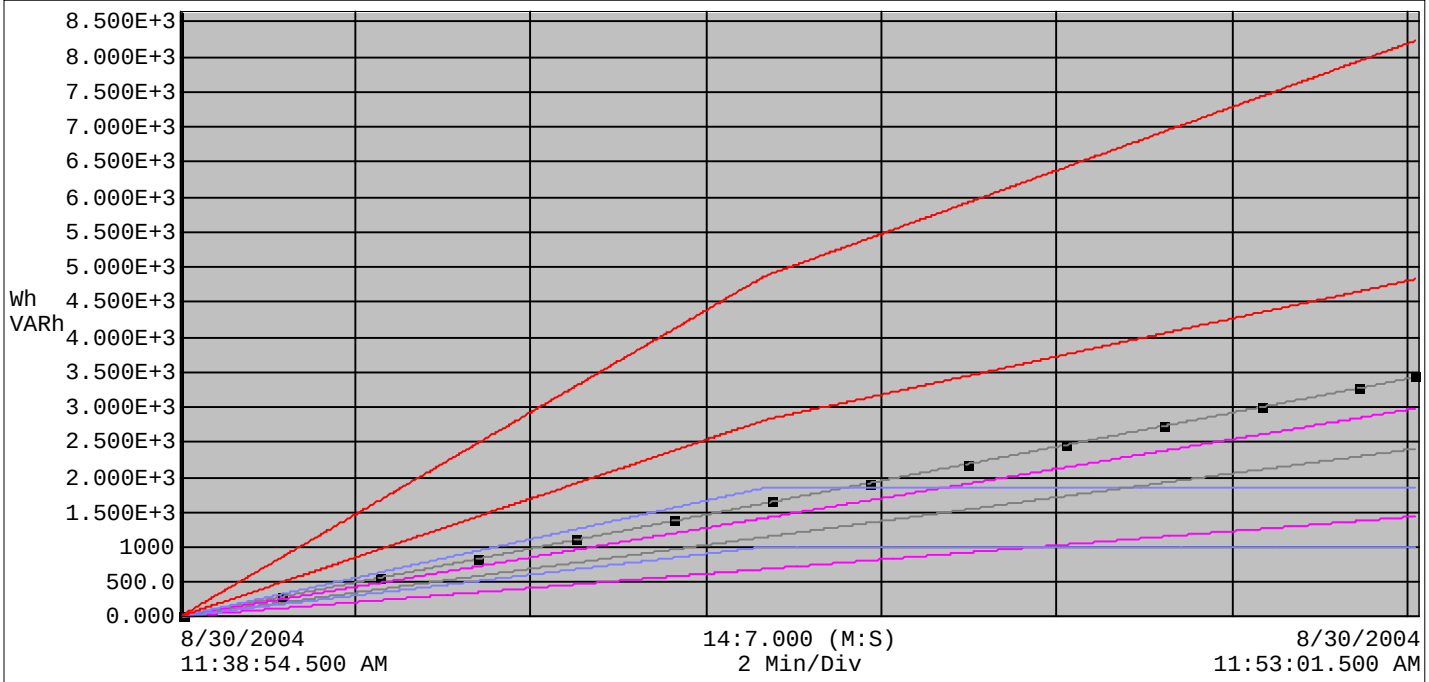
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/30/2004	11:38:54.500 AM	14.50E+3	14.46E+3	14.54E+3	W
W Line2	8/30/2004	11:38:54.500 AM	12.61E+3	12.57E+3	12.66E+3	W
W Line3	8/30/2004	11:38:54.500 AM	7.793E+3	0.000	16.52E+3	W
W Sum of Phases	8/30/2004	11:38:54.500 AM	34.91E+3	27.05E+3	43.63E+3	W
VAR Line1	8/30/2004	11:38:54.500 AM	10.17E+3	10.00E+3	10.25E+3	VAR
VAR Line2	8/30/2004	11:38:54.500 AM	6.063E+3	5.911E+3	6.135E+3	VAR
VAR Line3	8/30/2004	11:38:54.500 AM	4.219E+3	0.000	8.942E+3	VAR
VAR Sum of Phases	8/30/2004	11:38:54.500 AM	20.45E+3	15.94E+3	25.21E+3	VAR

8/30/2004 - 11:38:54.000 AM
Val
14.49E+3 — W Line1
12.61E+3 — W Line2
16.51E+3 — W Line3
43.61E+3 — W Sum of Phases
10.19E+3 — VAR Line1
6.064E+3 — VAR Line2
8.941E+3 — VAR Line3
25.19E+3 — VAR Sum of Phases

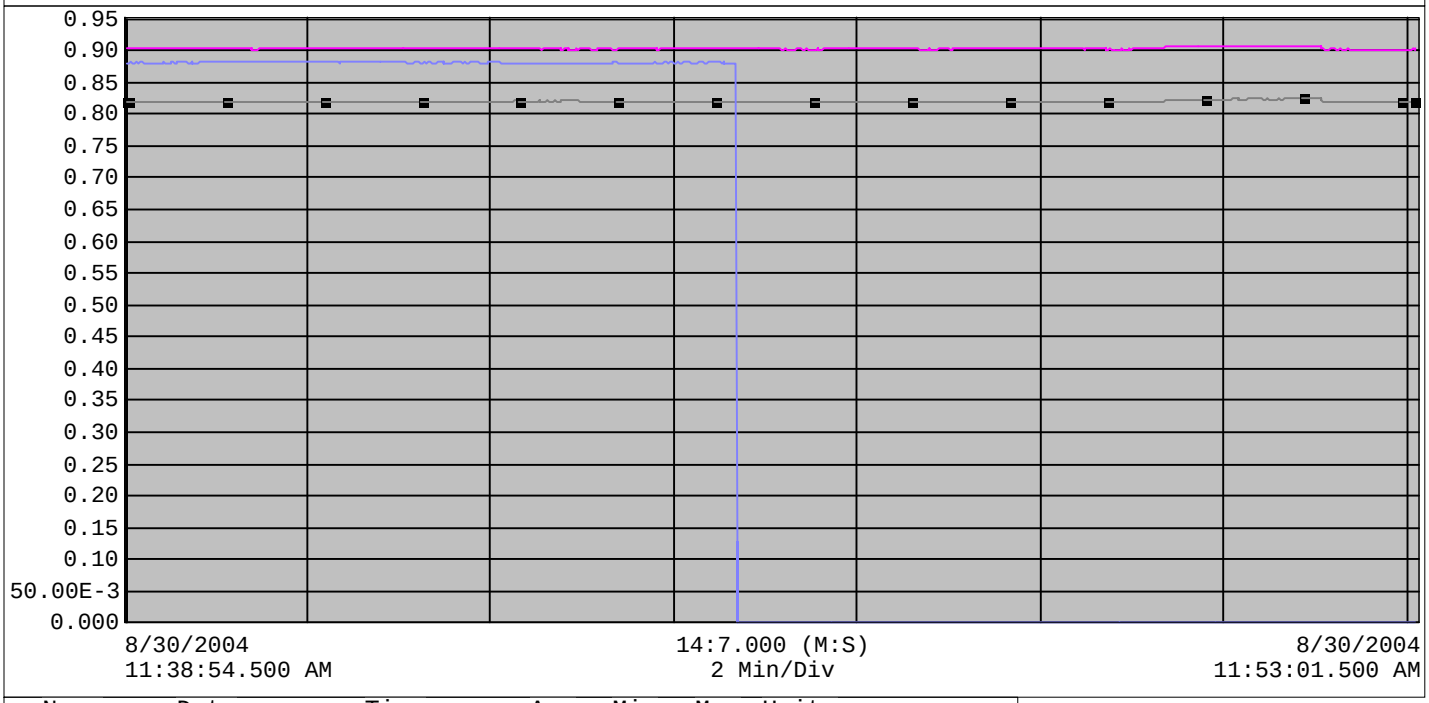
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/30/2004	11:38:54.500 AM	1.710E+3	4.067	3.416E+3	Wh
W-hours Line2	8/30/2004	11:38:54.500 AM	1.487E+3	3.536	2.971E+3	Wh
W-hours Line3	8/30/2004	11:38:54.500 AM	1.403E+3	4.594	1.836E+3	Wh
W-hours Sum of Phases	8/30/2004	11:38:54.500 AM	4.600E+3	12.05	8.223E+3	Wh
VAR-hours Line1	8/30/2004	11:38:54.500 AM	1.200E+3	2.851	2.395E+3	VARh
VAR-hours Line2	8/30/2004	11:38:54.500 AM	716.0	1.700	1.428E+3	VARh
VAR-hours Line3	8/30/2004	11:38:54.500 AM	759.2	2.487	993.8	VARh
VAR-hours Sum of Phases	8/30/2004	11:38:54.500 AM	2.675E+3	7.057	4.817E+3	VARh

8/30/2004 - 11:38:54.000 AM
Val
4.067 — W-hours Line1
3.536 — W-hours Line2
4.594 — W-hours Line3
12.05 — W-hours Sum of Phases
2.851 — VAR-hours Line1
1.700 — VAR-hours Line2
2.487 — VAR-hours Line3
7.057 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/30/2004	11:38:54.500 AM	0.819	0.817	0.823	
PF Line2	8/30/2004	11:38:54.500 AM	0.901	0.900	0.905	
PF Line3	8/30/2004	11:38:54.500 AM	0.416	0.000	0.880	

8/30/2004 - 11:38:54.000 AM
Val
0.818 — PF Line1
0.901 — PF Line2
0.879 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D8\083004-D8.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa,PE and Victor Jardel ,	GWA WPS D-8 ,

Comments

Recorded at motor starter overload relay. No Phase monitor. GPA Meter 86-404-732 showing a demand reading of 47.21. Voltage to station is lower than nominal. Transformers for this station also serves Station D-7 with the disconnect located along Y Seng Song Road.

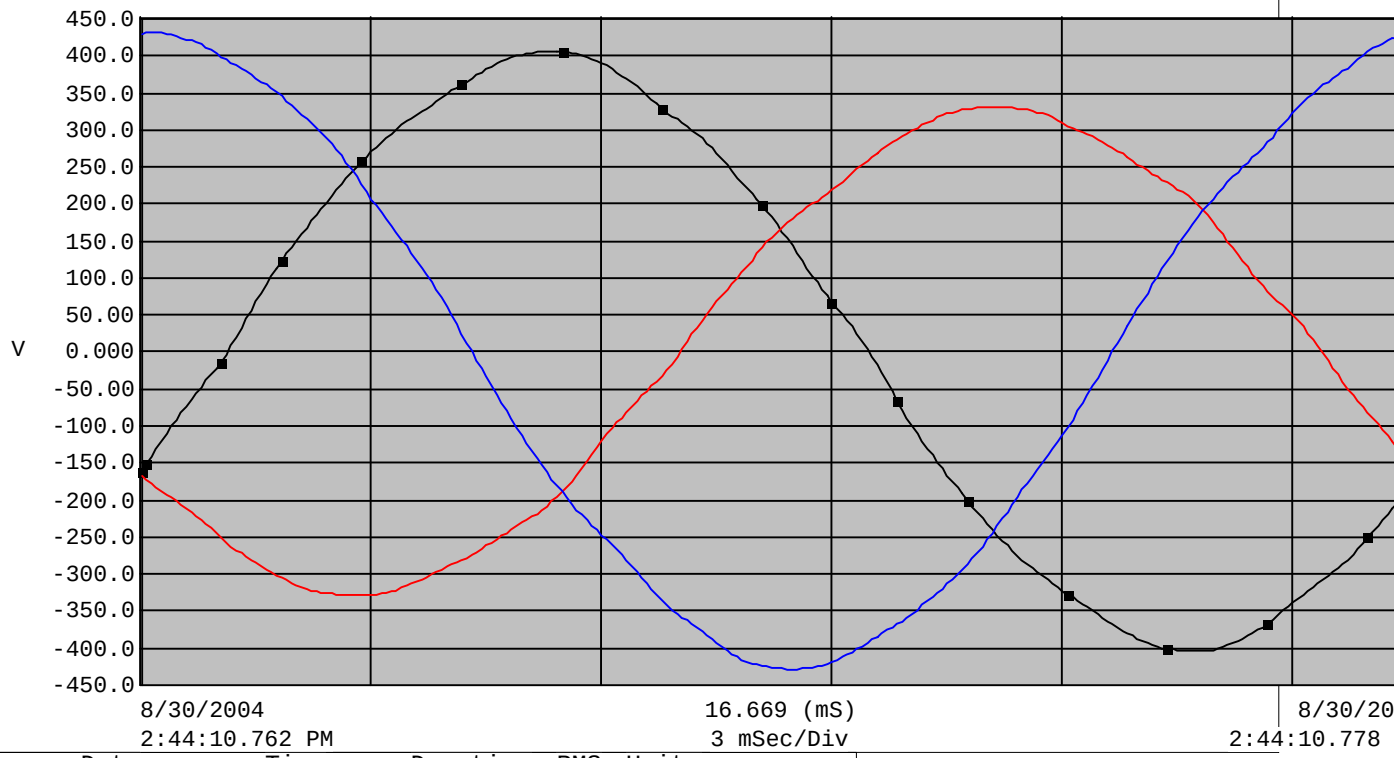
GWA Water Pumping Station Assessment				
Station Name: D-10	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.45	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	2	0.1	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.015	
Pressure	1.5%	1	0.015	
Flow	1.5%	0	0	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.2**

Comments:

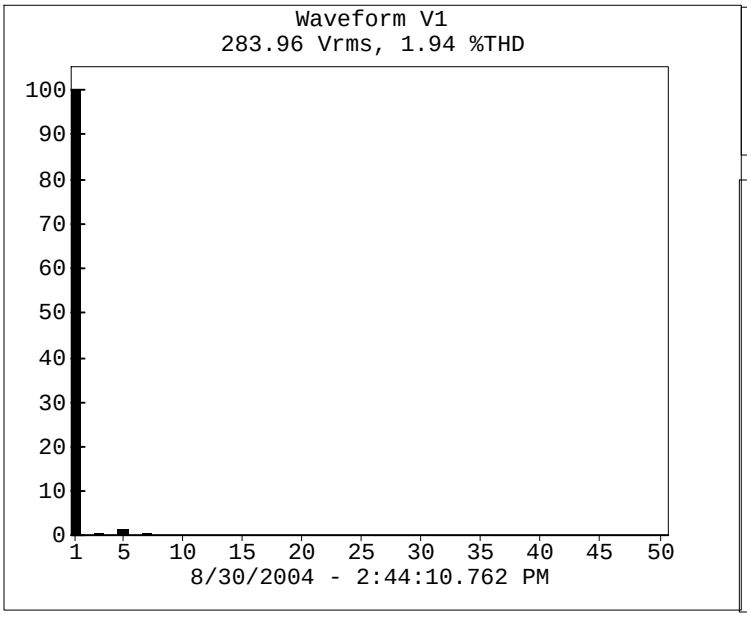
WPS D-10 Photo Report

Recording Start Date	8/30/2004 - 2:44:10 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/30/2004	2:44:10.762 PM	16.669	284.0	V
Waveform V2	8/30/2004	2:44:10.762 PM	16.669	232.8	V
Waveform V3	8/30/2004	2:44:10.762 PM	16.669	302.3	V

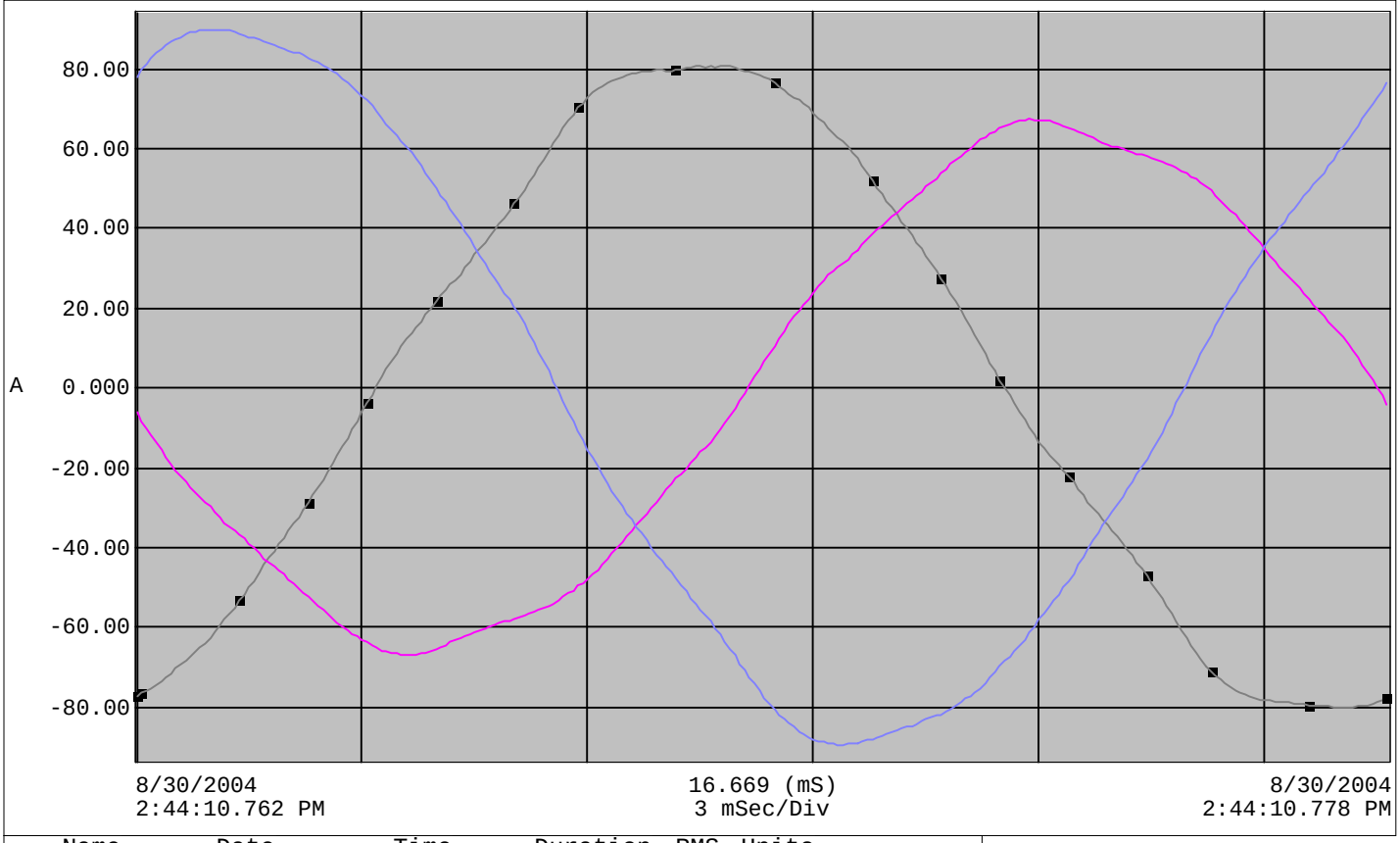


8/30/2004 - 2:44:10.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

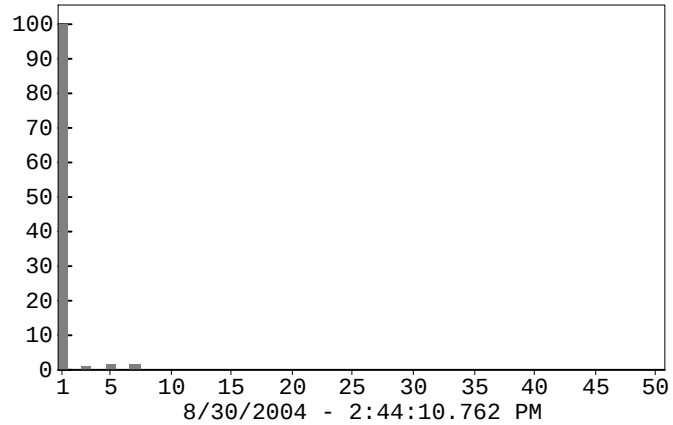
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.6	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.6	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.1	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.3	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/30/2004	2:44:10.762 PM	16.669	57.49	A
Waveform I2	8/30/2004	2:44:10.762 PM	16.669	46.53	A
Waveform I3	8/30/2004	2:44:10.762 PM	16.669	62.71	A

Waveform I1
57.49 Arms, 3.18 %THD

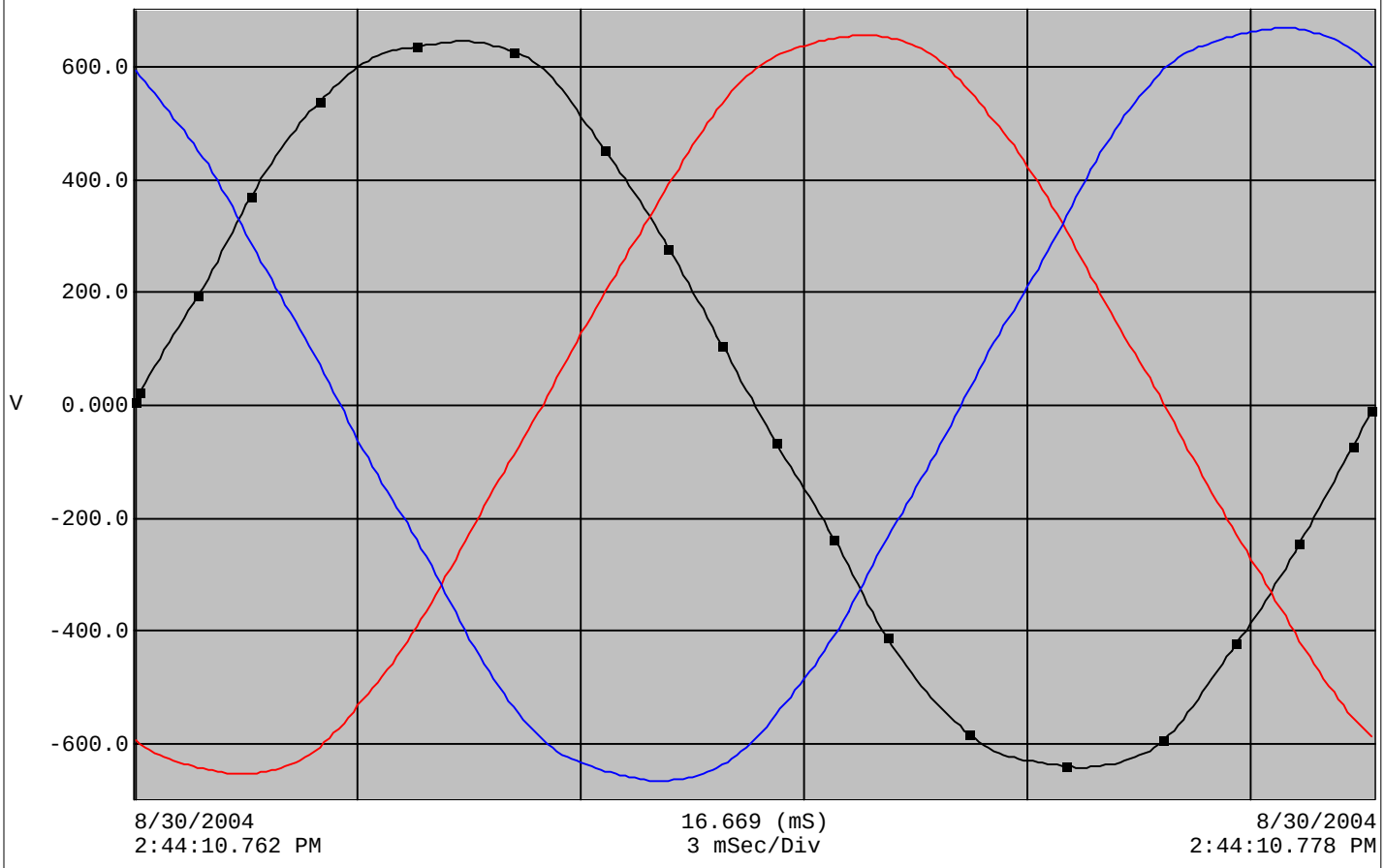


8/30/2004 - 2:44:10.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

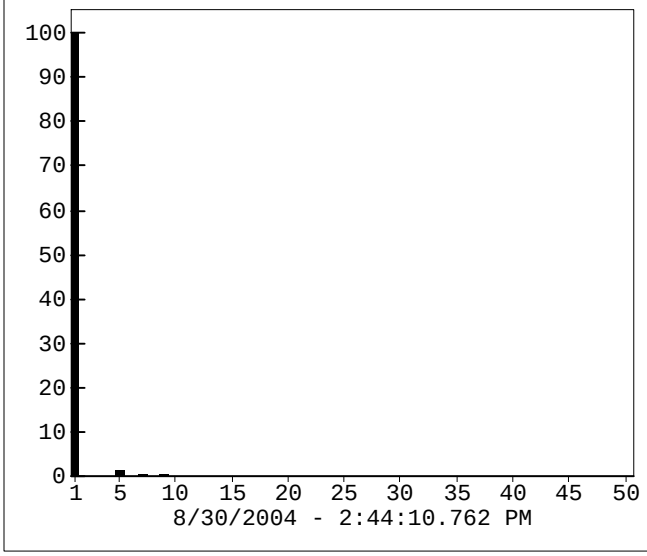
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	1.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.8	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/30/2004	2:44:10.762 PM	16.669	464.8	V
Waveform U2	8/30/2004	2:44:10.762 PM	16.669	469.5	V
Waveform U3	8/30/2004	2:44:10.762 PM	16.669	480.2	V

Waveform U1
464.84 Vrms, 1.88 %THD



8/30/2004 - 2:44:10.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.6	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 8/30/2004
Start Time: 2:44:10 PM
Duration: 0:0.000 (M:S)
W: 11.04E+3 W
VAR: 12.06E+3 W
VA: 16.35E+3 W
Power Factor: 0.675
Displacement Power Factor: 0.675
TAN: 1.092
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D10\083004-D10-Photo.dvb

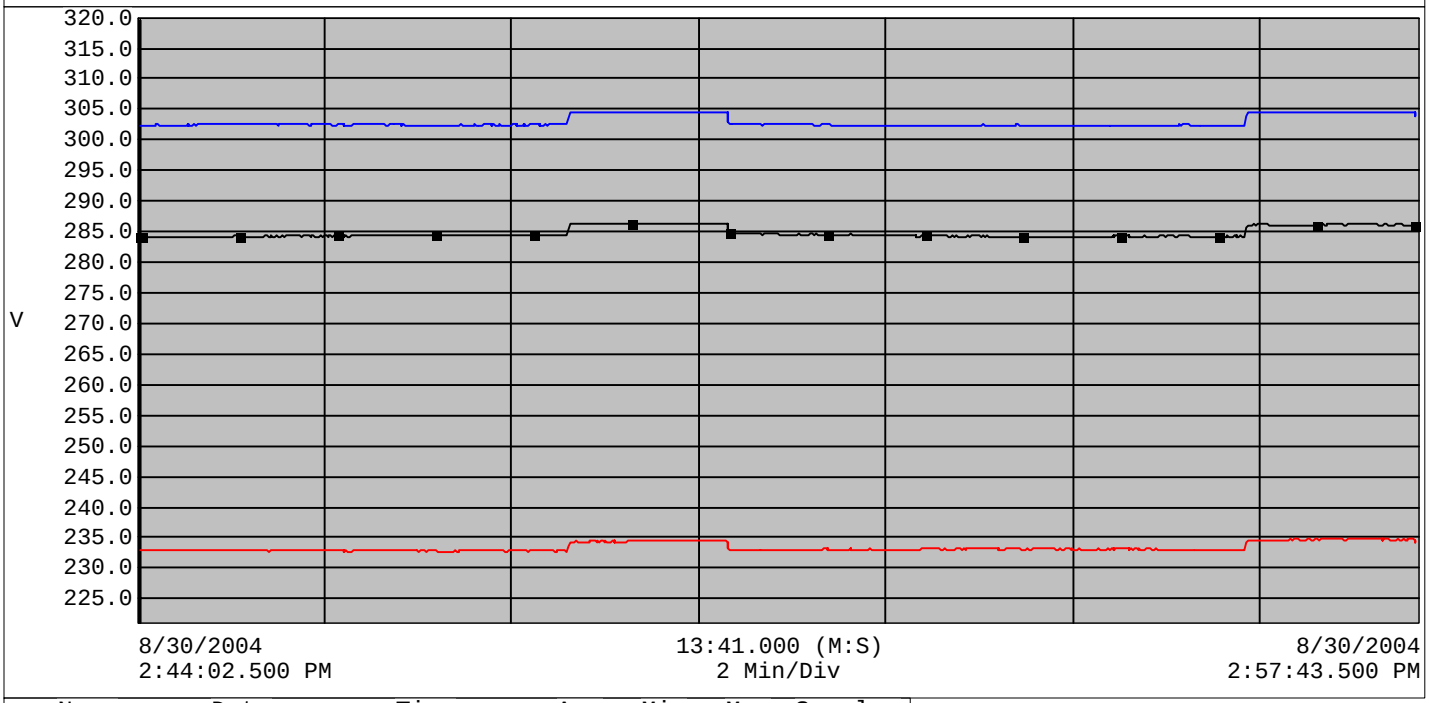
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS D-10 ,

Comments

WPS D-10

Recording Start Date	8/30/2004 - 2:44:02 PM
Recording Duration	13:41 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

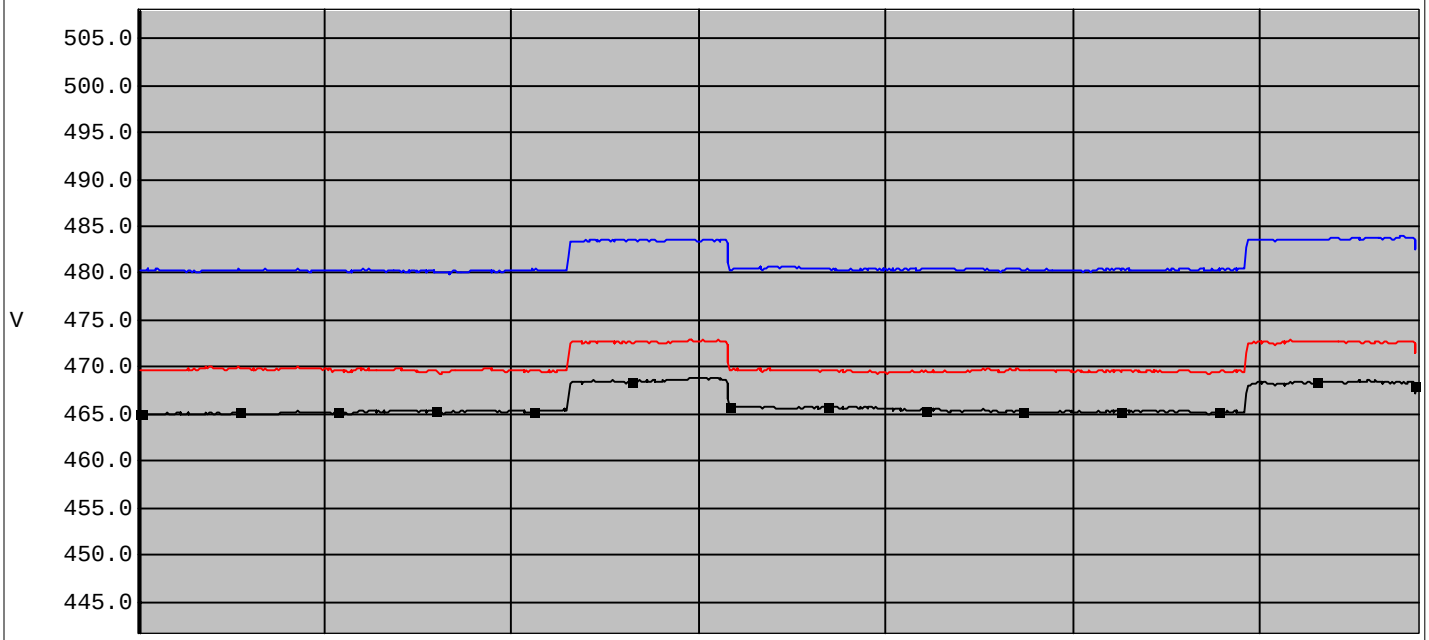
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/30/2004	2:44:02.500 PM	284.7	283.9	286.3	822
Vrms Line2	8/30/2004	2:44:02.500 PM	233.2	232.5	234.7	822
Vrms Line3	8/30/2004	2:44:02.500 PM	302.8	302.1	304.5	822

8/30/2004 - 2:44:02.000 PM
Val
284.0 — Vrms Line1
232.9 — Vrms Line2
302.3 — Vrms Line3

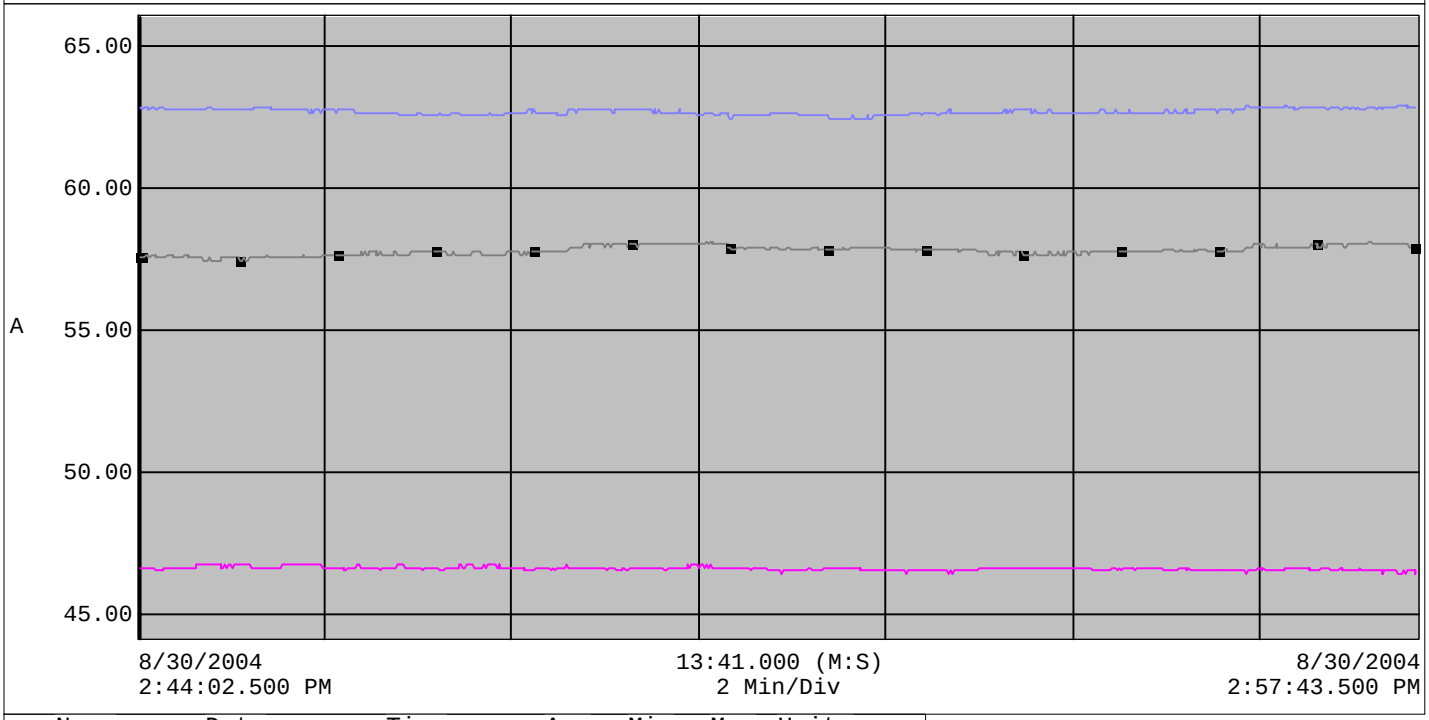
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/30/2004	2:44:02.500 PM	466.0	464.8	468.8	V
Urms Line2	8/30/2004	2:44:02.500 PM	470.3	469.2	472.8	V
Urms Line3	8/30/2004	2:44:02.500 PM	481.0	479.8	483.8	V

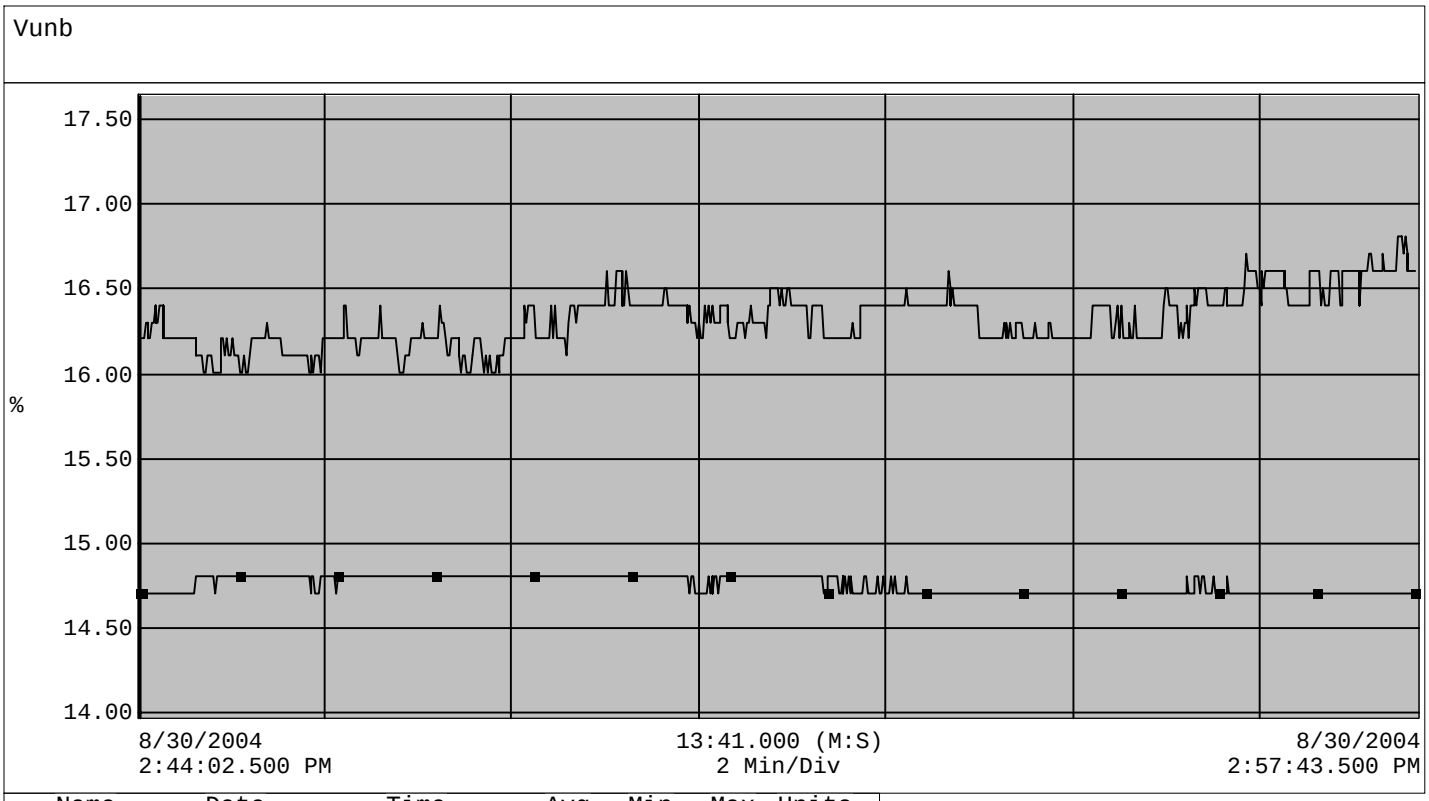
8/30/2004 - 2:44:02.000 PM
Val
464.8 Urms Line1
469.6 Urms Line2
480.2 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/30/2004	2:44:02.500 PM	57.76	57.40	58.10	A
Arms Line2	8/30/2004	2:44:02.500 PM	46.57	46.40	46.70	A
Arms Line3	8/30/2004	2:44:02.500 PM	62.64	62.40	62.90	A

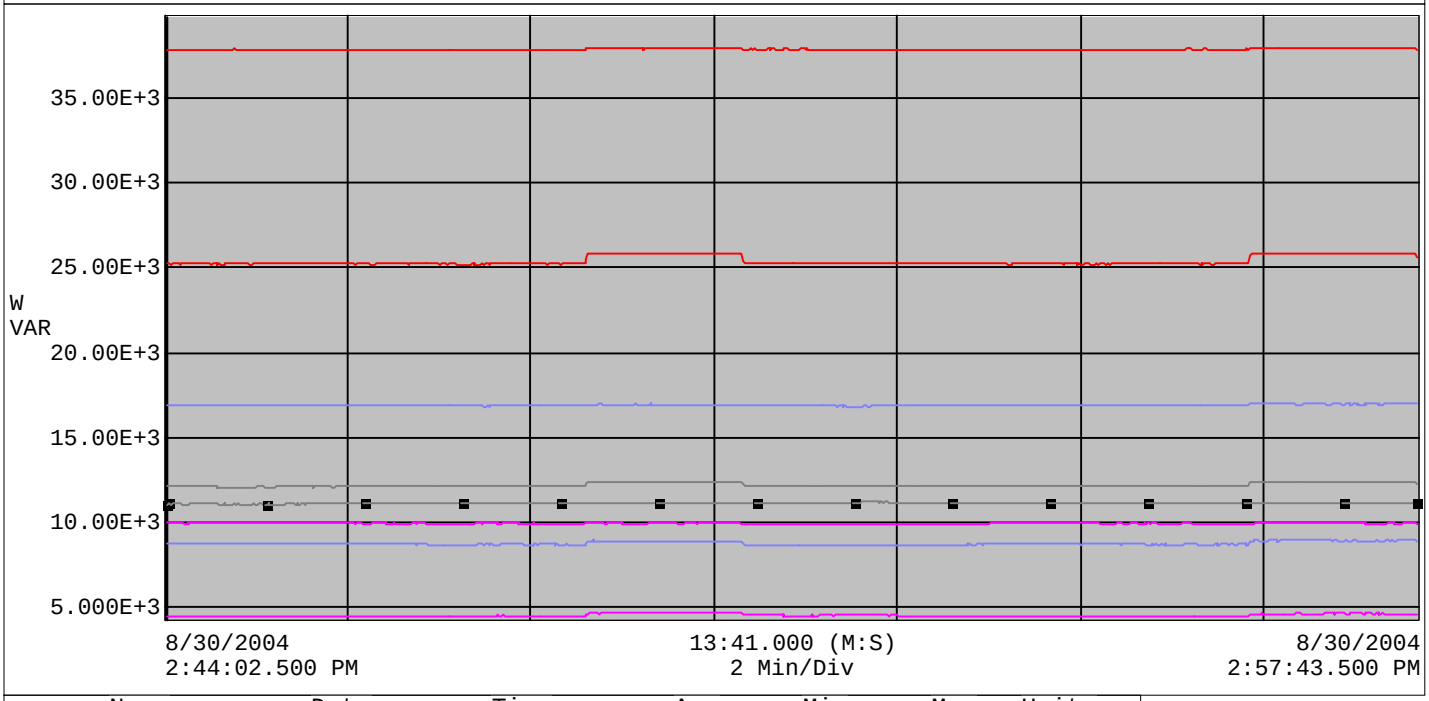
8/30/2004 - 2:44:02.000 PM
Val
57.50 — Arms Line1
46.60 — Arms Line2
62.80 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/30/2004	2:44:02.500 PM	14.75	14.70	14.80	%
Aunb(IEEE)	8/30/2004	2:44:02.500 PM	16.31	16.00	16.80	%

8/30/2004 - 2:44:02.000 PM
Val
14.70 —— Vunb(IEEE)
16.20 —— Aunb(IEEE)

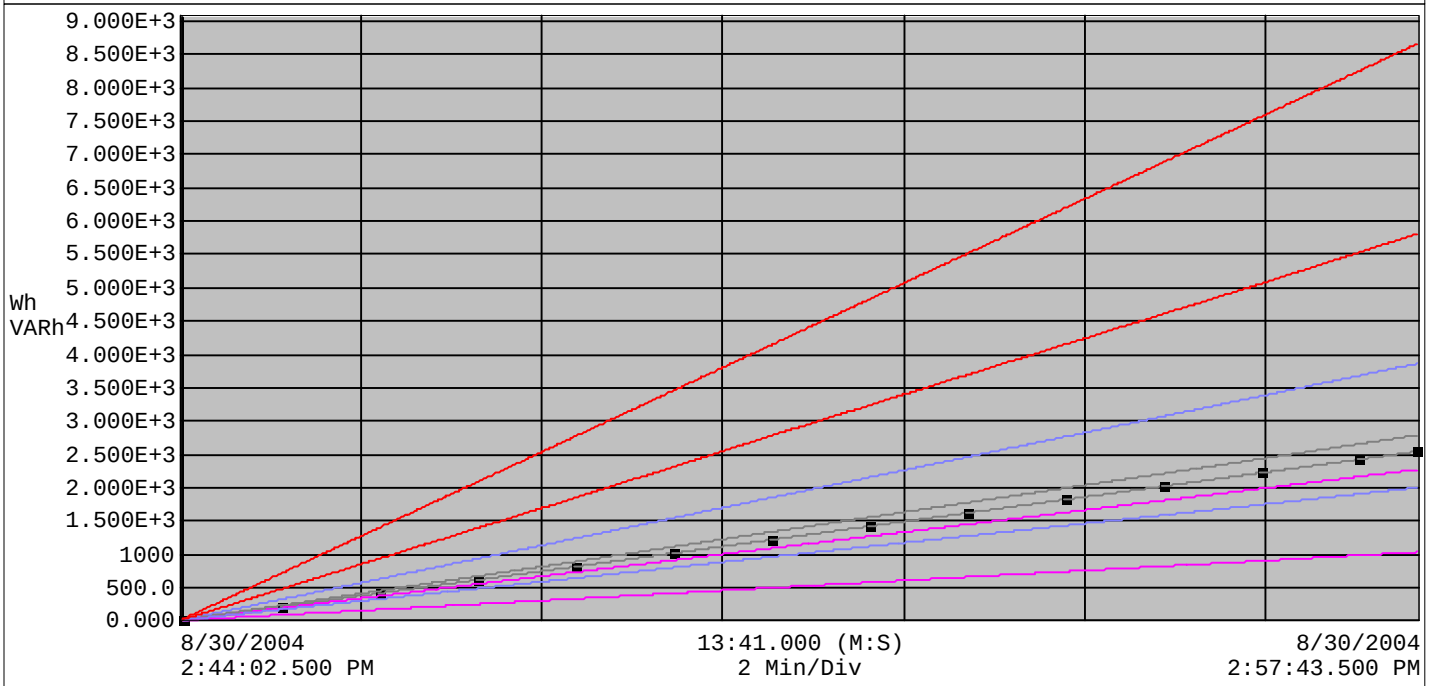
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/30/2004	2:44:02.500 PM	11.08E+3	11.00E+3	11.15E+3	W
W Line2	8/30/2004	2:44:02.500 PM	9.896E+3	9.852E+3	9.944E+3	W
W Line3	8/30/2004	2:44:02.500 PM	16.85E+3	16.78E+3	16.97E+3	W
W Sum of Phases	8/30/2004	2:44:02.500 PM	37.82E+3	37.75E+3	37.92E+3	W
VAR Line1	8/30/2004	2:44:02.500 PM	12.15E+3	12.02E+3	12.37E+3	VAR
VAR Line2	8/30/2004	2:44:02.500 PM	4.480E+3	4.404E+3	4.634E+3	VAR
VAR Line3	8/30/2004	2:44:02.500 PM	8.713E+3	8.588E+3	8.907E+3	VAR
VAR Sum of Phases	8/30/2004	2:44:02.500 PM	25.35E+3	25.14E+3	25.83E+3	VAR

8/30/2004 - 2:44:02.000 PM
Val
11.02E+3 — W Line1
9.912E+3 — W Line2
16.86E+3 — W Line3
37.78E+3 — W Sum of Phases
12.05E+3 — VAR Line1
4.410E+3 — VAR Line2
8.717E+3 — VAR Line3
25.17E+3 — VAR Sum of Phases

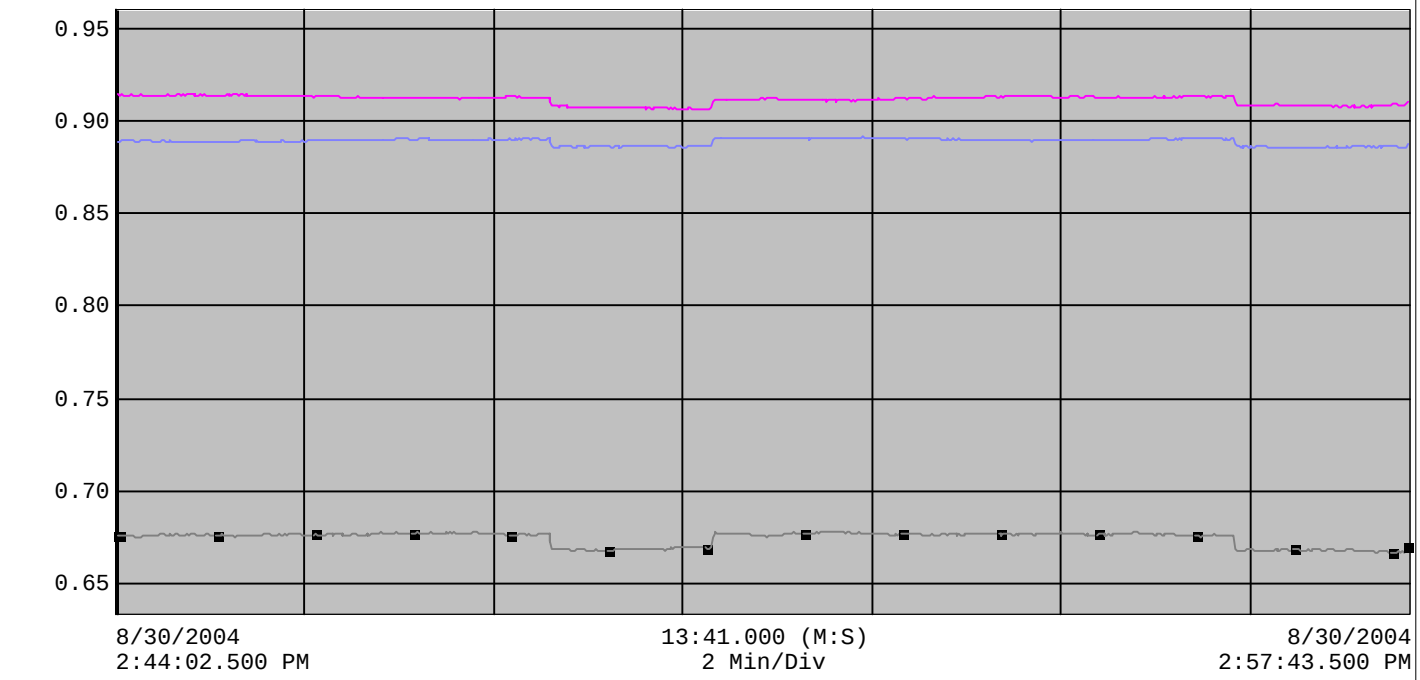
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/30/2004	2:44:02.500 PM	1.265E+3	3.087	2.529E+3	Wh
W-hours Line2	8/30/2004	2:44:02.500 PM	1.131E+3	2.759	2.260E+3	Wh
W-hours Line3	8/30/2004	2:44:02.500 PM	1.925E+3	4.697	3.847E+3	Wh
W-hours Sum of Phases	8/30/2004	2:44:02.500 PM	4.322E+3	10.54	8.636E+3	Wh
VAR-hours Line1	8/30/2004	2:44:02.500 PM	1.386E+3	3.388	2.775E+3	VARh
VAR-hours Line2	8/30/2004	2:44:02.500 PM	510.7	1.218	1.023E+3	VARh
VAR-hours Line3	8/30/2004	2:44:02.500 PM	994.3	2.429	1.989E+3	VARh
VAR-hours Sum of Phases	8/30/2004	2:44:02.500 PM	2.891E+3	7.065	5.787E+3	VARh

8/30/2004 - 2:44:02.000 PM
Val
3.087 — W-hours Line1
2.759 — W-hours Line2
4.697 — W-hours Line3
10.54 — W-hours Sum of Phases
3.388 — VAR-hours Line1
1.218 — VAR-hours Line2
2.429 — VAR-hours Line3
7.065 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/30/2004	2:44:02.500 PM	0.674	0.666	0.677	
PF Line2	8/30/2004	2:44:02.500 PM	0.911	0.906	0.914	
PF Line3	8/30/2004	2:44:02.500 PM	0.888	0.885	0.891	

8/30/2004 - 2:44:02.000 PM
Val
0.675 — PF Line1
0.914 — PF Line2
0.888 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D10\083004-D10.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS D-10 ,

Comments
Recorded at motor starter overload heater. No Phase monitor for this 50 HP pump. GPA Meter No. 02-465-811 with a measured demand reading of 40.11. (3) GPA 37.5 KVA Transformers connected in Delta, ungrounded.

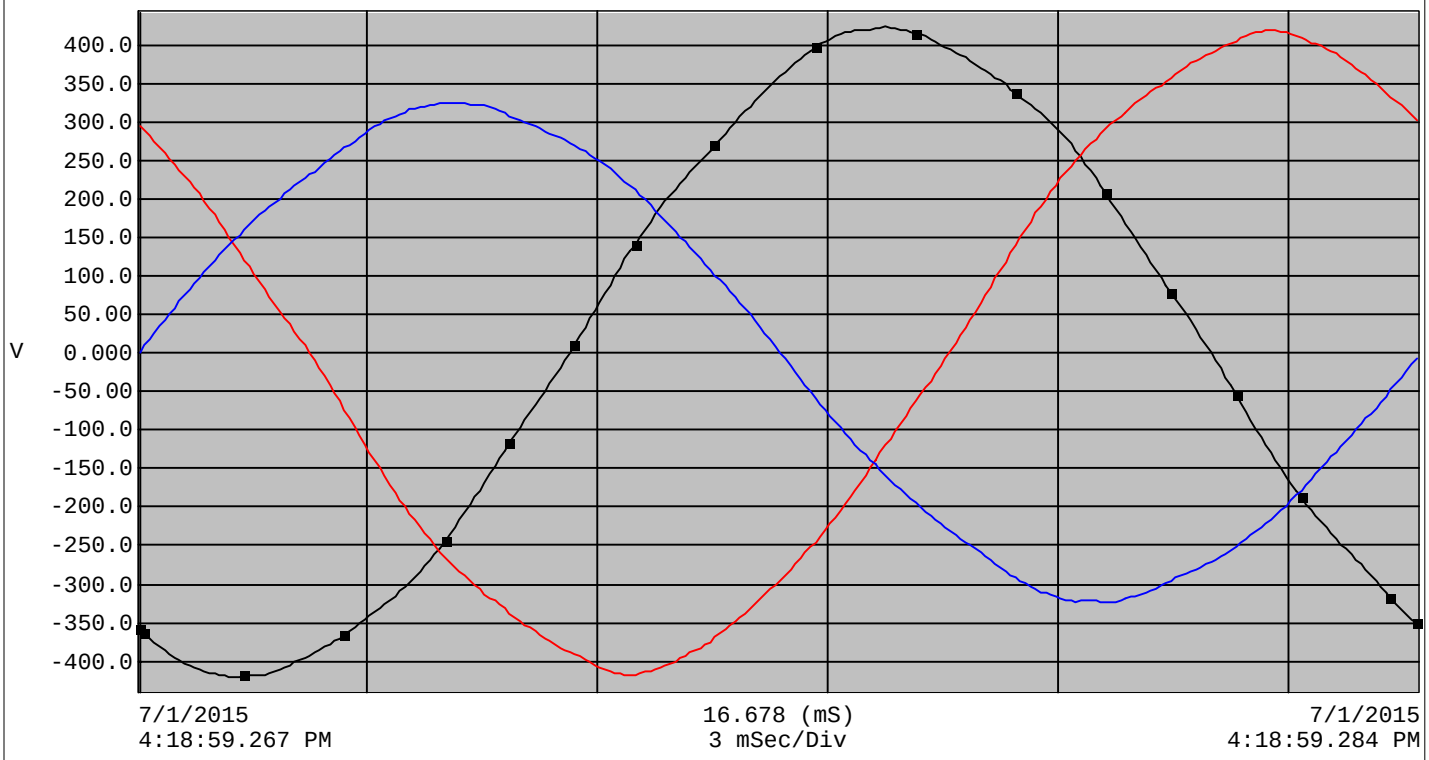
GWA Water Pumping Station Assessment				
Station Name: D-11	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/01/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.275	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	0	0	2
Metering Arrangement	2.5%	0	0	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.015	
Pressure	1.5%	1	0.015	
Flow	1.5%	0	0	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.2**

Comments:

WPS D-11 - Photo1

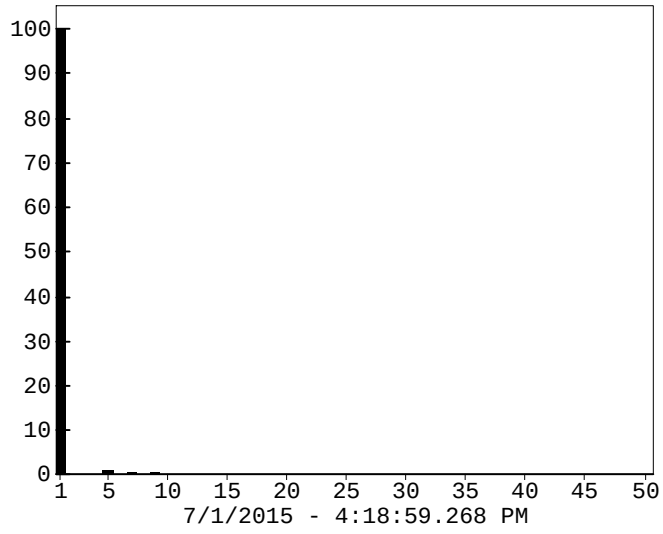
Recording Start Date	7/1/2015 - 4:18:59 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/1/2015	4:18:59.267 PM	16.678	296.5	V
Waveform V2	7/1/2015	4:18:59.267 PM	16.678	290.5	V
Waveform V3	7/1/2015	4:18:59.267 PM	16.678	226.7	V

Waveform V1
296.46 Vrms, 1.51 %THD



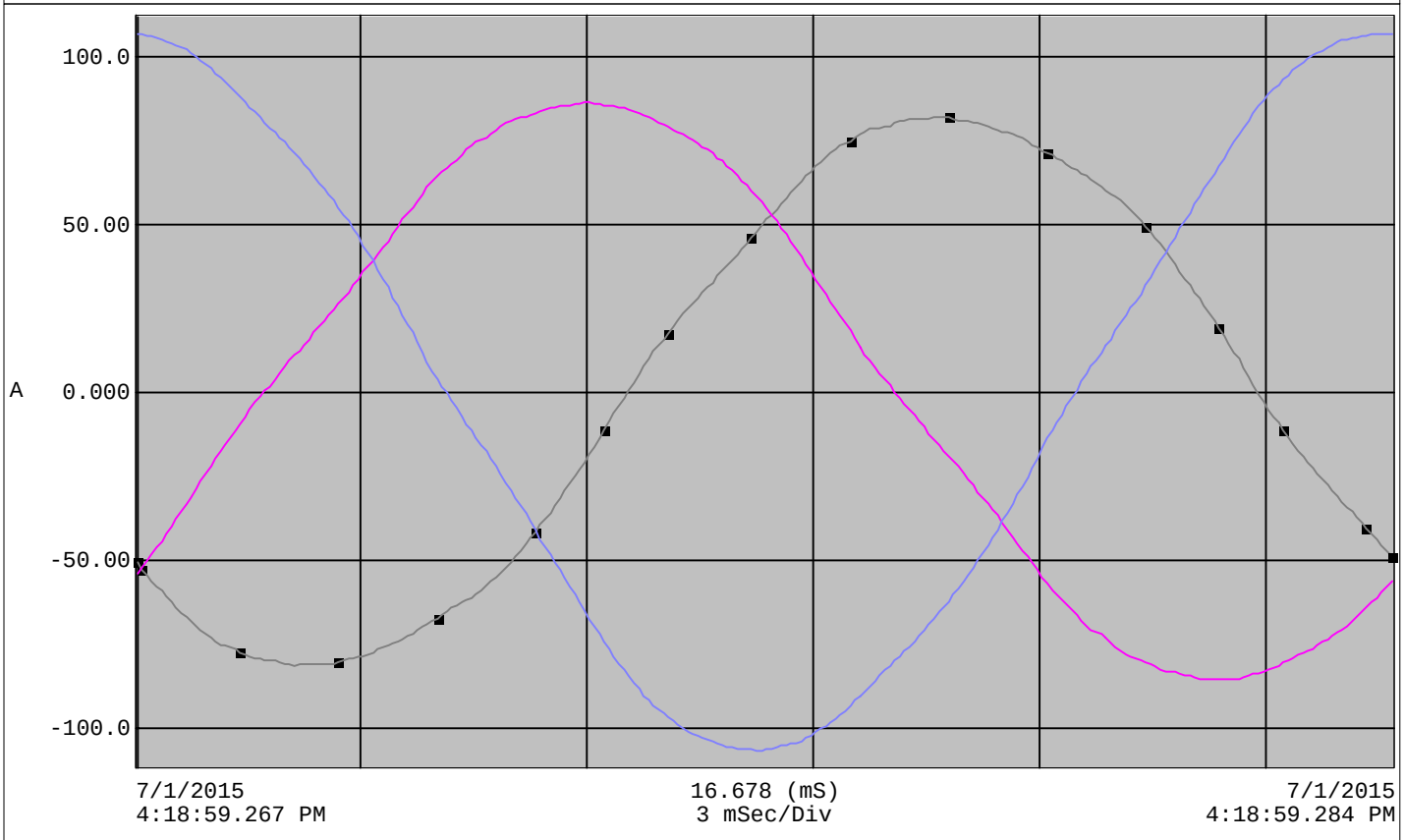
7/1/2015 - 4:18:59.000 PM

Val	
-359.1	Waveform V1
295.7	Waveform V2
0.700	Waveform V3

Waveform V1

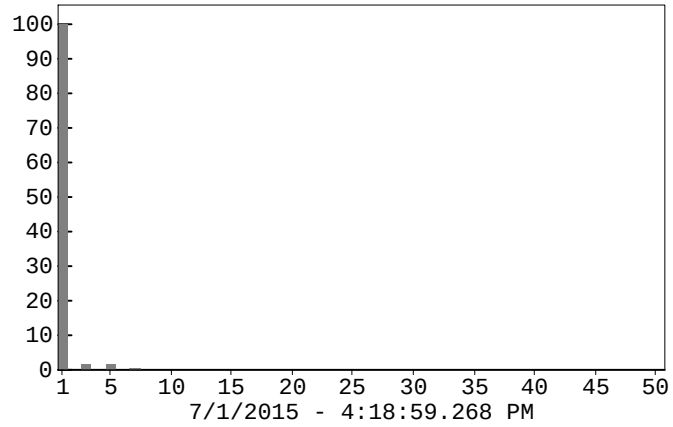
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.1		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/1/2015	4:18:59.267 PM	16.678	58.65	A
Waveform I2	7/1/2015	4:18:59.267 PM	16.678	60.64	A
Waveform I3	7/1/2015	4:18:59.267 PM	16.678	74.47	A

Waveform I1
58.65 Arms, 3.13 %THD

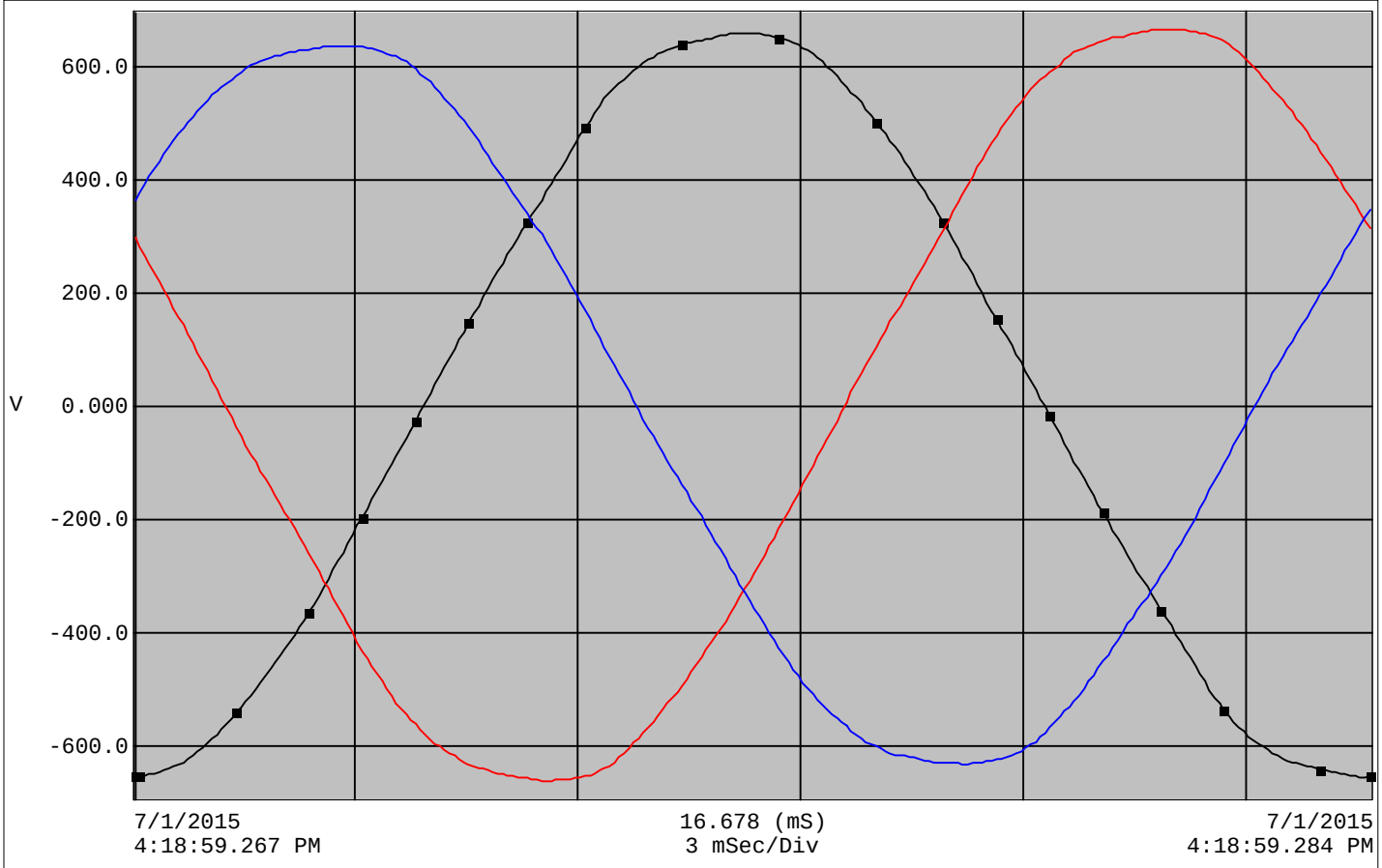


7/1/2015 - 4:18:59.000 PM
Val
-51.00 Waveform I1
-54.20 Waveform I2
106.3 Waveform I3

Waveform I1

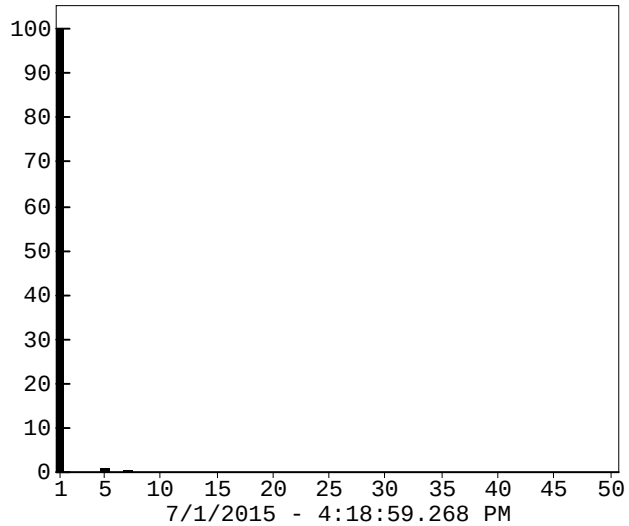
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.1
H03	2.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.1	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.1	H34	0.2		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/1/2015	4:18:59.267 PM	16.678	469.3	V
Waveform U2	7/1/2015	4:18:59.267 PM	16.678	475.5	V
Waveform U3	7/1/2015	4:18:59.267 PM	16.678	455.8	V

Waveform U1
469.27 Vrms, 1.40 %THD



7/1/2015 - 4:18:59.000 PM

	Val	
—	-654.8	Waveform U1
—	294.9	Waveform U2
—	359.9	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/1/2015
Start Time: 4:18:59 PM
Duration: 0:0.000 (M:S)
W: 16.24E+3 W
VAR: 6.257E+3 W
VA: 17.40E+3 W
Power Factor: 0.933
Displacement Power Factor: 0.933
TAN: 0.384
VoltageRatio: 1.000
CurrentRatio: 1.000
```

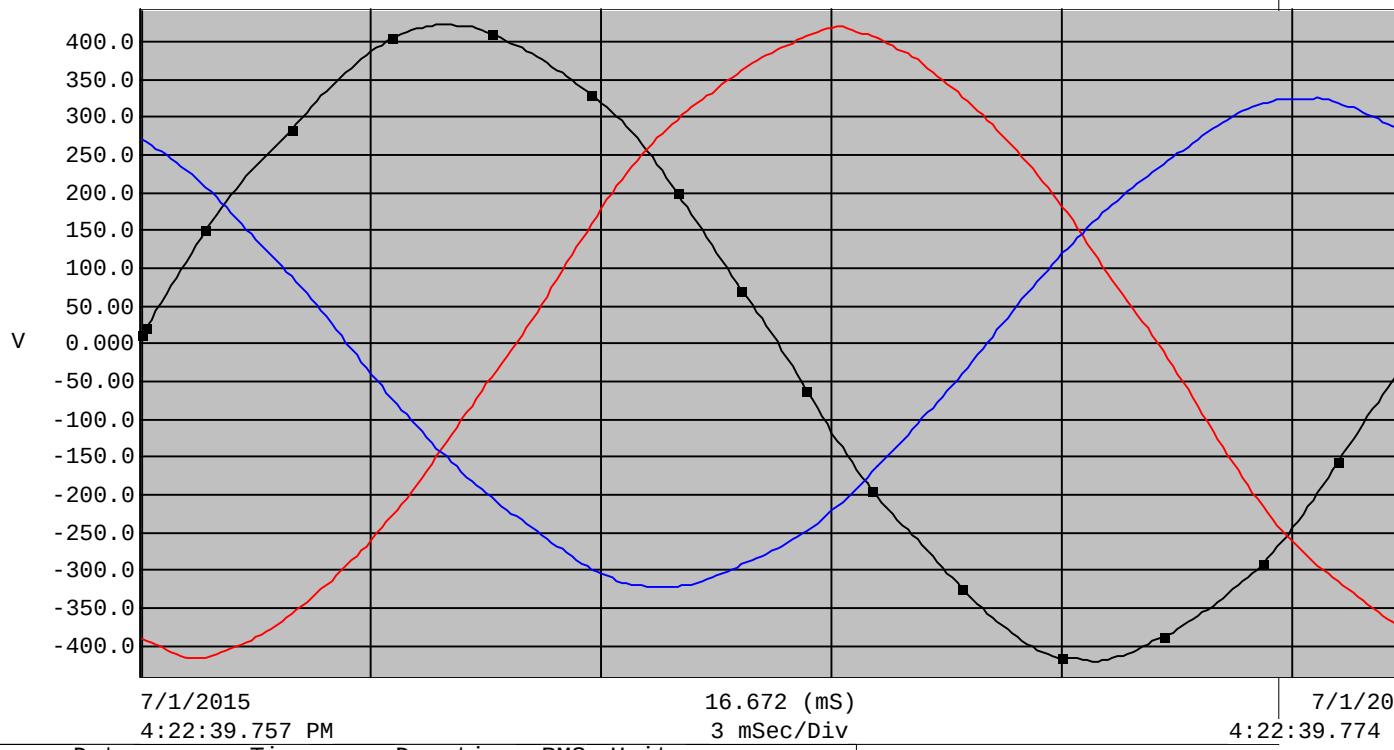
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D11\070104-D11-Photo1.dvb	
Operator ,	Test Site ,
Comments	

WPS D-11 - Photo2

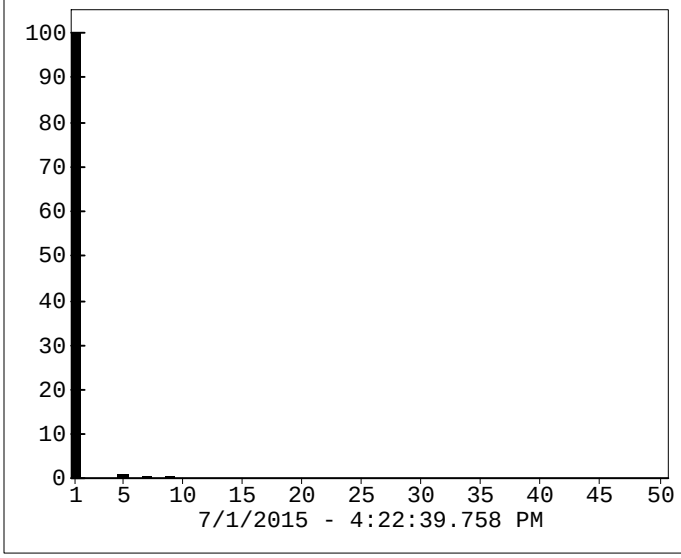
Recording Start Date	7/1/2015 - 4:22:39 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/1/2015	4:22:39.757 PM	16.672	295.8	V
Waveform V2	7/1/2015	4:22:39.757 PM	16.672	289.3	V
Waveform V3	7/1/2015	4:22:39.757 PM	16.672	226.1	V

Waveform V1
295.82 Vrms, 1.50 %THD



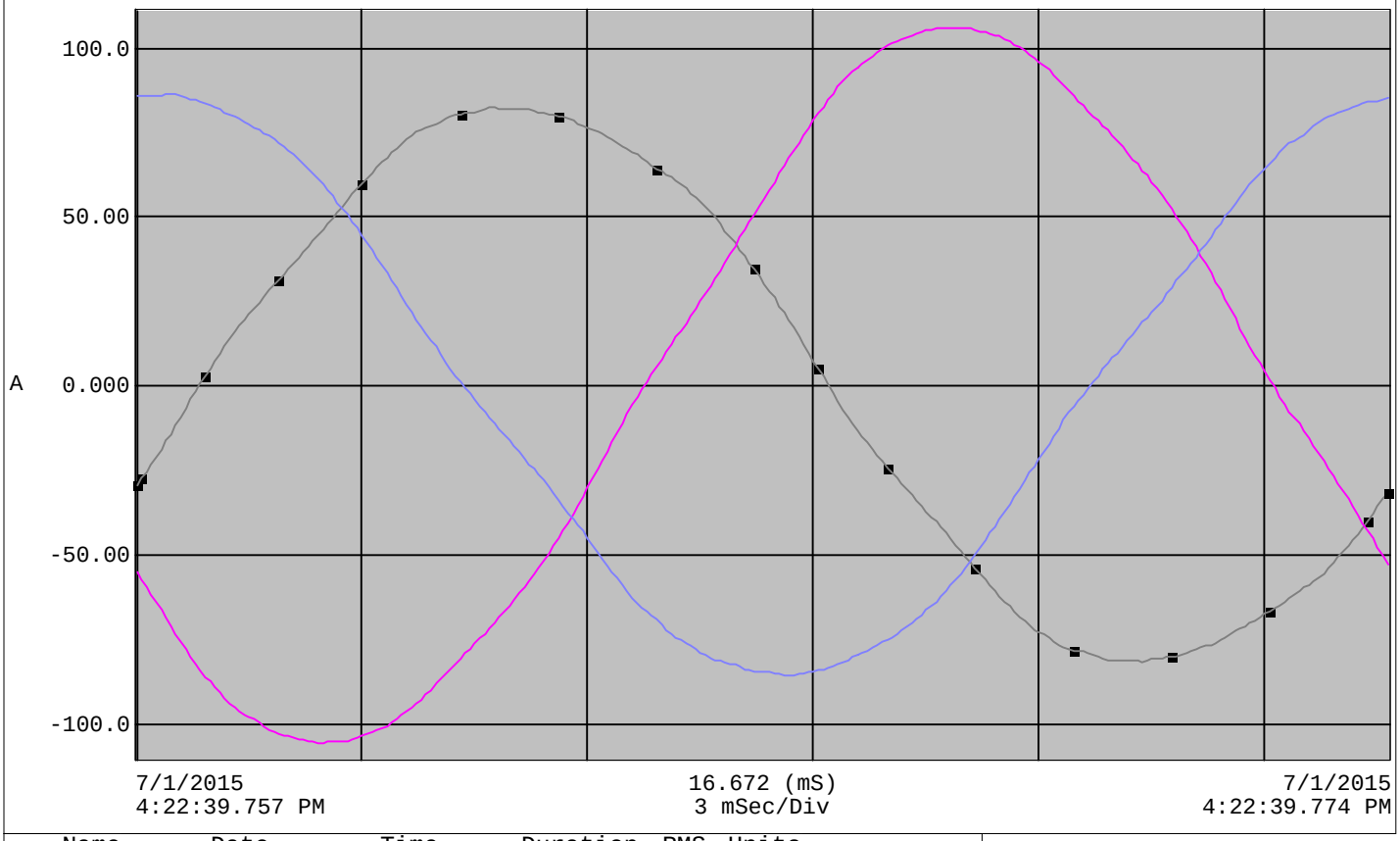
7/1/2015 - 4:22:39.000 PM

Val	
8.700	Waveform V1
-392.1	Waveform V2
269.5	Waveform V3

Waveform V1

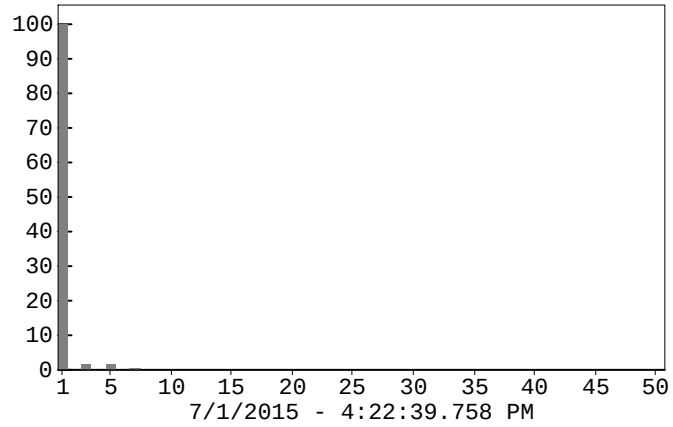
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.1		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/1/2015	4:22:39.757 PM	16.672	58.90	A
Waveform I2	7/1/2015	4:22:39.757 PM	16.672	74.00	A
Waveform I3	7/1/2015	4:22:39.757 PM	16.672	60.76	A

Waveform I1
58.90 Arms, 3.08 %THD



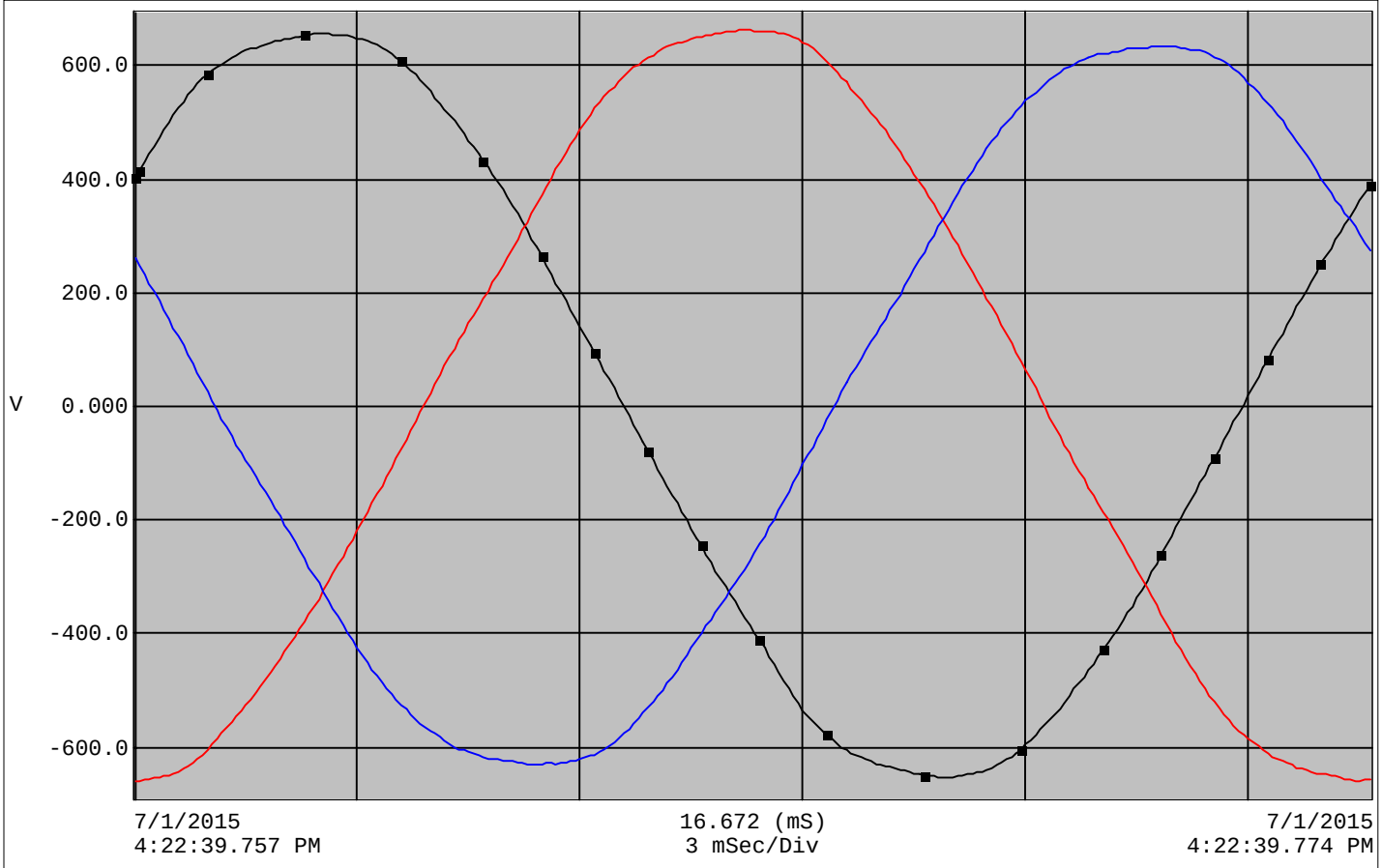
7/1/2015 - 4:22:39.000 PM

Val	
-30.00	Waveform I1
-55.50	Waveform I2
85.70	Waveform I3

Waveform I1

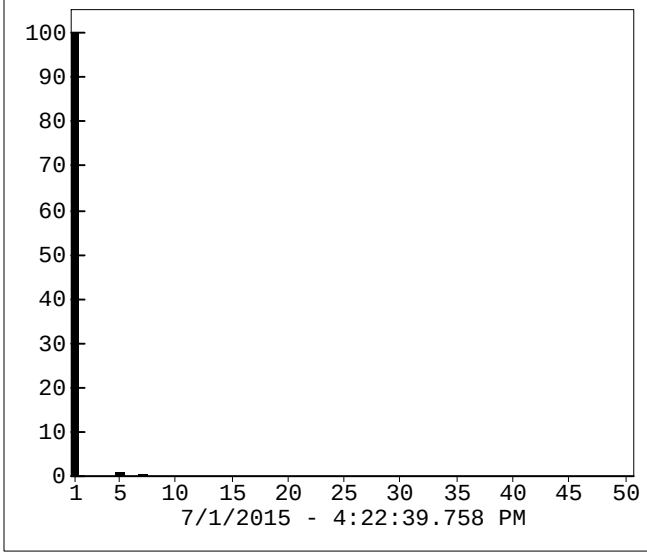
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.0	H19	0.0	H36	0.1
H03	2.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.1	H34	0.2		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/1/2015	4:22:39.757 PM	16.672	467.8	V
Waveform U2	7/1/2015	4:22:39.757 PM	16.672	473.7	V
Waveform U3	7/1/2015	4:22:39.757 PM	16.672	454.7	V

Waveform U1
467.85 Vrms, 1.39 %THD



7/1/2015 - 4:22:39.000 PM

Val	
400.9	Waveform U1
-661.6	Waveform U2
260.7	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 7/1/2015
Start Time: 4:22:39 PM
Duration: 0:0.000 (M:S)
W: 16.27E+3 W
VAR: 6.276E+3 W
VA: 17.44E+3 W
Power Factor: 0.933
Displacement Power Factor: 0.933
TAN: 0.385
VoltageRatio: 1.000
CurrentRatio: 1.000

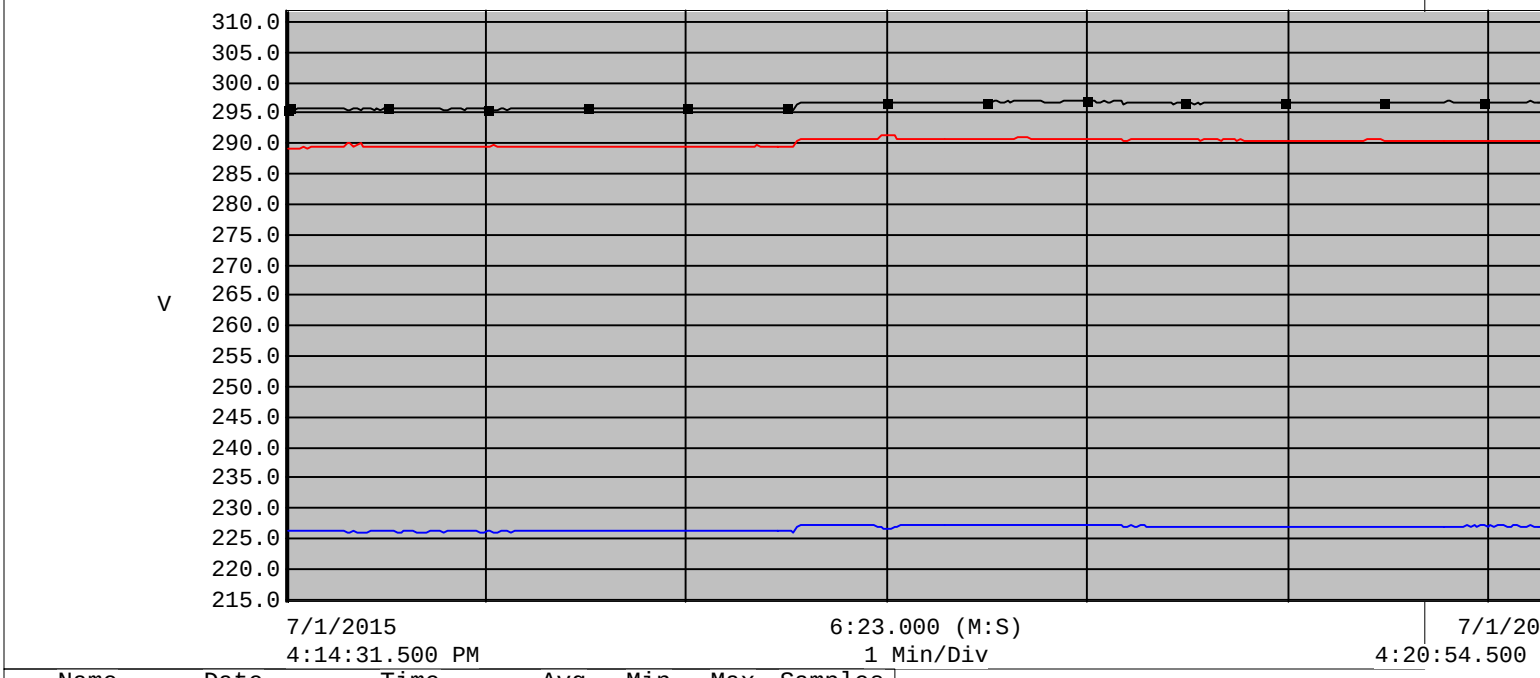
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D11\070104-D11-Photo2.dvb	
Operator ,	Test Site ,
Comments	

WPS D-11-1

Recording Start Date	7/1/2015 - 4:14:31 PM
Recording Duration	6:23 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

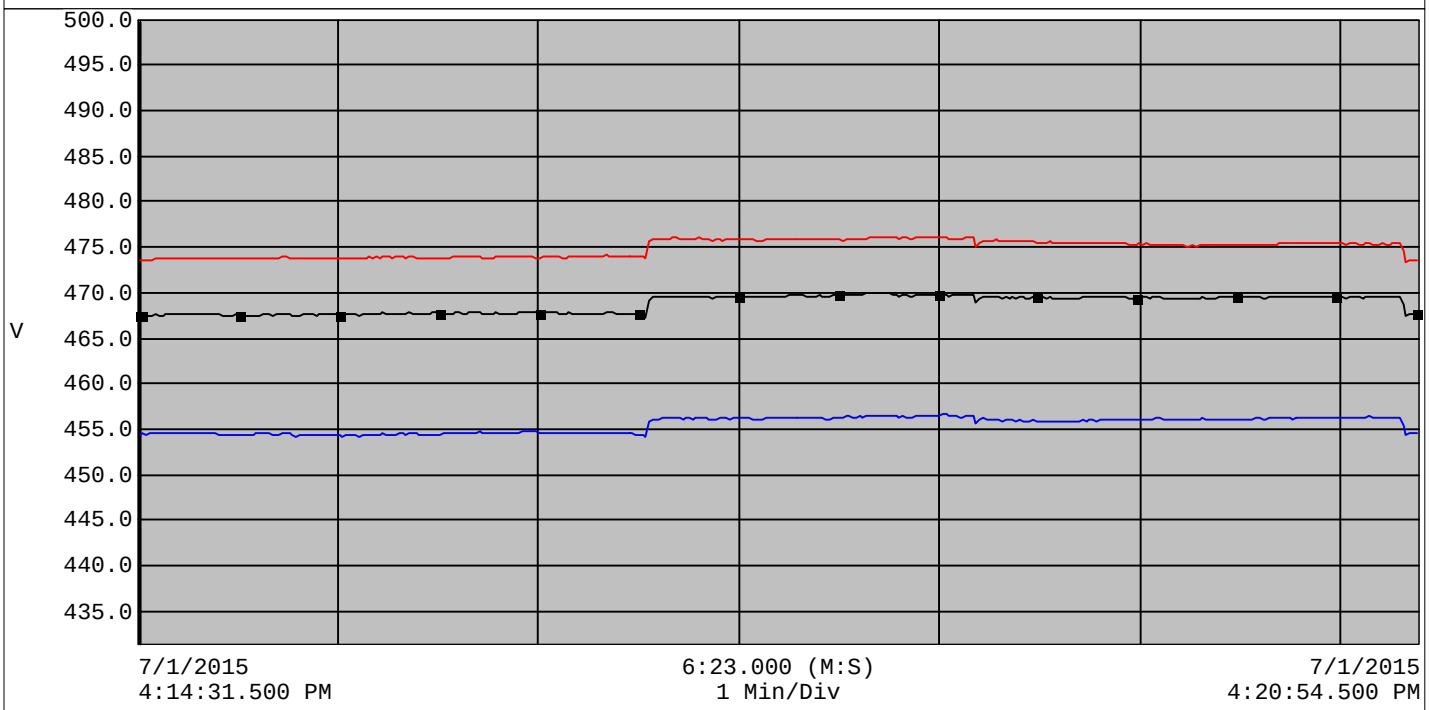
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/1/2015	4:14:31.500 PM	296.2	295.3	296.9	384
Vrms Line2	7/1/2015	4:14:31.500 PM	290.0	289.1	291.1	384
Vrms Line3	7/1/2015	4:14:31.500 PM	226.5	225.7	227.1	384

7/1/2015 - 4:14:31.000 PM
Val
295.4 — Vrms Line1
289.1 — Vrms Line2
226.0 — Vrms Line3

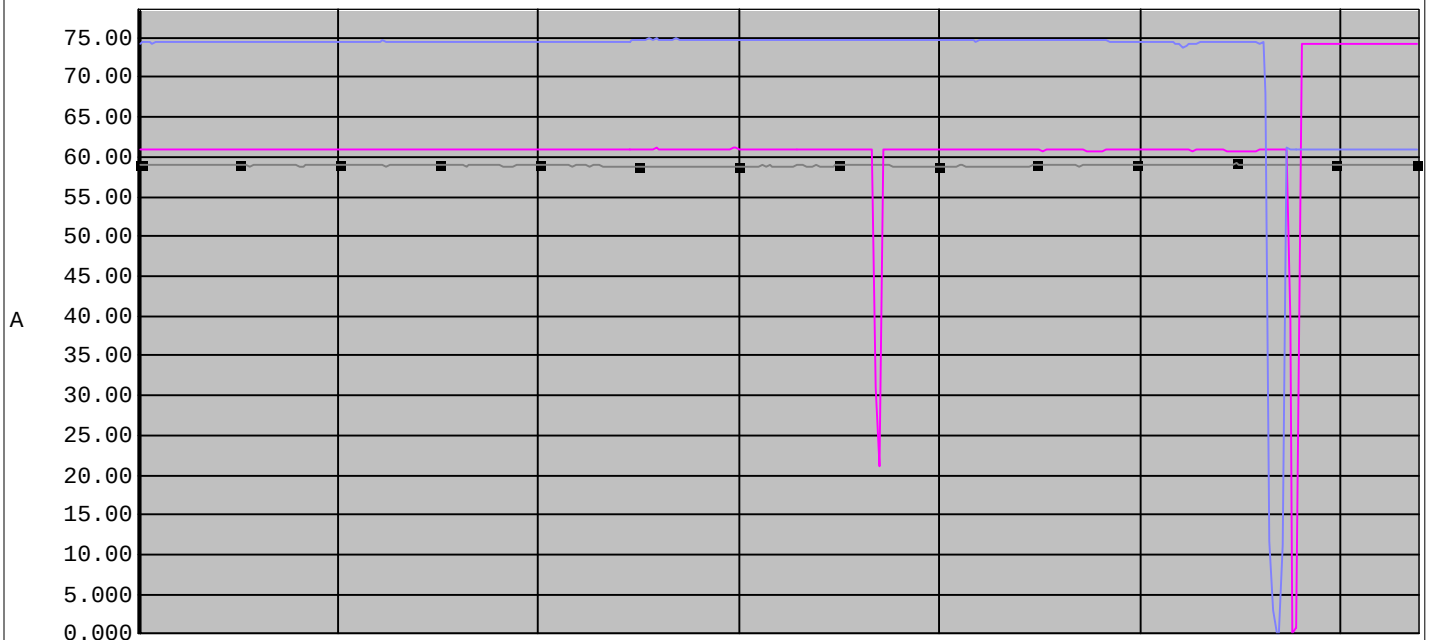
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/1/2015	4:14:31.500 PM	468.7	467.2	469.9	V
Urms Line2	7/1/2015	4:14:31.500 PM	474.8	473.3	476.0	V
Urms Line3	7/1/2015	4:14:31.500 PM	455.4	454.0	456.5	V

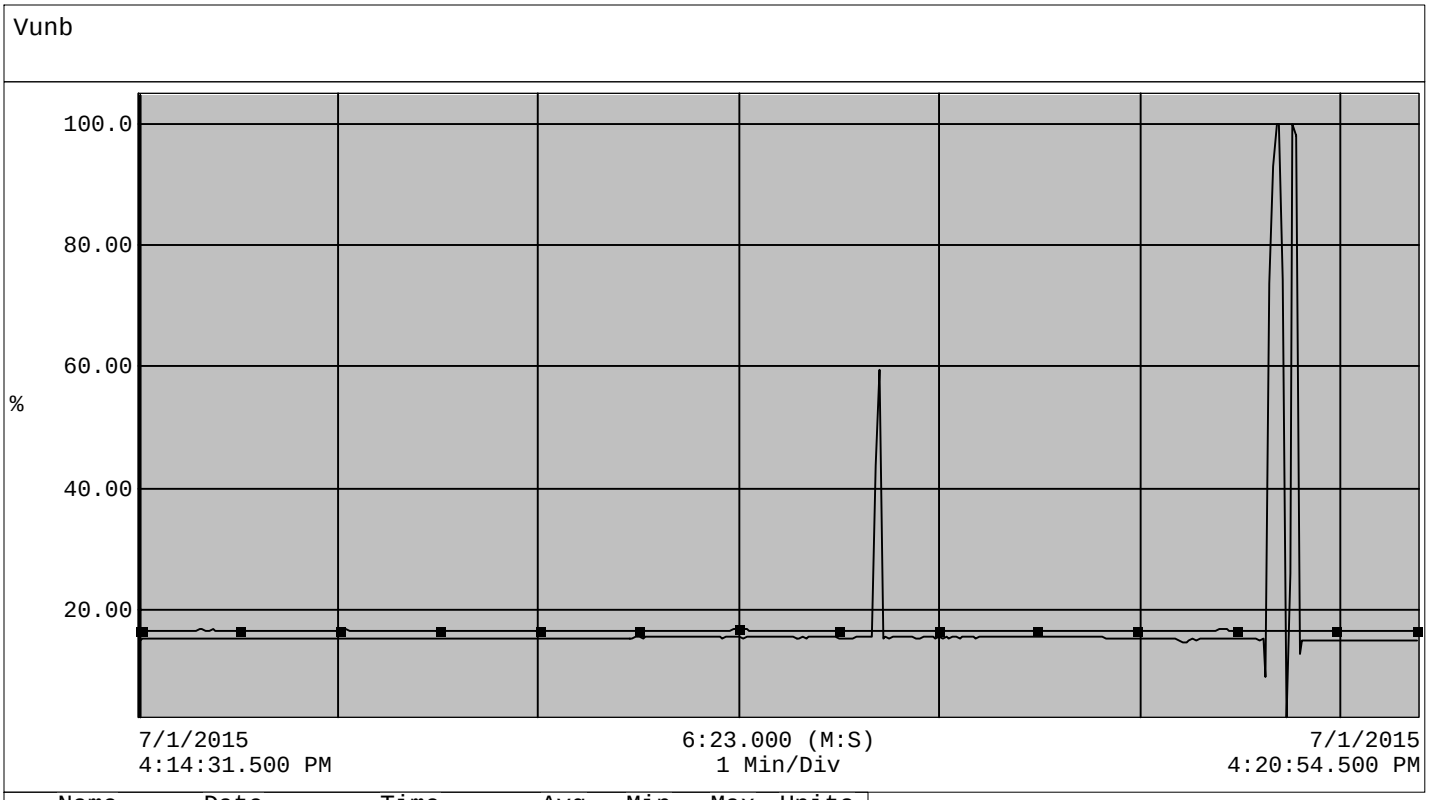
7/1/2015 - 4:14:31.000 PM
Val
467.3 Urms Line1
473.4 Urms Line2
454.3 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/1/2015	4:14:31.500 PM	58.81	58.60	59.10	A
Arms Line2	7/1/2015	4:14:31.500 PM	61.44	0.000	74.20	A
Arms Line3	7/1/2015	4:14:31.500 PM	72.10	0.000	74.70	A

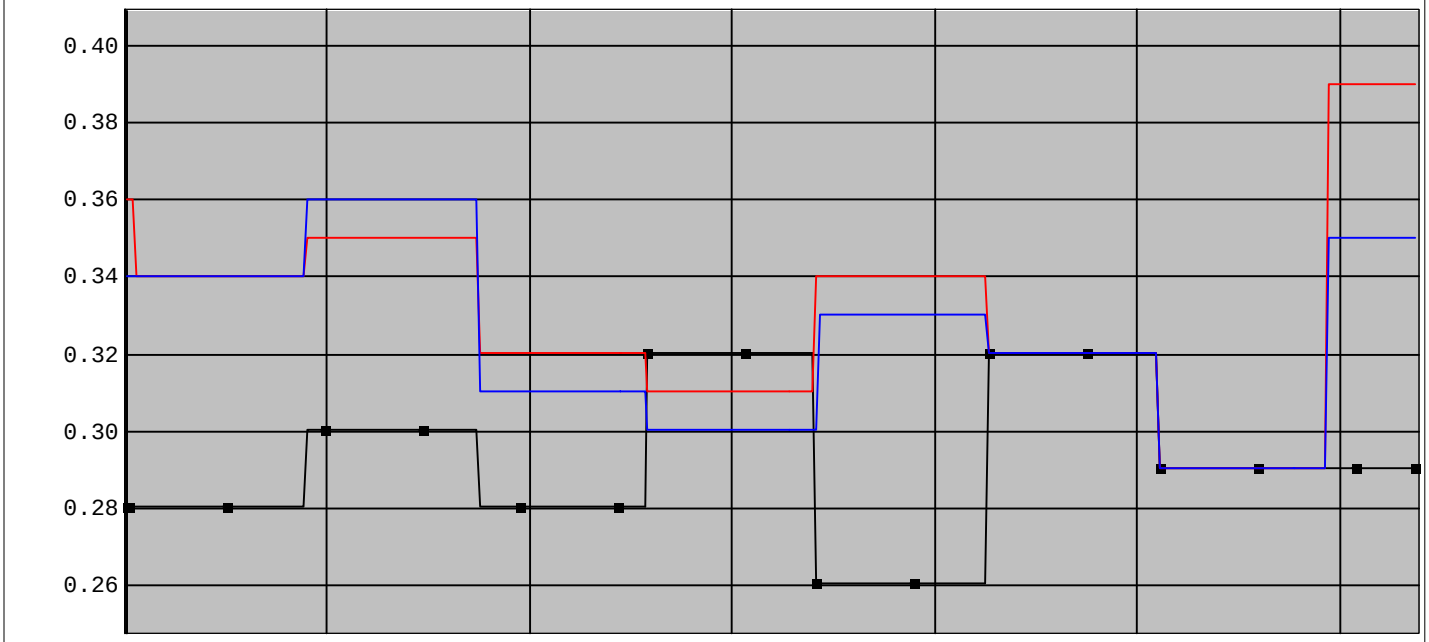
7/1/2015 - 4:14:31.000 PM
Val
58.90 — Arms Line1
60.80 — Arms Line2
74.20 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/1/2015	4:14:31.500 PM	16.40	16.30	16.50	%
Aunb(IEEE)	7/1/2015	4:14:31.500 PM	16.61	2.100	100.0	%

7/1/2015 - 4:14:31.000 PM
Val
16.30 —— Vunb(IEEE)
14.80 —— Aunb(IEEE)

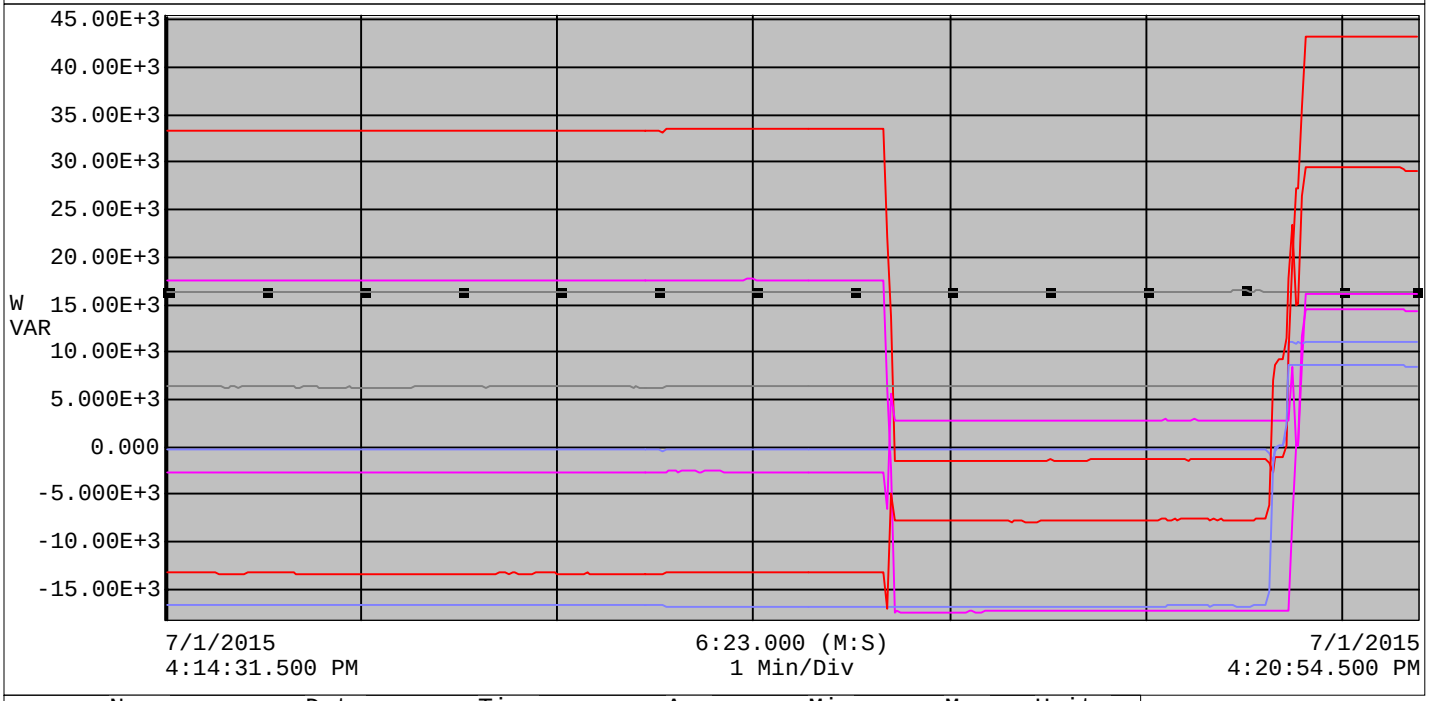
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/1/2015	4:14:31.500 PM	0.293	0.260	0.320	
Vflk Line2	7/1/2015	4:14:31.500 PM	0.329	0.290	0.390	
Vflk Line3	7/1/2015	4:14:31.500 PM	0.324	0.290	0.360	

7/1/2015 - 4:14:31.000 PM
Val
0.280 Vflk Line1
0.360 Vflk Line2
0.340 Vflk Line3

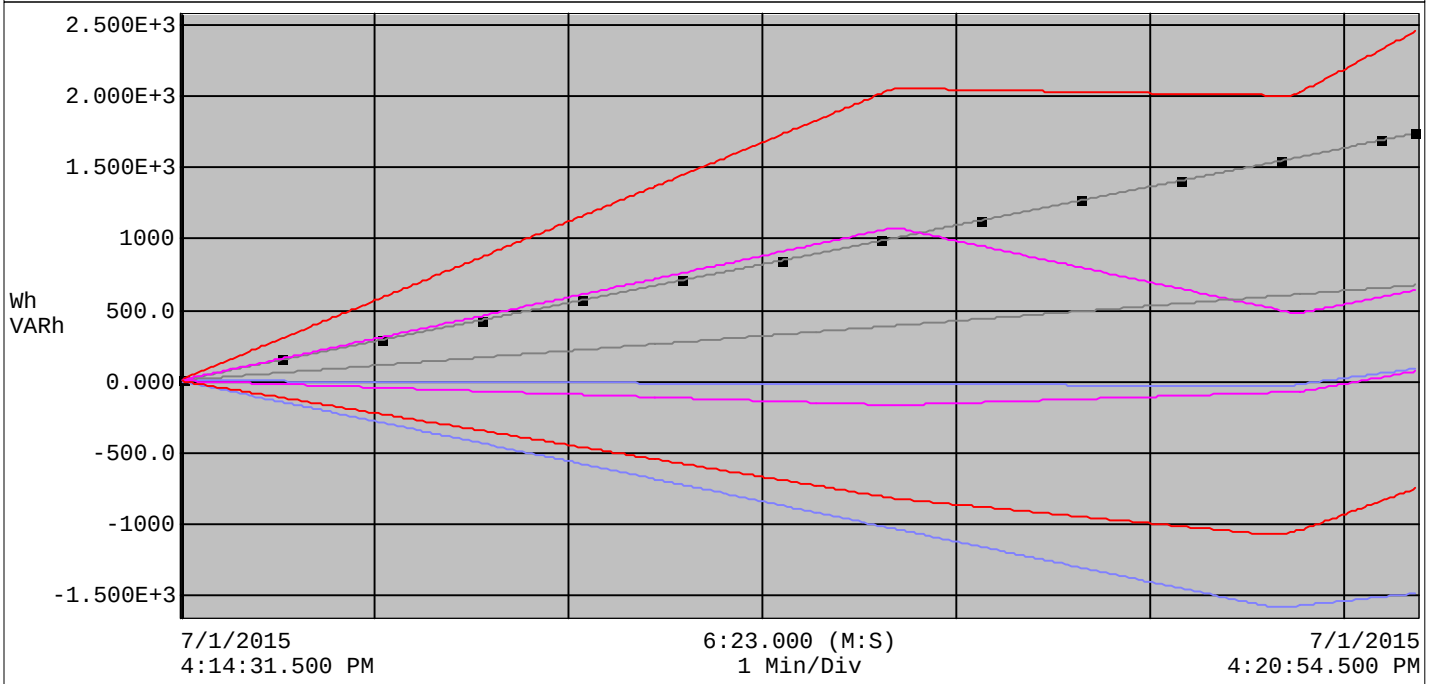
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/1/2015	4:14:31.500 PM	16.25E+3	16.18E+3	16.33E+3	W
W Line2	7/1/2015	4:14:31.500 PM	5.950E+3	-17.49E+3	17.54E+3	W
W Line3	7/1/2015	4:14:31.500 PM	782.7	-1.604E+3	10.89E+3	W
W Sum of Phases	7/1/2015	4:14:31.500 PM	22.98E+3	-2.706E+3	43.17E+3	W
VAR Line1	7/1/2015	4:14:31.500 PM	6.274E+3	6.142E+3	6.365E+3	VAR
VAR Line2	7/1/2015	4:14:31.500 PM	617.6	-6.622E+3	14.44E+3	VAR
VAR Line3	7/1/2015	4:14:31.500 PM	-13.99E+3	-16.94E+3	8.532E+3	VAR
VAR Sum of Phases	7/1/2015	4:14:31.500 PM	-7.098E+3	-17.23E+3	29.31E+3	VAR

7/1/2015 - 4:14:31.000 PM
Val
16.23E+3 — W Line1
17.34E+3 — W Line2
-445.7 — W Line3
33.13E+3 — W Sum of Phases
6.242E+3 — VAR Line1
-2.869E+3 — VAR Line2
-16.77E+3 — VAR Line3
-13.40E+3 — VAR Sum of Phases

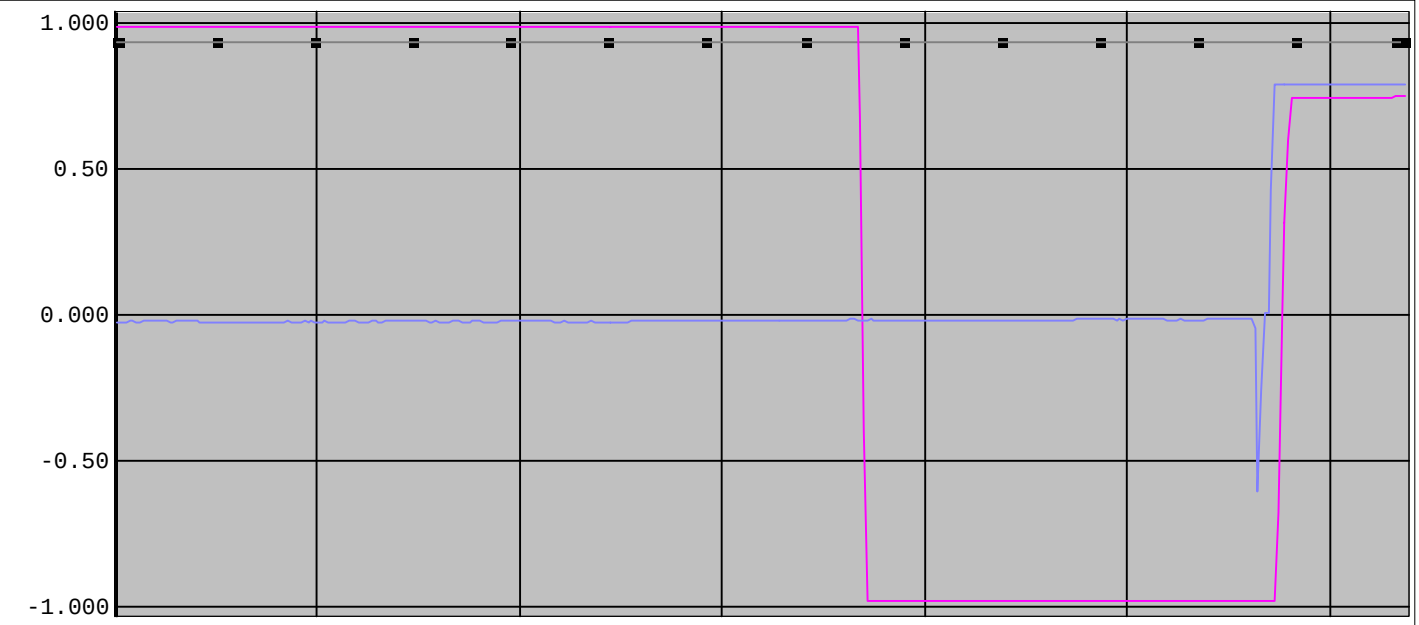
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/1/2015	4:14:31.500 PM	868.0	4.496	1.733E+3	Wh
W-hours Line2	7/1/2015	4:14:31.500 PM	615.0	4.801	1.070E+3	Wh
W-hours Line3	7/1/2015	4:14:31.500 PM	-15.41	-37.54	83.46	Wh
W-hours Sum of Phases	7/1/2015	4:14:31.500 PM	1.468E+3	9.202	2.451E+3	Wh
VAR-hours Line1	7/1/2015	4:14:31.500 PM	334.1	1.736	669.2	VARh
VAR-hours Line2	7/1/2015	4:14:31.500 PM	-91.87	-173.3	65.85	VARh
VAR-hours Line3	7/1/2015	4:14:31.500 PM	-882.7	-1.587E+3	-4.603	VARh
VAR-hours Sum of Phases	7/1/2015	4:14:31.500 PM	-640.5	-1.081E+3	-3.696	VARh

7/1/2015 - 4:14:31.000 PM
Val
4.496 — W-hours Line1
4.801 — W-hours Line2
-0.122 — W-hours Line3
9.202 — W-hours Sum of Phases
1.736 — VAR-hours Line1
-0.794 — VAR-hours Line2
-4.603 — VAR-hours Line3
-3.696 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/1/2015	4:14:31.500 PM	0.933	0.931	0.935	
PF Line2	7/1/2015	4:14:31.500 PM	0.323	-0.989	0.989	
PF Line3	7/1/2015	4:14:31.500 PM	60.23E-3	-0.611	0.791	

7/1/2015 - 4:14:31.000 PM
Val
0.933 — PF Line1
0.987 — PF Line2
-27.00E-3 — PF Line3

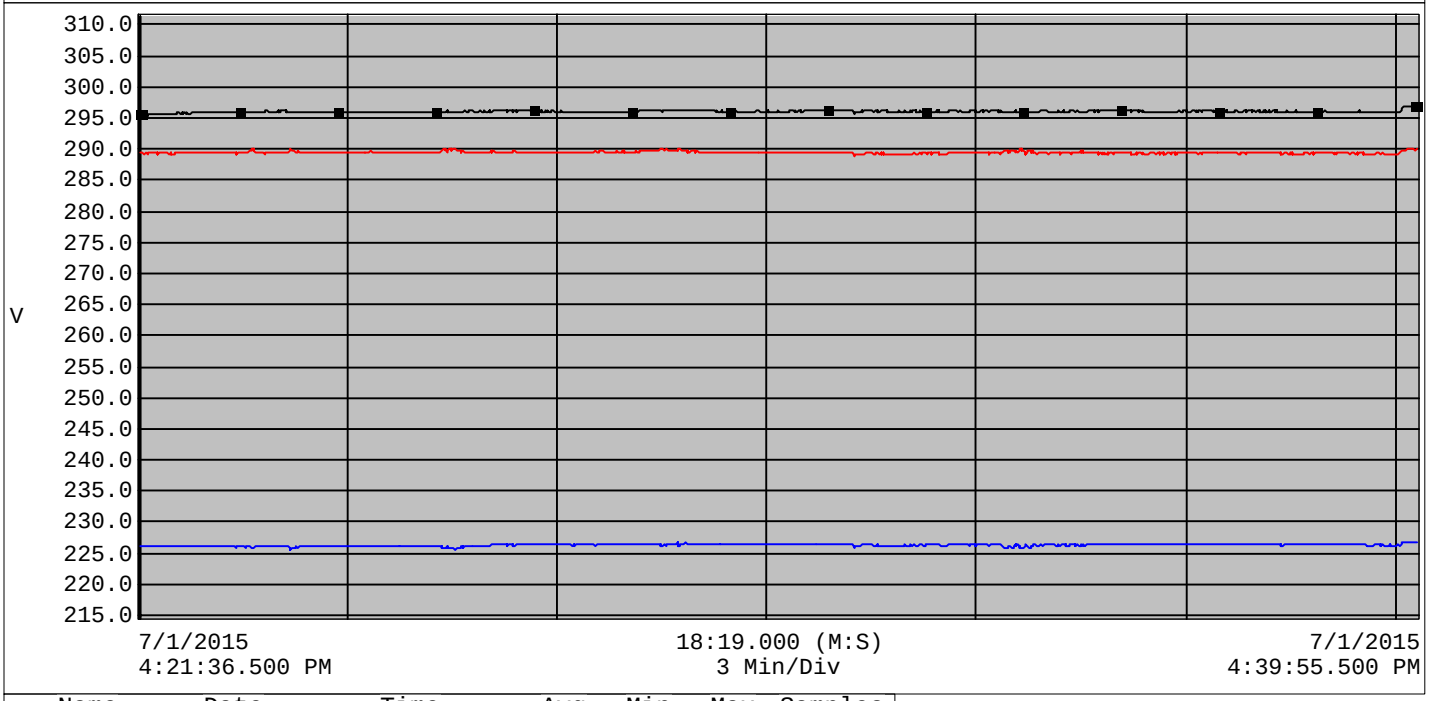
Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D11\070104-D11-1.dvb	
Operator ,	Test Site ,
Comments	

WPS D-11-2

Recording Start Date	7/1/2015 - 4:21:36 PM
Recording Duration	18:19 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

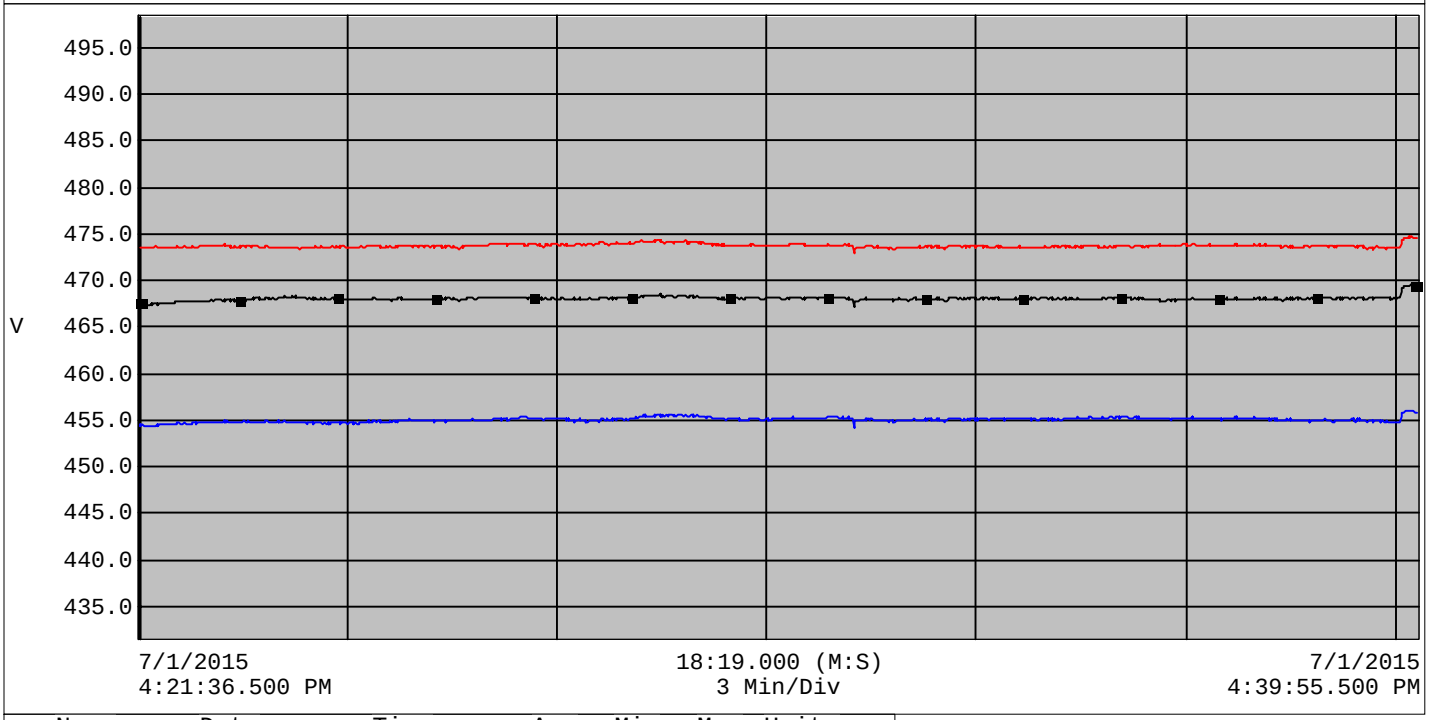
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/1/2015	4:21:36.500 PM	295.9	295.3	296.7	1100
Vrms Line2	7/1/2015	4:21:36.500 PM	289.3	288.6	290.0	1100
Vrms Line3	7/1/2015	4:21:36.500 PM	226.2	225.5	226.7	1100

7/1/2015 - 4:21:36.000 PM
Val
295.5 — Vrms Line1
289.2 — Vrms Line2
225.9 — Vrms Line3

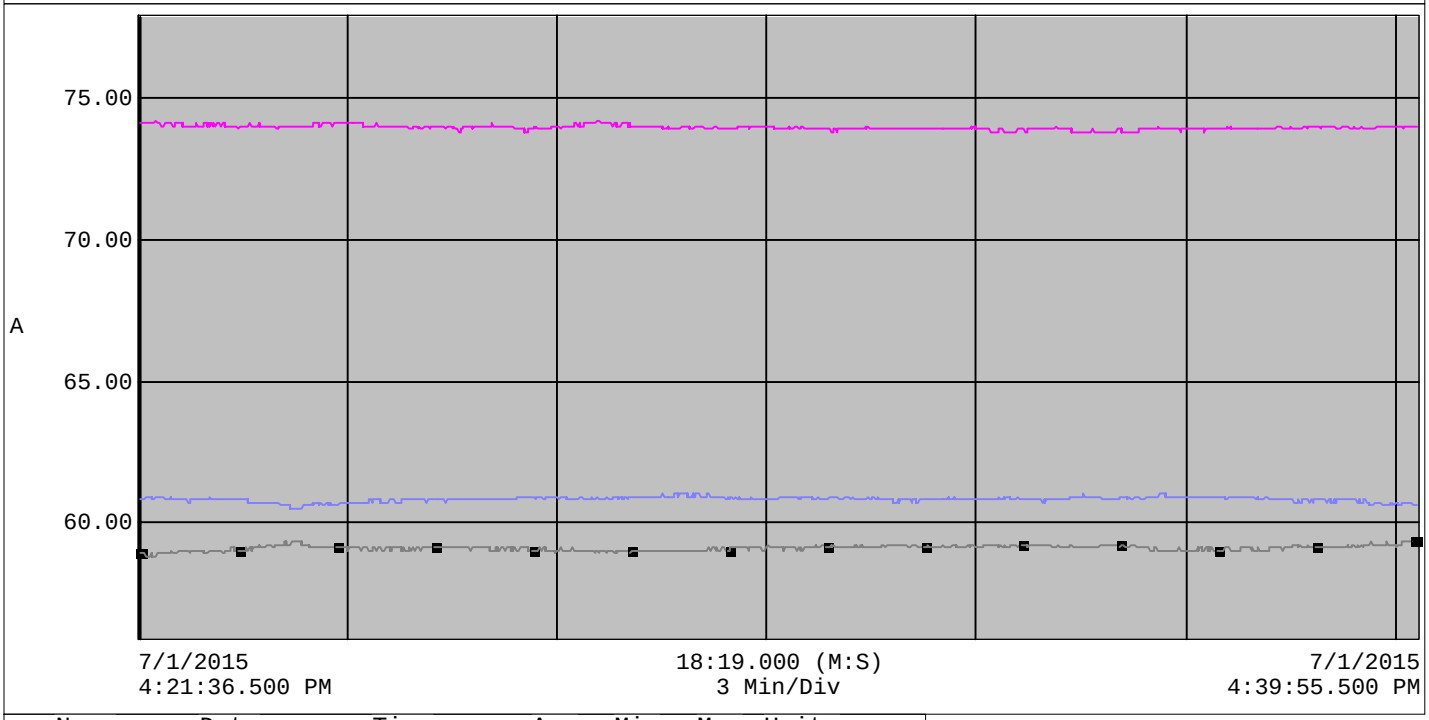
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/1/2015	4:21:36.500 PM	467.9	467.1	469.4	V
Urms Line2	7/1/2015	4:21:36.500 PM	473.6	472.7	474.6	V
Urms Line3	7/1/2015	4:21:36.500 PM	454.9	454.1	456.0	V

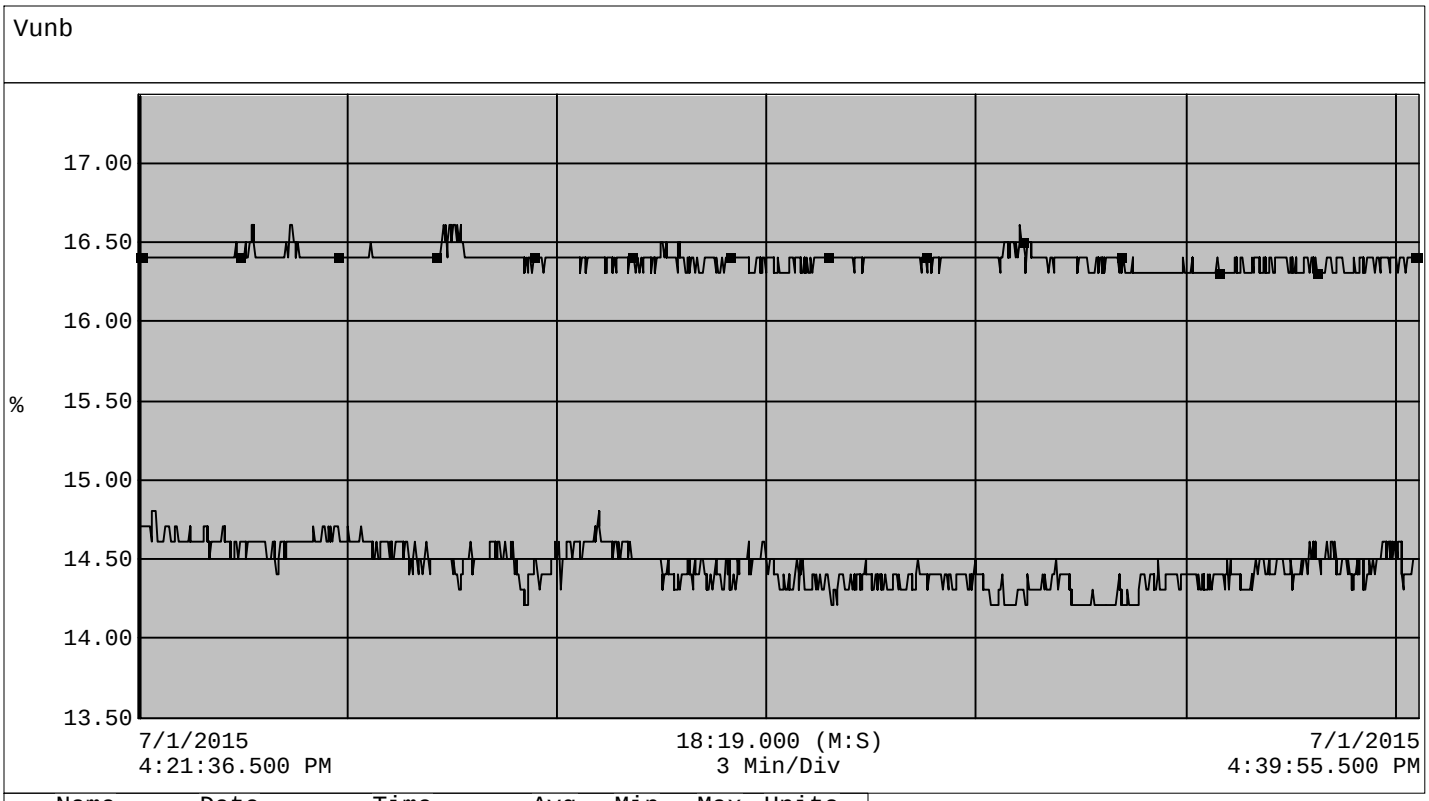
7/1/2015 - 4:21:36.000 PM
Val
467.5 — Urms Line1
473.4 — Urms Line2
454.4 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/1/2015	4:21:36.500 PM	59.08	58.80	59.30	A
Arms Line2	7/1/2015	4:21:36.500 PM	73.95	73.80	74.20	A
Arms Line3	7/1/2015	4:21:36.500 PM	60.81	60.50	61.00	A

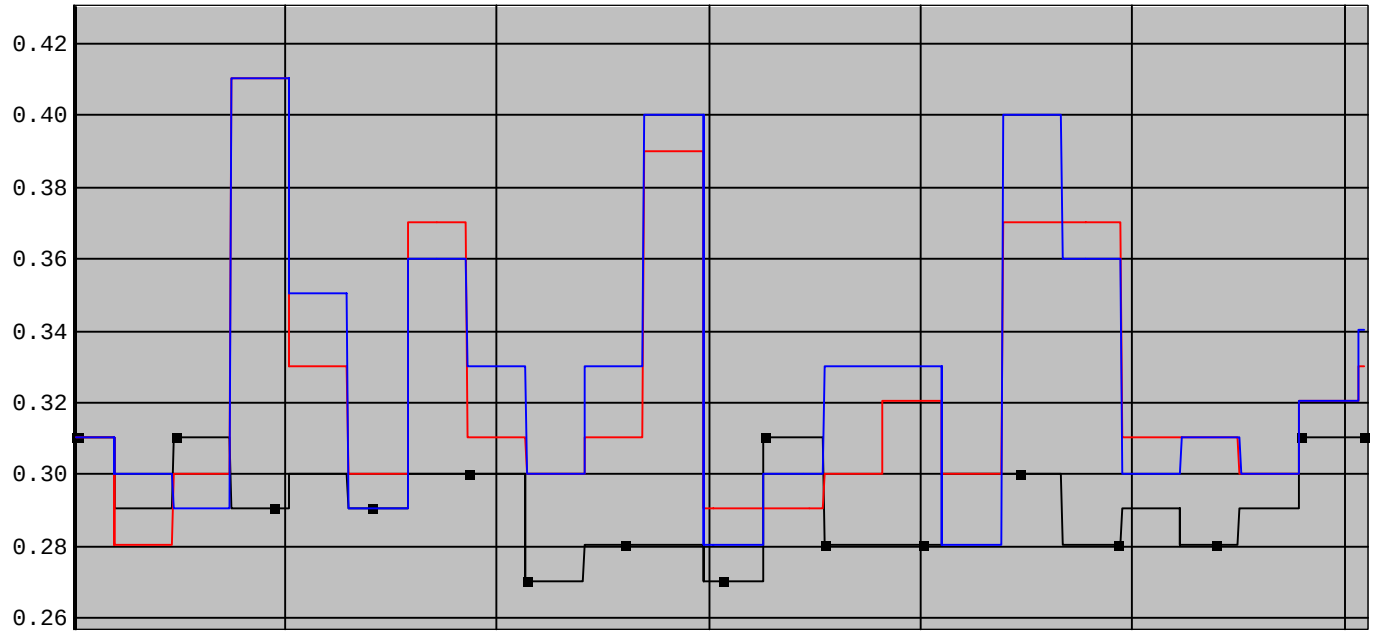
7/1/2015 - 4:21:36.000 PM
Val
58.90 — Arms Line1
74.10 — Arms Line2
60.80 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/1/2015	4:21:36.500 PM	16.38	16.30	16.60	%
Aunb(IEEE)	7/1/2015	4:21:36.500 PM	14.45	14.20	14.80	%

7/1/2015 - 4:21:36.000 PM
Val
16.40 —— Vunb(IEEE)
14.70 —— Aunb(IEEE)

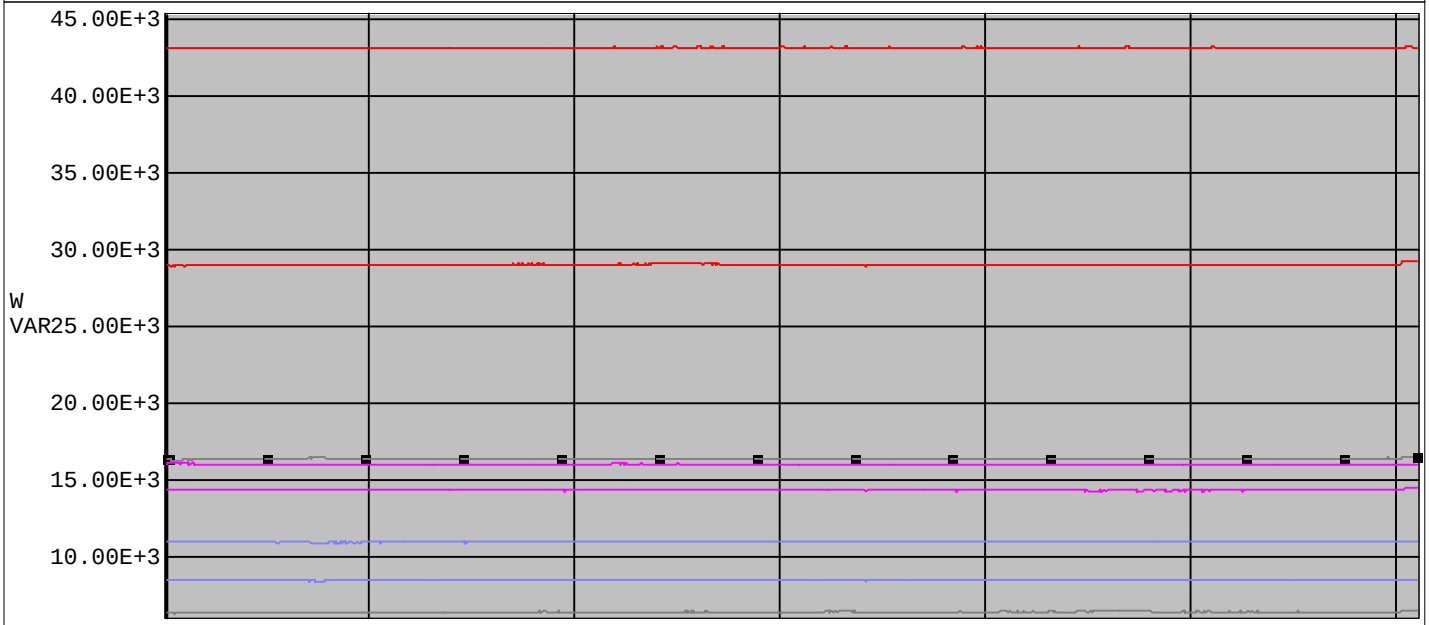
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/1/2015	4:21:36.500 PM	0.291	0.270	0.310	
Vflk Line2	7/1/2015	4:21:36.500 PM	0.323	0.280	0.410	
Vflk Line3	7/1/2015	4:21:36.500 PM	0.327	0.280	0.410	

7/1/2015 - 4:21:36.000 PM
Val
0.310 Vflk Line1
0.310 Vflk Line2
0.310 Vflk Line3

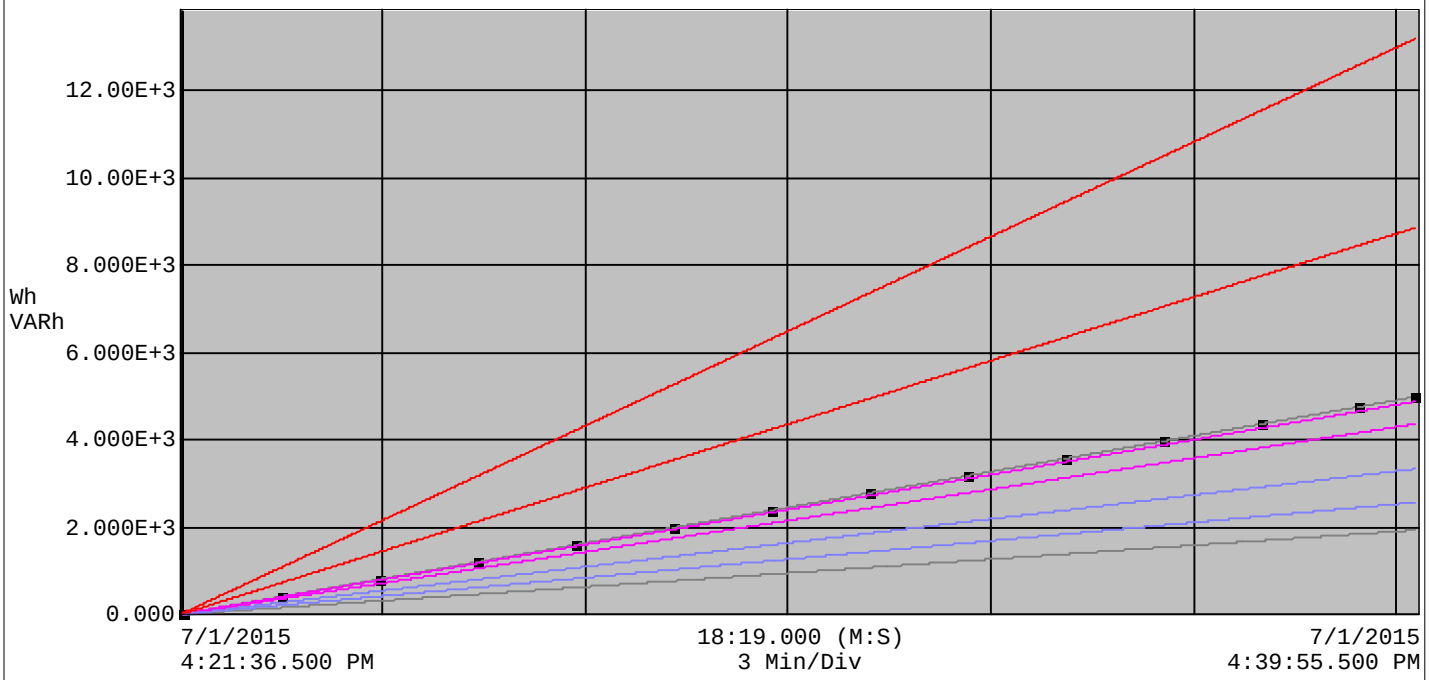
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/1/2015	4:21:36.500 PM	16.30E+3	16.22E+3	16.40E+3	W
W Line2	7/1/2015	4:21:36.500 PM	15.94E+3	15.89E+3	16.02E+3	W
W Line3	7/1/2015	4:21:36.500 PM	10.90E+3	10.81E+3	10.94E+3	W
W Sum of Phases	7/1/2015	4:21:36.500 PM	43.14E+3	43.07E+3	43.20E+3	W
VAR Line1	7/1/2015	4:21:36.500 PM	6.313E+3	6.211E+3	6.412E+3	VAR
VAR Line2	7/1/2015	4:21:36.500 PM	14.27E+3	14.18E+3	14.40E+3	VAR
VAR Line3	7/1/2015	4:21:36.500 PM	8.393E+3	8.326E+3	8.450E+3	VAR
VAR Sum of Phases	7/1/2015	4:21:36.500 PM	28.97E+3	28.79E+3	29.20E+3	VAR

7/1/2015 - 4:21:36.000 PM
Val
16.26E+3 — W Line1
15.98E+3 — W Line2
10.87E+3 — W Line3
43.11E+3 — W Sum of Phases
6.244E+3 — VAR Line1
14.27E+3 — VAR Line2
8.403E+3 — VAR Line3
28.91E+3 — VAR Sum of Phases

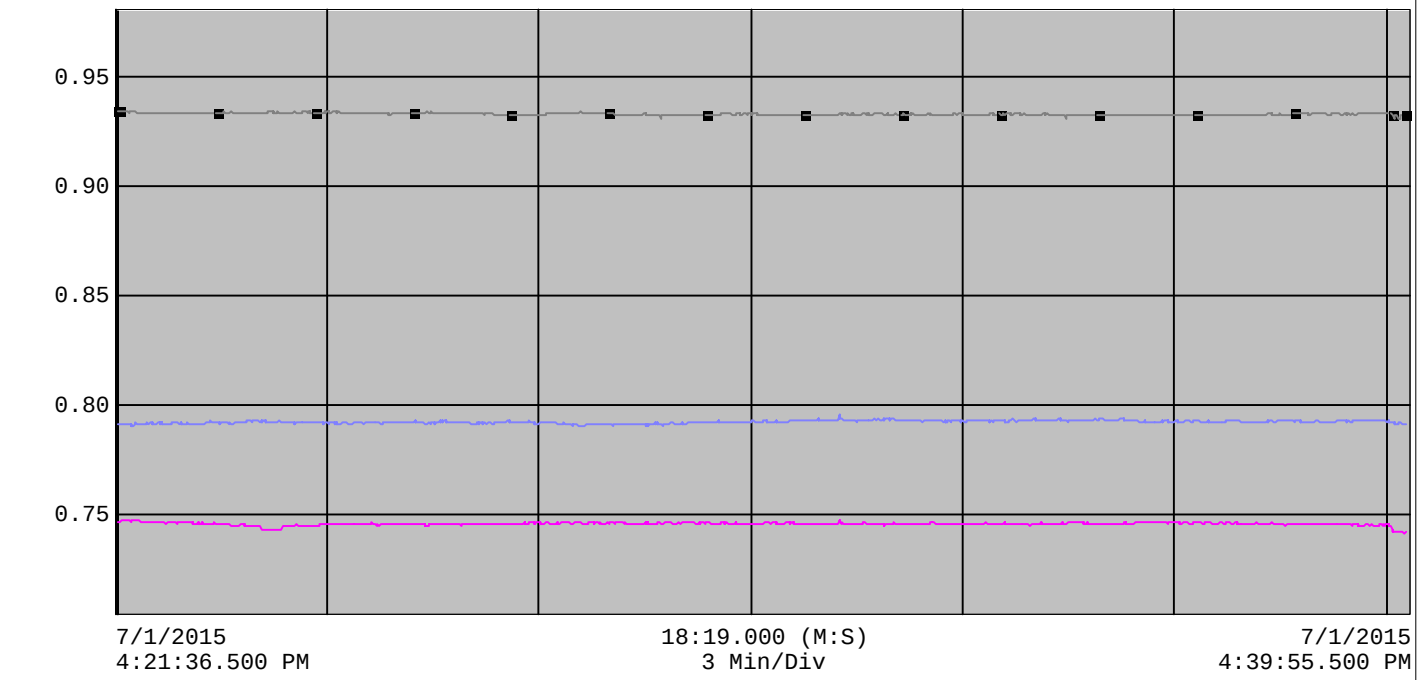
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/1/2015	4:21:36.500 PM	2.492E+3	4.561	4.981E+3	Wh
W-hours Line2	7/1/2015	4:21:36.500 PM	2.439E+3	4.460	4.871E+3	Wh
W-hours Line3	7/1/2015	4:21:36.500 PM	1.665E+3	3.048	3.329E+3	Wh
W-hours Sum of Phases	7/1/2015	4:21:36.500 PM	6.596E+3	12.07	13.18E+3	Wh
VAR-hours Line1	7/1/2015	4:21:36.500 PM	963.6	1.707	1.929E+3	VARh
VAR-hours Line2	7/1/2015	4:21:36.500 PM	2.183E+3	3.992	4.360E+3	VARh
VAR-hours Line3	7/1/2015	4:21:36.500 PM	1.284E+3	2.348	2.565E+3	VARh
VAR-hours Sum of Phases	7/1/2015	4:21:36.500 PM	4.430E+3	8.106	8.853E+3	VARh

7/1/2015 - 4:21:36.000 PM
Val
4.561 — W-hours Line1
4.460 — W-hours Line2
3.048 — W-hours Line3
12.07 — W-hours Sum of Phases
1.707 — VAR-hours Line1
3.992 — VAR-hours Line2
2.348 — VAR-hours Line3
8.106 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/1/2015	4:21:36.500 PM	0.933	0.931	0.934	
PF Line2	7/1/2015	4:21:36.500 PM	0.745	0.741	0.747	
PF Line3	7/1/2015	4:21:36.500 PM	0.792	0.790	0.795	

7/1/2015 - 4:21:36.000 PM
Val
0.934 — PF Line1
0.746 — PF Line2
0.791 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D11\070104-D11-2.dvb	
Operator ,	Test Site ,
Comments	

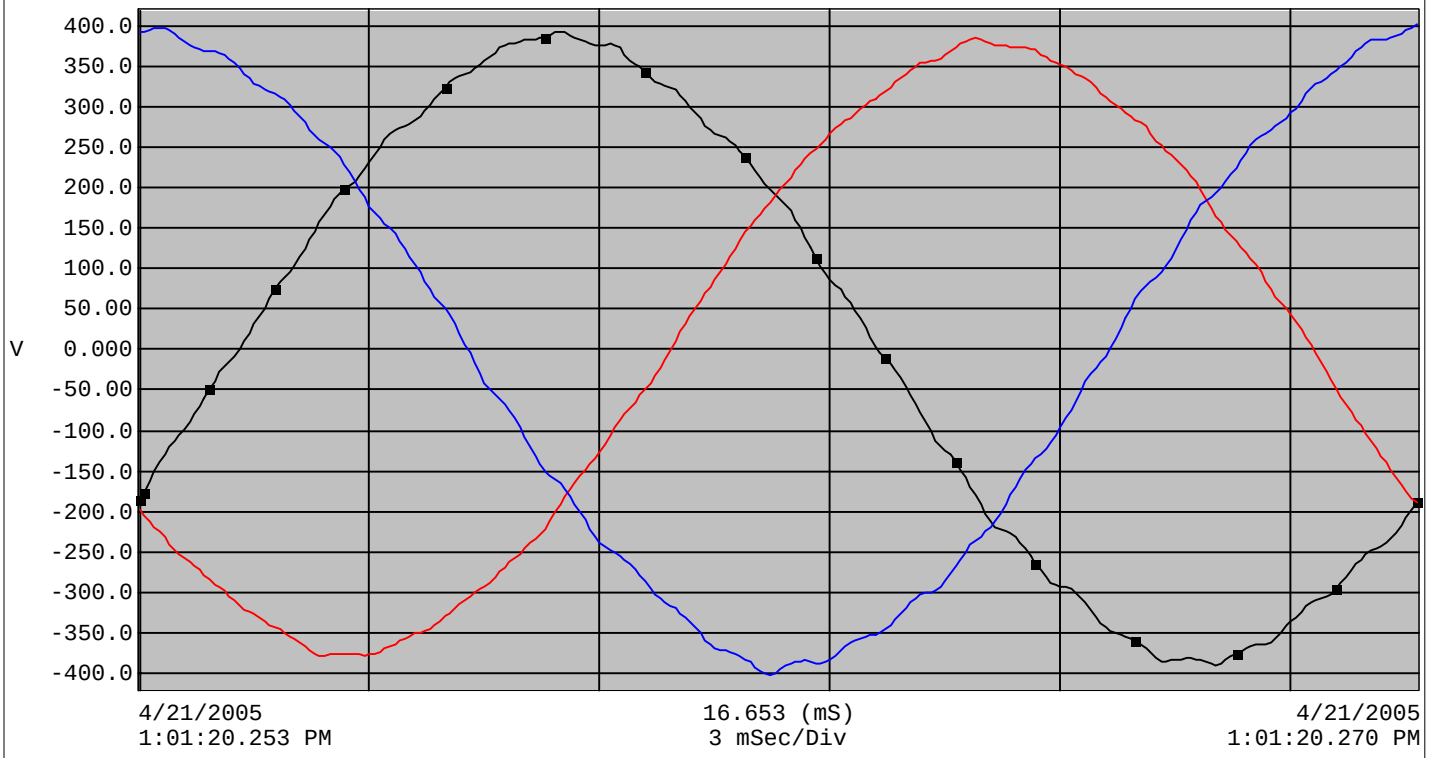
GWA Water Pumping Station Assessment				
Station Name: D-12	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.03	
Pressure	1.5%	1	0.015	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.3**

Comments:

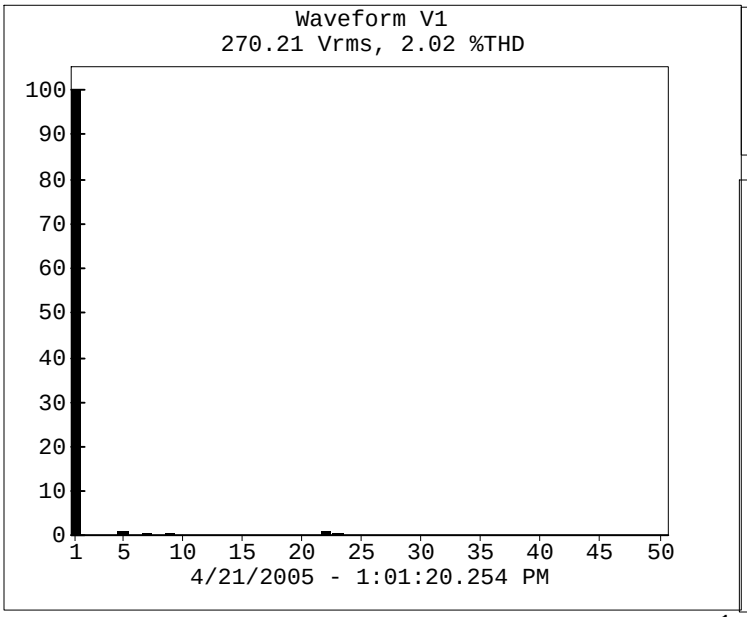
WPS D-12 - Photo

Recording Start Date	4/21/2005 - 1:01:20 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:260152 2.7

Waveform - Voltage (V)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	4/21/2005	1:01:20.253 PM	16.653	270.2	V
Waveform V2	4/21/2005	1:01:20.253 PM	16.653	264.8	V
Waveform V3	4/21/2005	1:01:20.253 PM	16.653	274.8	V



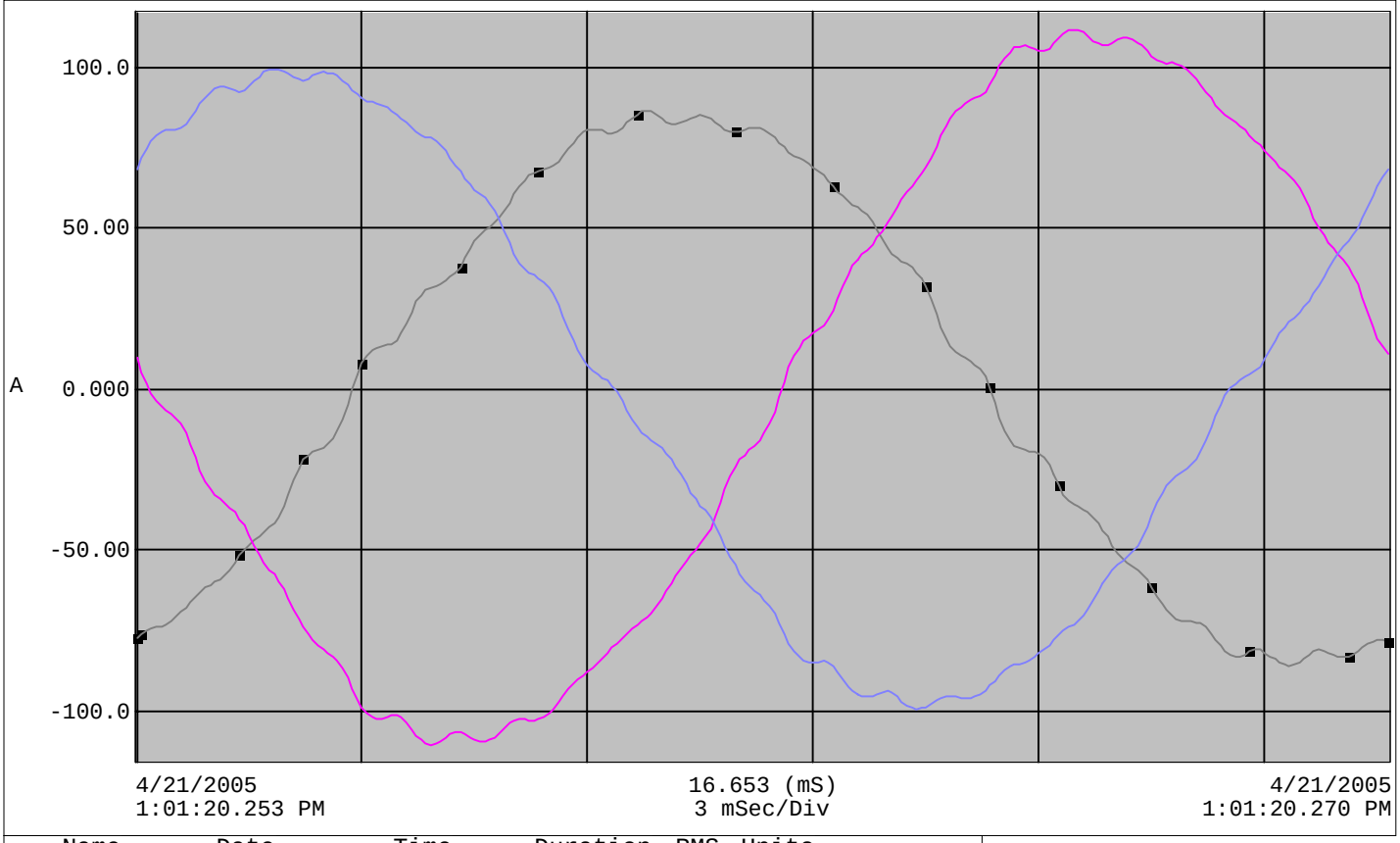
4/21/2005 - 1:01:20.000 PM

	Val	
—	-188.1	Waveform V1
—	-198.6	Waveform V2
—	390.3	Waveform V3

Waveform V1

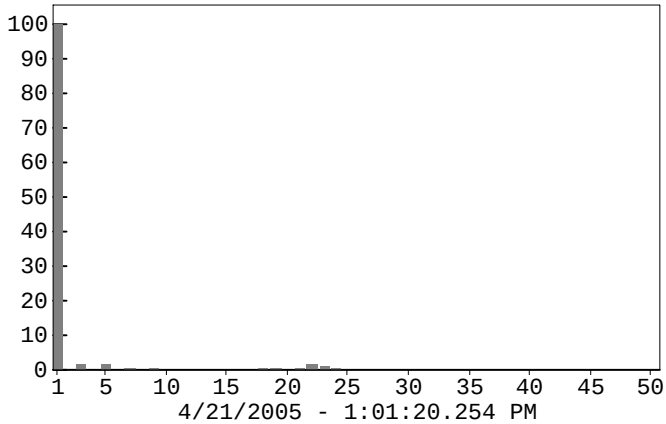
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.1	H20	0.1	H37	0.0
H04	0.0	H21	0.3	H38	0.0
H05	1.2	H22	0.9	H39	0.0
H06	0.1	H23	0.7	H40	0.0
H07	0.7	H24	0.3	H41	0.0
H08	0.0	H25	0.1	H42	0.2
H09	0.6	H26	0.1	H43	0.1
H10	0.0	H27	0.1	H44	0.1
H11	0.2	H28	0.1	H45	0.1
H12	0.0	H29	0.1	H46	0.2
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.1
H15	0.1	H32	0.1	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.1		

Waveform - Current
Frequency: 60.05 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	4/21/2005	1:01:20.253 PM	16.653	61.05	A
Waveform I2	4/21/2005	1:01:20.253 PM	16.653	77.49	A
Waveform I3	4/21/2005	1:01:20.253 PM	16.653	68.91	A

Waveform I1
61.05 Arms, 4.17 %THD

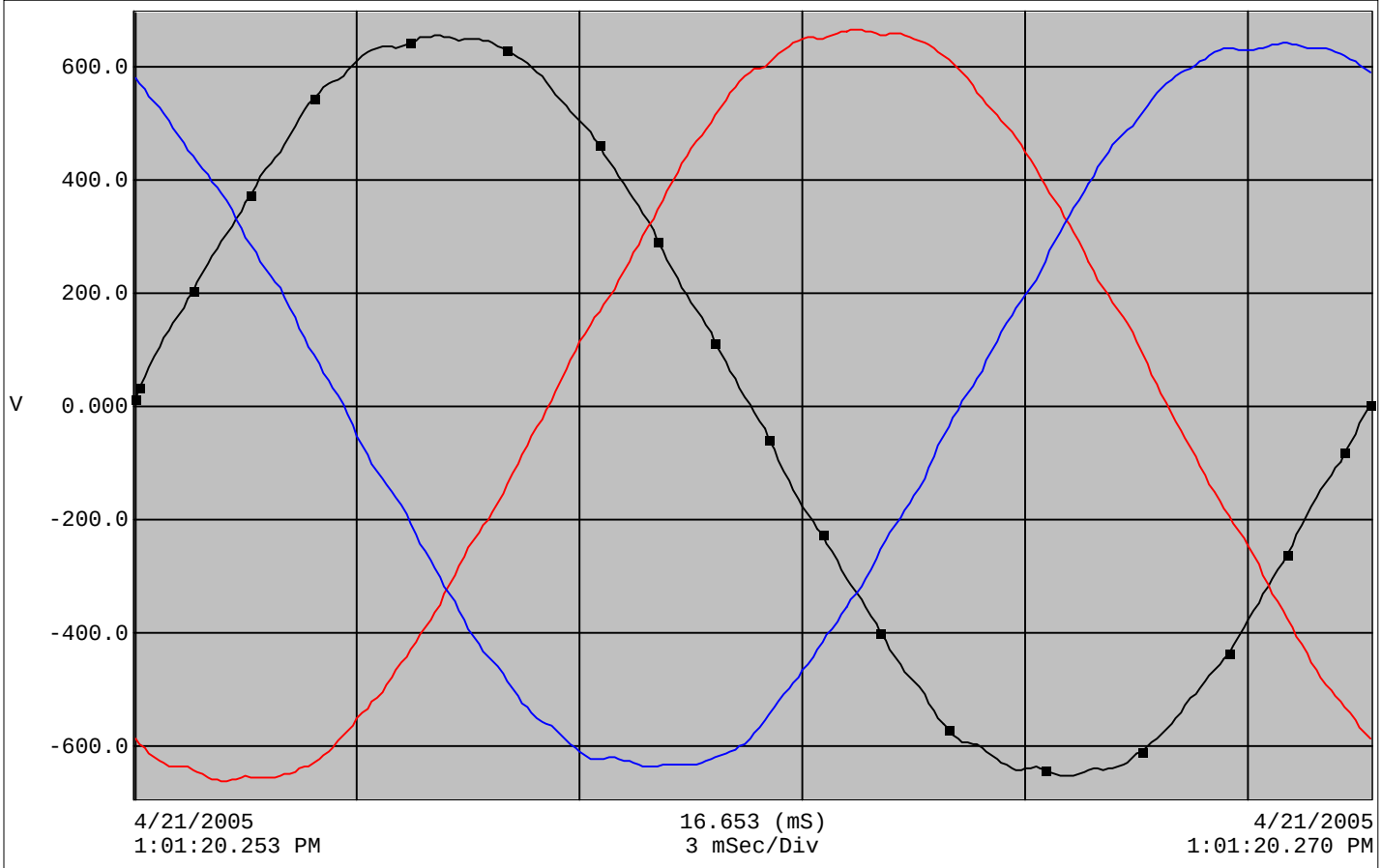


4/21/2005 - 1:01:20.000 PM
Val
-77.50 Waveform I1
9.500 Waveform I2
68.00 Waveform I3

Waveform I1

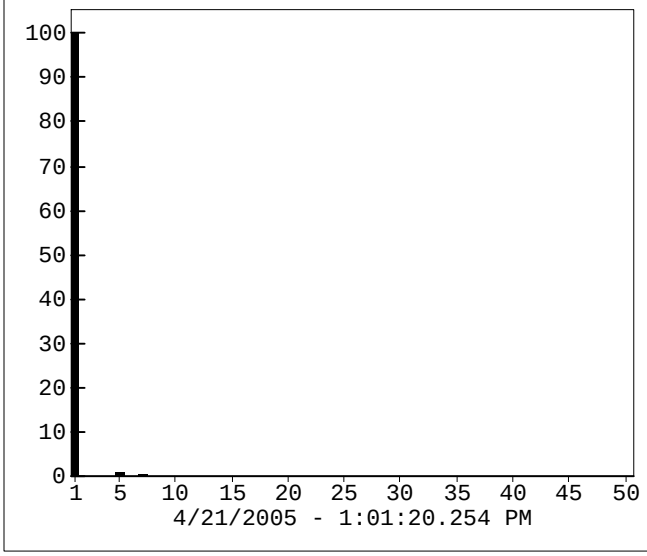
	(%)		(%)		(%)
H01	100.0	H18	1.1	H35	0.0
H02	0.1	H19	0.7	H36	0.0
H03	2.0	H20	0.3	H37	0.0
H04	0.2	H21	0.6	H38	0.0
H05	2.0	H22	1.7	H39	0.0
H06	0.2	H23	1.1	H40	0.1
H07	1.1	H24	0.6	H41	0.1
H08	0.1	H25	0.1	H42	0.3
H09	0.6	H26	0.1	H43	0.1
H10	0.1	H27	0.1	H44	0.0
H11	0.3	H28	0.2	H45	0.0
H12	0.1	H29	0.0	H46	0.1
H13	0.2	H30	0.1	H47	0.0
H14	0.1	H31	0.1	H48	0.0
H15	0.3	H32	0.0	H49	0.0
H16	0.5	H33	0.1	H50	0.0
H17	0.5	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	4/21/2005	1:01:20.253 PM	16.653	466.6	V
Waveform U2	4/21/2005	1:01:20.253 PM	16.653	475.4	V
Waveform U3	4/21/2005	1:01:20.253 PM	16.653	459.9	V

Waveform U1
466.58 Vrms, 1.43 %THD



4/21/2005 - 1:01:20.000 PM

	Val
Waveform U1	10.50
Waveform U2	-588.9
Waveform U3	578.4

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.0	H22	0.4	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	0.5	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.1
H09	0.4	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.3	H28	0.1	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 4/21/2005
Start Time: 1:01:20 PM
Duration: 0:0.000 (M:S)
W: 13.12E+3 W
VAR: 9.971E+3 W
VA: 16.50E+3 W
Power Factor: 0.795
Displacement Power Factor: 0.796
TAN: 0.760
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D12\042105-D12-PHOTO.dvb

Operator	Test Site
MORIKAWA & ASSOCIATES, LLC LYMAN MORIKAWA, PE ,	GWA WPS D-12 ,

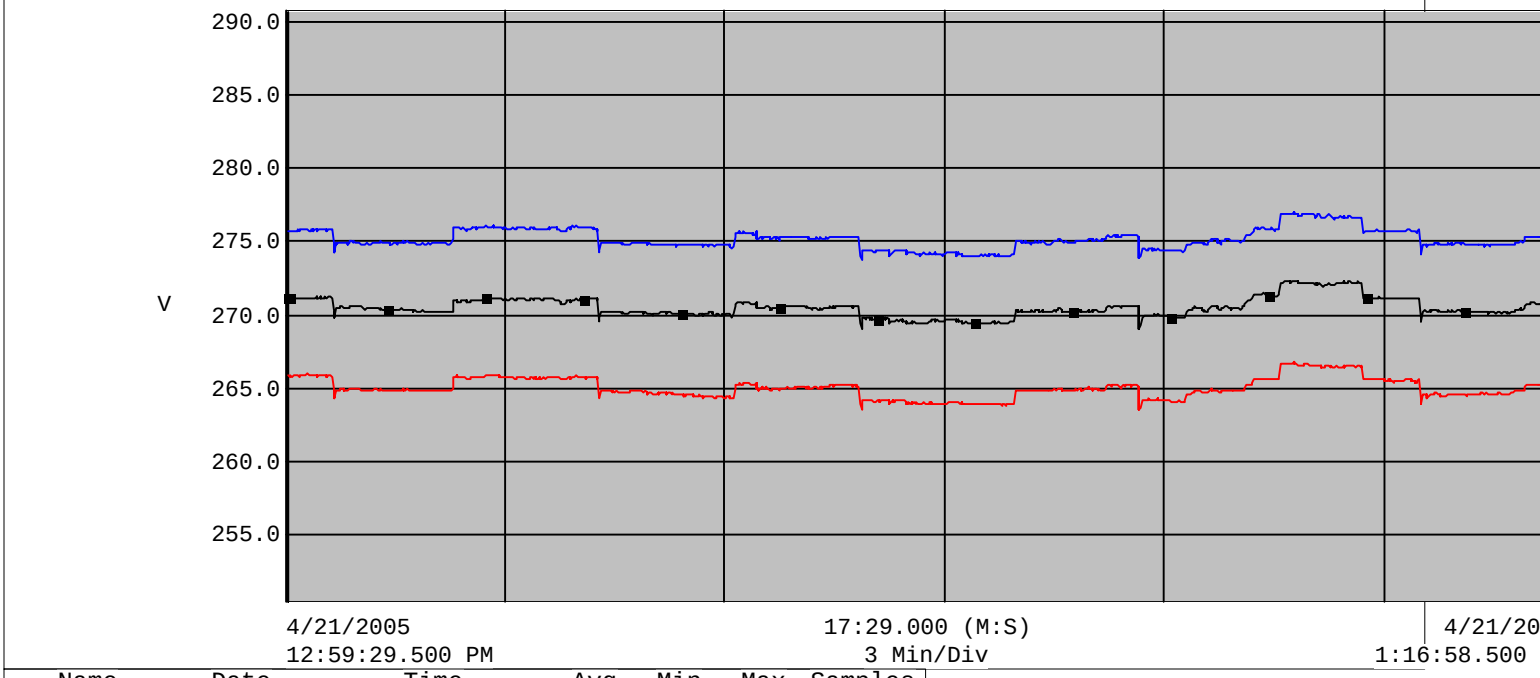
Comments
RECORDED AT MOTOR STARTER OVERLOAD RELAY, GRUNDFOS 37 KW, 50 HP, 460 V MOTOR

AEMC® INSTRUMENTS

WPS D-12

Recording Start Date	4/21/2005 - 12:59:29 PM
Recording Duration	17:29 (m:s)
Instrument ID	Model: 3945 - 1 1:260152 2.7

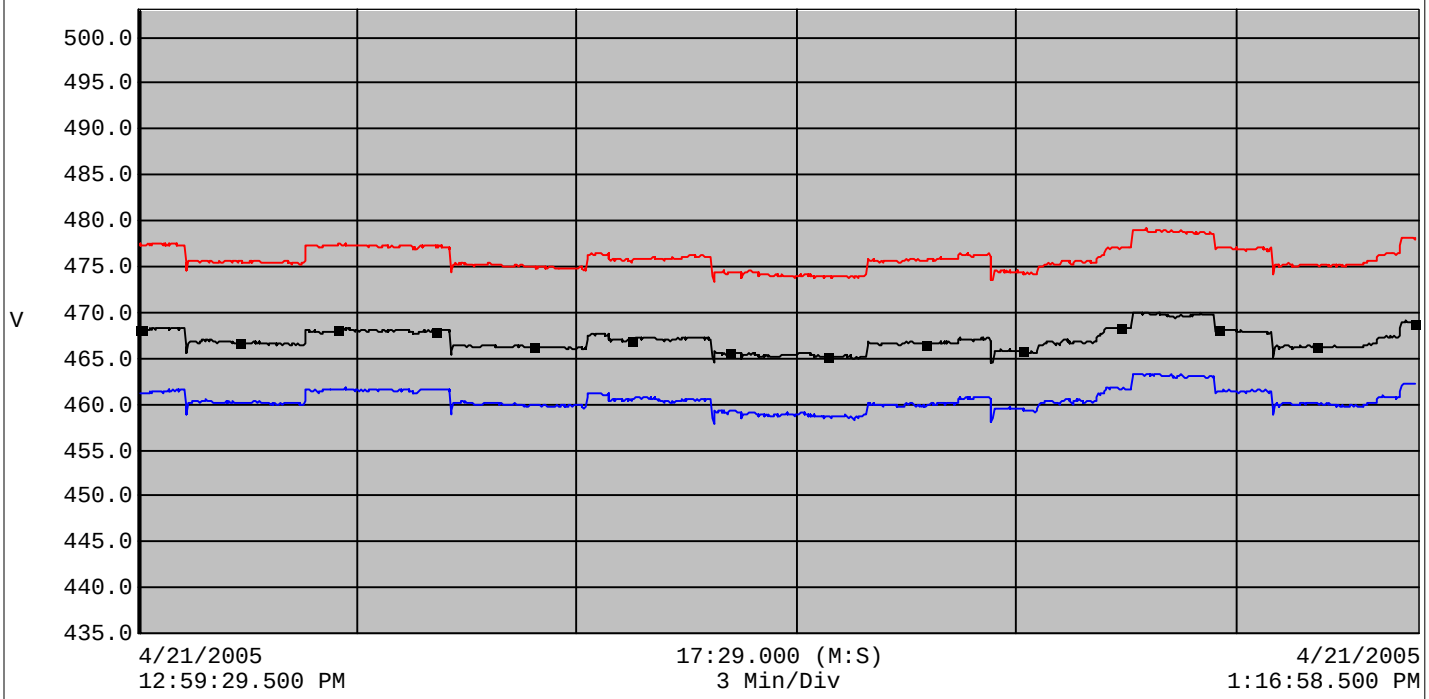
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	4/21/2005	12:59:29.500 PM	270.5	269.0	272.2	1050
Vrms Line2	4/21/2005	12:59:29.500 PM	265.0	263.5	266.7	1050
Vrms Line3	4/21/2005	12:59:29.500 PM	275.2	273.7	276.9	1050

4/21/2005 - 12:59:29.000 PM
Val
271.0 — Vrms Line1
265.8 — Vrms Line2
275.7 — Vrms Line3

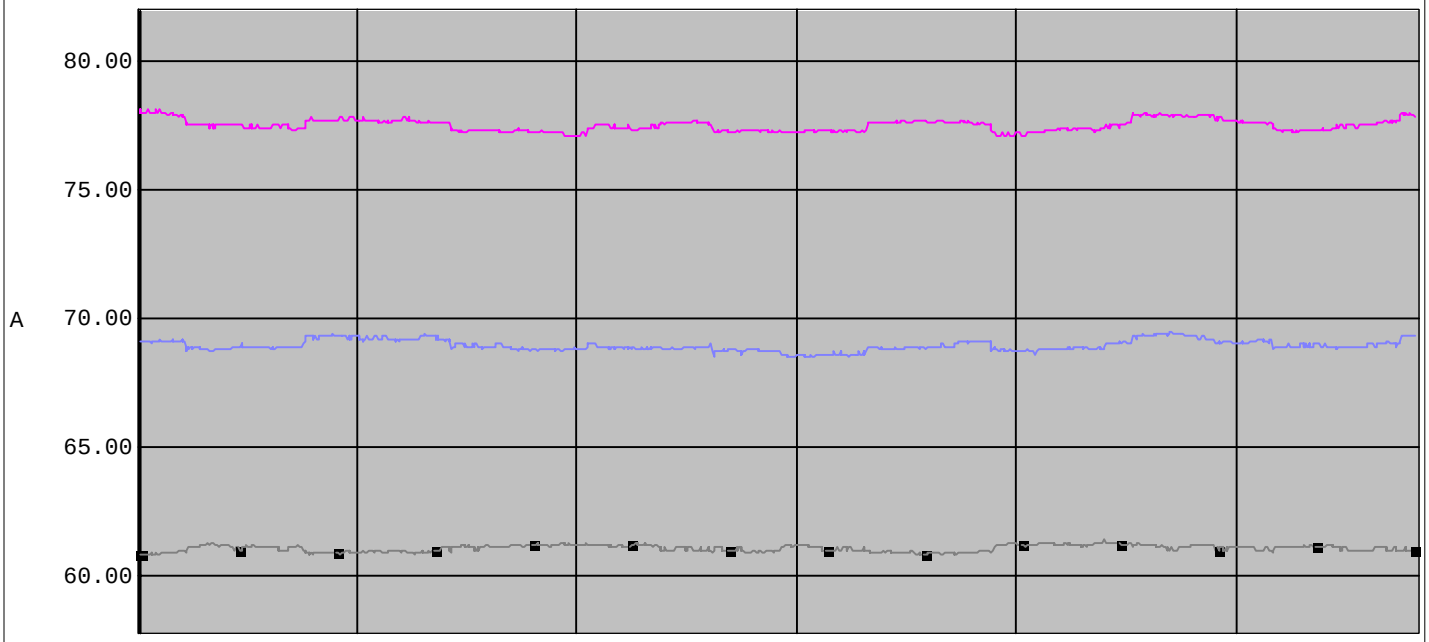
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	4/21/2005	12:59:29.500 PM	466.9	464.4	469.9	V
Urms Line2	4/21/2005	12:59:29.500 PM	475.8	473.2	479.0	V
Urms Line3	4/21/2005	12:59:29.500 PM	460.4	457.8	463.2	V

4/21/2005 - 12:59:29.000 PM
Val
468.0 Urms Line1
477.4 Urms Line2
461.1 Urms Line3

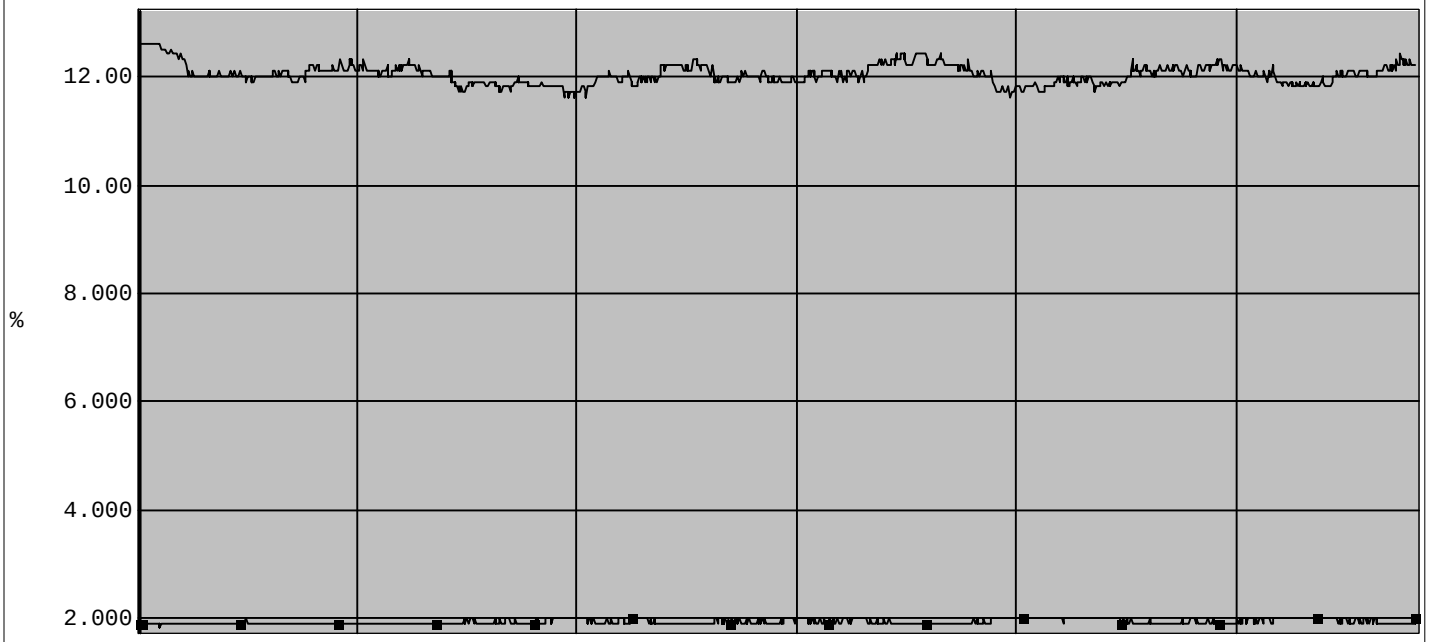
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	4/21/2005	12:59:29.500 PM	61.07	60.80	61.40	A
Arms Line2	4/21/2005	12:59:29.500 PM	77.49	77.10	78.10	A
Arms Line3	4/21/2005	12:59:29.500 PM	68.95	68.50	69.50	A

4/21/2005 - 12:59:29.000 PM
Val
60.80 — Arms Line1
78.10 — Arms Line2
69.10 — Arms Line3

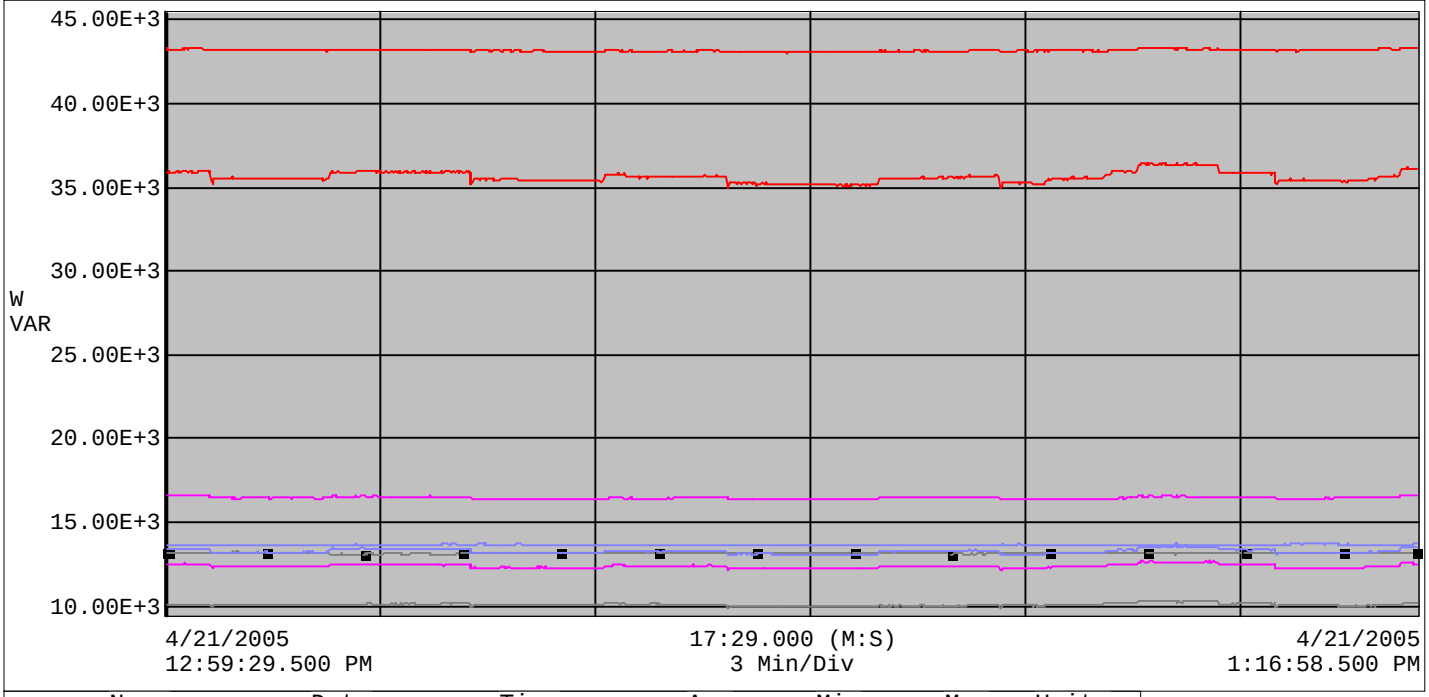
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	4/21/2005	12:59:29.500 PM	1.935	1.800	2.000	%
Aunb(IEEE)	4/21/2005	12:59:29.500 PM	12.03	11.60	12.60	%

4/21/2005 - 12:59:29.000 PM
Val
1.900 —— Vunb(IEEE)
12.60 —— Aunb(IEEE)

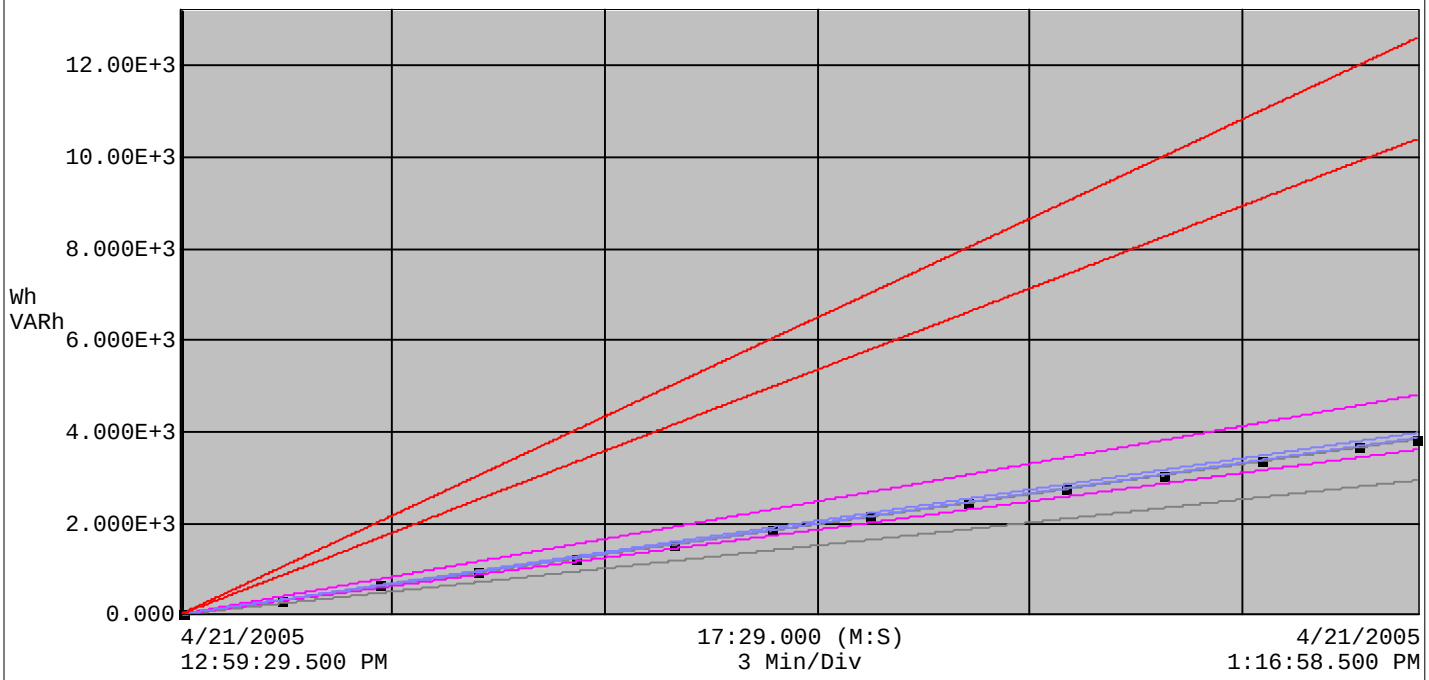
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	4/21/2005	12:59:29.500 PM	13.11E+3	13.03E+3	13.18E+3	W
W Line2	4/21/2005	12:59:29.500 PM	16.41E+3	16.29E+3	16.57E+3	W
W Line3	4/21/2005	12:59:29.500 PM	13.60E+3	13.52E+3	13.66E+3	W
W Sum of Phases	4/21/2005	12:59:29.500 PM	43.12E+3	42.97E+3	43.27E+3	W
VAR Line1	4/21/2005	12:59:29.500 PM	10.03E+3	9.830E+3	10.25E+3	VAR
VAR Line2	4/21/2005	12:59:29.500 PM	12.33E+3	12.09E+3	12.62E+3	VAR
VAR Line3	4/21/2005	12:59:29.500 PM	13.21E+3	12.95E+3	13.54E+3	VAR
VAR Sum of Phases	4/21/2005	12:59:29.500 PM	35.57E+3	34.90E+3	36.36E+3	VAR

4/21/2005 - 12:59:29.000 PM
Val
13.08E+3 — W Line1
16.57E+3 — W Line2
13.55E+3 — W Line3
43.20E+3 — W Sum of Phases
9.981E+3 — VAR Line1
12.48E+3 — VAR Line2
13.39E+3 — VAR Line3
35.85E+3 — VAR Sum of Phases

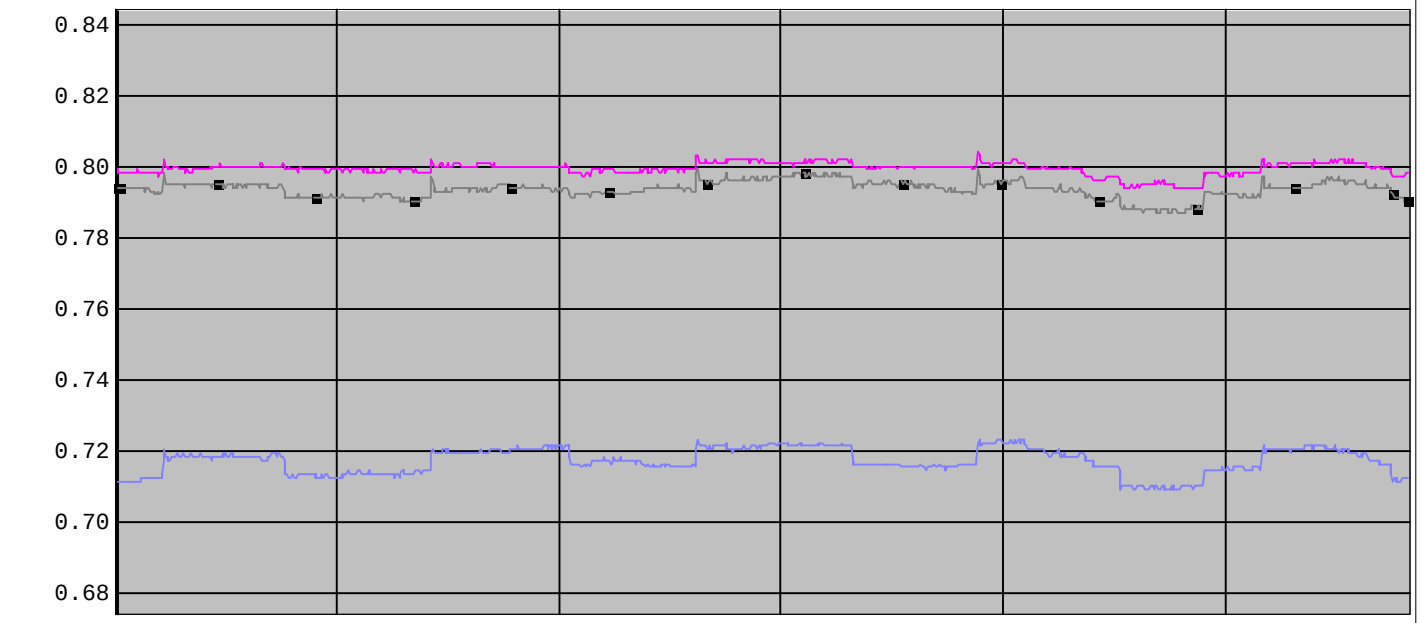
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	4/21/2005	12:59:29.500 PM	1.913E+3	3.617	3.823E+3	Wh
W-hours Line2	4/21/2005	12:59:29.500 PM	2.396E+3	4.675	4.786E+3	Wh
W-hours Line3	4/21/2005	12:59:29.500 PM	1.984E+3	3.752	3.966E+3	Wh
W-hours Sum of Phases	4/21/2005	12:59:29.500 PM	6.293E+3	11.90	12.58E+3	Wh
VAR-hours Line1	4/21/2005	12:59:29.500 PM	1.463E+3	2.767	2.925E+3	VARh
VAR-hours Line2	4/21/2005	12:59:29.500 PM	1.799E+3	3.511	3.595E+3	VARh
VAR-hours Line3	4/21/2005	12:59:29.500 PM	1.929E+3	3.763	3.853E+3	VARh
VAR-hours Sum of Phases	4/21/2005	12:59:29.500 PM	5.190E+3	9.814	10.37E+3	VARh

4/21/2005 - 12:59:29.000 PM
Val
3.617 — W-hours Line1
4.675 — W-hours Line2
3.752 — W-hours Line3
11.90 — W-hours Sum of Phases
2.767 — VAR-hours Line1
3.511 — VAR-hours Line2
3.763 — VAR-hours Line3
9.814 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	4/21/2005	12:59:29.500 PM	0.793	0.787	0.799	
PF Line2	4/21/2005	12:59:29.500 PM	0.799	0.794	0.804	
PF Line3	4/21/2005	12:59:29.500 PM	0.717	0.709	0.723	

4/21/2005 - 12:59:29.000 PM
Val
0.794 — PF Line1
0.799 — PF Line2
0.711 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D12\042105-D12.dvb

Operator	Test Site
MORIKAWA & ASSOCIATES, LLC LYMAN MORIKAWA, PE ,	GWA WPS D-12 ,

Comments
RECORDED AT THE MOTOR STARTER OVERLOAD RELAY. 37 KW (50 HP), 460 VOLTS

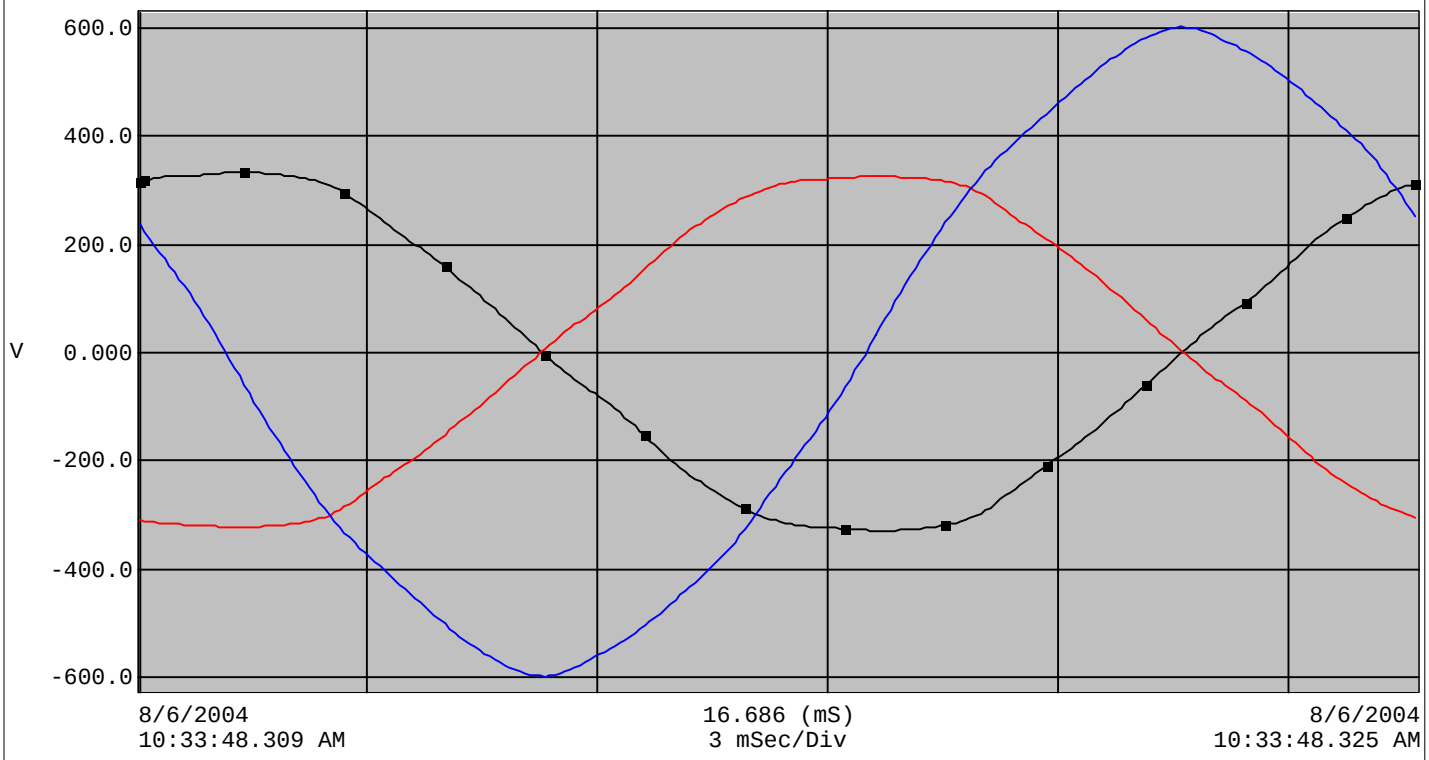
GWA Water Pumping Station Assessment				
Station Name: D-13	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/06/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.45	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	2	0.1	2
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.65	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	2	0.1	35
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0.015	
Pressure	1.5%	1	0.015	
Flow	1.5%	0	0	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.5**

Comments:

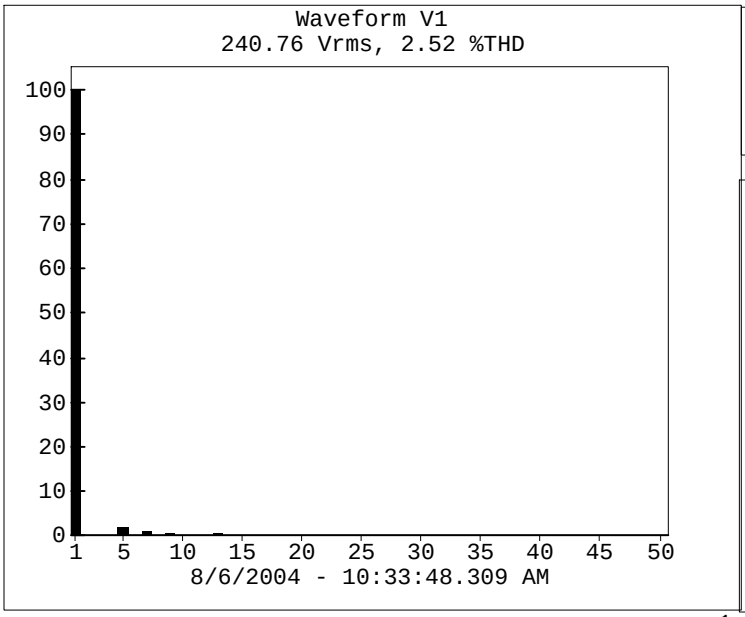
WPS D-13 - Photo

Recording Start Date	8/6/2004 - 10:33:48 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/6/2004	10:33:48.309 AM	16.686	240.8	V
Waveform V2	8/6/2004	10:33:48.309 AM	16.686	236.4	V
Waveform V3	8/6/2004	10:33:48.309 AM	16.686	413.6	V

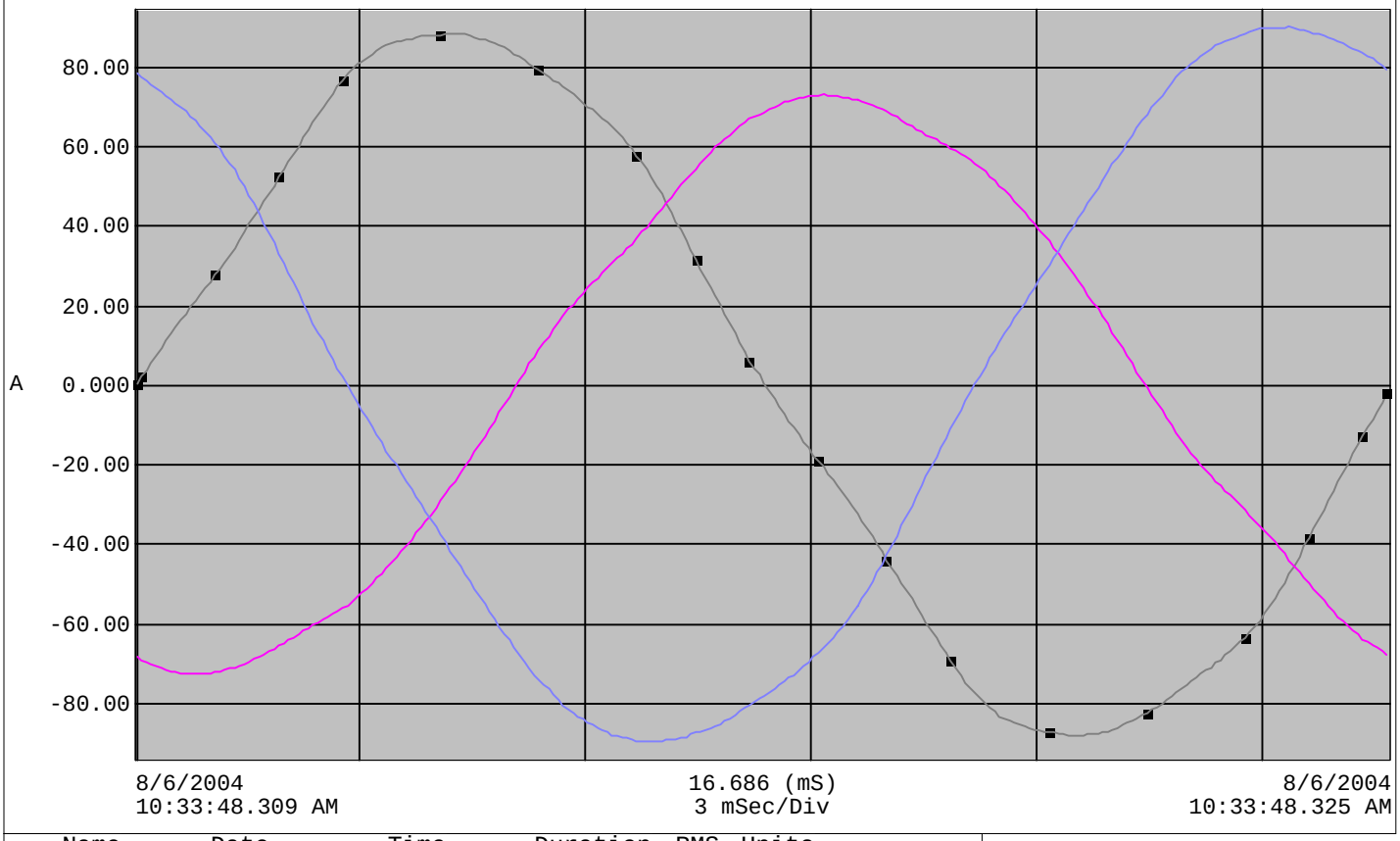


8/6/2004 - 10:33:48.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

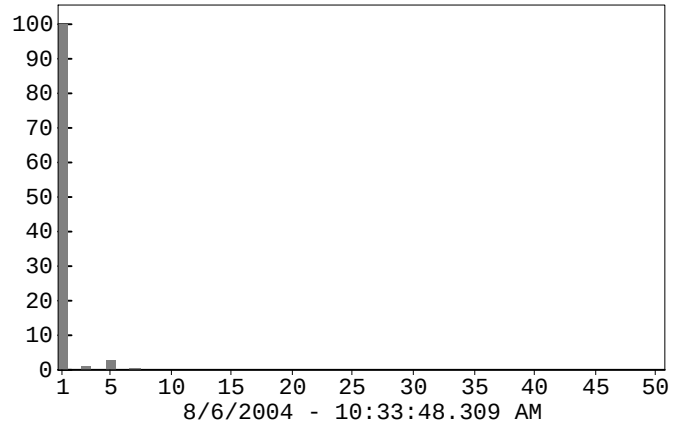
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/6/2004	10:33:48.309 AM	16.686	62.29	A
Waveform I2	8/6/2004	10:33:48.309 AM	16.686	50.88	A
Waveform I3	8/6/2004	10:33:48.309 AM	16.686	64.16	A

Waveform I1
62.29 Arms, 3.51 %THD

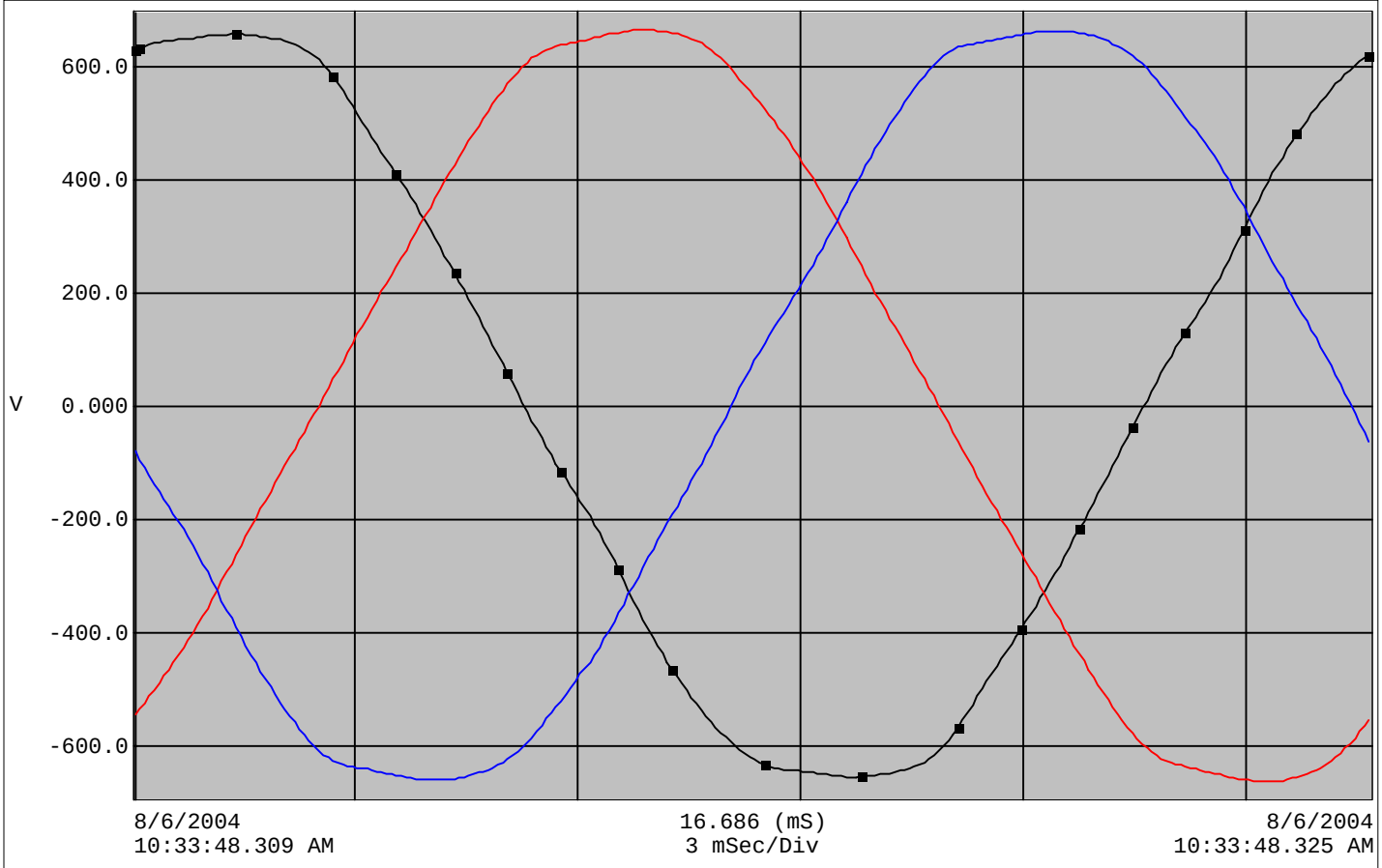


8/6/2004 - 10:33:48.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

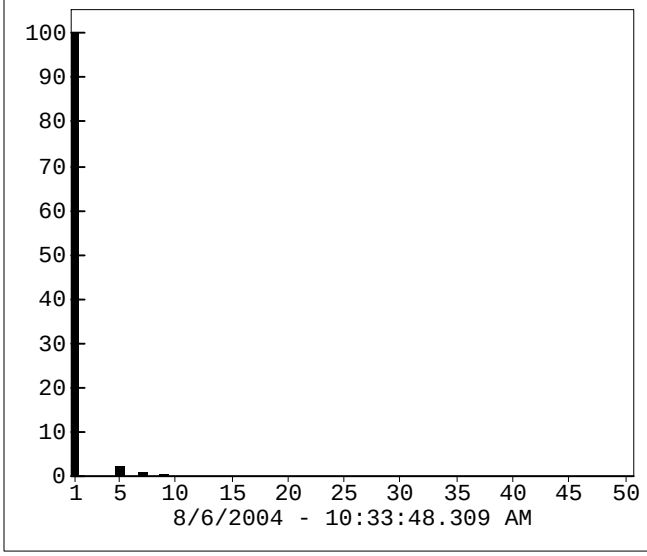
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.1
H03	1.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	3.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/6/2004	10:33:48.309 AM	16.686	477.2	V
Waveform U2	8/6/2004	10:33:48.309 AM	16.686	476.6	V
Waveform U3	8/6/2004	10:33:48.309 AM	16.686	478.6	V

Waveform U1
477.18 Vrms, 2.56 %THD



8/6/2004 - 10:33:48.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 8/6/2004
Start Time: 10:33:48 AM
Duration: 0:0.000 (M:S)
W: 5.491E+3 W
VAR: 13.91E+3 W
VA: 14.96E+3 W
Power Factor: 0.367
Displacement Power Factor: 0.367
TAN: 2.535
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D13\080604-D13-Photo.dvb

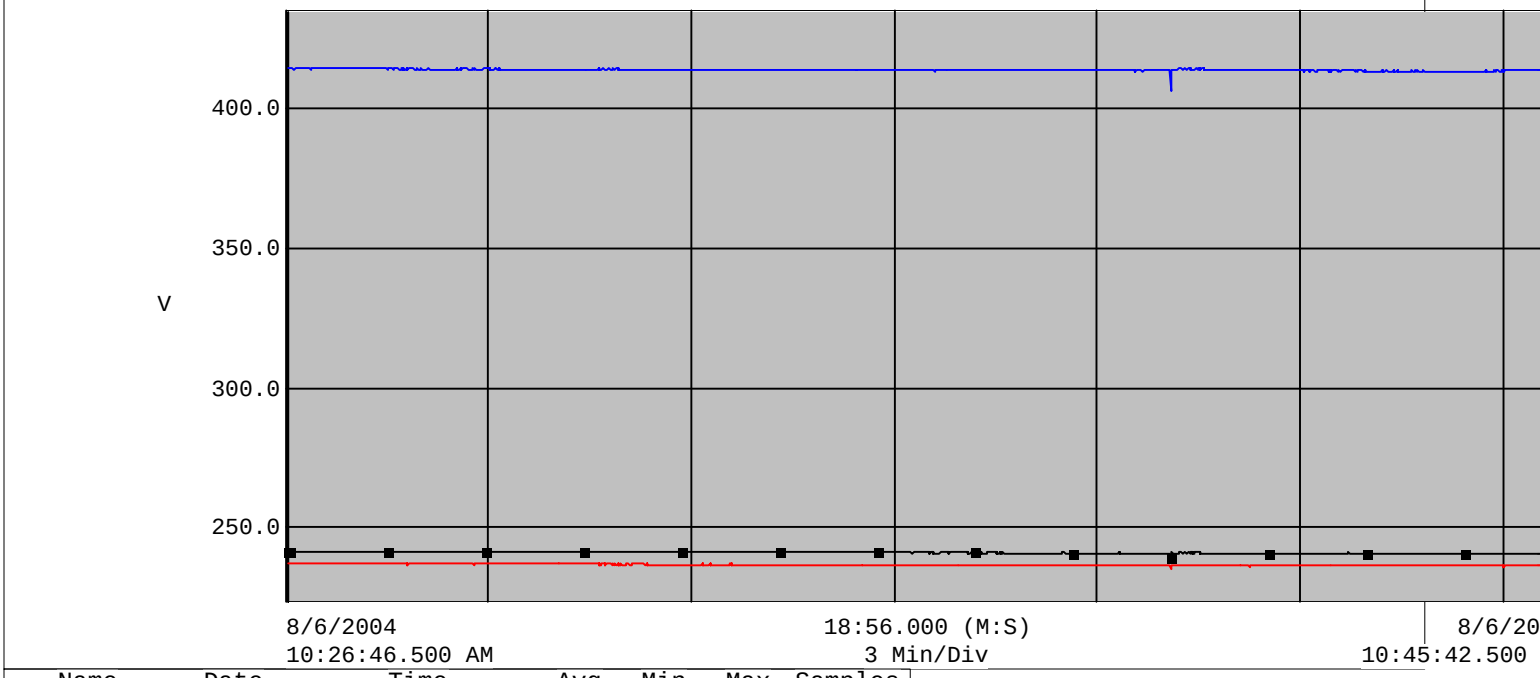
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-13 - Photo ,

Comments
Recorded at motor starter overload relay.

WPS D-13

Recording Start Date	8/6/2004 - 10:26:46 AM
Recording Duration	18:56 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

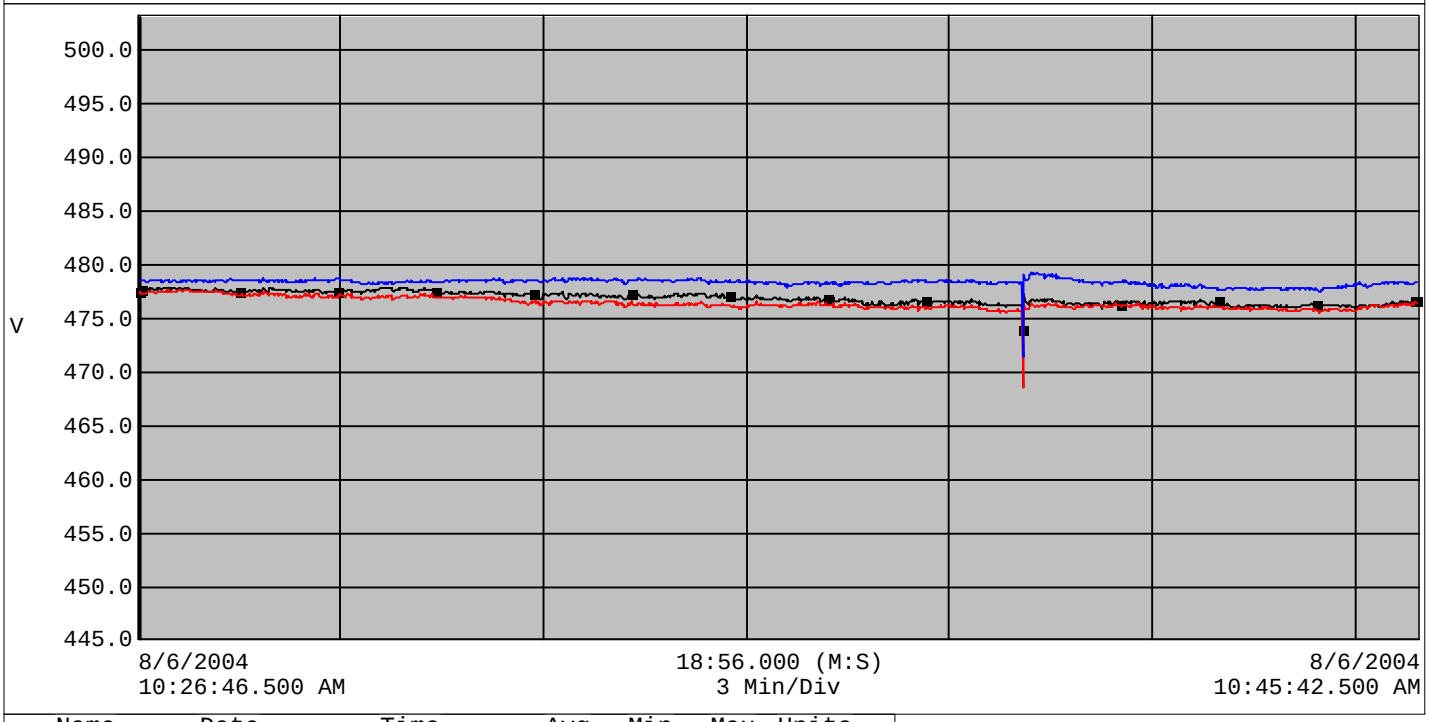
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/6/2004	10:26:46.500 AM	240.6	239.1	241.2	1137
Vrms Line2	8/6/2004	10:26:46.500 AM	236.2	234.8	236.8	1137
Vrms Line3	8/6/2004	10:26:46.500 AM	413.4	405.8	414.0	1137

8/6/2004 - 10:26:46.000 AM
Val
241.1 — Vrms Line1
236.7 — Vrms Line2
413.9 — Vrms Line3

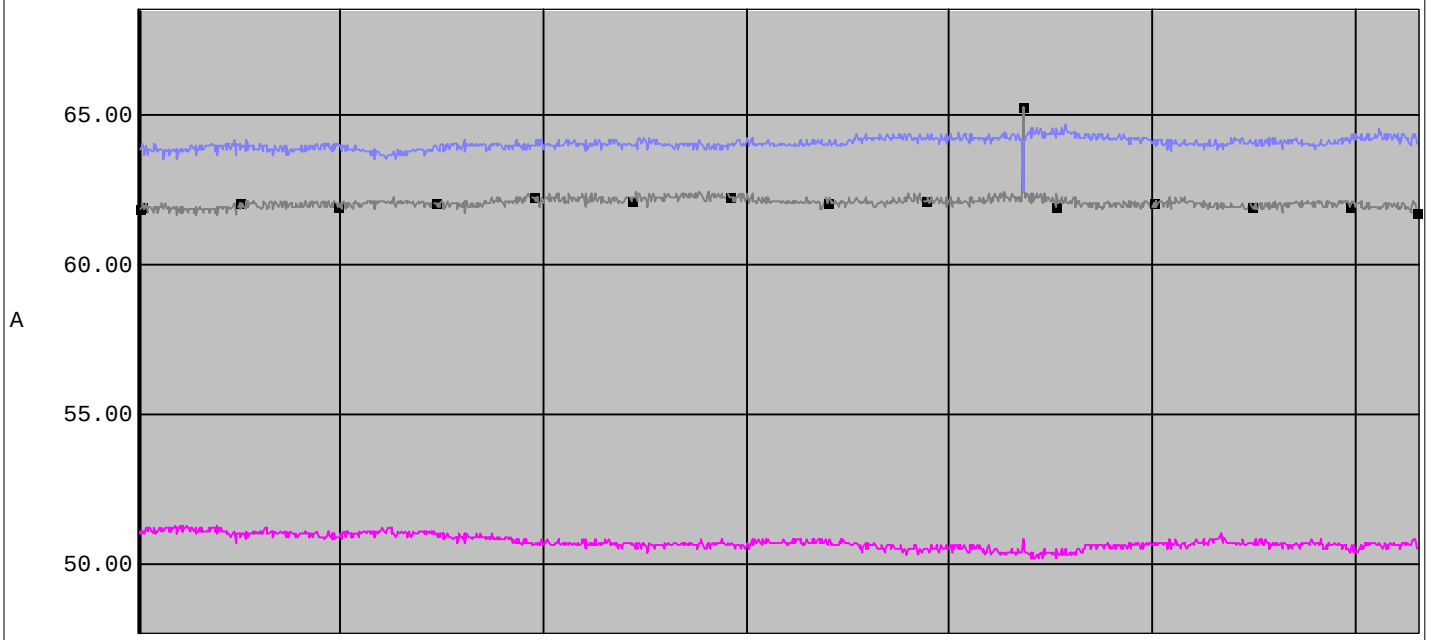
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/6/2004	10:26:46.500 AM	476.9	473.9	477.9	V
Urms Line2	8/6/2004	10:26:46.500 AM	476.4	468.6	477.7	V
Urms Line3	8/6/2004	10:26:46.500 AM	478.3	471.4	479.2	V

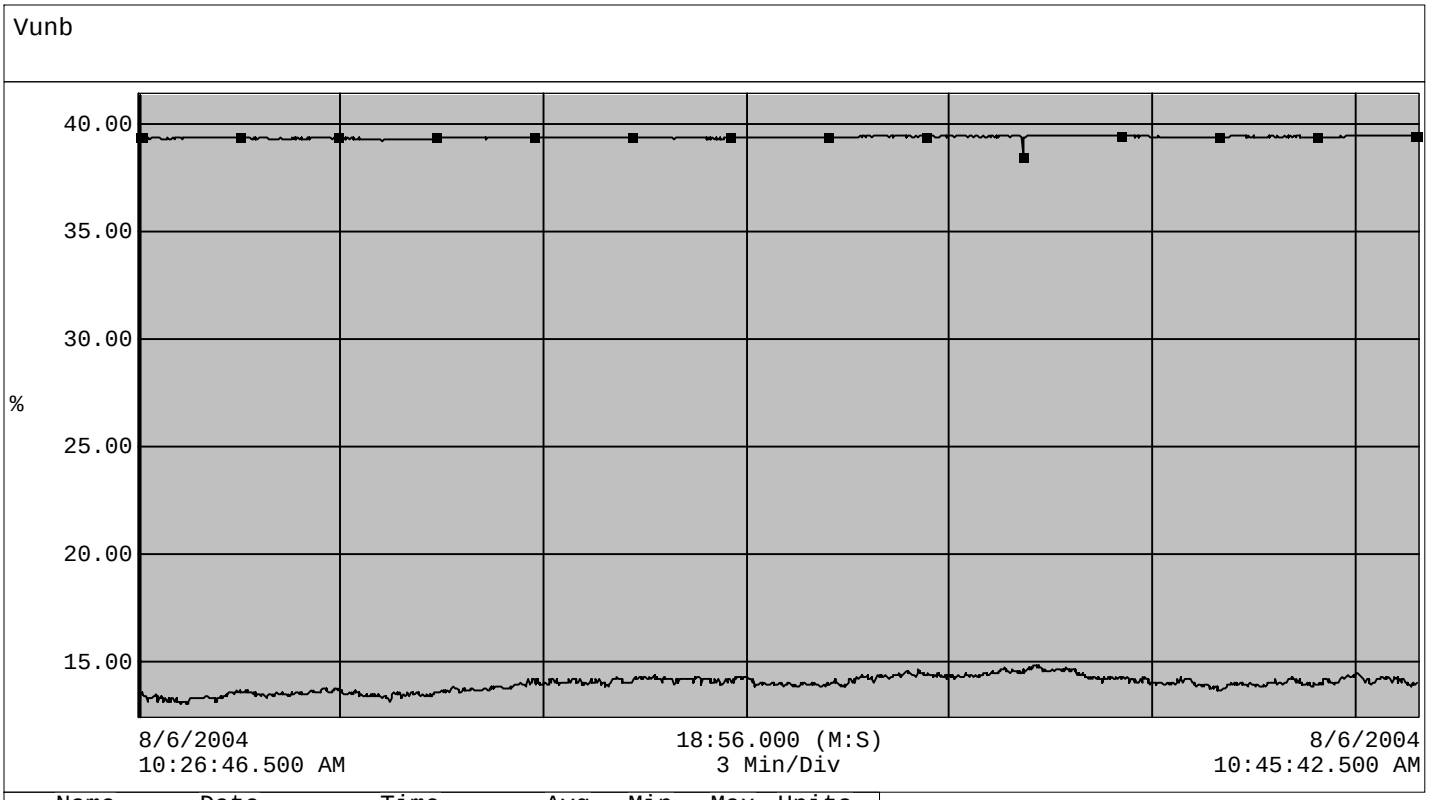
8/6/2004 - 10:26:46.000 AM
Val
477.7 Urms Line1
477.5 Urms Line2
478.6 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/6/2004	10:26:46.500 AM	62.04	61.60	65.20	A
Arms Line2	8/6/2004	10:26:46.500 AM	50.73	50.20	51.30	A
Arms Line3	8/6/2004	10:26:46.500 AM	64.00	62.40	64.60	A

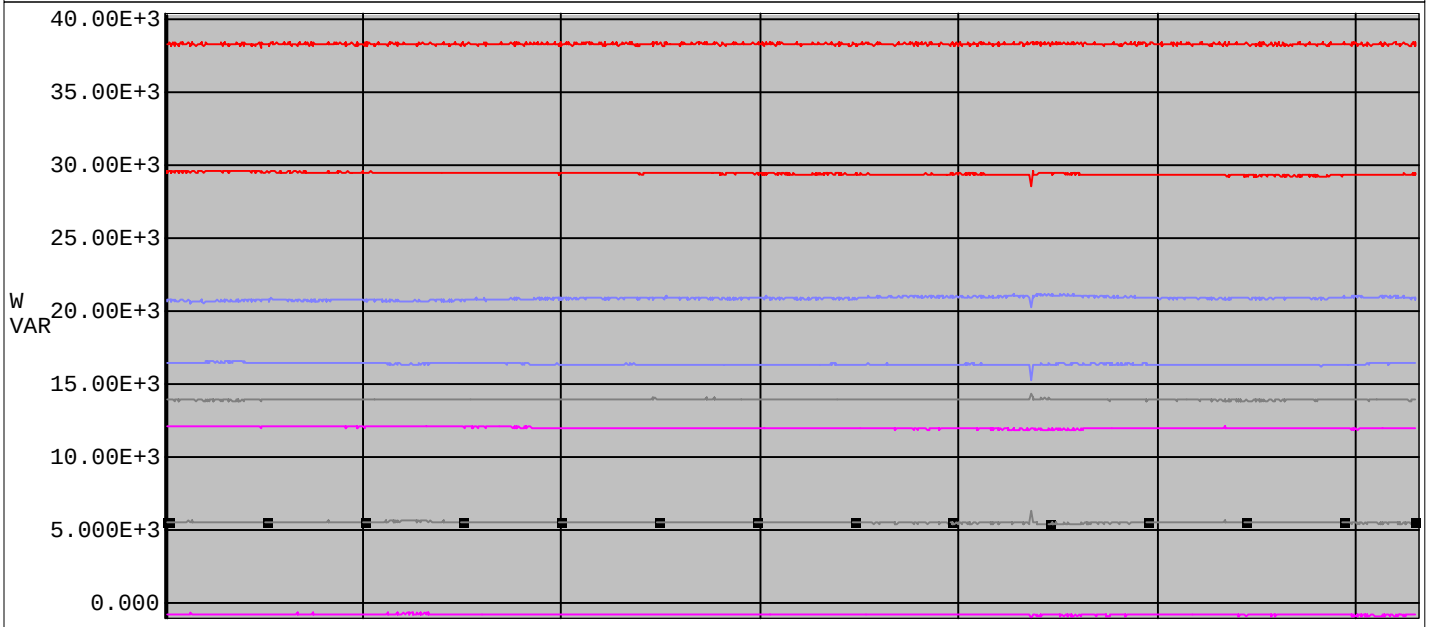
8/6/2004 - 10:26:46.000 AM
Val
61.80 — Arms Line1
51.10 — Arms Line2
63.80 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/6/2004	10:26:46.500 AM	39.31	38.40	39.40	%
Aunb(IEEE)	8/6/2004	10:26:46.500 AM	13.91	13.00	14.80	%

8/6/2004 - 10:26:46.000 AM
Val
39.30 —— Vunb(IEEE)
13.20 —— Aunb(IEEE)

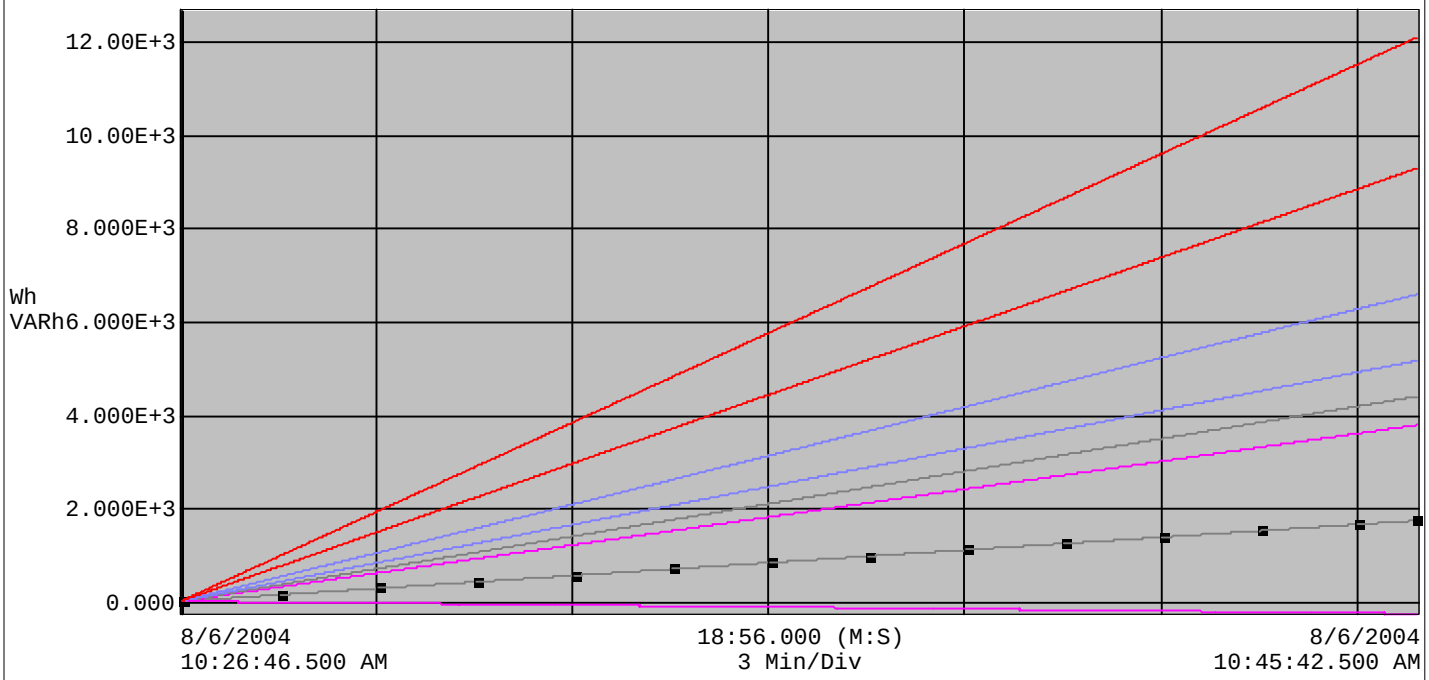
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/6/2004	10:26:46.500 AM	5.473E+3	5.348E+3	6.209E+3	W
W Line2	8/6/2004	10:26:46.500 AM	11.95E+3	11.82E+3	12.12E+3	W
W Line3	8/6/2004	10:26:46.500 AM	20.82E+3	20.23E+3	21.13E+3	W
W Sum of Phases	8/6/2004	10:26:46.500 AM	38.25E+3	38.00E+3	38.42E+3	W
VAR Line1	8/6/2004	10:26:46.500 AM	13.89E+3	13.79E+3	14.29E+3	VAR
VAR Line2	8/6/2004	10:26:46.500 AM	-841.7	-1.045E+3	-755.7	VAR
VAR Line3	8/6/2004	10:26:46.500 AM	16.32E+3	15.26E+3	16.51E+3	VAR
VAR Sum of Phases	8/6/2004	10:26:46.500 AM	29.37E+3	28.51E+3	29.53E+3	VAR

8/6/2004 - 10:26:46.000 AM
Val
5.500E+3 — W Line1
12.07E+3 — W Line2
20.66E+3 — W Line3
38.22E+3 — W Sum of Phases
13.85E+3 — VAR Line1
-789.0 — VAR Line2
16.44E+3 — VAR Line3
29.50E+3 — VAR Sum of Phases

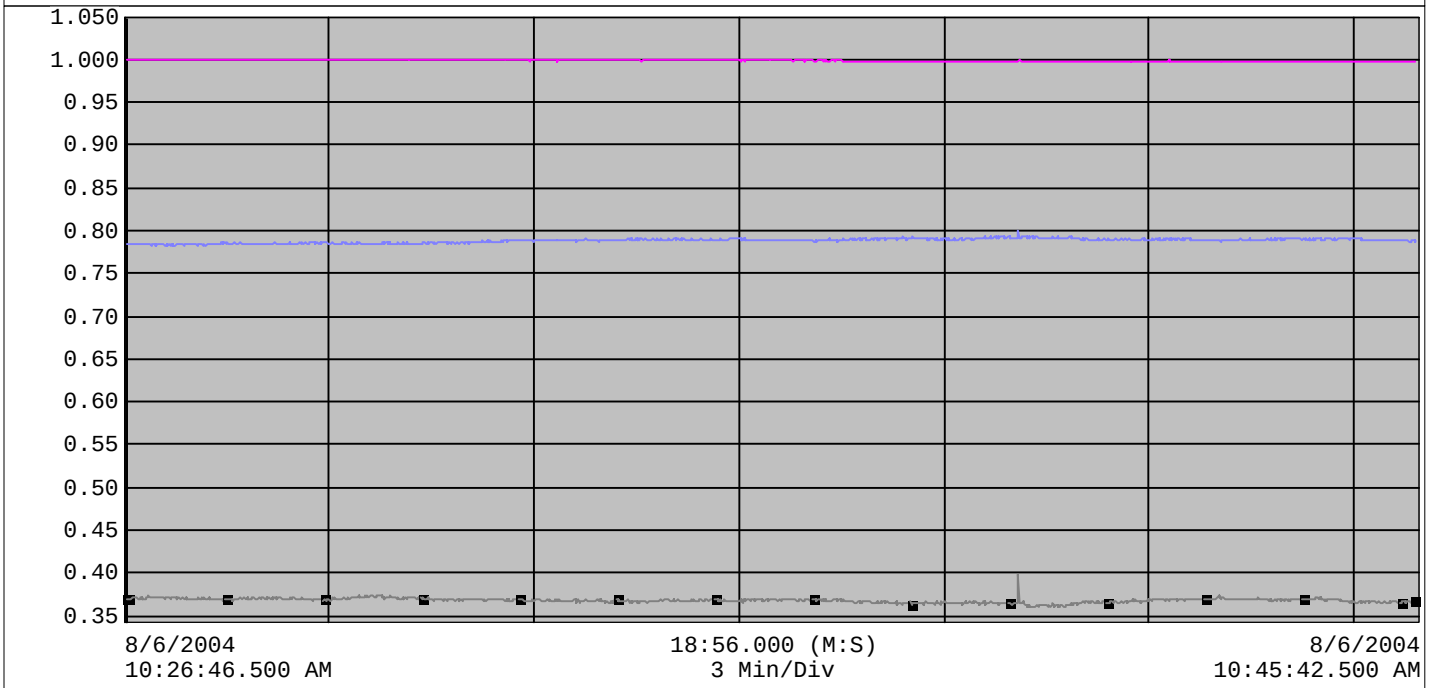
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/6/2004	10:26:46.500 AM	867.0	1.530	1.728E+3	Wh
W-hours Line2	8/6/2004	10:26:46.500 AM	1.894E+3	3.341	3.775E+3	Wh
W-hours Line3	8/6/2004	10:26:46.500 AM	3.284E+3	5.821	6.576E+3	Wh
W-hours Sum of Phases	8/6/2004	10:26:46.500 AM	6.045E+3	10.69	12.08E+3	Wh
VAR-hours Line1	8/6/2004	10:26:46.500 AM	2.196E+3	3.883	4.387E+3	VARh
VAR-hours Line2	8/6/2004	10:26:46.500 AM	-129.8	-265.9	-0.211	VARh
VAR-hours Line3	8/6/2004	10:26:46.500 AM	2.583E+3	4.562	5.154E+3	VARh
VAR-hours Sum of Phases	8/6/2004	10:26:46.500 AM	4.649E+3	8.209	9.275E+3	VARh

8/6/2004 - 10:26:46.000 AM
Val
1.530 — W-hours Line1
3.341 — W-hours Line2
5.821 — W-hours Line3
10.69 — W-hours Sum of Phases
3.883 — VAR-hours Line1
-0.211 — VAR-hours Line2
4.562 — VAR-hours Line3
8.209 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/6/2004	10:26:46.500 AM	0.367	0.359	0.398	
PF Line2	8/6/2004	10:26:46.500 AM	0.998	0.996	0.998	
PF Line3	8/6/2004	10:26:46.500 AM	0.787	0.781	0.798	

8/6/2004 - 10:26:46.000 AM
Val
0.369 — PF Line1
0.998 — PF Line2
0.782 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D13\080604-D13.dvb

Operator	Test Site
Morikawa & Assocates, LLC Lyman Morikawa, PE ,	GWA - WPS D-13 ,

Comments
Recorded at motor starter overload relay.

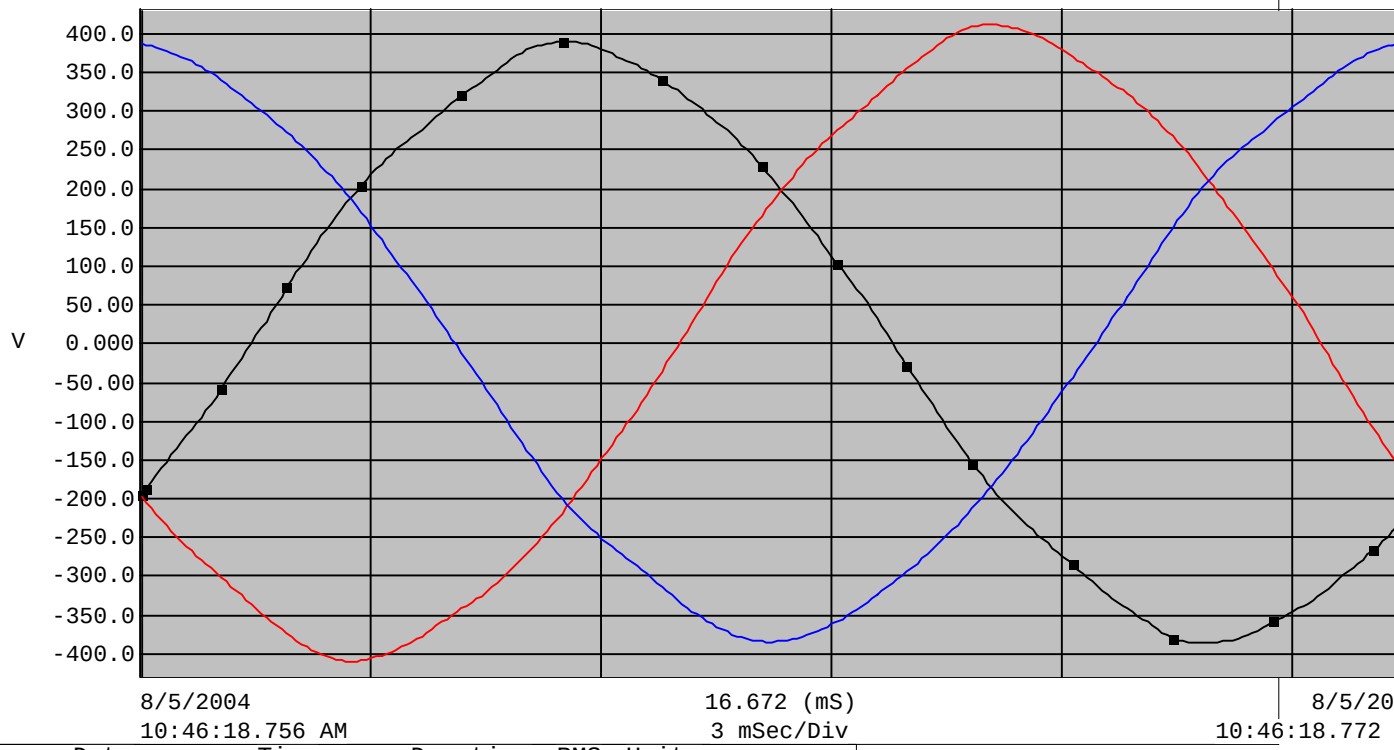
GWA Water Pumping Station Assessment				
Station Name: D-14	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/05/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.35	
Main Disconnect	10.0%	2	0.2	14
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.5	
Main Breaker	5.0%	2	0.1	36
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.07	
Main Breaker	1.0%	0	0	42
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	2	0.02	42
Wiring	1.0%	2	0.02	37
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.035	
Pressure	1.5%	0	0	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.2**

Comments:

WPS D-14 - Photo

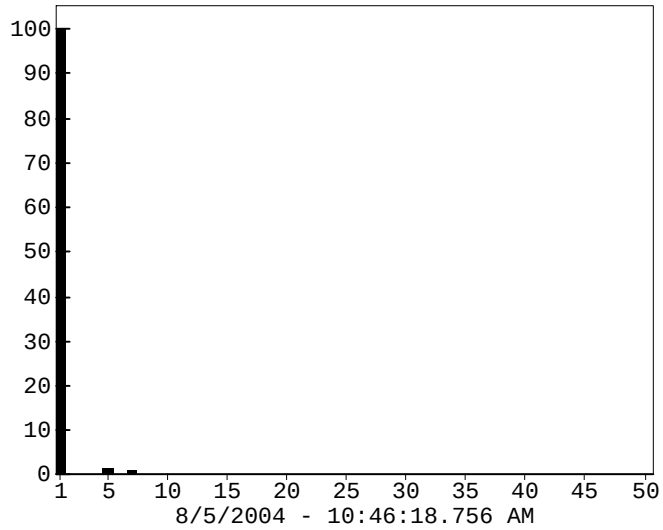
Recording Start Date	8/5/2004 - 10:46:18 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/5/2004	10:46:18.756 AM	16.672	269.3	V
Waveform V2	8/5/2004	10:46:18.756 AM	16.672	283.3	V
Waveform V3	8/5/2004	10:46:18.756 AM	16.672	268.0	V

Waveform V1
269.27 Vrms, 1.88 %THD

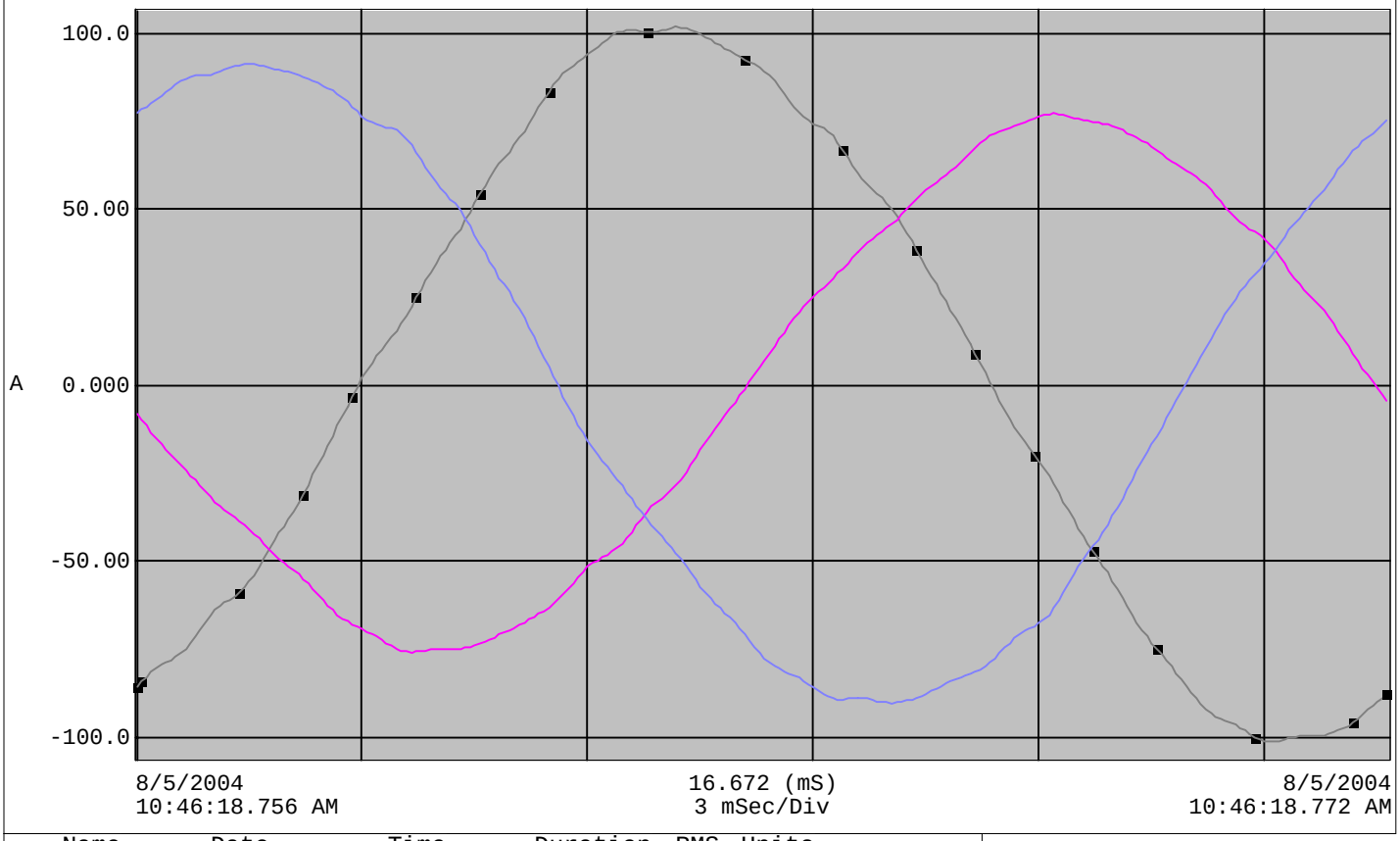


8/5/2004 - 10:46:18.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

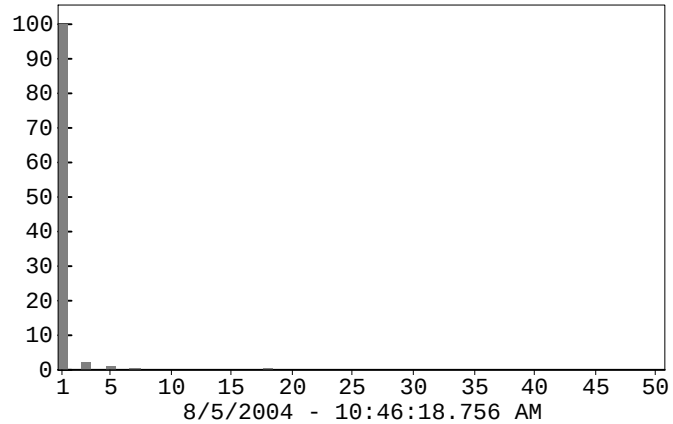
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.6	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/5/2004	10:46:18.756 AM	16.672	70.80	A
Waveform I2	8/5/2004	10:46:18.756 AM	16.672	52.68	A
Waveform I3	8/5/2004	10:46:18.756 AM	16.672	64.94	A

Waveform I1
70.80 Arms, 3.21 %THD

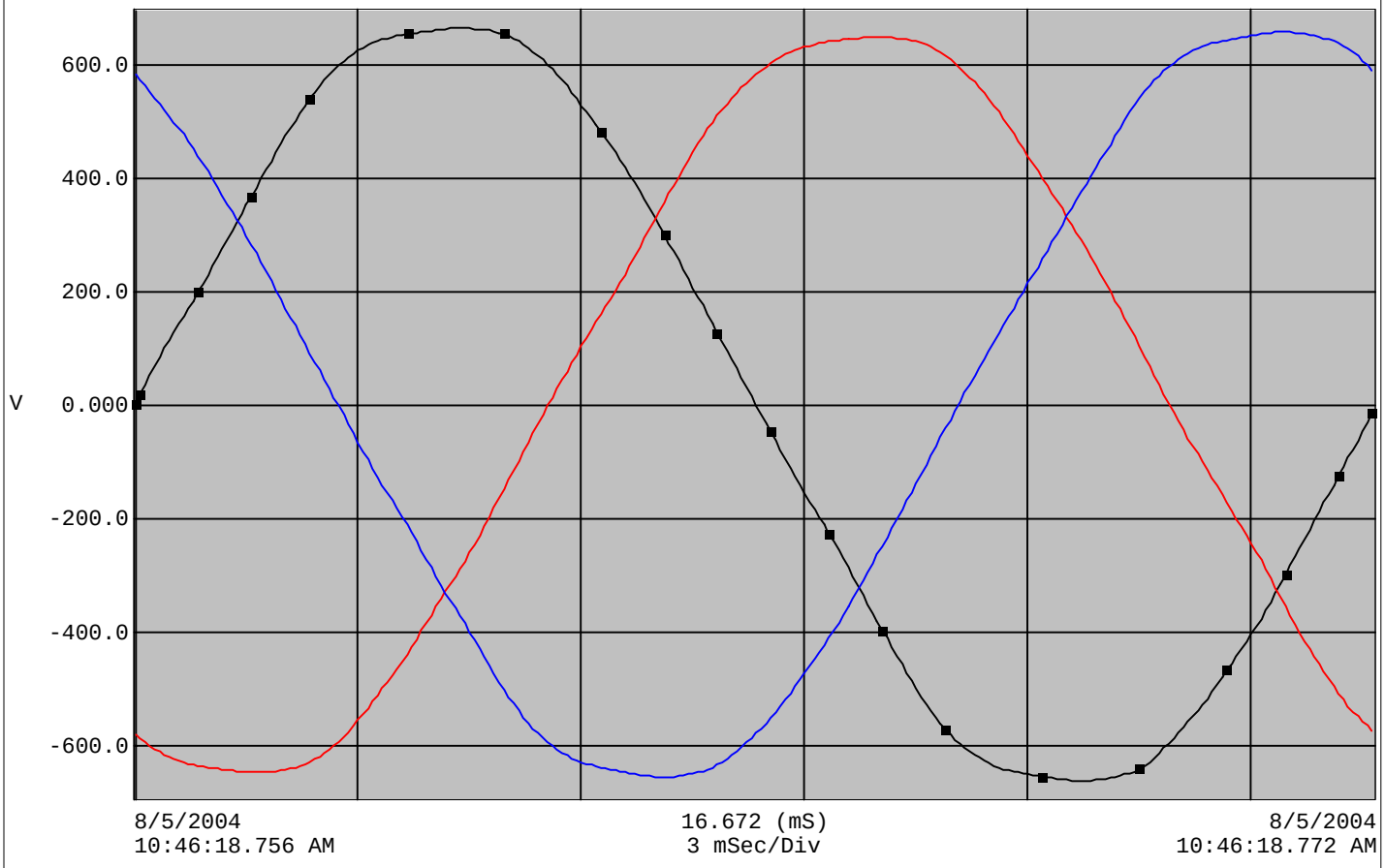


8/5/2004 - 10:46:18.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

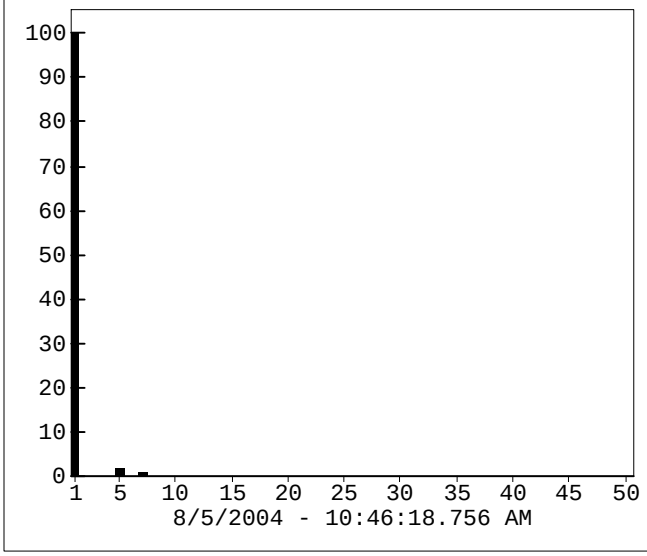
	(%)		(%)		(%)
H01	100.0	H18	0.6	H35	0.0
H02	0.2	H19	0.4	H36	0.0
H03	2.5	H20	0.1	H37	0.0
H04	0.2	H21	0.2	H38	0.0
H05	1.5	H22	0.3	H39	0.0
H06	0.3	H23	0.1	H40	0.0
H07	0.9	H24	0.1	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.2	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.3	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/5/2004	10:46:18.756 AM	16.672	479.6	V
Waveform U2	8/5/2004	10:46:18.756 AM	16.672	469.1	V
Waveform U3	8/5/2004	10:46:18.756 AM	16.672	472.3	V

Waveform U1
479.57 Vrms, 2.00 %THD



8/5/2004 - 10:46:18.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.8	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/5/2004
Start Time: 10:46:18 AM
Duration: 0:0.000 (M:S)
W: 15.80E+3 W
VAR: 10.71E+3 W
VA: 19.09E+3 W
Power Factor: 0.828
Displacement Power Factor: 0.828
TAN: 0.677
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D14\080504-D14-Photo.dvb

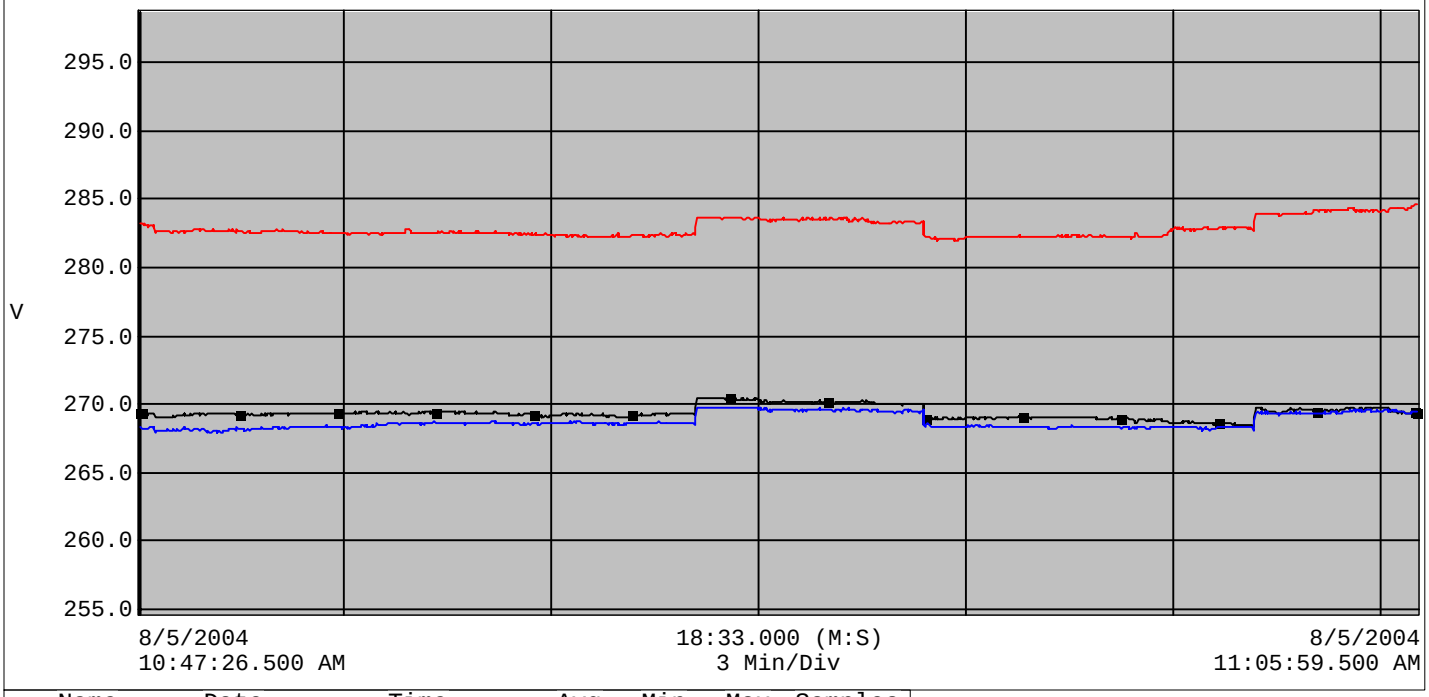
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-14 - Photo ,

Comments
Recording at motor starter overload relay.

WPS D-14

Recording Start Date	8/5/2004 - 10:47:26 AM
Recording Duration	18:33 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

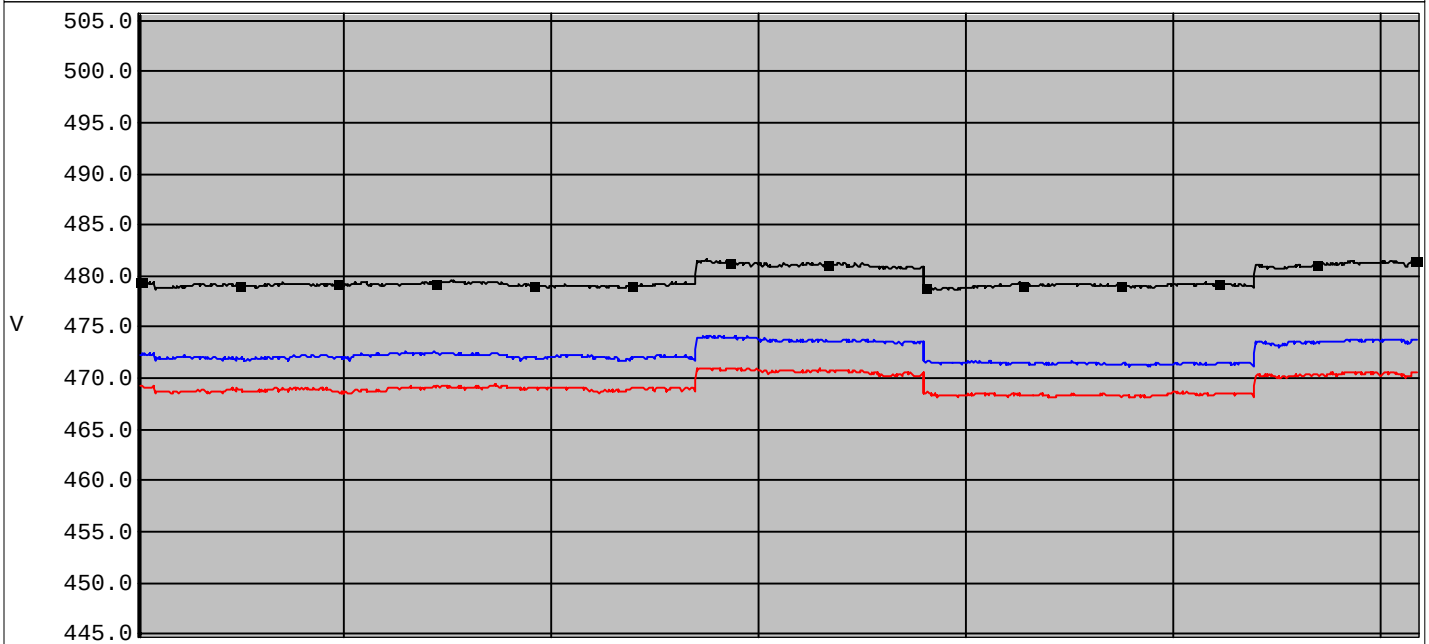
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/5/2004	10:47:26.500 AM	269.3	268.3	270.4	1114
Vrms Line2	8/5/2004	10:47:26.500 AM	282.8	281.9	284.5	1114
Vrms Line3	8/5/2004	10:47:26.500 AM	268.7	267.9	269.7	1114

8/5/2004 - 10:47:26.000 AM
Val
269.2 Vrms Line1
283.1 Vrms Line2
268.2 Vrms Line3

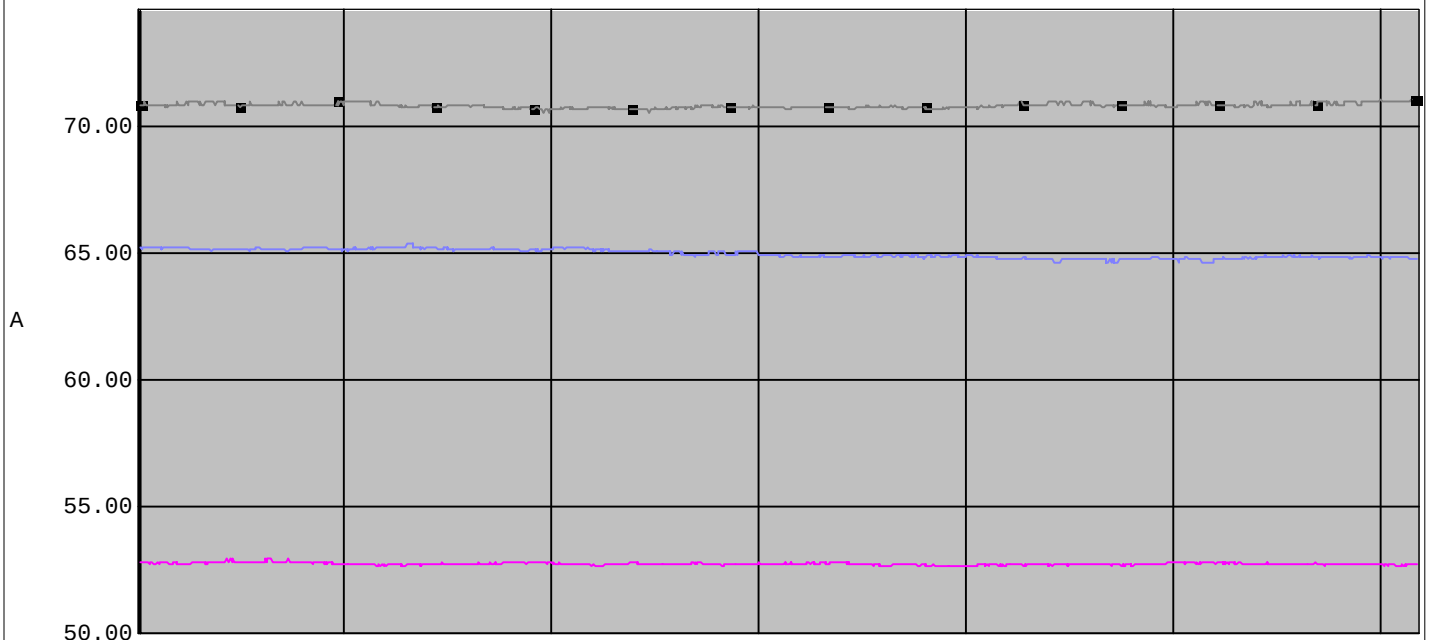
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/5/2004	10:47:26.500 AM	479.6	478.5	481.5	V
Urms Line2	8/5/2004	10:47:26.500 AM	469.2	468.0	470.9	V
Urms Line3	8/5/2004	10:47:26.500 AM	472.3	471.1	474.0	V

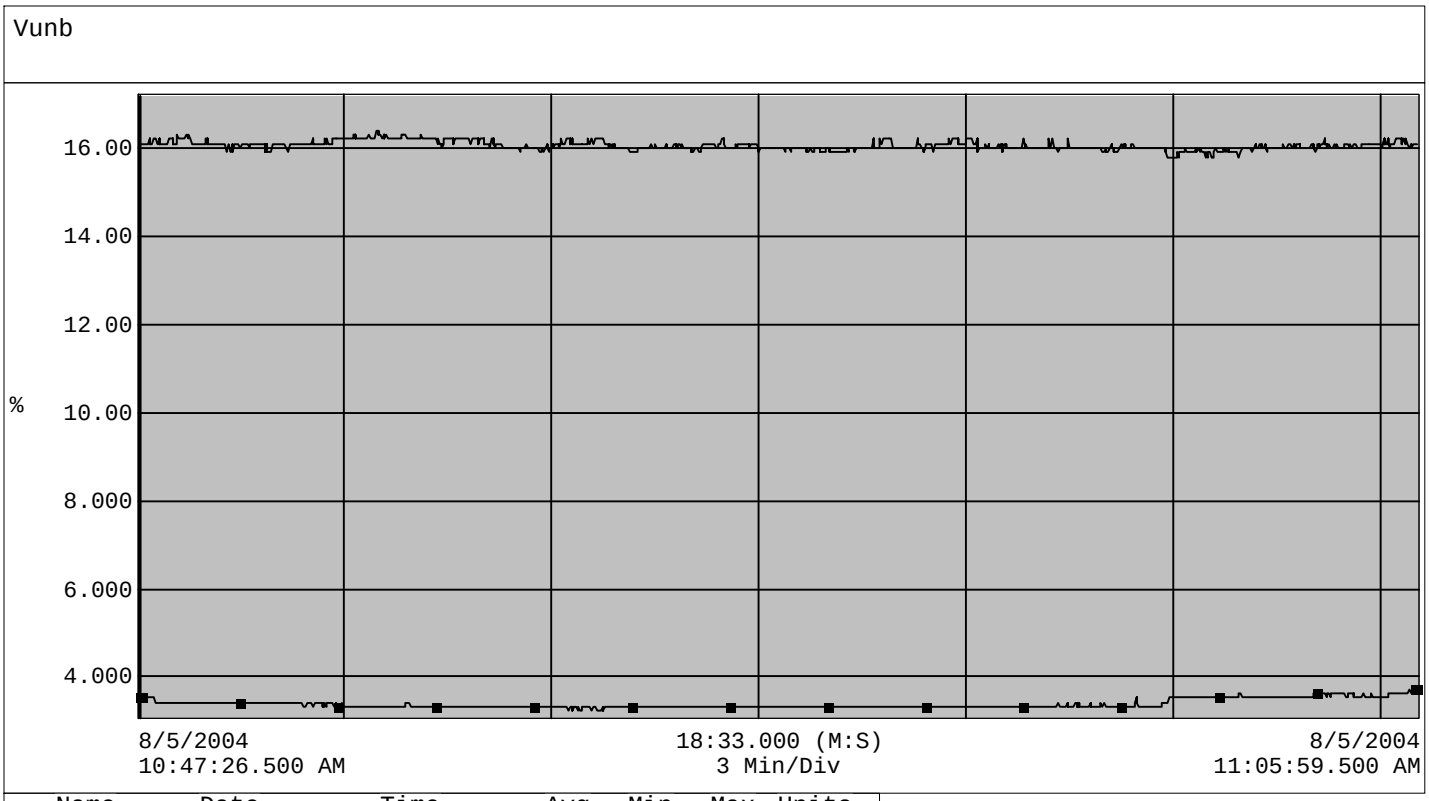
8/5/2004 - 10:47:26.000 AM
Val
479.3 — Urms Line1
469.1 — Urms Line2
472.2 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/5/2004	10:47:26.500 AM	70.76	70.50	71.00	A
Arms Line2	8/5/2004	10:47:26.500 AM	52.72	52.60	52.90	A
Arms Line3	8/5/2004	10:47:26.500 AM	64.93	64.60	65.30	A

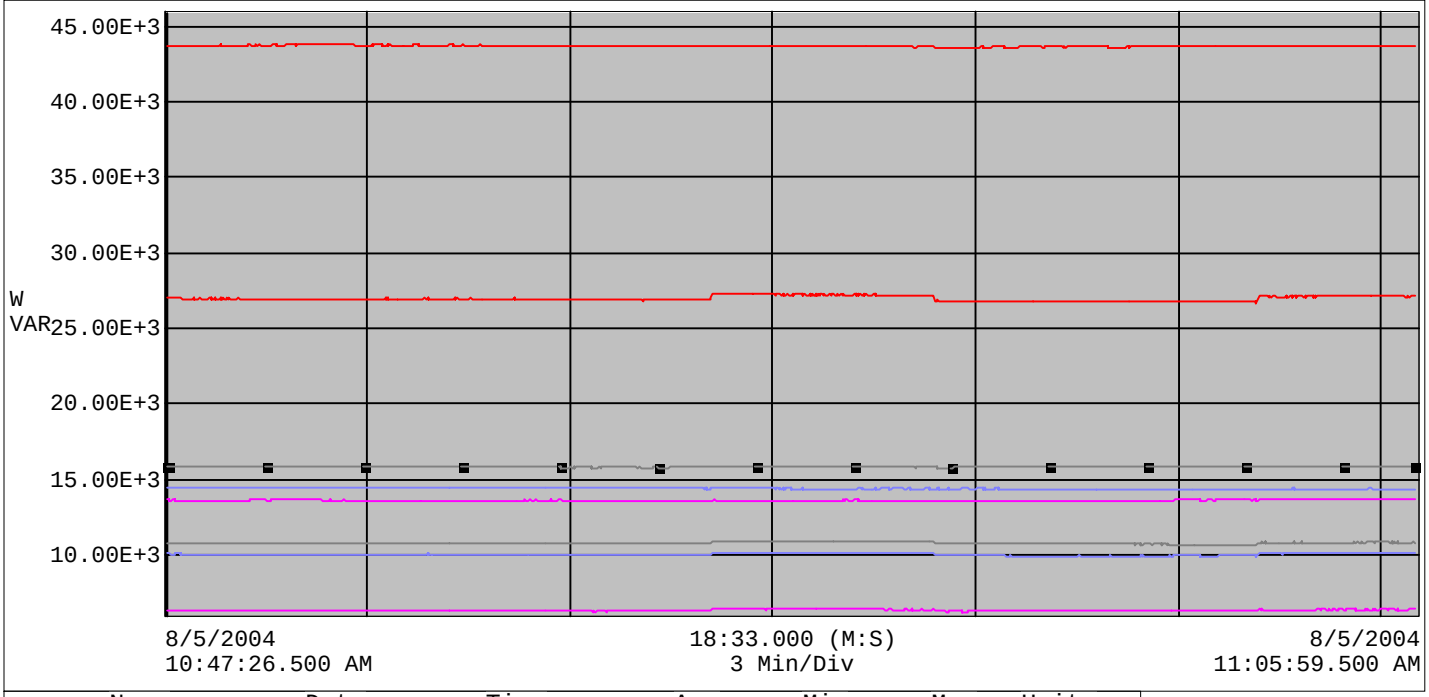
8/5/2004 - 10:47:26.000 AM
Val
70.80 — Arms Line1
52.80 — Arms Line2
65.20 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/5/2004	10:47:26.500 AM	3.361	3.200	3.700	%
Aunb(IEEE)	8/5/2004	10:47:26.500 AM	16.06	15.80	16.40	%

8/5/2004 - 10:47:26.000 AM
Val
3.500 —— Vunb(IEEE)
16.10 —— Aunb(IEEE)

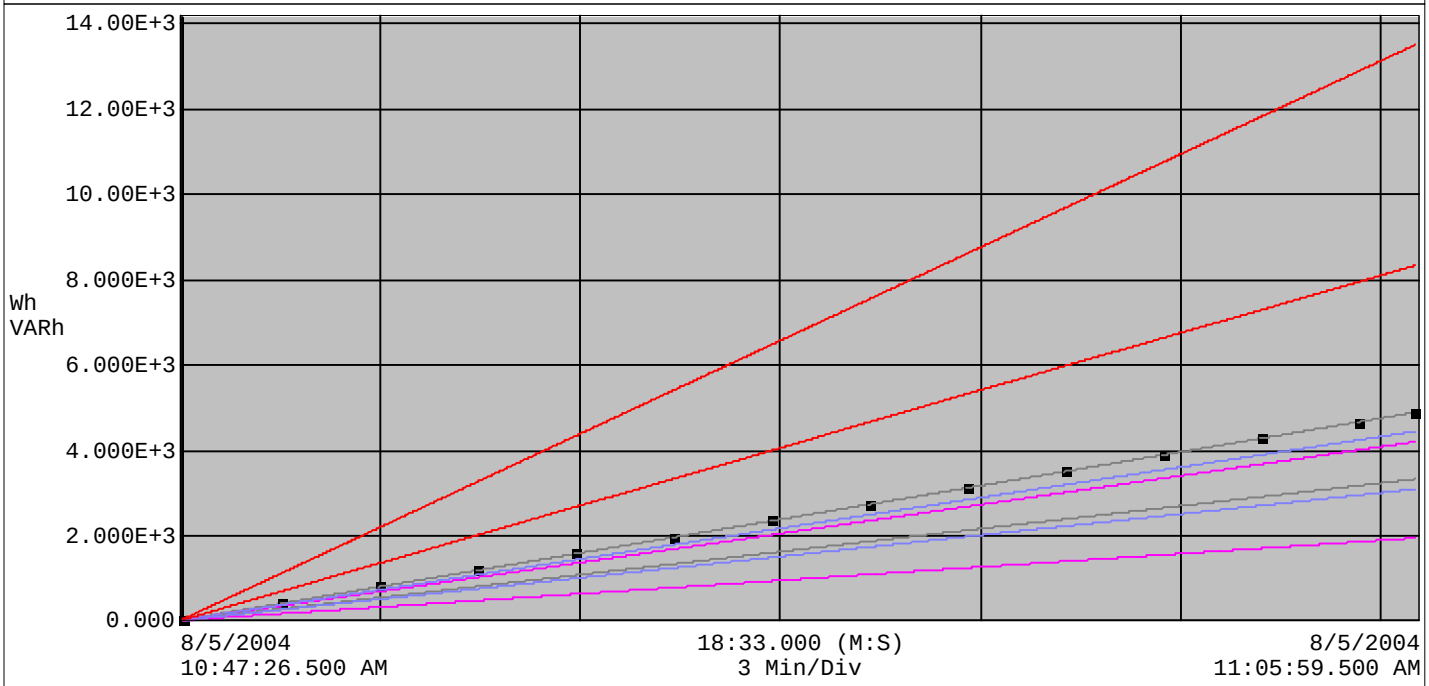
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/5/2004	10:47:26.500 AM	15.76E+3	15.69E+3	15.82E+3	W
W Line2	8/5/2004	10:47:26.500 AM	13.54E+3	13.47E+3	13.60E+3	W
W Line3	8/5/2004	10:47:26.500 AM	14.33E+3	14.24E+3	14.41E+3	W
W Sum of Phases	8/5/2004	10:47:26.500 AM	43.63E+3	43.49E+3	43.73E+3	W
VAR Line1	8/5/2004	10:47:26.500 AM	10.70E+3	10.57E+3	10.85E+3	VAR
VAR Line2	8/5/2004	10:47:26.500 AM	6.247E+3	6.169E+3	6.350E+3	VAR
VAR Line3	8/5/2004	10:47:26.500 AM	9.951E+3	9.817E+3	10.08E+3	VAR
VAR Sum of Phases	8/5/2004	10:47:26.500 AM	26.90E+3	26.64E+3	27.23E+3	VAR

8/5/2004 - 10:47:26.000 AM
Val
15.76E+3 — W Line1
13.56E+3 — W Line2
14.33E+3 — W Line3
43.66E+3 — W Sum of Phases
10.70E+3 — VAR Line1
6.277E+3 — VAR Line2
10.01E+3 — VAR Line3
26.99E+3 — VAR Sum of Phases

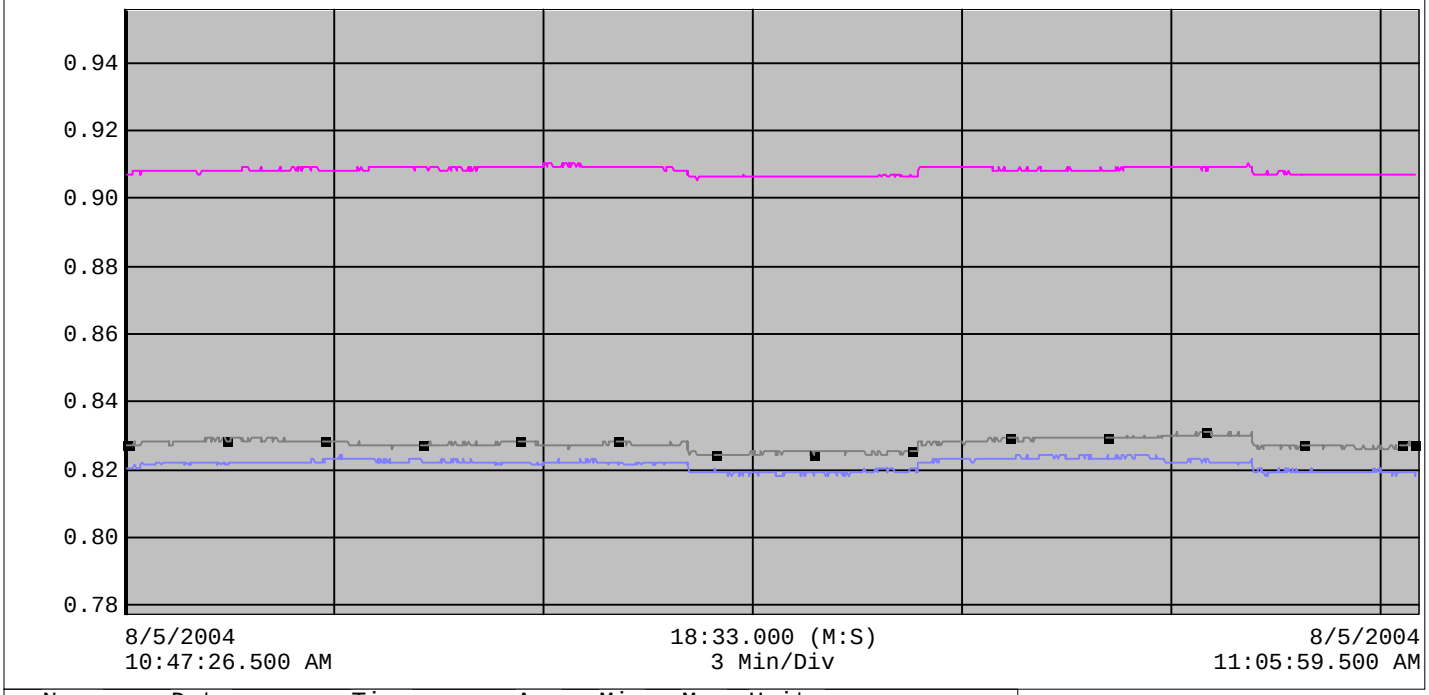
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/5/2004	10:47:26.500 AM	2.441E+3	4.318	4.878E+3	Wh
W-hours Line2	8/5/2004	10:47:26.500 AM	2.096E+3	3.707	4.188E+3	Wh
W-hours Line3	8/5/2004	10:47:26.500 AM	2.221E+3	3.924	4.433E+3	Wh
W-hours Sum of Phases	8/5/2004	10:47:26.500 AM	6.758E+3	11.95	13.50E+3	Wh
VAR-hours Line1	8/5/2004	10:47:26.500 AM	1.658E+3	2.932	3.312E+3	VARh
VAR-hours Line2	8/5/2004	10:47:26.500 AM	966.5	1.770	1.933E+3	VARh
VAR-hours Line3	8/5/2004	10:47:26.500 AM	1.542E+3	2.820	3.079E+3	VARh
VAR-hours Sum of Phases	8/5/2004	10:47:26.500 AM	4.166E+3	7.622	8.325E+3	VARh

8/5/2004 - 10:47:26.000 AM
Val
4.318 — W-hours Line1
3.707 — W-hours Line2
3.924 — W-hours Line3
11.95 — W-hours Sum of Phases
2.932 — VAR-hours Line1
1.770 — VAR-hours Line2
2.820 — VAR-hours Line3
7.622 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/5/2004	10:47:26.500 AM	0.827	0.824	0.831	
PF Line2	8/5/2004	10:47:26.500 AM	0.908	0.905	0.910	
PF Line3	8/5/2004	10:47:26.500 AM	0.821	0.818	0.824	

8/5/2004 - 10:47:26.000 AM
Val
0.827 — PF Line1
0.907 — PF Line2
0.820 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D14\080504-D14.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-14 ,

Comments
Recorded at motor starter overload relay.

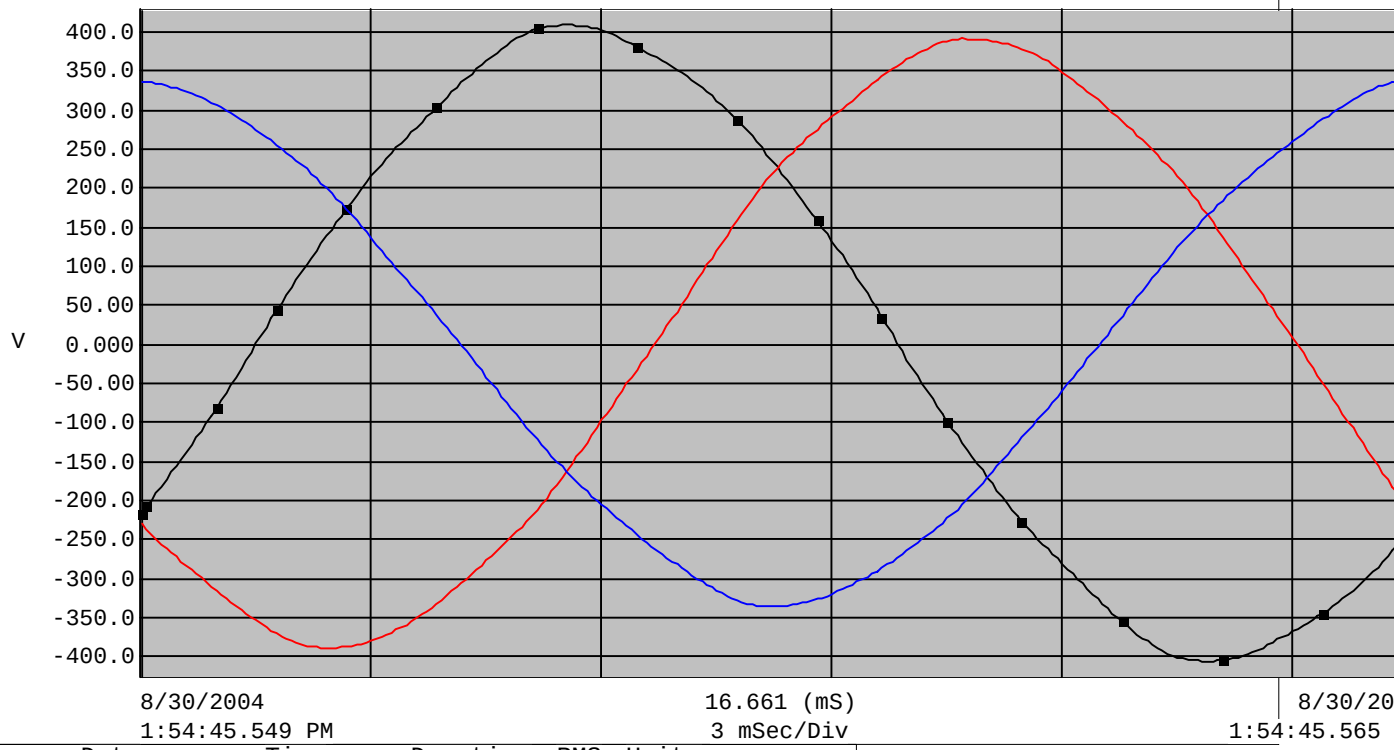
GWA Water Pumping Station Assessment				
Station Name: D-15	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.07	
Main Breaker	1.0%	0	0	42
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	2	0.02	42
Wiring	1.0%	2	0.02	42
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0	
Pressure	1.5%	0	0	
Flow	1.5%	0	0	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.3**

Comments:

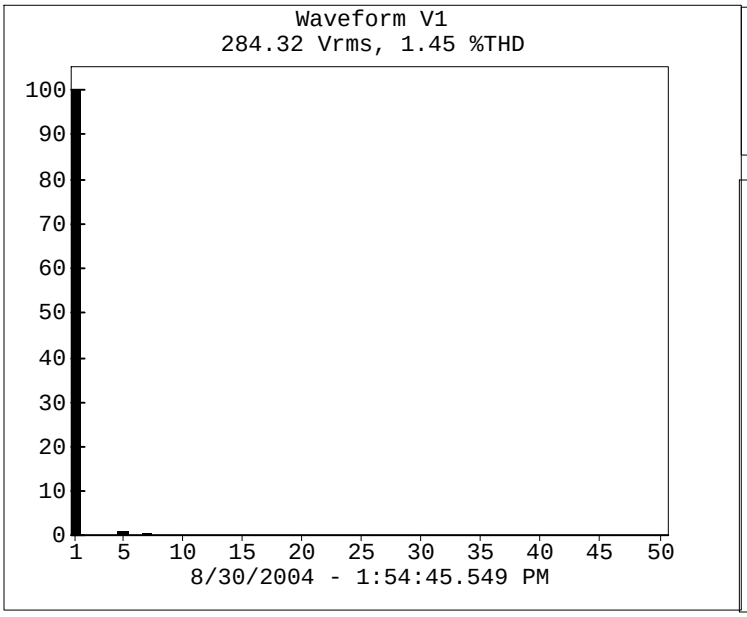
WPS D-15 Photo Report

Recording Start Date	8/30/2004 - 1:54:45 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/30/2004	1:54:45.549 PM	16.661	284.3	V
Waveform V2	8/30/2004	1:54:45.549 PM	16.661	272.7	V
Waveform V3	8/30/2004	1:54:45.549 PM	16.661	232.9	V

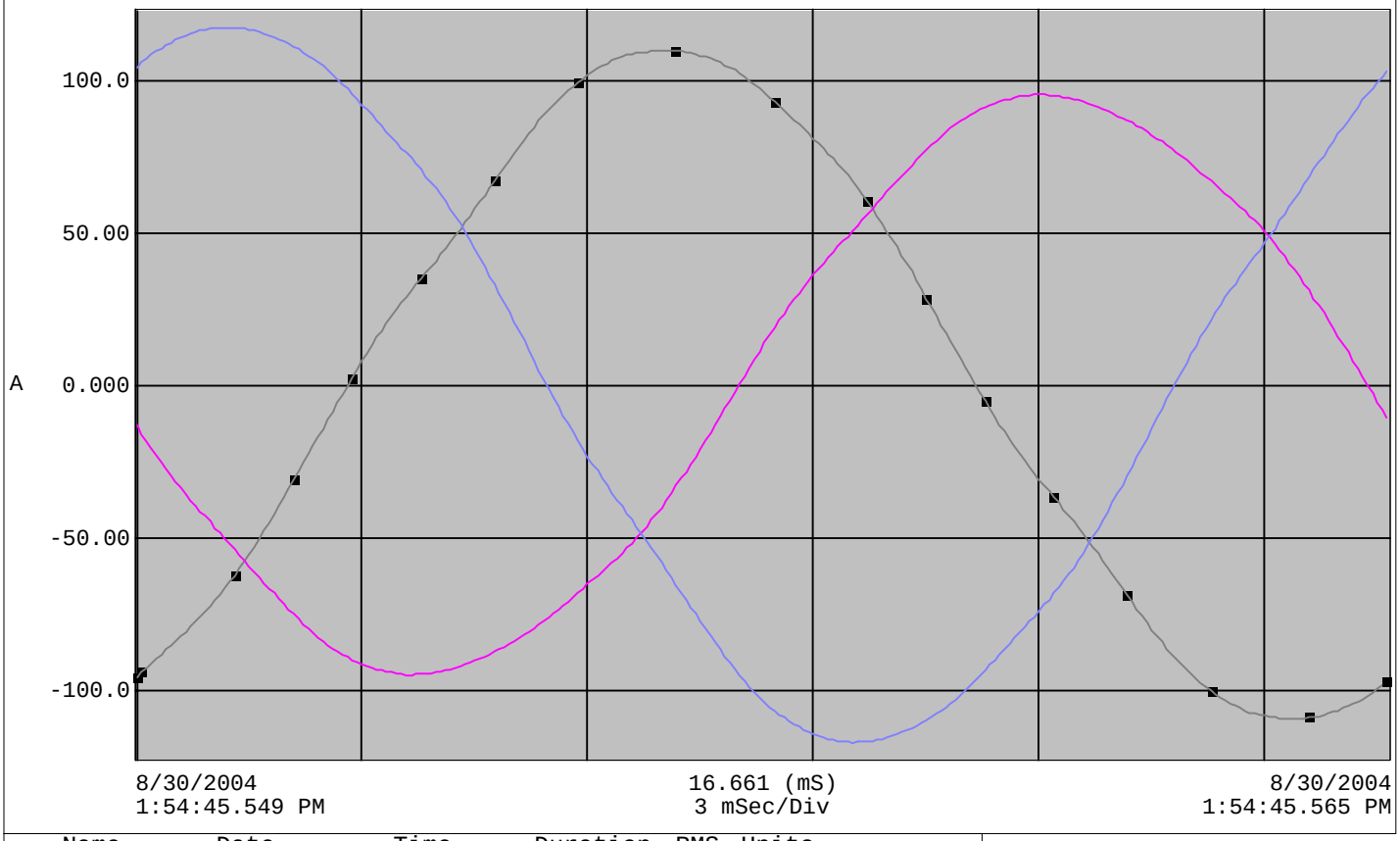


8/30/2004 - 1:54:45.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

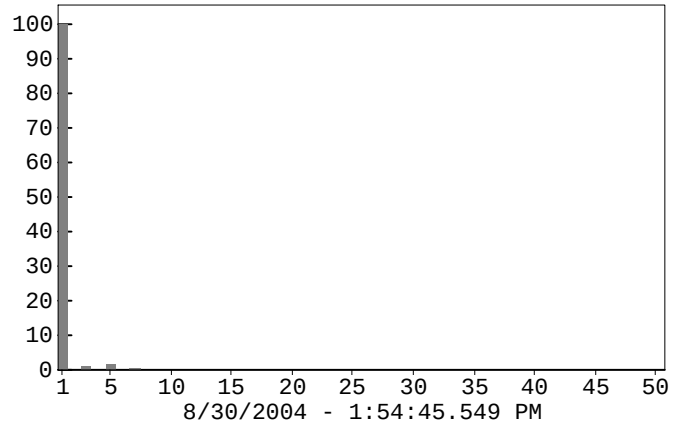
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/30/2004	1:54:45.549 PM	16.661	77.05	A
Waveform I2	8/30/2004	1:54:45.549 PM	16.661	67.54	A
Waveform I3	8/30/2004	1:54:45.549 PM	16.661	82.46	A

Waveform I1
77.05 Arms, 2.47 %THD

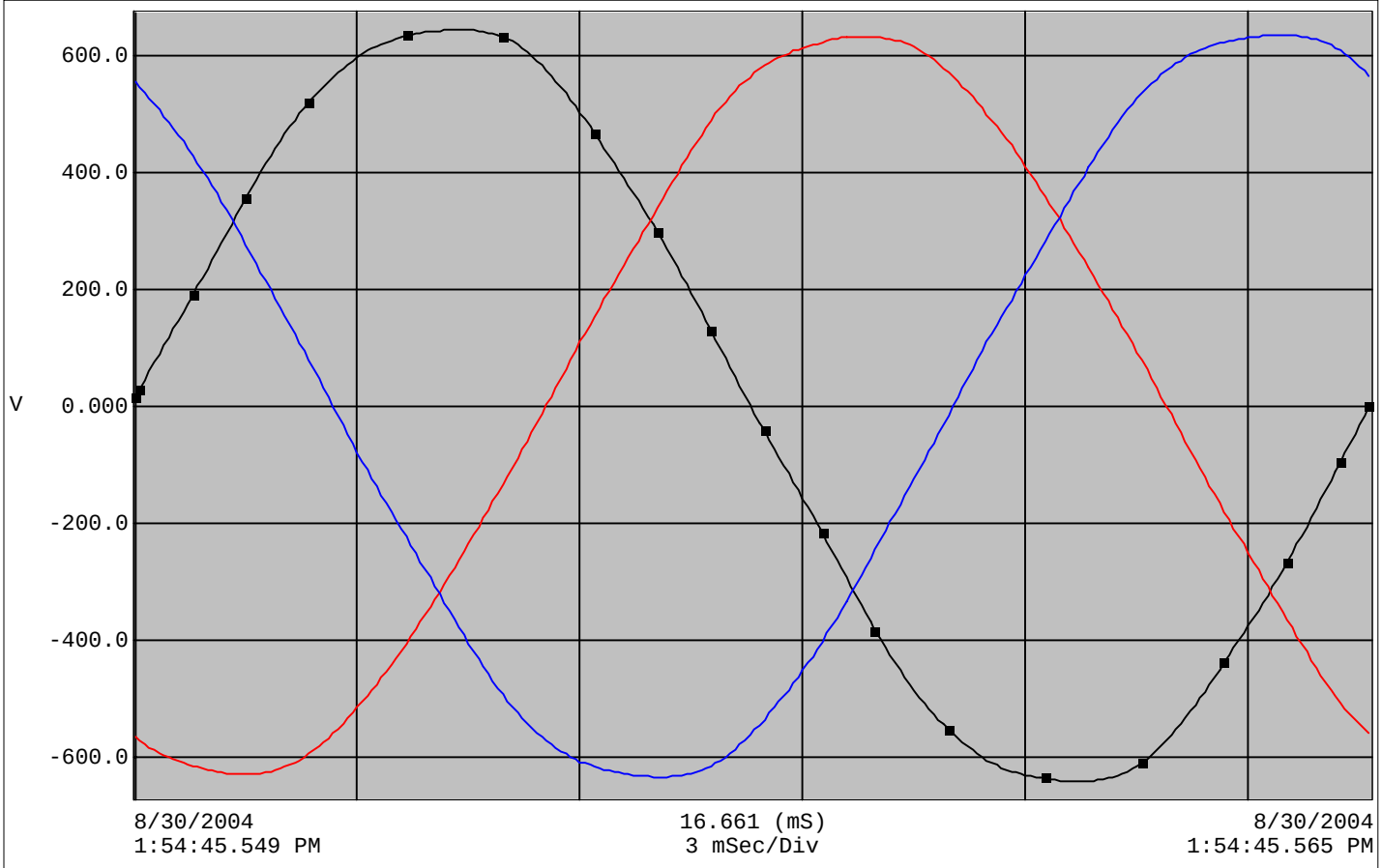


8/30/2004 - 1:54:45.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

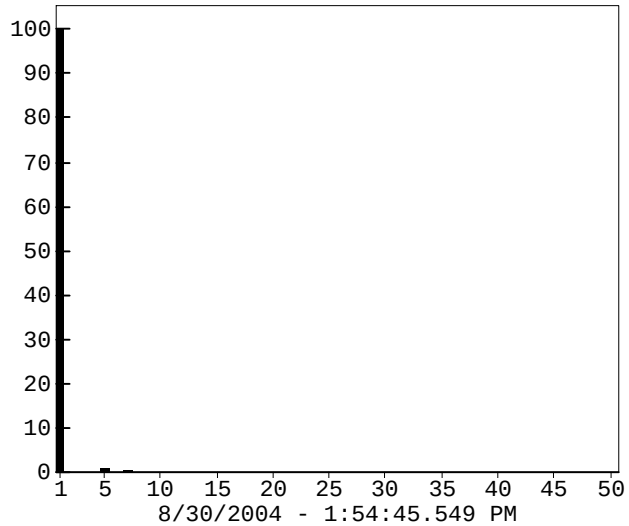
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	1.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/30/2004	1:54:45.549 PM	16.661	460.6	V
Waveform U2	8/30/2004	1:54:45.549 PM	16.661	449.6	V
Waveform U3	8/30/2004	1:54:45.549 PM	16.661	455.5	V

Waveform U1
460.55 Vrms, 1.45 %THD



8/30/2004 - 1:54:45.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 8/30/2004
Start Time: 1:54:45 PM
Duration: 0:0.000 (M:S)
W: 19.02E+3 W
VAR: 10.90E+3 W
VA: 21.92E+3 W
Power Factor: 0.868
Displacement Power Factor: 0.868
TAN: 0.572
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D15\083004-D15-Photo.dvb

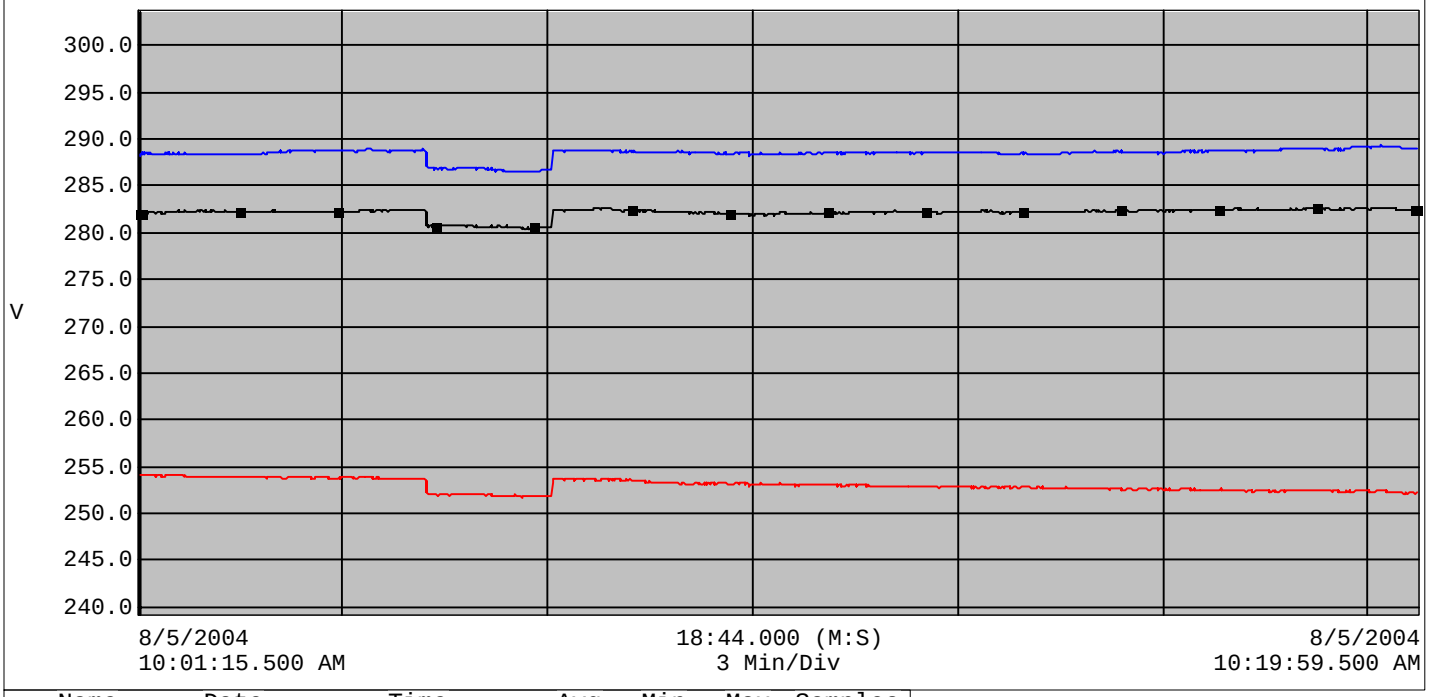
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS D-15 ,

Comments

WPS D-15

Recording Start Date	8/5/2004 - 10:01:15 AM
Recording Duration	18:44 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

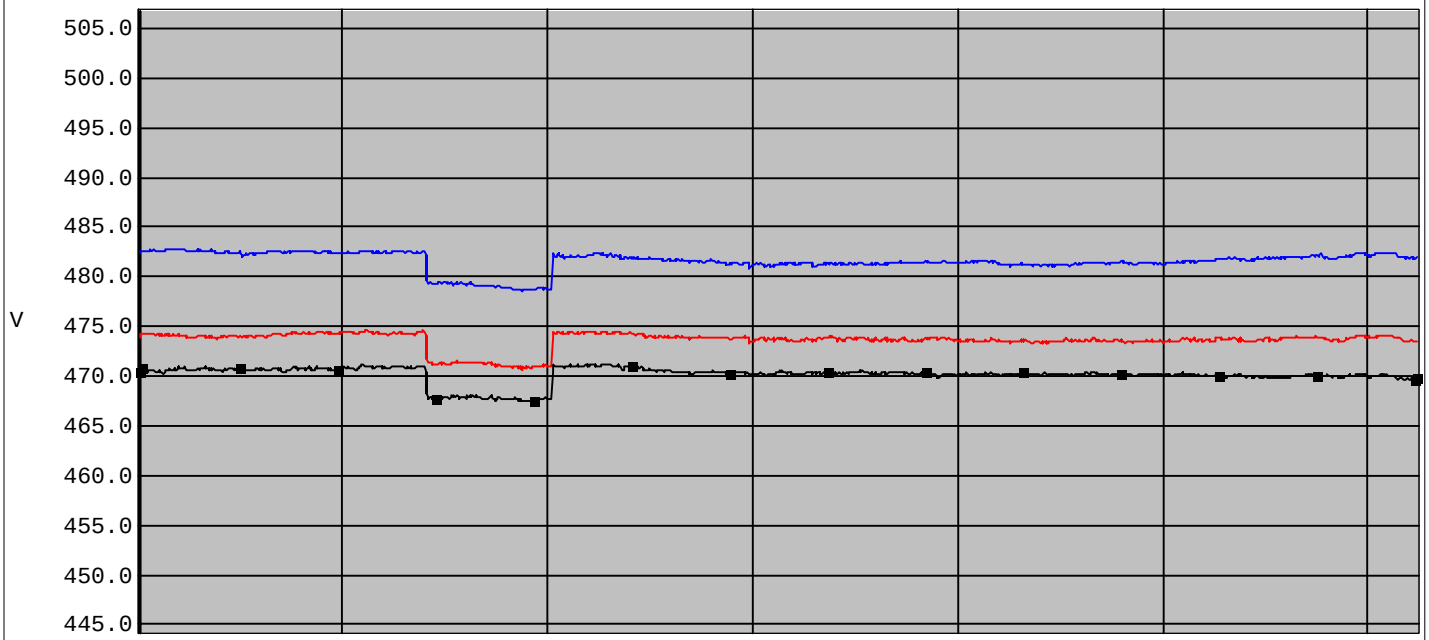
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/5/2004	10:01:15.500 AM	282.1	280.3	282.6	1125
Vrms Line2	8/5/2004	10:01:15.500 AM	252.9	251.6	254.1	1125
Vrms Line3	8/5/2004	10:01:15.500 AM	288.3	286.4	289.2	1125

8/5/2004 - 10:01:15.000 AM
Val
281.9 — Vrms Line1
253.9 — Vrms Line2
288.1 — Vrms Line3

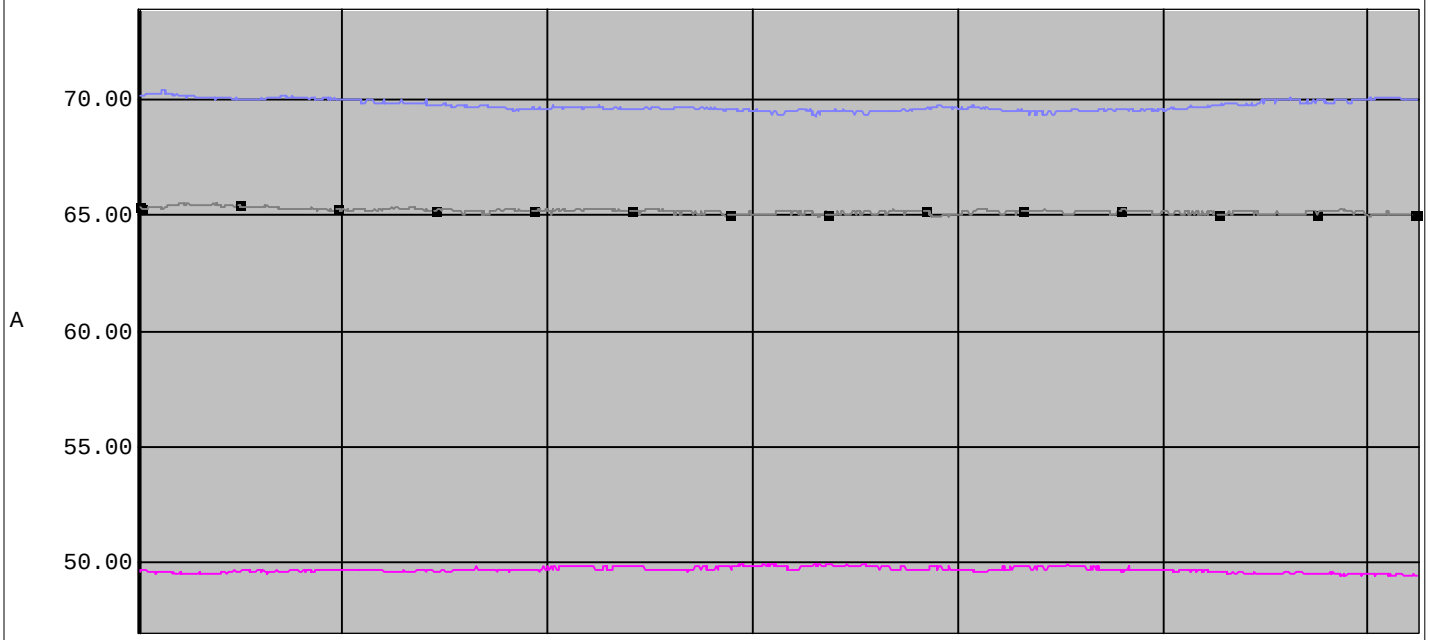
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/5/2004	10:01:15.500 AM	470.1	467.4	471.1	V
Urms Line2	8/5/2004	10:01:15.500 AM	473.5	470.6	474.5	V
Urms Line3	8/5/2004	10:01:15.500 AM	481.5	478.5	482.7	V

8/5/2004 - 10:01:15.000 AM
Val
470.4 Urms Line1
473.8 Urms Line2
482.2 Urms Line3

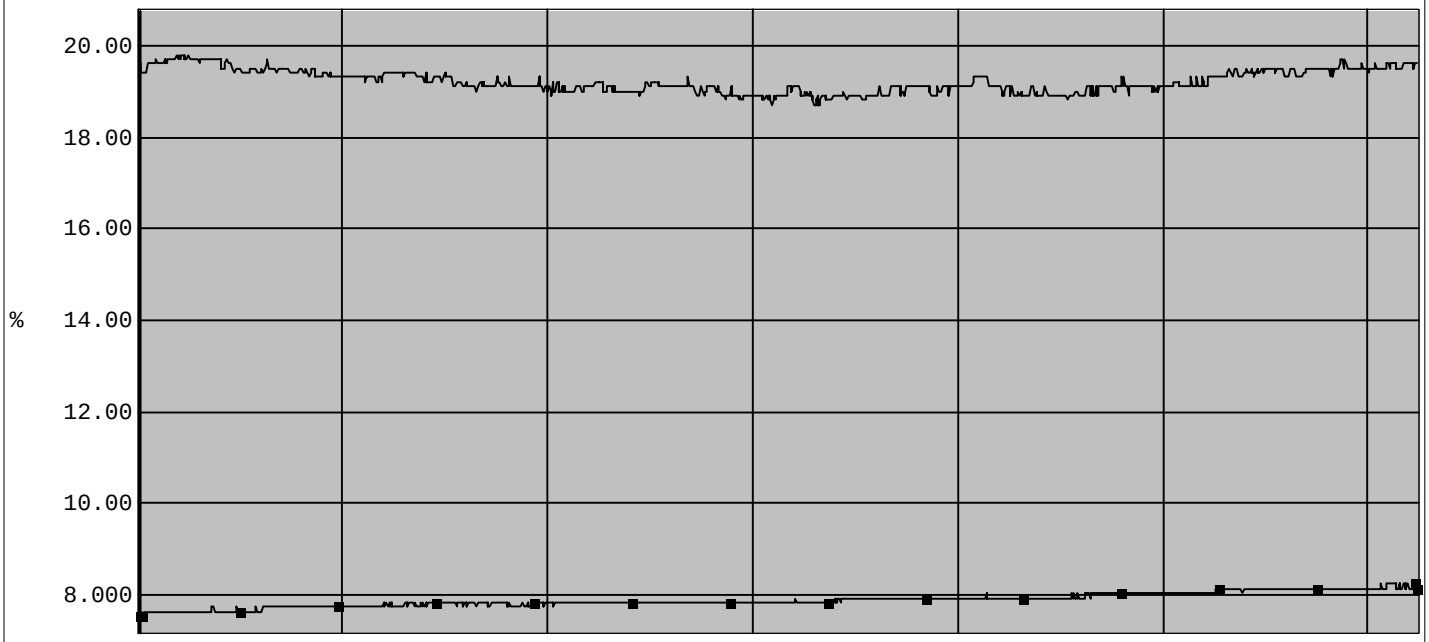
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/5/2004	10:01:15.500 AM	65.12	64.90	65.50	A
Arms Line2	8/5/2004	10:01:15.500 AM	49.68	49.40	49.90	A
Arms Line3	8/5/2004	10:01:15.500 AM	69.66	69.20	70.30	A

8/5/2004 - 10:01:15.000 AM
Val
65.30 — Arms Line1
49.60 — Arms Line2
70.10 — Arms Line3

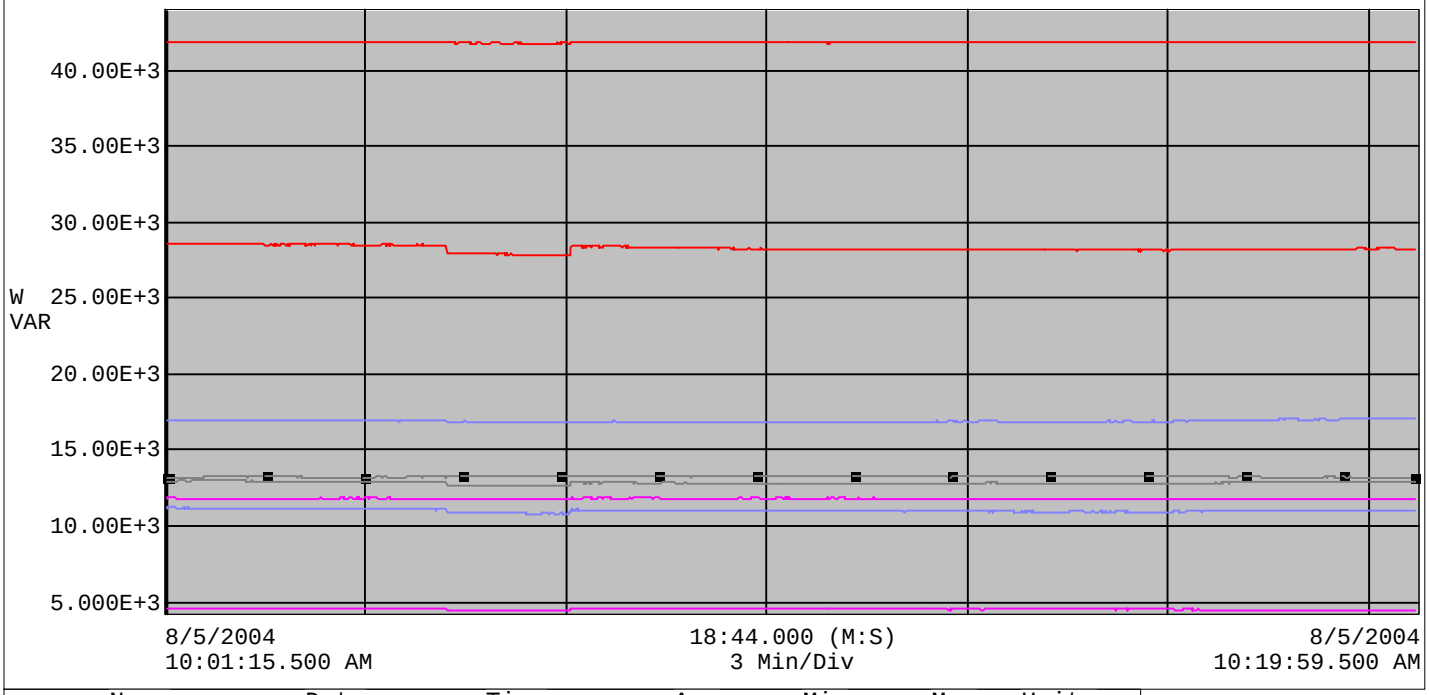
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/5/2004	10:01:15.500 AM	7.855	7.500	8.200	%
Aunb(IEEE)	8/5/2004	10:01:15.500 AM	19.21	18.70	19.80	%

8/5/2004 - 10:01:15.000 AM
Val
7.500 —— Vunb(IEEE)
19.60 —— Aunb(IEEE)

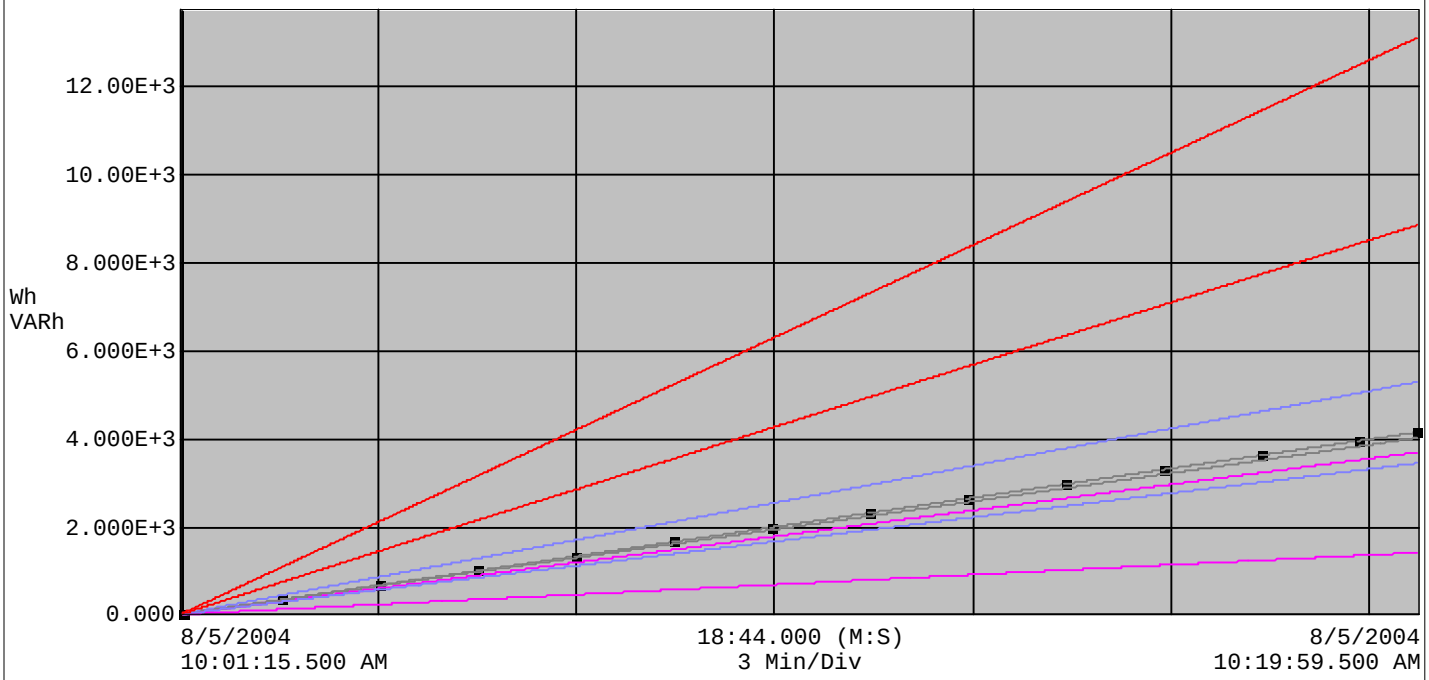
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/5/2004	10:01:15.500 AM	13.19E+3	13.10E+3	13.26E+3	W
W Line2	8/5/2004	10:01:15.500 AM	11.74E+3	11.66E+3	11.79E+3	W
W Line3	8/5/2004	10:01:15.500 AM	16.84E+3	16.71E+3	17.01E+3	W
W Sum of Phases	8/5/2004	10:01:15.500 AM	41.77E+3	41.66E+3	41.83E+3	W
VAR Line1	8/5/2004	10:01:15.500 AM	12.78E+3	12.56E+3	12.95E+3	VAR
VAR Line2	8/5/2004	10:01:15.500 AM	4.468E+3	4.353E+3	4.543E+3	VAR
VAR Line3	8/5/2004	10:01:15.500 AM	10.95E+3	10.74E+3	11.16E+3	VAR
VAR Sum of Phases	8/5/2004	10:01:15.500 AM	28.20E+3	27.72E+3	28.57E+3	VAR

8/5/2004 - 10:01:15.000 AM
Val
13.14E+3 — W Line1
11.77E+3 — W Line2
16.86E+3 — W Line3
41.77E+3 — W Sum of Phases
12.88E+3 — VAR Line1
4.508E+3 — VAR Line2
11.11E+3 — VAR Line3
28.50E+3 — VAR Sum of Phases

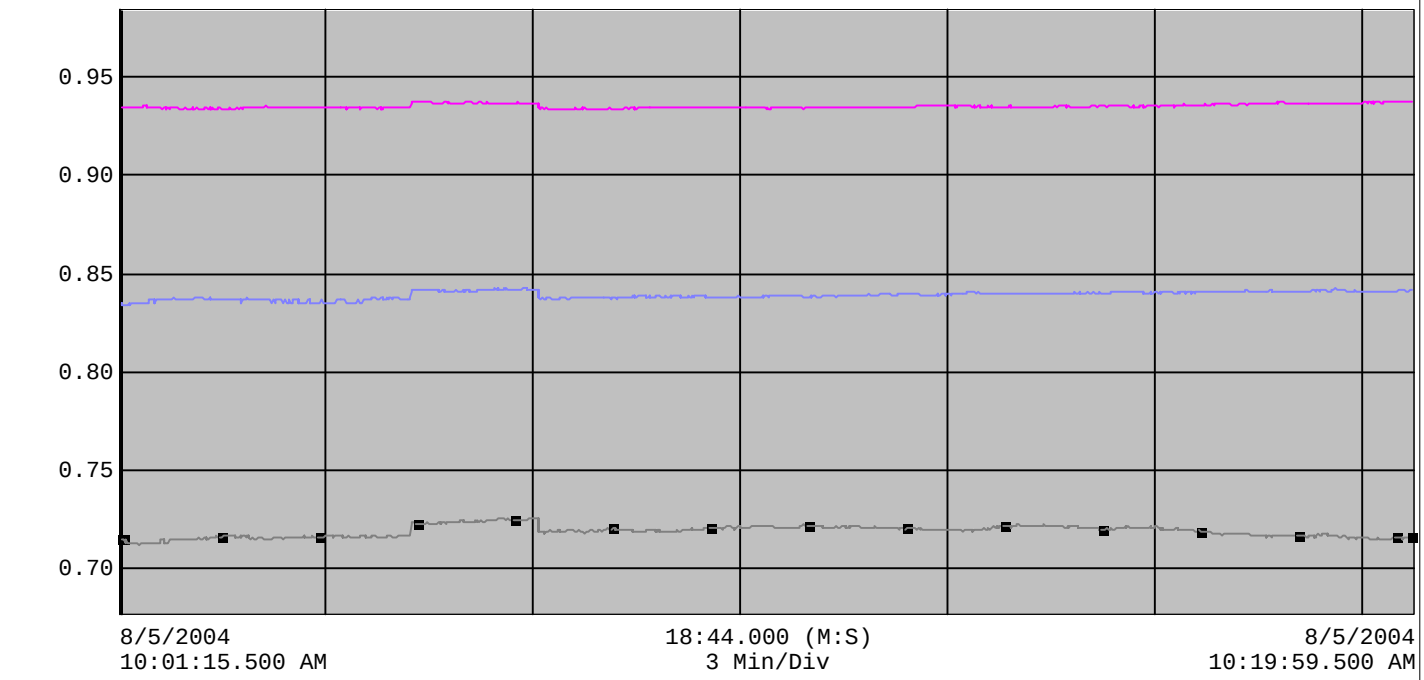
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/5/2004	10:01:15.500 AM	2.063E+3	3.649	4.122E+3	Wh
W-hours Line2	8/5/2004	10:01:15.500 AM	1.838E+3	3.247	3.669E+3	Wh
W-hours Line3	8/5/2004	10:01:15.500 AM	2.631E+3	4.657	5.262E+3	Wh
W-hours Sum of Phases	8/5/2004	10:01:15.500 AM	6.532E+3	11.55	13.05E+3	Wh
VAR-hours Line1	8/5/2004	10:01:15.500 AM	2.000E+3	3.534	3.993E+3	VARh
VAR-hours Line2	8/5/2004	10:01:15.500 AM	701.1	1.236	1.396E+3	VARh
VAR-hours Line3	8/5/2004	10:01:15.500 AM	1.717E+3	3.134	3.422E+3	VARh
VAR-hours Sum of Phases	8/5/2004	10:01:15.500 AM	4.417E+3	7.799	8.812E+3	VARh

8/5/2004 - 10:01:15.000 AM
Val
3.649 — W-hours Line1
3.247 — W-hours Line2
4.657 — W-hours Line3
11.55 — W-hours Sum of Phases
3.534 — VAR-hours Line1
1.236 — VAR-hours Line2
3.134 — VAR-hours Line3
7.799 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/5/2004	10:01:15.500 AM	0.718	0.712	0.725	
PF Line2	8/5/2004	10:01:15.500 AM	0.935	0.933	0.937	
PF Line3	8/5/2004	10:01:15.500 AM	0.838	0.834	0.842	

8/5/2004 - 10:01:15.000 AM
Val
0.714 — PF Line1
0.934 — PF Line2
0.835 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D15\080504-D15.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-16 ,

Comments
Recorded at motor starter overload relay.

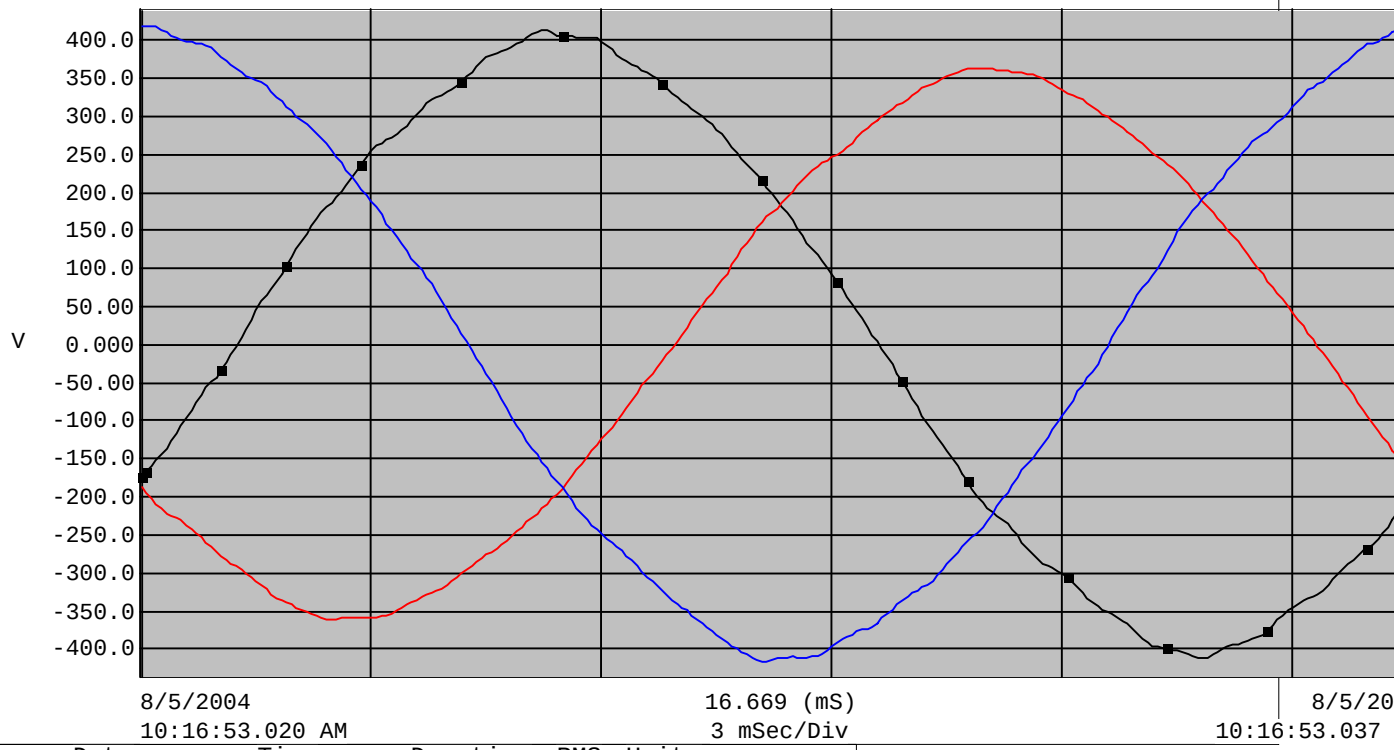
GWA Water Pumping Station Assessment				
Station Name: D-16	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/05/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.475	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	2	0.05	6
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	32
Overload Relay	5.0%	2	0.1	
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	44
Phase Monitor	1.0%	2	0.02	
Pump Instrumentation	**5.0%**		0.05	
Pressure	1.5%	0	0	
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.6**

Comments:

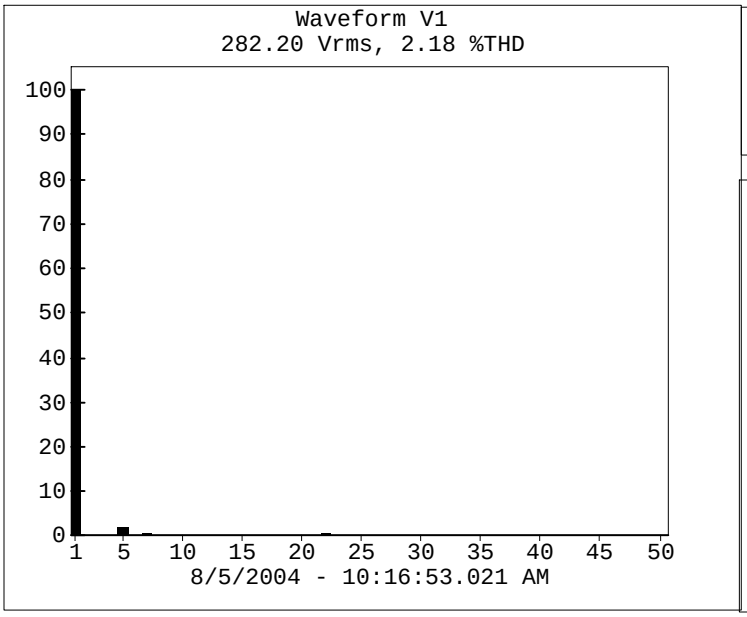
WPS D-16 - Photo1

Recording Start Date	8/5/2004 - 10:16:53 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/5/2004	10:16:53.020 AM	16.669	282.2	V
Waveform V2	8/5/2004	10:16:53.020 AM	16.669	252.4	V
Waveform V3	8/5/2004	10:16:53.020 AM	16.669	288.5	V



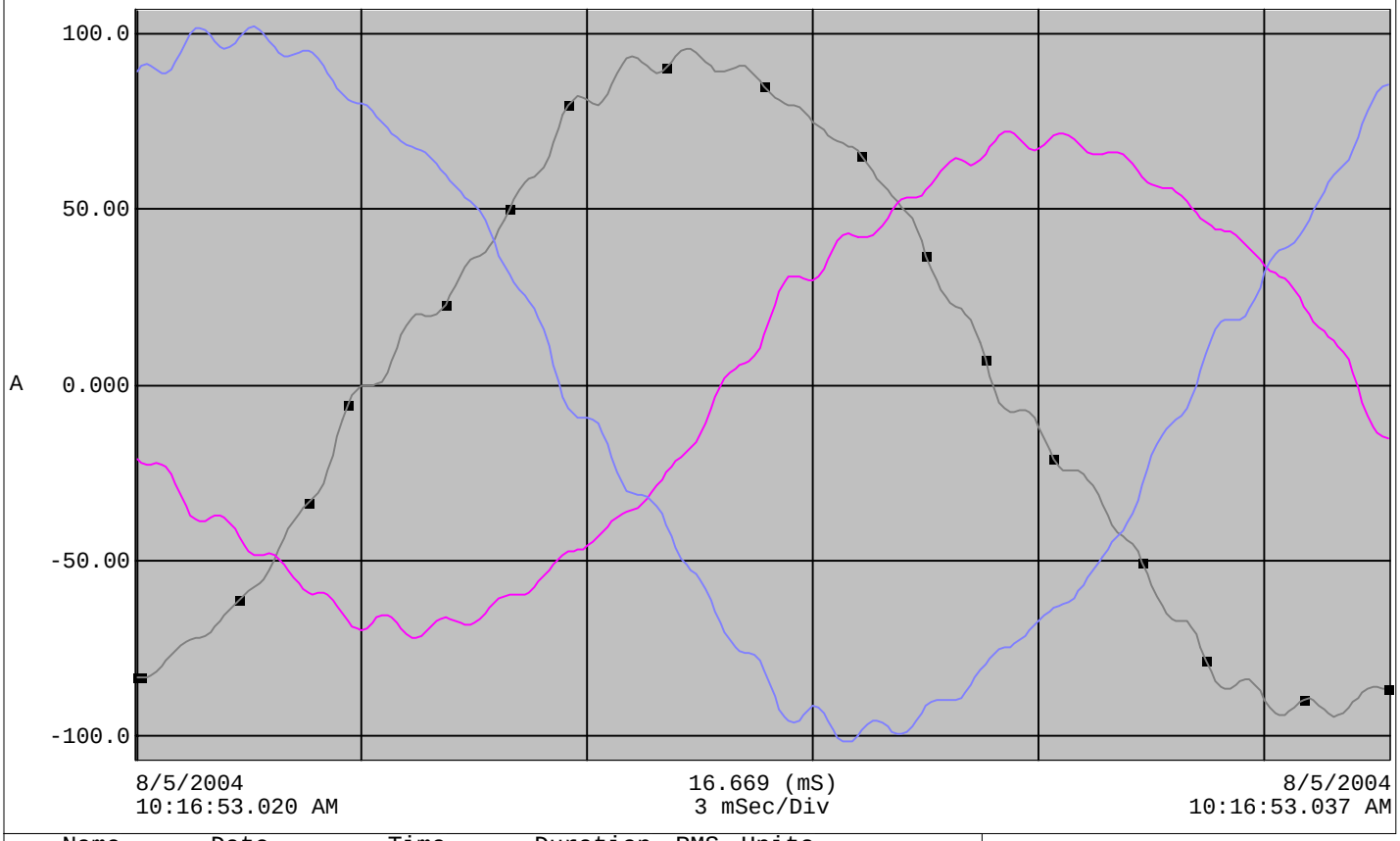
8/5/2004 - 10:16:53.000 AM

Val	
-176.5	Waveform V1
-188.3	Waveform V2
417.6	Waveform V3

Waveform V1

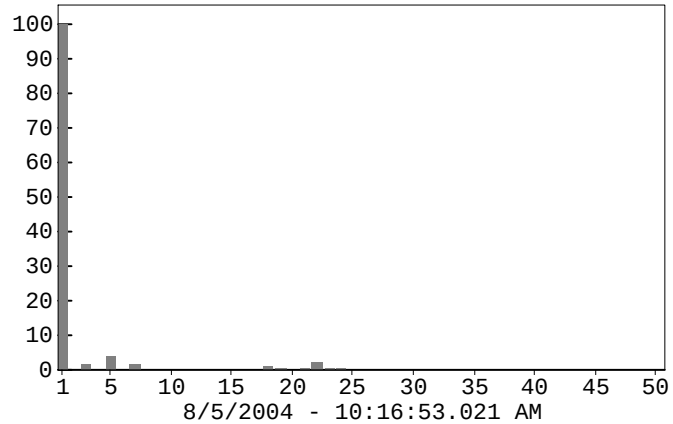
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.8	H22	0.7	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	0.9	H24	0.3	H41	0.0
H08	0.0	H25	0.0	H42	0.1
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.1
H12	0.0	H29	0.1	H46	0.1
H13	0.0	H30	0.0	H47	0.1
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/5/2004	10:16:53.020 AM	16.669	64.83	A
Waveform I2	8/5/2004	10:16:53.020 AM	16.669	49.48	A
Waveform I3	8/5/2004	10:16:53.020 AM	16.669	69.50	A

Waveform I1
64.83 Arms, 5.79 %THD



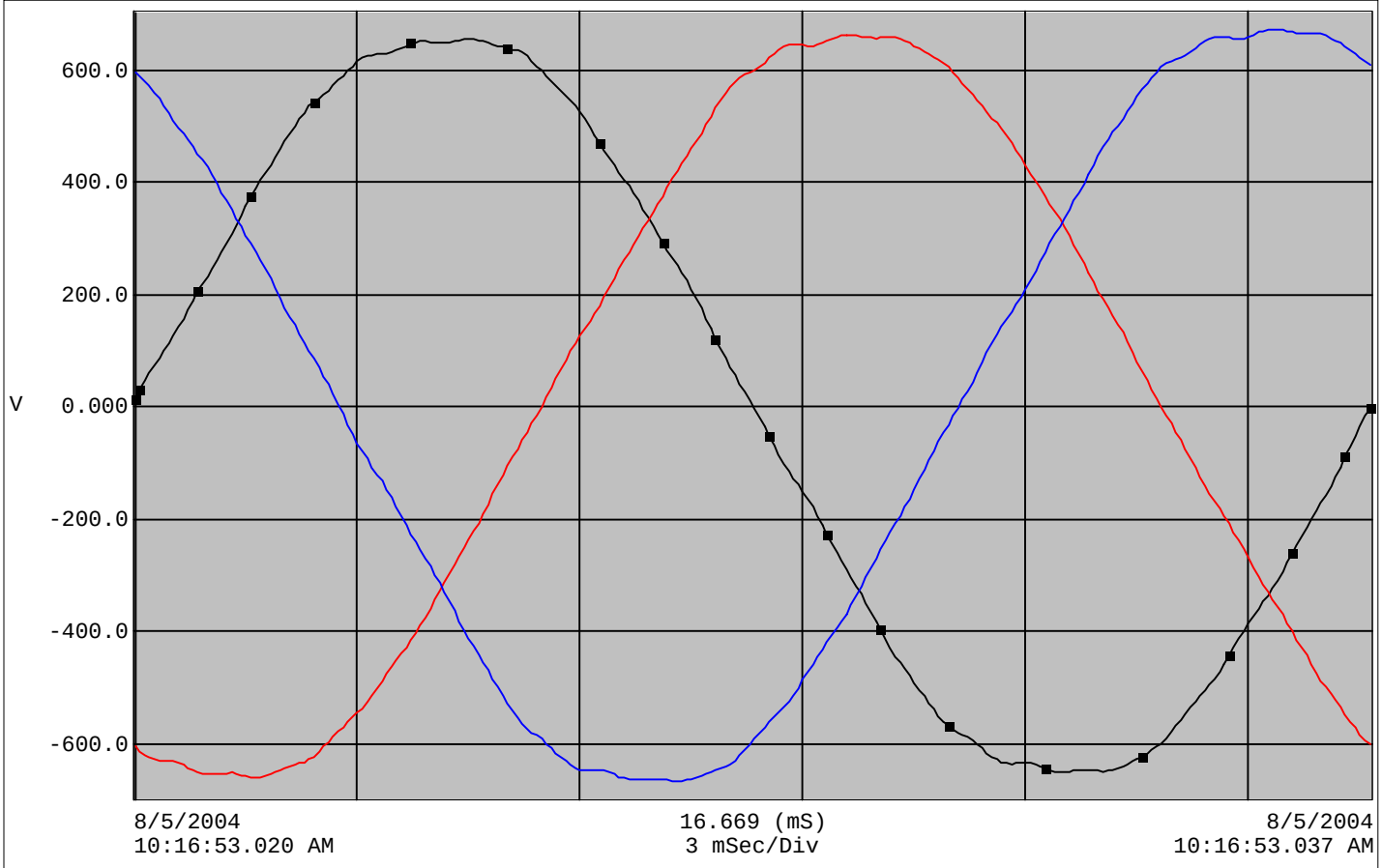
8/5/2004 - 10:16:53.000 AM

	Val	
—	-83.70	Waveform I1
—	-21.30	Waveform I2
—	89.20	Waveform I3

Waveform I1

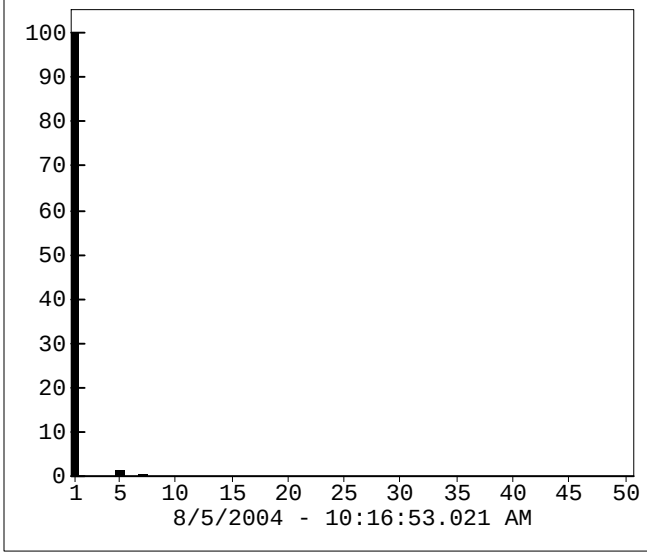
	(%)		(%)		(%)
H01	100.0	H18	1.3	H35	0.0
H02	0.0	H19	0.6	H36	0.1
H03	1.8	H20	0.3	H37	0.0
H04	0.1	H21	0.6	H38	0.0
H05	4.0	H22	2.3	H39	0.0
H06	0.1	H23	1.0	H40	0.1
H07	1.9	H24	1.0	H41	0.1
H08	0.0	H25	0.1	H42	0.2
H09	0.0	H26	0.1	H43	0.1
H10	0.2	H27	0.1	H44	0.1
H11	0.1	H28	0.0	H45	0.1
H12	0.4	H29	0.1	H46	0.1
H13	0.1	H30	0.1	H47	0.0
H14	0.1	H31	0.1	H48	0.1
H15	0.2	H32	0.0	H49	0.0
H16	0.5	H33	0.0	H50	0.0
H17	0.4	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/5/2004	10:16:53.020 AM	16.669	469.9	V
Waveform U2	8/5/2004	10:16:53.020 AM	16.669	473.5	V
Waveform U3	8/5/2004	10:16:53.020 AM	16.669	481.4	V

Waveform U1
469.95 Vrms, 1.92 %THD



8/5/2004 - 10:16:53.000 AM

	Val	
—	11.80	Waveform U1
—	-605.9	Waveform U2
—	594.1	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.6	H22	0.4	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.8	H24	0.2	H41	0.0
H08	0.0	H25	0.0	H42	0.1
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/5/2004
Start Time: 10:16:53 AM
Duration: 0:0.000 (M:S)
W: 13.19E+3 W
VAR: 12.77E+3 W
VA: 18.36E+3 W
Power Factor: 0.718
Displacement Power Factor: 0.720
TAN: 0.965
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D16\080504-D16-Photo1.dvb

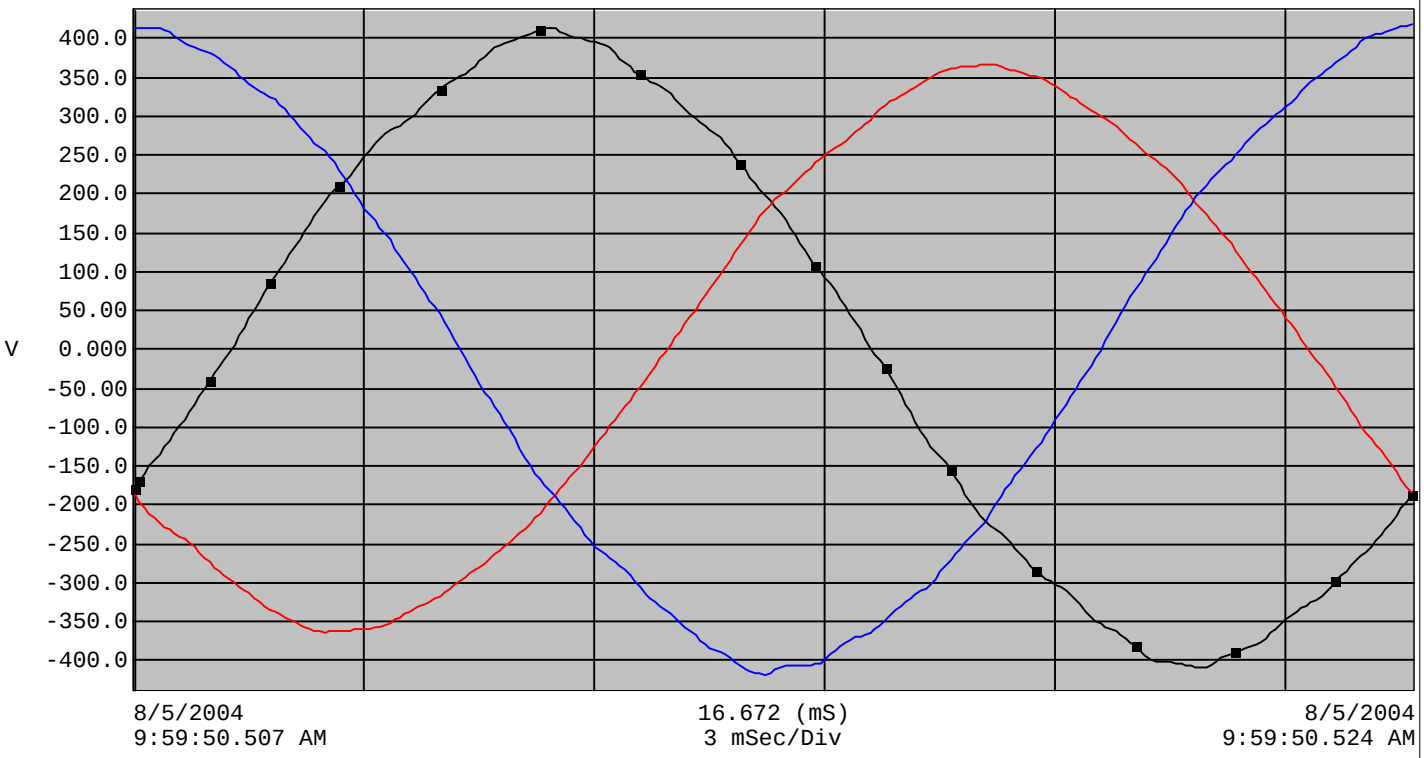
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-16 - Photo1 ,

Comments
Recording at motor starter overload relay.

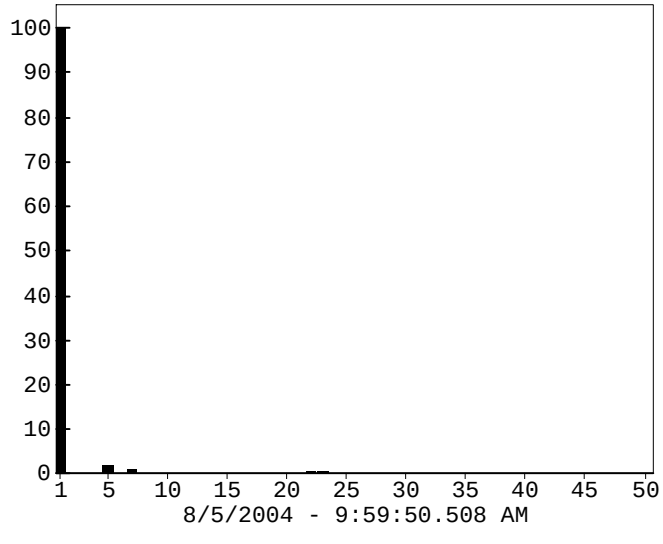
WPS D-16 - Photo

Recording Start Date	8/5/2004 - 9:59:50 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/5/2004	9:59:50.507 AM	16.672	282.1	V
Waveform V2	8/5/2004	9:59:50.507 AM	16.672	254.3	V
Waveform V3	8/5/2004	9:59:50.507 AM	16.672	288.0	V



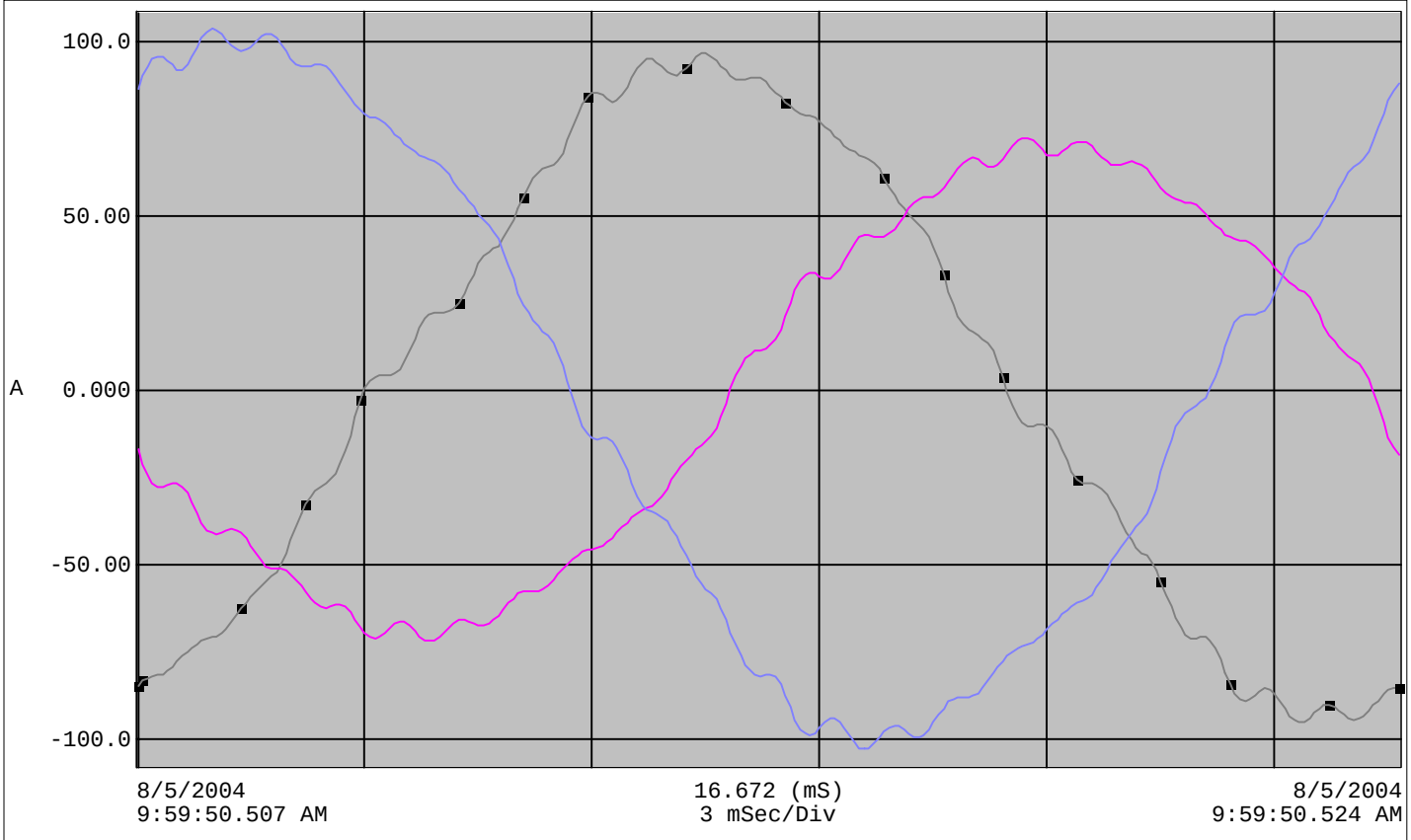
8/5/2004 - 9:59:50.000 AM

	Val	
—	-180.9	Waveform V1
—	-188.5	Waveform V2
—	411.8	Waveform V3

Waveform V1

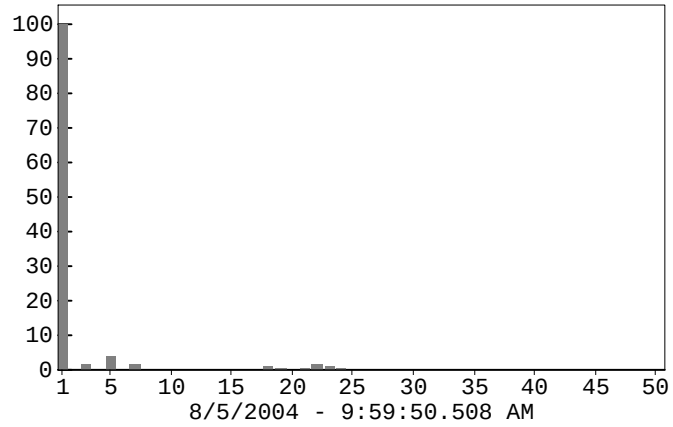
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.8	H22	0.5	H39	0.0
H06	0.0	H23	0.5	H40	0.0
H07	0.9	H24	0.2	H41	0.0
H08	0.0	H25	0.0	H42	0.1
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.1
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/5/2004	9:59:50.507 AM	16.672	65.30	A
Waveform I2	8/5/2004	9:59:50.507 AM	16.672	49.71	A
Waveform I3	8/5/2004	9:59:50.507 AM	16.672	70.17	A

Waveform I1
65.30 Arms, 5.74 %THD



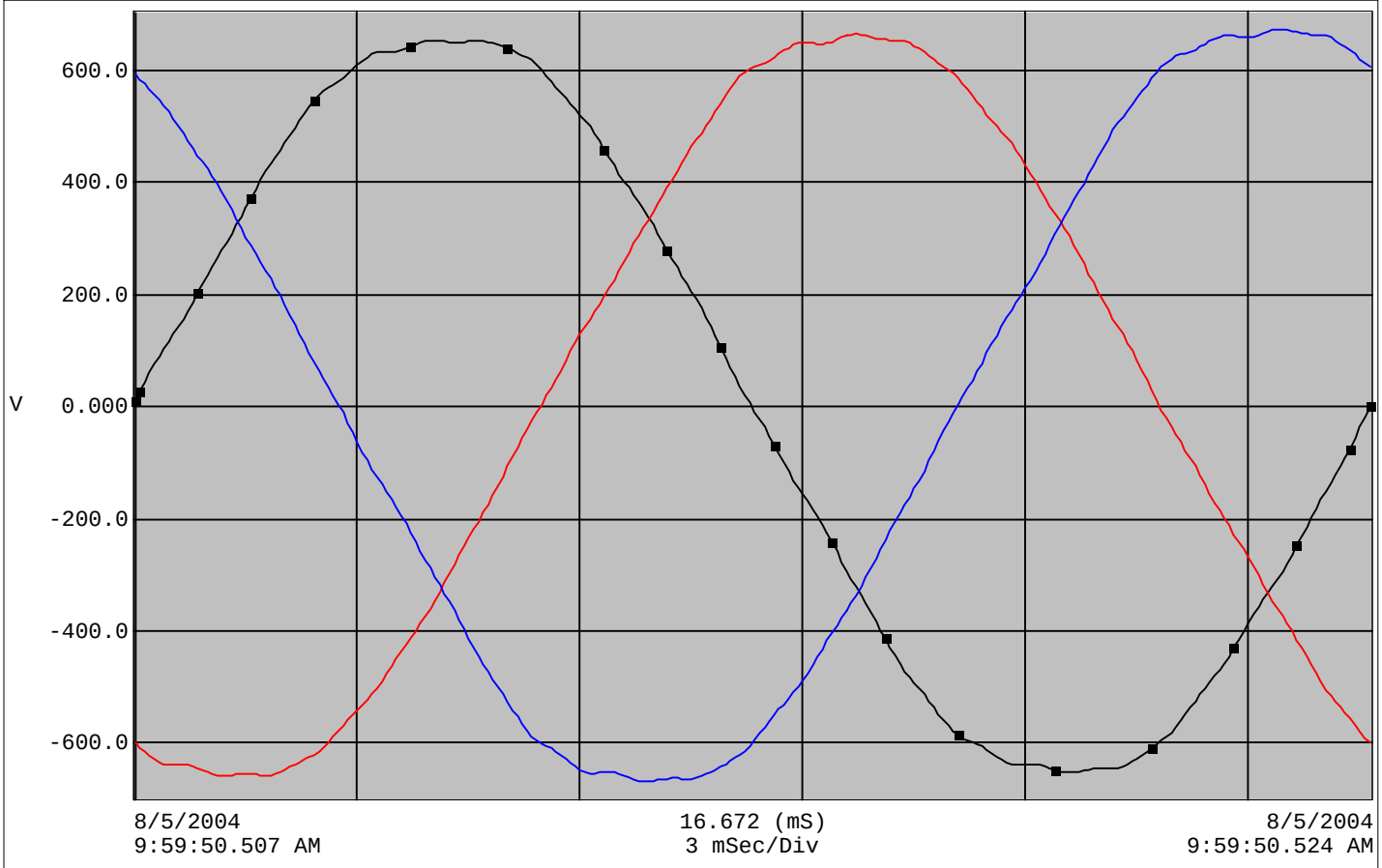
8/5/2004 - 9:59:50.000 AM

Val	
-85.10	Waveform I1
-17.10	Waveform I2
85.90	Waveform I3

Waveform I1

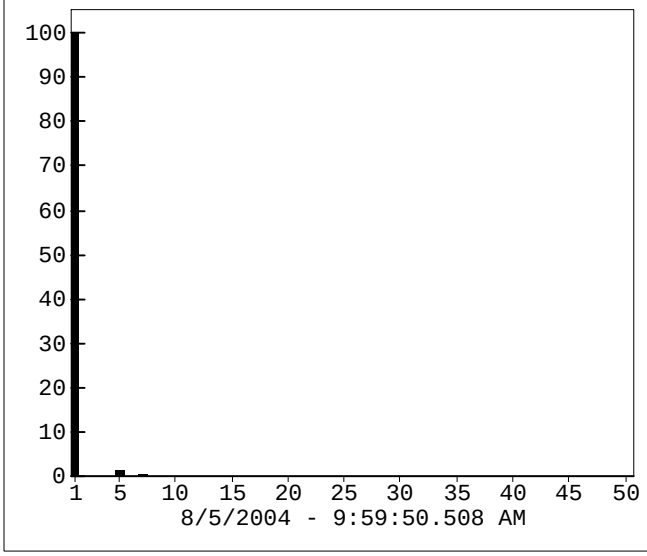
	(%)		(%)		(%)
H01	100.0	H18	1.1	H35	0.0
H02	0.1	H19	0.7	H36	0.0
H03	2.0	H20	0.5	H37	0.0
H04	0.1	H21	0.6	H38	0.0
H05	3.9	H22	2.2	H39	0.0
H06	0.1	H23	1.3	H40	0.1
H07	1.8	H24	1.0	H41	0.1
H08	0.1	H25	0.1	H42	0.2
H09	0.1	H26	0.1	H43	0.1
H10	0.2	H27	0.1	H44	0.1
H11	0.1	H28	0.0	H45	0.1
H12	0.3	H29	0.1	H46	0.1
H13	0.1	H30	0.1	H47	0.0
H14	0.1	H31	0.1	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.4	H33	0.0	H50	0.0
H17	0.5	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/5/2004	9:59:50.507 AM	16.672	470.8	V
Waveform U2	8/5/2004	9:59:50.507 AM	16.672	474.1	V
Waveform U3	8/5/2004	9:59:50.507 AM	16.672	482.4	V

Waveform U1
470.79 Vrms, 1.93 %THD



8/5/2004 - 9:59:50.000 AM

	Val	
—	7.600	Waveform U1
—	-600.4	Waveform U2
—	592.8	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.6	H22	0.4	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.8	H24	0.2	H41	0.0
H08	0.0	H25	0.1	H42	0.1
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/5/2004
Start Time: 9:59:50 AM
Duration: 0:0.000 (M:S)
W: 13.17E+3 W
VAR: 12.92E+3 W
VA: 18.45E+3 W
Power Factor: 0.714
Displacement Power Factor: 0.715
TAN: 0.977
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D16\080504-D16-Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-16-Photo ,

Comments
Recorded at motor starter overload relay.

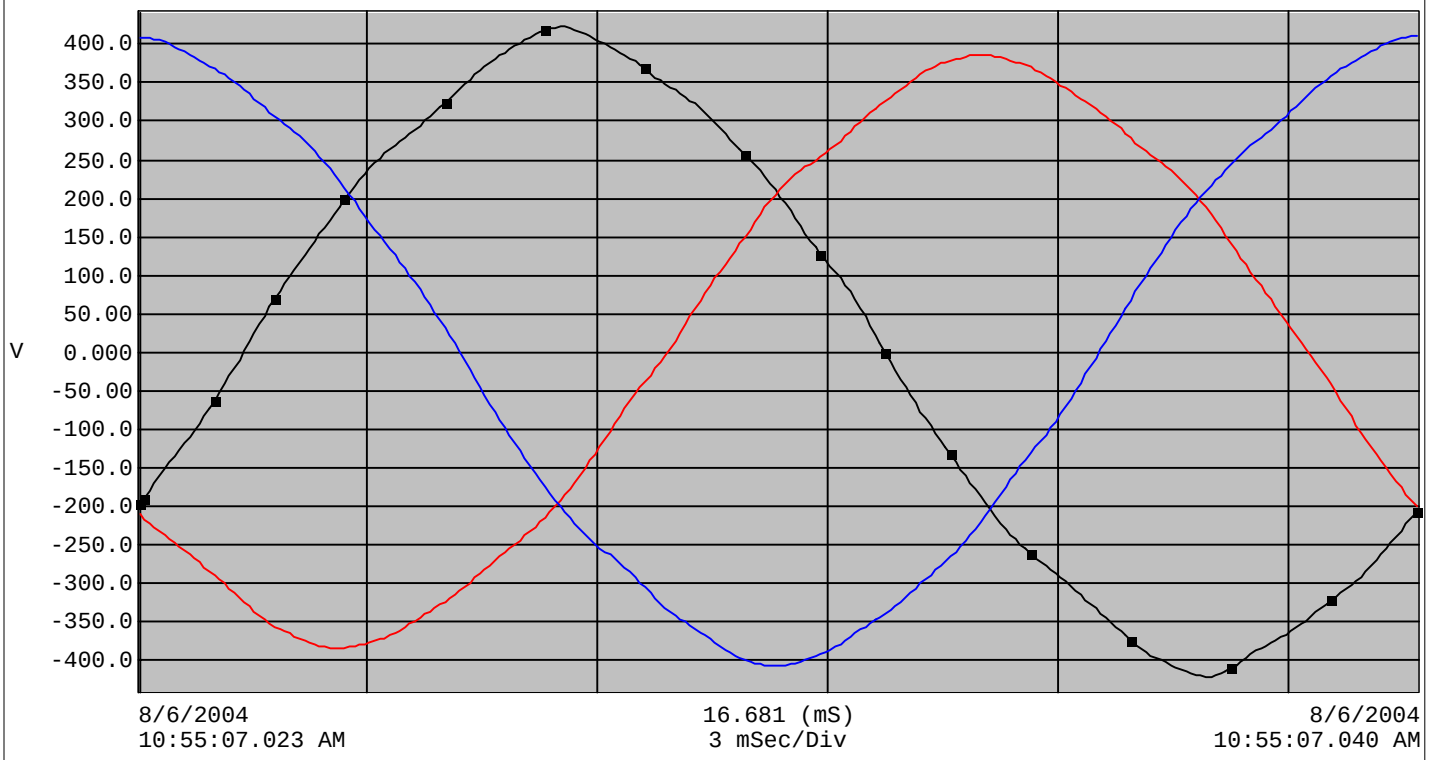
GWA Water Pumping Station Assessment				
Station Name: D-19	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/06/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.35	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	0	0	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	23
Diesel Fuel Line Condition	2.5%	2	0.05	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.03	
Main Breaker	1.0%	2	0.02	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	1	0.01	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.08	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.4**

Comments:

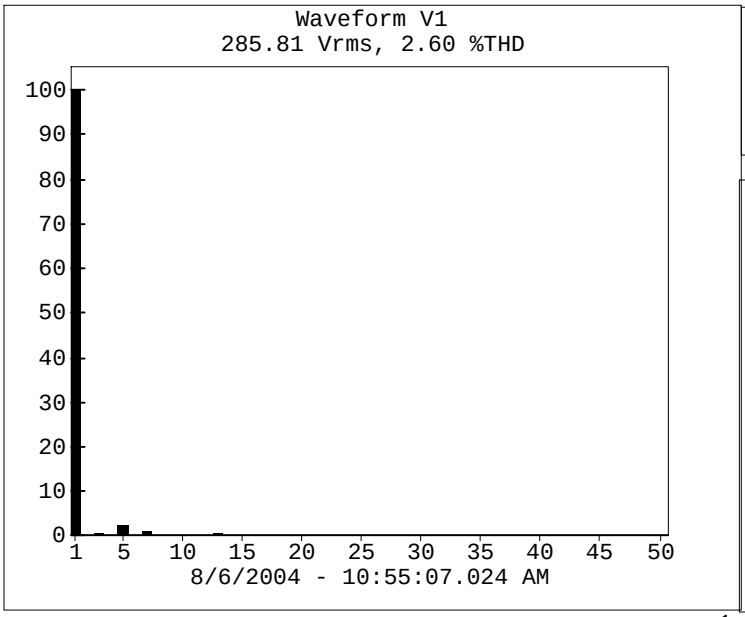
WPS D-19 - Photo

Recording Start Date	8/6/2004 - 10:55:07 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/6/2004	10:55:07.023 AM	16.681	285.8	V
Waveform V2	8/6/2004	10:55:07.023 AM	16.681	266.0	V
Waveform V3	8/6/2004	10:55:07.023 AM	16.681	282.1	V



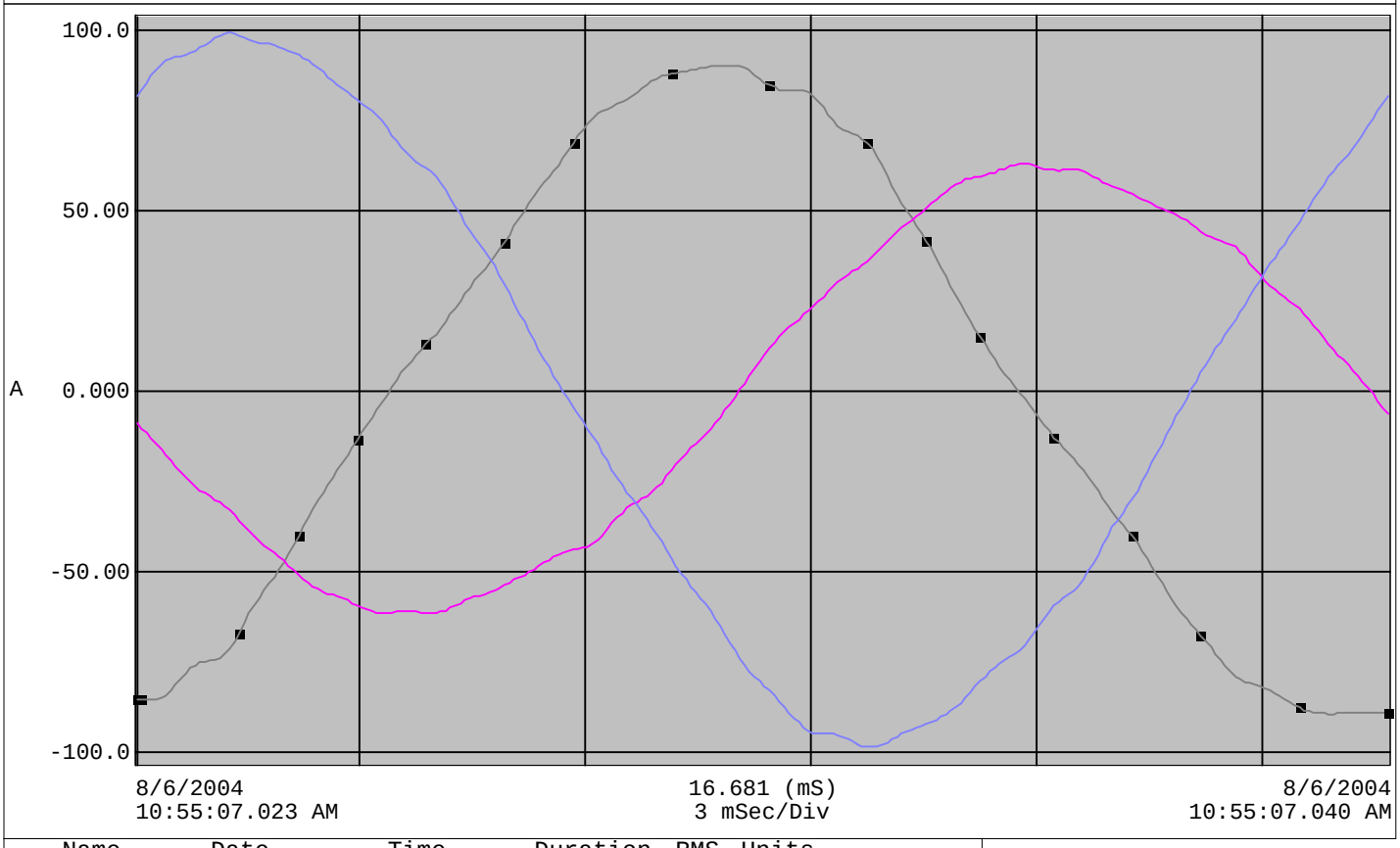
8/6/2004 - 10:55:07.000 AM

Val	
-199.2	Waveform V1
-210.7	Waveform V2
408.2	Waveform V3

Waveform V1

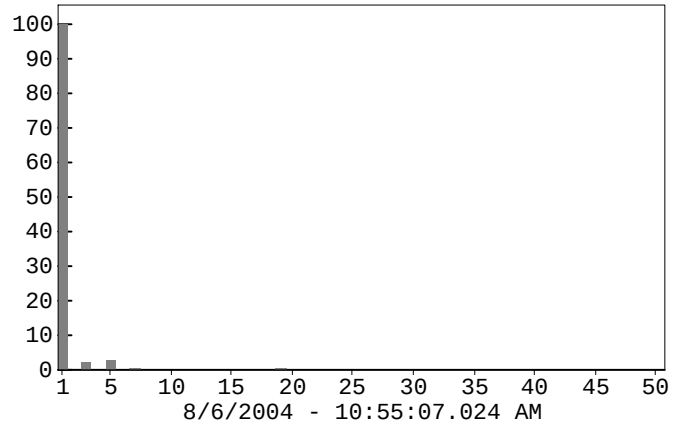
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.5	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.2	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.95 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/6/2004	10:55:07.023 AM	16.681	63.35	A
Waveform I2	8/6/2004	10:55:07.023 AM	16.681	43.68	A
Waveform I3	8/6/2004	10:55:07.023 AM	16.681	68.15	A

Waveform I1
63.35 Arms, 4.16 %THD



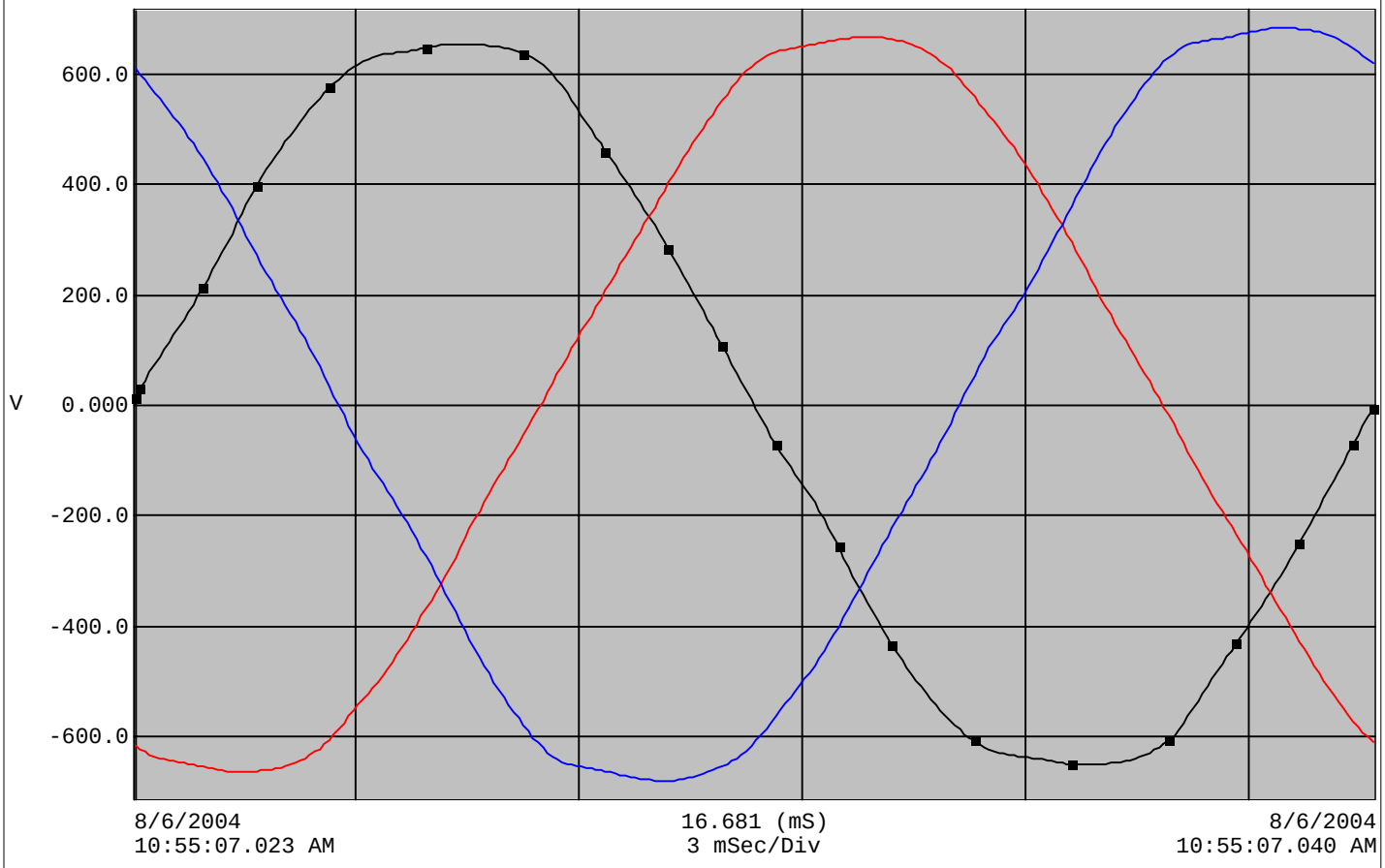
8/6/2004 - 10:55:07.000 AM

Val	
-86.00	Waveform I1
-9.000	Waveform I2
81.60	Waveform I3

Waveform I1

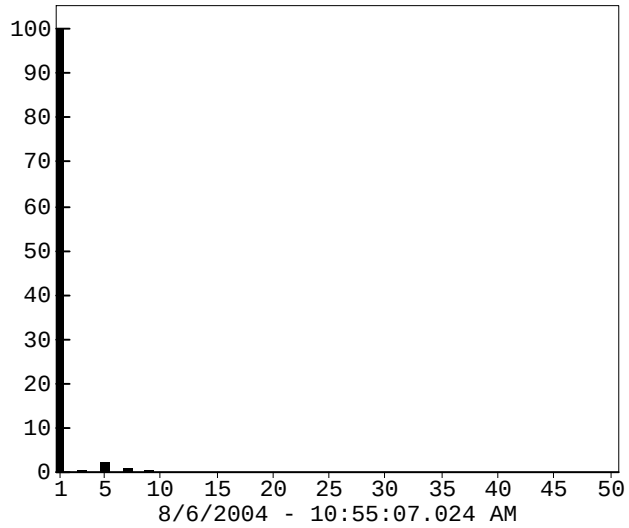
	(%)		(%)		(%)
H01	100.0	H18	0.5	H35	0.0
H02	0.1	H19	0.6	H36	0.1
H03	2.7	H20	0.2	H37	0.0
H04	0.2	H21	0.3	H38	0.0
H05	2.8	H22	0.4	H39	0.0
H06	0.3	H23	0.3	H40	0.0
H07	0.7	H24	0.2	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.5	H26	0.1	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.2	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.2	H31	0.1	H48	0.0
H15	0.1	H32	0.1	H49	0.0
H16	0.4	H33	0.1	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/6/2004	10:55:07.023 AM	16.681	474.1	V
Waveform U2	8/6/2004	10:55:07.023 AM	16.681	478.7	V
Waveform U3	8/6/2004	10:55:07.023 AM	16.681	491.8	V

Waveform U1
474.14 Vrms, 2.59 %THD



8/6/2004 - 10:55:07.000 AM

	Val	
—	11.40	Waveform U1
—	-618.9	Waveform U2
—	607.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	2.2	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/6/2004
Start Time: 10:55:07 AM
Duration: 0:0.000 (M:S)
W: 12.67E+3 W
VAR: 13.01E+3 W
VA: 18.16E+3 W
Power Factor: 0.698
Displacement Power Factor: 0.698
TAN: 1.025
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D19\080604-D19-Photo.dvb

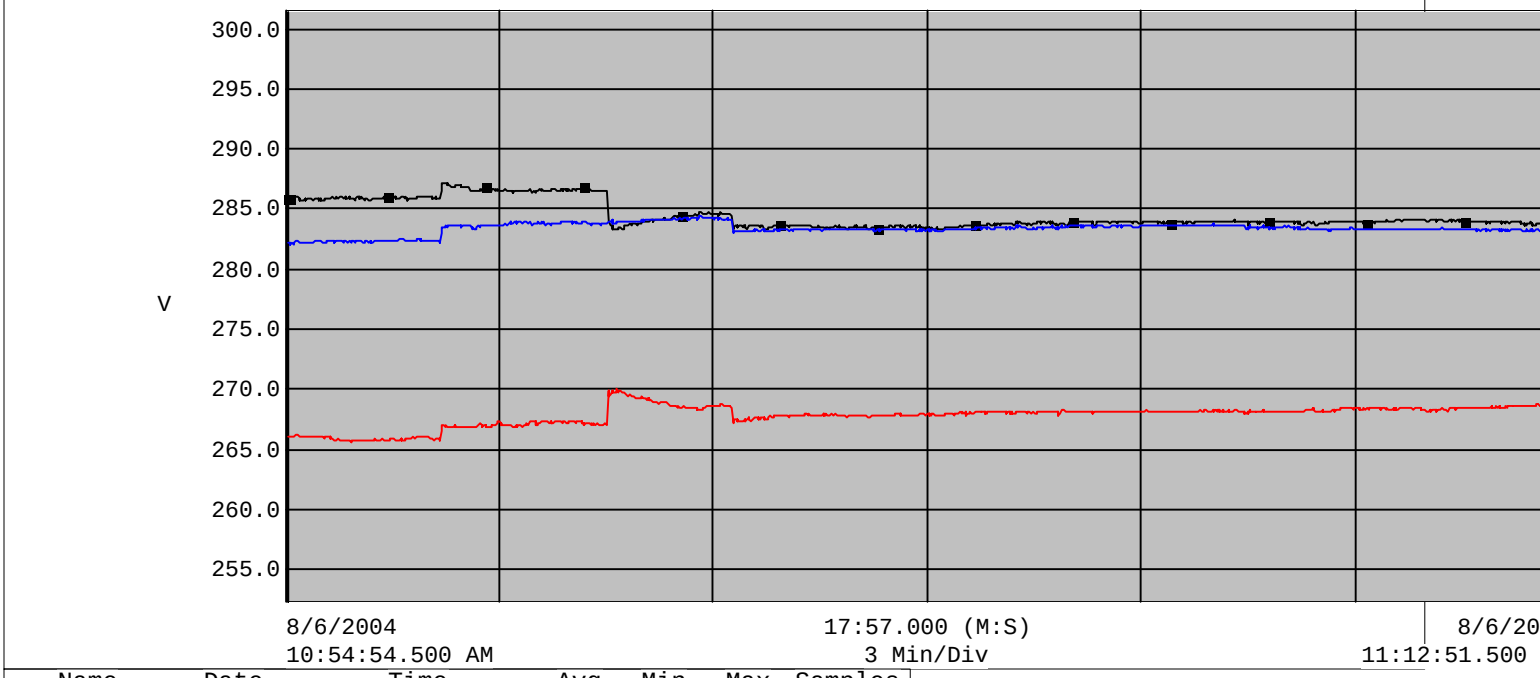
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-19 - Photo ,

Comments
Recorded at motor overload relay.

WPS D-19

Recording Start Date	8/6/2004 - 10:54:54 AM
Recording Duration	17:57 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

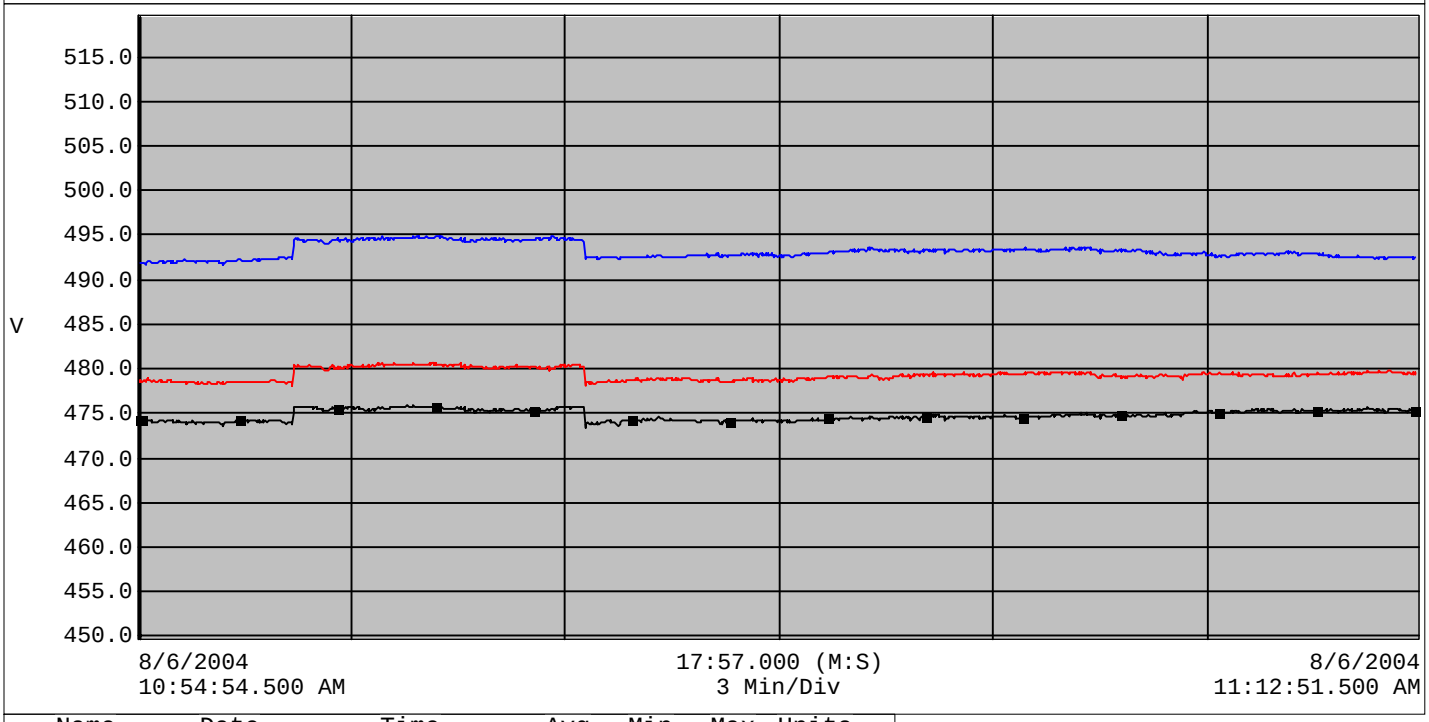
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/6/2004	10:54:54.500 AM	284.4	283.2	287.1	1078
Vrms Line2	8/6/2004	10:54:54.500 AM	267.7	265.5	269.9	1078
Vrms Line3	8/6/2004	10:54:54.500 AM	283.3	282.0	284.3	1078

8/6/2004 - 10:54:54.000 AM
Val
285.9 — Vrms Line1
266.0 — Vrms Line2
282.1 — Vrms Line3

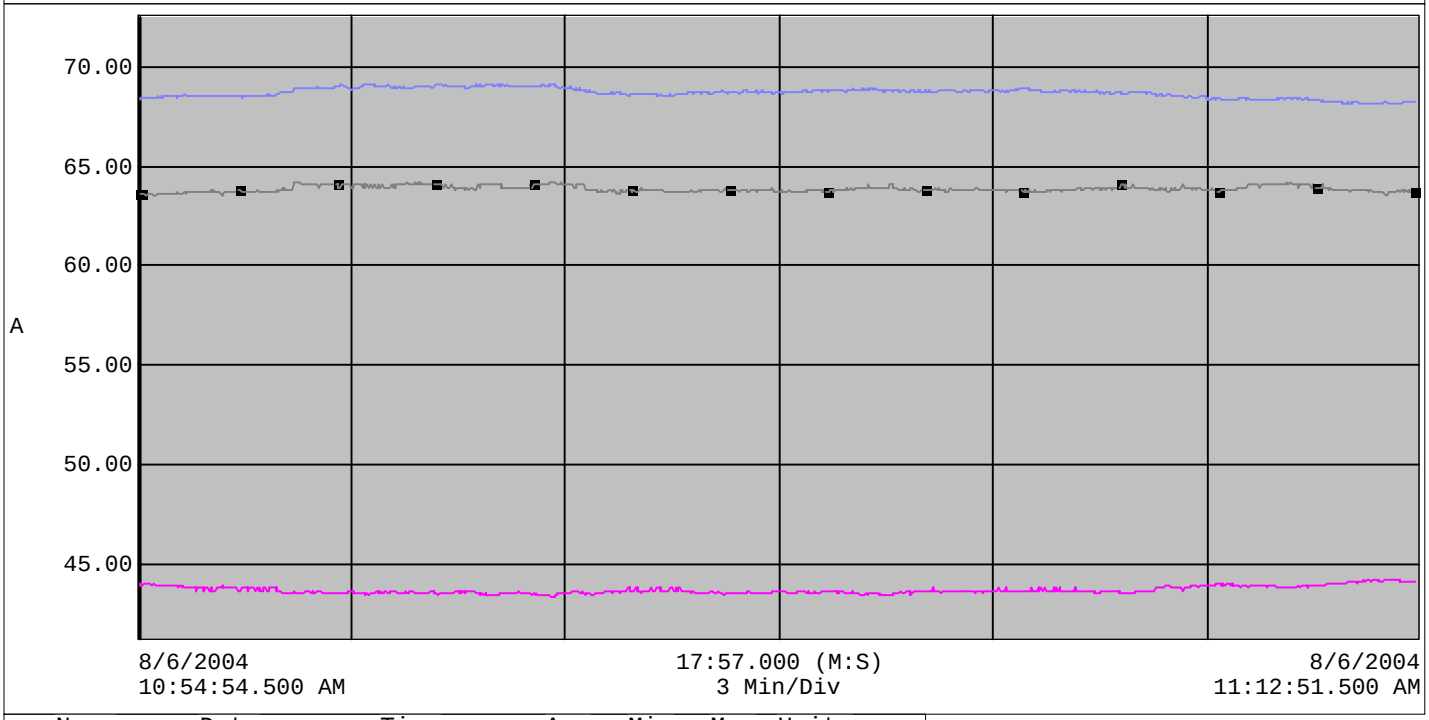
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/6/2004	10:54:54.500 AM	474.7	473.2	475.8	V
Urms Line2	8/6/2004	10:54:54.500 AM	479.2	477.9	480.6	V
Urms Line3	8/6/2004	10:54:54.500 AM	493.1	491.6	494.8	V

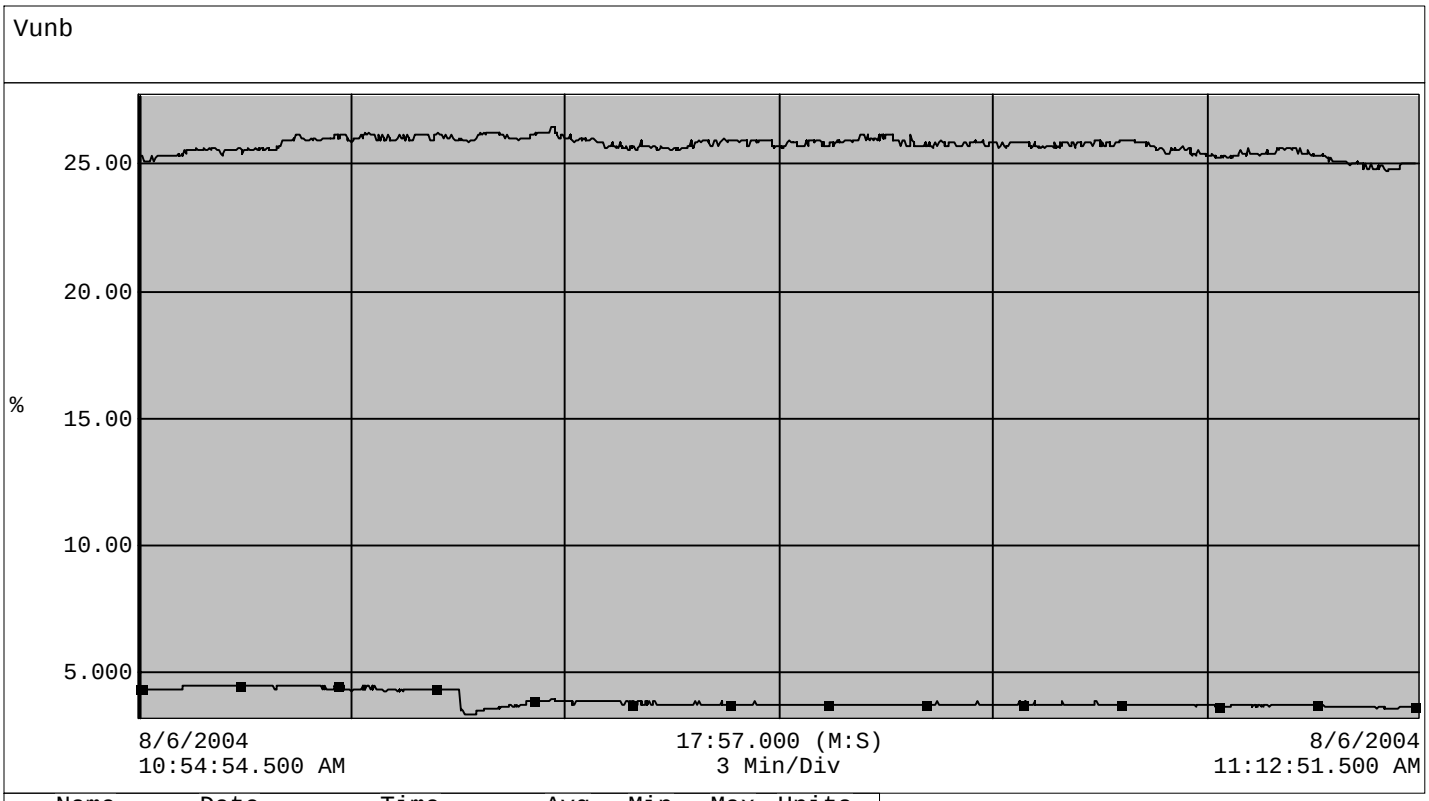
8/6/2004 - 10:54:54.000 AM
Val
474.2 Urms Line1
478.6 Urms Line2
491.8 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/6/2004	10:54:54.500 AM	63.83	63.50	64.10	A
Arms Line2	8/6/2004	10:54:54.500 AM	43.63	43.30	44.10	A
Arms Line3	8/6/2004	10:54:54.500 AM	68.67	68.10	69.10	A

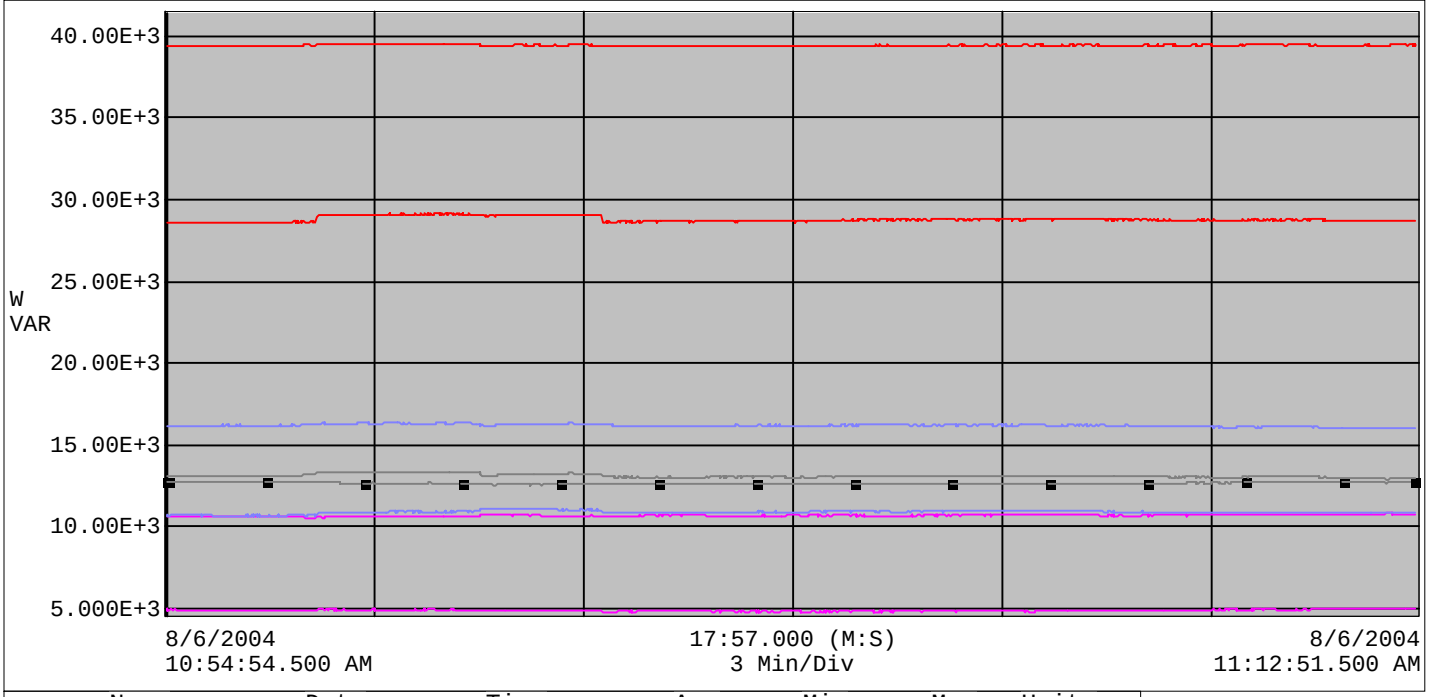
8/6/2004 - 10:54:54.000 AM
Val
63.60 — Arms Line1
43.90 — Arms Line2
68.30 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/6/2004	10:54:54.500 AM	3.852	3.300	4.400	%
Aunb(IEEE)	8/6/2004	10:54:54.500 AM	25.70	24.70	26.40	%

8/6/2004 - 10:54:54.000 AM
Val
4.300 —— Vunb(IEEE)
25.10 —— Aunb(IEEE)

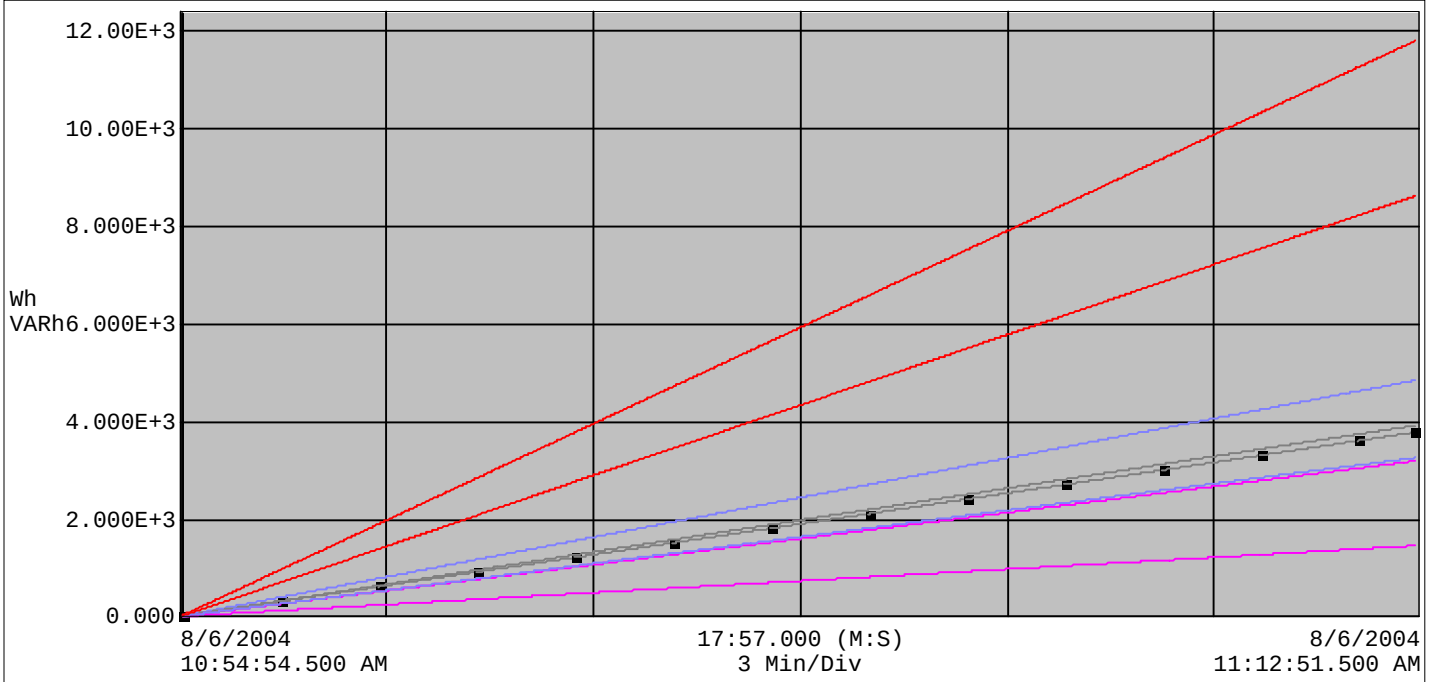
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/6/2004	10:54:54.500 AM	12.60E+3	12.51E+3	12.71E+3	W
W Line2	8/6/2004	10:54:54.500 AM	10.63E+3	10.51E+3	10.78E+3	W
W Line3	8/6/2004	10:54:54.500 AM	16.15E+3	15.95E+3	16.32E+3	W
W Sum of Phases	8/6/2004	10:54:54.500 AM	39.38E+3	39.29E+3	39.47E+3	W
VAR Line1	8/6/2004	10:54:54.500 AM	13.06E+3	12.85E+3	13.34E+3	VAR
VAR Line2	8/6/2004	10:54:54.500 AM	4.836E+3	4.718E+3	4.956E+3	VAR
VAR Line3	8/6/2004	10:54:54.500 AM	10.85E+3	10.61E+3	11.09E+3	VAR
VAR Sum of Phases	8/6/2004	10:54:54.500 AM	28.75E+3	28.48E+3	29.10E+3	VAR

8/6/2004 - 10:54:54.000 AM
Val
12.71E+3 — W Line1
10.59E+3 — W Line2
16.08E+3 — W Line3
39.38E+3 — W Sum of Phases
13.02E+3 — VAR Line1
4.896E+3 — VAR Line2
10.63E+3 — VAR Line3
28.55E+3 — VAR Sum of Phases

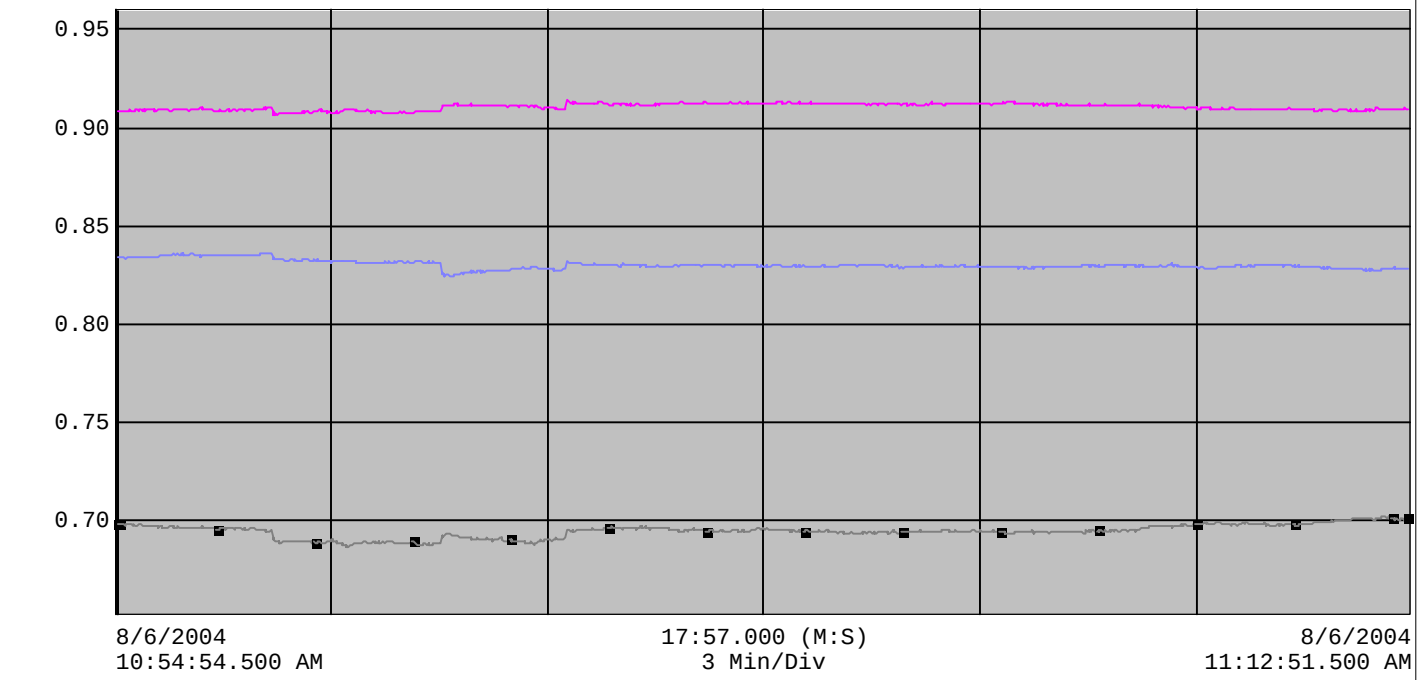
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/6/2004	10:54:54.500 AM	1.888E+3	3.571	3.774E+3	Wh
W-hours Line2	8/6/2004	10:54:54.500 AM	1.589E+3	2.915	3.184E+3	Wh
W-hours Line3	8/6/2004	10:54:54.500 AM	2.424E+3	4.427	4.835E+3	Wh
W-hours Sum of Phases	8/6/2004	10:54:54.500 AM	5.902E+3	10.80	11.79E+3	Wh
VAR-hours Line1	8/6/2004	10:54:54.500 AM	1.964E+3	3.582	3.912E+3	VARh
VAR-hours Line2	8/6/2004	10:54:54.500 AM	724.1	1.370	1.448E+3	VARh
VAR-hours Line3	8/6/2004	10:54:54.500 AM	1.624E+3	2.974	3.249E+3	VARh
VAR-hours Sum of Phases	8/6/2004	10:54:54.500 AM	4.311E+3	7.882	8.609E+3	VARh

8/6/2004 - 10:54:54.000 AM
Val
3.571 — W-hours Line1
2.915 — W-hours Line2
4.427 — W-hours Line3
10.80 — W-hours Sum of Phases
3.582 — VAR-hours Line1
1.370 — VAR-hours Line2
2.974 — VAR-hours Line3
7.882 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/6/2004	10:54:54.500 AM	0.694	0.686	0.702	
PF Line2	8/6/2004	10:54:54.500 AM	0.910	0.906	0.914	
PF Line3	8/6/2004	10:54:54.500 AM	0.830	0.824	0.836	

8/6/2004 - 10:54:54.000 AM
Val
0.698 — PF Line1
0.908 — PF Line2
0.834 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D19\080604-D19.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-19 ,

Comments
Recorded at the overload relay.

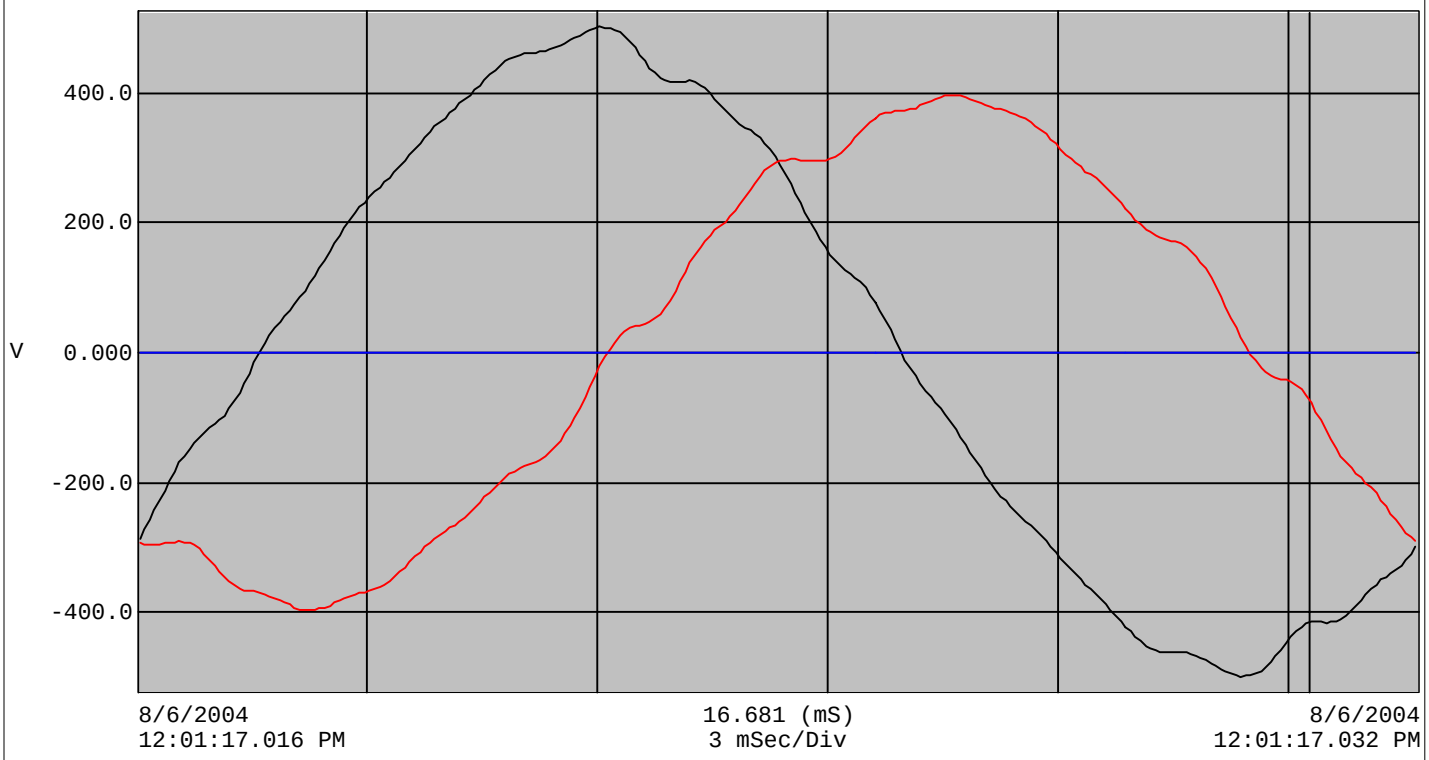
GWA Water Pumping Station Assessment				
Station Name: D-20	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/06/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.4	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	1	0.05	2
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.5	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	2	0.1	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.05	
Pressure	1.5%	1	0.015	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.13	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	2	0.04	63
	100%	**Assessment Value**		**2.1**

Comments:

WPS D-20 - Photo

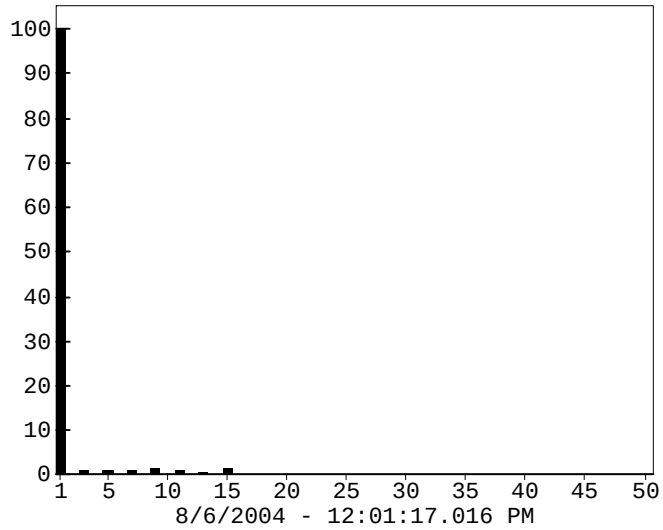
Recording Start Date	8/6/2004 - 12:01:17 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/6/2004	12:01:17.016 PM	16.681	338.5	V
Waveform V2	8/6/2004	12:01:17.016 PM	16.681	271.1	V
Waveform V3	8/6/2004	12:01:17.016 PM	16.681	0.000	V

Waveform V1
338.54 Vrms, 3.28 %THD



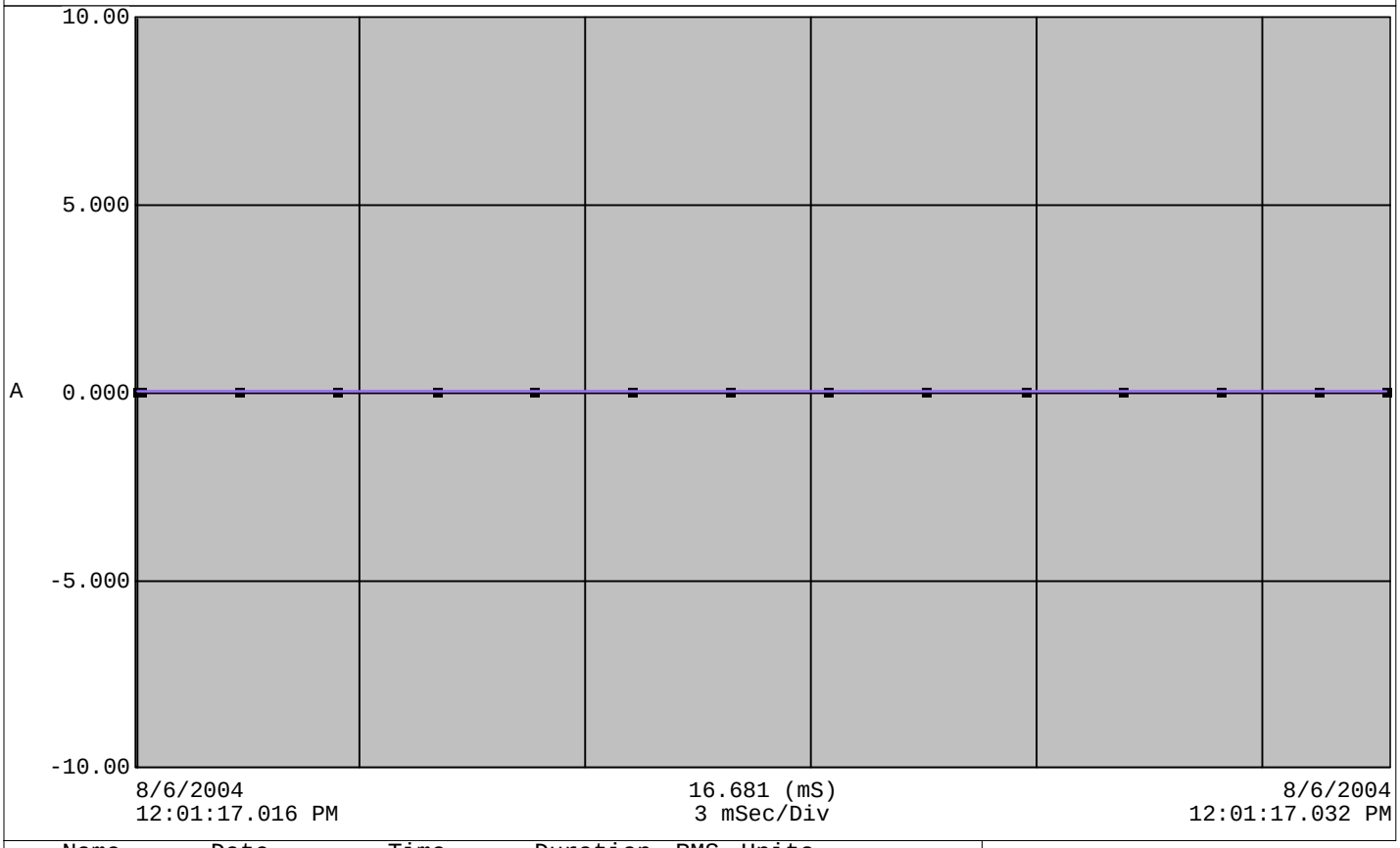
8/6/2004 - 12:01:17.015 PM

Val	
-415.8	Waveform V1
-78.80	Waveform V2
0.000	Waveform V3

Waveform V1

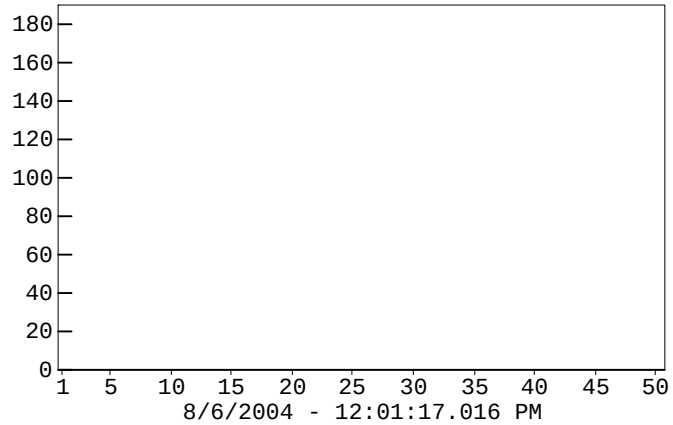
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.2	H36	0.0
H03	1.2	H20	0.0	H37	0.0
H04	0.1	H21	0.3	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.2	H23	0.1	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	1.7	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	1.1	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.8	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	1.5	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.4	H34	0.0		

Waveform - Current
Frequency: 59.95 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/6/2004	12:01:17.016 PM	16.681	0.000	A
Waveform I2	8/6/2004	12:01:17.016 PM	16.681	0.000	A
Waveform I3	8/6/2004	12:01:17.016 PM	16.681	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD

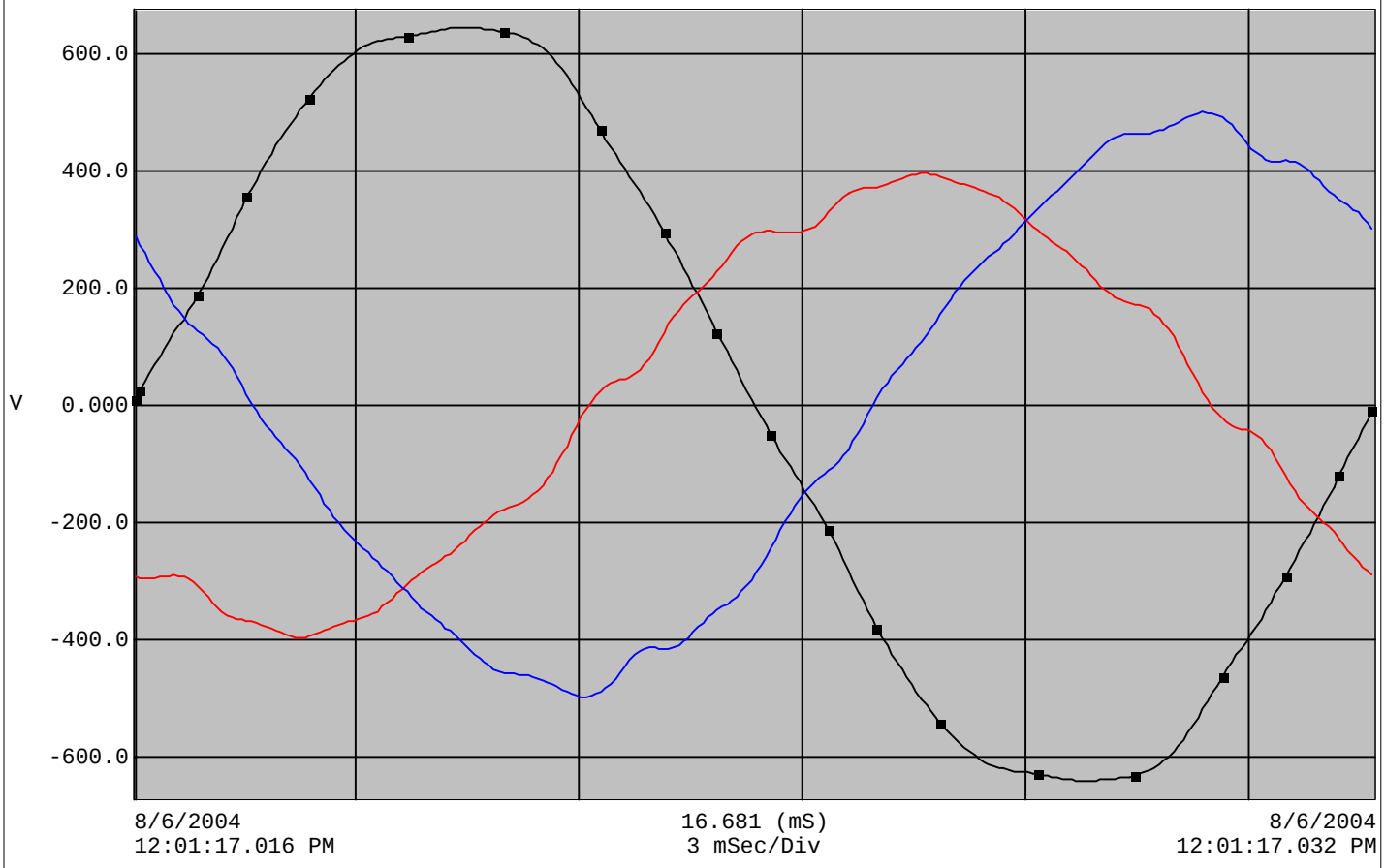


8/6/2004 - 12:01:17.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

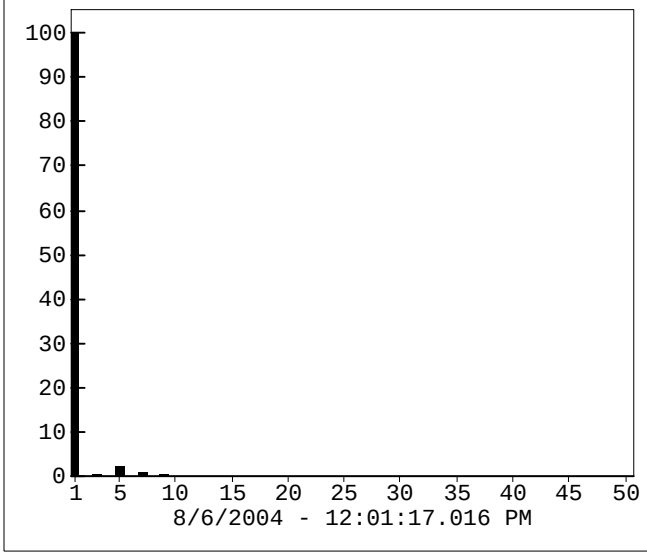
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/6/2004	12:01:17.016 PM	16.681	467.6	V
Waveform U2	8/6/2004	12:01:17.016 PM	16.681	271.1	V
Waveform U3	8/6/2004	12:01:17.016 PM	16.681	338.5	V

Waveform U1
467.62 Vrms, 2.70 %THD



8/6/2004 - 12:01:17.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/6/2004
Start Time: 12:01:17 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D20\080604-D20-Photo.dvb

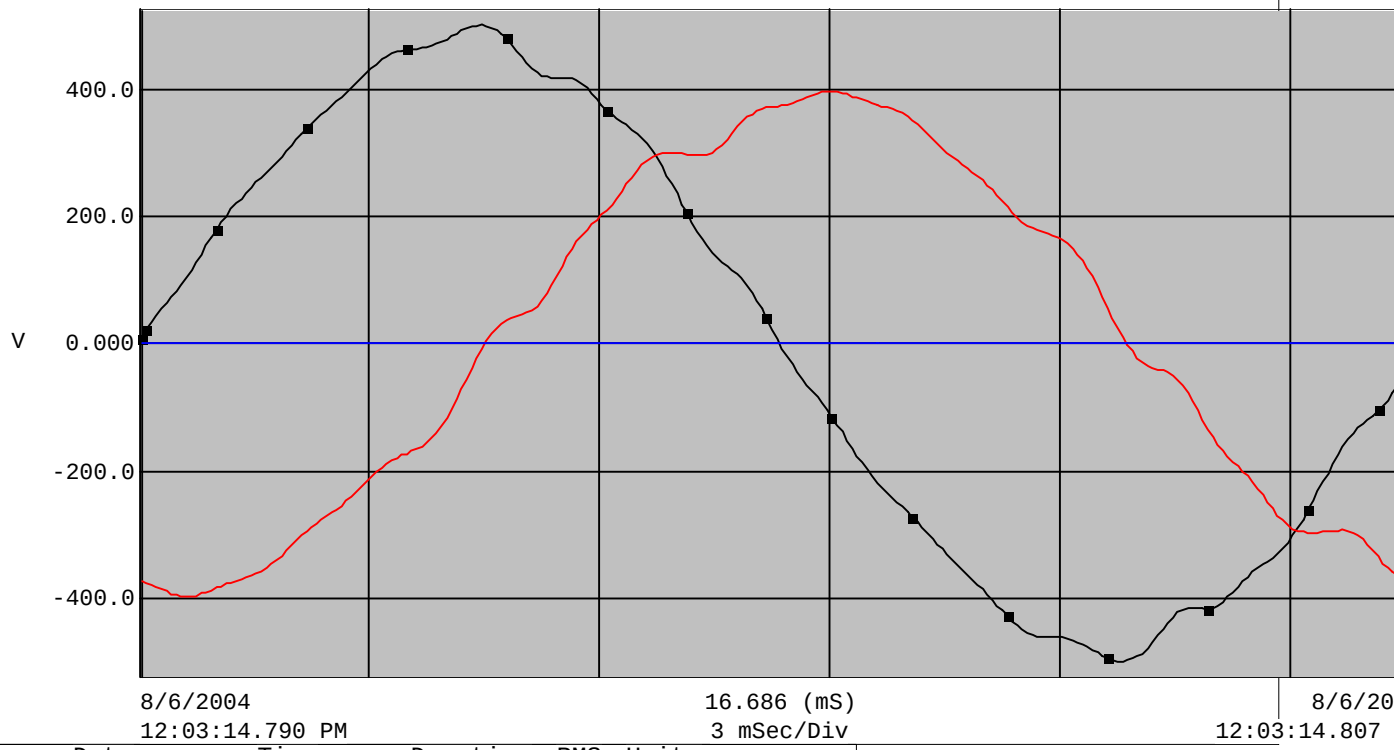
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-20 - Photo ,

Comments
Recorded at motor starter OL relay. (voltage dues to test leads not connected properly)

WPS D-20 - Photo1

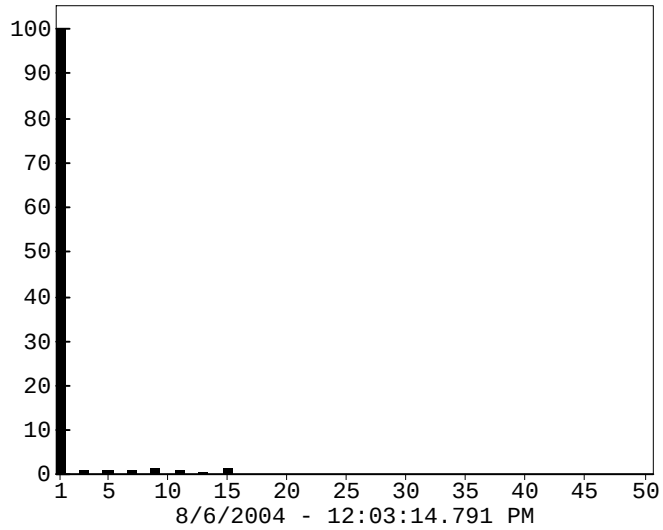
Recording Start Date	8/6/2004 - 12:03:14 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/6/2004	12:03:14.790 PM	16.686	338.7	V
Waveform V2	8/6/2004	12:03:14.790 PM	16.686	272.0	V
Waveform V3	8/6/2004	12:03:14.790 PM	16.686	0.000	V

Waveform V1
338.70 Vrms, 3.23 %THD



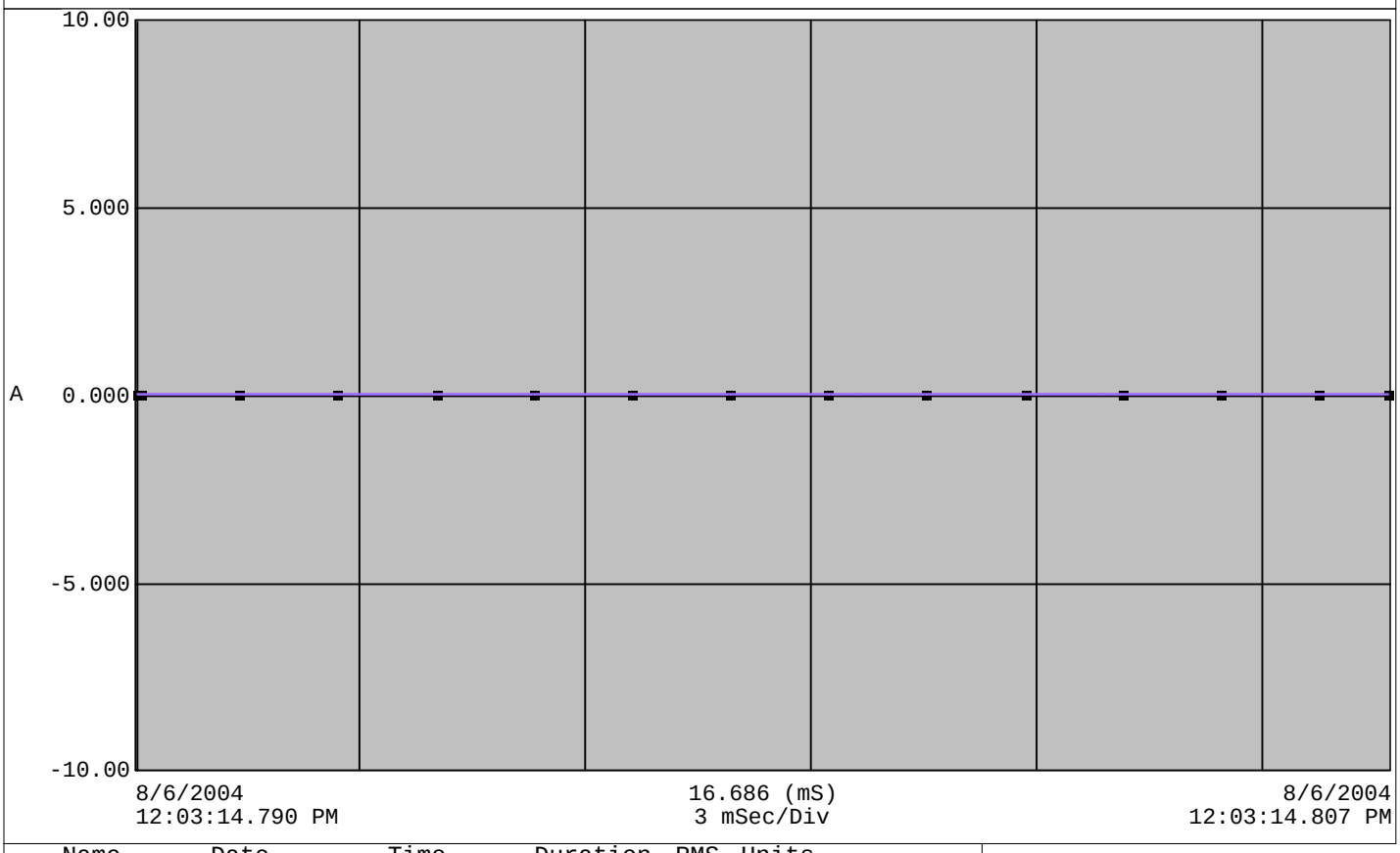
8/6/2004 - 12:03:14.000 PM

	Val	
—	7.400	Waveform V1
—	-375.3	Waveform V2
—	0.000	Waveform V3

Waveform V1

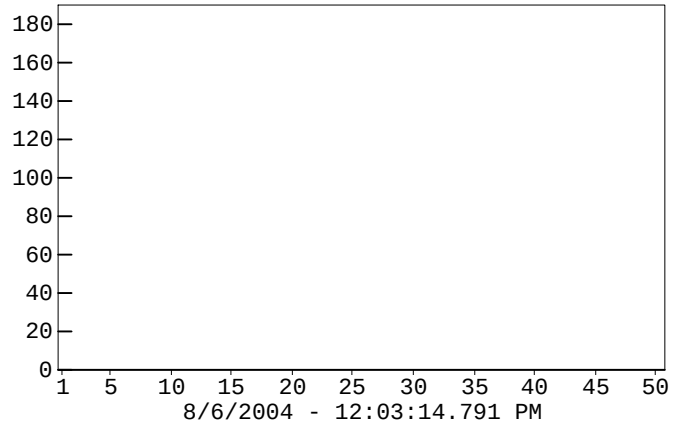
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	1.2	H20	0.0	H37	0.0
H04	0.1	H21	0.3	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.2	H23	0.1	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	1.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	1.0	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.8	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	1.5	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/6/2004	12:03:14.790 PM	16.686	0.000	A
Waveform I2	8/6/2004	12:03:14.790 PM	16.686	0.000	A
Waveform I3	8/6/2004	12:03:14.790 PM	16.686	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



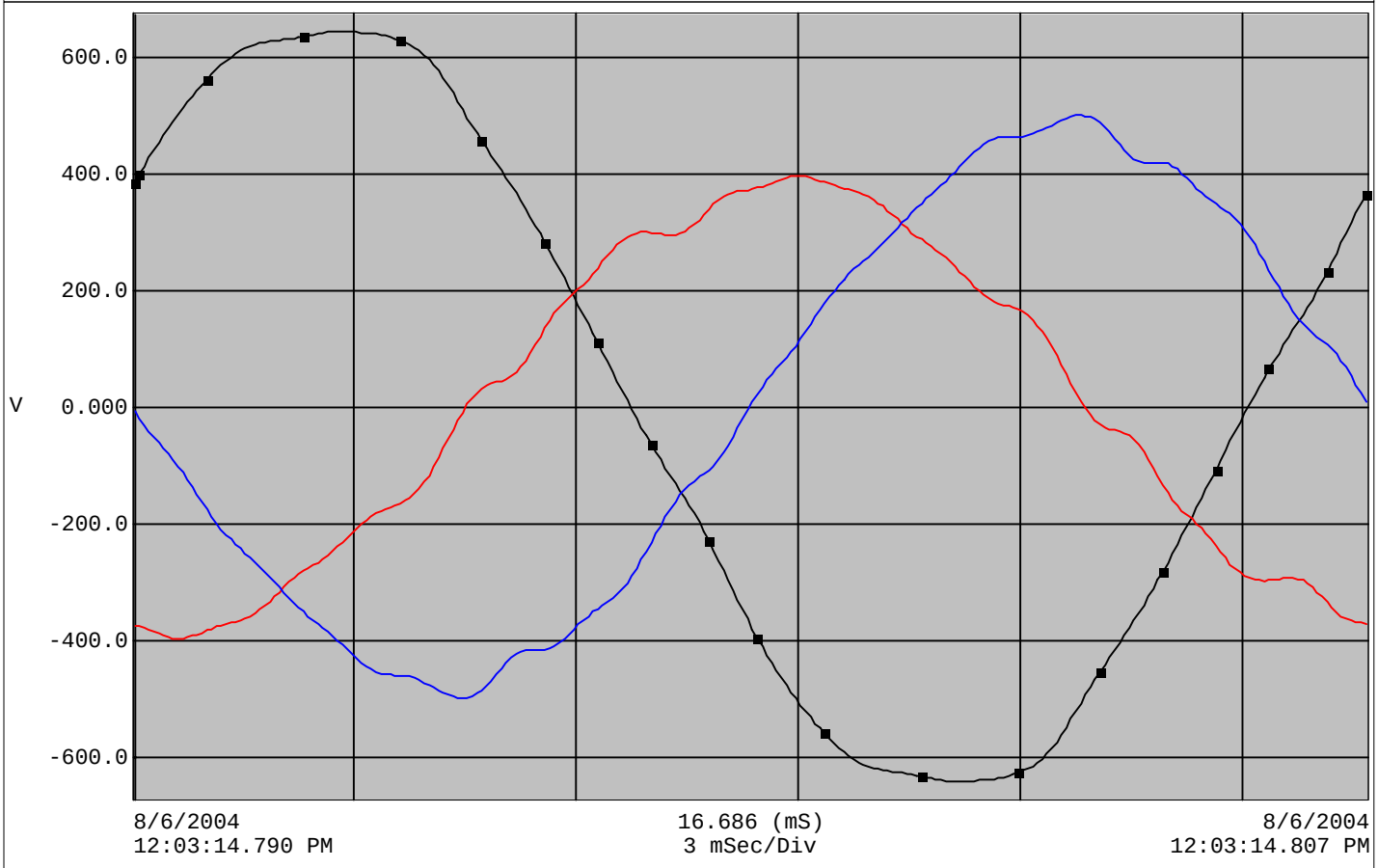
8/6/2004 - 12:03:14.000 PM

Val	
0.000	Waveform I1
0.000	Waveform I2
0.000	Waveform I3

Waveform I1

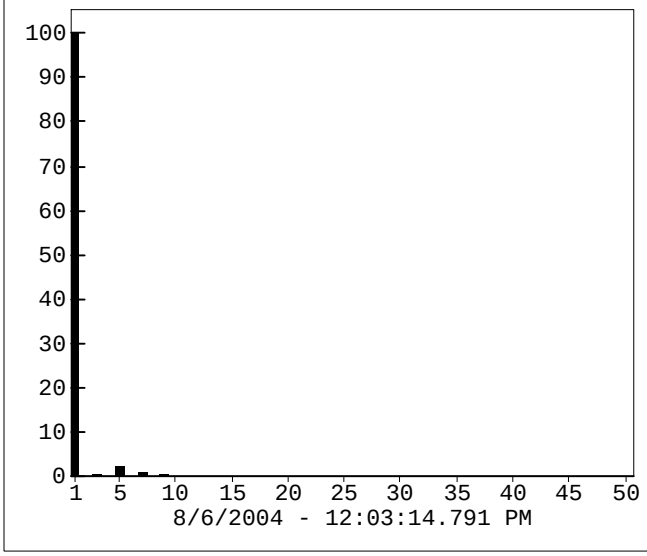
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/6/2004	12:03:14.790 PM	16.686	467.6	V
Waveform U2	8/6/2004	12:03:14.790 PM	16.686	272.0	V
Waveform U3	8/6/2004	12:03:14.790 PM	16.686	338.7	V

Waveform U1
467.62 Vrms, 2.73 %THD



8/6/2004 - 12:03:14.000 PM
Val
382.8 — Waveform U1
-375.3 — Waveform U2
-7.400 — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 8/6/2004
Start Time: 12:03:14 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D20\080604-D20-Photo1.dvb

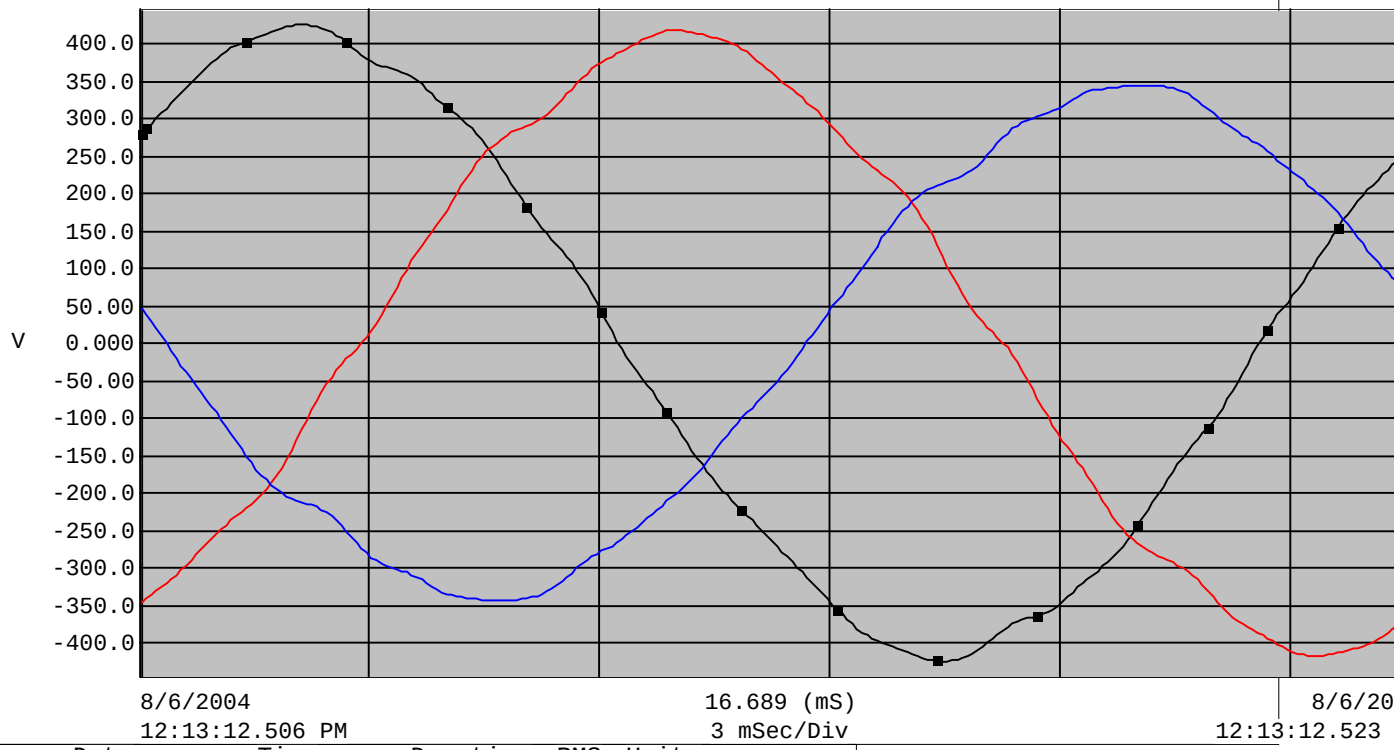
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-20 - Photo1 ,

Comments
Recorded at motor starter, voltge unbalance (due to test lead not correctly connected)

WPS D-20 - Photo2

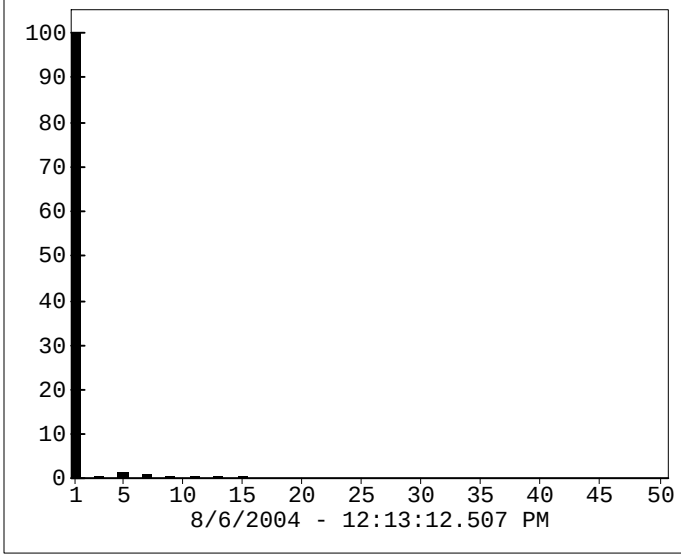
Recording Start Date	8/6/2004 - 12:13:12 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.92 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/6/2004	12:13:12.506 PM	16.689	292.2	V
Waveform V2	8/6/2004	12:13:12.506 PM	16.689	288.3	V
Waveform V3	8/6/2004	12:13:12.506 PM	16.689	240.1	V

Waveform V1
292.20 Vrms, 2.42 %THD



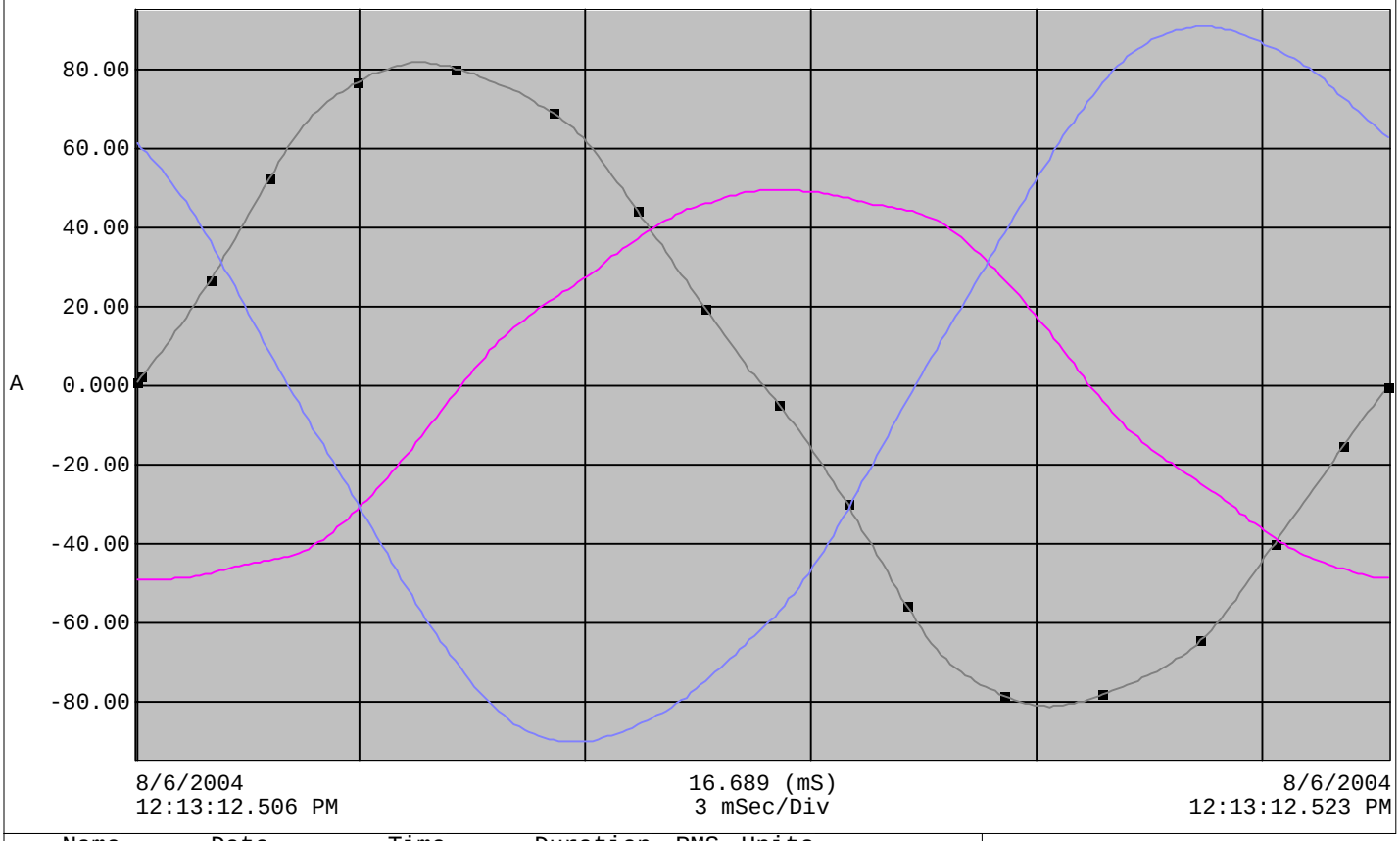
8/6/2004 - 12:13:12.000 PM

	Val	
—	278.7	Waveform V1
—	-347.5	Waveform V2
—	45.70	Waveform V3

Waveform V1

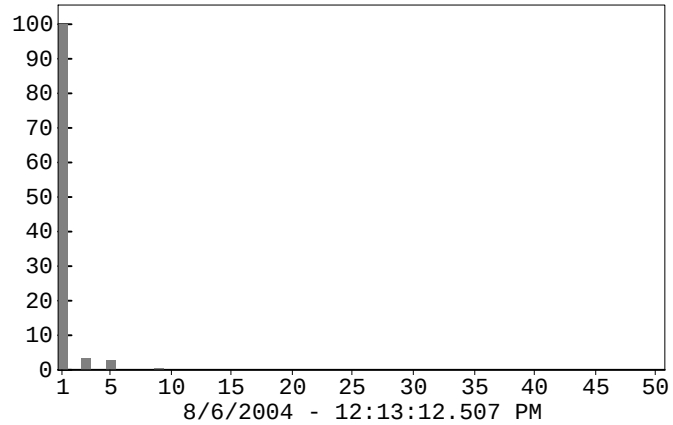
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.7	H20	0.0	H37	0.0
H04	0.0	H21	0.2	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.7	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Current
Frequency: 59.92 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/6/2004	12:13:12.506 PM	16.689	57.20	A
Waveform I2	8/6/2004	12:13:12.506 PM	16.689	36.27	A
Waveform I3	8/6/2004	12:13:12.506 PM	16.689	64.02	A

Waveform I1
57.20 Arms, 4.54 %THD

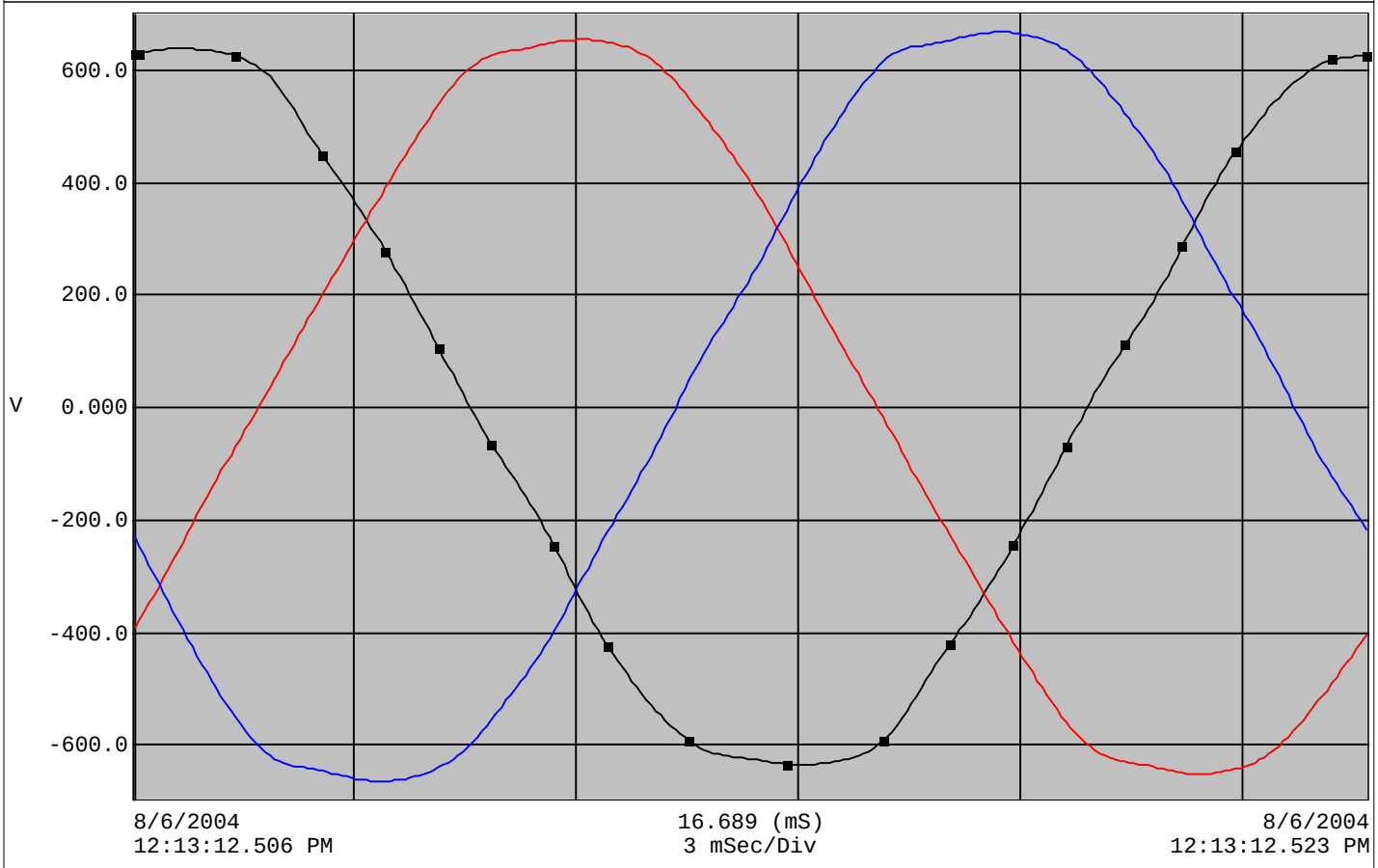


8/6/2004 - 12:13:12.000 PM
Val
0.700 — Waveform I1
-49.10 — Waveform I2
61.20 — Waveform I3

Waveform I1

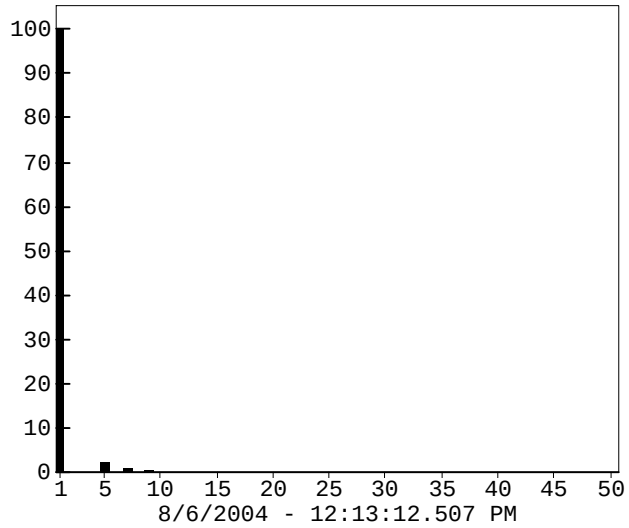
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	3.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	3.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.92 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/6/2004	12:13:12.506 PM	16.689	463.2	V
Waveform U2	8/6/2004	12:13:12.506 PM	16.689	469.4	V
Waveform U3	8/6/2004	12:13:12.506 PM	16.689	480.9	V

Waveform U1
463.19 Vrms, 2.62 %THD



8/6/2004 - 12:13:12.000 PM

	Val	
—	626.3	Waveform U1
—	-393.3	Waveform U2
—	-233.0	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 8/6/2004
Start Time: 12:13:12 PM
Duration: 0:0.000 (M:S)
W: 12.21E+3 W
VAR: 11.41E+3 W
VA: 16.71E+3 W
Power Factor: 0.731
Displacement Power Factor: 0.731
TAN: 0.933
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D20\080604-D20-Photo2.dvb

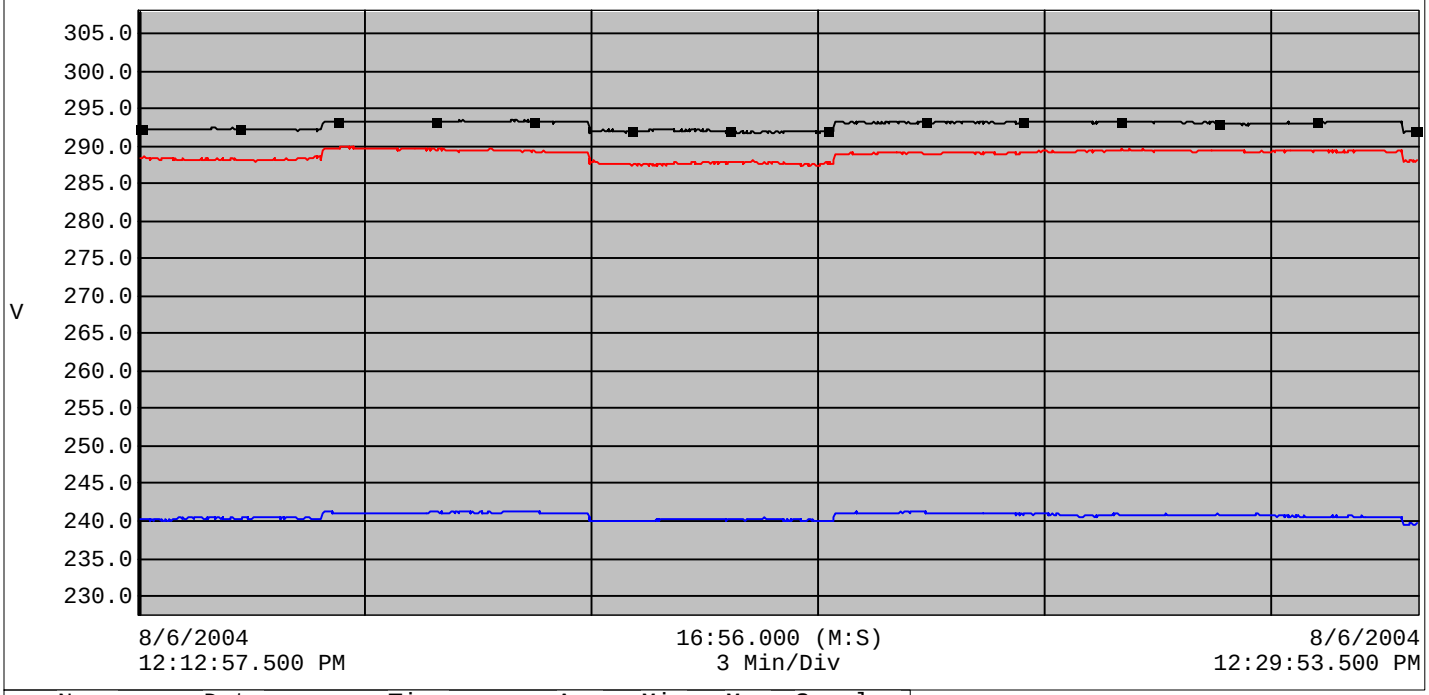
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-20 - Photo 3 ,

Comments
Recorded at motor starter overload, after motor was operational

WPS D-20

Recording Start Date	8/6/2004 - 12:12:57 PM
Recording Duration	16:56 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

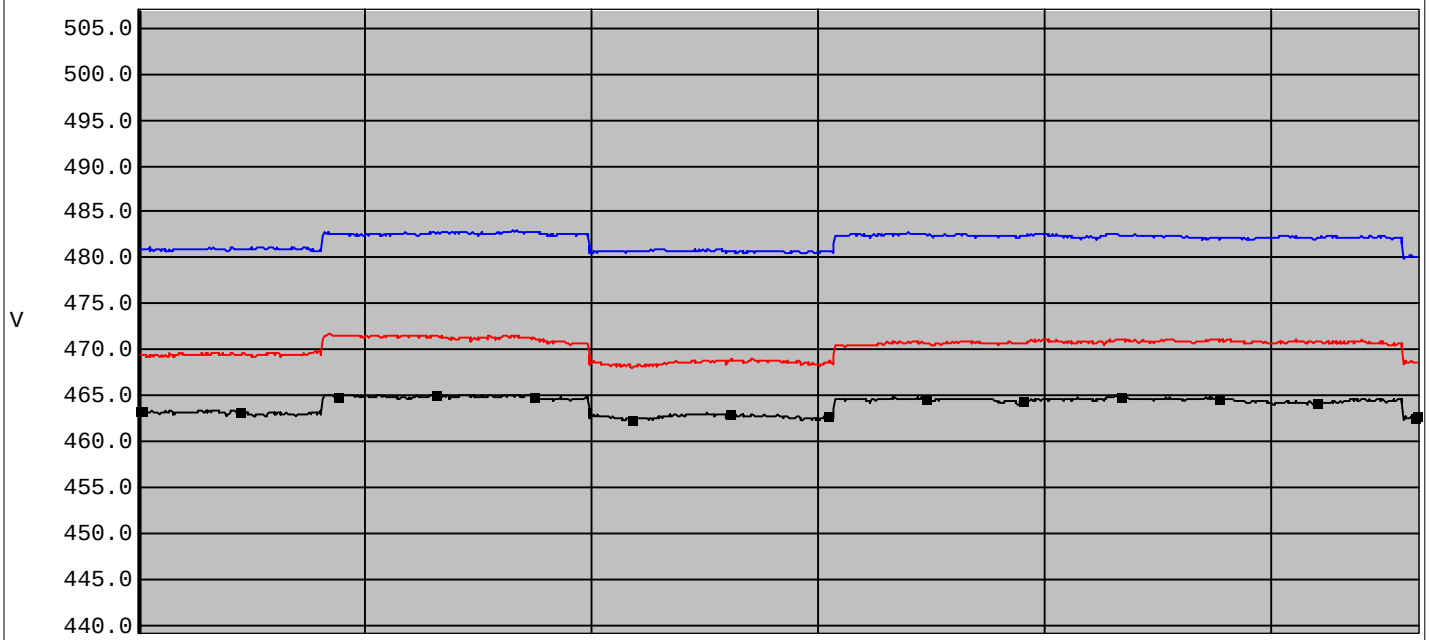
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/6/2004	12:12:57.500 PM	292.7	291.7	293.3	1017
Vrms Line2	8/6/2004	12:12:57.500 PM	288.7	287.3	289.7	1017
Vrms Line3	8/6/2004	12:12:57.500 PM	240.6	239.3	241.2	1017

8/6/2004 - 12:12:57.000 PM
Val
292.2 — Vrms Line1
288.2 — Vrms Line2
240.1 — Vrms Line3

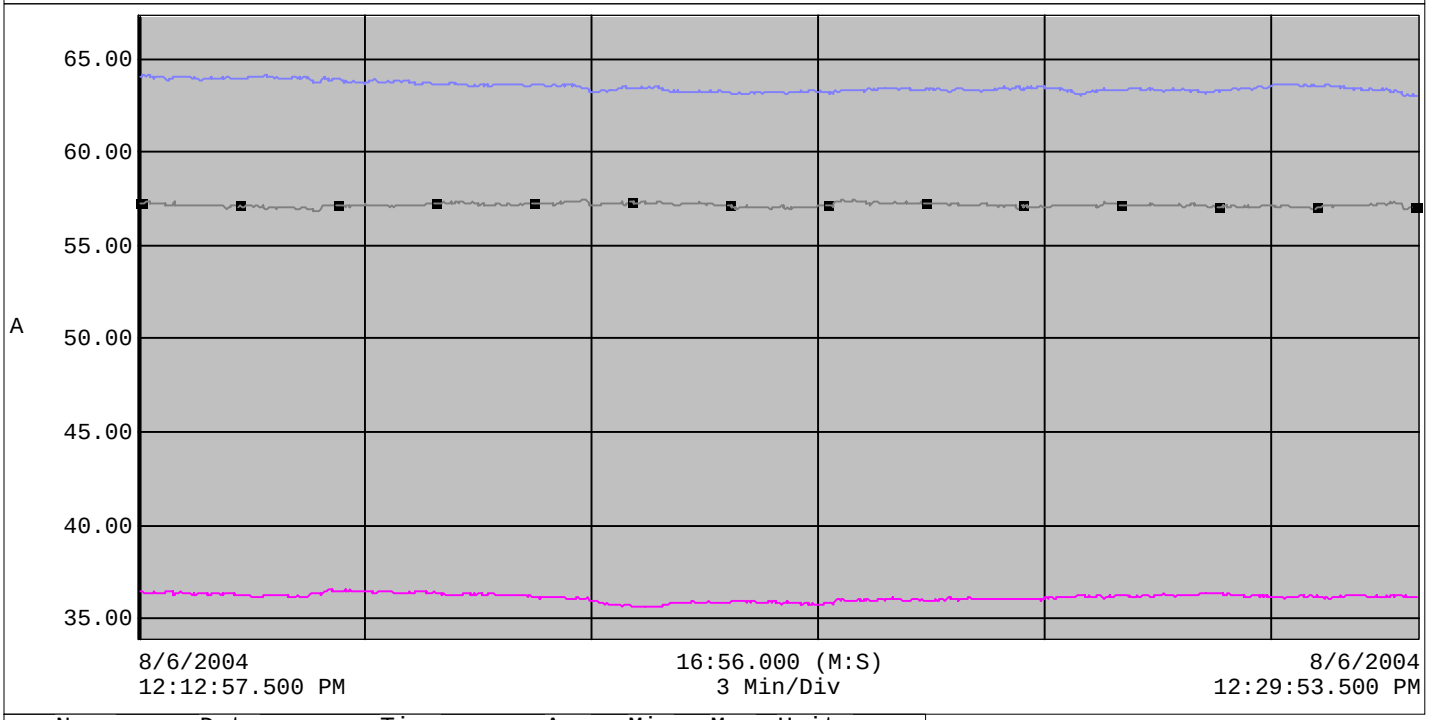
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/6/2004	12:12:57.500 PM	463.9	462.1	465.0	V
Urms Line2	8/6/2004	12:12:57.500 PM	470.1	467.9	471.6	V
Urms Line3	8/6/2004	12:12:57.500 PM	481.7	479.7	482.8	V

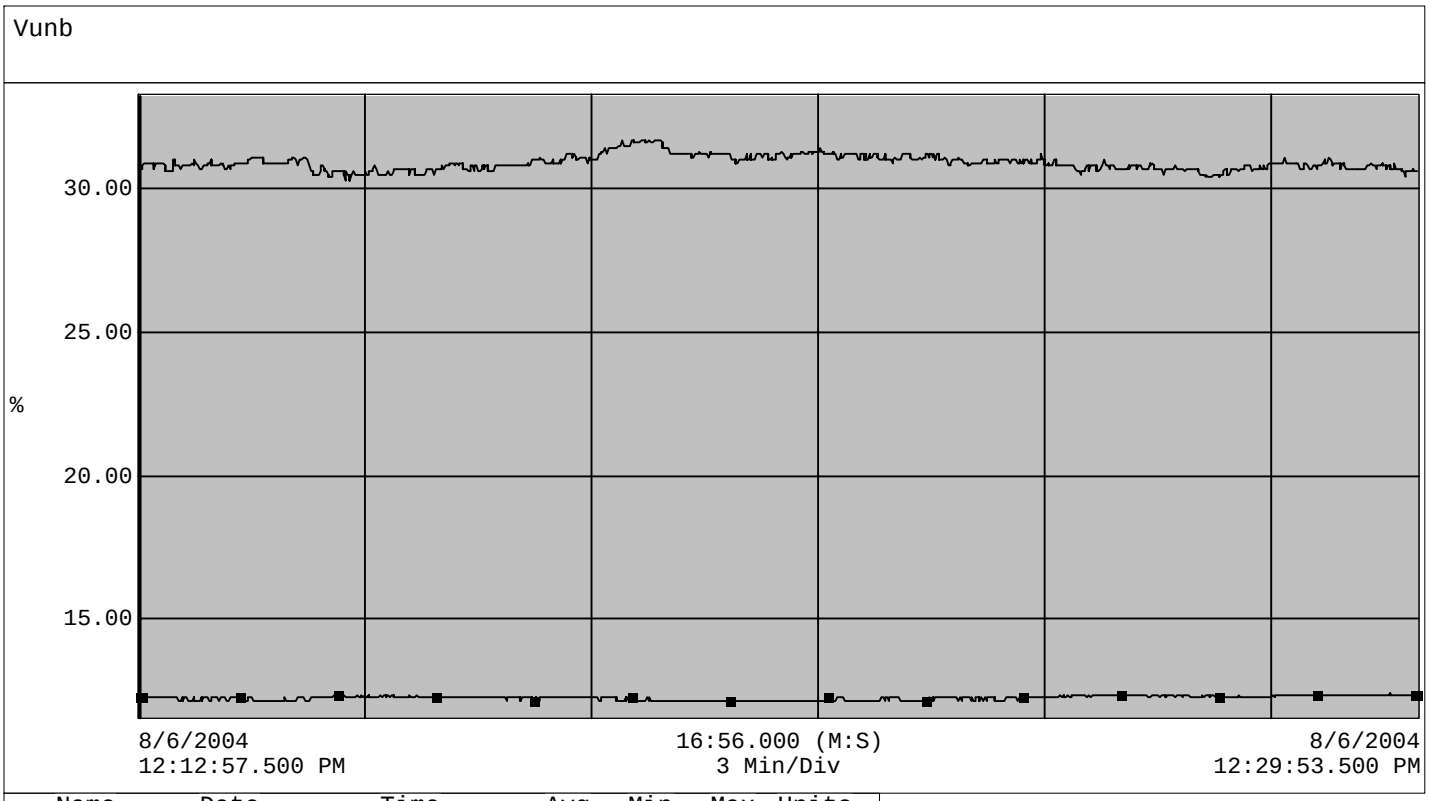
8/6/2004 - 12:12:57.000 PM
Val
463.2 Urms Line1
469.3 Urms Line2
480.8 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/6/2004	12:12:57.500 PM	57.12	56.80	57.40	A
Arms Line2	8/6/2004	12:12:57.500 PM	36.08	35.60	36.50	A
Arms Line3	8/6/2004	12:12:57.500 PM	63.47	63.00	64.10	A

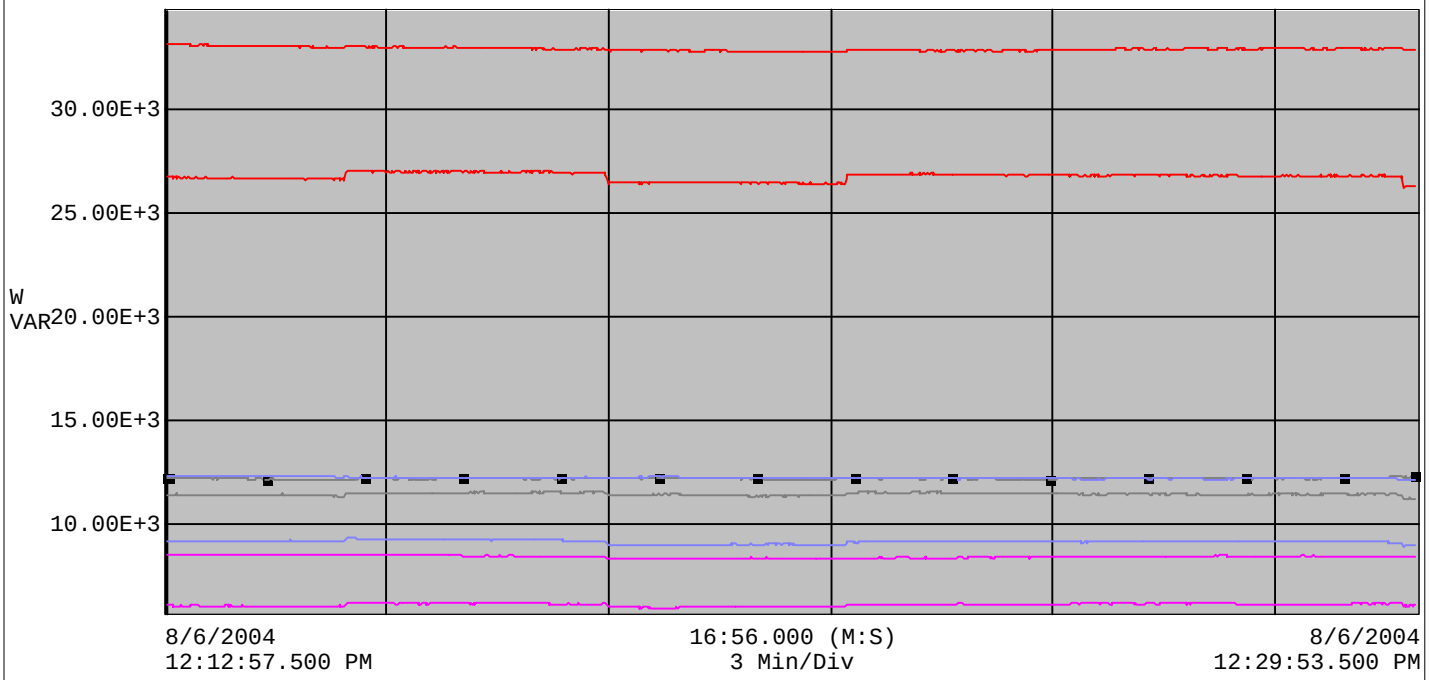
8/6/2004 - 12:12:57.000 PM
Val
57.30 — Arms Line1
36.40 — Arms Line2
64.00 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/6/2004	12:12:57.500 PM	12.19	12.10	12.40	%
Aunb(IEEE)	8/6/2004	12:12:57.500 PM	30.91	30.30	31.70	%

8/6/2004 - 12:12:57.000 PM
Val
12.20 —— Vunb(IEEE)
30.80 —— Aunb(IEEE)

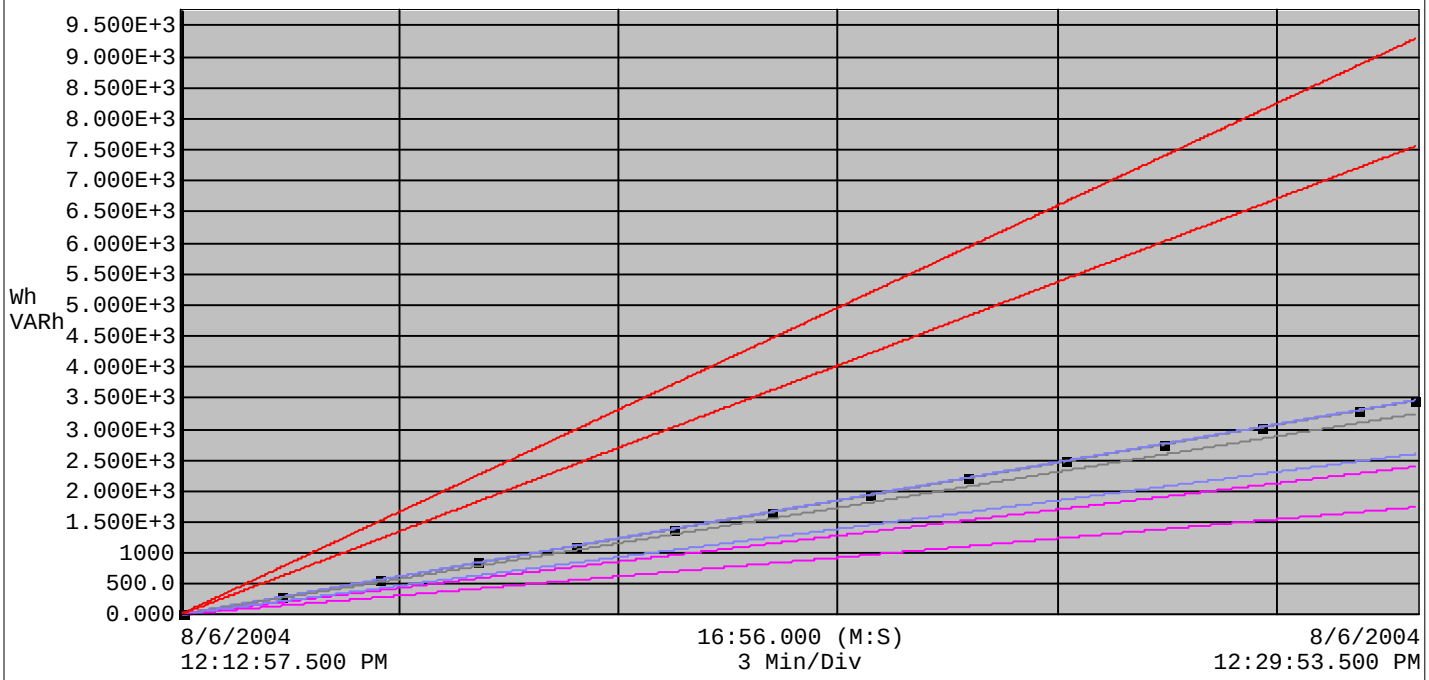
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/6/2004	12:12:57.500 PM	12.19E+3	12.09E+3	12.29E+3	W
W Line2	8/6/2004	12:12:57.500 PM	8.432E+3	8.302E+3	8.546E+3	W
W Line3	8/6/2004	12:12:57.500 PM	12.22E+3	12.12E+3	12.35E+3	W
W Sum of Phases	8/6/2004	12:12:57.500 PM	32.84E+3	32.68E+3	33.09E+3	W
VAR Line1	8/6/2004	12:12:57.500 PM	11.44E+3	11.21E+3	11.56E+3	VAR
VAR Line2	8/6/2004	12:12:57.500 PM	6.118E+3	5.958E+3	6.222E+3	VAR
VAR Line3	8/6/2004	12:12:57.500 PM	9.152E+3	8.932E+3	9.324E+3	VAR
VAR Sum of Phases	8/6/2004	12:12:57.500 PM	26.71E+3	26.20E+3	27.02E+3	VAR

8/6/2004 - 12:12:57.000 PM
Val
12.24E+3 — W Line1
8.538E+3 — W Line2
12.31E+3 — W Line3
33.09E+3 — W Sum of Phases
11.40E+3 — VAR Line1
6.089E+3 — VAR Line2
9.180E+3 — VAR Line3
26.67E+3 — VAR Sum of Phases

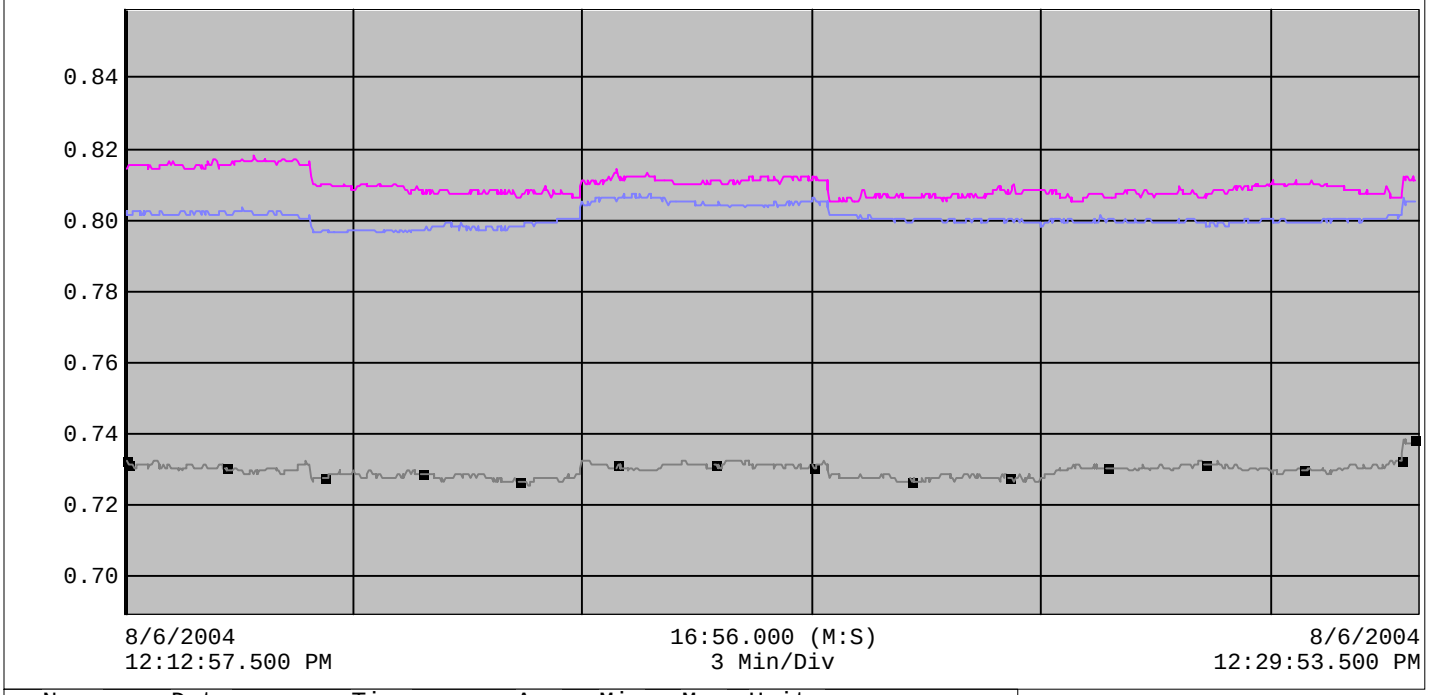
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/6/2004	12:12:57.500 PM	1.722E+3	3.363	3.443E+3	Wh
W-hours Line2	8/6/2004	12:12:57.500 PM	1.194E+3	2.399	2.382E+3	Wh
W-hours Line3	8/6/2004	12:12:57.500 PM	1.731E+3	3.372	3.453E+3	Wh
W-hours Sum of Phases	8/6/2004	12:12:57.500 PM	4.647E+3	9.061	9.278E+3	Wh
VAR-hours Line1	8/6/2004	12:12:57.500 PM	1.618E+3	3.156	3.232E+3	VARh
VAR-hours Line2	8/6/2004	12:12:57.500 PM	863.2	1.688	1.728E+3	VARh
VAR-hours Line3	8/6/2004	12:12:57.500 PM	1.296E+3	2.525	2.585E+3	VARh
VAR-hours Sum of Phases	8/6/2004	12:12:57.500 PM	3.777E+3	7.369	7.546E+3	VARh

8/6/2004 - 12:12:57.000 PM
Val
3.363 — W-hours Line1
2.399 — W-hours Line2
3.372 — W-hours Line3
9.061 — W-hours Sum of Phases
3.156 — VAR-hours Line1
1.688 — VAR-hours Line2
2.525 — VAR-hours Line3
7.369 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/6/2004	12:12:57.500 PM	0.729	0.725	0.738	
PF Line2	8/6/2004	12:12:57.500 PM	0.809	0.805	0.818	
PF Line3	8/6/2004	12:12:57.500 PM	0.801	0.796	0.807	

8/6/2004 - 12:12:57.000 PM
Val
0.732 — PF Line1
0.814 — PF Line2
0.802 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D20\080604-D20.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-20 ,

Comments
Recorded at motor overload relay.

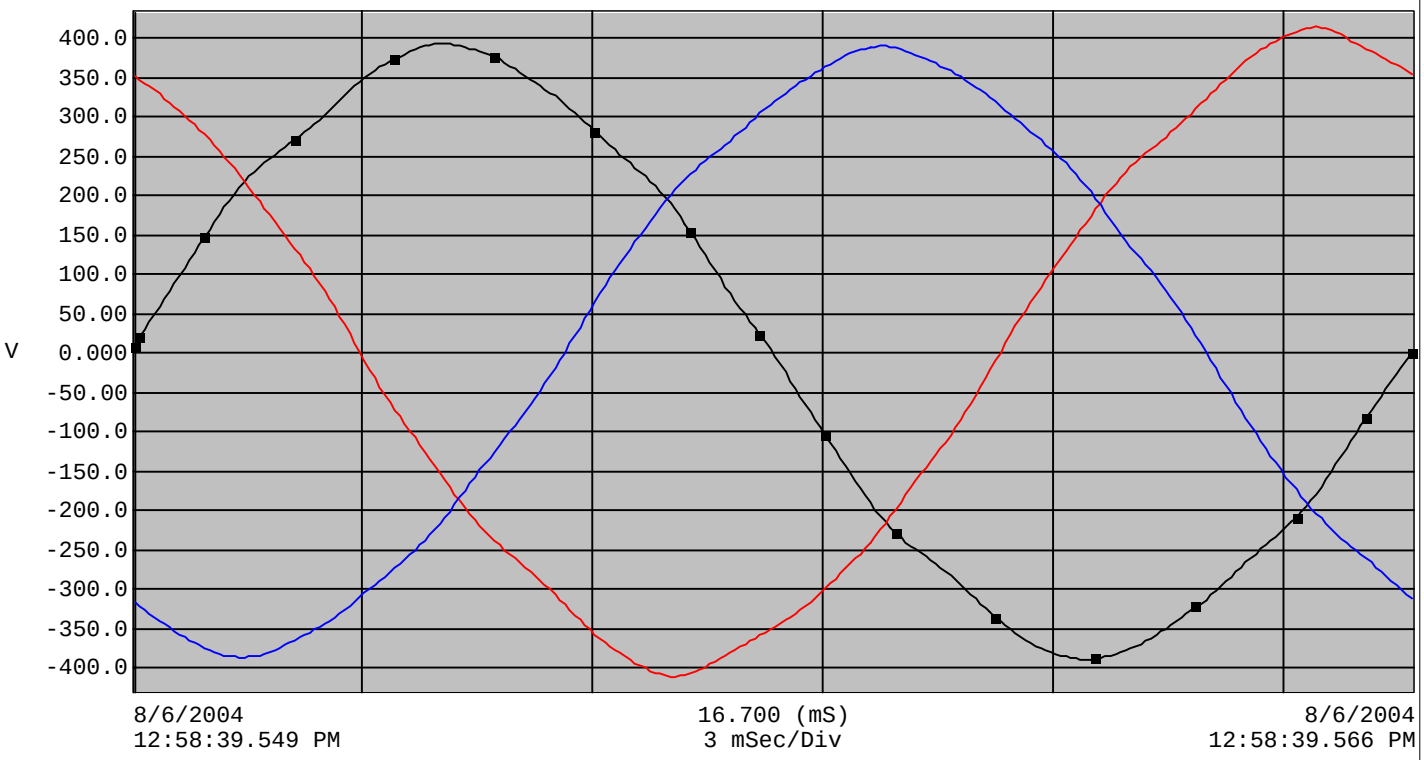
GWA Water Pumping Station Assessment				
Station Name: D-21	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/06/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0.035	
Pressure	1.5%	1	0.015	
Flow	1.5%	0	0	
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.13	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	2	0.04	
	100%	**Assessment Value**		**2.6**

Comments:

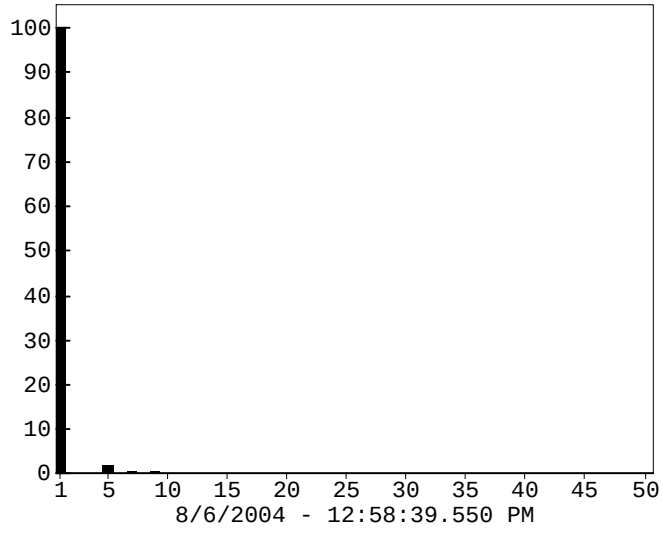
WPS D-21 - Photo

Recording Start Date	8/6/2004 - 12:58:39 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.88 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/6/2004	12:58:39.549 PM	16.700	270.3	V
Waveform V2	8/6/2004	12:58:39.549 PM	16.700	280.9	V
Waveform V3	8/6/2004	12:58:39.549 PM	16.700	267.9	V



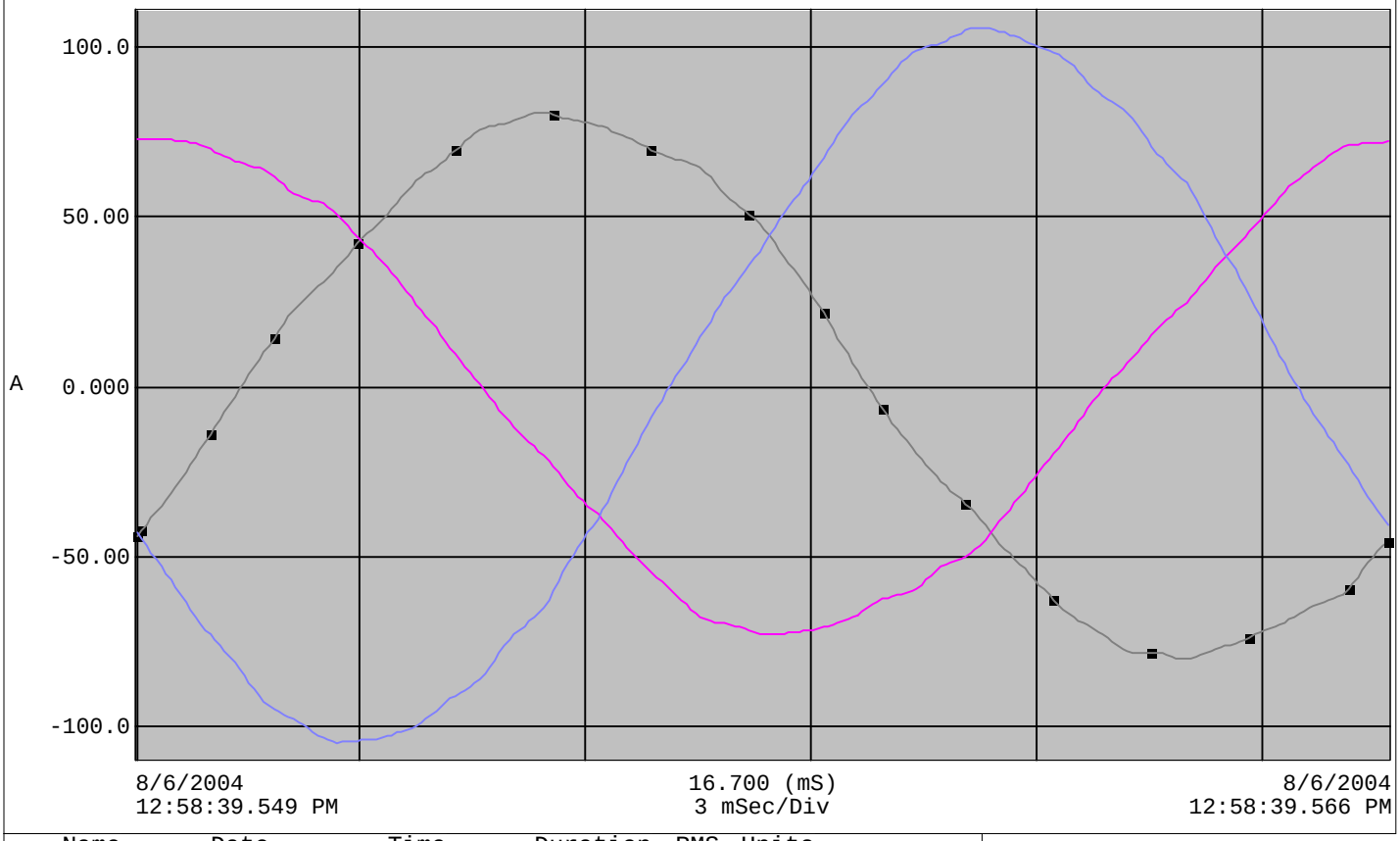
8/6/2004 - 12:58:39.000 PM

Val	
7.400	Waveform V1
349.9	Waveform V2
-318.2	Waveform V3

Waveform V1

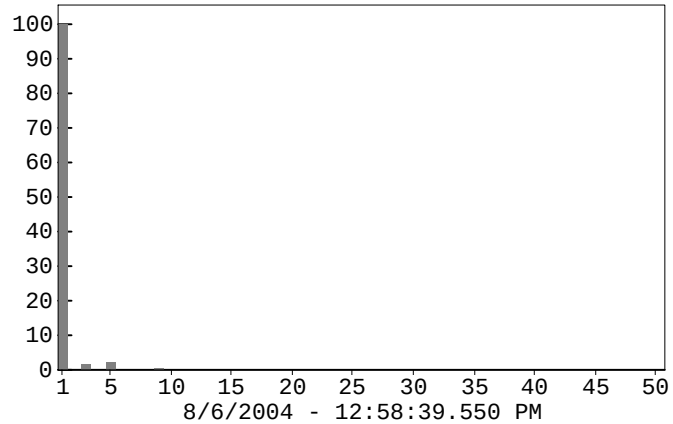
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.1	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.8	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.88 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/6/2004	12:58:39.549 PM	16.700	56.73	A
Waveform I2	8/6/2004	12:58:39.549 PM	16.700	51.43	A
Waveform I3	8/6/2004	12:58:39.549 PM	16.700	72.99	A

Waveform I1
56.73 Arms, 3.41 %THD

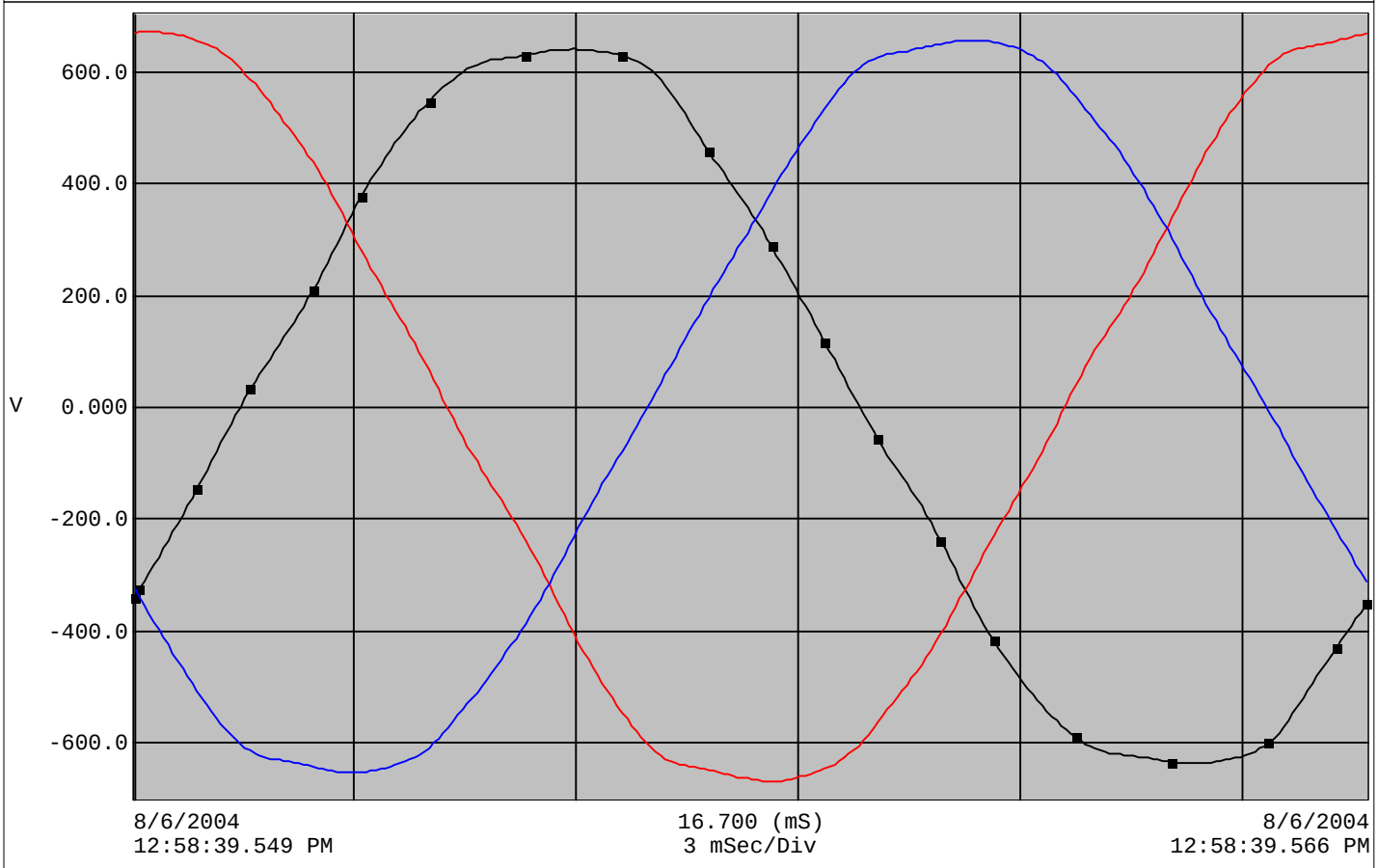


8/6/2004 - 12:58:39.000 PM
Val
-44.40 — Waveform I1
72.50 — Waveform I2
-42.80 — Waveform I3

Waveform I1

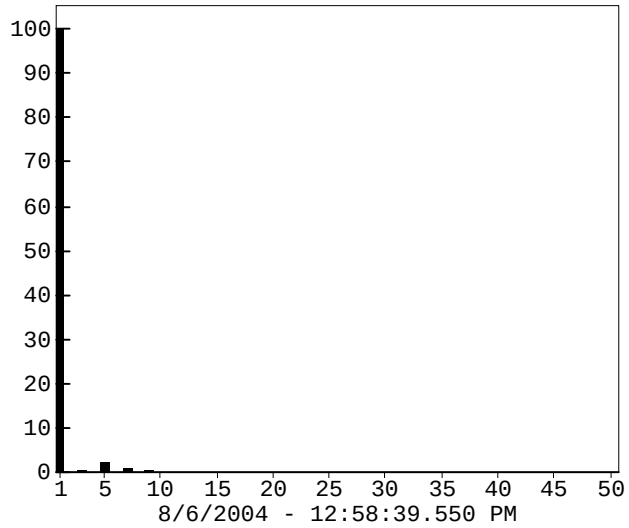
	(%)		(%)		(%)
H01	100.0	H18	0.4	H35	0.0
H02	0.2	H19	0.2	H36	0.0
H03	1.8	H20	0.1	H37	0.0
H04	0.2	H21	0.1	H38	0.0
H05	2.7	H22	0.4	H39	0.0
H06	0.3	H23	0.2	H40	0.0
H07	0.2	H24	0.1	H41	0.0
H08	0.2	H25	0.1	H42	0.0
H09	0.6	H26	0.1	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.1	H29	0.1	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.3	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.88 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/6/2004	12:58:39.549 PM	16.700	464.2	V
Waveform U2	8/6/2004	12:58:39.549 PM	16.700	483.1	V
Waveform U3	8/6/2004	12:58:39.549 PM	16.700	470.8	V

Waveform U1
464.19 Vrms, 2.66 %THD



8/6/2004 - 12:58:39.000 PM

Val	
-342.4	Waveform U1
668.1	Waveform U2
-325.6	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/6/2004
Start Time: 12:58:39 PM
Duration: 0:0.000 (M:S)
W: 12.87E+3 W
VAR: 8.372E+3 W
VA: 15.35E+3 W
Power Factor: 0.838
Displacement Power Factor: 0.839
TAN: 0.649
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D21\080604-D21-Photo.dvb

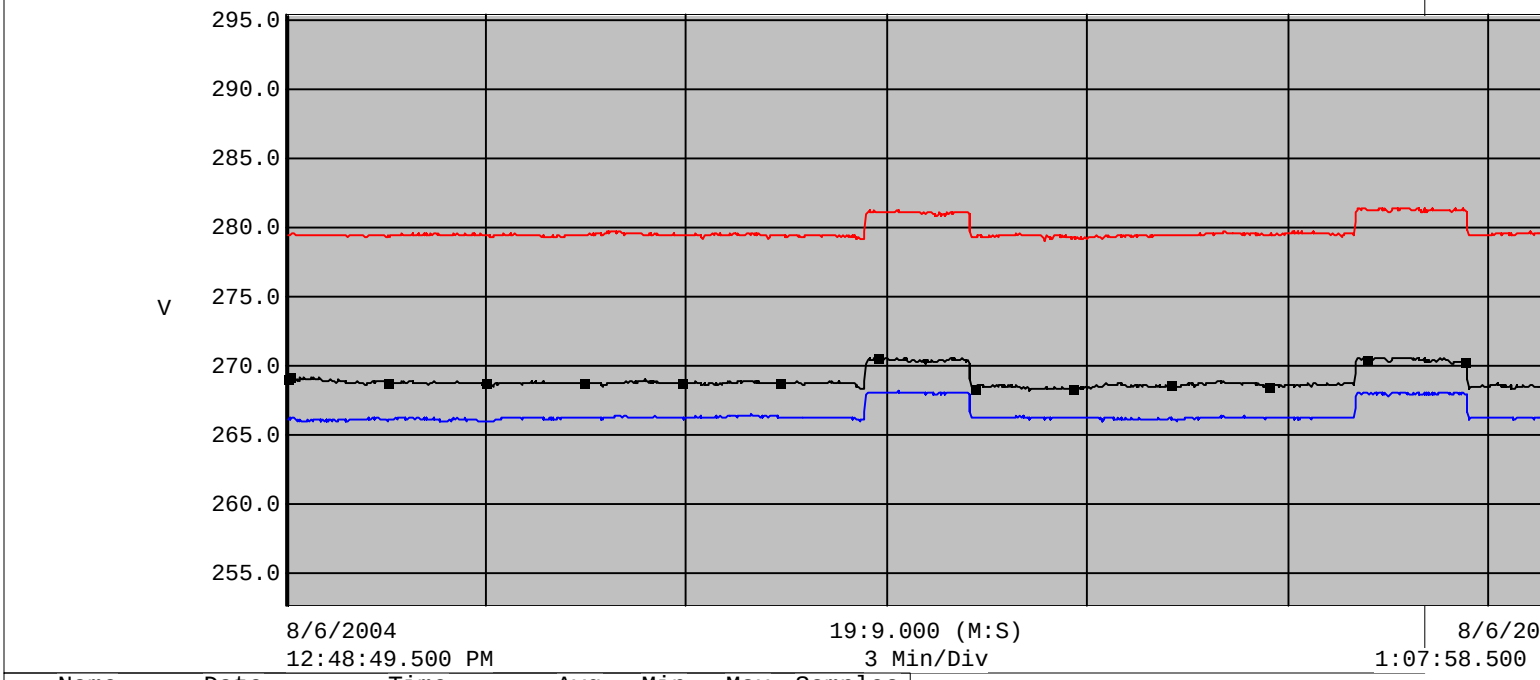
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-21 ,

Comments
Recorded at Motor starter overload relay.

WPS D-21

Recording Start Date	8/6/2004 - 12:48:49 PM
Recording Duration	19:09 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

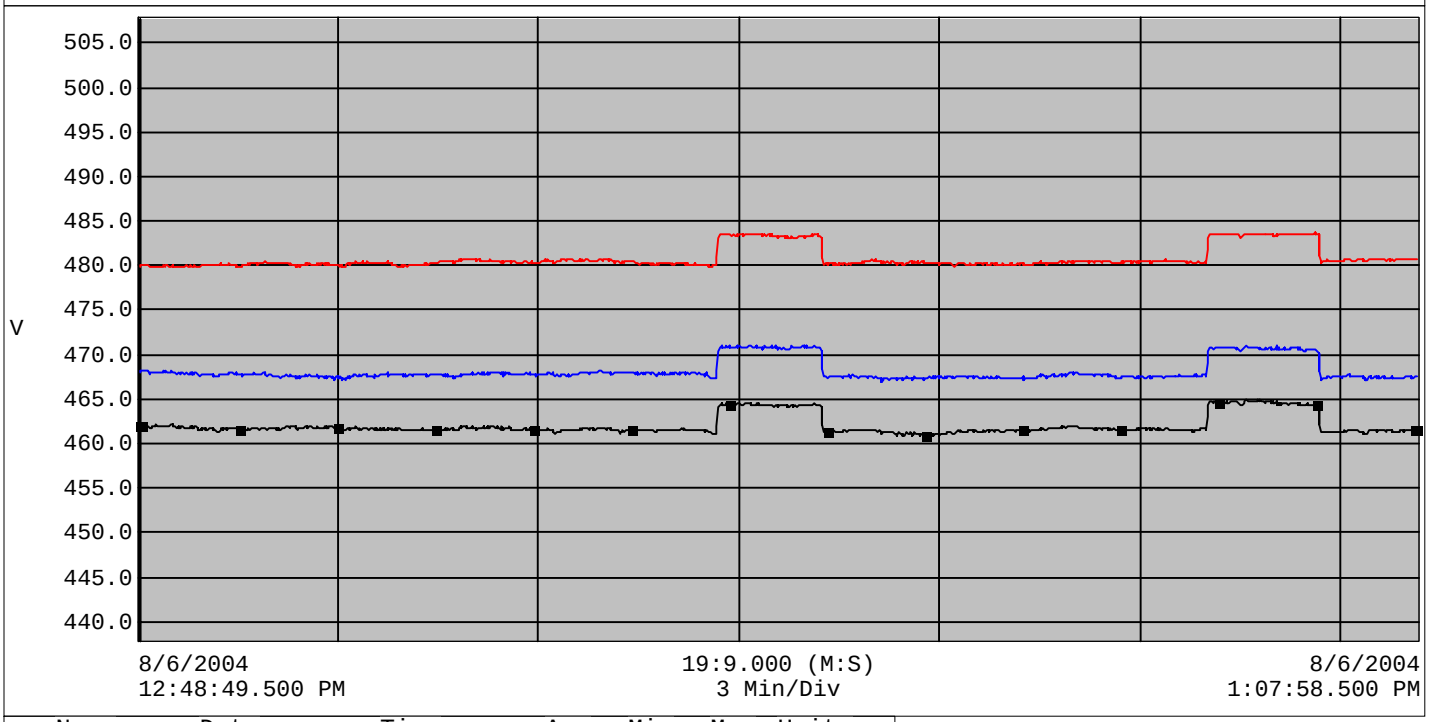
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/6/2004	12:48:49.500 PM	268.9	268.1	270.5	1150
Vrms Line2	8/6/2004	12:48:49.500 PM	279.7	279.0	281.3	1150
Vrms Line3	8/6/2004	12:48:49.500 PM	266.4	265.8	268.1	1150

8/6/2004 - 12:48:49.000 PM
Val
268.9 — Vrms Line1
279.4 — Vrms Line2
266.0 — Vrms Line3

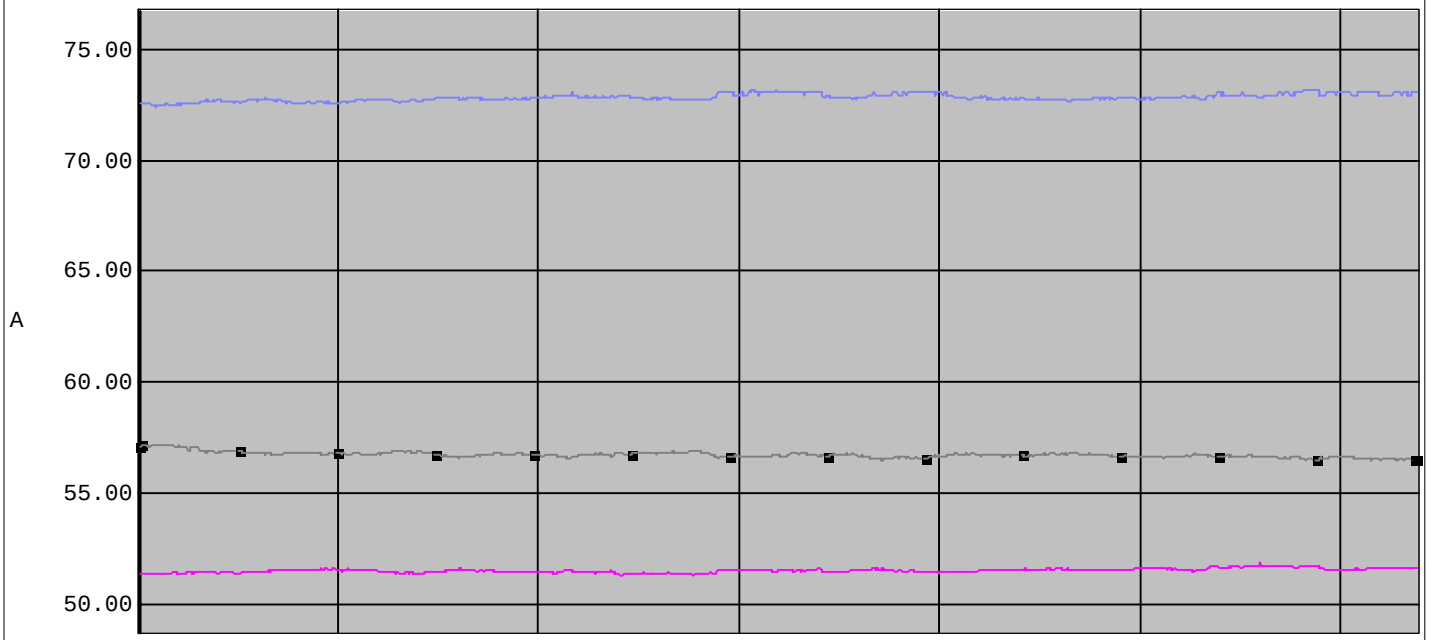
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/6/2004	12:48:49.500 PM	461.9	460.7	464.8	V
Urms Line2	8/6/2004	12:48:49.500 PM	480.7	479.7	483.6	V
Urms Line3	8/6/2004	12:48:49.500 PM	468.1	466.8	470.9	V

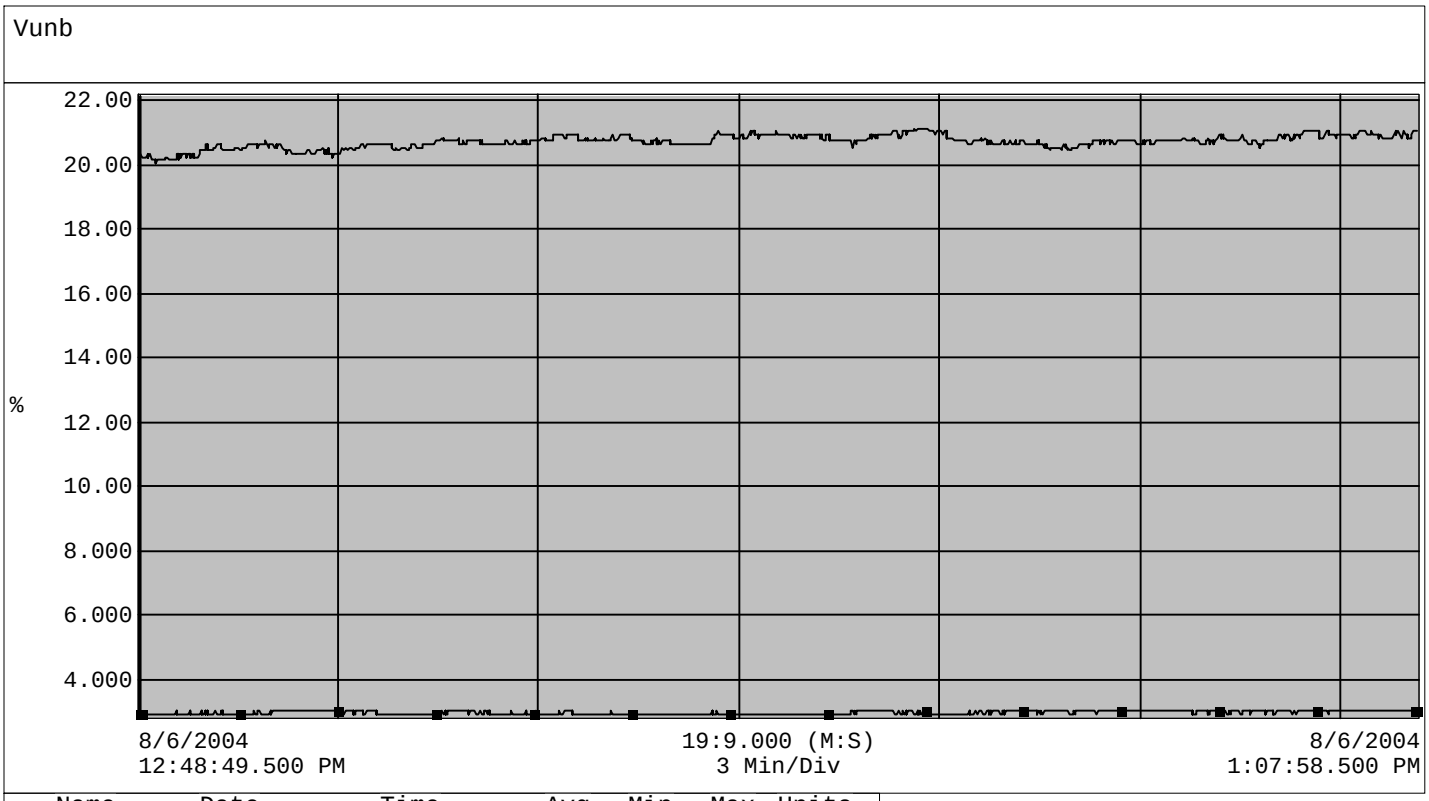
8/6/2004 - 12:48:49.000 PM
Val
461.8 — Urms Line1
479.8 — Urms Line2
467.9 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/6/2004	12:48:49.500 PM	56.69	56.40	57.10	A
Arms Line2	8/6/2004	12:48:49.500 PM	51.47	51.20	51.80	A
Arms Line3	8/6/2004	12:48:49.500 PM	72.79	72.30	73.10	A

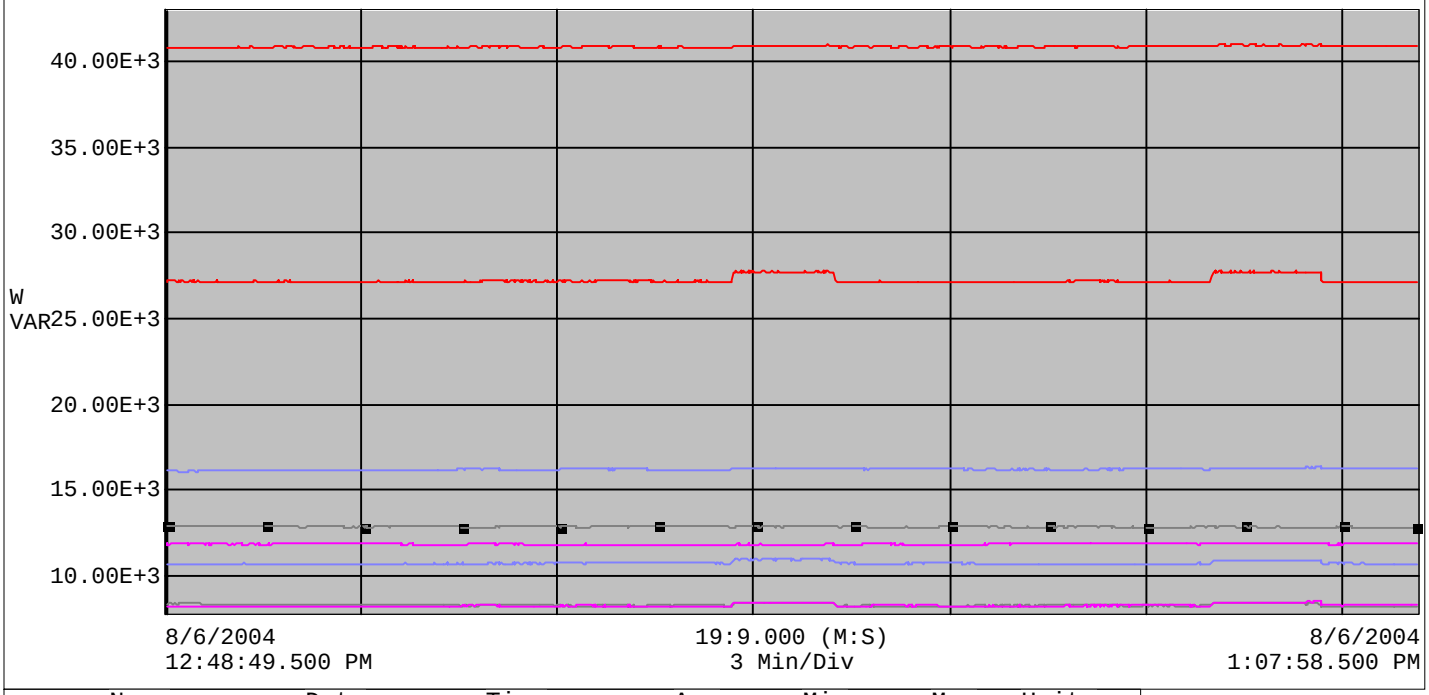
8/6/2004 - 12:48:49.000 PM
Val
57.00 — Arms Line1
51.30 — Arms Line2
72.50 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/6/2004	12:48:49.500 PM	2.948	2.900	3.000	%
Aunb(IEEE)	8/6/2004	12:48:49.500 PM	20.68	20.00	21.10	%

8/6/2004 - 12:48:49.000 PM
Val
2.900 —— Vunb(IEEE)
20.30 —— Aunb(IEEE)

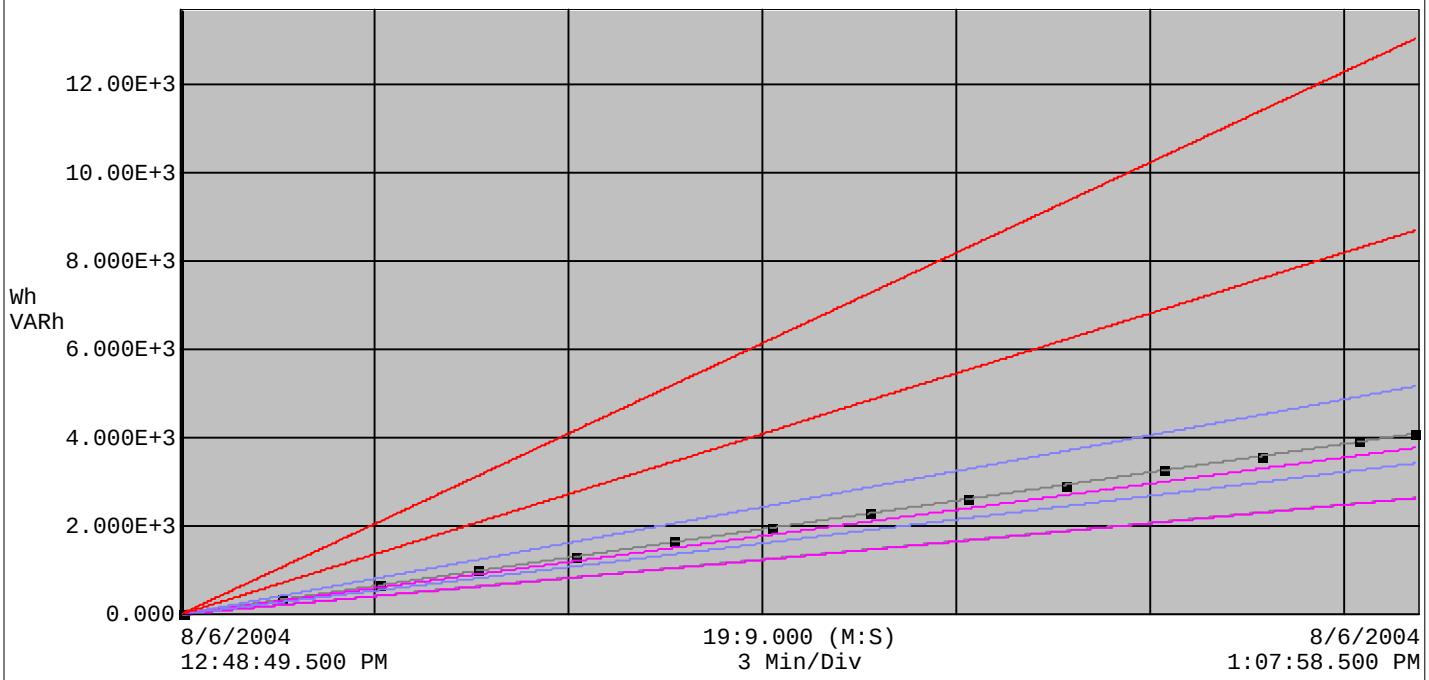
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/6/2004	12:48:49.500 PM	12.82E+3	12.73E+3	12.90E+3	W
W Line2	8/6/2004	12:48:49.500 PM	11.80E+3	11.72E+3	11.87E+3	W
W Line3	8/6/2004	12:48:49.500 PM	16.17E+3	16.02E+3	16.29E+3	W
W Sum of Phases	8/6/2004	12:48:49.500 PM	40.79E+3	40.72E+3	40.91E+3	W
VAR Line1	8/6/2004	12:48:49.500 PM	8.255E+3	8.133E+3	8.409E+3	VAR
VAR Line2	8/6/2004	12:48:49.500 PM	8.238E+3	8.122E+3	8.453E+3	VAR
VAR Line3	8/6/2004	12:48:49.500 PM	10.70E+3	10.58E+3	10.93E+3	VAR
VAR Sum of Phases	8/6/2004	12:48:49.500 PM	27.20E+3	27.03E+3	27.70E+3	VAR

8/6/2004 - 12:48:49.000 PM
Val
12.88E+3 — W Line1
11.80E+3 — W Line2
16.06E+3 — W Line3
40.74E+3 — W Sum of Phases
8.325E+3 — VAR Line1
8.135E+3 — VAR Line2
10.65E+3 — VAR Line3
27.11E+3 — VAR Sum of Phases

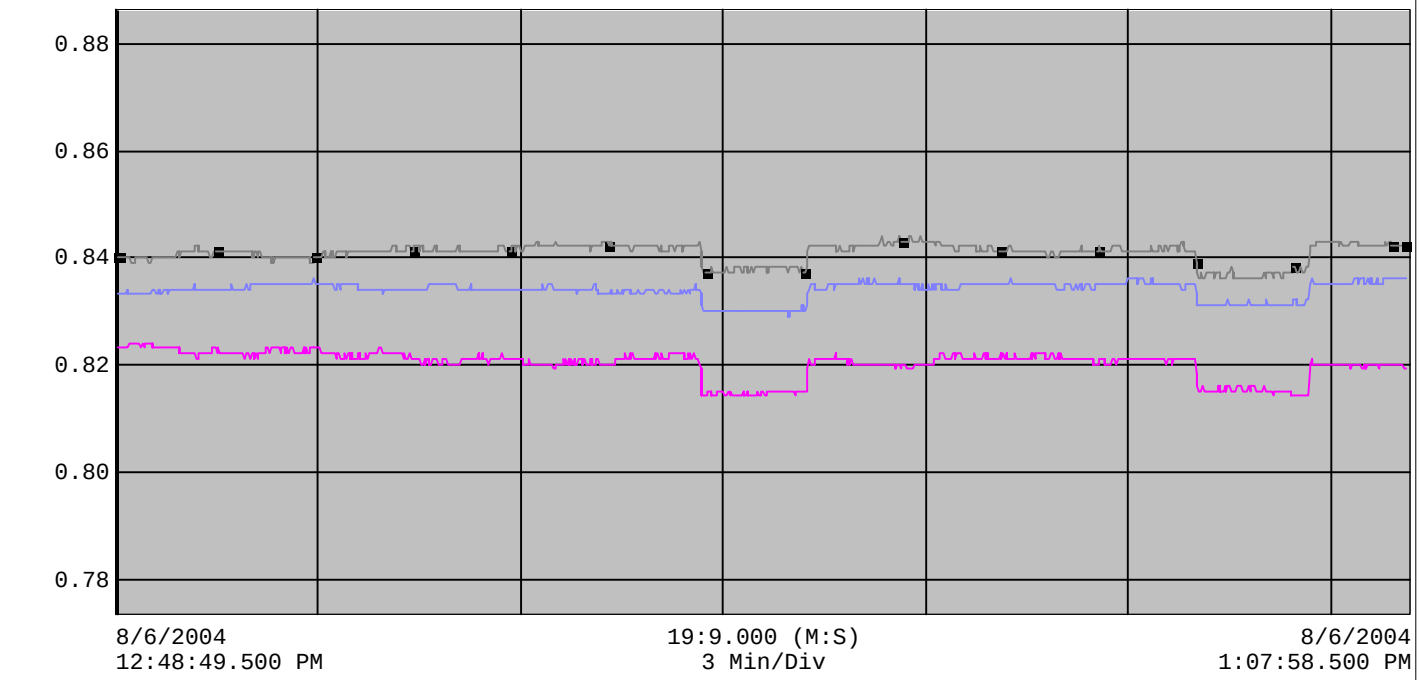
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/6/2004	12:48:49.500 PM	2.050E+3	3.623	4.094E+3	Wh
W-hours Line2	8/6/2004	12:48:49.500 PM	1.886E+3	3.222	3.771E+3	Wh
W-hours Line3	8/6/2004	12:48:49.500 PM	2.582E+3	4.414	5.165E+3	Wh
W-hours Sum of Phases	8/6/2004	12:48:49.500 PM	6.518E+3	11.13	13.03E+3	Wh
VAR-hours Line1	8/6/2004	12:48:49.500 PM	1.320E+3	2.334	2.637E+3	VARh
VAR-hours Line2	8/6/2004	12:48:49.500 PM	1.313E+3	2.249	2.632E+3	VARh
VAR-hours Line3	8/6/2004	12:48:49.500 PM	1.709E+3	2.922	3.420E+3	VARh
VAR-hours Sum of Phases	8/6/2004	12:48:49.500 PM	4.342E+3	7.424	8.688E+3	VARh

8/6/2004 - 12:48:49.000 PM
Val
3.623 — W-hours Line1
3.222 — W-hours Line2
4.414 — W-hours Line3
11.13 — W-hours Sum of Phases
2.334 — VAR-hours Line1
2.249 — VAR-hours Line2
2.922 — VAR-hours Line3
7.424 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/6/2004	12:48:49.500 PM	0.841	0.836	0.844	
PF Line2	8/6/2004	12:48:49.500 PM	0.820	0.814	0.824	
PF Line3	8/6/2004	12:48:49.500 PM	0.834	0.829	0.836	

8/6/2004 - 12:48:49.000 PM
Val
0.840 — PF Line1
0.823 — PF Line2
0.833 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D21\080604-D21.dvb

Operator	Test Site
Morikawa, & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS D-21 ,

Comments
Recorded at Motor Overload Relay.

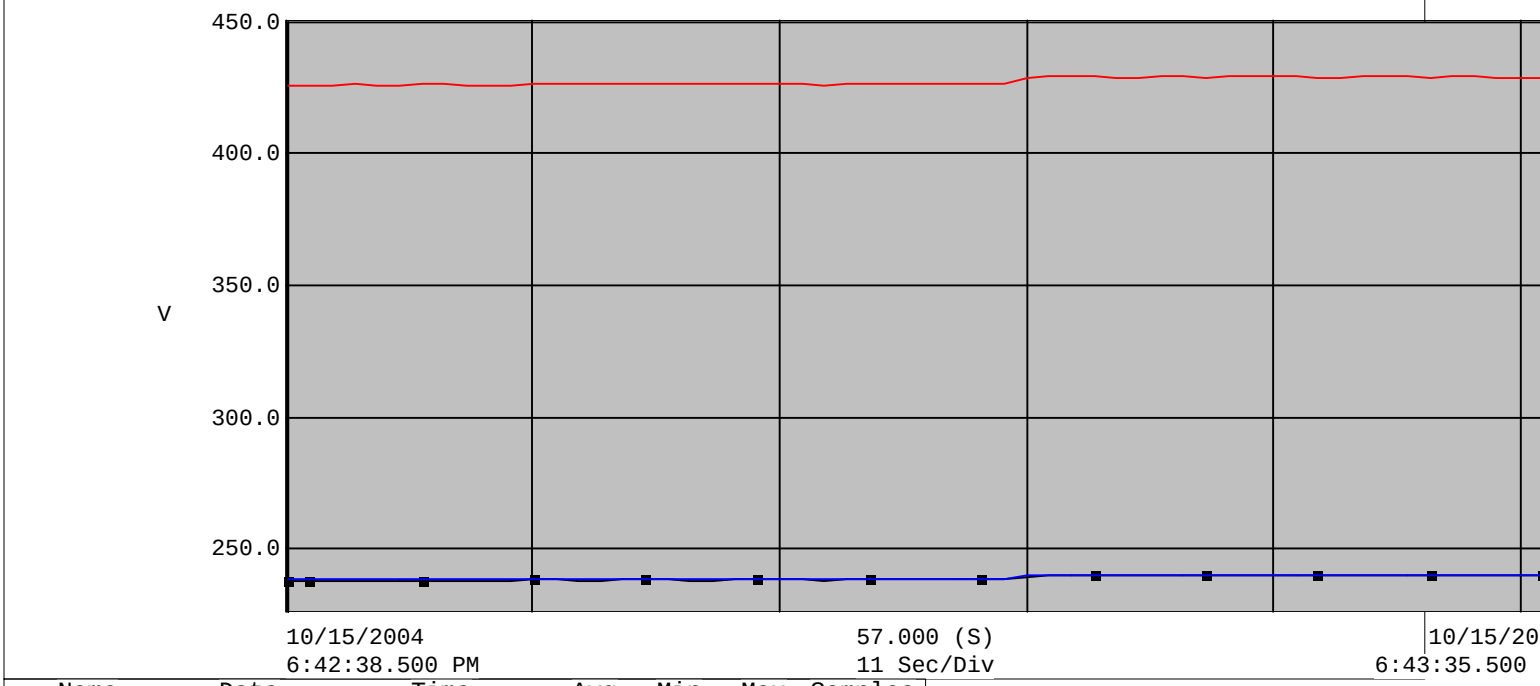
GWA Water Pumping Station Assessment				
Station Name: D-22	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/03/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.35	
Generator Condition	10.0%	2	0.2	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.6	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	
Wiring	5.0%	2	0.1	32
Phase Monitor	5.0%	2	0.1	35
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	
Pump Instrumentation	**5.0%**		0.02	
Pressure	1.5%	0	0	
Flow	1.5%	0	0	
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.2**

Comments:

WPS D-22

Recording Start Date	10/15/2004 - 6:42:38 PM
Recording Duration	57 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

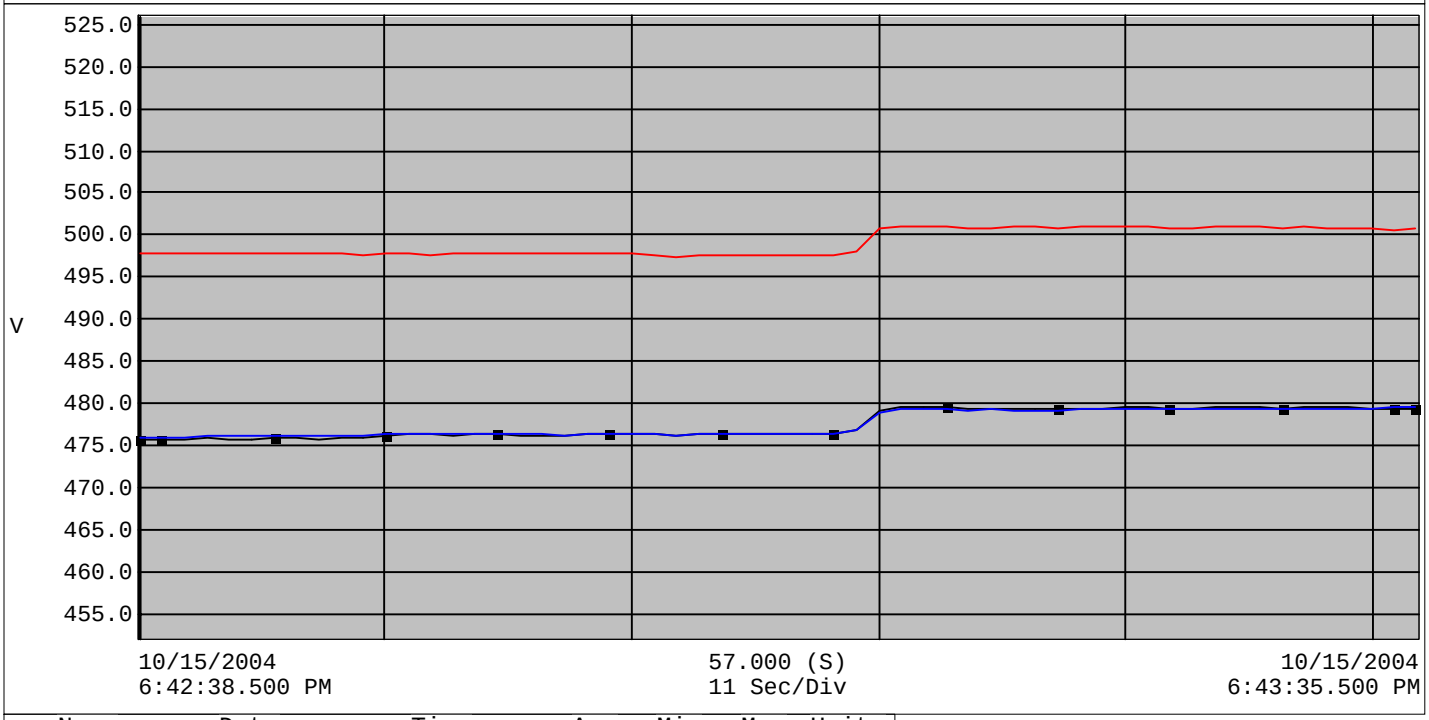
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/15/2004	6:42:38.500 PM	238.6	237.8	239.6	58
Vrms Line2	10/15/2004	6:42:38.500 PM	427.0	425.6	428.7	58
Vrms Line3	10/15/2004	6:42:38.500 PM	238.9	238.1	239.9	58

10/15/2004 - 6:42:38.000 PM
Val
237.8 — Vrms Line1
425.7 — Vrms Line2
238.1 — Vrms Line3

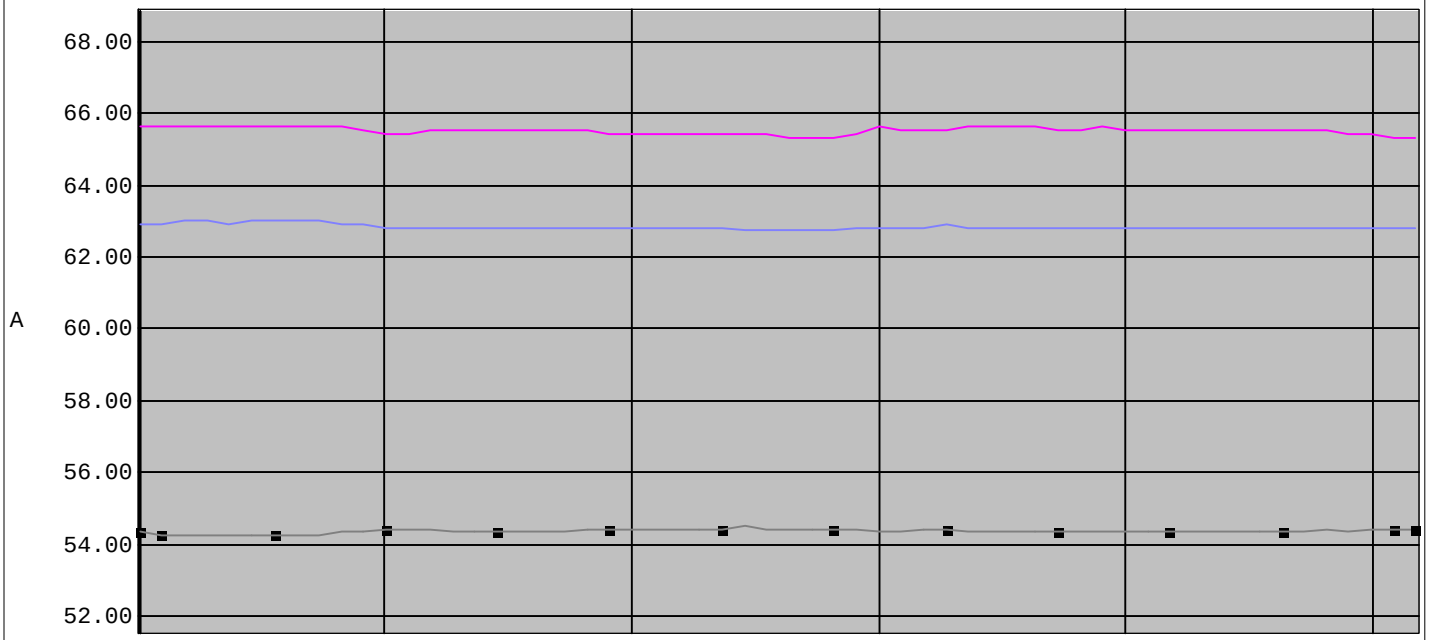
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/15/2004	6:42:38.500 PM	477.5	475.7	479.5	V
Urms Line2	10/15/2004	6:42:38.500 PM	499.0	497.3	500.9	V
Urms Line3	10/15/2004	6:42:38.500 PM	477.5	475.9	479.5	V

10/15/2004 - 6:42:38.000 PM
Val
475.7 Urms Line1
497.6 Urms Line2
475.9 Urms Line3

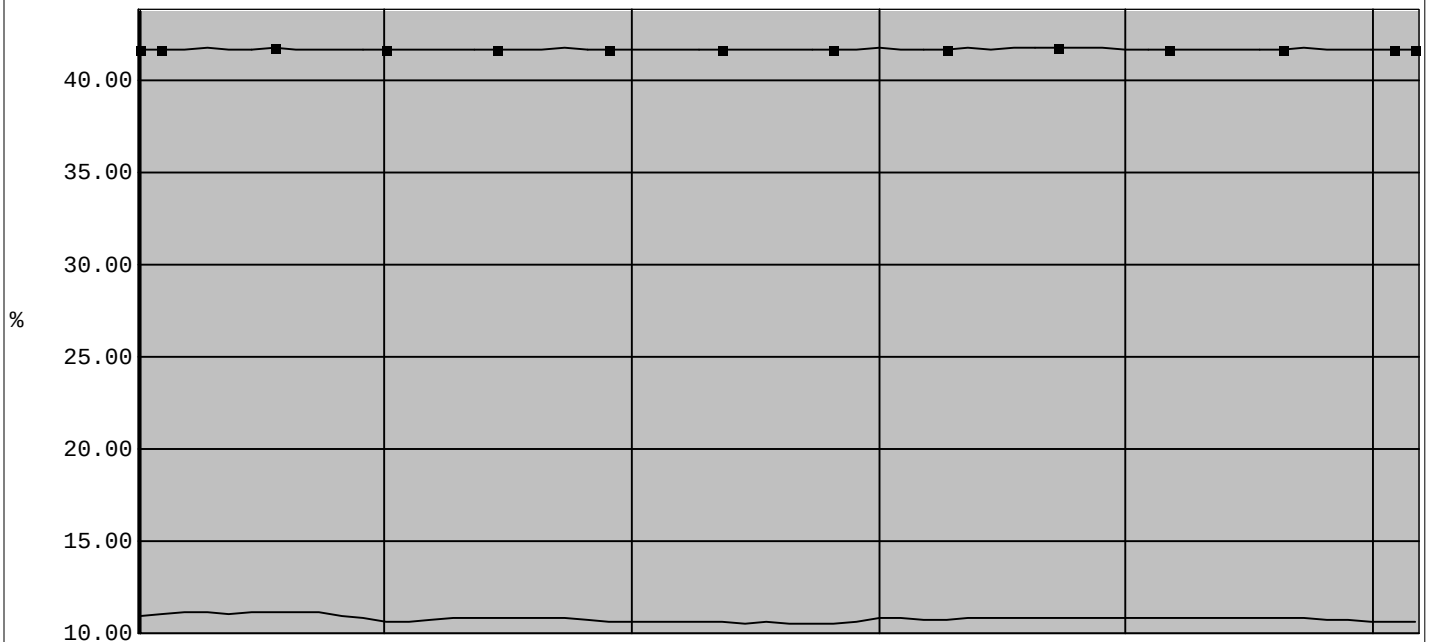
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/15/2004	6:42:38.500 PM	54.33	54.20	54.50	A
Arms Line2	10/15/2004	6:42:38.500 PM	65.49	65.30	65.60	A
Arms Line3	10/15/2004	6:42:38.500 PM	62.82	62.70	63.00	A

10/15/2004 - 6:42:38.000 PM
Val
54.30 — Arms Line1
65.60 — Arms Line2
62.90 — Arms Line3

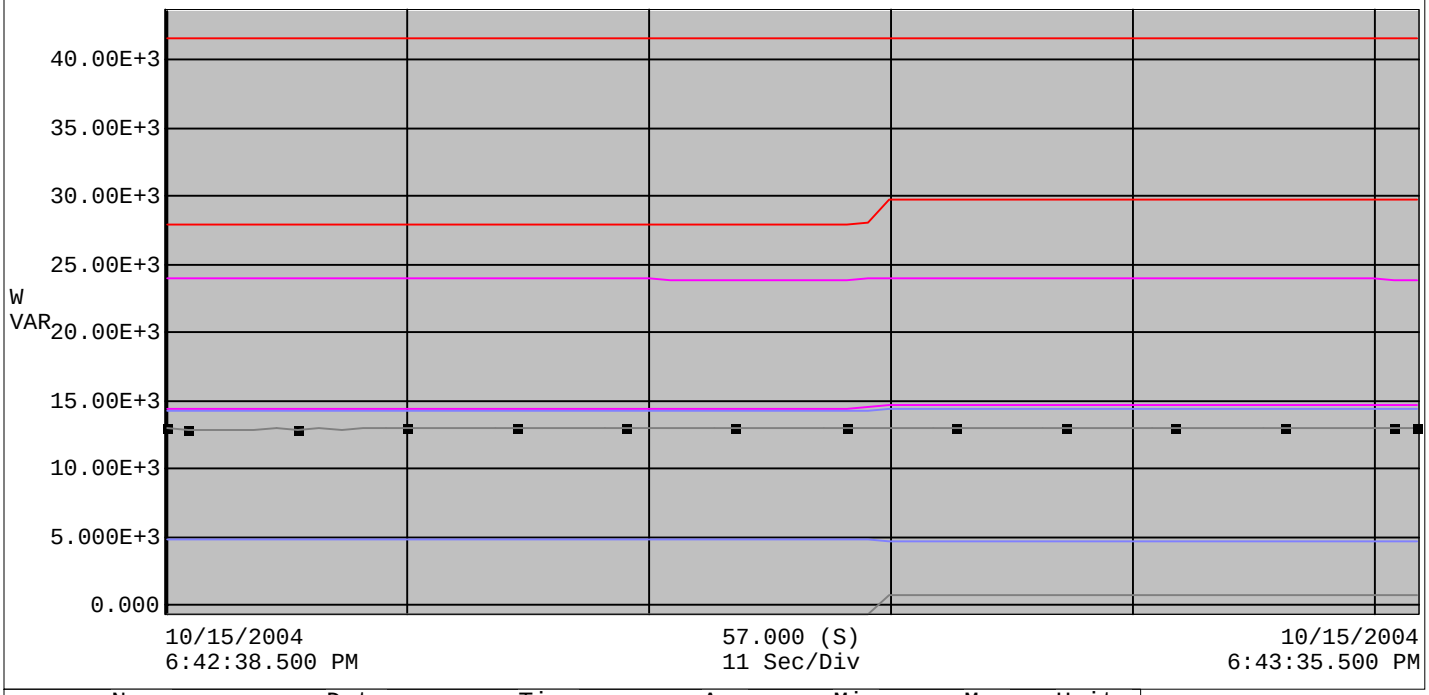
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/15/2004	6:42:38.500 PM	41.62	41.60	41.70	%
Aunb(IEEE)	10/15/2004	6:42:38.500 PM	10.77	10.50	11.10	%

10/15/2004 - 6:42:38.000 PM
Val
41.60 —— Vunb(IEEE)
10.90 —— Aunb(IEEE)

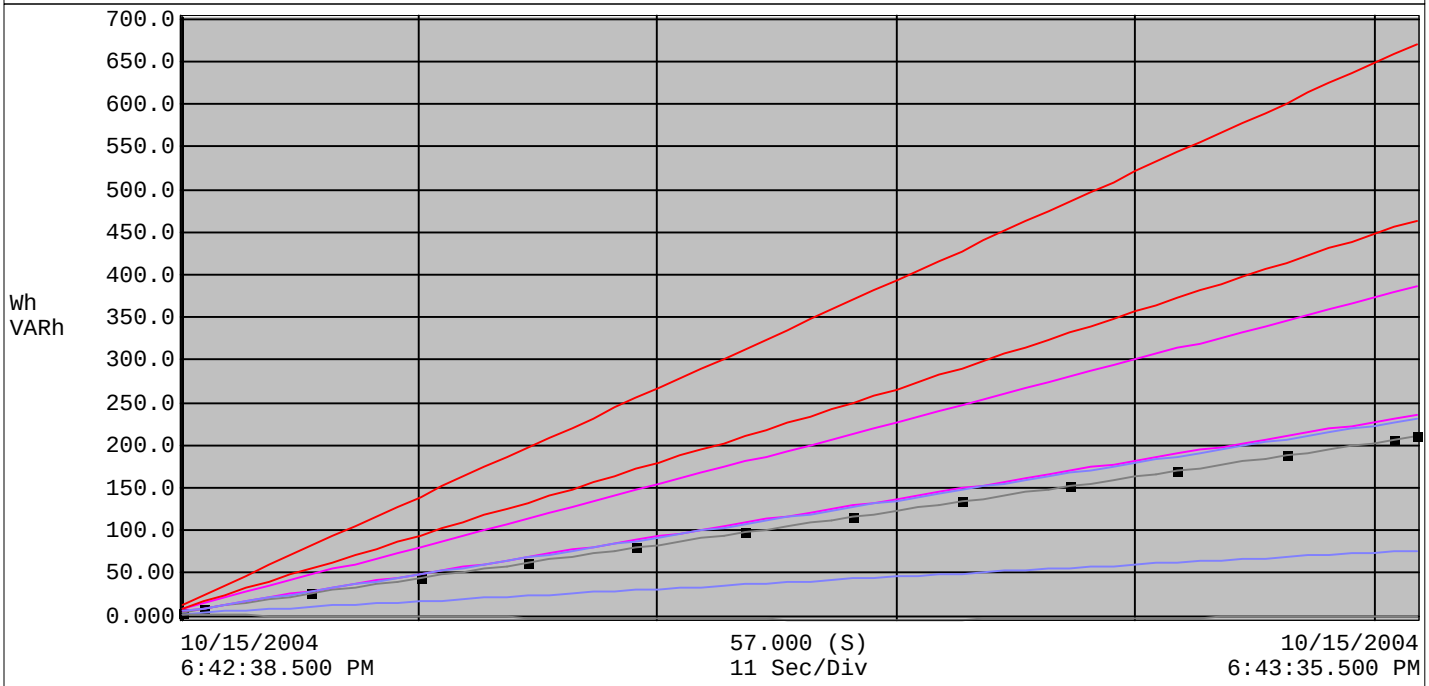
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/15/2004	6:42:38.500 PM	12.94E+3	12.87E+3	13.01E+3	W
W Line2	10/15/2004	6:42:38.500 PM	23.91E+3	23.82E+3	23.96E+3	W
W Line3	10/15/2004	6:42:38.500 PM	4.687E+3	4.614E+3	4.756E+3	W
W Sum of Phases	10/15/2004	6:42:38.500 PM	41.54E+3	41.49E+3	41.57E+3	W
VAR Line1	10/15/2004	6:42:38.500 PM	-83.60	-679.9	702.2	VAR
VAR Line2	10/15/2004	6:42:38.500 PM	14.51E+3	14.34E+3	14.70E+3	VAR
VAR Line3	10/15/2004	6:42:38.500 PM	14.26E+3	14.17E+3	14.35E+3	VAR
VAR Sum of Phases	10/15/2004	6:42:38.500 PM	28.69E+3	27.85E+3	29.74E+3	VAR

10/15/2004 - 6:42:38.000 PM
Val
12.88E+3 — W Line1
23.94E+3 — W Line2
4.724E+3 — W Line3
41.55E+3 — W Sum of Phases
-675.8 — VAR Line1
14.37E+3 — VAR Line2
14.22E+3 — VAR Line3
27.92E+3 — VAR Sum of Phases

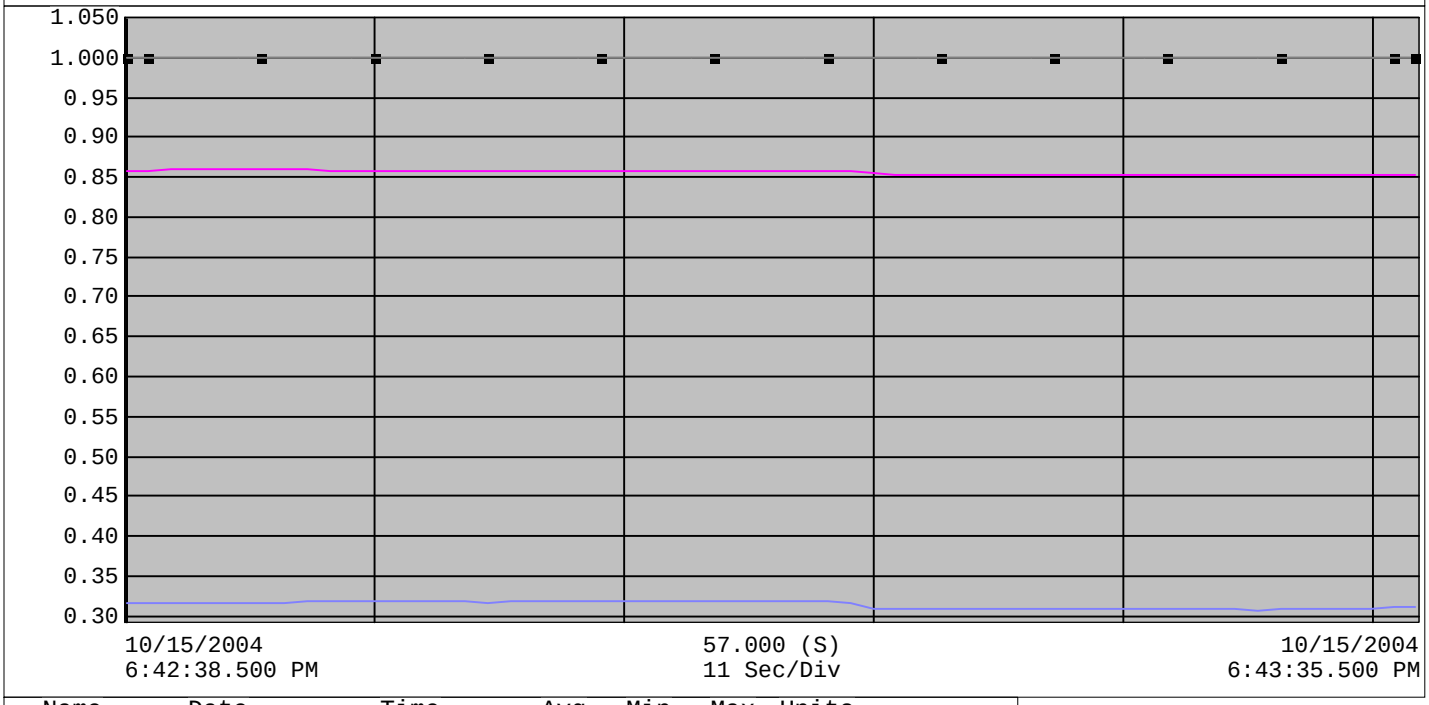
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/15/2004	6:42:38.500 PM	105.9	3.578	208.5	Wh
W-hours Line2	10/15/2004	6:42:38.500 PM	195.9	6.654	385.1	Wh
W-hours Line3	10/15/2004	6:42:38.500 PM	38.59	1.313	75.51	Wh
W-hours Sum of Phases	10/15/2004	6:42:38.500 PM	340.4	11.54	669.2	Wh
VAR-hours Line1	10/15/2004	6:42:38.500 PM	-3.400	-6.191	-0.188	VARh
VAR-hours Line2	10/15/2004	6:42:38.500 PM	118.3	3.990	233.8	VARh
VAR-hours Line3	10/15/2004	6:42:38.500 PM	116.6	3.949	229.7	VARh
VAR-hours Sum of Phases	10/15/2004	6:42:38.500 PM	231.5	7.759	462.2	VARh

10/15/2004 - 6:42:38.000 PM
Val
3.578 — W-hours Line1
6.654 — W-hours Line2
1.313 — W-hours Line3
11.54 — W-hours Sum of Phases
-0.188 — VAR-hours Line1
3.990 — VAR-hours Line2
3.949 — VAR-hours Line3
7.759 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/15/2004	6:42:38.500 PM	0.999	0.999	0.999	
PF Line2	10/15/2004	6:42:38.500 PM	0.855	0.852	0.858	
PF Line3	10/15/2004	6:42:38.500 PM	0.312	0.306	0.318	

10/15/2004 - 6:42:38.000 PM
Val
0.999 — PF Line1
0.857 — PF Line2
0.315 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D22\101504-D22.dvb

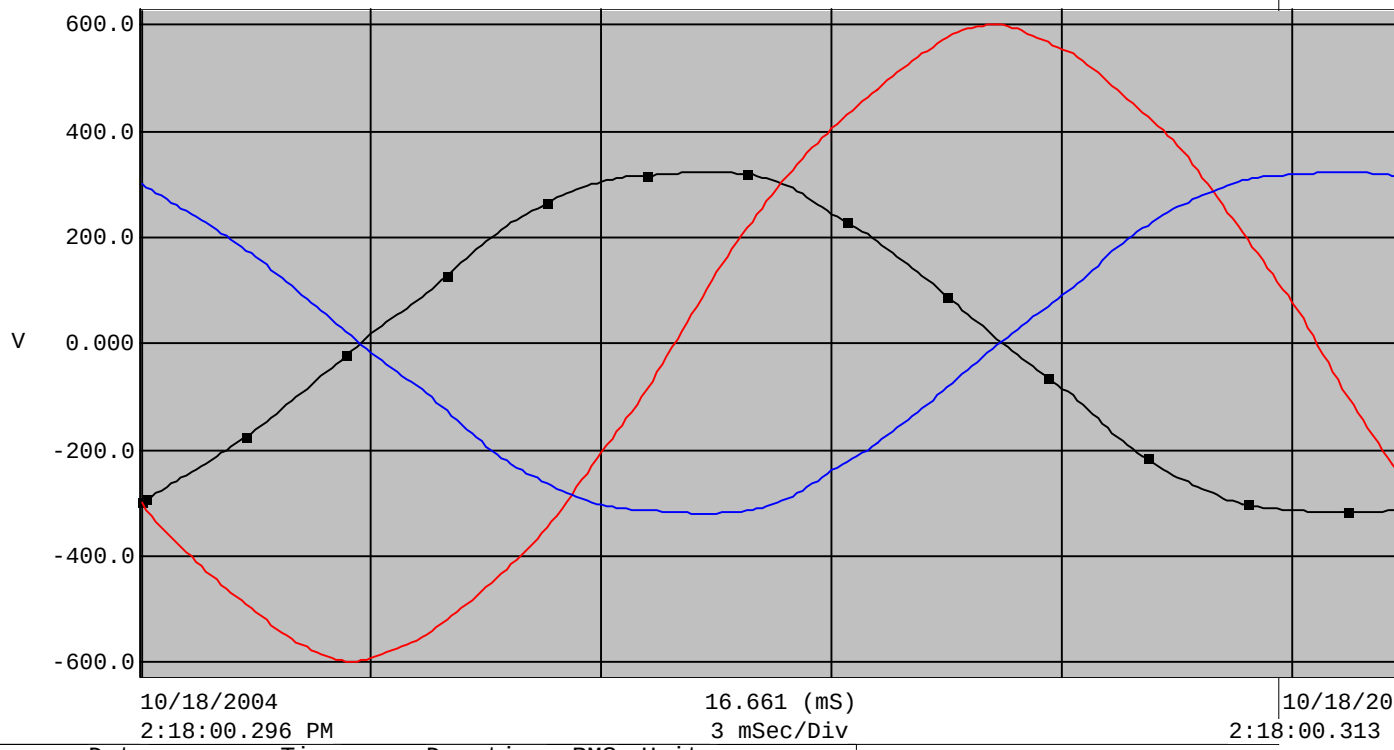
Operator	Test Site
GWA Victor Jardel ,	GWA WPS D-22 ,

Comments

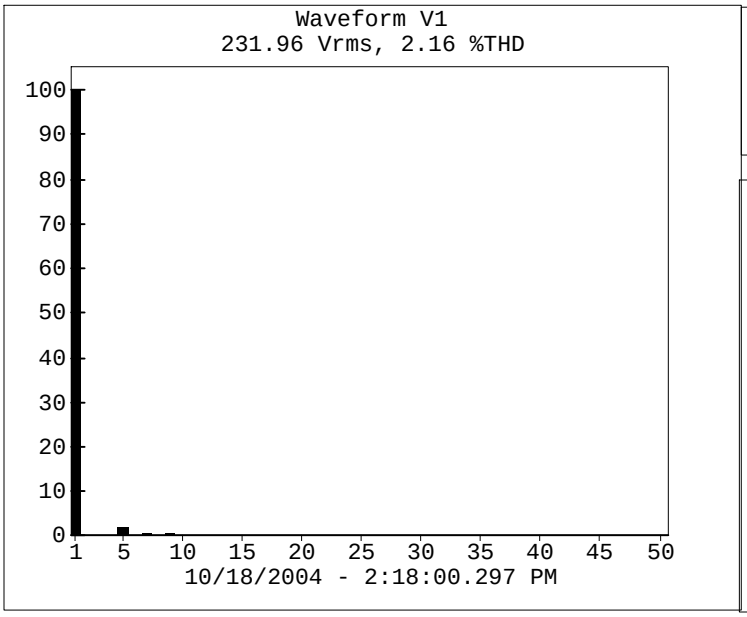
WPS D-22 - Photo

Recording Start Date	10/18/2004 - 2:18:00 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/18/2004	2:18:00.296 PM	16.661	232.0	V
Waveform V2	10/18/2004	2:18:00.296 PM	16.661	414.8	V
Waveform V3	10/18/2004	2:18:00.296 PM	16.661	232.3	V



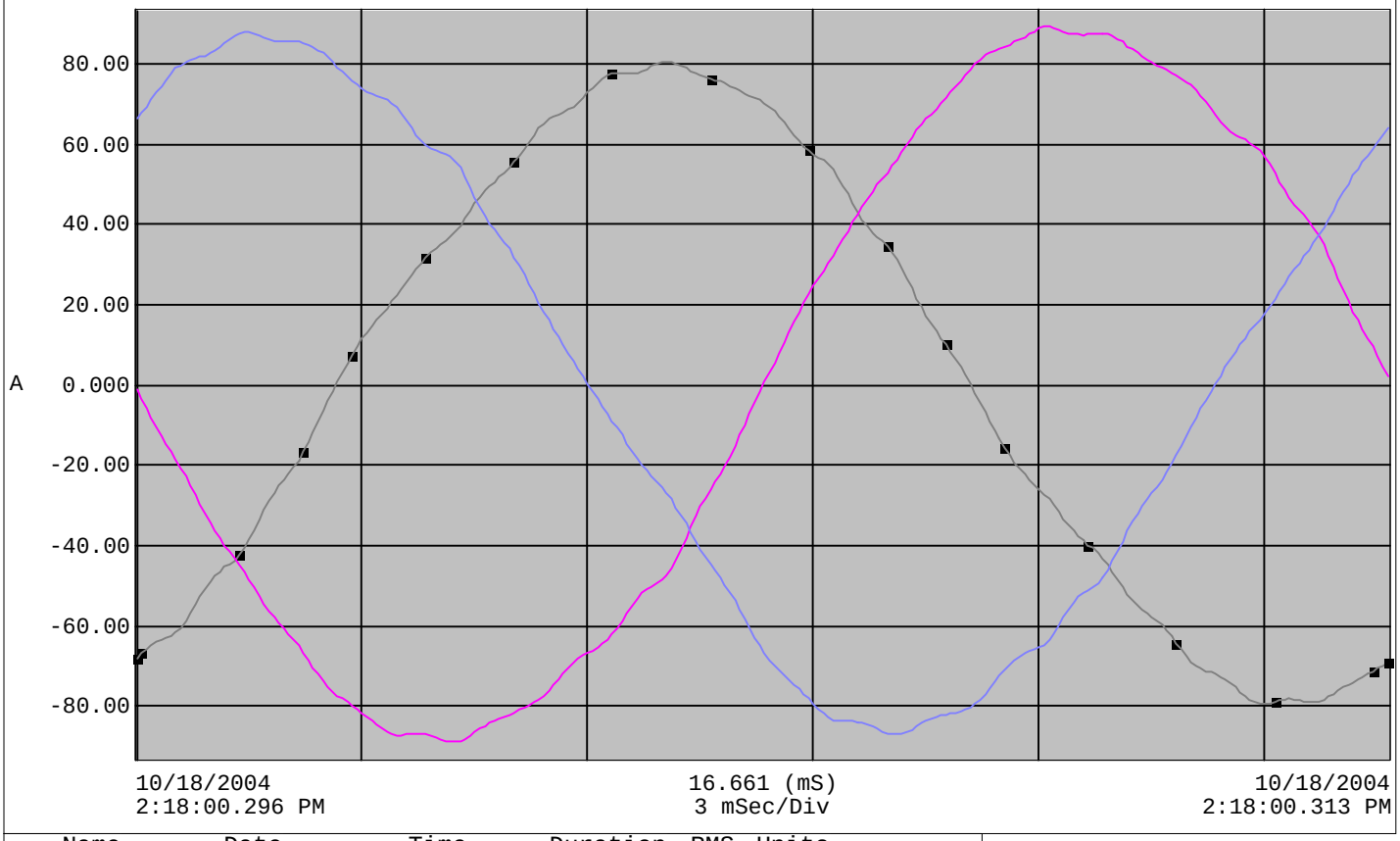
10/18/2004 - 2:18:00.000 PM

Val	
-299.2	Waveform V1
-302.5	Waveform V2
298.3	Waveform V3

Waveform V1

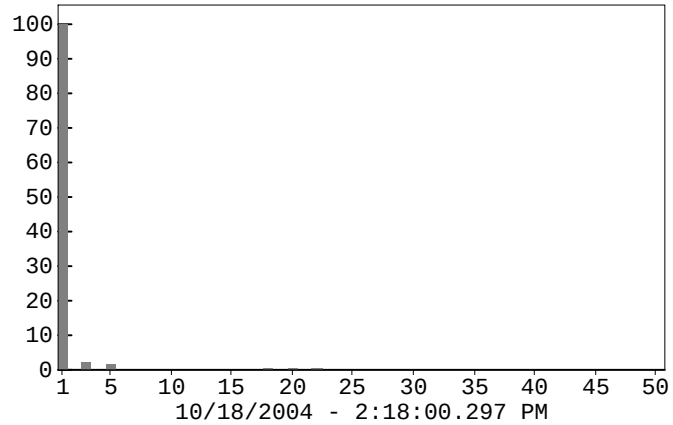
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.4	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.8	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/18/2004	2:18:00.296 PM	16.661	55.52	A
Waveform I2	10/18/2004	2:18:00.296 PM	16.661	63.24	A
Waveform I3	10/18/2004	2:18:00.296 PM	16.661	60.14	A

Waveform I1
55.52 Arms, 3.41 %THD



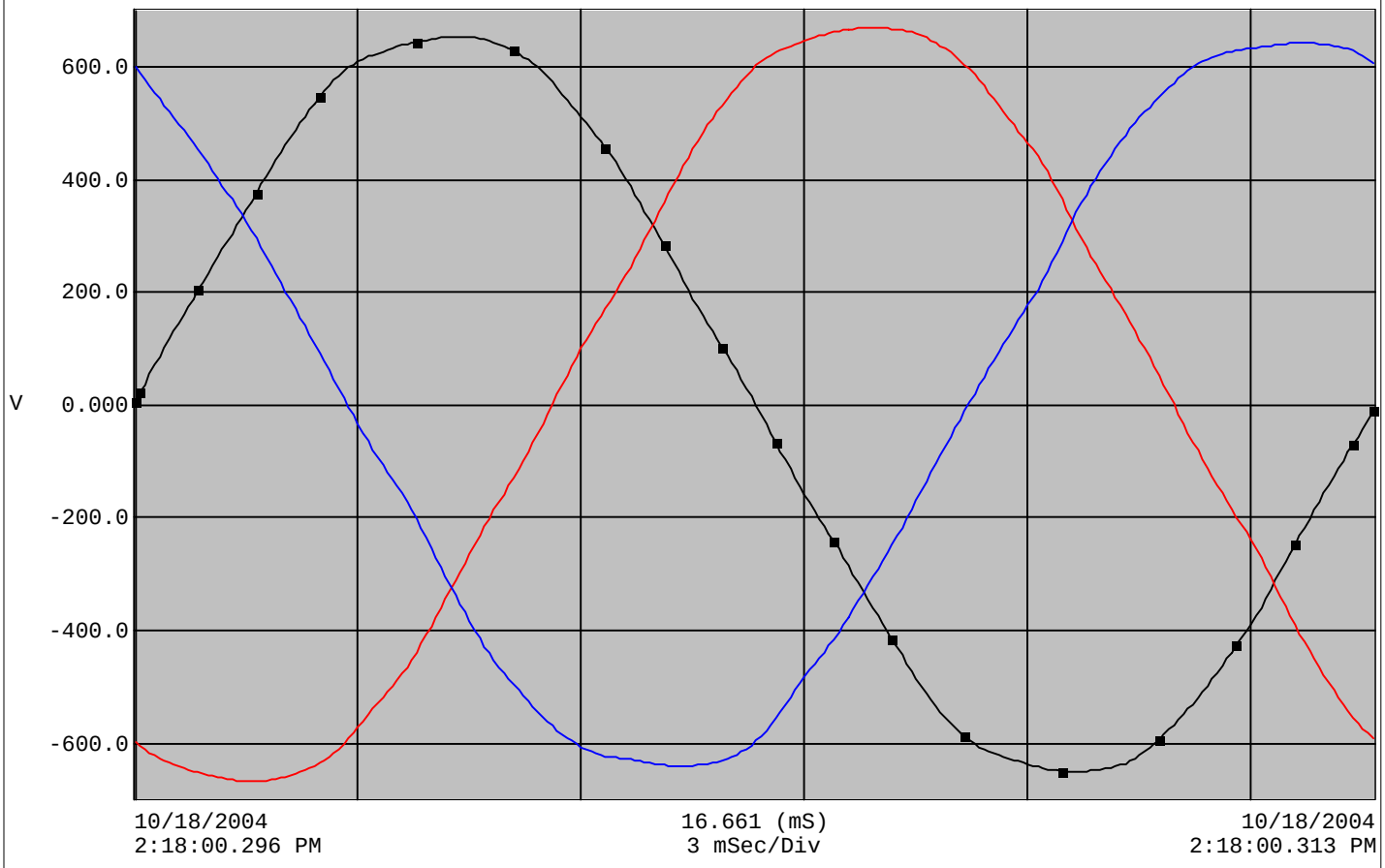
10/18/2004 - 2:18:00.000 PM

Val	
-68.20	Waveform I1
-1.100	Waveform I2
66.00	Waveform I3

Waveform I1

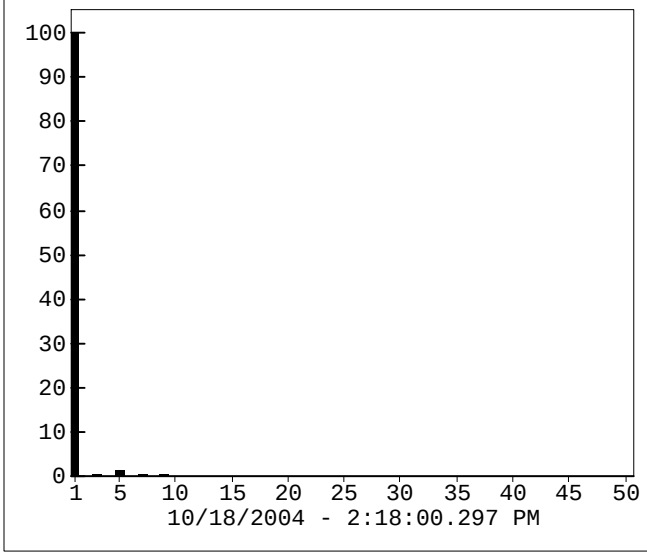
	(%)		(%)		(%)
H01	100.0	H18	0.6	H35	0.0
H02	0.2	H19	0.4	H36	0.0
H03	2.3	H20	0.6	H37	0.0
H04	0.3	H21	0.1	H38	0.0
H05	1.9	H22	0.6	H39	0.0
H06	0.3	H23	0.2	H40	0.0
H07	0.5	H24	0.2	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.3	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.5	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/18/2004	2:18:00.296 PM	16.661	466.7	V
Waveform U2	10/18/2004	2:18:00.296 PM	16.661	481.9	V
Waveform U3	10/18/2004	2:18:00.296 PM	16.661	464.3	V

Waveform U1
466.73 Vrms, 1.78 %THD



10/18/2004 - 2:18:00.000 PM

	Val	
—	3.300	Waveform U1
—	-600.8	Waveform U2
—	597.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.5	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.5	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/18/2004
Start Time: 2:18:00 PM
Duration: 0:0.000 (M:S)
W: 12.91E+3 W
VAR: -723.5 W
VA: 12.93E+3 W
Power Factor: 0.998
Displacement Power Factor: 0.999
TAN: -33.00E-3
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D22\101804-D22-Photo.dvb

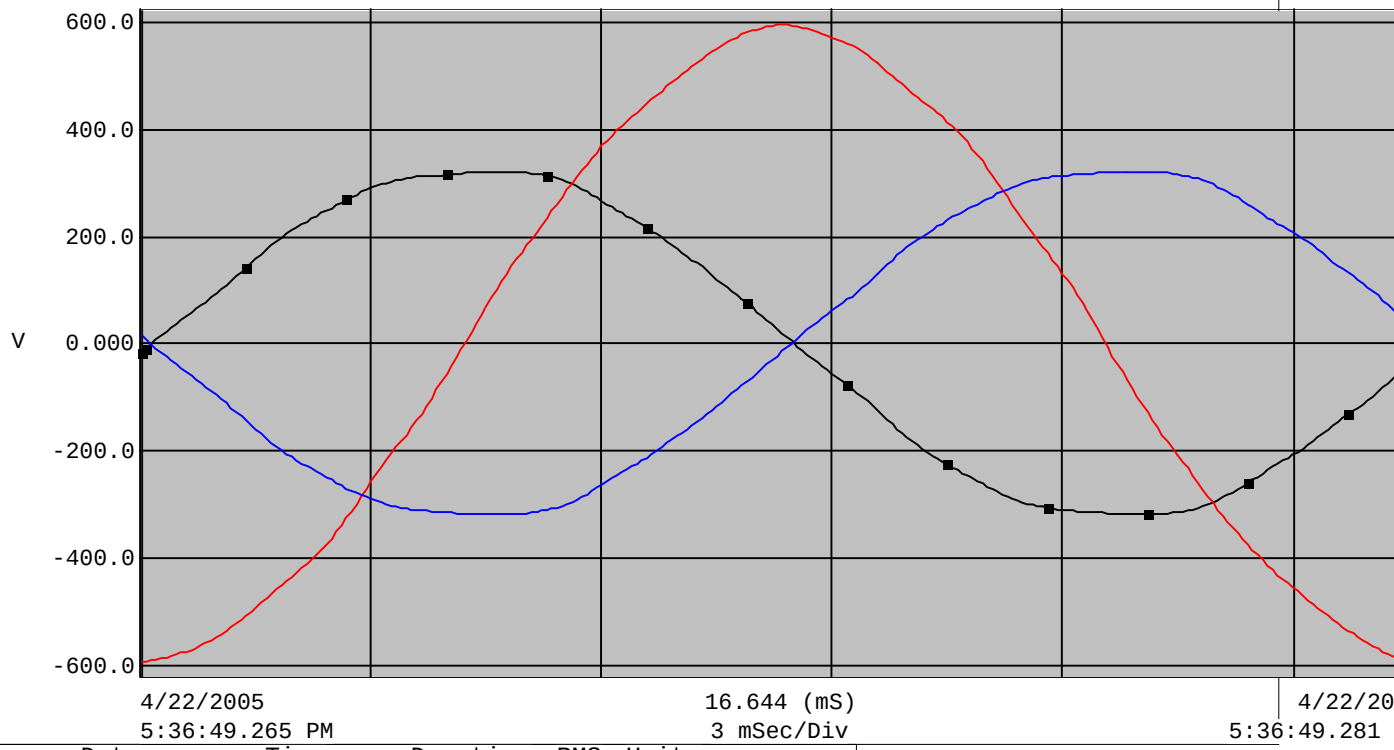
Operator	Test Site
GWA Victor Jardel ,	WPS D-22 - Photo ,

Comments

WPS D-22 - PHOTO

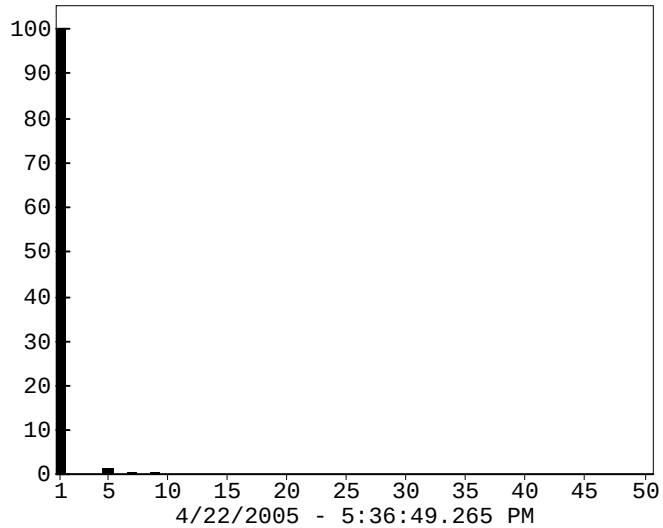
Recording Start Date	4/22/2005 - 5:36:49 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:260152 2.7

Waveform - Voltage (V)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	4/22/2005	5:36:49.265 PM	16.644	231.3	V
Waveform V2	4/22/2005	5:36:49.265 PM	16.644	415.0	V
Waveform V3	4/22/2005	5:36:49.265 PM	16.644	231.7	V

Waveform V1
231.27 Vrms, 1.83 %THD

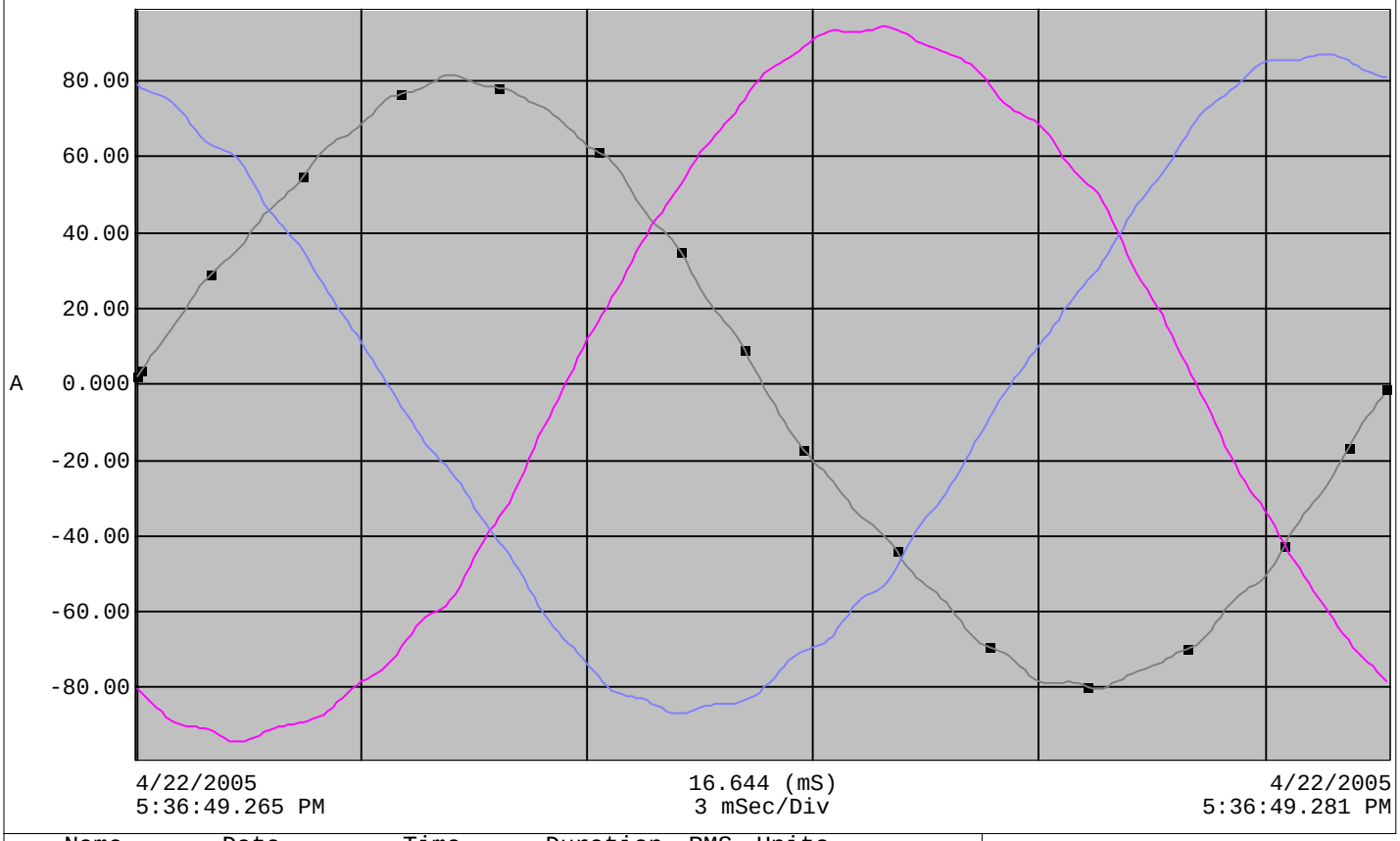


4/22/2005 - 5:36:49.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

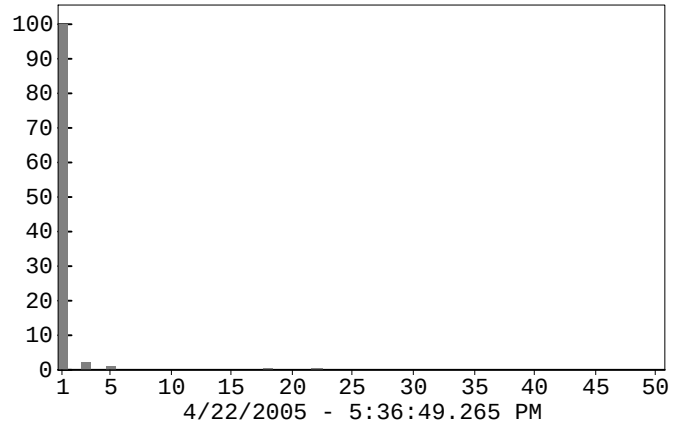
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.08 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	4/22/2005	5:36:49.265 PM	16.644	55.96	A
Waveform I2	4/22/2005	5:36:49.265 PM	16.644	67.25	A
Waveform I3	4/22/2005	5:36:49.265 PM	16.644	60.24	A

Waveform I1
55.96 Arms, 3.20 %THD

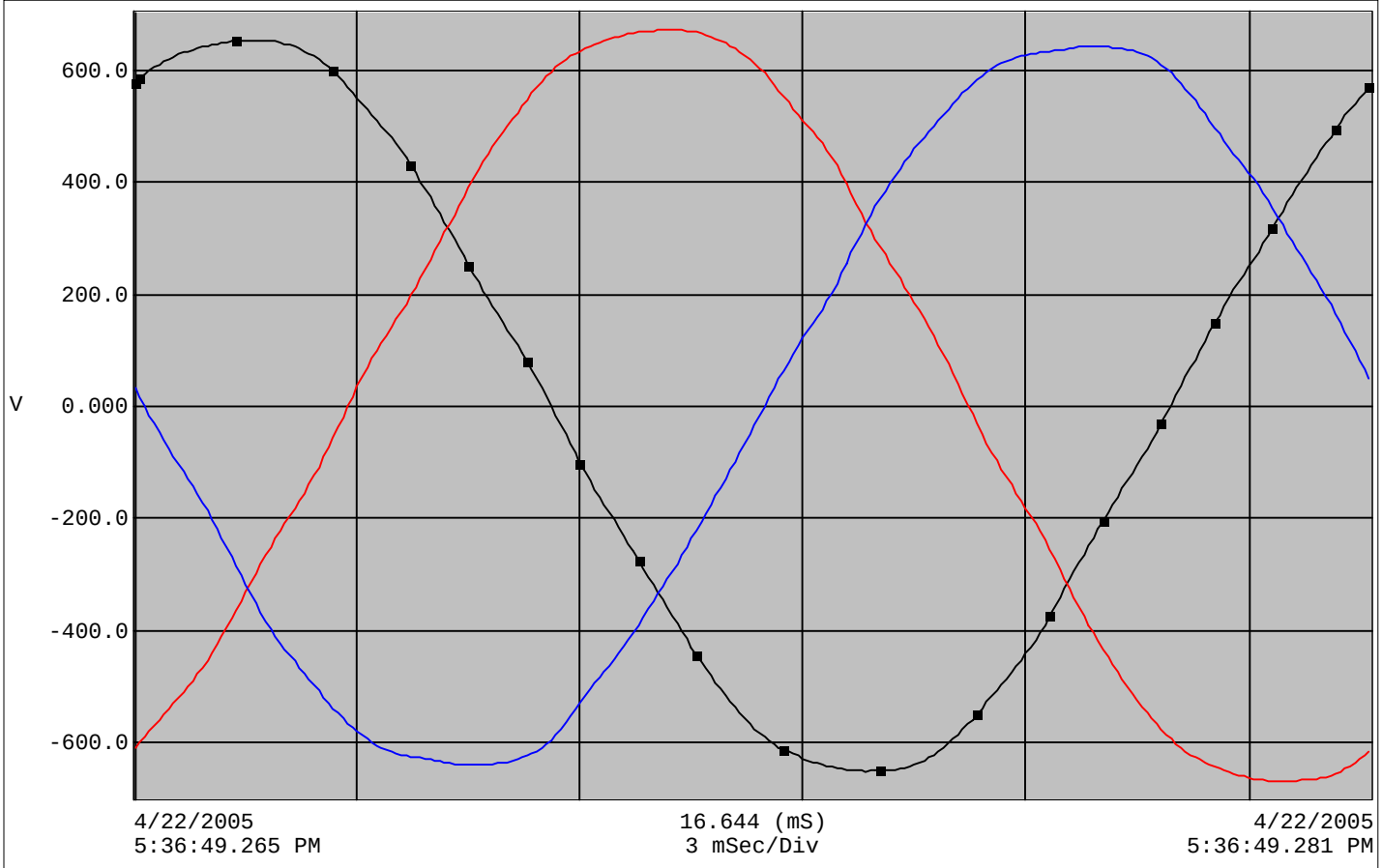


4/22/2005 - 5:36:49.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

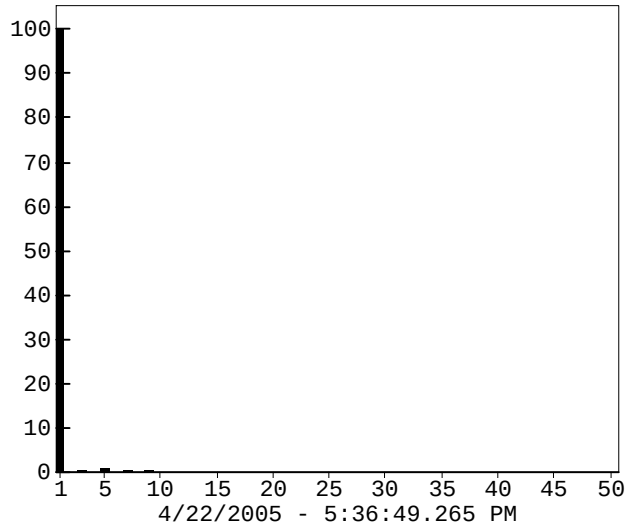
	(%)		(%)		(%)
H01	100.0	H18	0.7	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	2.4	H20	0.3	H37	0.0
H04	0.0	H21	0.3	H38	0.0
H05	1.5	H22	0.7	H39	0.0
H06	0.2	H23	0.1	H40	0.0
H07	0.3	H24	0.1	H41	0.0
H08	0.2	H25	0.1	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.2	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.2	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.5	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	4/22/2005	5:36:49.265 PM	16.644	466.0	V
Waveform U2	4/22/2005	5:36:49.265 PM	16.644	482.2	V
Waveform U3	4/22/2005	5:36:49.265 PM	16.644	463.0	V

Waveform U1
466.03 Vrms, 1.41 %THD



4/22/2005 - 5:36:49.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.5	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 4/22/2005
Start Time: 5:36:49 PM
Duration: 0:0.000 (M:S)
W: 12.94E+3 W
VAR: -478.2 W
VA: 12.95E+3 W
Power Factor: 0.999
Displacement Power Factor: 0.999
TAN: -37.00E-3
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D22\042205-D22-PHOTO.dvb

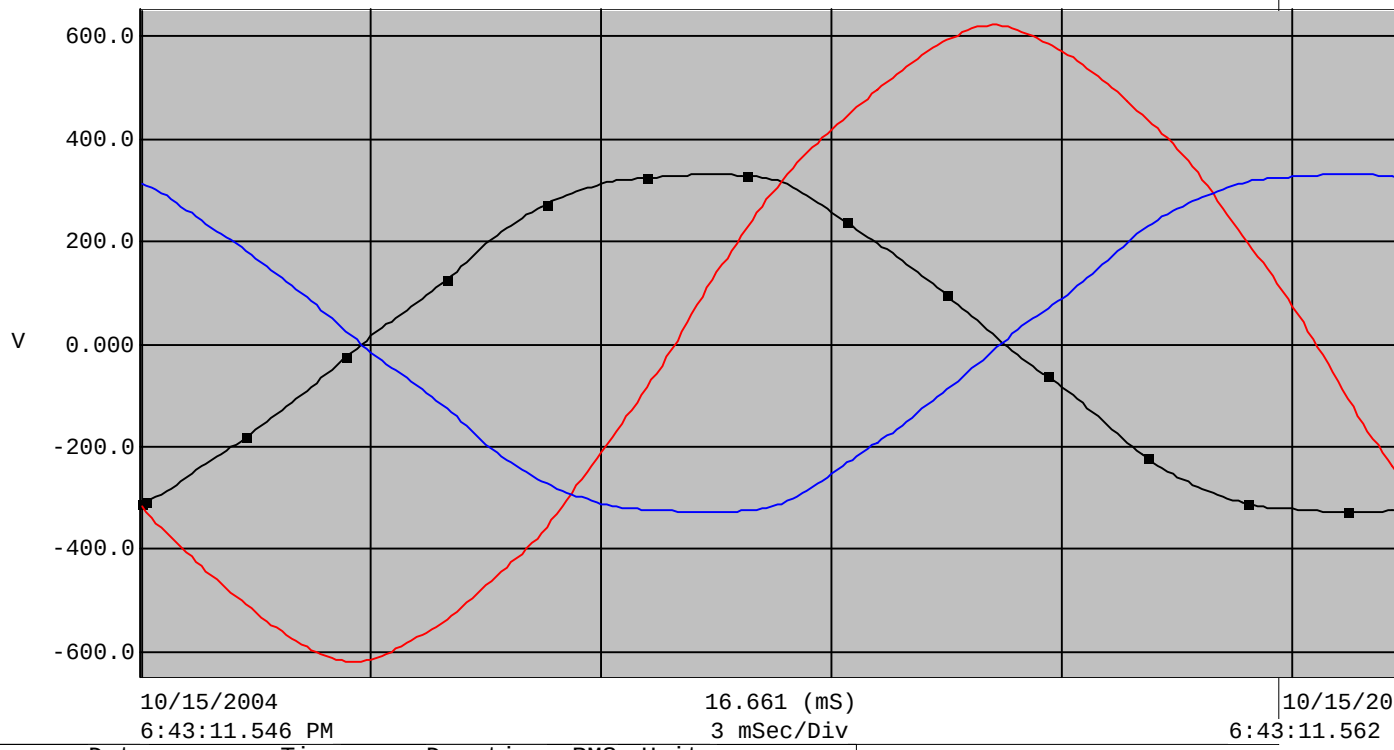
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS D-22 ,

Comments
Recorded at motor Starter Overload Relay, 50 HP, 460 V

WPS D-22 - Photo1

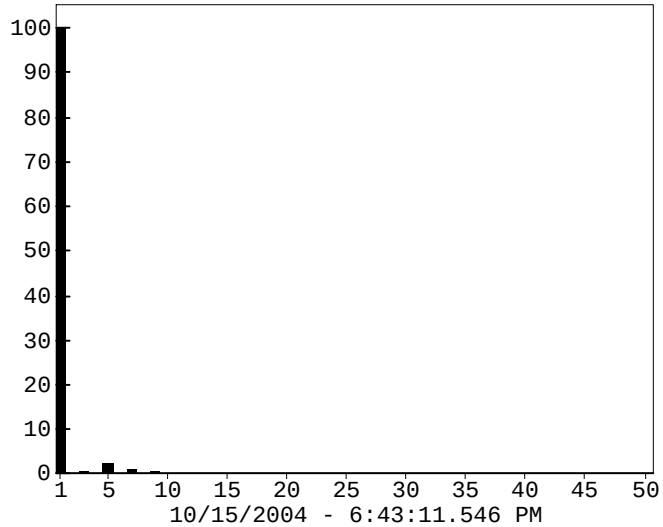
Recording Start Date	10/15/2004 - 6:43:11 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/15/2004	6:43:11.546 PM	16.661	239.2	V
Waveform V2	10/15/2004	6:43:11.546 PM	16.661	428.3	V
Waveform V3	10/15/2004	6:43:11.546 PM	16.661	239.5	V

Waveform V1
239.18 Vrms, 2.59 %THD

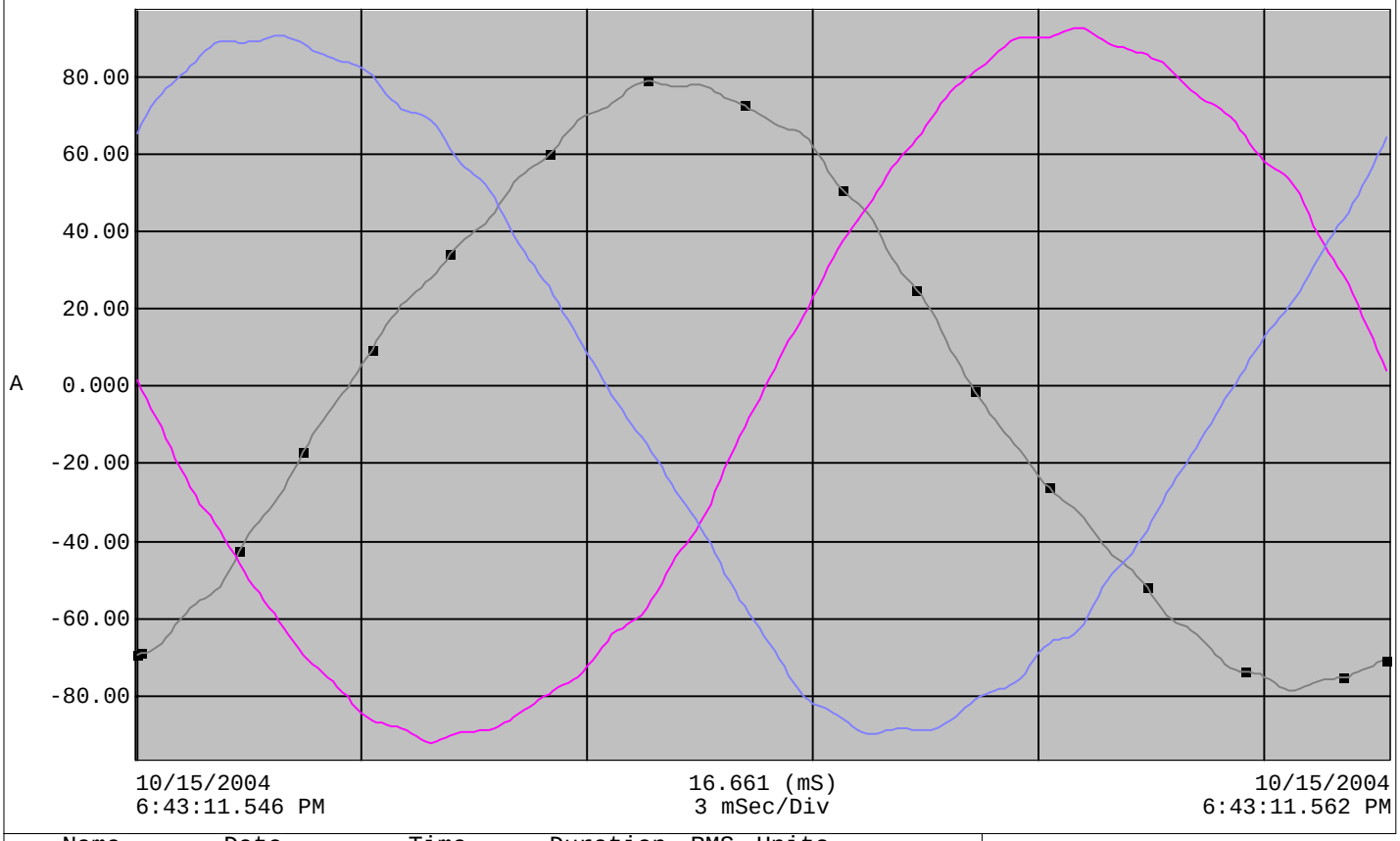


10/15/2004 - 6:43:11.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

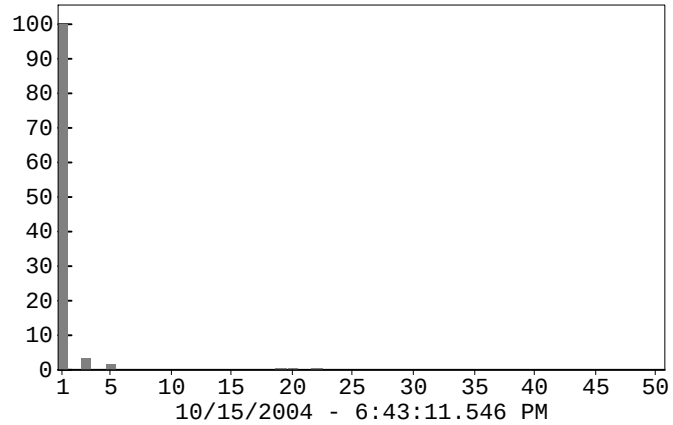
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.5	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.2	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.9	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.8	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/15/2004	6:43:11.546 PM	16.661	54.36	A
Waveform I2	10/15/2004	6:43:11.546 PM	16.661	65.66	A
Waveform I3	10/15/2004	6:43:11.546 PM	16.661	62.94	A

Waveform I1
54.36 Arms, 4.28 %THD

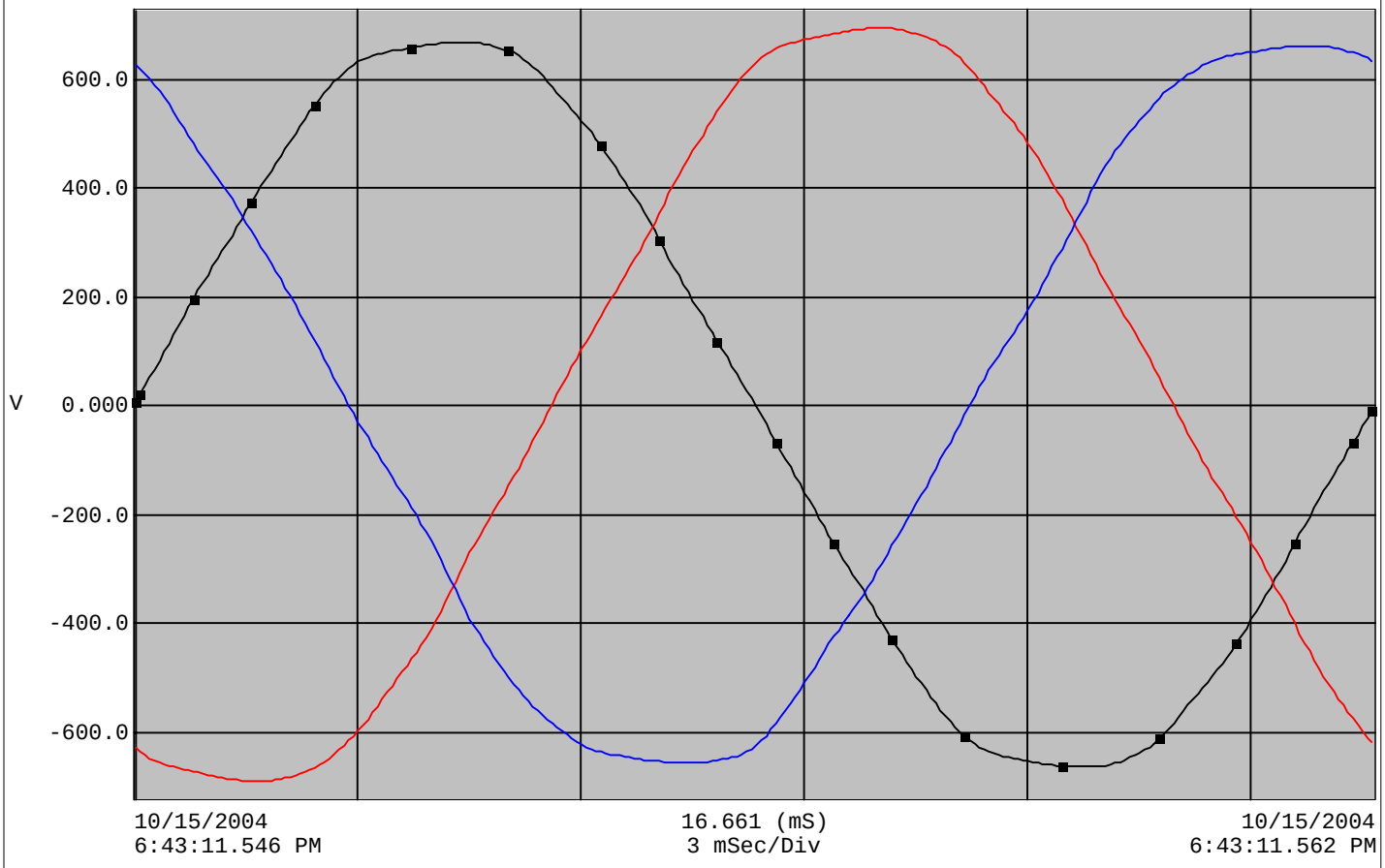


10/15/2004 - 6:43:11.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

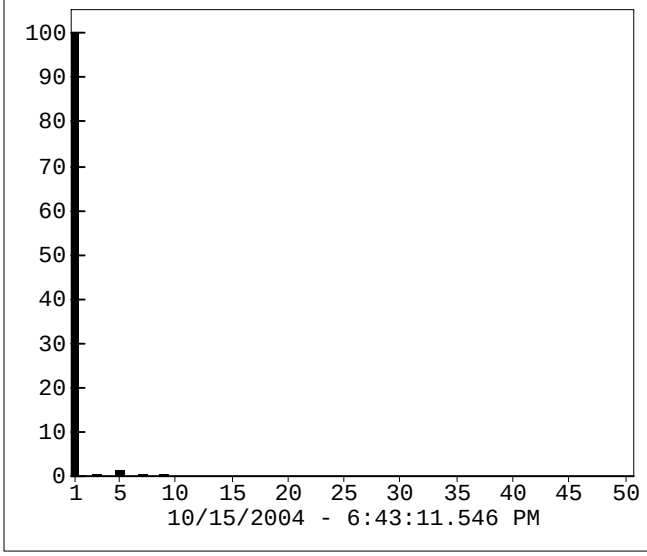
	(%)		(%)		(%)
H01	100.0	H18	0.5	H35	0.0
H02	0.2	H19	0.6	H36	0.0
H03	3.4	H20	0.7	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	2.1	H22	0.6	H39	0.0
H06	0.1	H23	0.3	H40	0.0
H07	0.2	H24	0.2	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.2	H27	0.1	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.3	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.4	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/15/2004	6:43:11.546 PM	16.661	478.8	V
Waveform U2	10/15/2004	6:43:11.546 PM	16.661	500.5	V
Waveform U3	10/15/2004	6:43:11.546 PM	16.661	478.7	V

Waveform U1
478.78 Vrms, 2.01 %THD



10/15/2004 - 6:43:11.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.5	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/15/2004
Start Time: 6:43:11 PM
Duration: 0:0.000 (M:S)
W: 12.97E+3 W
VAR: 695.1 W
VA: 12.99E+3 W
Power Factor: 0.999
Displacement Power Factor: 1.000
TAN: 4.000E-3
VoltageRatio: 1.000
CurrentRatio: 1.000
```

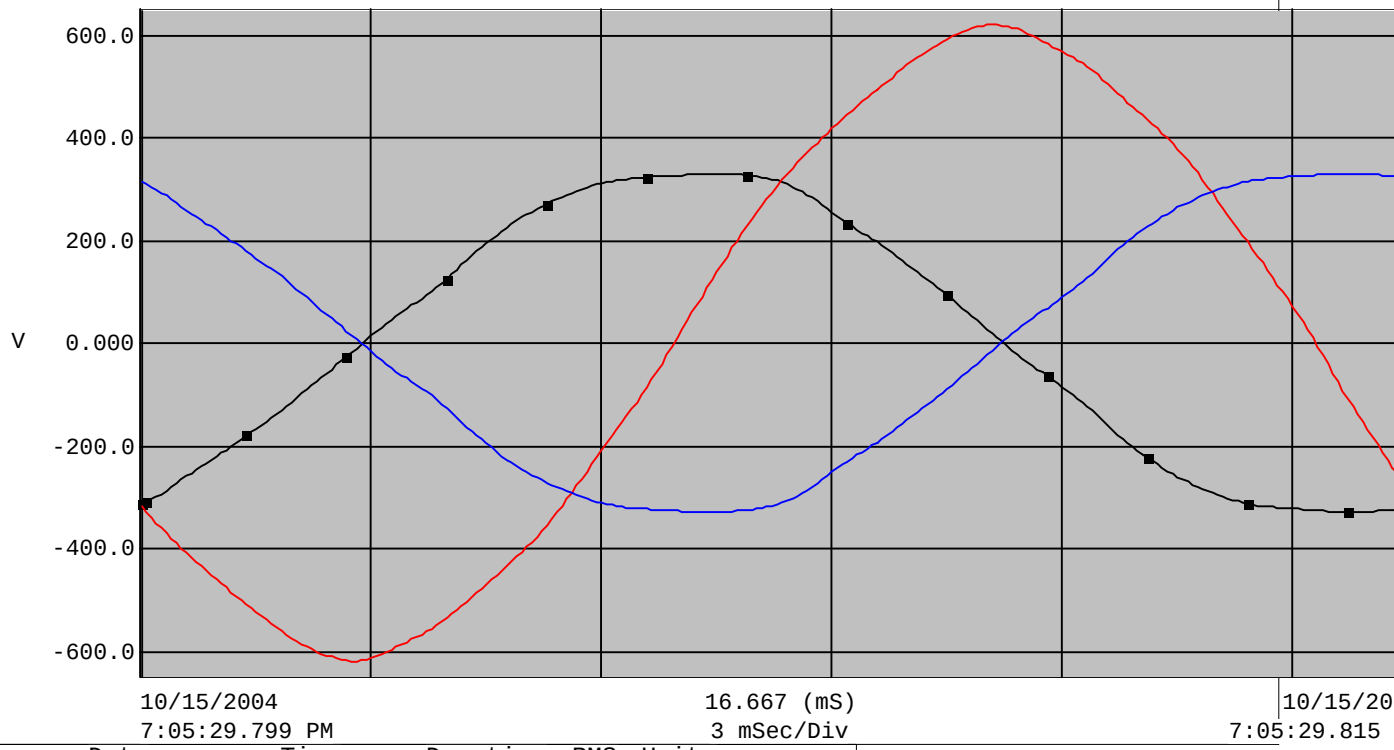
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D22\101504-D22-Photo1.dvb	
Operator GWA Victor Jardel ,	Test Site WPS D-22-Photo 1 ,
Comments	

WPS D-22 - Photo2

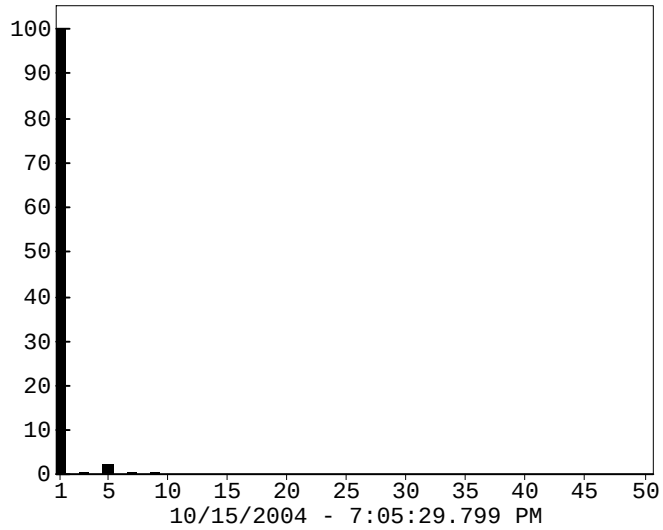
Recording Start Date	10/15/2004 - 7:05:29 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/15/2004	7:05:29.799 PM	16.667	239.0	V
Waveform V2	10/15/2004	7:05:29.799 PM	16.667	427.8	V
Waveform V3	10/15/2004	7:05:29.799 PM	16.667	239.3	V

Waveform V1
238.99 Vrms, 2.58 %THD

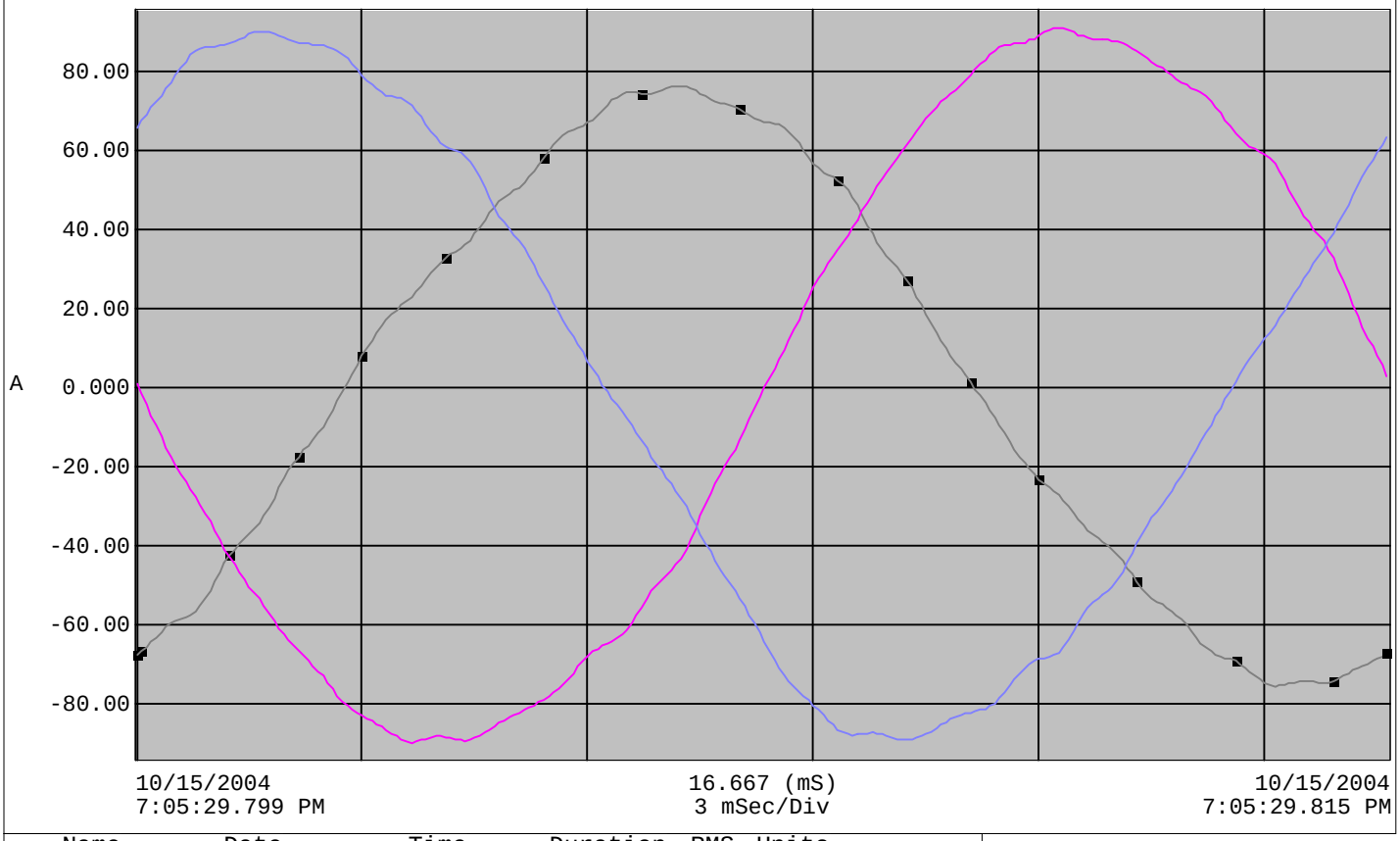


10/15/2004 - 7:05:29.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

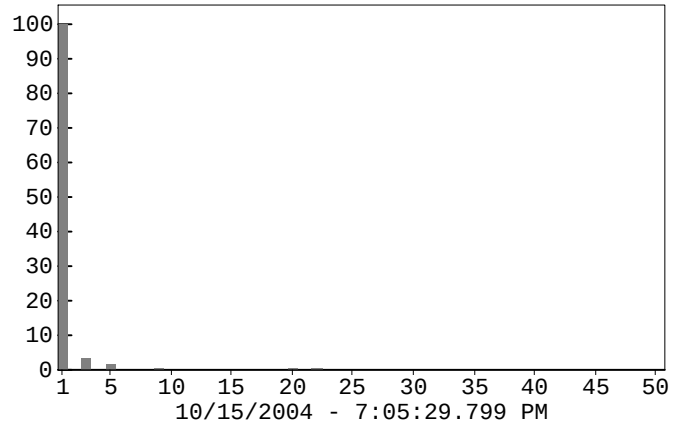
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.5	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.2	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.8	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/15/2004	7:05:29.799 PM	16.667	52.49	A
Waveform I2	10/15/2004	7:05:29.799 PM	16.667	64.50	A
Waveform I3	10/15/2004	7:05:29.799 PM	16.667	62.29	A

Waveform I1
52.49 Arms, 4.36 %THD

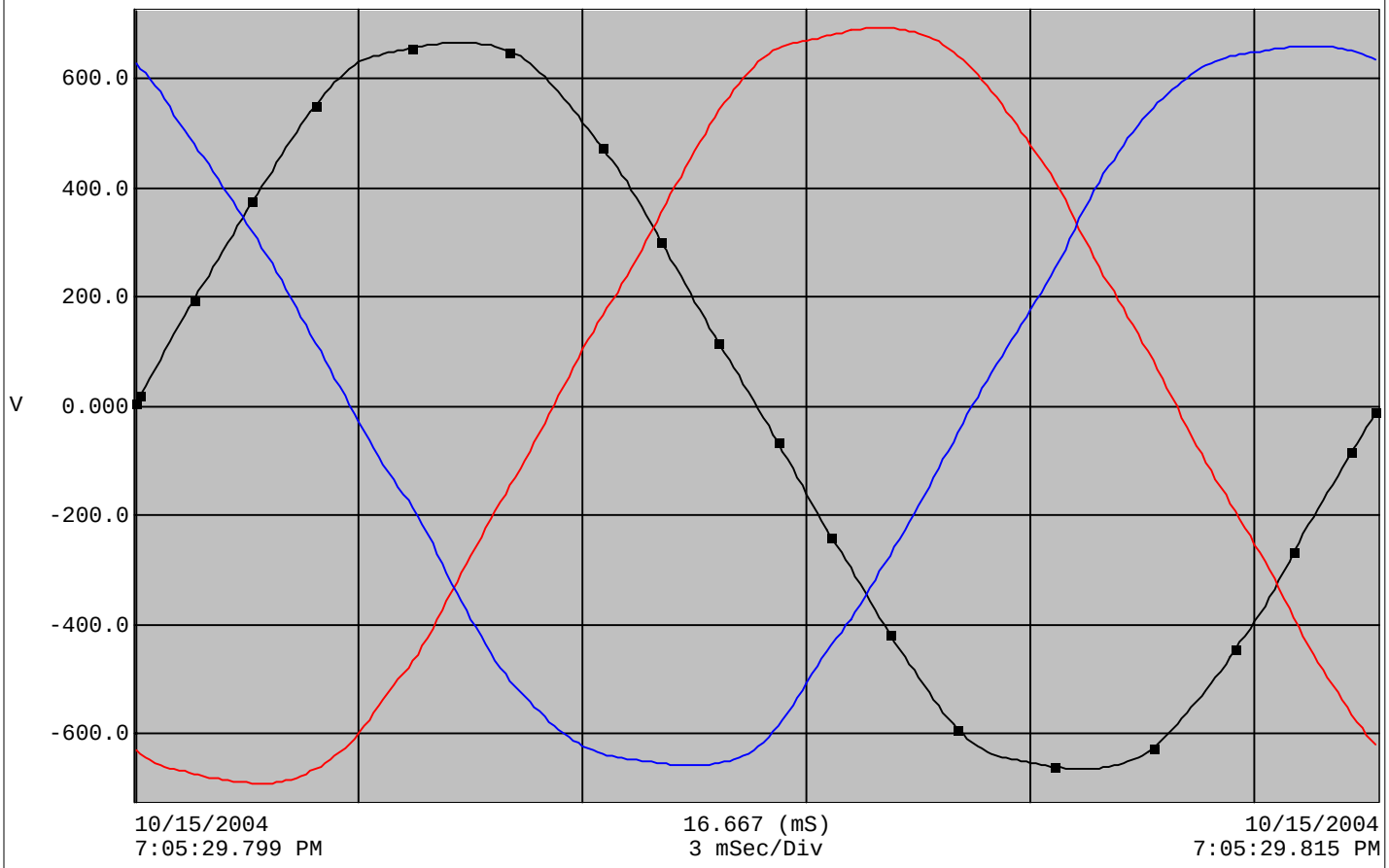


10/15/2004 - 7:05:29.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

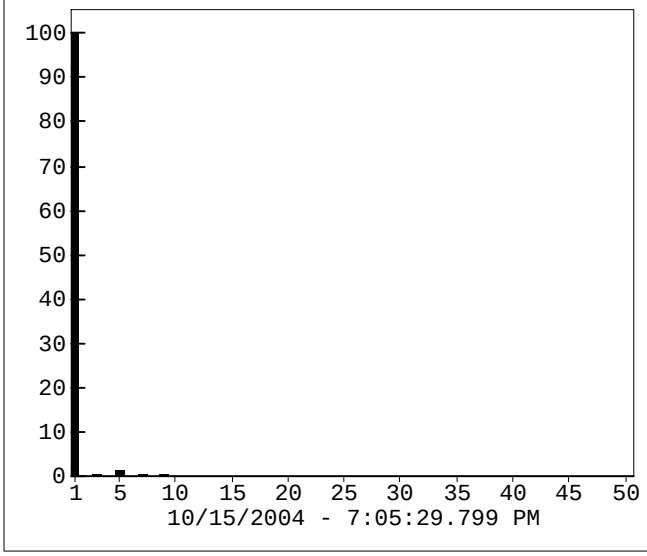
	(%)		(%)		(%)
H01	100.0	H18	0.5	H35	0.0
H02	0.0	H19	0.5	H36	0.0
H03	3.5	H20	0.7	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	2.0	H22	0.6	H39	0.0
H06	0.3	H23	0.3	H40	0.0
H07	0.3	H24	0.2	H41	0.0
H08	0.2	H25	0.1	H42	0.0
H09	0.6	H26	0.0	H43	0.0
H10	0.2	H27	0.1	H44	0.0
H11	0.2	H28	0.1	H45	0.0
H12	0.3	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.4	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/15/2004	7:05:29.799 PM	16.667	478.1	V
Waveform U2	10/15/2004	7:05:29.799 PM	16.667	500.1	V
Waveform U3	10/15/2004	7:05:29.799 PM	16.667	478.4	V

Waveform U1
478.07 Vrms, 1.98 %THD



10/15/2004 - 7:05:29.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.5	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/15/2004
Start Time: 7:05:29 PM
Duration: 0:0.000 (M:S)
W: 12.55E+3 W
VAR: -680.6 W
VA: 12.57E+3 W
Power Factor: 0.999
Displacement Power Factor: 1.000
TAN: -4.000E-3
VoltageRatio: 1.000
CurrentRatio: 1.000
```

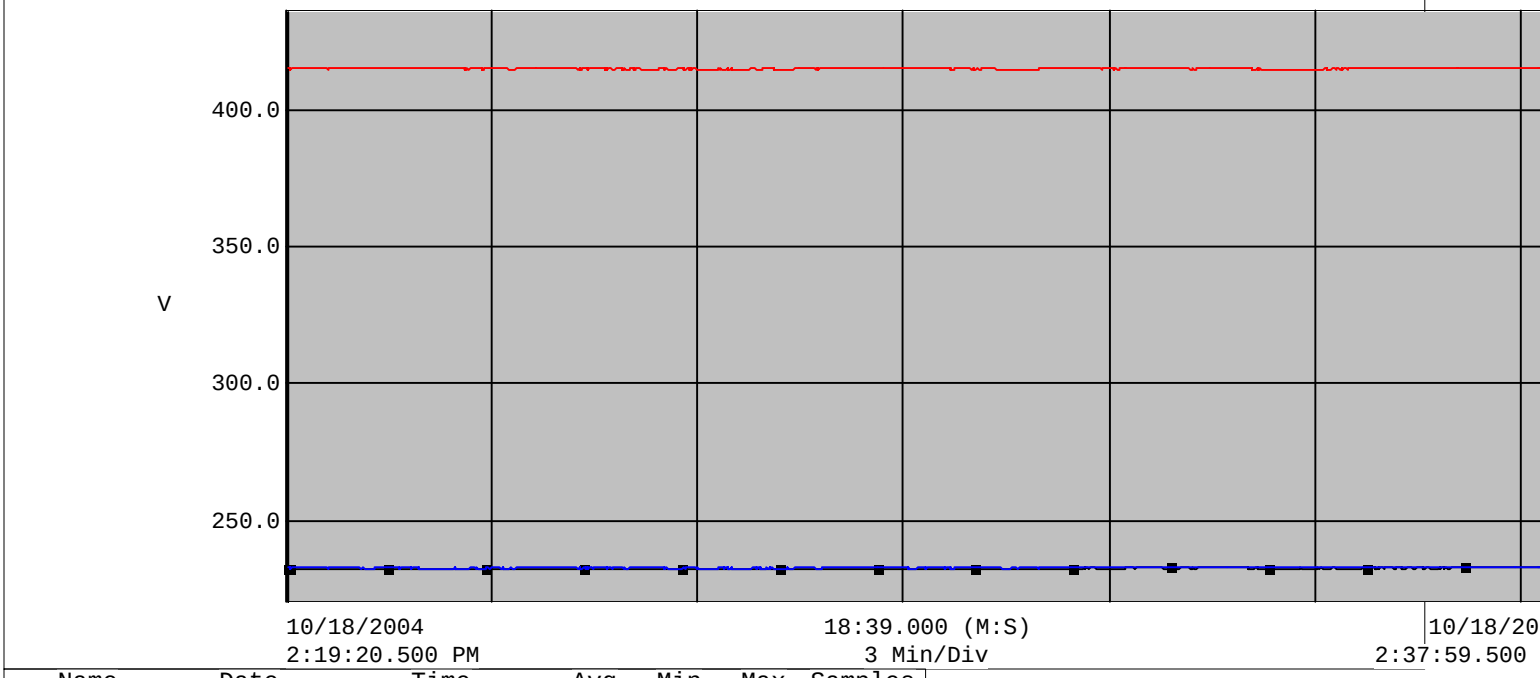
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D22\101504-D22-Photo2.dvb	
Operator GWA Victor Jardel ,	Test Site WPS D-22-Photo 2 ,
Comments	

WPS D-22 - Trend

Recording Start Date	10/18/2004 - 2:19:20 PM
Recording Duration	18:39 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

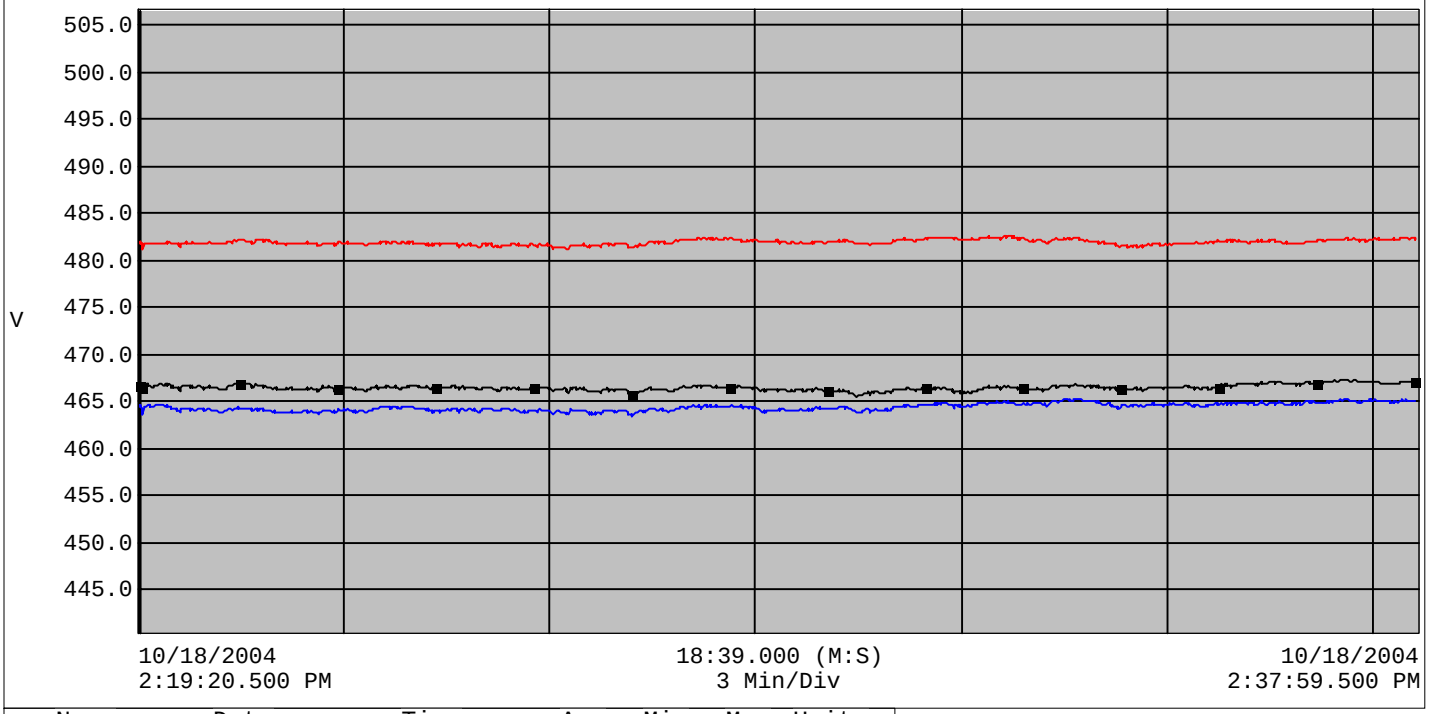
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/18/2004	2:19:20.500 PM	232.0	231.5	232.4	1120
Vrms Line2	10/18/2004	2:19:20.500 PM	414.5	413.9	415.0	1120
Vrms Line3	10/18/2004	2:19:20.500 PM	232.3	231.9	232.8	1120

10/18/2004 - 2:19:20.000 PM
Val
232.1 — Vrms Line1
414.8 — Vrms Line2
232.5 — Vrms Line3

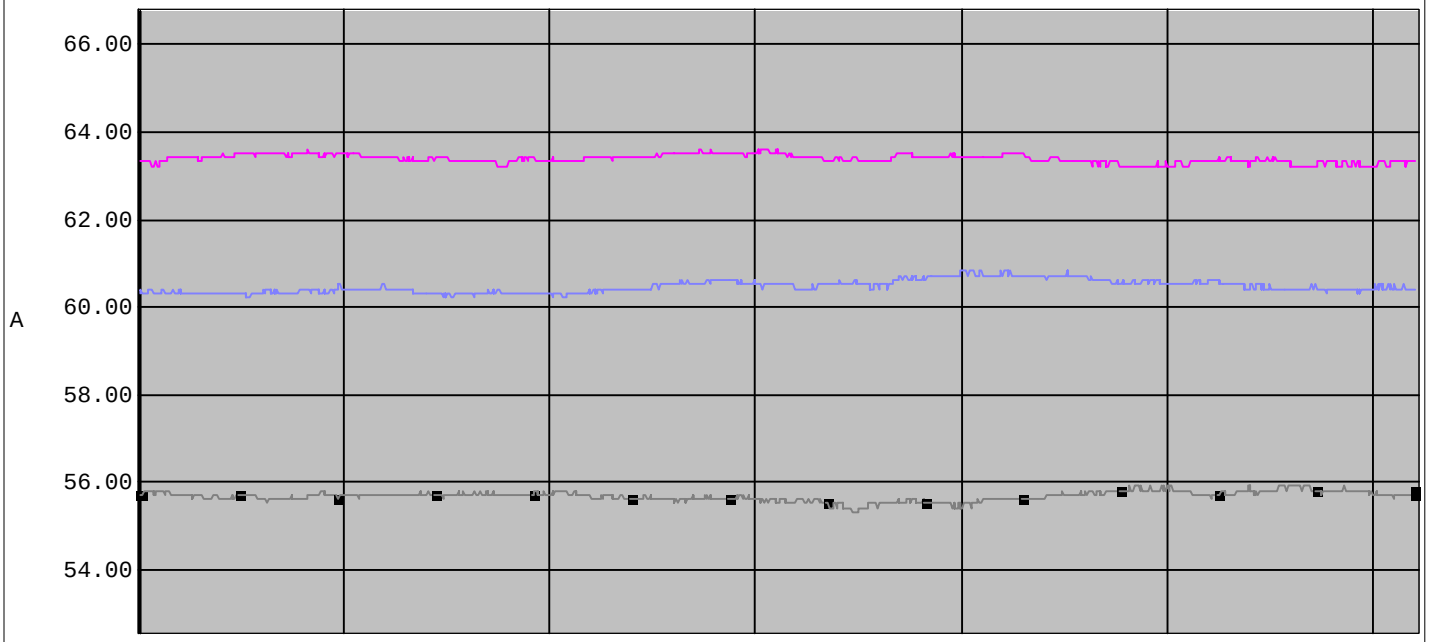
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/18/2004	2:19:20.500 PM	466.3	465.4	467.2	V
Urms Line2	10/18/2004	2:19:20.500 PM	481.9	481.0	482.5	V
Urms Line3	10/18/2004	2:19:20.500 PM	464.3	463.4	465.2	V

10/18/2004 - 2:19:20.000 PM
Val
466.7 Urms Line1
482.0 Urms Line2
464.5 Urms Line3

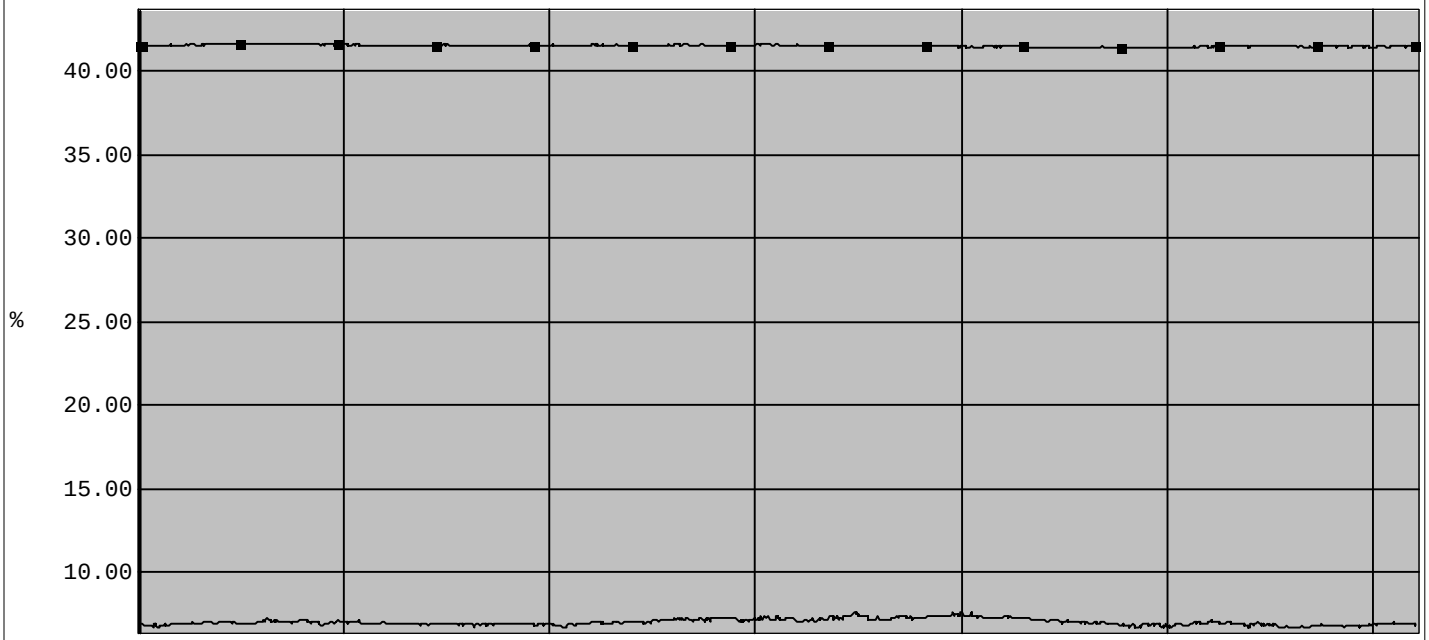
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/18/2004	2:19:20.500 PM	55.67	55.30	55.90	A
Arms Line2	10/18/2004	2:19:20.500 PM	63.36	63.20	63.60	A
Arms Line3	10/18/2004	2:19:20.500 PM	60.46	60.20	60.80	A

10/18/2004 - 2:19:20.000 PM
Val
55.70 — Arms Line1
63.30 — Arms Line2
60.30 — Arms Line3

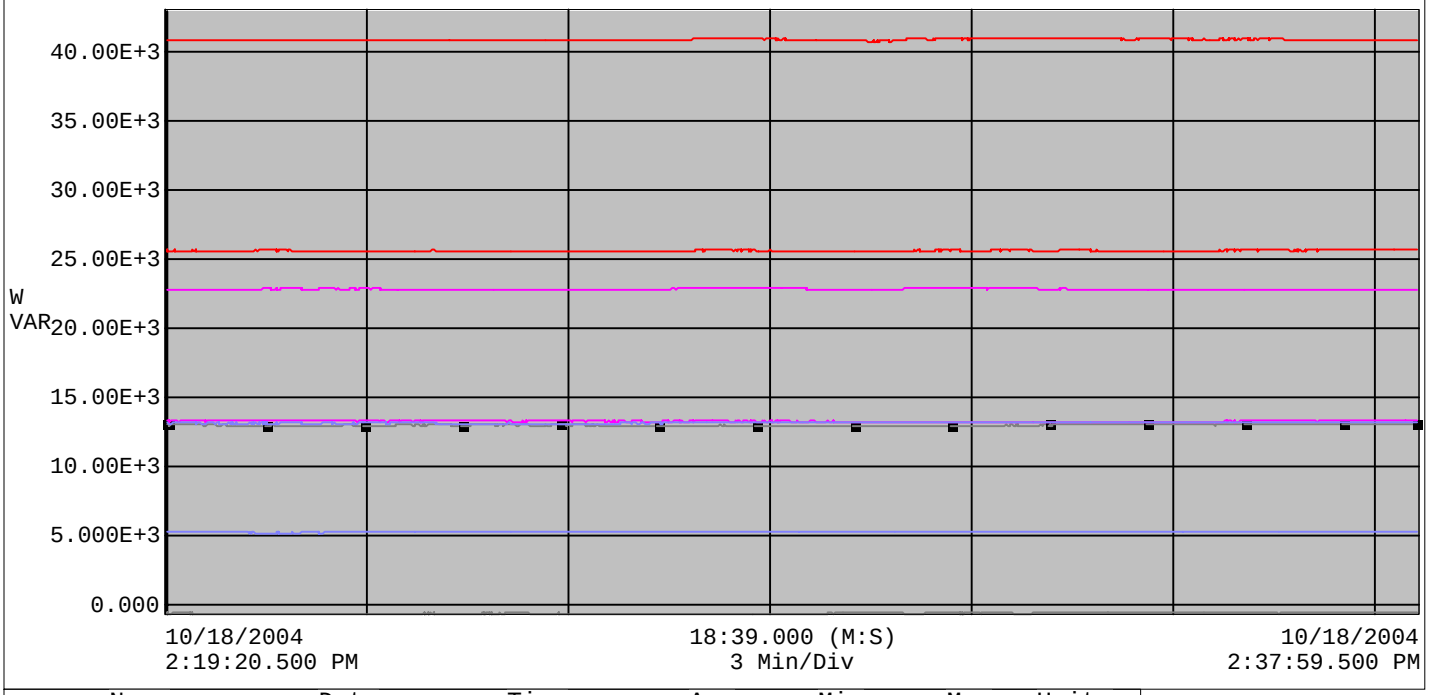
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/18/2004	2:19:20.500 PM	41.50	41.40	41.60	%
Aunb(IEEE)	10/18/2004	2:19:20.500 PM	6.956	6.600	7.500	%

10/18/2004 - 2:19:20.000 PM
Val
41.50 —— Vunb(IEEE)
6.800 —— Aunb(IEEE)

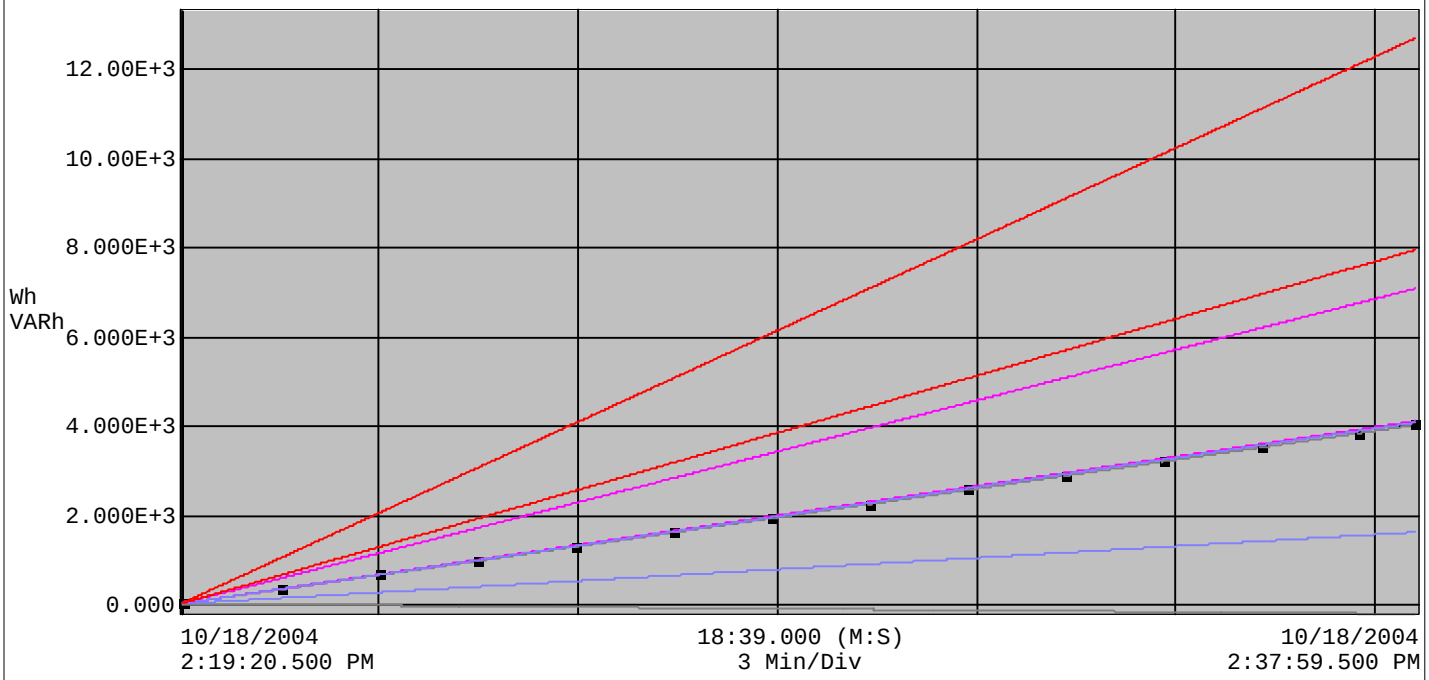
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/18/2004	2:19:20.500 PM	12.89E+3	12.80E+3	12.96E+3	W
W Line2	10/18/2004	2:19:20.500 PM	22.73E+3	22.63E+3	22.84E+3	W
W Line3	10/18/2004	2:19:20.500 PM	5.163E+3	5.101E+3	5.233E+3	W
W Sum of Phases	10/18/2004	2:19:20.500 PM	40.78E+3	40.66E+3	40.92E+3	W
VAR Line1	10/18/2004	2:19:20.500 PM	-718.0	-748.8	-693.6	VAR
VAR Line2	10/18/2004	2:19:20.500 PM	13.17E+3	13.08E+3	13.28E+3	VAR
VAR Line3	10/18/2004	2:19:20.500 PM	13.06E+3	12.99E+3	13.14E+3	VAR
VAR Sum of Phases	10/18/2004	2:19:20.500 PM	25.52E+3	25.42E+3	25.60E+3	VAR

10/18/2004 - 2:19:20.000 PM
Val
12.91E+3 — W Line1
22.70E+3 — W Line2
5.143E+3 — W Line3
40.76E+3 — W Sum of Phases
-715.7 — VAR Line1
13.22E+3 — VAR Line2
13.05E+3 — VAR Line3
25.56E+3 — VAR Sum of Phases

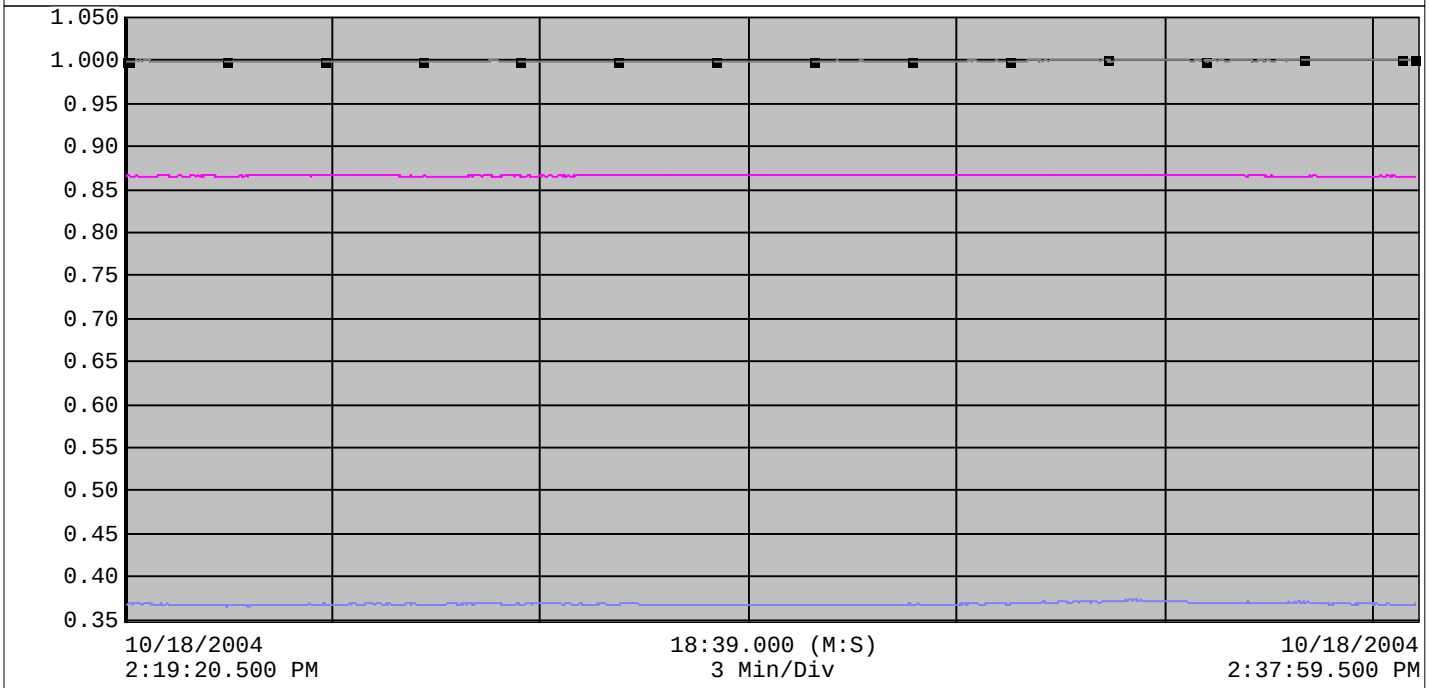
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/18/2004	2:19:20.500 PM	2.006E+3	3.550	4.011E+3	Wh
W-hours Line2	10/18/2004	2:19:20.500 PM	3.539E+3	6.258	7.070E+3	Wh
W-hours Line3	10/18/2004	2:19:20.500 PM	802.1	1.422	1.606E+3	Wh
W-hours Sum of Phases	10/18/2004	2:19:20.500 PM	6.347E+3	11.23	12.69E+3	Wh
VAR-hours Line1	10/18/2004	2:19:20.500 PM	-112.7	-223.4	-0.191	VARh
VAR-hours Line2	10/18/2004	2:19:20.500 PM	2.052E+3	3.627	4.097E+3	VARh
VAR-hours Line3	10/18/2004	2:19:20.500 PM	2.032E+3	3.597	4.064E+3	VARh
VAR-hours Sum of Phases	10/18/2004	2:19:20.500 PM	3.971E+3	7.026	7.938E+3	VARh

10/18/2004 - 2:19:20.000 PM
Val
3.550 — W-hours Line1
6.258 — W-hours Line2
1.422 — W-hours Line3
11.23 — W-hours Sum of Phases
-0.191 — VAR-hours Line1
3.627 — VAR-hours Line2
3.597 — VAR-hours Line3
7.026 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/18/2004	2:19:20.500 PM	0.998	0.998	0.999	
PF Line2	10/18/2004	2:19:20.500 PM	0.865	0.864	0.867	
PF Line3	10/18/2004	2:19:20.500 PM	0.368	0.364	0.372	

10/18/2004 - 2:19:20.000 PM
Val
0.998 — PF Line1
0.864 — PF Line2
0.367 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D22\101804-D22-Trend.dvb

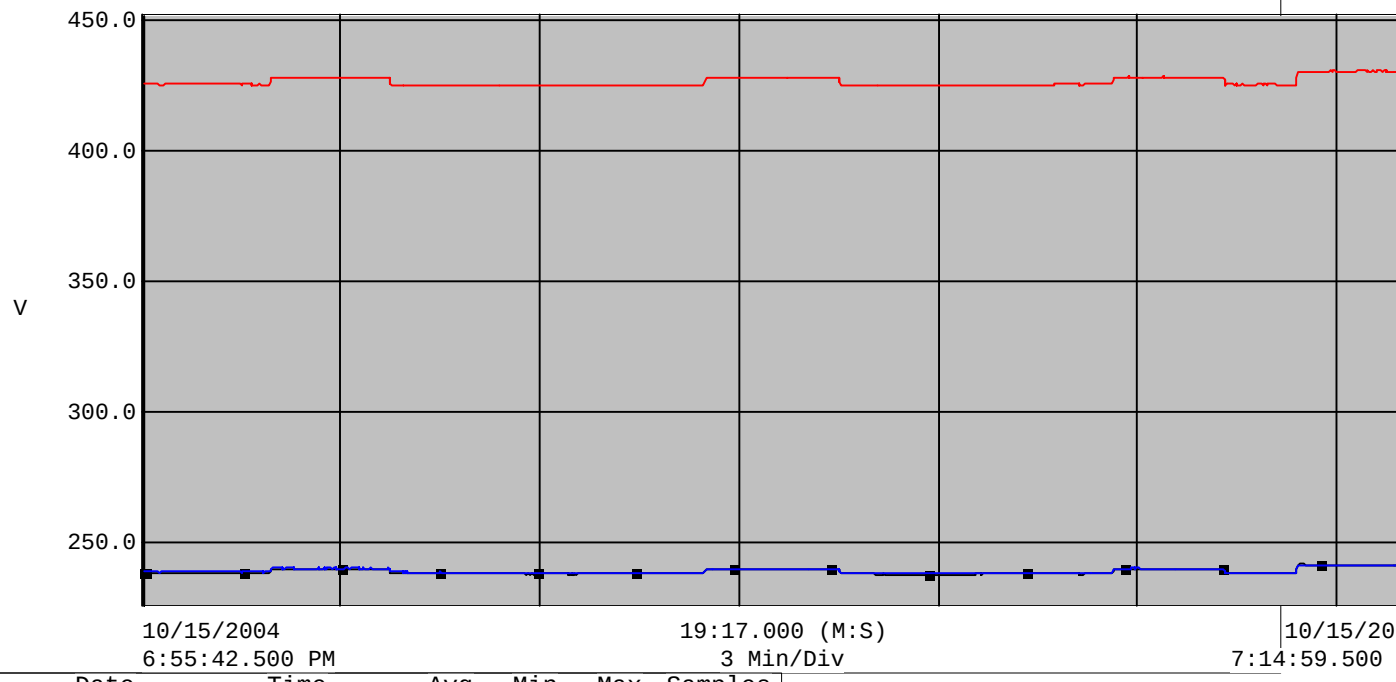
Operator	Test Site
GWA Victor Jardel ,	GWA WPS D-22 ,

Comments

WPS D-22 - Trend 2

Recording Start Date	10/15/2004 - 6:55:42 PM
Recording Duration	19:17 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

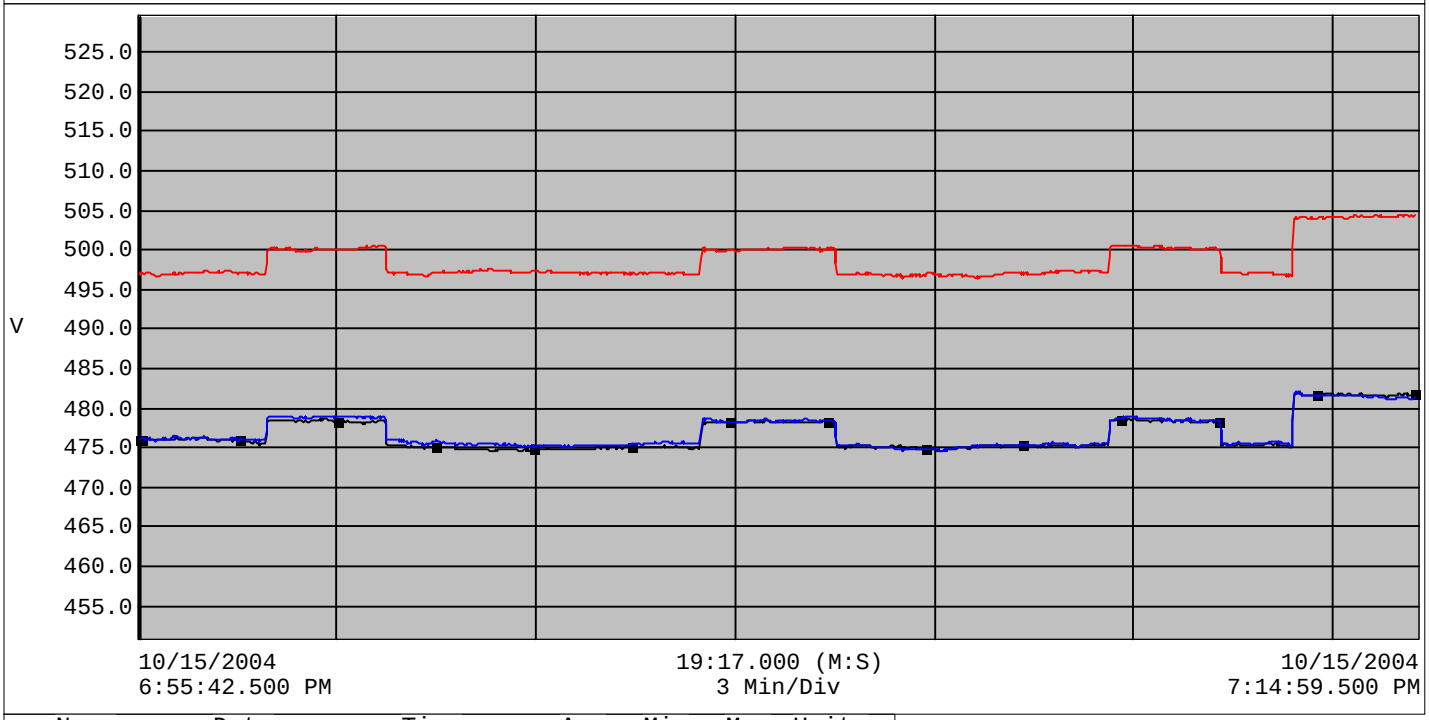
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/15/2004	6:55:42.500 PM	238.3	237.0	241.0	1158
Vrms Line2	10/15/2004	6:55:42.500 PM	426.4	424.8	430.6	1158
Vrms Line3	10/15/2004	6:55:42.500 PM	238.6	237.4	240.9	1158

10/15/2004 - 6:55:42.000 PM
Val
237.8 — Vrms Line1
425.4 — Vrms Line2
238.2 — Vrms Line3

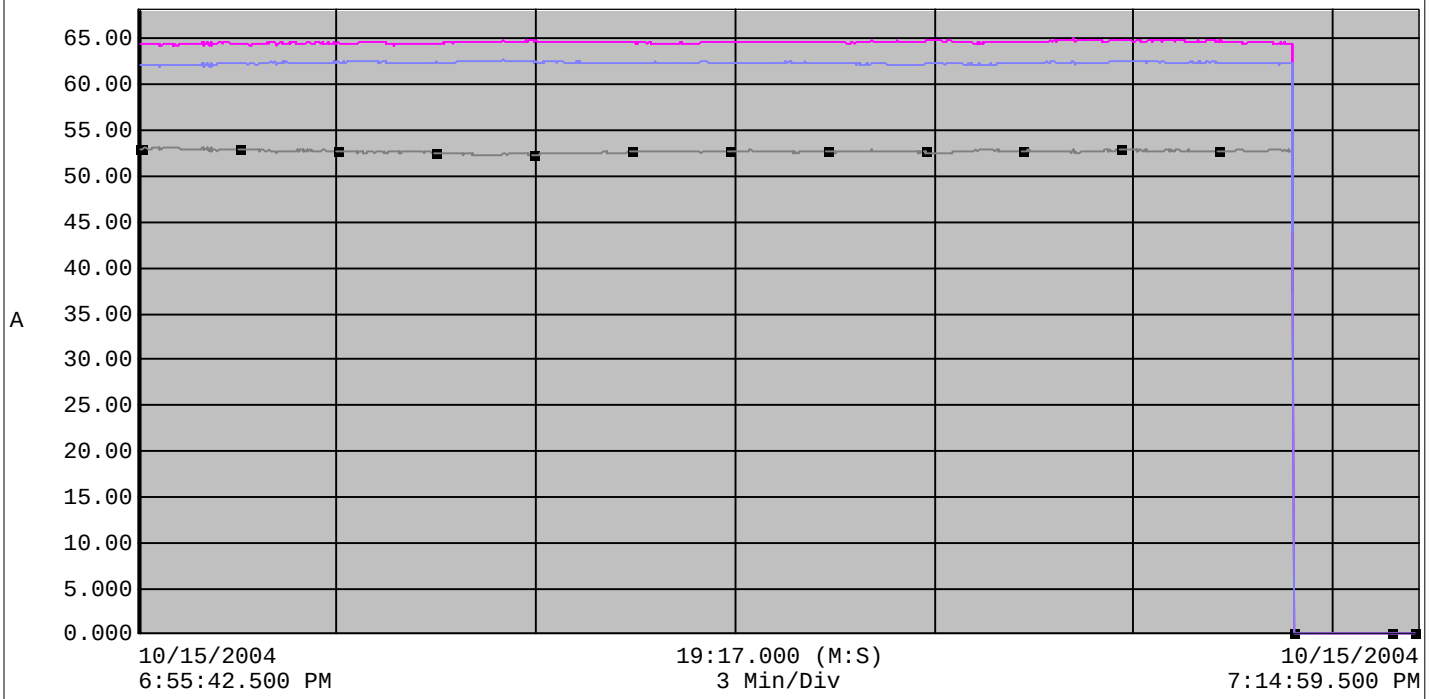
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/15/2004	6:55:42.500 PM	476.6	474.4	481.8	V
Urms Line2	10/15/2004	6:55:42.500 PM	498.5	496.3	504.3	V
Urms Line3	10/15/2004	6:55:42.500 PM	476.9	474.4	481.9	V

10/15/2004 - 6:55:42.000 PM
Val
475.9 Urms Line1
496.9 Urms Line2
476.0 Urms Line3

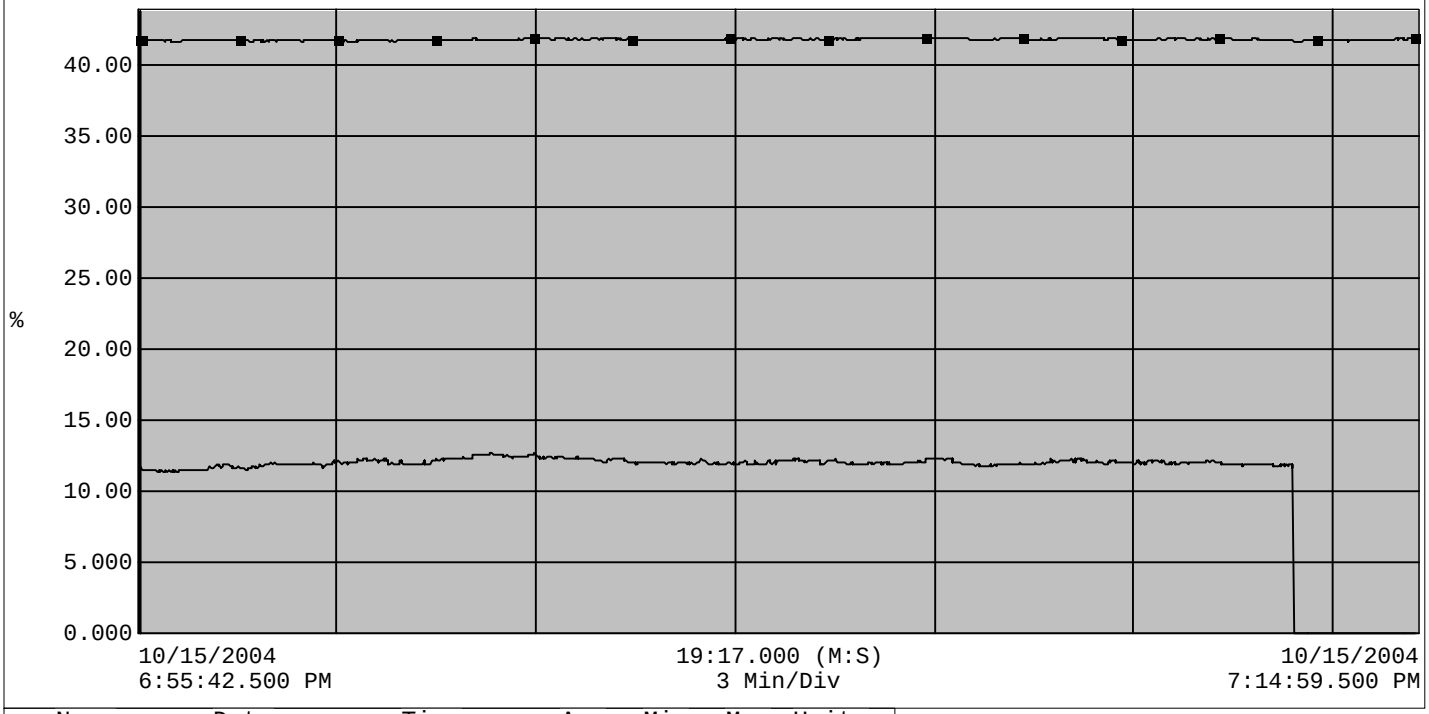
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/15/2004	6:55:42.500 PM	47.54	0.000	53.10	A
Arms Line2	10/15/2004	6:55:42.500 PM	58.26	0.000	64.90	A
Arms Line3	10/15/2004	6:55:42.500 PM	56.23	0.000	62.60	A

10/15/2004 - 6:55:42.000 PM
Val
52.80 — Arms Line1
64.40 — Arms Line2
62.10 — Arms Line3

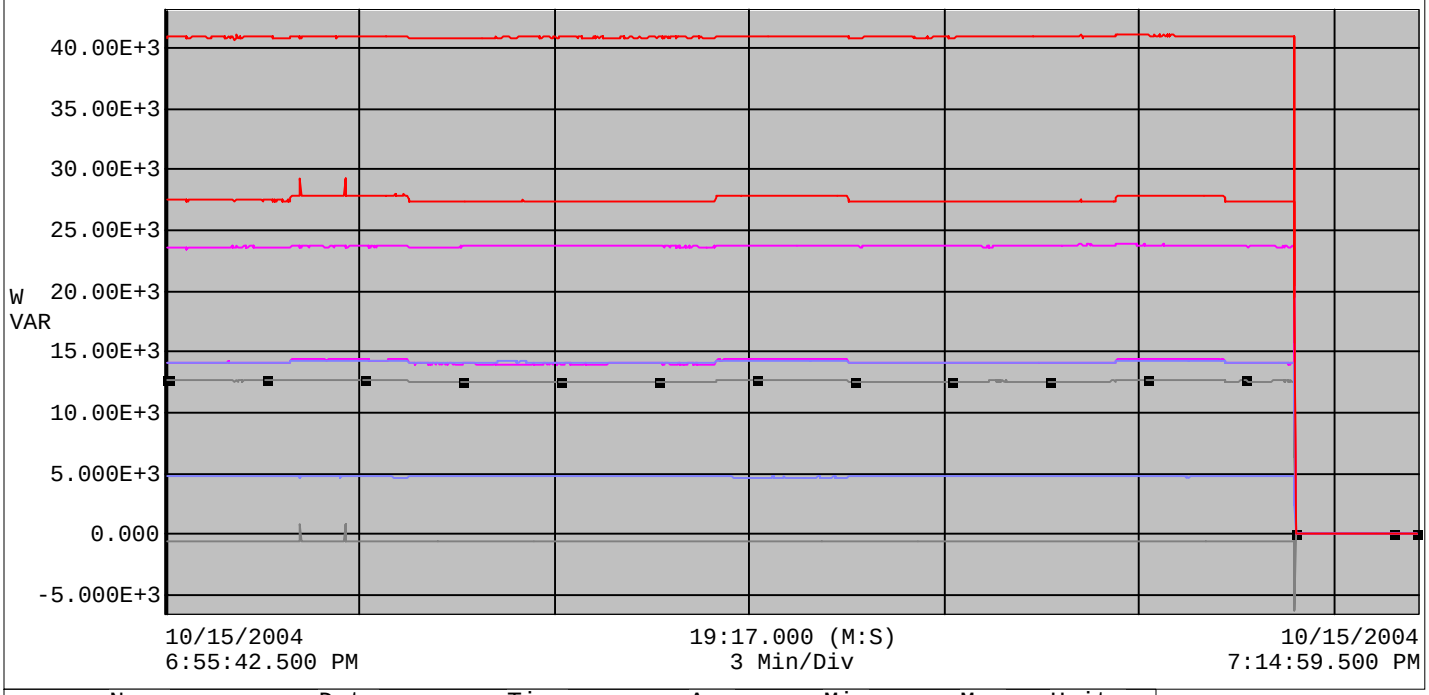
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/15/2004	6:55:42.500 PM	41.63	41.50	41.70	%
Aunb(IEEE)	10/15/2004	6:55:42.500 PM	10.82	0.000	12.70	%

10/15/2004 - 6:55:42.000 PM
Val
41.60 —— Vunb(IEEE)
11.70 —— Aunb(IEEE)

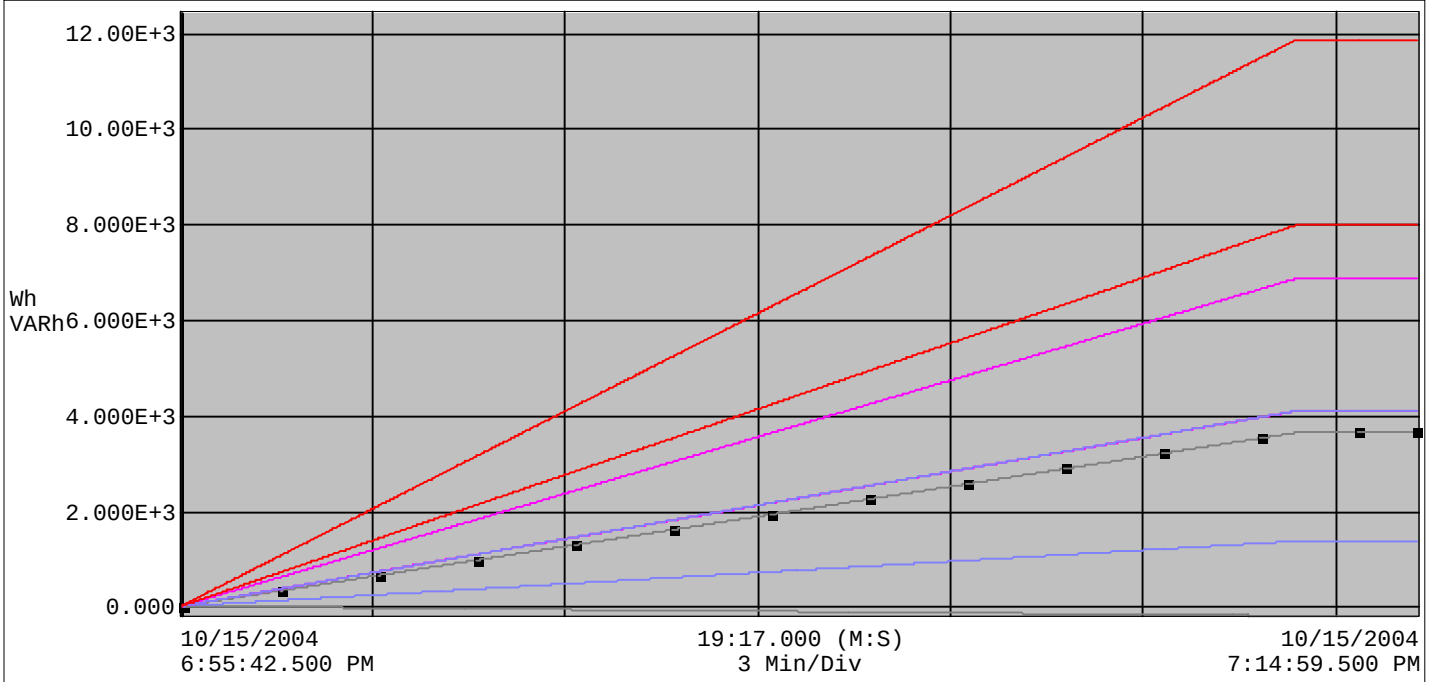
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/15/2004	6:55:42.500 PM	11.30E+3	0.000	12.62E+3	W
W Line2	10/15/2004	6:55:42.500 PM	21.32E+3	0.000	23.78E+3	W
W Line3	10/15/2004	6:55:42.500 PM	4.234E+3	0.000	4.765E+3	W
W Sum of Phases	10/15/2004	6:55:42.500 PM	36.85E+3	0.000	41.01E+3	W
VAR Line1	10/15/2004	6:55:42.500 PM	-619.0	-6.352E+3	683.6	VAR
VAR Line2	10/15/2004	6:55:42.500 PM	12.71E+3	0.000	15.51E+3	VAR
VAR Line3	10/15/2004	6:55:42.500 PM	12.72E+3	0.000	14.23E+3	VAR
VAR Sum of Phases	10/15/2004	6:55:42.500 PM	24.80E+3	0.000	29.17E+3	VAR

10/15/2004 - 6:55:42.000 PM
Val
12.54E+3 — W Line1
23.49E+3 — W Line2
4.737E+3 — W Line3
40.77E+3 — W Sum of Phases
-683.1 — VAR Line1
14.05E+3 — VAR Line2
14.01E+3 — VAR Line3
27.38E+3 — VAR Sum of Phases

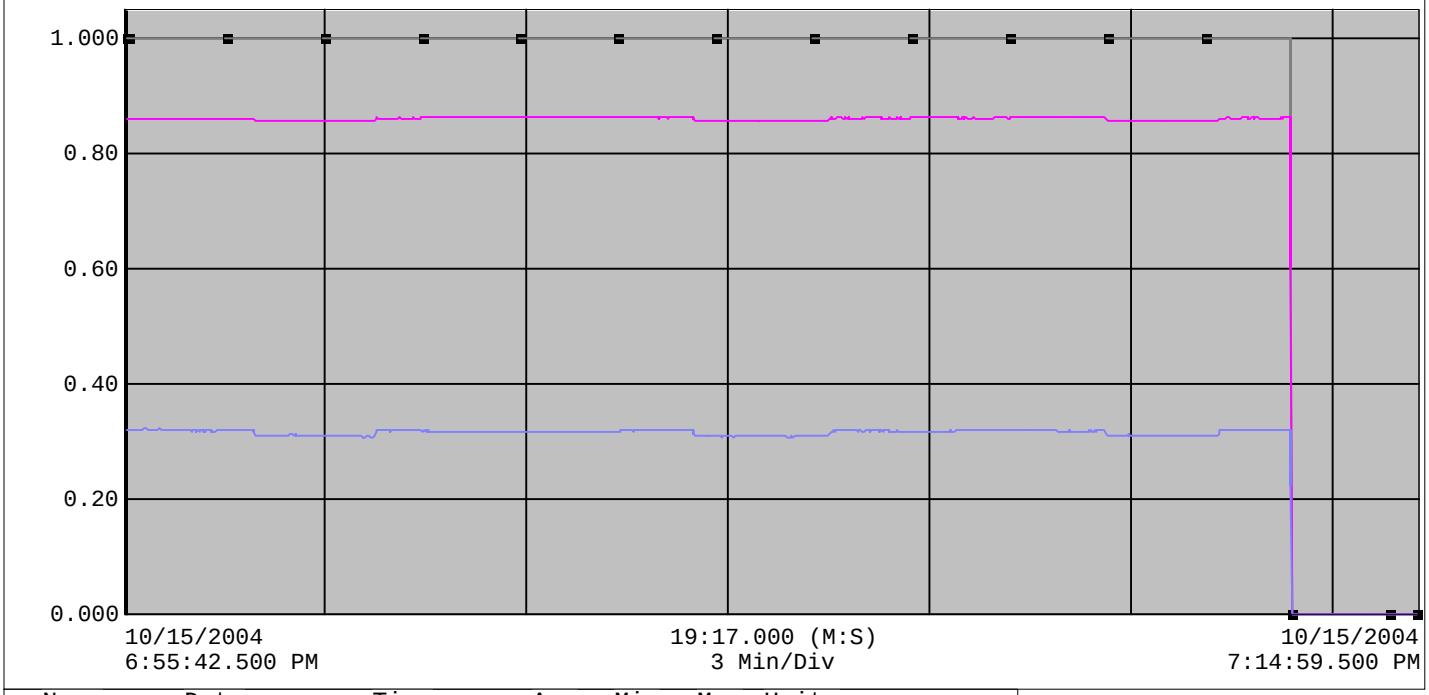
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/15/2004	6:55:42.500 PM	1.995E+3	3.438	3.633E+3	Wh
W-hours Line2	10/15/2004	6:55:42.500 PM	3.762E+3	6.488	6.857E+3	Wh
W-hours Line3	10/15/2004	6:55:42.500 PM	748.0	1.330	1.362E+3	Wh
W-hours Sum of Phases	10/15/2004	6:55:42.500 PM	6.505E+3	11.21	11.85E+3	Wh
VAR-hours Line1	10/15/2004	6:55:42.500 PM	-108.2	-199.2	-0.182	VARh
VAR-hours Line2	10/15/2004	6:55:42.500 PM	2.243E+3	3.867	4.088E+3	VARh
VAR-hours Line3	10/15/2004	6:55:42.500 PM	2.245E+3	3.870	4.090E+3	VARh
VAR-hours Sum of Phases	10/15/2004	6:55:42.500 PM	4.380E+3	7.549	7.979E+3	VARh

10/15/2004 - 6:55:42.000 PM
Val
3.438 — W-hours Line1
6.488 — W-hours Line2
1.330 — W-hours Line3
11.21 — W-hours Sum of Phases
-0.182 — VAR-hours Line1
3.867 — VAR-hours Line2
3.870 — VAR-hours Line3
7.549 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/15/2004	6:55:42.500 PM	0.902	0.000	0.999	
PF Line2	10/15/2004	6:55:42.500 PM	0.776	0.000	0.863	
PF Line3	10/15/2004	6:55:42.500 PM	0.285	0.000	0.322	

10/15/2004 - 6:55:42.000 PM
Val
0.999 — PF Line1
0.858 — PF Line2
0.320 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D22\101504-D22-Trend 2.dvb

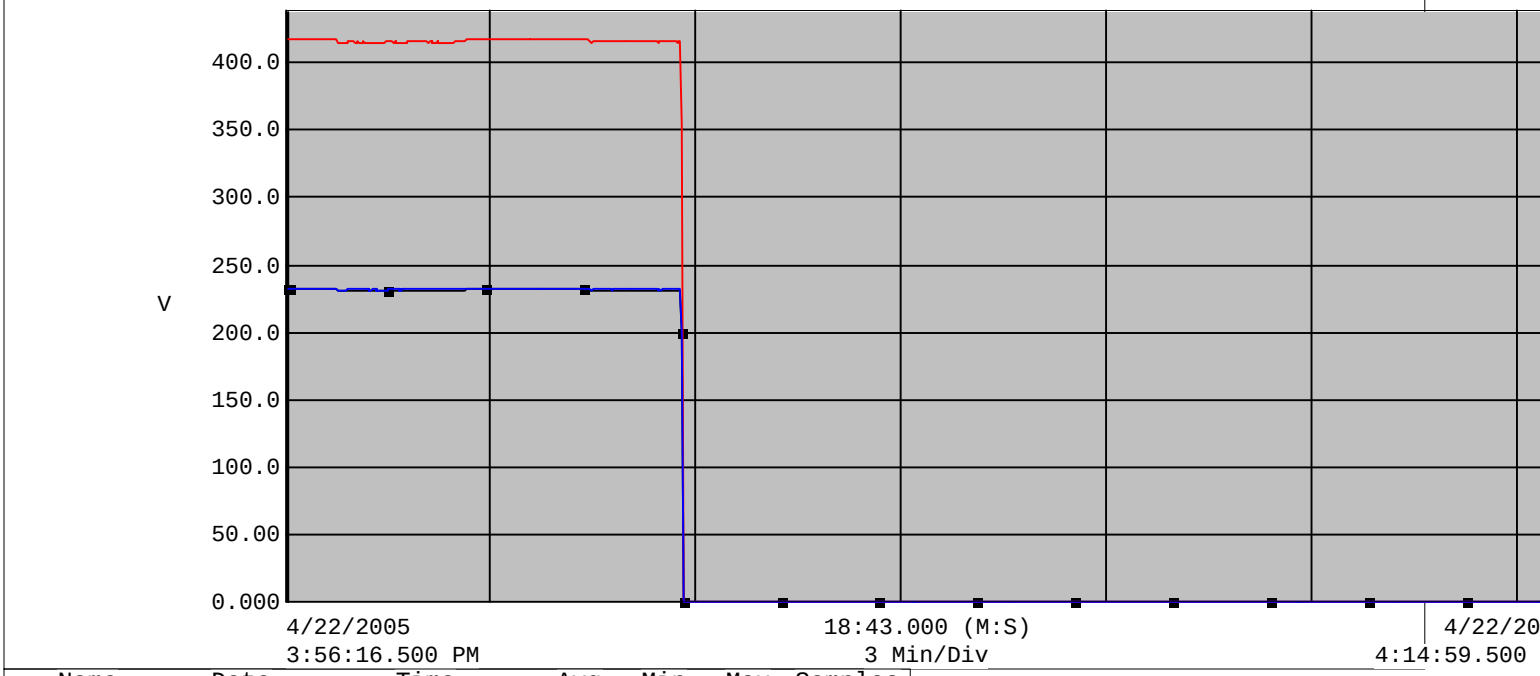
Operator	Test Site
GWA Victor Jardel ,	GWA WPS D-22 Trend 2 ,

Comments

WPS D-22

Recording Start Date	4/22/2005 - 3:56:16 PM
Recording Duration	18:43 (m:s)
Instrument ID	Model: 3945 - 1 1:260152 2.7

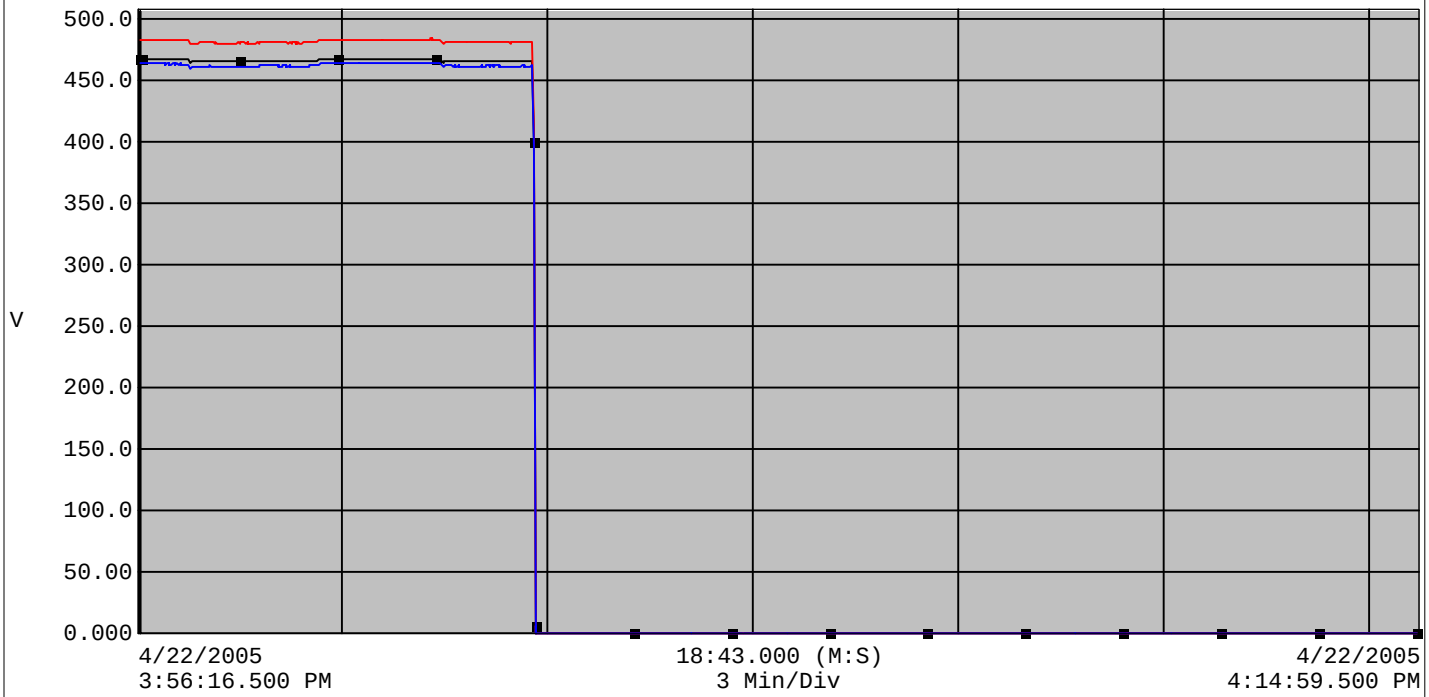
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	4/22/2005	3:56:16.500 PM	71.49	0.000	231.7	1124
Vrms Line2	4/22/2005	3:56:16.500 PM	128.5	0.000	416.7	1124
Vrms Line3	4/22/2005	3:56:16.500 PM	71.61	0.000	232.1	1124

4/22/2005 - 3:56:16.000 PM
Val
231.6 Vrms Line1
416.2 Vrms Line2
232.0 Vrms Line3

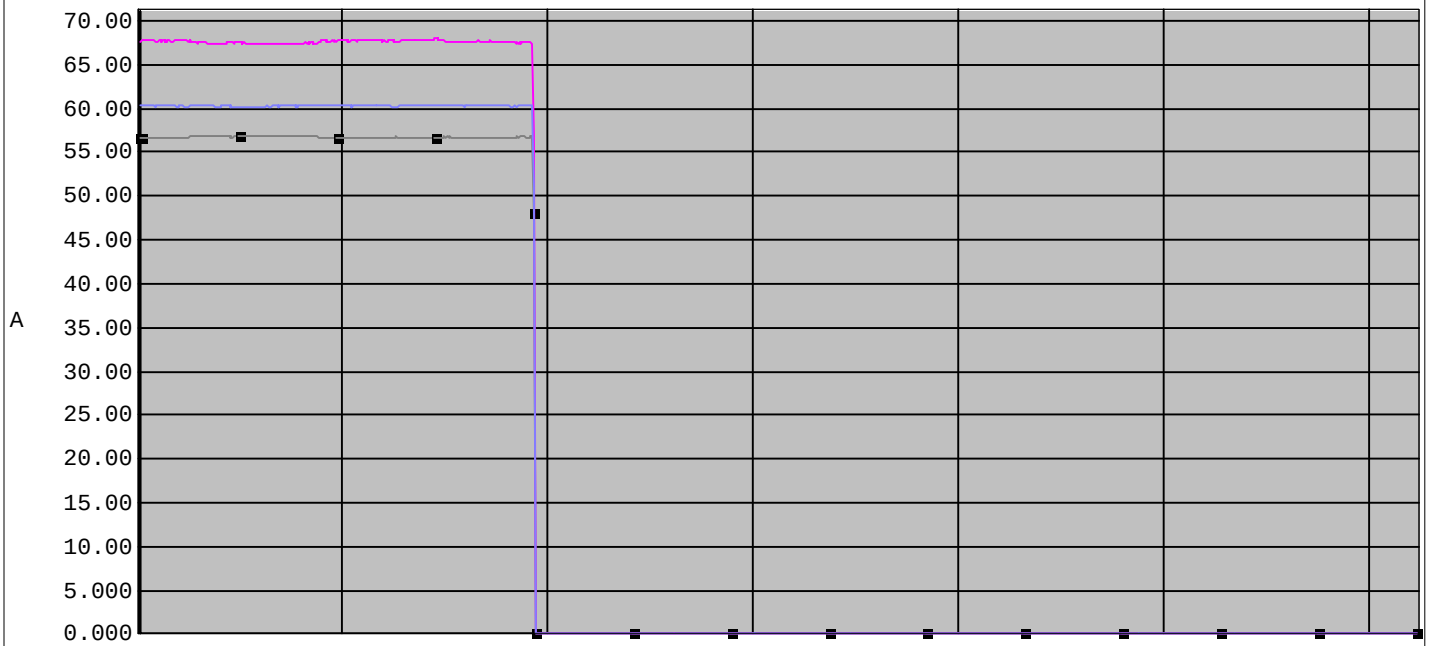
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	4/22/2005	3:56:16.500 PM	144.3	0.000	467.9	V
Urms Line2	4/22/2005	3:56:16.500 PM	149.1	0.000	483.6	V
Urms Line3	4/22/2005	3:56:16.500 PM	143.1	0.000	463.8	V

4/22/2005 - 3:56:16.000 PM
Val
467.5 Urms Line1
483.1 Urms Line2
463.6 Urms Line3

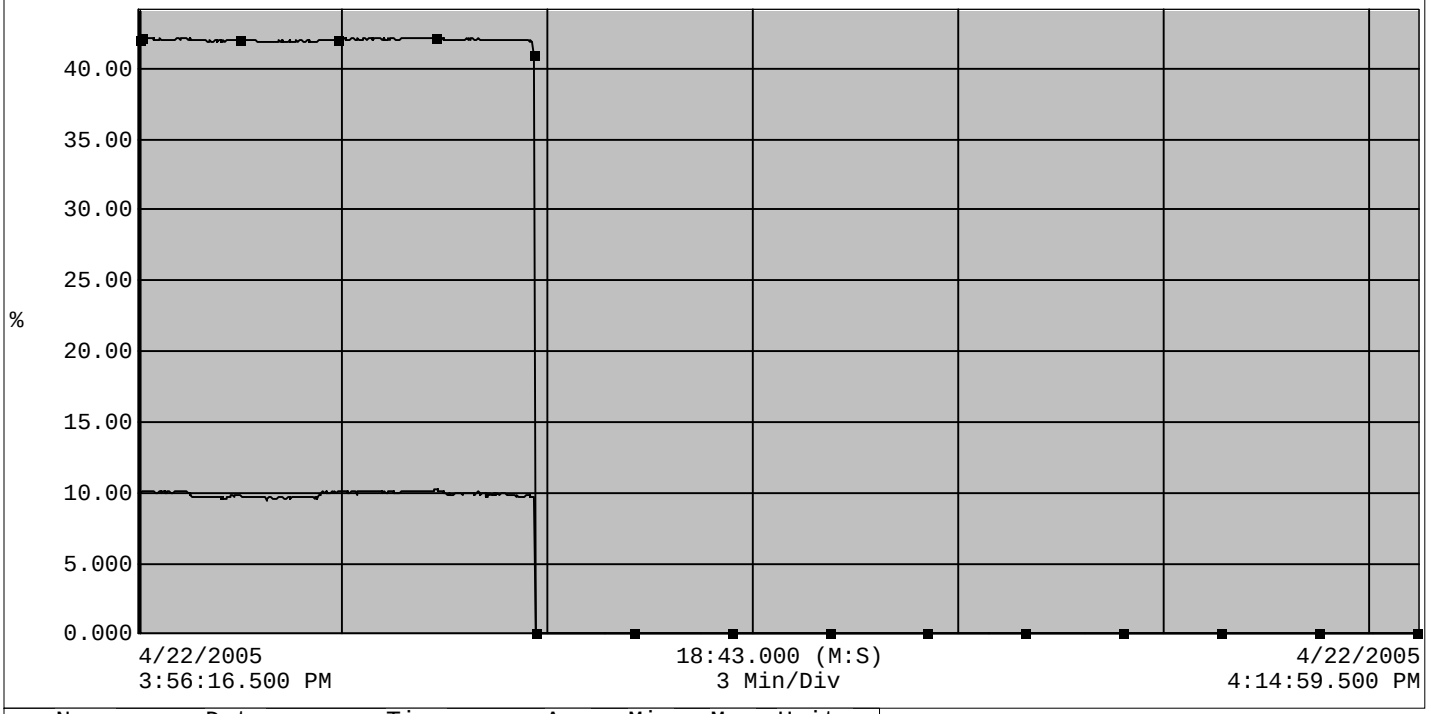
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	4/22/2005	3:56:16.500 PM	17.52	0.000	56.80	A
Arms Line2	4/22/2005	3:56:16.500 PM	20.88	0.000	67.80	A
Arms Line3	4/22/2005	3:56:16.500 PM	18.63	0.000	60.30	A

4/22/2005 - 3:56:16.000 PM
Val
56.50 — Arms Line1
67.50 — Arms Line2
60.20 — Arms Line3

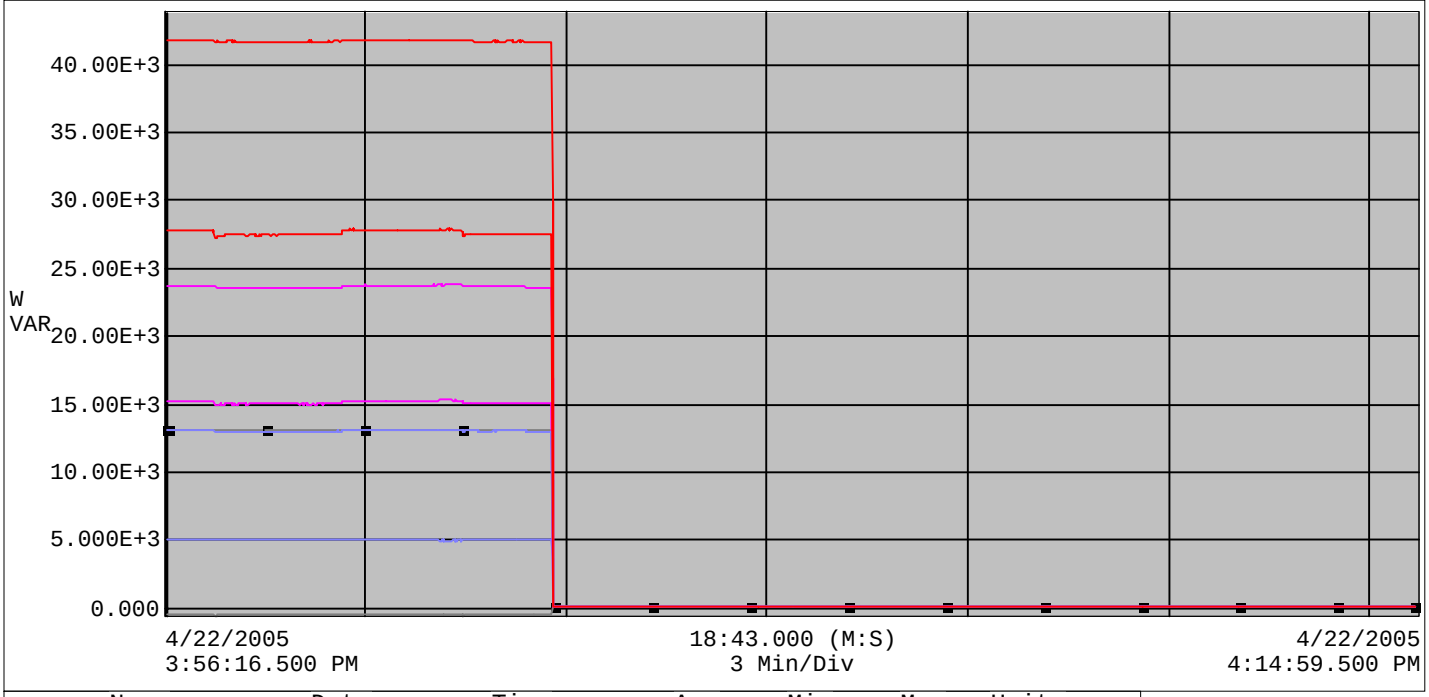
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	4/22/2005	3:56:16.500 PM	12.98	0.000	42.00	%
Aunb(IEEE)	4/22/2005	3:56:16.500 PM	3.047	0.000	10.20	%

4/22/2005 - 3:56:16.000 PM
Val
41.90 —— Vunb(IEEE)
9.900 —— Aunb(IEEE)

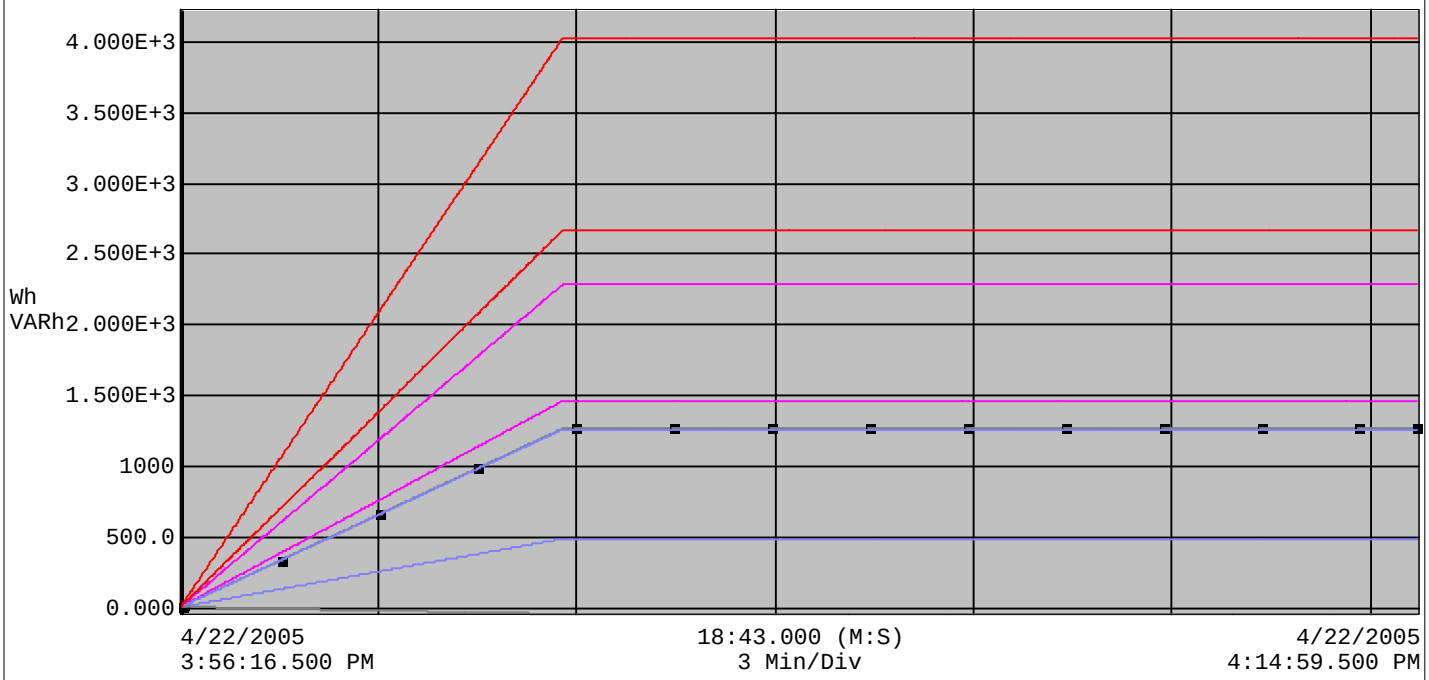
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	4/22/2005	3:56:16.500 PM	4.039E+3	0.000	13.10E+3	W
W Line2	4/22/2005	3:56:16.500 PM	7.297E+3	0.000	23.75E+3	W
W Line3	4/22/2005	3:56:16.500 PM	1.544E+3	0.000	5.058E+3	W
W Sum of Phases	4/22/2005	3:56:16.500 PM	12.88E+3	0.000	41.73E+3	W
VAR Line1	4/22/2005	3:56:16.500 PM	-158.3	-617.6	0.000	VAR
VAR Line2	4/22/2005	3:56:16.500 PM	4.653E+3	0.000	15.26E+3	VAR
VAR Line3	4/22/2005	3:56:16.500 PM	4.013E+3	0.000	13.08E+3	VAR
VAR Sum of Phases	4/22/2005	3:56:16.500 PM	8.507E+3	0.000	27.80E+3	VAR

4/22/2005 - 3:56:16.000 PM
Val
13.08E+3 — W Line1
23.64E+3 — W Line2
4.961E+3 — W Line3
41.68E+3 — W Sum of Phases
-481.8 — VAR Line1
15.17E+3 — VAR Line2
13.06E+3 — VAR Line3
27.75E+3 — VAR Sum of Phases

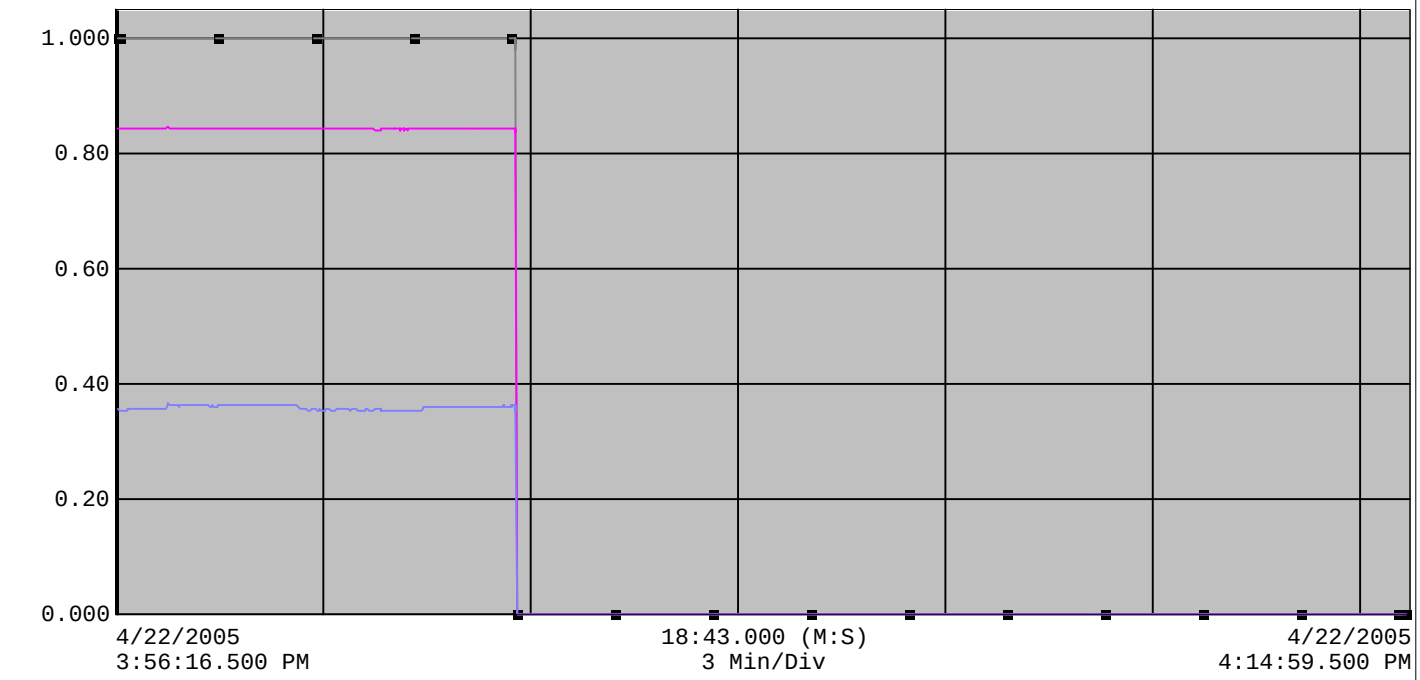
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	4/22/2005	3:56:16.500 PM	1.067E+3	3.618	1.261E+3	Wh
W-hours Line2	4/22/2005	3:56:16.500 PM	1.927E+3	6.536	2.278E+3	Wh
W-hours Line3	4/22/2005	3:56:16.500 PM	407.8	1.383	482.1	Wh
W-hours Sum of Phases	4/22/2005	3:56:16.500 PM	3.401E+3	11.54	4.022E+3	Wh
VAR-hours Line1	4/22/2005	3:56:16.500 PM	-41.78	-49.43	-0.133	VARh
VAR-hours Line2	4/22/2005	3:56:16.500 PM	1.229E+3	4.212	1.453E+3	VARh
VAR-hours Line3	4/22/2005	3:56:16.500 PM	1.060E+3	3.633	1.253E+3	VARh
VAR-hours Sum of Phases	4/22/2005	3:56:16.500 PM	2.247E+3	7.701	2.656E+3	VARh

4/22/2005 - 3:56:16.000 PM
Val
3.618 — W-hours Line1
6.536 — W-hours Line2
1.383 — W-hours Line3
11.54 — W-hours Sum of Phases
-0.133 — VAR-hours Line1
4.212 — VAR-hours Line2
3.633 — VAR-hours Line3
7.701 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	4/22/2005	3:56:16.500 PM	0.309	0.000	0.999	
PF Line2	4/22/2005	3:56:16.500 PM	0.261	0.000	0.845	
PF Line3	4/22/2005	3:56:16.500 PM	0.111	0.000	0.365	

4/22/2005 - 3:56:16.000 PM
Val
0.999 — PF Line1
0.841 — PF Line2
0.355 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\D22\042205-D22.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS D-22 ,

Comments
Recorded at the Motor Starter Overload Relay., 50 HP, 460 V

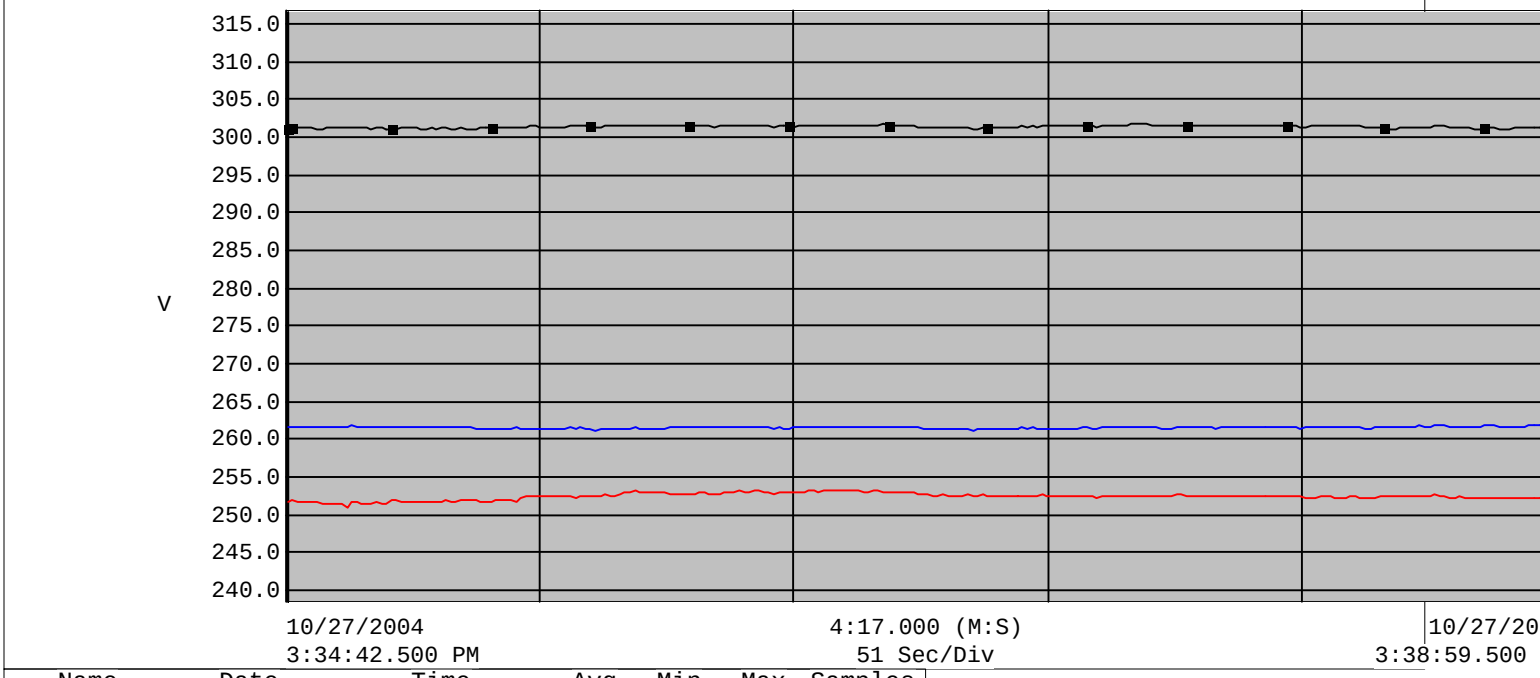
GWA Water Pumping Station Assessment				
Station Name: EX-11	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 10/26/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.35	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	0	0	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.05	
Pressure	1.5%	0	0	
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	1	0.02	51
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.2**

Comments:

WPS EX-11

Recording Start Date	10/27/2004 - 3:34:42 PM
Recording Duration	4:17 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

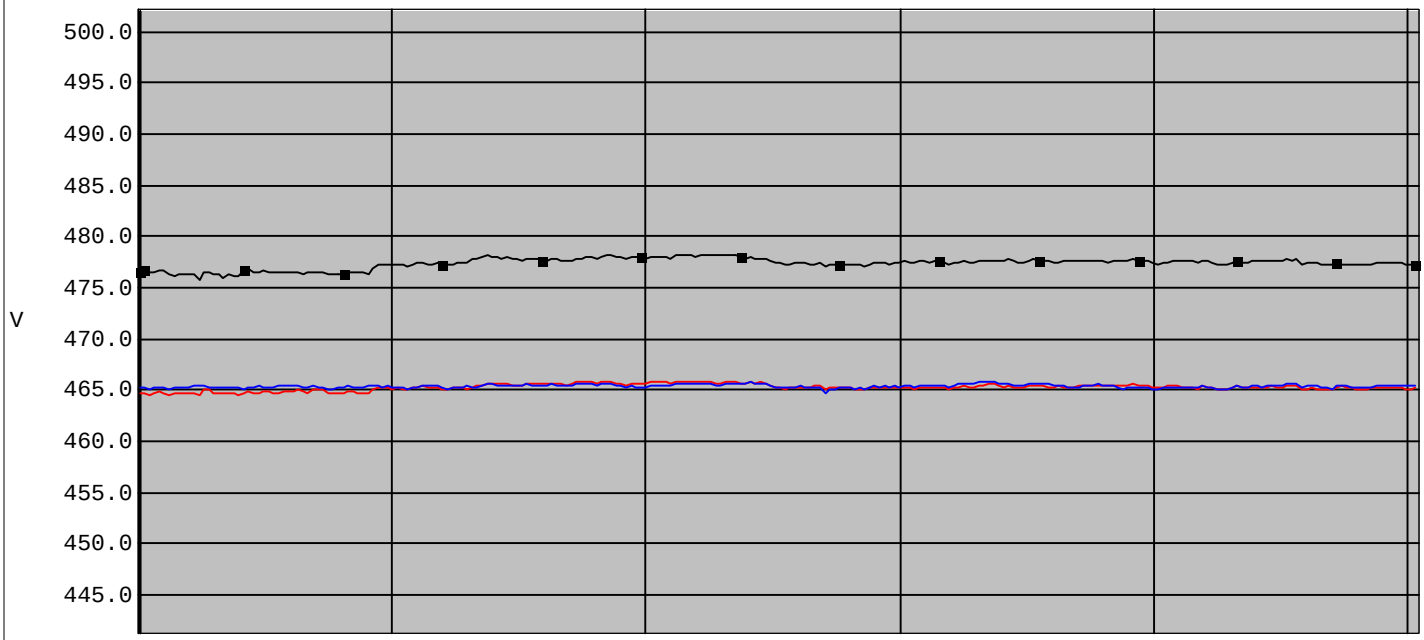
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/27/2004	3:34:42.500 PM	301.3	300.9	301.6	258
Vrms Line2	10/27/2004	3:34:42.500 PM	252.3	250.9	253.0	258
Vrms Line3	10/27/2004	3:34:42.500 PM	261.4	261.1	261.7	258

10/27/2004 - 3:34:42.000 PM
Val
301.0 — Vrms Line1
251.7 — Vrms Line2
261.5 — Vrms Line3

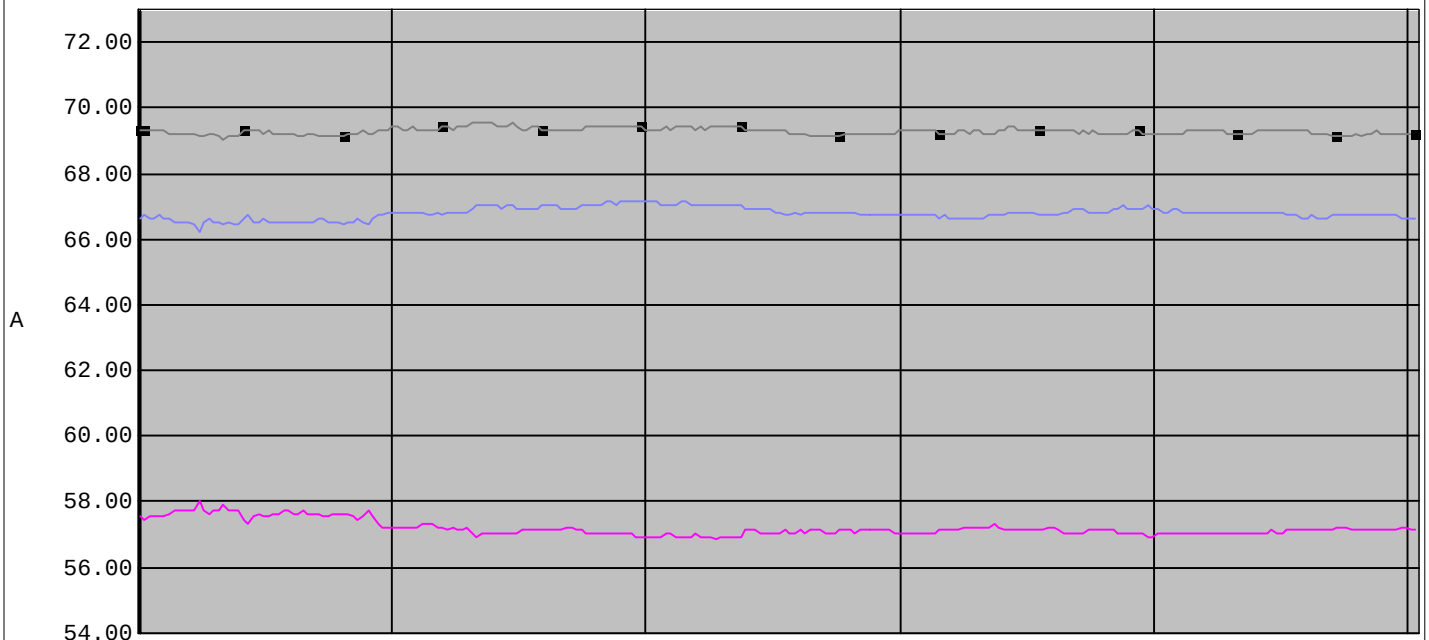
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/27/2004	3:34:42.500 PM	477.3	475.7	478.2	V
Urms Line2	10/27/2004	3:34:42.500 PM	465.2	464.4	465.8	V
Urms Line3	10/27/2004	3:34:42.500 PM	465.3	464.7	465.7	V

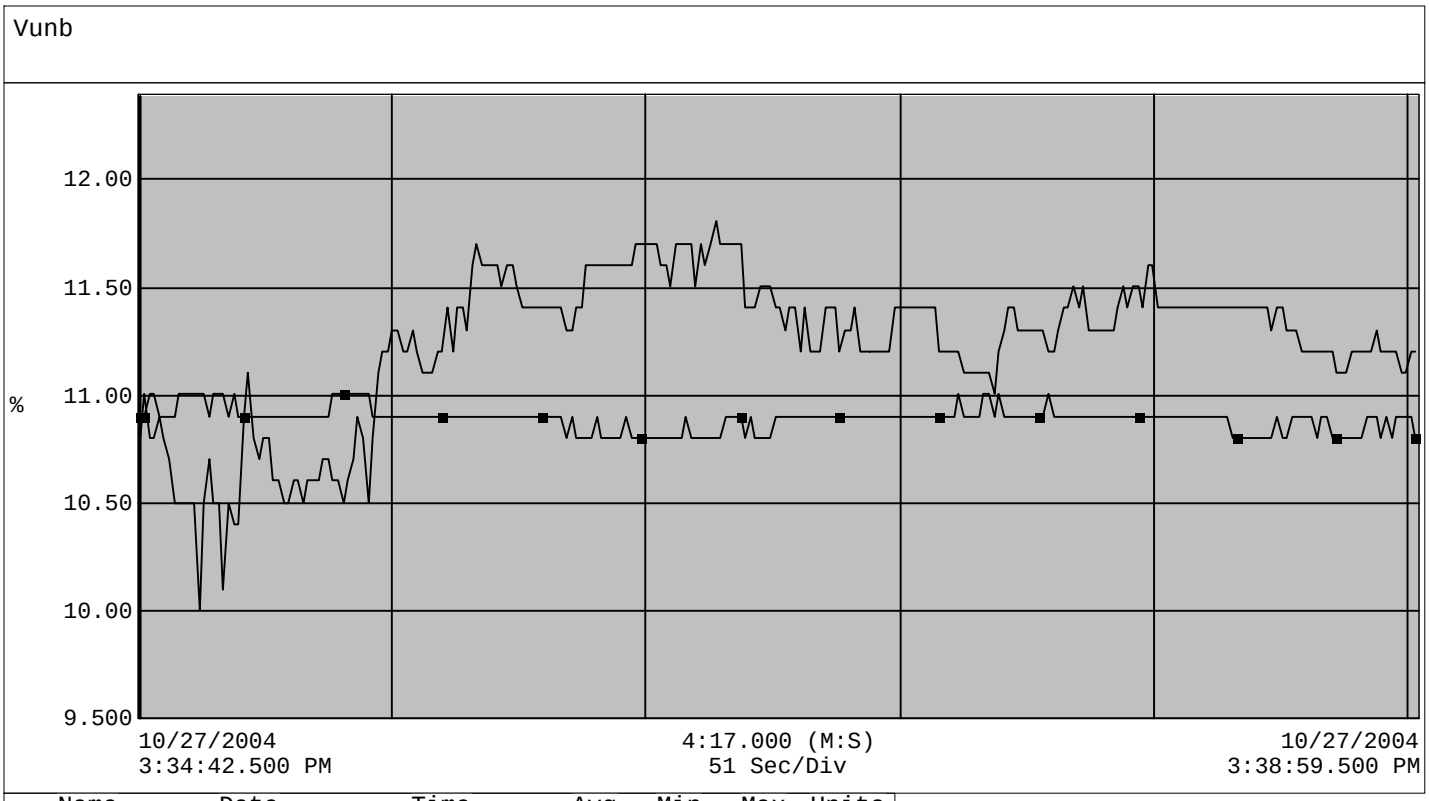
10/27/2004 - 3:34:42.000 PM
Val
476.5 — Urms Line1
464.7 — Urms Line2
465.1 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/27/2004	3:34:42.500 PM	69.27	69.00	69.50	A
Arms Line2	10/27/2004	3:34:42.500 PM	57.16	56.80	58.00	A
Arms Line3	10/27/2004	3:34:42.500 PM	66.77	66.20	67.10	A

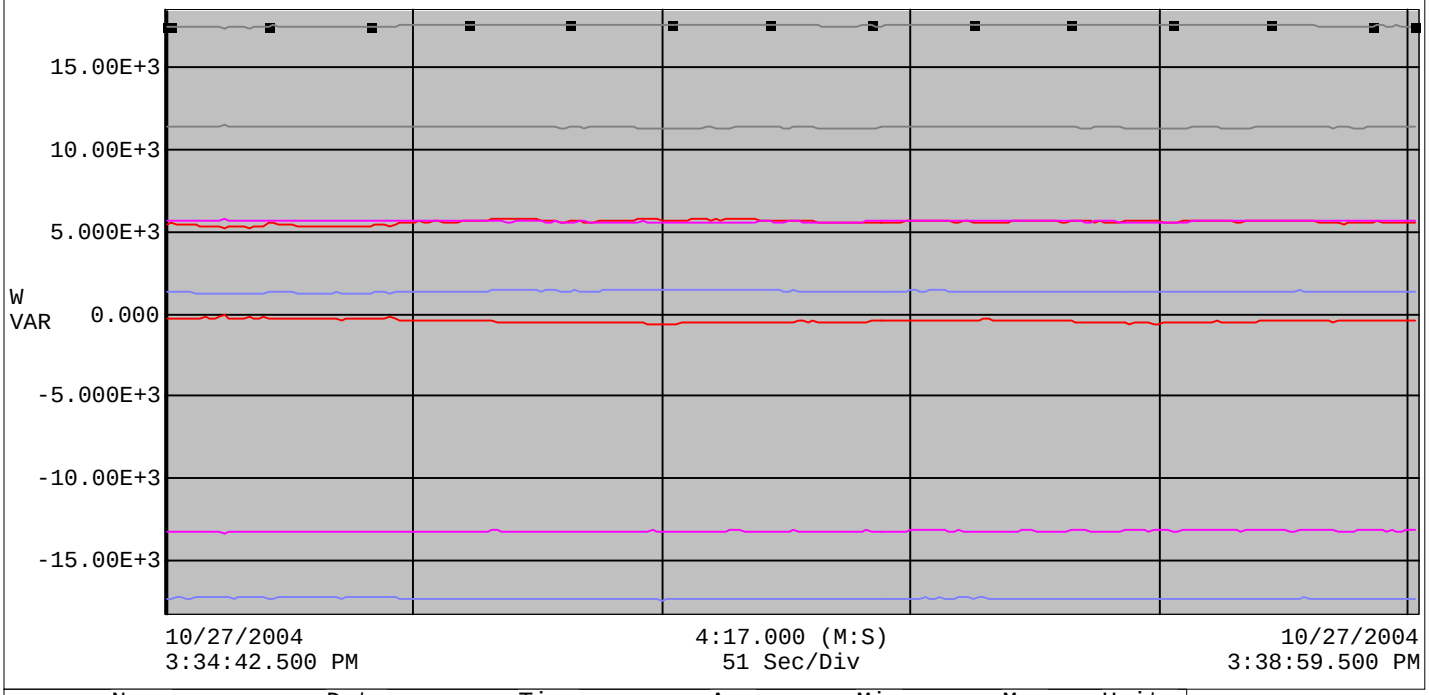
10/27/2004 - 3:34:42.000 PM
Val
69.30 — Arms Line1
57.50 — Arms Line2
66.60 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/27/2004	3:34:42.500 PM	10.89	10.80	11.00	%
Aunb(IEEE)	10/27/2004	3:34:42.500 PM	11.23	10.00	11.80	%

10/27/2004 - 3:34:42.000 PM
Val
10.90 —— Vunb(IEEE)
10.80 —— Aunb(IEEE)

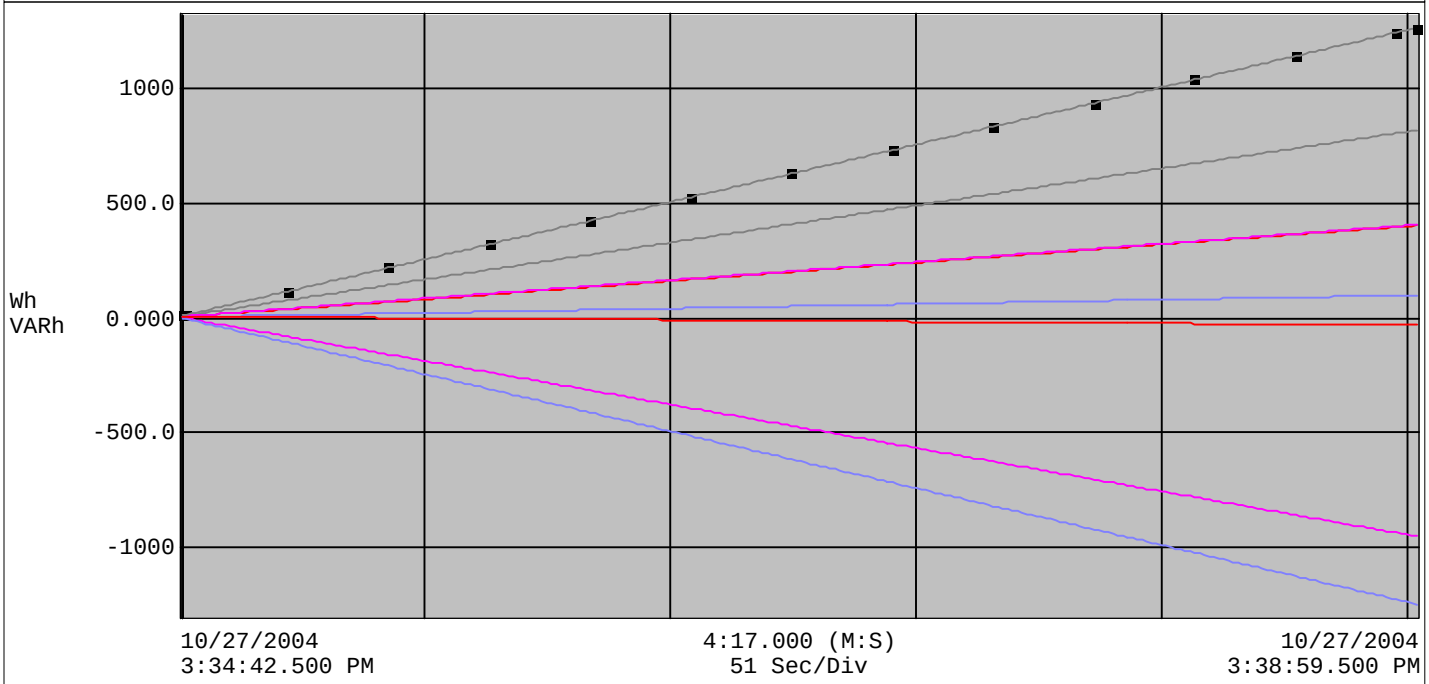
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/27/2004	3:34:42.500 PM	17.53E+3	17.38E+3	17.62E+3	W
W Line2	10/27/2004	3:34:42.500 PM	-13.30E+3	-13.39E+3	-13.23E+3	W
W Line3	10/27/2004	3:34:42.500 PM	1.317E+3	1.123E+3	1.418E+3	W
W Sum of Phases	10/27/2004	3:34:42.500 PM	5.547E+3	5.112E+3	5.760E+3	W
VAR Line1	10/27/2004	3:34:42.500 PM	11.33E+3	11.24E+3	11.45E+3	VAR
VAR Line2	10/27/2004	3:34:42.500 PM	5.589E+3	5.526E+3	5.697E+3	VAR
VAR Line3	10/27/2004	3:34:42.500 PM	-17.40E+3	-17.49E+3	-17.28E+3	VAR
VAR Sum of Phases	10/27/2004	3:34:42.500 PM	-489.9	-708.3	-137.4	VAR

10/27/2004 - 3:34:42.000 PM
Val
17.48E+3 — W Line1
-13.33E+3 — W Line2
1.256E+3 — W Line3
5.400E+3 — W Sum of Phases
11.38E+3 — VAR Line1
5.627E+3 — VAR Line2
-17.37E+3 — VAR Line3
-371.1 — VAR Sum of Phases

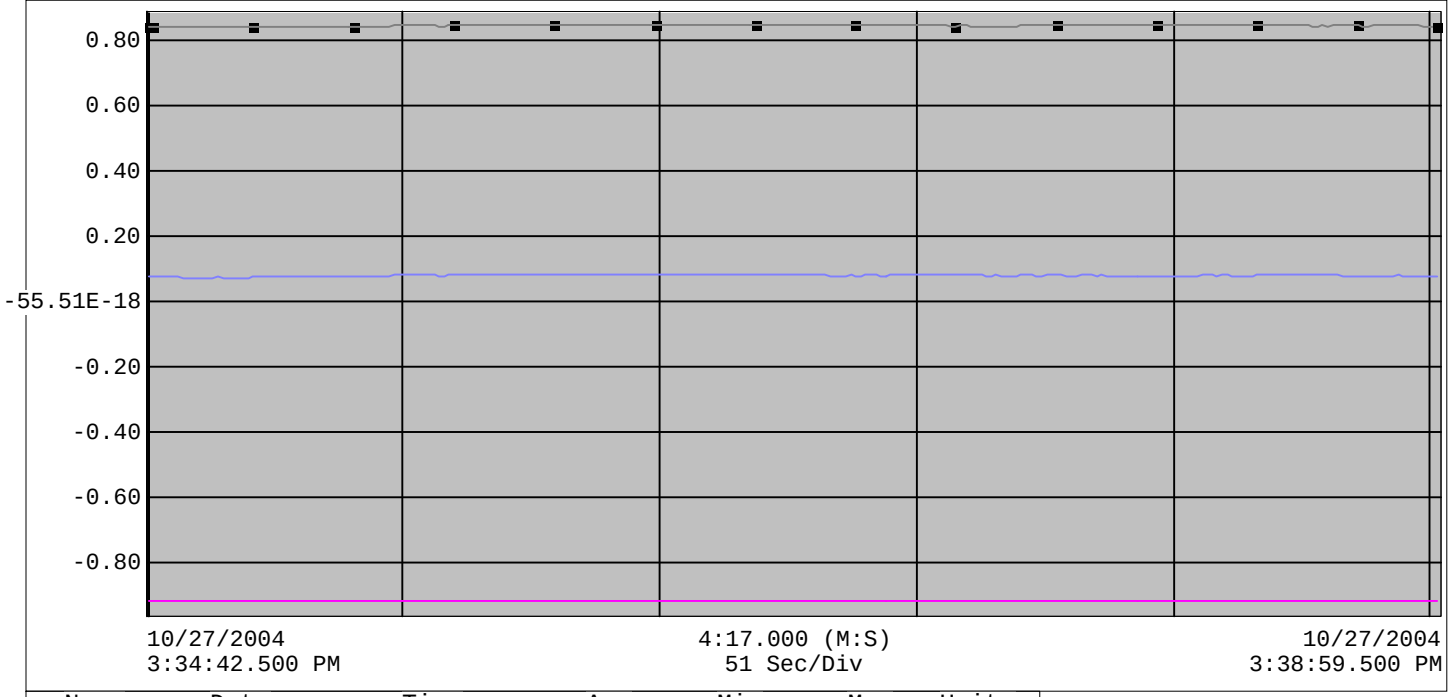
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/27/2004	3:34:42.500 PM	630.3	4.869	1.256E+3	Wh
W-hours Line2	10/27/2004	3:34:42.500 PM	-478.8	-952.9	-3.665	Wh
W-hours Line3	10/27/2004	3:34:42.500 PM	47.02	0.349	94.36	Wh
W-hours Sum of Phases	10/27/2004	3:34:42.500 PM	198.4	1.505	397.5	Wh
VAR-hours Line1	10/27/2004	3:34:42.500 PM	407.8	3.171	811.7	VARh
VAR-hours Line2	10/27/2004	3:34:42.500 PM	201.3	1.565	400.5	VARh
VAR-hours Line3	10/27/2004	3:34:42.500 PM	-625.8	-1.247E+3	-4.797	VARh
VAR-hours Sum of Phases	10/27/2004	3:34:42.500 PM	-16.76	-35.11	-0.102	VARh

10/27/2004 - 3:34:42.000 PM
Val
4.869 — W-hours Line1
-3.665 — W-hours Line2
0.349 — W-hours Line3
1.505 — W-hours Sum of Phases
3.171 — VAR-hours Line1
1.565 — VAR-hours Line2
-4.797 — VAR-hours Line3
-0.102 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/27/2004	3:34:42.500 PM	0.840	0.835	0.842	
PF Line2	10/27/2004	3:34:42.500 PM	-0.922	-0.923	-0.920	
PF Line3	10/27/2004	3:34:42.500 PM	75.44E-3	65.00E-3	81.00E-3	

10/27/2004 - 3:34:42.000 PM
Val
0.838 — PF Line1
-0.921 — PF Line2
72.00E-3 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\EX-11\102704-EX11.dvb

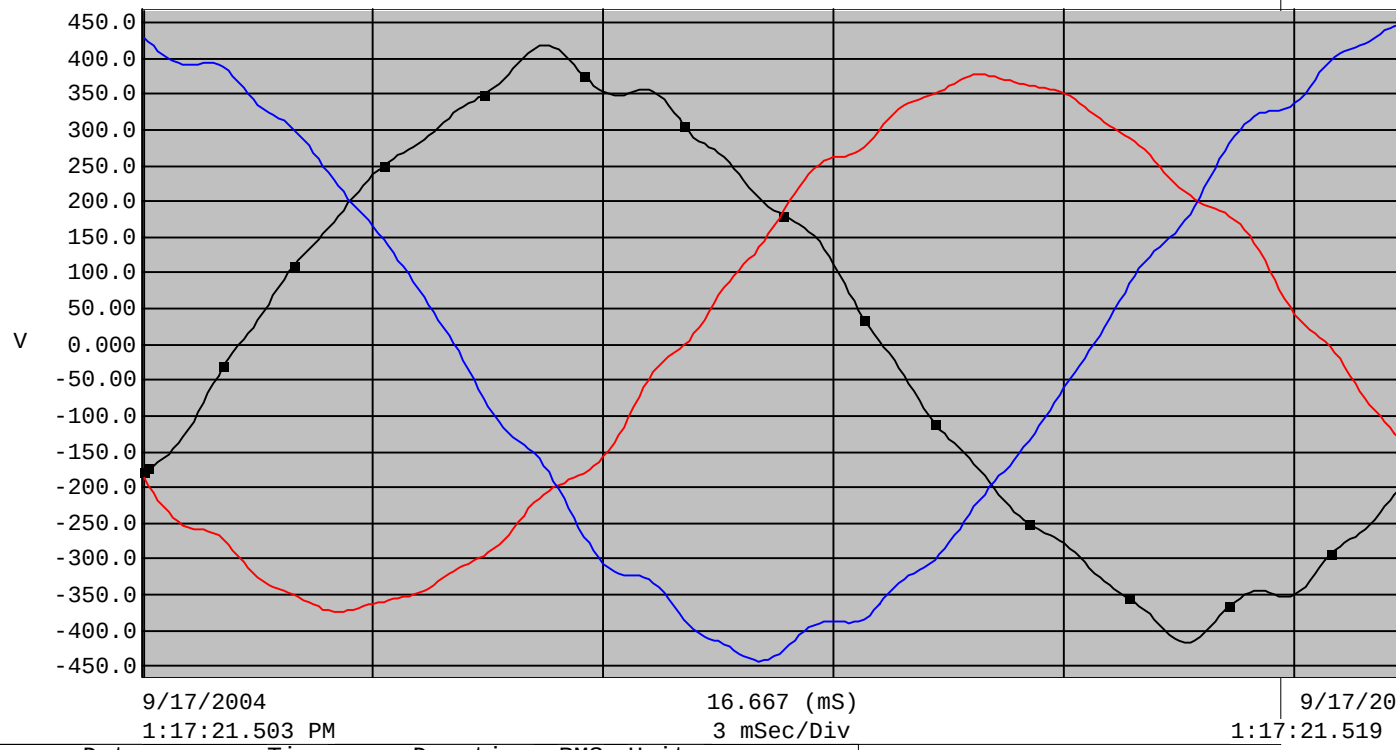
Operator	Test Site
Morikawa & Assocates, LLC Lyman Morikawa, PE ,	EX-11 ,

Comments
Recorded at Main Breaker to station

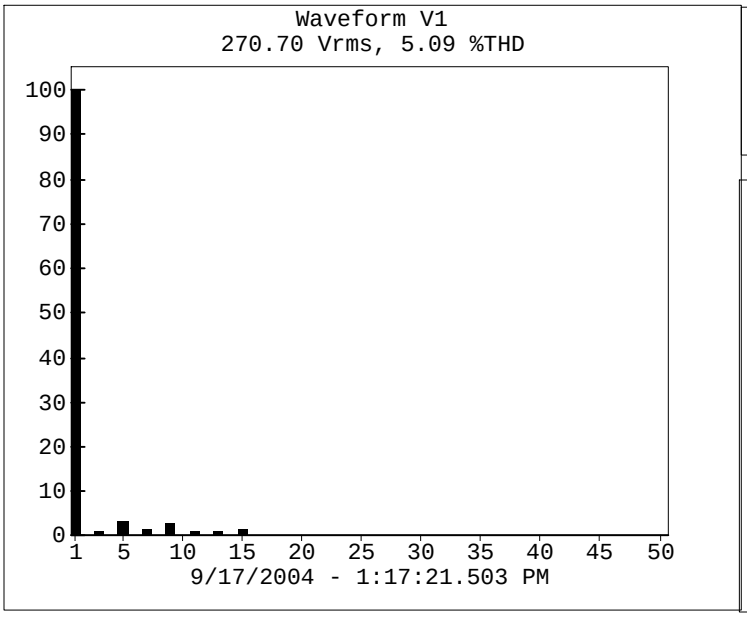
WPS F-1 - Adj 1 Tap 4-4-4

Recording Start Date	9/17/2004 - 1:17:21 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/17/2004	1:17:21.503 PM	16.667	270.7	V
Waveform V2	9/17/2004	1:17:21.503 PM	16.667	259.9	V
Waveform V3	9/17/2004	1:17:21.503 PM	16.667	300.4	V

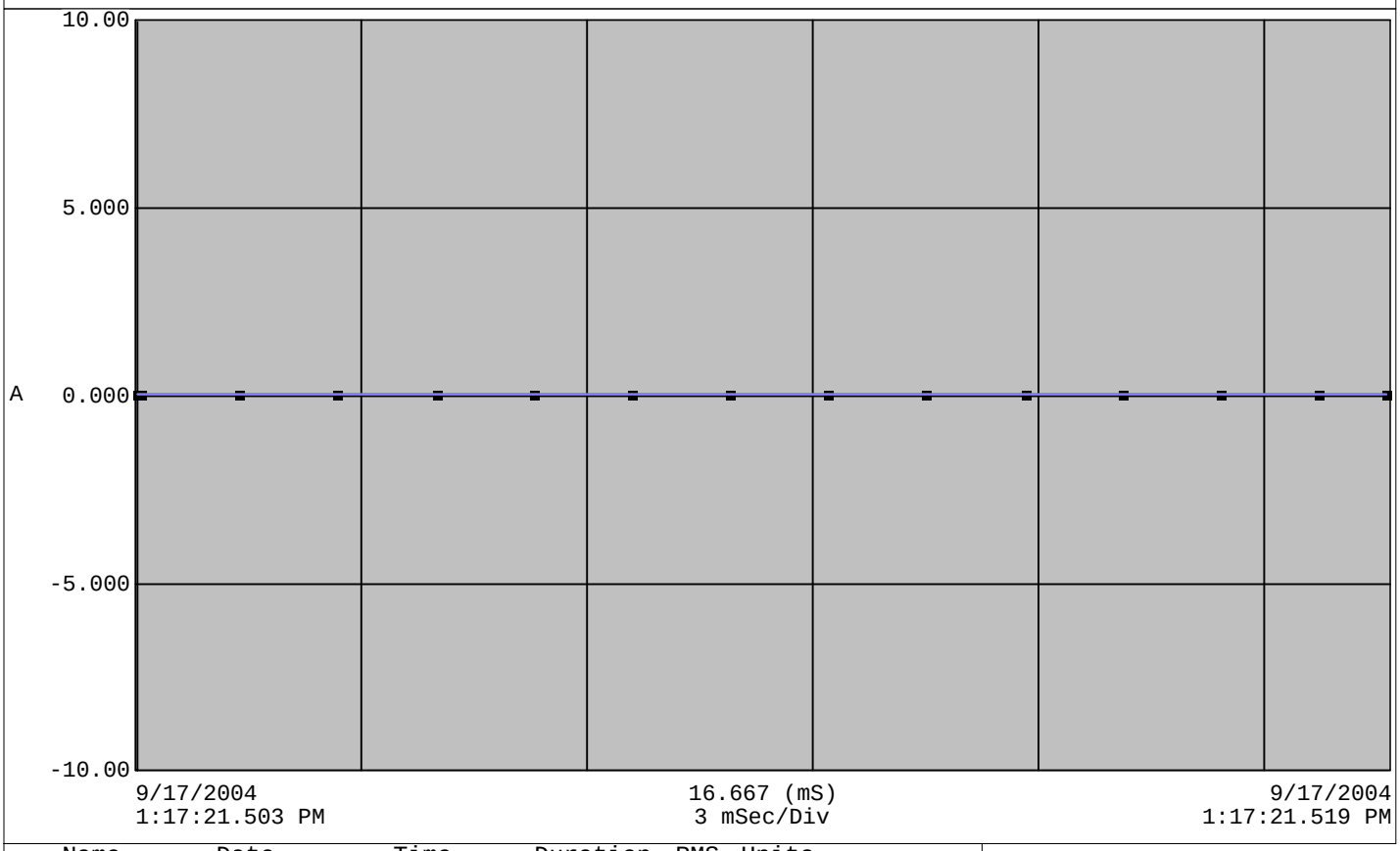


9/17/2004 - 1:17:21.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

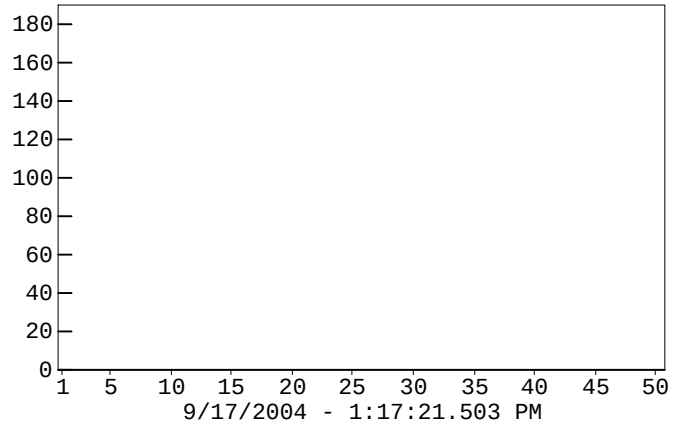
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.2	H36	0.0
H03	1.0	H20	0.0	H37	0.0
H04	0.1	H21	0.4	H38	0.0
H05	3.3	H22	0.0	H39	0.0
H06	0.2	H23	0.1	H40	0.0
H07	1.4	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	2.7	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	1.0	H28	0.0	H45	0.0
H12	0.1	H29	0.1	H46	0.0
H13	1.1	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	1.6	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.4	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/17/2004	1:17:21.503 PM	16.667	0.000	A
Waveform I2	9/17/2004	1:17:21.503 PM	16.667	0.000	A
Waveform I3	9/17/2004	1:17:21.503 PM	16.667	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD

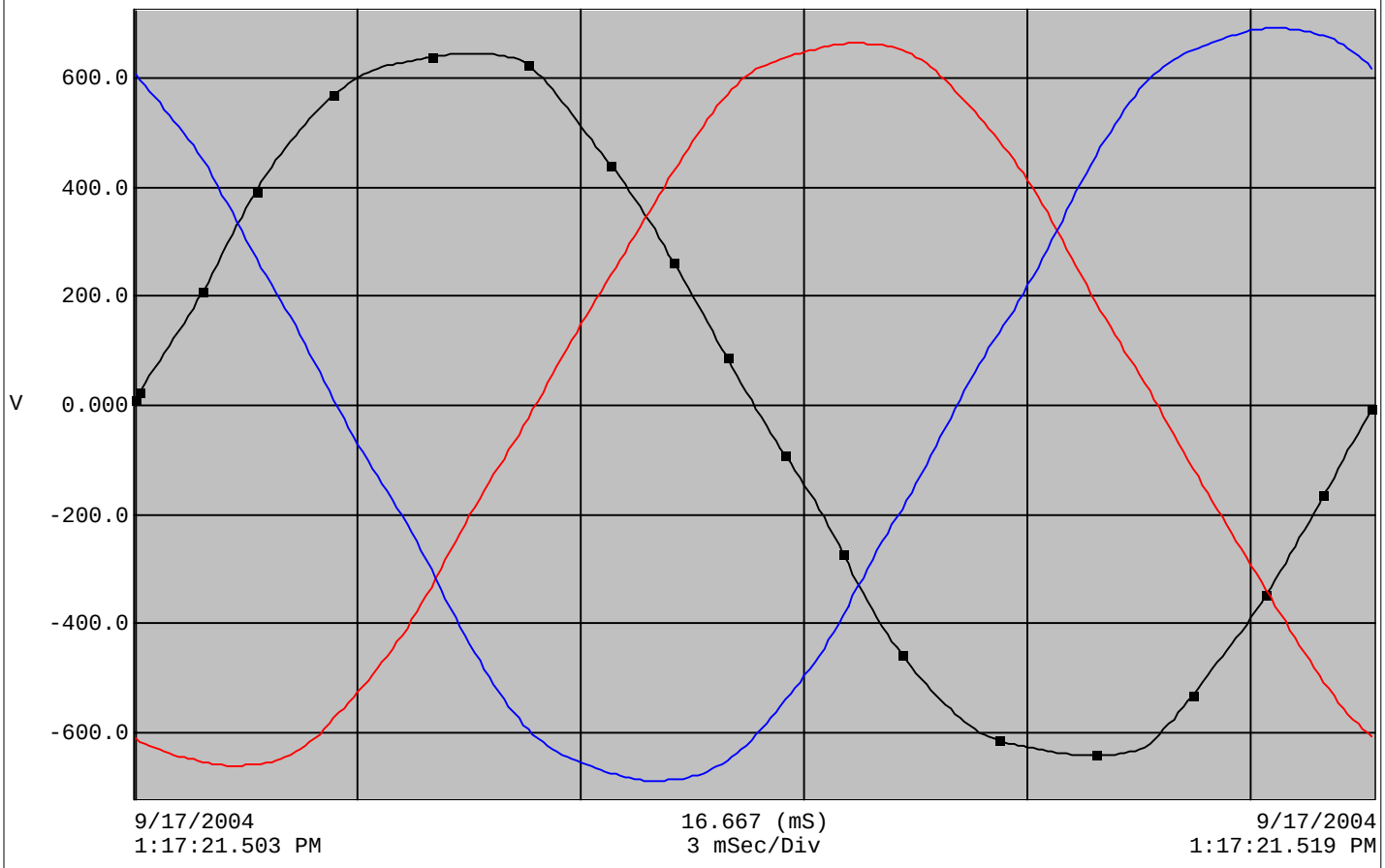


9/17/2004 - 1:17:21.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

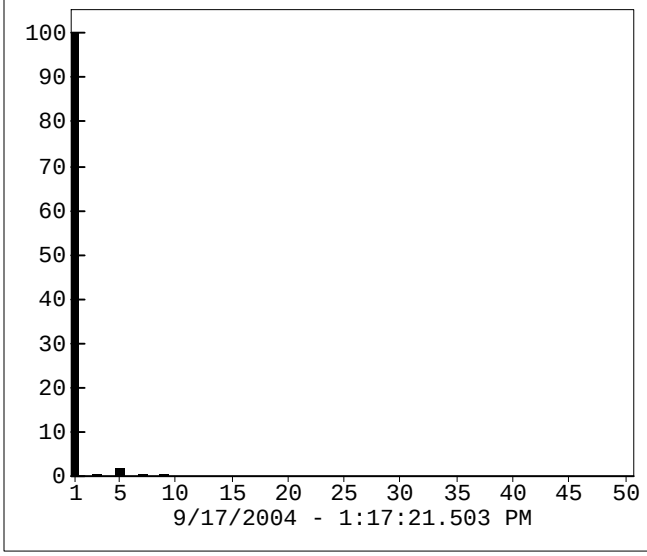
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/17/2004	1:17:21.503 PM	16.667	466.7	V
Waveform U2	9/17/2004	1:17:21.503 PM	16.667	474.9	V
Waveform U3	9/17/2004	1:17:21.503 PM	16.667	496.6	V

Waveform U1
466.73 Vrms, 2.34 %THD



9/17/2004 - 1:17:21.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	2.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/17/2004
Start Time: 1:17:21 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F1\091704-F1-Photo 2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS F-1 Photo 2 ,

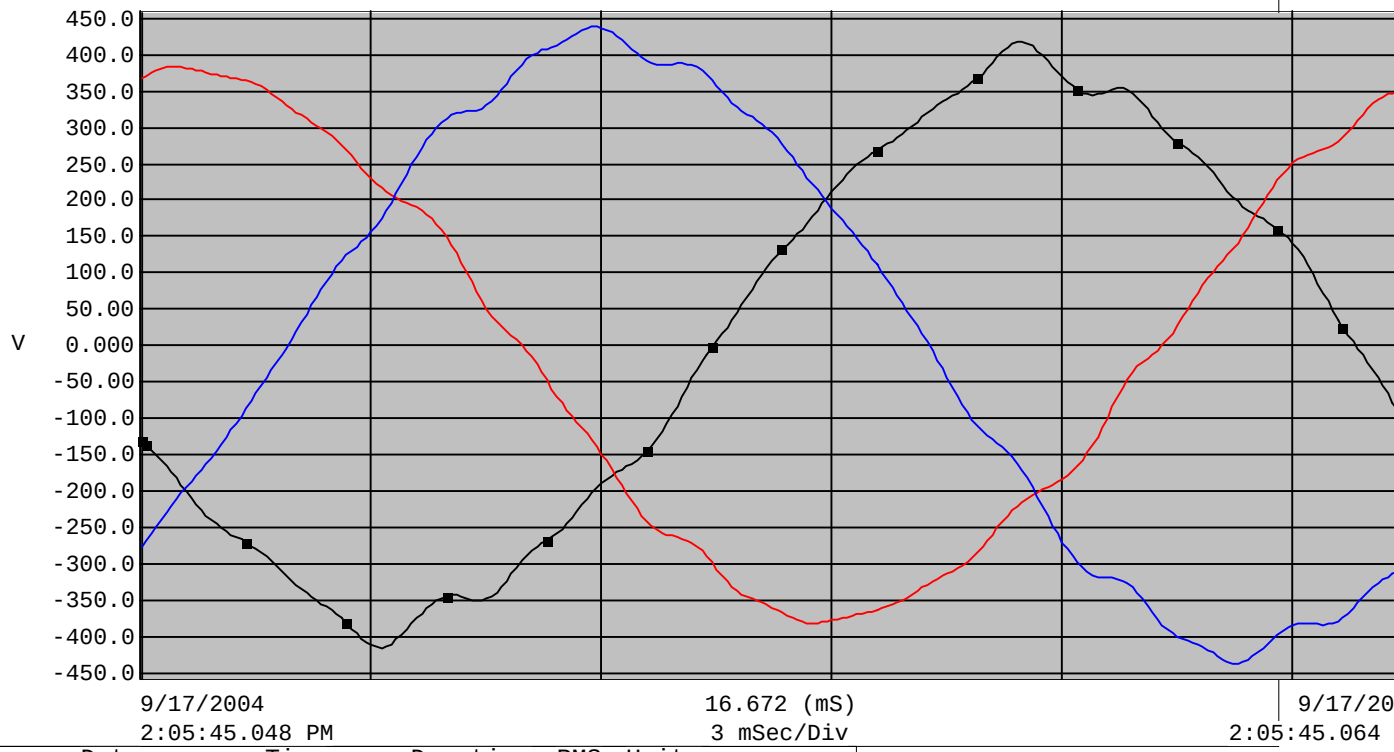
Comments

Voltage reading after transformer has been adjusted. Recording made at main breaker to stations with breaker open.

WPS F-1 - Adj 5
Tap 3-4-5 - Final

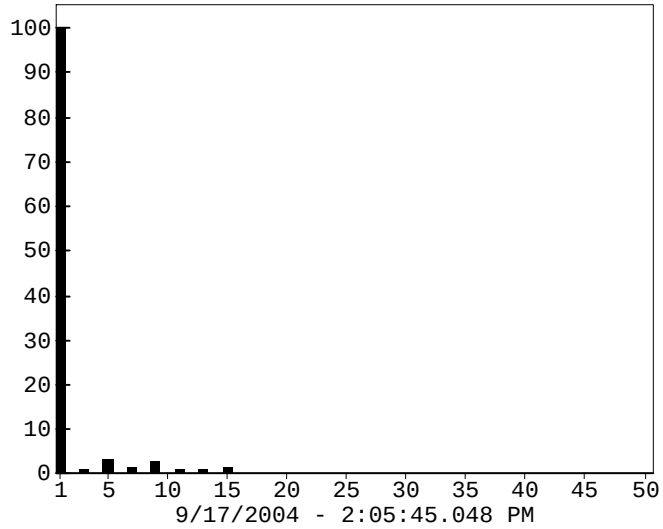
Recording Start Date	9/17/2004 - 2:05:45 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/17/2004	2:05:45.048 PM	16.672	269.4	V
Waveform V2	9/17/2004	2:05:45.048 PM	16.672	265.4	V
Waveform V3	9/17/2004	2:05:45.048 PM	16.672	295.6	V

Waveform V1
269.36 Vrms, 4.94 %THD

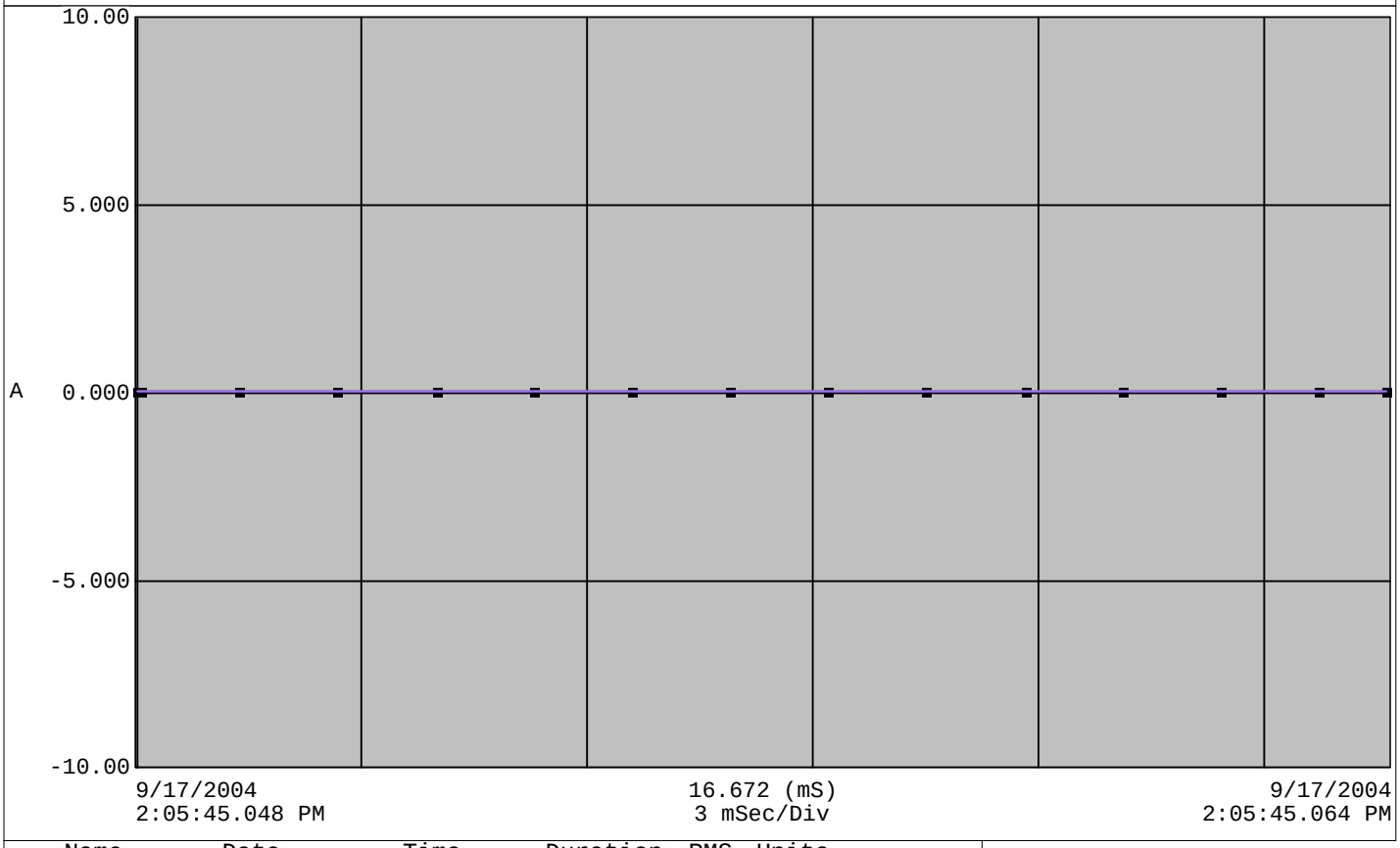


9/17/2004 - 2:05:45.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

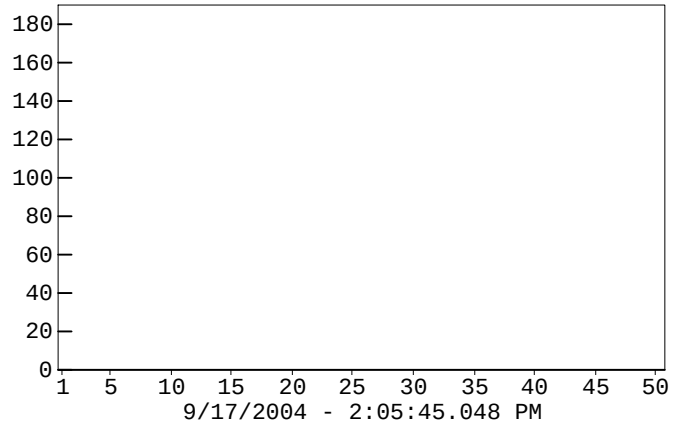
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	1.0	H20	0.0	H37	0.0
H04	0.1	H21	0.3	H38	0.0
H05	3.1	H22	0.0	H39	0.0
H06	0.2	H23	0.1	H40	0.0
H07	1.3	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	2.7	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	1.0	H28	0.0	H45	0.0
H12	0.1	H29	0.1	H46	0.0
H13	1.1	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	1.5	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.4	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/17/2004	2:05:45.048 PM	16.672	0.000	A
Waveform I2	9/17/2004	2:05:45.048 PM	16.672	0.000	A
Waveform I3	9/17/2004	2:05:45.048 PM	16.672	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD

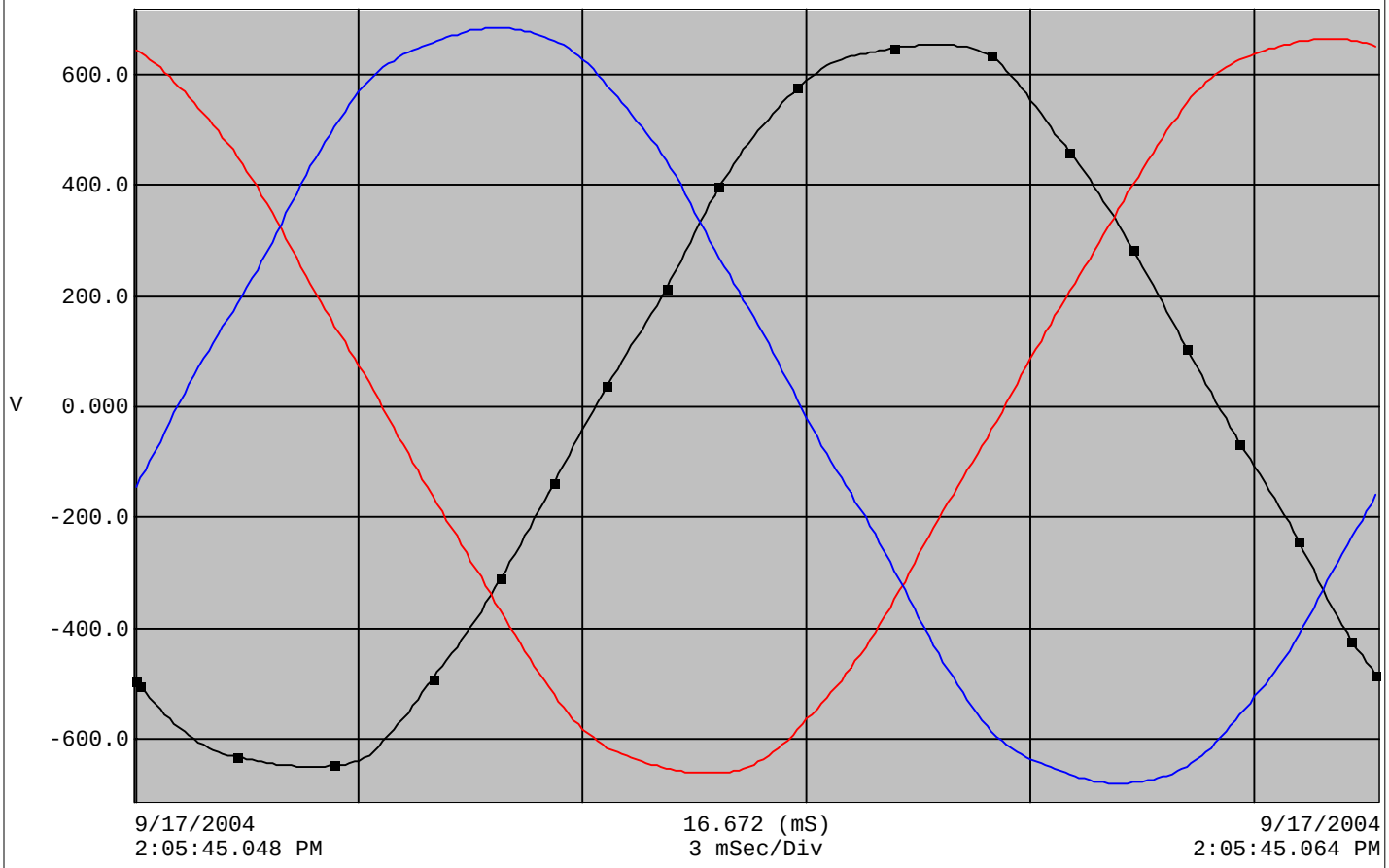


9/17/2004 - 2:05:45.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

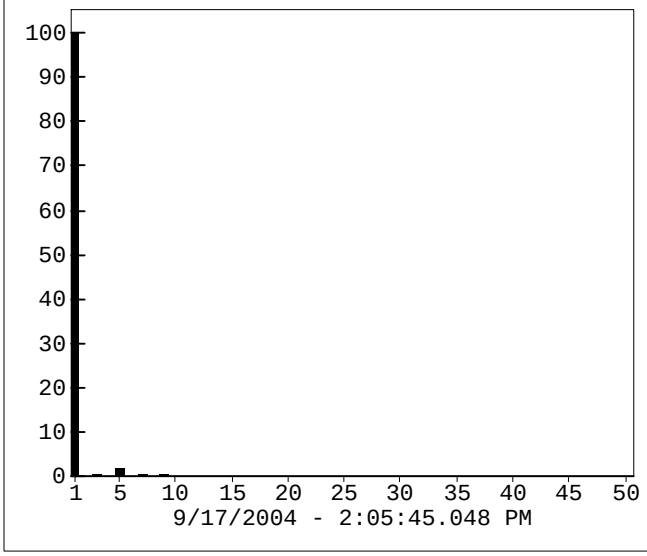
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/17/2004	2:05:45.048 PM	16.672	472.5	V
Waveform U2	9/17/2004	2:05:45.048 PM	16.672	474.3	V
Waveform U3	9/17/2004	2:05:45.048 PM	16.672	489.8	V

Waveform U1
472.45 Vrms, 2.23 %THD



9/17/2004 - 2:05:45.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 9/17/2004
Start Time: 2:05:45 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F1\091704-F1-Photo 3.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS F-1 - Photo 3 ,

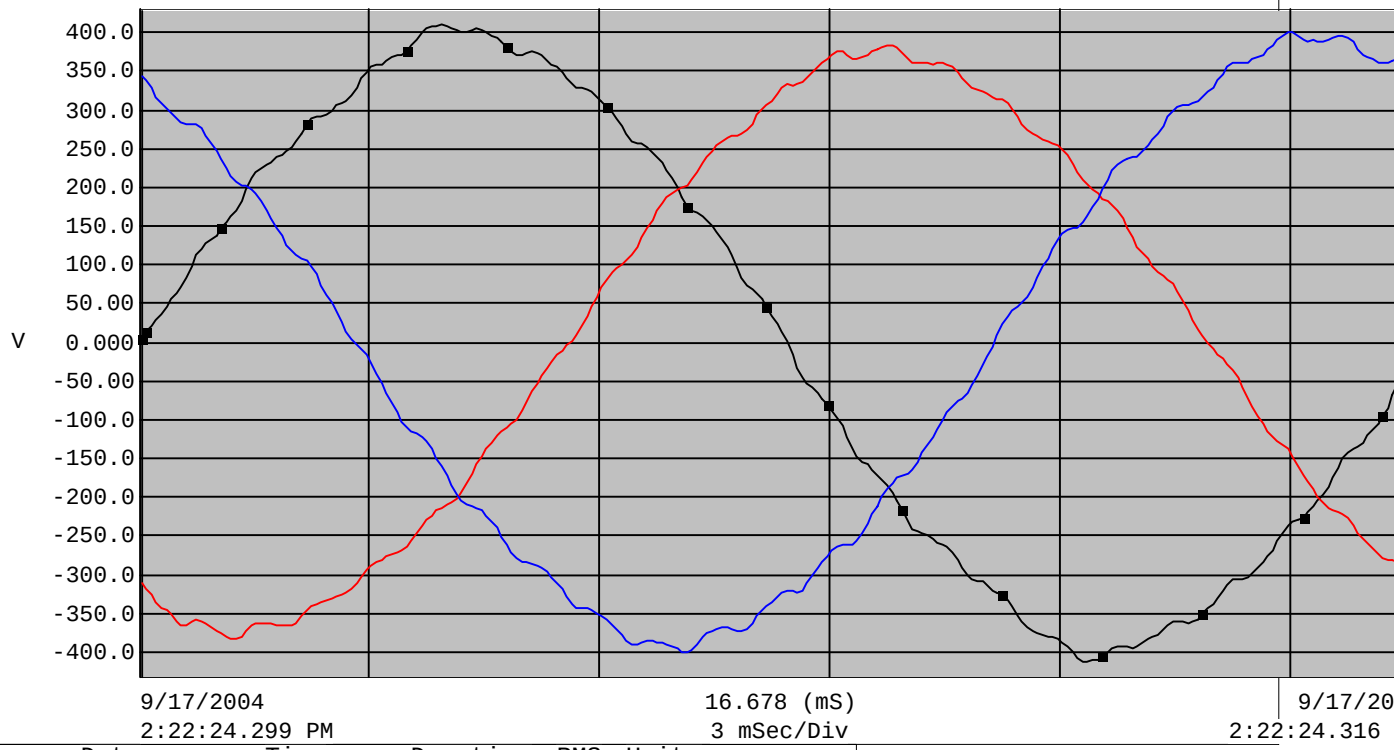
Comments

Recording made at main breaker to station with breaker open. Voltage being adjusted by GPA to balance the voltage at the station.

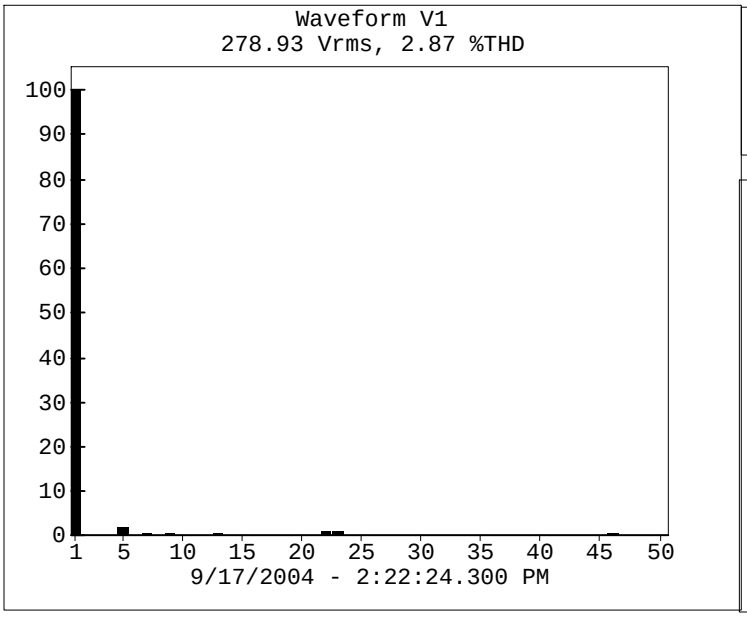
WPS F-1 - Photo 6

Recording Start Date	9/17/2004 - 2:22:24 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/17/2004	2:22:24.299 PM	16.678	278.9	V
Waveform V2	9/17/2004	2:22:24.299 PM	16.678	262.0	V
Waveform V3	9/17/2004	2:22:24.299 PM	16.678	274.2	V



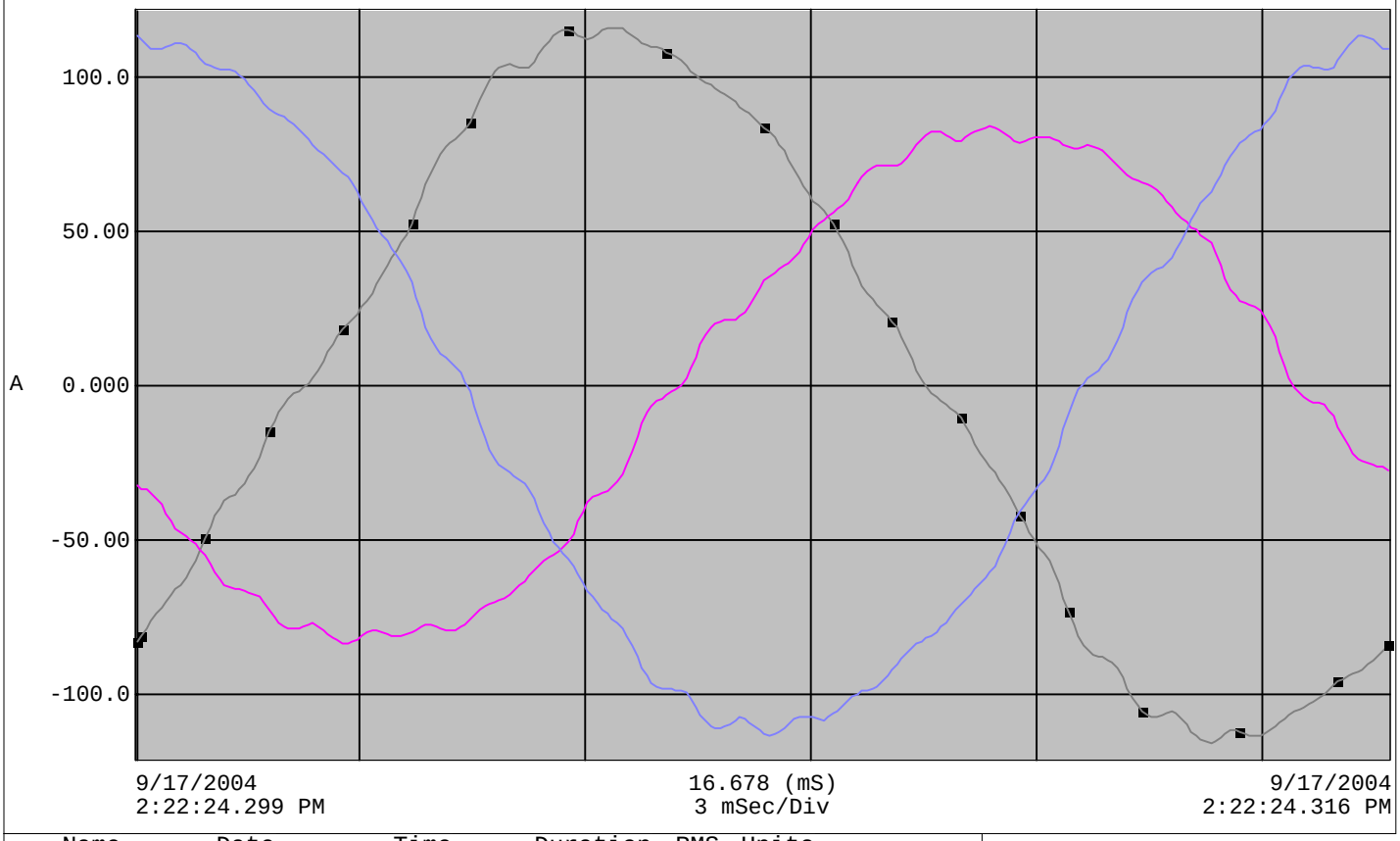
9/17/2004 - 2:22:24.000 PM

Val	
1.900	Waveform V1
-313.3	Waveform V2
341.6	Waveform V3

Waveform V1

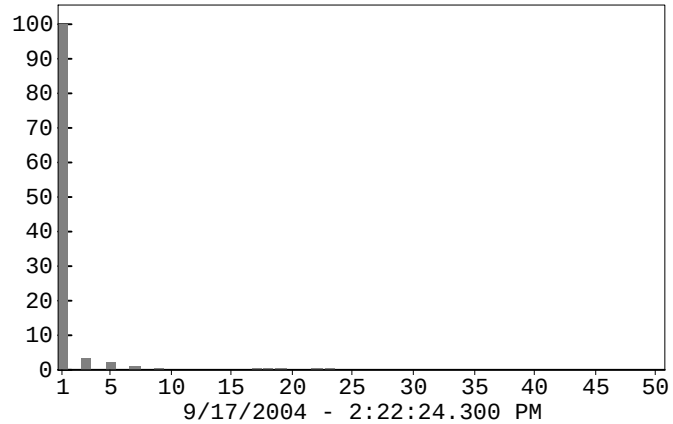
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.3	H20	0.3	H37	0.0
H04	0.0	H21	0.4	H38	0.0
H05	1.9	H22	1.2	H39	0.0
H06	0.1	H23	0.9	H40	0.1
H07	0.8	H24	0.2	H41	0.0
H08	0.0	H25	0.2	H42	0.1
H09	0.7	H26	0.1	H43	0.0
H10	0.1	H27	0.2	H44	0.1
H11	0.1	H28	0.1	H45	0.1
H12	0.1	H29	0.0	H46	0.5
H13	0.4	H30	0.1	H47	0.1
H14	0.1	H31	0.0	H48	0.1
H15	0.1	H32	0.0	H49	0.1
H16	0.1	H33	0.0	H50	0.1
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/17/2004	2:22:24.299 PM	16.678	79.93	A
Waveform I2	9/17/2004	2:22:24.299 PM	16.678	59.51	A
Waveform I3	9/17/2004	2:22:24.299 PM	16.678	79.85	A

Waveform I1
79.93 Arms, 4.95 %THD



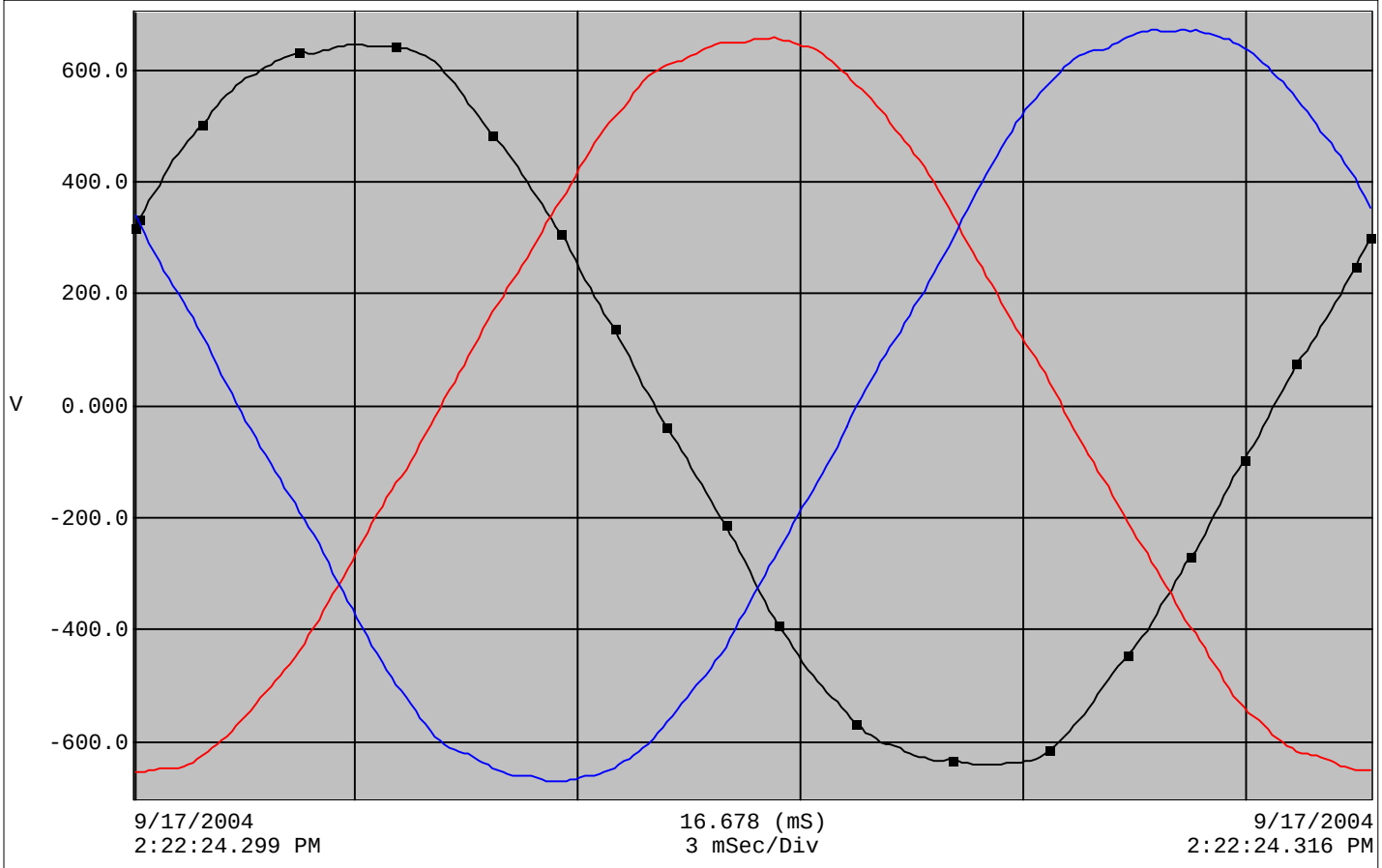
9/17/2004 - 2:22:24.000 PM

Val	
-83.30	Waveform I1
-32.90	Waveform I2
113.1	Waveform I3

Waveform I1

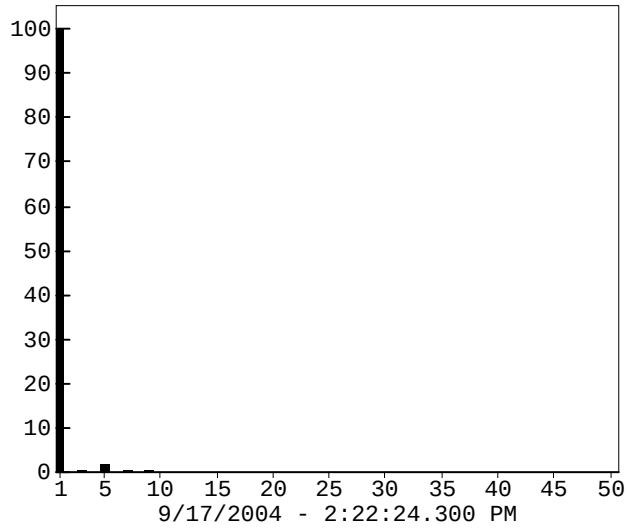
	(%)		(%)		(%)
H01	100.0	H18	1.0	H35	0.0
H02	0.3	H19	0.6	H36	0.0
H03	3.3	H20	0.4	H37	0.0
H04	0.0	H21	0.5	H38	0.0
H05	2.7	H22	1.0	H39	0.0
H06	0.0	H23	0.7	H40	0.1
H07	1.3	H24	0.4	H41	0.0
H08	0.0	H25	0.1	H42	0.2
H09	0.6	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.2	H28	0.1	H45	0.0
H12	0.1	H29	0.1	H46	0.1
H13	0.1	H30	0.1	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.3	H33	0.0	H50	0.0
H17	0.6	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/17/2004	2:22:24.299 PM	16.678	464.9	V
Waveform U2	9/17/2004	2:22:24.299 PM	16.678	465.9	V
Waveform U3	9/17/2004	2:22:24.299 PM	16.678	481.0	V

Waveform U1
464.94 Vrms, 2.13 %THD



9/17/2004 - 2:22:24.000 PM

Val	
315.2	Waveform U1
-654.9	Waveform U2
339.6	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.5	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.7	H22	0.2	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.7	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.1
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.1
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/17/2004
Start Time: 2:22:24 PM
Duration: 0:0.000 (M:S)
W: 15.33E+3 W
VAR: 16.17E+3 W
VA: 22.28E+3 W
Power Factor: 0.688
Displacement Power Factor: 0.689
TAN: 1.051
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F1\091704-F1-Photo 6.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS F-1 - Photo 6 ,

Comments

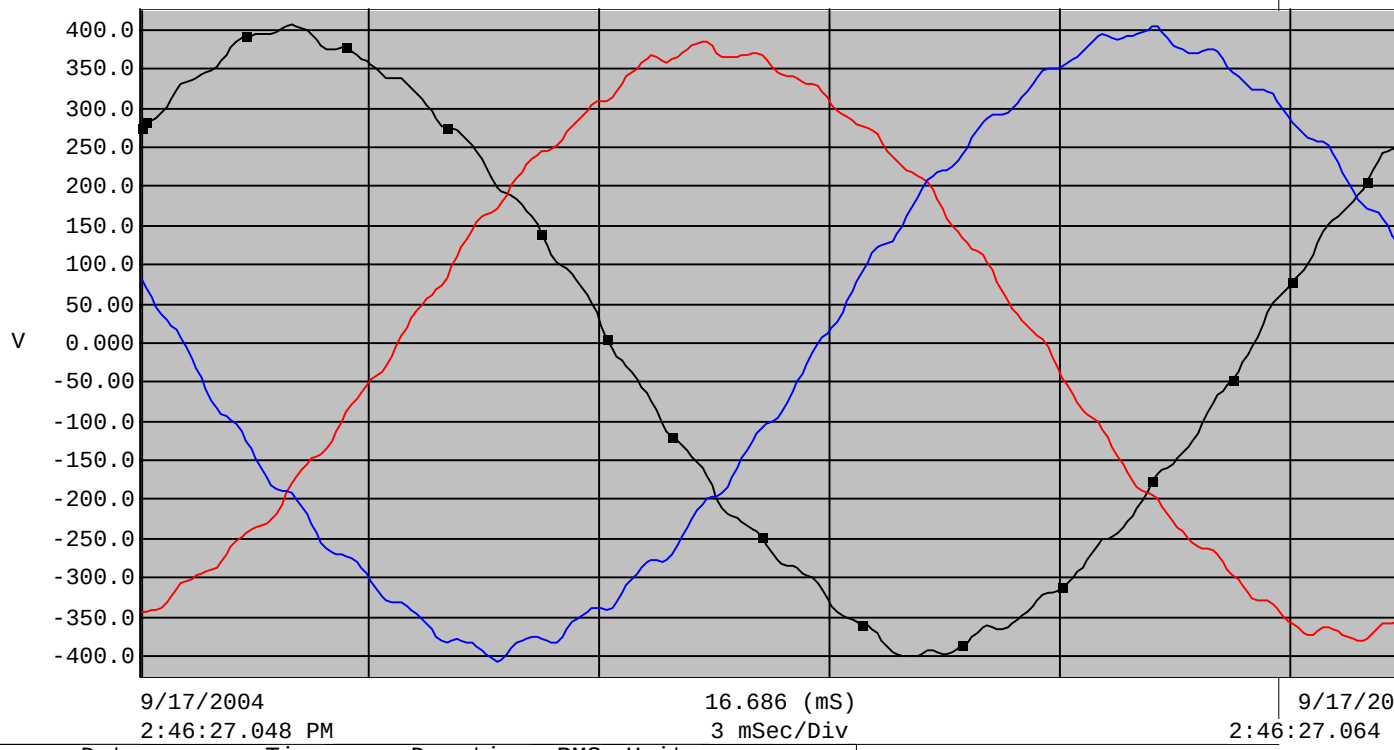
Snapshot with pump operating on GPA power.

AEMC® INSTRUMENTS

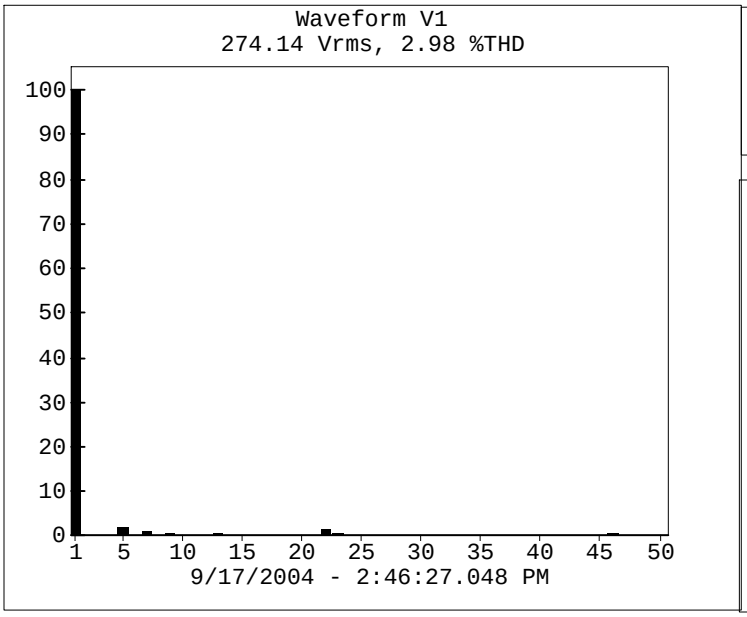
WPS F-1 - Photo 7

Recording Start Date	9/17/2004 - 2:46:27 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/17/2004	2:46:27.048 PM	16.686	274.1	V
Waveform V2	9/17/2004	2:46:27.048 PM	16.686	261.9	V
Waveform V3	9/17/2004	2:46:27.048 PM	16.686	274.9	V

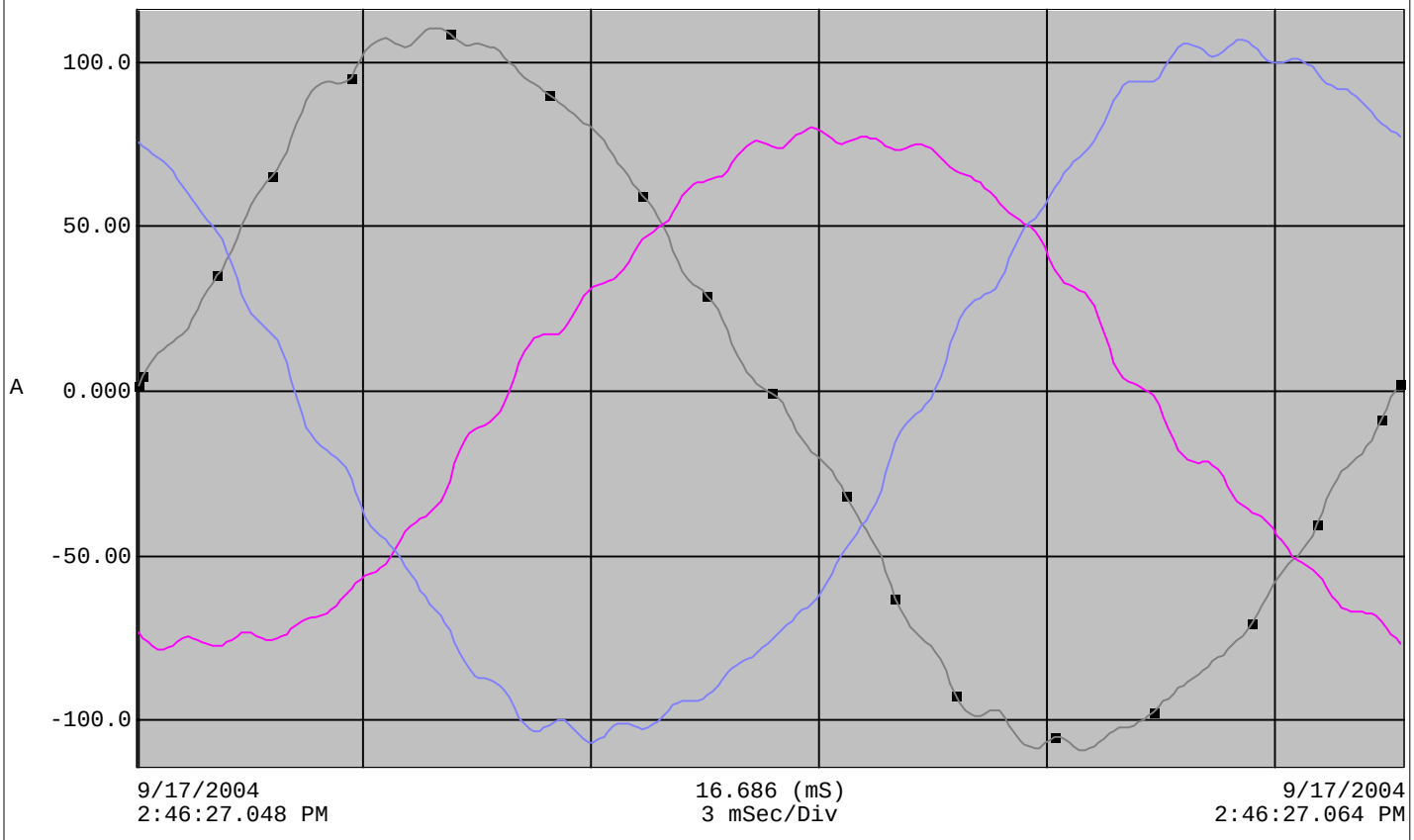


9/17/2004 - 2:46:27.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

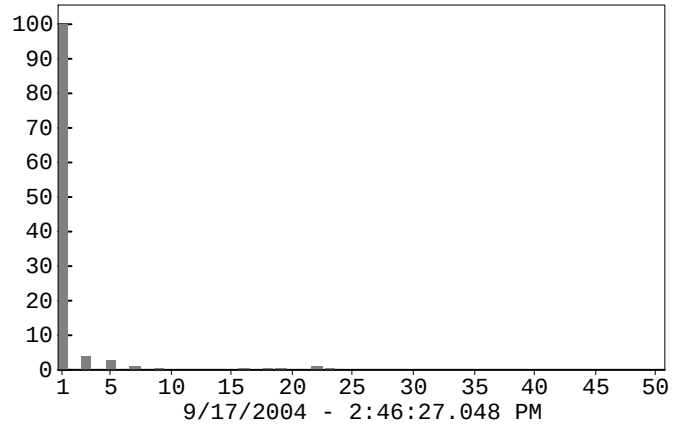
	(%)		(%)		(%)
H01	100.0	H18	0.3	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.2	H37	0.0
H04	0.0	H21	0.3	H38	0.1
H05	2.0	H22	1.3	H39	0.1
H06	0.0	H23	0.8	H40	0.1
H07	0.9	H24	0.3	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.7	H26	0.2	H43	0.0
H10	0.1	H27	0.1	H44	0.1
H11	0.2	H28	0.1	H45	0.2
H12	0.1	H29	0.1	H46	0.5
H13	0.5	H30	0.1	H47	0.1
H14	0.0	H31	0.0	H48	0.1
H15	0.2	H32	0.1	H49	0.0
H16	0.1	H33	0.0	H50	0.1
H17	0.1	H34	0.1		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/17/2004	2:46:27.048 PM	16.686	75.04	A
Waveform I2	9/17/2004	2:46:27.048 PM	16.686	56.24	A
Waveform I3	9/17/2004	2:46:27.048 PM	16.686	75.14	A

Waveform I1
75.04 Arms, 5.70 %THD

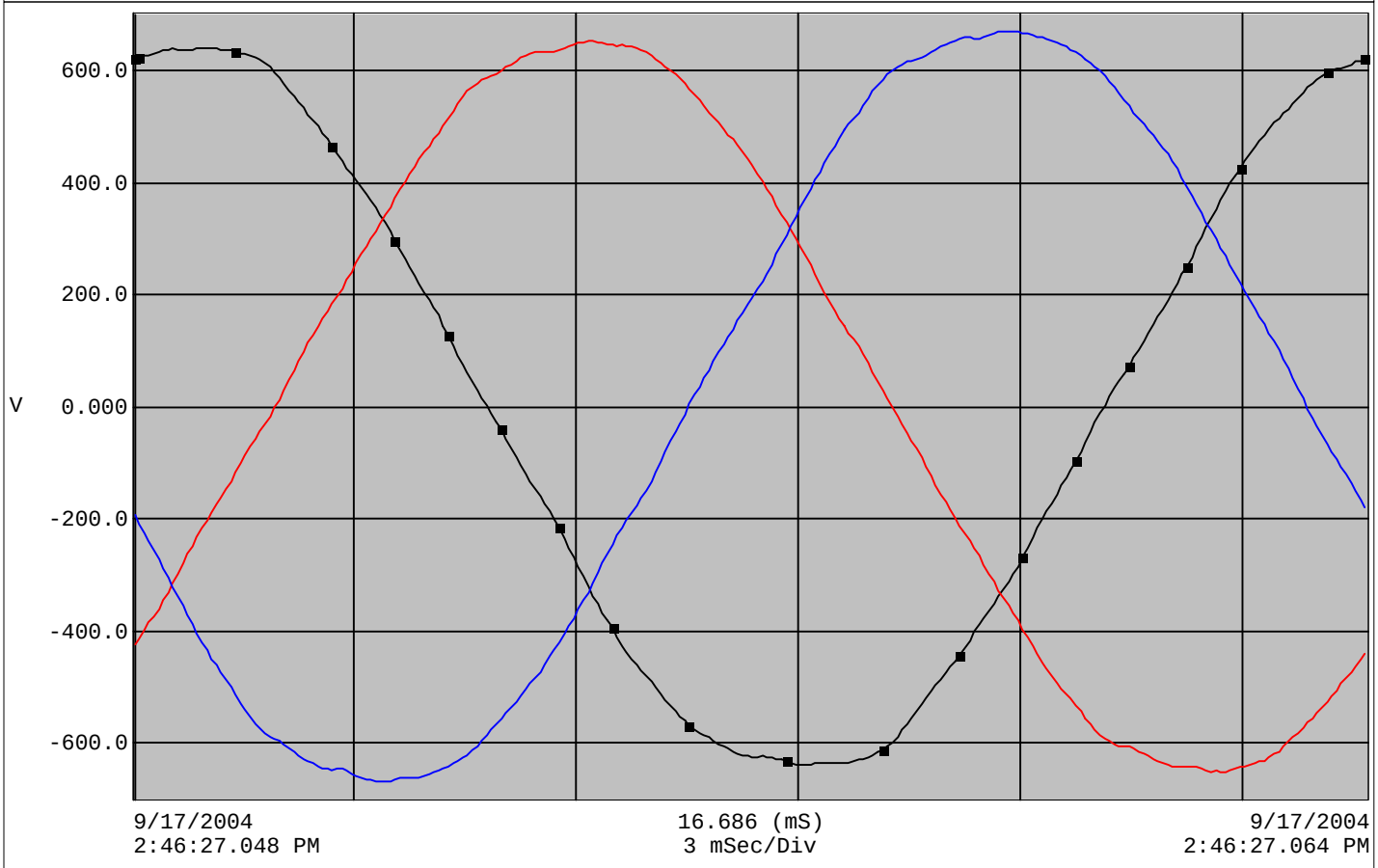


9/17/2004 - 2:46:27.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

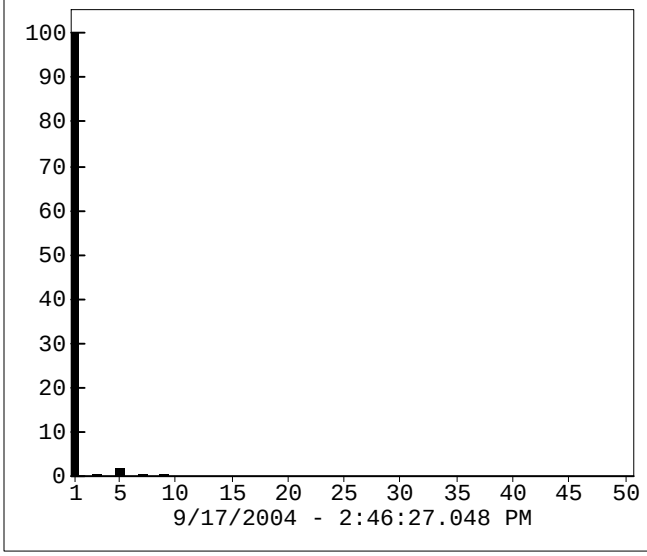
	(%)		(%)		(%)
H01	100.0	H18	0.9	H35	0.1
H02	0.1	H19	0.7	H36	0.0
H03	4.1	H20	0.5	H37	0.0
H04	0.0	H21	0.4	H38	0.1
H05	2.9	H22	1.1	H39	0.1
H06	0.0	H23	0.7	H40	0.0
H07	1.5	H24	0.2	H41	0.1
H08	0.1	H25	0.3	H42	0.2
H09	0.6	H26	0.2	H43	0.1
H10	0.0	H27	0.2	H44	0.1
H11	0.3	H28	0.2	H45	0.1
H12	0.0	H29	0.1	H46	0.1
H13	0.2	H30	0.1	H47	0.0
H14	0.2	H31	0.1	H48	0.0
H15	0.3	H32	0.1	H49	0.0
H16	0.6	H33	0.1	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/17/2004	2:46:27.048 PM	16.686	462.6	V
Waveform U2	9/17/2004	2:46:27.048 PM	16.686	462.9	V
Waveform U3	9/17/2004	2:46:27.048 PM	16.686	479.0	V

Waveform U1
462.57 Vrms, 2.17 %THD



9/17/2004 - 2:46:27.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.6	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.8	H22	0.3	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.1
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.0	H46	0.1
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/17/2004
Start Time: 2:46:27 PM
Duration: 0:0.000 (M:S)
W: 14.29E+3 W
VAR: 14.73E+3 W
VA: 20.52E+3 W
Power Factor: 0.696
Displacement Power Factor: 0.698
TAN: 1.026
VoltageRatio: 1.000
CurrentRatio: 1.000
```

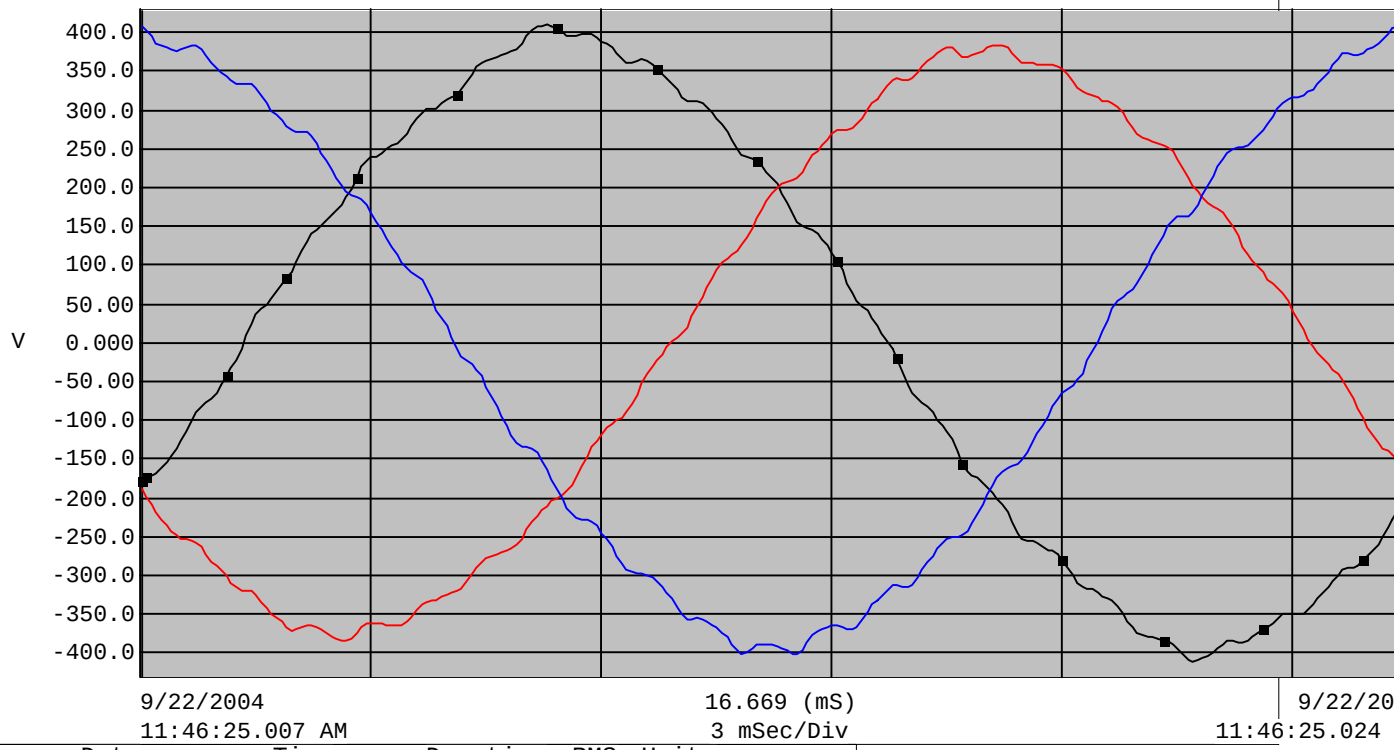
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F1\091704-F1-Photo 7.dvb	
Operator Morikawa & ,	Test Site ,
Comments	

WPS F-1 - Photo

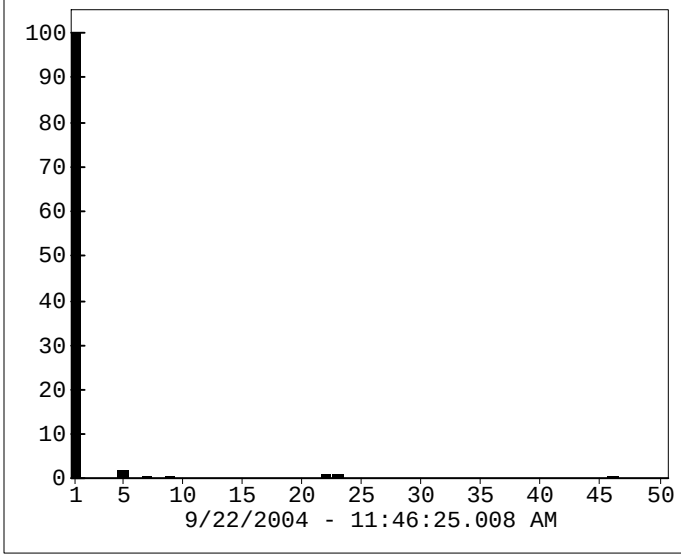
Recording Start Date	9/22/2004 - 11:46:25 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/22/2004	11:46:25.007 AM	16.669	276.0	V
Waveform V2	9/22/2004	11:46:25.007 AM	16.669	263.5	V
Waveform V3	9/22/2004	11:46:25.007 AM	16.669	275.6	V

Waveform V1
276.04 Vrms, 3.06 %THD



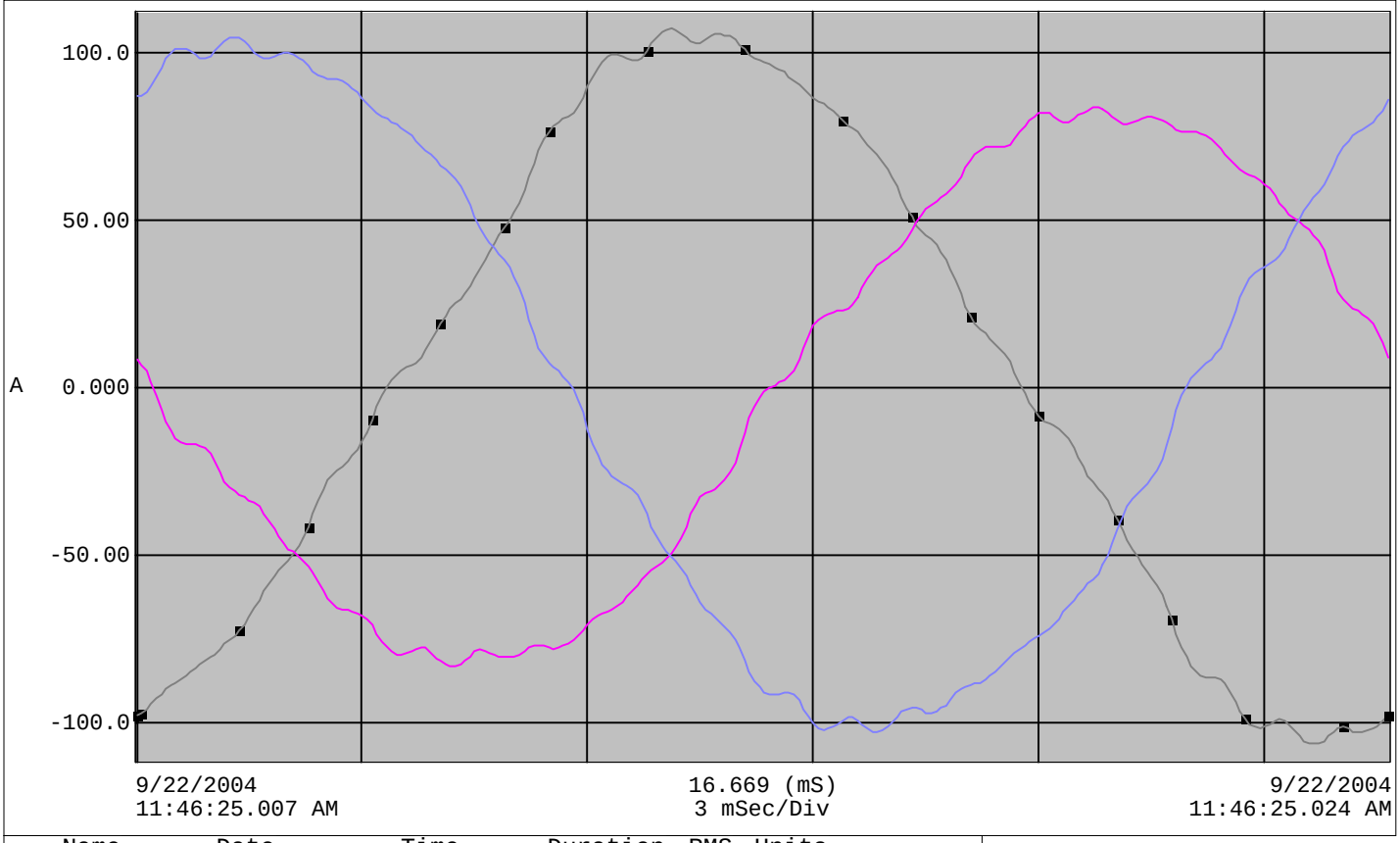
9/22/2004 - 11:46:25.000 AM

Val	
-179.5	Waveform V1
-190.8	Waveform V2
406.9	Waveform V3

Waveform V1

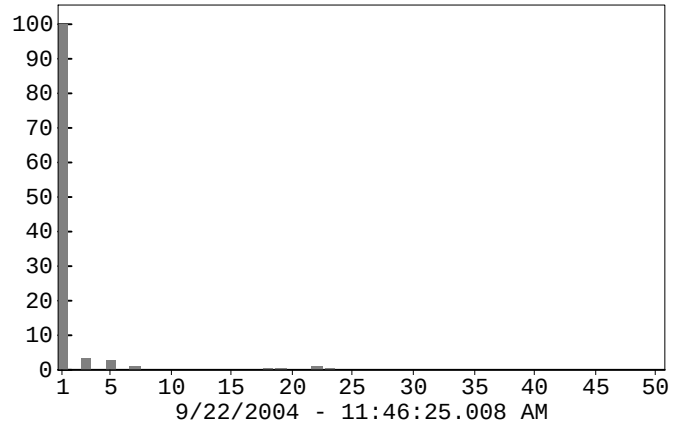
	(%)		(%)		(%)
H01	100.0	H18	0.3	H35	0.1
H02	0.0	H19	0.1	H36	0.1
H03	0.3	H20	0.2	H37	0.0
H04	0.1	H21	0.3	H38	0.1
H05	2.1	H22	1.2	H39	0.1
H06	0.0	H23	1.1	H40	0.0
H07	0.8	H24	0.4	H41	0.0
H08	0.1	H25	0.2	H42	0.1
H09	0.7	H26	0.2	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	0.1	H28	0.0	H45	0.1
H12	0.0	H29	0.2	H46	0.6
H13	0.3	H30	0.1	H47	0.1
H14	0.0	H31	0.1	H48	0.1
H15	0.2	H32	0.1	H49	0.1
H16	0.1	H33	0.1	H50	0.0
H17	0.1	H34	0.1		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/22/2004	11:46:25.007 AM	16.669	73.10	A
Waveform I2	9/22/2004	11:46:25.007 AM	16.669	58.93	A
Waveform I3	9/22/2004	11:46:25.007 AM	16.669	73.02	A

Waveform I1
73.10 Arms, 5.30 %THD



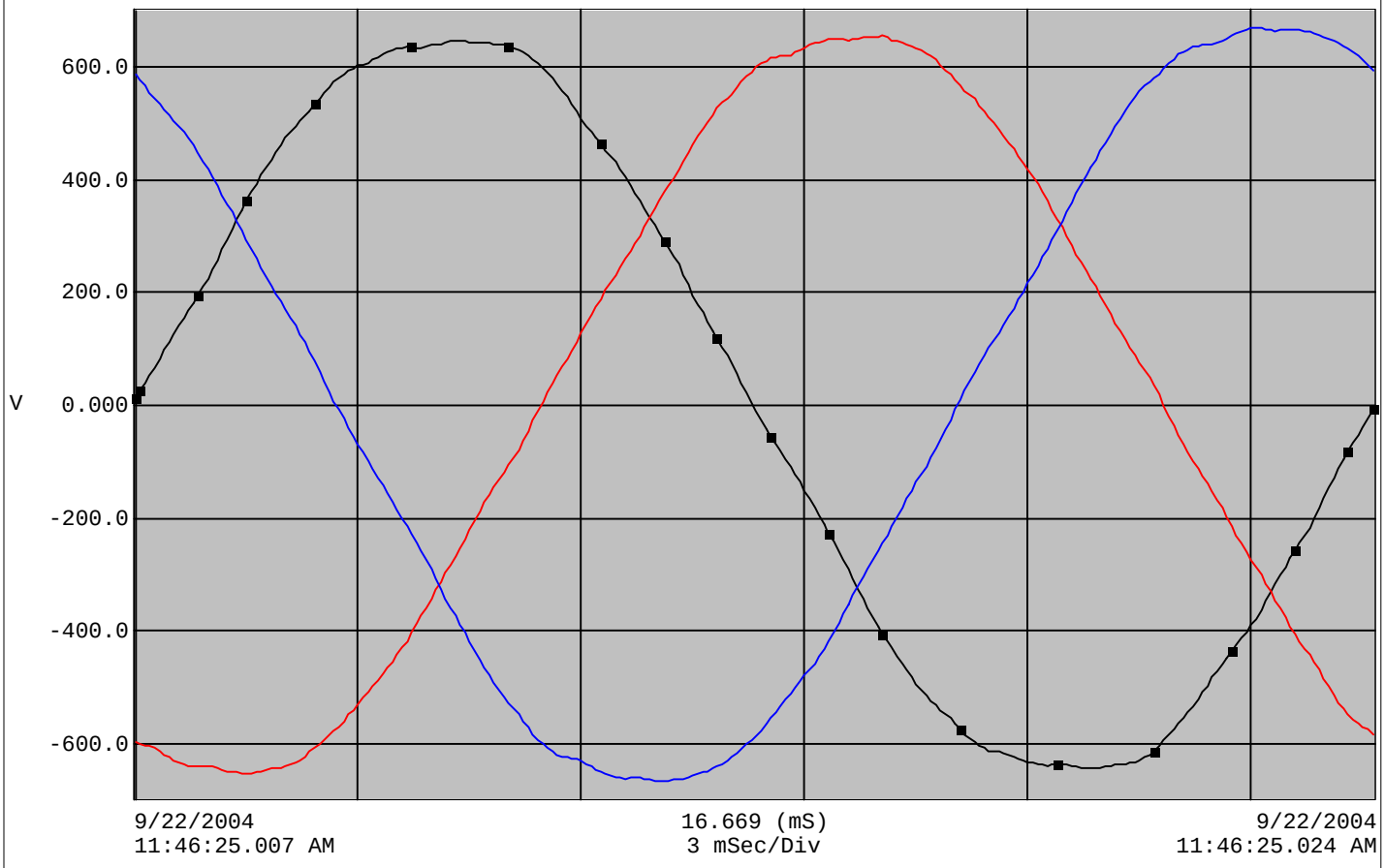
9/22/2004 - 11:46:25.000 AM

Val	
-98.50	Waveform I1
7.800	Waveform I2
86.60	Waveform I3

Waveform I1

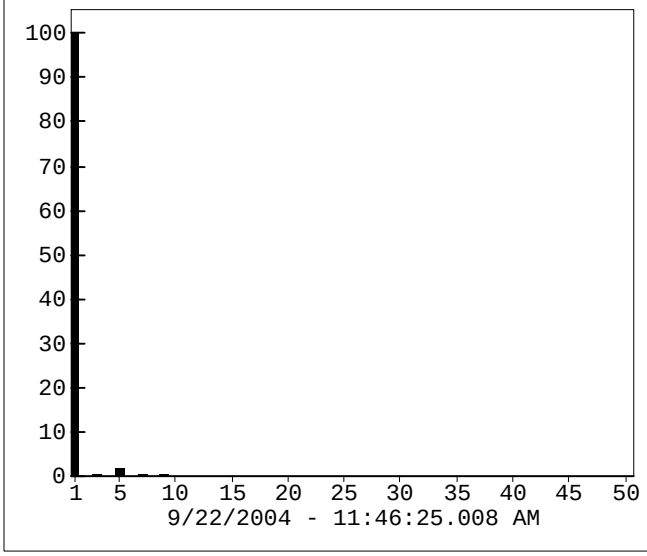
	(%)		(%)		(%)
H01	100.0	H18	1.0	H35	0.0
H02	0.2	H19	0.7	H36	0.0
H03	3.6	H20	0.4	H37	0.0
H04	0.0	H21	0.5	H38	0.0
H05	3.0	H22	1.1	H39	0.0
H06	0.1	H23	0.8	H40	0.1
H07	1.3	H24	0.5	H41	0.1
H08	0.1	H25	0.0	H42	0.1
H09	0.5	H26	0.0	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	0.2	H28	0.2	H45	0.0
H12	0.1	H29	0.1	H46	0.1
H13	0.3	H30	0.0	H47	0.0
H14	0.1	H31	0.1	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.2	H33	0.0	H50	0.1
H17	0.5	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/22/2004	11:46:25.007 AM	16.669	466.3	V
Waveform U2	9/22/2004	11:46:25.007 AM	16.669	466.4	V
Waveform U3	9/22/2004	11:46:25.007 AM	16.669	479.0	V

Waveform U1
466.27 Vrms, 2.22 %THD



9/22/2004 - 11:46:25.000 AM

	Val	
—	11.30	Waveform U1
—	-597.8	Waveform U2
—	586.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.5	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.9	H22	0.2	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.8	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.1
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.1
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 9/22/2004
Start Time: 11:46:25 AM
Duration: 0:0.000 (M:S)
W: 14.20E+3 W
VAR: 14.30E+3 W
VA: 20.15E+3 W
Power Factor: 0.705
Displacement Power Factor: 0.706
TAN: 1.003
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F1\092204-F1-Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS - F-1 - Photo ,

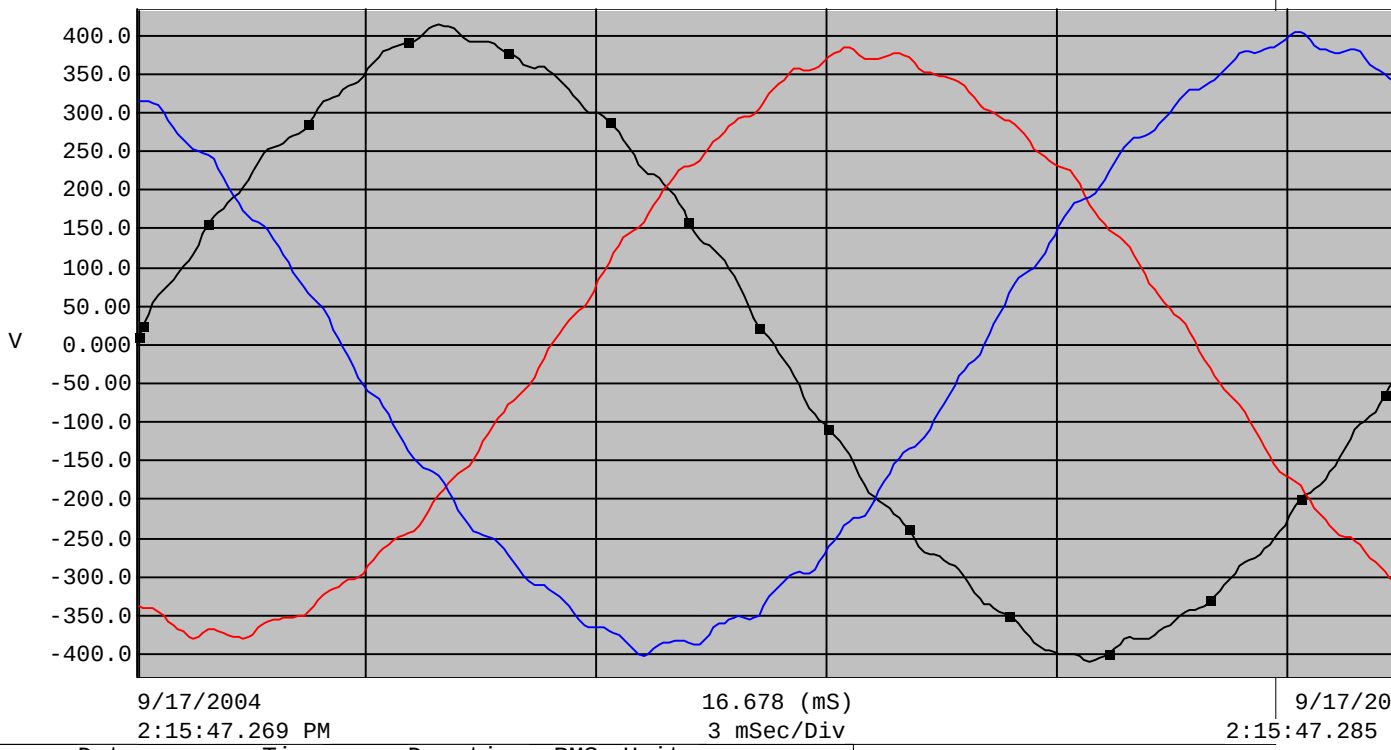
Comments

Recorded at motor starter overload relay. Pump operational after being shut down due to water overheating conditions. The checkvalve was replaced with a new valve. Pressure noted at 56 psi and 200 GPM.

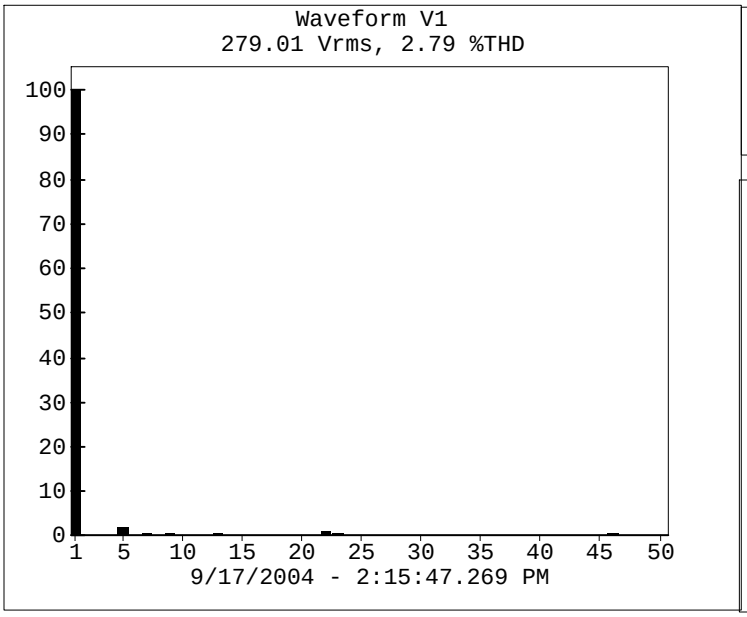
WPS F-1 Photo 4

Recording Start Date	9/17/2004 - 2:15:47 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/17/2004	2:15:47.269 PM	16.678	279.0	V
Waveform V2	9/17/2004	2:15:47.269 PM	16.678	262.9	V
Waveform V3	9/17/2004	2:15:47.269 PM	16.678	273.4	V

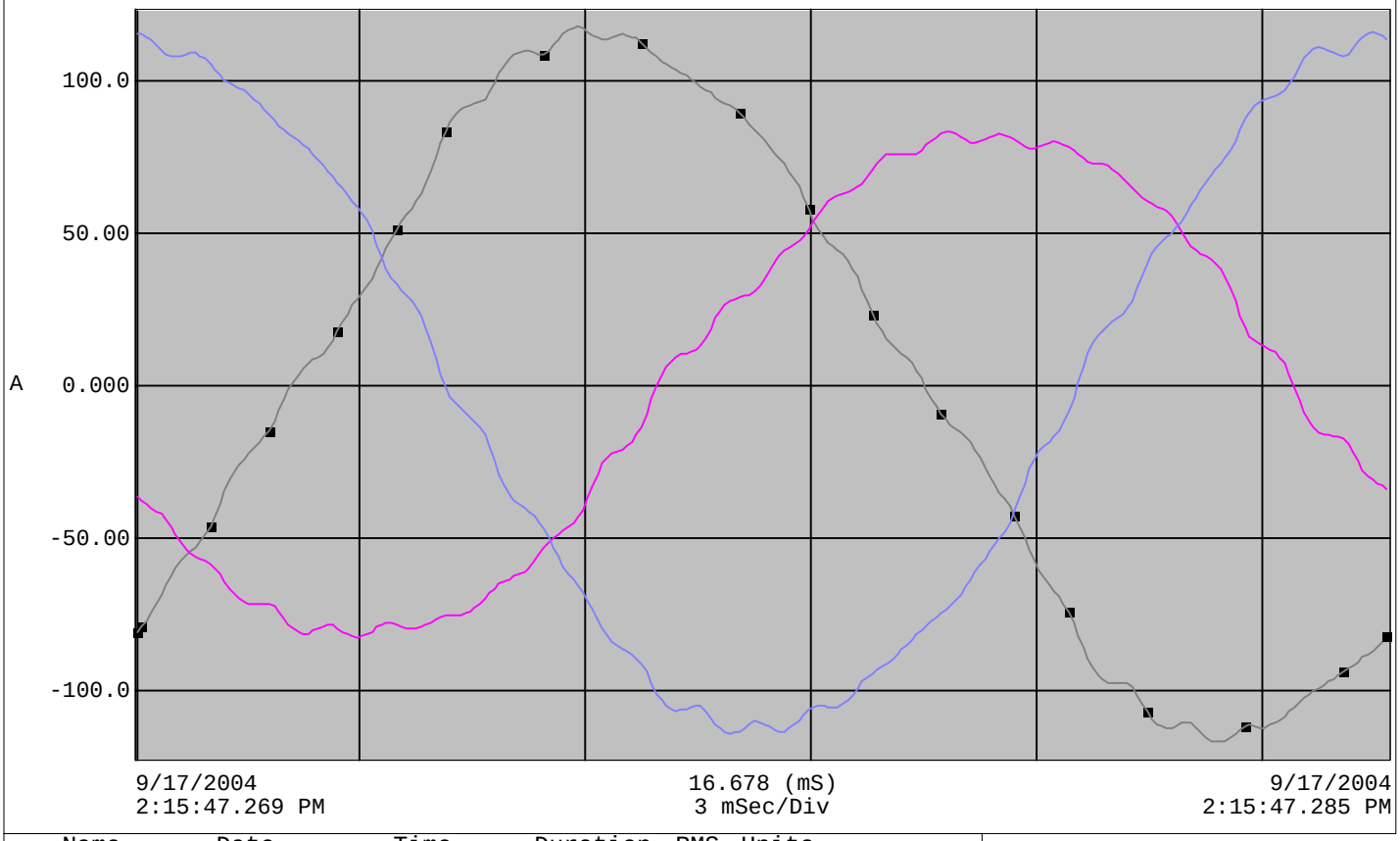


9/17/2004 - 2:15:47.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

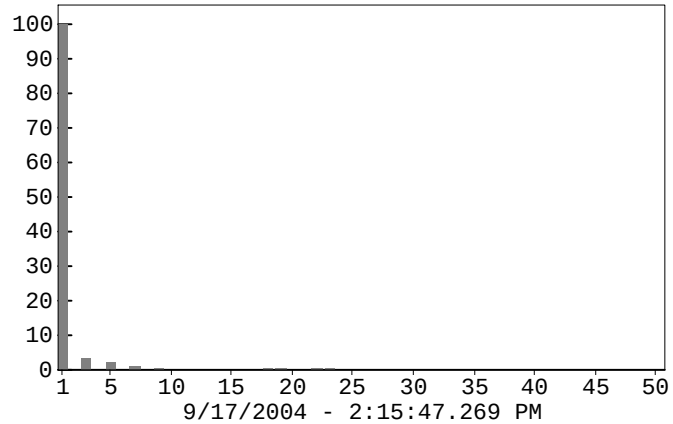
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.3	H36	0.1
H03	0.3	H20	0.3	H37	0.0
H04	0.0	H21	0.3	H38	0.0
H05	1.9	H22	1.1	H39	0.0
H06	0.0	H23	0.9	H40	0.1
H07	0.8	H24	0.2	H41	0.0
H08	0.1	H25	0.2	H42	0.0
H09	0.7	H26	0.1	H43	0.0
H10	0.1	H27	0.2	H44	0.1
H11	0.2	H28	0.2	H45	0.0
H12	0.0	H29	0.1	H46	0.5
H13	0.4	H30	0.1	H47	0.1
H14	0.0	H31	0.0	H48	0.1
H15	0.1	H32	0.1	H49	0.1
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/17/2004	2:15:47.269 PM	16.678	80.29	A
Waveform I2	9/17/2004	2:15:47.269 PM	16.678	59.14	A
Waveform I3	9/17/2004	2:15:47.269 PM	16.678	80.78	A

Waveform I1
80.29 Arms, 4.90 %THD

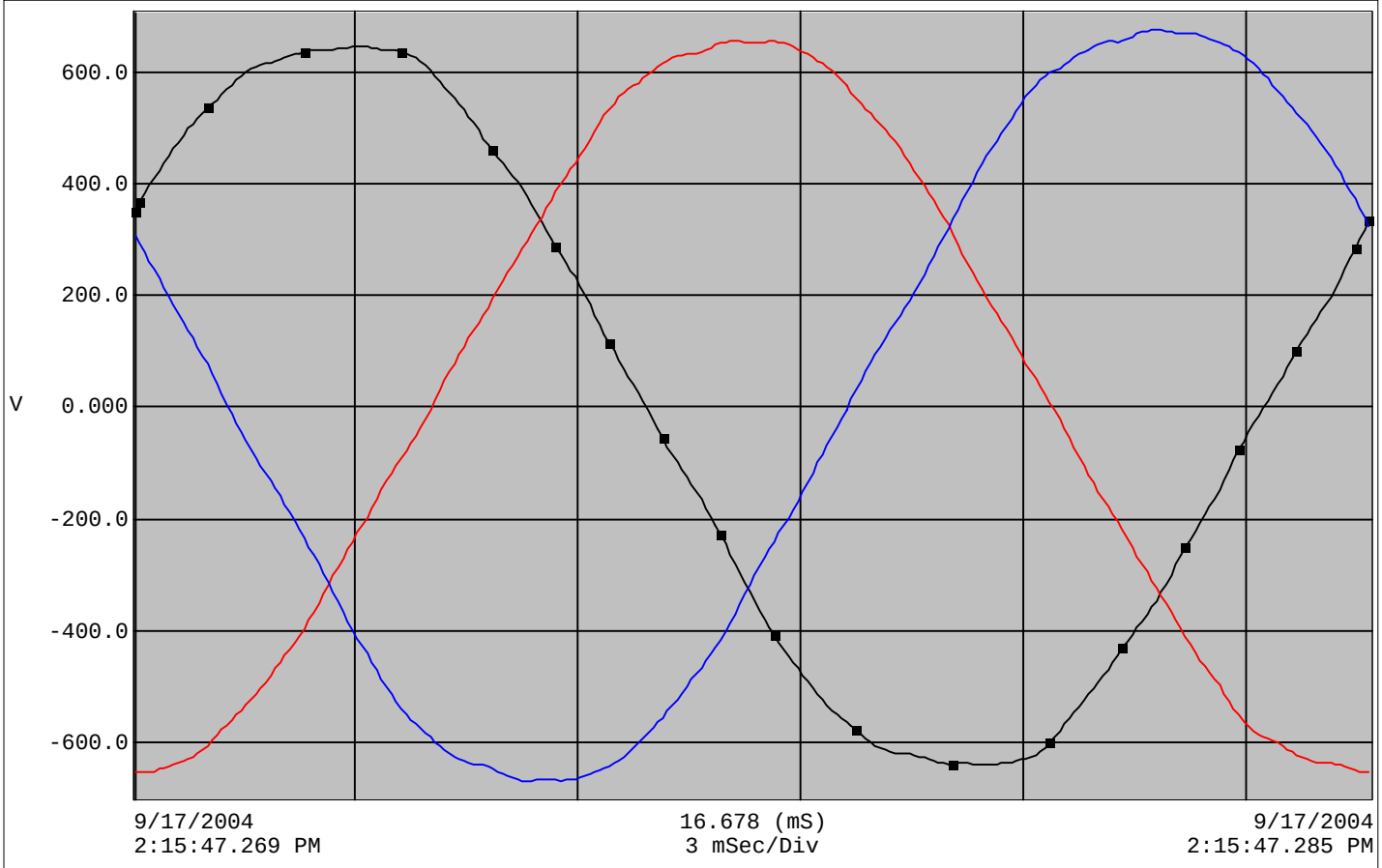


9/17/2004 - 2:15:47.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

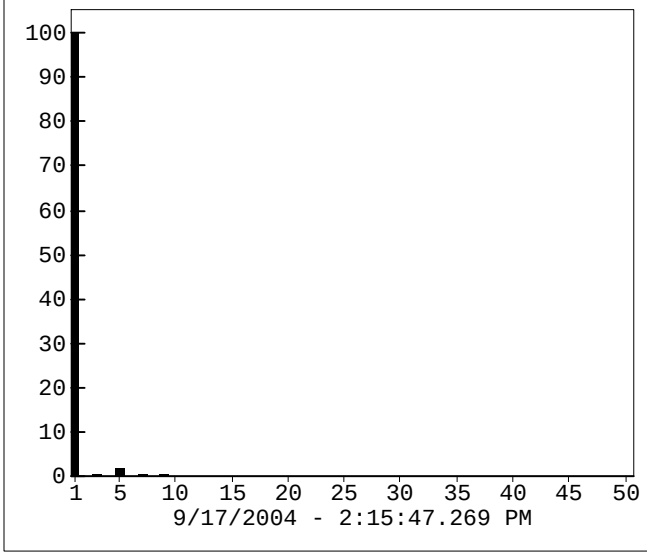
	(%)		(%)		(%)
H01	100.0	H18	0.8	H35	0.0
H02	0.2	H19	0.7	H36	0.0
H03	3.4	H20	0.4	H37	0.0
H04	0.1	H21	0.5	H38	0.0
H05	2.5	H22	1.0	H39	0.0
H06	0.1	H23	0.7	H40	0.1
H07	1.3	H24	0.4	H41	0.0
H08	0.0	H25	0.0	H42	0.1
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.3	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.1
H13	0.4	H30	0.1	H47	0.0
H14	0.2	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.2	H33	0.0	H50	0.1
H17	0.4	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/17/2004	2:15:47.269 PM	16.678	464.6	V
Waveform U2	9/17/2004	2:15:47.269 PM	16.678	465.9	V
Waveform U3	9/17/2004	2:15:47.269 PM	16.678	481.5	V

Waveform U1
464.62 Vrms, 2.16 %THD



9/17/2004 - 2:15:47.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.5	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.8	H22	0.3	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.1
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.1
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/17/2004
Start Time: 2:15:47 PM
Duration: 0:0.000 (M:S)
W: 15.31E+3 W
VAR: 16.37E+3 W
VA: 22.41E+3 W
Power Factor: 0.683
Displacement Power Factor: 0.684
TAN: 1.065
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F1\091704-F1-Photo 4.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS F-1 - Photo 4 ,

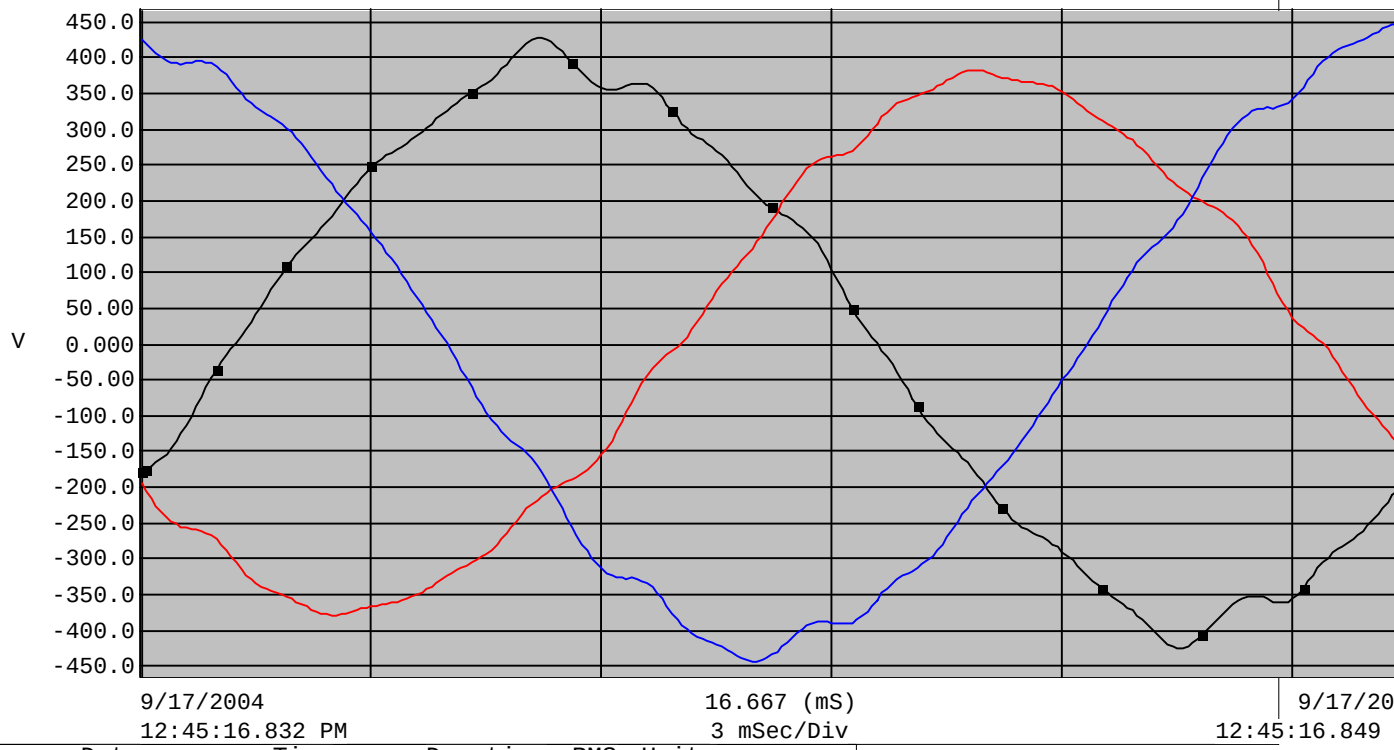
Comments

Recorded at main breaker for the station, main breaker open. Voltage being adjusted by GPA.

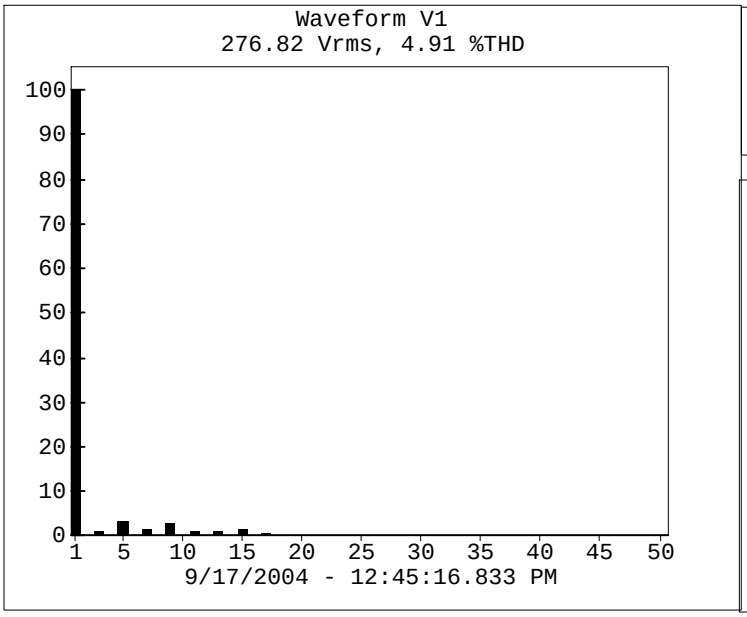
WPS F-1 Prior to Adjustment

Recording Start Date	9/17/2004 - 12:45:16 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/17/2004	12:45:16.832 PM	16.667	276.8	V
Waveform V2	9/17/2004	12:45:16.832 PM	16.667	263.1	V
Waveform V3	9/17/2004	12:45:16.832 PM	16.667	301.0	V



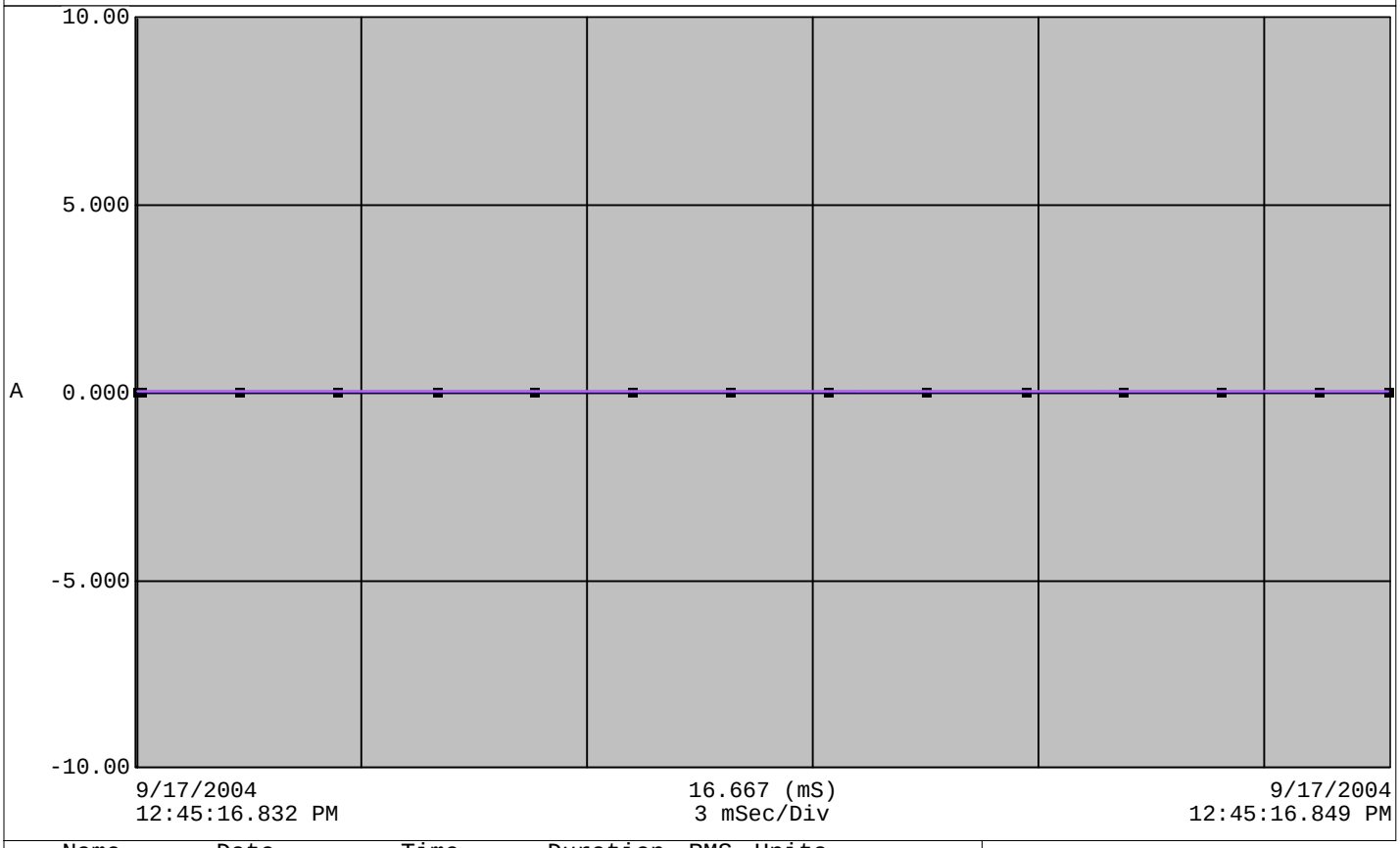
9/17/2004 - 12:45:16.000 PM

Val	
-180.9	Waveform V1
-195.2	Waveform V2
424.0	Waveform V3

Waveform V1

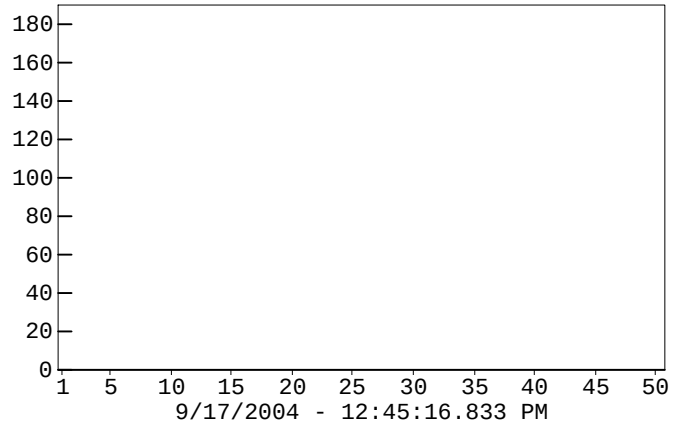
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	0.9	H20	0.0	H37	0.0
H04	0.1	H21	0.3	H38	0.0
H05	3.1	H22	0.0	H39	0.0
H06	0.2	H23	0.1	H40	0.0
H07	1.3	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	2.6	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	1.0	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	1.0	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	1.6	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.5	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/17/2004	12:45:16.832 PM	16.667	0.000	A
Waveform I2	9/17/2004	12:45:16.832 PM	16.667	0.000	A
Waveform I3	9/17/2004	12:45:16.832 PM	16.667	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



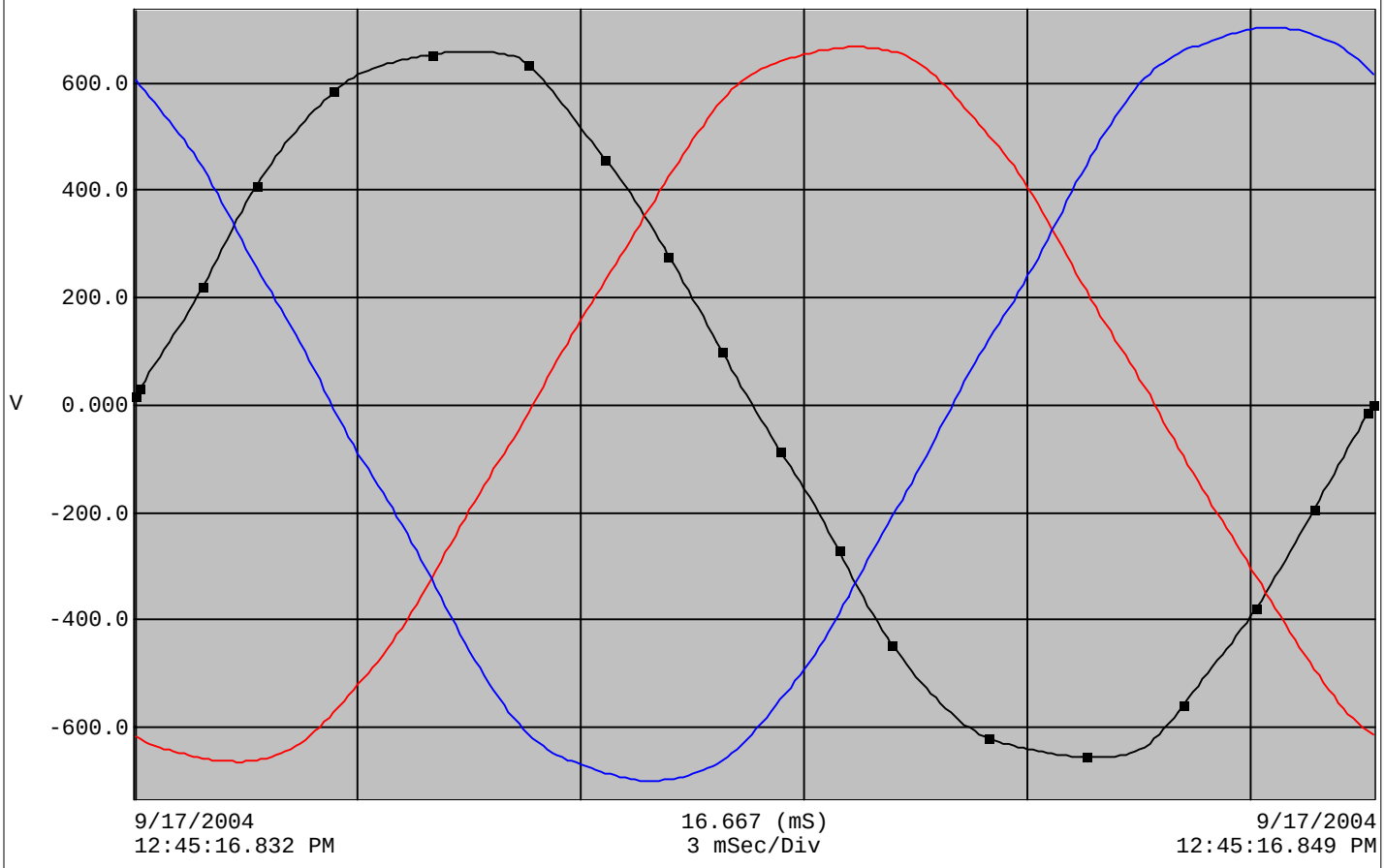
9/17/2004 - 12:45:16.000 PM

Val	
0.000	Waveform I1
0.000	Waveform I2
0.000	Waveform I3

Waveform I1

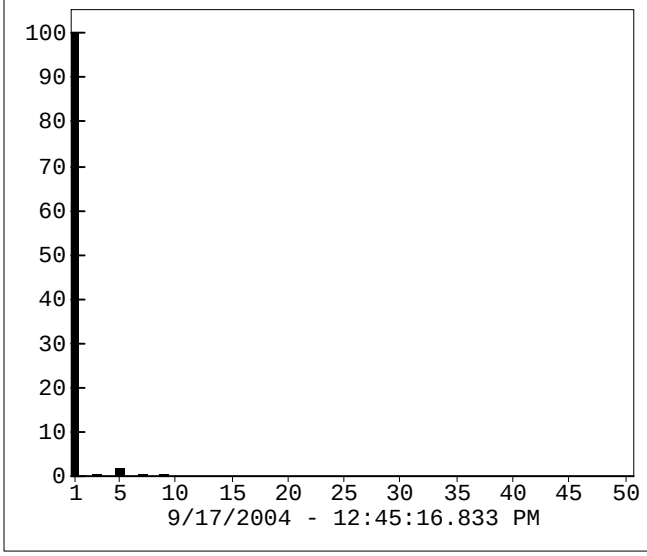
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/17/2004	12:45:16.832 PM	16.667	475.4	V
Waveform U2	9/17/2004	12:45:16.832 PM	16.667	476.4	V
Waveform U3	9/17/2004	12:45:16.832 PM	16.667	503.6	V

Waveform U1
475.37 Vrms, 2.28 %THD



9/17/2004 - 12:45:16.000 PM

	Val	
—	14.30	Waveform U1
—	-619.3	Waveform U2
—	605.0	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 9/17/2004
Start Time: 12:45:16 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F1\091704-F1-Photo 1.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS F-1 - Photo 1 ,

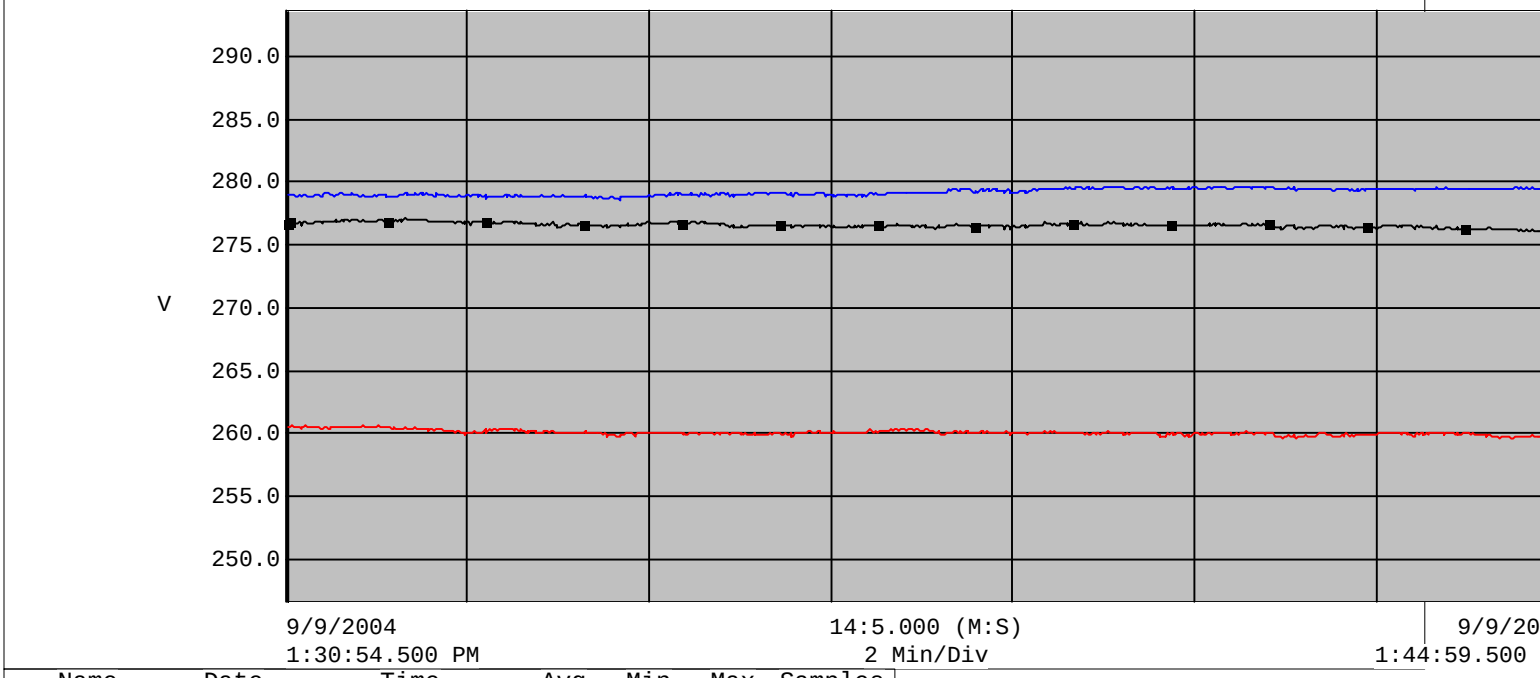
Comments

Station on Generator Power. Photo measurement made at Station Main Breaker. Main Breaker open. GPA crew to adjust voltage.

WPS F-1

Recording Start Date	9/9/2004 - 1:30:54 PM
Recording Duration	14:05 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

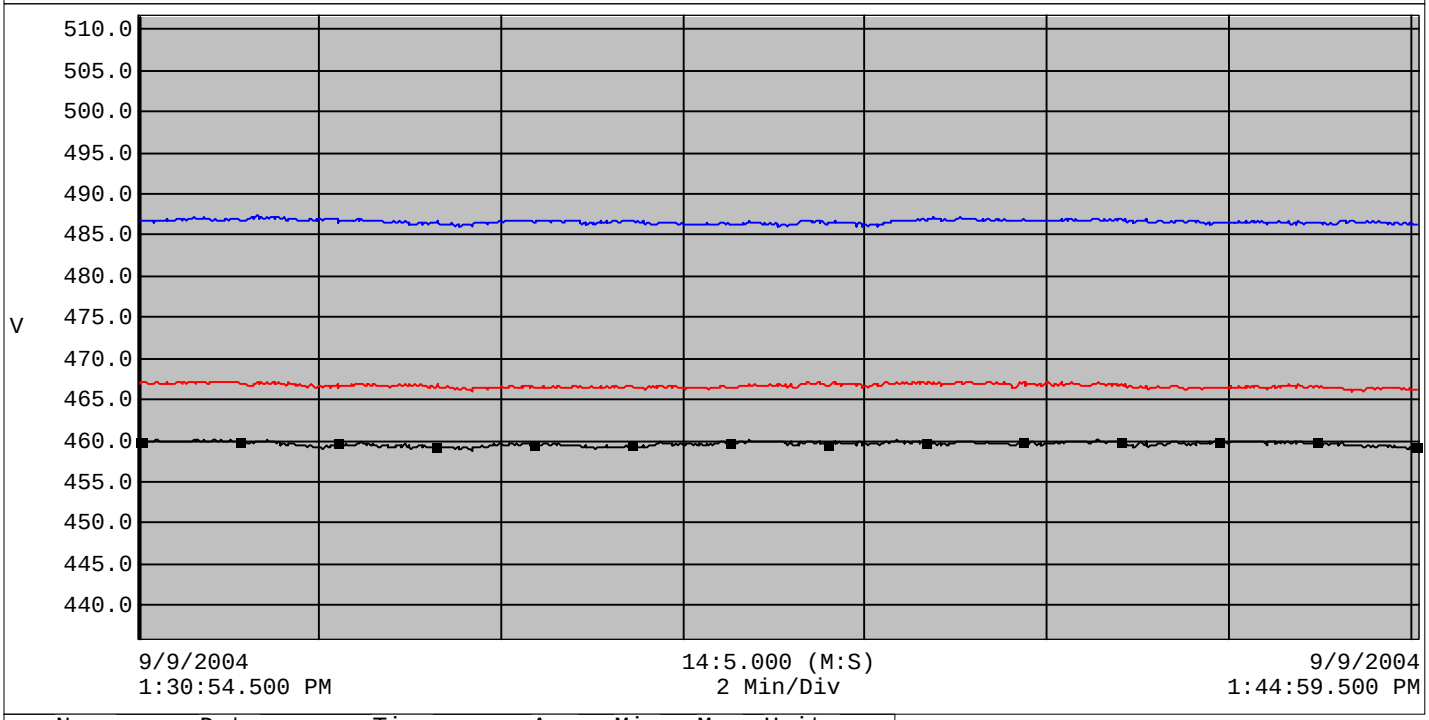
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/9/2004	1:30:54.500 PM	276.5	275.8	277.1	846
Vrms Line2	9/9/2004	1:30:54.500 PM	260.0	259.5	260.6	846
Vrms Line3	9/9/2004	1:30:54.500 PM	279.1	278.5	279.6	846

9/9/2004 - 1:30:54.000 PM
Val
276.6 Vrms Line1
260.4 Vrms Line2
278.9 Vrms Line3

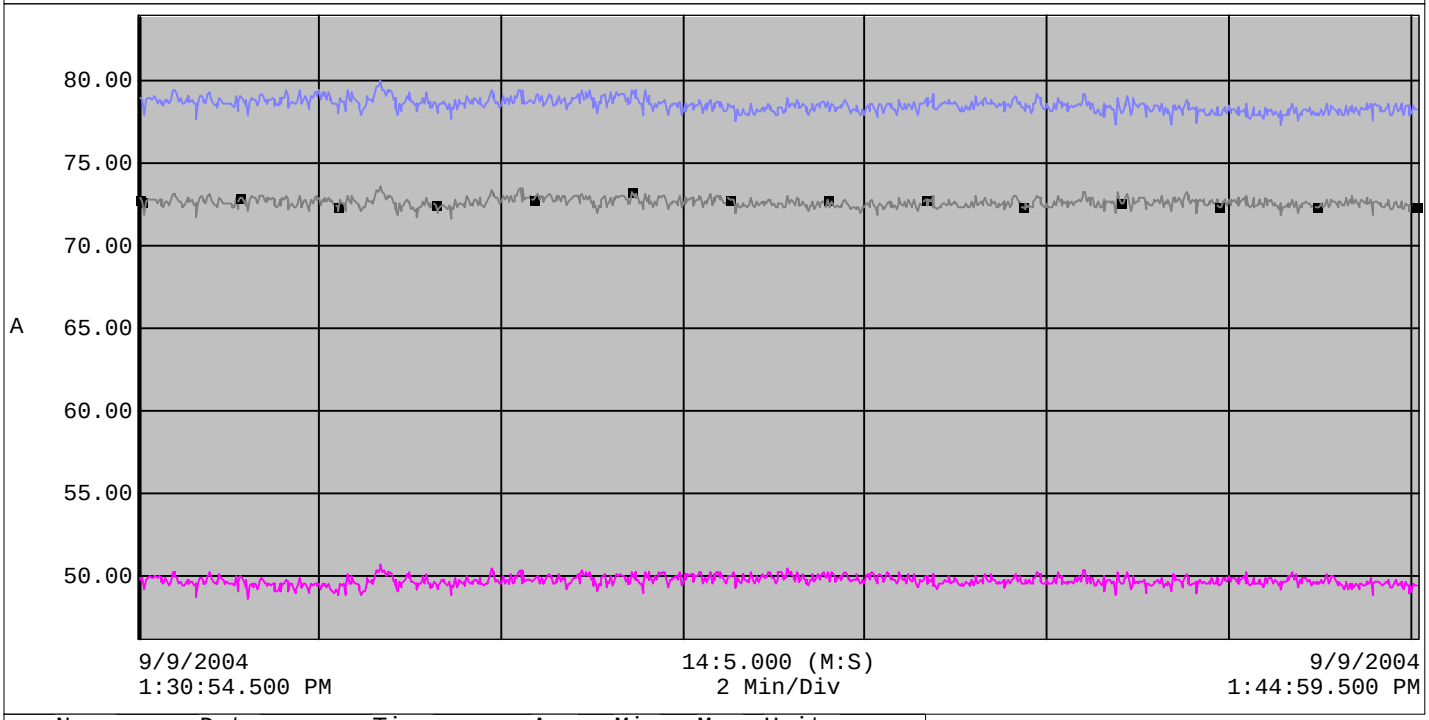
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/9/2004	1:30:54.500 PM	459.5	458.7	460.1	V
Urms Line2	9/9/2004	1:30:54.500 PM	466.5	465.9	467.1	V
Urms Line3	9/9/2004	1:30:54.500 PM	486.5	486.0	487.2	V

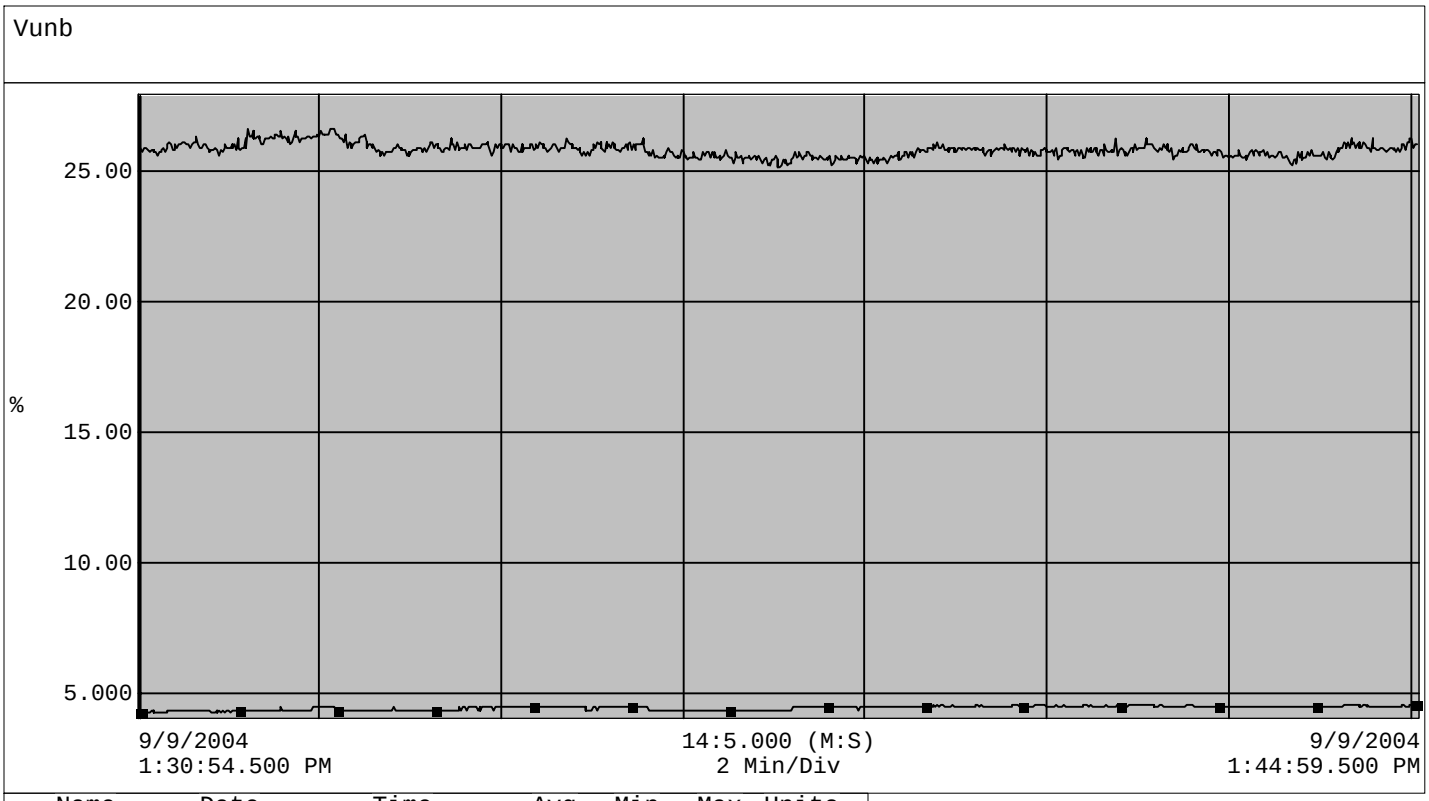
9/9/2004 - 1:30:54.000 PM
Val
459.8 Urms Line1
466.7 Urms Line2
486.6 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/9/2004	1:30:54.500 PM	72.55	71.60	73.50	A
Arms Line2	9/9/2004	1:30:54.500 PM	49.63	48.50	50.60	A
Arms Line3	9/9/2004	1:30:54.500 PM	78.47	77.30	79.90	A

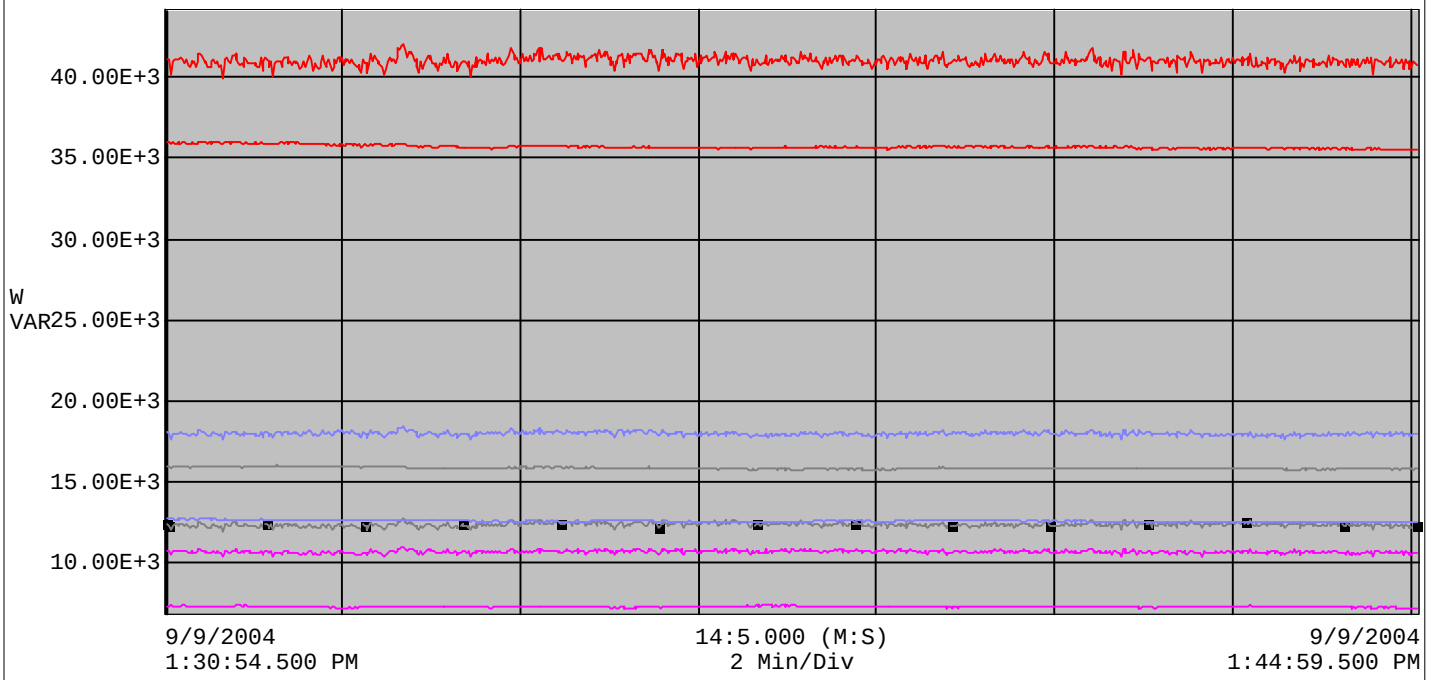
9/9/2004 - 1:30:54.000 PM
Val
72.70 — Arms Line1
49.70 — Arms Line2
78.90 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/9/2004	1:30:54.500 PM	4.370	4.200	4.500	%
Aunb(IEEE)	9/9/2004	1:30:54.500 PM	25.80	25.10	26.60	%

9/9/2004 - 1:30:54.000 PM
Val
4.300 —— Vunb(IEEE)
25.90 —— Aunb(IEEE)

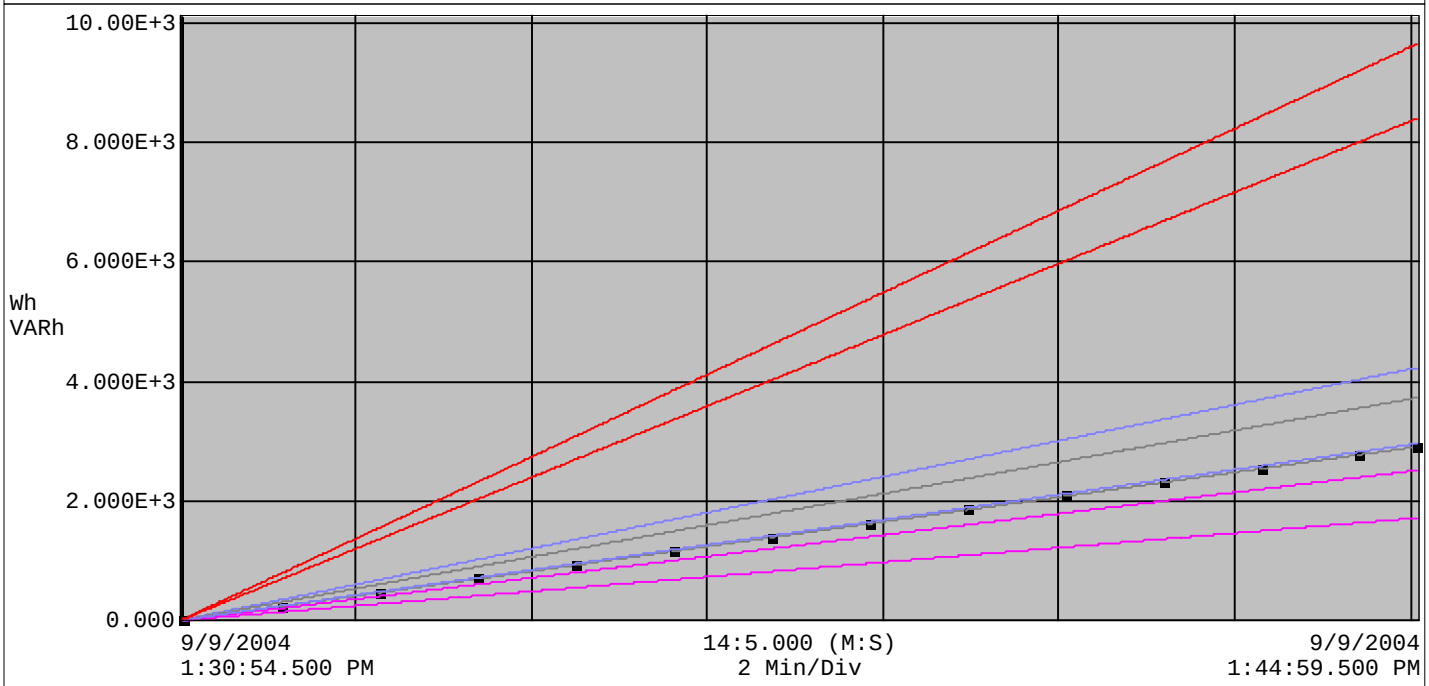
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/9/2004	1:30:54.500 PM	12.33E+3	11.91E+3	12.68E+3	W
W Line2	9/9/2004	1:30:54.500 PM	10.66E+3	10.33E+3	10.96E+3	W
W Line3	9/9/2004	1:30:54.500 PM	17.95E+3	17.56E+3	18.36E+3	W
W Sum of Phases	9/9/2004	1:30:54.500 PM	40.94E+3	39.79E+3	42.00E+3	W
VAR Line1	9/9/2004	1:30:54.500 PM	15.82E+3	15.69E+3	15.98E+3	VAR
VAR Line2	9/9/2004	1:30:54.500 PM	7.269E+3	7.160E+3	7.365E+3	VAR
VAR Line3	9/9/2004	1:30:54.500 PM	12.55E+3	12.44E+3	12.70E+3	VAR
VAR Sum of Phases	9/9/2004	1:30:54.500 PM	35.64E+3	35.42E+3	35.93E+3	VAR

9/9/2004 - 1:30:54.000 PM
Val
12.31E+3 — W Line1
10.69E+3 — W Line2
17.99E+3 — W Line3
41.00E+3 — W Sum of Phases
15.91E+3 — VAR Line1
7.301E+3 — VAR Line2
12.67E+3 — VAR Line3
35.89E+3 — VAR Sum of Phases

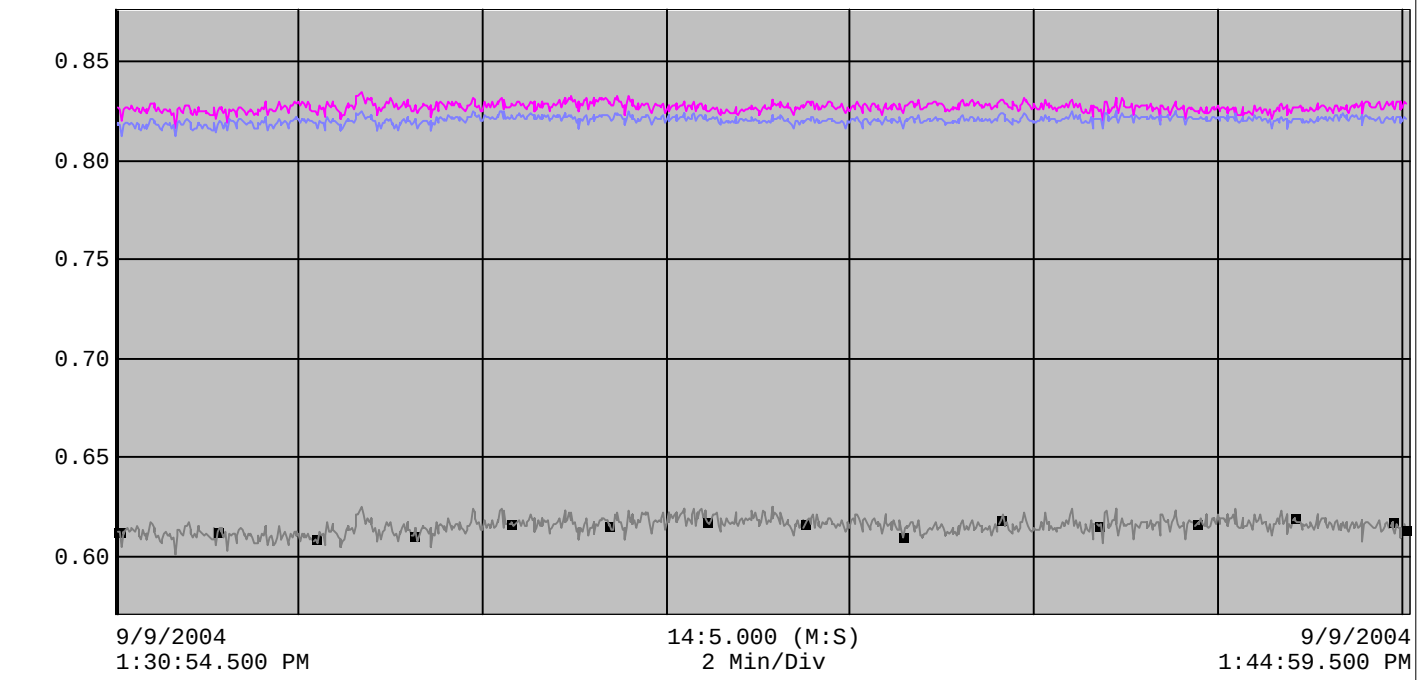
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/9/2004	1:30:54.500 PM	1.450E+3	3.450	2.898E+3	Wh
W-hours Line2	9/9/2004	1:30:54.500 PM	1.254E+3	2.981	2.505E+3	Wh
W-hours Line3	9/9/2004	1:30:54.500 PM	2.113E+3	5.021	4.218E+3	Wh
W-hours Sum of Phases	9/9/2004	1:30:54.500 PM	4.817E+3	11.45	9.621E+3	Wh
VAR-hours Line1	9/9/2004	1:30:54.500 PM	1.863E+3	4.424	3.717E+3	VARh
VAR-hours Line2	9/9/2004	1:30:54.500 PM	855.4	2.033	1.708E+3	VARh
VAR-hours Line3	9/9/2004	1:30:54.500 PM	1.480E+3	3.511	2.950E+3	VARh
VAR-hours Sum of Phases	9/9/2004	1:30:54.500 PM	4.198E+3	9.968	8.375E+3	VARh

9/9/2004 - 1:30:54.000 PM
Val
3.450 — W-hours Line1
2.981 — W-hours Line2
5.021 — W-hours Line3
11.45 — W-hours Sum of Phases
4.424 — VAR-hours Line1
2.033 — VAR-hours Line2
3.511 — VAR-hours Line3
9.968 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/9/2004	1:30:54.500 PM	0.615	0.600	0.624	
PF Line2	9/9/2004	1:30:54.500 PM	0.826	0.816	0.834	
PF Line3	9/9/2004	1:30:54.500 PM	0.820	0.812	0.824	

9/9/2004 - 1:30:54.000 PM
Val
0.612 — PF Line1
0.826 — PF Line2
0.818 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F1\090904-F1.dvb

Operator	Test Site
GWA Victor Jardel ,	GWA WPS F-1 ,

Comments

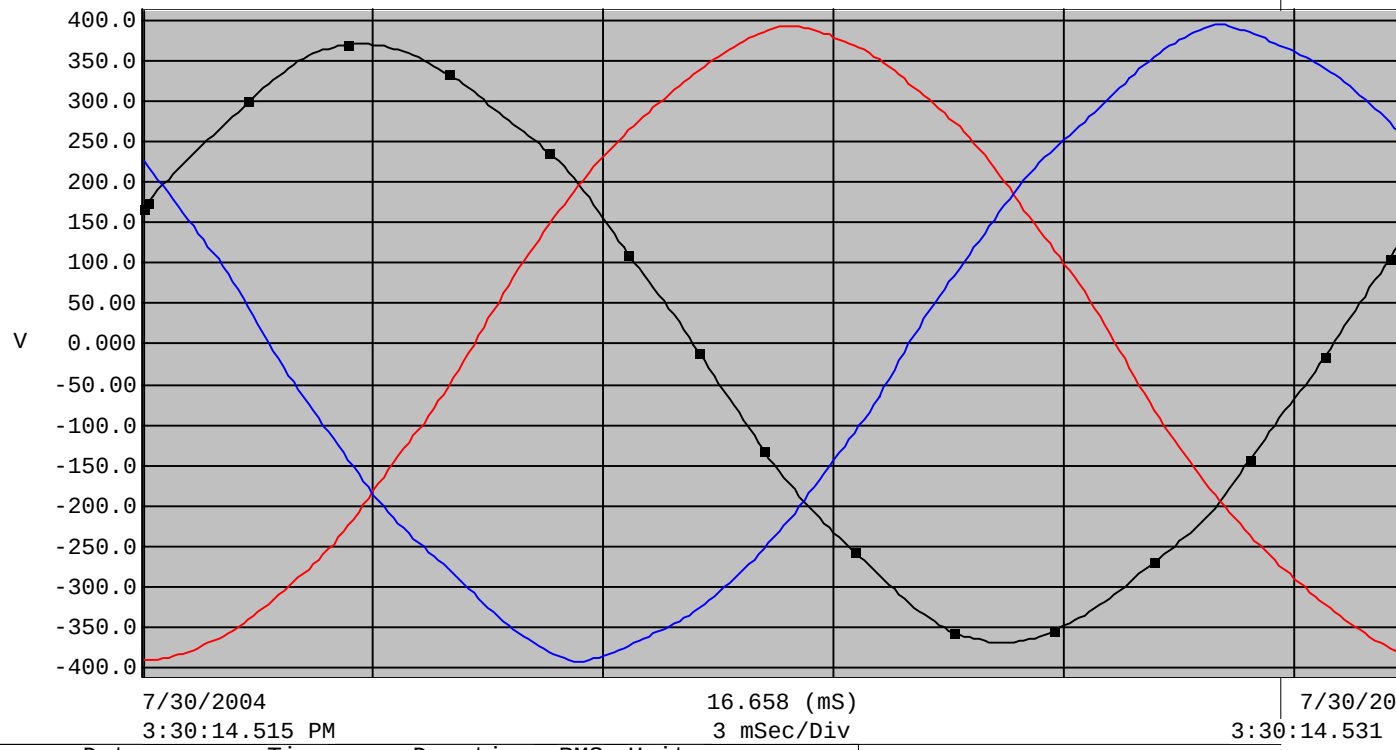
GWA Water Pumping Station Assessment				
Station Name: F-02	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	
Pump Instrumentation	**5.0%**		0.03	
Pressure	1.5%	0	0	
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.6**

Comments:

WPS F-2 - Photo

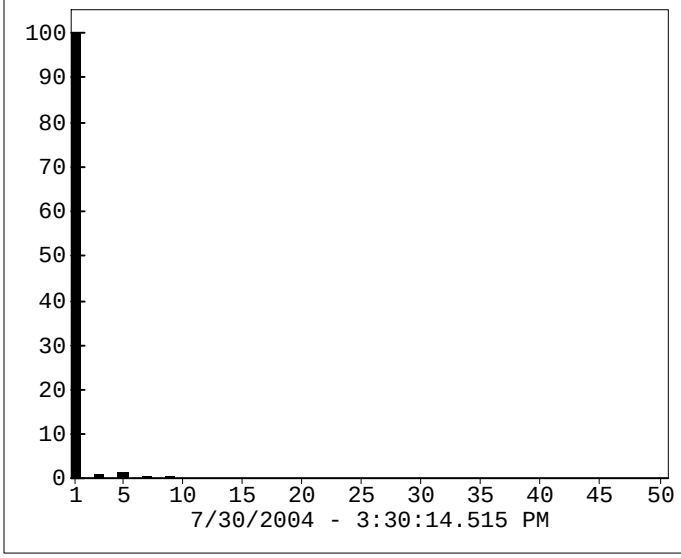
Recording Start Date	7/30/2004 - 3:30:14 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/30/2004	3:30:14.515 PM	16.658	257.7	V
Waveform V2	7/30/2004	3:30:14.515 PM	16.658	272.1	V
Waveform V3	7/30/2004	3:30:14.515 PM	16.658	269.6	V

Waveform V1
257.69 Vrms, 1.84 %THD

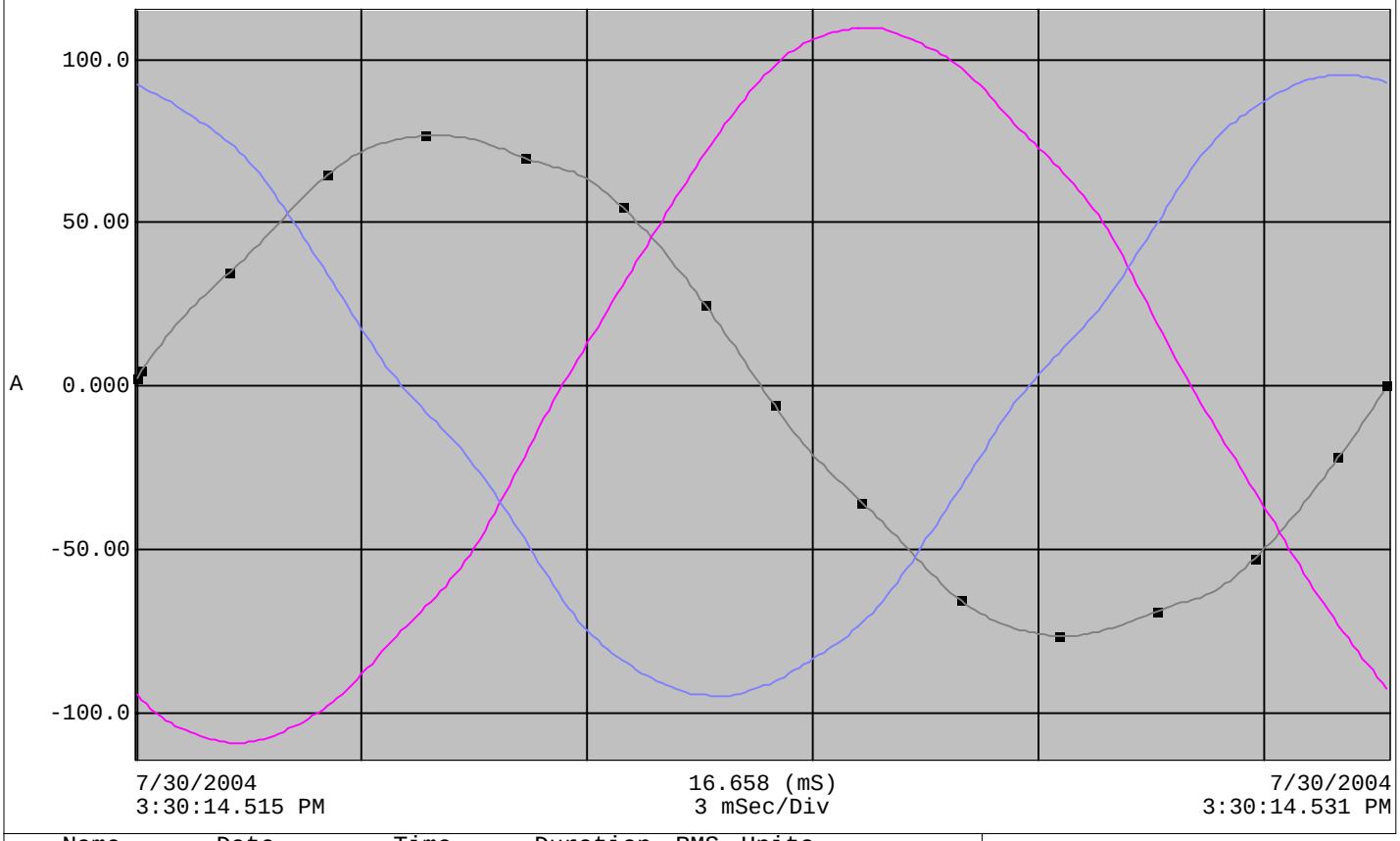


7/30/2004 - 3:30:14.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

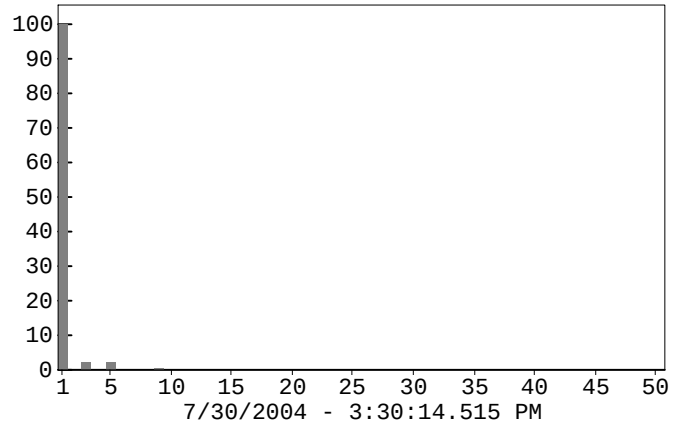
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.9	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/30/2004	3:30:14.515 PM	16.658	55.09	A
Waveform I2	7/30/2004	3:30:14.515 PM	16.658	76.84	A
Waveform I3	7/30/2004	3:30:14.515 PM	16.658	66.29	A

Waveform I1
55.09 Arms, 3.67 %THD

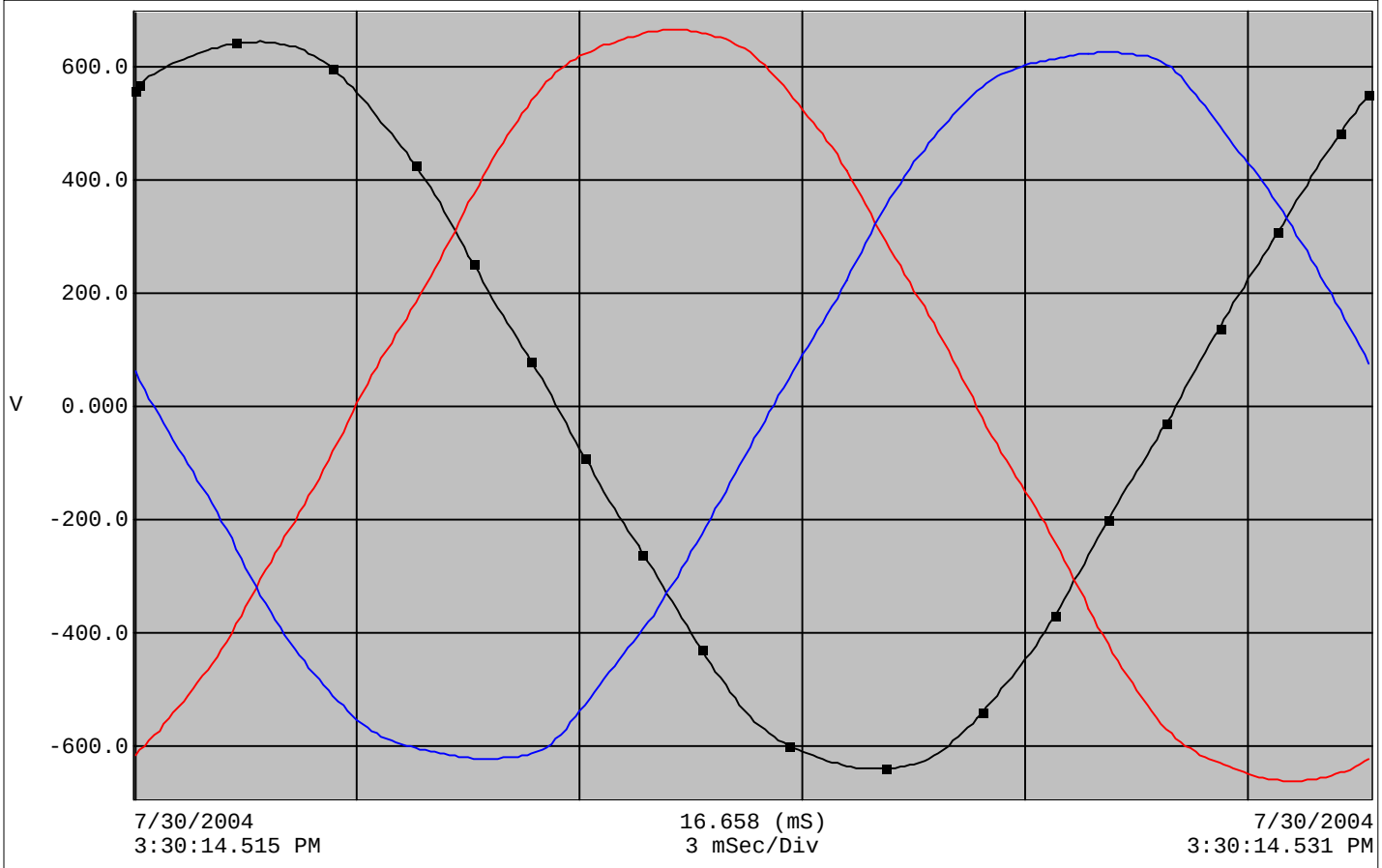


7/30/2004 - 3:30:14.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

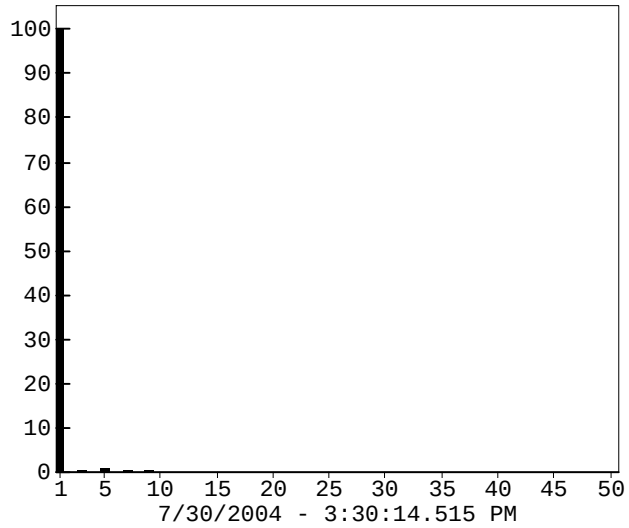
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	2.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.8	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/30/2004	3:30:14.515 PM	16.658	456.8	V
Waveform U2	7/30/2004	3:30:14.515 PM	16.658	476.3	V
Waveform U3	7/30/2004	3:30:14.515 PM	16.658	451.5	V

Waveform U1
456.83 Vrms, 1.63 %THD



7/30/2004 - 3:30:14.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.8	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/30/2004
Start Time: 3:30:14 PM
Duration: 0:0.000 (M:S)
W: 12.71E+3 W
VAR: 6.350E+3 W
VA: 14.21E+3 W
Power Factor: 0.895
Displacement Power Factor: 0.895
TAN: 0.498
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F2\073004-F2-Photo.dvb

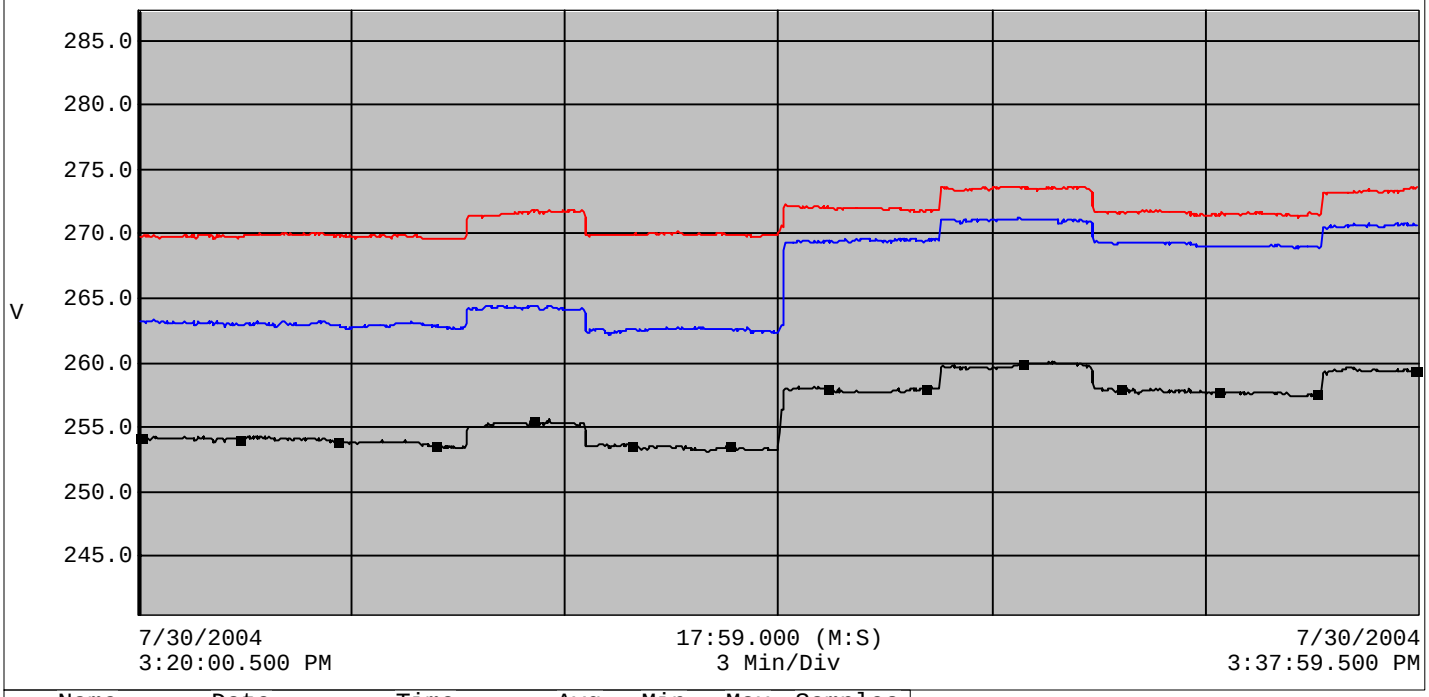
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-2 Photos ,

Comments
Waveform photo, at motor leads, GPA Meter #86-404-731

WPS F-2

Recording Start Date	7/30/2004 - 3:20:00 PM
Recording Duration	17:59 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

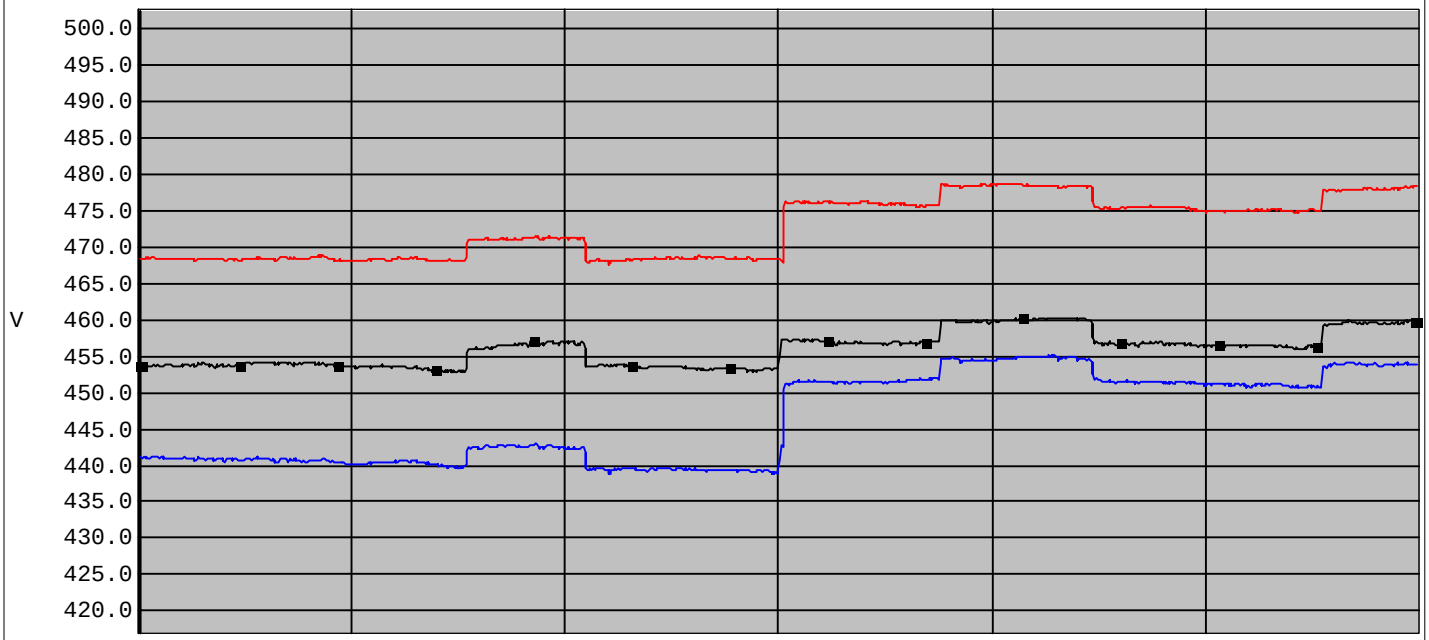
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/30/2004	3:20:00.500 PM	256.2	253.0	260.0	1080
Vrms Line2	7/30/2004	3:20:00.500 PM	271.2	269.5	273.6	1080
Vrms Line3	7/30/2004	3:20:00.500 PM	266.4	262.1	271.2	1080

7/30/2004 - 3:20:00.000 PM
Val
254.0 — Vrms Line1
269.7 — Vrms Line2
263.2 — Vrms Line3

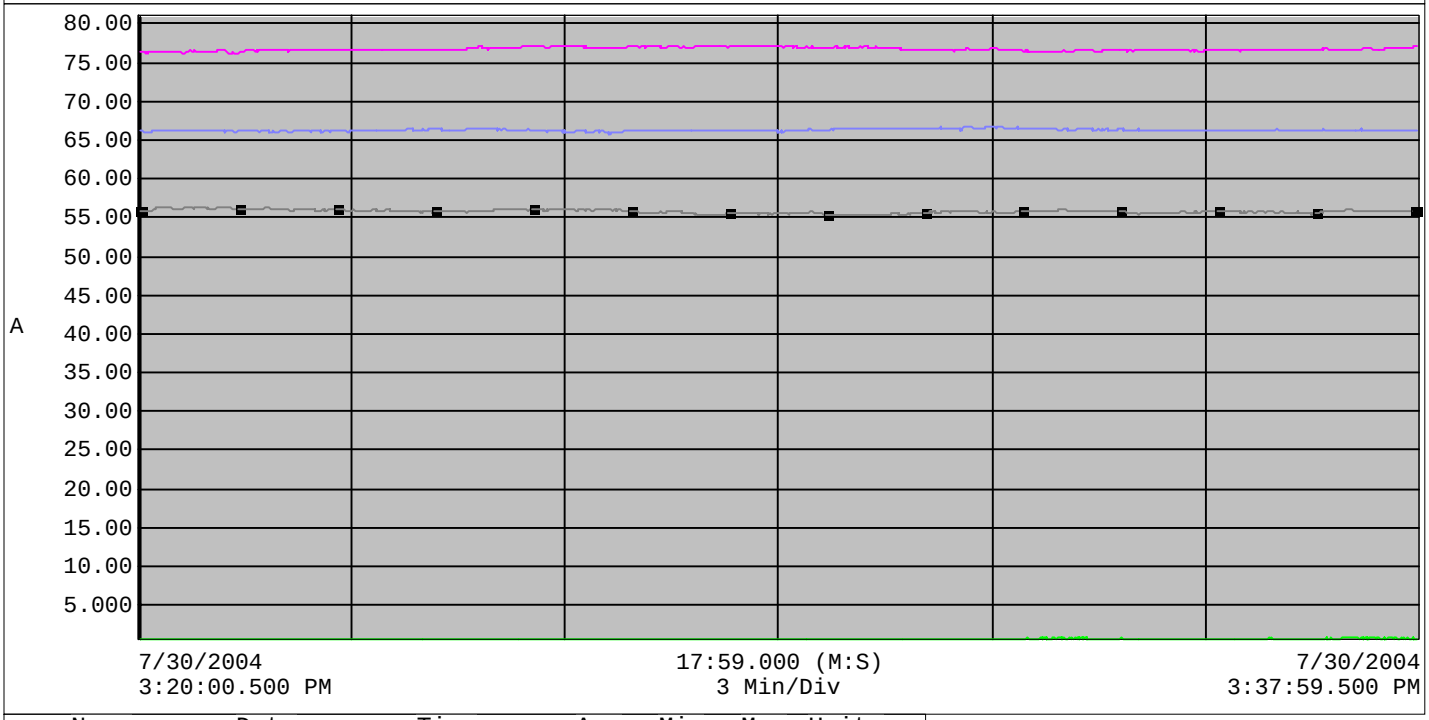
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/30/2004	3:20:00.500 PM	455.9	452.8	460.2	V
Urms Line2	7/30/2004	3:20:00.500 PM	472.6	467.6	478.7	V
Urms Line3	7/30/2004	3:20:00.500 PM	446.4	438.7	455.0	V

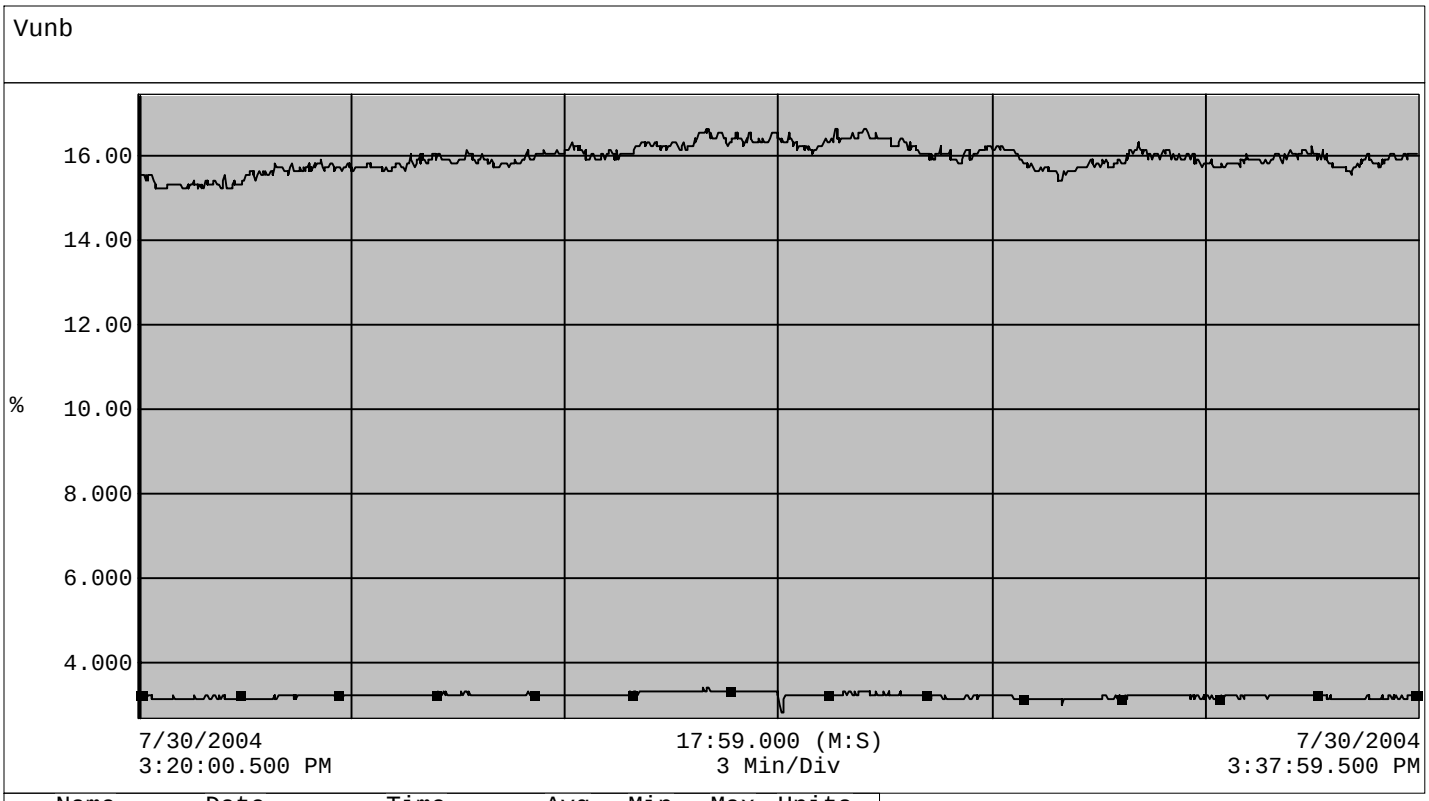
7/30/2004 - 3:20:00.000 PM
Val
453.5 Urms Line1
468.4 Urms Line2
441.1 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/30/2004	3:20:00.500 PM	55.67	55.10	56.30	A
Arms Line2	7/30/2004	3:20:00.500 PM	76.59	76.10	77.10	A
Arms Line3	7/30/2004	3:20:00.500 PM	66.15	65.70	66.50	A
Arms Neutral	7/30/2004	3:20:00.500 PM	0.506	0.500	0.600	A

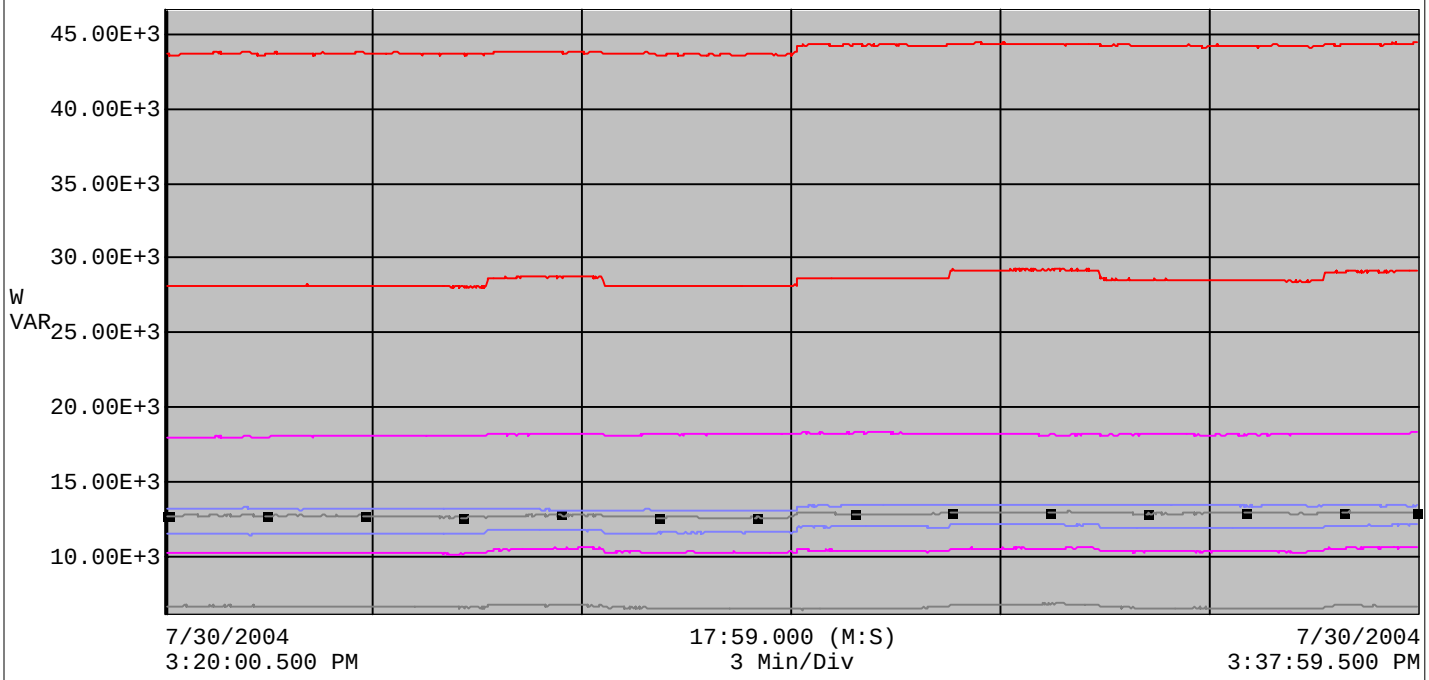
7/30/2004 - 3:20:00.000 PM
Val
55.80 — Arms Line1
76.20 — Arms Line2
66.10 — Arms Line3
0.500 — Arms Neutral



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/30/2004	3:20:00.500 PM	3.186	2.800	3.400	%
Aunb(IEEE)	7/30/2004	3:20:00.500 PM	15.92	15.20	16.60	%

7/30/2004 - 3:20:00.000 PM
Val
3.200 —— Vunb(IEEE)
15.50 —— Aunb(IEEE)

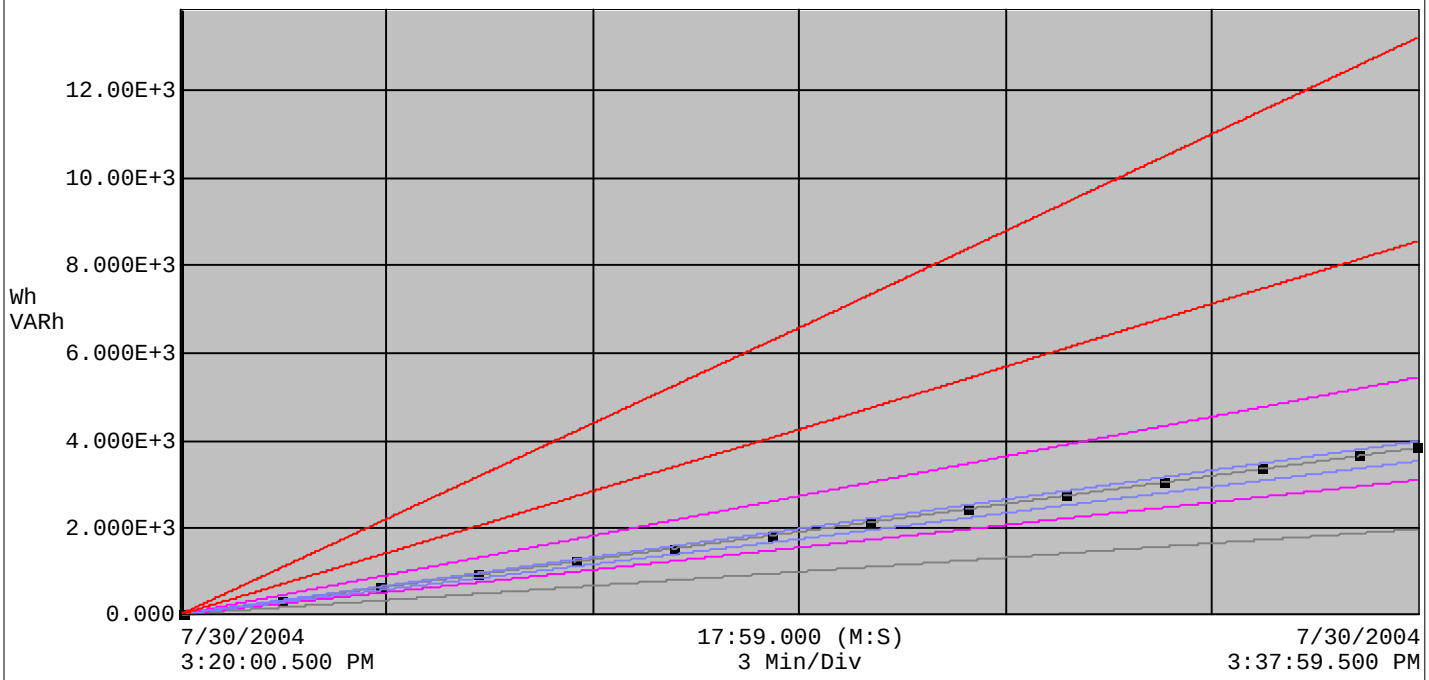
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/30/2004	3:20:00.500 PM	12.69E+3	12.44E+3	12.91E+3	W
W Line2	7/30/2004	3:20:00.500 PM	18.07E+3	17.85E+3	18.22E+3	W
W Line3	7/30/2004	3:20:00.500 PM	13.19E+3	12.91E+3	13.40E+3	W
W Sum of Phases	7/30/2004	3:20:00.500 PM	43.95E+3	43.50E+3	44.40E+3	W
VAR Line1	7/30/2004	3:20:00.500 PM	6.498E+3	6.319E+3	6.722E+3	VAR
VAR Line2	7/30/2004	3:20:00.500 PM	10.25E+3	10.04E+3	10.51E+3	VAR
VAR Line3	7/30/2004	3:20:00.500 PM	11.69E+3	11.34E+3	12.09E+3	VAR
VAR Sum of Phases	7/30/2004	3:20:00.500 PM	28.44E+3	27.97E+3	29.17E+3	VAR

7/30/2004 - 3:20:00.000 PM
Val
12.58E+3 — W Line1
17.91E+3 — W Line2
13.13E+3 — W Line3
43.62E+3 — W Sum of Phases
6.540E+3 — VAR Line1
10.08E+3 — VAR Line2
11.43E+3 — VAR Line3
28.05E+3 — VAR Sum of Phases

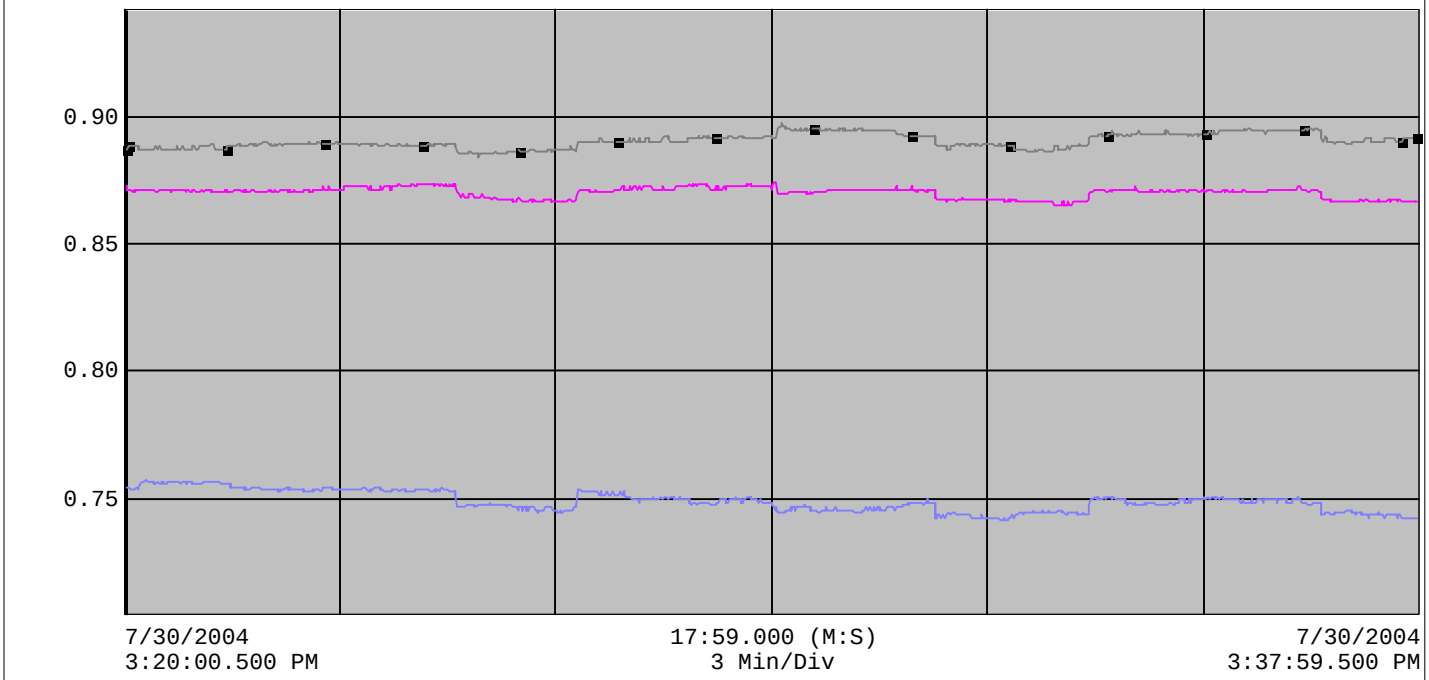
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/30/2004	3:20:00.500 PM	1.898E+3	3.487	3.808E+3	Wh
W-hours Line2	7/30/2004	3:20:00.500 PM	2.708E+3	4.963	5.420E+3	Wh
W-hours Line3	7/30/2004	3:20:00.500 PM	1.971E+3	3.622	3.956E+3	Wh
W-hours Sum of Phases	7/30/2004	3:20:00.500 PM	6.577E+3	12.07	13.18E+3	Wh
VAR-hours Line1	7/30/2004	3:20:00.500 PM	976.3	1.844	1.949E+3	VARh
VAR-hours Line2	7/30/2004	3:20:00.500 PM	1.533E+3	2.816	3.076E+3	VARh
VAR-hours Line3	7/30/2004	3:20:00.500 PM	1.738E+3	3.211	3.507E+3	VARh
VAR-hours Sum of Phases	7/30/2004	3:20:00.500 PM	4.248E+3	7.812	8.532E+3	VARh

7/30/2004 - 3:20:00.000 PM
Val
3.487 — W-hours Line1
4.963 — W-hours Line2
3.622 — W-hours Line3
12.07 — W-hours Sum of Phases
1.844 — VAR-hours Line1
2.816 — VAR-hours Line2
3.211 — VAR-hours Line3
7.812 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/30/2004	3:20:00.500 PM	0.890	0.884	0.897	
PF Line2	7/30/2004	3:20:00.500 PM	0.870	0.865	0.874	
PF Line3	7/30/2004	3:20:00.500 PM	0.748	0.741	0.757	

7/30/2004 - 3:20:00.000 PM
Val
0.887 — PF Line1
0.872 — PF Line2
0.754 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F2\073004-F2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-2 ,

Comments
Recording at motor leads of motor sarter, GPA Meter # 86-404-731

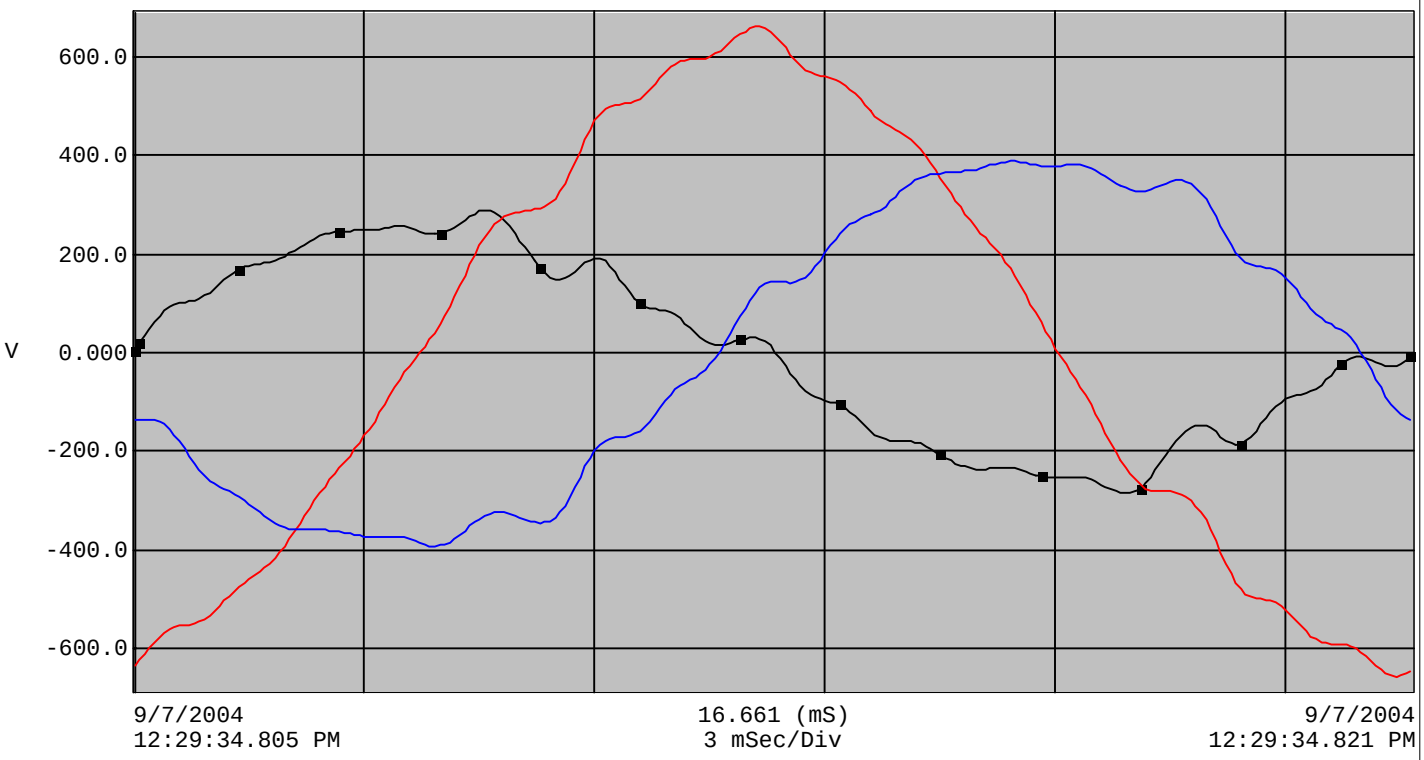
GWA Water Pumping Station Assessment				
Station Name: F-03	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/20/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.45	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	2	0.1	2
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.7	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	2	0.1	34
Overload Relay	5.0%	2	0.1	32, 34
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.06	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.4**

Comments:

WPS F-3 - Photo

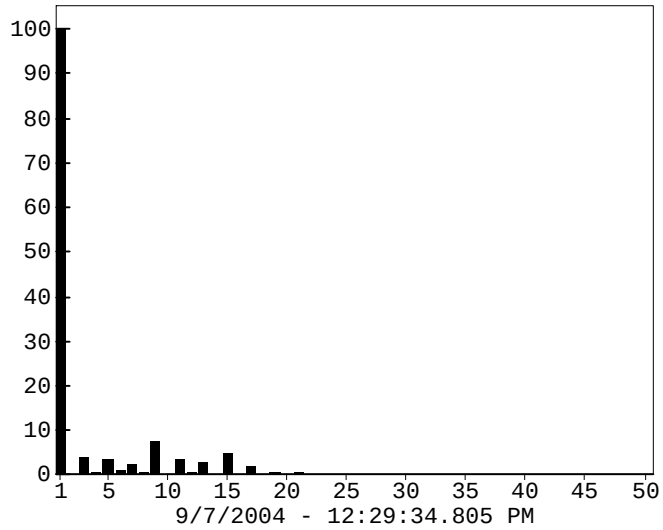
Recording Start Date	9/7/2004 - 12:29:34 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/7/2004	12:29:34.805 PM	16.661	180.3	V
Waveform V2	9/7/2004	12:29:34.805 PM	16.661	434.7	V
Waveform V3	9/7/2004	12:29:34.805 PM	16.661	280.9	V

Waveform V1
180.26 Vrms, 11.97 %THD

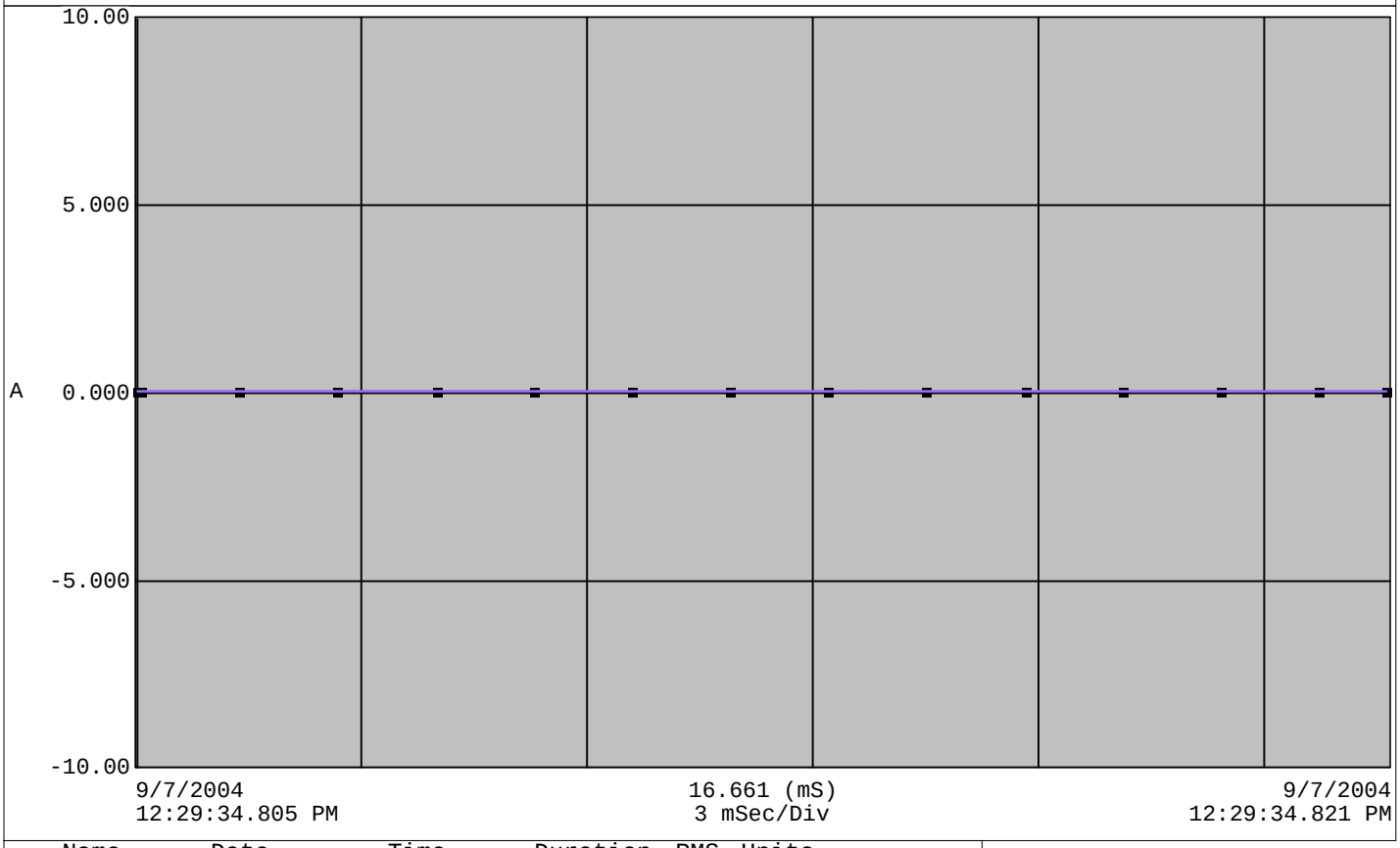


9/7/2004 - 12:29:34.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

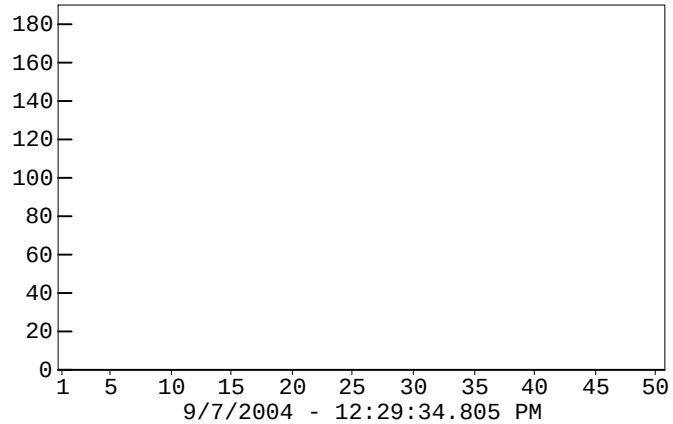
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.1
H02	0.4	H19	0.5	H36	0.0
H03	4.0	H20	0.1	H37	0.0
H04	0.5	H21	0.8	H38	0.0
H05	3.8	H22	0.1	H39	0.0
H06	0.9	H23	0.2	H40	0.0
H07	2.6	H24	0.0	H41	0.0
H08	0.6	H25	0.1	H42	0.0
H09	7.3	H26	0.1	H43	0.0
H10	0.3	H27	0.1	H44	0.0
H11	3.7	H28	0.1	H45	0.0
H12	0.5	H29	0.1	H46	0.0
H13	2.7	H30	0.1	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	5.0	H32	0.1	H49	0.0
H16	0.1	H33	0.1	H50	0.0
H17	1.9	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/7/2004	12:29:34.805 PM	16.661	0.000	A
Waveform I2	9/7/2004	12:29:34.805 PM	16.661	0.000	A
Waveform I3	9/7/2004	12:29:34.805 PM	16.661	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD

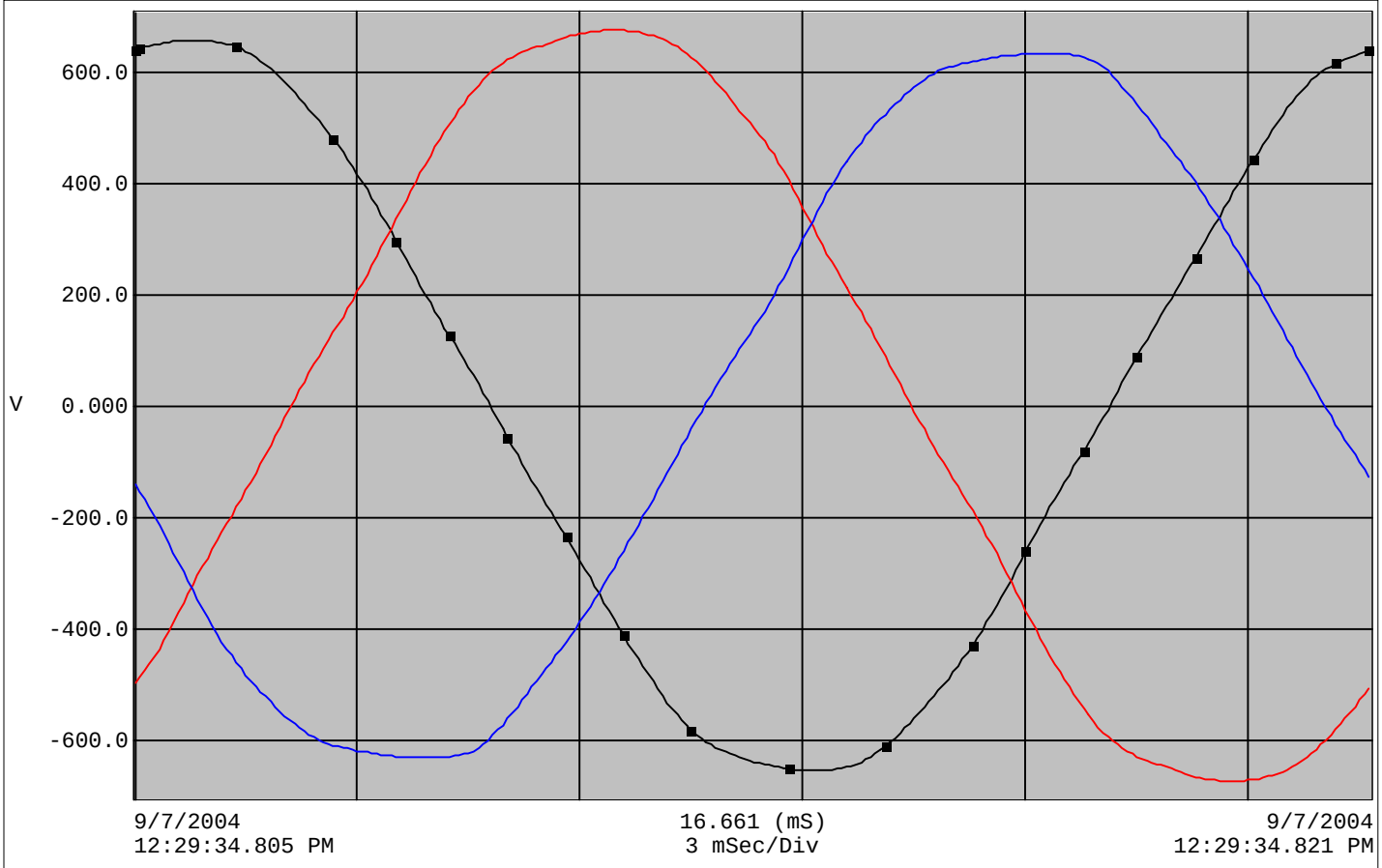


9/7/2004 - 12:29:34.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

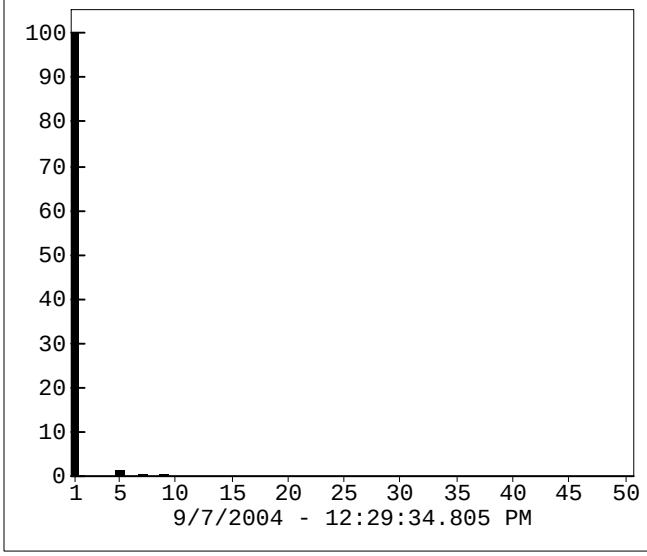
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/7/2004	12:29:34.805 PM	16.661	469.4	V
Waveform U2	9/7/2004	12:29:34.805 PM	16.661	484.3	V
Waveform U3	9/7/2004	12:29:34.805 PM	16.661	458.4	V

Waveform U1
469.45 Vrms, 1.87 %THD



9/7/2004 - 12:29:34.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/7/2004
Start Time: 12:29:34 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F3\090704-F3-Photo.dvb

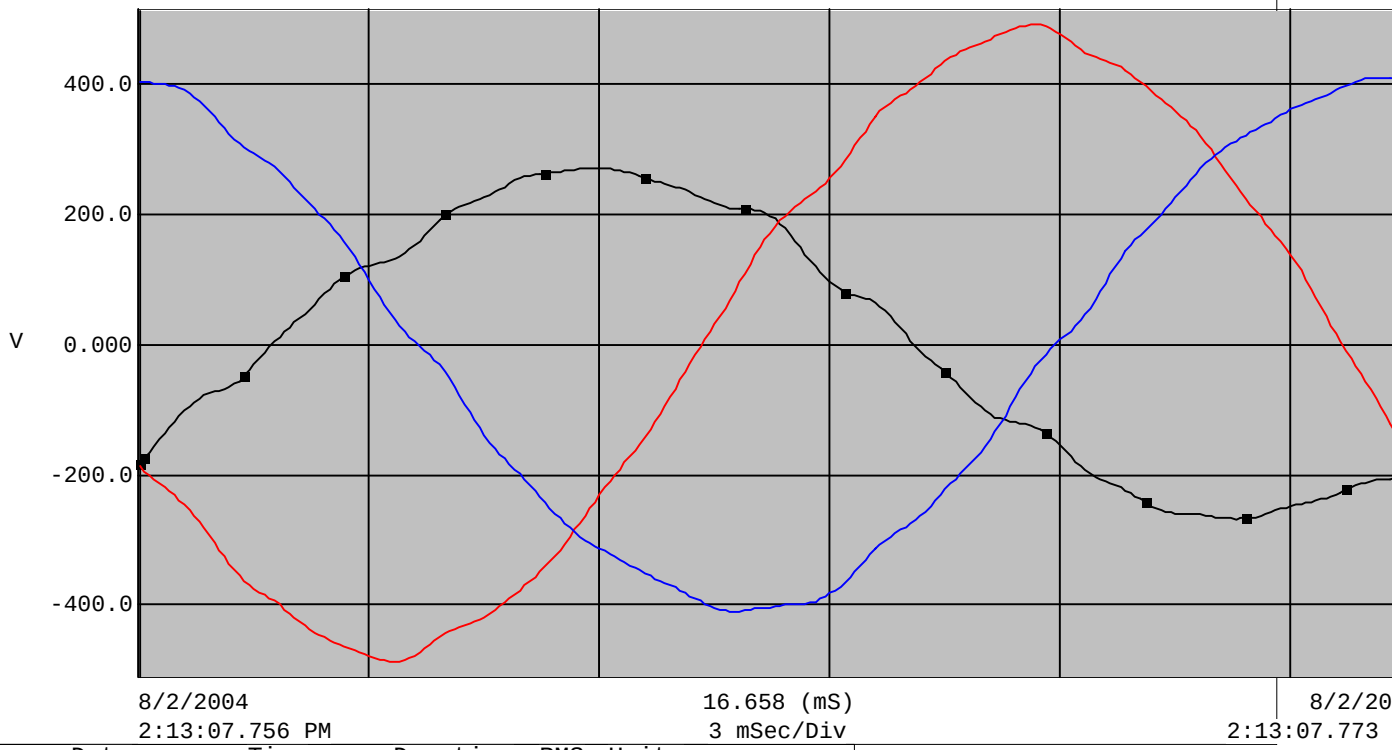
Operator	Test Site
GWA Victor Jardel ,	GWA WPS F-3 ,

Comments

WPS F-3 - Photo

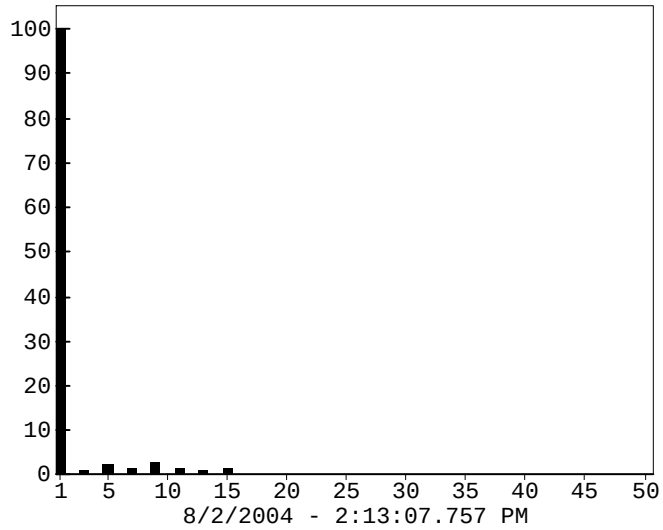
Recording Start Date	8/2/2004 - 2:13:07 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/2/2004	2:13:07.756 PM	16.658	188.7	V
Waveform V2	8/2/2004	2:13:07.756 PM	16.658	336.0	V
Waveform V3	8/2/2004	2:13:07.756 PM	16.658	290.1	V

Waveform V1
188.74 Vrms, 4.81 %THD



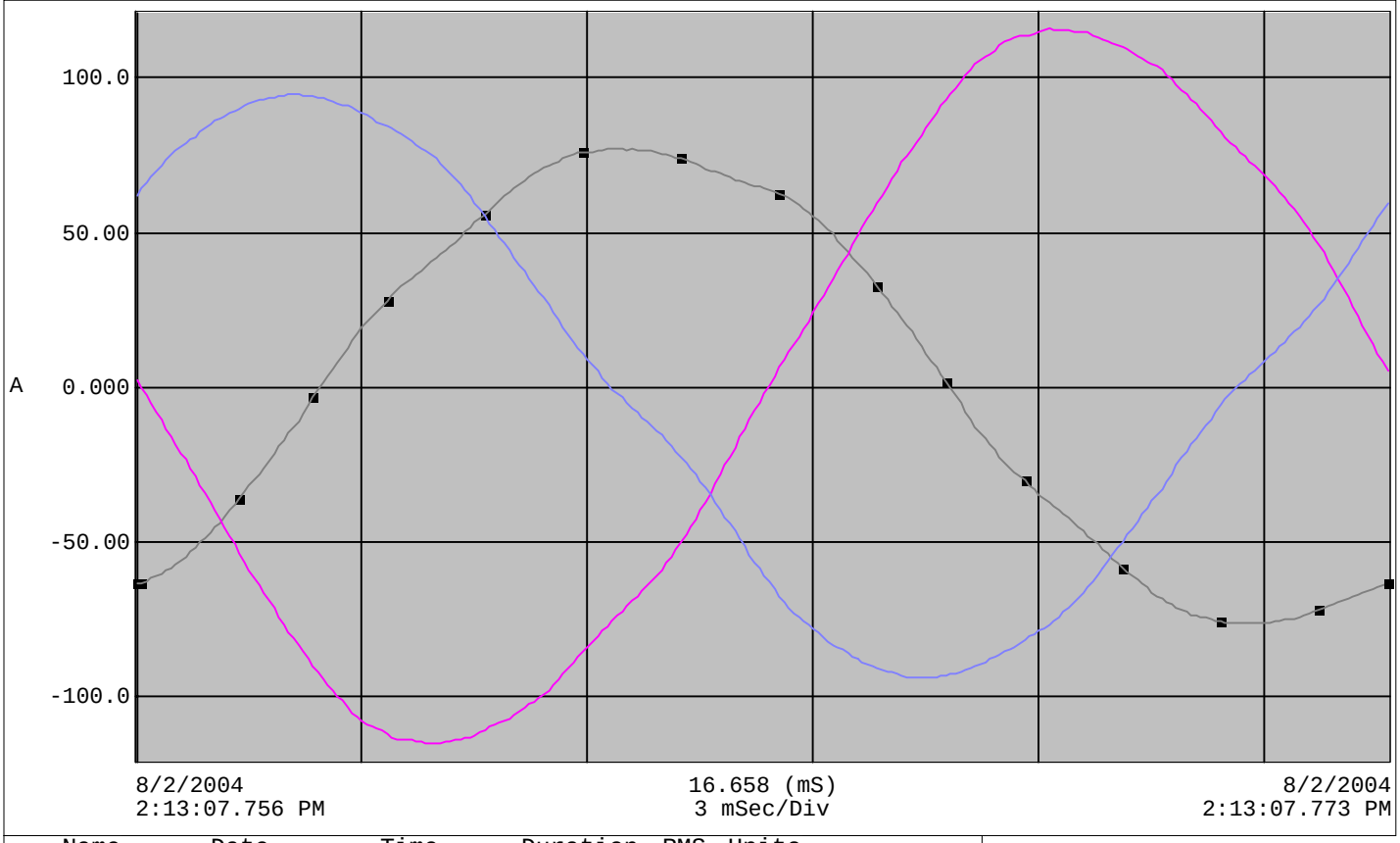
8/2/2004 - 2:13:07.000 PM

Val	
-185.0	Waveform V1
-189.5	Waveform V2
402.8	Waveform V3

Waveform V1

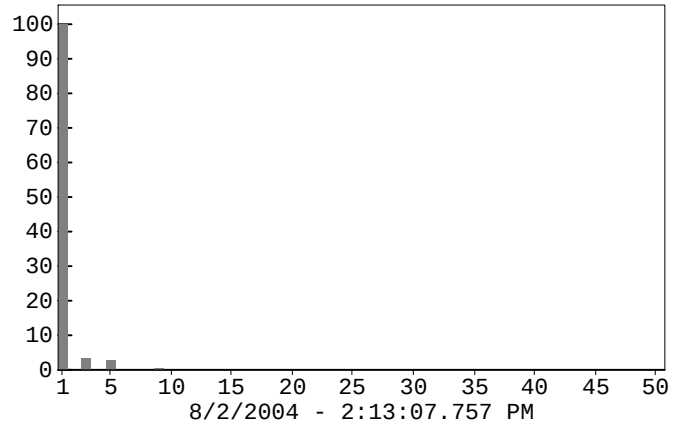
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	0.9	H20	0.0	H37	0.0
H04	0.1	H21	0.4	H38	0.0
H05	2.5	H22	0.0	H39	0.0
H06	0.2	H23	0.1	H40	0.0
H07	1.3	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	2.9	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	1.4	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.9	H30	0.1	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	1.6	H32	0.0	H49	0.0
H16	0.1	H33	0.1	H50	0.0
H17	0.4	H34	0.1		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/2/2004	2:13:07.756 PM	16.658	55.46	A
Waveform I2	8/2/2004	2:13:07.756 PM	16.658	80.88	A
Waveform I3	8/2/2004	2:13:07.756 PM	16.658	65.11	A

Waveform I1
55.46 Arms, 4.72 %THD



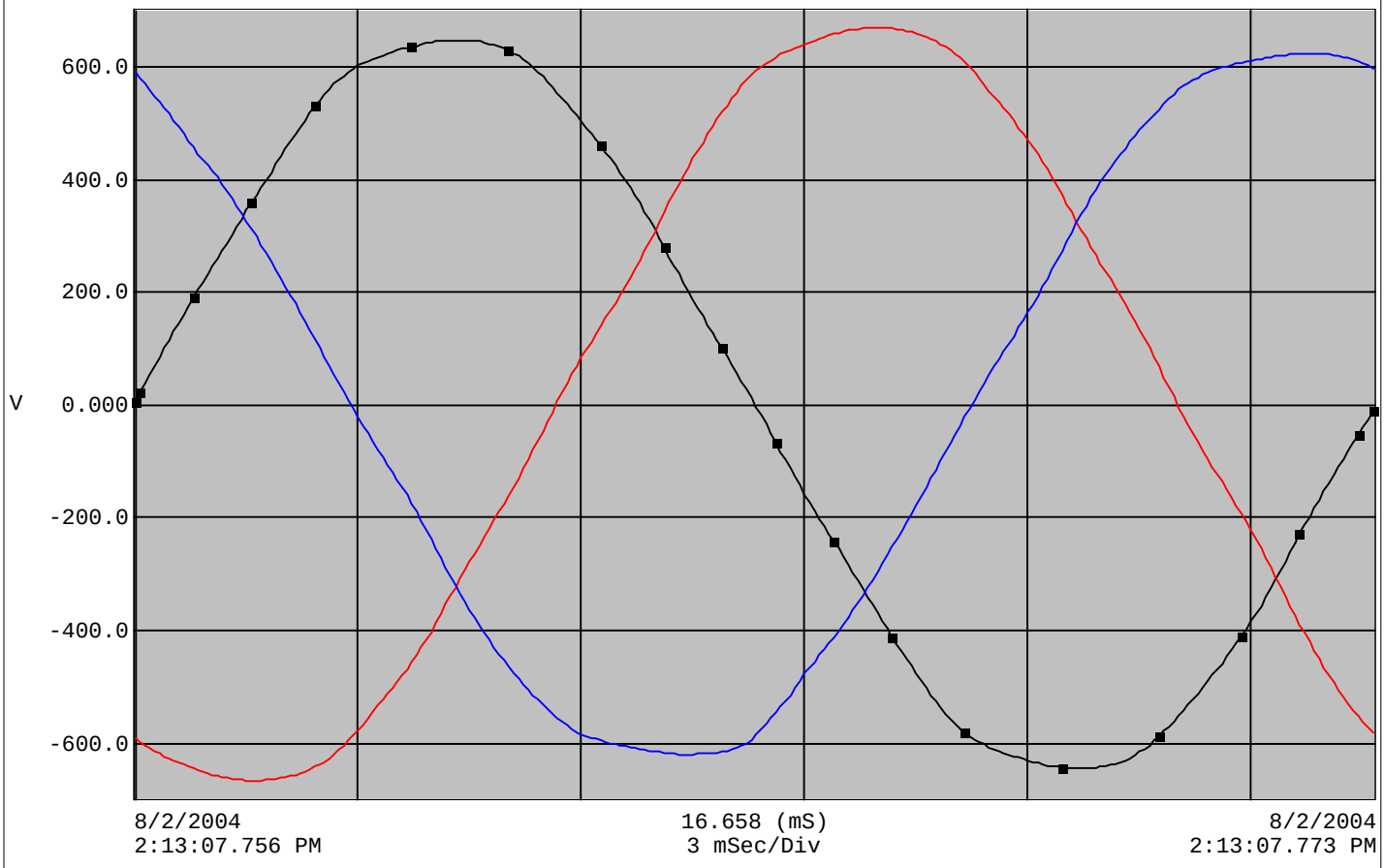
8/2/2004 - 2:13:07.000 PM

Val	
-63.70	Waveform I1
2.000	Waveform I2
61.80	Waveform I3

Waveform I1

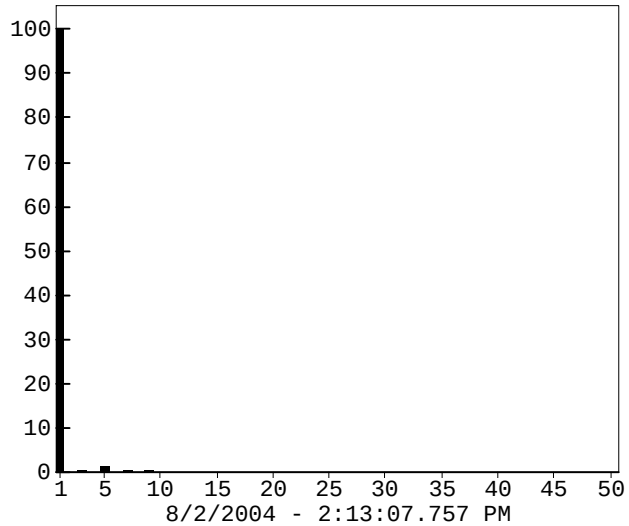
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.1
H03	3.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	3.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.9	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.1	H32	0.1	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.1	H34	0.2		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/2/2004	2:13:07.756 PM	16.658	461.5	V
Waveform U2	8/2/2004	2:13:07.756 PM	16.658	479.4	V
Waveform U3	8/2/2004	2:13:07.756 PM	16.658	450.7	V

Waveform U1
461.50 Vrms, 1.71 %THD



8/2/2004 - 2:13:07.000 PM

	Val	
—	4.400	Waveform U1
—	-592.3	Waveform U2
—	587.9	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.6	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/2/2004
Start Time: 2:13:07 PM
Duration: 0:0.000 (M:S)
W: 10.07E+3 W
VAR: 2.913E+3 W
VA: 10.48E+3 W
Power Factor: 0.961
Displacement Power Factor: 0.963
TAN: 0.279
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F3\080204-F3-Photo.dvb

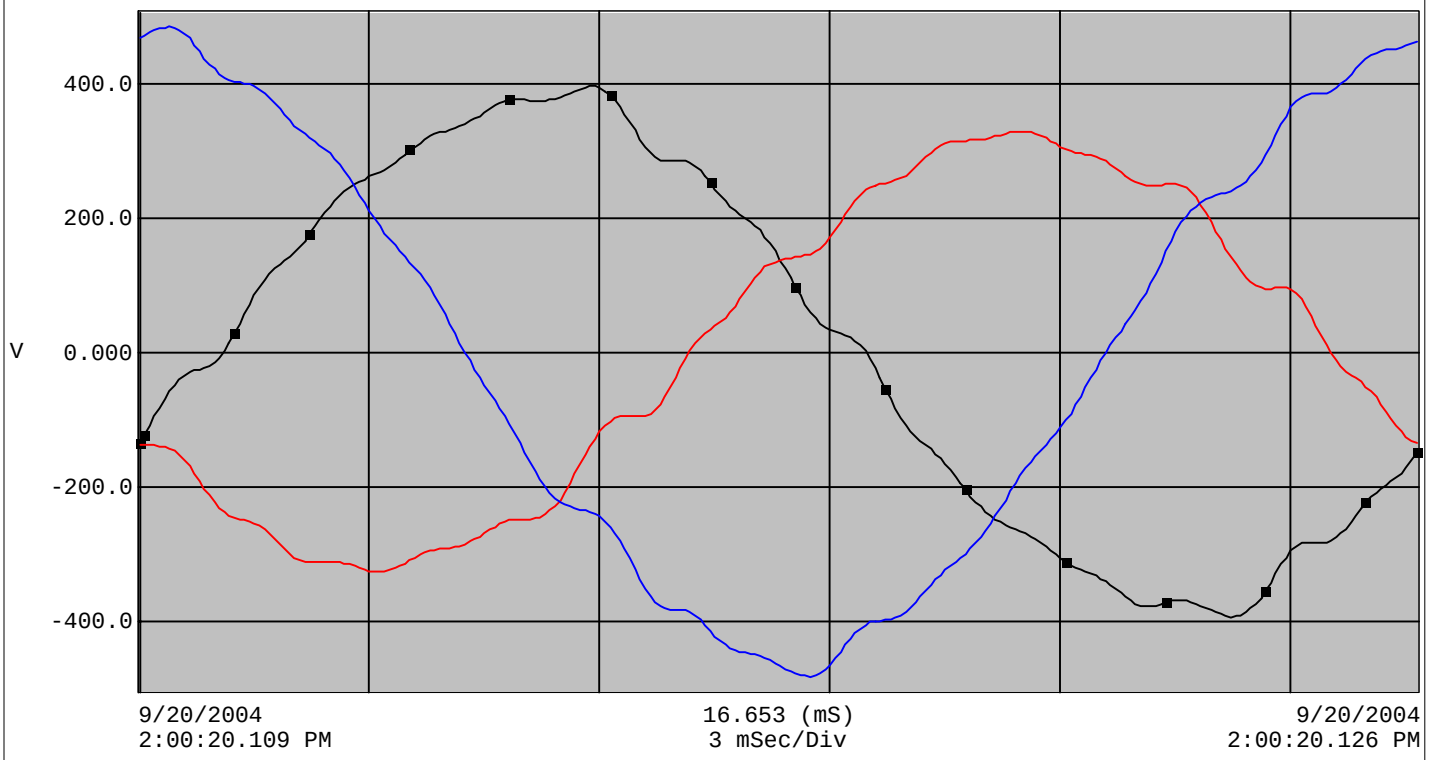
Operator	Test Site
Morikawa &Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-3 ,

Comments

WPS F-3 GPA Power Photo 1

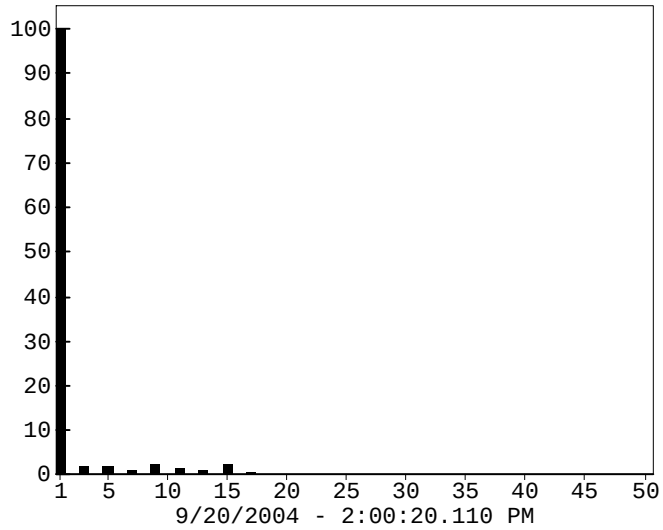
Recording Start Date	9/20/2004 - 2:00:20 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/20/2004	2:00:20.109 PM	16.653	268.5	V
Waveform V2	9/20/2004	2:00:20.109 PM	16.653	226.0	V
Waveform V3	9/20/2004	2:00:20.109 PM	16.653	324.7	V

Waveform V1
268.48 Vrms, 5.03 %THD



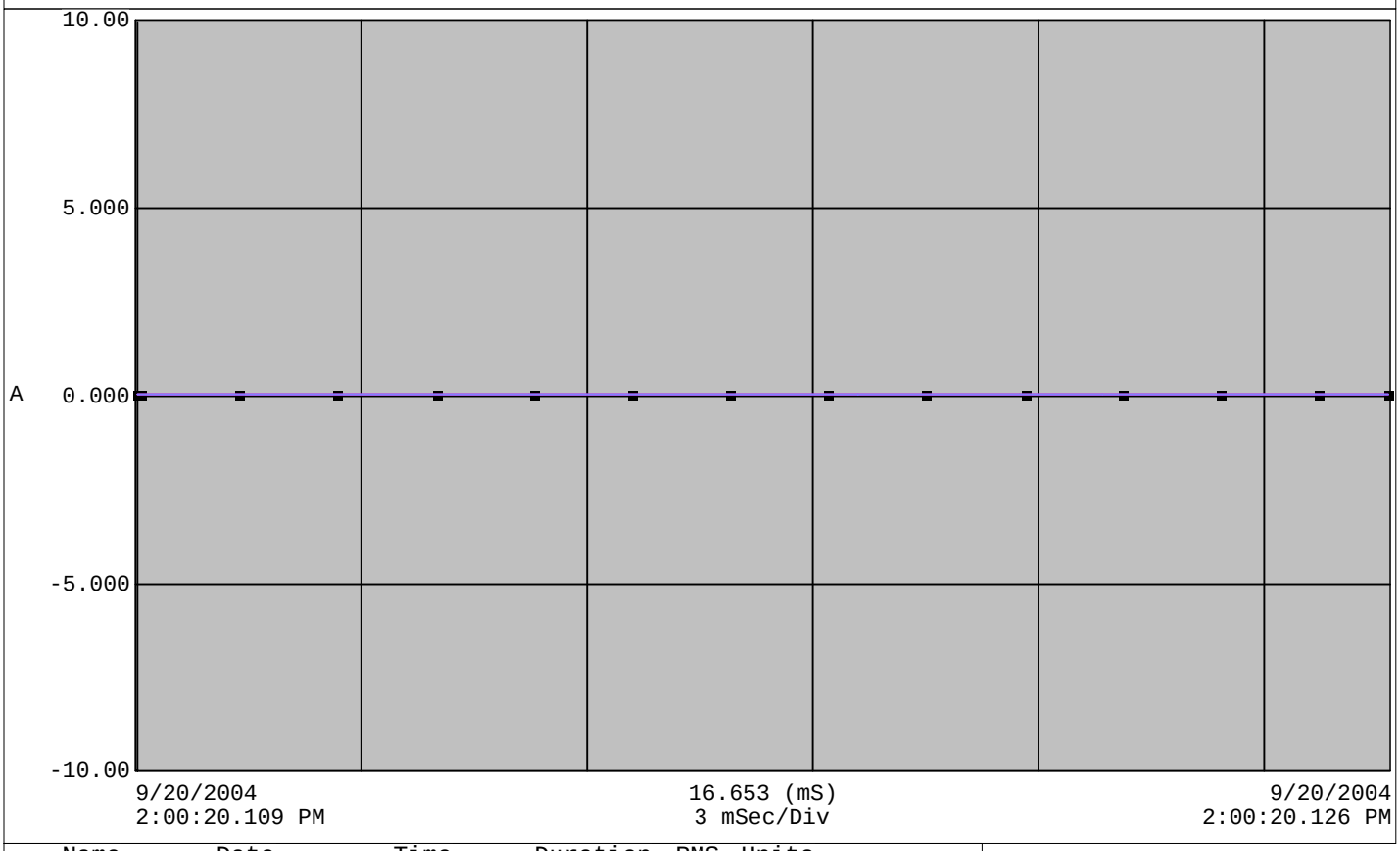
9/20/2004 - 2:00:20.000 PM

	Val	
—	-136.7	Waveform V1
—	-137.1	Waveform V2
—	467.8	Waveform V3

Waveform V1

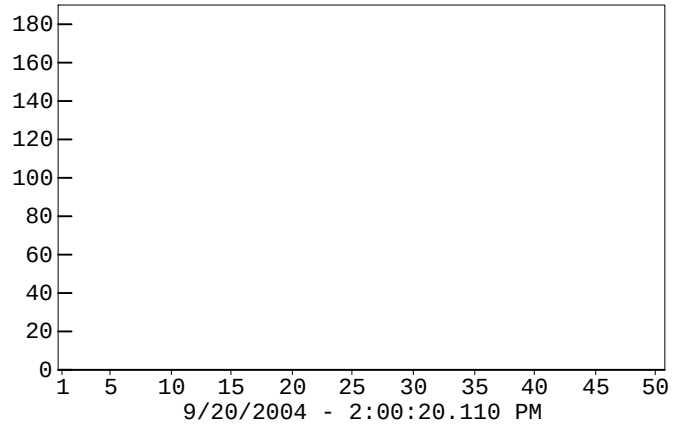
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.2	H36	0.0
H03	1.8	H20	0.1	H37	0.0
H04	0.1	H21	0.4	H38	0.0
H05	2.0	H22	0.0	H39	0.0
H06	0.2	H23	0.1	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.2	H25	0.0	H42	0.0
H09	2.4	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	1.6	H28	0.0	H45	0.0
H12	0.2	H29	0.1	H46	0.0
H13	1.0	H30	0.0	H47	0.0
H14	0.1	H31	0.1	H48	0.0
H15	2.5	H32	0.0	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.7	H34	0.0		

Waveform - Current
Frequency: 60.05 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/20/2004	2:00:20.109 PM	16.653	0.000	A
Waveform I2	9/20/2004	2:00:20.109 PM	16.653	0.000	A
Waveform I3	9/20/2004	2:00:20.109 PM	16.653	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



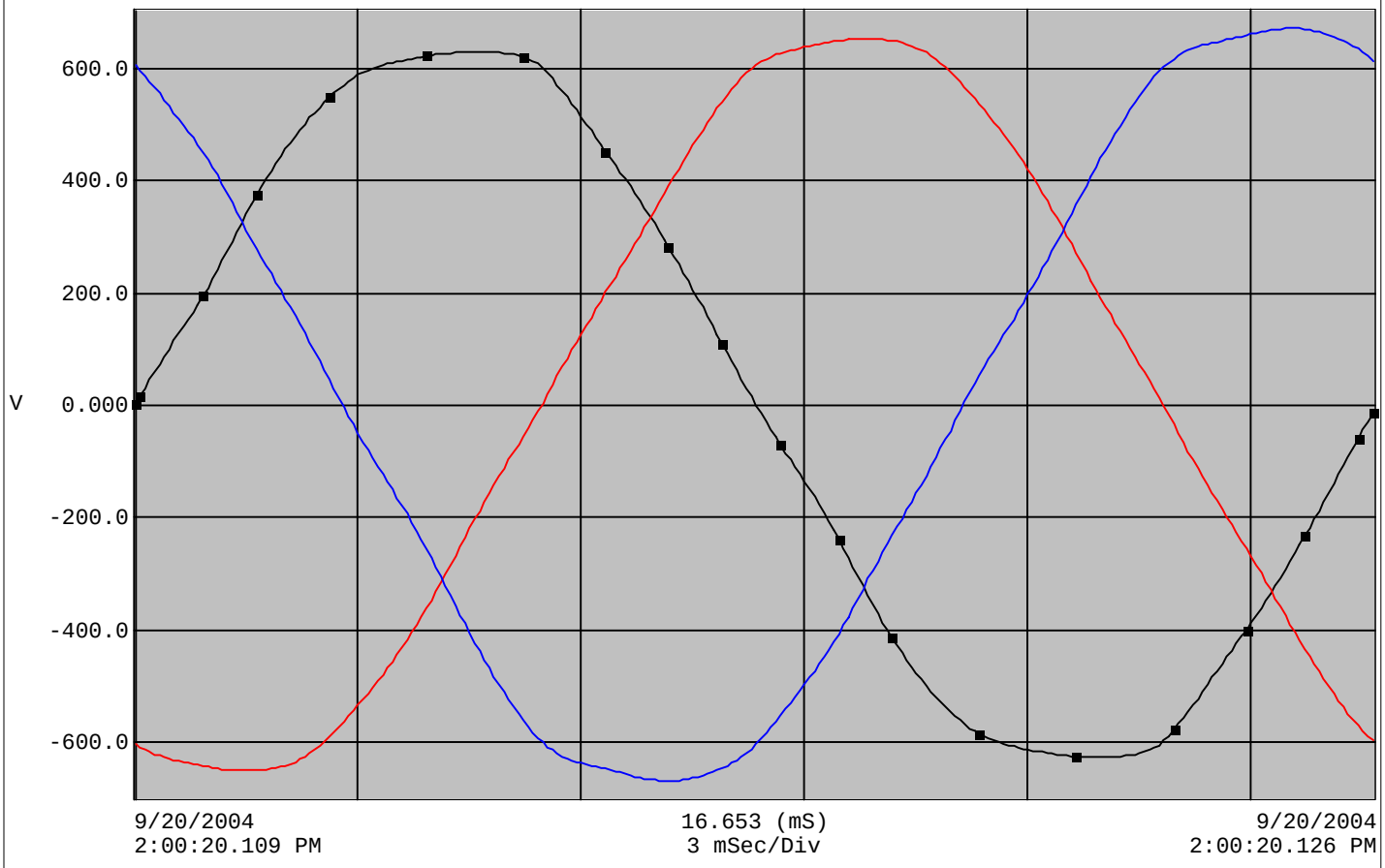
9/20/2004 - 2:00:20.000 PM

Val	
0.000	Waveform I1
0.000	Waveform I2
0.000	Waveform I3

Waveform I1

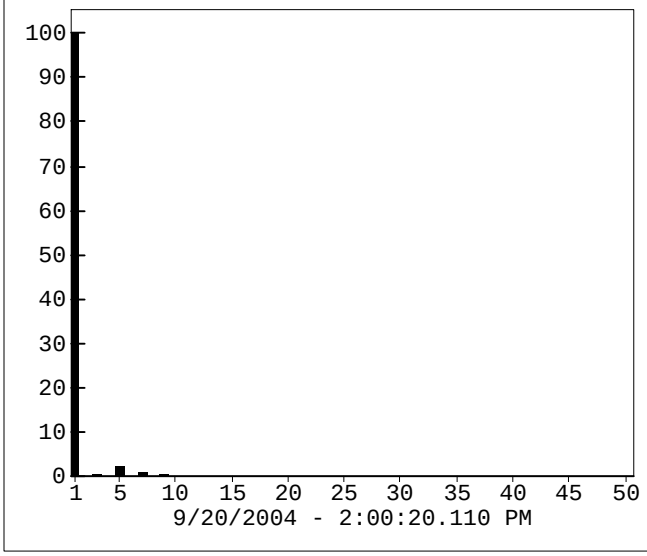
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/20/2004	2:00:20.109 PM	16.653	457.3	V
Waveform U2	9/20/2004	2:00:20.109 PM	16.653	468.9	V
Waveform U3	9/20/2004	2:00:20.109 PM	16.653	483.2	V

Waveform U1
457.33 Vrms, 2.72 %THD



9/20/2004 - 2:00:20.000 PM

	Val	
—	0.400	Waveform U1
—	-604.9	Waveform U2
—	604.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.6	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	2.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/20/2004
Start Time: 2:00:20 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F3\092004-F3 GPA Power Photo 1.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	WPS F-3 - Photo Prior to Adjustment ,

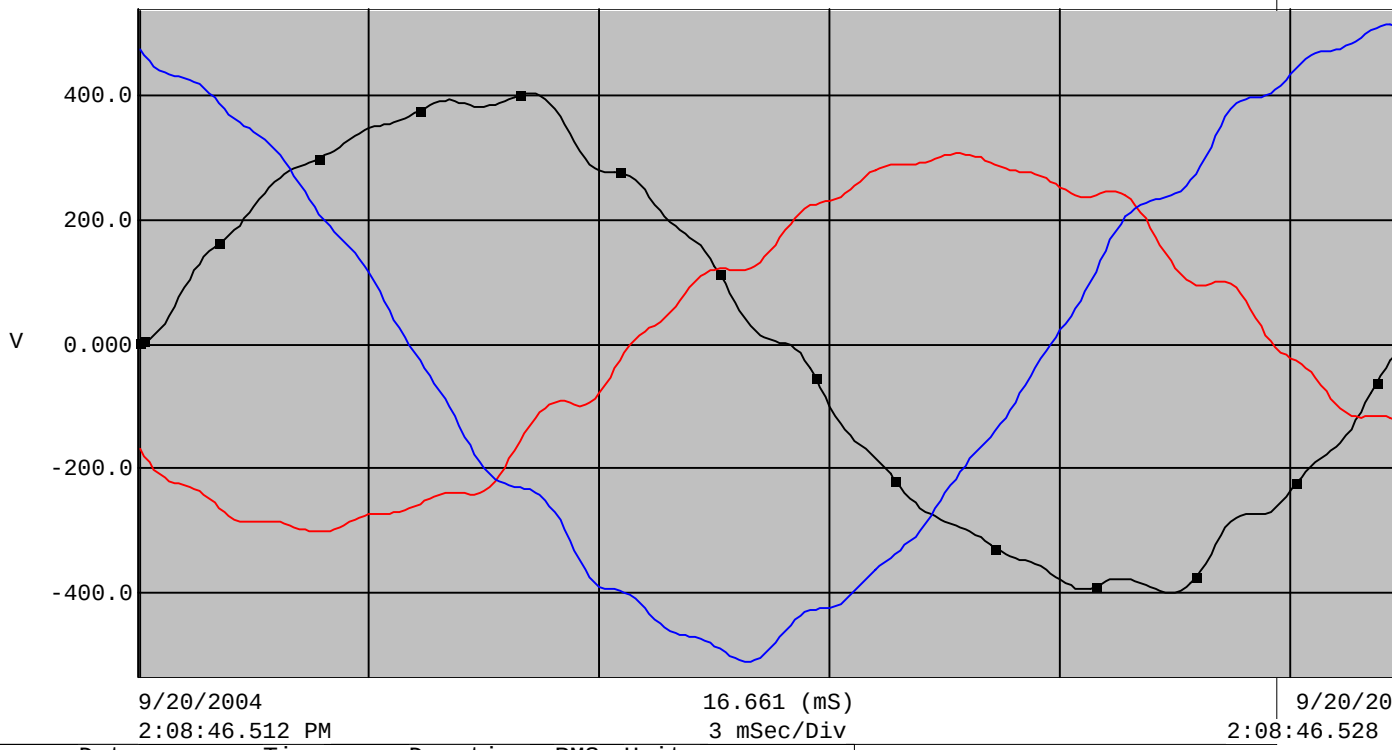
Comments

Snapshot prior to Transformer Adjustment. 3.1% unbalance. Station operating on Generator Power. Neutral voltage shift.

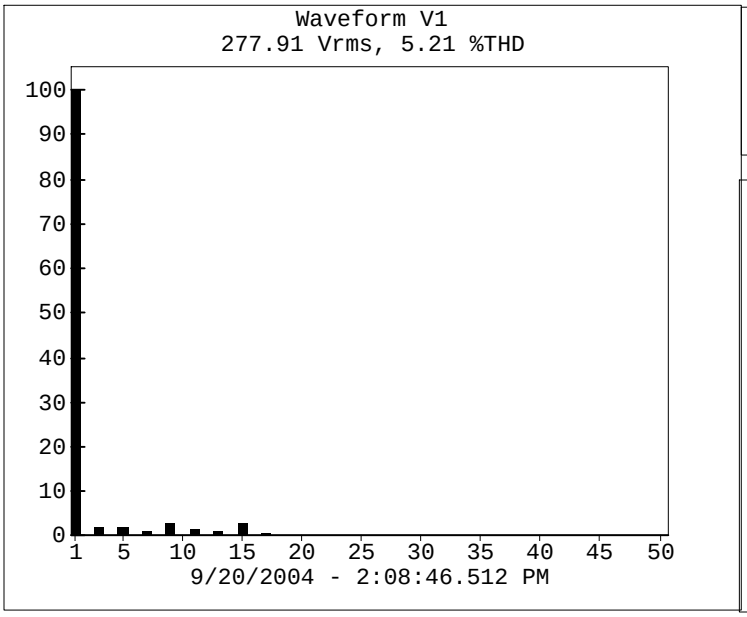
WPS F-3 GPA Power Photo 2

Recording Start Date	9/20/2004 - 2:08:46 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/20/2004	2:08:46.512 PM	16.661	277.9	V
Waveform V2	9/20/2004	2:08:46.512 PM	16.661	209.7	V
Waveform V3	9/20/2004	2:08:46.512 PM	16.661	342.0	V

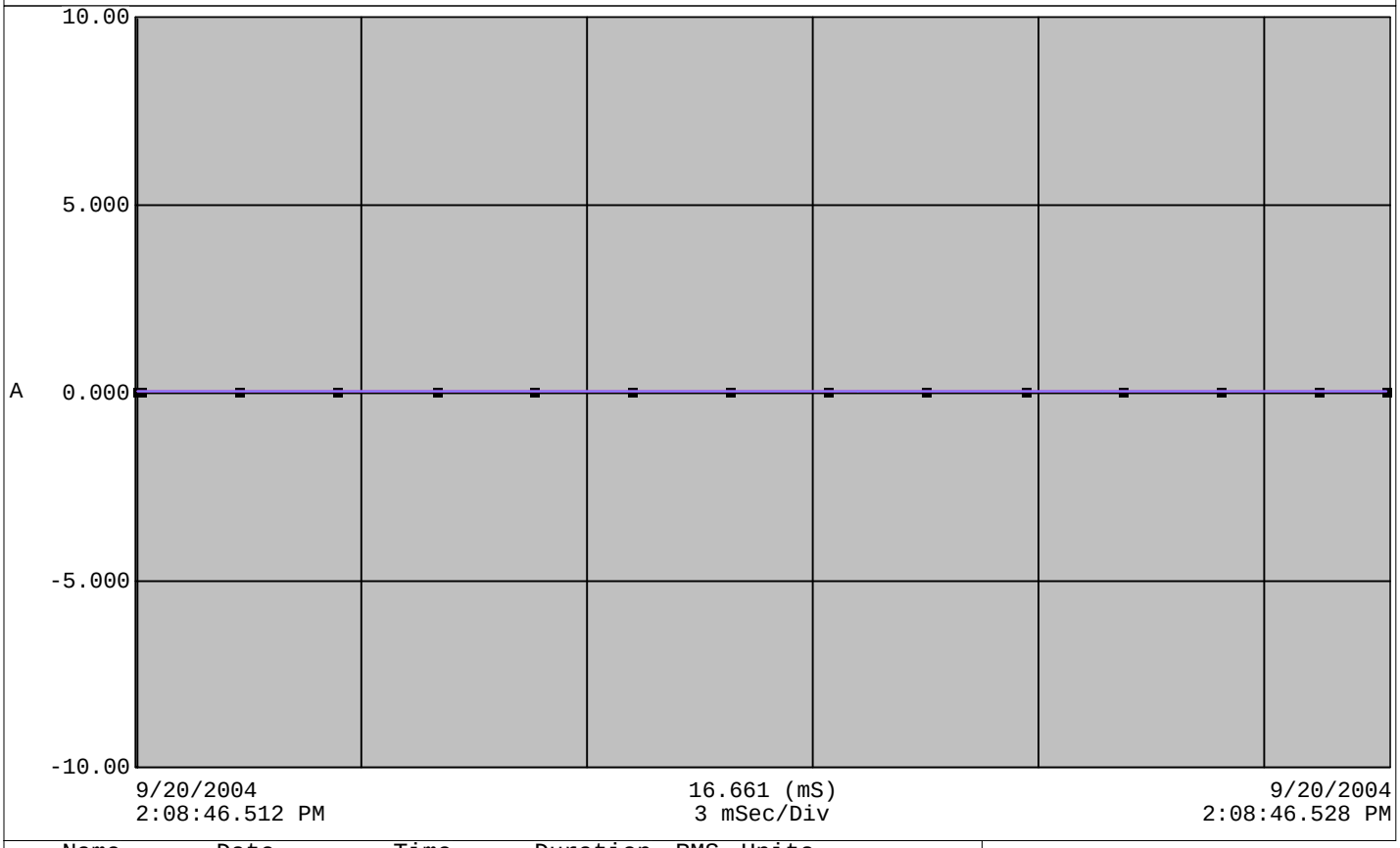


9/20/2004 - 2:08:46.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

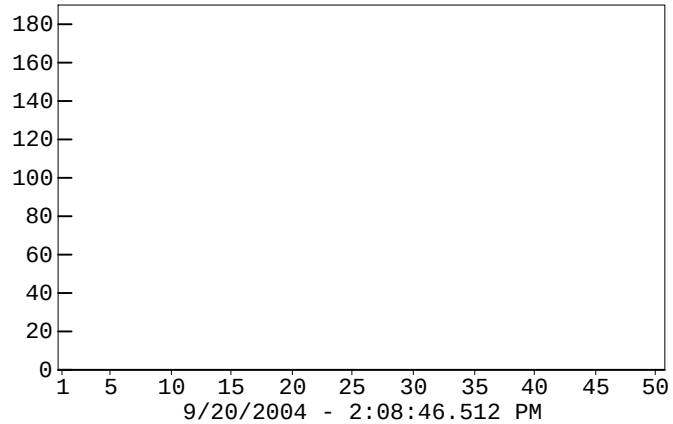
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.3	H36	0.0
H03	1.8	H20	0.0	H37	0.0
H04	0.0	H21	0.4	H38	0.0
H05	2.1	H22	0.0	H39	0.0
H06	0.3	H23	0.1	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.2	H25	0.0	H42	0.0
H09	2.6	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	1.7	H28	0.0	H45	0.0
H12	0.2	H29	0.0	H46	0.0
H13	1.1	H30	0.0	H47	0.0
H14	0.1	H31	0.1	H48	0.0
H15	2.6	H32	0.0	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.7	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/20/2004	2:08:46.512 PM	16.661	0.000	A
Waveform I2	9/20/2004	2:08:46.512 PM	16.661	0.000	A
Waveform I3	9/20/2004	2:08:46.512 PM	16.661	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD

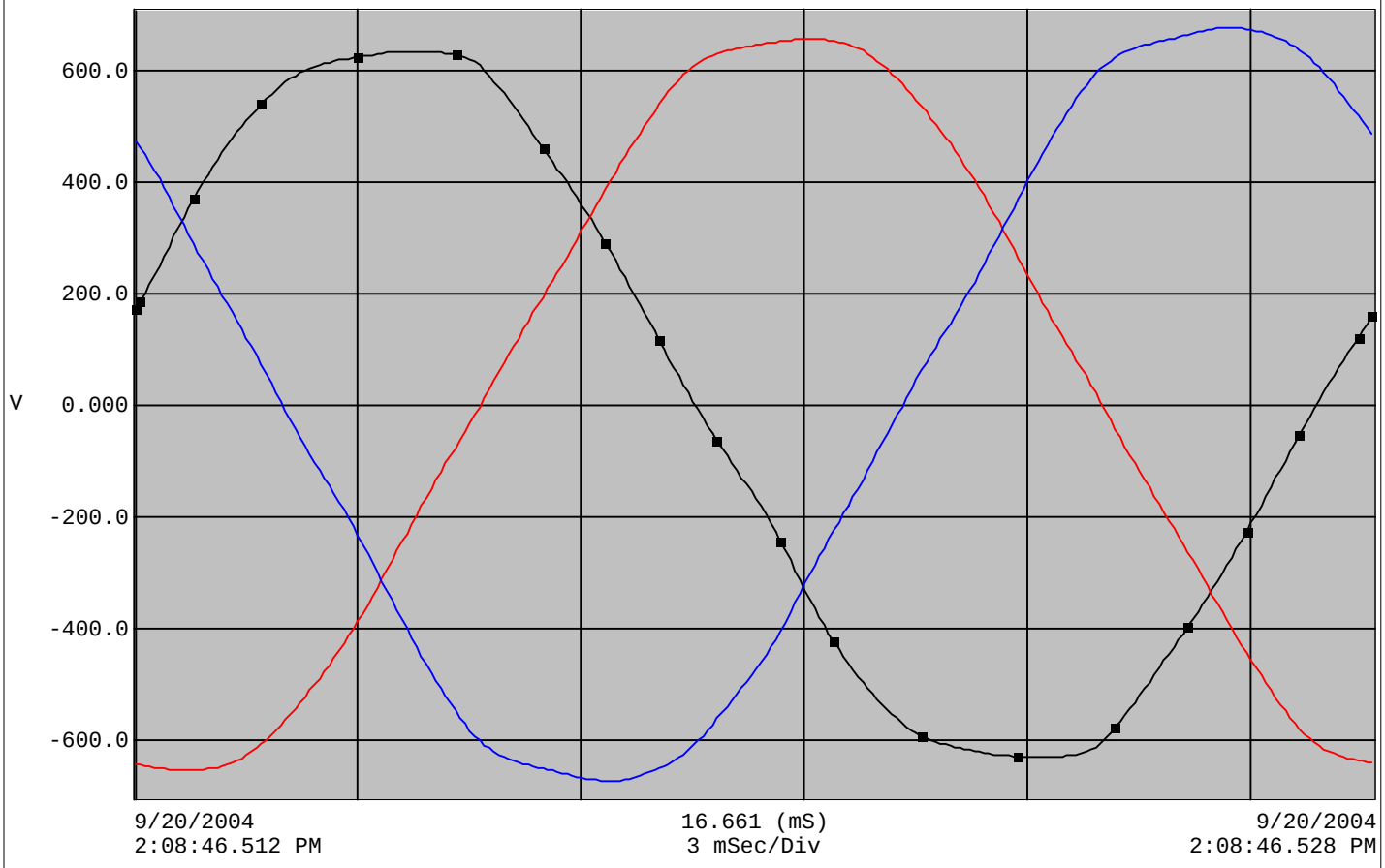


9/20/2004 - 2:08:46.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

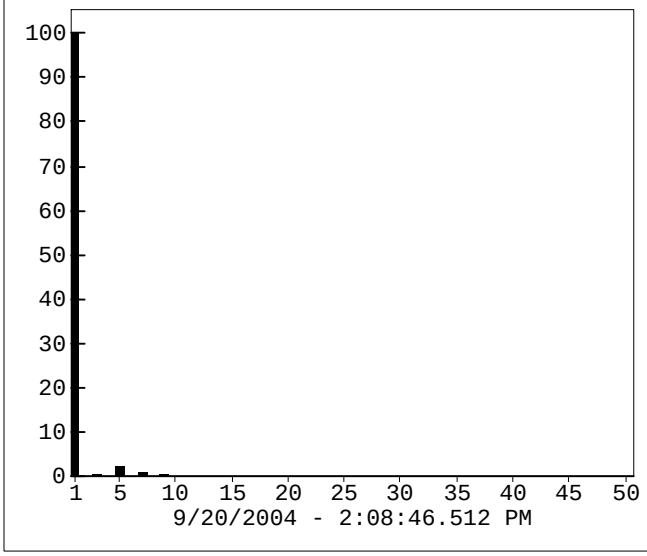
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/20/2004	2:08:46.512 PM	16.661	460.2	V
Waveform U2	9/20/2004	2:08:46.512 PM	16.661	471.7	V
Waveform U3	9/20/2004	2:08:46.512 PM	16.661	486.0	V

Waveform U1
460.20 Vrms, 2.83 %THD



9/20/2004 - 2:08:46.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	2.5	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/20/2004
Start Time: 2:08:46 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F3\092004-F3 GPA Power Photo 2.dvb

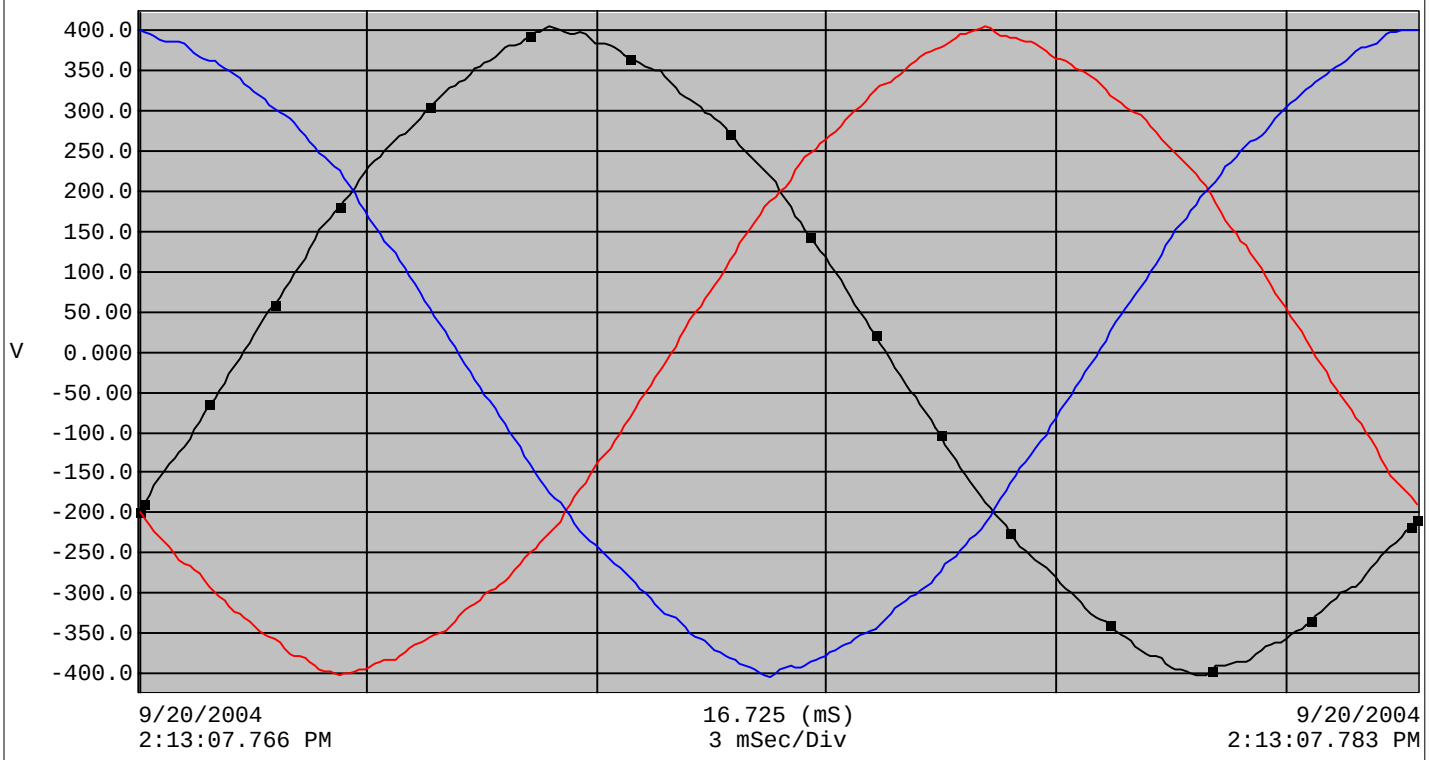
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	WPS F-3 - Transformer Adj Photo 2 ,

Comments
Snapshot with station on generator power. Prior to Adjustments.

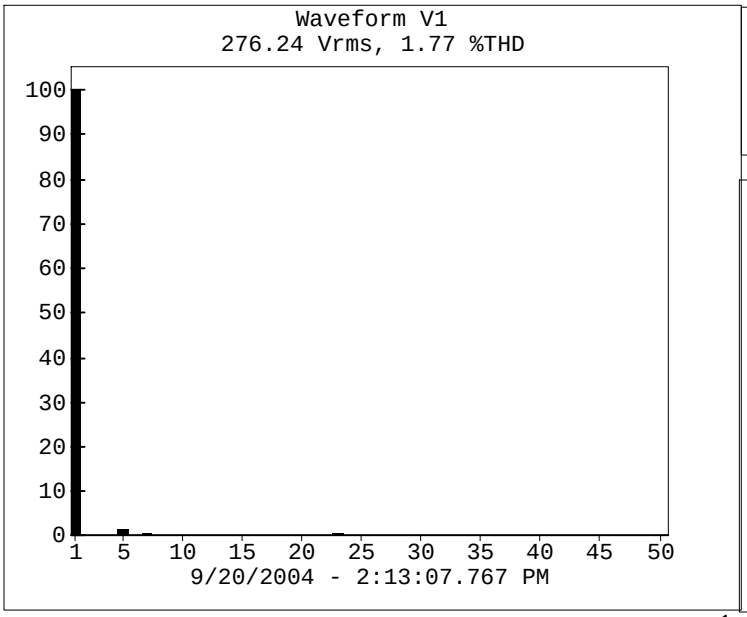
WPS F-3 Gen Power Photo 3

Recording Start Date	9/20/2004 - 2:13:07 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.79 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/20/2004	2:13:07.766 PM	16.725	276.2	V
Waveform V2	9/20/2004	2:13:07.766 PM	16.725	275.9	V
Waveform V3	9/20/2004	2:13:07.766 PM	16.725	275.5	V



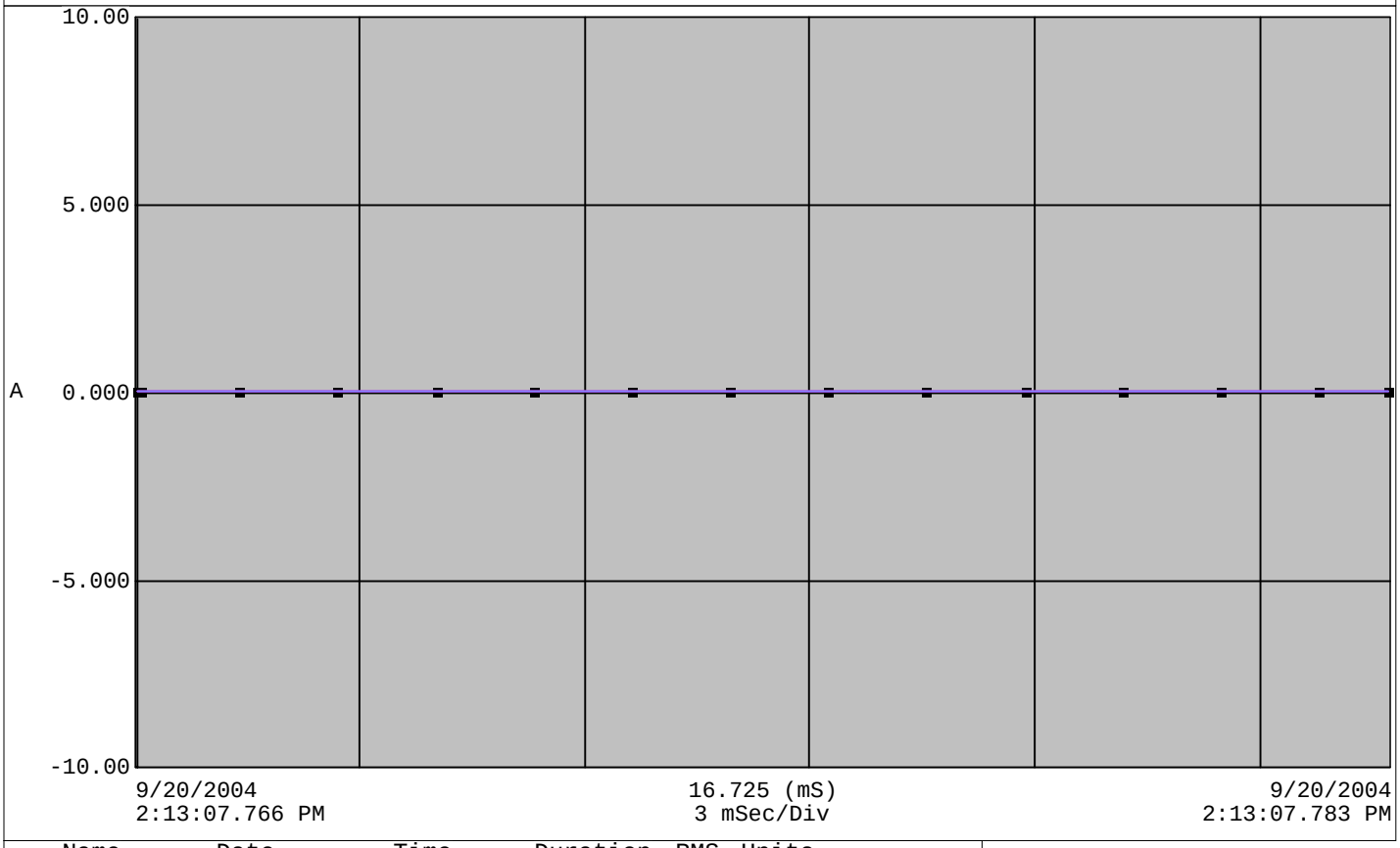
9/20/2004 - 2:13:07.000 PM

Val	
-199.6	Waveform V1
-201.1	Waveform V2
399.5	Waveform V3

Waveform V1

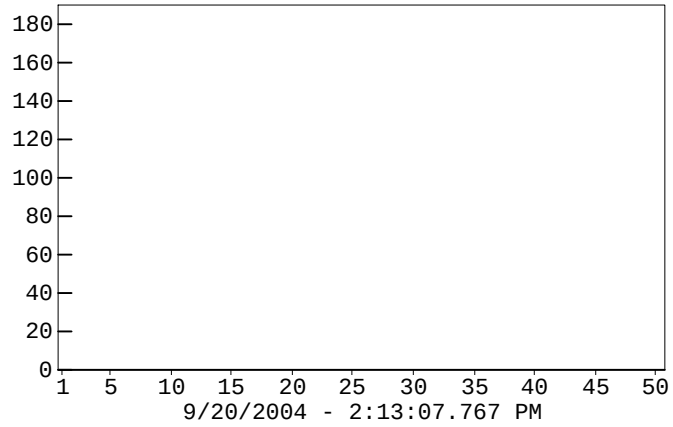
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.2	H36	0.1
H03	0.1	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.5	H40	0.1
H07	0.8	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.1	H47	0.2
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.2
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.2		

Waveform - Current
Frequency: 59.79 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/20/2004	2:13:07.766 PM	16.725	0.000	A
Waveform I2	9/20/2004	2:13:07.766 PM	16.725	0.000	A
Waveform I3	9/20/2004	2:13:07.766 PM	16.725	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



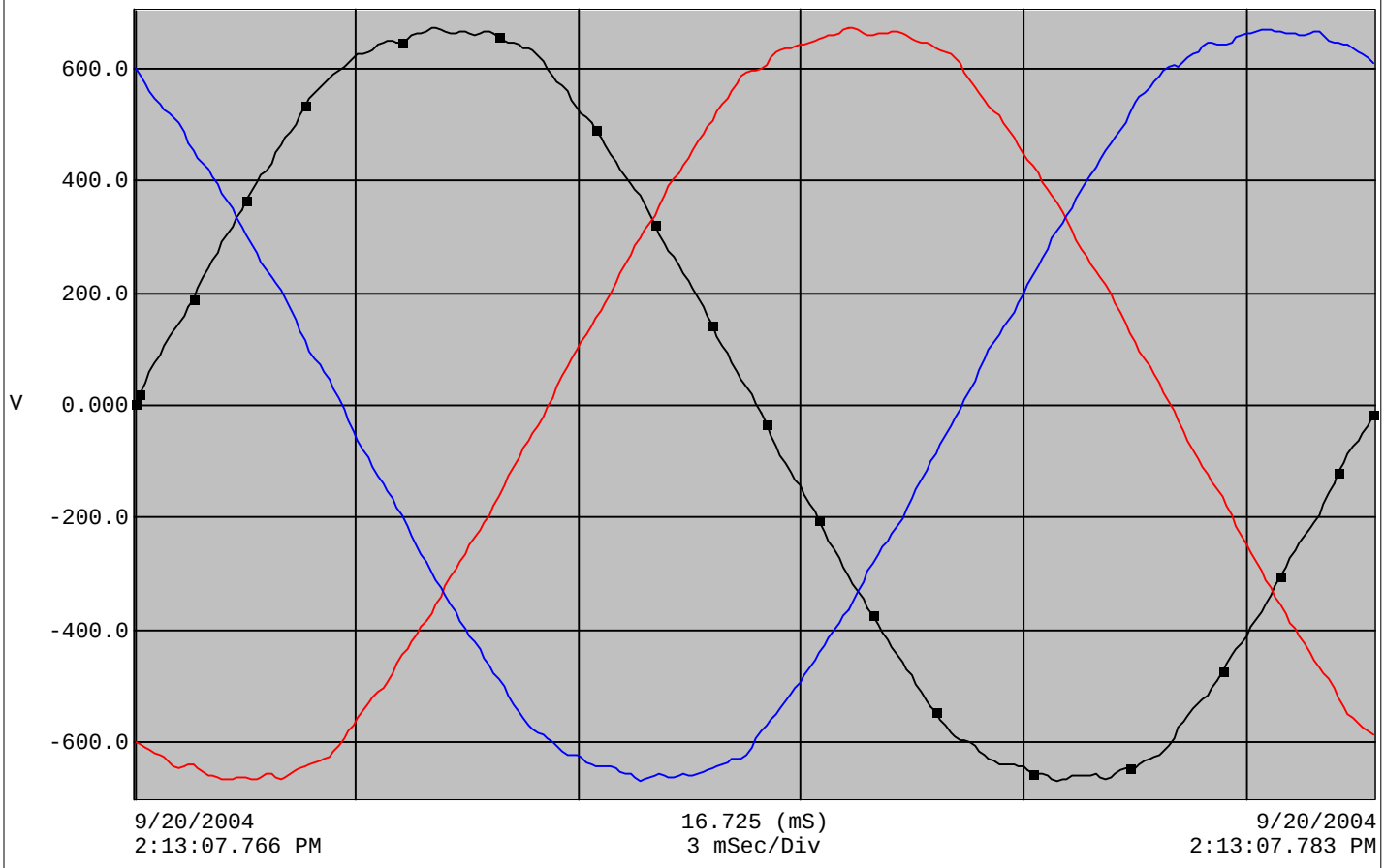
9/20/2004 - 2:13:07.000 PM

Val	
0.000	Waveform I1
0.000	Waveform I2
0.000	Waveform I3

Waveform I1

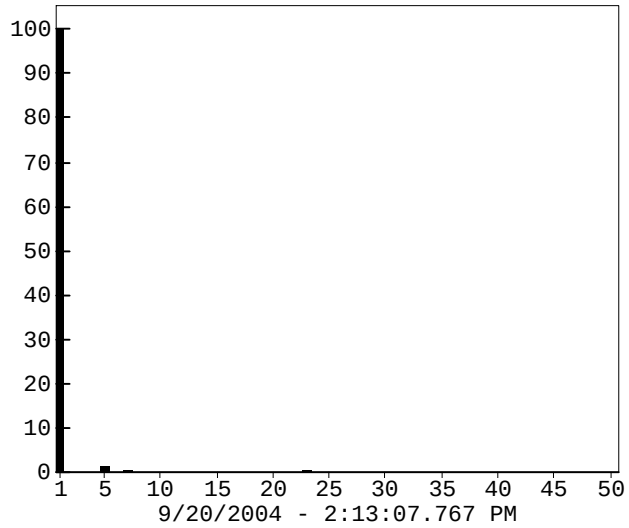
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.79 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/20/2004	2:13:07.766 PM	16.725	478.5	V
Waveform U2	9/20/2004	2:13:07.766 PM	16.725	477.4	V
Waveform U3	9/20/2004	2:13:07.766 PM	16.725	477.8	V

Waveform U1
478.47 Vrms, 1.77 %THD



9/20/2004 - 2:13:07.000 PM

	Val	
—	1.400	Waveform U1
—	-600.6	Waveform U2
—	599.1	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.2	H36	0.1
H03	0.1	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.5	H40	0.0
H07	0.7	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.1	H47	0.2
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.1	H49	0.2
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.2		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/20/2004
Start Time: 2:13:07 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F3\092004-F3 Gen Power Photo 3.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	WPS F-3 - Generator Power - Photo 3 ,

Comments
Snapshot of generator waveform during transformer voltage adjustments. Generator operating the pump.

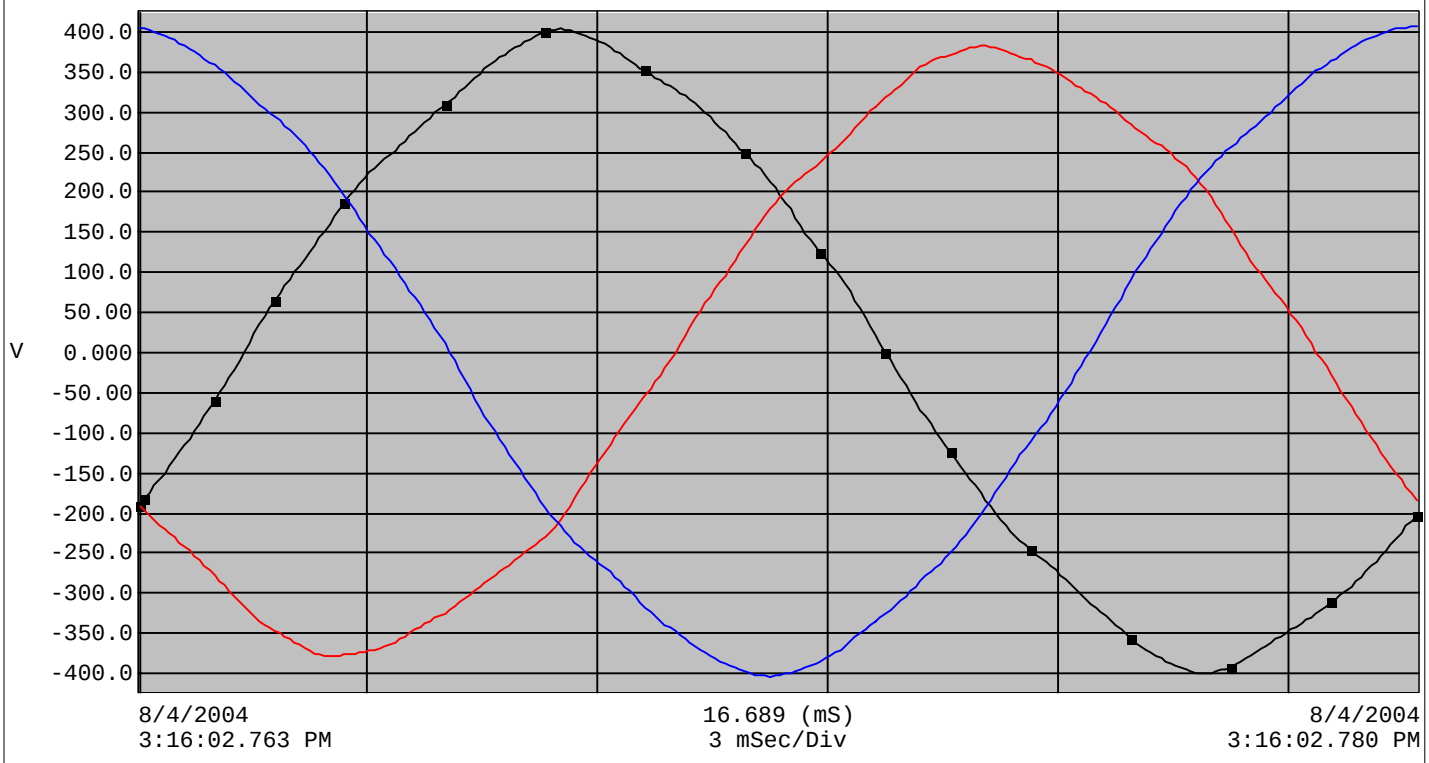
GWA Water Pumping Station Assessment				
Station Name: F-06	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/04/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0.05	
Pressure	1.5%	0	0	
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.6**

Comments:

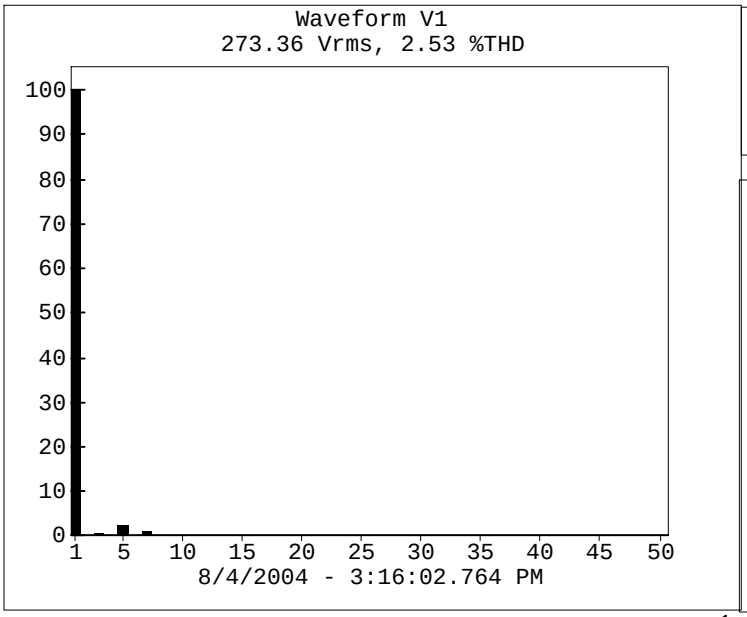
WPS F-6 - Photo

Recording Start Date	8/4/2004 - 3:16:02 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.92 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/4/2004	3:16:02.763 PM	16.689	273.4	V
Waveform V2	8/4/2004	3:16:02.763 PM	16.689	263.0	V
Waveform V3	8/4/2004	3:16:02.763 PM	16.689	280.3	V



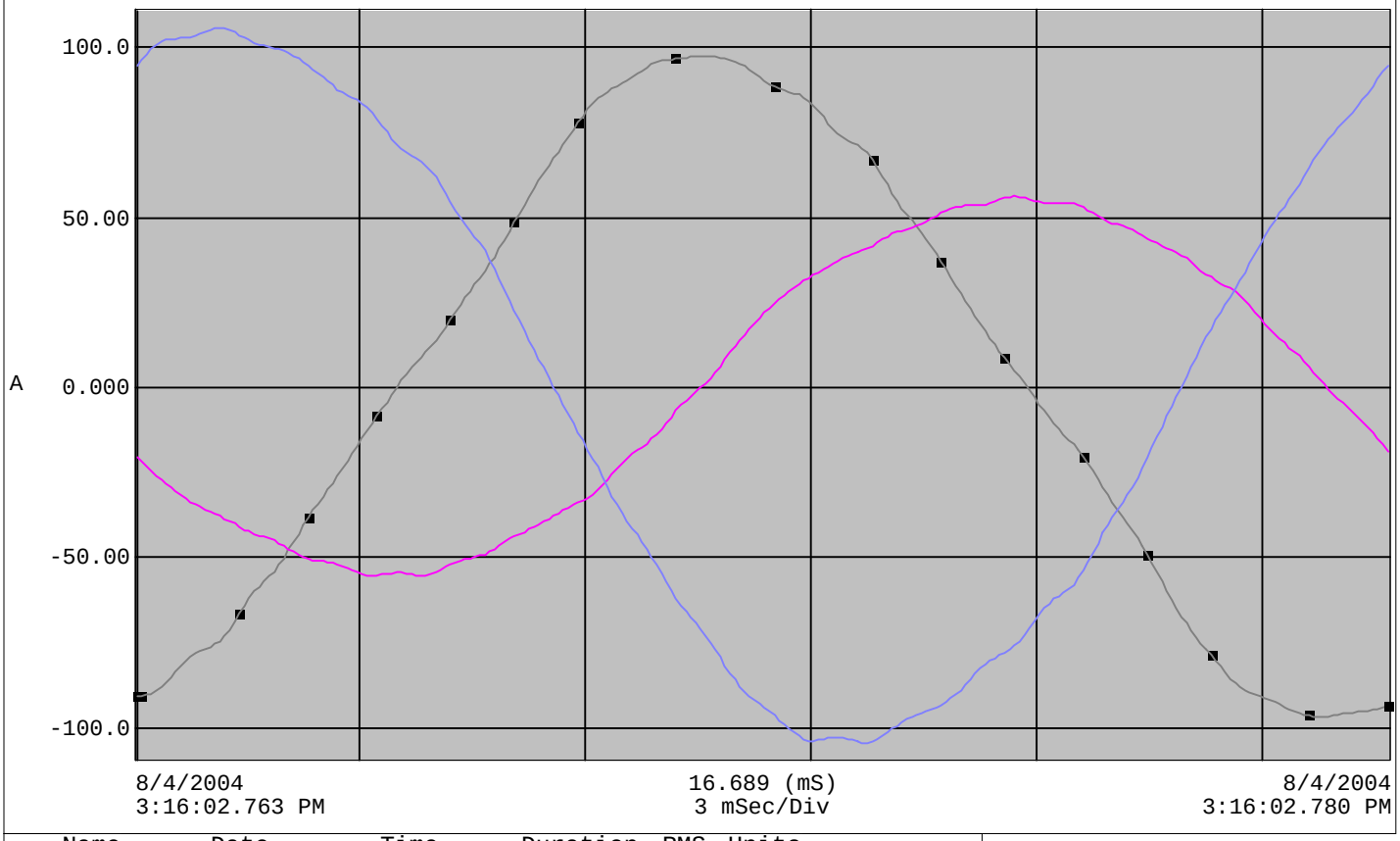
8/4/2004 - 3:16:02.000 PM

Val	
-192.4	Waveform V1
-192.8	Waveform V2
403.4	Waveform V3

Waveform V1

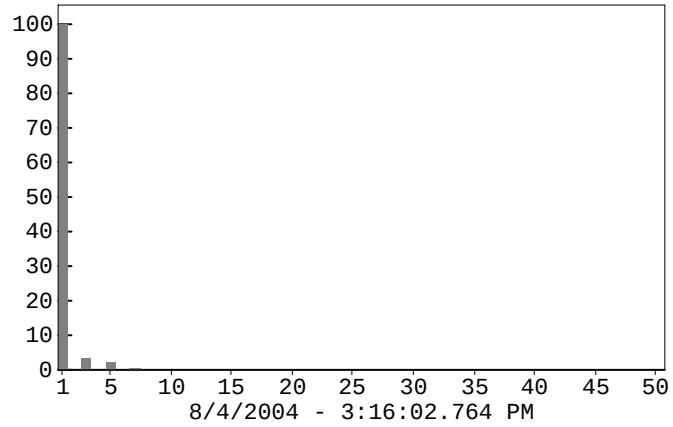
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.6	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.2	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.9	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.92 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/4/2004	3:16:02.763 PM	16.689	67.38	A
Waveform I2	8/4/2004	3:16:02.763 PM	16.689	39.52	A
Waveform I3	8/4/2004	3:16:02.763 PM	16.689	74.07	A

Waveform I1
67.38 Arms, 4.43 %THD



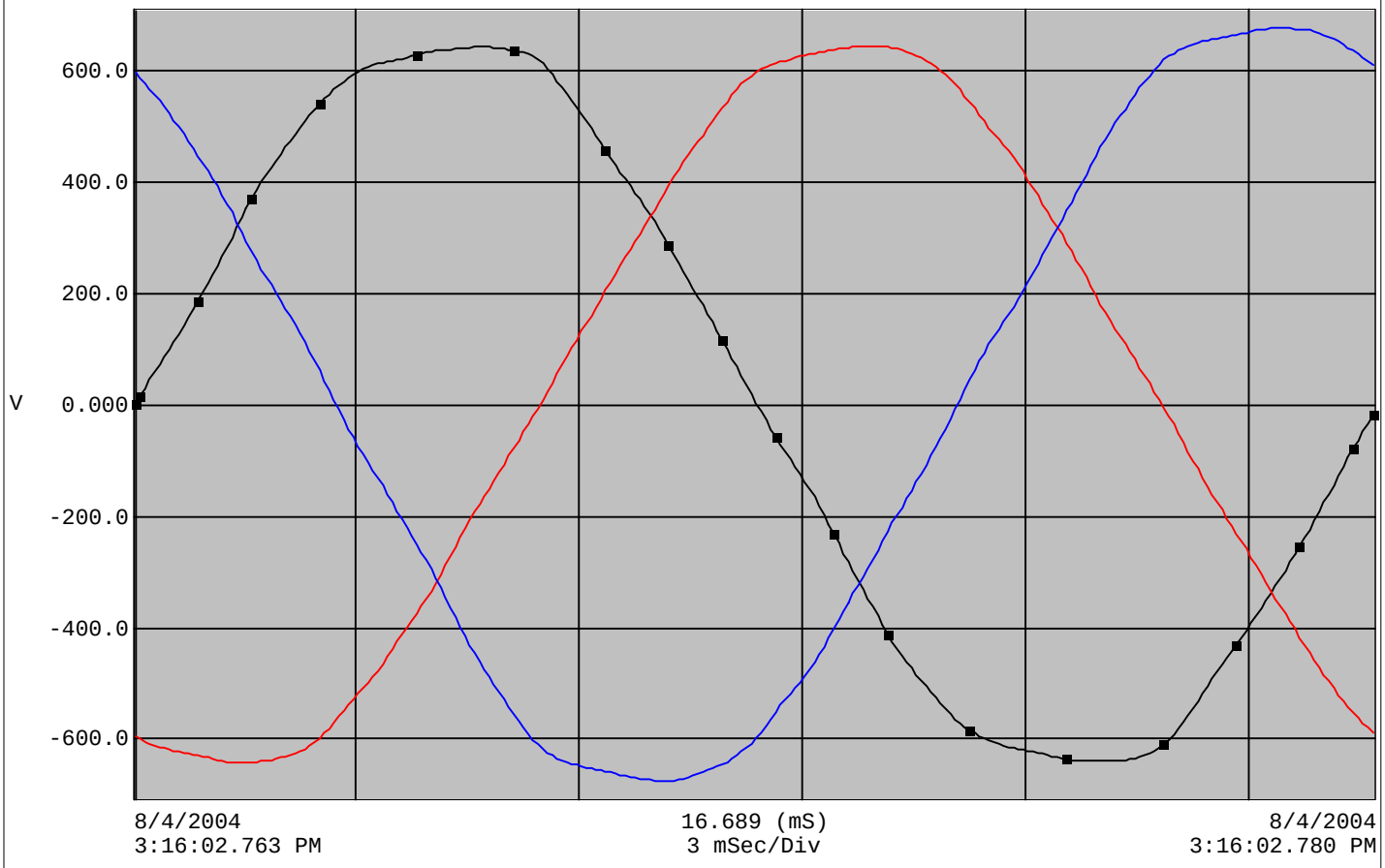
8/4/2004 - 3:16:02.000 PM

Val	
-91.20	Waveform I1
-20.60	Waveform I2
94.40	Waveform I3

Waveform I1

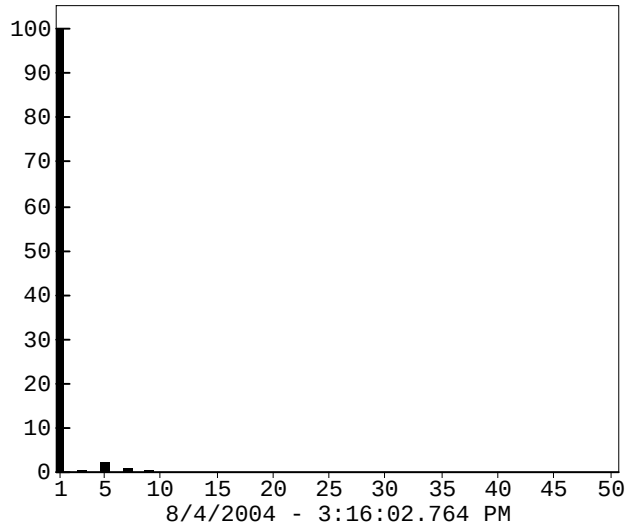
	(%)		(%)		(%)
H01	100.0	H18	0.5	H35	0.0
H02	0.2	H19	0.3	H36	0.0
H03	3.5	H20	0.1	H37	0.0
H04	0.1	H21	0.2	H38	0.0
H05	2.3	H22	0.3	H39	0.0
H06	0.2	H23	0.2	H40	0.0
H07	0.8	H24	0.2	H41	0.0
H08	0.2	H25	0.1	H42	0.0
H09	0.4	H26	0.1	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.3	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.92 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/4/2004	3:16:02.763 PM	16.689	465.6	V
Waveform U2	8/4/2004	3:16:02.763 PM	16.689	461.4	V
Waveform U3	8/4/2004	3:16:02.763 PM	16.689	487.5	V

Waveform U1
465.55 Vrms, 2.71 %THD



8/4/2004 - 3:16:02.000 PM

	Val	
—	0.300	Waveform U1
—	-596.2	Waveform U2
—	595.9	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.7	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.3	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 8/4/2004
Start Time: 3:16:02 PM
Duration: 0:0.000 (M:S)
W: 12.99E+3 W
VAR: 13.09E+3 W
VA: 18.44E+3 W
Power Factor: 0.705
Displacement Power Factor: 0.705
TAN: 1.005
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F6\080404-F6-Photo.dvb

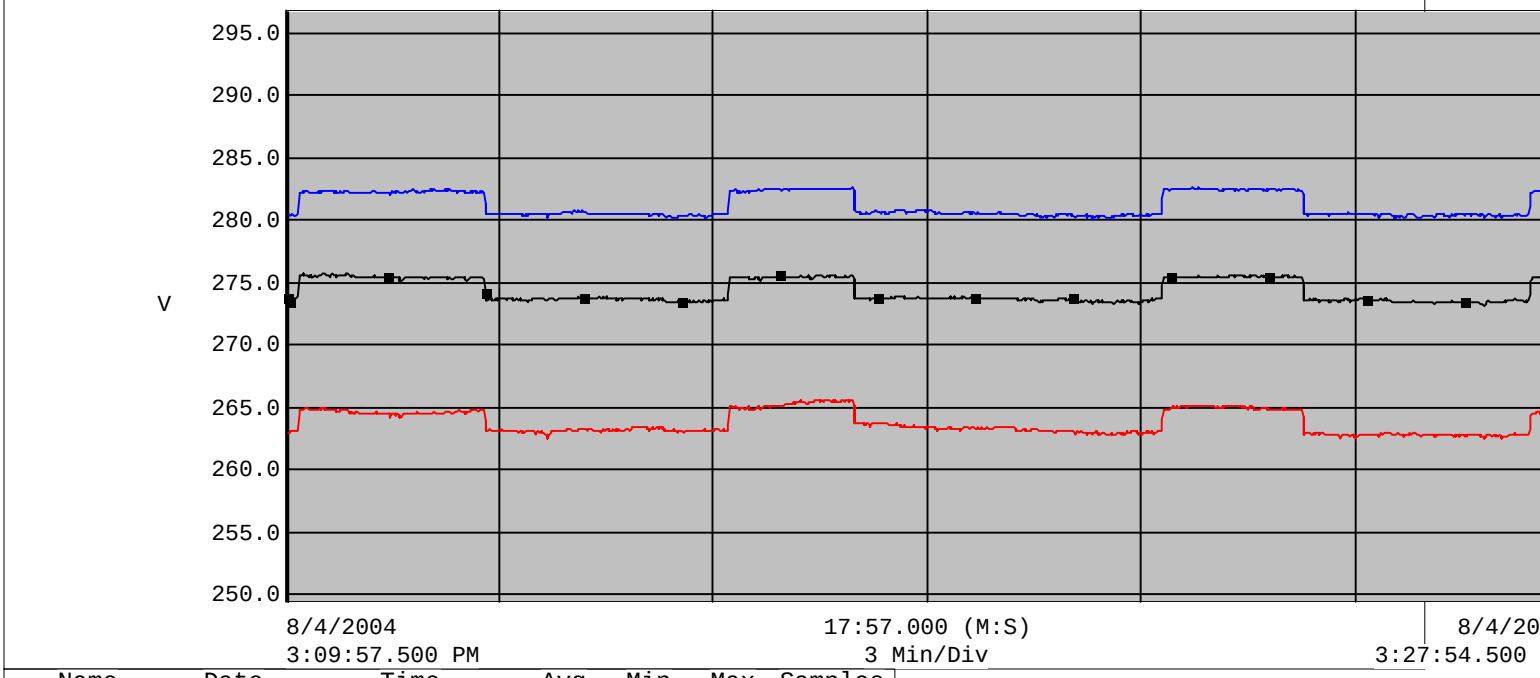
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-6 ,

Comments
Photo taken at motor overload relay.

WPS F-6

Recording Start Date	8/4/2004 - 3:09:57 PM
Recording Duration	17:57 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

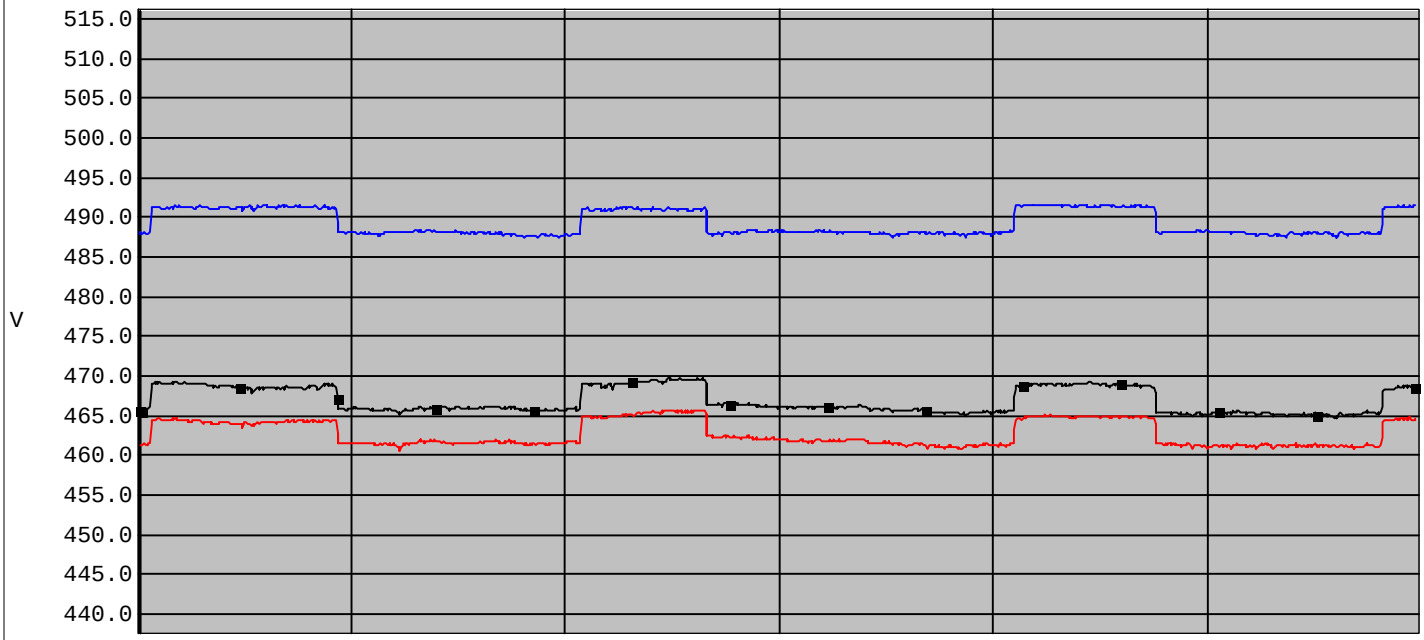
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/4/2004	3:09:57.500 PM	274.2	273.1	275.6	1078
Vrms Line2	8/4/2004	3:09:57.500 PM	263.7	262.5	265.5	1078
Vrms Line3	8/4/2004	3:09:57.500 PM	281.1	280.0	282.6	1078

8/4/2004 - 3:09:57.000 PM
Val
273.6 — Vrms Line1
262.9 — Vrms Line2
280.4 — Vrms Line3

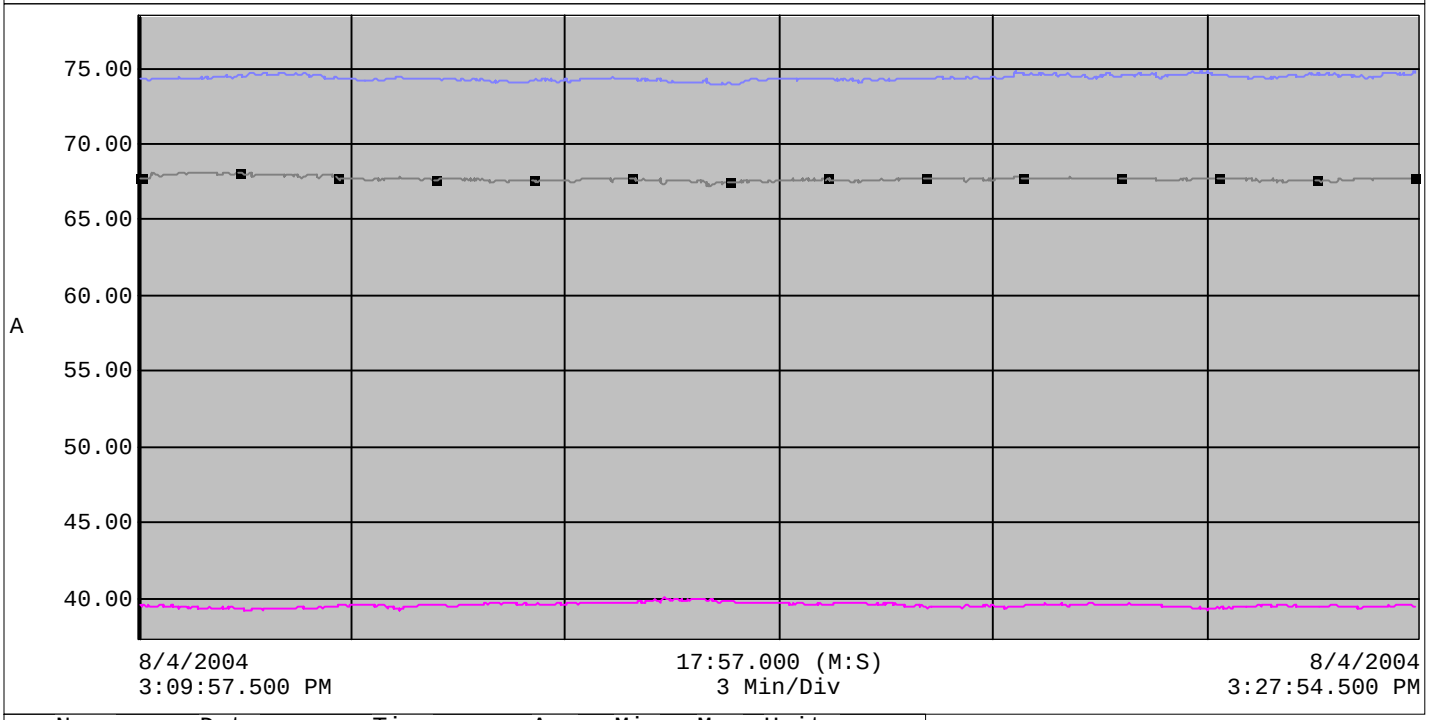
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/4/2004	3:09:57.500 PM	466.8	464.5	469.6	V
Urms Line2	8/4/2004	3:09:57.500 PM	462.6	460.5	465.6	V
Urms Line3	8/4/2004	3:09:57.500 PM	489.1	487.3	491.5	V

8/4/2004 - 3:09:57.000 PM
Val
465.5 Urms Line1
461.2 Urms Line2
487.9 Urms Line3

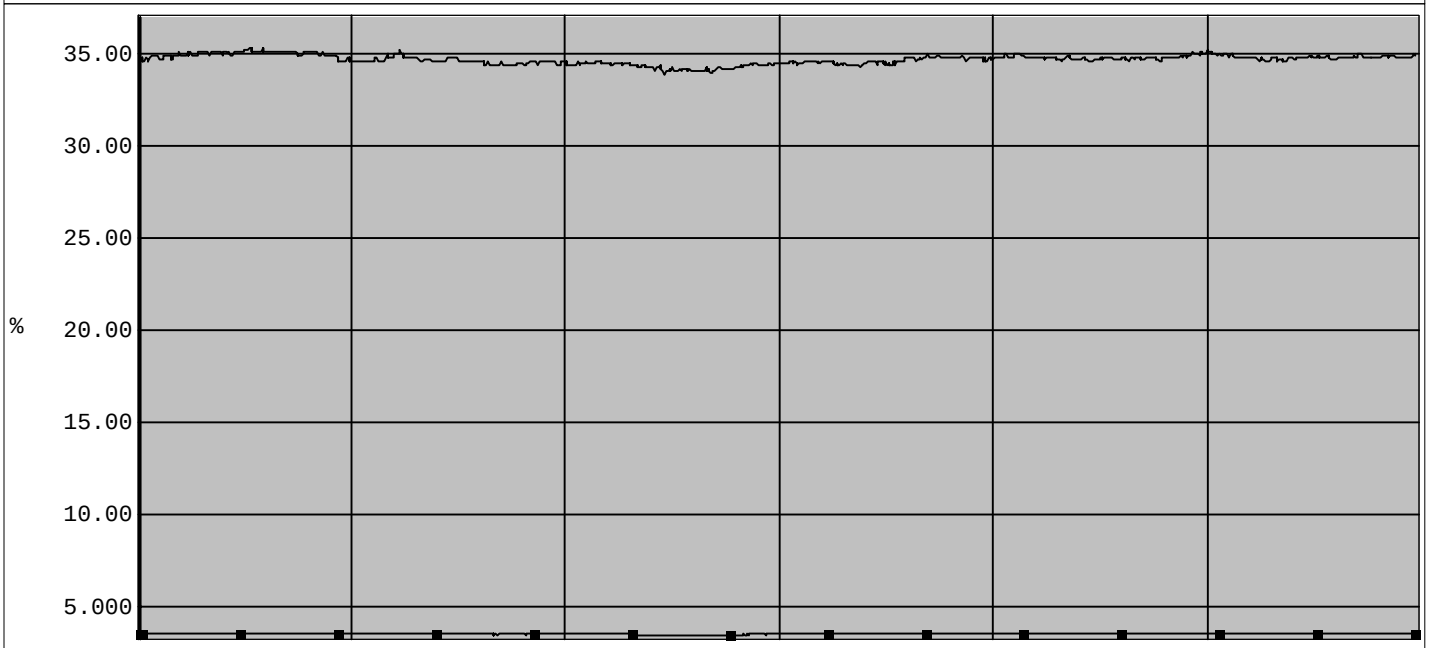
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/4/2004	3:09:57.500 PM	67.61	67.20	68.10	A
Arms Line2	8/4/2004	3:09:57.500 PM	39.49	39.20	40.00	A
Arms Line3	8/4/2004	3:09:57.500 PM	74.30	73.90	74.70	A

8/4/2004 - 3:09:57.000 PM
Val
67.60 — Arms Line1
39.50 — Arms Line2
74.30 — Arms Line3

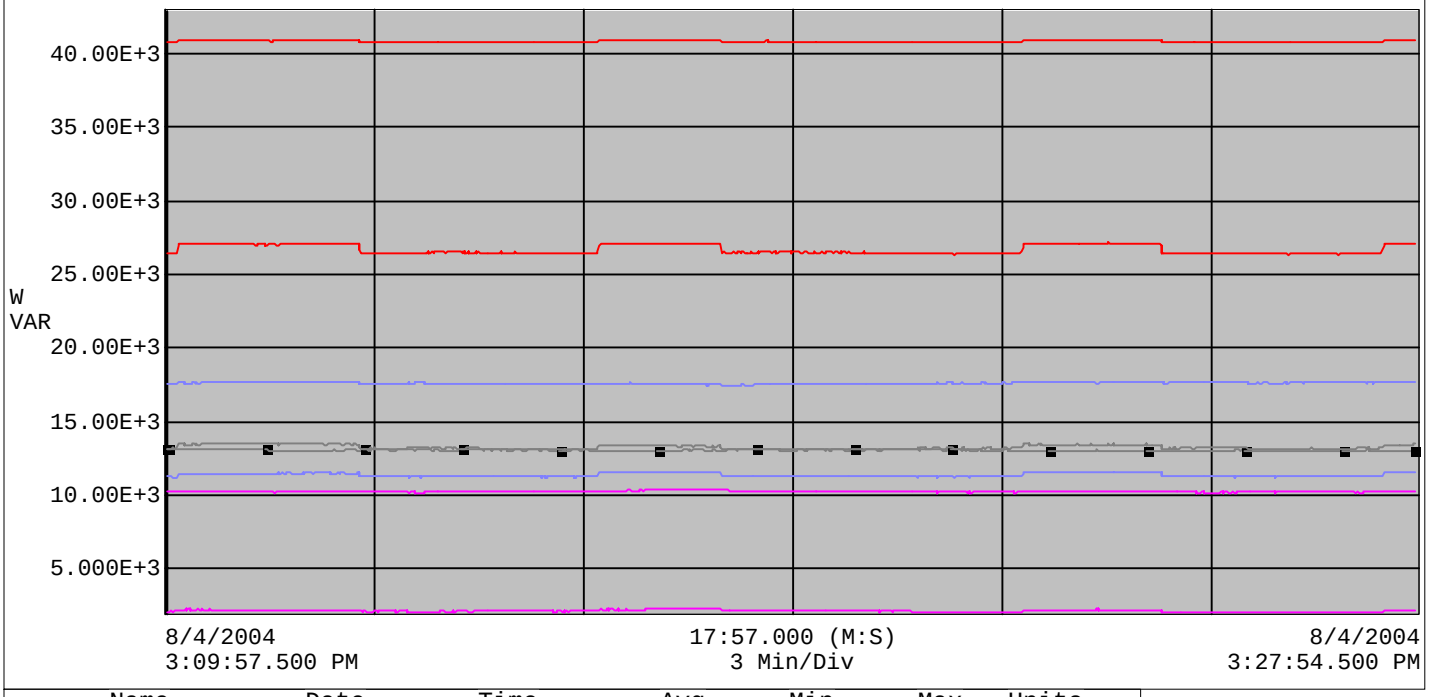
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/4/2004	3:09:57.500 PM	3.420	3.300	3.500	%
Aunb(IEEE)	8/4/2004	3:09:57.500 PM	34.69	33.80	35.30	%

8/4/2004 - 3:09:57.000 PM
Val
3.500 —— Vunb(IEEE)
34.70 —— Aunb(IEEE)

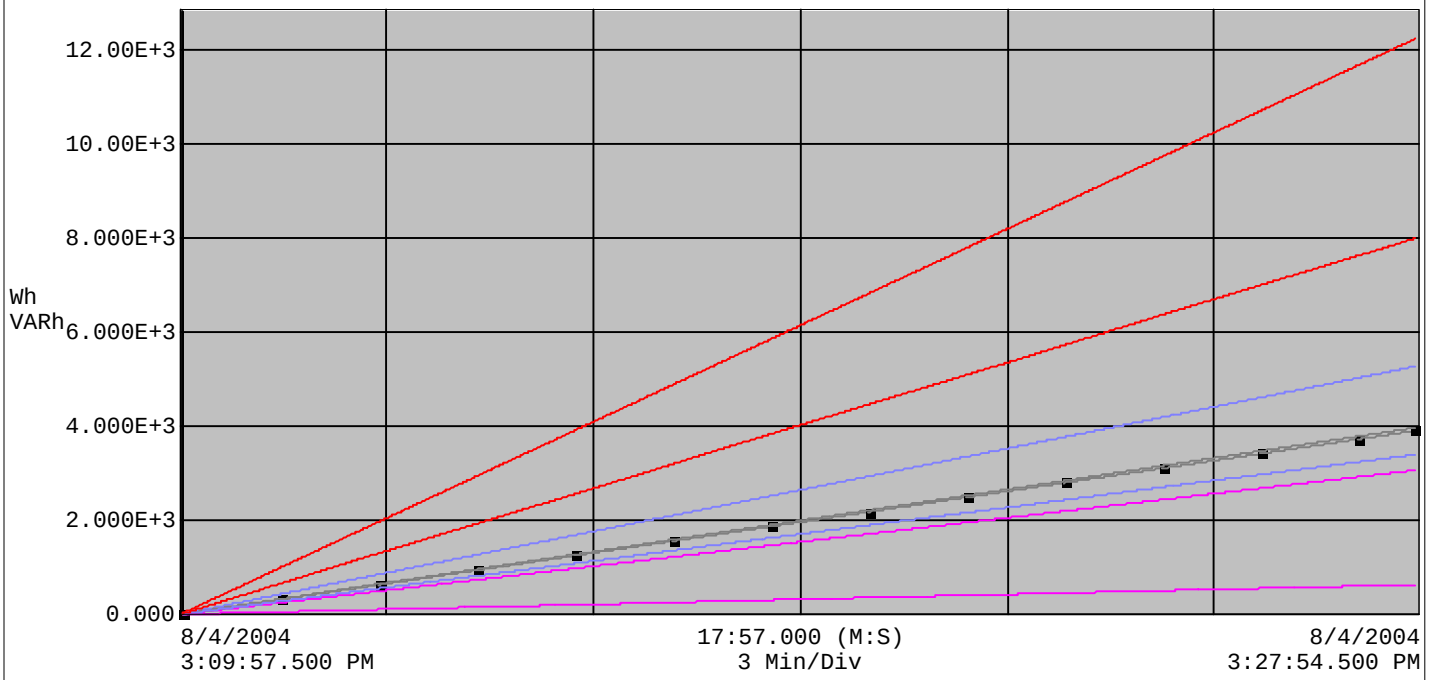
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/4/2004	3:09:57.500 PM	13.00E+3	12.93E+3	13.07E+3	W
W Line2	8/4/2004	3:09:57.500 PM	10.20E+3	10.09E+3	10.37E+3	W
W Line3	8/4/2004	3:09:57.500 PM	17.56E+3	17.41E+3	17.68E+3	W
W Sum of Phases	8/4/2004	3:09:57.500 PM	40.76E+3	40.66E+3	40.88E+3	W
VAR Line1	8/4/2004	3:09:57.500 PM	13.22E+3	13.01E+3	13.47E+3	VAR
VAR Line2	8/4/2004	3:09:57.500 PM	2.095E+3	1.964E+3	2.262E+3	VAR
VAR Line3	8/4/2004	3:09:57.500 PM	11.32E+3	11.16E+3	11.54E+3	VAR
VAR Sum of Phases	8/4/2004	3:09:57.500 PM	26.63E+3	26.29E+3	27.09E+3	VAR

8/4/2004 - 3:09:57.000 PM
Val
13.02E+3 — W Line1
10.17E+3 — W Line2
17.56E+3 — W Line3
40.75E+3 — W Sum of Phases
13.13E+3 — VAR Line1
2.042E+3 — VAR Line2
11.21E+3 — VAR Line3
26.38E+3 — VAR Sum of Phases

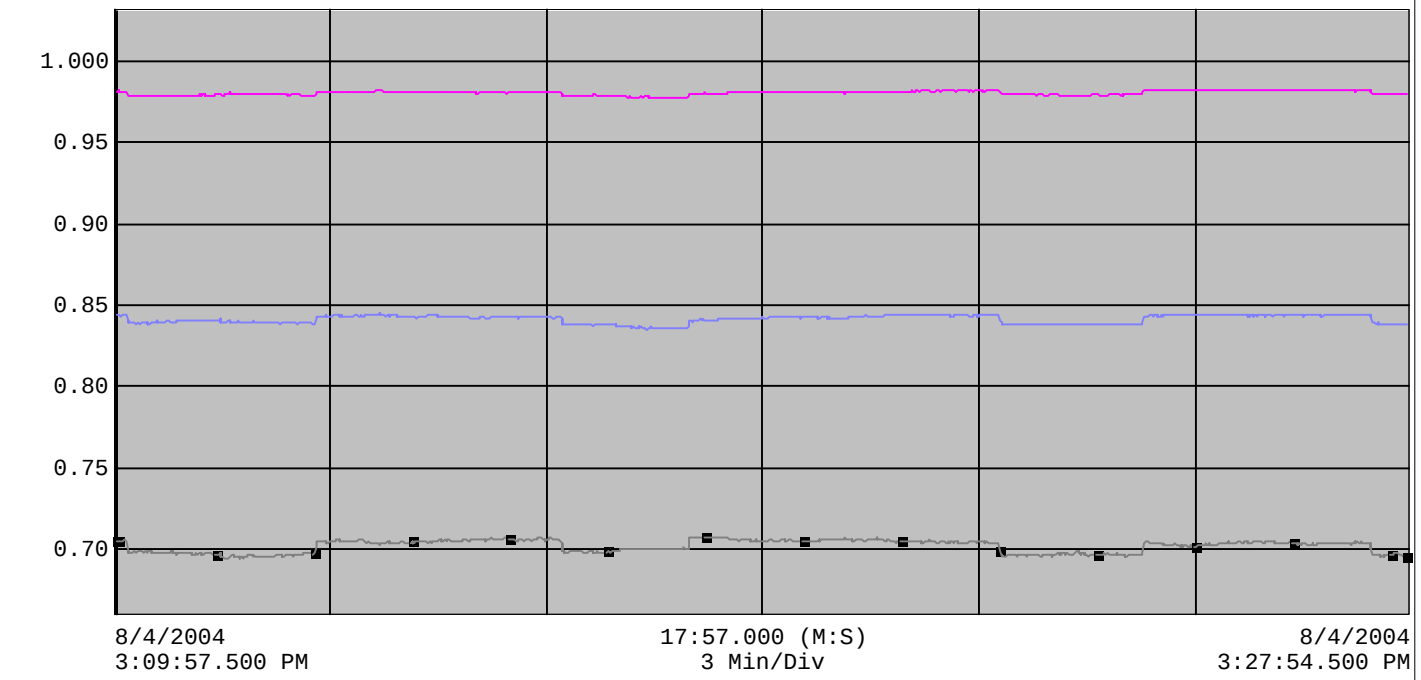
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/4/2004	3:09:57.500 PM	1.950E+3	3.565	3.893E+3	Wh
W-hours Line2	8/4/2004	3:09:57.500 PM	1.529E+3	2.797	3.055E+3	Wh
W-hours Line3	8/4/2004	3:09:57.500 PM	2.630E+3	4.814	5.258E+3	Wh
W-hours Sum of Phases	8/4/2004	3:09:57.500 PM	6.109E+3	11.18	12.21E+3	Wh
VAR-hours Line1	8/4/2004	3:09:57.500 PM	1.984E+3	3.625	3.959E+3	VARh
VAR-hours Line2	8/4/2004	3:09:57.500 PM	316.5	0.575	627.4	VARh
VAR-hours Line3	8/4/2004	3:09:57.500 PM	1.697E+3	3.103	3.389E+3	VARh
VAR-hours Sum of Phases	8/4/2004	3:09:57.500 PM	3.997E+3	7.302	7.975E+3	VARh

8/4/2004 - 3:09:57.000 PM
Val
3.565 — W-hours Line1
2.797 — W-hours Line2
4.814 — W-hours Line3
11.18 — W-hours Sum of Phases
3.625 — VAR-hours Line1
0.575 — VAR-hours Line2
3.103 — VAR-hours Line3
7.302 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/4/2004	3:09:57.500 PM	0.701	0.694	0.707	
PF Line2	8/4/2004	3:09:57.500 PM	0.980	0.977	0.982	
PF Line3	8/4/2004	3:09:57.500 PM	0.841	0.834	0.845	

8/4/2004 - 3:09:57.000 PM
Val
0.704 — PF Line1
0.980 — PF Line2
0.843 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F6\080404-F6.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS F-6 ,

Comments
Recorded at motor starter overload heater.

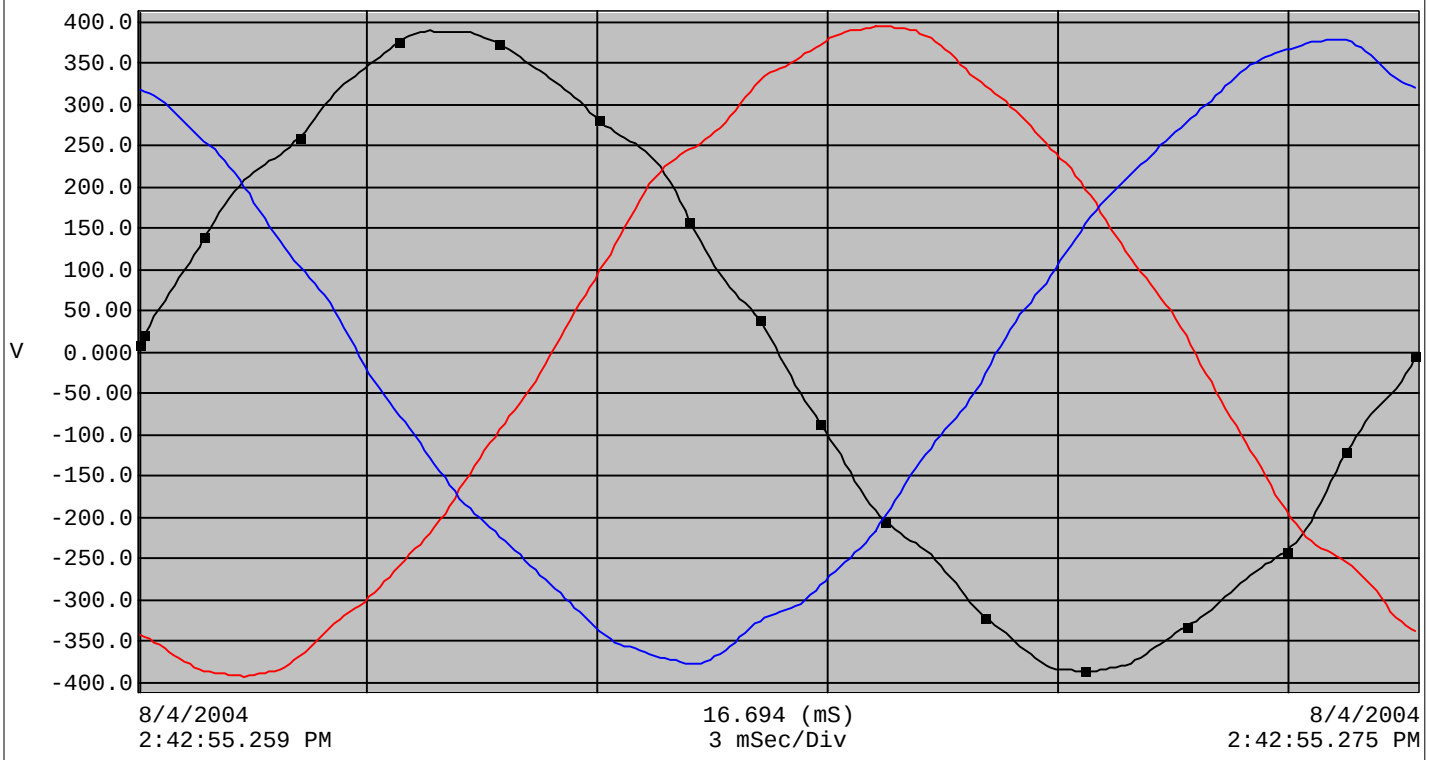
GWA Water Pumping Station Assessment				
Station Name: F-07	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/04/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.7	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	2	0.1	34
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.065	
Pressure	1.5%	1	0.015	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.5**

Comments:

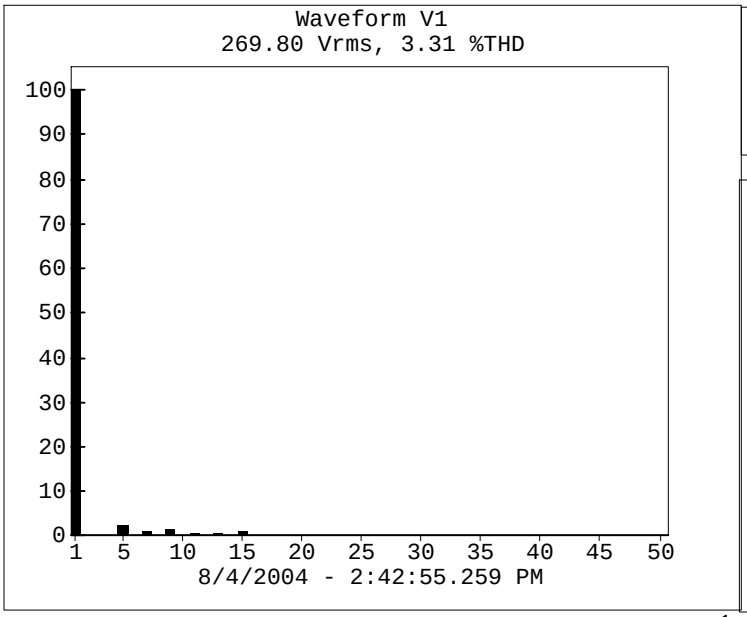
GWA - WPS F-7 - Photo Report

Recording Start Date	8/4/2004 - 2:42:55 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 59.90 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/4/2004	2:42:55.259 PM	16.694	269.8	V
Waveform V2	8/4/2004	2:42:55.259 PM	16.694	274.4	V
Waveform V3	8/4/2004	2:42:55.259 PM	16.694	259.1	V

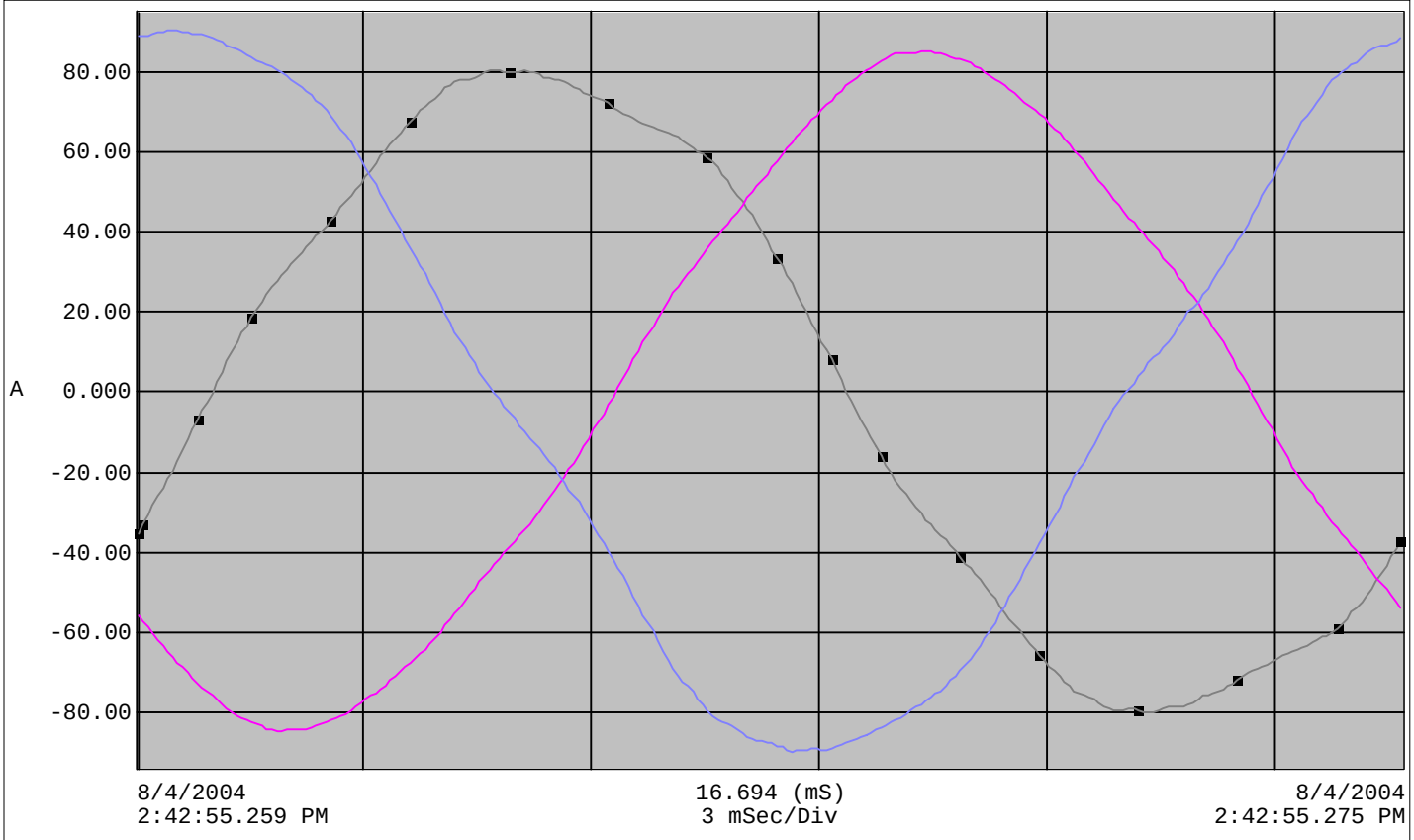


8/4/2004 - 2:42:55.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

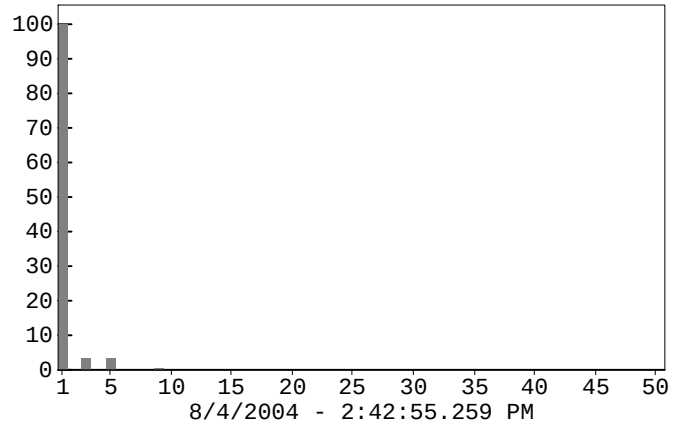
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.1	H21	0.2	H38	0.0
H05	2.4	H22	0.0	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	1.5	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.7	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.9	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Channel Name: Waveform I1
Frequency: 59.90 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/4/2004	2:42:55.259 PM	16.694	57.58	A
Waveform I2	8/4/2004	2:42:55.259 PM	16.694	58.13	A
Waveform I3	8/4/2004	2:42:55.259 PM	16.694	63.21	A

Waveform I1
57.58 Arms, 5.23 %THD

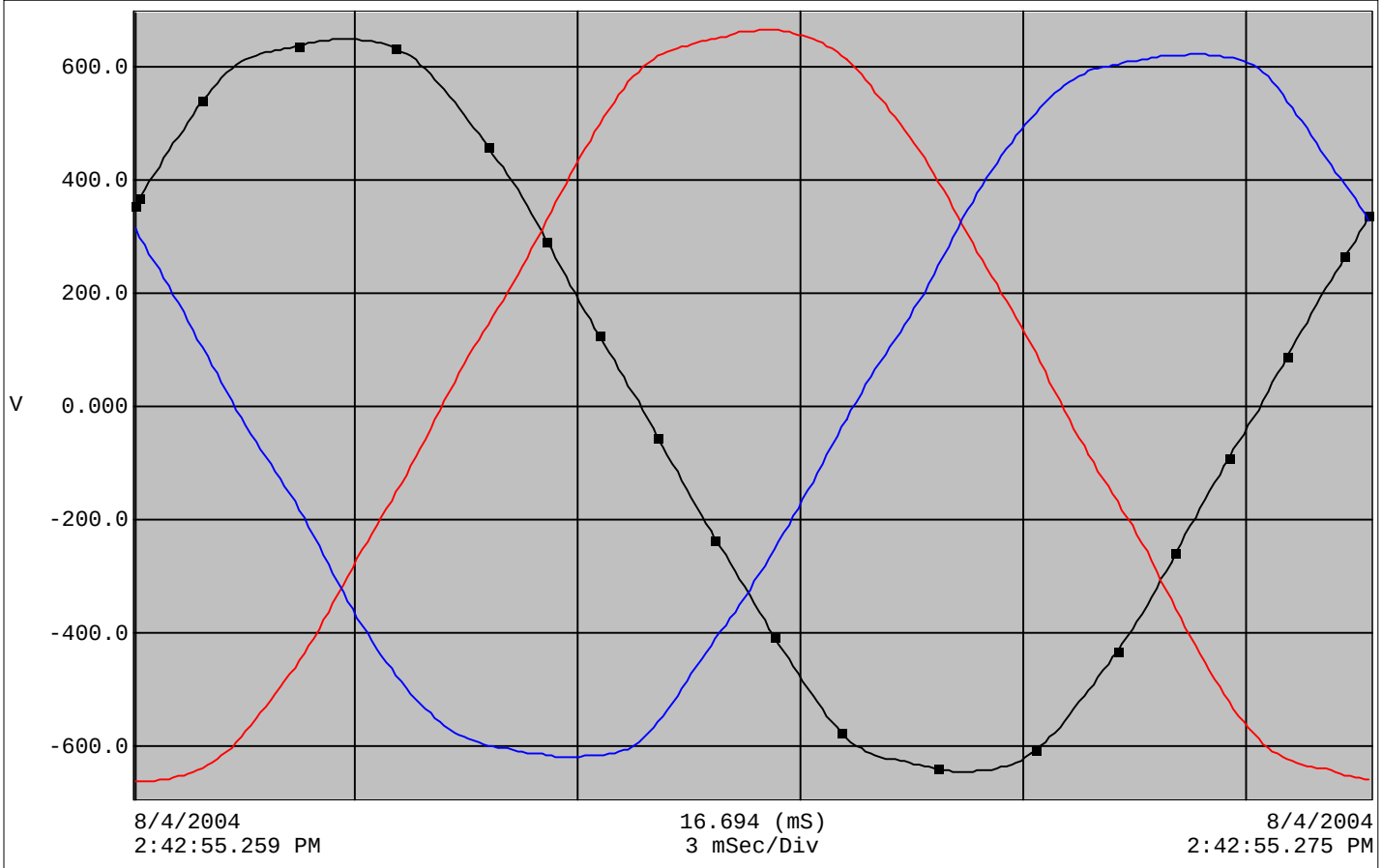


8/4/2004 - 2:42:55.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

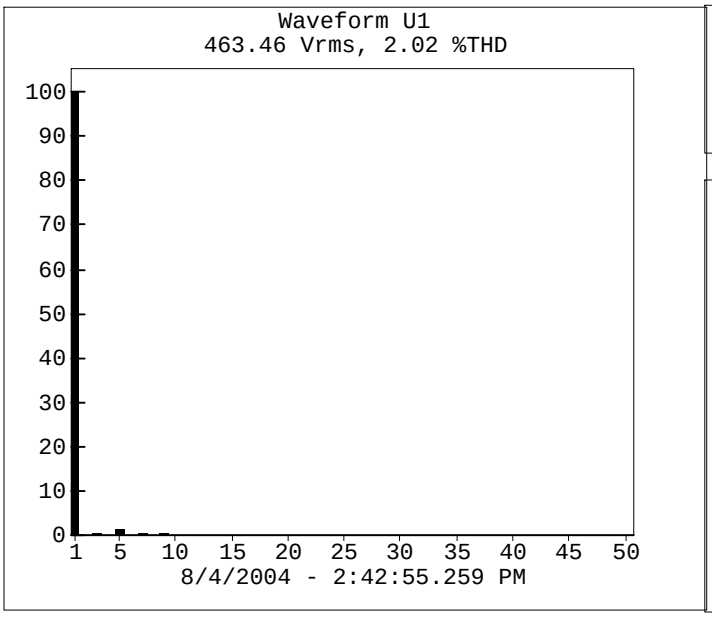
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.0	H19	0.0	H36	0.1
H03	3.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	3.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.0	H34	0.3		

Channel Name: Waveform U1
Frequency: 59.90 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/4/2004	2:42:55.259 PM	16.694	463.5	V
Waveform U2	8/4/2004	2:42:55.259 PM	16.694	476.4	V
Waveform U3	8/4/2004	2:42:55.259 PM	16.694	450.4	V



8/4/2004 - 2:42:55.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/4/2004
Start Time: 2:42:55 PM
Duration: 0:0.000 (M:S)
W: 14.20E+3 W
VAR: 6.386E+3 W
VA: 15.57E+3 W
Power Factor: 0.912
Displacement Power Factor: 0.914
TAN: 0.445
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F7\080404-F7-Photo.dvb

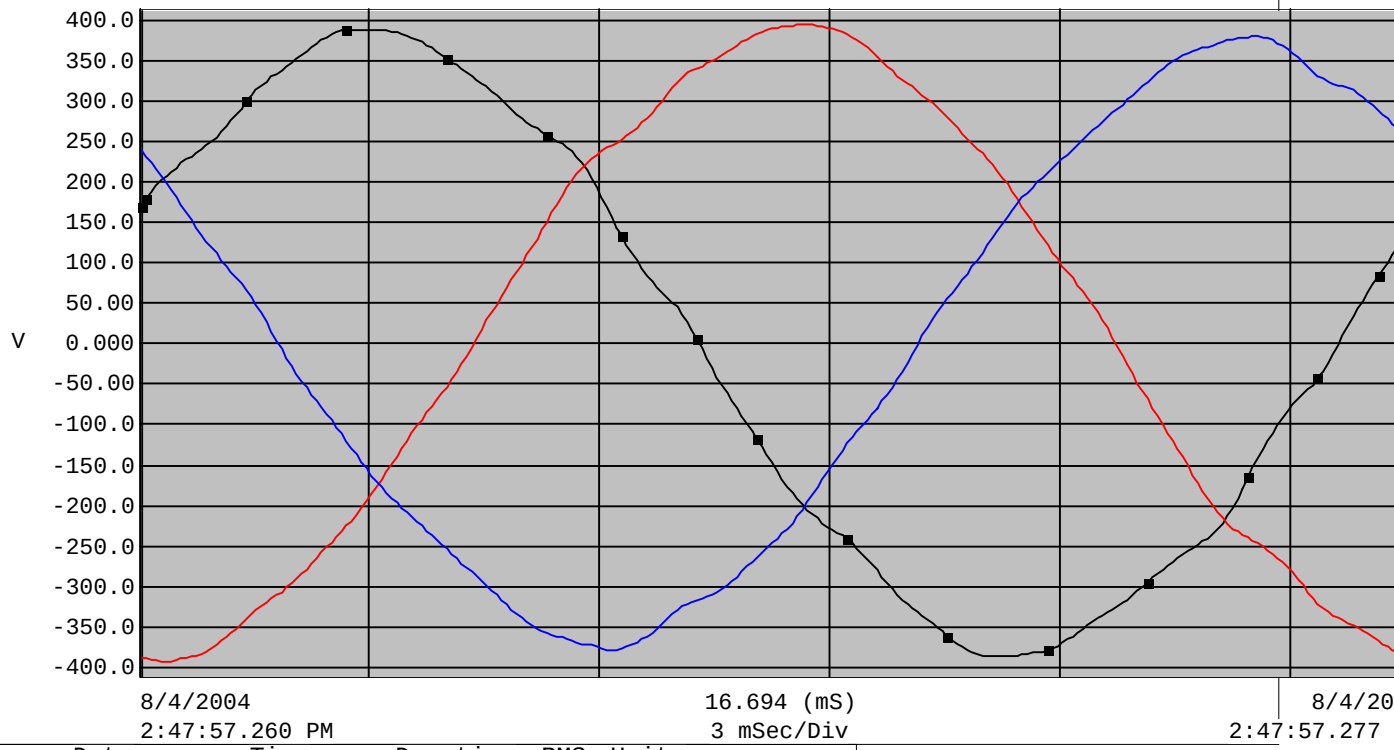
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS - F7 - Photo ,

Comments
Recorded at motor overload relay.

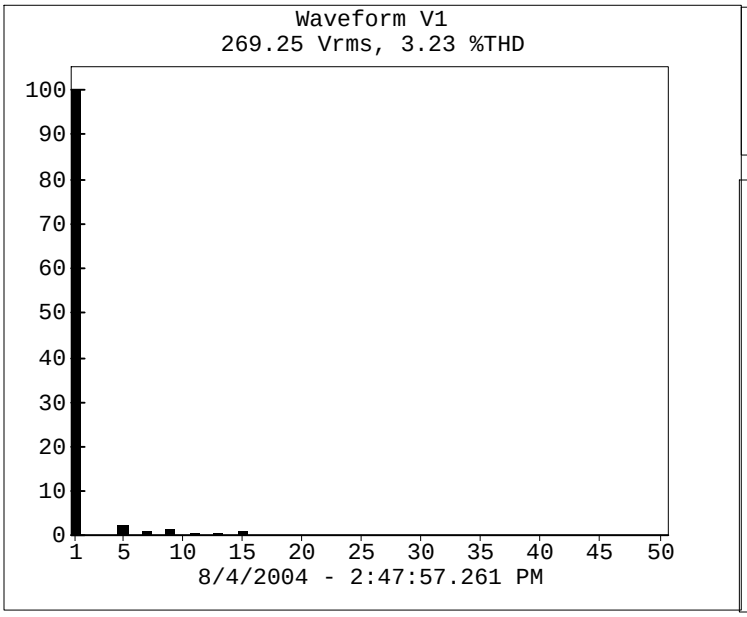
GWA - WPS F-7 Photo Report

Recording Start Date	8/4/2004 - 2:47:57 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 59.90 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/4/2004	2:47:57.260 PM	16.694	269.2	V
Waveform V2	8/4/2004	2:47:57.260 PM	16.694	274.0	V
Waveform V3	8/4/2004	2:47:57.260 PM	16.694	259.3	V



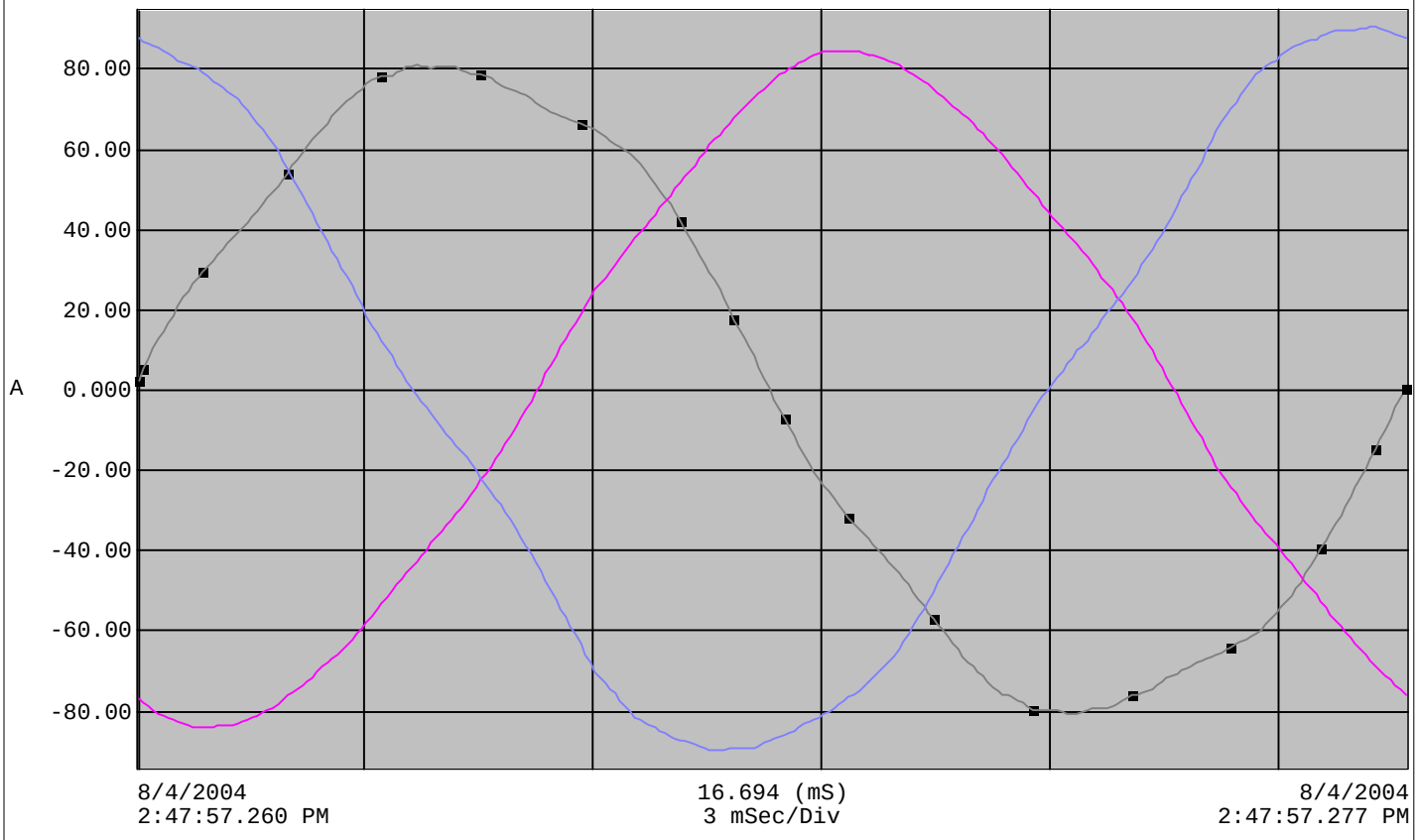
8/4/2004 - 2:47:57.000 PM

Val	
167.9	Waveform V1
-389.7	Waveform V2
236.4	Waveform V3

Waveform V1

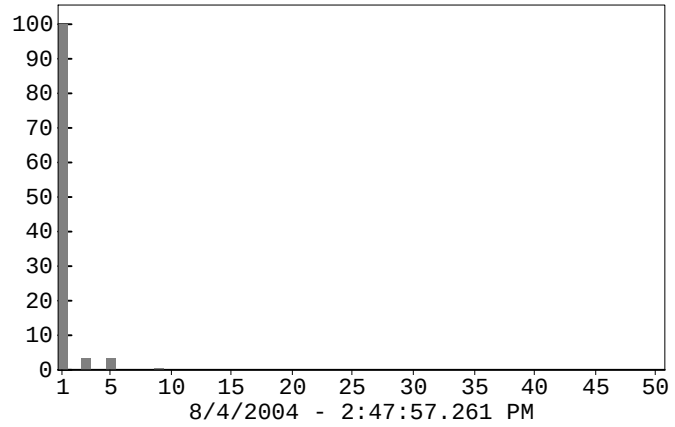
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.1	H21	0.2	H38	0.0
H05	2.3	H22	0.0	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	1.4	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.7	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.9	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Channel Name: Waveform I1
Frequency: 59.90 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/4/2004	2:47:57.260 PM	16.694	58.03	A
Waveform I2	8/4/2004	2:47:57.260 PM	16.694	57.87	A
Waveform I3	8/4/2004	2:47:57.260 PM	16.694	63.27	A

Waveform I1
58.03 Arms, 5.13 %THD



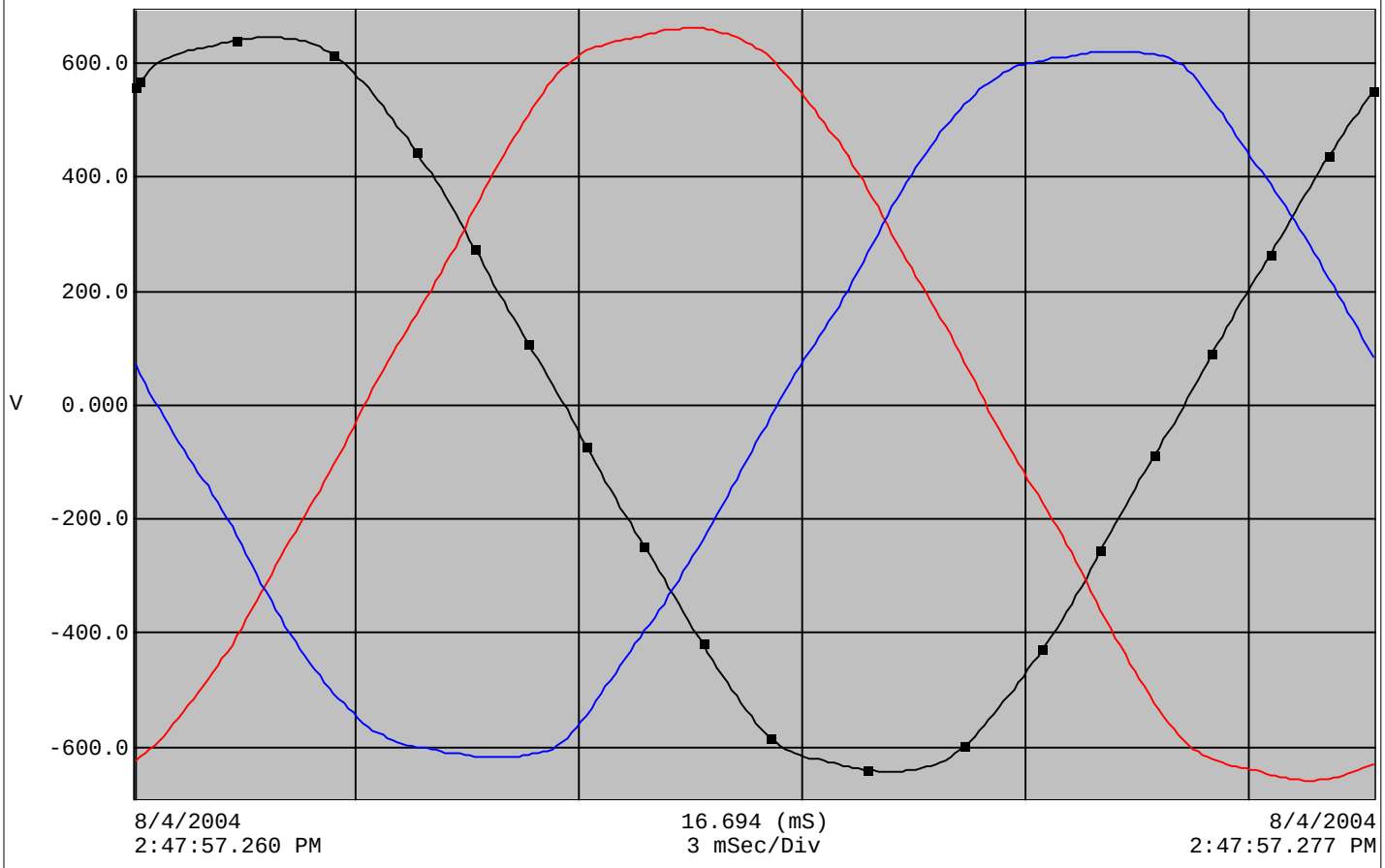
8/4/2004 - 2:47:57.000 PM

Val	
2.200	Waveform I1
-77.00	Waveform I2
87.40	Waveform I3

Waveform I1

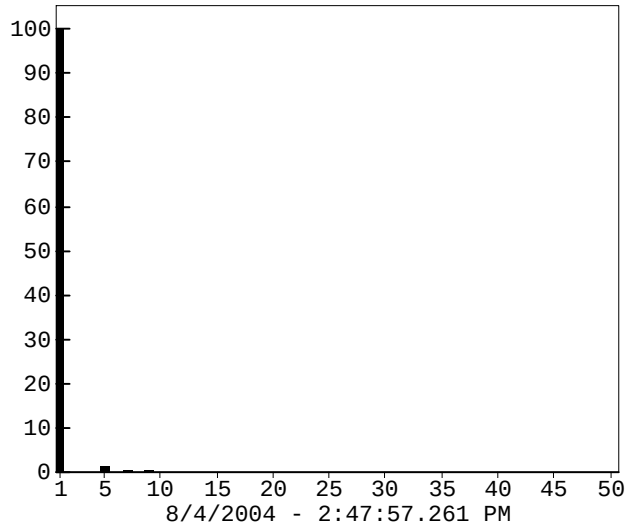
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.1	H19	0.0	H36	0.1
H03	3.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	3.8	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.1
H07	0.5	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.0	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.0	H34	0.3		

Channel Name: Waveform U1
Frequency: 59.90 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/4/2004	2:47:57.260 PM	16.694	463.1	V
Waveform U2	8/4/2004	2:47:57.260 PM	16.694	475.6	V
Waveform U3	8/4/2004	2:47:57.260 PM	16.694	450.3	V

Waveform U1
463.06 Vrms, 1.98 %THD



8/4/2004 - 2:47:57.000 PM

Val	
557.6	Waveform U1
-626.1	Waveform U2
68.40	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 8/4/2004
Start Time: 2:47:57 PM
Duration: 0:0.000 (M:S)
W: 14.25E+3 W
VAR: 6.482E+3 W
VA: 15.66E+3 W
Power Factor: 0.910
Displacement Power Factor: 0.912
TAN: 0.450
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F7\080404-F7-Photo1.dvb

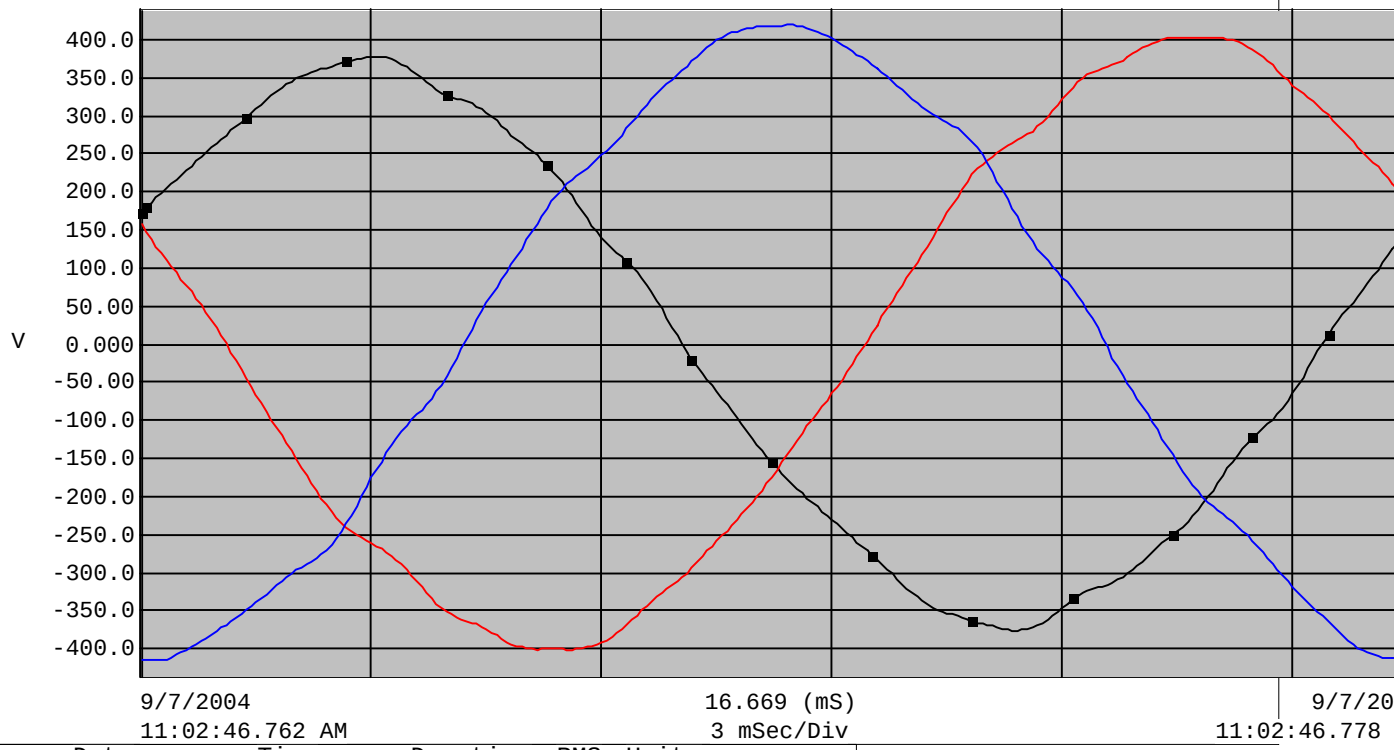
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS - F7 - Photo 1 ,

Comments
Photo taken at motor overload relay.

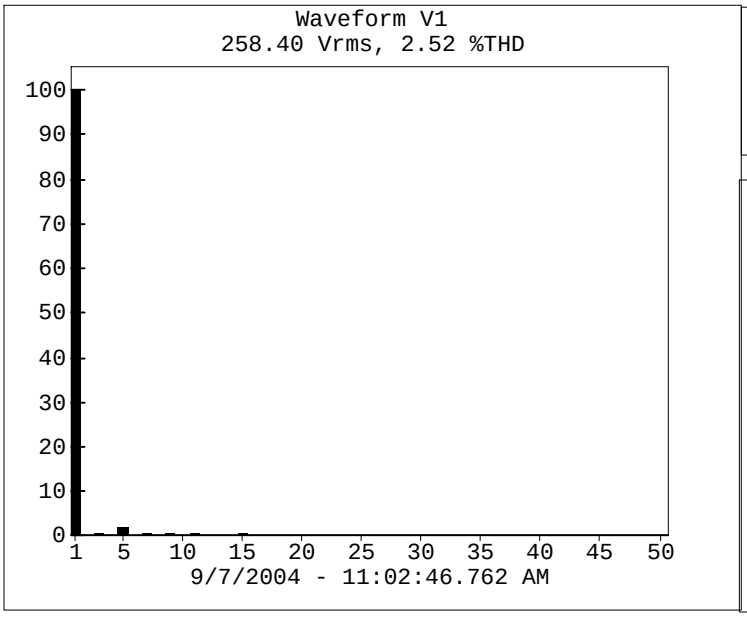
WPS F-7 - Photo

Recording Start Date	9/7/2004 - 11:02:46 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/7/2004	11:02:46.762 AM	16.669	258.4	V
Waveform V2	9/7/2004	11:02:46.762 AM	16.669	282.2	V
Waveform V3	9/7/2004	11:02:46.762 AM	16.669	291.4	V

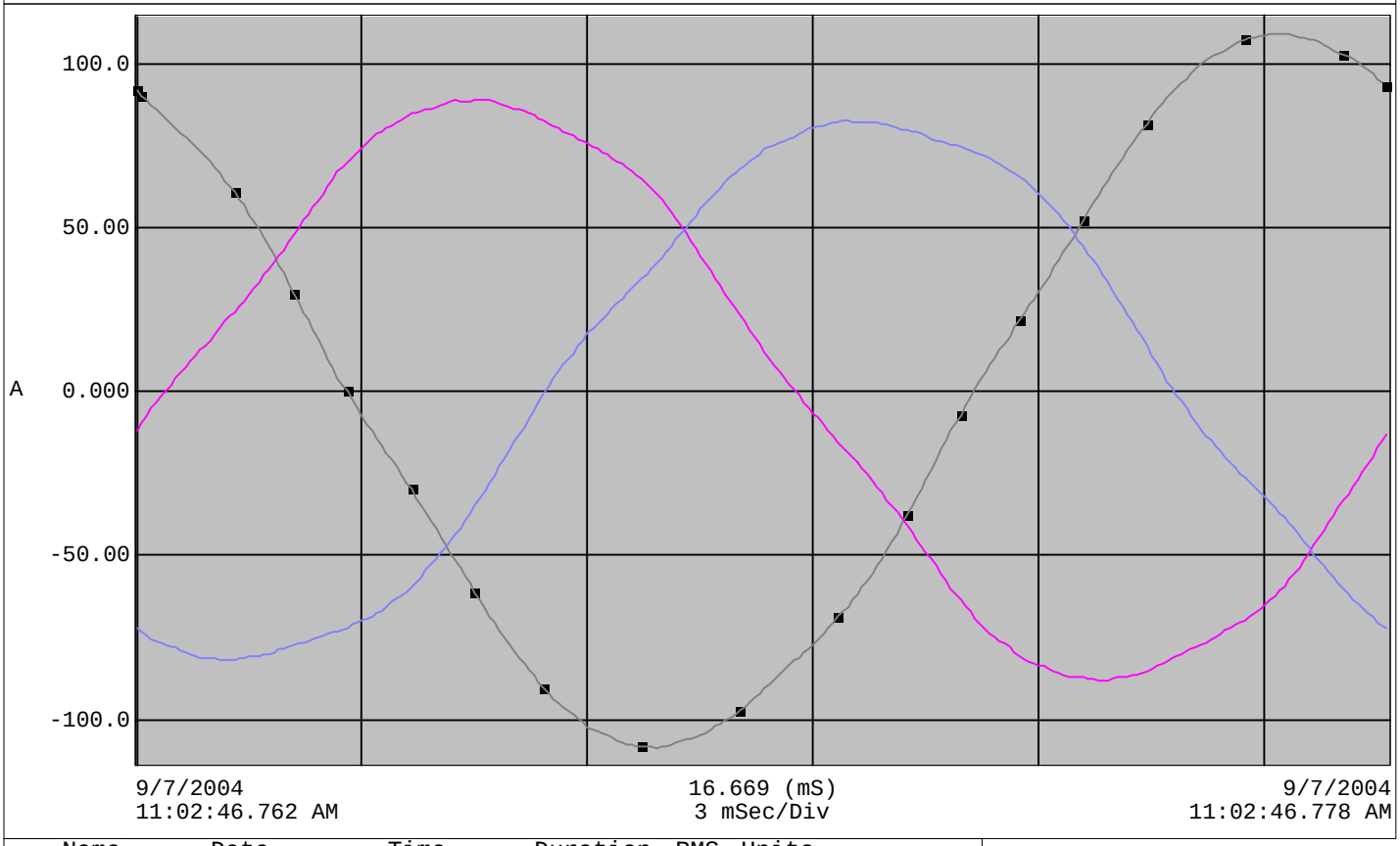


9/7/2004 - 11:02:46.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

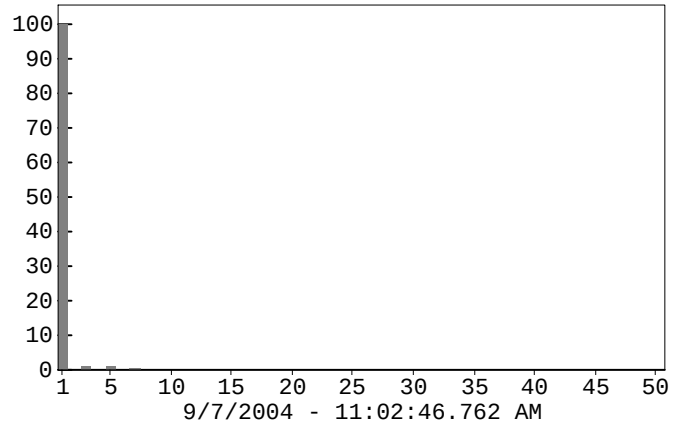
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.8	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.8	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.8	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.3	H34	0.1		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/7/2004	11:02:46.762 AM	16.669	75.97	A
Waveform I2	9/7/2004	11:02:46.762 AM	16.669	62.01	A
Waveform I3	9/7/2004	11:02:46.762 AM	16.669	59.18	A

Waveform I1
75.97 Arms, 2.40 %THD

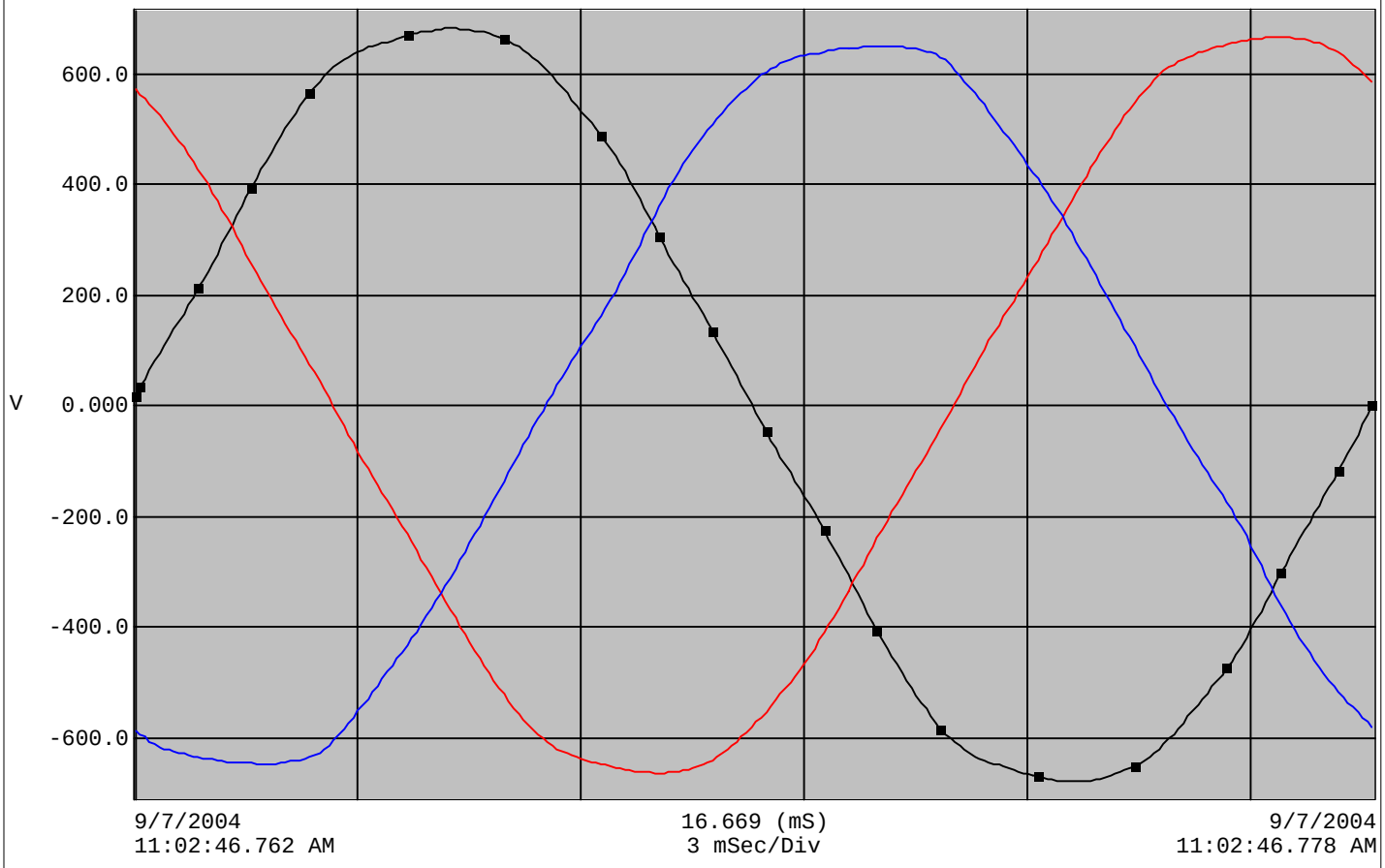


9/7/2004 - 11:02:46.015 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

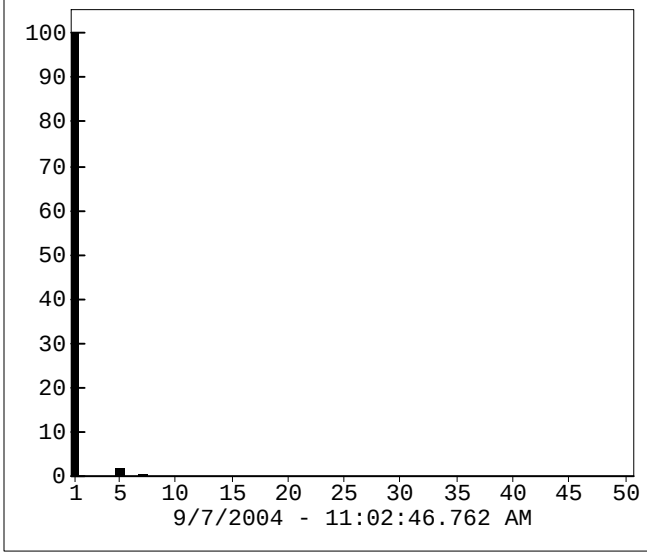
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.1
H03	1.4	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	1.6	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/7/2004	11:02:46.762 AM	16.669	489.7	V
Waveform U2	9/7/2004	11:02:46.762 AM	16.669	476.7	V
Waveform U3	9/7/2004	11:02:46.762 AM	16.669	470.9	V

Waveform U1
489.75 Vrms, 2.16 %THD



9/7/2004 - 11:02:46.015 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/7/2004
Start Time: 11:02:46 AM
Duration: 0:0.000 (M:S)
W: -613.6 W
VAR: -19.65E+3 W
VA: 19.66E+3 W
Power Factor: -31.00E-3
Displacement Power Factor: -31.00E-3
TAN: 32.26
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F7\090704-F7-Photo.dvb

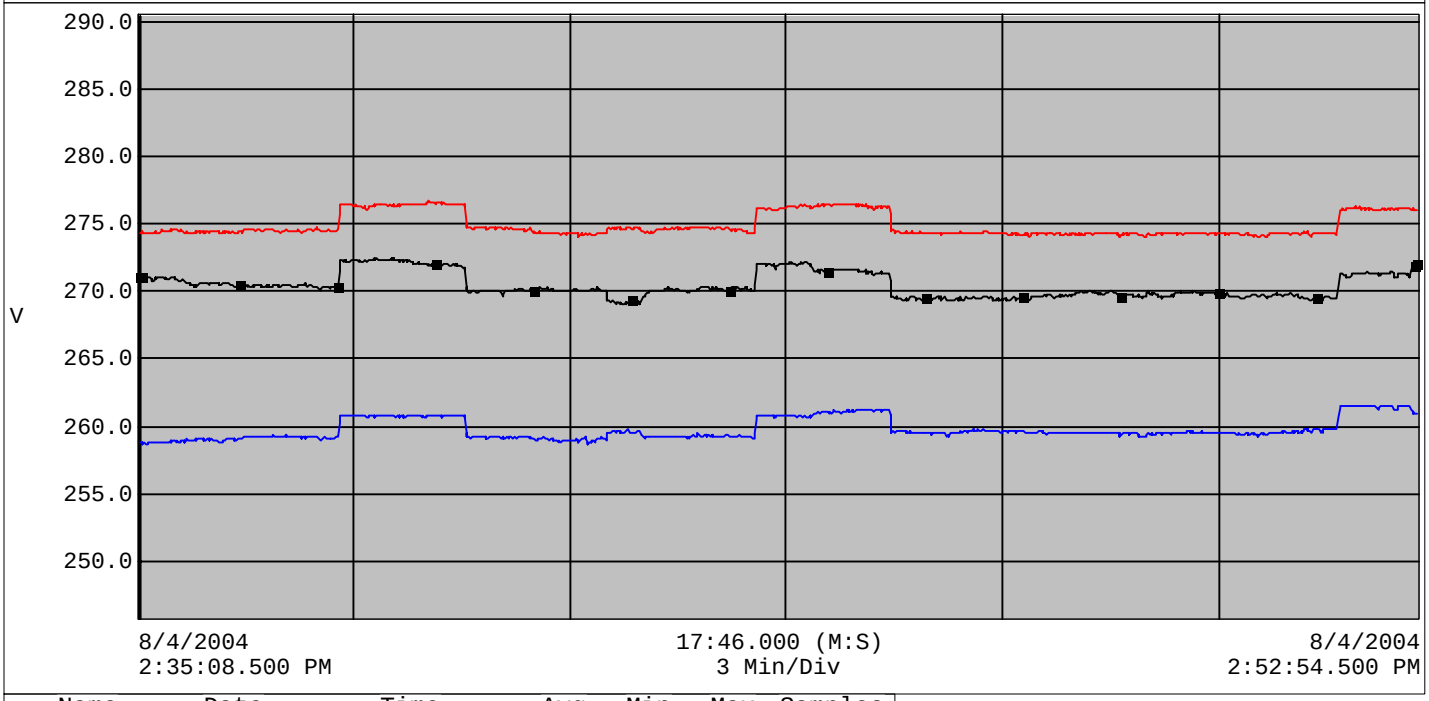
Operator	Test Site
GWA Victor Jardel ,	GWA WPS F-7 ,

Comments

WPS F-7

Recording Start Date	8/4/2004 - 2:35:08 PM
Recording Duration	17:46 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

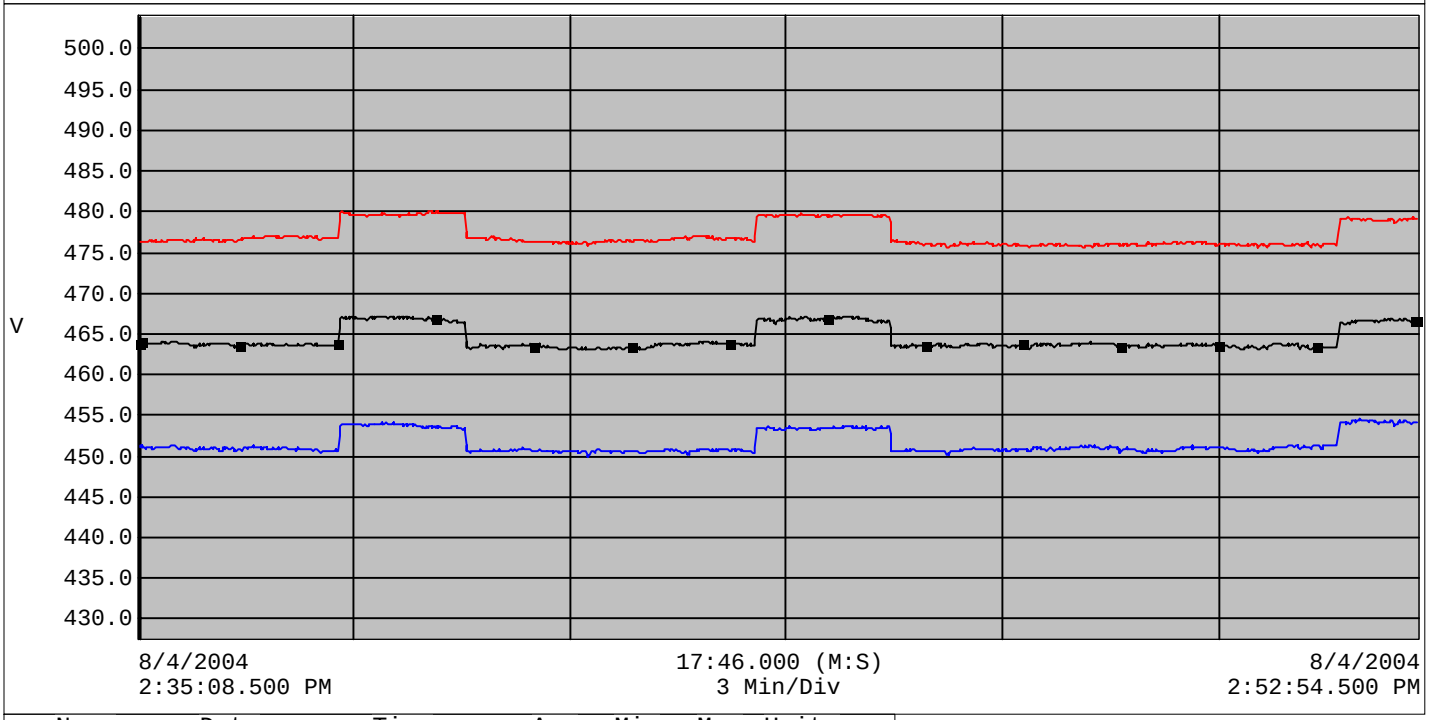
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/4/2004	2:35:08.500 PM	270.4	269.0	272.4	1067
Vrms Line2	8/4/2004	2:35:08.500 PM	274.8	273.9	276.6	1067
Vrms Line3	8/4/2004	2:35:08.500 PM	259.7	258.6	261.5	1067

8/4/2004 - 2:35:08.000 PM
Val
270.9 — Vrms Line1
274.3 — Vrms Line2
258.7 — Vrms Line3

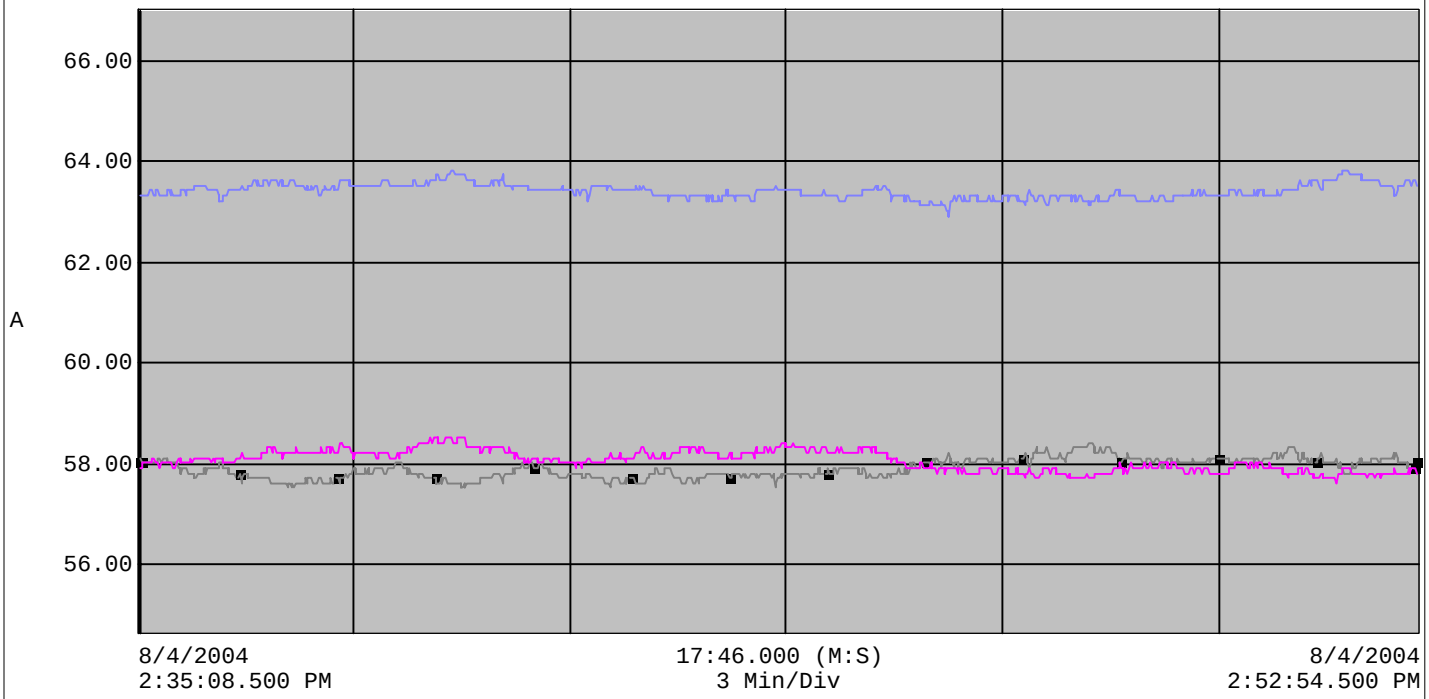
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/4/2004	2:35:08.500 PM	464.3	462.9	467.0	V
Urms Line2	8/4/2004	2:35:08.500 PM	477.0	475.5	480.0	V
Urms Line3	8/4/2004	2:35:08.500 PM	451.5	449.9	454.4	V

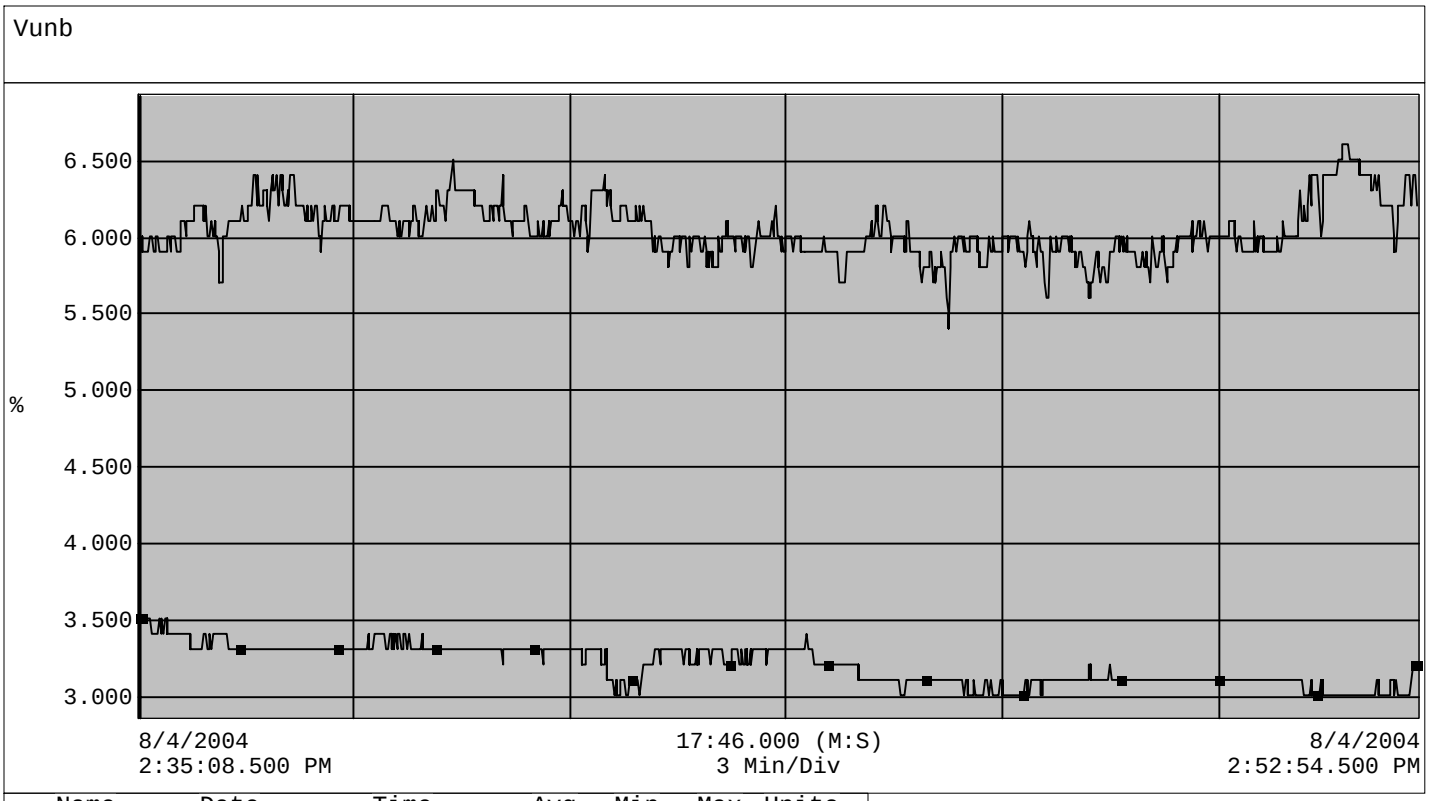
8/4/2004 - 2:35:08.000 PM
Val
463.7 Urms Line1
476.2 Urms Line2
451.0 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/4/2004	2:35:08.500 PM	57.89	57.50	58.40	A
Arms Line2	8/4/2004	2:35:08.500 PM	58.05	57.60	58.50	A
Arms Line3	8/4/2004	2:35:08.500 PM	63.39	62.90	63.80	A

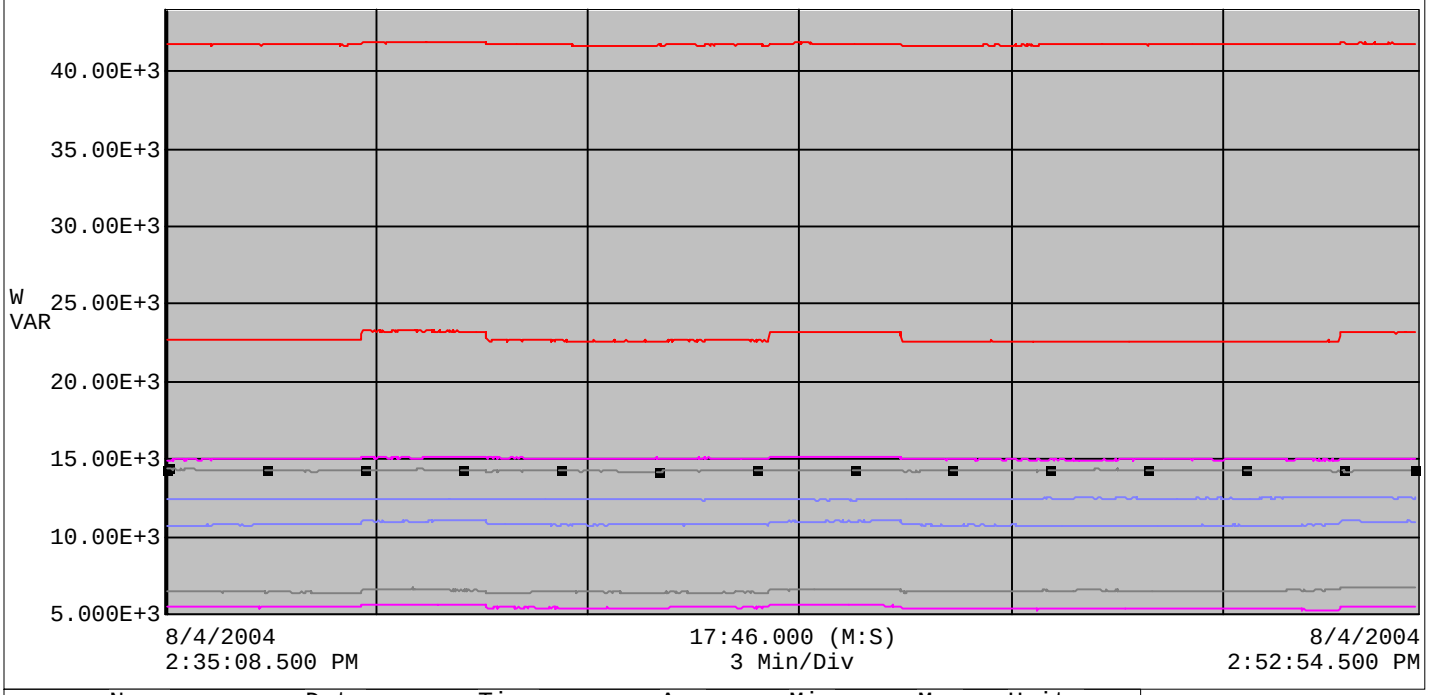
8/4/2004 - 2:35:08.000 PM
Val
58.00 — Arms Line1
57.90 — Arms Line2
63.30 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/4/2004	2:35:08.500 PM	3.196	3.000	3.500	%
Aunb(IEEE)	8/4/2004	2:35:08.500 PM	6.047	5.400	6.600	%

8/4/2004 - 2:35:08.000 PM
Val
3.500 —— Vunb(IEEE)
6.000 —— Aunb(IEEE)

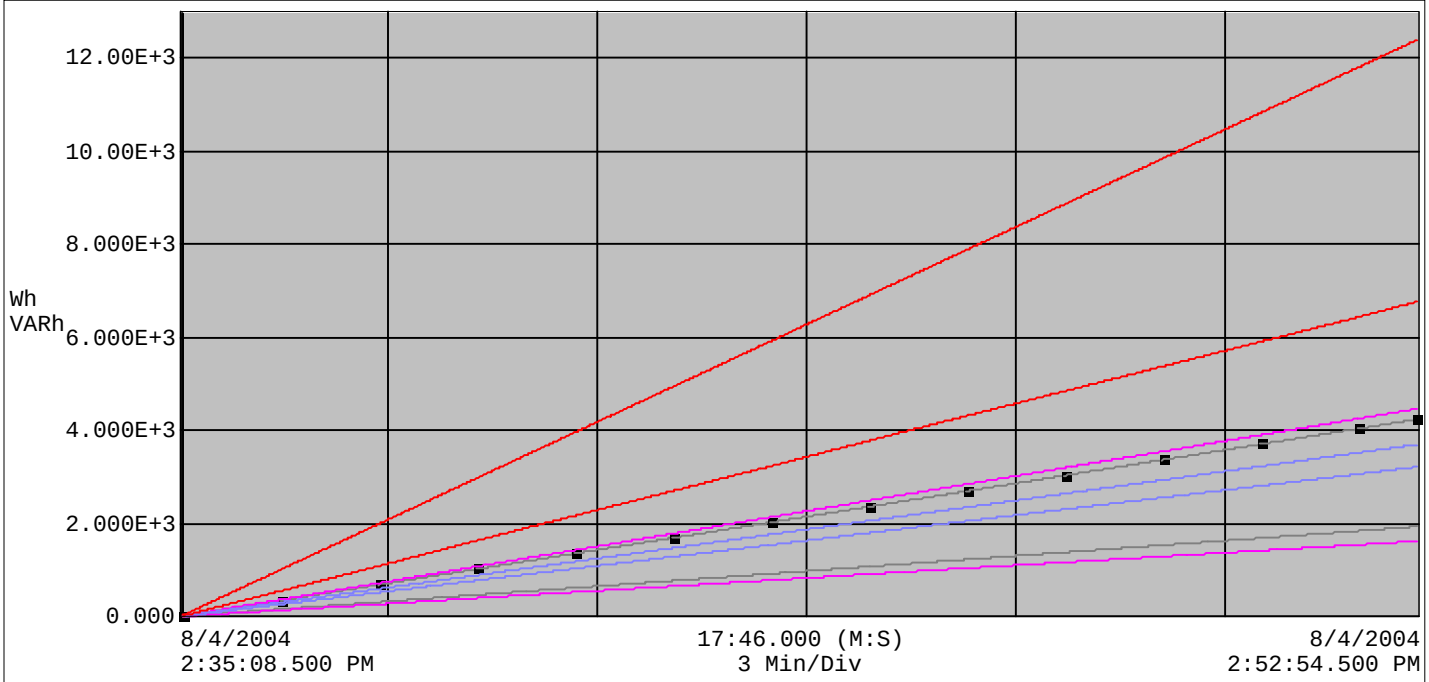
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/4/2004	2:35:08.500 PM	14.24E+3	14.12E+3	14.34E+3	W
W Line2	8/4/2004	2:35:08.500 PM	15.00E+3	14.88E+3	15.17E+3	W
W Line3	8/4/2004	2:35:08.500 PM	12.42E+3	12.32E+3	12.54E+3	W
W Sum of Phases	8/4/2004	2:35:08.500 PM	41.66E+3	41.54E+3	41.80E+3	W
VAR Line1	8/4/2004	2:35:08.500 PM	6.496E+3	6.325E+3	6.756E+3	VAR
VAR Line2	8/4/2004	2:35:08.500 PM	5.434E+3	5.252E+3	5.640E+3	VAR
VAR Line3	8/4/2004	2:35:08.500 PM	10.81E+3	10.63E+3	11.06E+3	VAR
VAR Sum of Phases	8/4/2004	2:35:08.500 PM	22.74E+3	22.47E+3	23.25E+3	VAR

8/4/2004 - 2:35:08.000 PM
Val
14.31E+3 — W Line1
14.91E+3 — W Line2
12.42E+3 — W Line3
41.64E+3 — W Sum of Phases
6.502E+3 — VAR Line1
5.476E+3 — VAR Line2
10.68E+3 — VAR Line3
22.66E+3 — VAR Sum of Phases

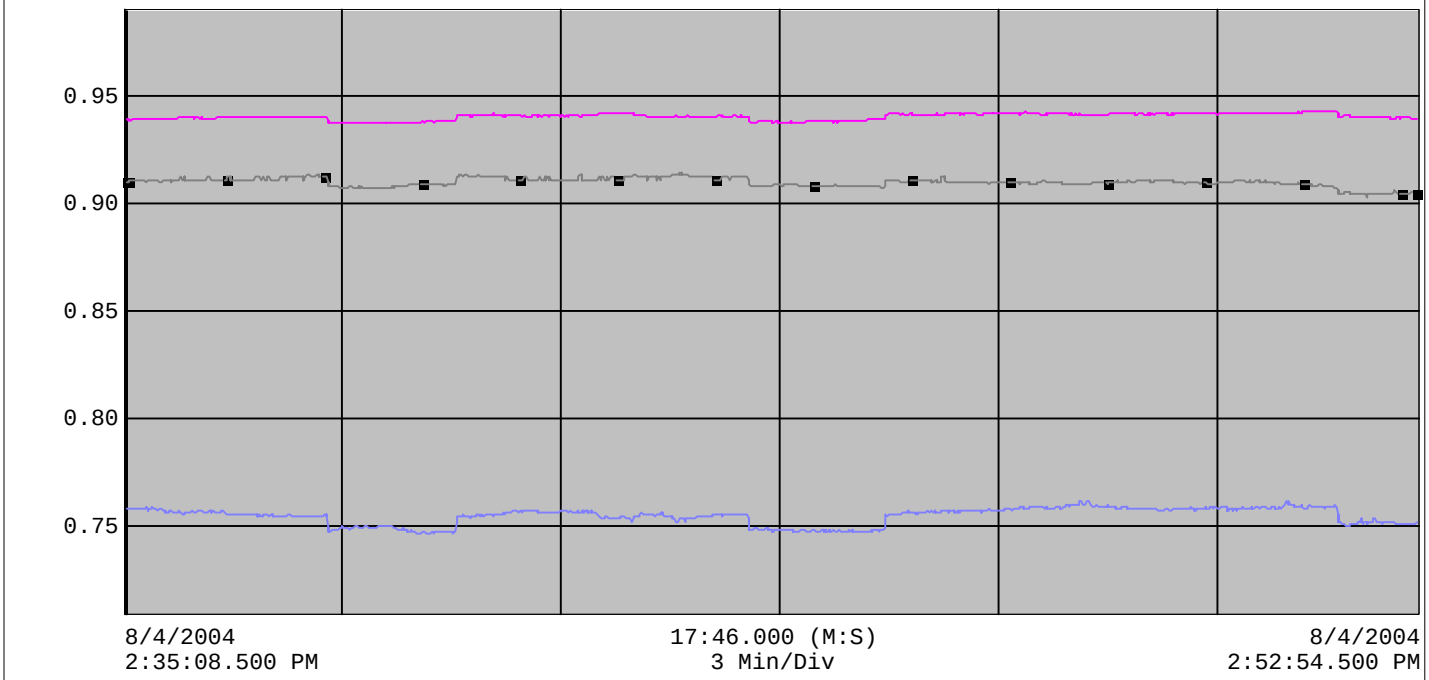
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/4/2004	2:35:08.500 PM	2.112E+3	3.993	4.221E+3	Wh
W-hours Line2	8/4/2004	2:35:08.500 PM	2.227E+3	4.206	4.445E+3	Wh
W-hours Line3	8/4/2004	2:35:08.500 PM	1.840E+3	3.483	3.681E+3	Wh
W-hours Sum of Phases	8/4/2004	2:35:08.500 PM	6.180E+3	11.68	12.35E+3	Wh
VAR-hours Line1	8/4/2004	2:35:08.500 PM	960.3	1.822	1.925E+3	VARh
VAR-hours Line2	8/4/2004	2:35:08.500 PM	810.4	1.524	1.611E+3	VARh
VAR-hours Line3	8/4/2004	2:35:08.500 PM	1.604E+3	2.932	3.203E+3	VARh
VAR-hours Sum of Phases	8/4/2004	2:35:08.500 PM	3.375E+3	6.375	6.739E+3	VARh

8/4/2004 - 2:35:08.000 PM
Val
3.993 — W-hours Line1
4.206 — W-hours Line2
3.483 — W-hours Line3
11.68 — W-hours Sum of Phases
1.822 — VAR-hours Line1
1.524 — VAR-hours Line2
2.932 — VAR-hours Line3
6.375 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/4/2004	2:35:08.500 PM	0.910	0.903	0.914	
PF Line2	8/4/2004	2:35:08.500 PM	0.940	0.937	0.943	
PF Line3	8/4/2004	2:35:08.500 PM	0.754	0.746	0.761	

8/4/2004 - 2:35:08.000 PM
Val
0.910 — PF Line1
0.939 — PF Line2
0.758 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F7\080404-F7.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS F-7 ,

Comments
Recordings taken at motor starter overload relay.

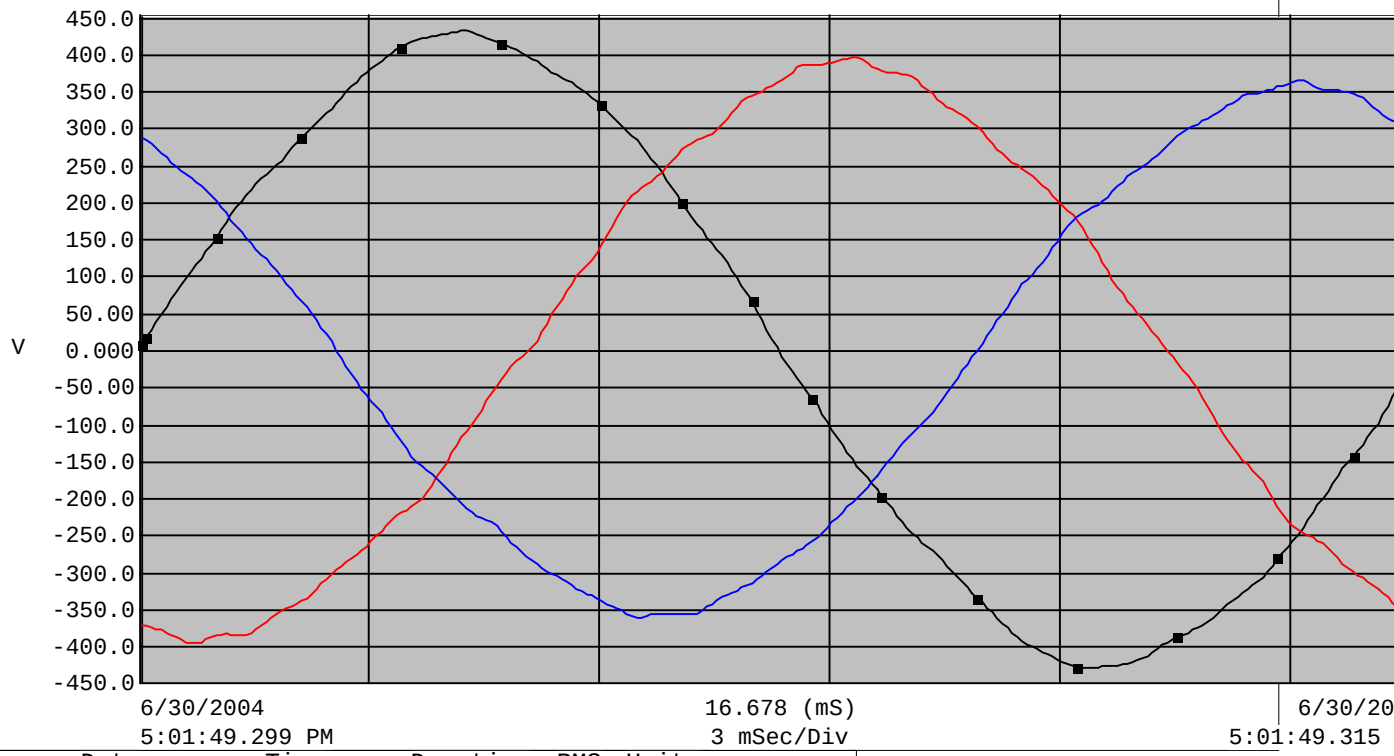
GWA Water Pumping Station Assessment				
Station Name: F-09	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 06/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.45	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	3
Transformer Wiring Method	5.0%	2	0.1	2
Lightning Arrester Condition	5.0%	2	0.1	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.05	
Pressure	1.5%	1	0.015	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.3**

Comments:

WPS F-9 - Photo1

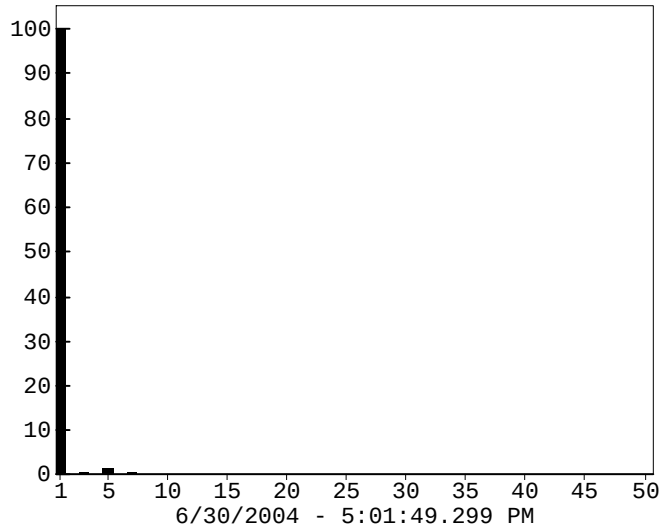
Recording Start Date	6/30/2004 - 5:01:49 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	6/30/2004	5:01:49.299 PM	16.678	299.0	V
Waveform V2	6/30/2004	5:01:49.299 PM	16.678	272.7	V
Waveform V3	6/30/2004	5:01:49.299 PM	16.678	250.9	V

Waveform V1
298.95 Vrms, 1.92 %THD

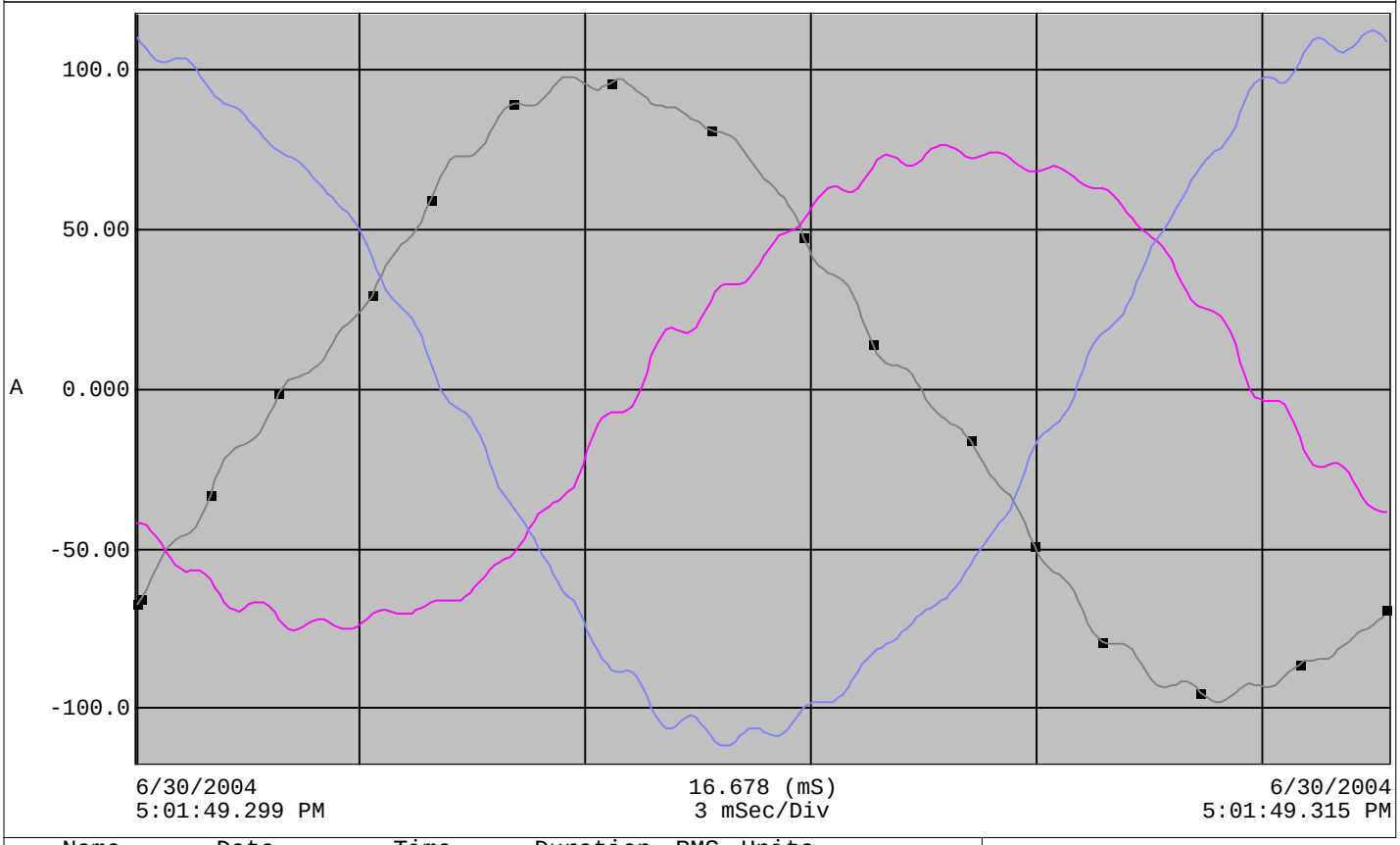


6/30/2004 - 5:01:49.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

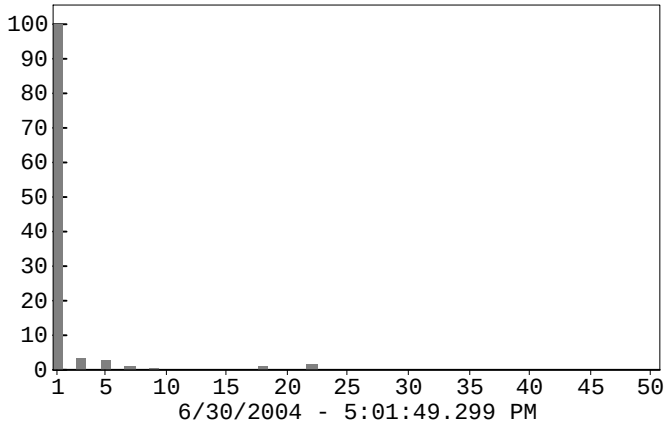
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.7	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.5	H22	0.3	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	6/30/2004	5:01:49.299 PM	16.678	66.67	A
Waveform I2	6/30/2004	5:01:49.299 PM	16.678	53.93	A
Waveform I3	6/30/2004	5:01:49.299 PM	16.678	77.12	A

Waveform I1
66.67 Arms, 5.54 %THD

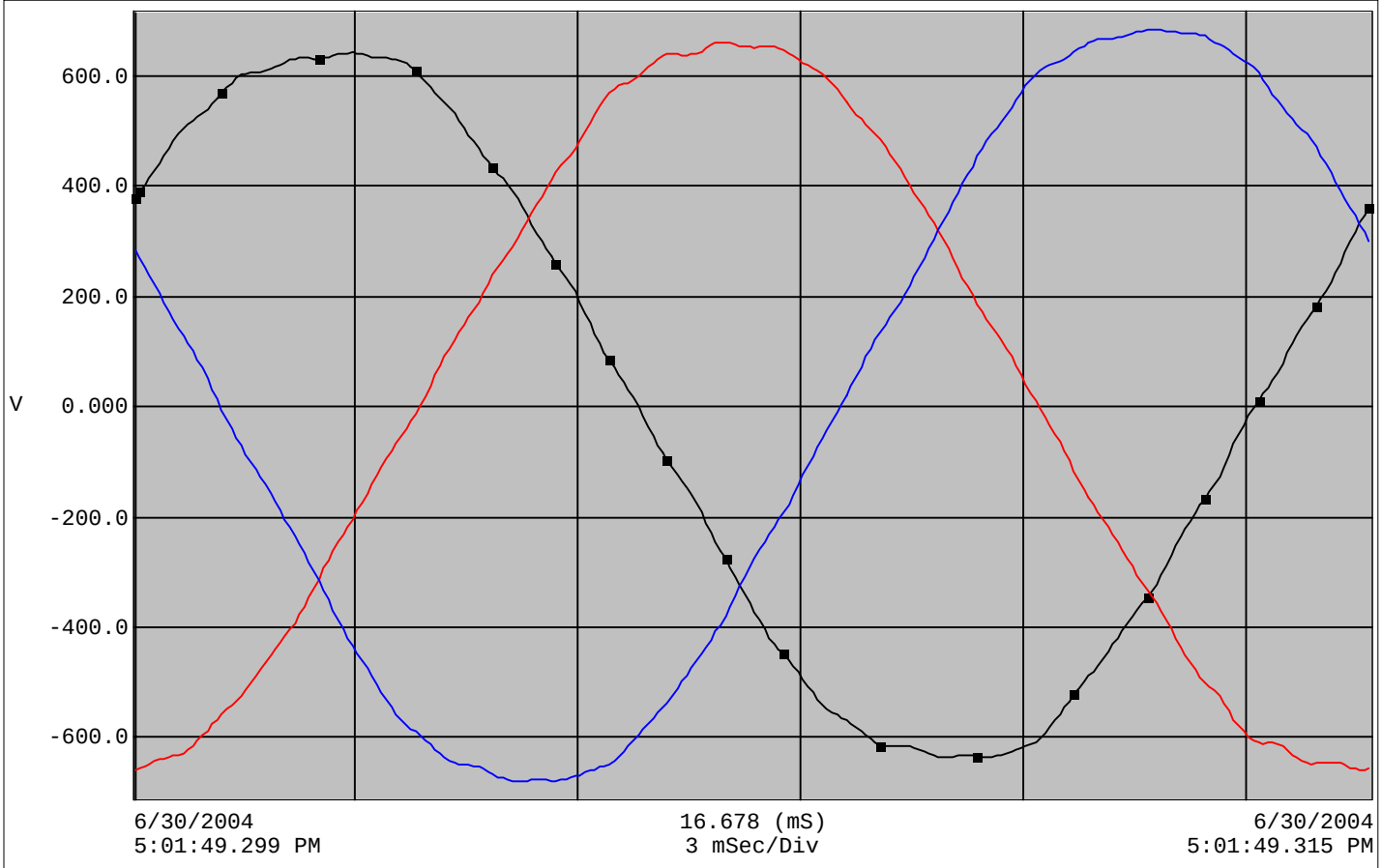


6/30/2004 - 5:01:49.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

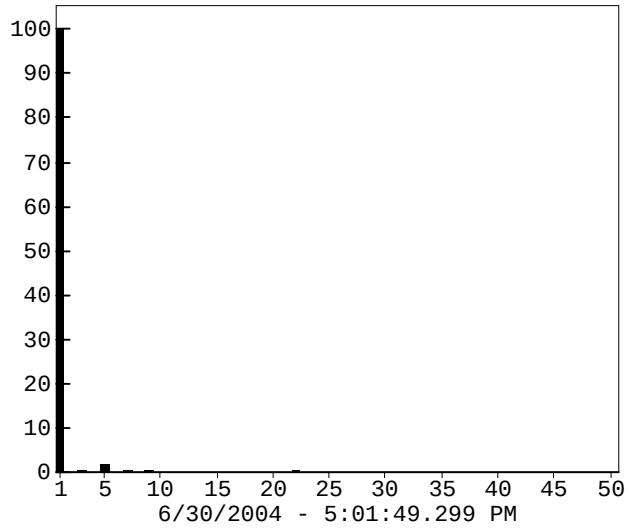
	(%)		(%)		(%)
H01	100.0	H18	1.1	H35	0.0
H02	0.1	H19	0.4	H36	0.0
H03	3.4	H20	0.2	H37	0.0
H04	0.0	H21	0.4	H38	0.0
H05	3.2	H22	2.1	H39	0.0
H06	0.1	H23	0.5	H40	0.1
H07	1.3	H24	0.5	H41	0.1
H08	0.0	H25	0.1	H42	0.1
H09	0.6	H26	0.1	H43	0.0
H10	0.1	H27	0.1	H44	0.1
H11	0.3	H28	0.2	H45	0.0
H12	0.2	H29	0.0	H46	0.1
H13	0.4	H30	0.0	H47	0.0
H14	0.1	H31	0.1	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.4	H33	0.0	H50	0.0
H17	0.3	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	6/30/2004	5:01:49.299 PM	16.678	461.1	V
Waveform U2	6/30/2004	5:01:49.299 PM	16.678	468.8	V
Waveform U3	6/30/2004	5:01:49.299 PM	16.678	489.2	V

Waveform U1
461.15 Vrms, 2.22 %THD



6/30/2004 - 5:01:49.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.6	H20	0.1	H37	0.0
H04	0.0	H21	0.2	H38	0.0
H05	1.7	H22	0.6	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.7	H24	0.0	H41	0.1
H08	0.0	H25	0.1	H42	0.0
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 6/30/2004
Start Time: 5:01:49 PM
Duration: 0:0.000 (M:S)
W: 14.34E+3 W
VAR: 13.91E+3 W
VA: 19.97E+3 W
Power Factor: 0.718
Displacement Power Factor: 0.719
TAN: 0.967
VoltageRatio: 1.000
CurrentRatio: 1.000

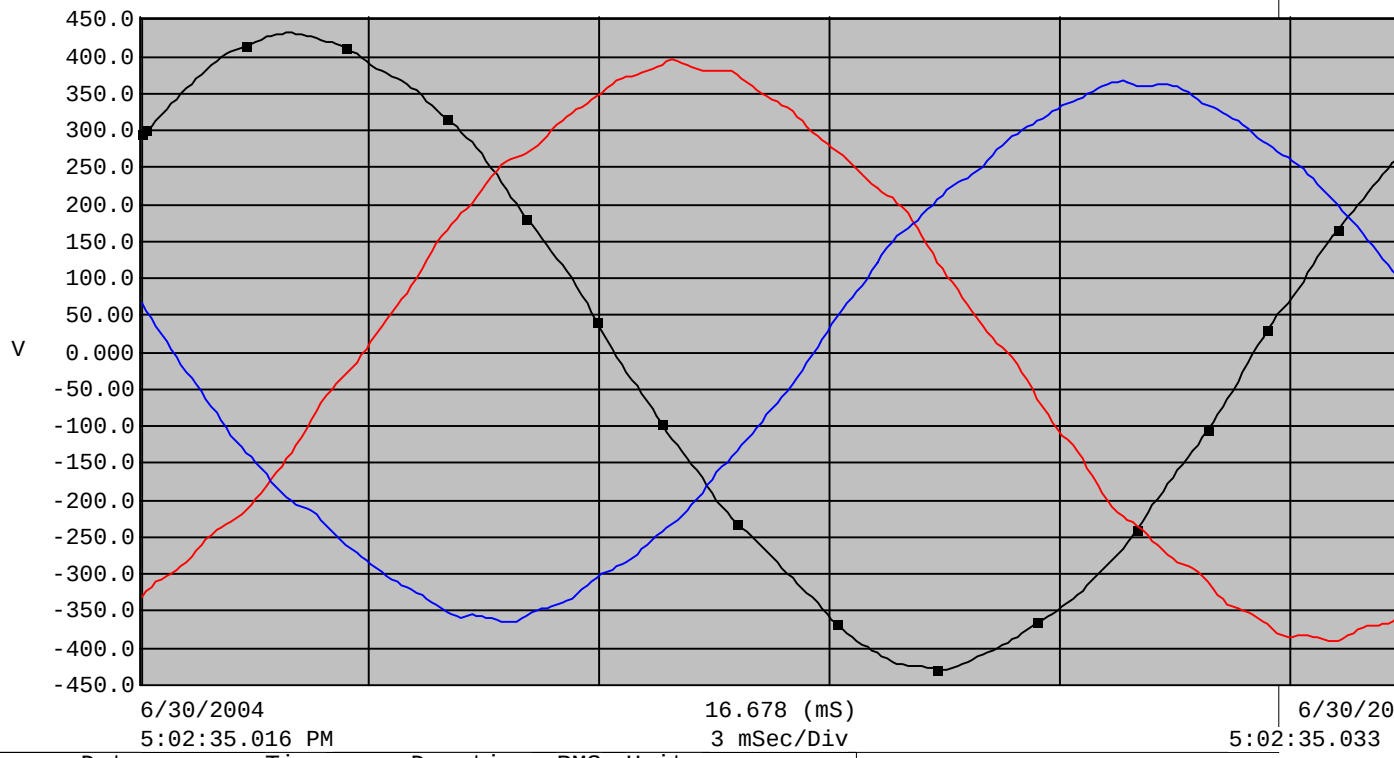
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F9\063004-F9-Photo1.dvb	
Operator ,	Test Site ,
Comments	

WPS F-9 - Photo2

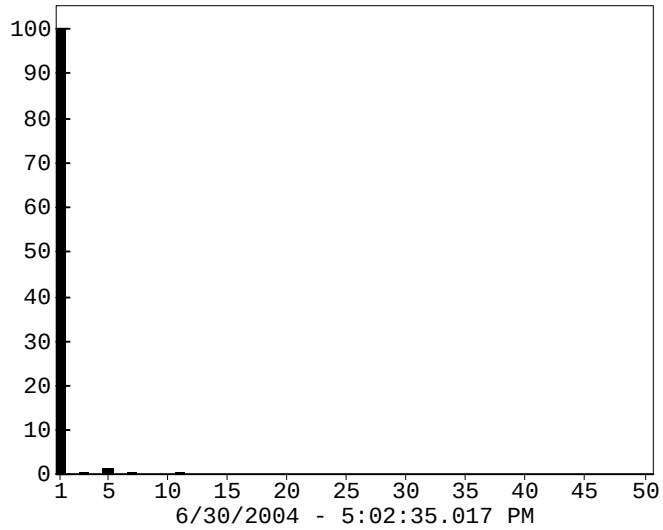
Recording Start Date	6/30/2004 - 5:02:35 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	6/30/2004	5:02:35.016 PM	16.678	298.6	V
Waveform V2	6/30/2004	5:02:35.016 PM	16.678	270.7	V
Waveform V3	6/30/2004	5:02:35.016 PM	16.678	253.5	V

Waveform V1
298.59 Vrms, 1.94 %THD



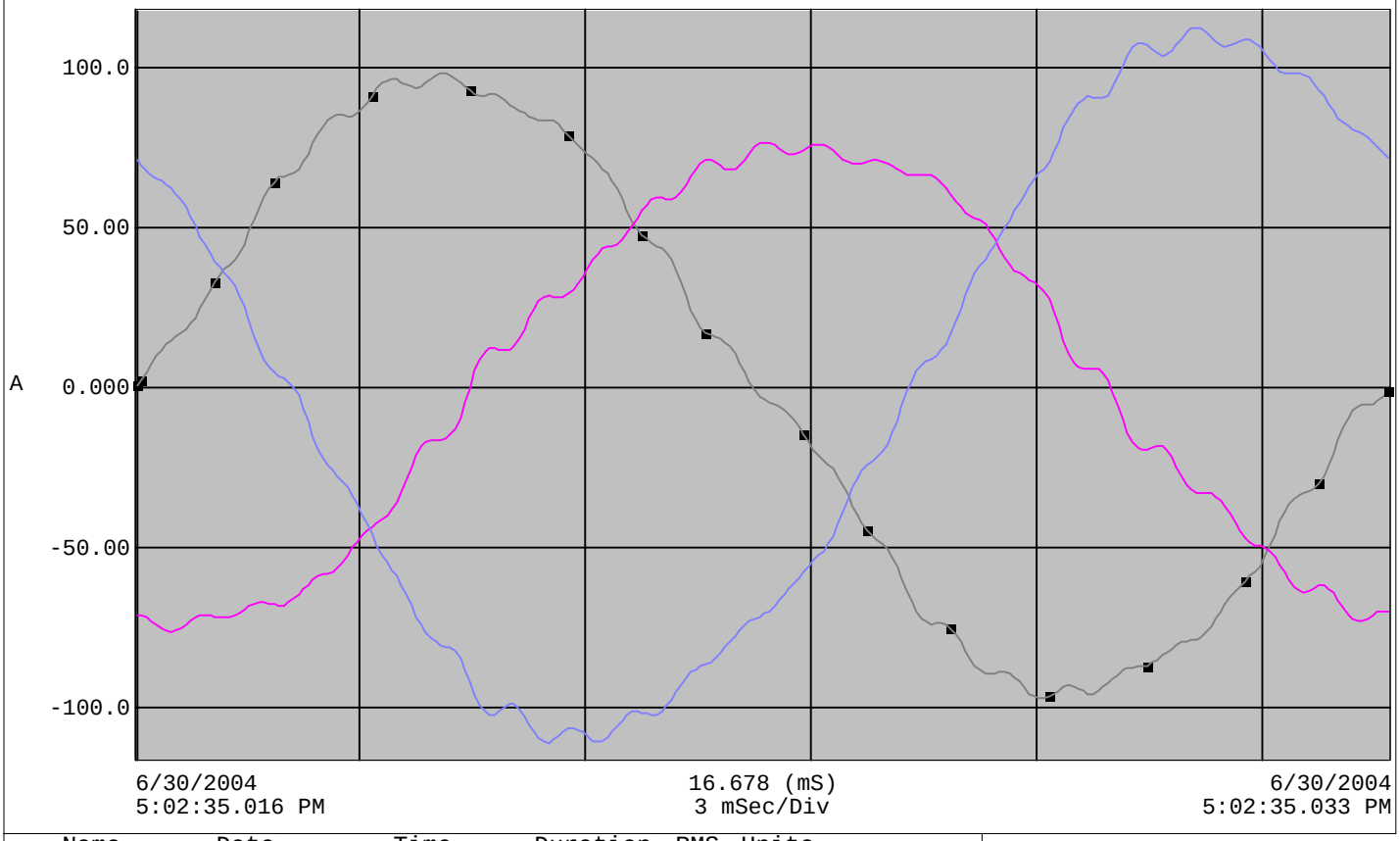
6/30/2004 - 5:02:35.000 PM

Val	
293.0	Waveform V1
-331.3	Waveform V2
64.20	Waveform V3

Waveform V1

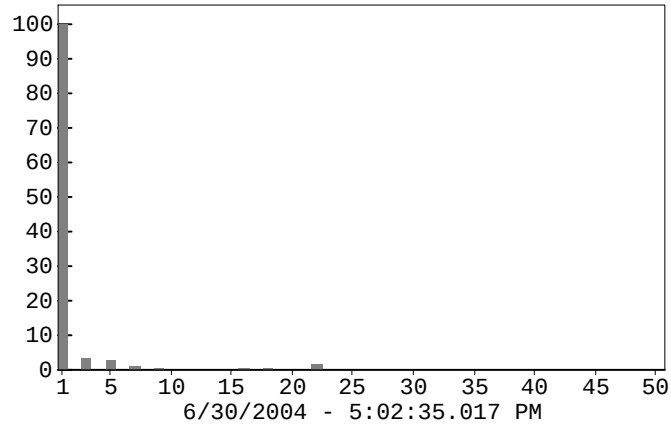
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.7	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.5	H22	0.3	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	6/30/2004	5:02:35.016 PM	16.678	66.56	A
Waveform I2	6/30/2004	5:02:35.016 PM	16.678	54.00	A
Waveform I3	6/30/2004	5:02:35.016 PM	16.678	77.15	A

Waveform I1
66.56 Arms, 5.58 %THD



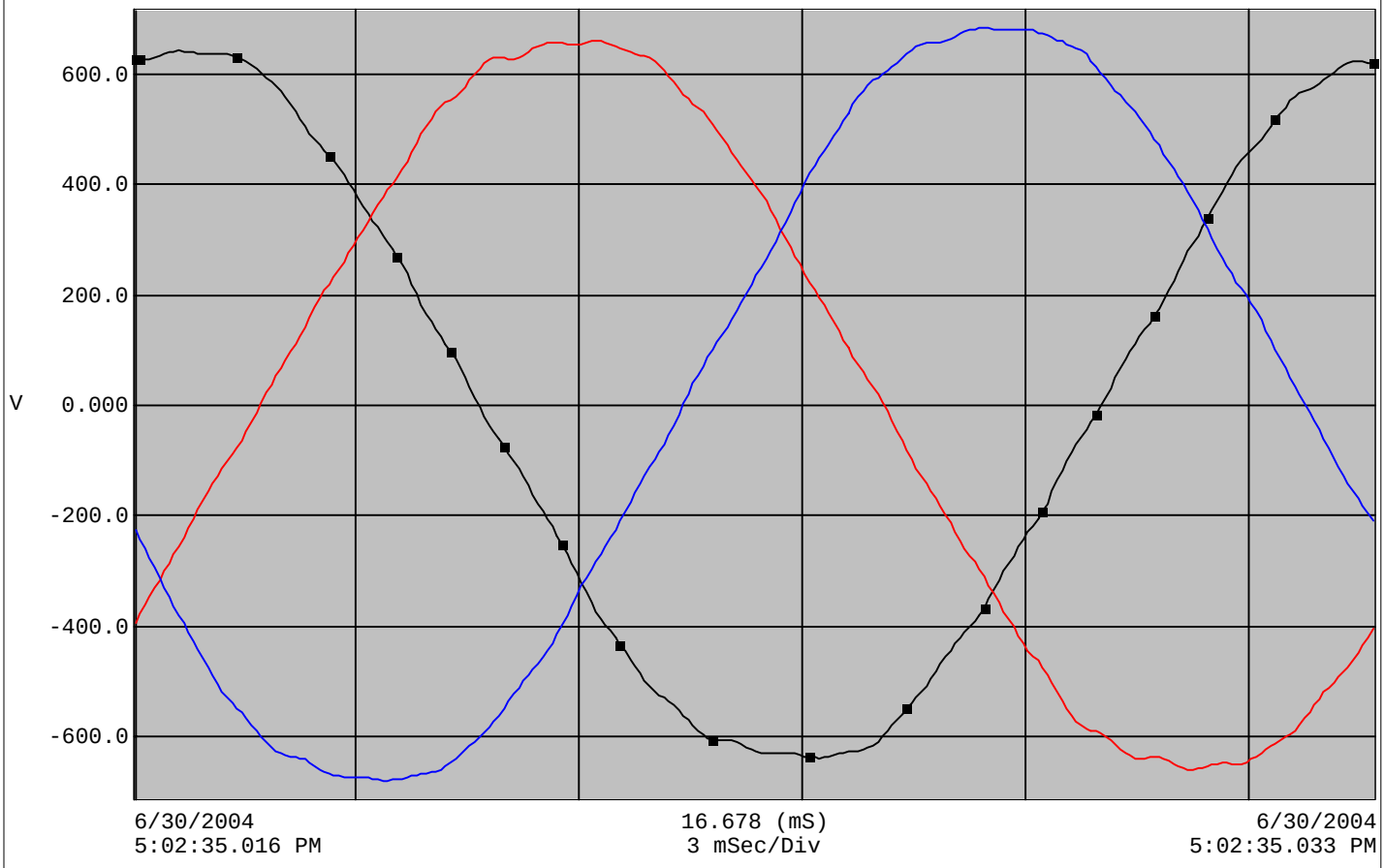
6/30/2004 - 5:02:35.000 PM

	Val
Waveform I1	0.400
Waveform I2	-71.50
Waveform I3	70.70

Waveform I1

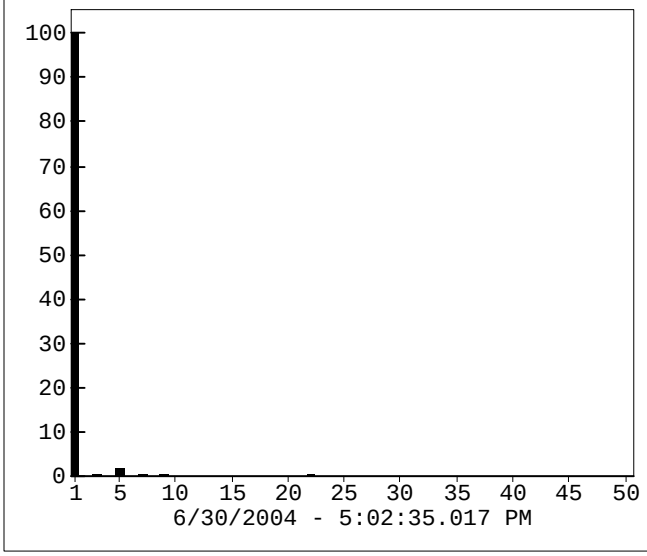
	(%)		(%)		(%)
H01	100.0	H18	1.1	H35	0.0
H02	0.1	H19	0.4	H36	0.1
H03	3.4	H20	0.3	H37	0.1
H04	0.1	H21	0.4	H38	0.0
H05	3.2	H22	2.1	H39	0.0
H06	0.0	H23	0.5	H40	0.0
H07	1.2	H24	0.1	H41	0.1
H08	0.1	H25	0.2	H42	0.1
H09	0.6	H26	0.1	H43	0.1
H10	0.1	H27	0.1	H44	0.0
H11	0.3	H28	0.2	H45	0.1
H12	0.2	H29	0.0	H46	0.0
H13	0.4	H30	0.1	H47	0.0
H14	0.2	H31	0.1	H48	0.0
H15	0.2	H32	0.1	H49	0.0
H16	0.6	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	6/30/2004	5:02:35.016 PM	16.678	461.4	V
Waveform U2	6/30/2004	5:02:35.016 PM	16.678	469.3	V
Waveform U3	6/30/2004	5:02:35.016 PM	16.678	489.6	V

Waveform U1
461.43 Vrms, 2.23 %THD



6/30/2004 - 5:02:35.000 PM

	Val	
—	624.3	Waveform U1
—	-395.5	Waveform U2
—	-228.8	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.3	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.6	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.7	H22	0.6	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.7	H24	0.1	H41	0.1
H08	0.0	H25	0.1	H42	0.1
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 6/30/2004
Start Time: 5:02:35 PM
Duration: 0:0.000 (M:S)
W: 14.16E+3 W
VAR: 14.00E+3 W
VA: 19.91E+3 W
Power Factor: 0.711
Displacement Power Factor: 0.712
TAN: 0.985
VoltageRatio: 1.000
CurrentRatio: 1.000
```

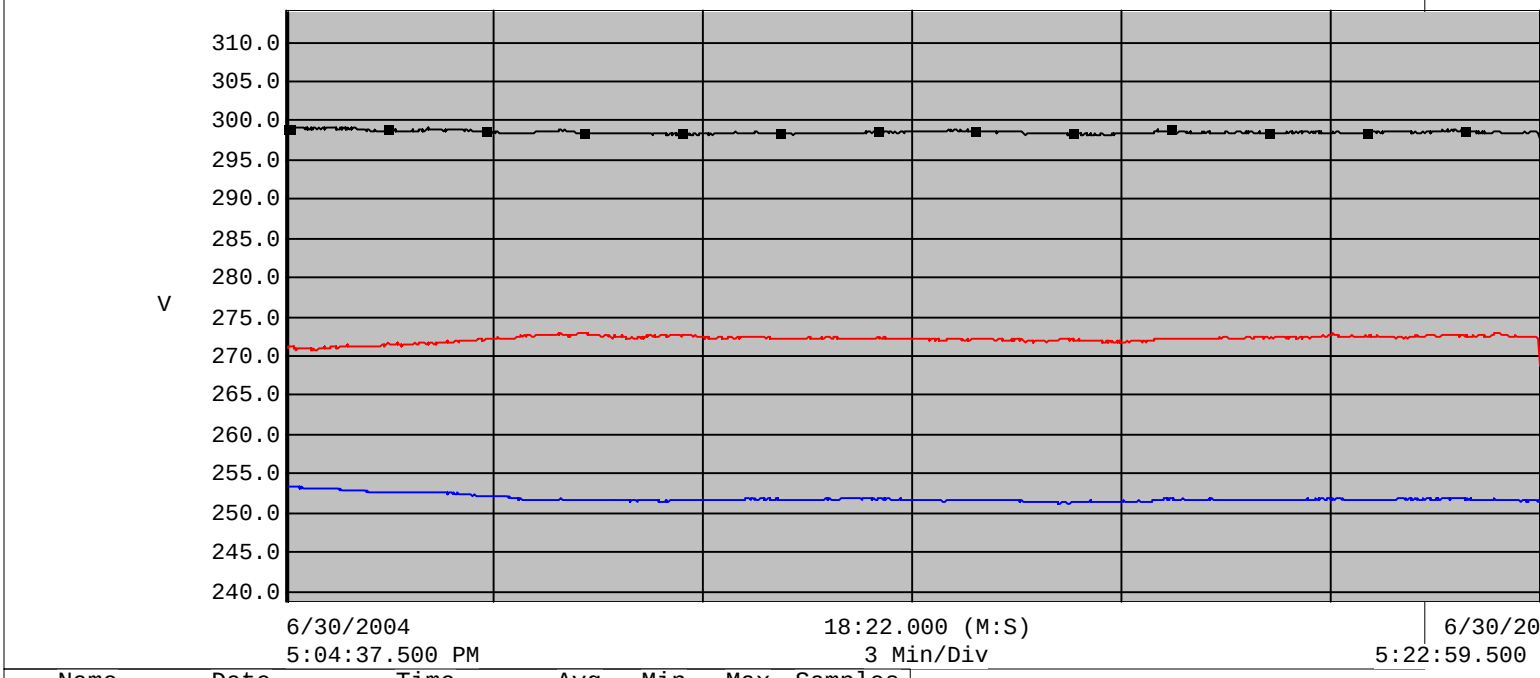
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F9\063004-F9-Photo2.dvb	
Operator ,	Test Site ,
Comments	

WPS F-9

Recording Start Date	6/30/2004 - 5:04:37 PM
Recording Duration	18:22 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

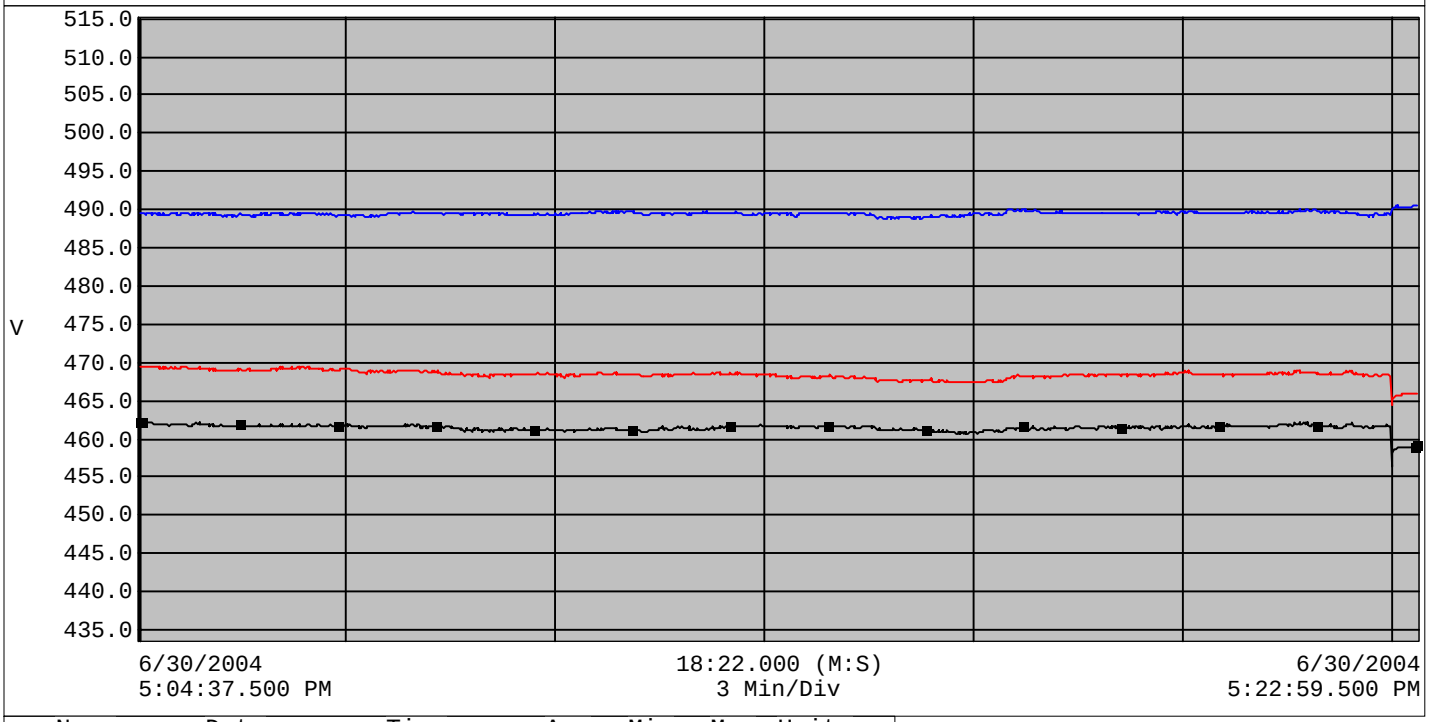
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	6/30/2004	5:04:37.500 PM	298.4	297.5	299.0	1103
Vrms Line2	6/30/2004	5:04:37.500 PM	272.0	268.6	272.8	1103
Vrms Line3	6/30/2004	5:04:37.500 PM	251.7	251.1	253.3	1103

6/30/2004 - 5:04:37.000 PM
Val
298.8 — Vrms Line1
270.9 — Vrms Line2
253.2 — Vrms Line3

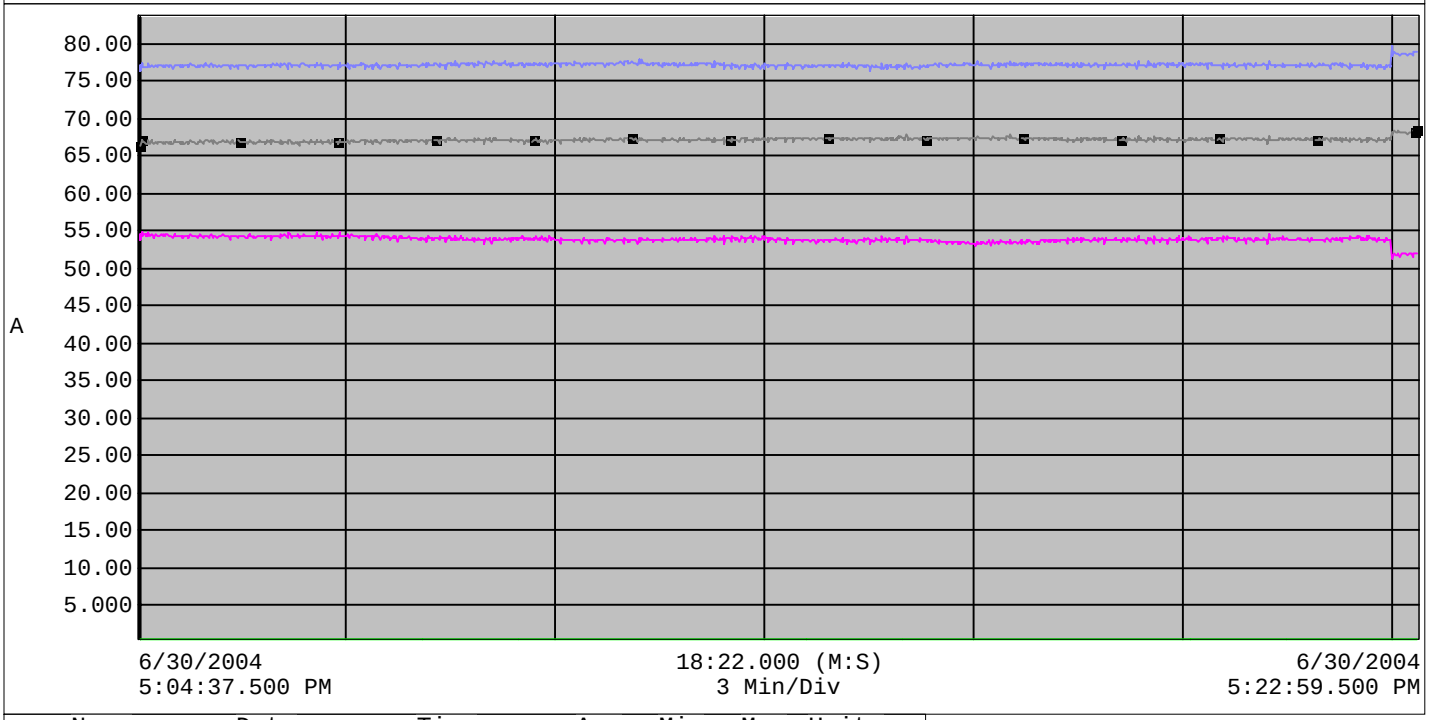
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	6/30/2004	5:04:37.500 PM	461.3	456.2	462.1	V
Urms Line2	6/30/2004	5:04:37.500 PM	468.3	464.3	469.4	V
Urms Line3	6/30/2004	5:04:37.500 PM	489.3	488.6	490.5	V

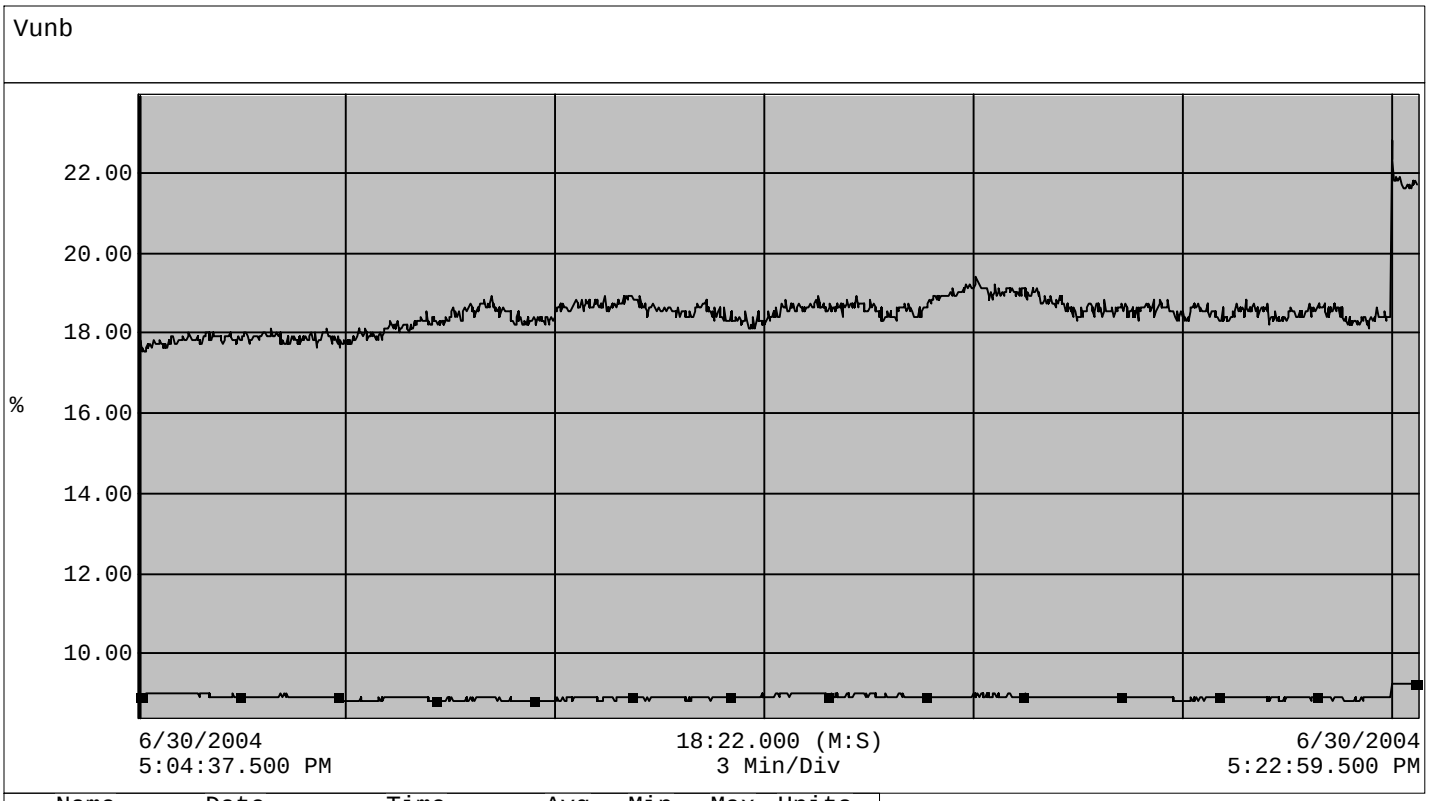
6/30/2004 - 5:04:37.000 PM
Val
461.9 — Urms Line1
469.3 — Urms Line2
489.3 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	6/30/2004	5:04:37.500 PM	67.05	66.20	68.20	A
Arms Line2	6/30/2004	5:04:37.500 PM	53.77	51.10	54.70	A
Arms Line3	6/30/2004	5:04:37.500 PM	77.06	76.20	79.70	A
Arms Neutral	6/30/2004	5:04:37.500 PM	0.400	0.400	0.400	A

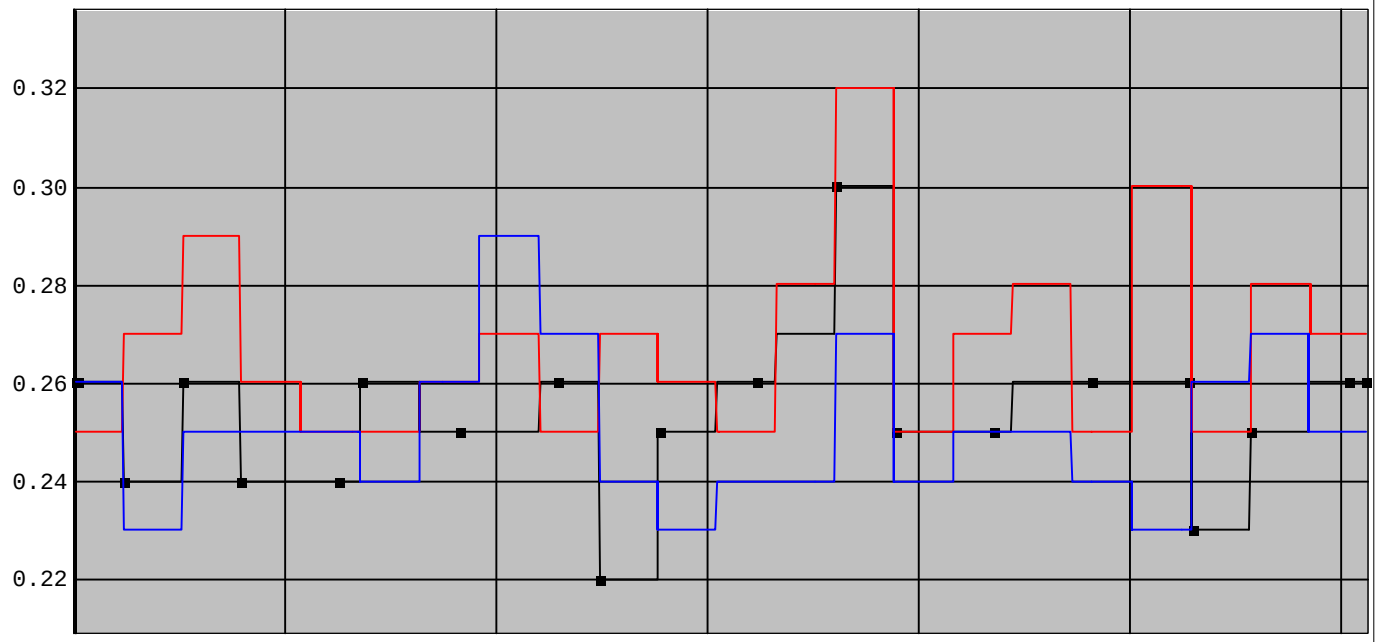
6/30/2004 - 5:04:37.000 PM
Val
66.80 — Arms Line1
54.50 — Arms Line2
77.00 — Arms Line3
0.400 — Arms Neutral



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	6/30/2004	5:04:37.500 PM	8.903	8.800	9.200	%
Aunb(IEEE)	6/30/2004	5:04:37.500 PM	18.48	17.50	22.80	%

6/30/2004 - 5:04:37.000 PM
Val
8.900 —— Vunb(IEEE)
17.50 —— Aunb(IEEE)

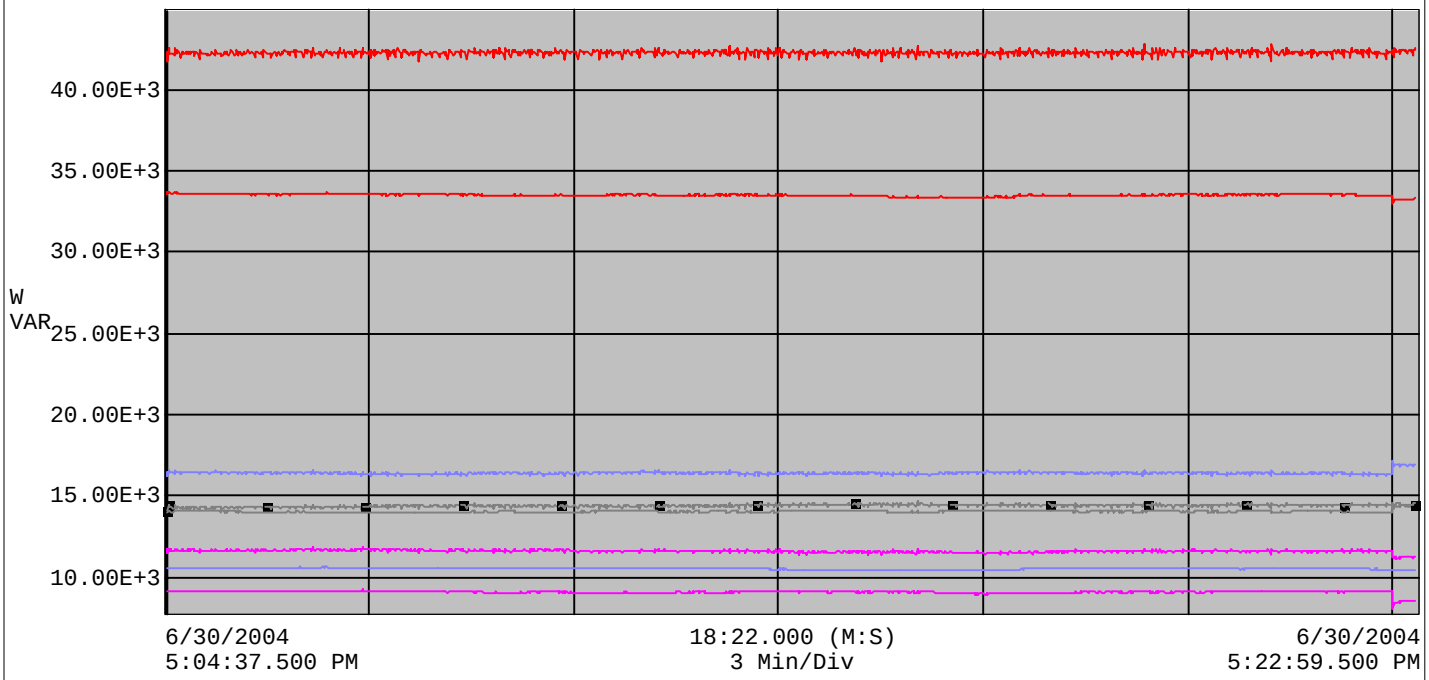
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	6/30/2004	5:04:37.500 PM	0.254	0.220	0.300	
Vflk Line2	6/30/2004	5:04:37.500 PM	0.267	0.250	0.320	
Vflk Line3	6/30/2004	5:04:37.500 PM	0.250	0.230	0.290	

6/30/2004 - 5:04:37.000 PM
Val
0.260 Vflk Line1
0.250 Vflk Line2
0.260 Vflk Line3

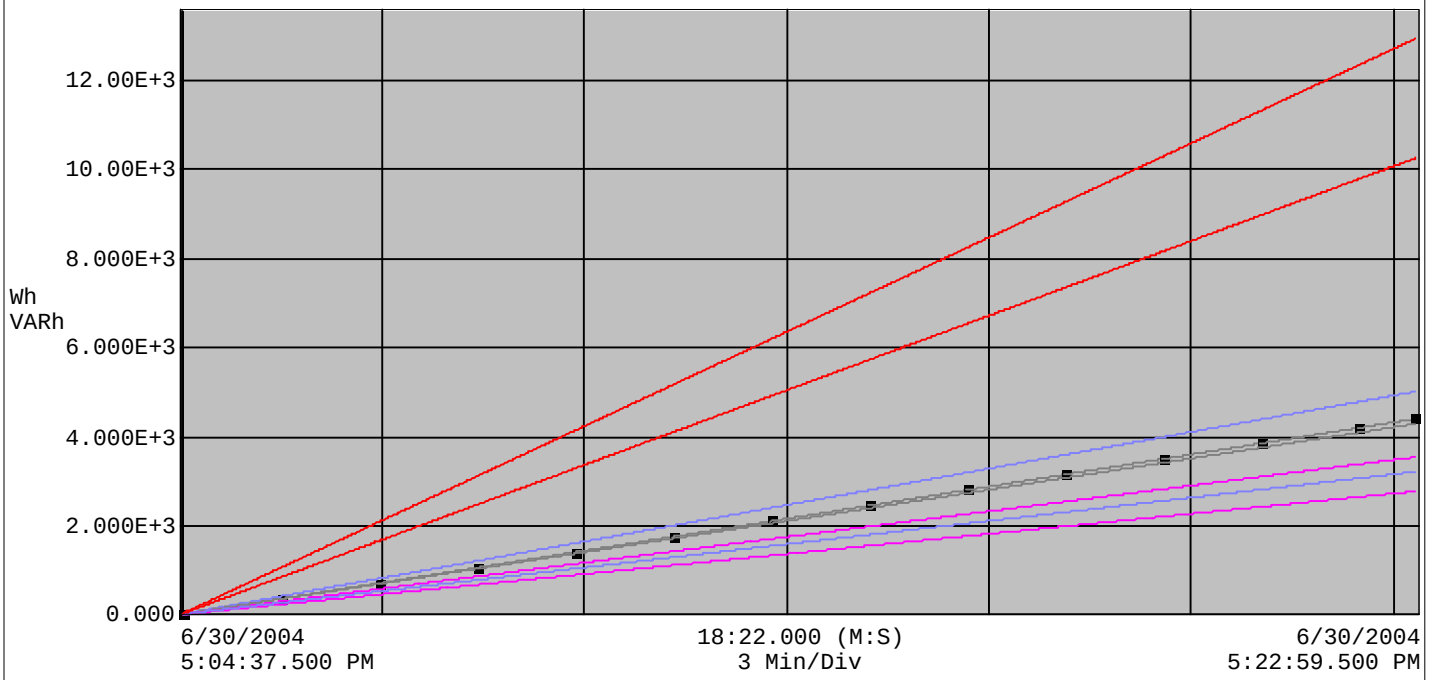
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	6/30/2004	5:04:37.500 PM	14.33E+3	14.03E+3	14.56E+3	W
W Line2	6/30/2004	5:04:37.500 PM	11.53E+3	11.02E+3	11.74E+3	W
W Line3	6/30/2004	5:04:37.500 PM	16.34E+3	16.12E+3	17.11E+3	W
W Sum of Phases	6/30/2004	5:04:37.500 PM	42.19E+3	41.62E+3	42.71E+3	W
VAR Line1	6/30/2004	5:04:37.500 PM	13.97E+3	13.86E+3	14.47E+3	VAR
VAR Line2	6/30/2004	5:04:37.500 PM	9.006E+3	8.047E+3	9.138E+3	VAR
VAR Line3	6/30/2004	5:04:37.500 PM	10.45E+3	10.30E+3	10.56E+3	VAR
VAR Sum of Phases	6/30/2004	5:04:37.500 PM	33.43E+3	32.90E+3	33.61E+3	VAR

6/30/2004 - 5:04:37.000 PM
Val
14.26E+3 — W Line1
11.63E+3 — W Line2
16.40E+3 — W Line3
42.29E+3 — W Sum of Phases
13.96E+3 — VAR Line1
9.091E+3 — VAR Line2
10.53E+3 — VAR Line3
33.58E+3 — VAR Sum of Phases

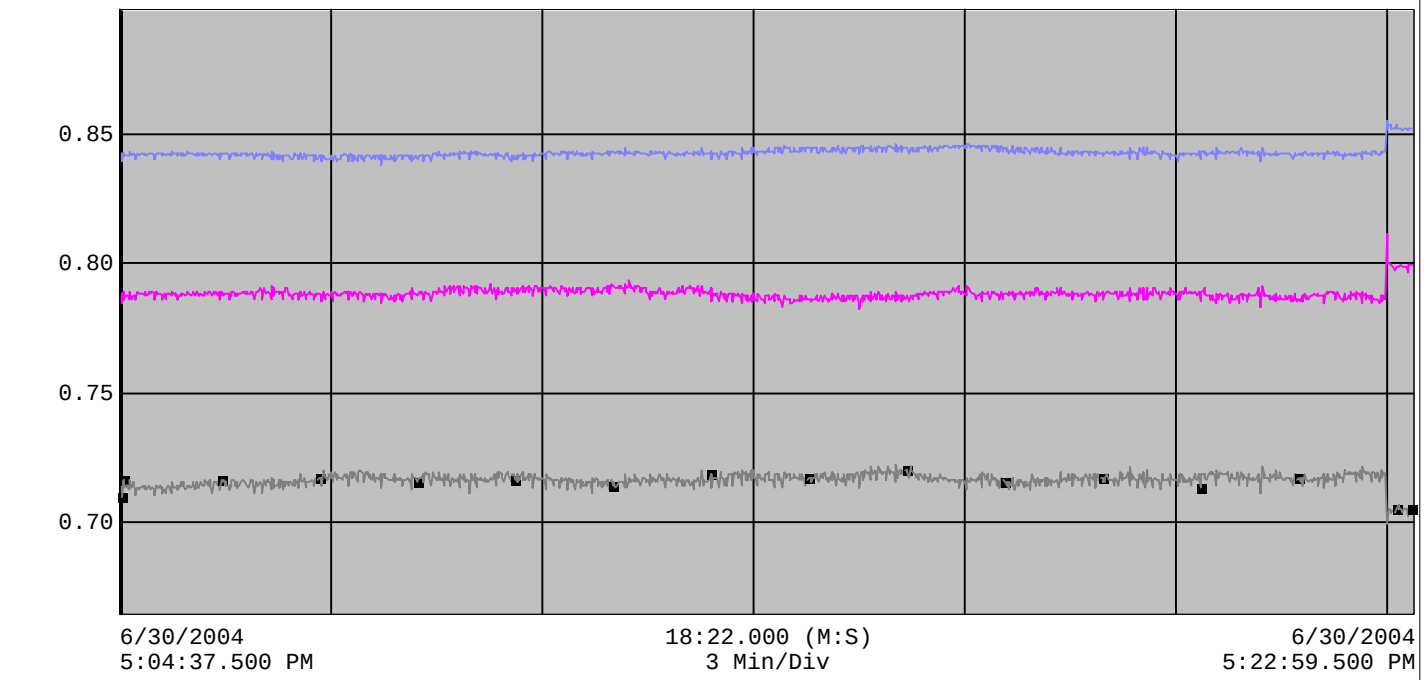
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	6/30/2004	5:04:37.500 PM	2.193E+3	4.019	4.389E+3	Wh
W-hours Line2	6/30/2004	5:04:37.500 PM	1.771E+3	3.234	3.532E+3	Wh
W-hours Line3	6/30/2004	5:04:37.500 PM	2.504E+3	4.583	5.006E+3	Wh
W-hours Sum of Phases	6/30/2004	5:04:37.500 PM	6.468E+3	11.84	12.93E+3	Wh
VAR-hours Line1	6/30/2004	5:04:37.500 PM	2.140E+3	3.920	4.281E+3	VARh
VAR-hours Line2	6/30/2004	5:04:37.500 PM	1.384E+3	2.526	2.759E+3	VARh
VAR-hours Line3	6/30/2004	5:04:37.500 PM	1.605E+3	2.932	3.203E+3	VARh
VAR-hours Sum of Phases	6/30/2004	5:04:37.500 PM	5.129E+3	9.378	10.24E+3	VARh

6/30/2004 - 5:04:37.000 PM
Val
4.019 — W-hours Line1
3.234 — W-hours Line2
4.583 — W-hours Line3
11.84 — W-hours Sum of Phases
3.920 — VAR-hours Line1
2.526 — VAR-hours Line2
2.932 — VAR-hours Line3
9.378 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	6/30/2004	5:04:37.500 PM	0.716	0.699	0.722	
PF Line2	6/30/2004	5:04:37.500 PM	0.788	0.782	0.811	
PF Line3	6/30/2004	5:04:37.500 PM	0.842	0.838	0.855	

6/30/2004 - 5:04:37.000 PM
Val
0.714 — PF Line1
0.788 — PF Line2
0.842 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F9\063004-F9.dvb	
Operator ,	Test Site ,
Comments	

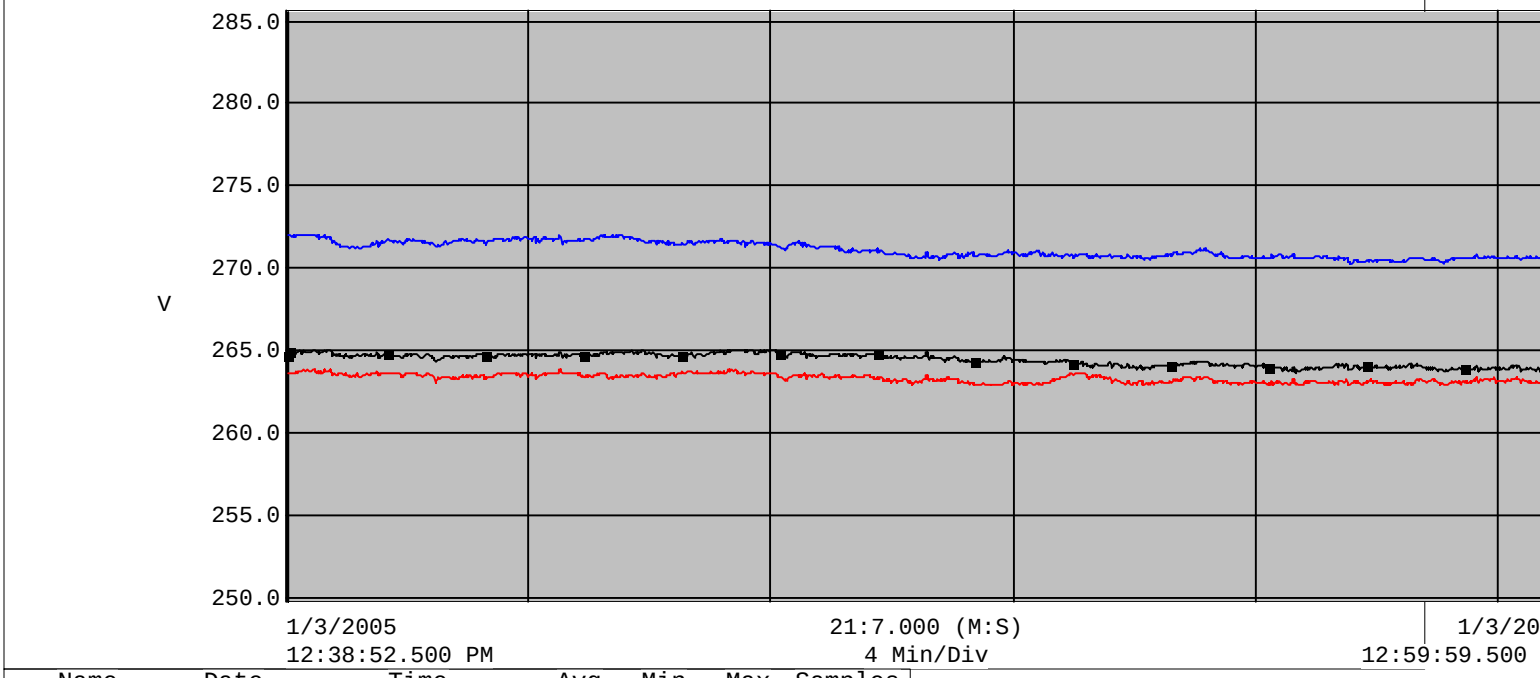
GWA Water Pumping Station Assessment				
Station Name: F-10	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/28/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.5	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	0	0	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.1	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	2	0.04	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.4**

Comments:

WPS F-10

Recording Start Date	1/3/2005 - 12:38:52 PM
Recording Duration	21:07 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

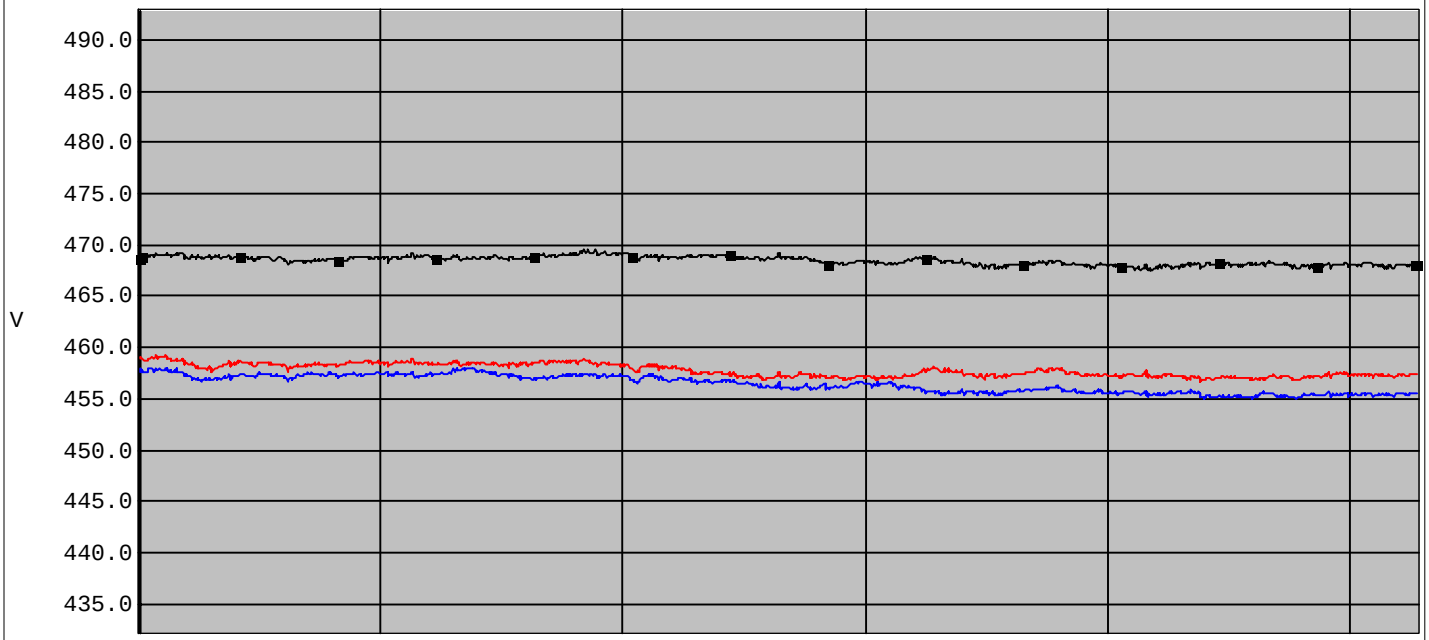
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	1/3/2005	12:38:52.500 PM	264.4	263.6	265.0	1268
Vrms Line2	1/3/2005	12:38:52.500 PM	263.2	262.8	263.8	1268
Vrms Line3	1/3/2005	12:38:52.500 PM	271.1	270.2	272.0	1268

1/3/2005 - 12:38:52.000 PM
Val
264.6 — Vrms Line1
263.5 — Vrms Line2
271.9 — Vrms Line3

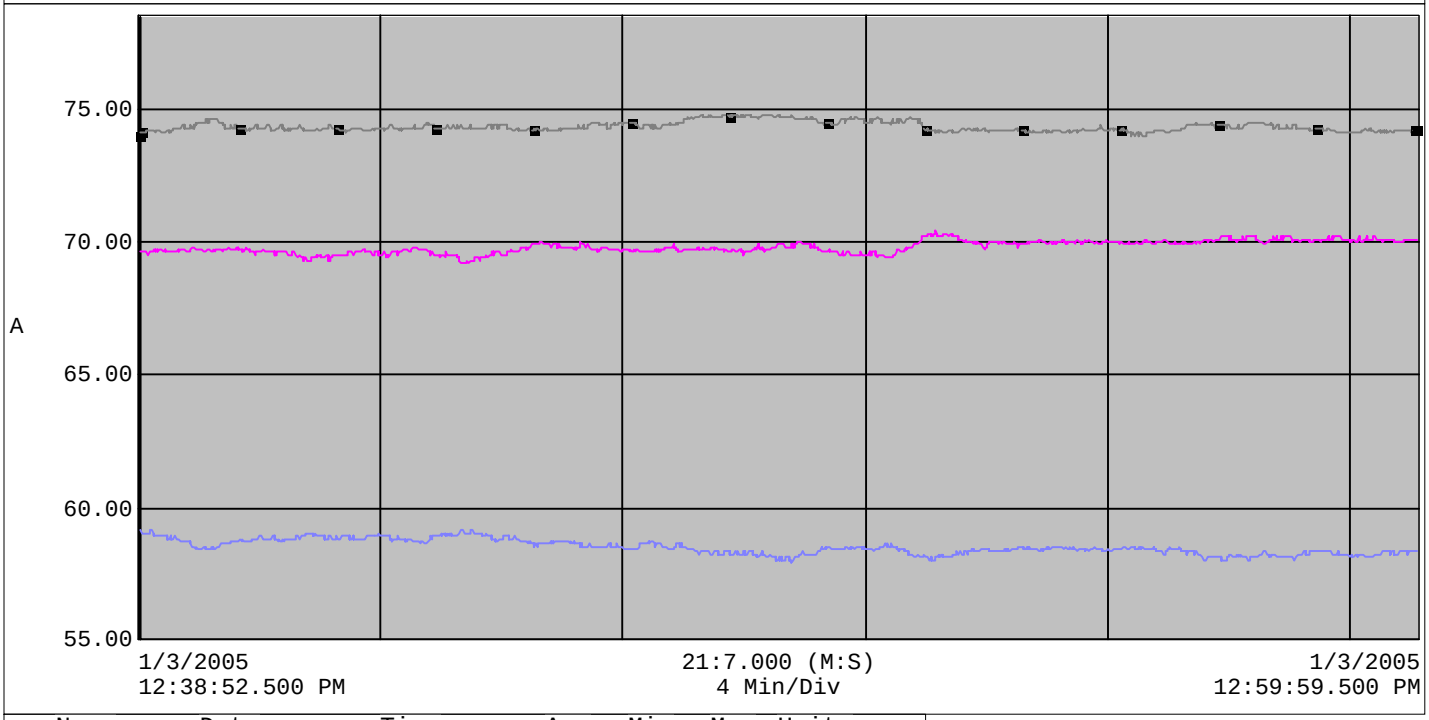
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	1/3/2005	12:38:52.500 PM	468.4	467.4	469.4	V
Urms Line2	1/3/2005	12:38:52.500 PM	457.7	456.6	459.1	V
Urms Line3	1/3/2005	12:38:52.500 PM	456.4	454.8	457.9	V

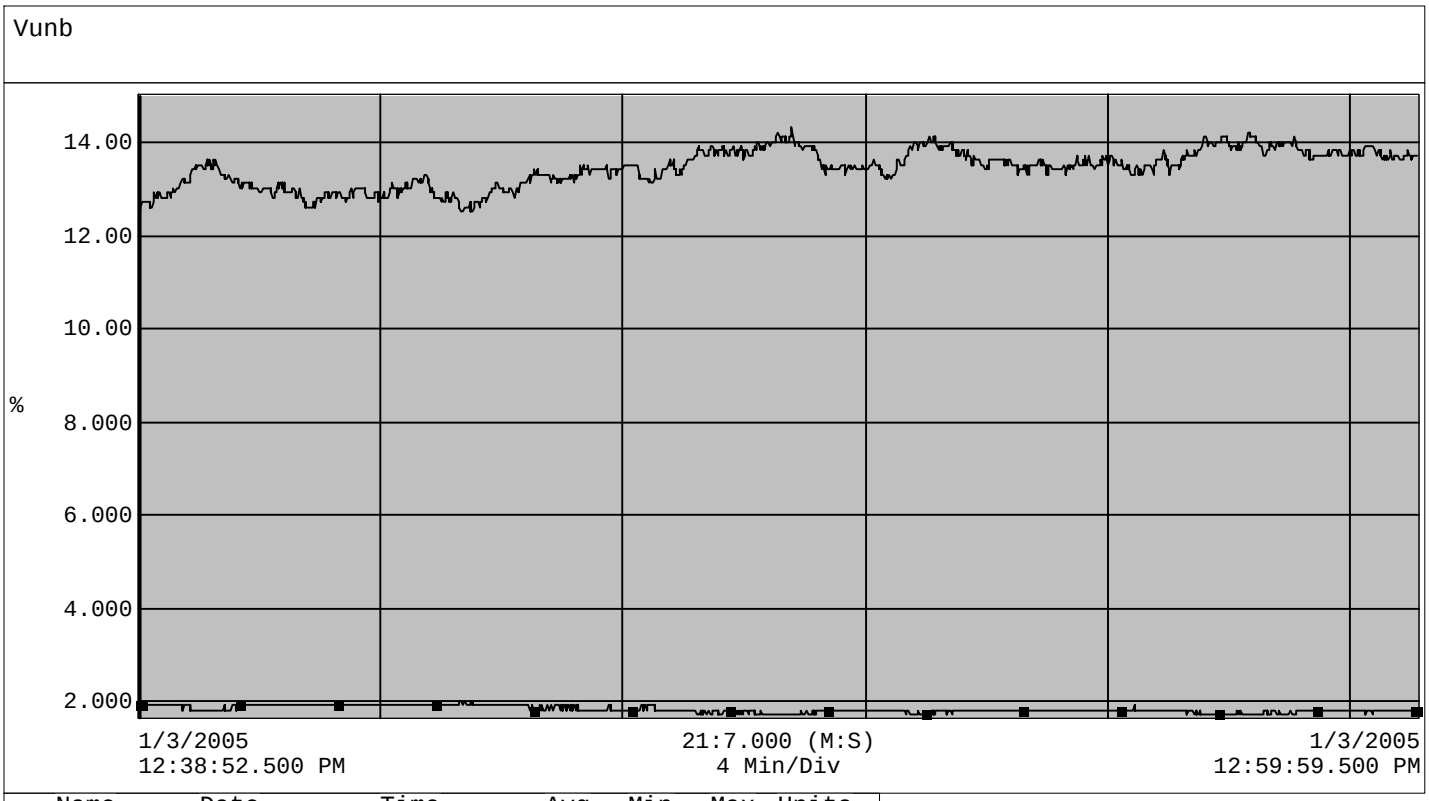
1/3/2005 - 12:38:52.000 PM
Val
468.6 Urms Line1
458.9 Urms Line2
457.6 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	1/3/2005	12:38:52.500 PM	74.34	74.00	74.80	A
Arms Line2	1/3/2005	12:38:52.500 PM	69.80	69.20	70.40	A
Arms Line3	1/3/2005	12:38:52.500 PM	58.47	57.90	59.10	A

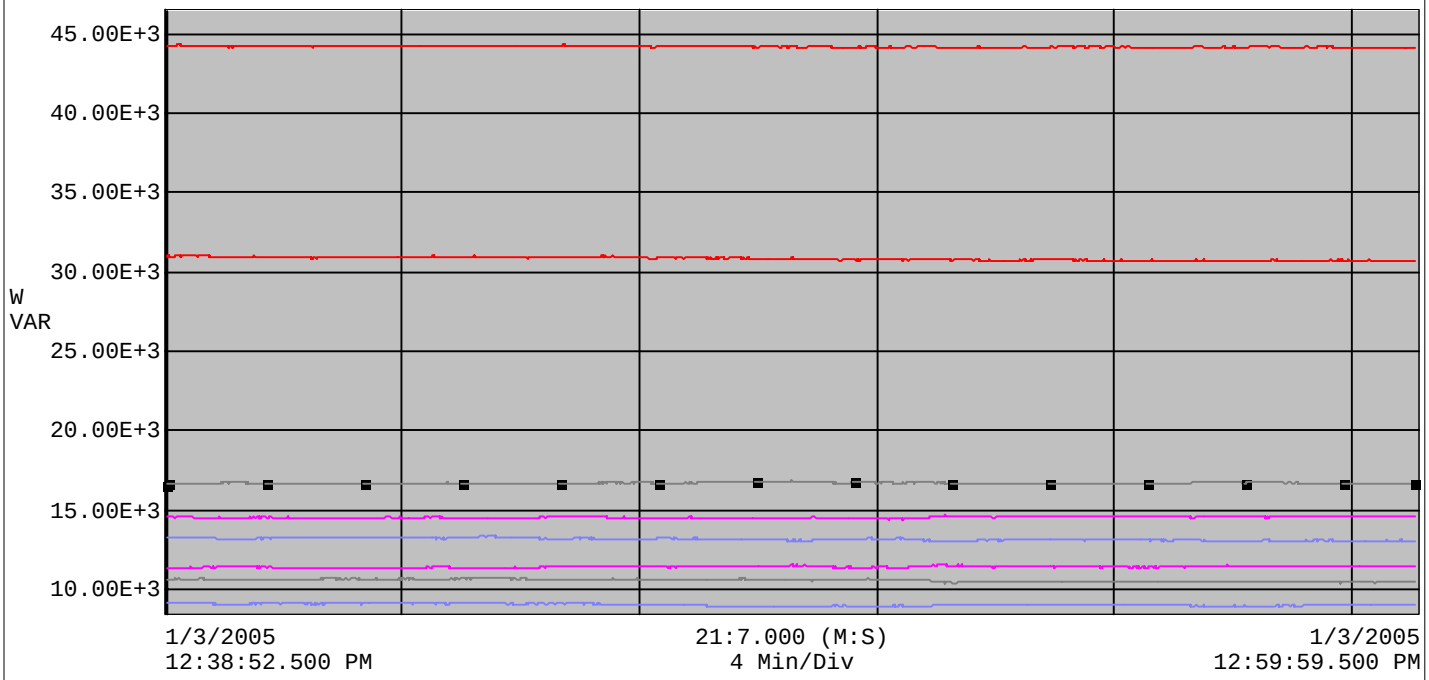
1/3/2005 - 12:38:52.000 PM
Val
74.00 — Arms Line1
69.60 — Arms Line2
59.10 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	1/3/2005	12:38:52.500 PM	1.816	1.700	2.000	%
Aunb(IEEE)	1/3/2005	12:38:52.500 PM	13.42	12.50	14.30	%

1/3/2005 - 12:38:52.000 PM
Val
2.000 —— Vunb(IEEE)
12.50 —— Aunb(IEEE)

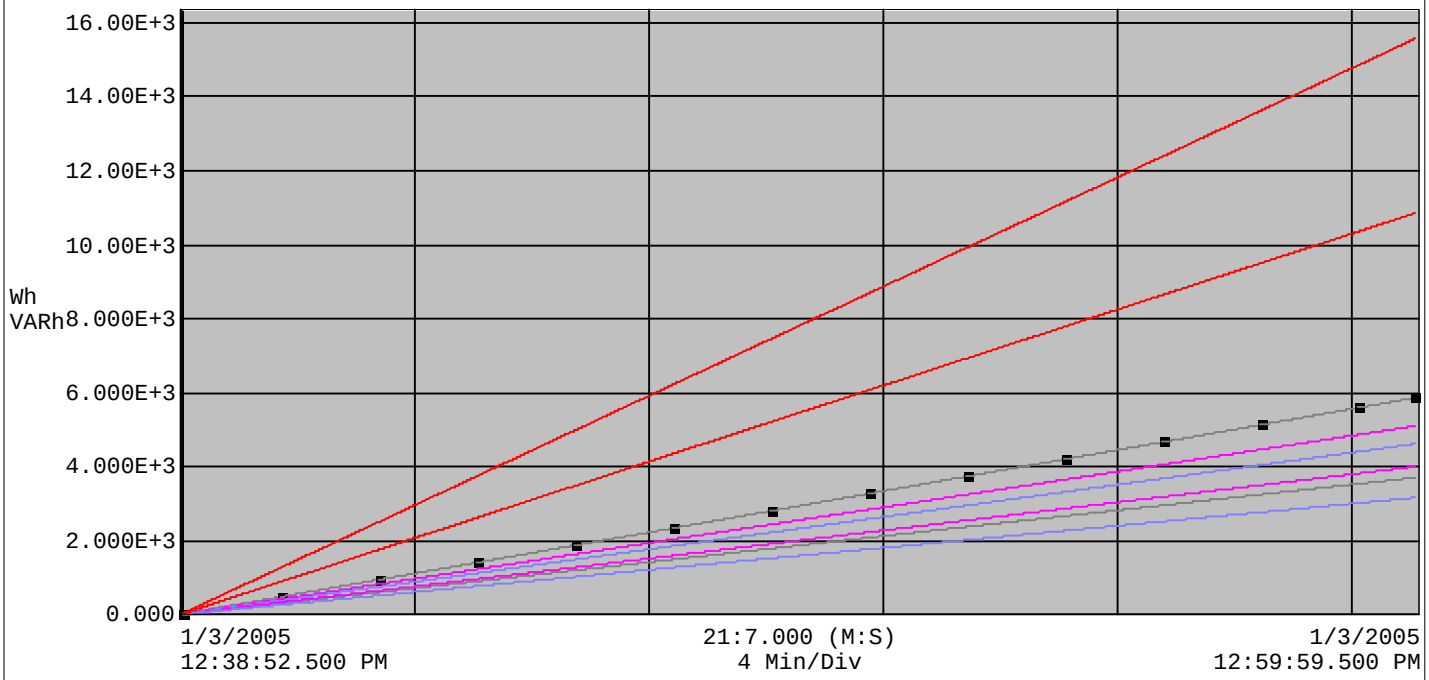
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	1/3/2005	12:38:52.500 PM	16.62E+3	16.51E+3	16.77E+3	W
W Line2	1/3/2005	12:38:52.500 PM	14.46E+3	14.34E+3	14.59E+3	W
W Line3	1/3/2005	12:38:52.500 PM	13.08E+3	12.92E+3	13.29E+3	W
W Sum of Phases	1/3/2005	12:38:52.500 PM	44.16E+3	44.02E+3	44.29E+3	W
VAR Line1	1/3/2005	12:38:52.500 PM	10.49E+3	10.33E+3	10.66E+3	VAR
VAR Line2	1/3/2005	12:38:52.500 PM	11.34E+3	11.19E+3	11.47E+3	VAR
VAR Line3	1/3/2005	12:38:52.500 PM	8.949E+3	8.784E+3	9.122E+3	VAR
VAR Sum of Phases	1/3/2005	12:38:52.500 PM	30.78E+3	30.60E+3	30.98E+3	VAR

1/3/2005 - 12:38:52.000 PM
Val
16.51E+3 — W Line1
14.50E+3 — W Line2
13.23E+3 — W Line3
44.24E+3 — W Sum of Phases
10.55E+3 — VAR Line1
11.25E+3 — VAR Line2
9.122E+3 — VAR Line3
30.92E+3 — VAR Sum of Phases

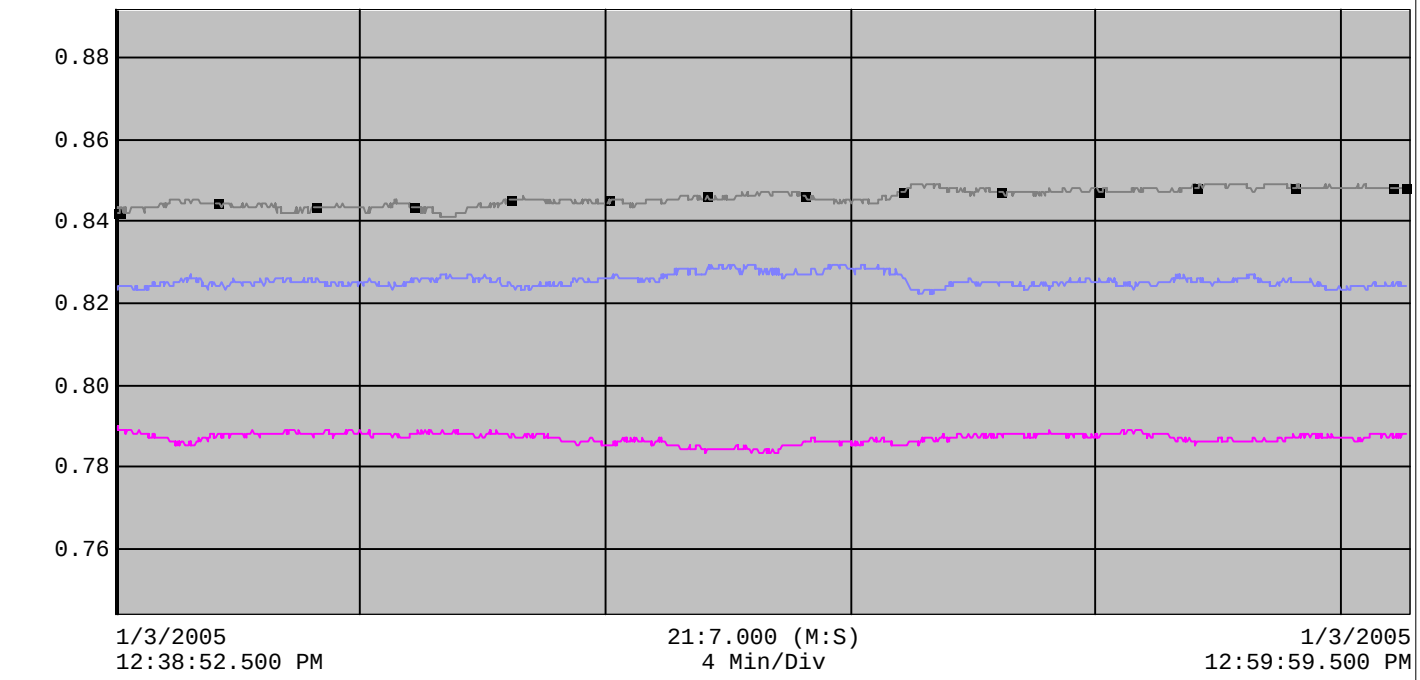
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	1/3/2005	12:38:52.500 PM	2.928E+3	4.645	5.853E+3	Wh
W-hours Line2	1/3/2005	12:38:52.500 PM	2.545E+3	4.041	5.092E+3	Wh
W-hours Line3	1/3/2005	12:38:52.500 PM	2.313E+3	3.656	4.608E+3	Wh
W-hours Sum of Phases	1/3/2005	12:38:52.500 PM	7.786E+3	12.34	15.55E+3	Wh
VAR-hours Line1	1/3/2005	12:38:52.500 PM	1.857E+3	2.932	3.695E+3	VARh
VAR-hours Line2	1/3/2005	12:38:52.500 PM	1.996E+3	3.169	3.994E+3	VARh
VAR-hours Line3	1/3/2005	12:38:52.500 PM	1.582E+3	2.501	3.152E+3	VARh
VAR-hours Sum of Phases	1/3/2005	12:38:52.500 PM	5.435E+3	8.603	10.84E+3	VARh

1/3/2005 - 12:38:52.000 PM
Val
4.645 — W-hours Line1
4.041 — W-hours Line2
3.656 — W-hours Line3
12.34 — W-hours Sum of Phases
2.932 — VAR-hours Line1
3.169 — VAR-hours Line2
2.501 — VAR-hours Line3
8.603 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	1/3/2005	12:38:52.500 PM	0.846	0.841	0.849	
PF Line2	1/3/2005	12:38:52.500 PM	0.787	0.783	0.790	
PF Line3	1/3/2005	12:38:52.500 PM	0.825	0.822	0.829	

1/3/2005 - 12:38:52.000 PM
Val
0.843 — PF Line1
0.790 — PF Line2
0.823 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\010305-F10.dvb

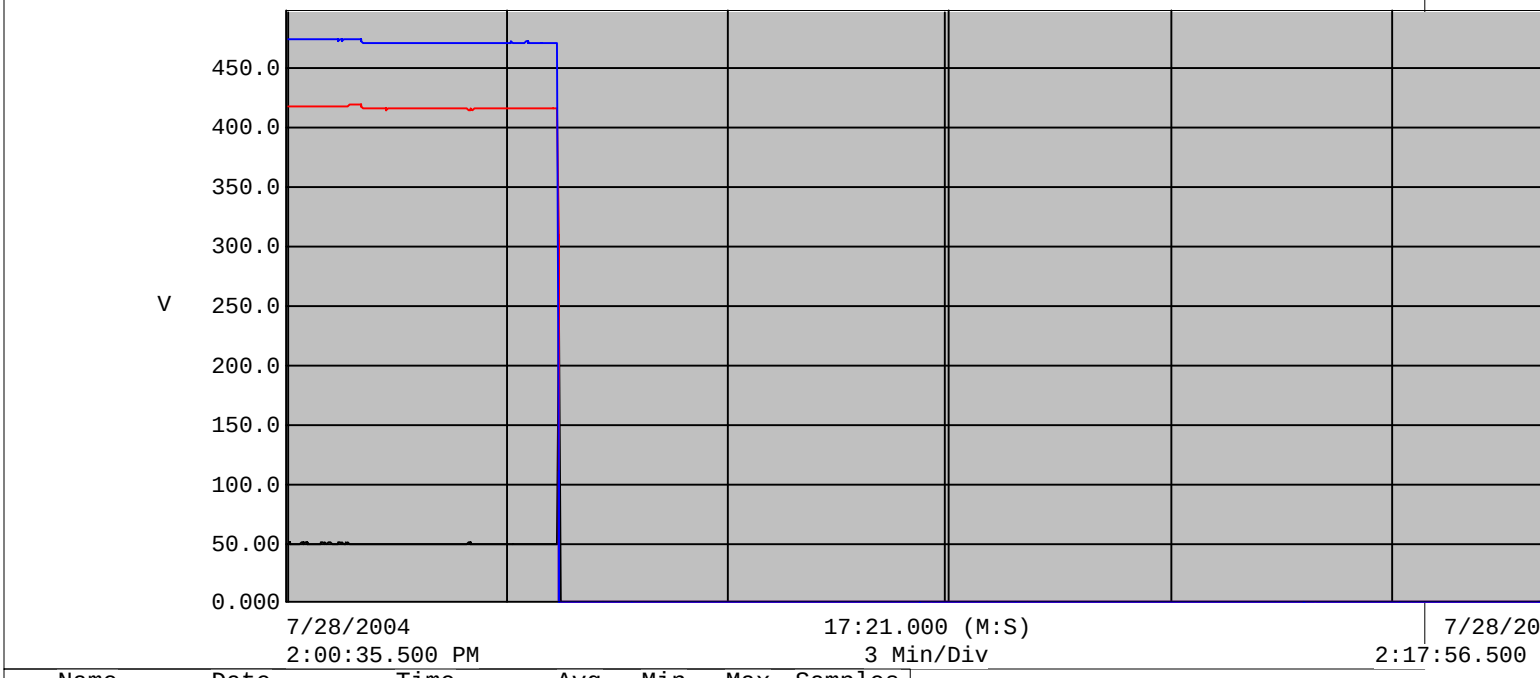
Operator	Test Site
GWA Victor Jardel ,	WPS F-10 ,

Comments

WPS F-10

Recording Start Date	7/28/2004 - 2:00:35 PM
Recording Duration	17:21 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

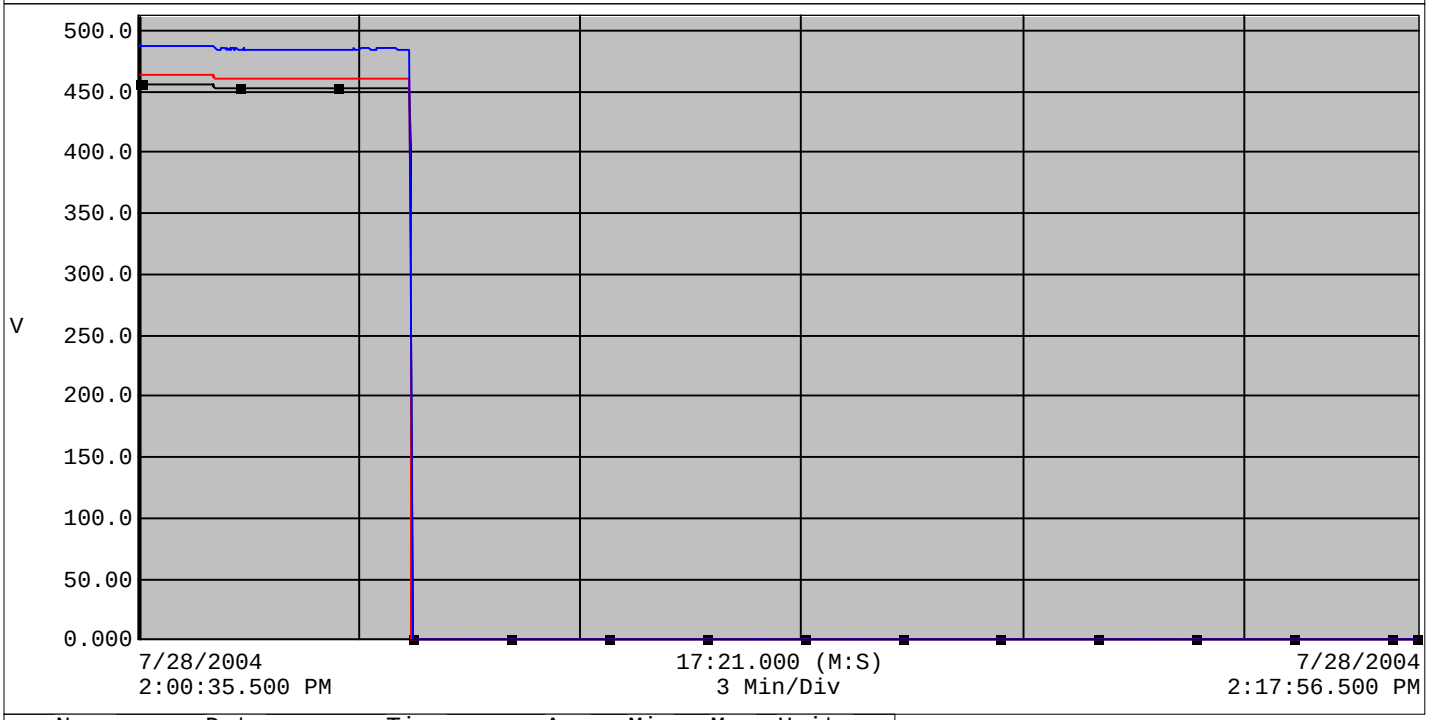
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/28/2004	2:00:35.500 PM	10.81	0.000	249.7	1042
Vrms Line2	7/28/2004	2:00:35.500 PM	88.37	0.000	417.7	1042
Vrms Line3	7/28/2004	2:00:35.500 PM	99.93	0.000	473.4	1042

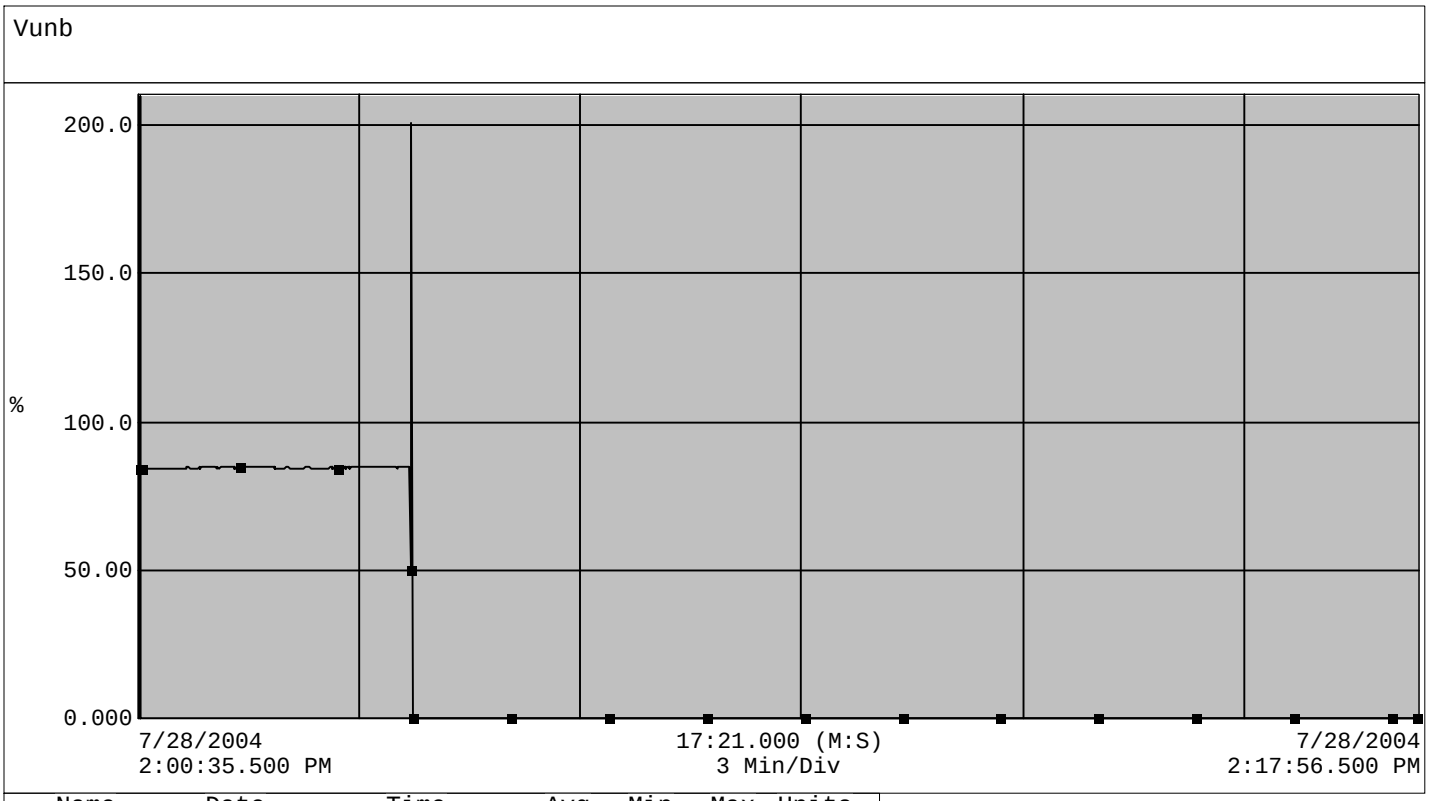
7/28/2004 - 2:09:32.000 PM
Val
0.000 Vrms Line1
0.000 Vrms Line2
0.000 Vrms Line3

Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/28/2004	2:00:35.500 PM	96.65	0.000	455.1	V
Urms Line2	7/28/2004	2:00:35.500 PM	97.90	0.000	462.5	V
Urms Line3	7/28/2004	2:00:35.500 PM	103.3	0.000	487.2	V

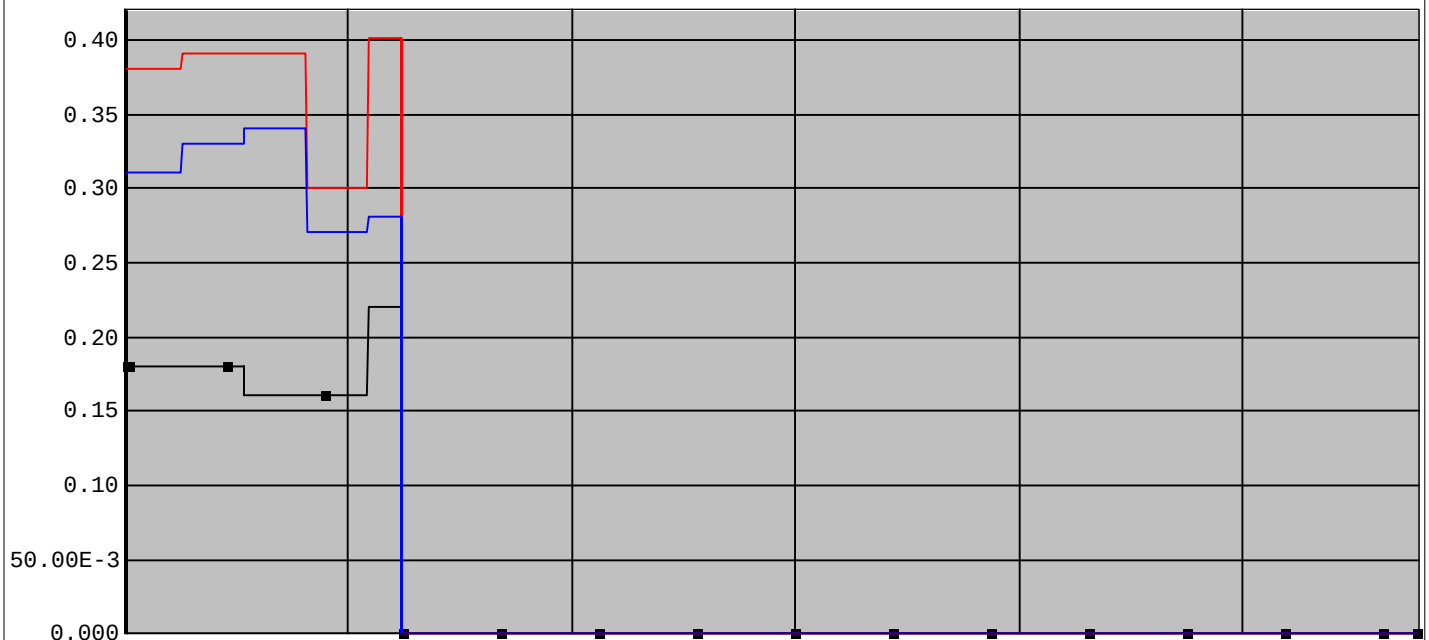
7/28/2004 - 2:00:35.000 PM
Val
454.8 — Urms Line1
462.3 — Urms Line2
487.2 — Urms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/28/2004	2:00:35.500 PM	18.13	0.000	200.0	%

7/28/2004 - 2:00:35.000 PM
Val
84.30 —— Vunb(IEEE)

Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/28/2004	2:00:35.500 PM	37.64E-3	0.000	0.220	
Vflk Line2	7/28/2004	2:00:35.500 PM	78.97E-3	0.000	0.400	
Vflk Line3	7/28/2004	2:00:35.500 PM	66.07E-3	0.000	0.340	

7/28/2004 - 2:00:35.000 PM
Val
0.180 Vflk Line1
0.380 Vflk Line2
0.310 Vflk Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\072804-F10.dvb

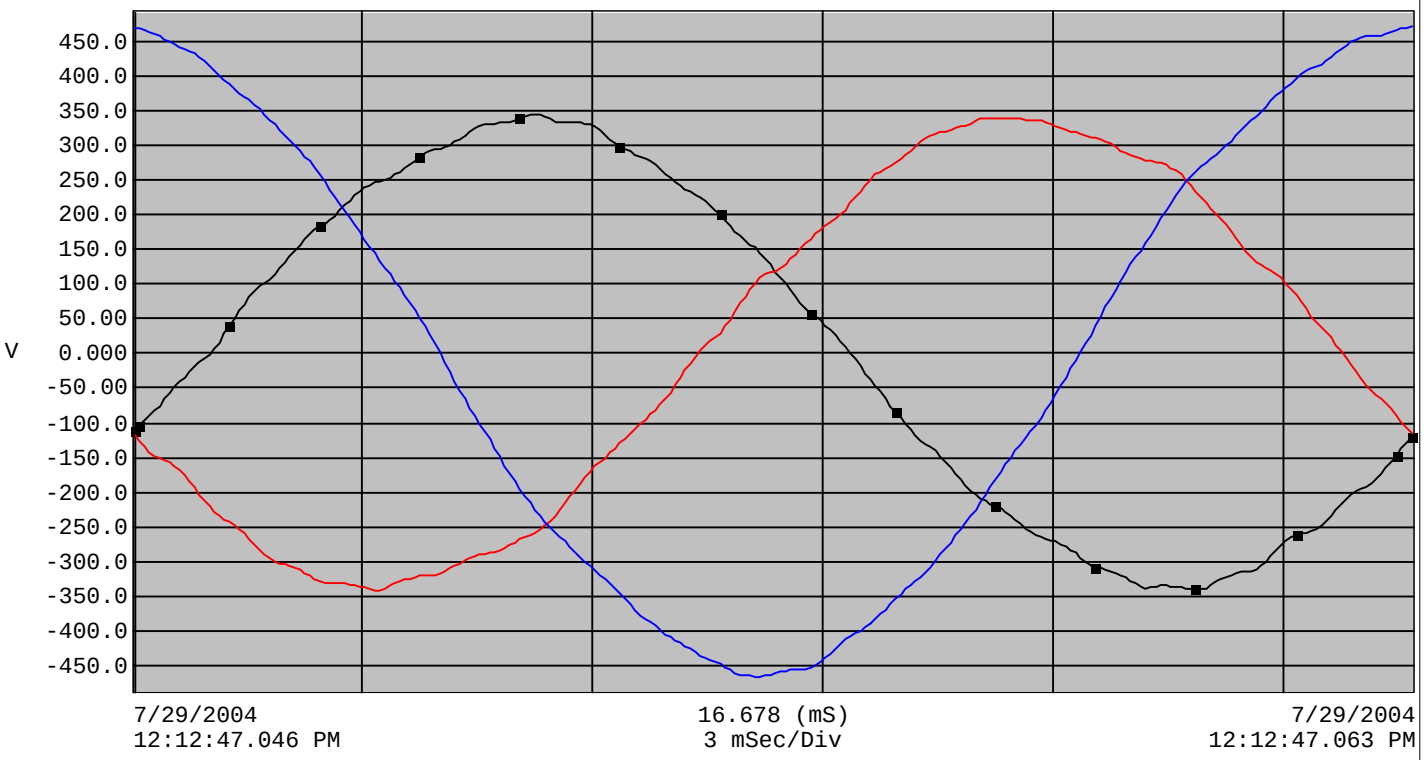
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS - F10 ,

Comments

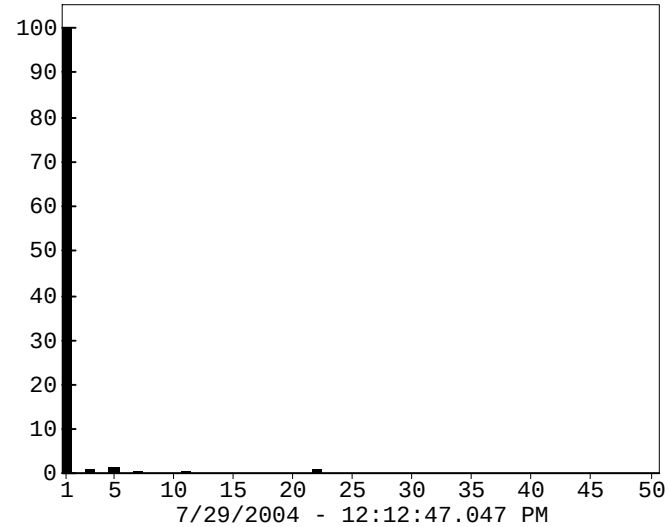
WPS F-10 - Photo Photo Report

Recording Start Date	7/29/2004 - 12:12:47 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/29/2004	12:12:47.046 PM	16.678	237.4	V
Waveform V2	7/29/2004	12:12:47.046 PM	16.678	239.2	V
Waveform V3	7/29/2004	12:12:47.046 PM	16.678	326.3	V



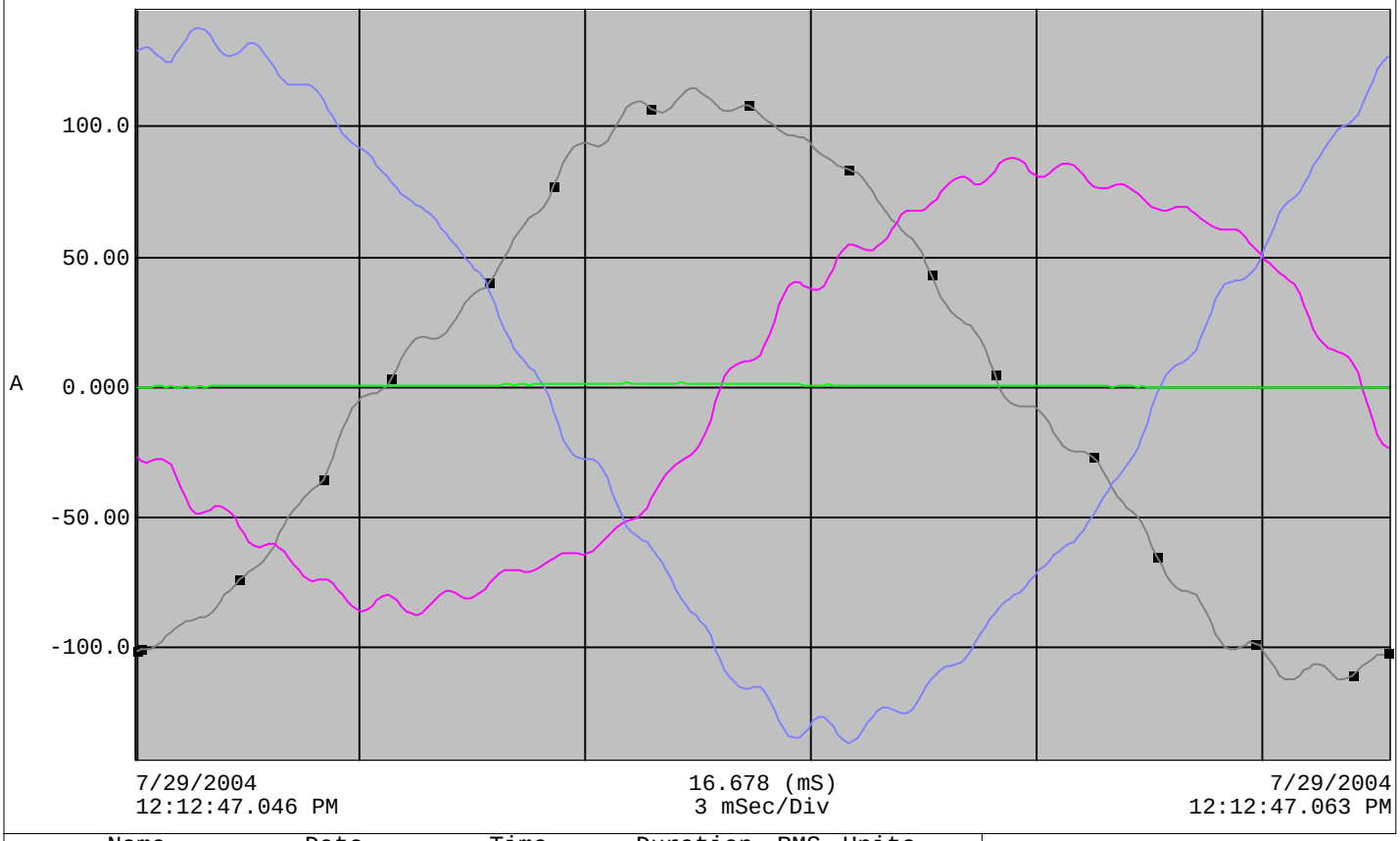
7/29/2004 - 12:12:47.000 PM

	Val	
—	-113.2	Waveform V1
—	-120.6	Waveform V2
—	468.7	Waveform V3

Waveform V1

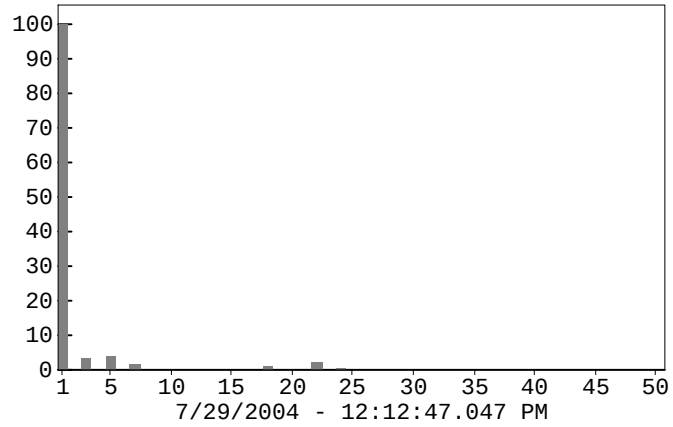
	(%)		(%)		(%)
H01	100.0	H18	0.3	H35	0.1
H02	0.1	H19	0.1	H36	0.0
H03	1.0	H20	0.2	H37	0.0
H04	0.0	H21	0.2	H38	0.0
H05	1.5	H22	1.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.3	H41	0.1
H08	0.0	H25	0.0	H42	0.1
H09	0.3	H26	0.1	H43	0.1
H10	0.0	H27	0.1	H44	0.1
H11	0.5	H28	0.1	H45	0.2
H12	0.0	H29	0.1	H46	0.1
H13	0.3	H30	0.0	H47	0.1
H14	0.0	H31	0.0	H48	0.0
H15	0.4	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Channel Name: Waveform I1
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/29/2004	12:12:47.046 PM	16.678	76.45	A
Waveform I2	7/29/2004	12:12:47.046 PM	16.678	61.40	A
Waveform I3	7/29/2004	12:12:47.046 PM	16.678	90.82	A
Waveform INeutral	7/29/2004	12:12:47.046 PM	16.678	0.519	A

Waveform I1
76.45 Arms, 6.59 %THD



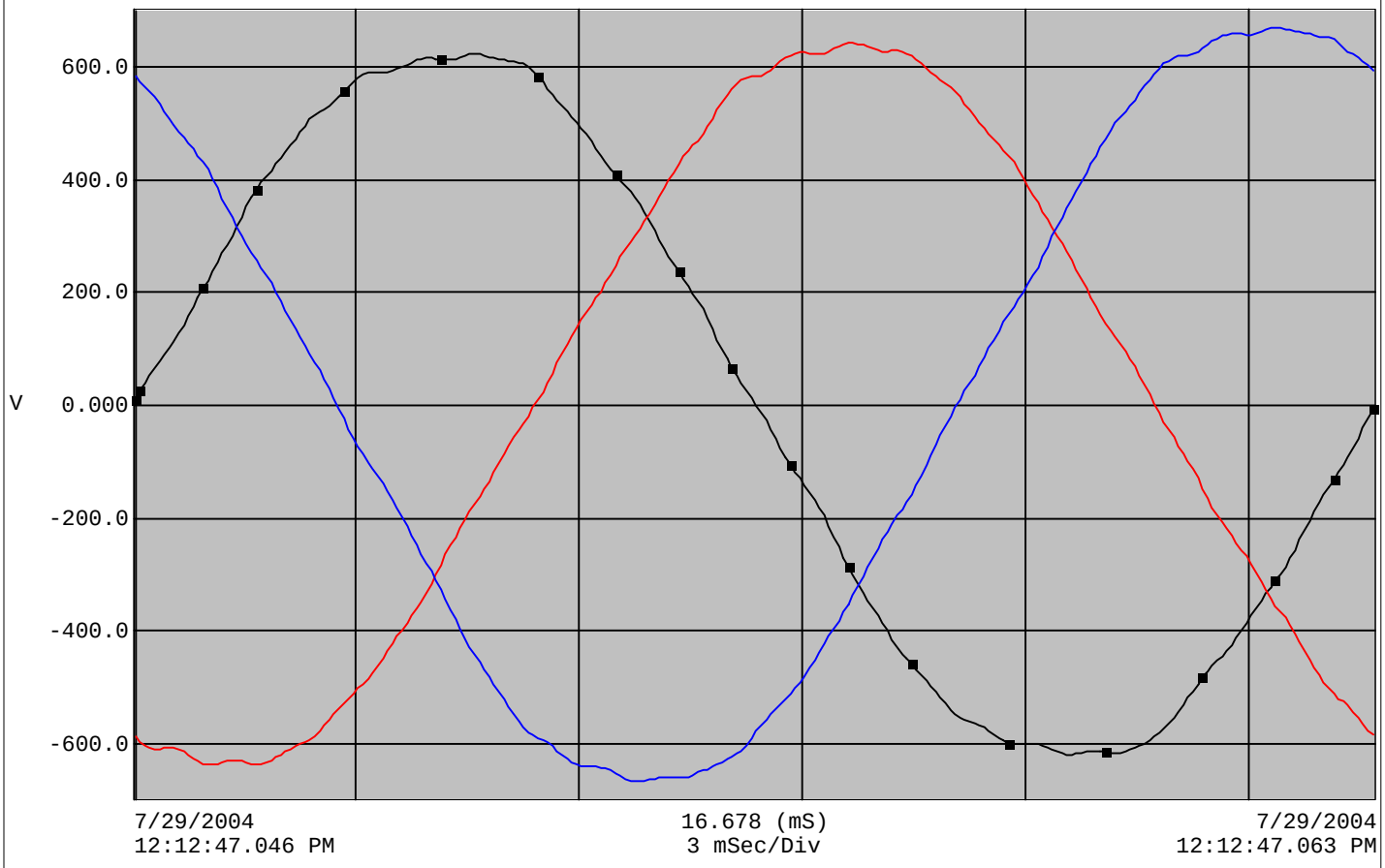
7/29/2004 - 12:12:47.000 PM

	Val	
—	-101.4	Waveform I1
—	-27.50	Waveform I2
—	128.6	Waveform I3
—	-0.400	Waveform INeutral

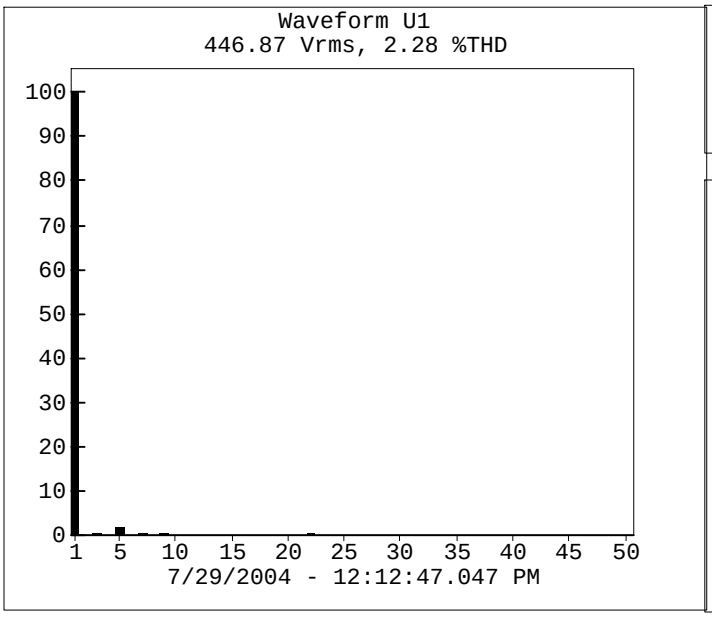
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	1.4	H35	0.0
H02	0.0	H19	0.3	H36	0.0
H03	3.6	H20	0.4	H37	0.0
H04	0.0	H21	0.3	H38	0.0
H05	4.2	H22	2.4	H39	0.0
H06	0.1	H23	0.5	H40	0.0
H07	1.9	H24	0.7	H41	0.2
H08	0.1	H25	0.1	H42	0.1
H09	0.5	H26	0.1	H43	0.0
H10	0.2	H27	0.1	H44	0.1
H11	0.1	H28	0.1	H45	0.1
H12	0.3	H29	0.0	H46	0.1
H13	0.2	H30	0.0	H47	0.0
H14	0.1	H31	0.1	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.3	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Channel Name: Waveform U1
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/29/2004	12:12:47.046 PM	16.678	446.9	V
Waveform U2	7/29/2004	12:12:47.046 PM	16.678	453.7	V
Waveform U3	7/29/2004	12:12:47.046 PM	16.678	477.9	V



7/29/2004 - 12:12:47.000 PM

	Val	
—	7.400	Waveform U1
—	-589.4	Waveform U2
—	582.0	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.3	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.6	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.8	H22	0.6	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.8	H24	0.2	H41	0.1
H08	0.0	H25	0.1	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.1	H28	0.0	H45	0.1
H12	0.1	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/29/2004
Start Time: 12:12:47 PM
Duration: 0:0.000 (M:S)
W: 11.03E+3 W
VAR: 14.49E+3 W
VA: 18.21E+3 W
Power Factor: 0.606
Displacement Power Factor: 0.607
TAN: 1.309
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\072904-F10-Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS - F10 ,

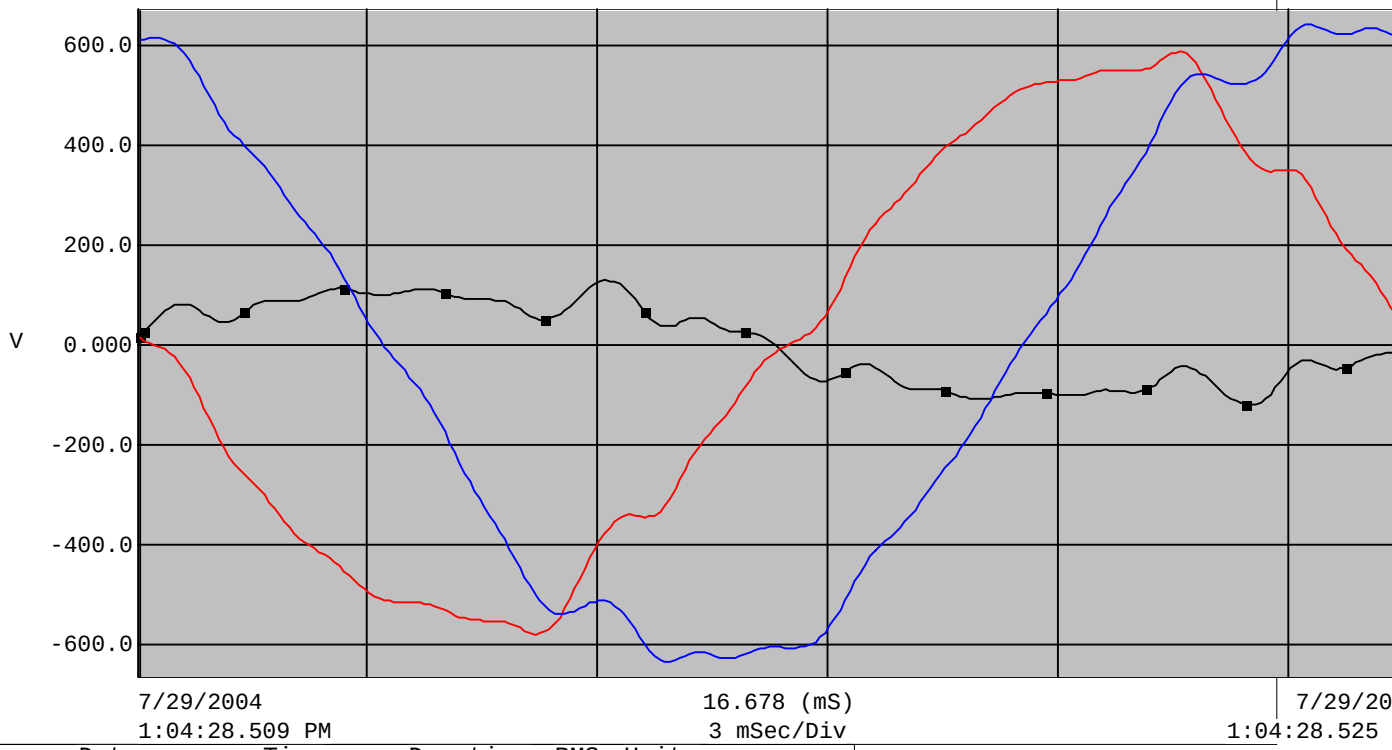
Comments

Snapshot at main breaker with main breaker open.

WPS F-10 - Photo1
Photo Report

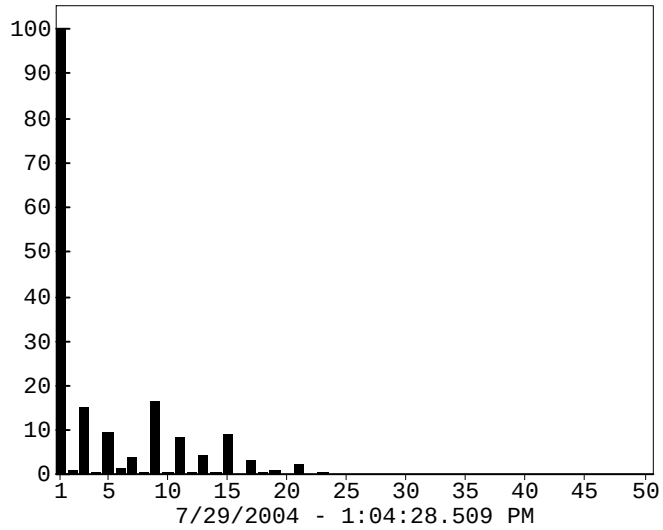
Recording Start Date	7/29/2004 - 1:04:28 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/29/2004	1:04:28.509 PM	16.678	79.77	V
Waveform V2	7/29/2004	1:04:28.509 PM	16.678	391.6	V
Waveform V3	7/29/2004	1:04:28.509 PM	16.678	458.3	V

Waveform V1
79.77 Vrms, 28.55 %THD

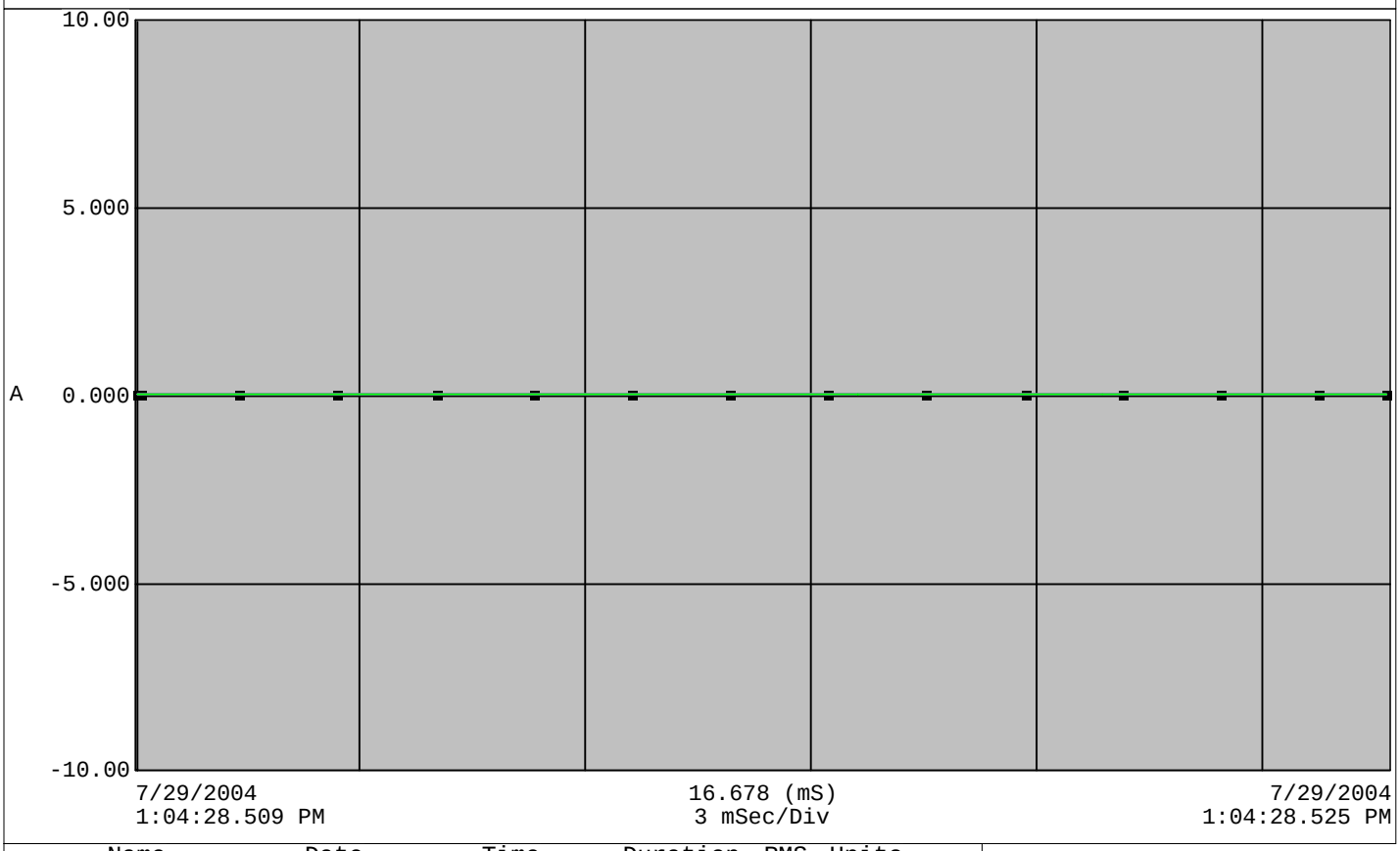


7/29/2004 - 1:04:28.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

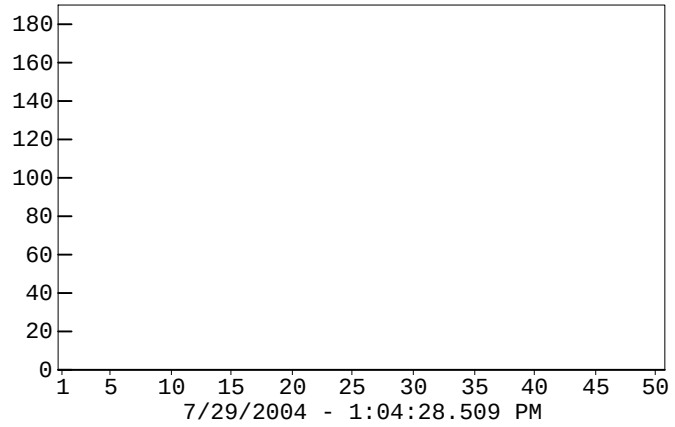
	(%)		(%)		(%)
H01	100.0	H18	0.5	H35	0.2
H02	0.9	H19	1.2	H36	0.0
H03	15.1	H20	0.3	H37	0.1
H04	0.5	H21	2.3	H38	0.1
H05	9.6	H22	0.1	H39	0.0
H06	1.5	H23	0.6	H40	0.0
H07	4.1	H24	0.1	H41	0.0
H08	0.7	H25	0.1	H42	0.0
H09	16.7	H26	0.2	H43	0.1
H10	0.5	H27	0.2	H44	0.0
H11	8.4	H28	0.2	H45	0.0
H12	0.7	H29	0.0	H46	0.0
H13	4.5	H30	0.1	H47	0.1
H14	0.5	H31	0.3	H48	0.0
H15	9.2	H32	0.0	H49	0.0
H16	0.1	H33	0.4	H50	0.0
H17	3.3	H34	0.1		

Channel Name: Waveform I1
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/29/2004	1:04:28.509 PM	16.678	0.000	A
Waveform I2	7/29/2004	1:04:28.509 PM	16.678	0.000	A
Waveform I3	7/29/2004	1:04:28.509 PM	16.678	0.000	A
Waveform INeutral	7/29/2004	1:04:28.509 PM	16.678	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD

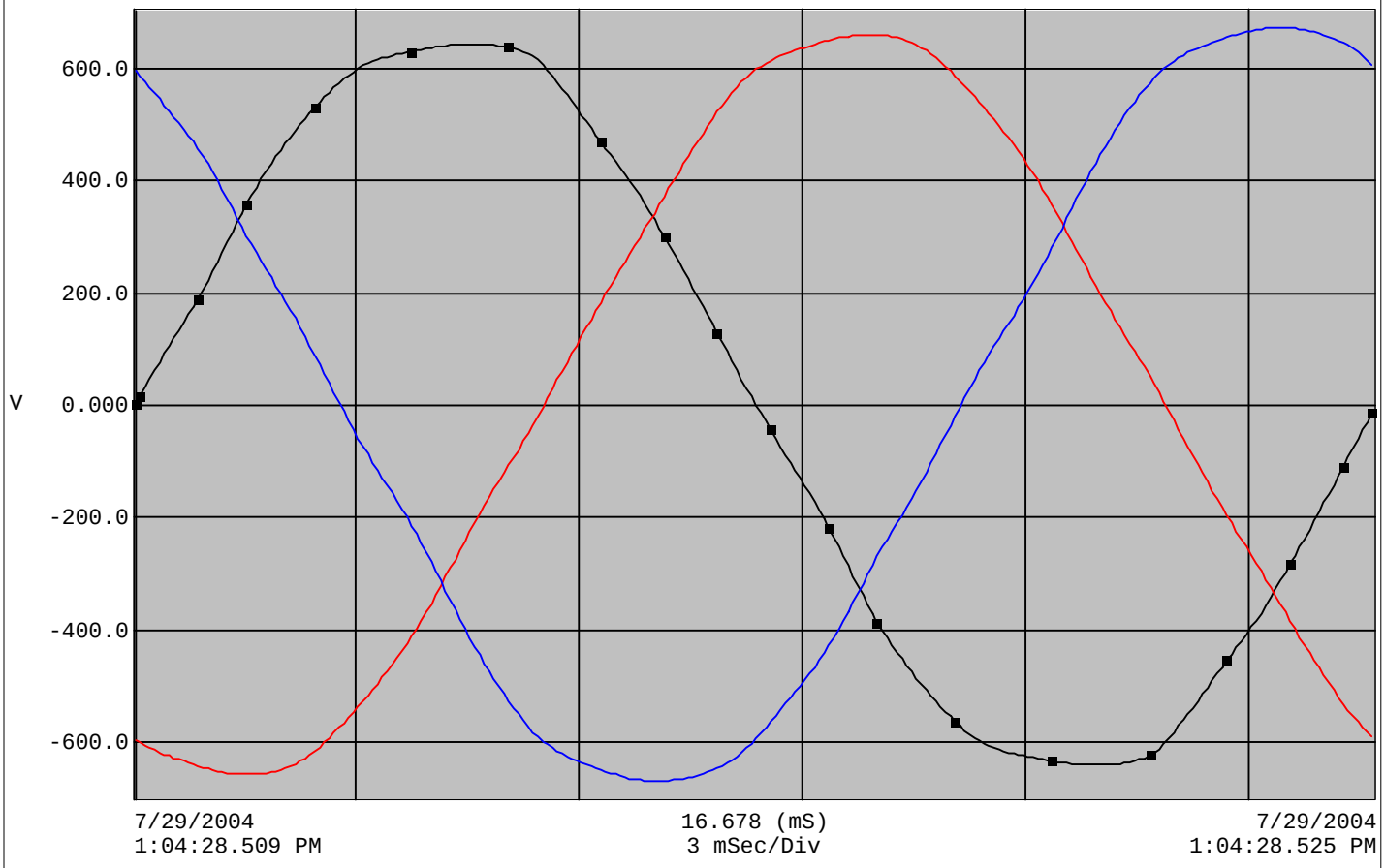


7/29/2004 - 1:04:28.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3
X.XX — Waveform INeutral

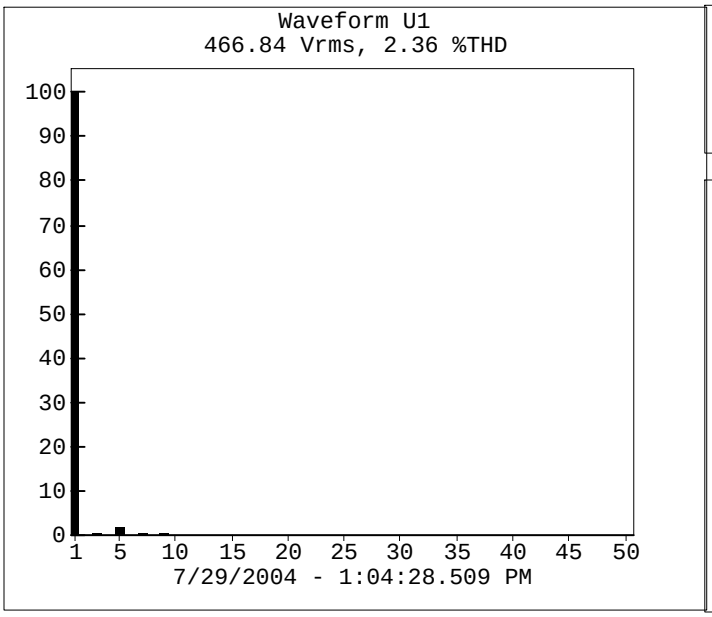
Waveform I1

	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Channel Name: Waveform U1
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/29/2004	1:04:28.509 PM	16.678	466.8	V
Waveform U2	7/29/2004	1:04:28.509 PM	16.678	470.1	V
Waveform U3	7/29/2004	1:04:28.509 PM	16.678	482.1	V



7/29/2004 - 1:04:28.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.8	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 7/29/2004
Start Time: 1:04:28 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\072904-F10-Photo1.dvb

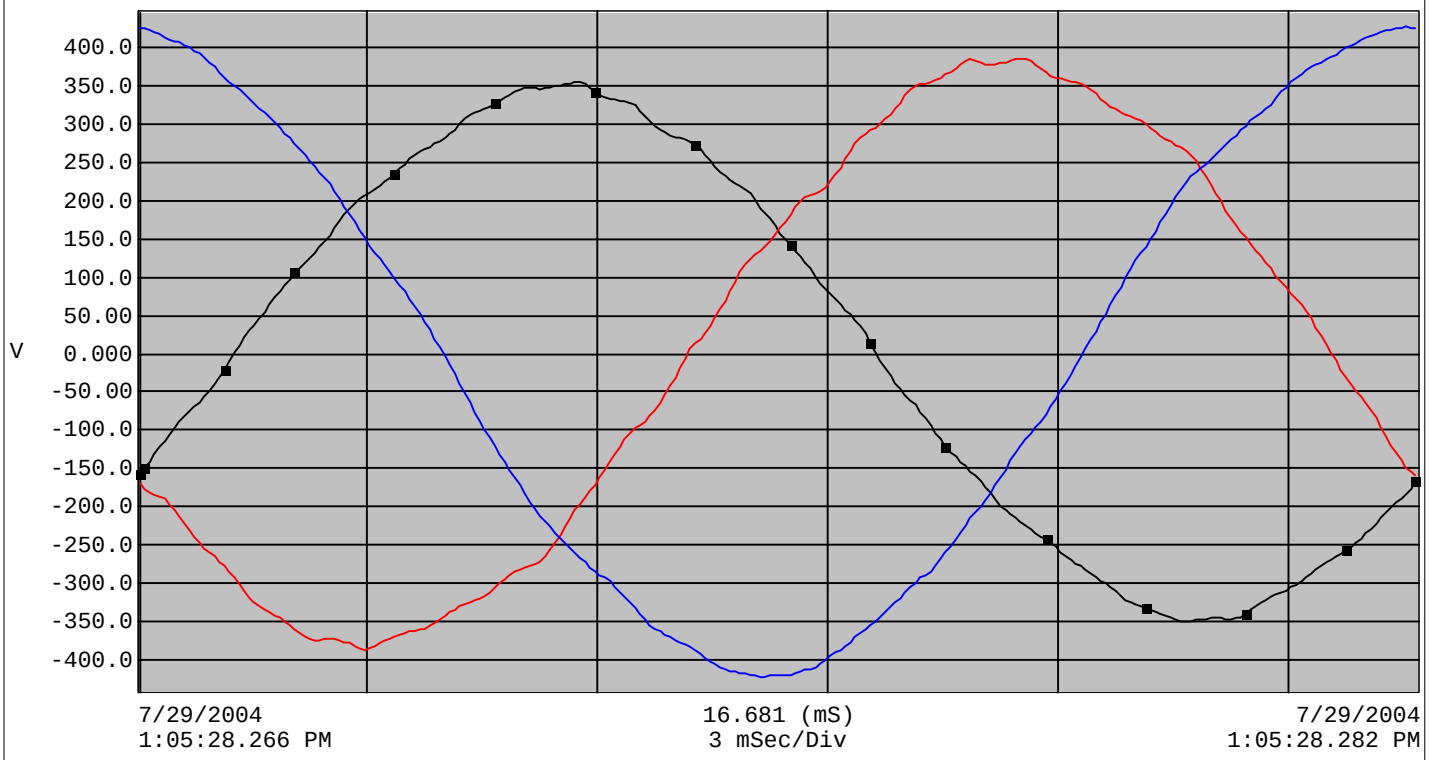
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-10 ,

Comments
Voltage testing with GPA Crew

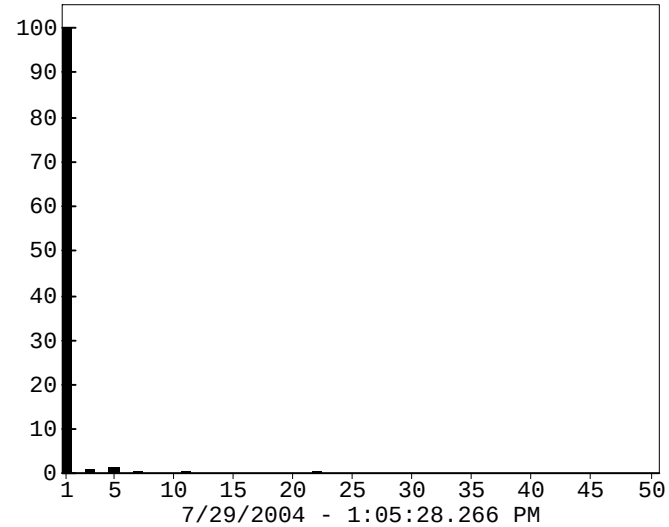
WPS F-10 - Photo2 Photo Report

Recording Start Date	7/29/2004 - 1:05:28 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/29/2004	1:05:28.266 PM	16.681	243.6	V
Waveform V2	7/29/2004	1:05:28.266 PM	16.681	268.6	V
Waveform V3	7/29/2004	1:05:28.266 PM	16.681	296.8	V

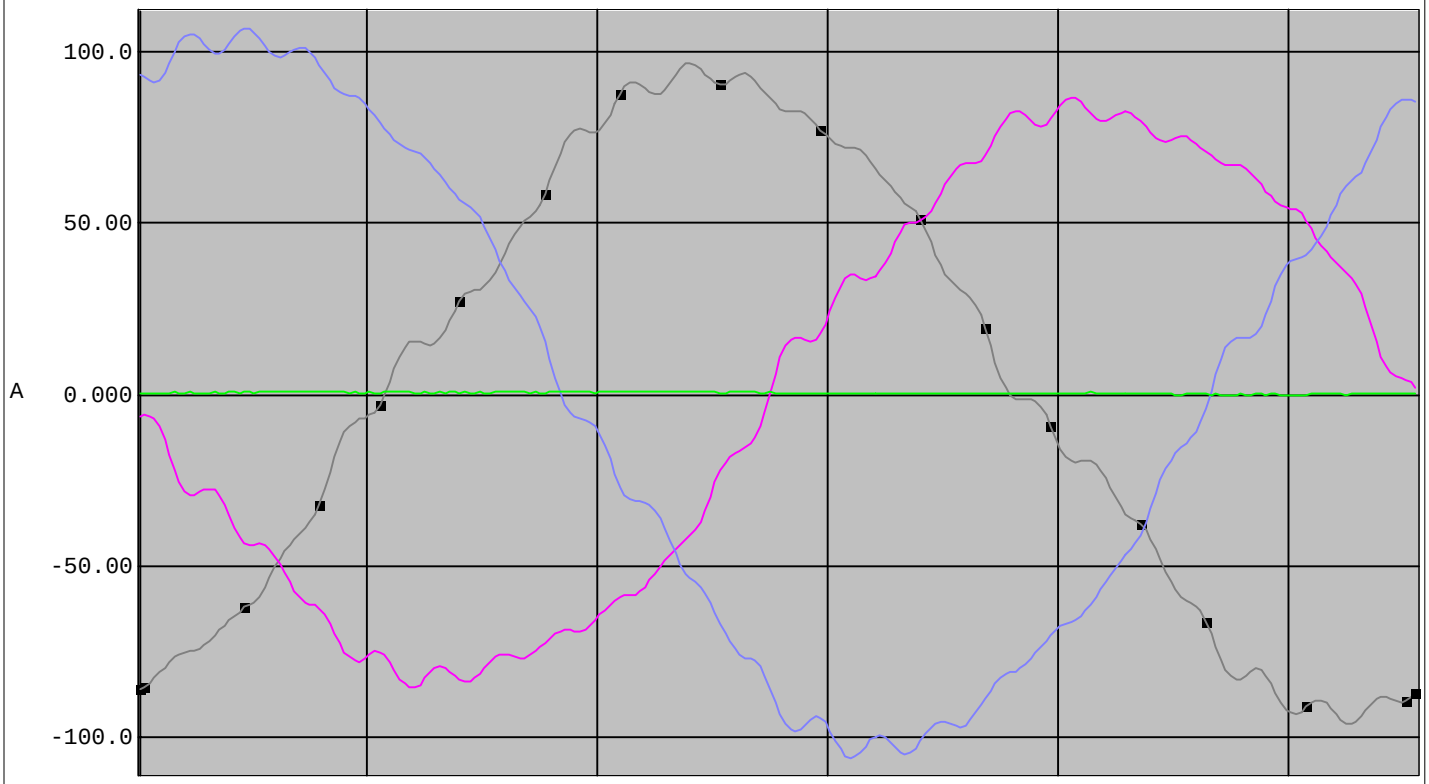


7/29/2004 - 1:05:28.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

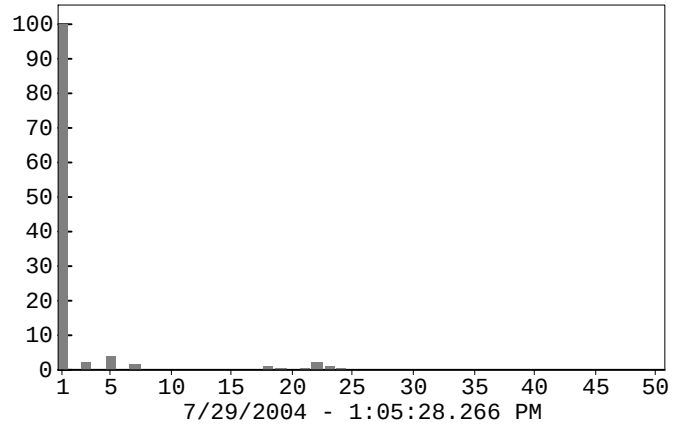
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	1.0	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.5	H22	0.6	H39	0.0
H06	0.1	H23	0.4	H40	0.1
H07	0.6	H24	0.2	H41	0.1
H08	0.0	H25	0.1	H42	0.1
H09	0.3	H26	0.1	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.5	H28	0.1	H45	0.1
H12	0.0	H29	0.0	H46	0.2
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.4	H32	0.1	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Channel Name: Waveform I1
Frequency: 59.95 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/29/2004	1:05:28.266 PM	16.681	64.86	A
Waveform I2	7/29/2004	1:05:28.266 PM	16.681	59.21	A
Waveform I3	7/29/2004	1:05:28.266 PM	16.681	72.62	A
Waveform INeutral	7/29/2004	1:05:28.266 PM	16.681	0.354	A

Waveform I1
64.86 Arms, 6.28 %THD

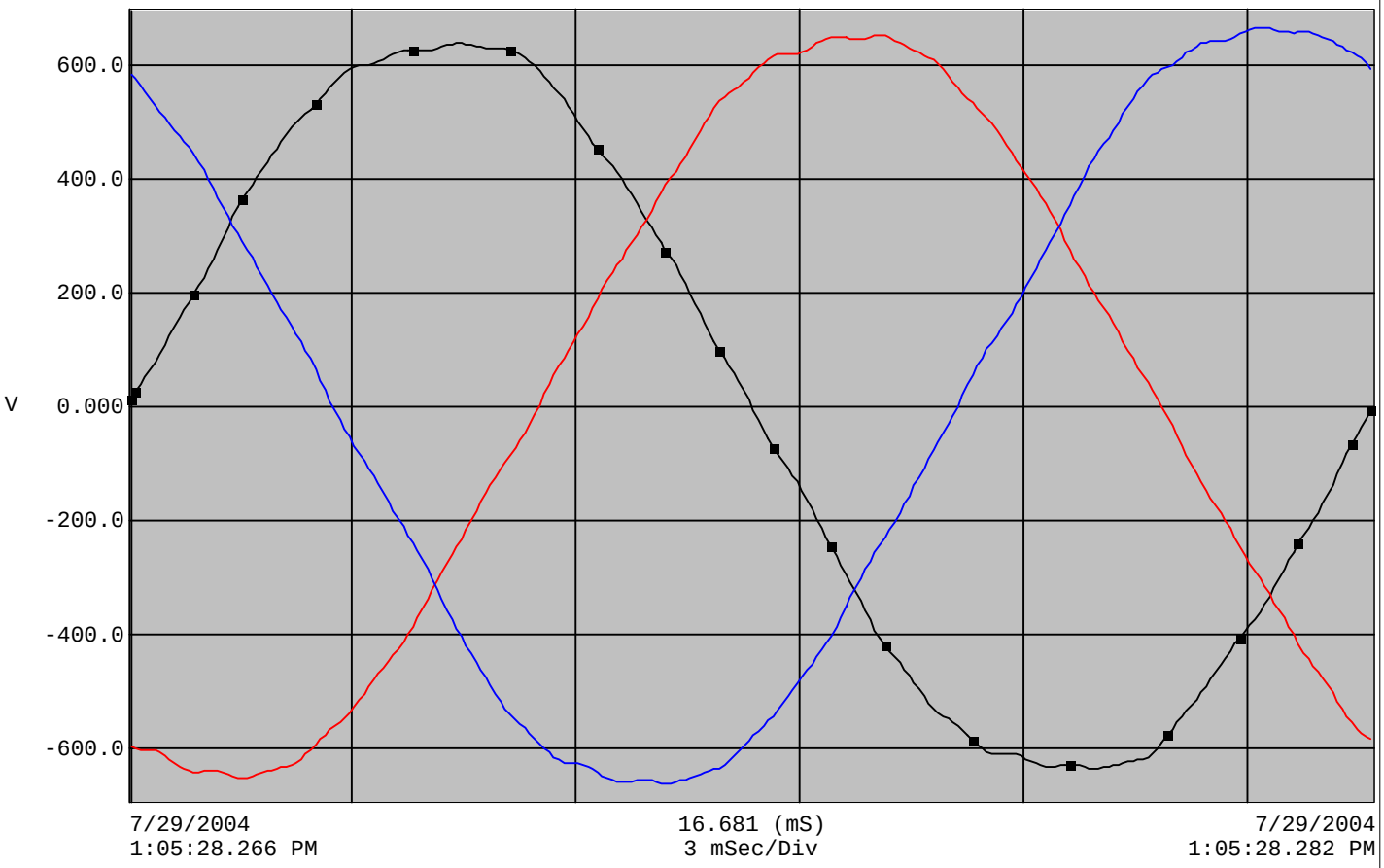


7/29/2004 - 1:05:28.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3
X.XX — Waveform INeutral

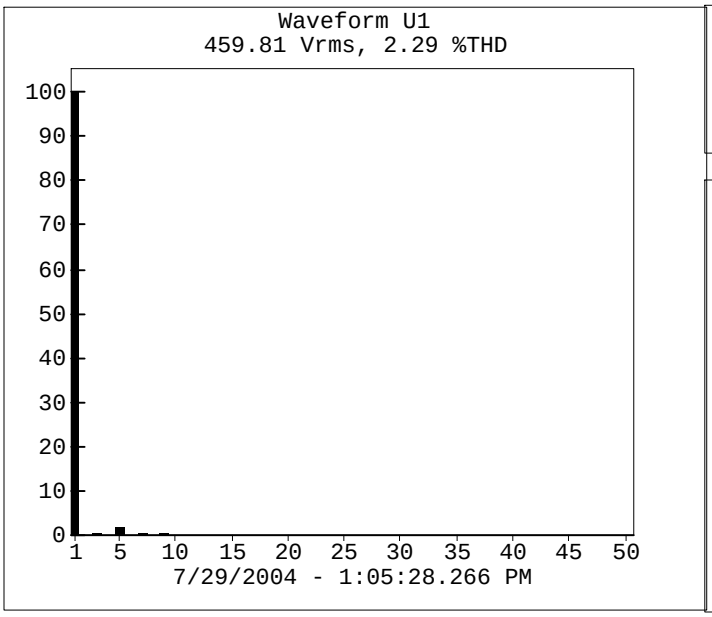
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	1.2	H35	0.0
H02	0.0	H19	0.7	H36	0.1
H03	2.5	H20	0.5	H37	0.0
H04	0.1	H21	0.6	H38	0.0
H05	4.1	H22	2.3	H39	0.0
H06	0.1	H23	1.2	H40	0.1
H07	2.1	H24	1.0	H41	0.1
H08	0.1	H25	0.1	H42	0.2
H09	0.4	H26	0.1	H43	0.0
H10	0.2	H27	0.1	H44	0.1
H11	0.2	H28	0.1	H45	0.0
H12	0.3	H29	0.1	H46	0.1
H13	0.4	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.2	H32	0.1	H49	0.0
H16	0.5	H33	0.1	H50	0.0
H17	0.5	H34	0.0		

Channel Name: Waveform U1
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/29/2004	1:05:28.266 PM	16.681	459.8	V
Waveform U2	7/29/2004	1:05:28.266 PM	16.681	462.4	V
Waveform U3	7/29/2004	1:05:28.266 PM	16.681	475.1	V



7/29/2004 - 1:05:28.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.7	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.8	H22	0.4	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	0.7	H24	0.2	H41	0.1
H08	0.0	H25	0.0	H42	0.1
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.1	H29	0.1	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/29/2004
Start Time: 1:05:28 PM
Duration: 0:0.000 (M:S)
W: 11.40E+3 W
VAR: 10.98E+3 W
VA: 15.83E+3 W
Power Factor: 0.720
Displacement Power Factor: 0.722
TAN: 0.960
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\072904-F10-Photo2.dvb

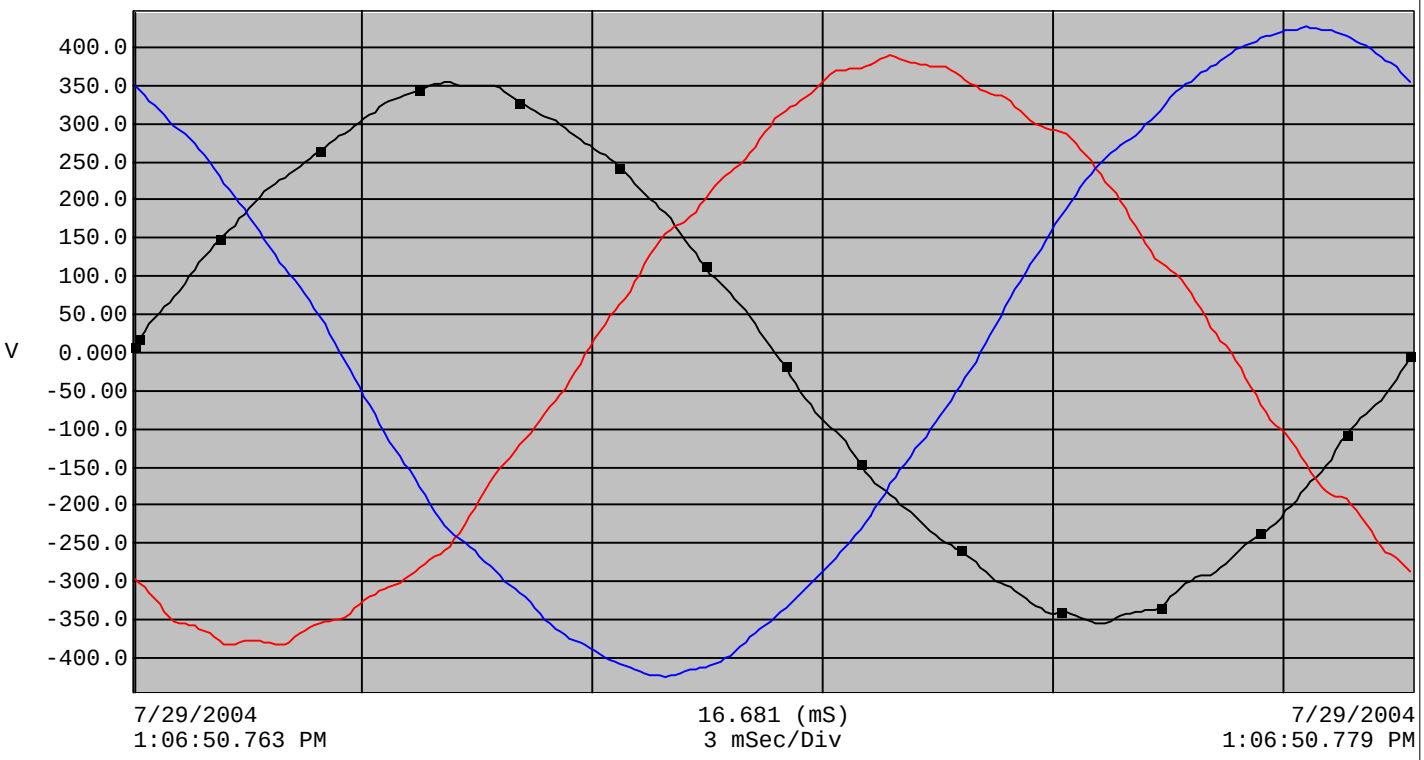
Operator	Test Site
Morikawa & Assocaites, LLC Lyman Morikawa, PE ,	GWA - WPS F-10 ,

Comments
Voltage Adjustments wth GPA at Station F-10

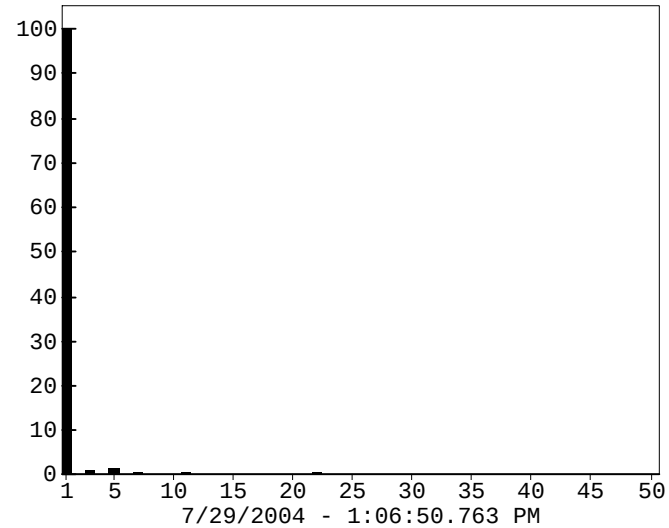
WPS F-10 - Photo3 Photo Report

Recording Start Date	7/29/2004 - 1:06:50 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/29/2004	1:06:50.763 PM	16.681	244.4	V
Waveform V2	7/29/2004	1:06:50.763 PM	16.681	268.7	V
Waveform V3	7/29/2004	1:06:50.763 PM	16.681	296.7	V

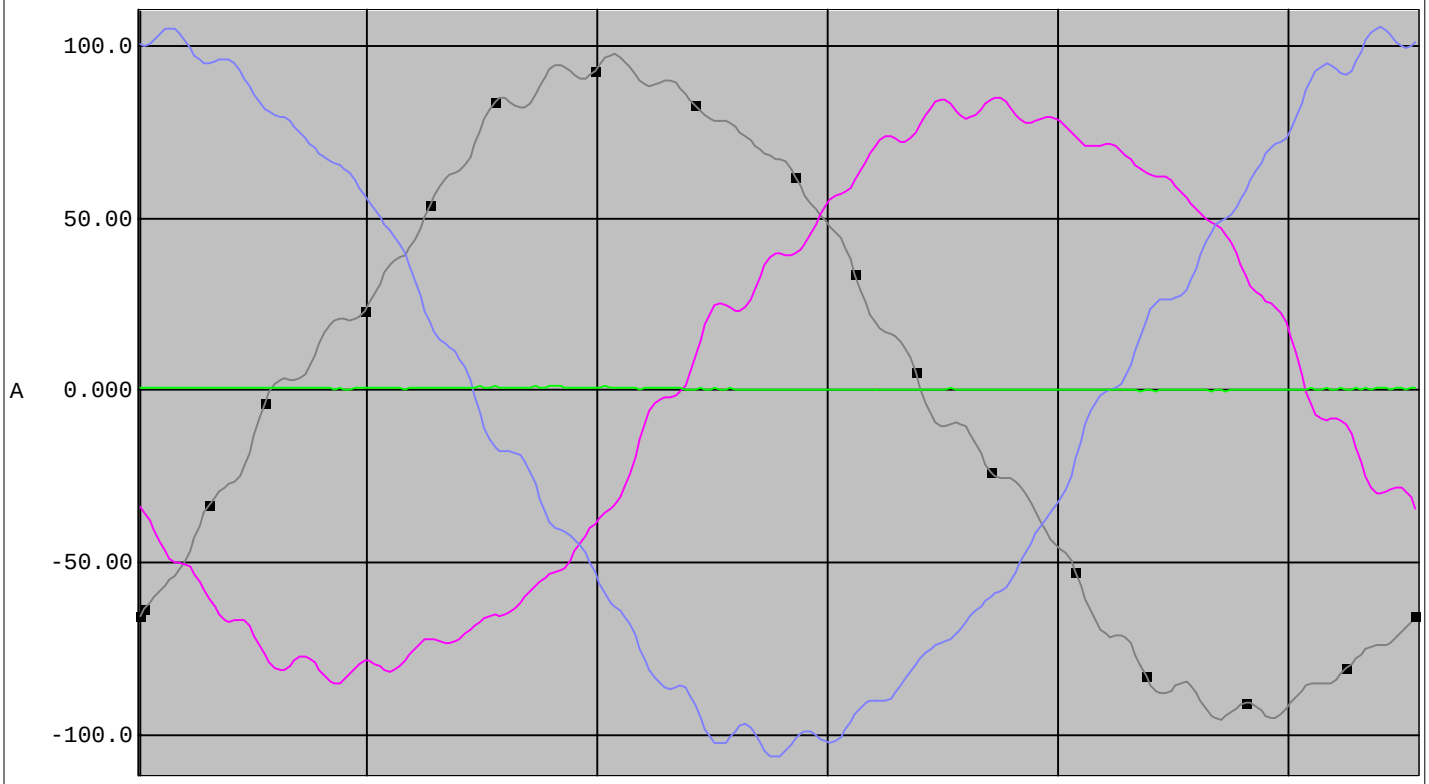


7/29/2004 - 1:06:50.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

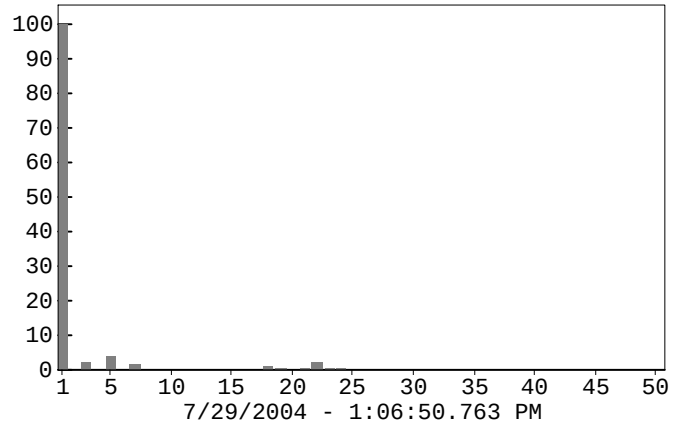
	(%)		(%)		(%)
H01	100.0	H18	0.3	H35	0.1
H02	0.0	H19	0.1	H36	0.0
H03	0.9	H20	0.1	H37	0.0
H04	0.0	H21	0.2	H38	0.0
H05	1.5	H22	0.6	H39	0.1
H06	0.0	H23	0.3	H40	0.0
H07	0.6	H24	0.2	H41	0.0
H08	0.0	H25	0.0	H42	0.1
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.5	H28	0.1	H45	0.1
H12	0.0	H29	0.0	H46	0.1
H13	0.3	H30	0.1	H47	0.1
H14	0.0	H31	0.0	H48	0.0
H15	0.4	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Channel Name: Waveform I1
Frequency: 59.95 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/29/2004	1:06:50.763 PM	16.681	65.04	A
Waveform I2	7/29/2004	1:06:50.763 PM	16.681	58.73	A
Waveform I3	7/29/2004	1:06:50.763 PM	16.681	72.30	A
Waveform INeutral	7/29/2004	1:06:50.763 PM	16.681	0.366	A

Waveform I1
65.04 Arms, 6.22 %THD

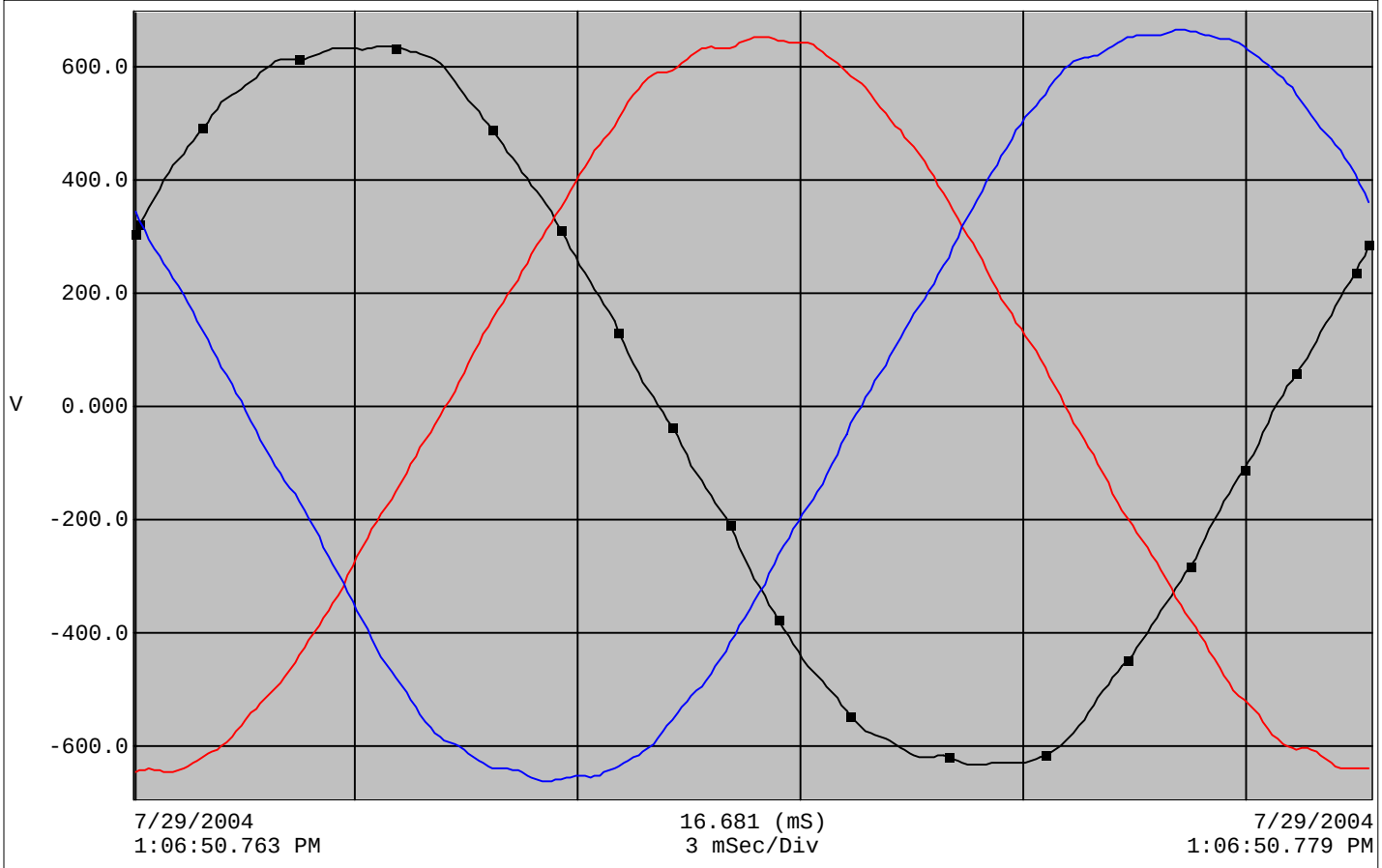


7/29/2004 - 1:06:50.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3
X.XX — Waveform INeutral

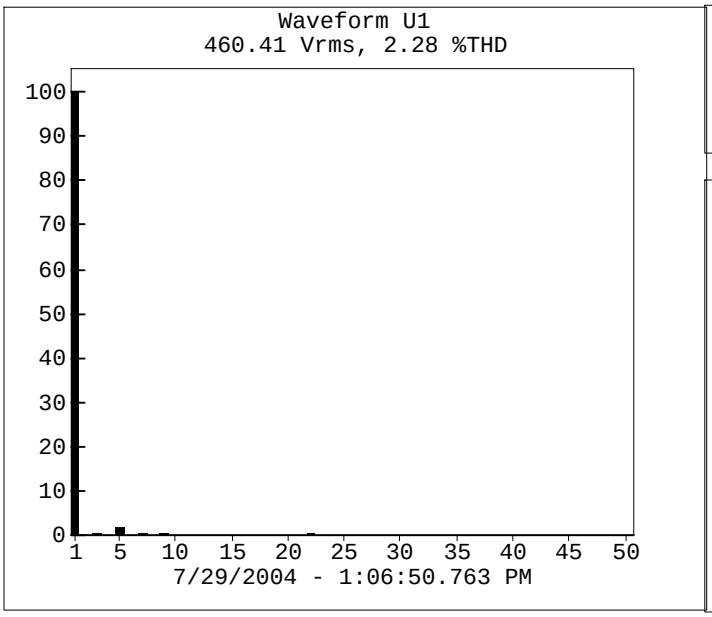
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	1.2	H35	0.0
H02	0.1	H19	0.7	H36	0.1
H03	2.5	H20	0.5	H37	0.1
H04	0.0	H21	0.6	H38	0.1
H05	4.1	H22	2.4	H39	0.1
H06	0.1	H23	1.1	H40	0.1
H07	2.1	H24	0.9	H41	0.2
H08	0.0	H25	0.1	H42	0.1
H09	0.5	H26	0.1	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.3	H29	0.1	H46	0.1
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.4	H33	0.0	H50	0.0
H17	0.4	H34	0.0		

Channel Name: Waveform U1
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/29/2004	1:06:50.763 PM	16.681	460.4	V
Waveform U2	7/29/2004	1:06:50.763 PM	16.681	462.4	V
Waveform U3	7/29/2004	1:06:50.763 PM	16.681	475.8	V



7/29/2004 - 1:06:50.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.7	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.8	H22	0.5	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.7	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.1
H09	0.7	H26	0.1	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/29/2004
Start Time: 1:06:50 PM
Duration: 0:0.000 (M:S)
W: 11.48E+3 W
VAR: 11.04E+3 W
VA: 15.93E+3 W
Power Factor: 0.721
Displacement Power Factor: 0.722
TAN: 0.958
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\072904-F10-Photo3.dvb

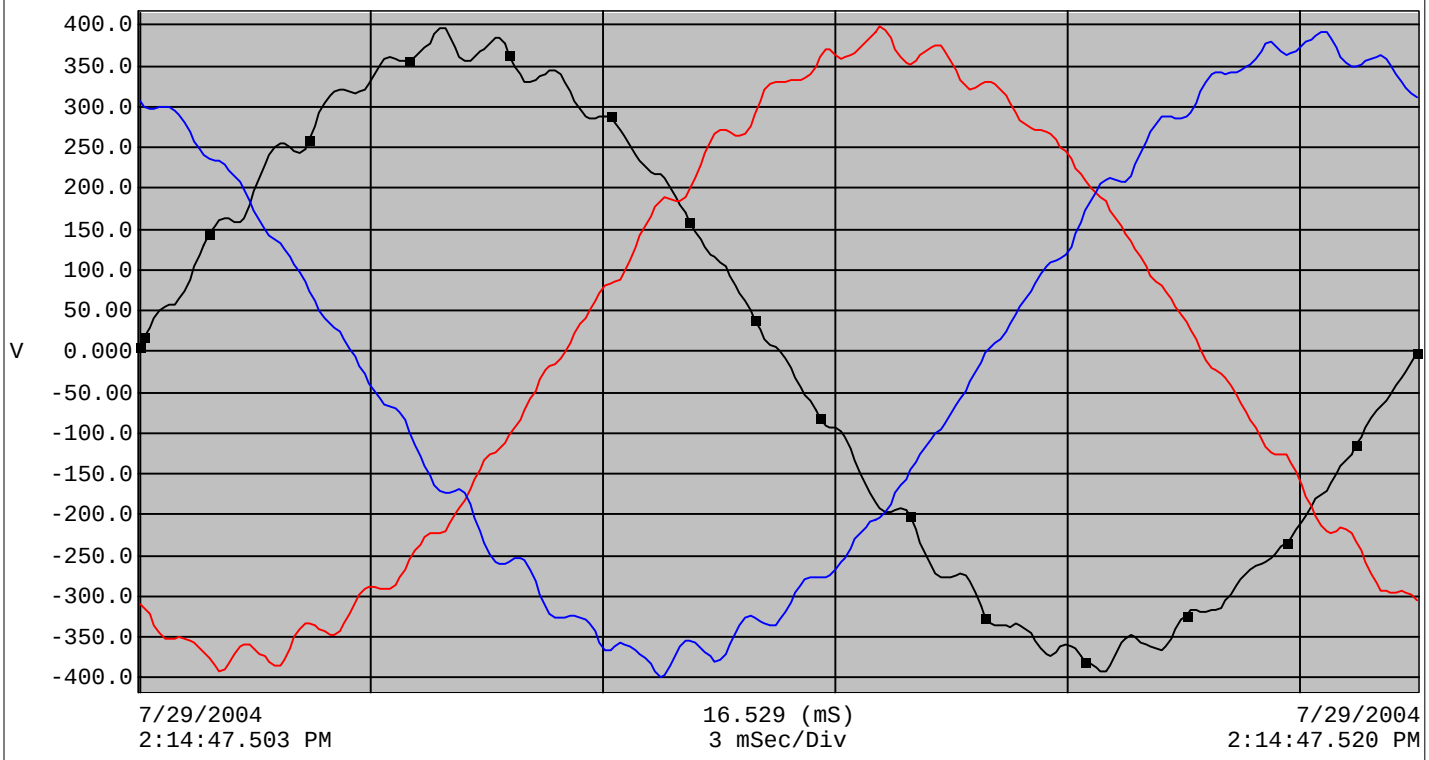
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-10 ,

Comments
Voltage Adjustments with GPA Crew

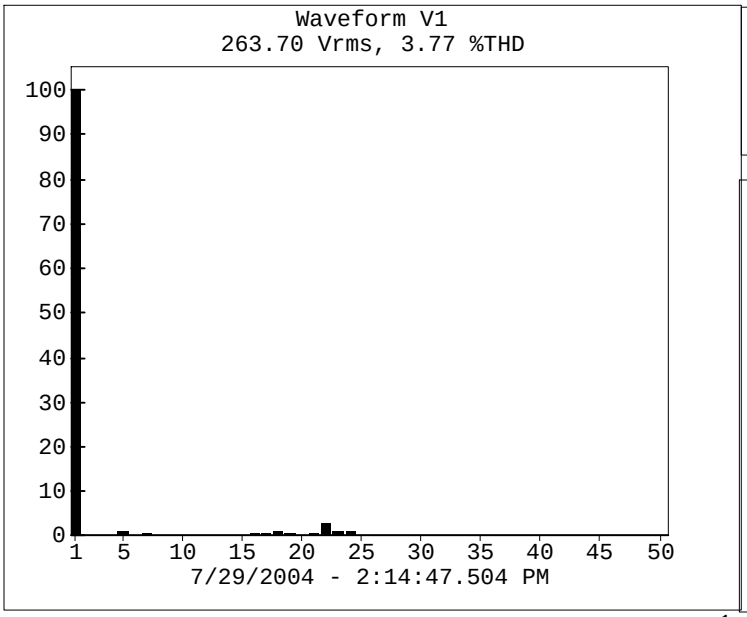
WPS F-10 - Photo4 Photo Report

Recording Start Date	7/29/2004 - 2:14:47 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 60.50 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/29/2004	2:14:47.503 PM	16.529	263.7	V
Waveform V2	7/29/2004	2:14:47.503 PM	16.529	263.3	V
Waveform V3	7/29/2004	2:14:47.503 PM	16.529	263.8	V



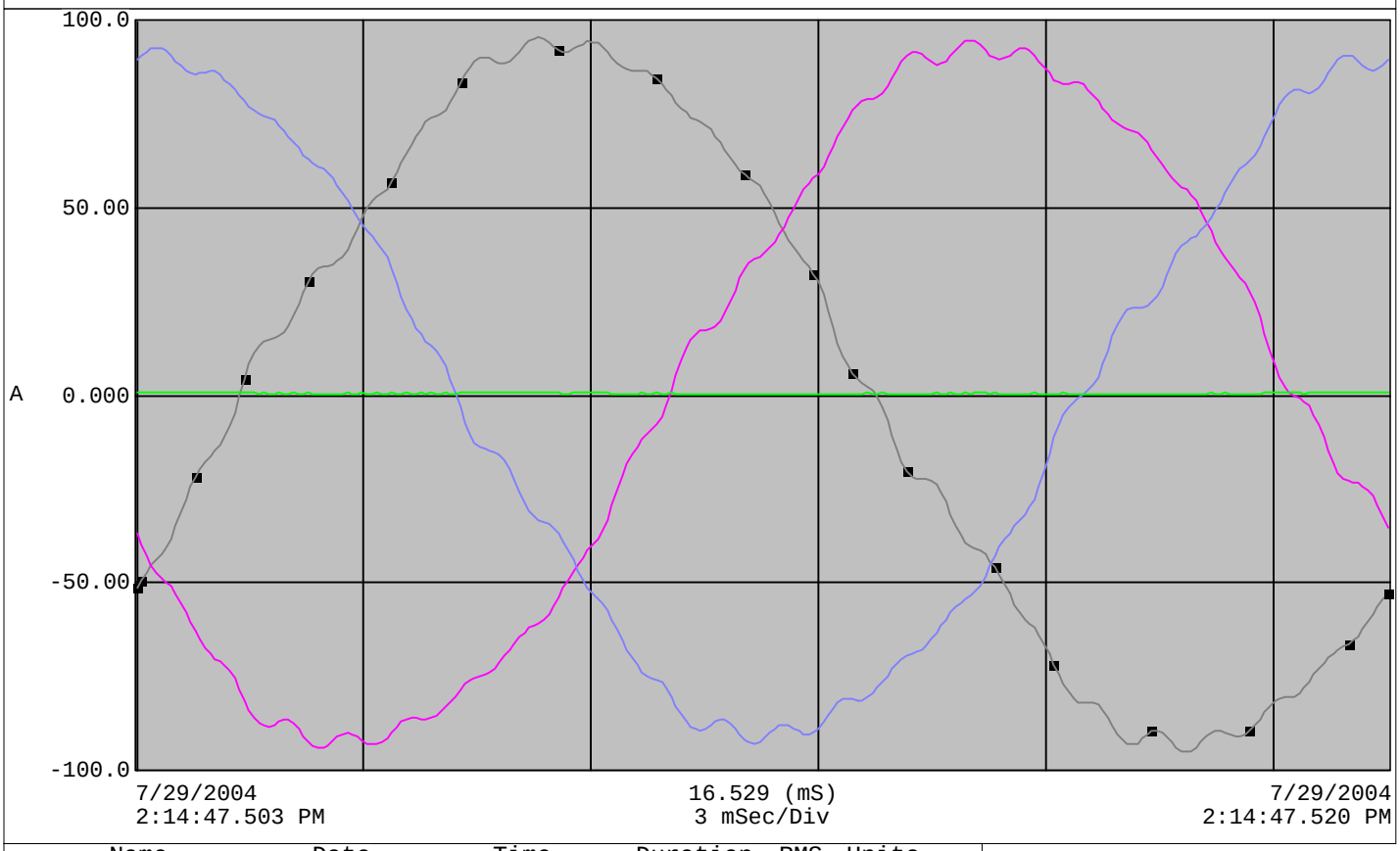
7/29/2004 - 2:14:47.000 PM

Val	
5.000	Waveform V1
-310.8	Waveform V2
306.2	Waveform V3

Waveform V1

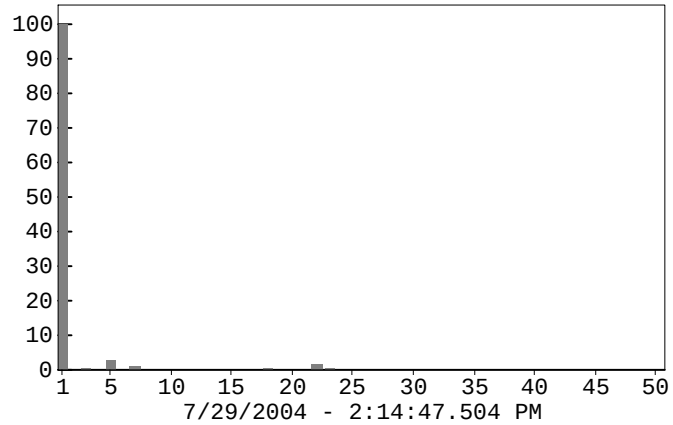
	(%)		(%)		(%)
H01	100.0	H18	1.1	H35	0.1
H02	0.1	H19	0.4	H36	0.1
H03	0.1	H20	0.3	H37	0.1
H04	0.1	H21	0.5	H38	0.1
H05	1.0	H22	2.6	H39	0.1
H06	0.0	H23	1.2	H40	0.2
H07	0.5	H24	1.3	H41	0.4
H08	0.0	H25	0.3	H42	0.3
H09	0.0	H26	0.1	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	0.2	H28	0.0	H45	0.1
H12	0.2	H29	0.1	H46	0.2
H13	0.3	H30	0.0	H47	0.1
H14	0.0	H31	0.1	H48	0.0
H15	0.1	H32	0.0	H49	0.1
H16	0.5	H33	0.1	H50	0.0
H17	0.6	H34	0.1		

Channel Name: Waveform I1
Frequency: 60.50 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/29/2004	2:14:47.503 PM	16.529	66.03	A
Waveform I2	7/29/2004	2:14:47.503 PM	16.529	65.93	A
Waveform I3	7/29/2004	2:14:47.503 PM	16.529	64.23	A
Waveform INeutral	7/29/2004	2:14:47.503 PM	16.529	0.282	A

Waveform I1
66.03 Arms, 4.17 %THD



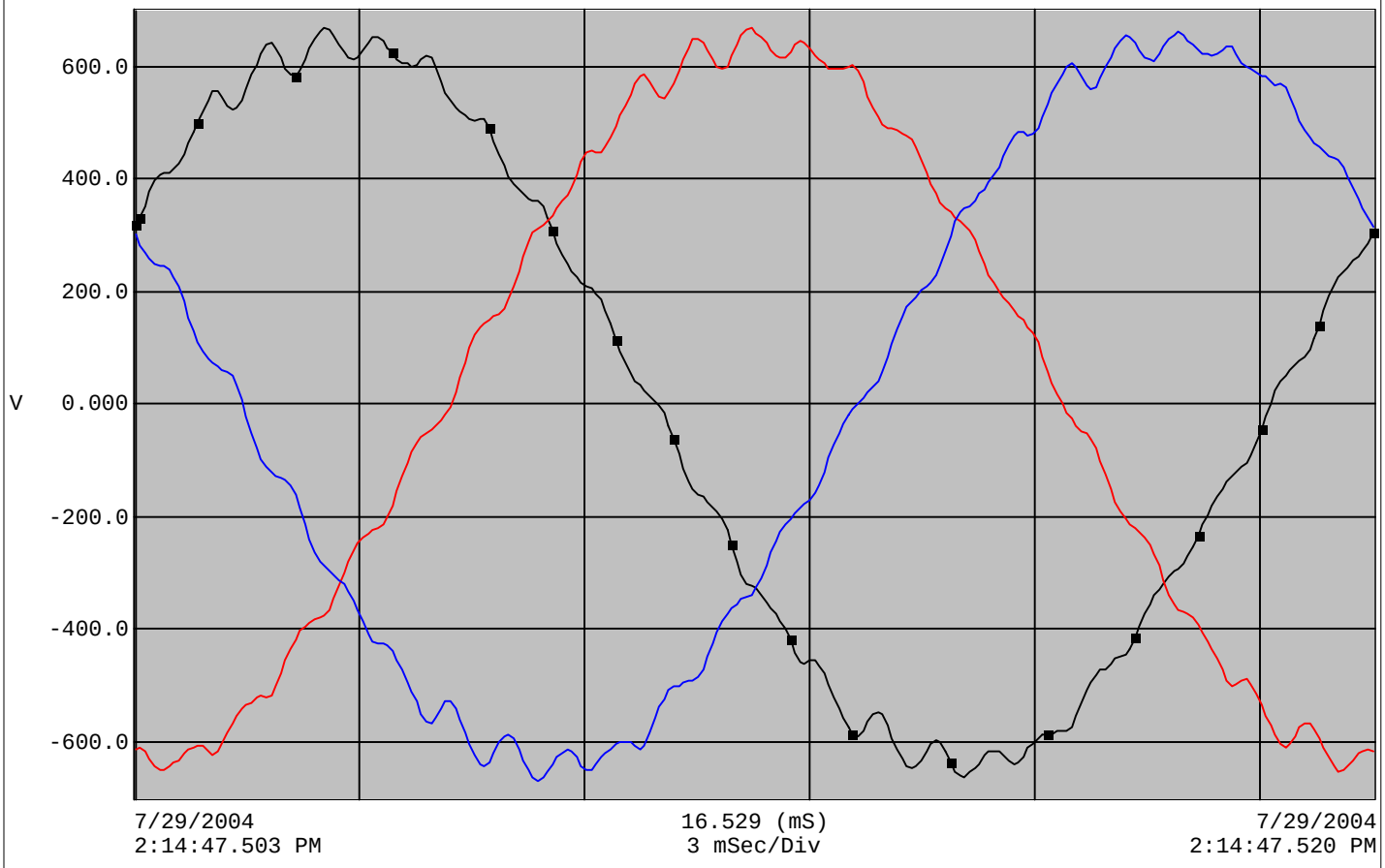
7/29/2004 - 2:14:47.000 PM

Val	
-51.80	Waveform I1
-36.90	Waveform I2
89.30	Waveform I3
0.600	Waveform INeutral

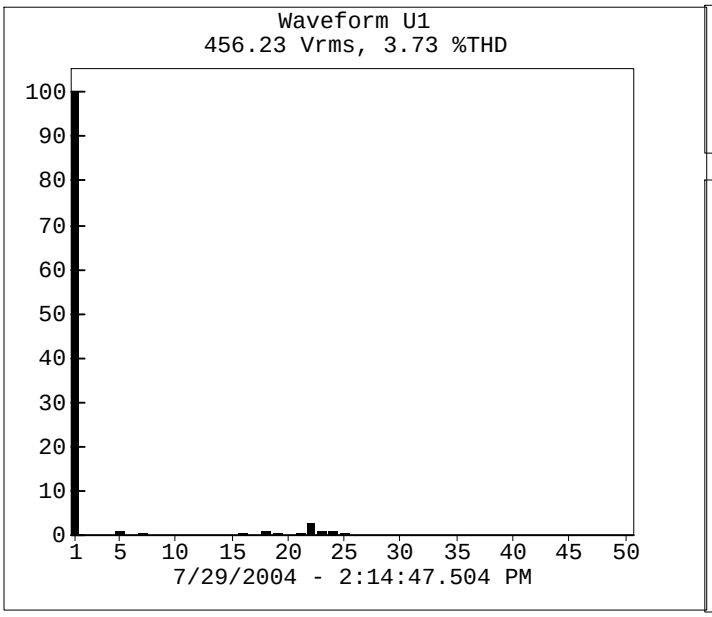
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.9	H35	0.0
H02	0.2	H19	0.4	H36	0.0
H03	0.8	H20	0.3	H37	0.0
H04	0.3	H21	0.4	H38	0.0
H05	2.9	H22	2.0	H39	0.1
H06	0.0	H23	0.6	H40	0.1
H07	1.5	H24	0.5	H41	0.2
H08	0.0	H25	0.2	H42	0.1
H09	0.0	H26	0.1	H43	0.0
H10	0.2	H27	0.1	H44	0.0
H11	0.1	H28	0.0	H45	0.1
H12	0.3	H29	0.1	H46	0.1
H13	0.1	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.4	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Channel Name: Waveform U1
Frequency: 60.50 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/29/2004	2:14:47.503 PM	16.529	456.2	V
Waveform U2	7/29/2004	2:14:47.503 PM	16.529	456.6	V
Waveform U3	7/29/2004	2:14:47.503 PM	16.529	457.1	V



7/29/2004 - 2:14:47.000 PM

	Val	
—	315.8	Waveform U1
—	-617.0	Waveform U2
—	301.2	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.9	H35	0.0
H02	0.1	H19	0.5	H36	0.1
H03	0.1	H20	0.3	H37	0.1
H04	0.2	H21	0.7	H38	0.1
H05	0.9	H22	2.8	H39	0.2
H06	0.0	H23	1.0	H40	0.1
H07	0.5	H24	1.0	H41	0.4
H08	0.0	H25	0.5	H42	0.3
H09	0.1	H26	0.2	H43	0.1
H10	0.1	H27	0.1	H44	0.1
H11	0.2	H28	0.1	H45	0.2
H12	0.2	H29	0.1	H46	0.2
H13	0.3	H30	0.1	H47	0.1
H14	0.1	H31	0.1	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.6	H33	0.0	H50	0.0
H17	0.4	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/29/2004
Start Time: 2:14:47 PM
Duration: 0:0.000 (M:S)
W: 14.80E+3 W
VAR: 9.468E+3 W
VA: 17.57E+3 W
Power Factor: 0.842
Displacement Power Factor: 0.844
TAN: 0.637
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\072904-F10-Photo4.dvb

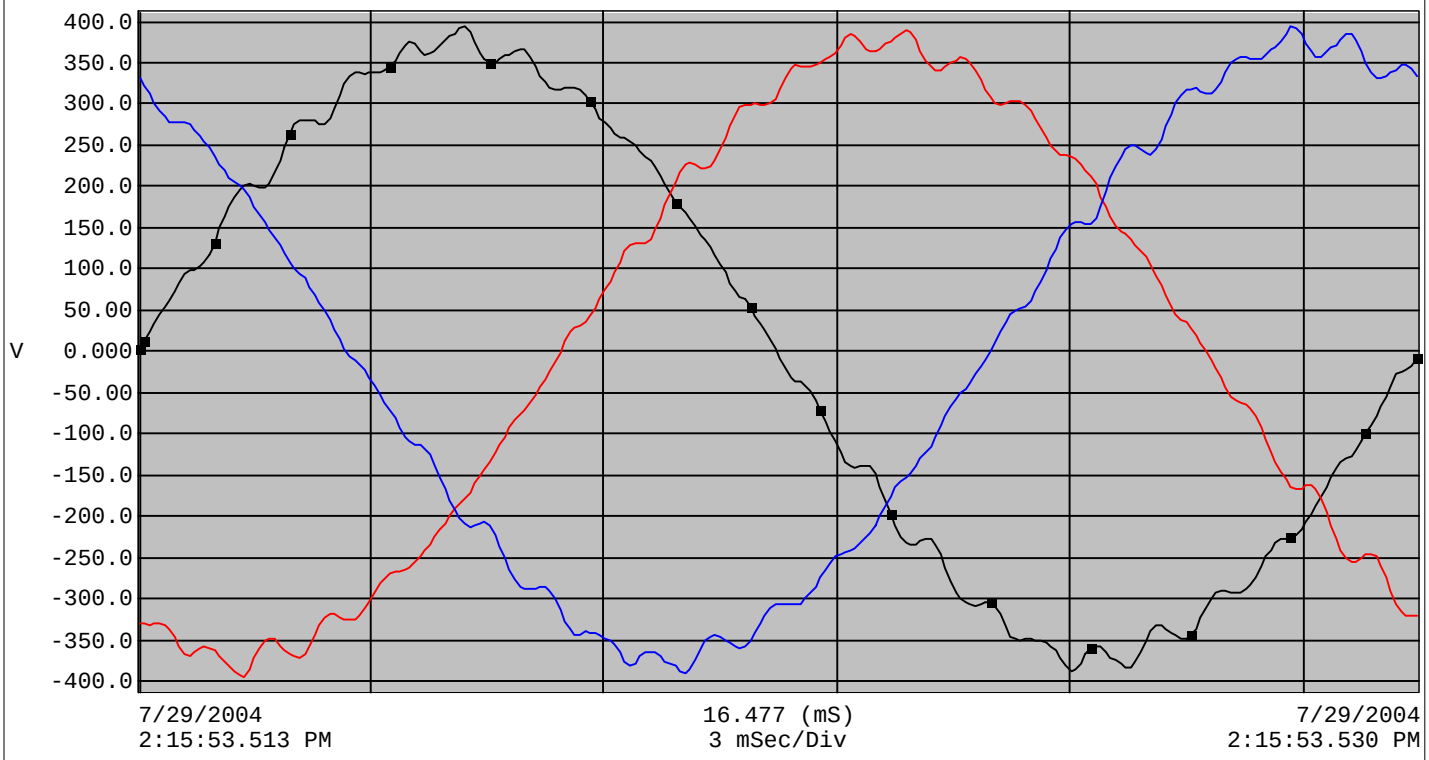
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F10 ,

Comments
Station Voltage Adjustments with GPA Crew

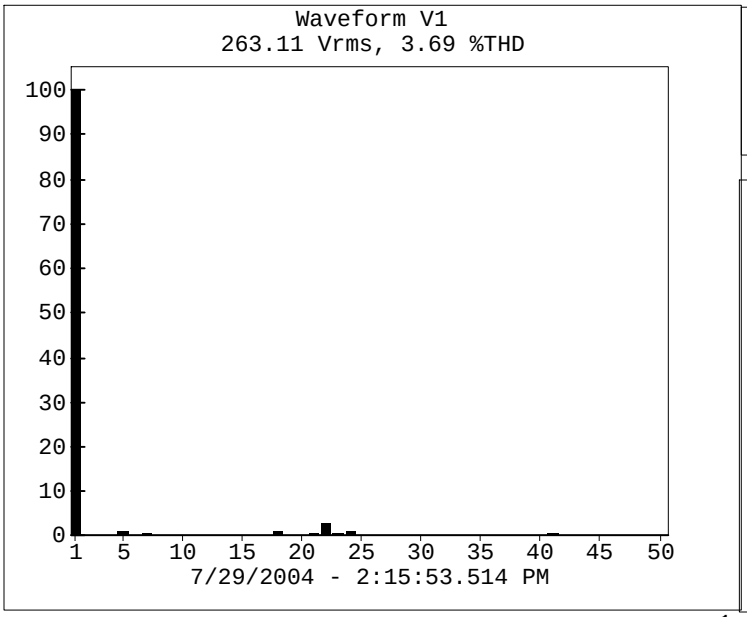
WPS F-10 - Photo5 Photo Report

Recording Start Date	7/29/2004 - 2:15:53 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 60.69 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/29/2004	2:15:53.513 PM	16.477	263.1	V
Waveform V2	7/29/2004	2:15:53.513 PM	16.477	263.0	V
Waveform V3	7/29/2004	2:15:53.513 PM	16.477	263.5	V



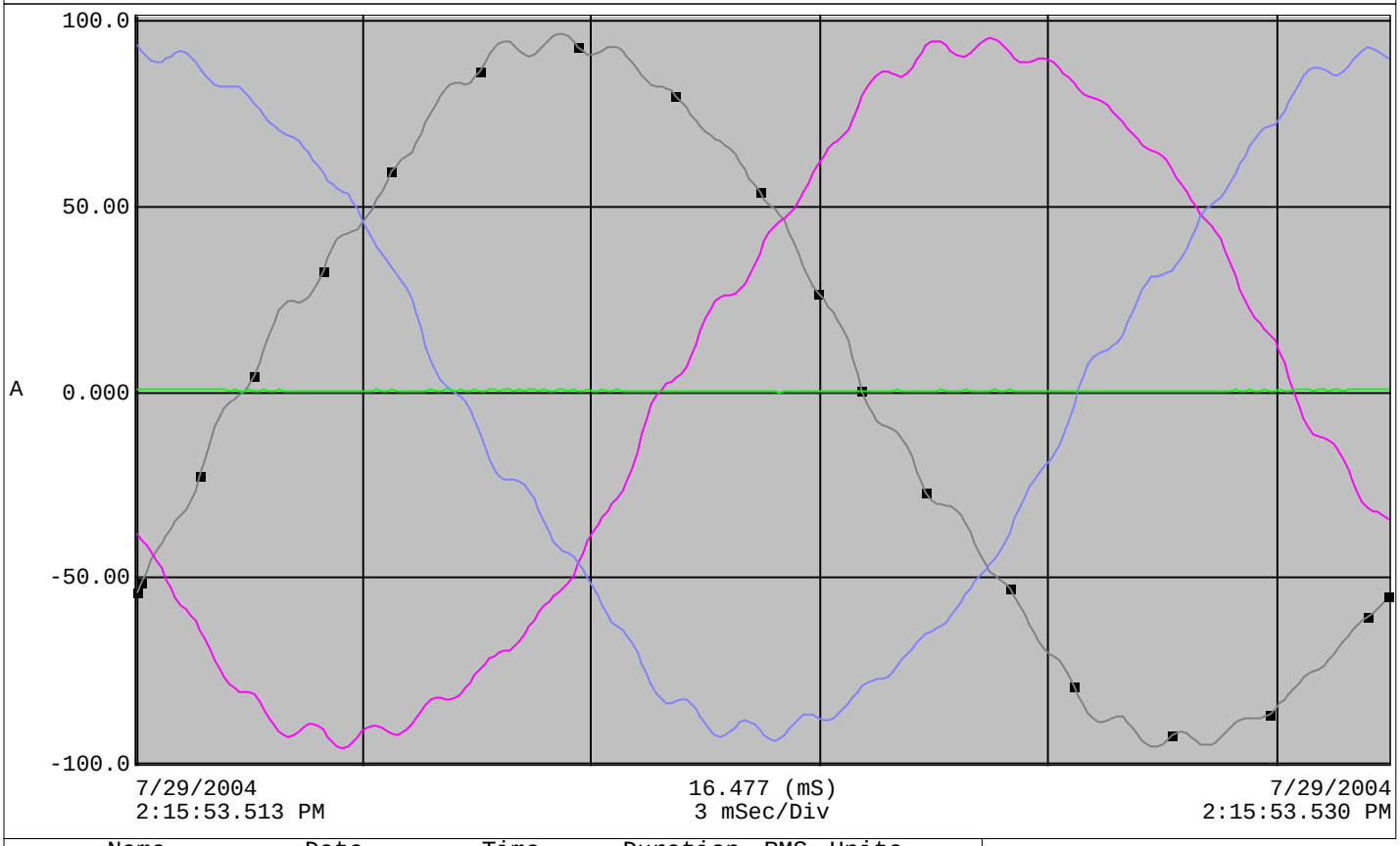
7/29/2004 - 2:15:53.000 PM

Val	
1.600	Waveform V1
-331.4	Waveform V2
329.3	Waveform V3

Waveform V1

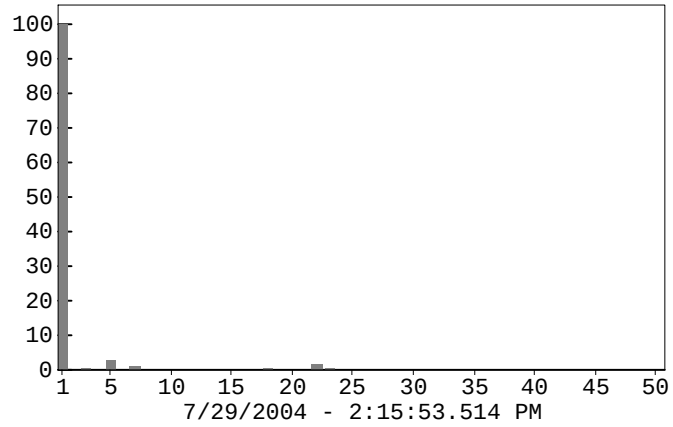
	(%)		(%)		(%)
H01	100.0	H18	1.2	H35	0.1
H02	0.0	H19	0.4	H36	0.1
H03	0.1	H20	0.3	H37	0.1
H04	0.2	H21	0.5	H38	0.1
H05	0.9	H22	2.8	H39	0.1
H06	0.0	H23	0.6	H40	0.2
H07	0.5	H24	1.3	H41	0.4
H08	0.0	H25	0.3	H42	0.3
H09	0.0	H26	0.1	H43	0.1
H10	0.1	H27	0.1	H44	0.0
H11	0.2	H28	0.1	H45	0.1
H12	0.2	H29	0.0	H46	0.1
H13	0.2	H30	0.1	H47	0.1
H14	0.0	H31	0.0	H48	0.1
H15	0.0	H32	0.1	H49	0.1
H16	0.4	H33	0.1	H50	0.0
H17	0.1	H34	0.1		

Channel Name: Waveform I1
Frequency: 60.69 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/29/2004	2:15:53.513 PM	16.477	66.56	A
Waveform I2	7/29/2004	2:15:53.513 PM	16.477	66.42	A
Waveform I3	7/29/2004	2:15:53.513 PM	16.477	64.79	A
Waveform INeutral	7/29/2004	2:15:53.513 PM	16.477	0.290	A

Waveform I1
66.56 Arms, 4.26 %THD



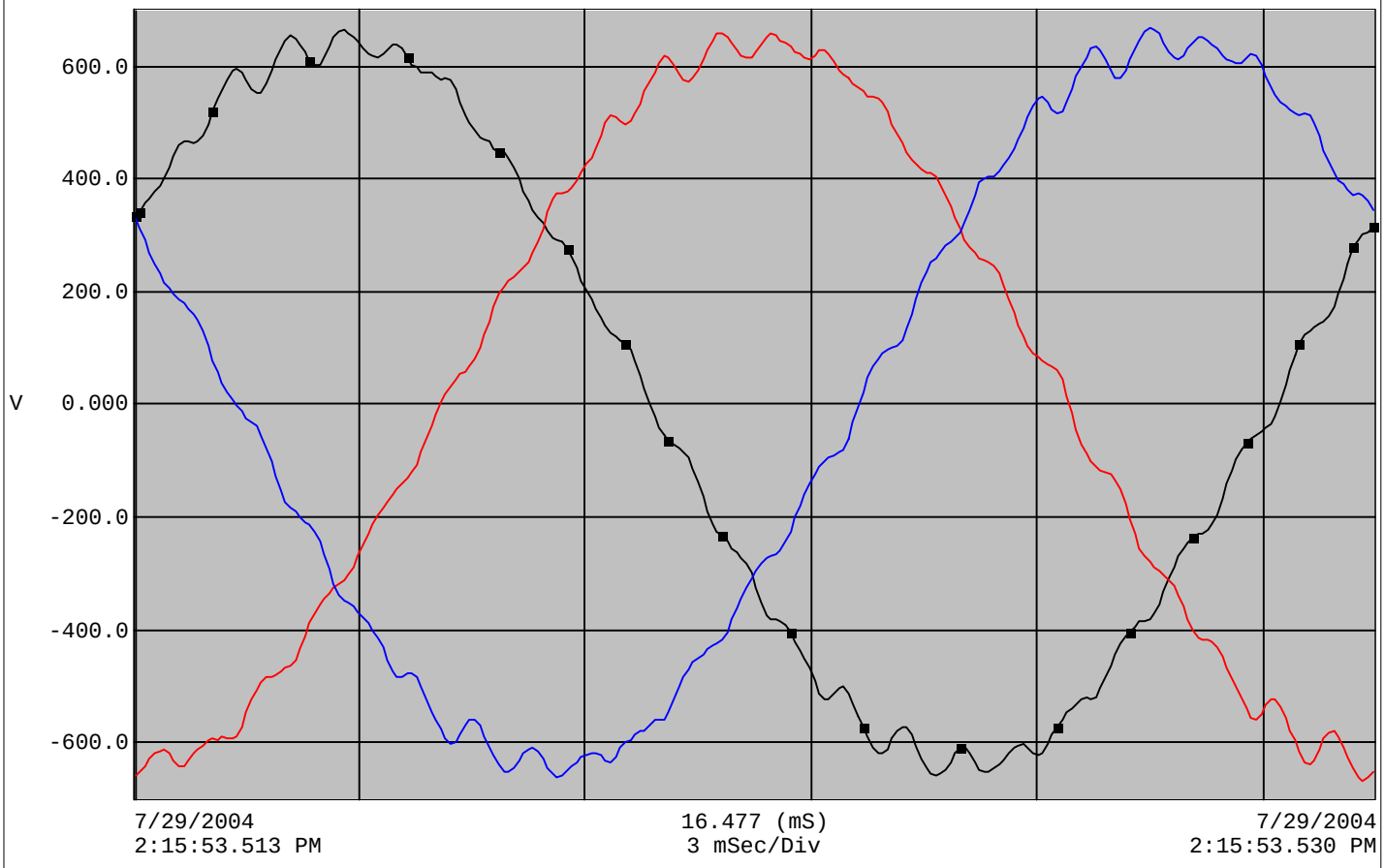
7/29/2004 - 2:15:53.000 PM

Val	
-53.90	Waveform I1
-38.60	Waveform I2
93.10	Waveform I3
0.500	Waveform INeutral

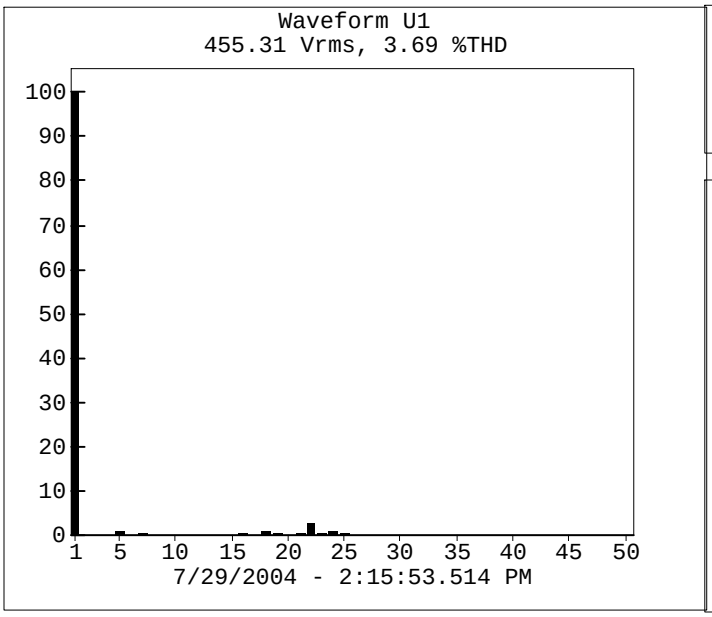
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	1.0	H35	0.0
H02	0.2	H19	0.4	H36	0.0
H03	0.8	H20	0.2	H37	0.0
H04	0.2	H21	0.4	H38	0.0
H05	2.9	H22	2.0	H39	0.0
H06	0.1	H23	0.7	H40	0.1
H07	1.5	H24	0.5	H41	0.1
H08	0.0	H25	0.0	H42	0.1
H09	0.1	H26	0.1	H43	0.0
H10	0.2	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.3	H29	0.0	H46	0.1
H13	0.2	H30	0.0	H47	0.1
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.3	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Channel Name: Waveform U1
Frequency: 60.69 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/29/2004	2:15:53.513 PM	16.477	455.3	V
Waveform U2	7/29/2004	2:15:53.513 PM	16.477	456.2	V
Waveform U3	7/29/2004	2:15:53.513 PM	16.477	456.3	V



7/29/2004 - 2:15:53.000 PM

	Val	
—	333.1	Waveform U1
—	-660.8	Waveform U2
—	327.6	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	1.0	H35	0.1
H02	0.0	H19	0.5	H36	0.1
H03	0.1	H20	0.3	H37	0.1
H04	0.1	H21	0.6	H38	0.1
H05	1.0	H22	2.9	H39	0.2
H06	0.0	H23	0.5	H40	0.1
H07	0.5	H24	1.0	H41	0.4
H08	0.1	H25	0.5	H42	0.3
H09	0.0	H26	0.2	H43	0.0
H10	0.1	H27	0.2	H44	0.0
H11	0.2	H28	0.1	H45	0.1
H12	0.2	H29	0.1	H46	0.2
H13	0.3	H30	0.1	H47	0.0
H14	0.1	H31	0.1	H48	0.1
H15	0.1	H32	0.1	H49	0.0
H16	0.6	H33	0.1	H50	0.0
H17	0.1	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/29/2004
Start Time: 2:15:53 PM
Duration: 0:0.000 (M:S)
W: 14.90E+3 W
VAR: 9.386E+3 W
VA: 17.61E+3 W
Power Factor: 0.846
Displacement Power Factor: 0.847
TAN: 0.626
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\072904-F10-Photo5.dvb

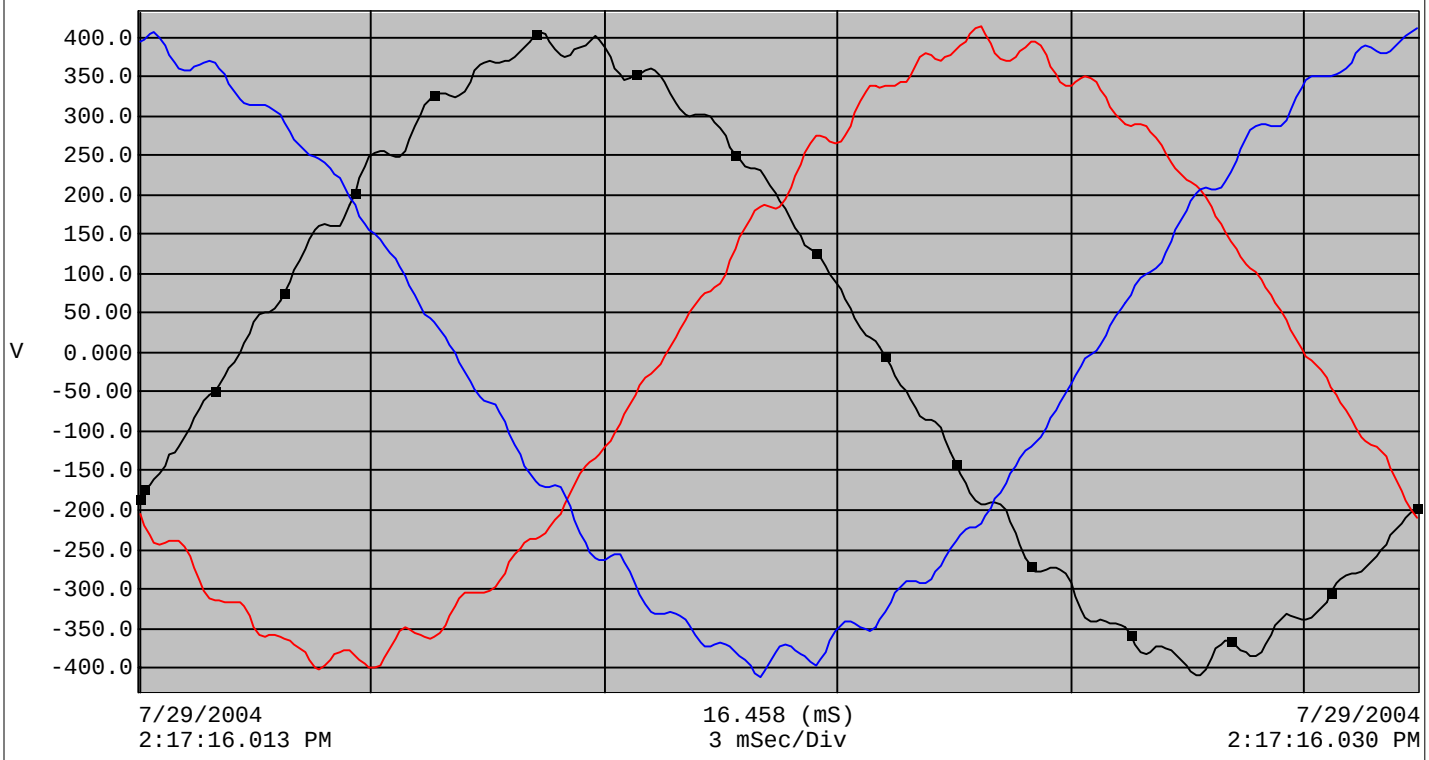
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-10 ,

Comments
Transformer Voltage adjustments with GPA crew

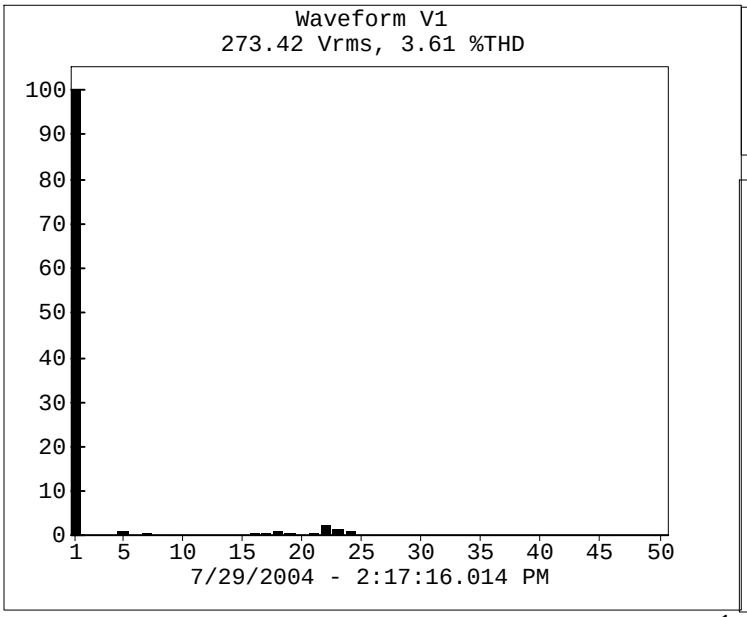
WPS F-10 - Photo6 Photo Report

Recording Start Date	7/29/2004 - 2:17:16 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 60.76 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/29/2004	2:17:16.013 PM	16.458	273.4	V
Waveform V2	7/29/2004	2:17:16.013 PM	16.458	273.4	V
Waveform V3	7/29/2004	2:17:16.013 PM	16.458	274.1	V



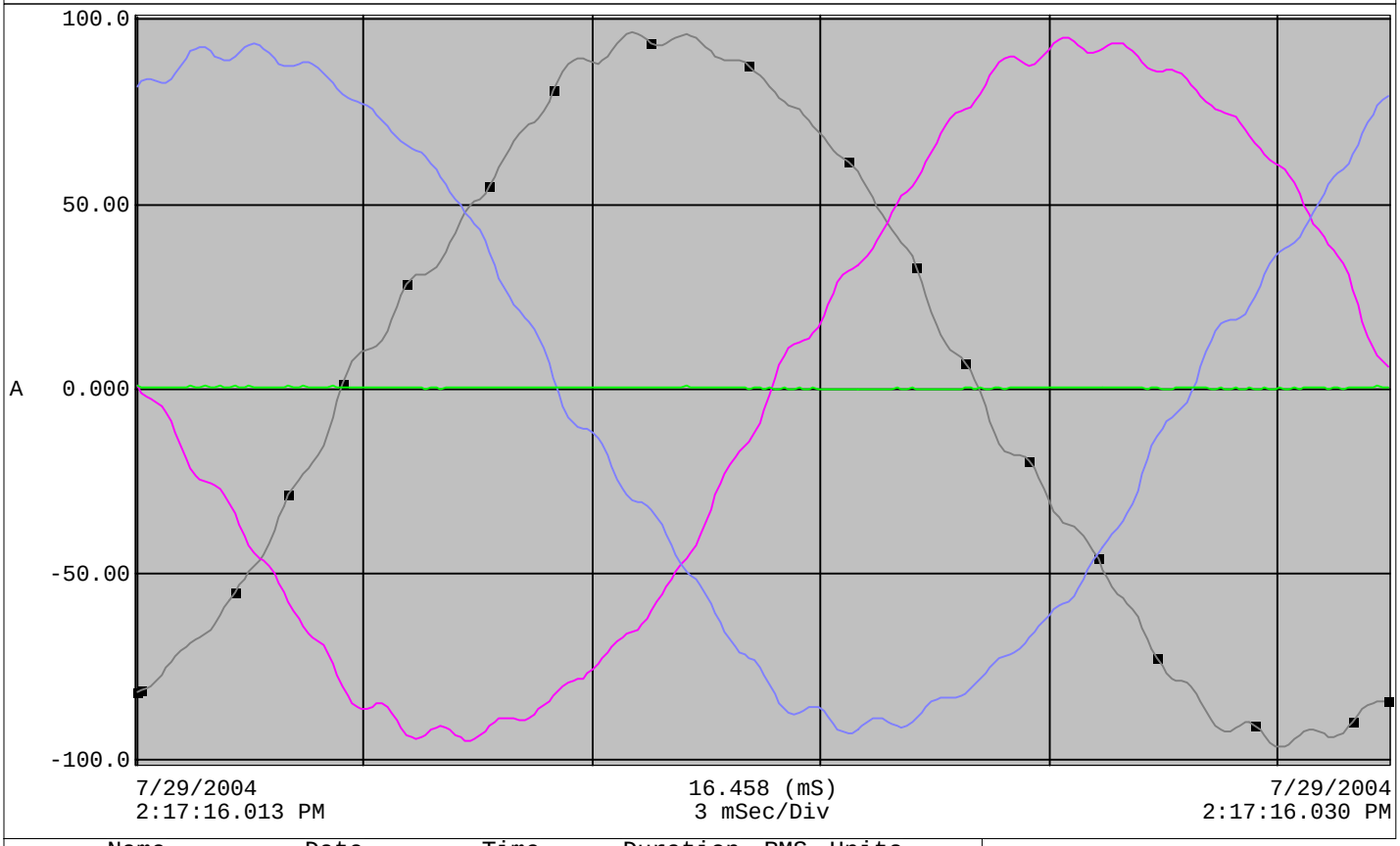
7/29/2004 - 2:17:16.000 PM

Val	
-185.6	Waveform V1
-207.1	Waveform V2
391.9	Waveform V3

Waveform V1

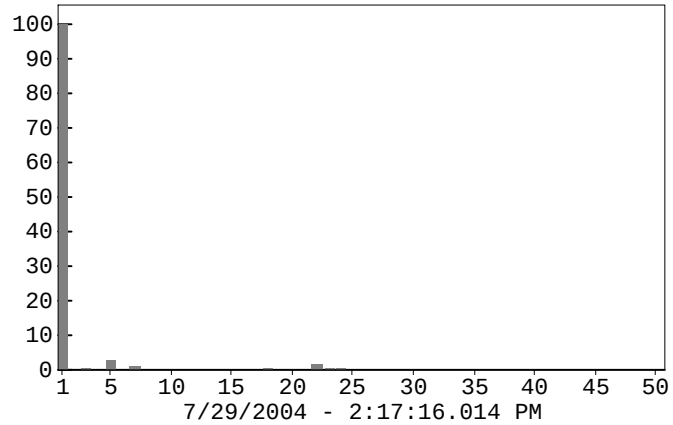
	(%)		(%)		(%)
H01	100.0	H18	1.0	H35	0.1
H02	0.1	H19	0.6	H36	0.0
H03	0.0	H20	0.3	H37	0.0
H04	0.1	H21	0.6	H38	0.0
H05	1.0	H22	2.3	H39	0.0
H06	0.0	H23	1.5	H40	0.2
H07	0.5	H24	1.3	H41	0.3
H08	0.0	H25	0.2	H42	0.3
H09	0.0	H26	0.0	H43	0.1
H10	0.1	H27	0.0	H44	0.1
H11	0.2	H28	0.0	H45	0.1
H12	0.1	H29	0.0	H46	0.1
H13	0.3	H30	0.1	H47	0.2
H14	0.1	H31	0.1	H48	0.1
H15	0.1	H32	0.0	H49	0.1
H16	0.4	H33	0.0	H50	0.0
H17	0.5	H34	0.0		

Channel Name: Waveform I1
Frequency: 60.76 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/29/2004	2:17:16.013 PM	16.458	66.81	A
Waveform I2	7/29/2004	2:17:16.013 PM	16.458	66.54	A
Waveform I3	7/29/2004	2:17:16.013 PM	16.458	64.82	A
Waveform INeutral	7/29/2004	2:17:16.013 PM	16.458	0.291	A

Waveform I1
66.81 Arms, 4.09 %THD



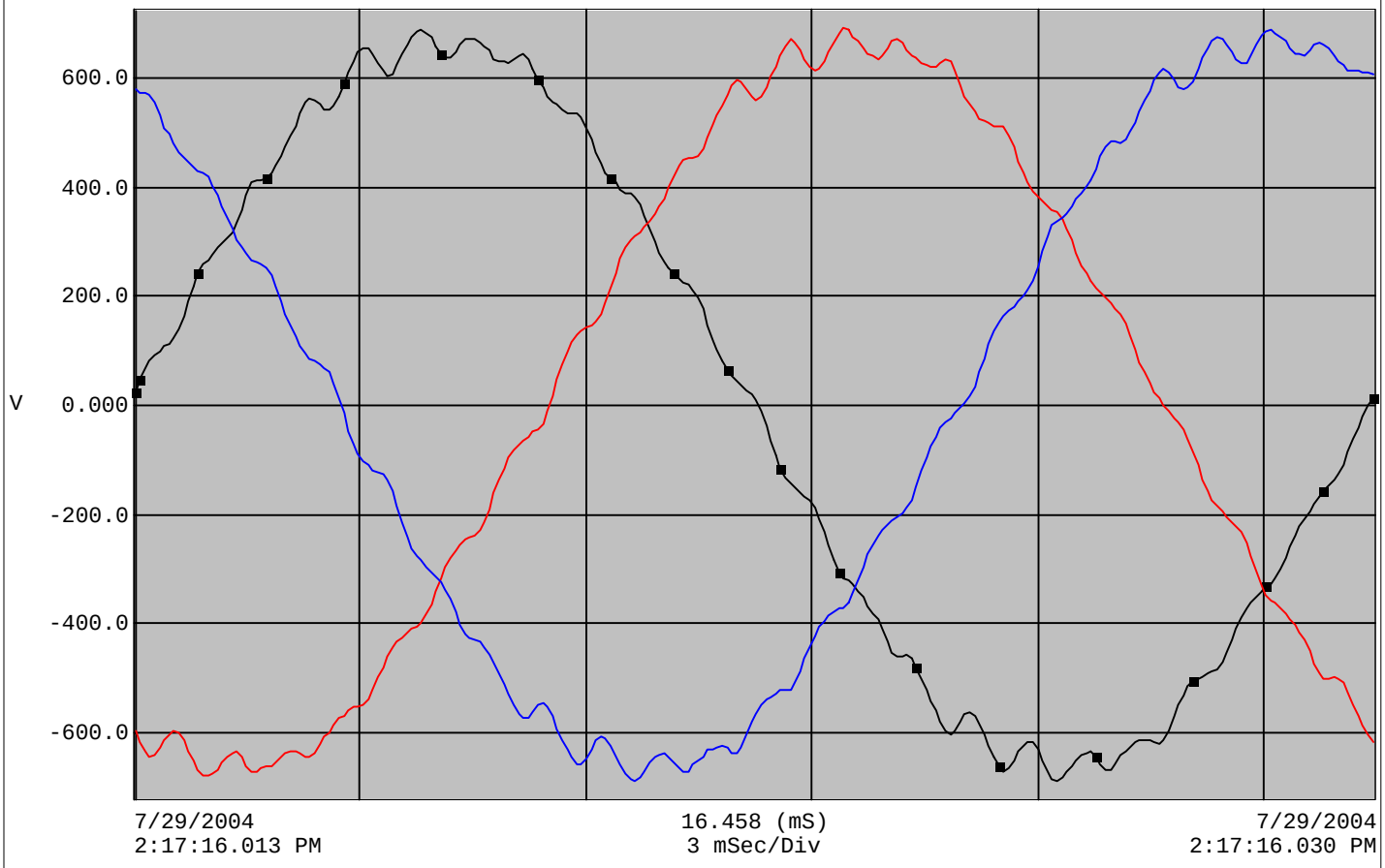
7/29/2004 - 2:17:16.000 PM

	Val	
—	-81.80	Waveform I1
—	0.700	Waveform I2
—	81.70	Waveform I3
—	0.600	Waveform INeutral

Waveform I1

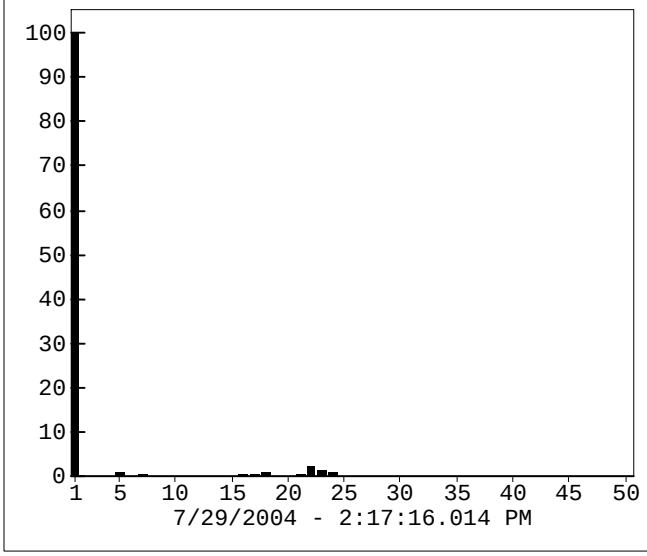
	(%)		(%)		(%)
H01	100.0	H18	0.9	H35	0.0
H02	0.2	H19	0.4	H36	0.1
H03	0.9	H20	0.2	H37	0.0
H04	0.2	H21	0.5	H38	0.0
H05	2.9	H22	1.8	H39	0.0
H06	0.1	H23	0.7	H40	0.0
H07	1.3	H24	0.7	H41	0.1
H08	0.0	H25	0.1	H42	0.2
H09	0.1	H26	0.1	H43	0.1
H10	0.2	H27	0.1	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.2	H29	0.0	H46	0.1
H13	0.2	H30	0.1	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.4	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Channel Name: Waveform U1
Frequency: 60.76 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/29/2004	2:17:16.013 PM	16.458	473.1	V
Waveform U2	7/29/2004	2:17:16.013 PM	16.458	474.5	V
Waveform U3	7/29/2004	2:17:16.013 PM	16.458	474.4	V

Waveform U1
473.09 Vrms, 3.58 %THD



7/29/2004 - 2:17:16.000 PM

	Val	
—	21.40	Waveform U1
—	-599.1	Waveform U2
—	577.6	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	1.0	H35	0.0
H02	0.0	H19	0.4	H36	0.1
H03	0.1	H20	0.1	H37	0.1
H04	0.1	H21	0.5	H38	0.1
H05	1.0	H22	2.2	H39	0.1
H06	0.0	H23	1.5	H40	0.2
H07	0.5	H24	1.2	H41	0.3
H08	0.1	H25	0.1	H42	0.3
H09	0.1	H26	0.2	H43	0.1
H10	0.1	H27	0.1	H44	0.1
H11	0.2	H28	0.1	H45	0.1
H12	0.1	H29	0.1	H46	0.2
H13	0.4	H30	0.1	H47	0.2
H14	0.2	H31	0.1	H48	0.0
H15	0.2	H32	0.1	H49	0.1
H16	0.5	H33	0.1	H50	0.0
H17	0.5	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/29/2004
Start Time: 2:17:16 PM
Duration: 0:0.000 (M:S)
W: 15.07E+3 W
VAR: 10.24E+3 W
VA: 18.22E+3 W
Power Factor: 0.827
Displacement Power Factor: 0.828
TAN: 0.677
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\072904-F10-Photo6.dvb

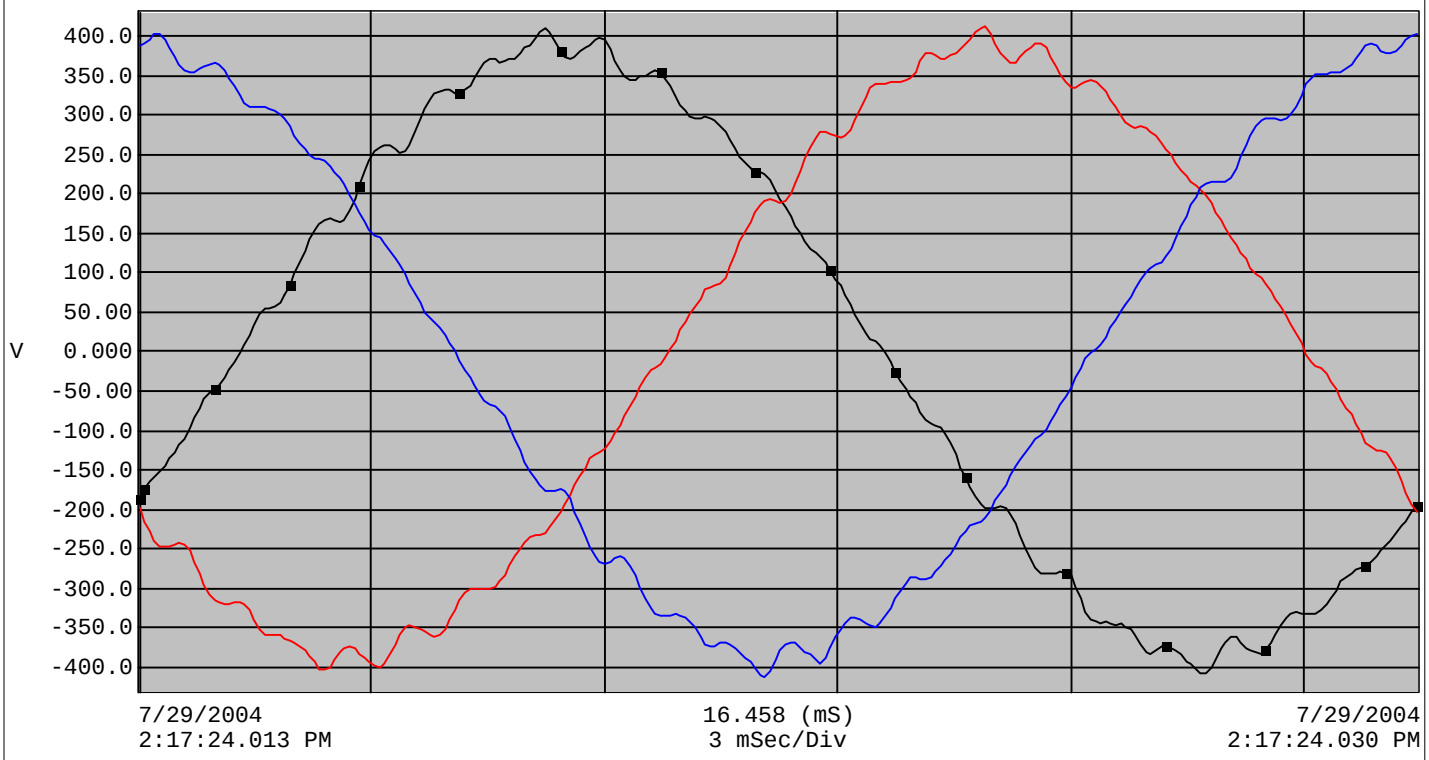
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-10 ,

Comments
Transformer adjustments with GPA crew

WPS F-10 - Photo7 Photo Report

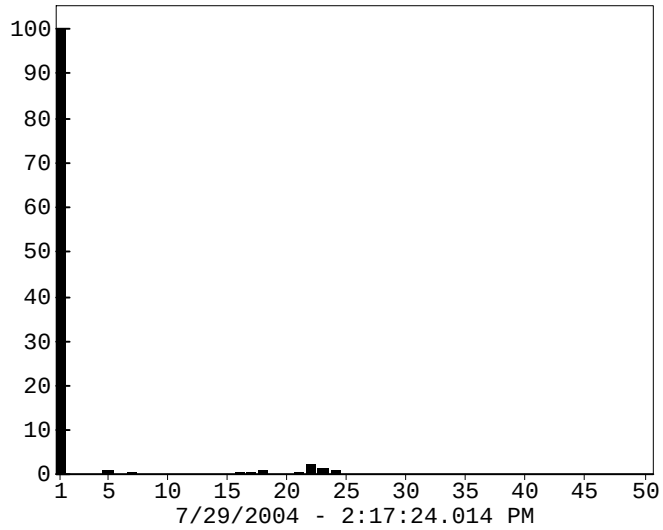
Recording Start Date	7/29/2004 - 2:17:24 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 60.76 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/29/2004	2:17:24.013 PM	16.458	273.0	V
Waveform V2	7/29/2004	2:17:24.013 PM	16.458	272.9	V
Waveform V3	7/29/2004	2:17:24.013 PM	16.458	273.4	V

Waveform V1
273.03 Vrms, 3.59 %THD



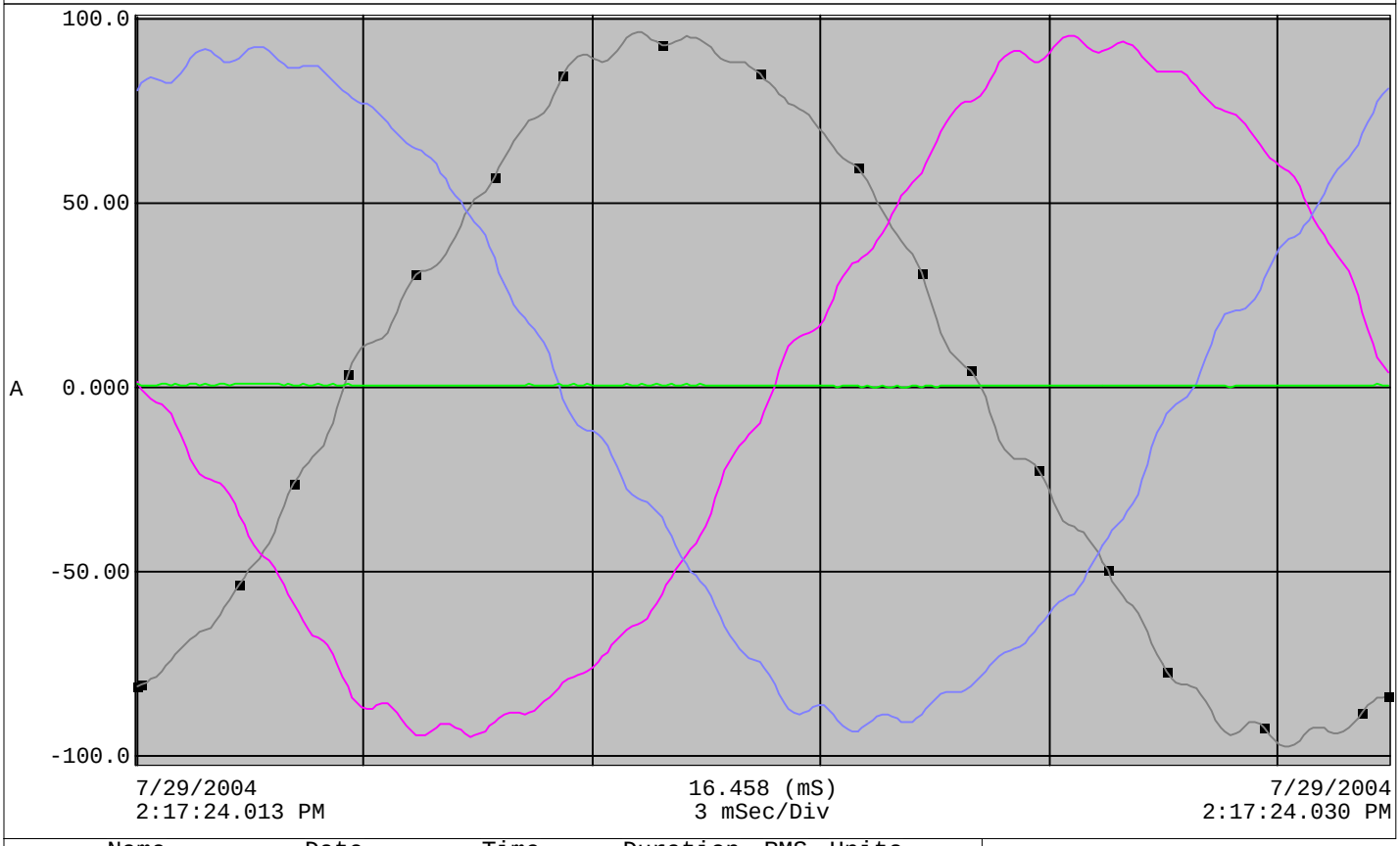
7/29/2004 - 2:17:24.000 PM

Val	
-187.7	Waveform V1
-200.2	Waveform V2
386.8	Waveform V3

Waveform V1

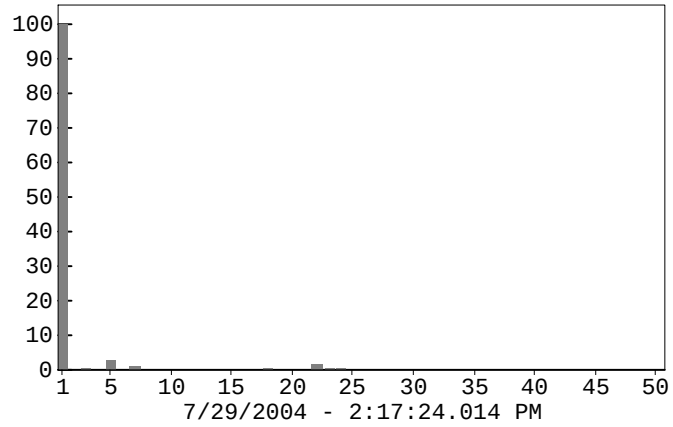
	(%)		(%)		(%)
H01	100.0	H18	1.1	H35	0.1
H02	0.1	H19	0.4	H36	0.1
H03	0.1	H20	0.3	H37	0.0
H04	0.1	H21	0.5	H38	0.0
H05	0.9	H22	2.4	H39	0.1
H06	0.0	H23	1.3	H40	0.2
H07	0.5	H24	1.2	H41	0.3
H08	0.0	H25	0.3	H42	0.3
H09	0.0	H26	0.0	H43	0.1
H10	0.1	H27	0.0	H44	0.1
H11	0.2	H28	0.1	H45	0.1
H12	0.2	H29	0.0	H46	0.1
H13	0.4	H30	0.1	H47	0.1
H14	0.1	H31	0.1	H48	0.1
H15	0.1	H32	0.0	H49	0.1
H16	0.5	H33	0.1	H50	0.0
H17	0.6	H34	0.0		

Channel Name: Waveform I1
Frequency: 60.76 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/29/2004	2:17:24.013 PM	16.458	66.81	A
Waveform I2	7/29/2004	2:17:24.013 PM	16.458	66.50	A
Waveform I3	7/29/2004	2:17:24.013 PM	16.458	64.69	A
Waveform INeutral	7/29/2004	2:17:24.013 PM	16.458	0.289	A

Waveform I1
66.81 Arms, 4.25 %THD



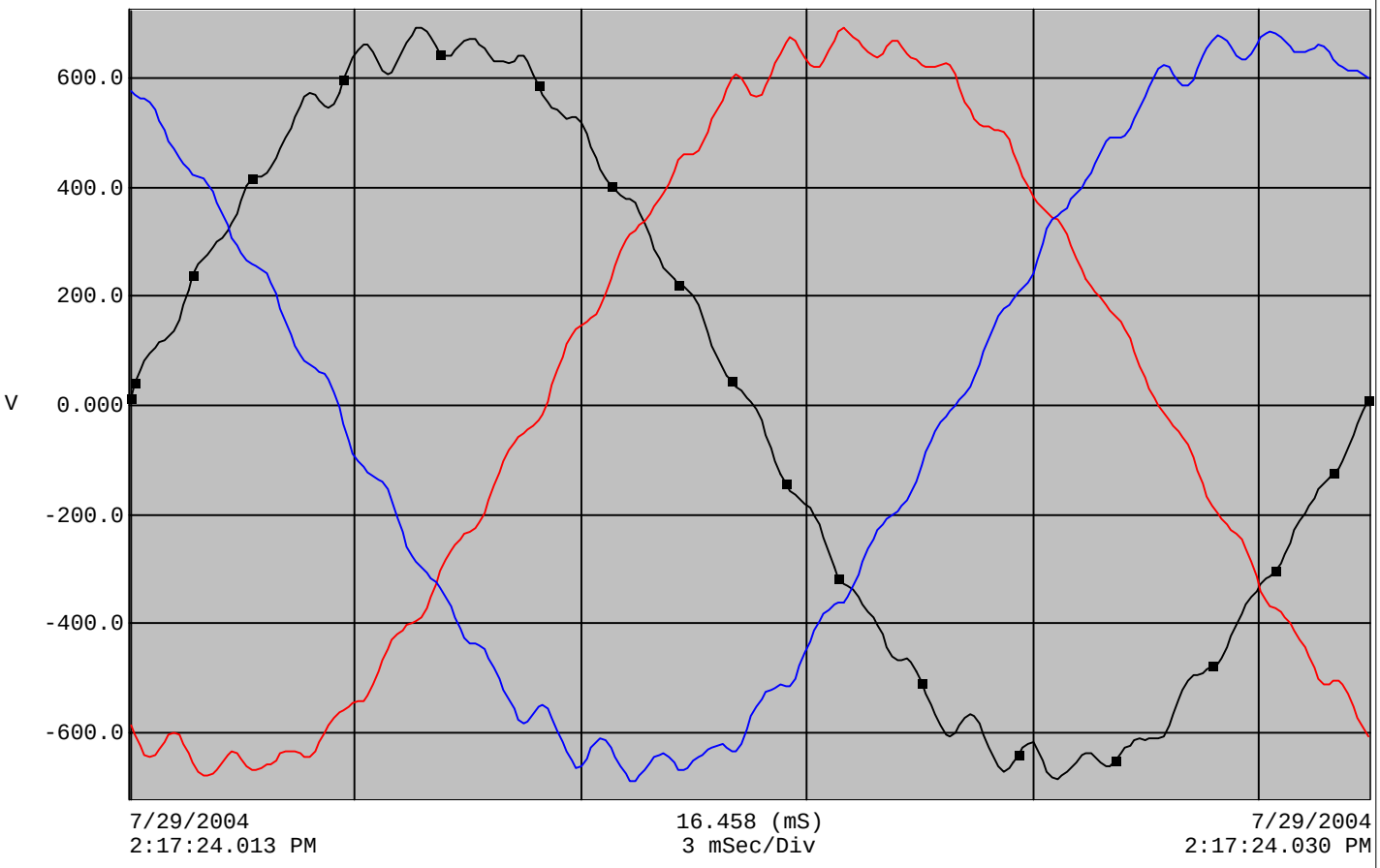
7/29/2004 - 2:17:24.000 PM

Val	
-81.20	Waveform I1
1.400	Waveform I2
80.30	Waveform I3
0.500	Waveform INeutral

Waveform I1

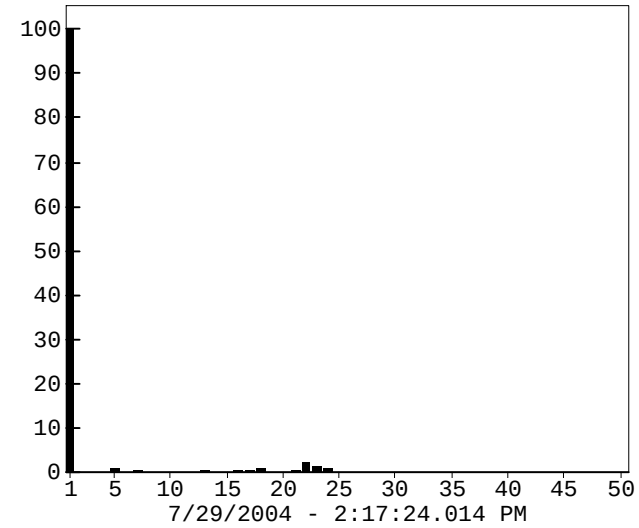
	(%)		(%)		(%)
H01	100.0	H18	1.0	H35	0.1
H02	0.3	H19	0.4	H36	0.0
H03	1.0	H20	0.2	H37	0.0
H04	0.4	H21	0.4	H38	0.0
H05	3.0	H22	1.8	H39	0.0
H06	0.0	H23	0.6	H40	0.1
H07	1.4	H24	0.6	H41	0.1
H08	0.1	H25	0.1	H42	0.1
H09	0.1	H26	0.1	H43	0.1
H10	0.2	H27	0.1	H44	0.1
H11	0.0	H28	0.1	H45	0.1
H12	0.3	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.4	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Channel Name: Waveform U1
Frequency: 60.76 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/29/2004	2:17:24.013 PM	16.458	472.5	V
Waveform U2	7/29/2004	2:17:24.013 PM	16.458	473.4	V
Waveform U3	7/29/2004	2:17:24.013 PM	16.458	473.4	V

Waveform U1
472.51 Vrms, 3.58 %THD



7/29/2004 - 2:17:24.000 PM

Val	
12.50	Waveform U1
-587.0	Waveform U2
574.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	1.1	H35	0.0
H02	0.1	H19	0.3	H36	0.1
H03	0.0	H20	0.1	H37	0.1
H04	0.1	H21	0.5	H38	0.1
H05	0.9	H22	2.3	H39	0.2
H06	0.0	H23	1.3	H40	0.1
H07	0.6	H24	1.2	H41	0.3
H08	0.0	H25	0.1	H42	0.3
H09	0.1	H26	0.2	H43	0.1
H10	0.1	H27	0.1	H44	0.1
H11	0.2	H28	0.1	H45	0.1
H12	0.1	H29	0.1	H46	0.2
H13	0.4	H30	0.1	H47	0.1
H14	0.1	H31	0.1	H48	0.0
H15	0.2	H32	0.1	H49	0.1
H16	0.6	H33	0.1	H50	0.0
H17	0.5	H34	0.1		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/29/2004
Start Time: 2:17:24 PM
Duration: 0:0.000 (M:S)
W: 15.06E+3 W
VAR: 10.23E+3 W
VA: 18.20E+3 W
Power Factor: 0.827
Displacement Power Factor: 0.828
TAN: 0.677
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\072904-F10-Photo7.dvb

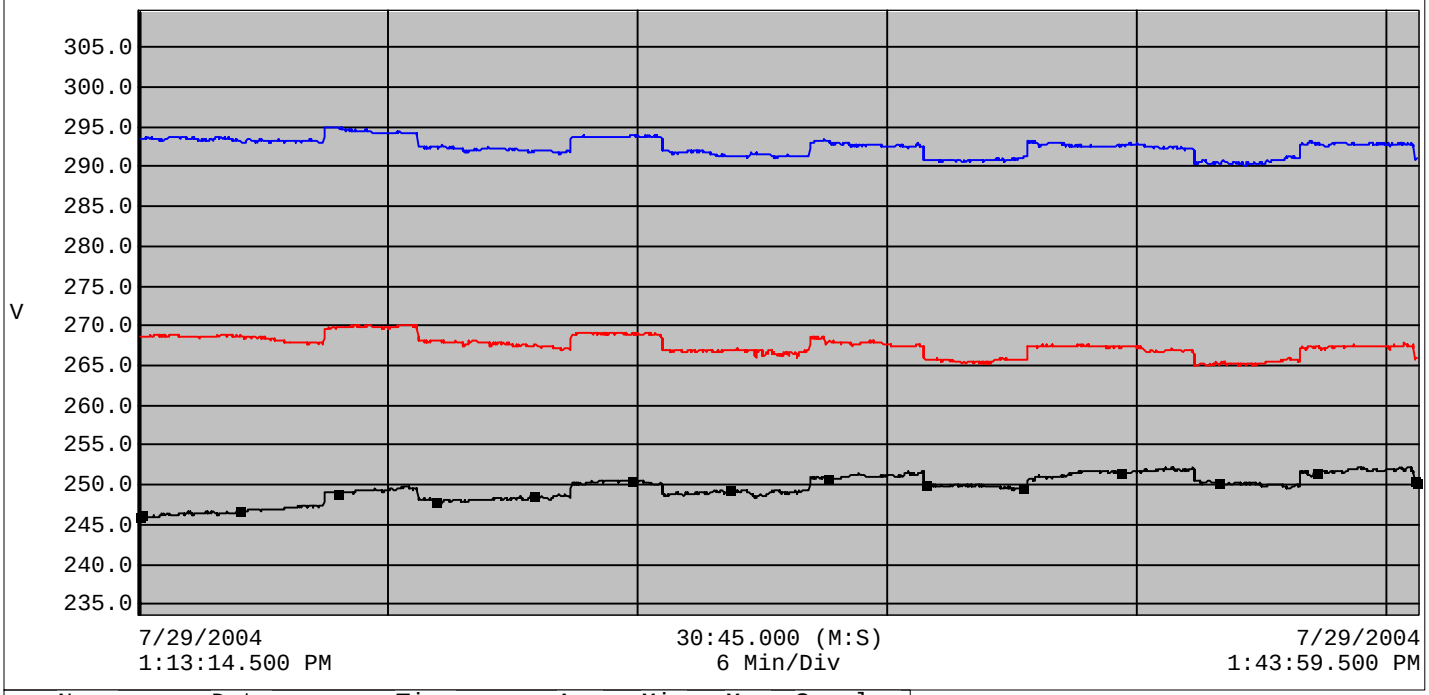
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS - F10 ,

Comments
Transformer voltage adjustments

WPS F-10C

Recording Start Date	7/29/2004 - 1:13:14 PM
Recording Duration	30:45 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

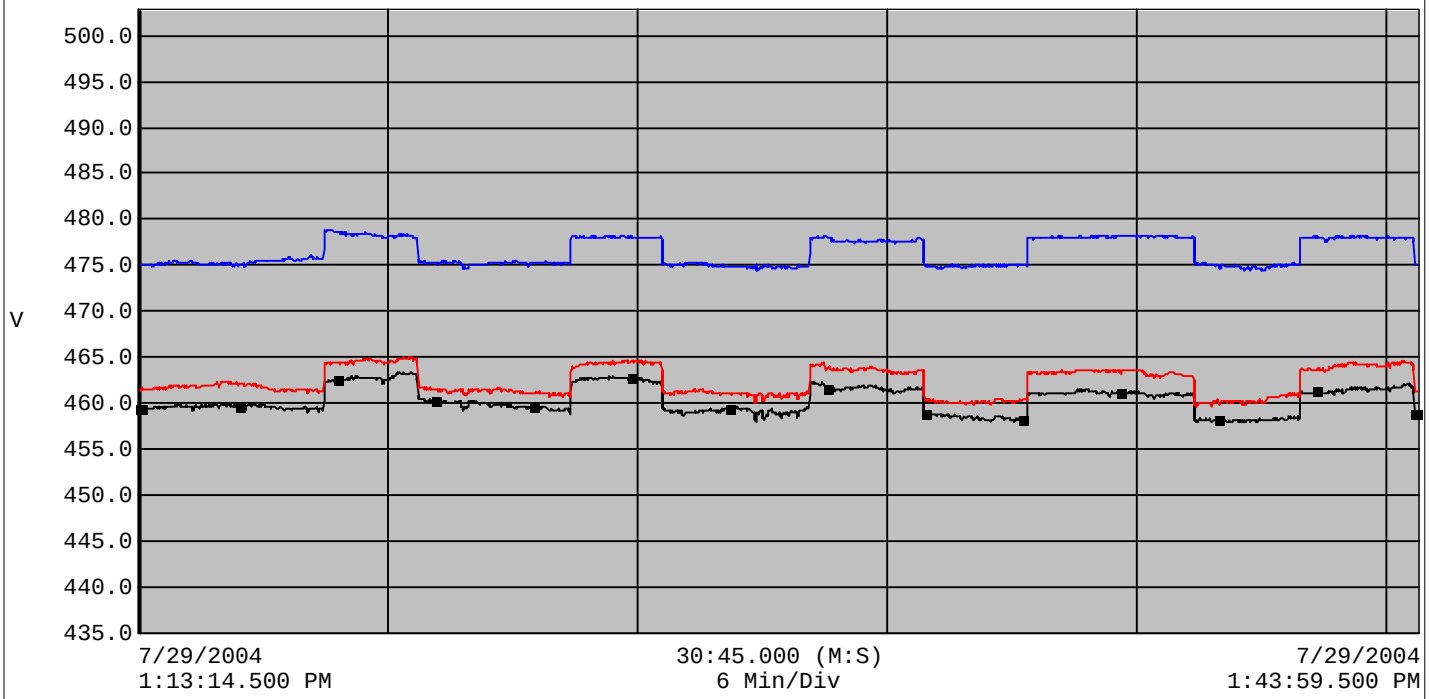
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/29/2004	1:13:14.500 PM	249.5	245.8	252.2	1846
Vrms Line2	7/29/2004	1:13:14.500 PM	267.4	264.8	270.0	1846
Vrms Line3	7/29/2004	1:13:14.500 PM	292.4	290.0	294.8	1846

7/29/2004 - 1:13:14.000 PM
Val
245.9 Vrms Line1
268.5 Vrms Line2
293.3 Vrms Line3

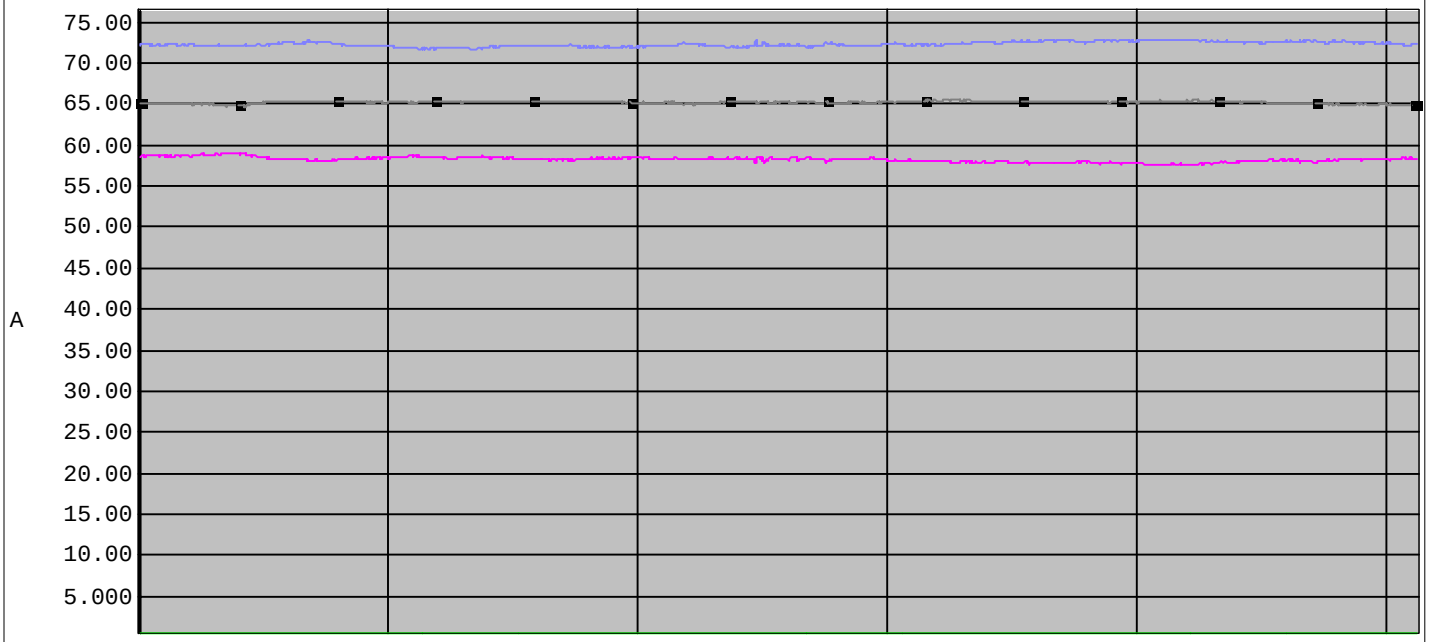
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/29/2004	1:13:14.500 PM	460.3	457.8	463.3	V
Urms Line2	7/29/2004	1:13:14.500 PM	462.3	459.6	465.0	V
Urms Line3	7/29/2004	1:13:14.500 PM	476.3	474.3	478.8	V

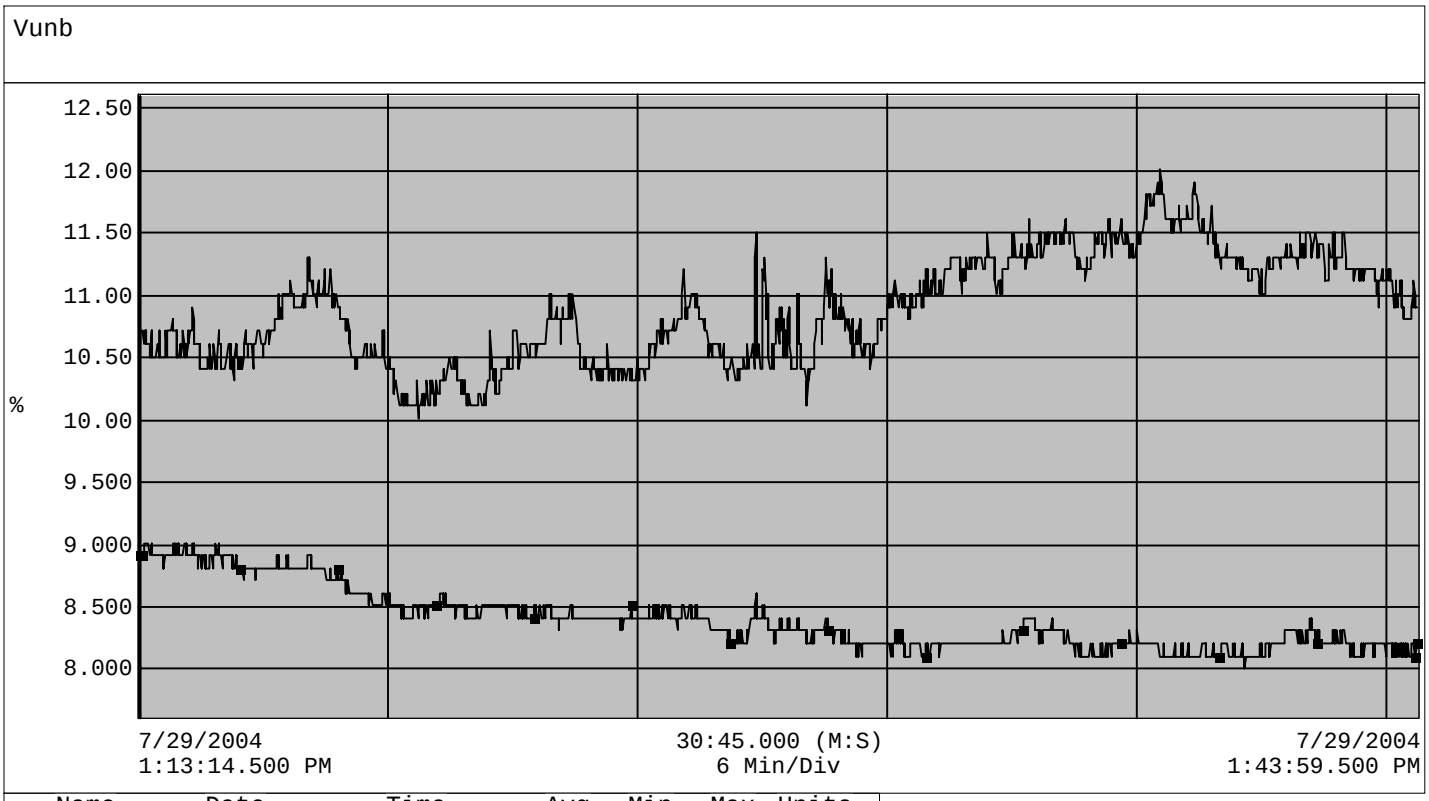
7/29/2004 - 1:13:14.000 PM
Val
459.3 Urms Line1
461.3 Urms Line2
474.9 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/29/2004	1:13:14.500 PM	65.08	64.60	65.40	A
Arms Line2	7/29/2004	1:13:14.500 PM	58.15	57.40	58.90	A
Arms Line3	7/29/2004	1:13:14.500 PM	72.19	71.60	72.80	A
Arms Neutral	7/29/2004	1:13:14.500 PM	0.400	0.400	0.400	A

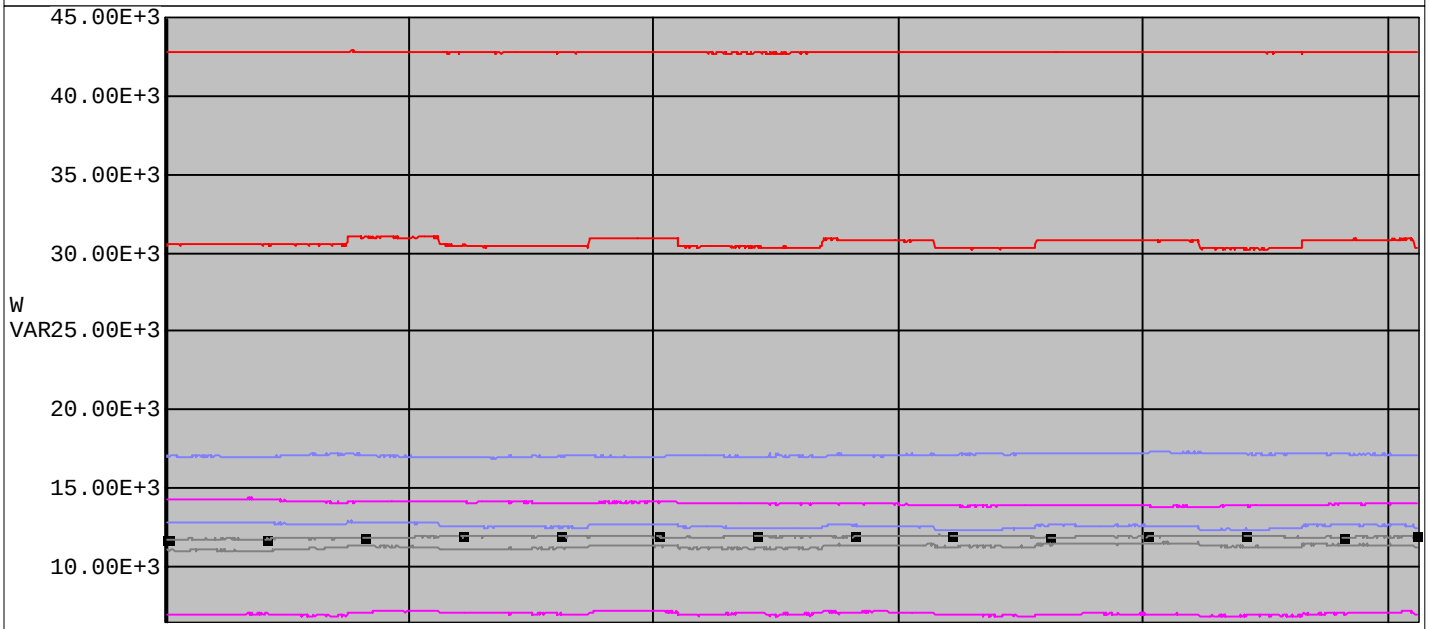
7/29/2004 - 1:13:14.000 PM
Val
65.00 — Arms Line1
58.50 — Arms Line2
72.10 — Arms Line3
0.400 — Arms Neutral



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/29/2004	1:13:14.500 PM	8.385	8.000	9.000	%
Aunb(IEEE)	7/29/2004	1:13:14.500 PM	10.87	10.00	12.00	%

7/29/2004 - 1:13:14.000 PM
Val
8.900 —— Vunb(IEEE)
10.60 —— Aunb(IEEE)

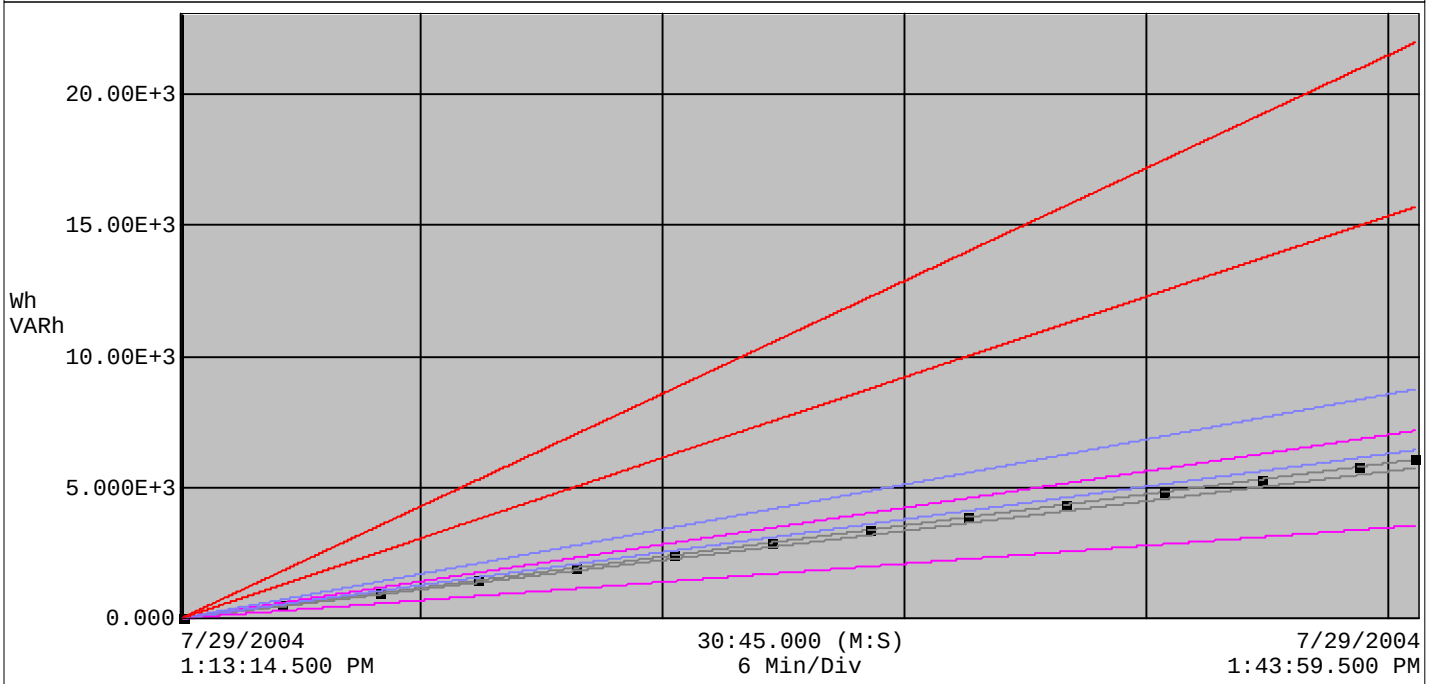
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/29/2004	1:13:14.500 PM	11.79E+3	11.60E+3	11.92E+3	W
W Line2	7/29/2004	1:13:14.500 PM	13.94E+3	13.65E+3	14.26E+3	W
W Line3	7/29/2004	1:13:14.500 PM	17.01E+3	16.81E+3	17.24E+3	W
W Sum of Phases	7/29/2004	1:13:14.500 PM	42.74E+3	42.68E+3	42.83E+3	W
VAR Line1	7/29/2004	1:13:14.500 PM	11.16E+3	10.86E+3	11.44E+3	VAR
VAR Line2	7/29/2004	1:13:14.500 PM	6.896E+3	6.671E+3	7.134E+3	VAR
VAR Line3	7/29/2004	1:13:14.500 PM	12.49E+3	12.20E+3	12.78E+3	VAR
VAR Sum of Phases	7/29/2004	1:13:14.500 PM	30.55E+3	30.16E+3	30.98E+3	VAR

7/29/2004 - 1:13:14.000 PM
Val
11.66E+3 — W Line1
14.16E+3 — W Line2
16.94E+3 — W Line3
42.76E+3 — W Sum of Phases
10.94E+3 — VAR Line1
6.825E+3 — VAR Line2
12.67E+3 — VAR Line3
30.44E+3 — VAR Sum of Phases

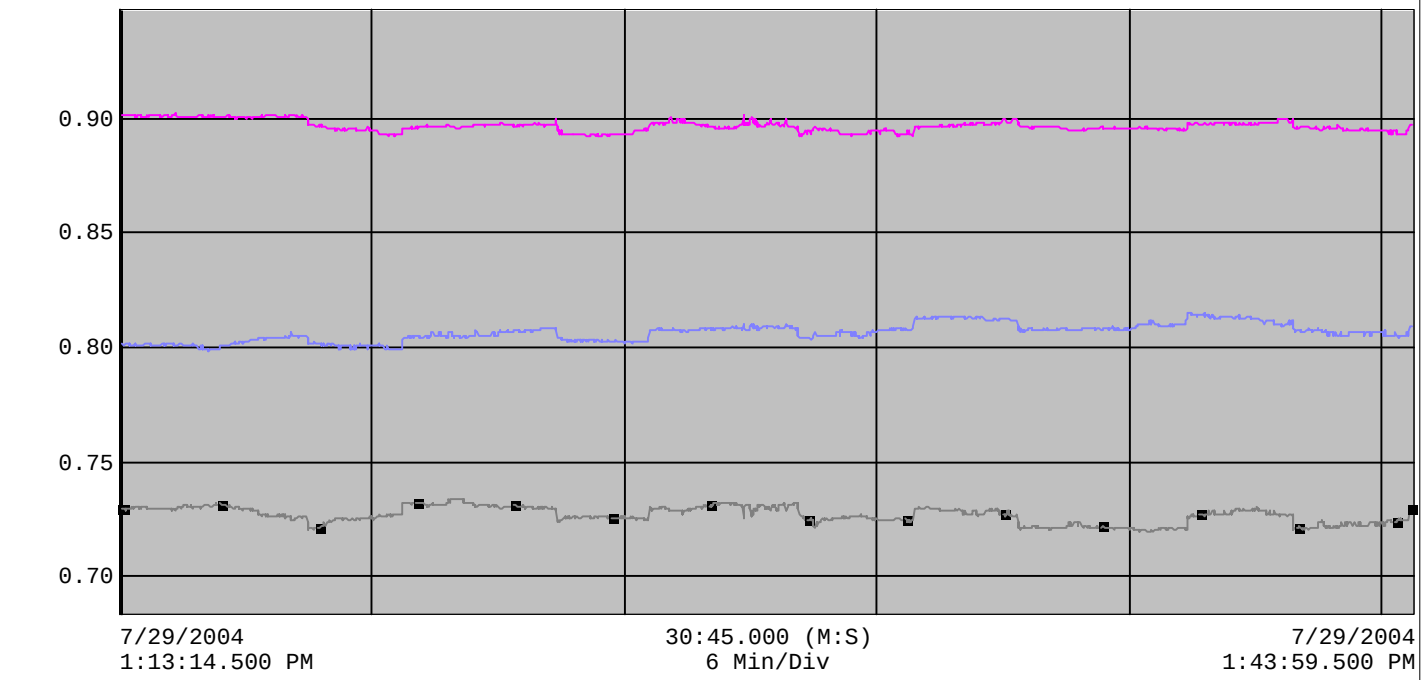
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/29/2004	1:13:14.500 PM	3.020E+3	3.323	6.048E+3	Wh
W-hours Line2	7/29/2004	1:13:14.500 PM	3.591E+3	3.926	7.146E+3	Wh
W-hours Line3	7/29/2004	1:13:14.500 PM	4.355E+3	4.793	8.724E+3	Wh
W-hours Sum of Phases	7/29/2004	1:13:14.500 PM	10.97E+3	12.04	21.92E+3	Wh
VAR-hours Line1	7/29/2004	1:13:14.500 PM	2.849E+3	2.969	5.723E+3	VARh
VAR-hours Line2	7/29/2004	1:13:14.500 PM	1.772E+3	1.943	3.536E+3	VARh
VAR-hours Line3	7/29/2004	1:13:14.500 PM	3.215E+3	3.519	6.405E+3	VARh
VAR-hours Sum of Phases	7/29/2004	1:13:14.500 PM	7.836E+3	8.605	15.66E+3	VARh

7/29/2004 - 1:13:14.000 PM
Val
3.323 — W-hours Line1
3.926 — W-hours Line2
4.793 — W-hours Line3
12.04 — W-hours Sum of Phases
2.969 — VAR-hours Line1
1.943 — VAR-hours Line2
3.519 — VAR-hours Line3
8.605 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/29/2004	1:13:14.500 PM	0.726	0.719	0.733	
PF Line2	7/29/2004	1:13:14.500 PM	0.896	0.892	0.902	
PF Line3	7/29/2004	1:13:14.500 PM	0.806	0.798	0.815	

7/29/2004 - 1:13:14.000 PM
Val
0.729 — PF Line1
0.901 — PF Line2
0.801 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\072904-F10C.dvb

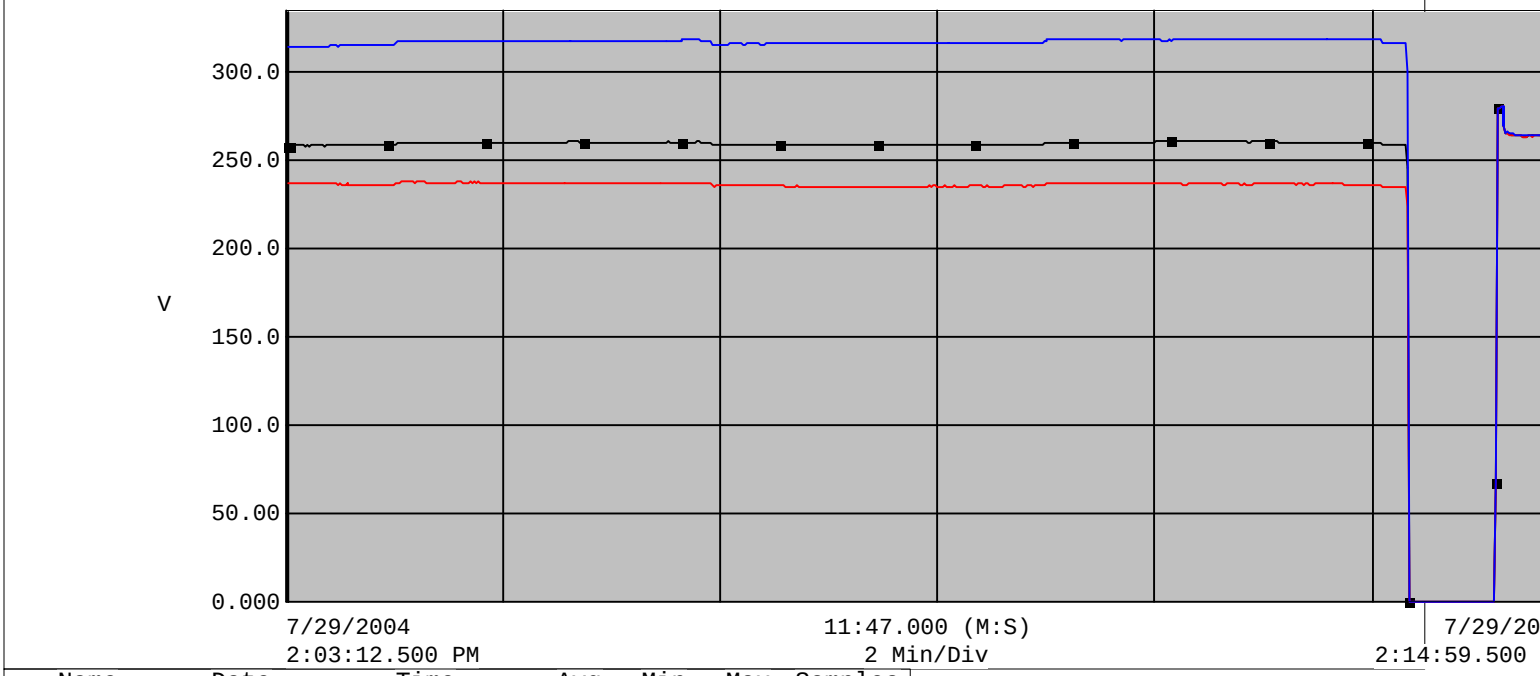
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS - F10 ,

Comments
Pump Operation (Flush Mode) after GPA Transformer is adjusted to balance voltage.

WPS F-10D

Recording Start Date	7/29/2004 - 2:03:12 PM
Recording Duration	11:47 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Vrms

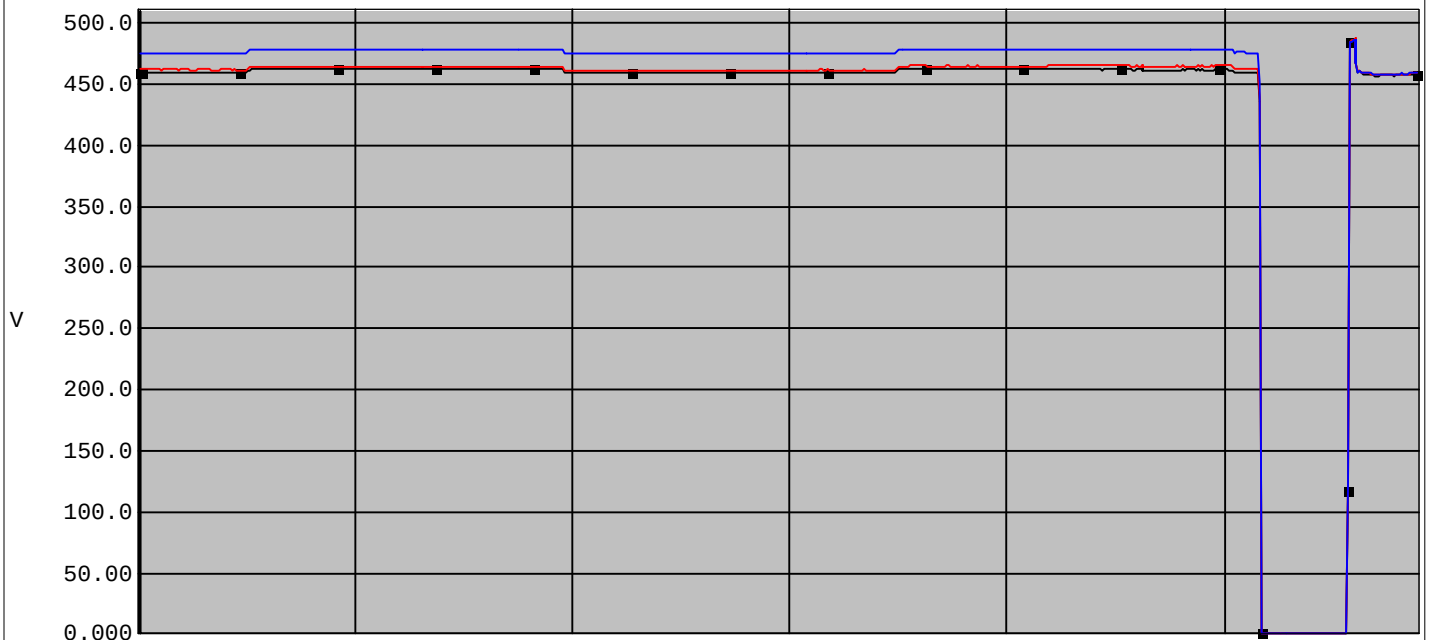


Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/29/2004	2:03:12.500 PM	241.9	0.000	280.3	708
Vrms Line2	7/29/2004	2:03:12.500 PM	221.5	0.000	280.4	708
Vrms Line3	7/29/2004	2:03:12.500 PM	292.3	0.000	318.7	708

7/29/2004 - 2:03:12.000 PM

Val	
258.1	Vrms Line1
236.7	Vrms Line2
314.5	Vrms Line3

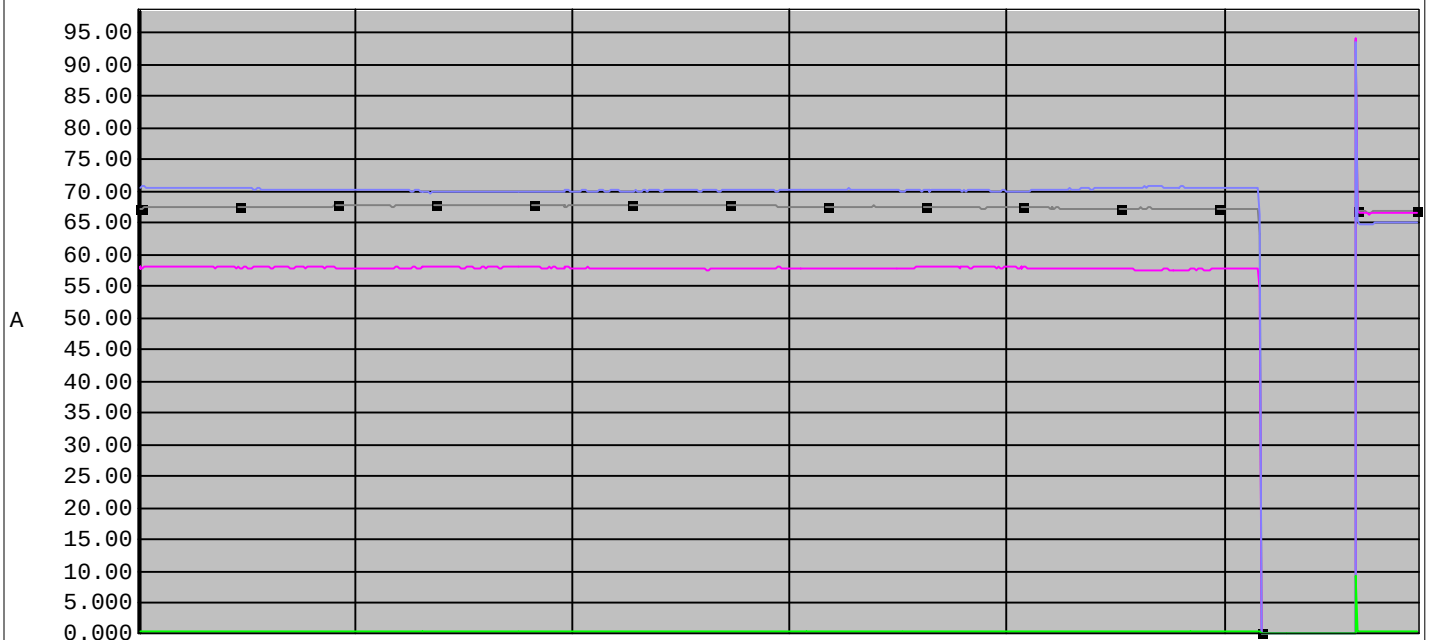
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/29/2004	2:03:12.500 PM	428.4	0.000	485.4	V
Urms Line2	7/29/2004	2:03:12.500 PM	430.4	0.000	485.9	V
Urms Line3	7/29/2004	2:03:12.500 PM	442.6	0.000	485.5	V

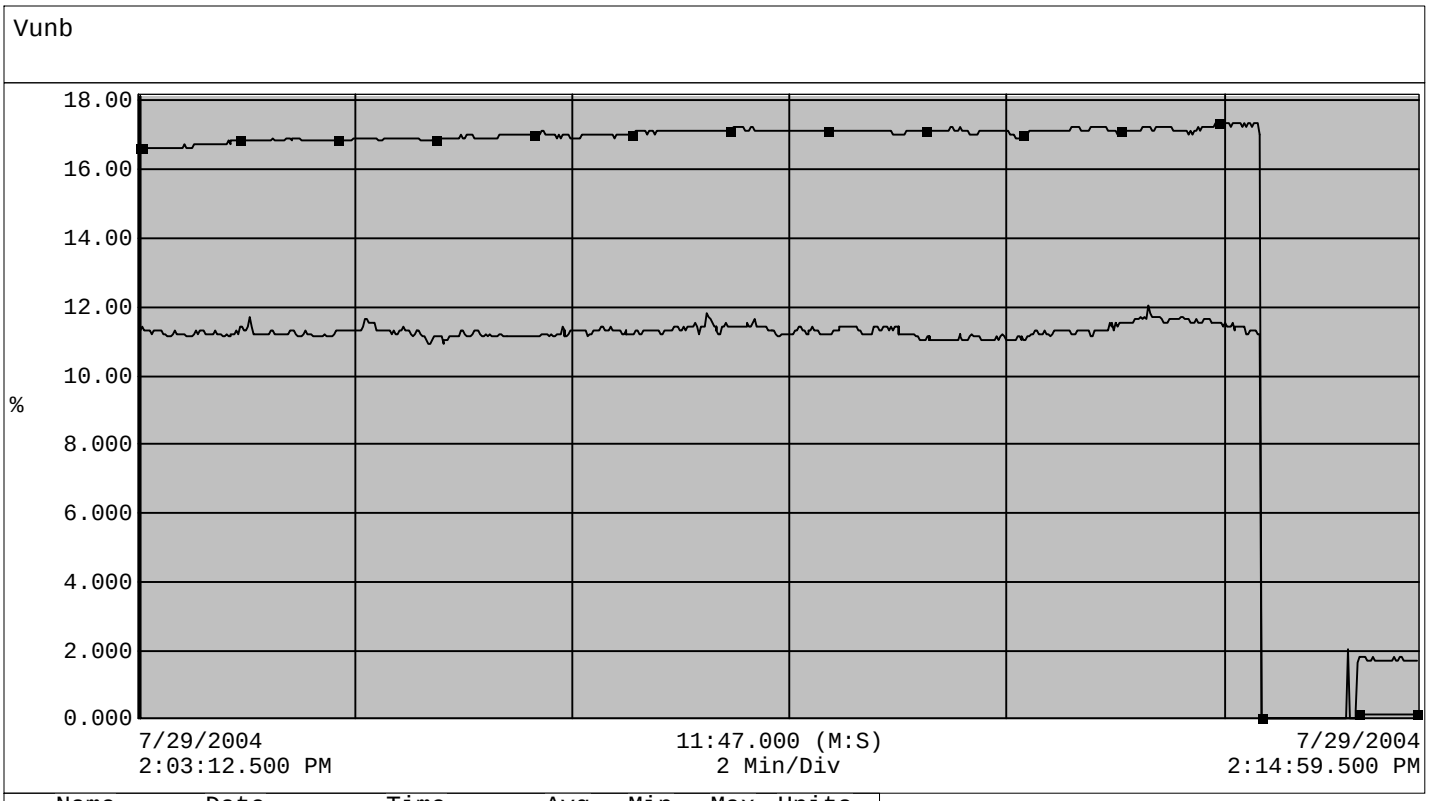
7/29/2004 - 2:03:12.000 PM
Val
458.1 Urms Line1
460.9 Urms Line2
474.7 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/29/2004	2:03:12.500 PM	62.31	0.000	93.50	A
Arms Line2	7/29/2004	2:03:12.500 PM	53.82	0.000	93.80	A
Arms Line3	7/29/2004	2:03:12.500 PM	64.56	0.000	93.40	A
Arms Neutral	7/29/2004	2:03:12.500 PM	0.290	0.000	9.100	A

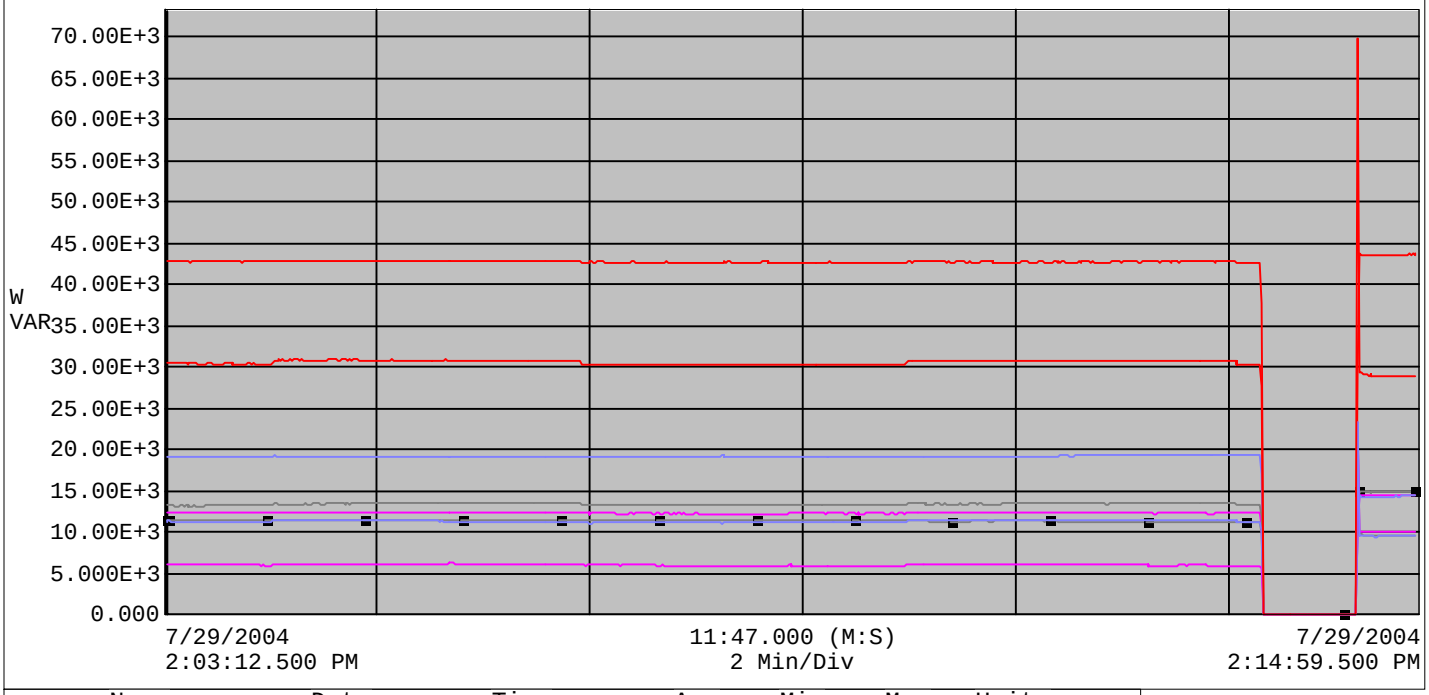
7/29/2004 - 2:03:12.000 PM
Val
67.20 — Arms Line1
57.80 — Arms Line2
70.40 — Arms Line3
0.300 — Arms Neutral



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/29/2004	2:03:12.500 PM	14.92	0.000	17.30	%
Aunb(IEEE)	7/29/2004	2:03:12.500 PM	9.963	0.000	12.00	%

7/29/2004 - 2:03:12.000 PM
Val
16.60 —— Vunb(IEEE)
11.30 —— Aunb(IEEE)

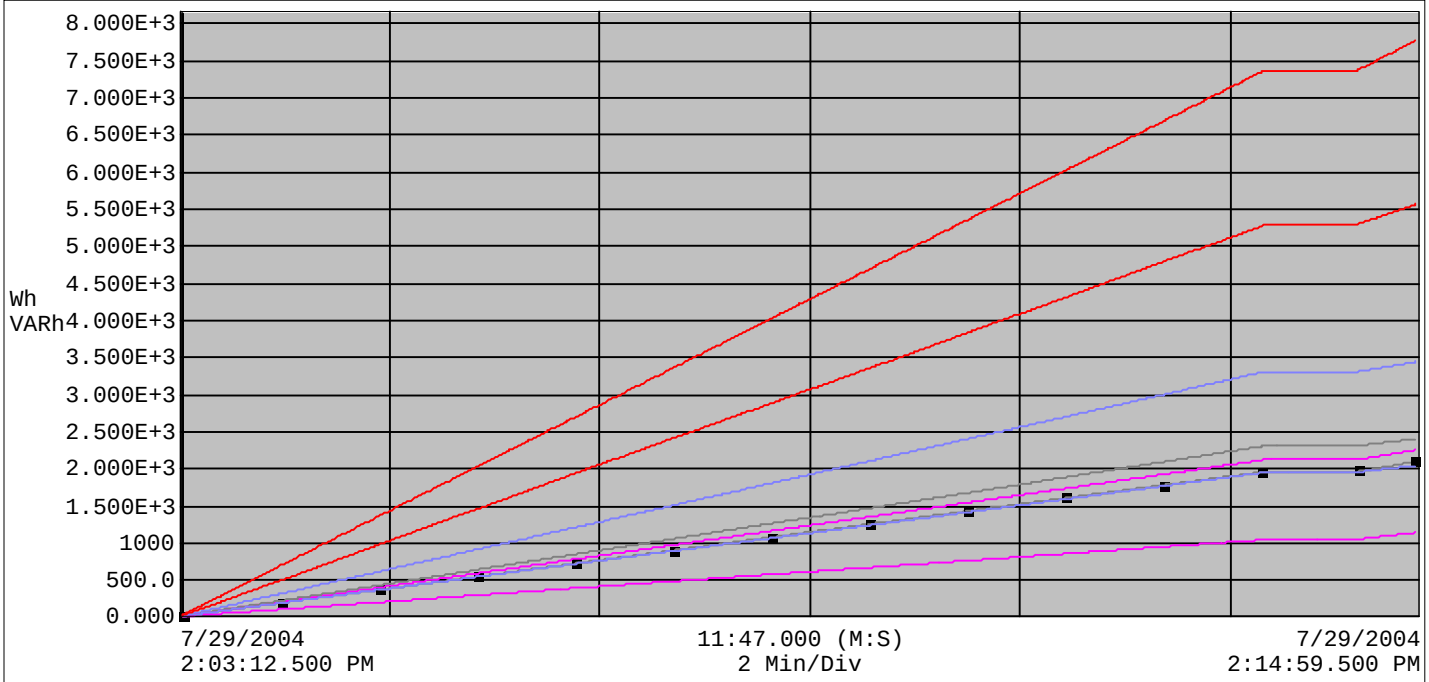
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/29/2004	2:03:12.500 PM	10.62E+3	0.000	14.84E+3	W
W Line2	7/29/2004	2:03:12.500 PM	11.42E+3	0.000	14.47E+3	W
W Line3	7/29/2004	2:03:12.500 PM	17.45E+3	0.000	19.33E+3	W
W Sum of Phases	7/29/2004	2:03:12.500 PM	39.49E+3	0.000	43.65E+3	W
VAR Line1	7/29/2004	2:03:12.500 PM	12.16E+3	0.000	23.15E+3	VAR
VAR Line2	7/29/2004	2:03:12.500 PM	5.751E+3	0.000	23.31E+3	VAR
VAR Line3	7/29/2004	2:03:12.500 PM	10.34E+3	0.000	23.28E+3	VAR
VAR Sum of Phases	7/29/2004	2:03:12.500 PM	28.25E+3	0.000	69.75E+3	VAR

7/29/2004 - 2:03:12.000 PM
Val
11.30E+3 — W Line1
12.31E+3 — W Line2
19.07E+3 — W Line3
42.67E+3 — W Sum of Phases
13.14E+3 — VAR Line1
5.954E+3 — VAR Line2
11.27E+3 — VAR Line3
30.37E+3 — VAR Sum of Phases

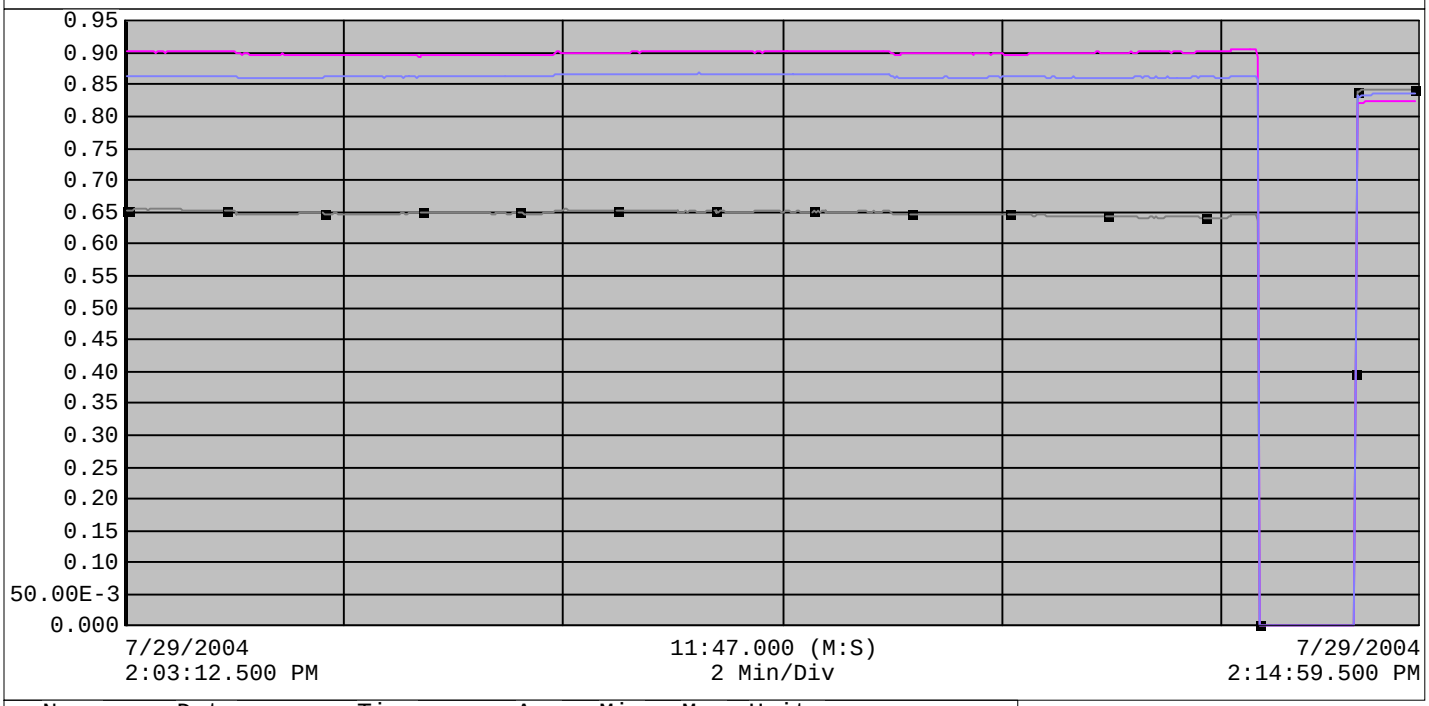
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/29/2004	2:03:12.500 PM	1.101E+3	3.122	2.088E+3	Wh
W-hours Line2	7/29/2004	2:03:12.500 PM	1.191E+3	3.427	2.246E+3	Wh
W-hours Line3	7/29/2004	2:03:12.500 PM	1.855E+3	5.342	3.432E+3	Wh
W-hours Sum of Phases	7/29/2004	2:03:12.500 PM	4.148E+3	11.85	7.765E+3	Wh
VAR-hours Line1	7/29/2004	2:03:12.500 PM	1.293E+3	3.649	2.391E+3	VARh
VAR-hours Line2	7/29/2004	2:03:12.500 PM	585.0	1.657	1.131E+3	VARh
VAR-hours Line3	7/29/2004	2:03:12.500 PM	1.092E+3	3.102	2.033E+3	VARh
VAR-hours Sum of Phases	7/29/2004	2:03:12.500 PM	2.970E+3	8.477	5.555E+3	VARh

7/29/2004 - 2:03:12.000 PM
Val
3.122 — W-hours Line1
3.427 — W-hours Line2
5.342 — W-hours Line3
11.85 — W-hours Sum of Phases
3.649 — VAR-hours Line1
1.657 — VAR-hours Line2
3.102 — VAR-hours Line3
8.477 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/29/2004	2:03:12.500 PM	0.607	0.000	0.842	
PF Line2	7/29/2004	2:03:12.500 PM	0.827	0.000	0.904	
PF Line3	7/29/2004	2:03:12.500 PM	0.795	0.000	0.867	

7/29/2004 - 2:03:12.000 PM
Val
0.652 — PF Line1
0.900 — PF Line2
0.861 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\072904-F10D.dvb

Operator	Test Site
Morikawa & Associates,LLC Lyman Morikawa, PE ,	GWA - WPS F-10 ,

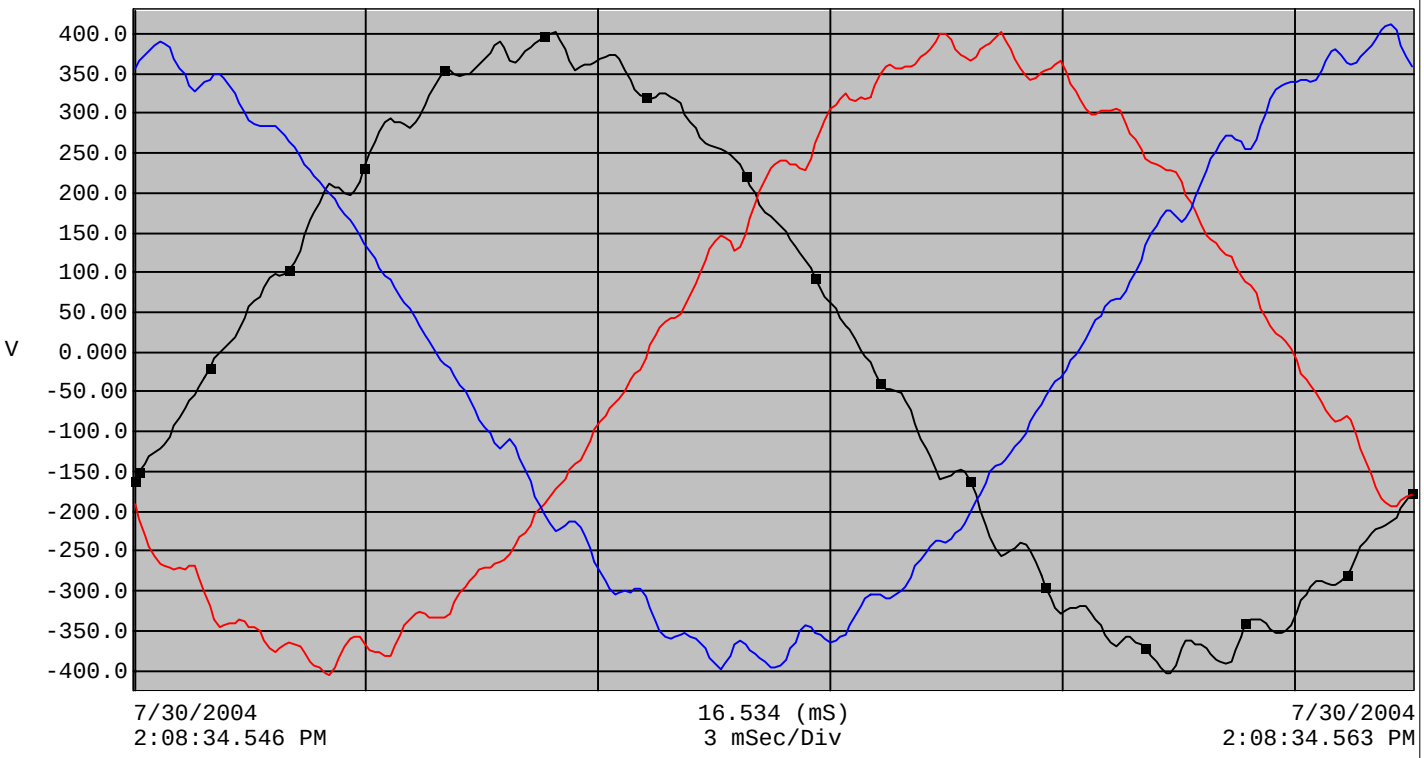
Comments

Recording is after the transformer voltages have been adjusted to a 2% voltage and 11% current unbalance. These generator was tested for operations. Generator is grounded 277/480 volts.

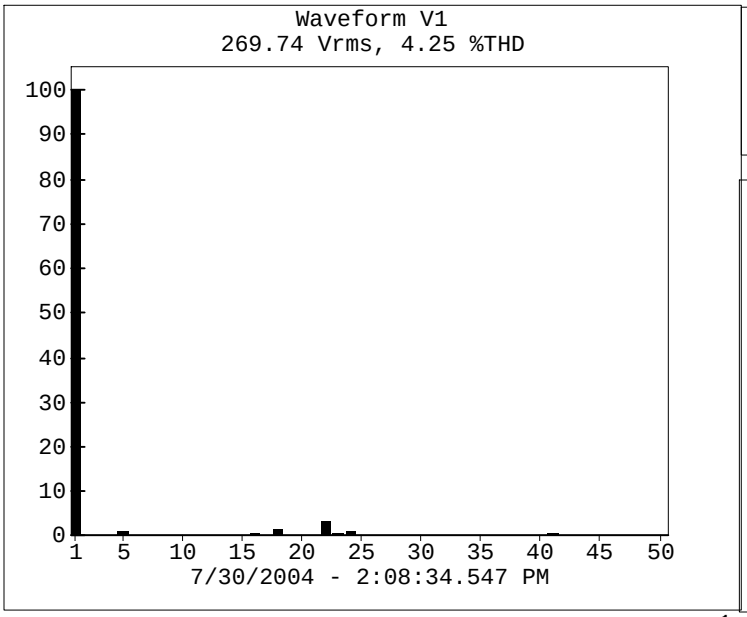
WPS F-10 - Photo1
Photo Report

Recording Start Date	7/30/2004 - 2:08:34 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 60.48 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/30/2004	2:08:34.546 PM	16.534	269.7	V
Waveform V2	7/30/2004	2:08:34.546 PM	16.534	269.6	V
Waveform V3	7/30/2004	2:08:34.546 PM	16.534	270.3	V



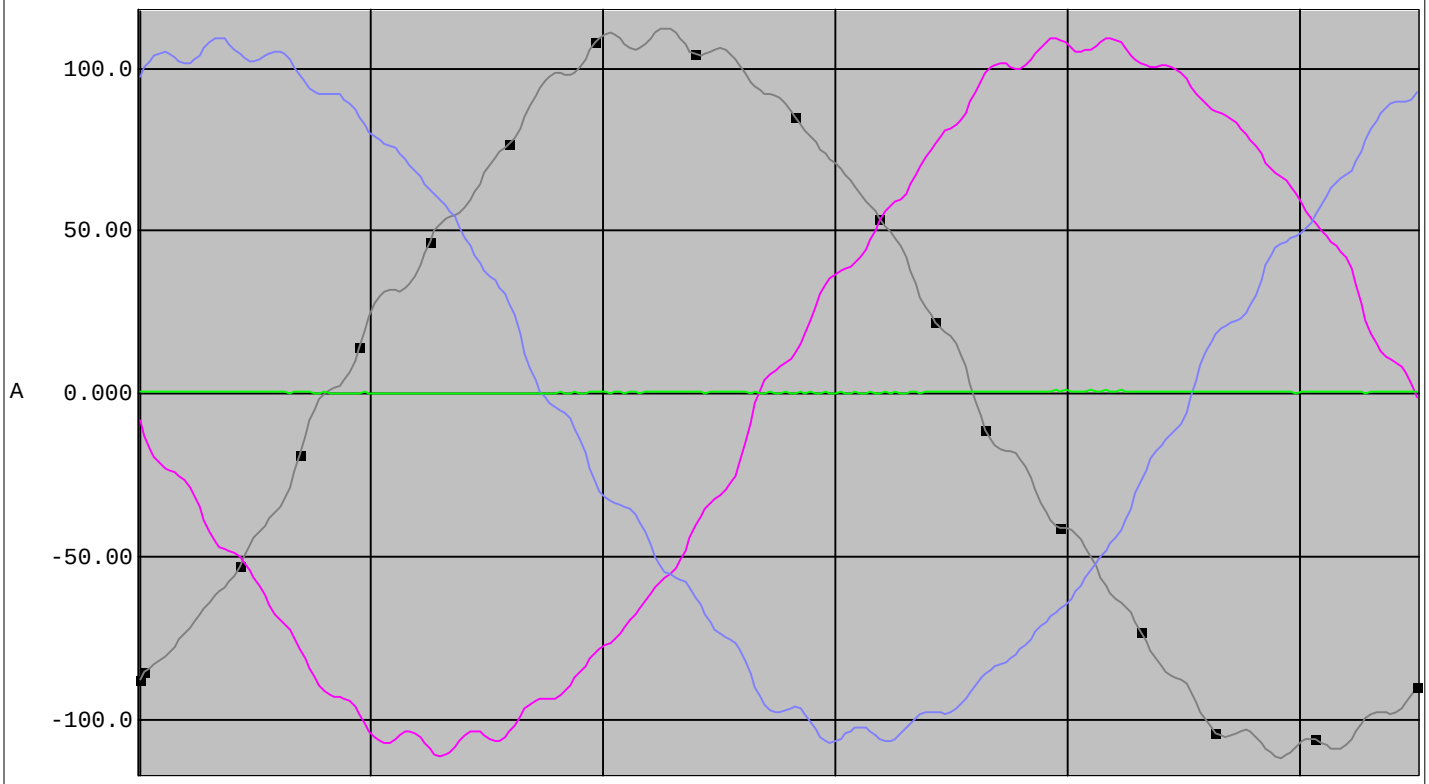
7/30/2004 - 2:08:34.000 PM

Val	
-163.9	Waveform V1
-192.7	Waveform V2
356.1	Waveform V3

Waveform V1

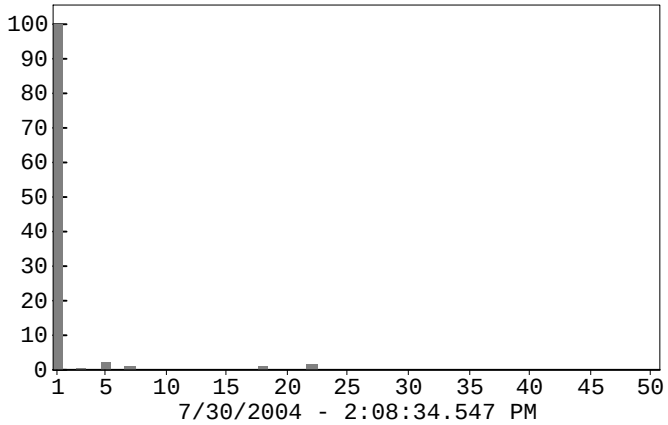
	(%)		(%)		(%)
H01	100.0	H18	1.7	H35	0.1
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.1	H37	0.1
H04	0.1	H21	0.1	H38	0.0
H05	1.0	H22	3.3	H39	0.1
H06	0.0	H23	0.5	H40	0.0
H07	0.3	H24	1.1	H41	0.5
H08	0.0	H25	0.3	H42	0.0
H09	0.1	H26	0.2	H43	0.1
H10	0.2	H27	0.0	H44	0.0
H11	0.2	H28	0.2	H45	0.4
H12	0.2	H29	0.1	H46	0.0
H13	0.3	H30	0.1	H47	0.2
H14	0.1	H31	0.0	H48	0.1
H15	0.1	H32	0.2	H49	0.1
H16	0.7	H33	0.0	H50	0.0
H17	0.3	H34	0.1		

Channel Name: Waveform I1
Frequency: 60.48 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/30/2004	2:08:34.546 PM	16.534	76.79	A
Waveform I2	7/30/2004	2:08:34.546 PM	16.534	76.41	A
Waveform I3	7/30/2004	2:08:34.546 PM	16.534	74.59	A
Waveform INeutral	7/30/2004	2:08:34.546 PM	16.534	0.284	A

Waveform I1
76.79 Arms, 4.11 %THD



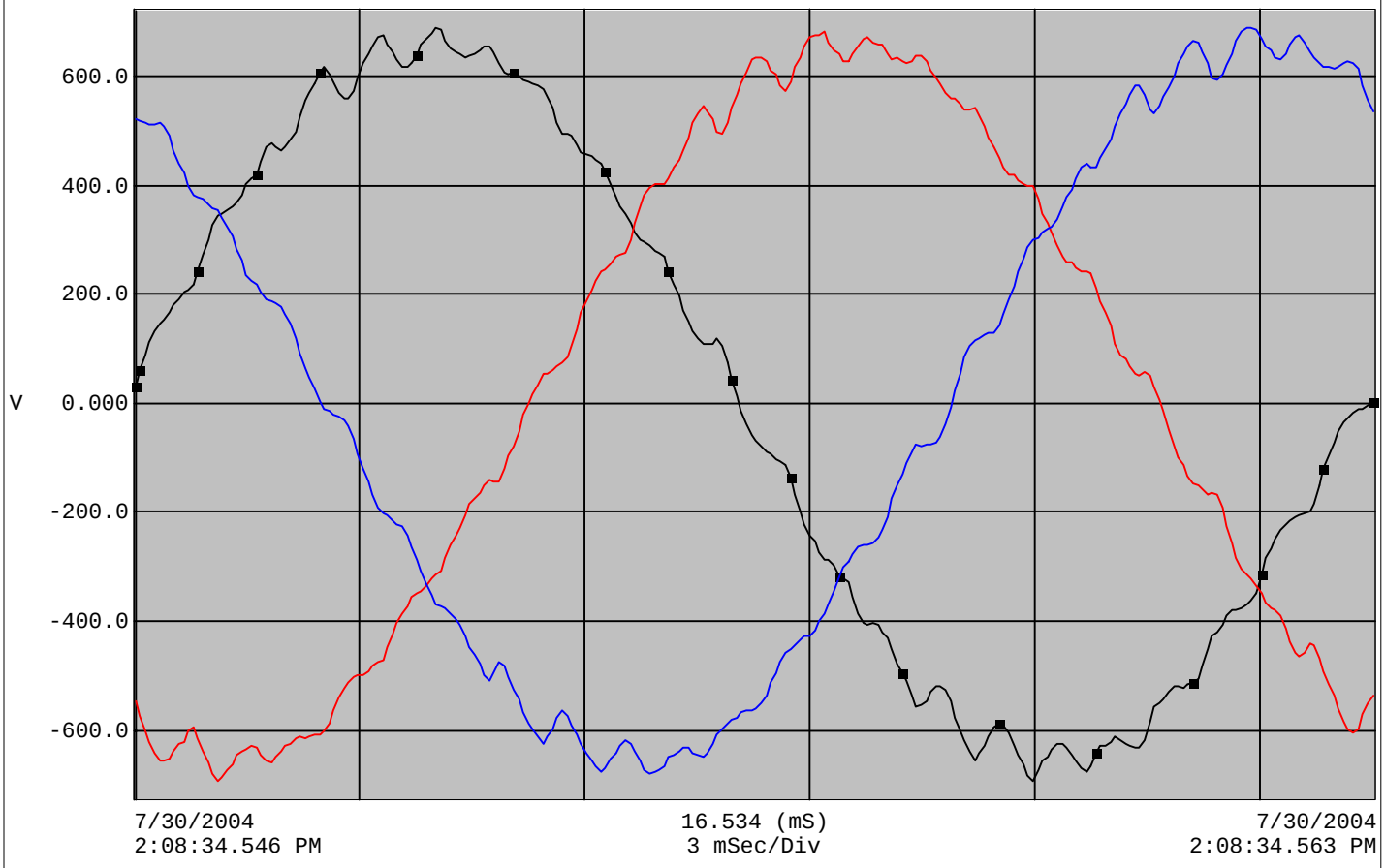
7/30/2004 - 2:08:34.000 PM

Val	
-88.10	Waveform I1
-8.500	Waveform I2
96.90	Waveform I3
0.300	Waveform INeutral

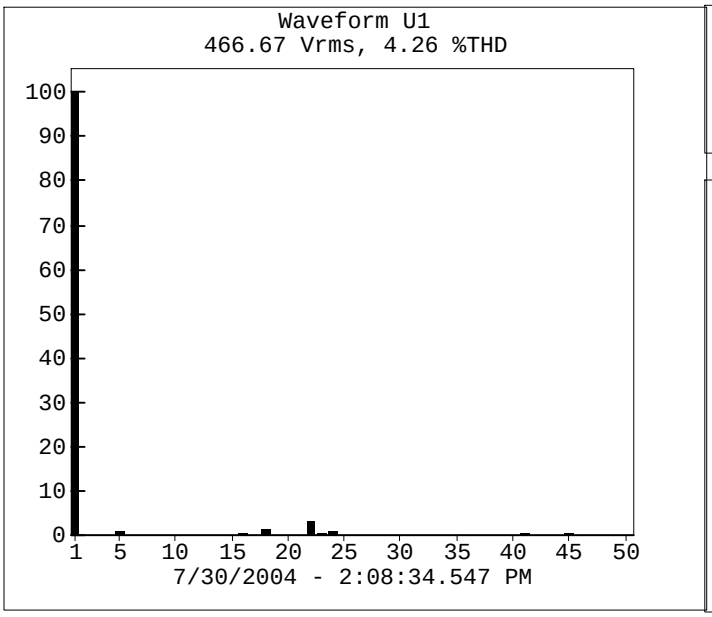
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	1.4	H35	0.0
H02	0.3	H19	0.1	H36	0.0
H03	1.0	H20	0.1	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	2.5	H22	2.2	H39	0.0
H06	0.1	H23	0.2	H40	0.0
H07	1.5	H24	0.4	H41	0.2
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.1	H43	0.0
H10	0.2	H27	0.0	H44	0.0
H11	0.2	H28	0.1	H45	0.1
H12	0.3	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.1	H49	0.0
H16	0.5	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Channel Name: Waveform U1
Frequency: 60.48 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/30/2004	2:08:34.546 PM	16.534	466.7	V
Waveform U2	7/30/2004	2:08:34.546 PM	16.534	467.7	V
Waveform U3	7/30/2004	2:08:34.546 PM	16.534	467.9	V



7/30/2004 - 2:08:34.000 PM

	Val	
—	28.70	Waveform U1
—	-548.8	Waveform U2
—	520.1	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	1.7	H35	0.1
H02	0.1	H19	0.1	H36	0.0
H03	0.1	H20	0.2	H37	0.1
H04	0.1	H21	0.1	H38	0.0
H05	1.0	H22	3.3	H39	0.2
H06	0.0	H23	0.5	H40	0.0
H07	0.3	H24	1.1	H41	0.5
H08	0.0	H25	0.3	H42	0.0
H09	0.1	H26	0.2	H43	0.1
H10	0.1	H27	0.1	H44	0.0
H11	0.2	H28	0.3	H45	0.4
H12	0.3	H29	0.0	H46	0.1
H13	0.4	H30	0.1	H47	0.2
H14	0.0	H31	0.0	H48	0.0
H15	0.2	H32	0.2	H49	0.1
H16	0.7	H33	0.1	H50	0.0
H17	0.4	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/30/2004
Start Time: 2:08:34 PM
Duration: 0:0.000 (M:S)
W: 17.91E+3 W
VAR: 10.52E+3 W
VA: 20.77E+3 W
Power Factor: 0.862
Displacement Power Factor: 0.863
TAN: 0.584
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\073004-F10-Photo1.dvb

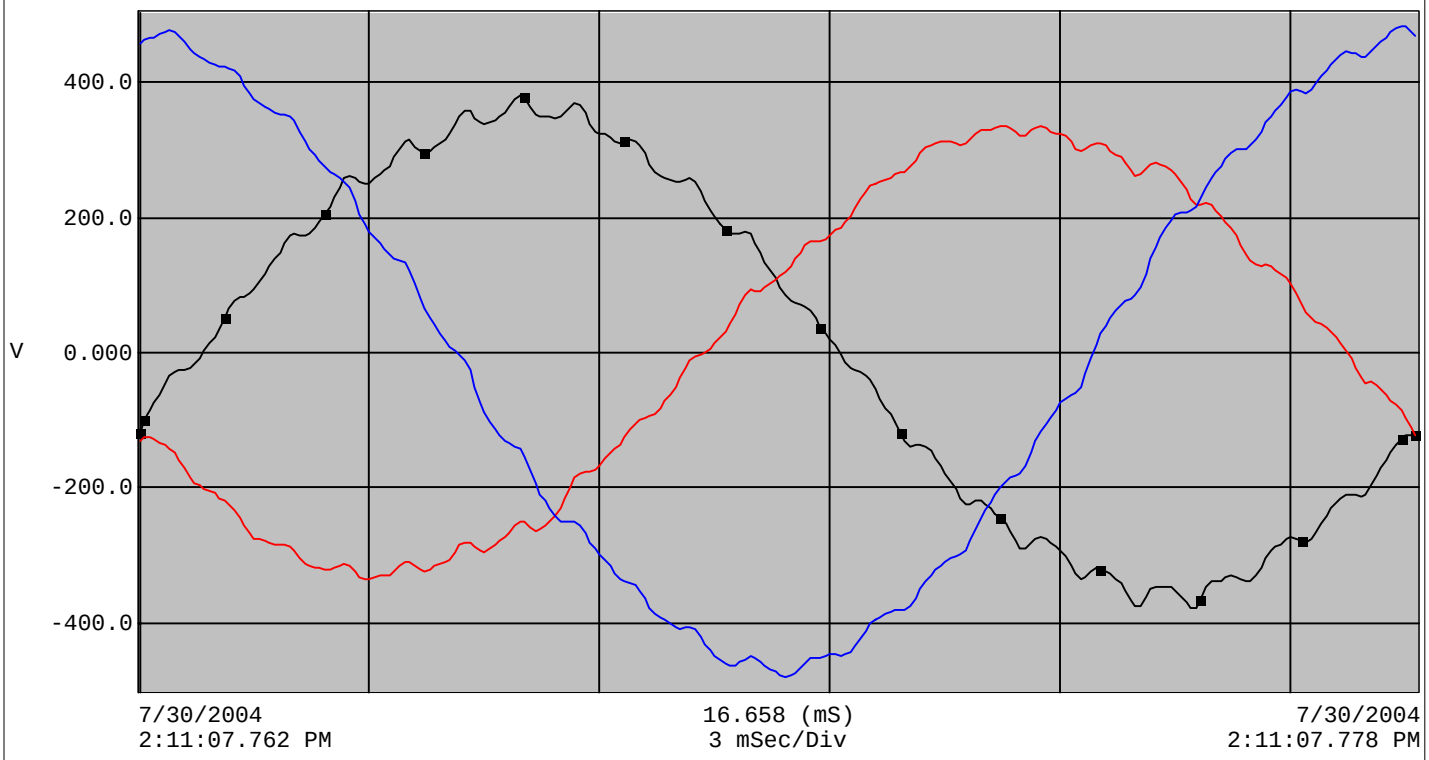
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-10 Photo 1 ,

Comments
Photo snapshot of Station F10 on Normal Power

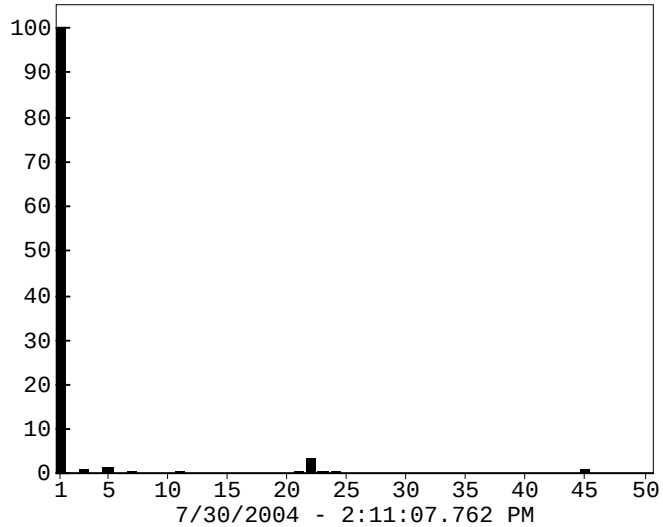
WPS F-10 - Photo2 Photo Report

Recording Start Date	7/30/2004 - 2:11:07 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/30/2004	2:11:07.762 PM	16.658	252.5	V
Waveform V2	7/30/2004	2:11:07.762 PM	16.658	232.9	V
Waveform V3	7/30/2004	2:11:07.762 PM	16.658	330.0	V

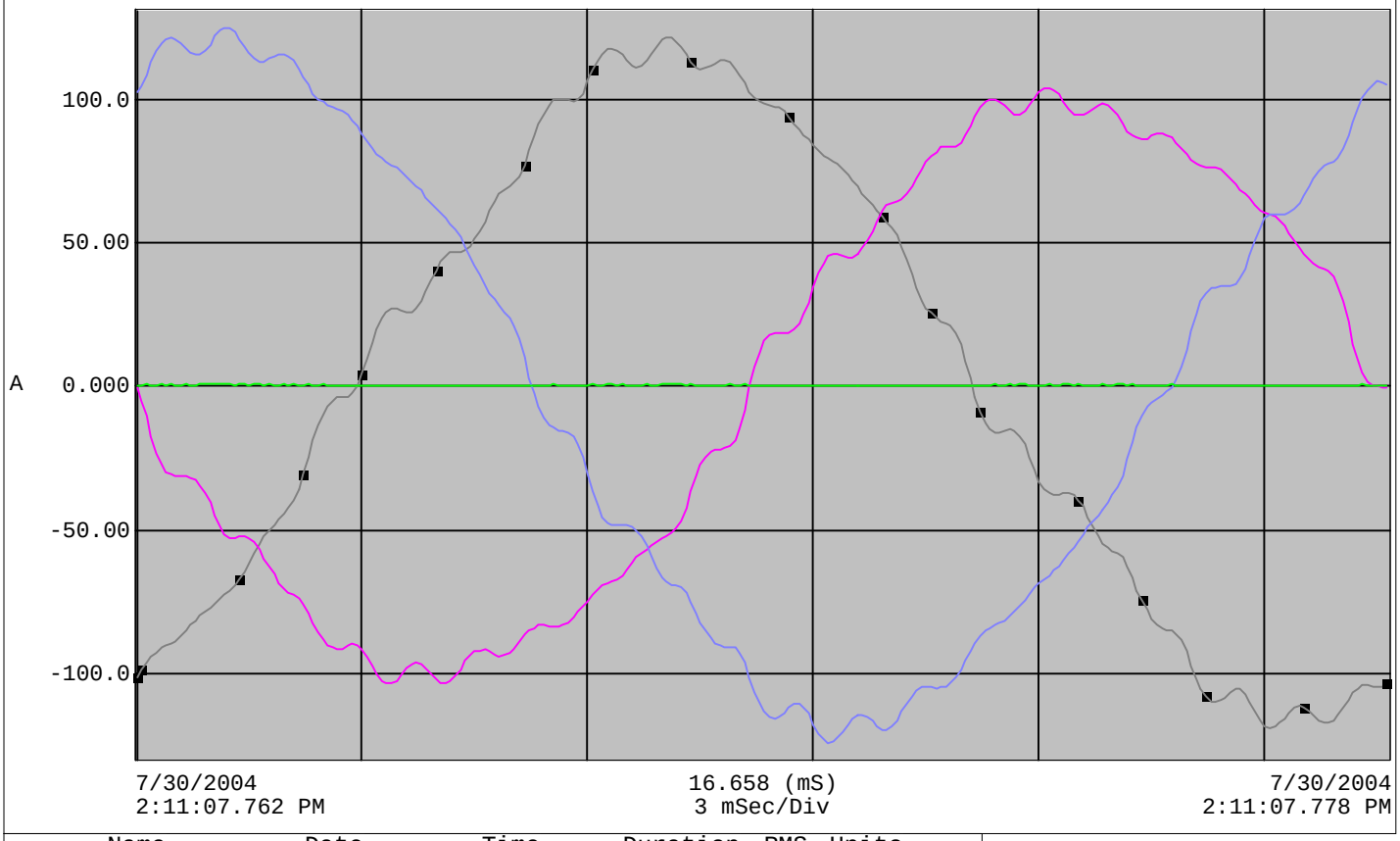


7/30/2004 - 2:11:07.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

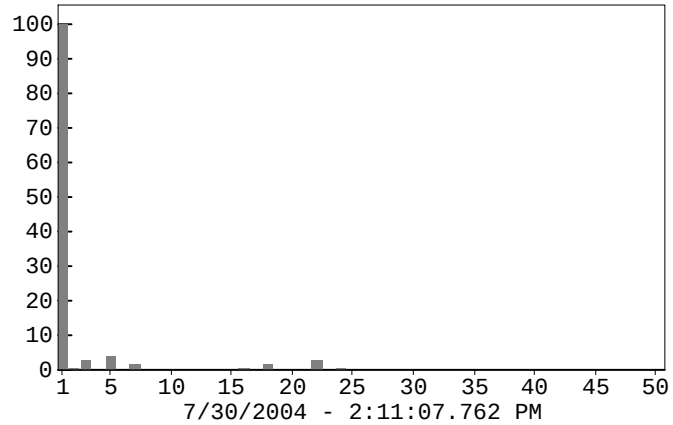
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.1
H02	0.1	H19	0.2	H36	0.0
H03	1.1	H20	0.2	H37	0.1
H04	0.1	H21	0.4	H38	0.1
H05	1.5	H22	3.6	H39	0.2
H06	0.1	H23	0.6	H40	0.1
H07	0.8	H24	0.6	H41	0.1
H08	0.0	H25	0.1	H42	0.0
H09	0.3	H26	0.1	H43	0.2
H10	0.0	H27	0.1	H44	0.3
H11	0.5	H28	0.3	H45	0.9
H12	0.1	H29	0.1	H46	0.3
H13	0.4	H30	0.0	H47	0.1
H14	0.1	H31	0.1	H48	0.0
H15	0.3	H32	0.1	H49	0.0
H16	0.2	H33	0.1	H50	0.0
H17	0.2	H34	0.1		

Channel Name: Waveform I1
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/30/2004	2:11:07.762 PM	16.658	80.06	A
Waveform I2	7/30/2004	2:11:07.762 PM	16.658	71.40	A
Waveform I3	7/30/2004	2:11:07.762 PM	16.658	82.92	A
Waveform INeutral	7/30/2004	2:11:07.762 PM	16.658	0.257	A

Waveform I1
80.06 Arms, 6.47 %THD

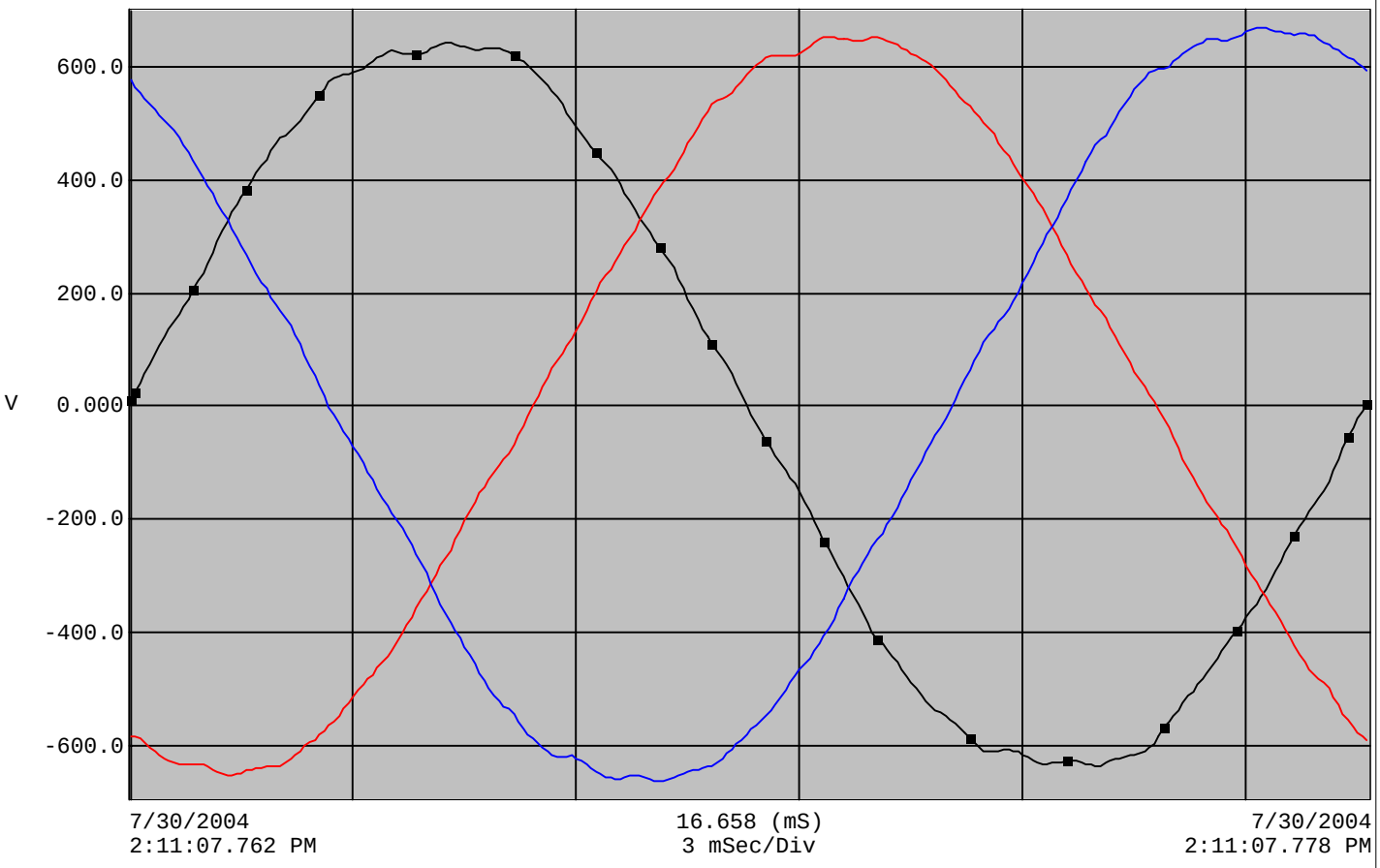


7/30/2004 - 2:11:07.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3
X.XX — Waveform INeutral

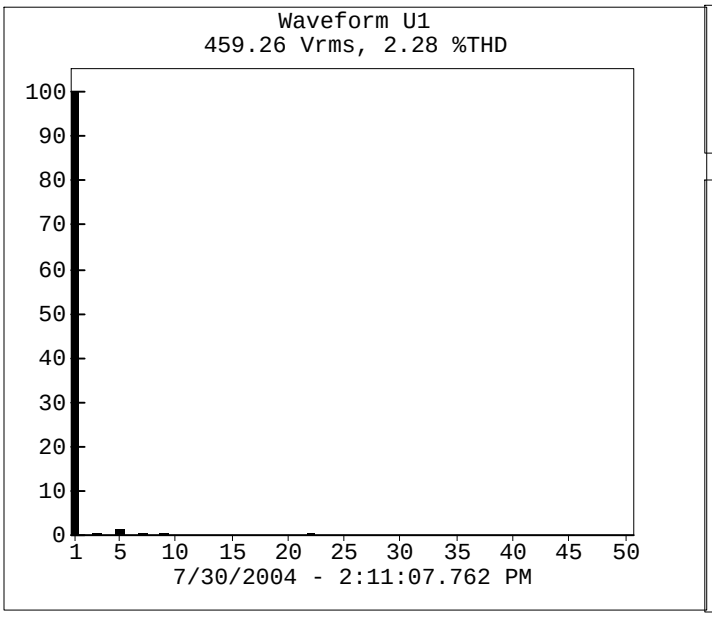
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	1.9	H35	0.0
H02	0.6	H19	0.2	H36	0.0
H03	2.9	H20	0.3	H37	0.0
H04	0.1	H21	0.4	H38	0.0
H05	4.1	H22	2.8	H39	0.1
H06	0.1	H23	0.3	H40	0.1
H07	1.8	H24	0.6	H41	0.2
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.2	H43	0.1
H10	0.1	H27	0.0	H44	0.1
H11	0.2	H28	0.2	H45	0.1
H12	0.3	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.2	H32	0.1	H49	0.0
H16	0.7	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Channel Name: Waveform U1
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/30/2004	2:11:07.762 PM	16.658	459.3	V
Waveform U2	7/30/2004	2:11:07.762 PM	16.658	461.7	V
Waveform U3	7/30/2004	2:11:07.762 PM	16.658	475.0	V



7/30/2004 - 2:11:07.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.4	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.7	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.7	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.7	H24	0.1	H41	0.1
H08	0.0	H25	0.1	H42	0.0
H09	0.7	H26	0.1	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.1	H45	0.1
H12	0.1	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 7/30/2004
Start Time: 2:11:07 PM
Duration: 0:0.000 (M:S)
W: 14.07E+3 W
VAR: 14.83E+3 W
VA: 20.44E+3 W
Power Factor: 0.688
Displacement Power Factor: 0.690
TAN: 1.049
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\073004-F10-Photo2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-10 Photo2 ,

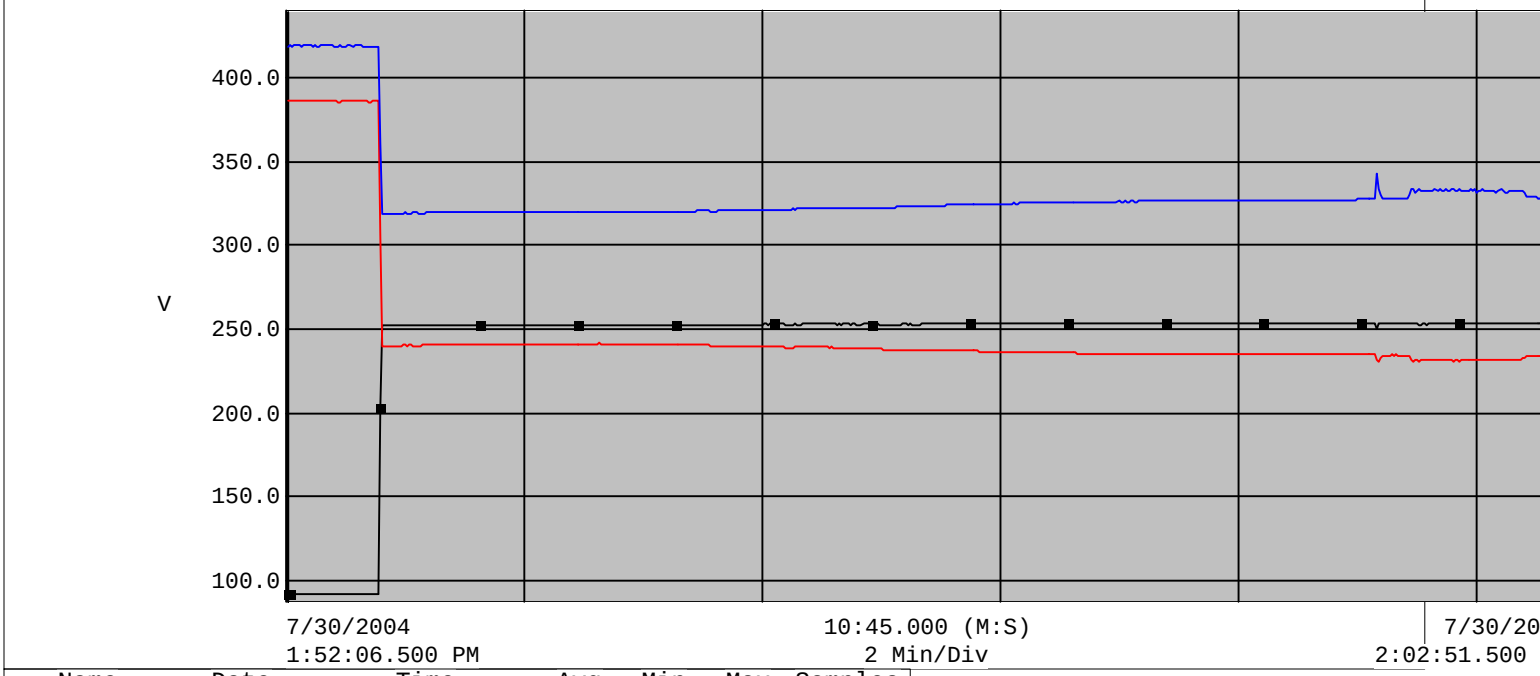
Comments

Photo of Station F-10 operating on the standby generator.

WPS F-10E

Recording Start Date	7/30/2004 - 1:52:06 PM
Recording Duration	10:45 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

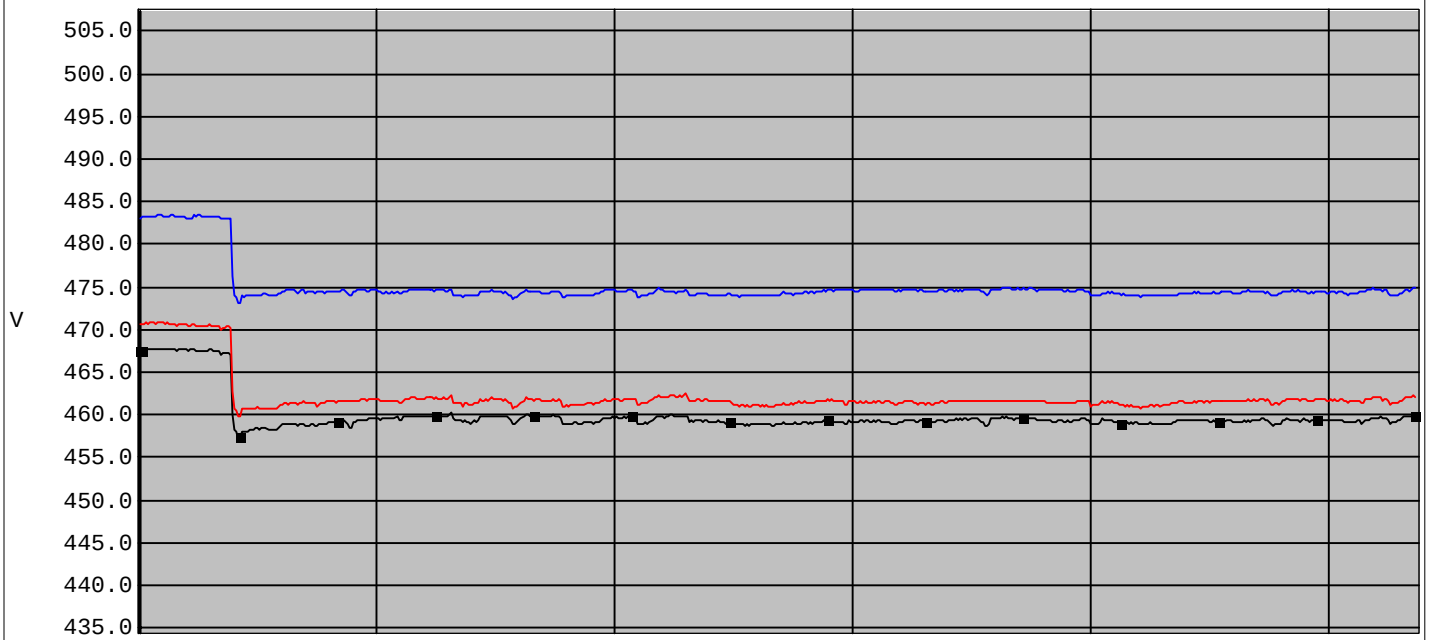
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/30/2004	1:52:06.500 PM	240.7	91.60	253.3	646
Vrms Line2	7/30/2004	1:52:06.500 PM	247.6	230.3	385.8	646
Vrms Line3	7/30/2004	1:52:06.500 PM	330.8	318.0	418.6	646

7/30/2004 - 1:52:06.000 PM
Val
91.90 — Vrms Line1
385.3 — Vrms Line2
418.3 — Vrms Line3

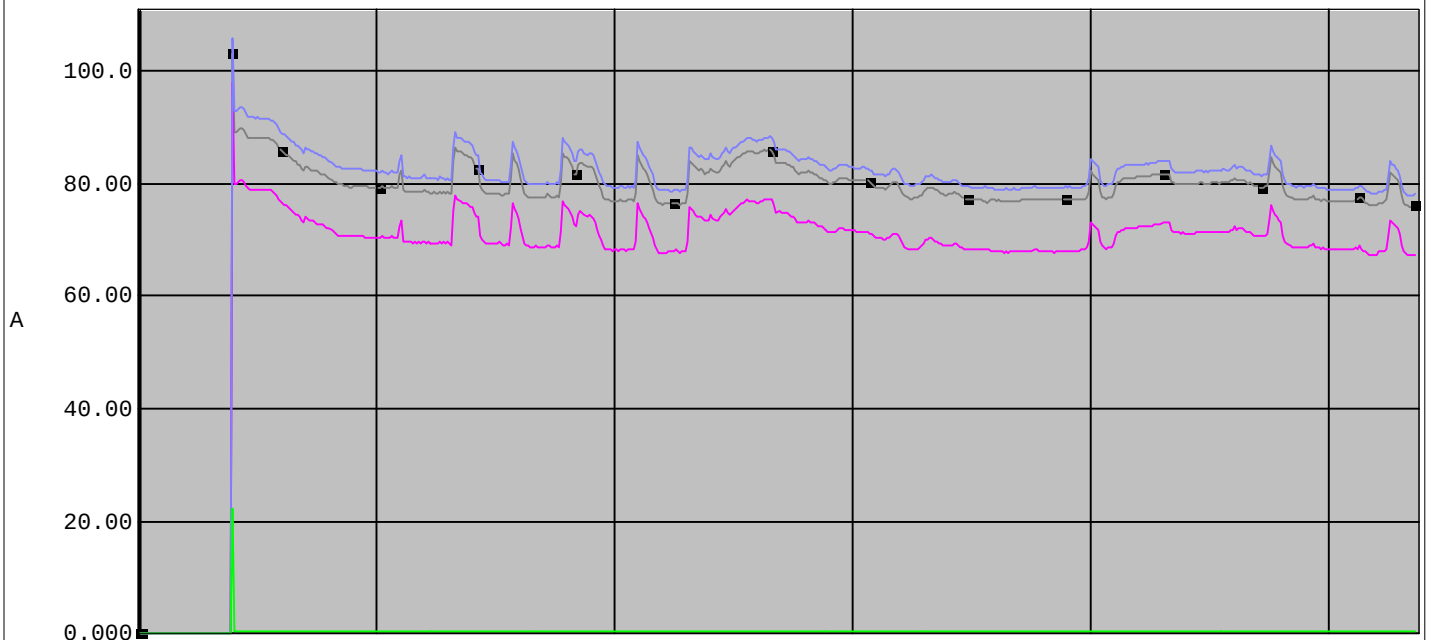
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/30/2004	1:52:06.500 PM	459.8	457.1	467.7	V
Urms Line2	7/30/2004	1:52:06.500 PM	462.1	459.7	470.8	V
Urms Line3	7/30/2004	1:52:06.500 PM	474.9	473.0	483.3	V

7/30/2004 - 1:52:06.000 PM
Val
467.4 Urms Line1
470.5 Urms Line2
483.0 Urms Line3

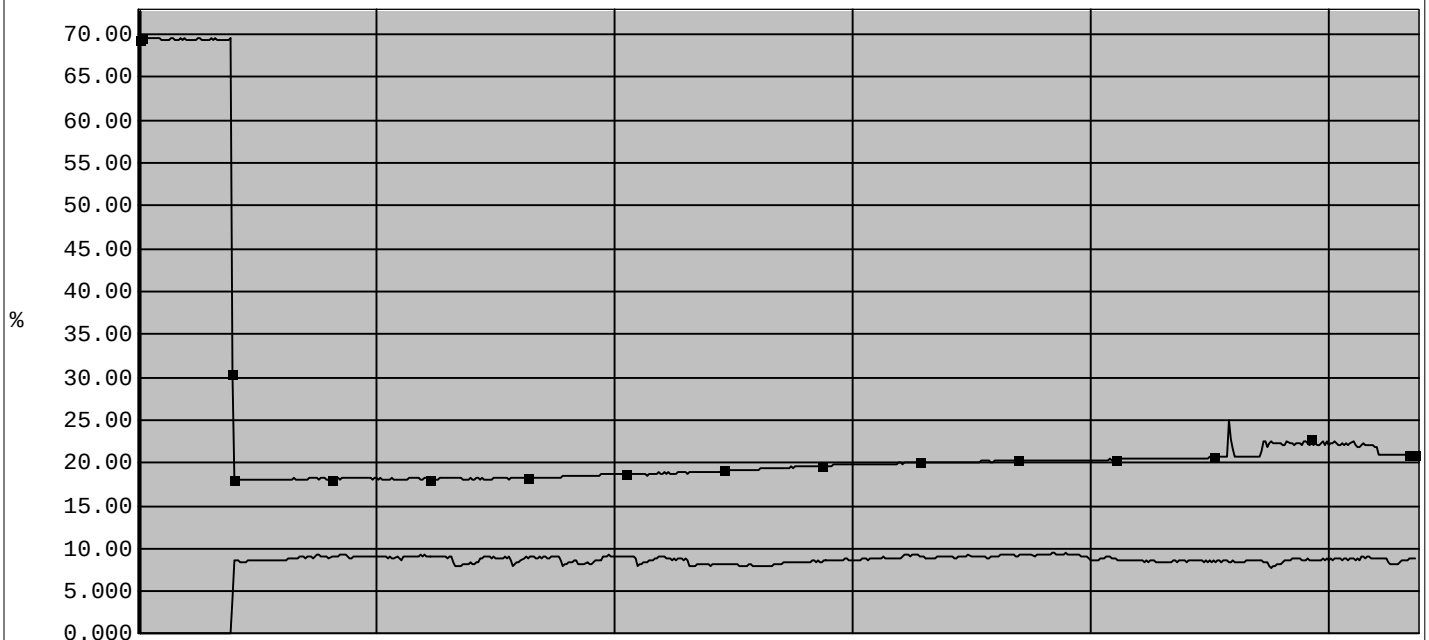
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/30/2004	1:52:06.500 PM	74.15	0.000	102.8	A
Arms Line2	7/30/2004	1:52:06.500 PM	65.96	0.000	97.90	A
Arms Line3	7/30/2004	1:52:06.500 PM	76.37	0.000	105.5	A
Arms Neutral	7/30/2004	1:52:06.500 PM	0.312	0.000	22.20	A

7/30/2004 - 1:52:06.000 PM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3
0.000 — Arms Neutral

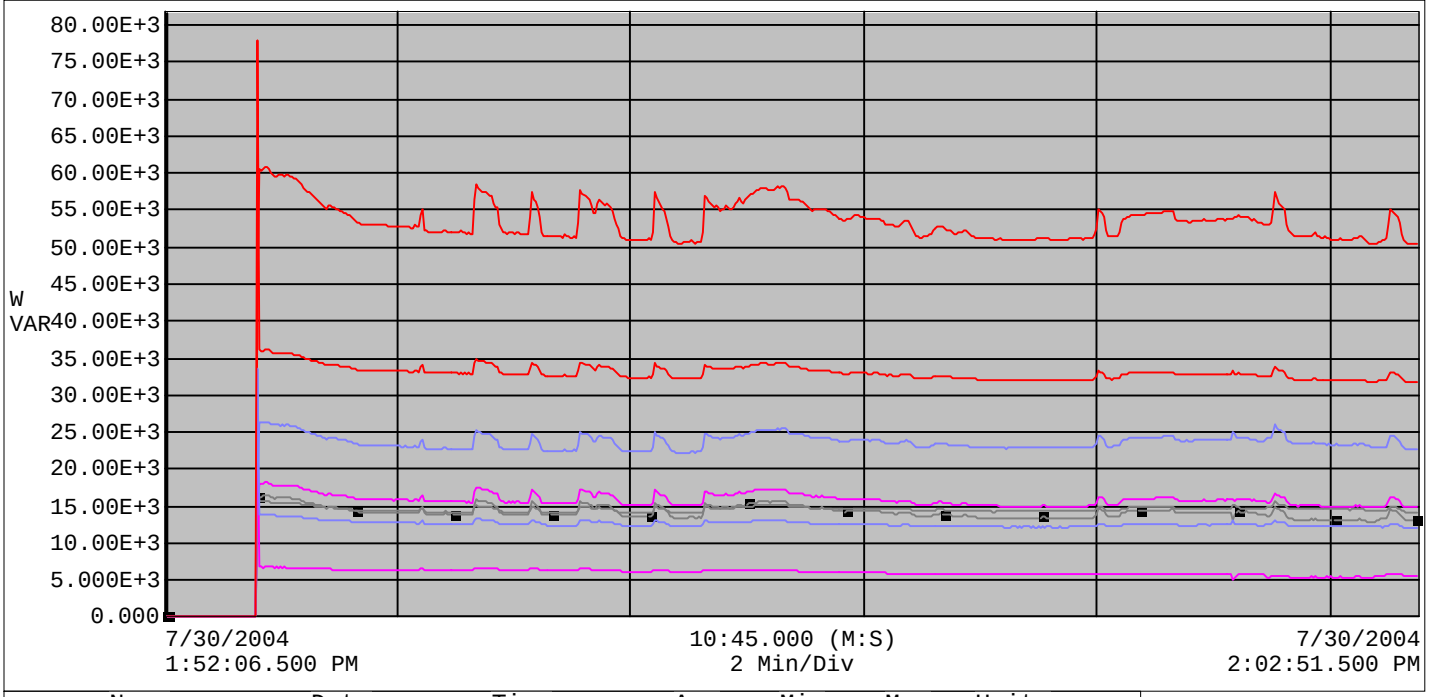
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/30/2004	1:52:06.500 PM	23.13	17.90	69.30	%
Aunb(IEEE)	7/30/2004	1:52:06.500 PM	7.978	0.000	9.300	%

7/30/2004 - 1:52:06.000 PM
Val
69.20 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

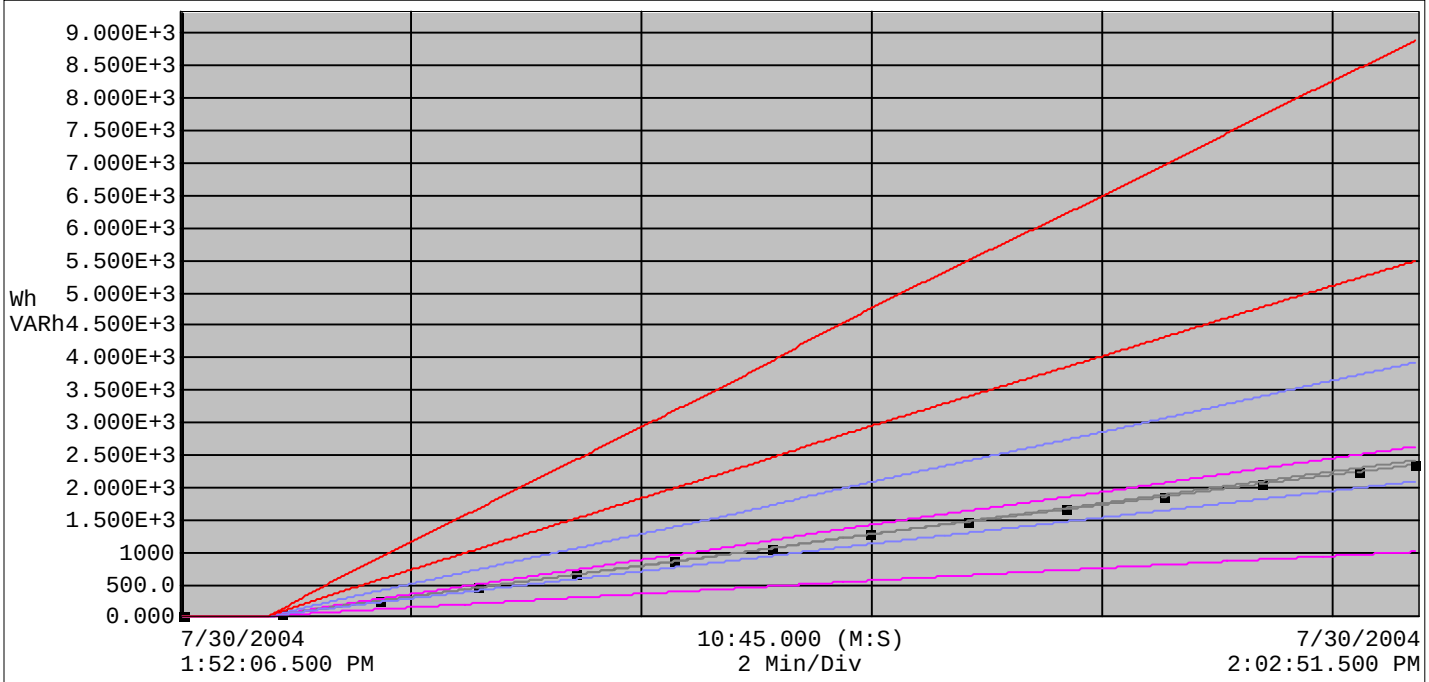
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/30/2004	1:52:06.500 PM	13.05E+3	0.000	16.31E+3	W
W Line2	7/30/2004	1:52:06.500 PM	14.59E+3	0.000	18.10E+3	W
W Line3	7/30/2004	1:52:06.500 PM	21.83E+3	0.000	26.31E+3	W
W Sum of Phases	7/30/2004	1:52:06.500 PM	49.47E+3	0.000	60.71E+3	W
VAR Line1	7/30/2004	1:52:06.500 PM	13.41E+3	0.000	17.46E+3	VAR
VAR Line2	7/30/2004	1:52:06.500 PM	5.550E+3	0.000	26.87E+3	VAR
VAR Line3	7/30/2004	1:52:06.500 PM	11.60E+3	0.000	33.47E+3	VAR
VAR Sum of Phases	7/30/2004	1:52:06.500 PM	30.57E+3	0.000	77.80E+3	VAR

7/30/2004 - 1:52:06.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

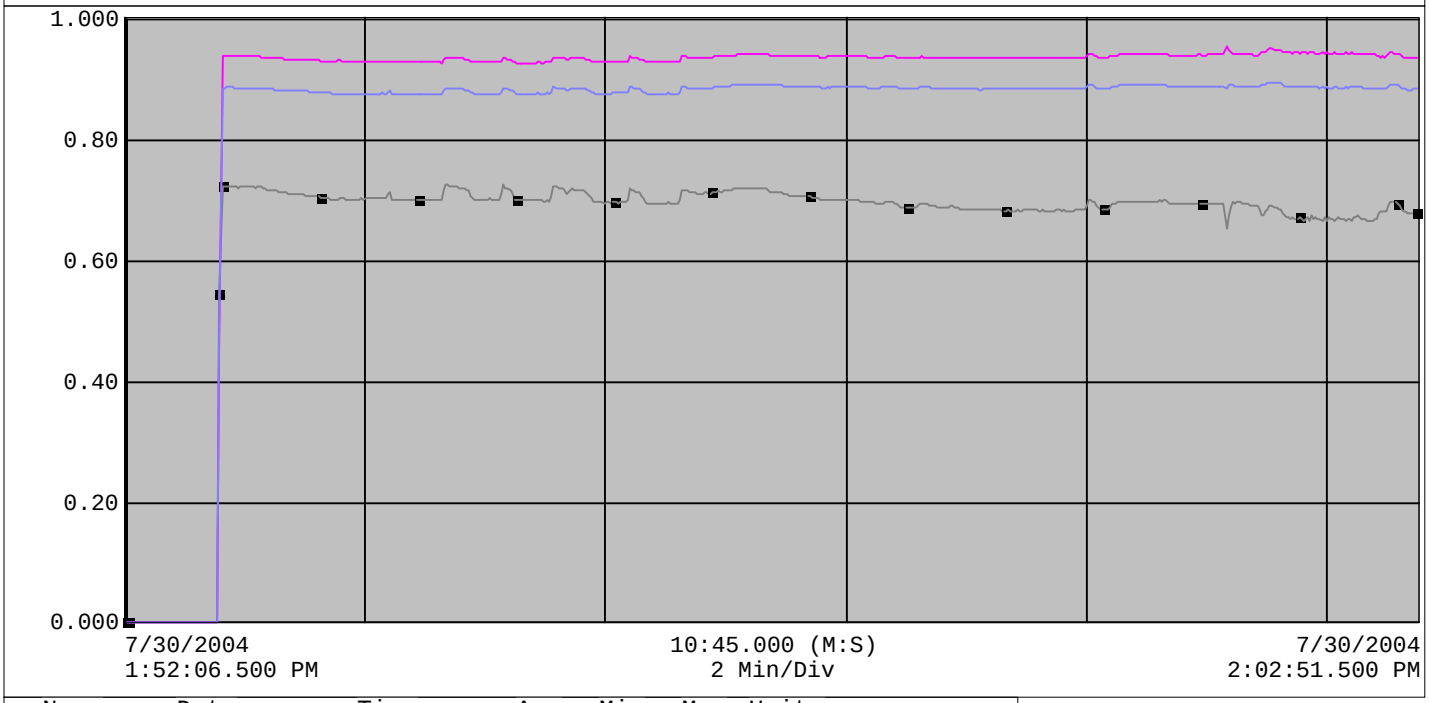
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/30/2004	1:52:06.500 PM	1.106E+3	0.000	2.341E+3	Wh
W-hours Line2	7/30/2004	1:52:06.500 PM	1.234E+3	0.000	2.618E+3	Wh
W-hours Line3	7/30/2004	1:52:06.500 PM	1.823E+3	0.000	3.917E+3	Wh
W-hours Sum of Phases	7/30/2004	1:52:06.500 PM	4.163E+3	0.000	8.877E+3	Wh
VAR-hours Line1	7/30/2004	1:52:06.500 PM	1.119E+3	0.000	2.407E+3	VARh
VAR-hours Line2	7/30/2004	1:52:06.500 PM	480.0	0.000	995.9	VARh
VAR-hours Line3	7/30/2004	1:52:06.500 PM	980.5	0.000	2.082E+3	VARh
VAR-hours Sum of Phases	7/30/2004	1:52:06.500 PM	2.579E+3	0.000	5.485E+3	VARh

7/30/2004 - 1:52:06.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/30/2004	1:52:06.500 PM	0.646	0.000	0.726	
PF Line2	7/30/2004	1:52:06.500 PM	0.866	0.000	0.954	
PF Line3	7/30/2004	1:52:06.500 PM	0.819	0.000	0.895	

7/30/2004 - 1:52:06.000 PM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\073004-F10E.dvb

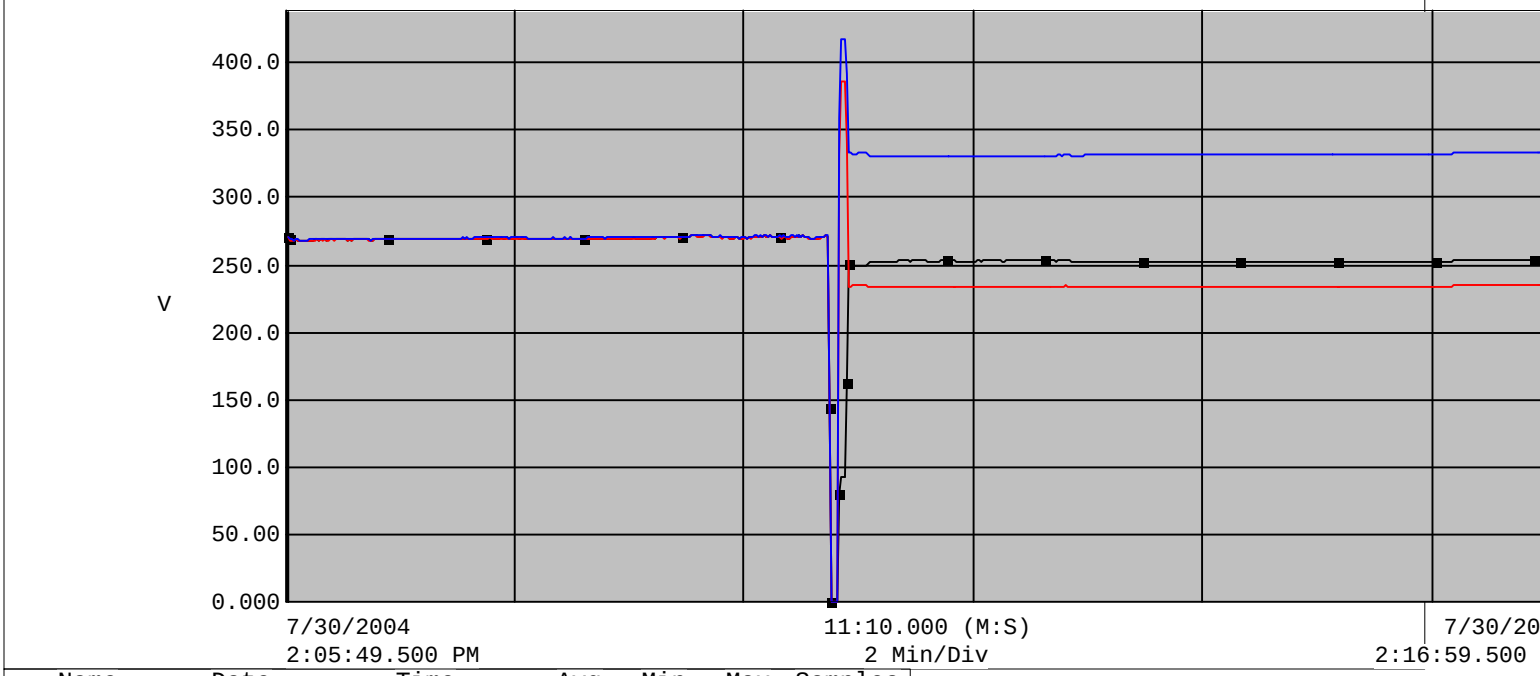
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-10 ,

Comments
Recording at motor starter with pump prior and operating on normal electrical power.

WPS F-10F

Recording Start Date	7/30/2004 - 2:05:49 PM
Recording Duration	11:10 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

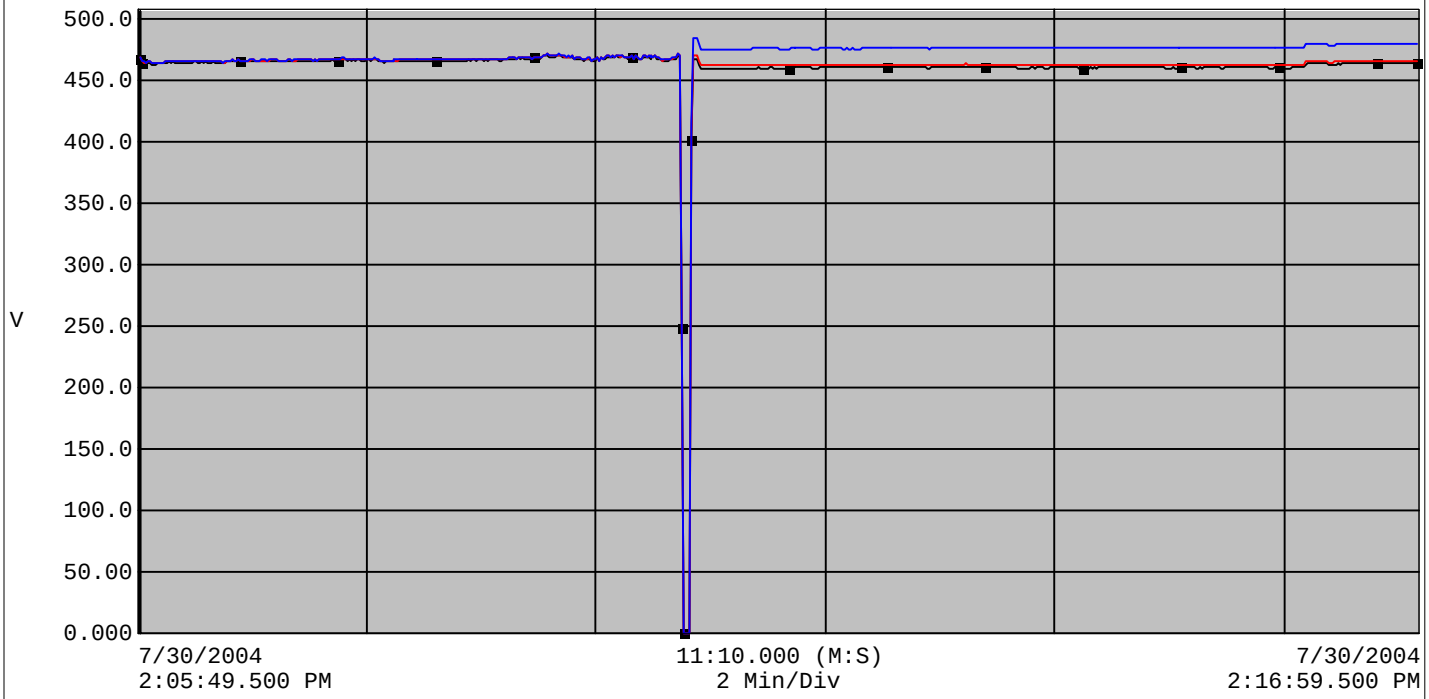
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/30/2004	2:05:49.500 PM	256.6	0.000	271.7	671
Vrms Line2	7/30/2004	2:05:49.500 PM	248.2	0.000	385.5	671
Vrms Line3	7/30/2004	2:05:49.500 PM	303.2	0.000	417.0	671

7/30/2004 - 2:05:49.000 PM
Val
270.1 Vrms Line1
269.9 Vrms Line2
270.5 Vrms Line3

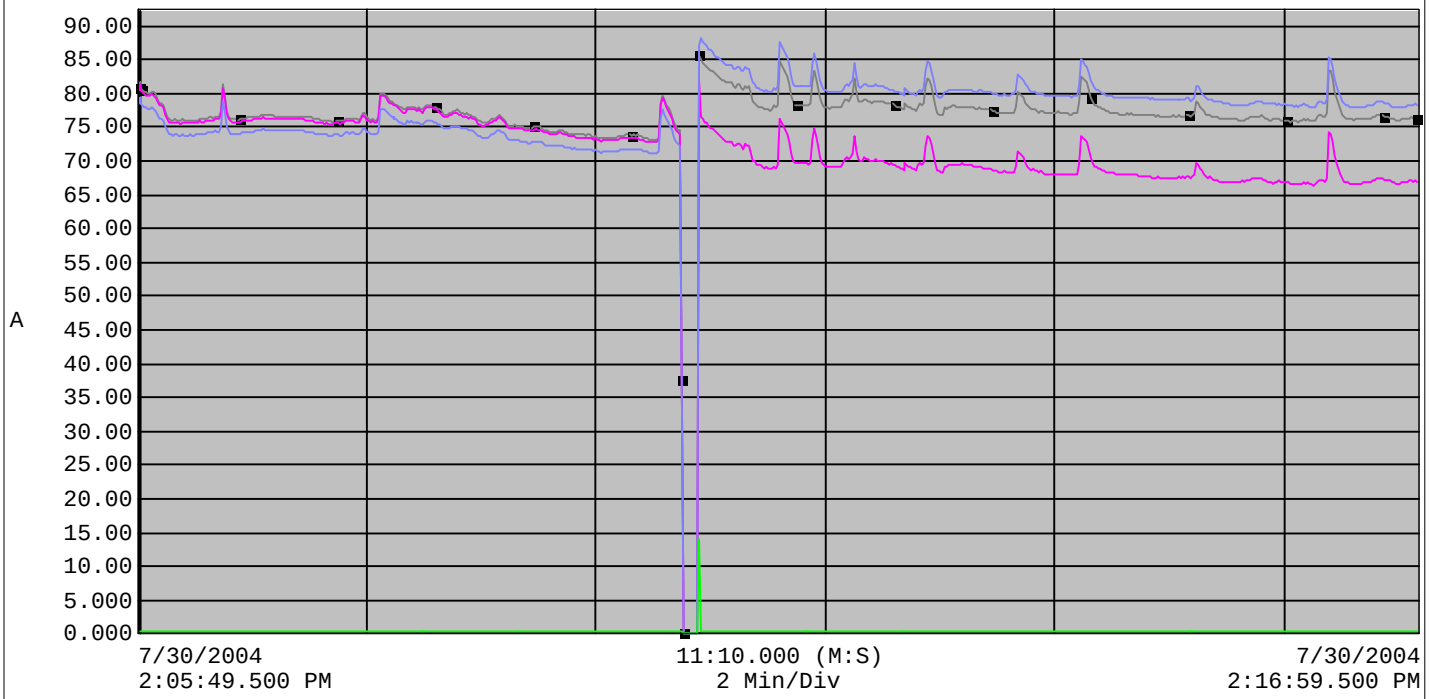
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/30/2004	2:05:49.500 PM	459.3	0.000	470.1	V
Urms Line2	7/30/2004	2:05:49.500 PM	461.0	0.000	471.0	V
Urms Line3	7/30/2004	2:05:49.500 PM	468.7	0.000	482.9	V

7/30/2004 - 2:05:49.000 PM
Val
467.3 Urms Line1
468.2 Urms Line2
468.3 Urms Line3

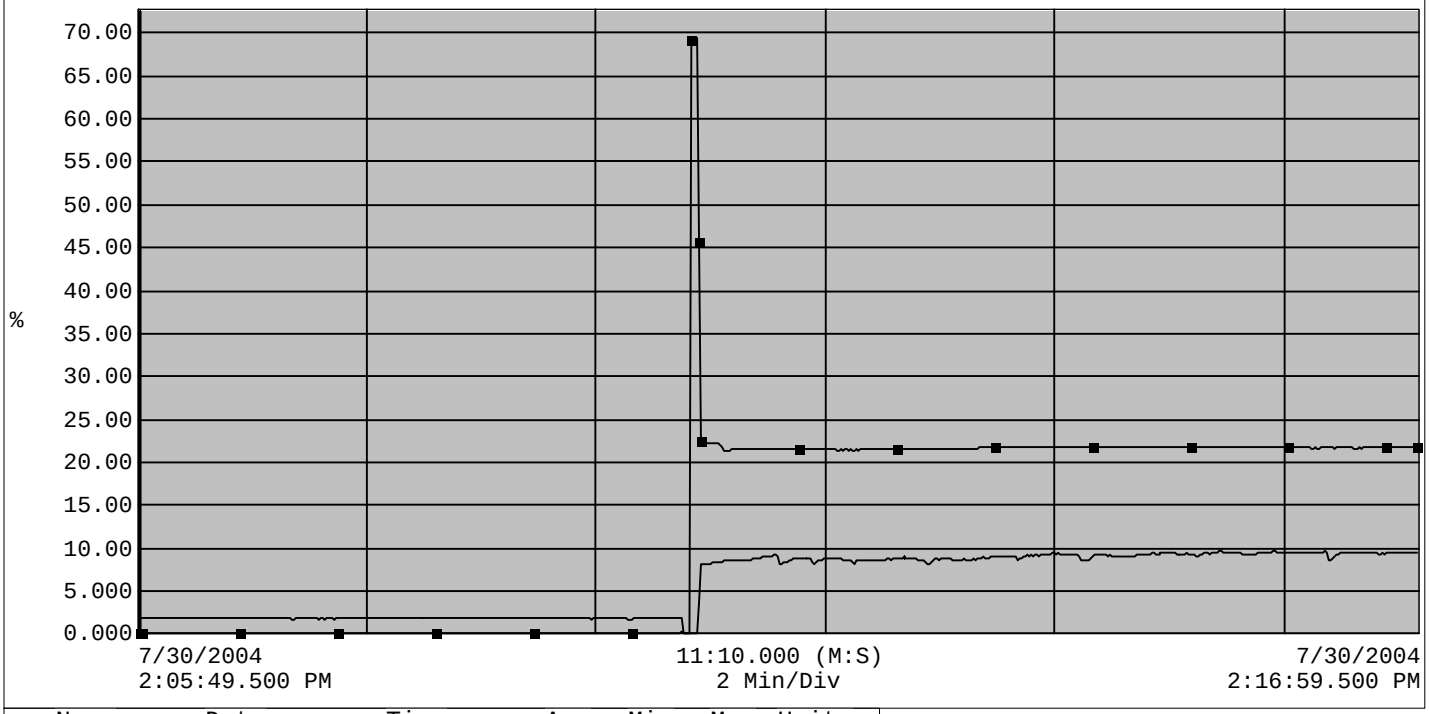
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/30/2004	2:05:49.500 PM	76.09	0.000	85.60	A
Arms Line2	7/30/2004	2:05:49.500 PM	70.90	0.000	81.80	A
Arms Line3	7/30/2004	2:05:49.500 PM	76.50	0.000	87.90	A
Arms Neutral	7/30/2004	2:05:49.500 PM	0.317	0.000	13.80	A

7/30/2004 - 2:05:49.000 PM
Val
81.40 — Arms Line1
81.10 — Arms Line2
79.10 — Arms Line3
0.300 — Arms Neutral

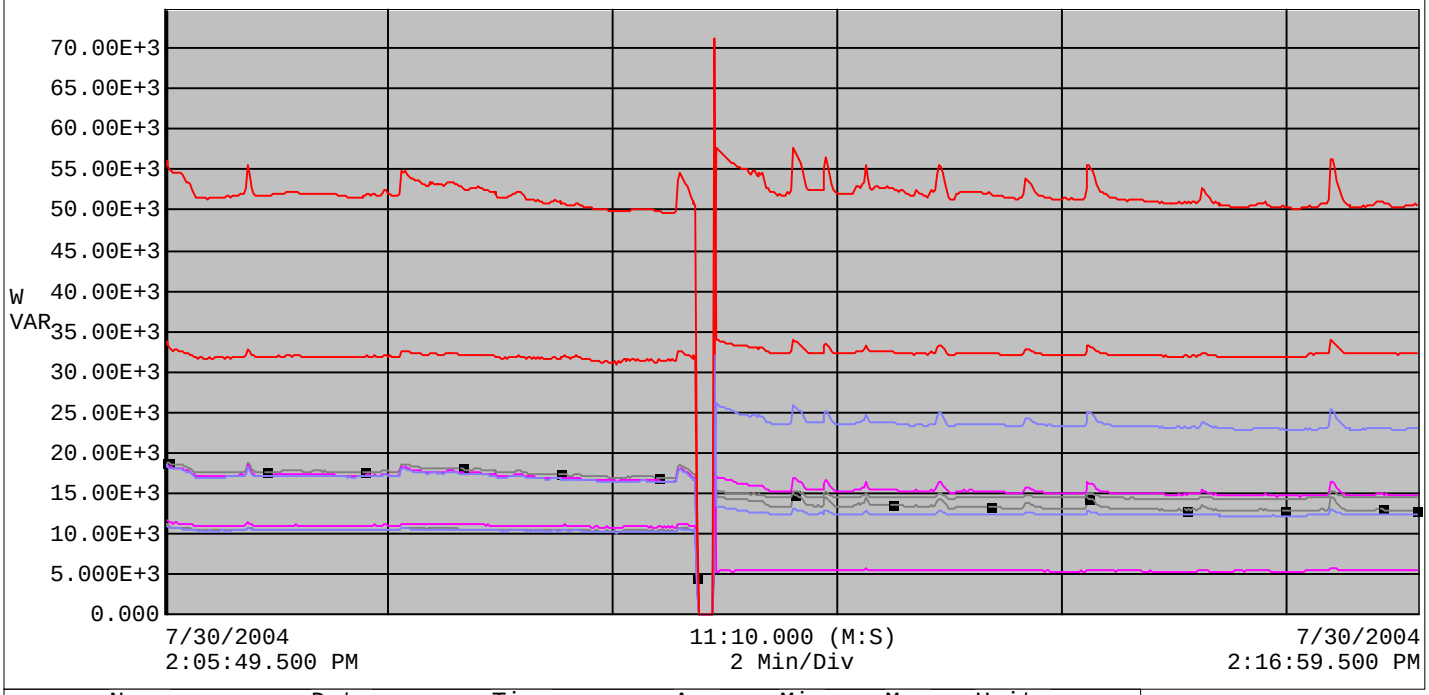
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/30/2004	2:05:49.500 PM	12.60	0.000	69.20	%
Aunb(IEEE)	7/30/2004	2:05:49.500 PM	5.769	0.000	9.700	%

7/30/2004 - 2:05:49.000 PM
Val
0.100 —— Vunb(IEEE)
1.800 —— Aunb(IEEE)

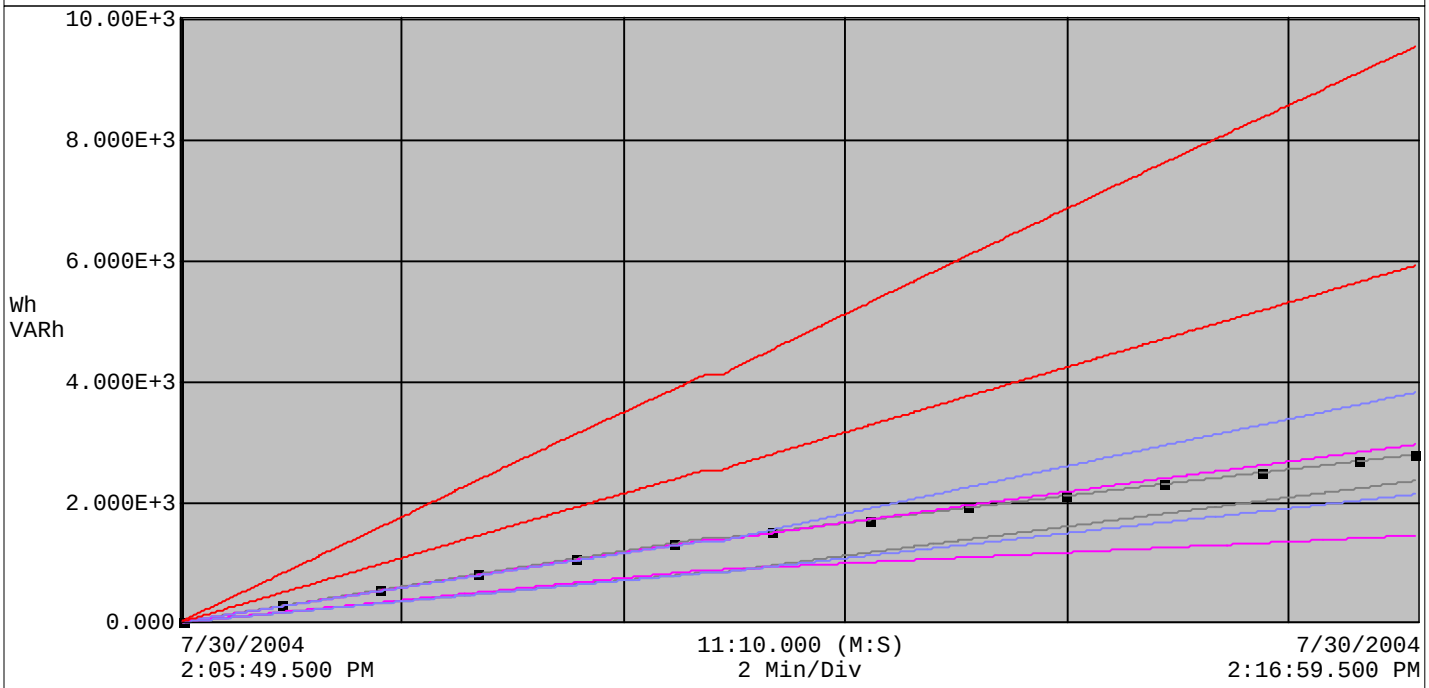
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/30/2004	2:05:49.500 PM	14.91E+3	0.000	19.01E+3	W
W Line2	7/30/2004	2:05:49.500 PM	15.80E+3	0.000	18.55E+3	W
W Line3	7/30/2004	2:05:49.500 PM	20.41E+3	0.000	26.09E+3	W
W Sum of Phases	7/30/2004	2:05:49.500 PM	51.11E+3	0.000	57.68E+3	W
VAR Line1	7/30/2004	2:05:49.500 PM	12.58E+3	0.000	15.37E+3	VAR
VAR Line2	7/30/2004	2:05:49.500 PM	7.727E+3	0.000	26.74E+3	VAR
VAR Line3	7/30/2004	2:05:49.500 PM	11.39E+3	0.000	31.95E+3	VAR
VAR Sum of Phases	7/30/2004	2:05:49.500 PM	31.70E+3	0.000	71.08E+3	VAR

7/30/2004 - 2:05:49.000 PM
Val
19.01E+3 — W Line1
18.55E+3 — W Line2
18.37E+3 — W Line3
55.92E+3 — W Sum of Phases
11.06E+3 — VAR Line1
11.63E+3 — VAR Line2
10.96E+3 — VAR Line3
33.65E+3 — VAR Sum of Phases

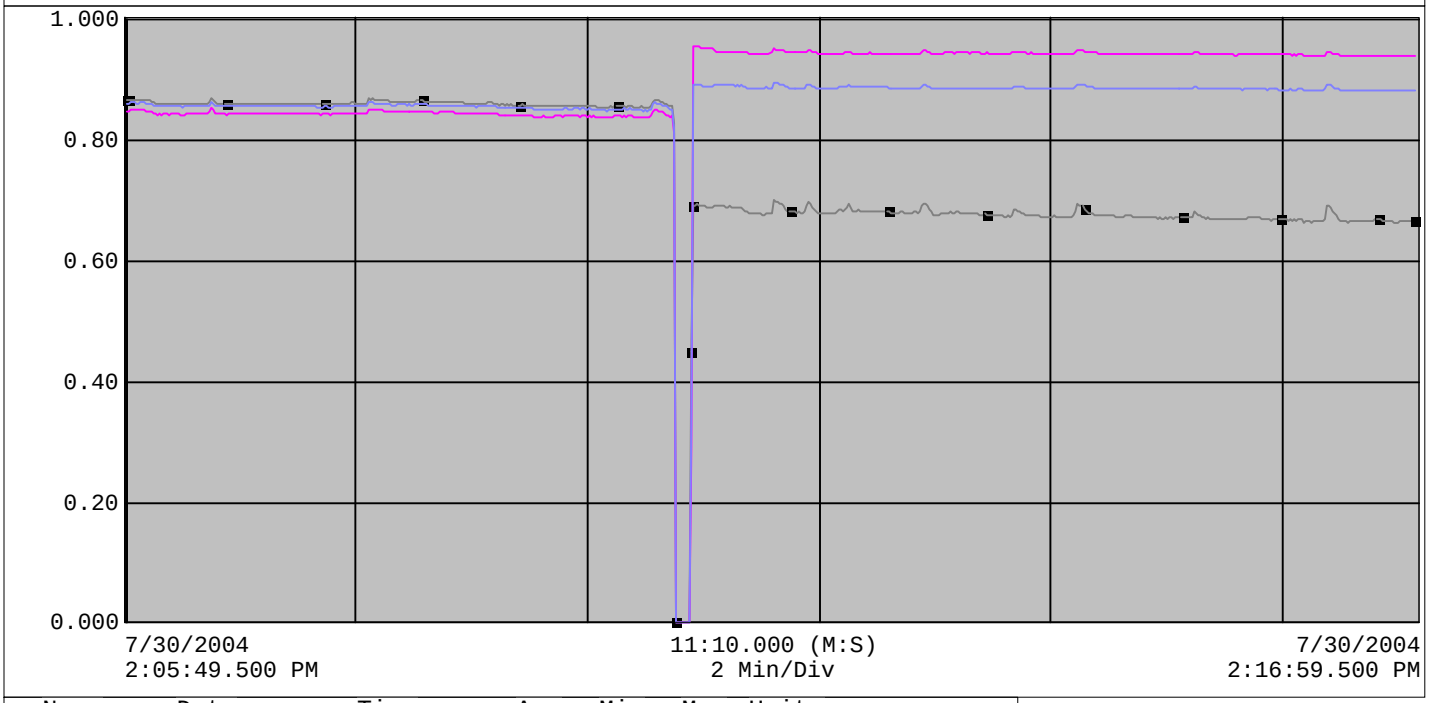
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/30/2004	2:05:49.500 PM	1.496E+3	5.259	2.779E+3	Wh
W-hours Line2	7/30/2004	2:05:49.500 PM	1.525E+3	5.122	2.944E+3	Wh
W-hours Line3	7/30/2004	2:05:49.500 PM	1.763E+3	5.108	3.803E+3	Wh
W-hours Sum of Phases	7/30/2004	2:05:49.500 PM	4.784E+3	15.41	9.527E+3	Wh
VAR-hours Line1	7/30/2004	2:05:49.500 PM	1.083E+3	3.078	2.345E+3	VARh
VAR-hours Line2	7/30/2004	2:05:49.500 PM	848.4	3.209	1.440E+3	VARh
VAR-hours Line3	7/30/2004	2:05:49.500 PM	1.017E+3	3.044	2.122E+3	VARh
VAR-hours Sum of Phases	7/30/2004	2:05:49.500 PM	2.949E+3	9.376	5.908E+3	VARh

7/30/2004 - 2:05:49.000 PM
Val
5.259 — W-hours Line1
5.122 — W-hours Line2
5.108 — W-hours Line3
15.41 — W-hours Sum of Phases
3.078 — VAR-hours Line1
3.209 — VAR-hours Line2
3.044 — VAR-hours Line3
9.376 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/30/2004	2:05:49.500 PM	0.745	0.000	0.868	
PF Line2	7/30/2004	2:05:49.500 PM	0.887	0.000	0.954	
PF Line3	7/30/2004	2:05:49.500 PM	0.860	0.000	0.893	

7/30/2004 - 2:05:49.000 PM
Val
0.864 — PF Line1
0.847 — PF Line2
0.859 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\073004-F10F.dvb

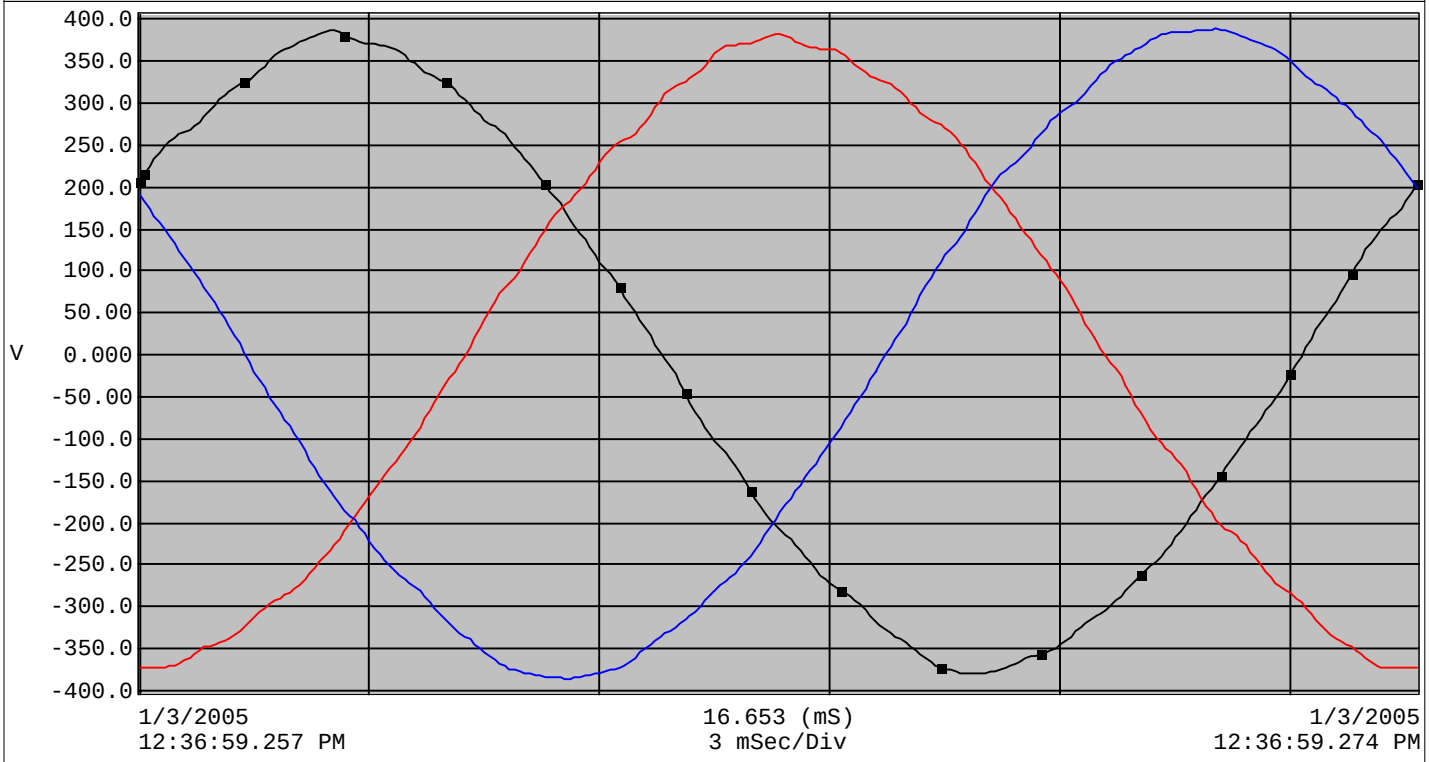
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-10 ,

Comments
Recording on Generator Power and transfer back to normal GPA power

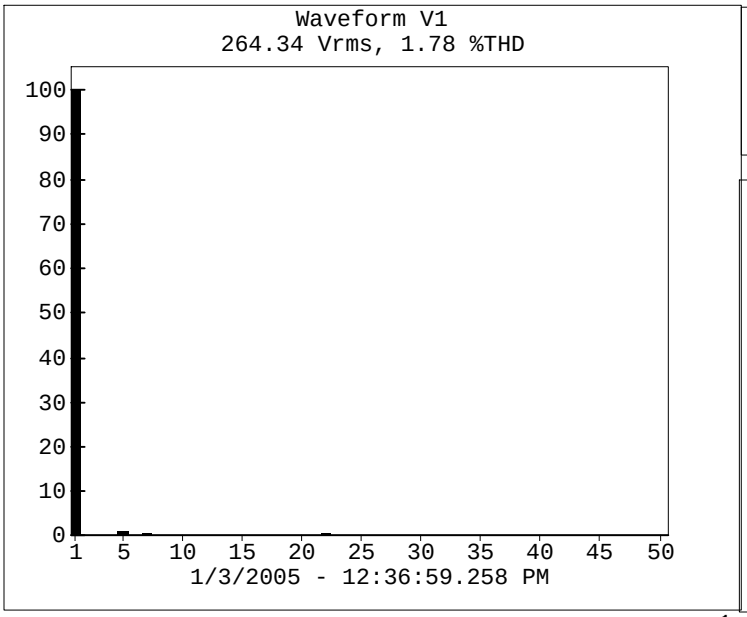
WPS F-10 Photo Photo Report

Recording Start Date	1/3/2005 - 12:36:59 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	1/3/2005	12:36:59.257 PM	16.653	264.3	V
Waveform V2	1/3/2005	12:36:59.257 PM	16.653	263.5	V
Waveform V3	1/3/2005	12:36:59.257 PM	16.653	271.9	V



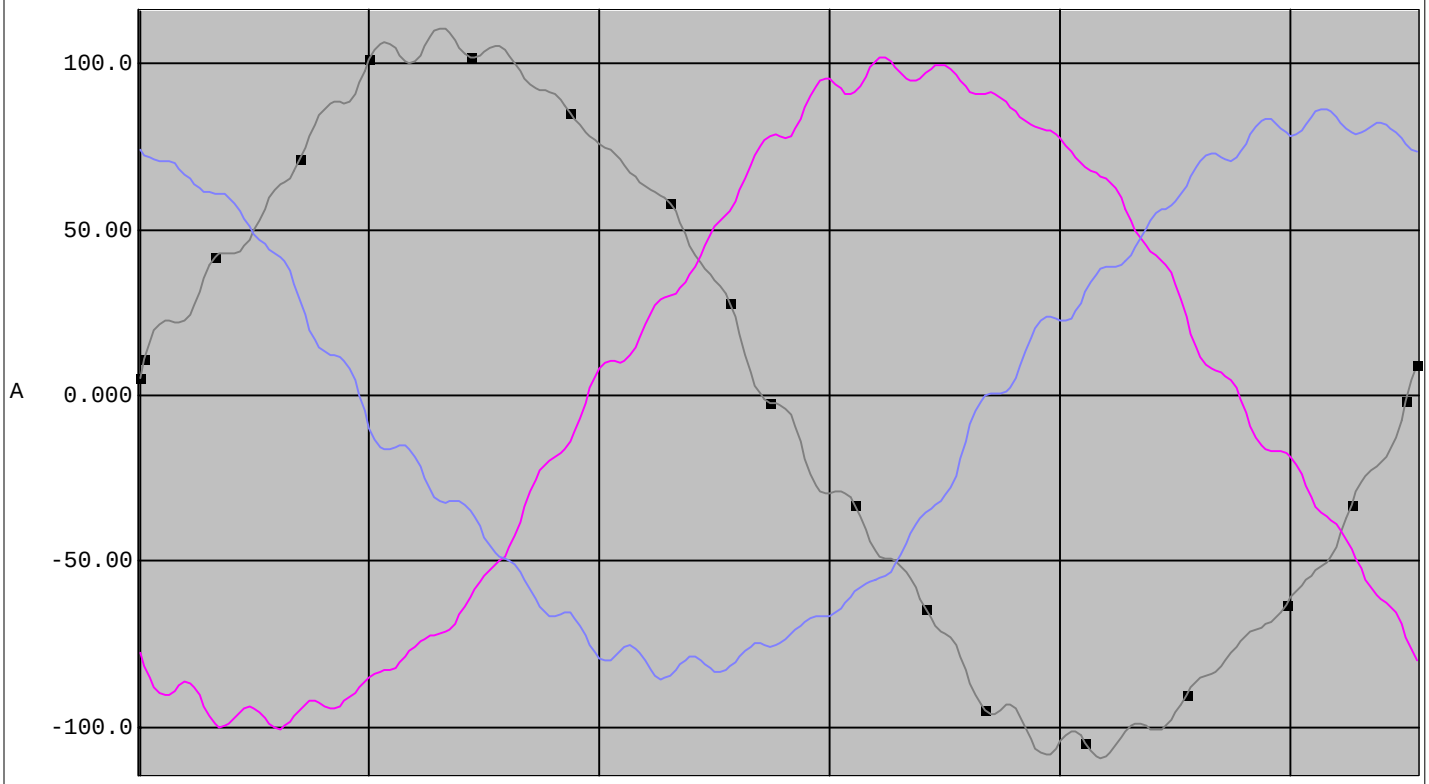
1/3/2005 - 12:36:59.000 PM

Val	
204.6	Waveform V1
-372.9	Waveform V2
190.2	Waveform V3

Waveform V1

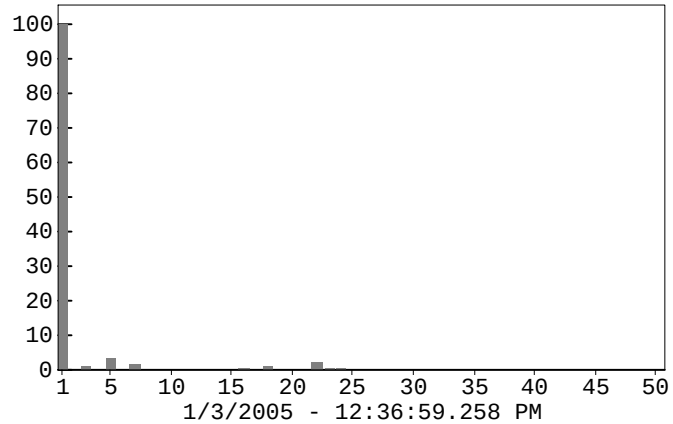
	(%)		(%)		(%)
H01	100.0	H18	0.3	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.2	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.3	H22	0.5	H39	0.0
H06	0.1	H23	0.2	H40	0.0
H07	0.7	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.1
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.1
H11	0.4	H28	0.1	H45	0.1
H12	0.1	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Channel Name: Waveform I1
Frequency: 60.05 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	1/3/2005	12:36:59.257 PM	16.653	73.67	A
Waveform I2	1/3/2005	12:36:59.257 PM	16.653	69.79	A
Waveform I3	1/3/2005	12:36:59.257 PM	16.653	59.14	A

Waveform I1
73.67 Arms, 5.69 %THD



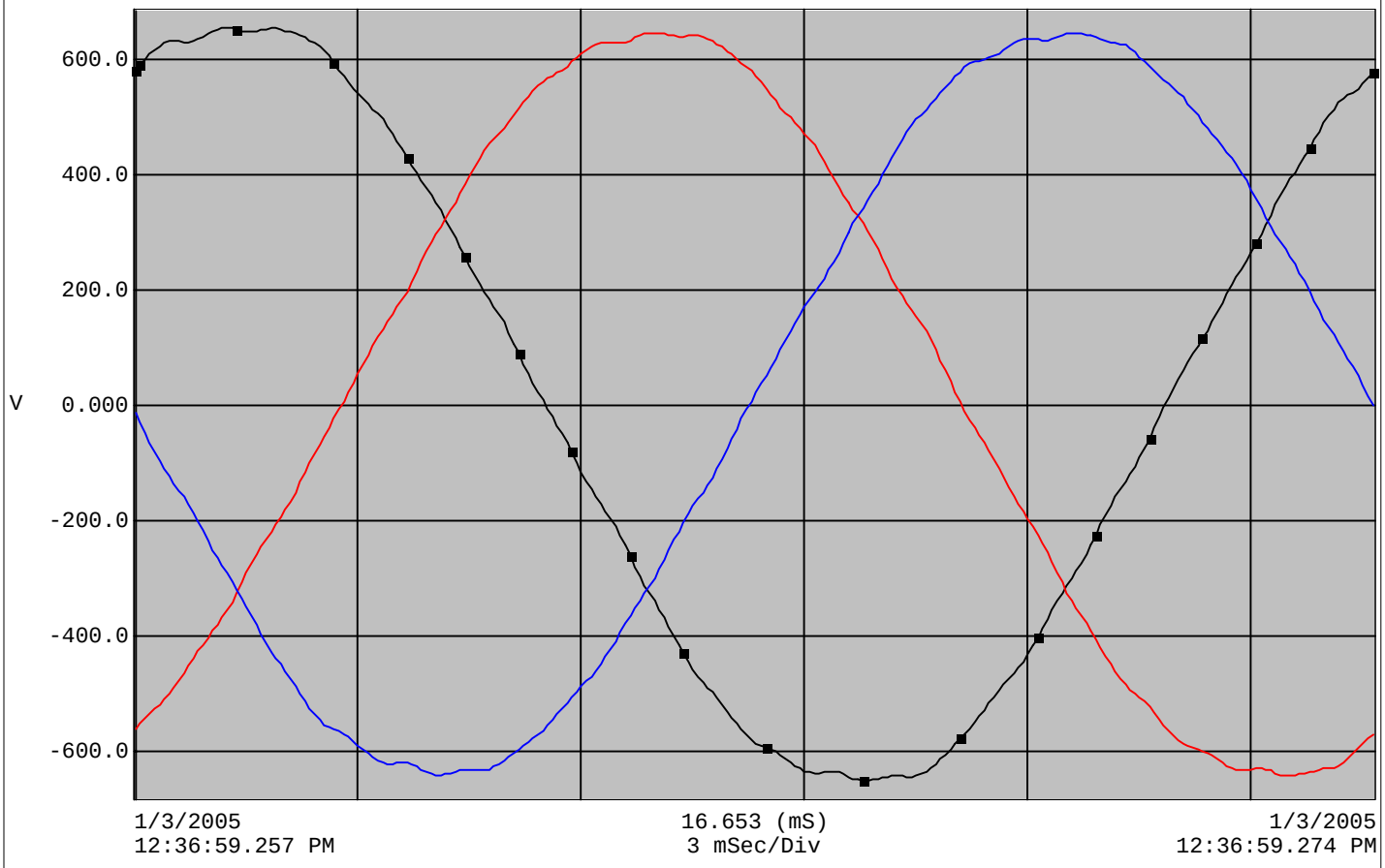
1/3/2005 - 12:36:59.000 PM

	Val
Waveform I1	5.100
Waveform I2	-77.80
Waveform I3	73.70

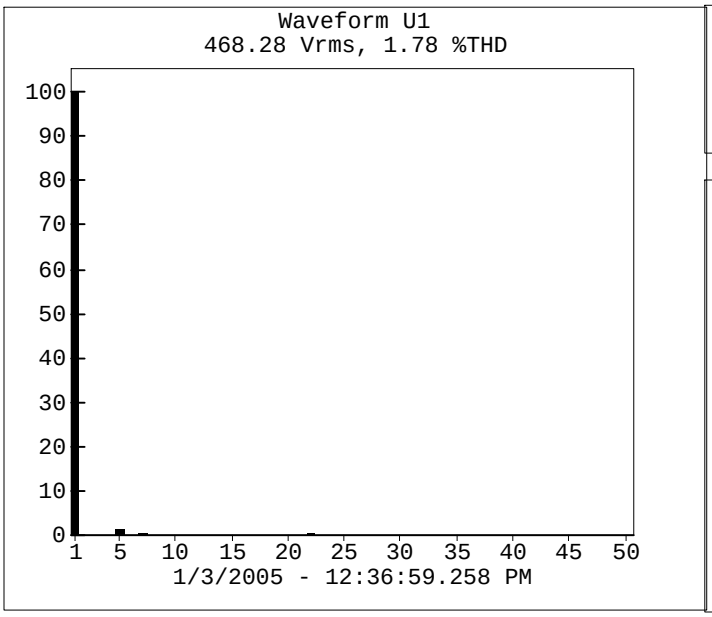
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	1.6	H35	0.1
H02	0.0	H19	0.4	H36	0.1
H03	1.5	H20	0.2	H37	0.1
H04	0.1	H21	0.4	H38	0.1
H05	3.7	H22	2.4	H39	0.1
H06	0.1	H23	1.1	H40	0.1
H07	2.1	H24	0.6	H41	0.1
H08	0.1	H25	0.4	H42	0.2
H09	0.1	H26	0.3	H43	0.1
H10	0.2	H27	0.2	H44	0.1
H11	0.0	H28	0.2	H45	0.1
H12	0.3	H29	0.2	H46	0.0
H13	0.3	H30	0.2	H47	0.1
H14	0.2	H31	0.2	H48	0.1
H15	0.3	H32	0.1	H49	0.1
H16	0.7	H33	0.1	H50	0.1
H17	0.4	H34	0.1		

Channel Name: Waveform U1
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	1/3/2005	12:36:59.257 PM	16.653	468.3	V
Waveform U2	1/3/2005	12:36:59.257 PM	16.653	459.0	V
Waveform U3	1/3/2005	12:36:59.257 PM	16.653	457.3	V



1/3/2005 - 12:36:59.000 PM

	Val	
—	577.6	Waveform U1
—	-563.2	Waveform U2
—	-14.30	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.3	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.4	H22	0.5	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.1
H09	0.2	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.4	H28	0.1	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 1/3/2005
Start Time: 12:36:59 PM
Duration: 0:0.000 (M:S)
W: 16.45E+3 W
VAR: 10.47E+3 W
VA: 19.49E+3 W
Power Factor: 0.844
Displacement Power Factor: 0.845
TAN: 0.634
VoltageRatio: 1.000
CurrentRatio: 1.000
```

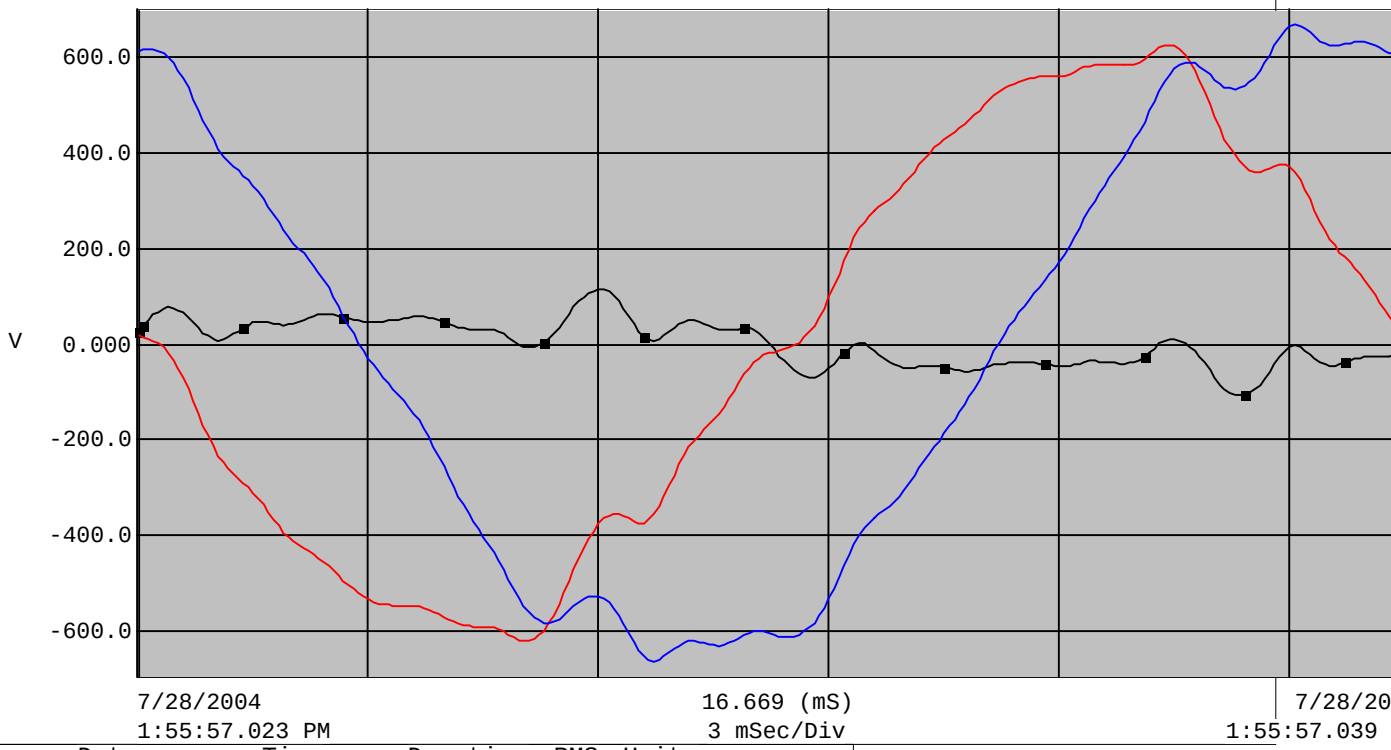
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\010305-F10 Photo.dvb	
Operator GWA Victor Jardel ,	Test Site WPS F-10 ,
Comments	

WPS F-10 Photo1 Photo Report

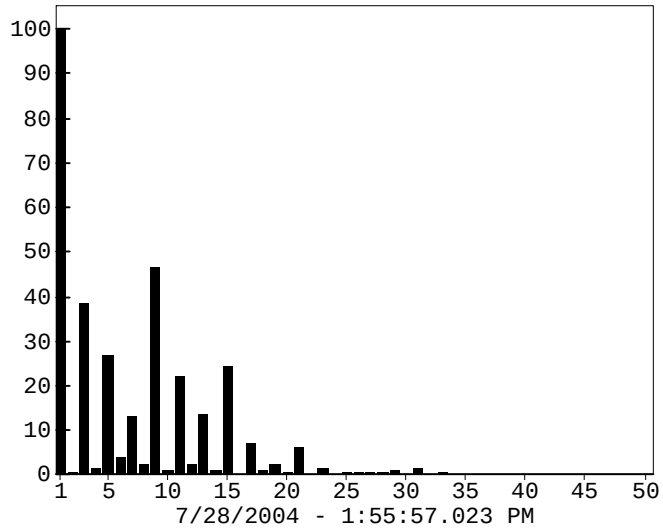
Recording Start Date	7/28/2004 - 1:55:57 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/28/2004	1:55:57.023 PM	16.669	47.95	V
Waveform V2	7/28/2004	1:55:57.023 PM	16.669	414.7	V
Waveform V3	7/28/2004	1:55:57.023 PM	16.669	468.9	V

Waveform V1
47.95 Vrms, 77.33 %THD

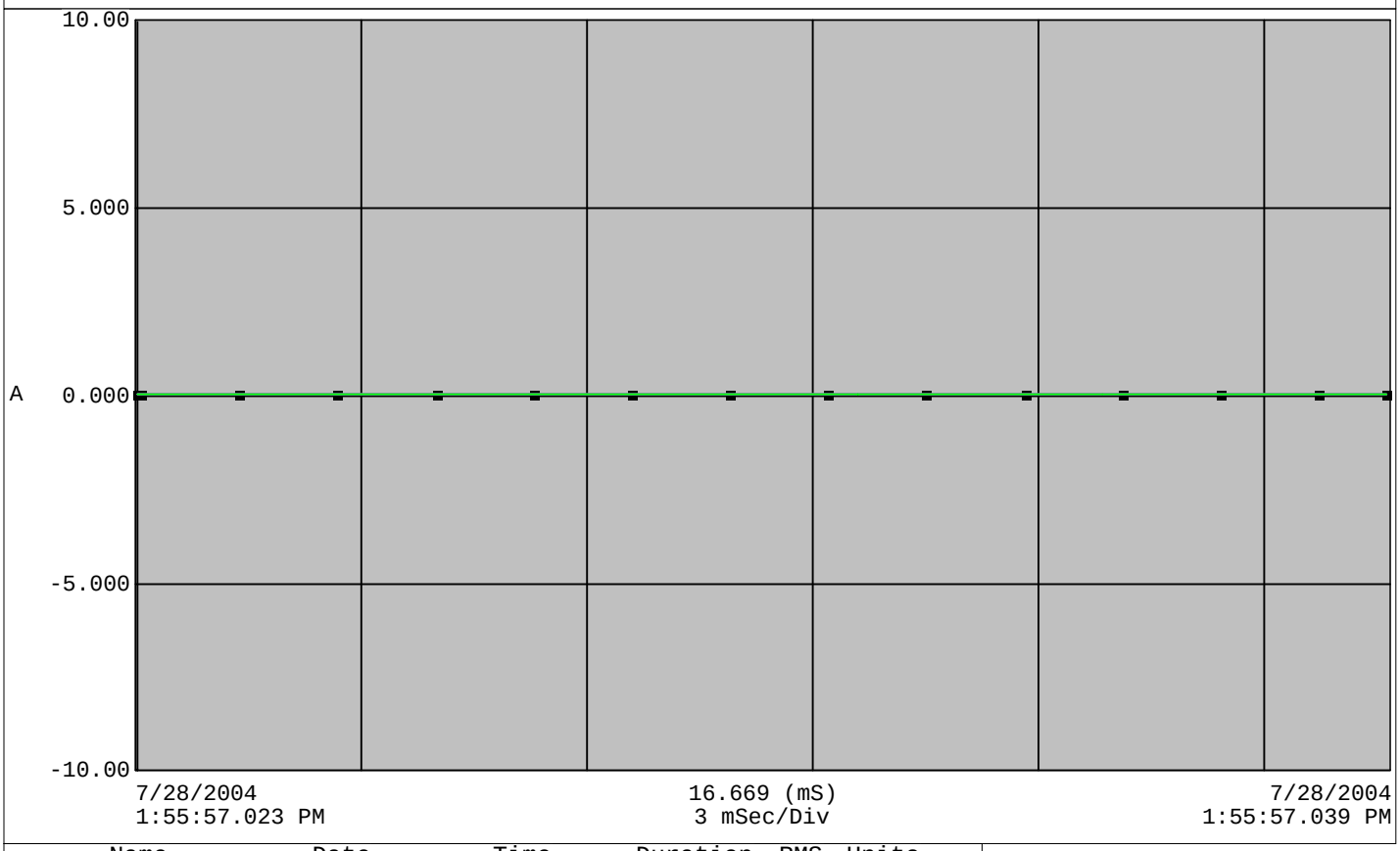


7/28/2004 - 1:55:57.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

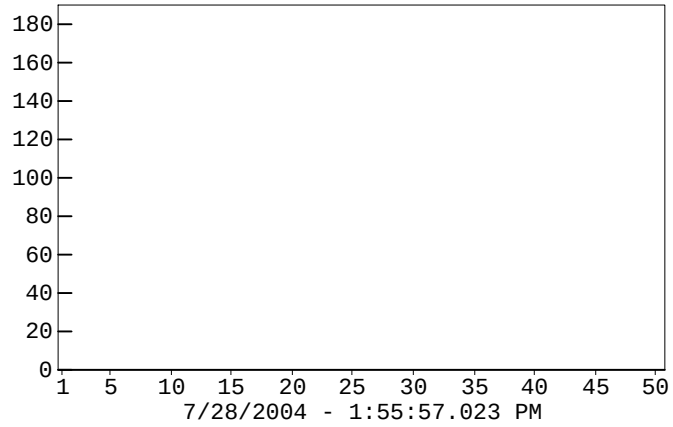
	(%)		(%)		(%)
H01	100.0	H18	1.2	H35	0.4
H02	0.7	H19	2.5	H36	0.0
H03	38.5	H20	0.5	H37	0.3
H04	1.6	H21	6.1	H38	0.1
H05	26.8	H22	0.2	H39	0.1
H06	4.2	H23	1.5	H40	0.1
H07	13.0	H24	0.3	H41	0.1
H08	2.5	H25	0.6	H42	0.1
H09	46.9	H26	0.7	H43	0.2
H10	1.2	H27	0.8	H44	0.0
H11	22.3	H28	0.5	H45	0.0
H12	2.4	H29	0.9	H46	0.0
H13	13.7	H30	0.2	H47	0.1
H14	1.1	H31	1.3	H48	0.0
H15	24.3	H32	0.2	H49	0.1
H16	0.1	H33	0.6	H50	0.1
H17	7.2	H34	0.1		

Channel Name: Waveform I1
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/28/2004	1:55:57.023 PM	16.669	0.000	A
Waveform I2	7/28/2004	1:55:57.023 PM	16.669	0.000	A
Waveform I3	7/28/2004	1:55:57.023 PM	16.669	0.000	A
Waveform INeutral	7/28/2004	1:55:57.023 PM	16.669	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD

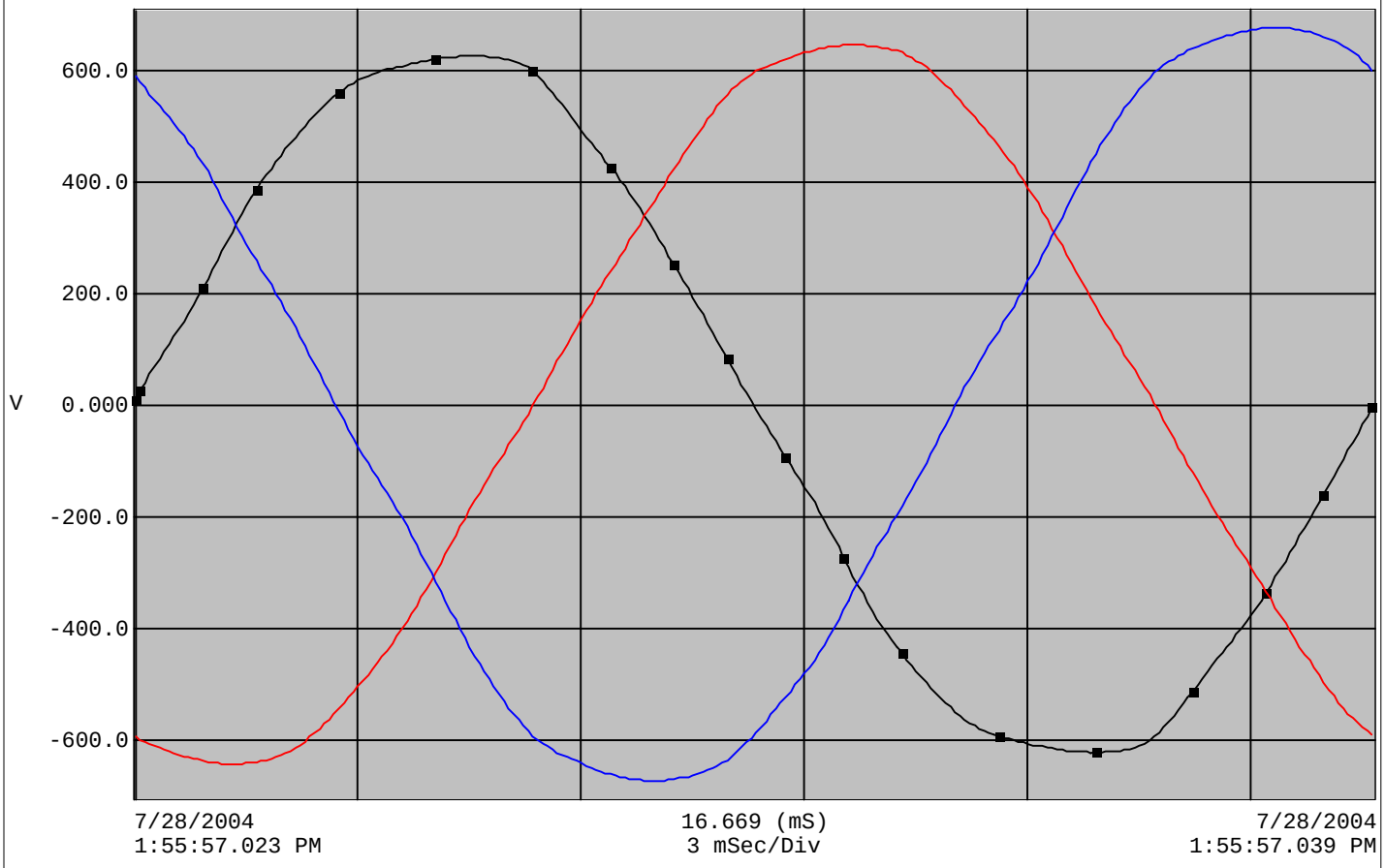


7/28/2004 - 1:55:57.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3
X.XX — Waveform INeutral

Waveform I1

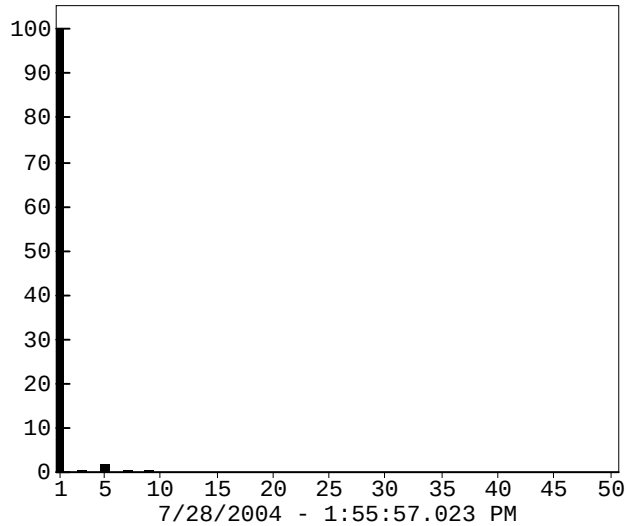
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Channel Name: Waveform U1
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/28/2004	1:55:57.023 PM	16.669	451.5	V
Waveform U2	7/28/2004	1:55:57.023 PM	16.669	459.7	V
Waveform U3	7/28/2004	1:55:57.023 PM	16.669	484.0	V

Waveform U1
451.47 Vrms, 2.31 %THD



7/28/2004 - 1:55:57.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.7	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/28/2004
Start Time: 1:55:57 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\072804-F10-Photo1.dvb

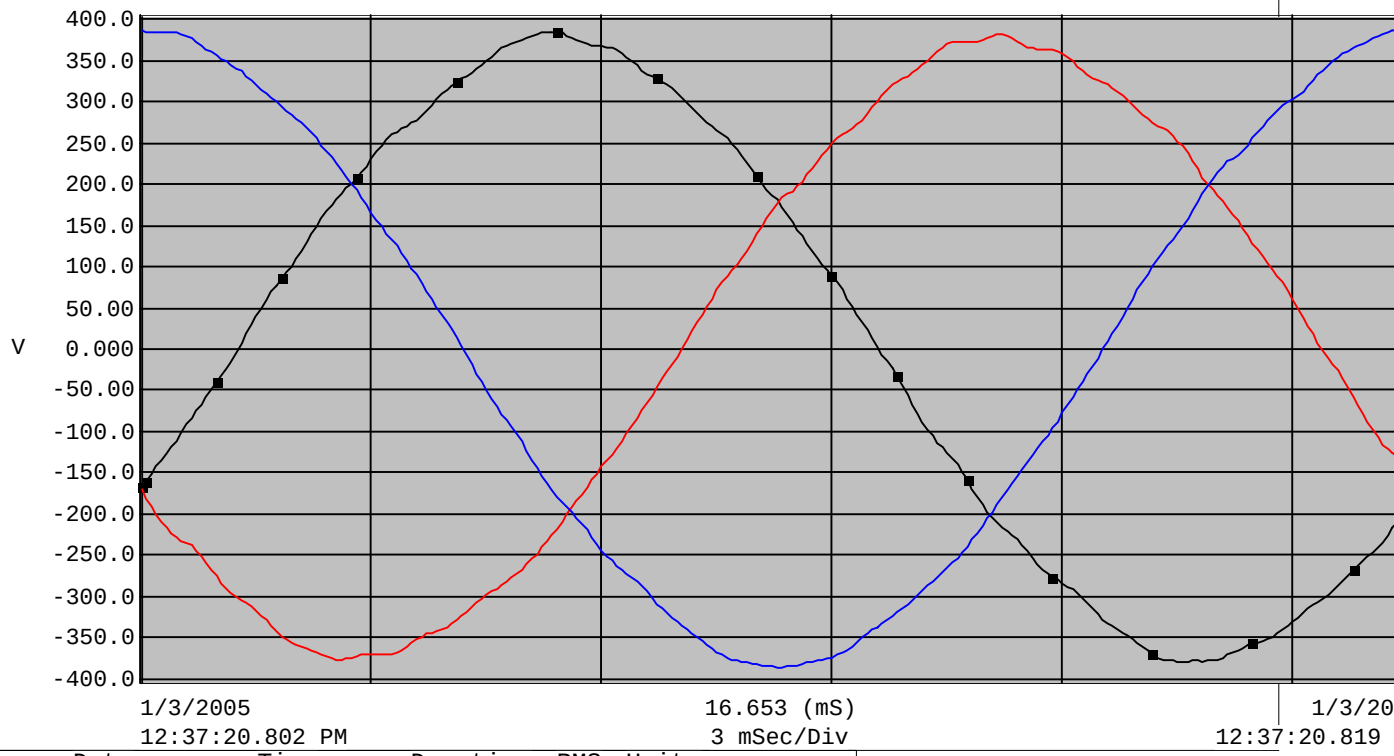
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS - F!0 ,

Comments

WPS F-10 Photo2 Photo Report

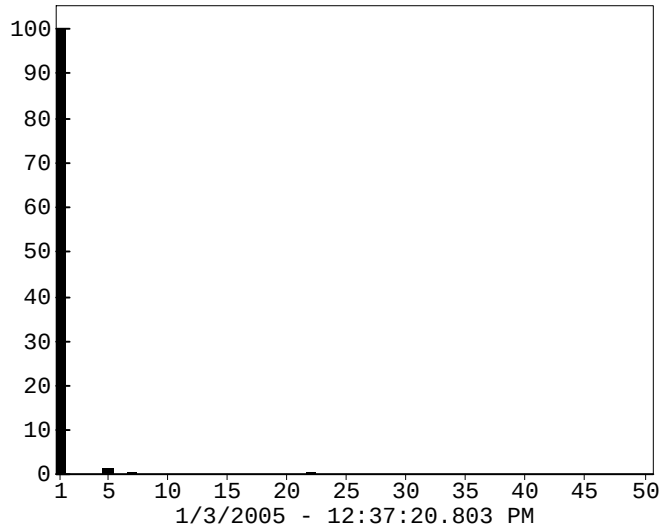
Recording Start Date	1/3/2005 - 12:37:20 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	1/3/2005	12:37:20.802 PM	16.653	264.6	V
Waveform V2	1/3/2005	12:37:20.802 PM	16.653	263.7	V
Waveform V3	1/3/2005	12:37:20.802 PM	16.653	272.1	V

Waveform V1
264.64 Vrms, 1.82 %THD

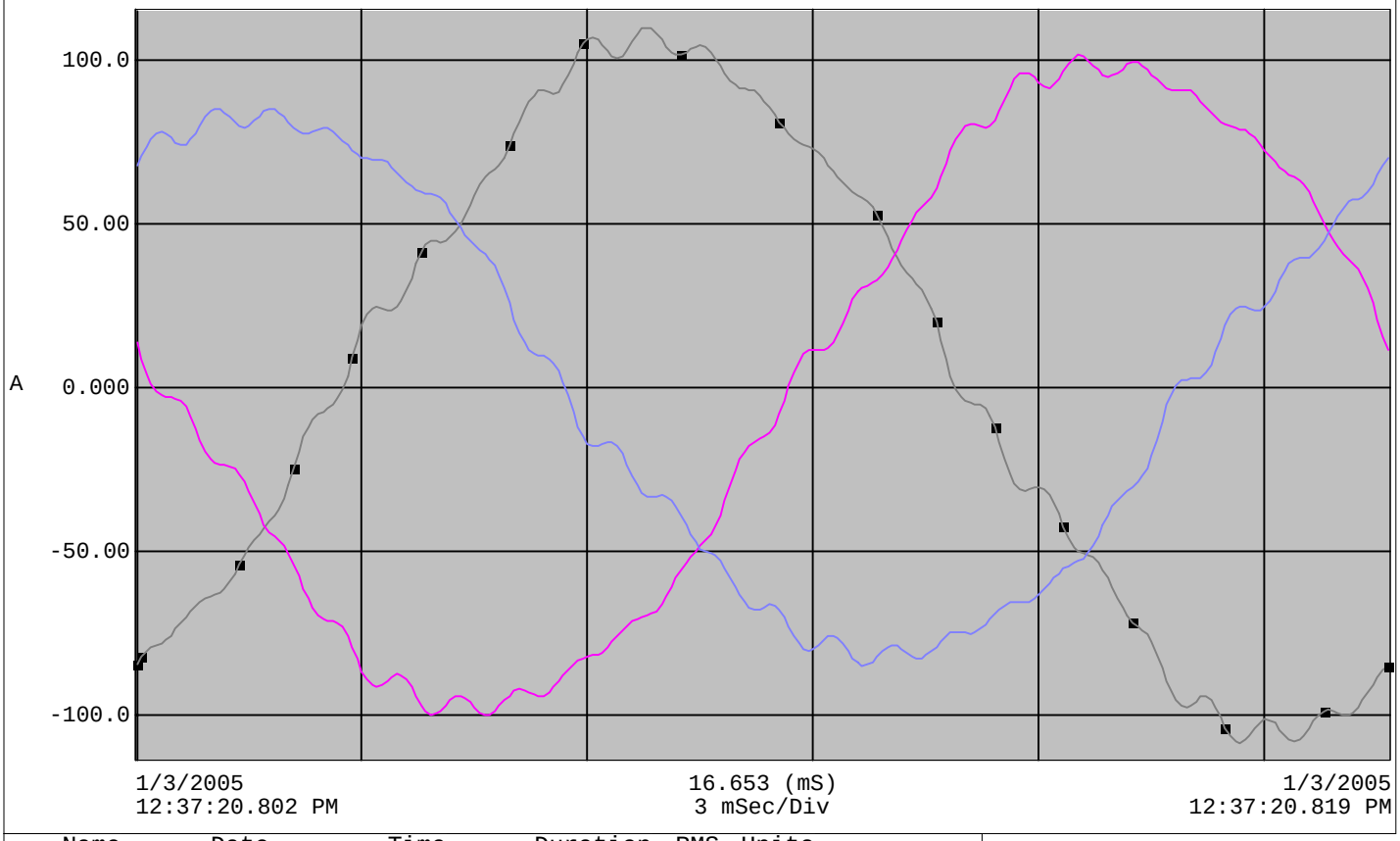


1/3/2005 - 12:37:20.000 PM
Val
-169.3 — Waveform V1
-172.3 — Waveform V2
385.2 — Waveform V3

Waveform V1

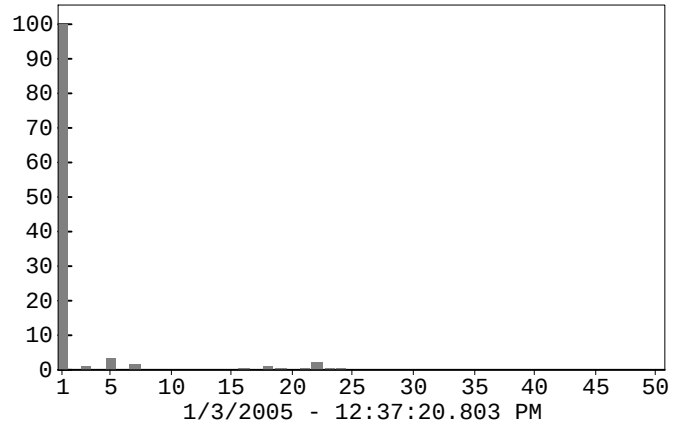
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.2	H36	0.0
H03	0.3	H20	0.2	H37	0.0
H04	0.0	H21	0.2	H38	0.0
H05	1.4	H22	0.6	H39	0.0
H06	0.1	H23	0.3	H40	0.0
H07	0.8	H24	0.1	H41	0.1
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.0	H43	0.1
H10	0.0	H27	0.1	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.1
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Channel Name: Waveform I1
Frequency: 60.05 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	1/3/2005	12:37:20.802 PM	16.653	73.61	A
Waveform I2	1/3/2005	12:37:20.802 PM	16.653	69.83	A
Waveform I3	1/3/2005	12:37:20.802 PM	16.653	59.09	A

Waveform I1
73.61 Arms, 5.55 %THD



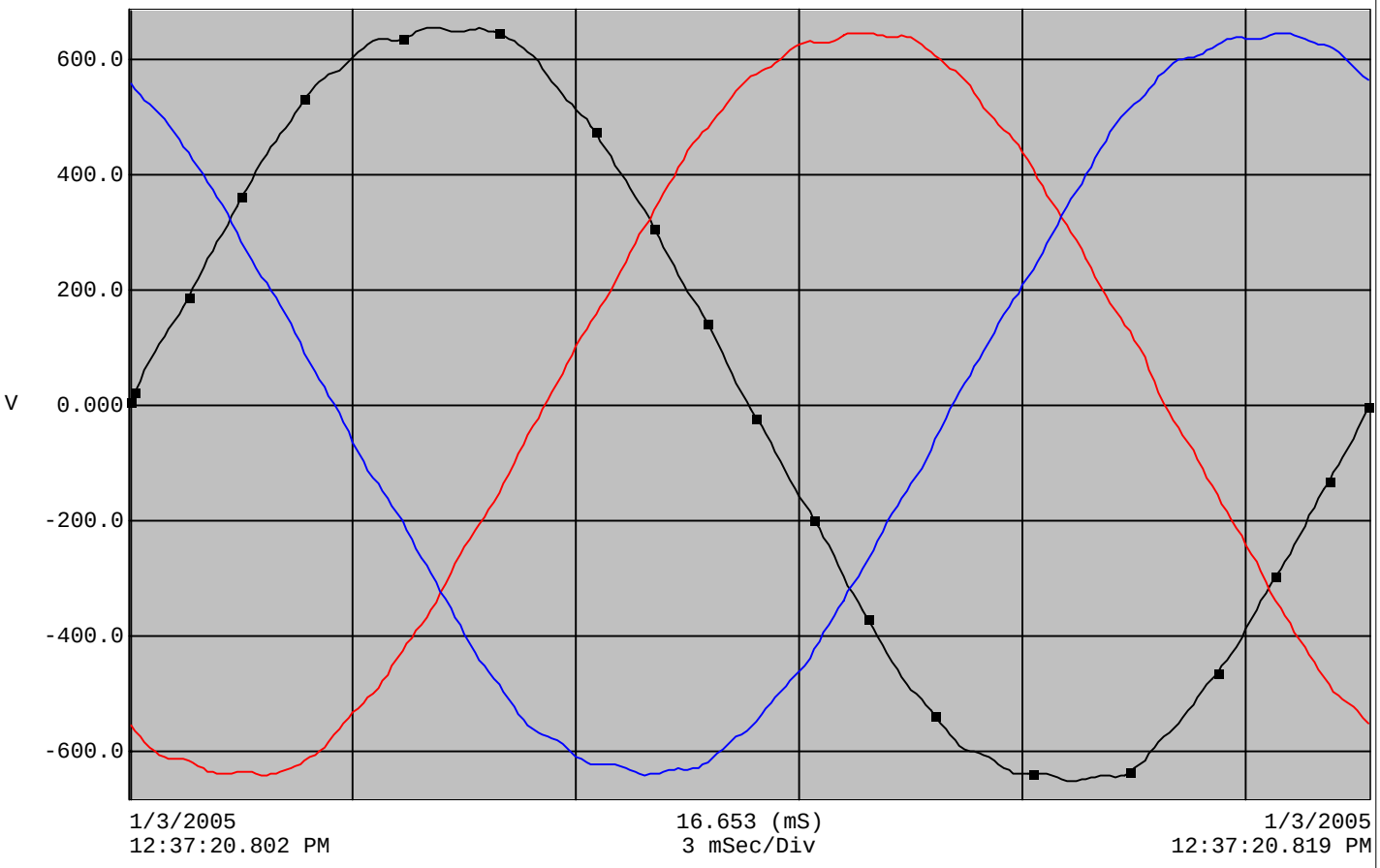
1/3/2005 - 12:37:20.000 PM

Val	
-85.20	Waveform I1
13.40	Waveform I2
67.50	Waveform I3

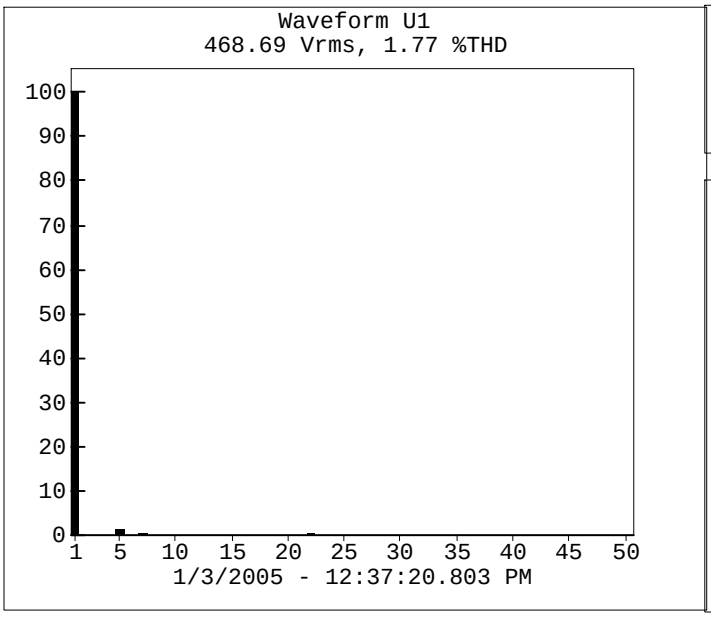
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	1.3	H35	0.0
H02	0.1	H19	0.6	H36	0.0
H03	1.5	H20	0.3	H37	0.0
H04	0.1	H21	0.7	H38	0.0
H05	3.5	H22	2.5	H39	0.0
H06	0.1	H23	1.1	H40	0.1
H07	2.1	H24	0.9	H41	0.1
H08	0.1	H25	0.0	H42	0.2
H09	0.3	H26	0.1	H43	0.1
H10	0.2	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.1
H12	0.3	H29	0.1	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.6	H33	0.1	H50	0.0
H17	0.5	H34	0.1		

Channel Name: Waveform U1
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	1/3/2005	12:37:20.802 PM	16.653	468.7	V
Waveform U2	1/3/2005	12:37:20.802 PM	16.653	459.4	V
Waveform U3	1/3/2005	12:37:20.802 PM	16.653	457.5	V



1/3/2005 - 12:37:20.000 PM

	Val	
—	2.900	Waveform U1
—	-557.5	Waveform U2
—	554.6	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.4	H22	0.5	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.6	H24	0.2	H41	0.0
H08	0.0	H25	0.1	H42	0.1
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 1/3/2005
Start Time: 12:37:20 PM
Duration: 0:0.000 (M:S)
W: 16.44E+3 W
VAR: 10.45E+3 W
VA: 19.48E+3 W
Power Factor: 0.844
Displacement Power Factor: 0.845
TAN: 0.633
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F10\010305-F10 Photo2.dvb	
Operator GWA Victor Jardel ,	Test Site WPS F-10 Photo 2 ,
Comments	

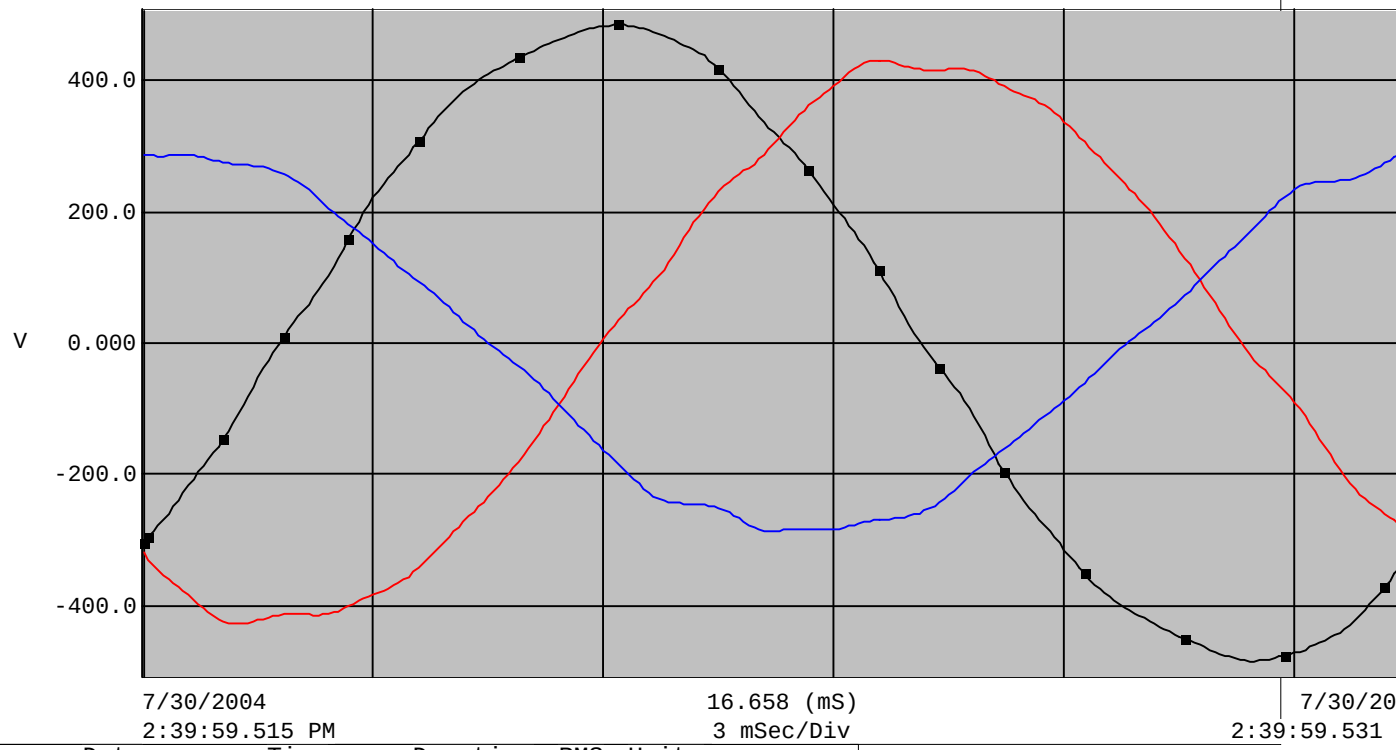
GWA Water Pumping Station Assessment				
Station Name: F-11	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	10
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0.08	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0	
Lighting	3.0%	0	0	
Power Devices	2.0%	0	0	
	100%	**Assessment Value**		**2.5**

Comments:

WPS F-11 - Photo

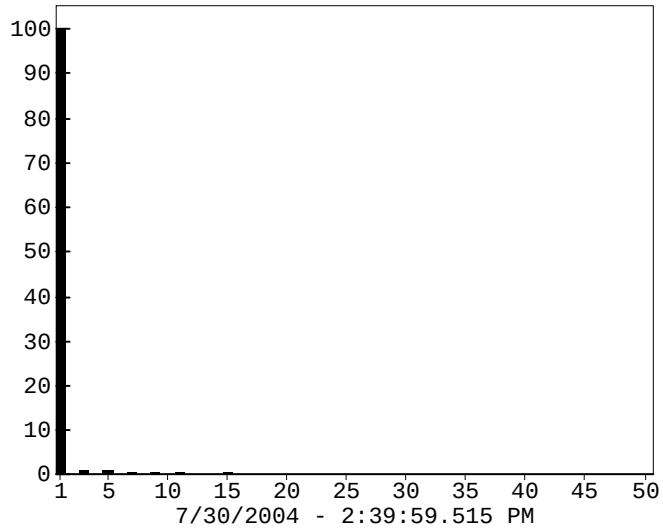
Recording Start Date	7/30/2004 - 2:39:59 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/30/2004	2:39:59.515 PM	16.658	343.2	V
Waveform V2	7/30/2004	2:39:59.515 PM	16.658	301.9	V
Waveform V3	7/30/2004	2:39:59.515 PM	16.658	206.6	V

Waveform V1
343.18 Vrms, 1.95 %THD

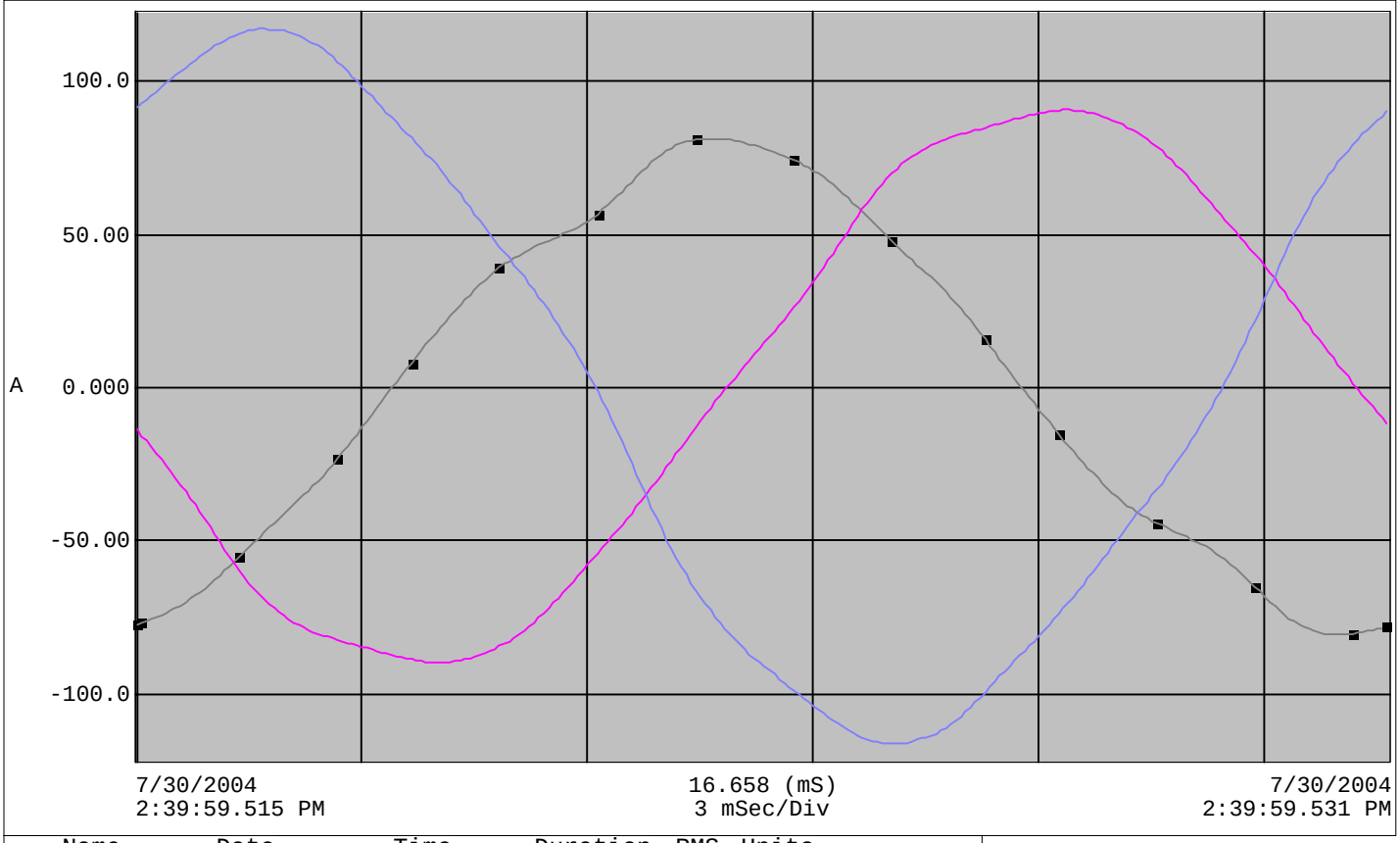


7/30/2004 - 2:39:59.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

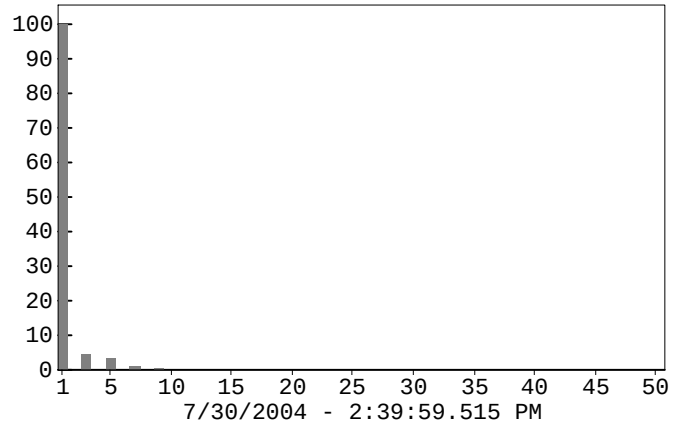
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	1.0	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.5	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/30/2004	2:39:59.515 PM	16.658	54.81	A
Waveform I2	7/30/2004	2:39:59.515 PM	16.658	64.22	A
Waveform I3	7/30/2004	2:39:59.515 PM	16.658	80.91	A

Waveform I1
54.81 Arms, 6.24 %THD

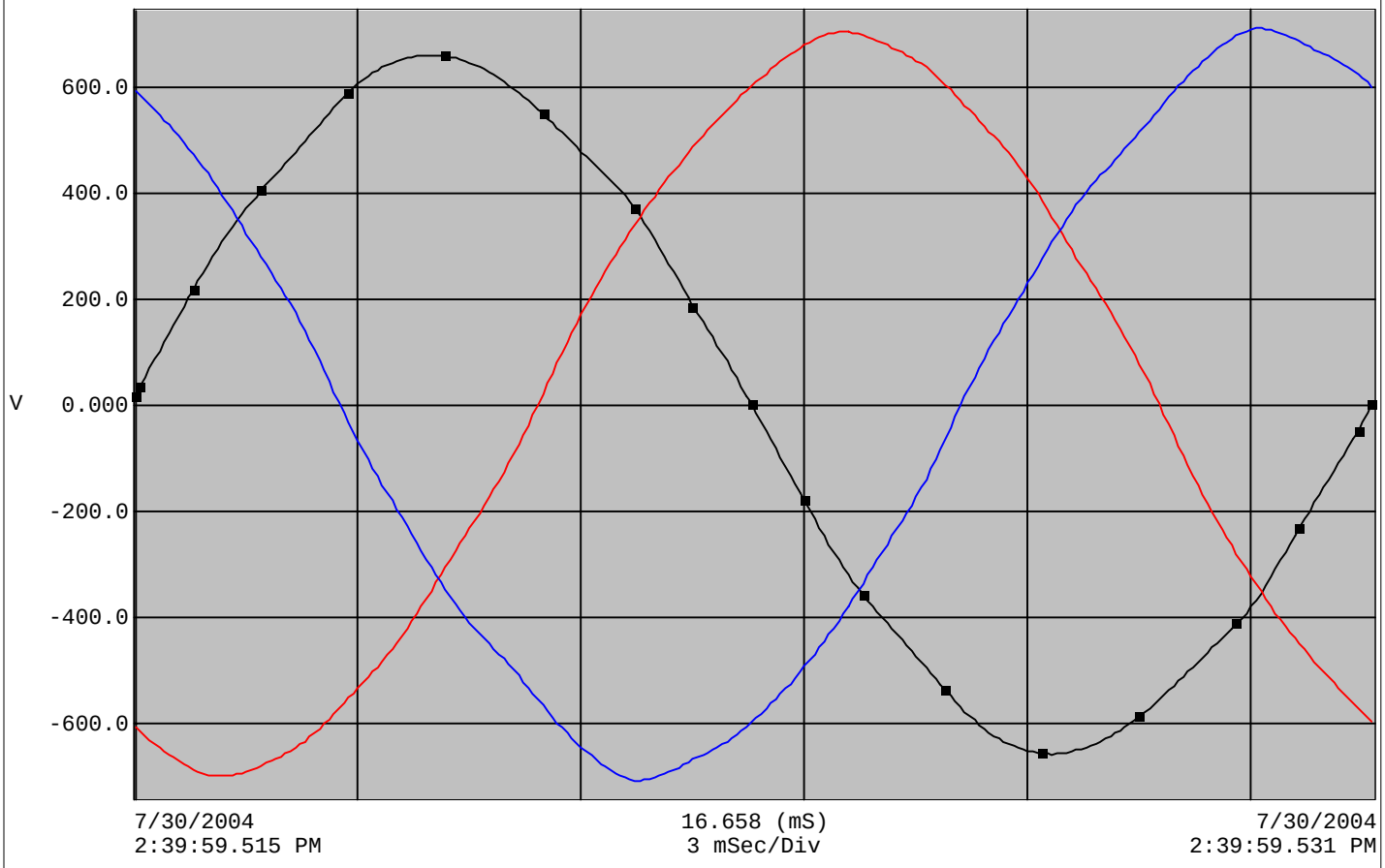


7/30/2004 - 2:39:59.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

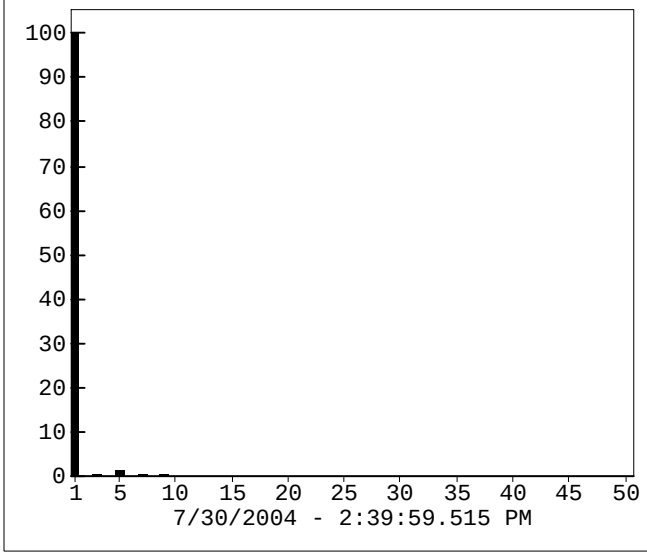
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	4.8	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	3.6	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	1.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/30/2004	2:39:59.515 PM	16.658	459.8	V
Waveform U2	7/30/2004	2:39:59.515 PM	16.658	487.8	V
Waveform U3	7/30/2004	2:39:59.515 PM	16.658	486.7	V

Waveform U1
459.77 Vrms, 1.81 %THD



7/30/2004 - 2:39:59.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.7	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/30/2004
Start Time: 2:39:59 PM
Duration: 0:0.000 (M:S)
W: 15.11E+3 W
VAR: 11.23E+3 W
VA: 18.83E+3 W
Power Factor: 0.803
Displacement Power Factor: 0.804
TAN: 0.740
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F11\073004-11-Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-11 Photos ,

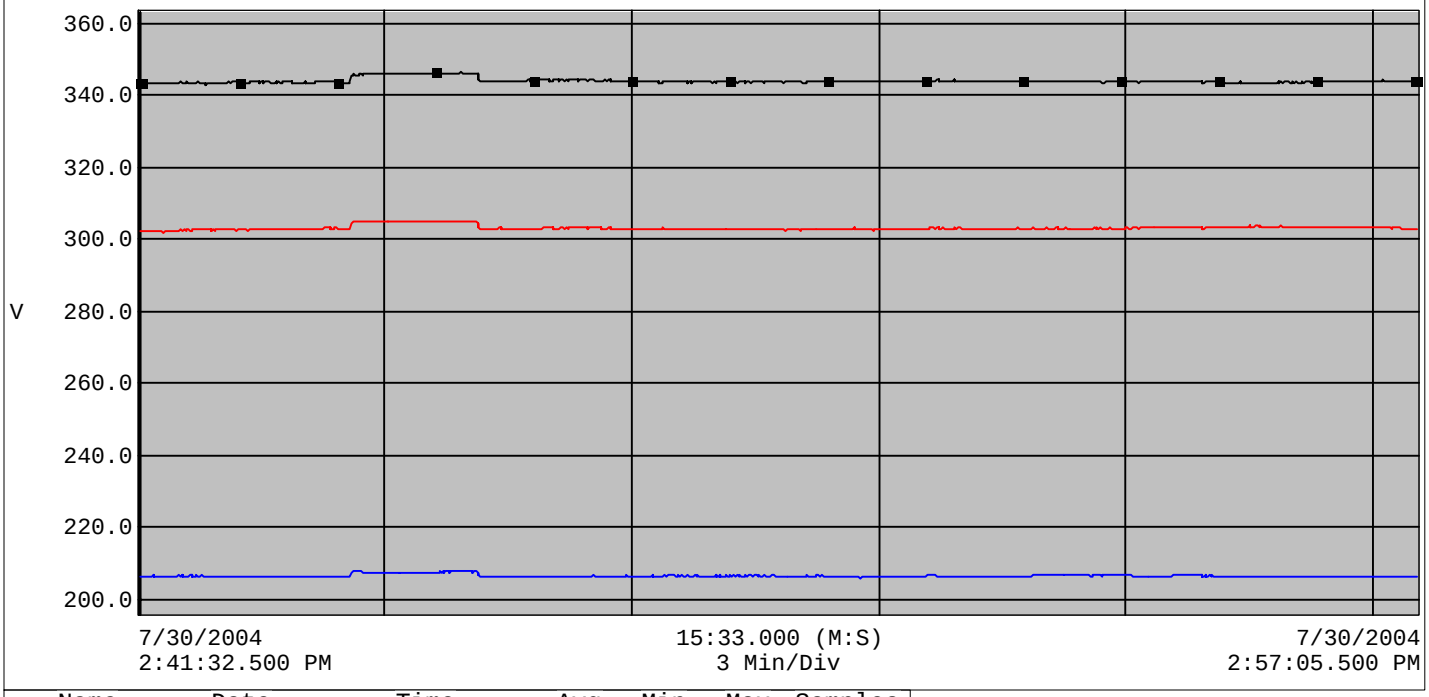
Comments

Waveform at motor leads at motor starter

WPS F-11

Recording Start Date	7/30/2004 - 2:41:32 PM
Recording Duration	15:33 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

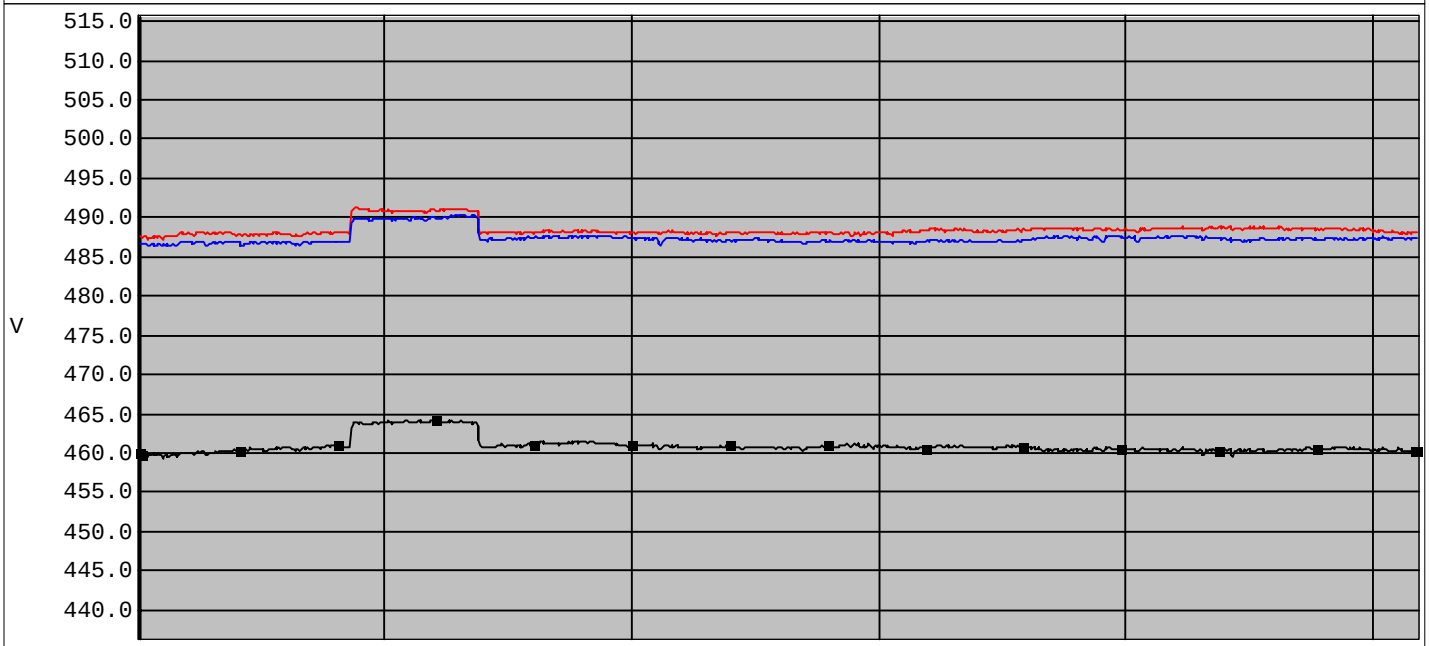
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/30/2004	2:41:32.500 PM	343.6	342.7	345.9	934
Vrms Line2	7/30/2004	2:41:32.500 PM	302.9	301.5	304.8	934
Vrms Line3	7/30/2004	2:41:32.500 PM	206.4	205.8	207.6	934

7/30/2004 - 2:41:32.000 PM
Val
343.1 Vrms Line1
301.9 Vrms Line2
206.4 Vrms Line3

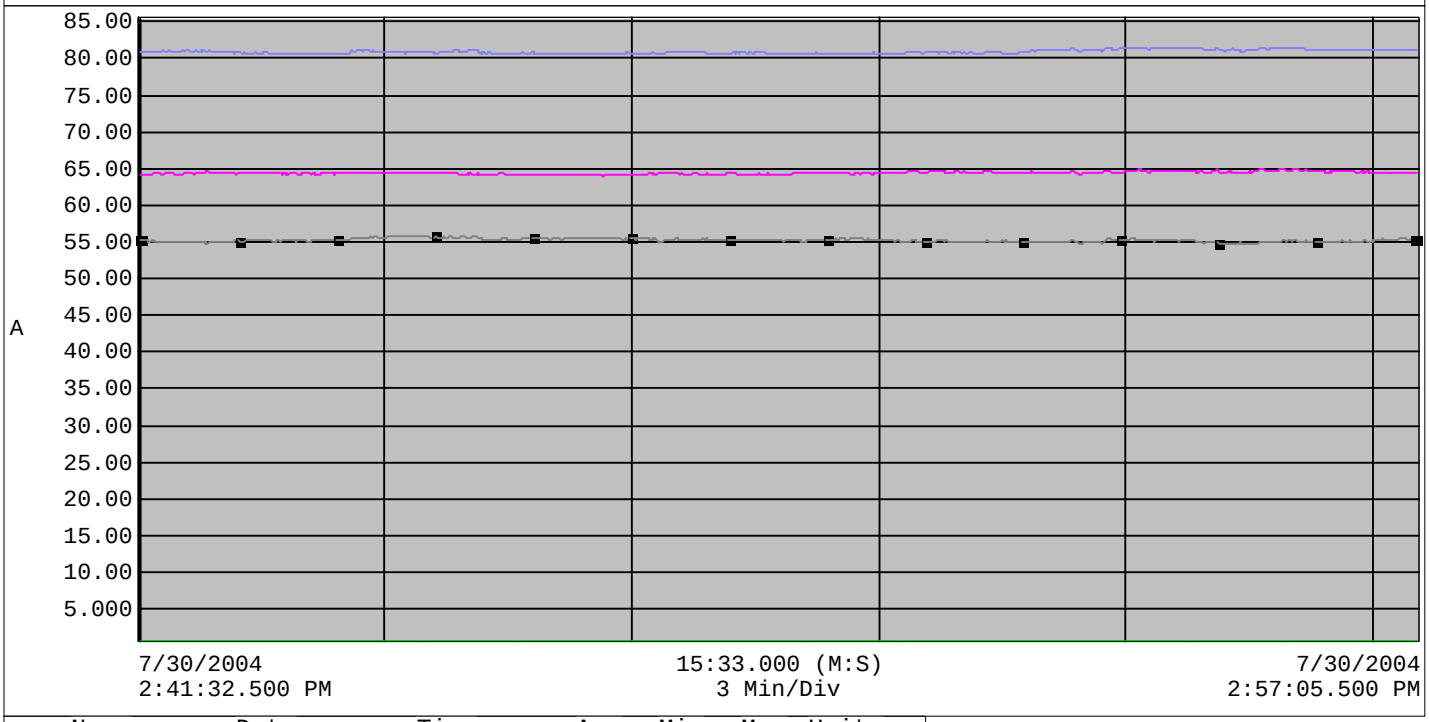
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/30/2004	2:41:32.500 PM	460.8	459.1	464.1	V
Urms Line2	7/30/2004	2:41:32.500 PM	488.4	487.0	491.1	V
Urms Line3	7/30/2004	2:41:32.500 PM	487.3	486.2	490.2	V

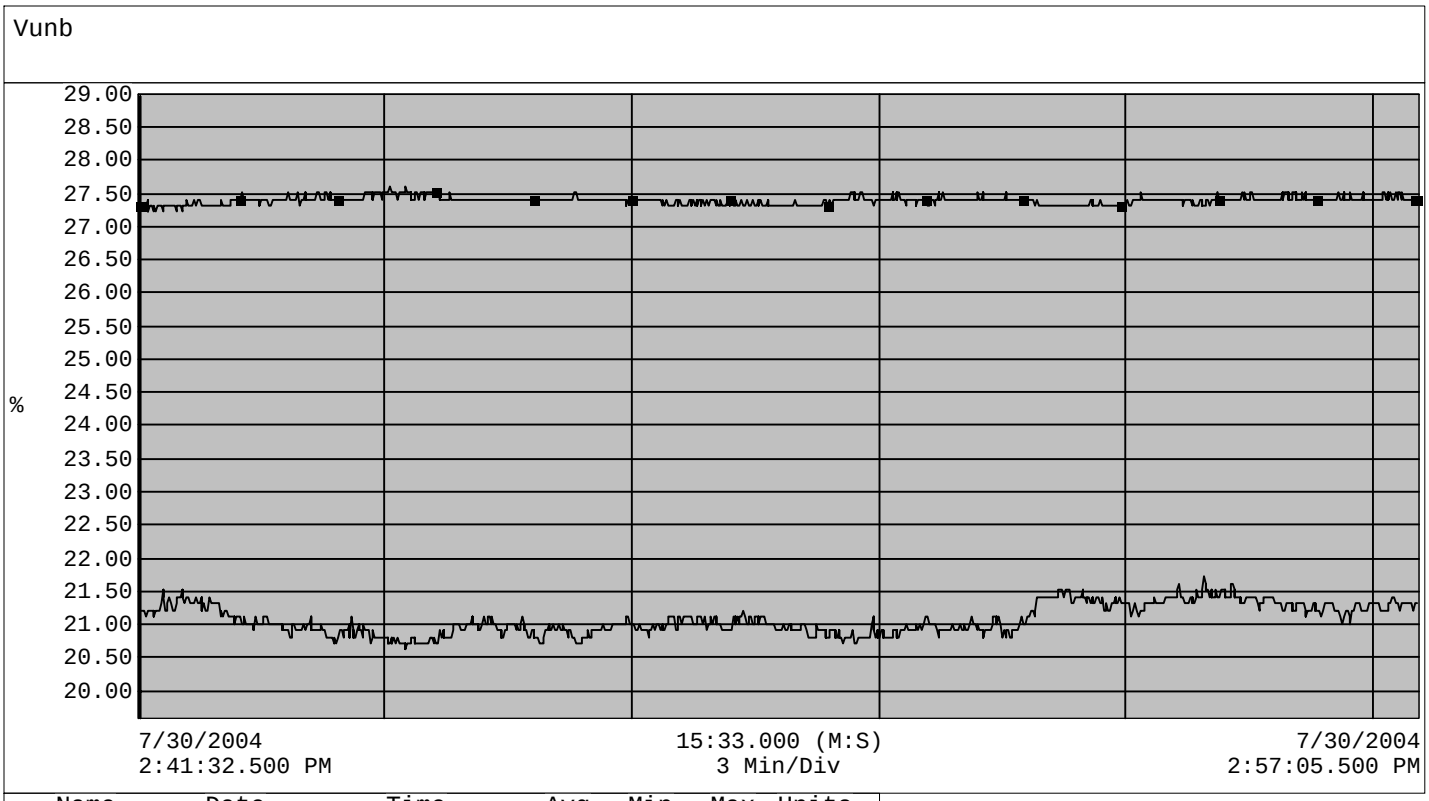
7/30/2004 - 2:41:32.000 PM
Val
459.8 Urms Line1
487.4 Urms Line2
486.6 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/30/2004	2:41:32.500 PM	55.13	54.50	55.70	A
Arms Line2	7/30/2004	2:41:32.500 PM	64.27	63.80	64.80	A
Arms Line3	7/30/2004	2:41:32.500 PM	80.78	80.40	81.40	A
Arms Neutral	7/30/2004	2:41:32.500 PM	0.500	0.500	0.500	A

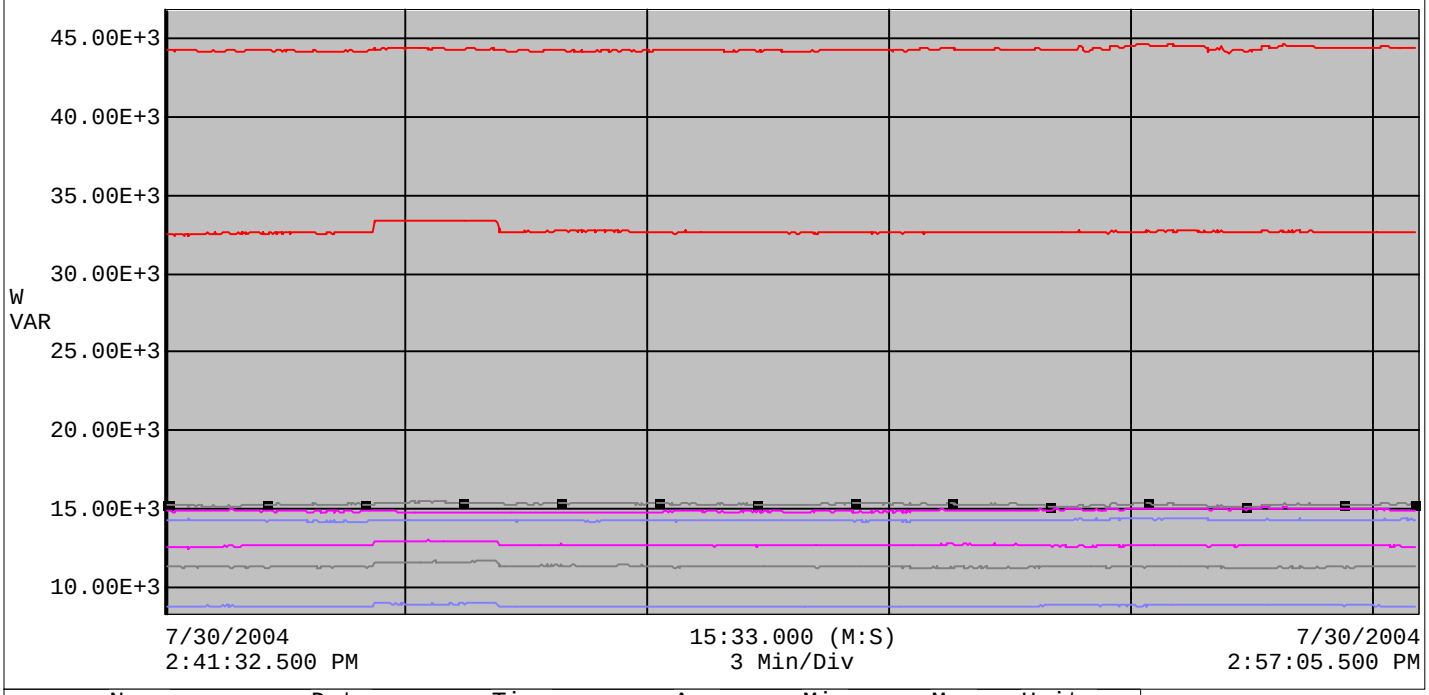
7/30/2004 - 2:41:32.000 PM
Val
55.10 — Arms Line1
64.10 — Arms Line2
80.80 — Arms Line3
0.500 — Arms Neutral



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/30/2004	2:41:32.500 PM	27.38	27.20	27.60	%
Aunb(IEEE)	7/30/2004	2:41:32.500 PM	21.07	20.60	21.70	%

7/30/2004 - 2:41:32.000 PM
Val
27.30 —— Vunb(IEEE)
21.20 —— Aunb(IEEE)

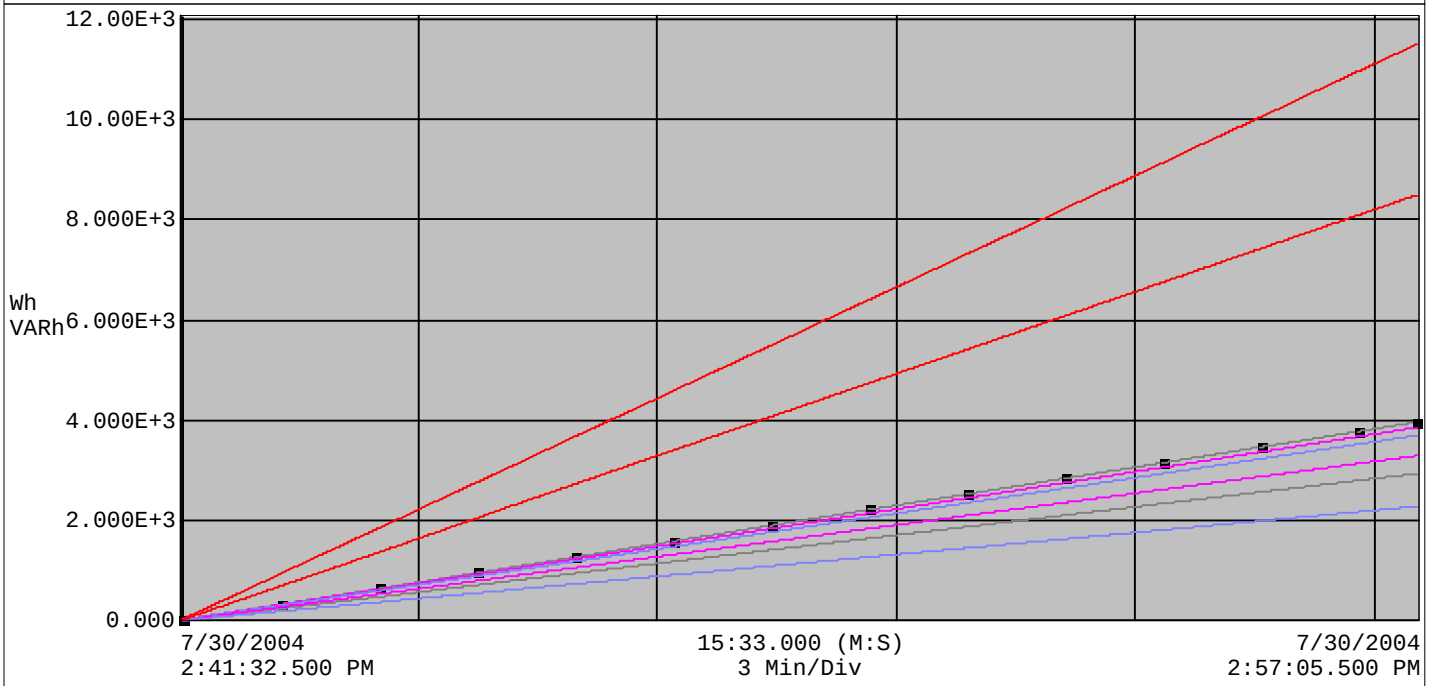
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/30/2004	2:41:32.500 PM	15.22E+3	15.01E+3	15.41E+3	W
W Line2	7/30/2004	2:41:32.500 PM	14.81E+3	14.67E+3	15.02E+3	W
W Line3	7/30/2004	2:41:32.500 PM	14.20E+3	14.12E+3	14.32E+3	W
W Sum of Phases	7/30/2004	2:41:32.500 PM	44.23E+3	44.01E+3	44.55E+3	W
VAR Line1	7/30/2004	2:41:32.500 PM	11.27E+3	11.11E+3	11.61E+3	VAR
VAR Line2	7/30/2004	2:41:32.500 PM	12.63E+3	12.43E+3	12.92E+3	VAR
VAR Line3	7/30/2004	2:41:32.500 PM	8.745E+3	8.636E+3	8.930E+3	VAR
VAR Sum of Phases	7/30/2004	2:41:32.500 PM	32.65E+3	32.35E+3	33.36E+3	VAR

7/30/2004 - 2:41:32.000 PM
Val
15.17E+3 — W Line1
14.76E+3 — W Line2
14.22E+3 — W Line3
44.15E+3 — W Sum of Phases
11.25E+3 — VAR Line1
12.50E+3 — VAR Line2
8.694E+3 — VAR Line3
32.45E+3 — VAR Sum of Phases

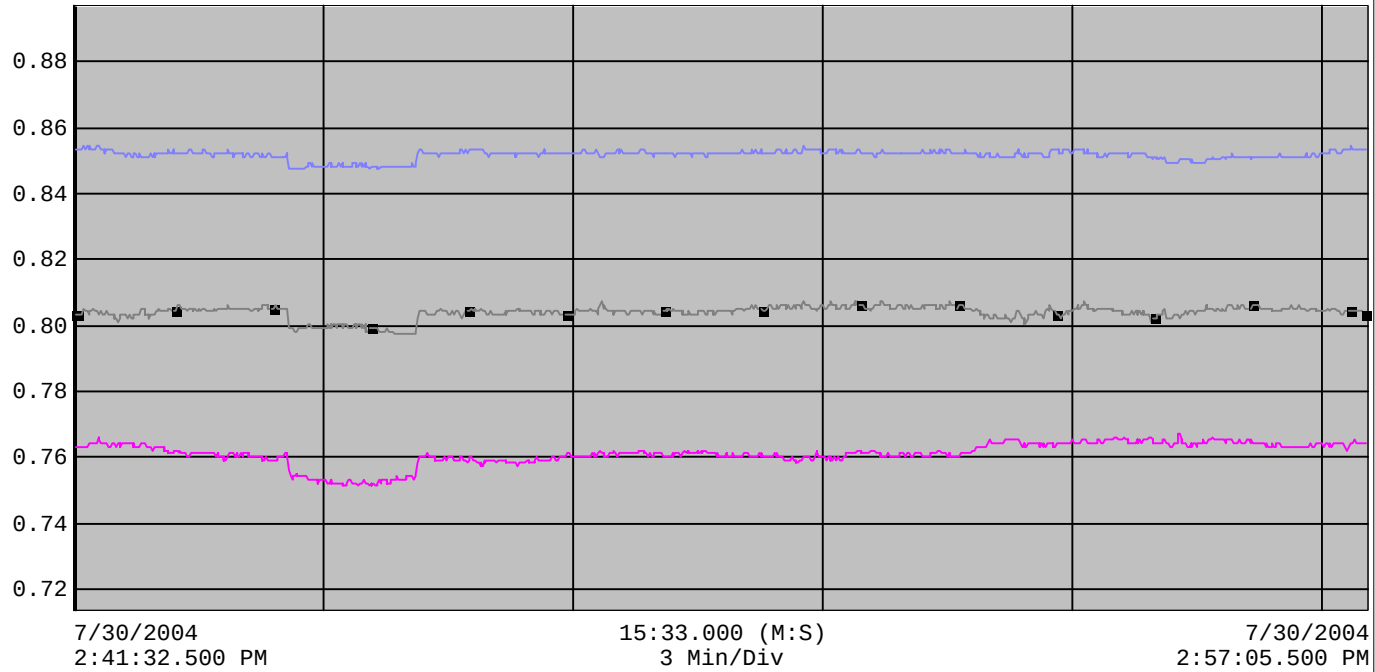
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/30/2004	2:41:32.500 PM	1.978E+3	4.219	3.950E+3	Wh
W-hours Line2	7/30/2004	2:41:32.500 PM	1.919E+3	4.104	3.842E+3	Wh
W-hours Line3	7/30/2004	2:41:32.500 PM	1.842E+3	3.935	3.684E+3	Wh
W-hours Sum of Phases	7/30/2004	2:41:32.500 PM	5.739E+3	12.26	11.48E+3	Wh
VAR-hours Line1	7/30/2004	2:41:32.500 PM	1.467E+3	3.124	2.924E+3	VARh
VAR-hours Line2	7/30/2004	2:41:32.500 PM	1.642E+3	3.501	3.277E+3	VARh
VAR-hours Line3	7/30/2004	2:41:32.500 PM	1.135E+3	2.424	2.269E+3	VARh
VAR-hours Sum of Phases	7/30/2004	2:41:32.500 PM	4.243E+3	9.048	8.470E+3	VARh

7/30/2004 - 2:41:32.000 PM
Val
4.219 — W-hours Line1
4.104 — W-hours Line2
3.935 — W-hours Line3
12.26 — W-hours Sum of Phases
3.124 — VAR-hours Line1
3.501 — VAR-hours Line2
2.424 — VAR-hours Line3
9.048 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/30/2004	2:41:32.500 PM	0.804	0.797	0.807	
PF Line2	7/30/2004	2:41:32.500 PM	0.761	0.751	0.767	
PF Line3	7/30/2004	2:41:32.500 PM	0.851	0.847	0.854	

7/30/2004 - 2:41:32.000 PM
Val
0.803 — PF Line1
0.763 — PF Line2
0.853 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F11\073004-F11.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS F-11 ,

Comments
At motor leads after the motor starter

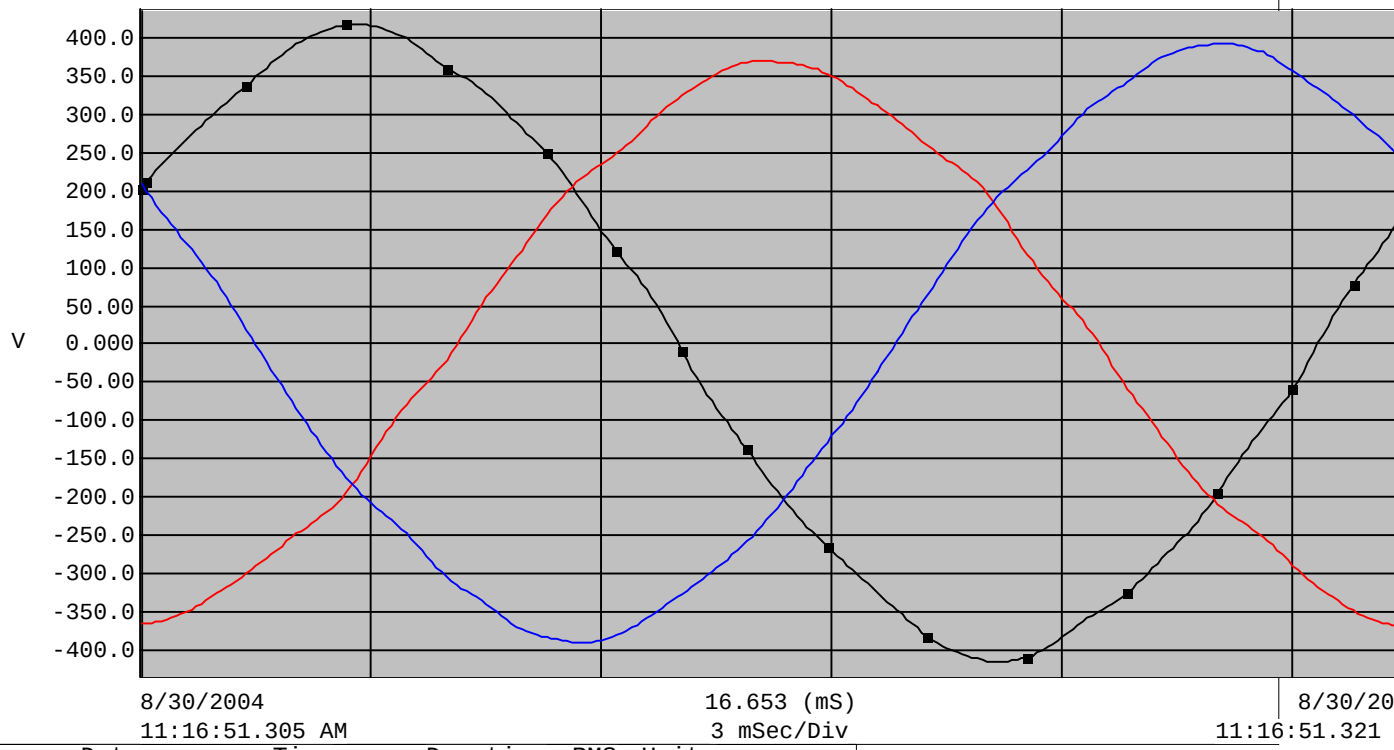
GWA Water Pumping Station Assessment				
Station Name: F-12	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.13	
Main Breaker	1.0%	2	0.02	FUSED
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	35
Pump Instrumentation	**5.0%**		0.055	
Pressure	1.5%	0	0	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	2	0.04	52
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.6**

Comments:

WPS F-12 - Photo

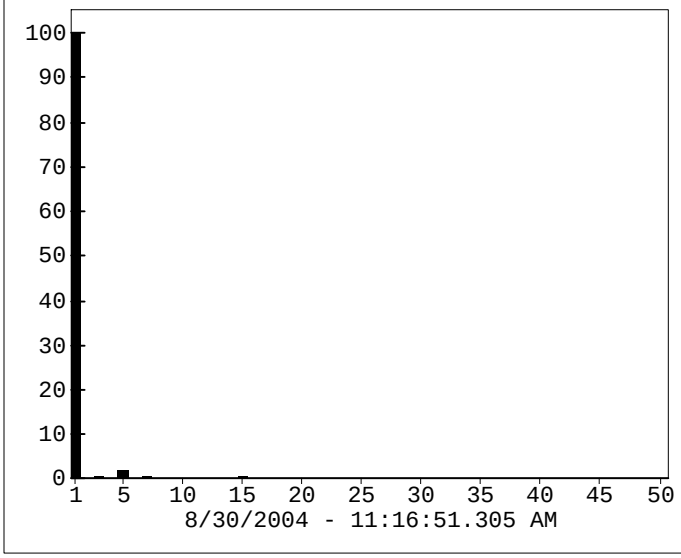
Recording Start Date	8/30/2004 - 11:16:51 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/30/2004	11:16:51.305 AM	16.653	287.3	V
Waveform V2	8/30/2004	11:16:51.305 AM	16.653	256.2	V
Waveform V3	8/30/2004	11:16:51.305 AM	16.653	272.0	V

Waveform V1
287.29 Vrms, 2.09 %THD

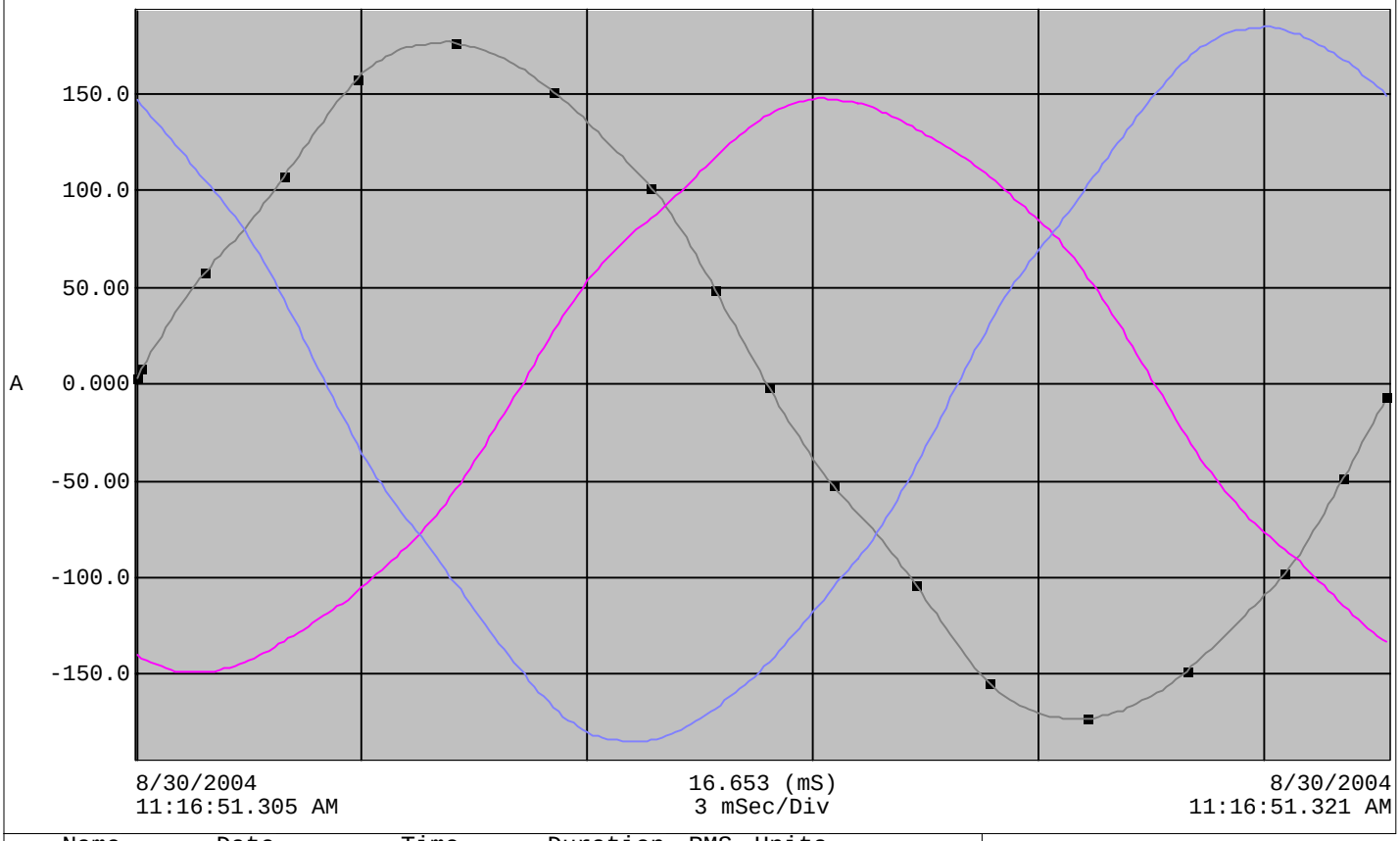


8/30/2004 - 11:16:51.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

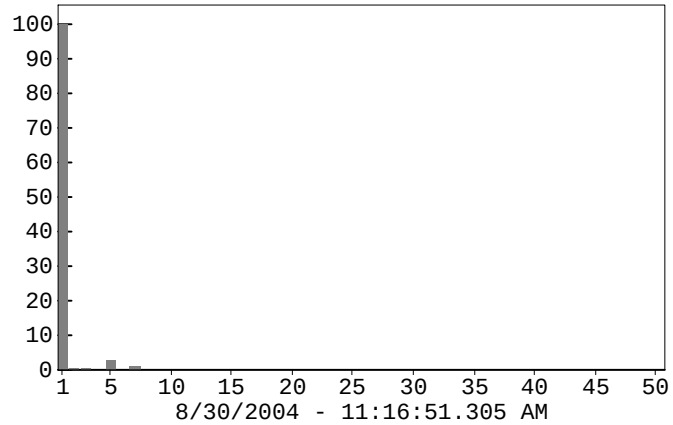
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.5	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.05 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/30/2004	11:16:51.305 AM	16.653	122.3	A
Waveform I2	8/30/2004	11:16:51.305 AM	16.653	103.6	A
Waveform I3	8/30/2004	11:16:51.305 AM	16.653	128.4	A

Waveform I1
122.33 Arms, 3.43 %THD

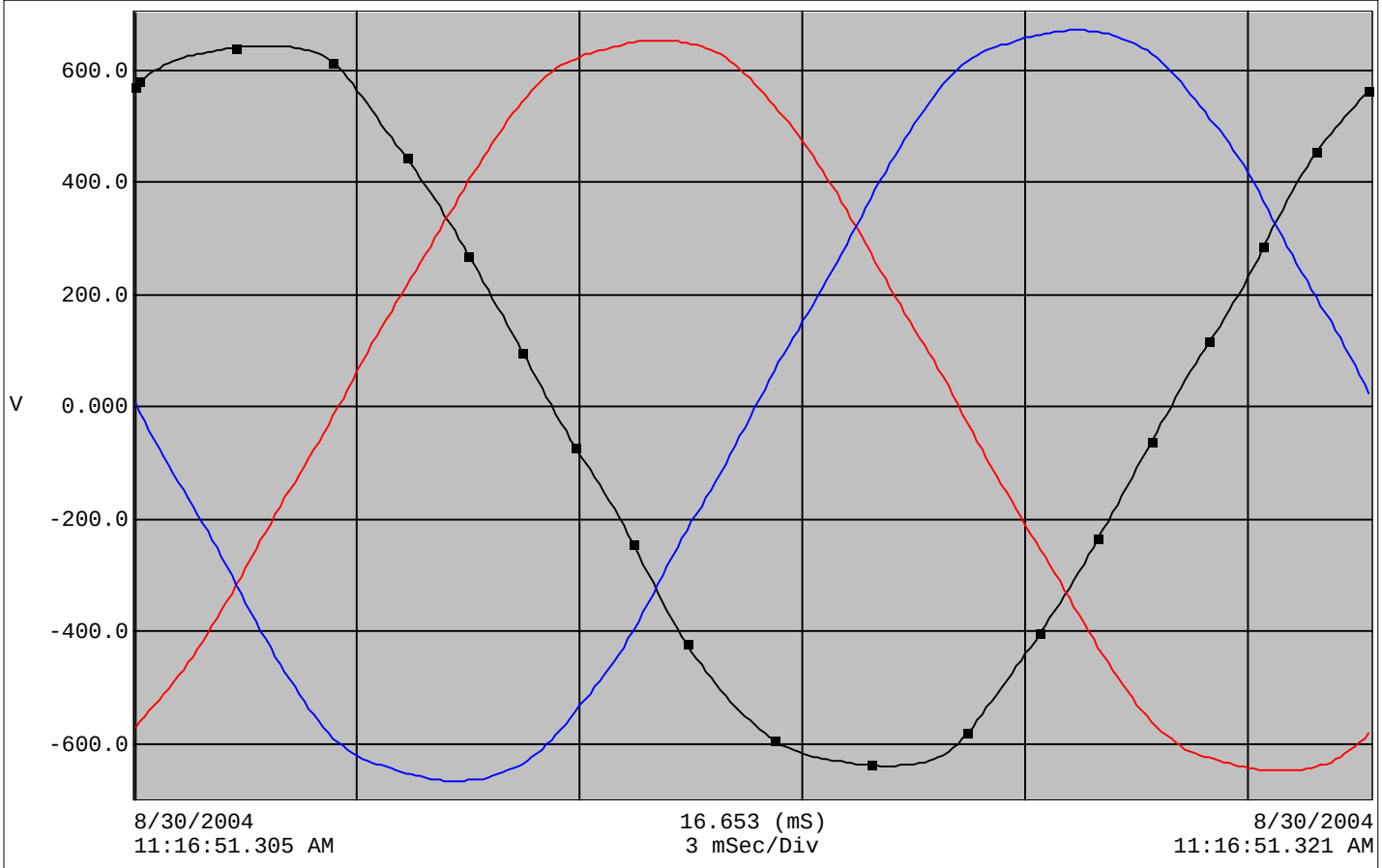


8/30/2004 - 11:16:51.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

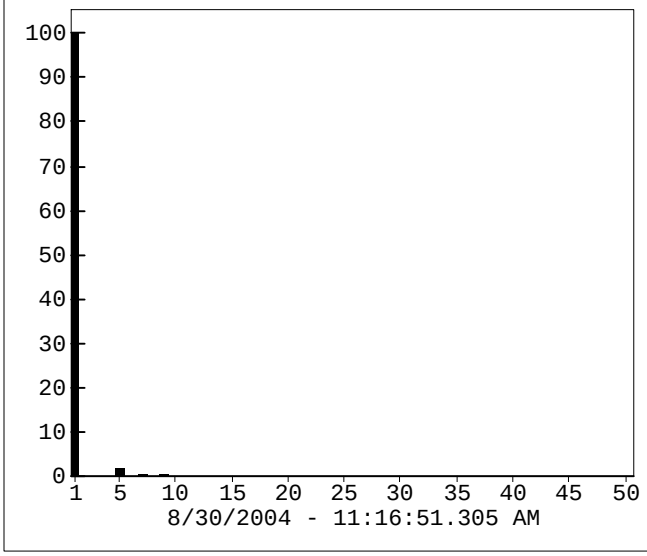
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.9	H19	0.1	H36	0.0
H03	0.8	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	2.9	H22	0.0	H39	0.0
H06	0.2	H23	0.1	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.1	H29	0.1	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/30/2004	11:16:51.305 AM	16.653	464.3	V
Waveform U2	8/30/2004	11:16:51.305 AM	16.653	466.5	V
Waveform U3	8/30/2004	11:16:51.305 AM	16.653	481.4	V

Waveform U1
464.31 Vrms, 2.25 %THD



8/30/2004 - 11:16:51.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/30/2004
Start Time: 11:16:51 AM
Duration: 0:0.000 (M:S)
W: 29.98E+3 W
VAR: 18.22E+3 W
VA: 35.08E+3 W
Power Factor: 0.855
Displacement Power Factor: 0.855
TAN: 0.606
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F12\083004-F12-Photo.dvb

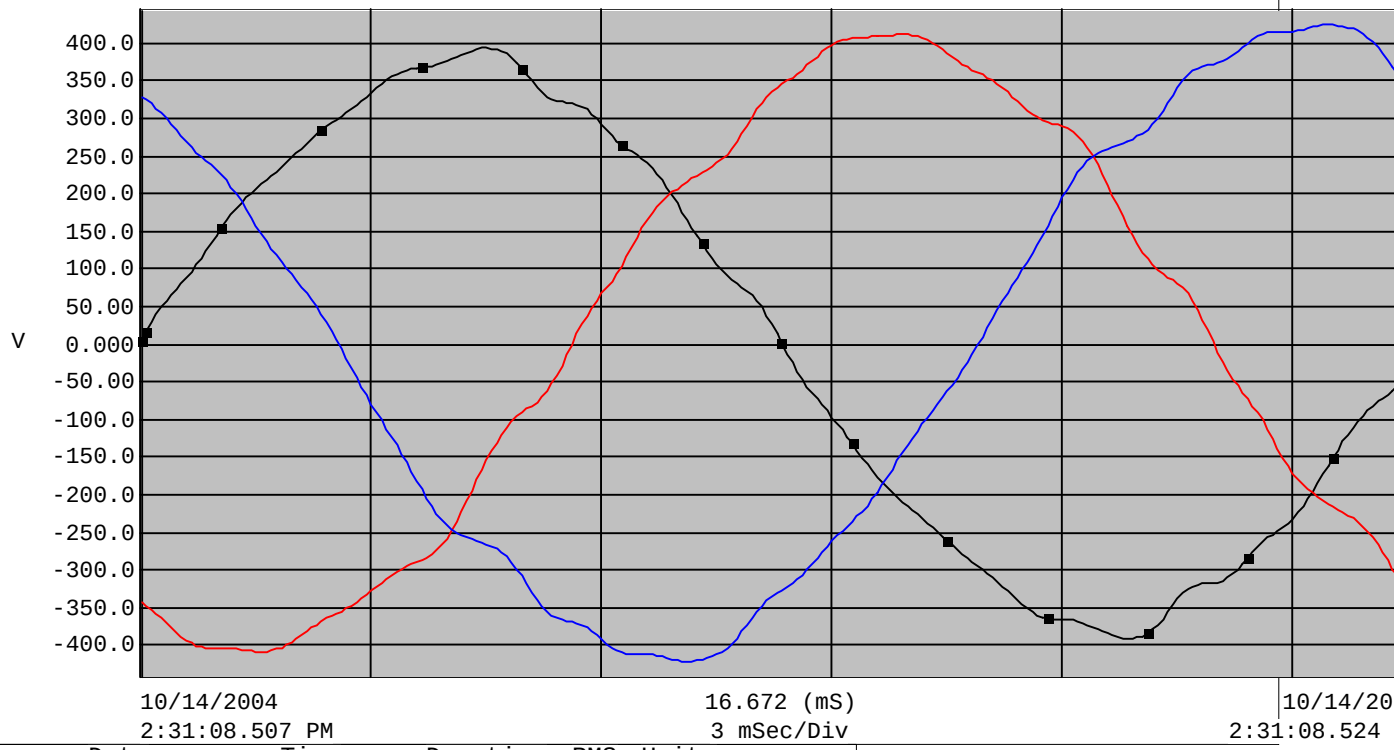
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS F-12 ,

Comments
Motor has high current, motor meggered okay, pump problem.

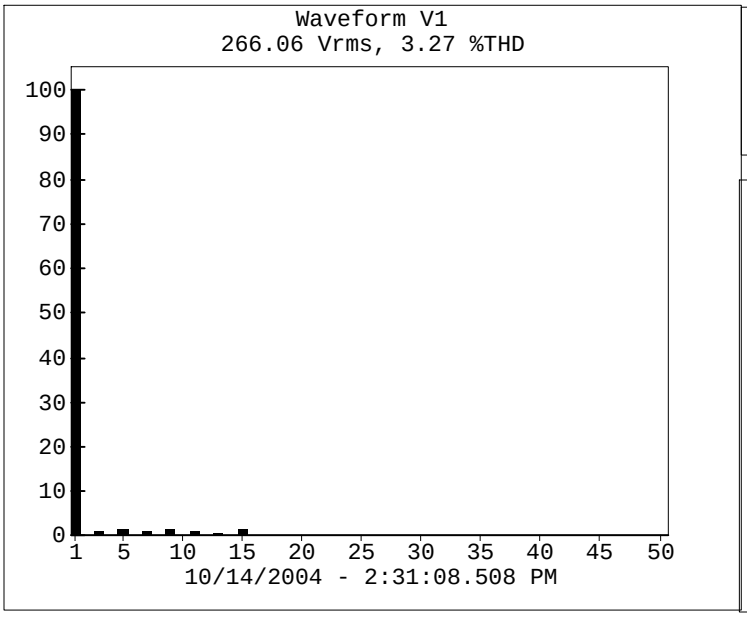
WPS F-12 - Photo1

Recording Start Date	10/14/2004 - 2:31:08 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/14/2004	2:31:08.507 PM	16.672	266.1	V
Waveform V2	10/14/2004	2:31:08.507 PM	16.672	286.0	V
Waveform V3	10/14/2004	2:31:08.507 PM	16.672	293.7	V



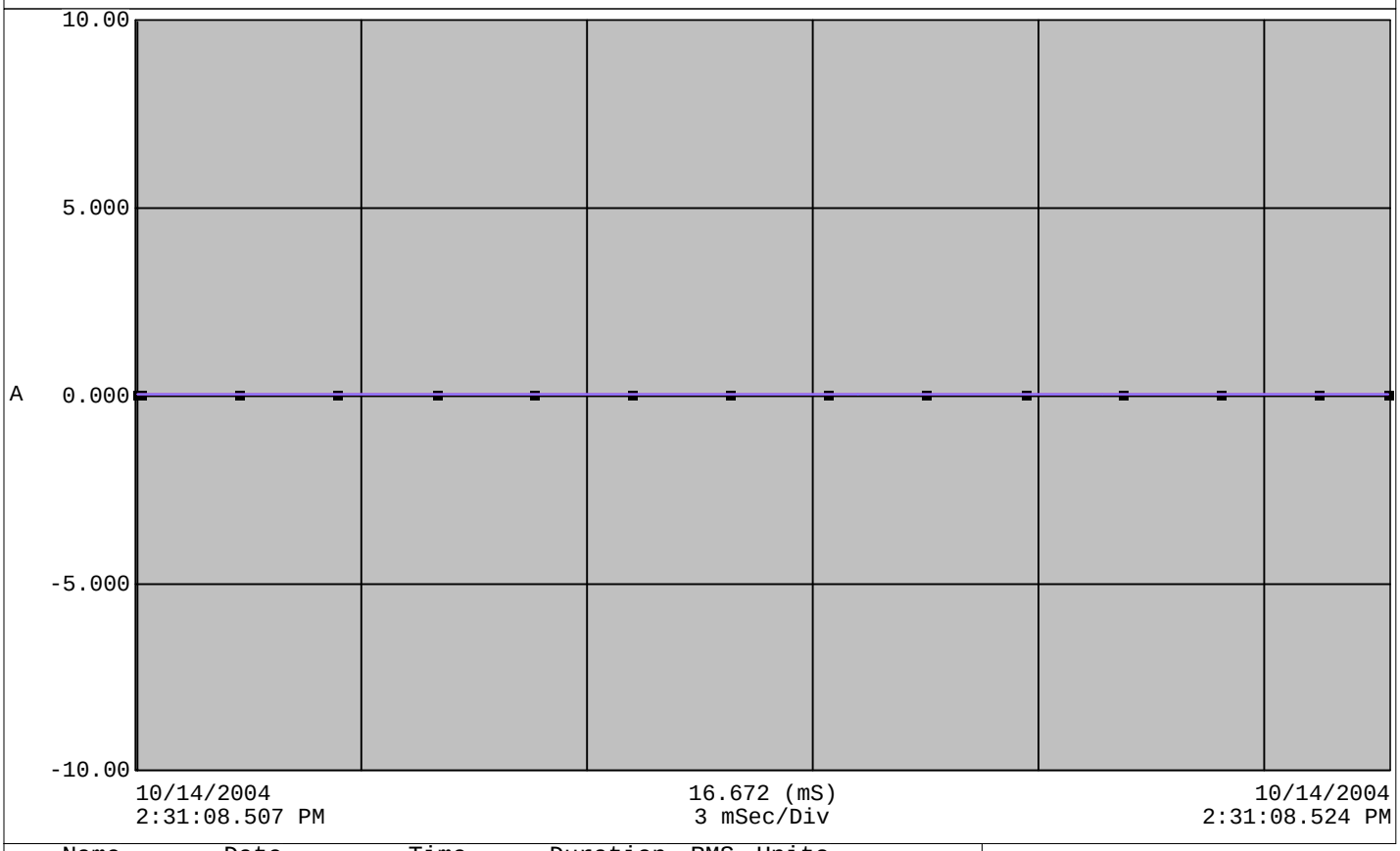
10/14/2004 - 2:31:08.000 PM

	Val	
—	1.900	Waveform V1
—	-344.2	Waveform V2
—	327.8	Waveform V3

Waveform V1

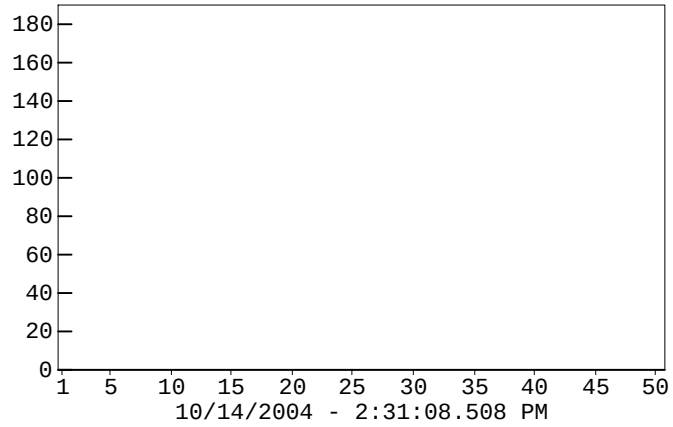
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.3	H36	0.0
H03	1.3	H20	0.0	H37	0.0
H04	0.0	H21	0.4	H38	0.0
H05	1.5	H22	0.0	H39	0.0
H06	0.2	H23	0.1	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	1.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.9	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.8	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	1.4	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.3	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/14/2004	2:31:08.507 PM	16.672	0.000	A
Waveform I2	10/14/2004	2:31:08.507 PM	16.672	0.000	A
Waveform I3	10/14/2004	2:31:08.507 PM	16.672	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



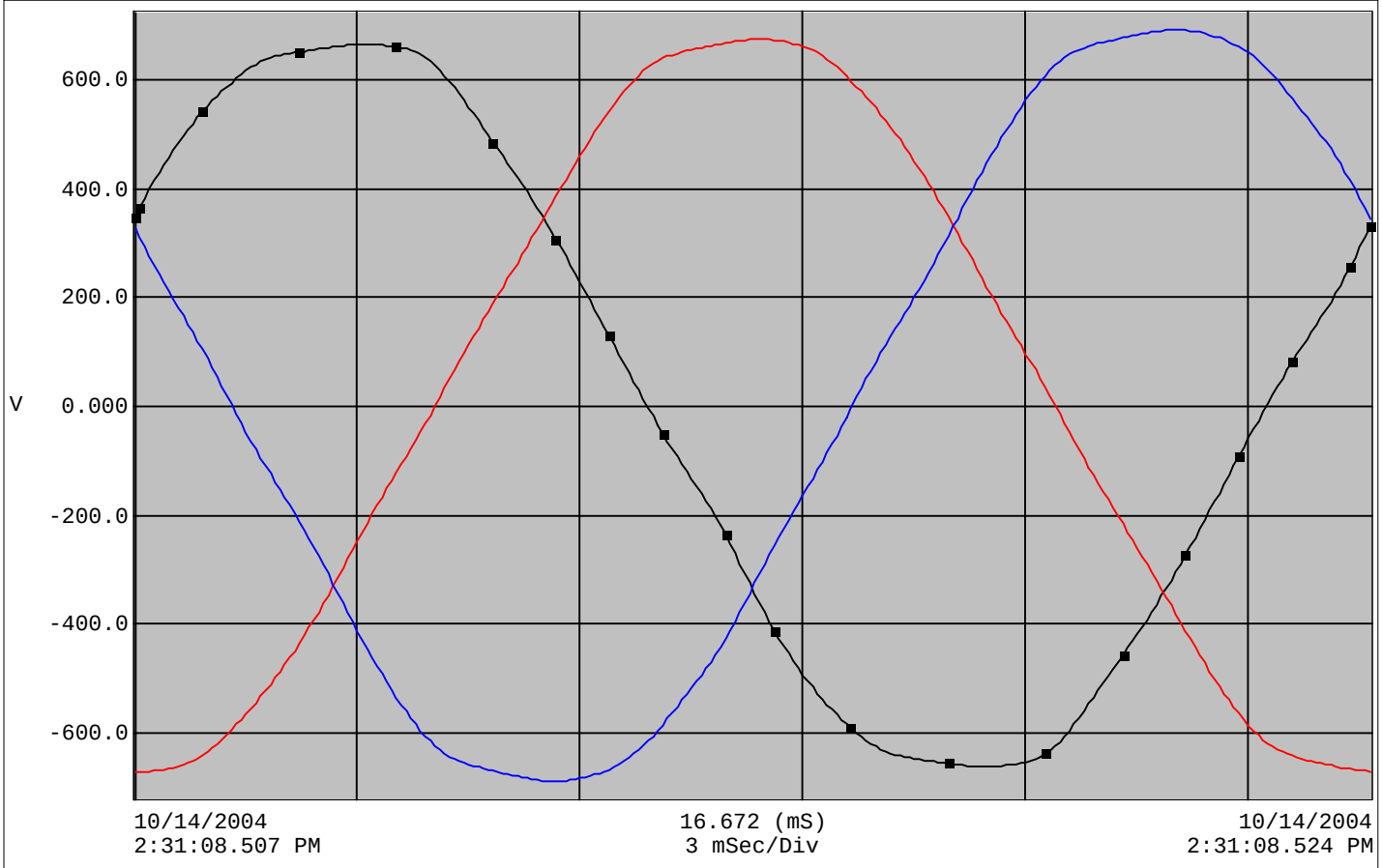
10/14/2004 - 2:31:08.000 PM

Val	
0.000	Waveform I1
0.000	Waveform I2
0.000	Waveform I3

Waveform I1

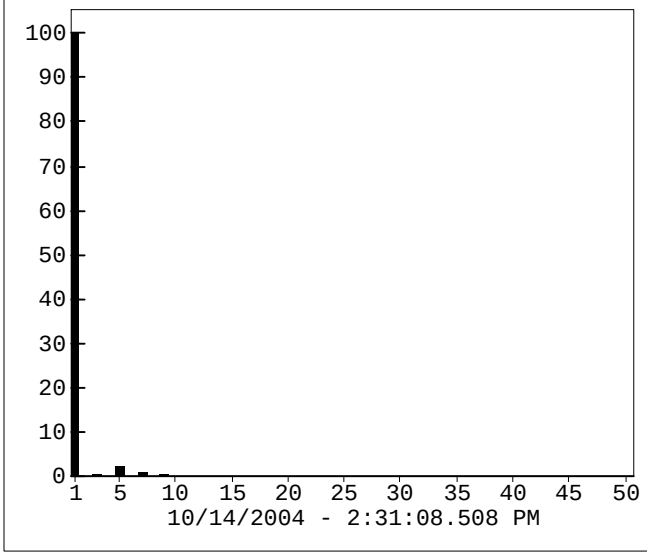
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/14/2004	2:31:08.507 PM	16.672	481.5	V
Waveform U2	10/14/2004	2:31:08.507 PM	16.672	483.4	V
Waveform U3	10/14/2004	2:31:08.507 PM	16.672	497.6	V

Waveform U1
481.50 Vrms, 2.62 %THD



10/14/2004 - 2:31:08.000 PM

Val	
346.2	Waveform U1
-672.1	Waveform U2
325.9	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.8	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/14/2004
Start Time: 2:31:08 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F12\101404-F12-Photo1.dvb

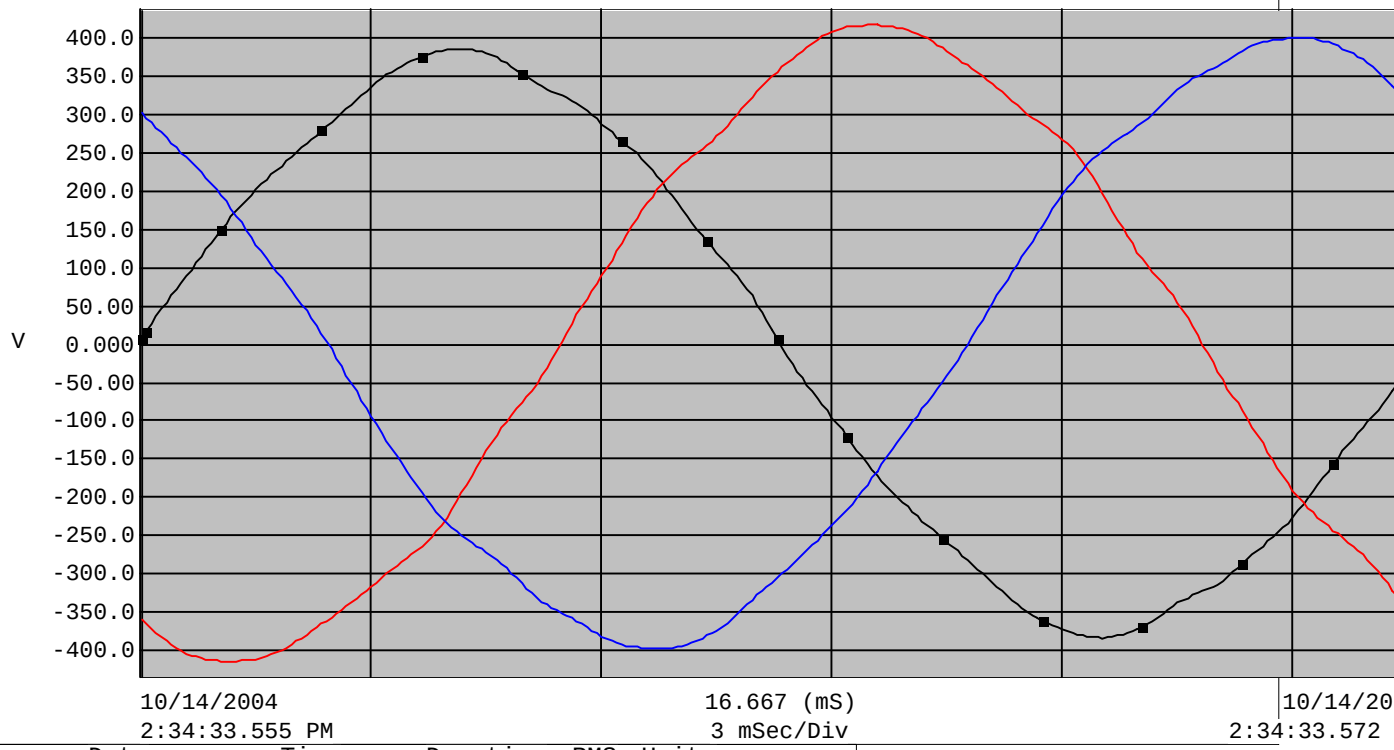
Operator	Test Site
GWA Victor Jardel ,	WPS F-12 - Photo 1 ,

Comments

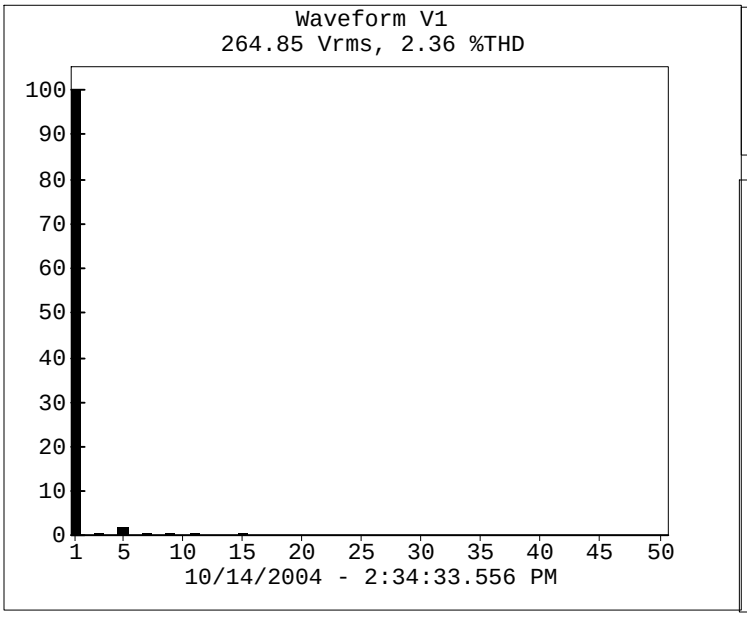
WPS F-12 - Photo4

Recording Start Date	10/14/2004 - 2:34:33 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/14/2004	2:34:33.555 PM	16.667	264.8	V
Waveform V2	10/14/2004	2:34:33.555 PM	16.667	289.8	V
Waveform V3	10/14/2004	2:34:33.555 PM	16.667	278.4	V



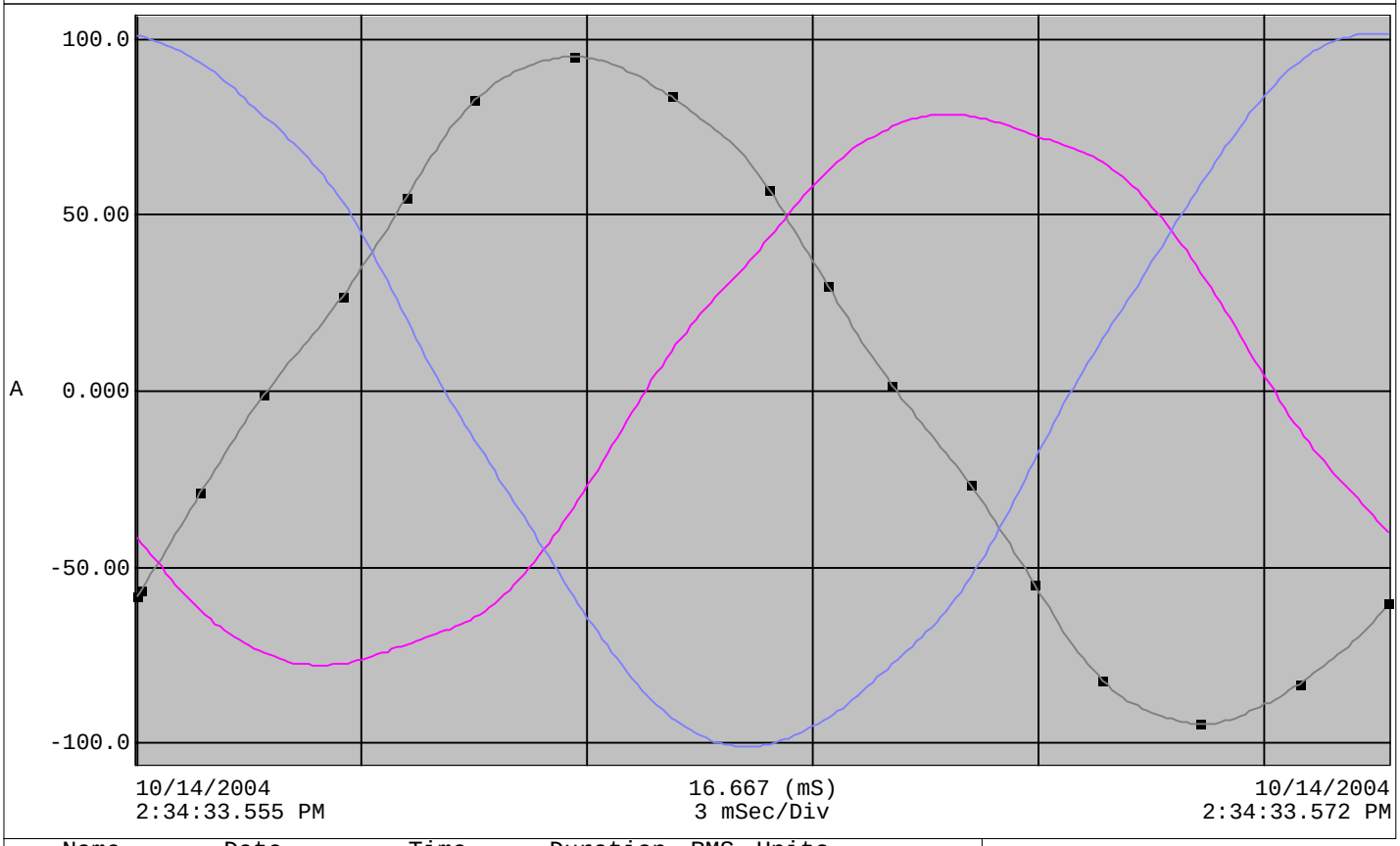
10/14/2004 - 2:34:33.000 PM

Val	
5.300	Waveform V1
-361.7	Waveform V2
300.9	Waveform V3

Waveform V1

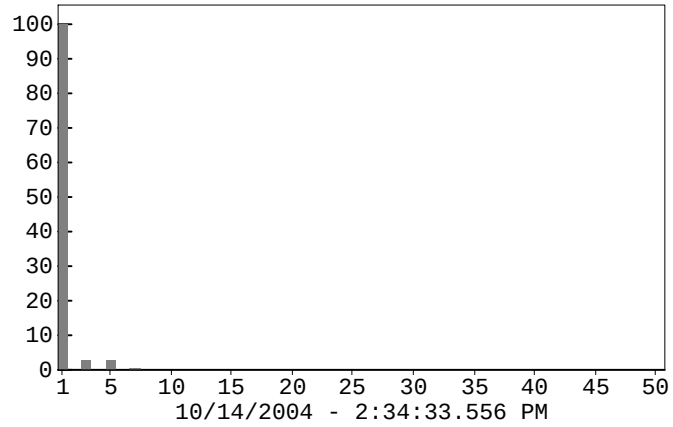
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.6	H20	0.0	H37	0.0
H04	0.0	H21	0.2	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.5	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/14/2004	2:34:33.555 PM	16.667	65.86	A
Waveform I2	10/14/2004	2:34:33.555 PM	16.667	56.56	A
Waveform I3	10/14/2004	2:34:33.555 PM	16.667	71.31	A

Waveform I1
65.86 Arms, 4.12 %THD



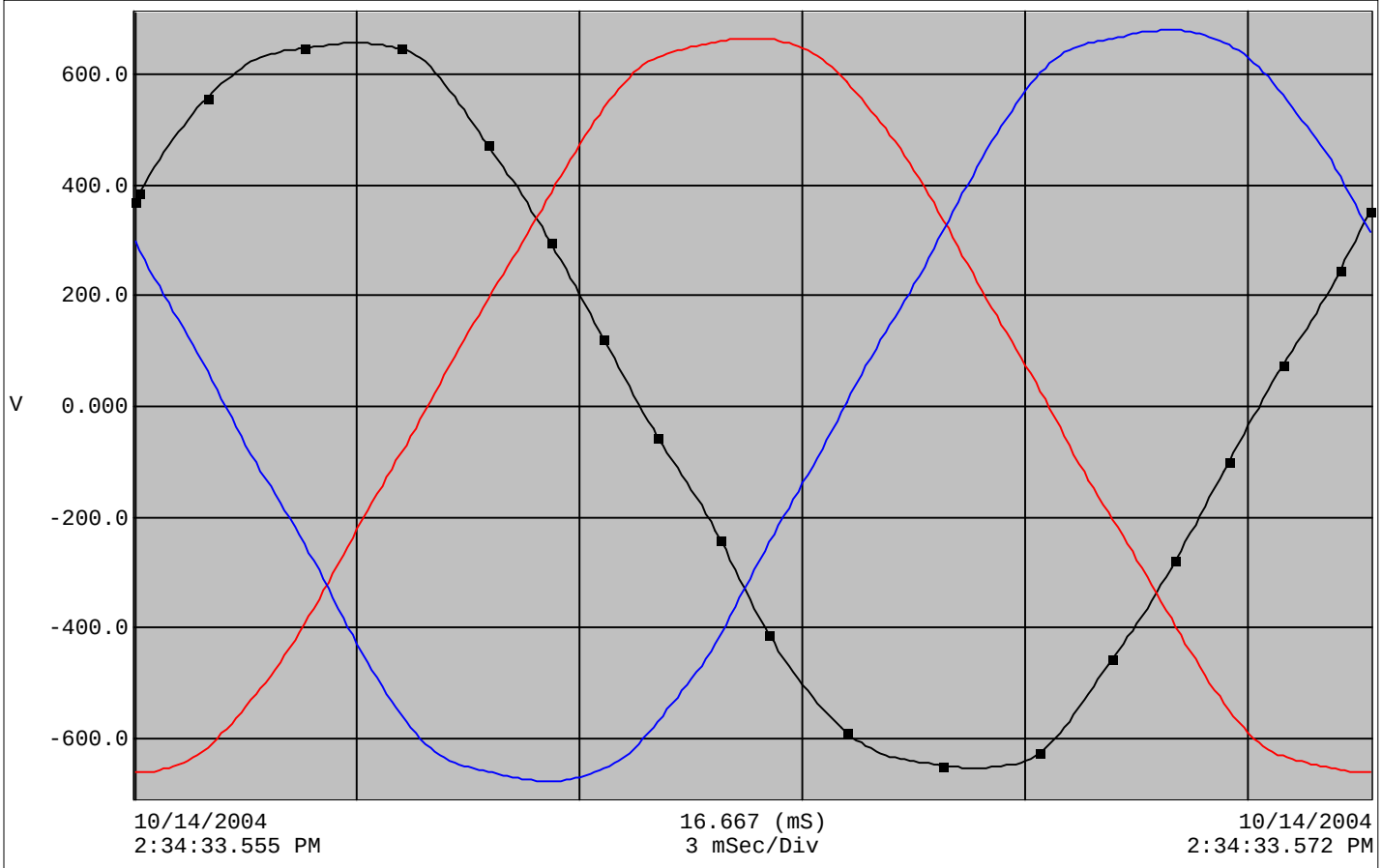
10/14/2004 - 2:34:33.000 PM

Val	
-58.60	Waveform I1
-41.70	Waveform I2
100.8	Waveform I3

Waveform I1

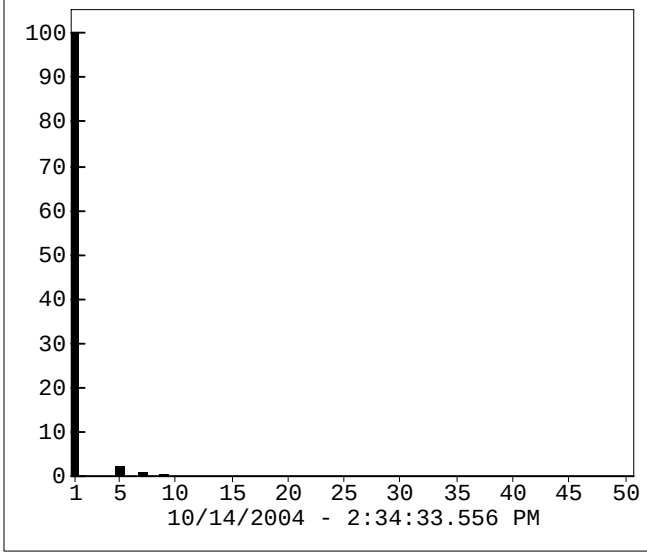
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	2.8	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	2.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/14/2004	2:34:33.555 PM	16.667	474.5	V
Waveform U2	10/14/2004	2:34:33.555 PM	16.667	476.3	V
Waveform U3	10/14/2004	2:34:33.555 PM	16.667	489.5	V

Waveform U1
474.48 Vrms, 2.51 %THD



10/14/2004 - 2:34:33.000 PM

Val	
367.1	Waveform U1
-662.6	Waveform U2
295.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 10/14/2004
Start Time: 2:34:33 PM
Duration: 0:0.000 (M:S)
W: 13.56E+3 W
VAR: 10.94E+3 W
VA: 17.42E+3 W
Power Factor: 0.778
Displacement Power Factor: 0.779
TAN: 0.805
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F12\101404-F12-Photo4.dvb

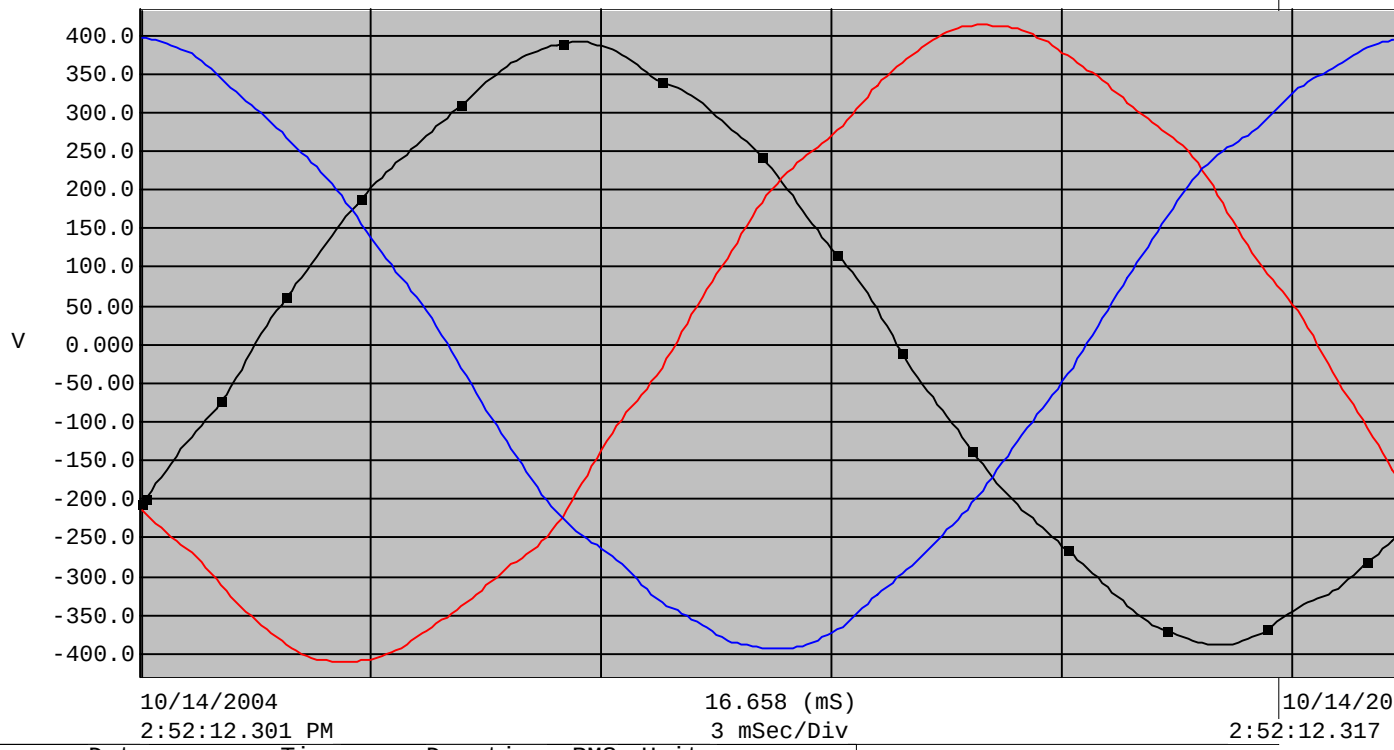
Operator	Test Site
GWA Victor Jardel ,	WPS F-12 - Photo 4 ,

Comments

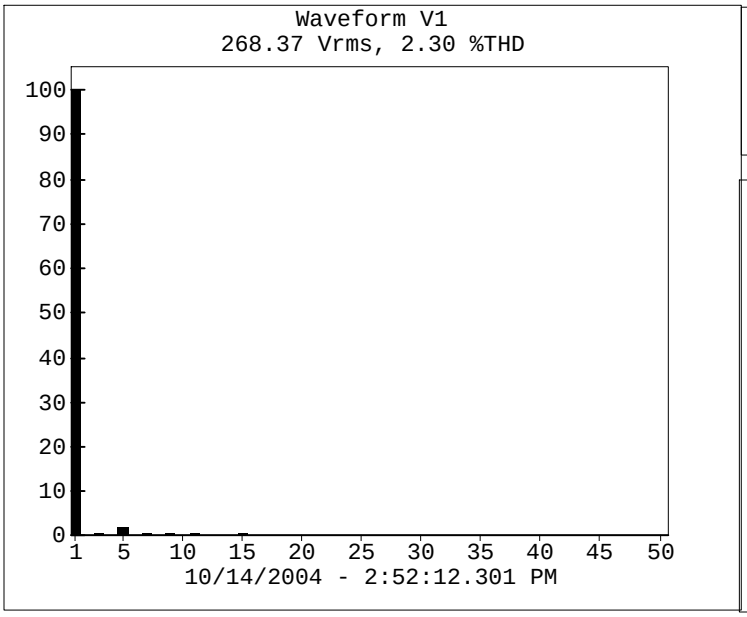
WPS F-12 - Photo5

Recording Start Date	10/14/2004 - 2:52:12 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/14/2004	2:52:12.301 PM	16.658	268.4	V
Waveform V2	10/14/2004	2:52:12.301 PM	16.658	286.4	V
Waveform V3	10/14/2004	2:52:12.301 PM	16.658	275.1	V

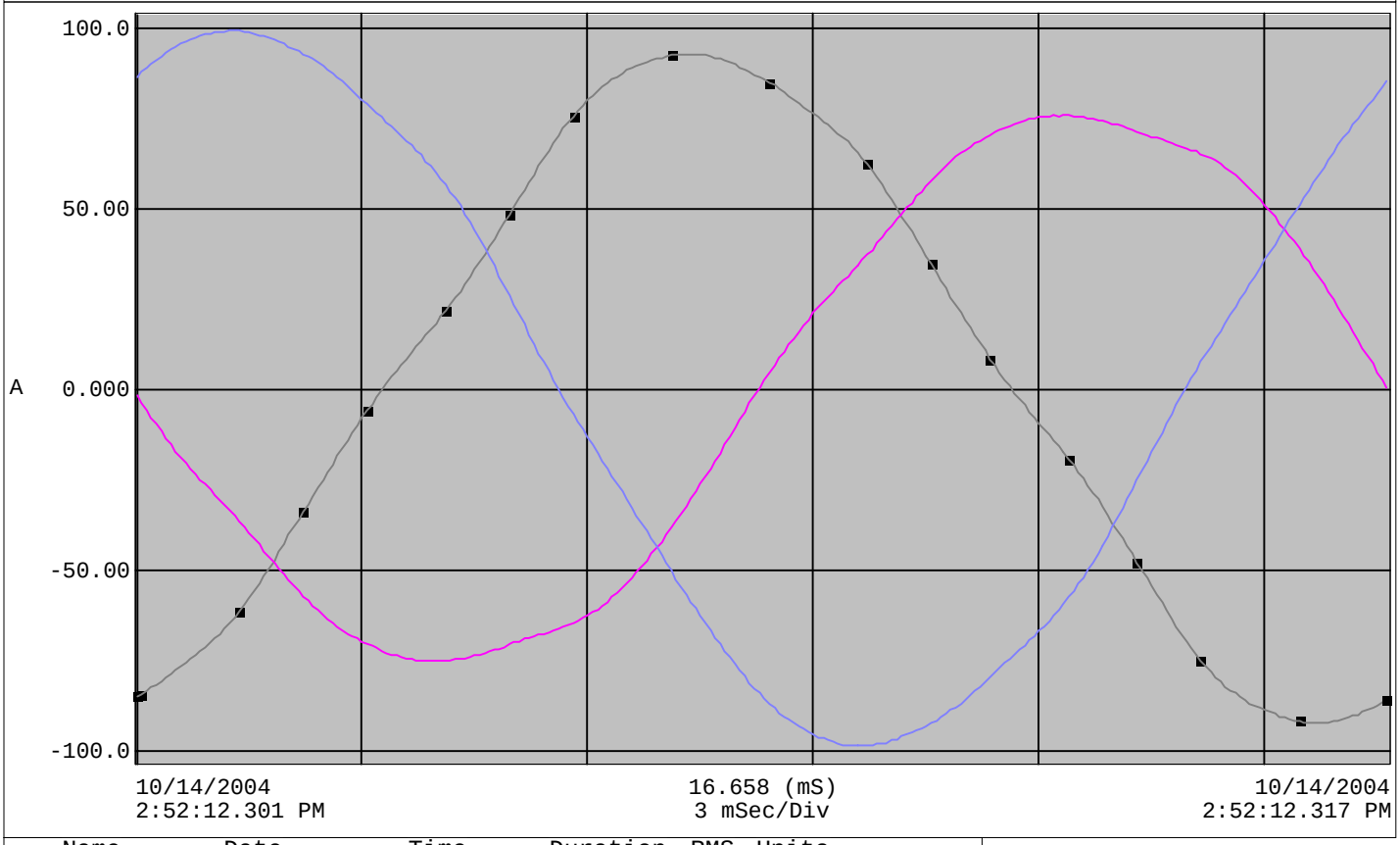


10/14/2004 - 2:52:12.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

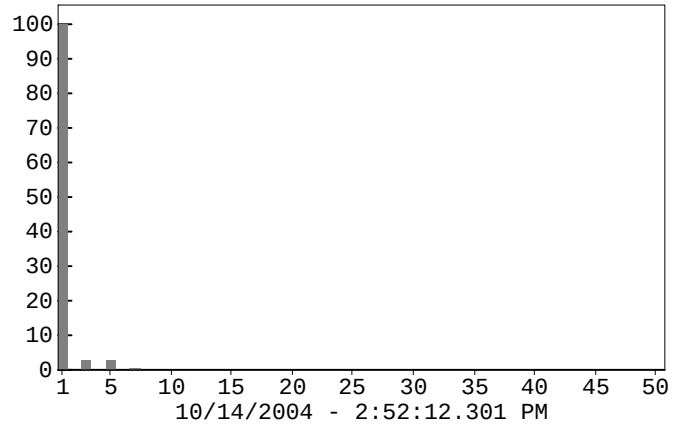
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.6	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.5	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.5	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/14/2004	2:52:12.301 PM	16.658	64.29	A
Waveform I2	10/14/2004	2:52:12.301 PM	16.658	54.70	A
Waveform I3	10/14/2004	2:52:12.301 PM	16.658	69.66	A

Waveform I1
64.29 Arms, 4.18 %THD

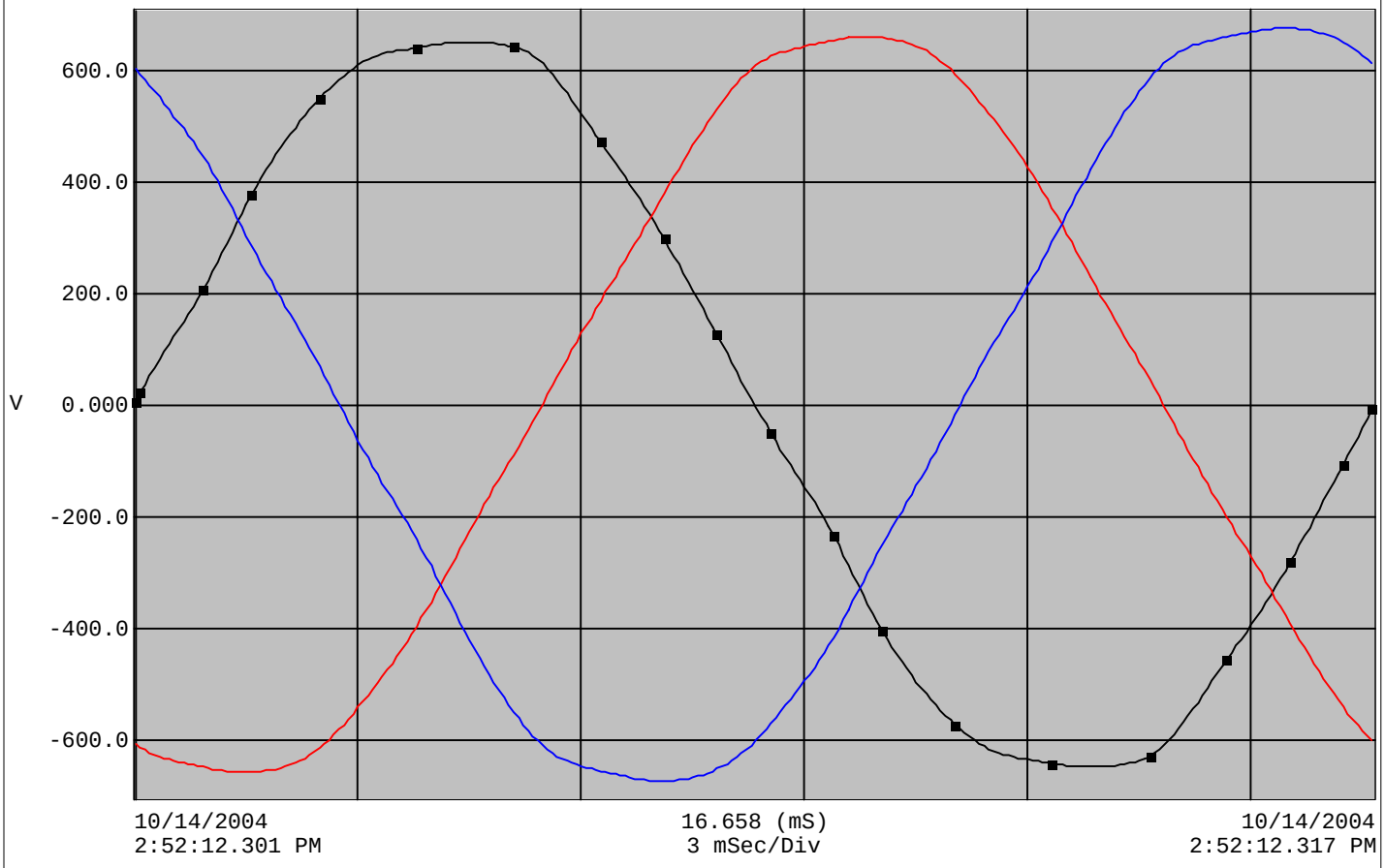


10/14/2004 - 2:52:12.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

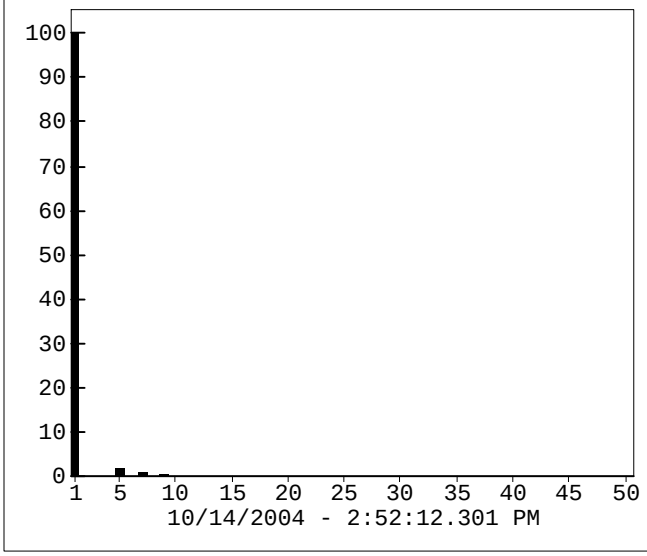
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	2.9	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/14/2004	2:52:12.301 PM	16.658	472.4	V
Waveform U2	10/14/2004	2:52:12.301 PM	16.658	474.6	V
Waveform U3	10/14/2004	2:52:12.301 PM	16.658	488.2	V

Waveform U1
472.44 Vrms, 2.47 %THD



10/14/2004 - 2:52:12.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.7	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/14/2004
Start Time: 2:52:12 PM
Duration: 0:0.000 (M:S)
W: 13.41E+3 W
VAR: 10.88E+3 W
VA: 17.27E+3 W
Power Factor: 0.777
Displacement Power Factor: 0.777
TAN: 0.809
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F12\101404-F12-Photo5.dvb

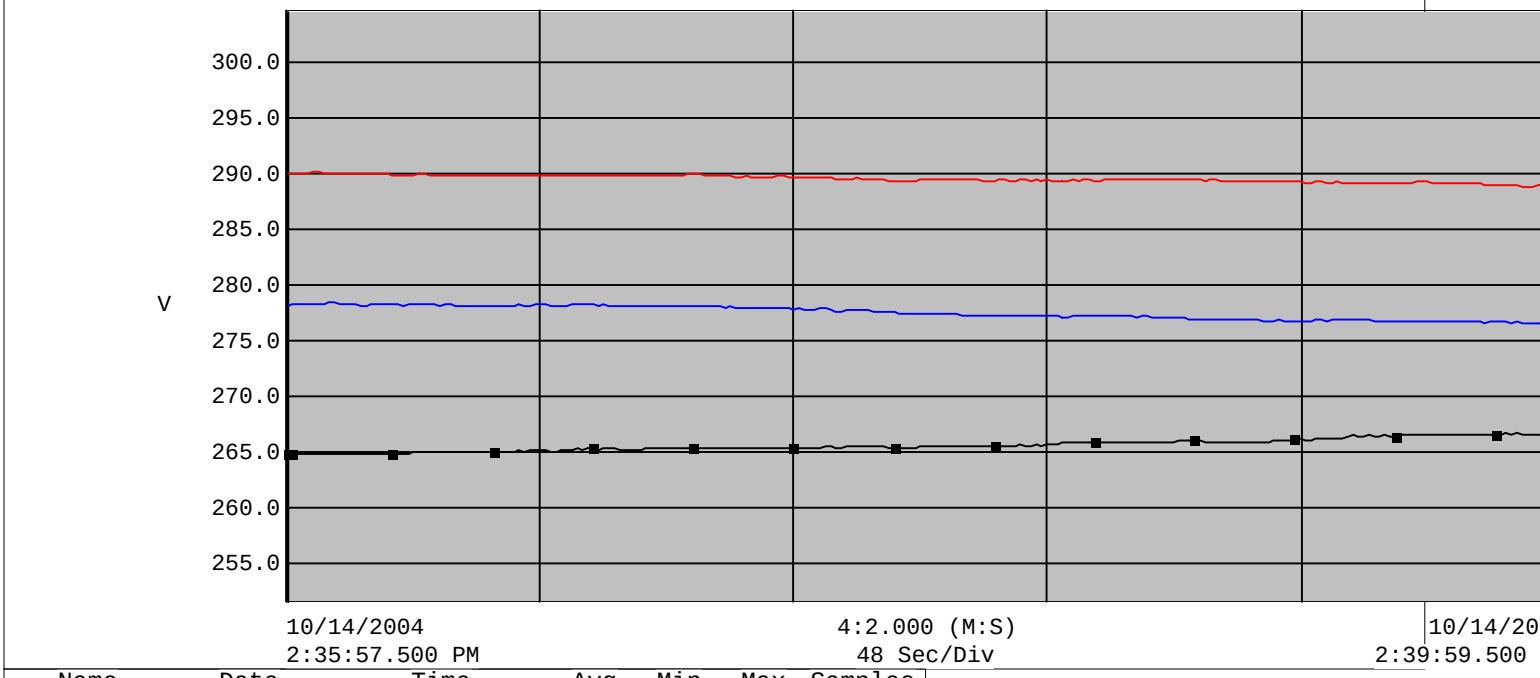
Operator	Test Site
GWA Victor Jardel ,	WPS F-12 - Photo 5 ,

Comments

WPS F-12

Recording Start Date	10/14/2004 - 2:35:57 PM
Recording Duration	4:02 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

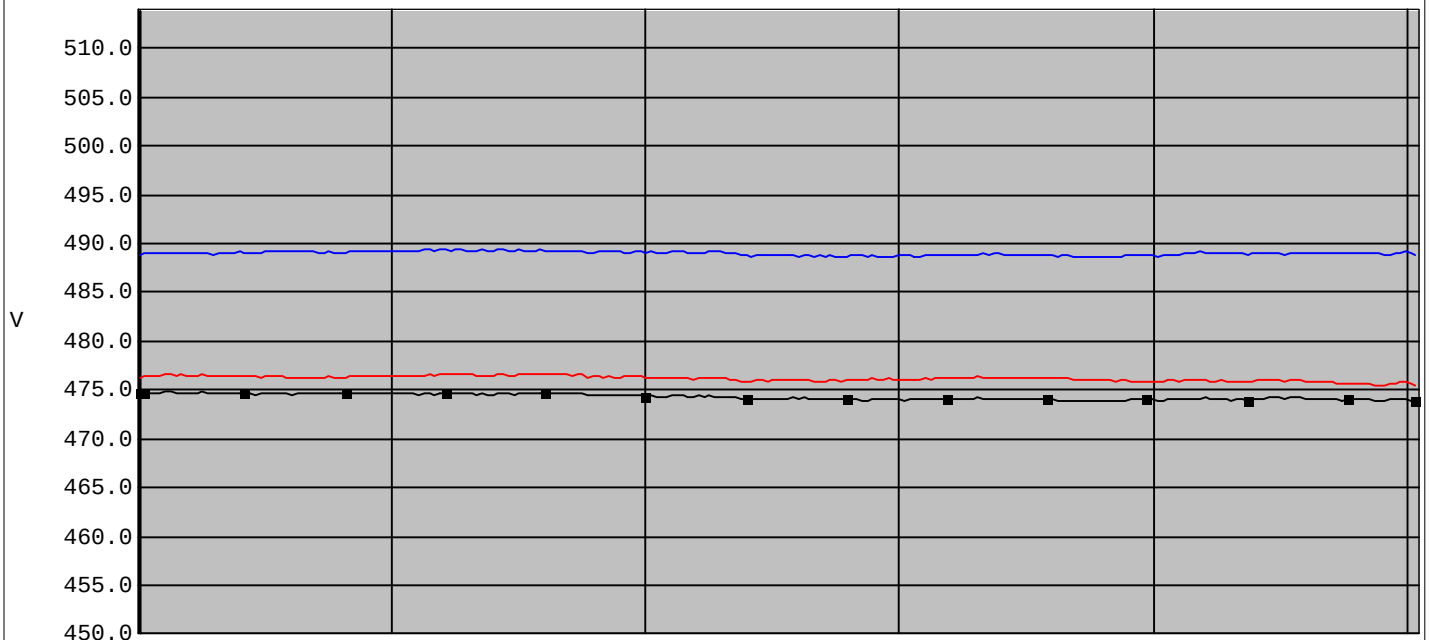
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/14/2004	2:35:57.500 PM	265.5	264.7	266.7	243
Vrms Line2	10/14/2004	2:35:57.500 PM	289.5	288.7	290.1	243
Vrms Line3	10/14/2004	2:35:57.500 PM	277.4	276.4	278.3	243

10/14/2004 - 2:35:57.000 PM
Val
264.7 — Vrms Line1
289.9 — Vrms Line2
278.1 — Vrms Line3

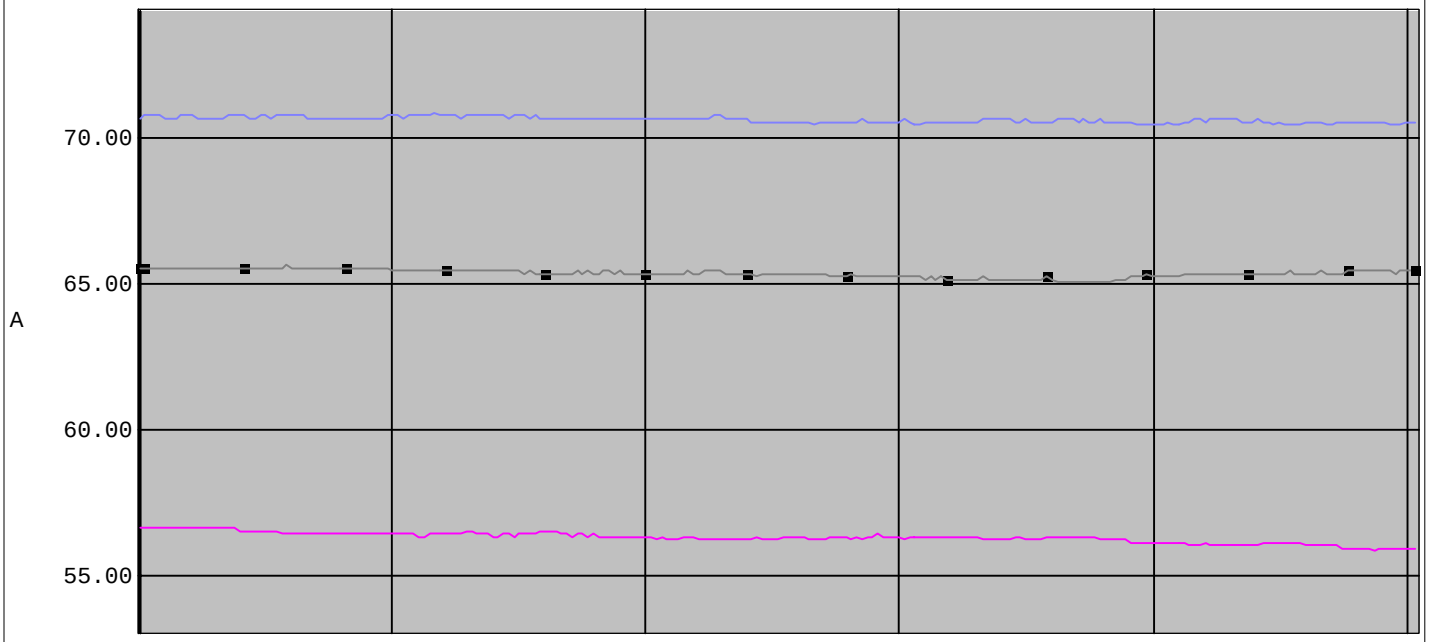
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/14/2004	2:35:57.500 PM	474.2	473.7	474.7	V
Urms Line2	10/14/2004	2:35:57.500 PM	476.1	475.4	476.6	V
Urms Line3	10/14/2004	2:35:57.500 PM	488.9	488.5	489.4	V

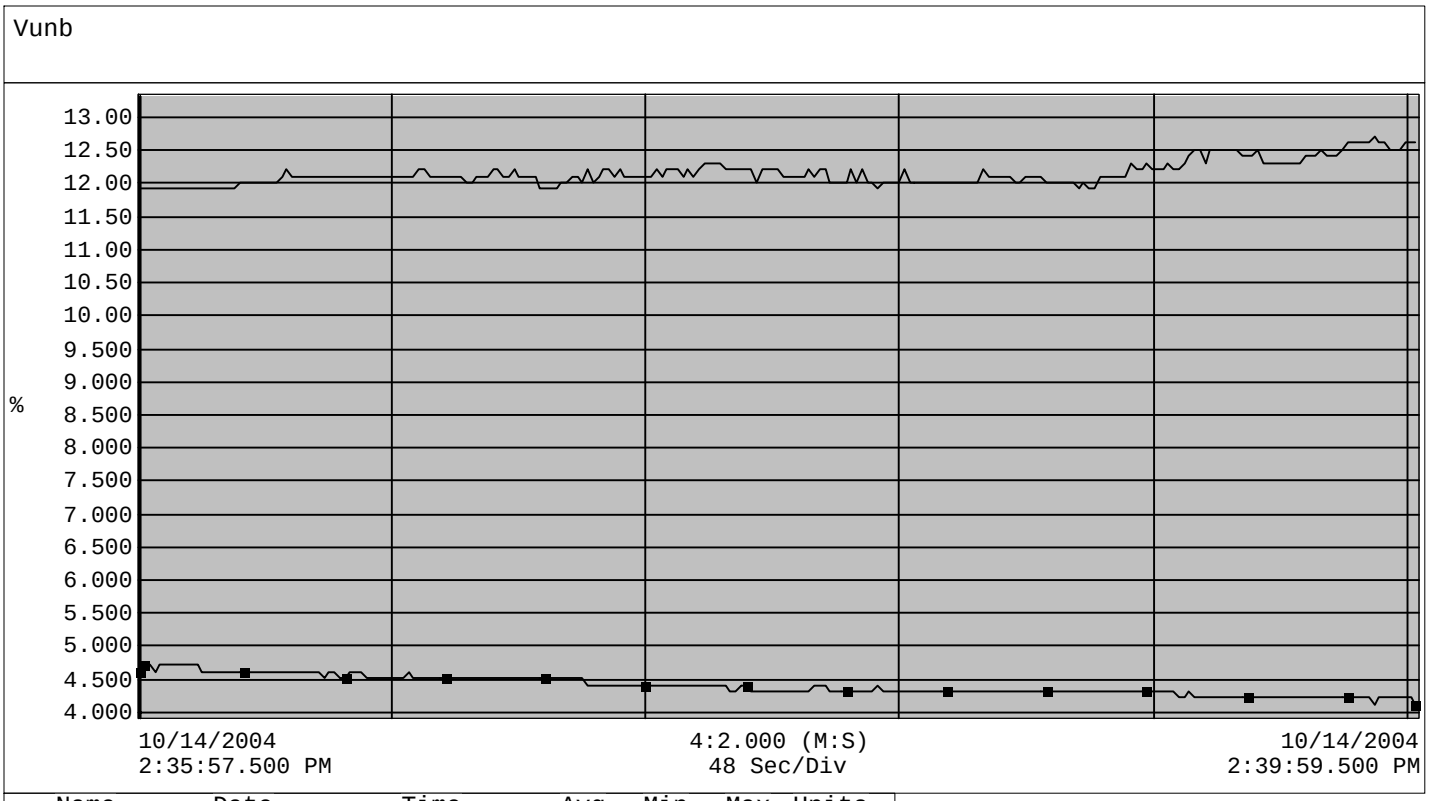
10/14/2004 - 2:35:57.000 PM
Val
474.5 Urms Line1
476.2 Urms Line2
488.8 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/14/2004	2:35:57.500 PM	65.31	65.00	65.60	A
Arms Line2	10/14/2004	2:35:57.500 PM	56.27	55.80	56.60	A
Arms Line3	10/14/2004	2:35:57.500 PM	70.57	70.40	70.80	A

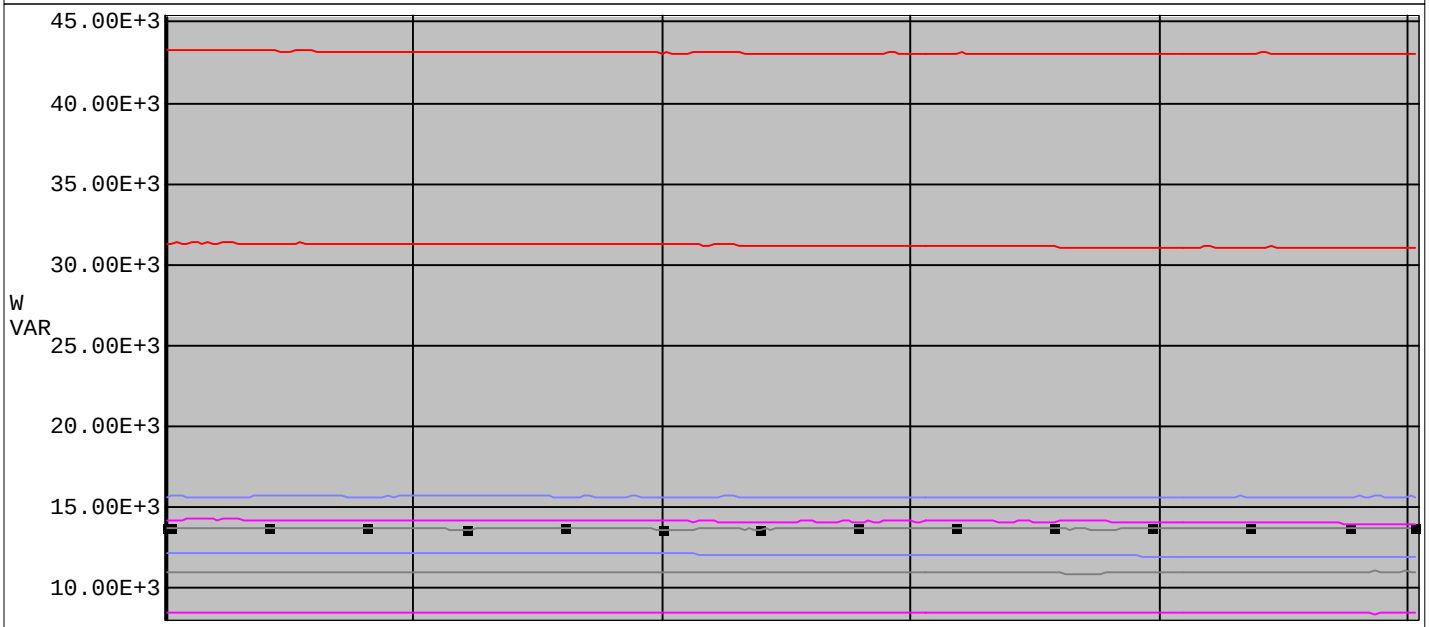
10/14/2004 - 2:35:57.000 PM
Val
65.50 — Arms Line1
56.60 — Arms Line2
70.60 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/14/2004	2:35:57.500 PM	4.385	4.100	4.700	%
Aunb(IEEE)	10/14/2004	2:35:57.500 PM	12.15	11.90	12.70	%

10/14/2004 - 2:35:57.000 PM
Val
4.600 —— Vunb(IEEE)
11.90 —— Aunb(IEEE)

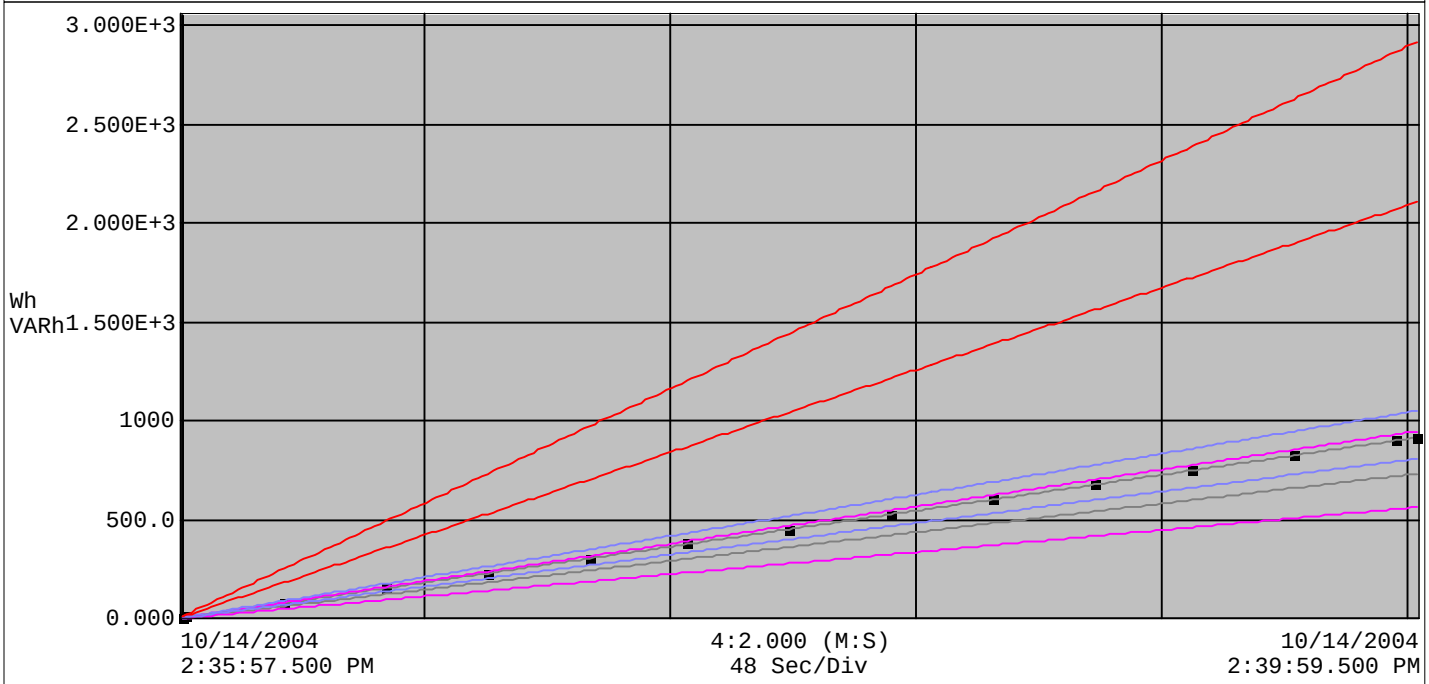
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/14/2004	2:35:57.500 PM	13.54E+3	13.50E+3	13.63E+3	W
W Line2	10/14/2004	2:35:57.500 PM	14.00E+3	13.83E+3	14.12E+3	W
W Line3	10/14/2004	2:35:57.500 PM	15.52E+3	15.47E+3	15.57E+3	W
W Sum of Phases	10/14/2004	2:35:57.500 PM	43.06E+3	42.97E+3	43.20E+3	W
VAR Line1	10/14/2004	2:35:57.500 PM	10.83E+3	10.76E+3	10.90E+3	VAR
VAR Line2	10/14/2004	2:35:57.500 PM	8.334E+3	8.275E+3	8.395E+3	VAR
VAR Line3	10/14/2004	2:35:57.500 PM	11.93E+3	11.75E+3	12.05E+3	VAR
VAR Sum of Phases	10/14/2004	2:35:57.500 PM	31.10E+3	30.93E+3	31.26E+3	VAR

10/14/2004 - 2:35:57.000 PM
Val
13.55E+3 — W Line1
14.11E+3 — W Line2
15.53E+3 — W Line3
43.19E+3 — W Sum of Phases
10.82E+3 — VAR Line1
8.382E+3 — VAR Line2
12.03E+3 — VAR Line3
31.23E+3 — VAR Sum of Phases

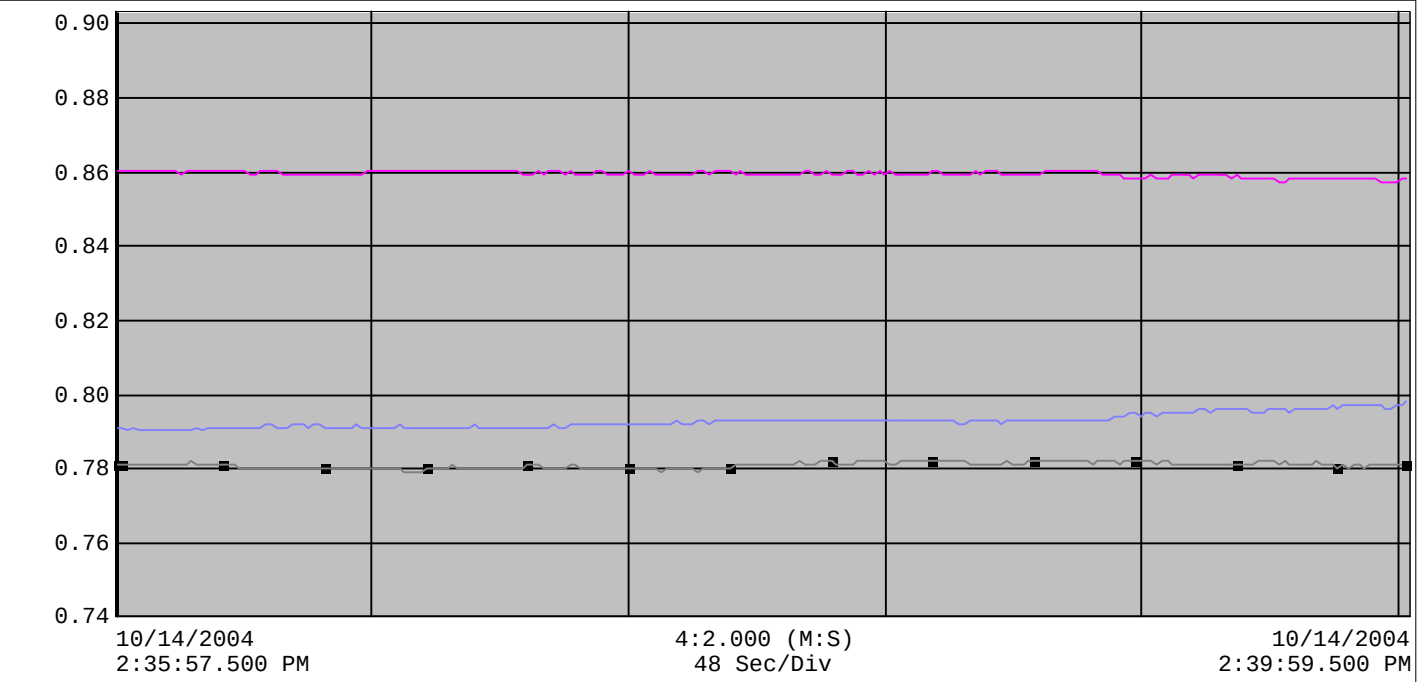
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/14/2004	2:35:57.500 PM	458.6	3.767	914.2	Wh
W-hours Line2	10/14/2004	2:35:57.500 PM	475.6	3.922	944.8	Wh
W-hours Line3	10/14/2004	2:35:57.500 PM	526.2	4.317	1.048E+3	Wh
W-hours Sum of Phases	10/14/2004	2:35:57.500 PM	1.460E+3	11.98	2.907E+3	Wh
VAR-hours Line1	10/14/2004	2:35:57.500 PM	367.2	3.014	731.4	VARh
VAR-hours Line2	10/14/2004	2:35:57.500 PM	282.8	2.335	562.6	VARh
VAR-hours Line3	10/14/2004	2:35:57.500 PM	405.9	3.344	805.4	VARh
VAR-hours Sum of Phases	10/14/2004	2:35:57.500 PM	1.056E+3	8.650	2.099E+3	VARh

10/14/2004 - 2:35:57.000 PM
Val
3.767 — W-hours Line1
3.922 — W-hours Line2
4.317 — W-hours Line3
11.98 — W-hours Sum of Phases
3.014 — VAR-hours Line1
2.335 — VAR-hours Line2
3.344 — VAR-hours Line3
8.650 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/14/2004	2:35:57.500 PM	0.781	0.779	0.782	
PF Line2	10/14/2004	2:35:57.500 PM	0.859	0.857	0.860	
PF Line3	10/14/2004	2:35:57.500 PM	0.793	0.790	0.798	

10/14/2004 - 2:35:57.000 PM
Val
0.781 — PF Line1
0.860 — PF Line2
0.791 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F12\101404-F12.dvb

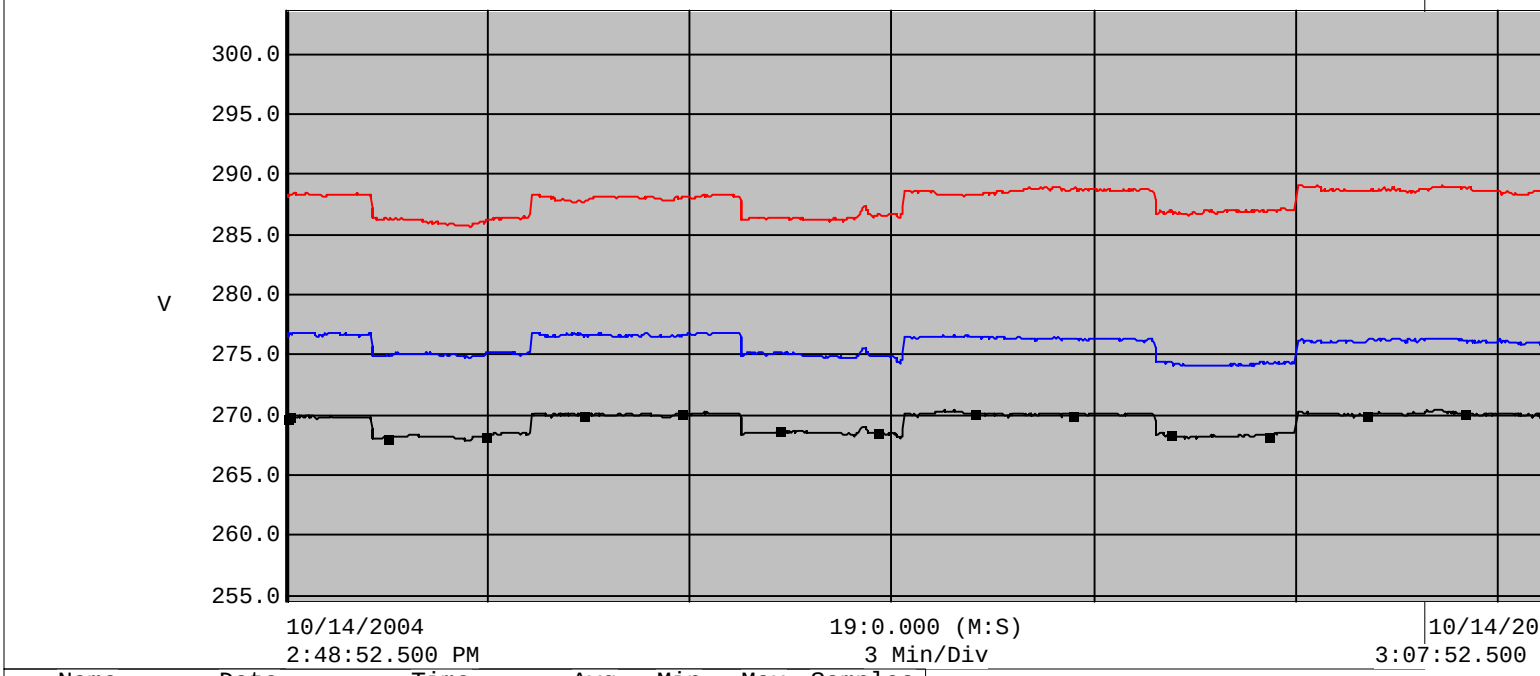
Operator	Test Site
GWA Victor Jardel ,	GWA WPS F-12 ,

Comments

WPS F-12B

Recording Start Date	10/14/2004 - 2:48:52 PM
Recording Duration	19:00 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

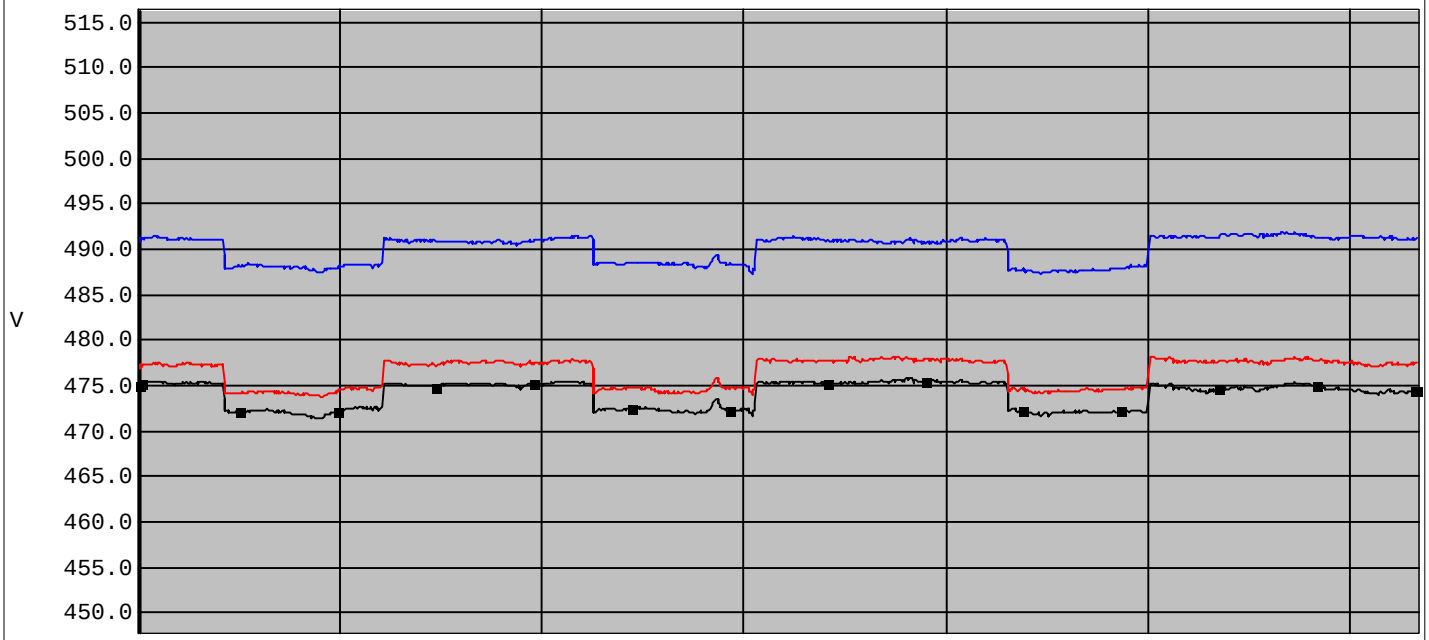
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/14/2004	2:48:52.500 PM	269.4	267.8	270.3	1141
Vrms Line2	10/14/2004	2:48:52.500 PM	287.7	285.6	289.1	1141
Vrms Line3	10/14/2004	2:48:52.500 PM	275.7	274.0	276.8	1141

10/14/2004 - 2:48:52.000 PM
Val
269.8 — Vrms Line1
288.3 — Vrms Line2
276.7 — Vrms Line3

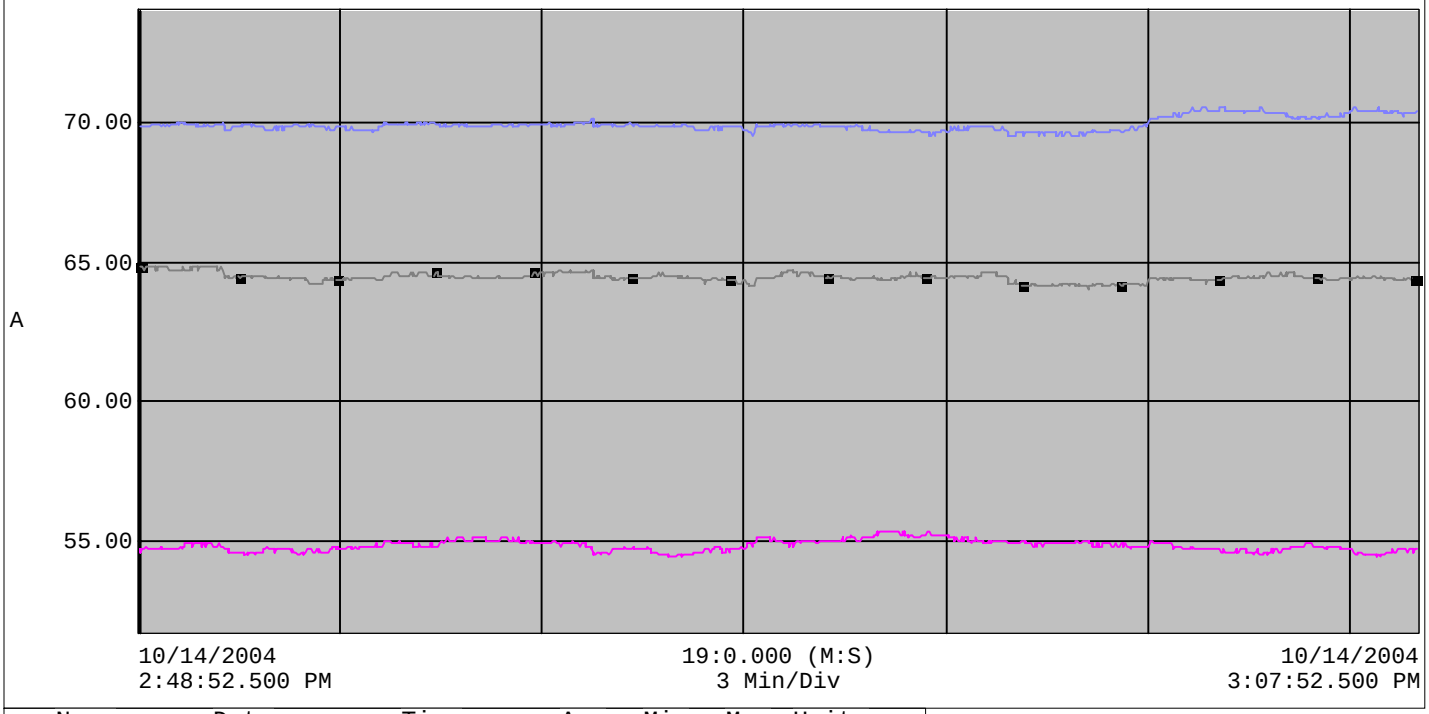
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/14/2004	2:48:52.500 PM	473.9	471.2	475.7	V
Urms Line2	10/14/2004	2:48:52.500 PM	476.4	473.6	478.0	V
Urms Line3	10/14/2004	2:48:52.500 PM	489.9	487.1	491.7	V

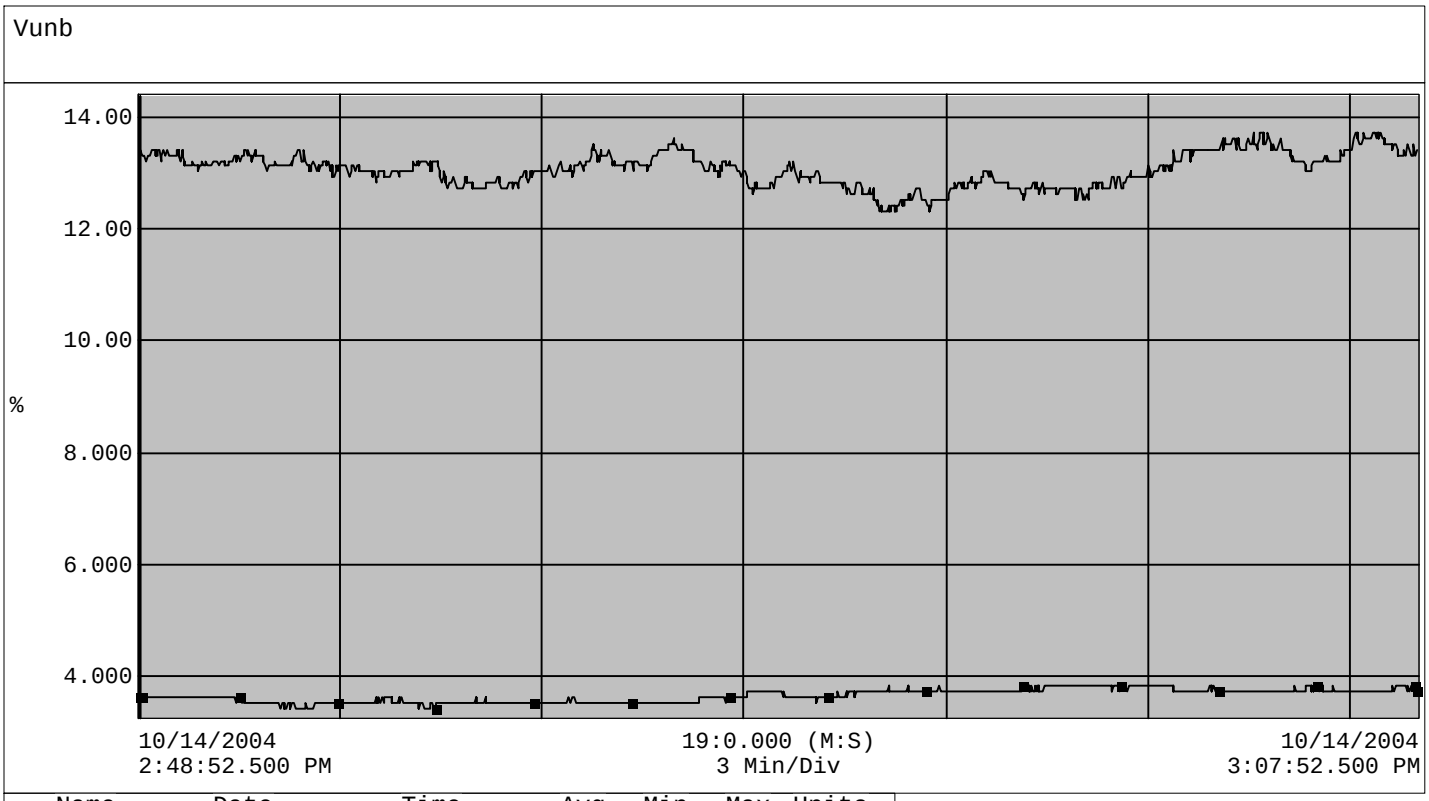
10/14/2004 - 2:48:52.000 PM
Val
475.3 — Urms Line1
477.2 — Urms Line2
491.1 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/14/2004	2:48:52.500 PM	64.42	64.00	64.80	A
Arms Line2	10/14/2004	2:48:52.500 PM	54.83	54.40	55.30	A
Arms Line3	10/14/2004	2:48:52.500 PM	69.89	69.50	70.50	A

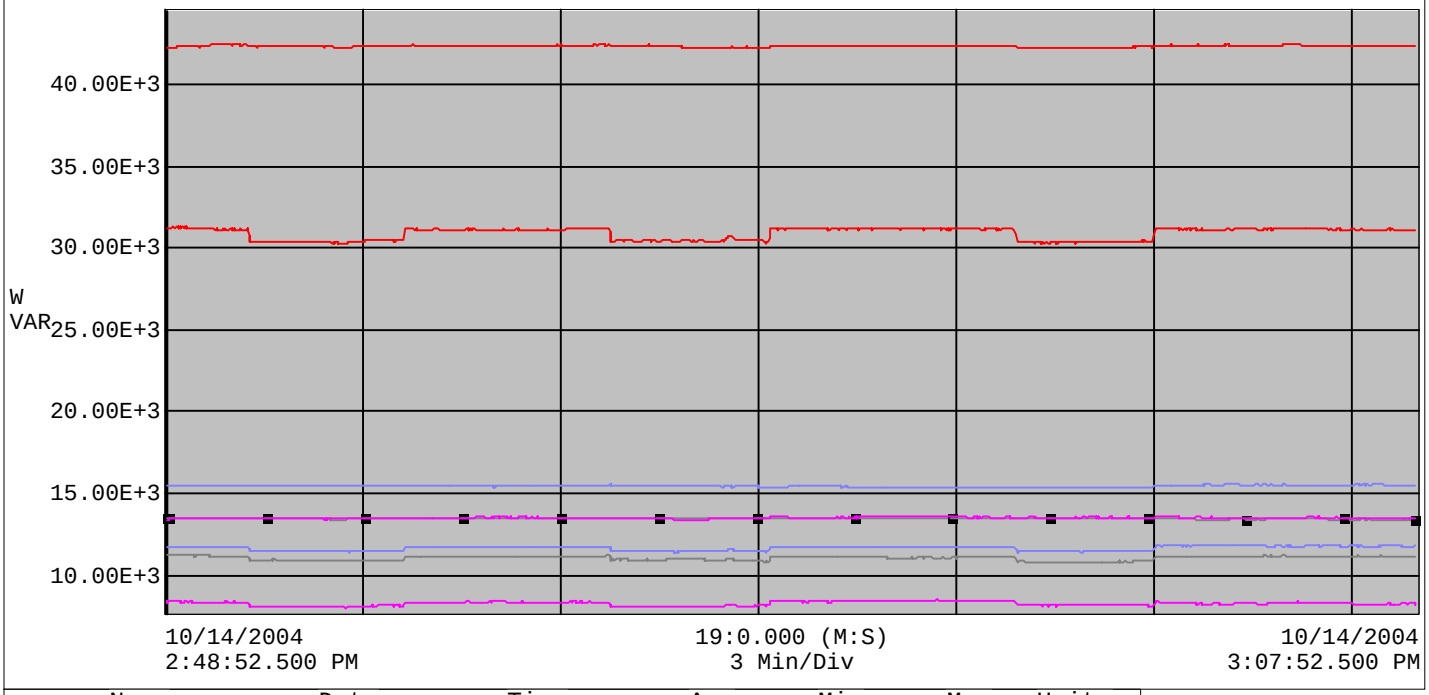
10/14/2004 - 2:48:52.000 PM
Val
64.80 — Arms Line1
54.70 — Arms Line2
69.80 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/14/2004	2:48:52.500 PM	3.625	3.400	3.800	%
Aunb(IEEE)	10/14/2004	2:48:52.500 PM	13.04	12.30	13.70	%

10/14/2004 - 2:48:52.000 PM
Val
3.600 —— Vunb(IEEE)
13.30 —— Aunb(IEEE)

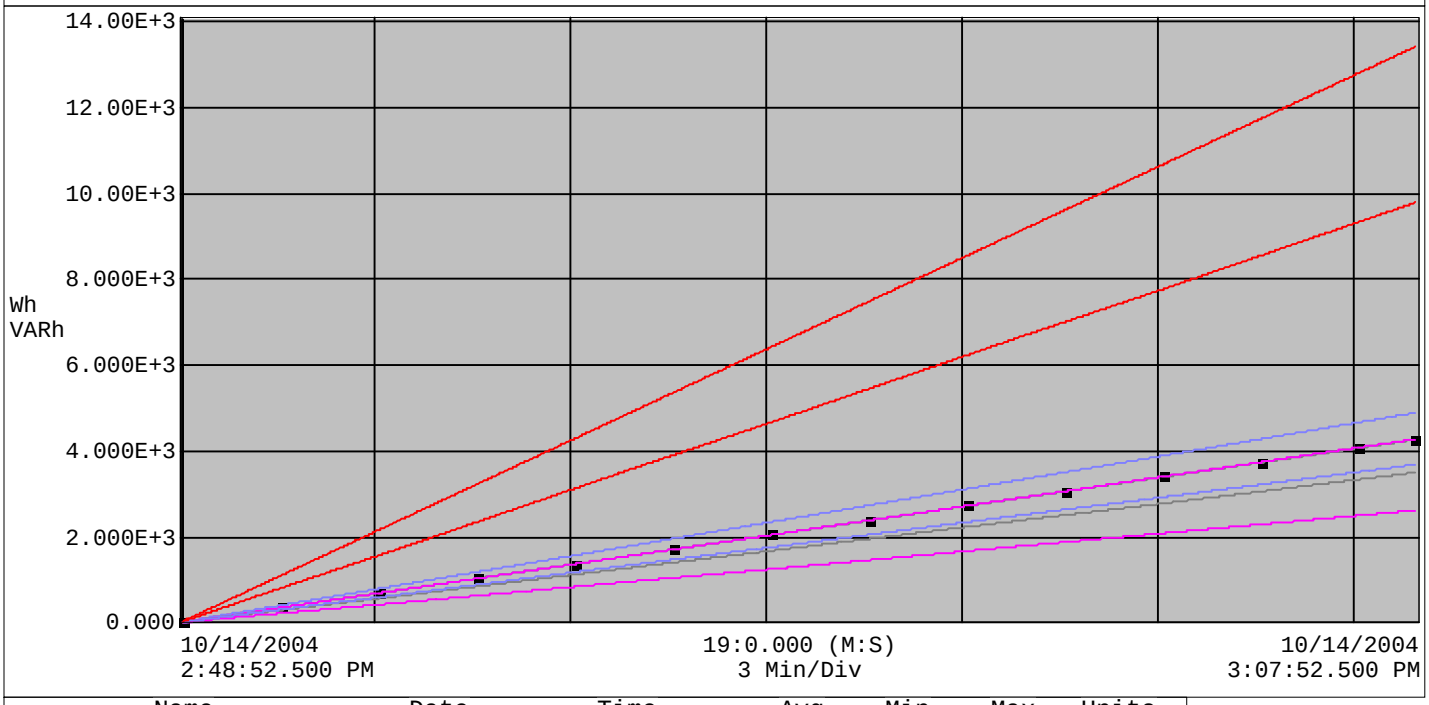
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/14/2004	2:48:52.500 PM	13.42E+3	13.33E+3	13.49E+3	W
W Line2	10/14/2004	2:48:52.500 PM	13.46E+3	13.33E+3	13.57E+3	W
W Line3	10/14/2004	2:48:52.500 PM	15.40E+3	15.26E+3	15.51E+3	W
W Sum of Phases	10/14/2004	2:48:52.500 PM	42.27E+3	42.15E+3	42.39E+3	W
VAR Line1	10/14/2004	2:48:52.500 PM	11.01E+3	10.74E+3	11.18E+3	VAR
VAR Line2	10/14/2004	2:48:52.500 PM	8.226E+3	7.967E+3	8.448E+3	VAR
VAR Line3	10/14/2004	2:48:52.500 PM	11.59E+3	11.36E+3	11.78E+3	VAR
VAR Sum of Phases	10/14/2004	2:48:52.500 PM	30.82E+3	30.19E+3	31.23E+3	VAR

10/14/2004 - 2:48:52.000 PM
Val
13.45E+3 — W Line1
13.37E+3 — W Line2
15.39E+3 — W Line3
42.21E+3 — W Sum of Phases
11.18E+3 — VAR Line1
8.345E+3 — VAR Line2
11.66E+3 — VAR Line3
31.19E+3 — VAR Sum of Phases

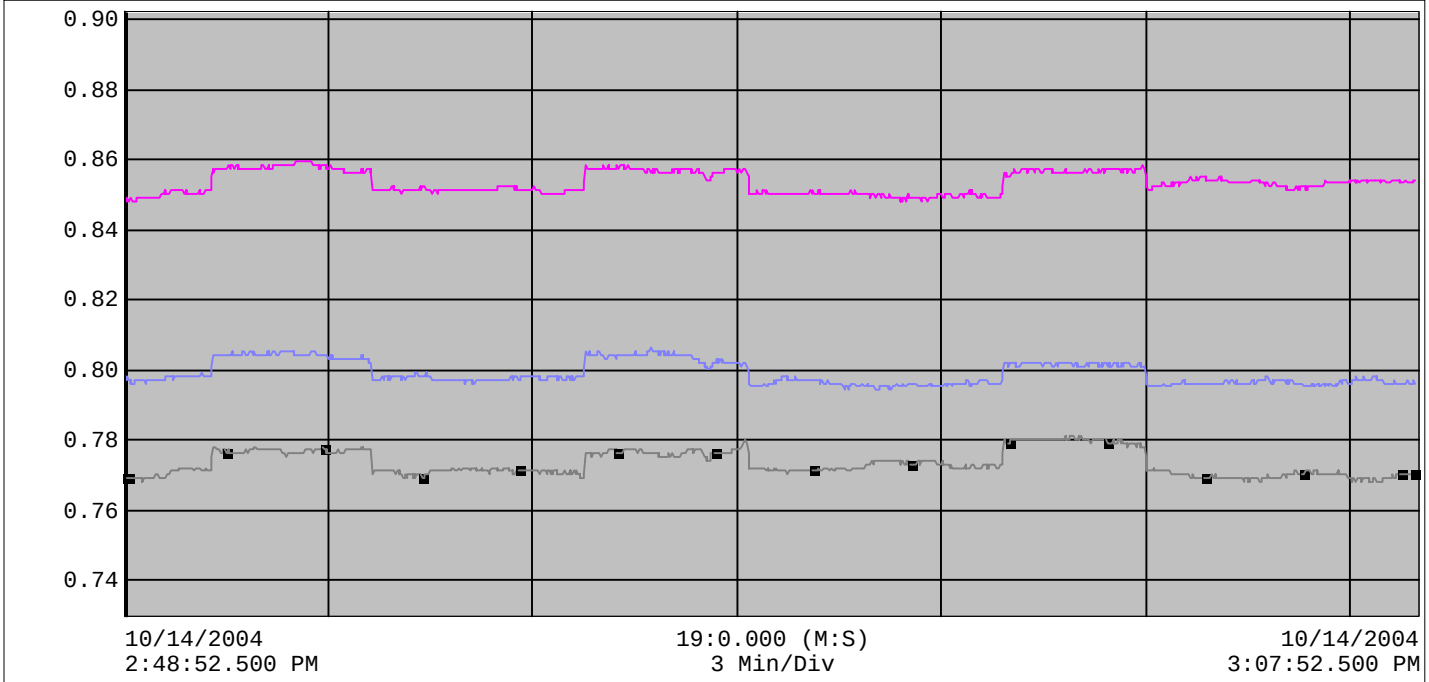
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/14/2004	2:48:52.500 PM	2.129E+3	3.764	4.253E+3	Wh
W-hours Line2	10/14/2004	2:48:52.500 PM	2.133E+3	3.775	4.265E+3	Wh
W-hours Line3	10/14/2004	2:48:52.500 PM	2.443E+3	4.319	4.880E+3	Wh
W-hours Sum of Phases	10/14/2004	2:48:52.500 PM	6.705E+3	11.86	13.40E+3	Wh
VAR-hours Line1	10/14/2004	2:48:52.500 PM	1.745E+3	3.087	3.488E+3	VARh
VAR-hours Line2	10/14/2004	2:48:52.500 PM	1.303E+3	2.308	2.607E+3	VARh
VAR-hours Line3	10/14/2004	2:48:52.500 PM	1.834E+3	3.252	3.674E+3	VARh
VAR-hours Sum of Phases	10/14/2004	2:48:52.500 PM	4.882E+3	8.647	9.770E+3	VARh

10/14/2004 - 2:48:52.000 PM
Val
3.764 — W-hours Line1
3.775 — W-hours Line2
4.319 — W-hours Line3
11.86 — W-hours Sum of Phases
3.087 — VAR-hours Line1
2.308 — VAR-hours Line2
3.252 — VAR-hours Line3
8.647 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/14/2004	2:48:52.500 PM	0.773	0.768	0.781	
PF Line2	10/14/2004	2:48:52.500 PM	0.853	0.848	0.859	
PF Line3	10/14/2004	2:48:52.500 PM	0.799	0.794	0.806	

10/14/2004 - 2:48:52.000 PM
Val
0.769 — PF Line1
0.848 — PF Line2
0.797 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F12\101404-F12B.dvb

Operator	Test Site
GWA Victor Jardel ,	GWA WPS F-12 - Trend B ,

Comments

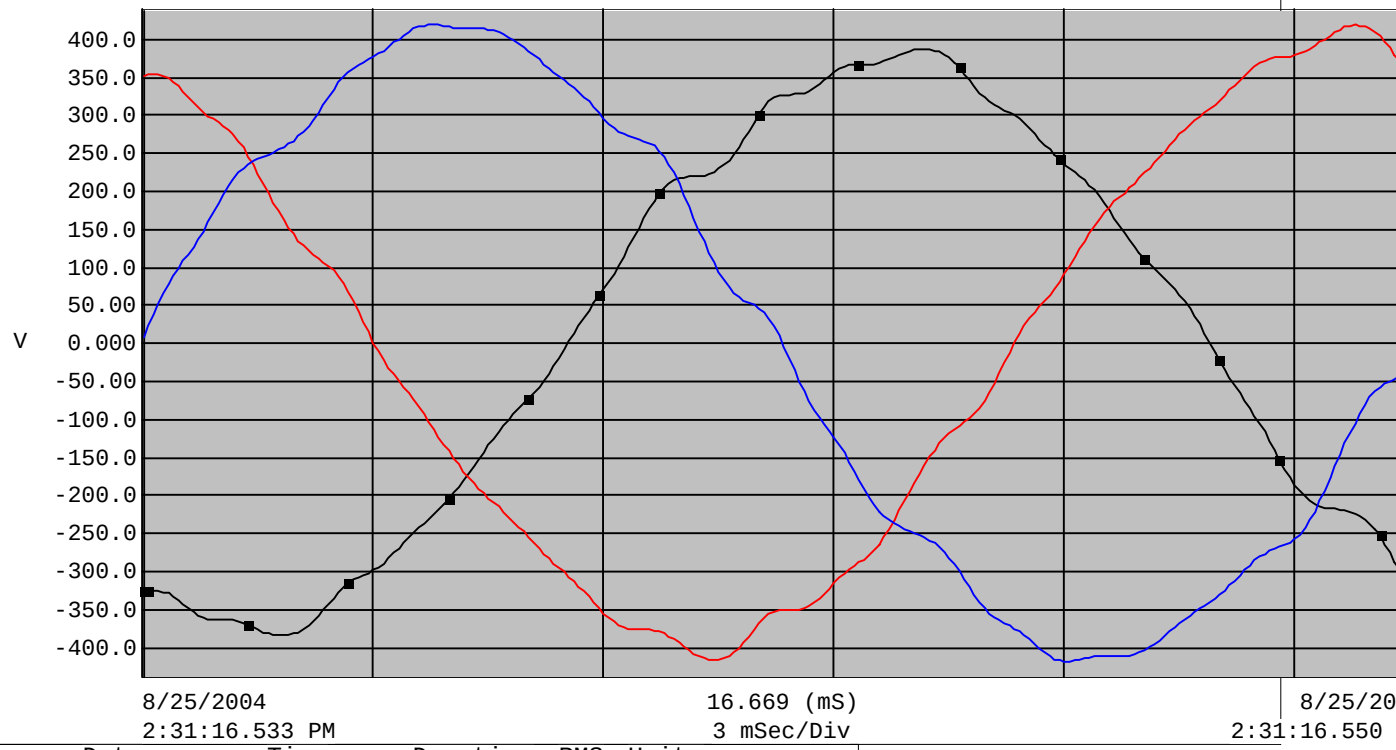
GWA Water Pumping Station Assessment				
Station Name: F-13	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	14
Surge Protection	5.0%	0	0	0
Standby Generator	**20.0%**		0.275	
Generator Condition	10.0%	2	0.2	22
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	0	0	
Pump Motor Starter	**25.0%**		0.6	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	2	0.1	57
Phase Monitor	5.0%	2	0.1	35
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	
Pump Instrumentation	**5.0%**		0.1	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	2	0.04	52
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.2**

Comments:

WPS F-13 - Photo

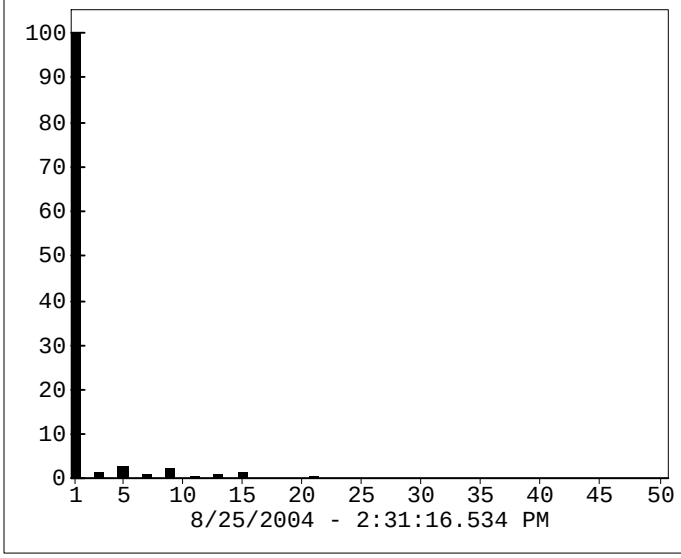
Recording Start Date	8/25/2004 - 2:31:16 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/25/2004	2:31:16.533 PM	16.669	263.8	V
Waveform V2	8/25/2004	2:31:16.533 PM	16.669	281.1	V
Waveform V3	8/25/2004	2:31:16.533 PM	16.669	291.5	V

Waveform V1
263.80 Vrms, 4.76 %THD



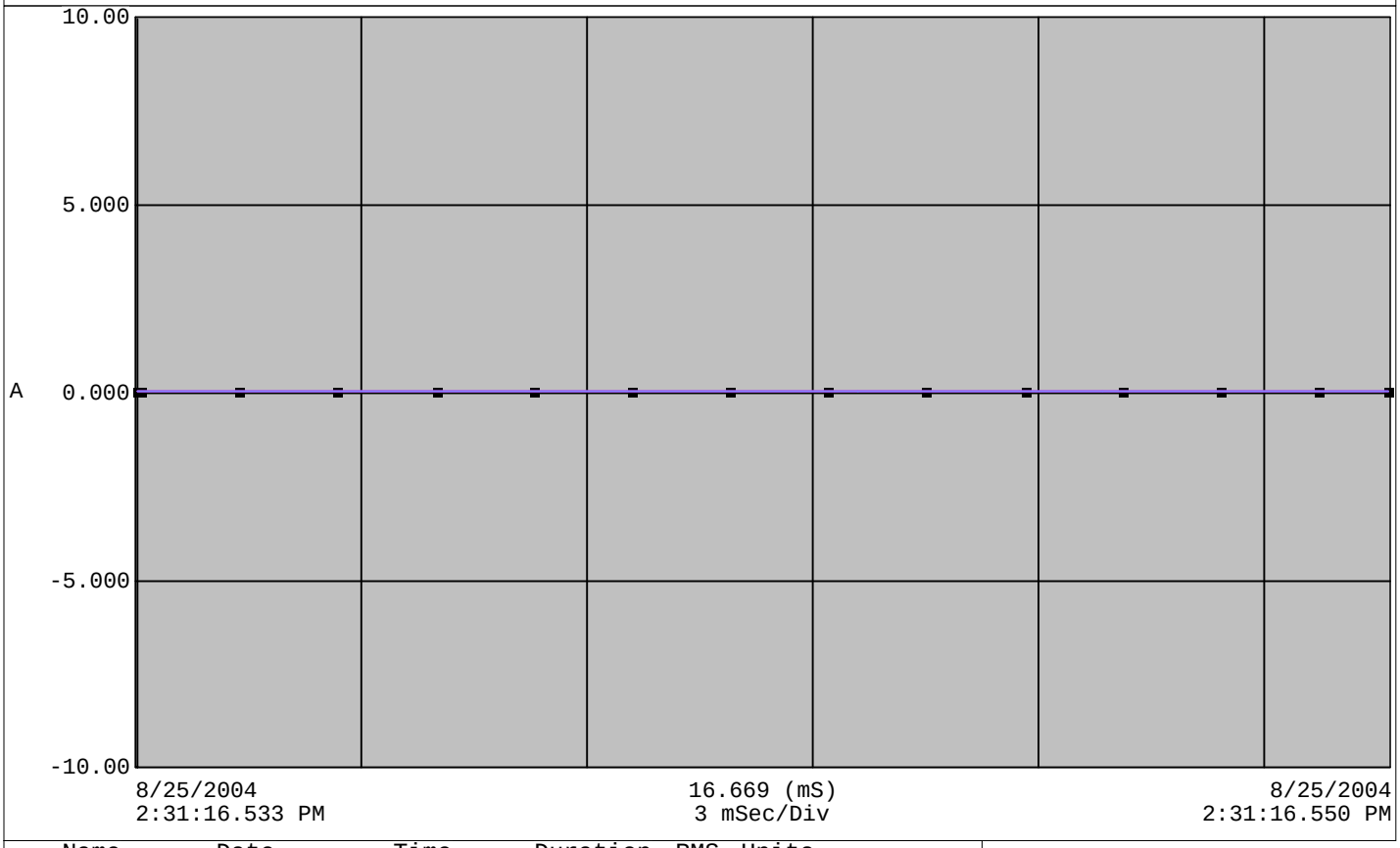
8/25/2004 - 2:31:16.000 PM

Val	
-326.1	Waveform V1
351.3	Waveform V2
5.900	Waveform V3

Waveform V1

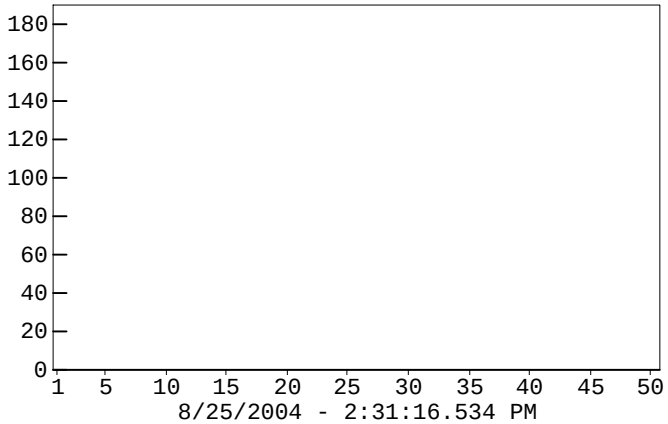
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.3	H36	0.0
H03	1.5	H20	0.0	H37	0.0
H04	0.1	H21	0.5	H38	0.0
H05	2.9	H22	0.0	H39	0.0
H06	0.2	H23	0.1	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	2.5	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.8	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	1.0	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	1.6	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/25/2004	2:31:16.533 PM	16.669	0.000	A
Waveform I2	8/25/2004	2:31:16.533 PM	16.669	0.000	A
Waveform I3	8/25/2004	2:31:16.533 PM	16.669	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



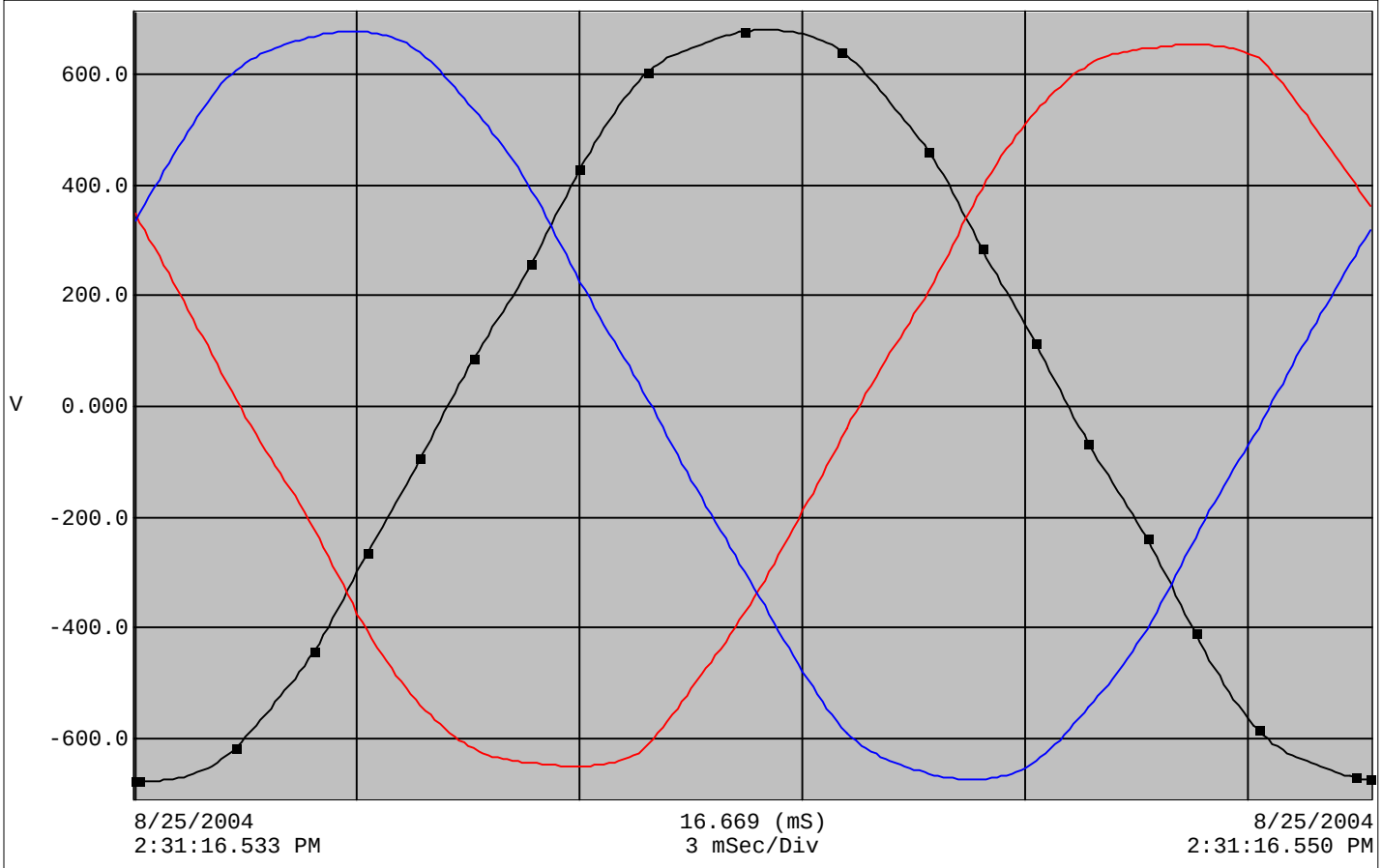
8/25/2004 - 2:31:16.000 PM

Val	
0.000	Waveform I1
0.000	Waveform I2
0.000	Waveform I3

Waveform I1

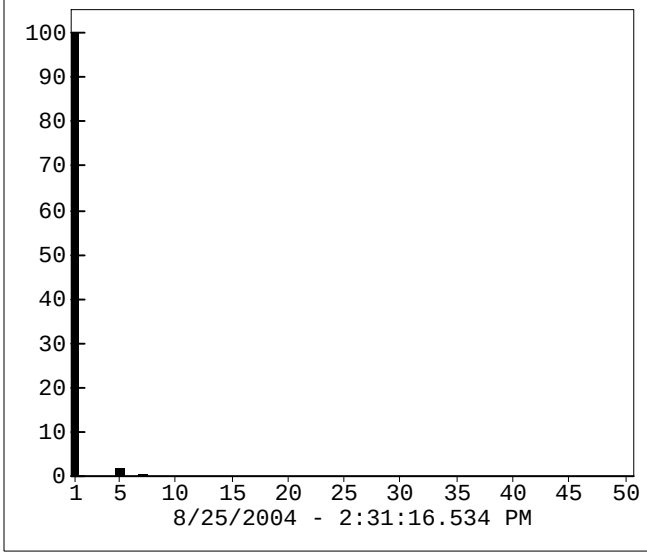
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/25/2004	2:31:16.533 PM	16.669	487.9	V
Waveform U2	8/25/2004	2:31:16.533 PM	16.669	473.6	V
Waveform U3	8/25/2004	2:31:16.533 PM	16.669	483.3	V

Waveform U1
487.90 Vrms, 2.25 %THD



8/25/2004 - 2:31:16.000 PM

Val	
-677.4	Waveform U1
345.3	Waveform U2
332.0	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/25/2004
Start Time: 2:31:16 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F13\082504-F13-Photo.dvb

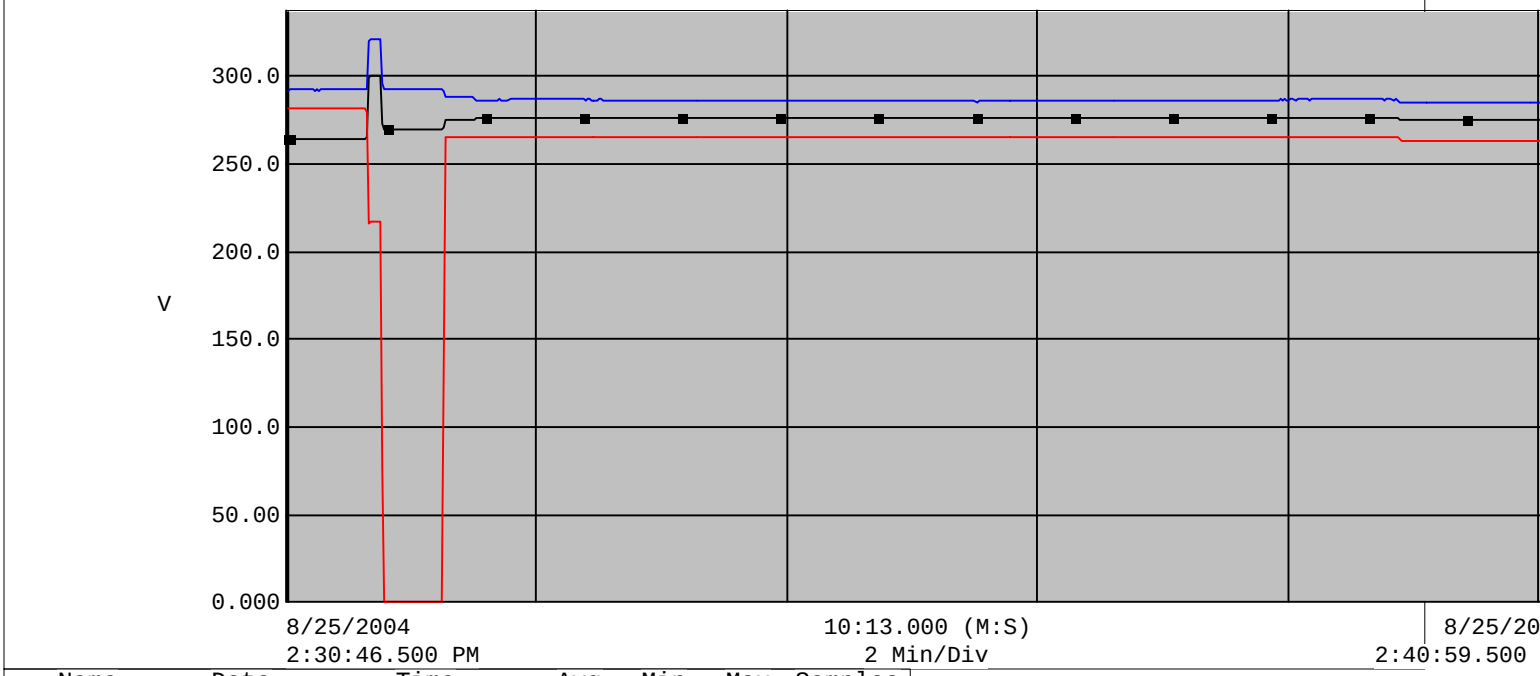
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa ,	GWA WPS F-13 Photo ,

Comments

WPS F-13

Recording Start Date	8/25/2004 - 2:30:46 PM
Recording Duration	10:13 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Vrms

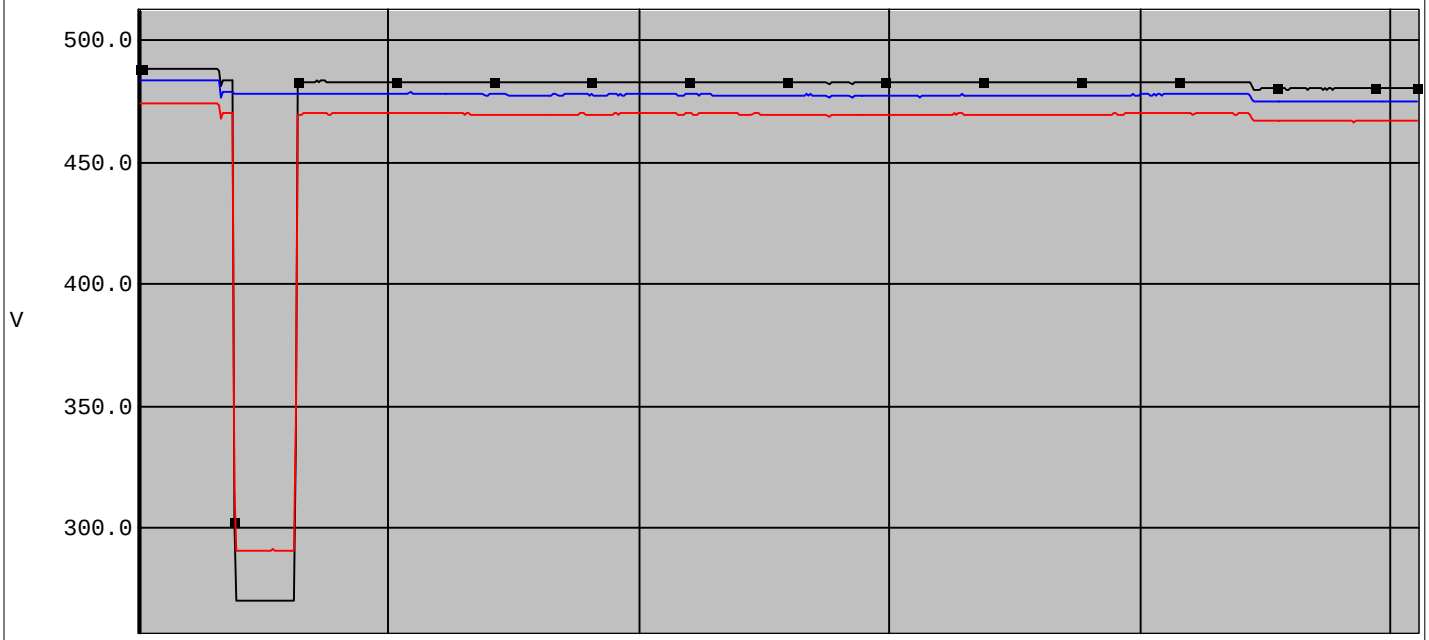


Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/25/2004	2:30:46.500 PM	274.7	263.6	300.0	614
Vrms Line2	8/25/2004	2:30:46.500 PM	252.3	0.000	281.2	614
Vrms Line3	8/25/2004	2:30:46.500 PM	286.5	283.8	320.7	614

8/25/2004 - 2:30:46.000 PM

Val	
263.9	Vrms Line1
281.1	Vrms Line2
291.3	Vrms Line3

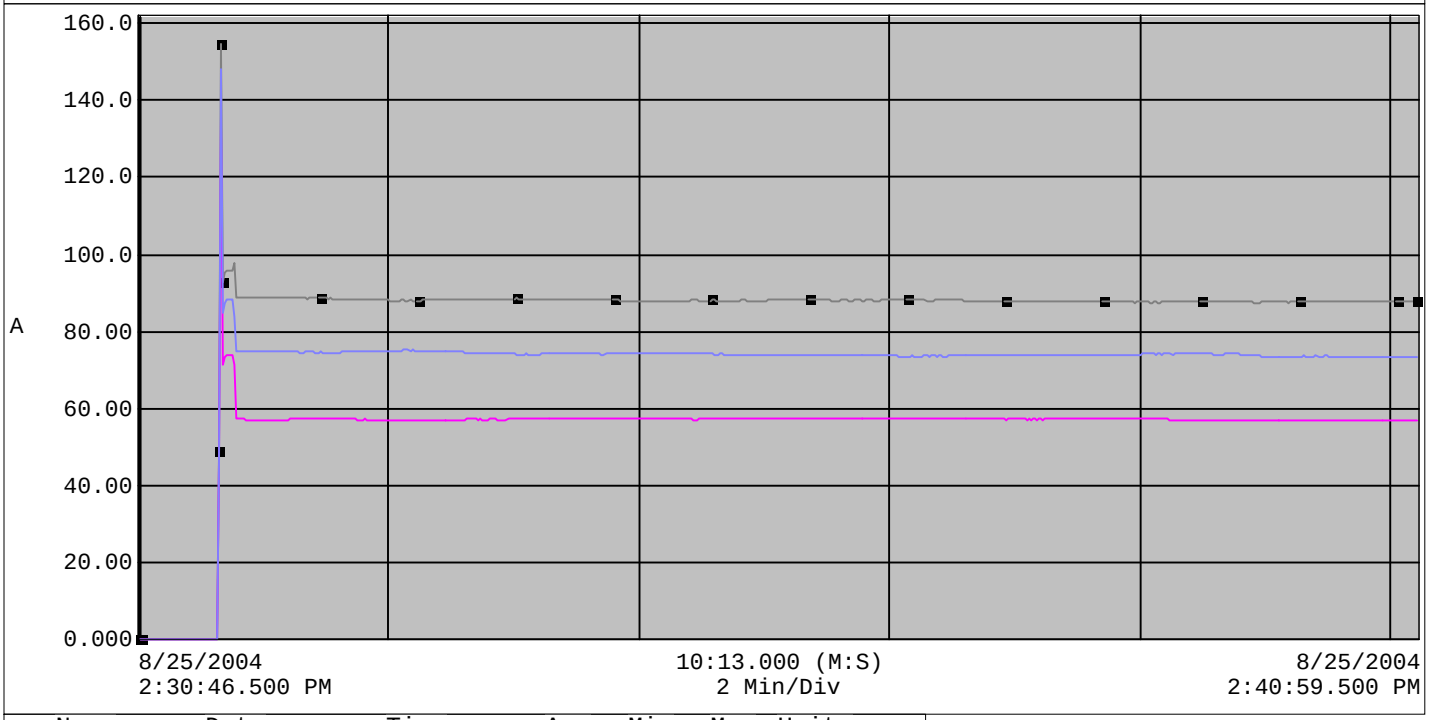
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/25/2004	2:30:46.500 PM	472.1	270.0	487.9	V
Urms Line2	8/25/2004	2:30:46.500 PM	460.6	290.4	473.9	V
Urms Line3	8/25/2004	2:30:46.500 PM	477.3	474.2	483.5	V

8/25/2004 - 2:30:46.000 PM
Val
487.8 Urms Line1
473.7 Urms Line2
483.2 Urms Line3

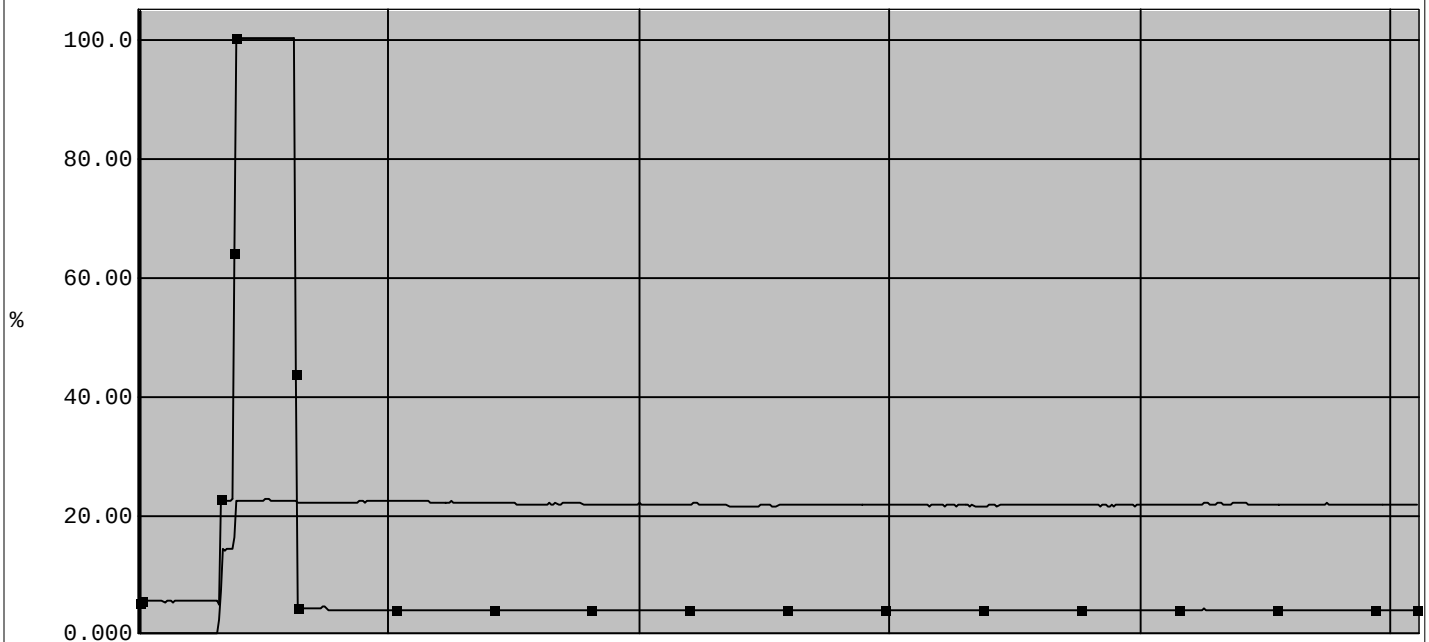
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/25/2004	2:30:46.500 PM	82.53	0.000	154.1	A
Arms Line2	8/25/2004	2:30:46.500 PM	53.83	0.000	135.3	A
Arms Line3	8/25/2004	2:30:46.500 PM	69.58	0.000	148.1	A

8/25/2004 - 2:30:46.000 PM
Val
0.000 Arms Line1
0.000 Arms Line2
0.000 Arms Line3

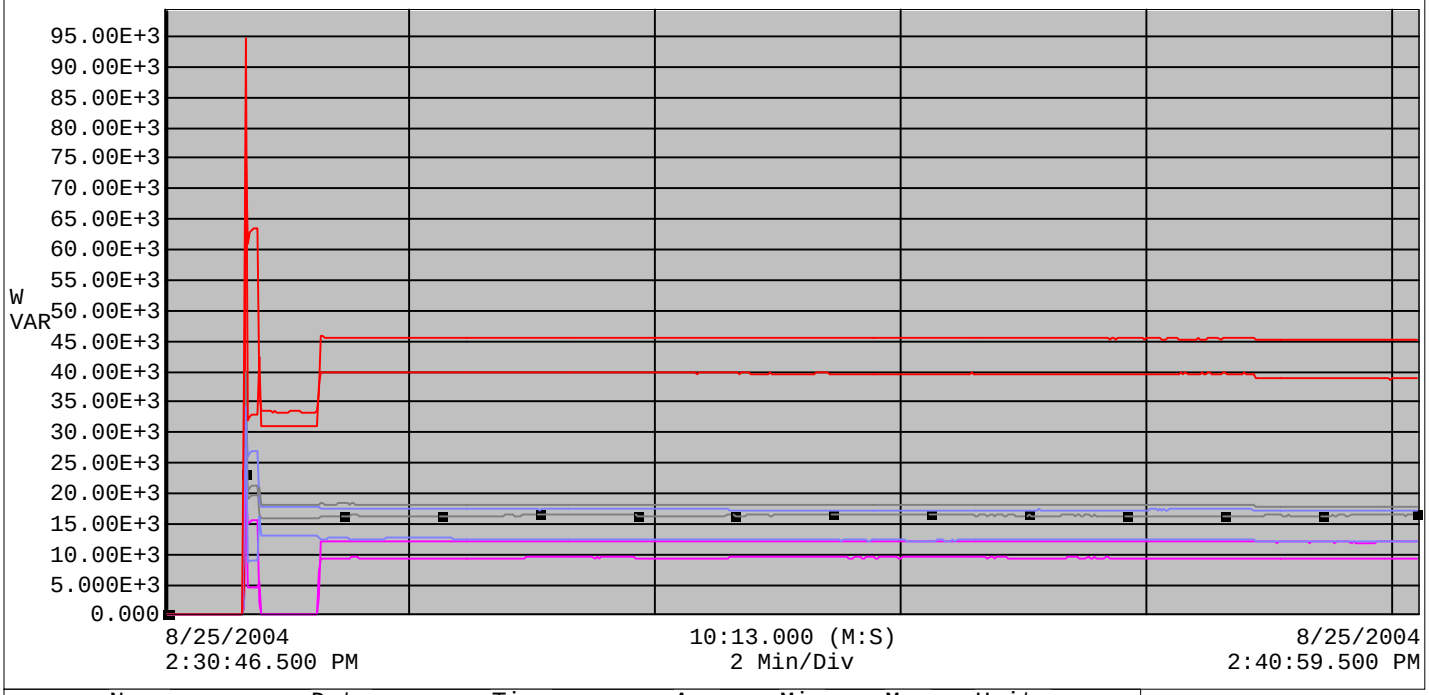
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/25/2004	2:30:46.500 PM	8.762	3.800	100.0	%
Aunb(IEEE)	8/25/2004	2:30:46.500 PM	20.28	0.000	22.50	%

8/25/2004 - 2:30:46.000 PM
Val
5.300 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

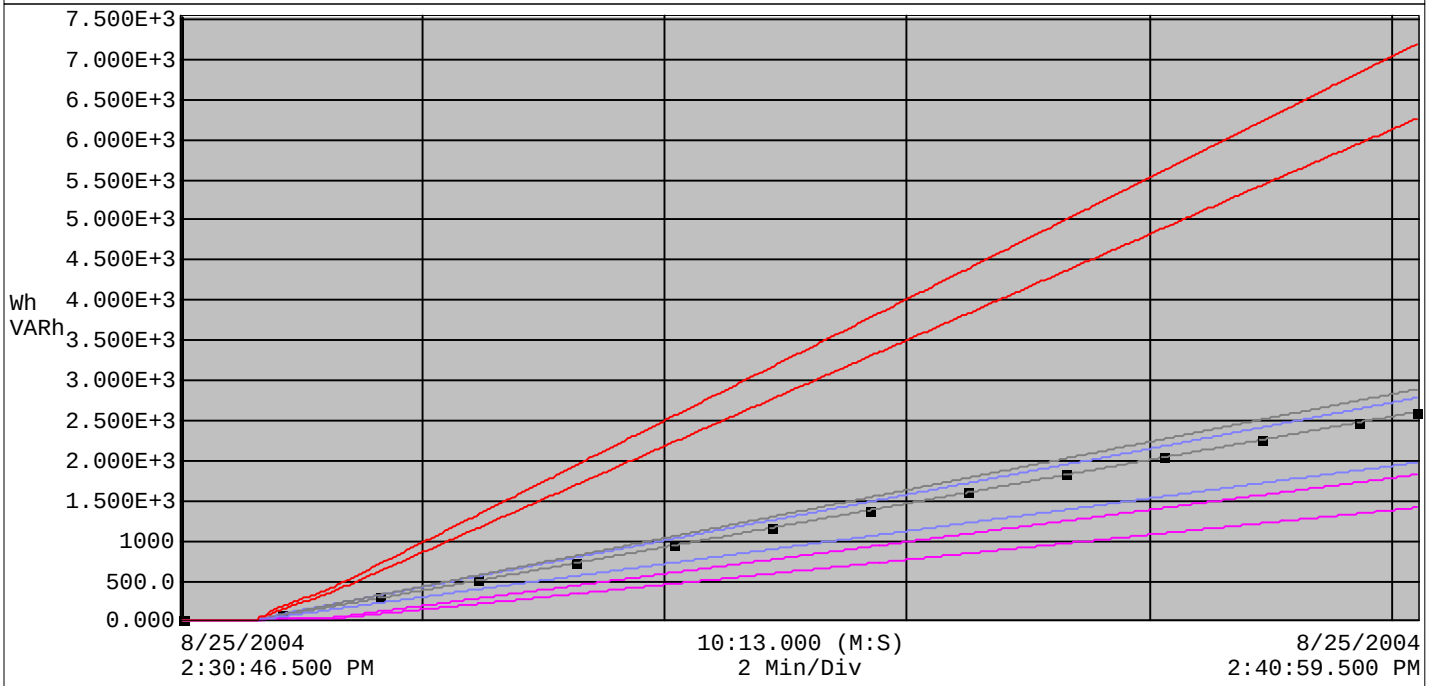
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/25/2004	2:30:46.500 PM	15.22E+3	0.000	23.01E+3	W
W Line2	8/25/2004	2:30:46.500 PM	10.63E+3	0.000	20.41E+3	W
W Line3	8/25/2004	2:30:46.500 PM	16.23E+3	0.000	32.88E+3	W
W Sum of Phases	8/25/2004	2:30:46.500 PM	42.08E+3	0.000	76.30E+3	W
VAR Line1	8/25/2004	2:30:46.500 PM	16.87E+3	0.000	39.83E+3	VAR
VAR Line2	8/25/2004	2:30:46.500 PM	8.225E+3	0.000	20.72E+3	VAR
VAR Line3	8/25/2004	2:30:46.500 PM	11.51E+3	0.000	33.97E+3	VAR
VAR Sum of Phases	8/25/2004	2:30:46.500 PM	36.61E+3	0.000	94.53E+3	VAR

8/25/2004 - 2:30:46.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

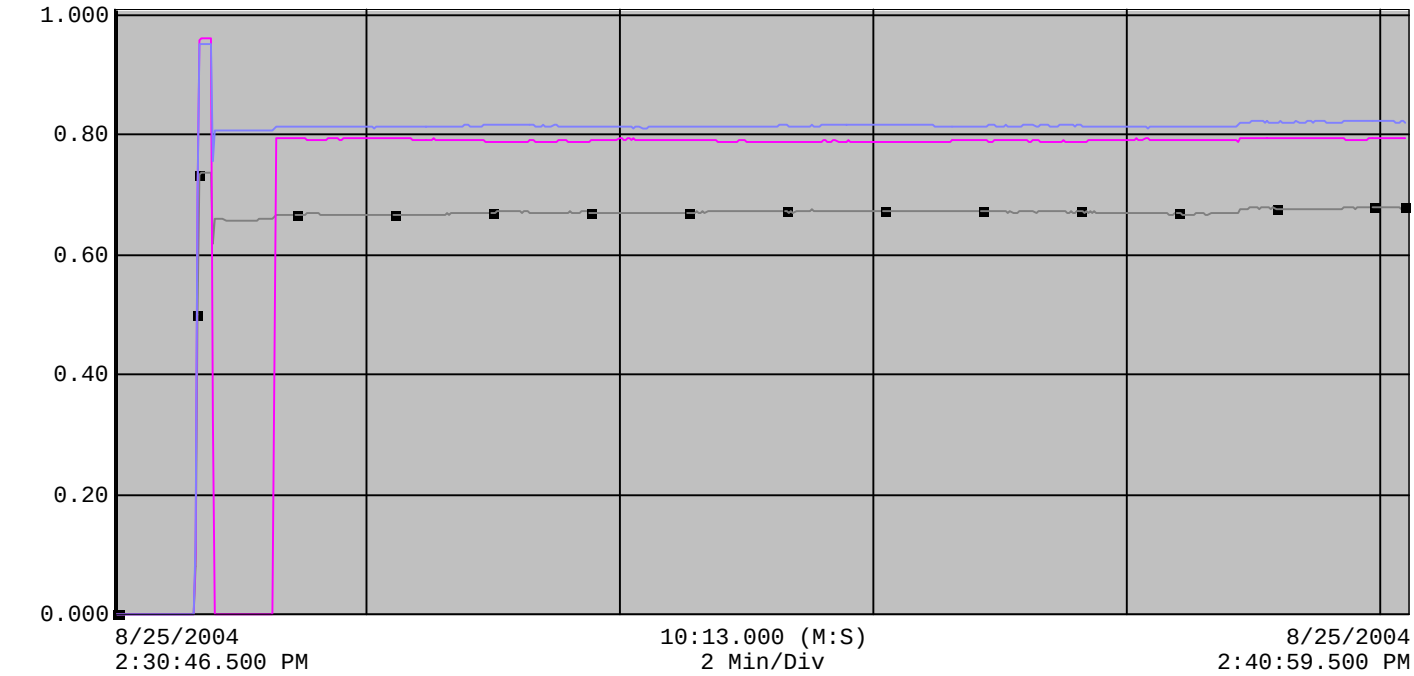
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/25/2004	2:30:46.500 PM	1.220E+3	0.000	2.596E+3	Wh
W-hours Line2	8/25/2004	2:30:46.500 PM	813.2	0.000	1.813E+3	Wh
W-hours Line3	8/25/2004	2:30:46.500 PM	1.312E+3	0.000	2.768E+3	Wh
W-hours Sum of Phases	8/25/2004	2:30:46.500 PM	3.345E+3	0.000	7.177E+3	Wh
VAR-hours Line1	8/25/2004	2:30:46.500 PM	1.360E+3	0.000	2.878E+3	VARh
VAR-hours Line2	8/25/2004	2:30:46.500 PM	627.1	0.000	1.403E+3	VARh
VAR-hours Line3	8/25/2004	2:30:46.500 PM	930.4	0.000	1.963E+3	VARh
VAR-hours Sum of Phases	8/25/2004	2:30:46.500 PM	2.917E+3	0.000	6.244E+3	VARh

8/25/2004 - 2:30:46.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/25/2004	2:30:46.500 PM	0.628	0.000	0.736	
PF Line2	8/25/2004	2:30:46.500 PM	0.704	0.000	0.960	
PF Line3	8/25/2004	2:30:46.500 PM	0.764	0.000	0.950	

8/25/2004 - 2:30:46.000 PM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F13\082504-F13.dvb

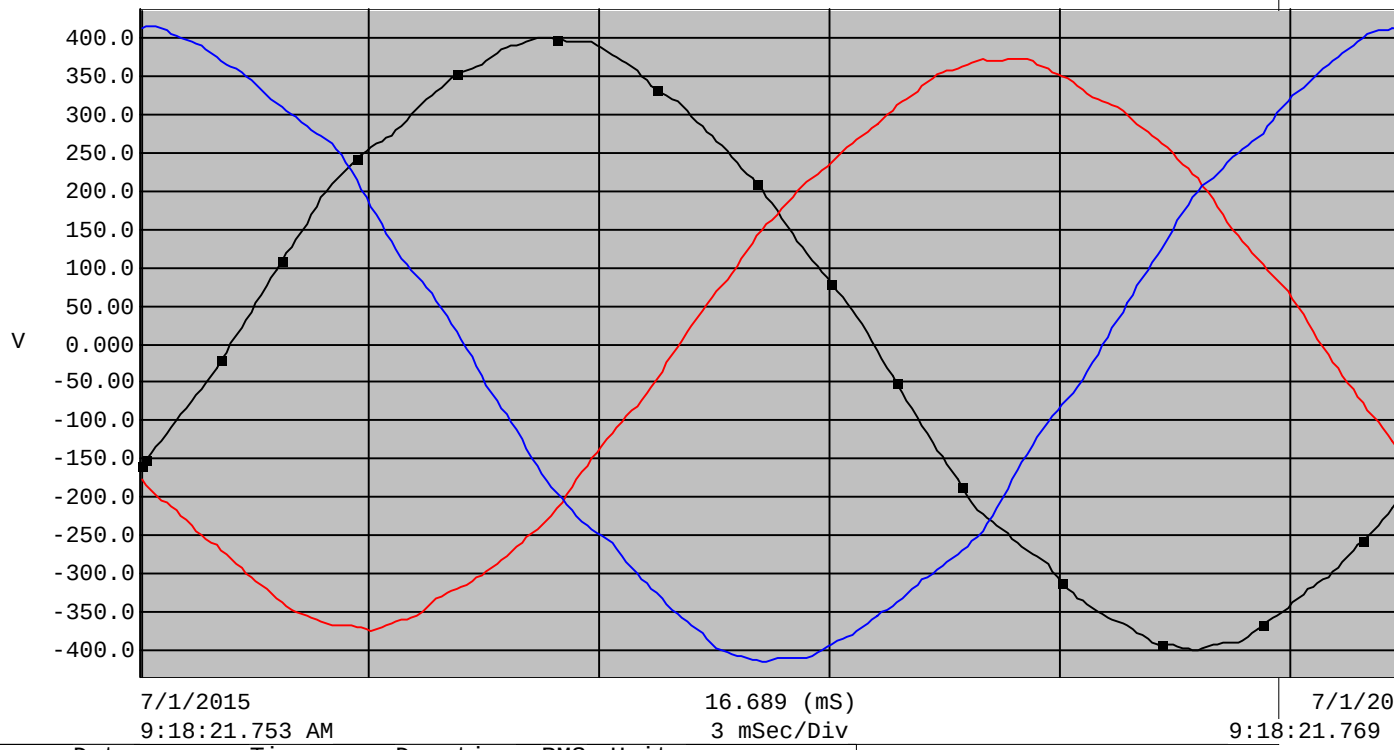
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa ,	GWA WPS F-13 ,

Comments

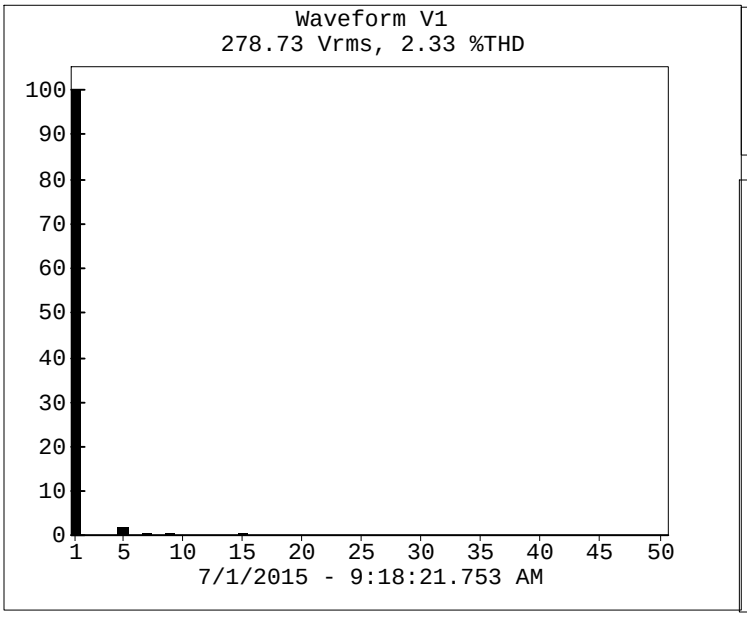
WPS F-13 - Photo

Recording Start Date	7/1/2015 - 9:18:21 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.92 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/1/2015	9:18:21.753 AM	16.689	278.7	V
Waveform V2	7/1/2015	9:18:21.753 AM	16.689	258.4	V
Waveform V3	7/1/2015	9:18:21.753 AM	16.689	290.0	V

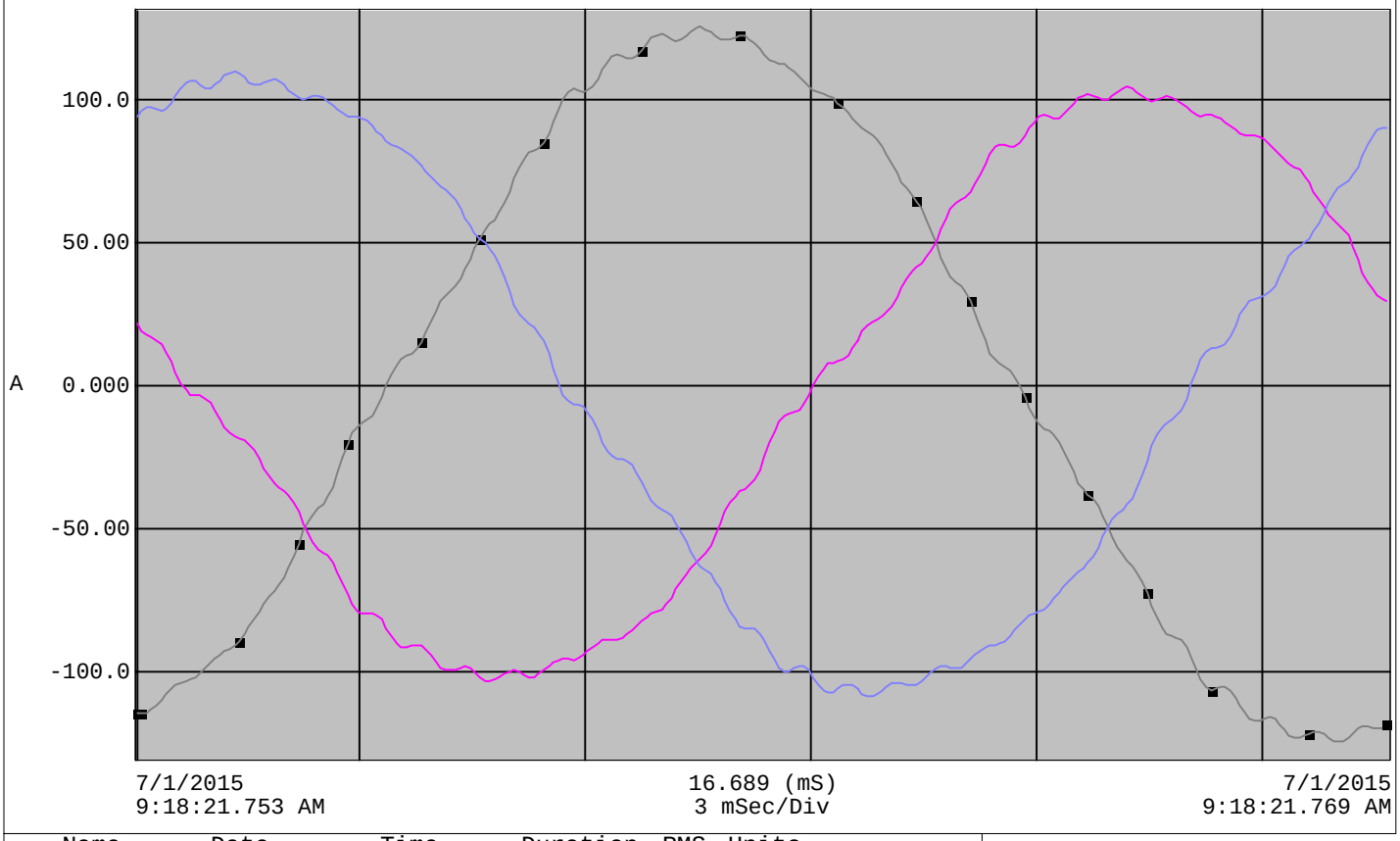


7/1/2015 - 9:18:21.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

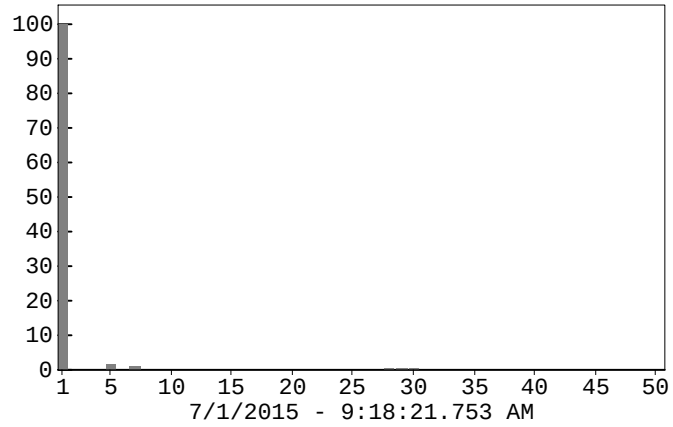
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.8	H22	0.1	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.8	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.8	H26	0.1	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.2	H45	0.0
H12	0.0	H29	0.3	H46	0.0
H13	0.4	H30	0.2	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.5	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.92 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/1/2015	9:18:21.753 AM	16.689	87.36	A
Waveform I2	7/1/2015	9:18:21.753 AM	16.689	72.08	A
Waveform I3	7/1/2015	9:18:21.753 AM	16.689	76.18	A

Waveform I1
87.36 Arms, 3.19 %THD

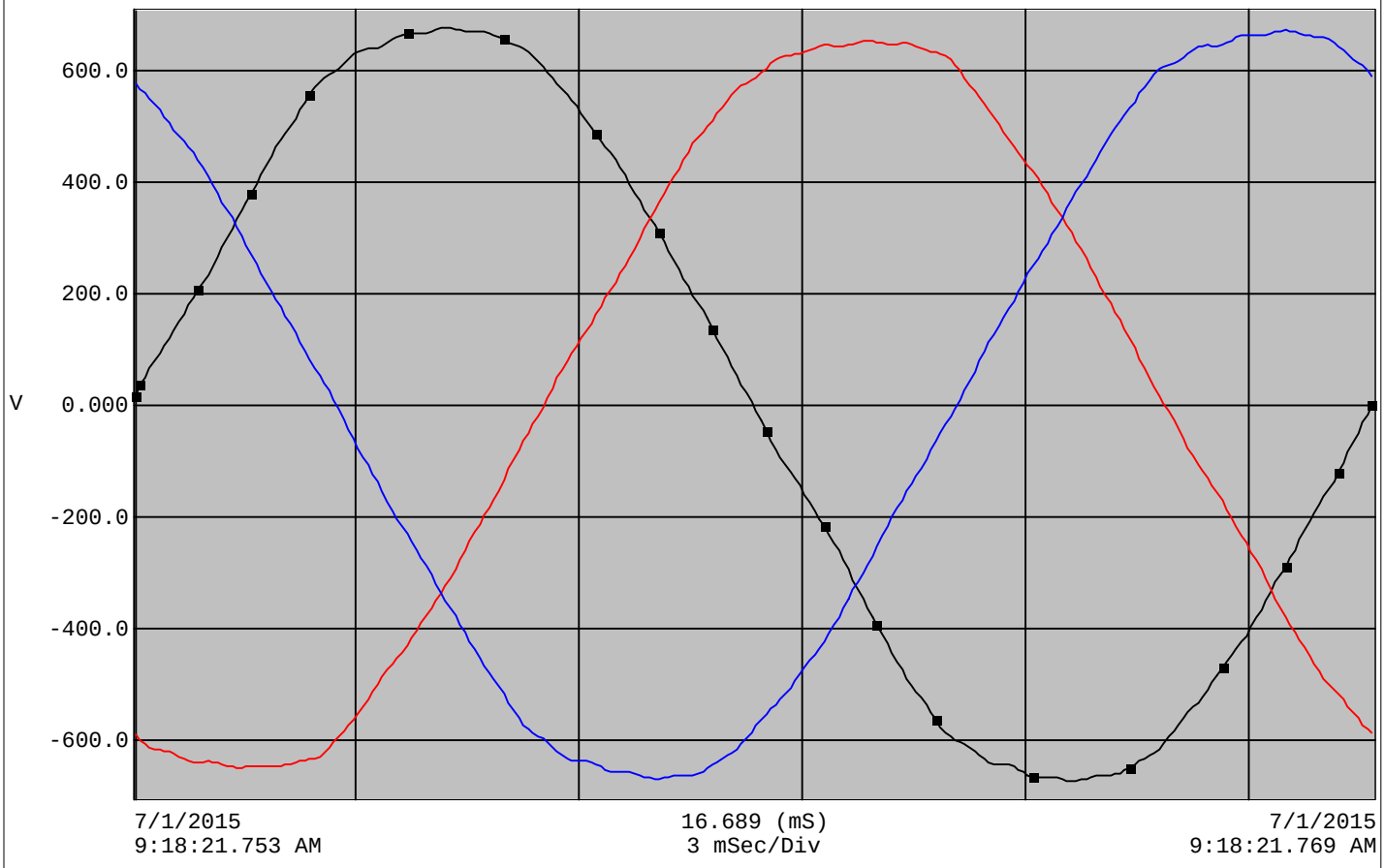


7/1/2015 - 9:18:21.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

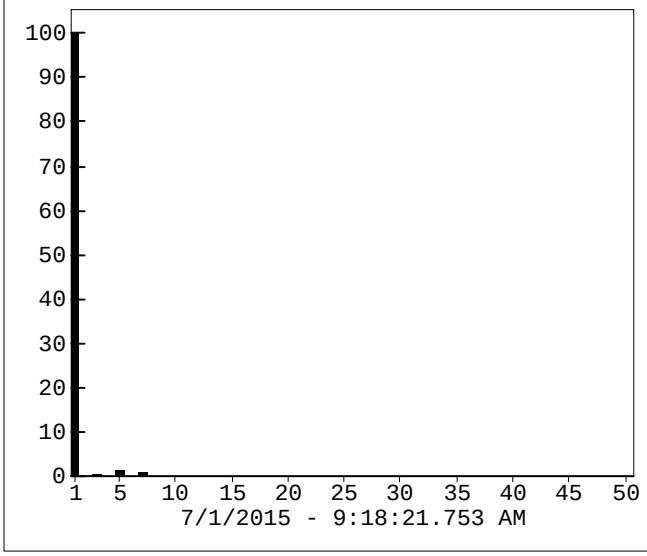
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.1	H19	0.1	H36	0.1
H03	0.5	H20	0.1	H37	0.0
H04	0.1	H21	0.1	H38	0.1
H05	2.1	H22	0.2	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	1.6	H24	0.3	H41	0.0
H08	0.0	H25	0.4	H42	0.0
H09	0.2	H26	0.3	H43	0.0
H10	0.0	H27	0.2	H44	0.0
H11	0.1	H28	0.9	H45	0.0
H12	0.0	H29	1.1	H46	0.1
H13	0.2	H30	0.6	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.1	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.92 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/1/2015	9:18:21.753 AM	16.689	481.6	V
Waveform U2	7/1/2015	9:18:21.753 AM	16.689	470.9	V
Waveform U3	7/1/2015	9:18:21.753 AM	16.689	478.1	V

Waveform U1
481.57 Vrms, 2.12 %THD



7/1/2015 - 9:18:21.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.2	H28	0.2	H45	0.0
H12	0.0	H29	0.3	H46	0.0
H13	0.3	H30	0.2	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/1/2015
Start Time: 9:18:21 AM
Duration: 0:0.000 (M:S)
W: 16.05E+3 W
VAR: 18.34E+3 W
VA: 24.37E+3 W
Power Factor: 0.659
Displacement Power Factor: 0.659
TAN: 1.141
VoltageRatio: 1.000
CurrentRatio: 1.000
```

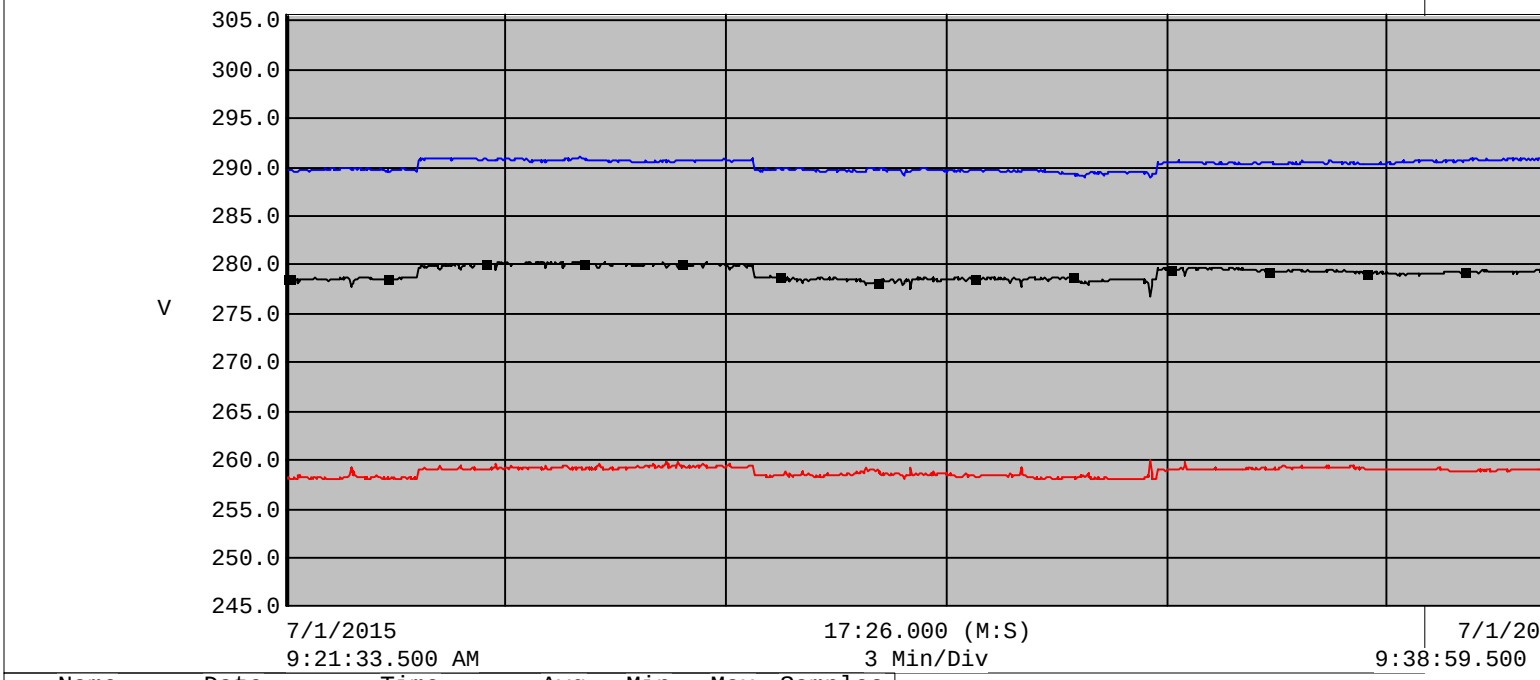
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F13\070104-F13-Photo.dvb	
Operator ,	Test Site ,
Comments	

WPS F-13

Recording Start Date	7/1/2015 - 9:21:33 AM
Recording Duration	17:26 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

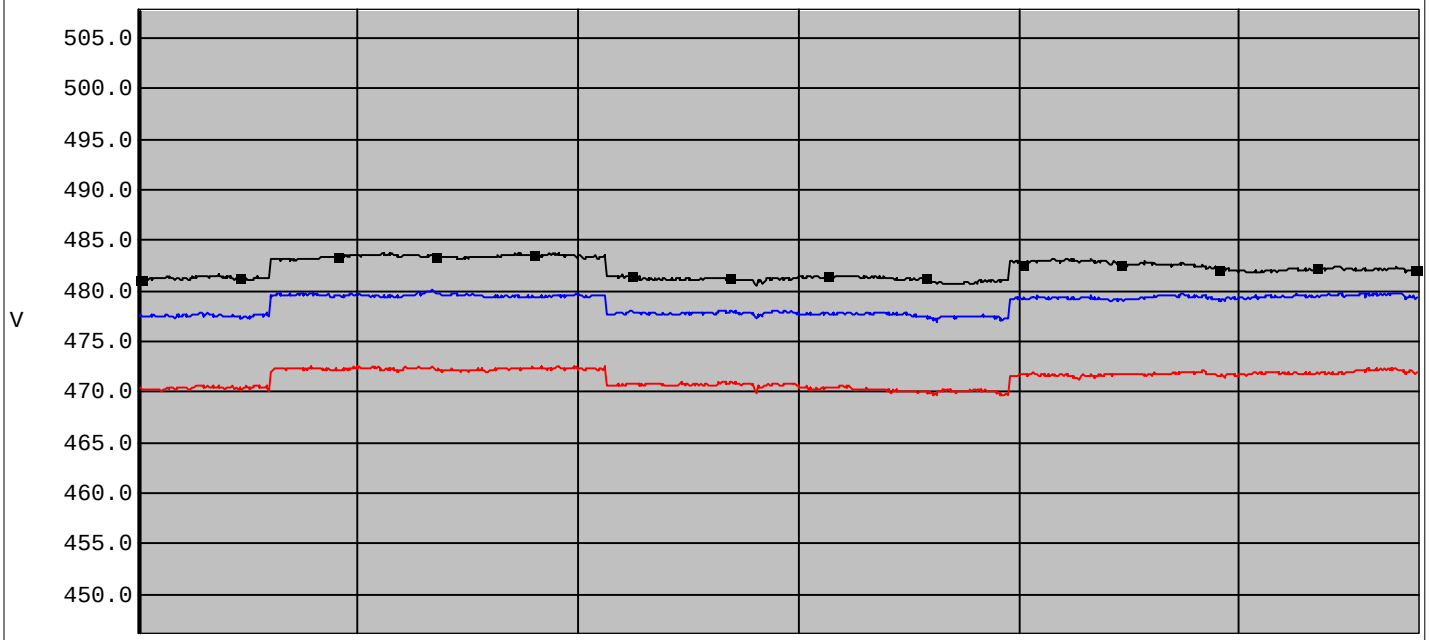
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/1/2015	9:21:33.500 AM	279.1	276.6	280.2	1047
Vrms Line2	7/1/2015	9:21:33.500 AM	258.7	257.9	260.0	1047
Vrms Line3	7/1/2015	9:21:33.500 AM	290.2	288.8	291.0	1047

7/1/2015 - 9:21:33.000 AM
Val
278.4 — Vrms Line1
258.0 — Vrms Line2
289.7 — Vrms Line3

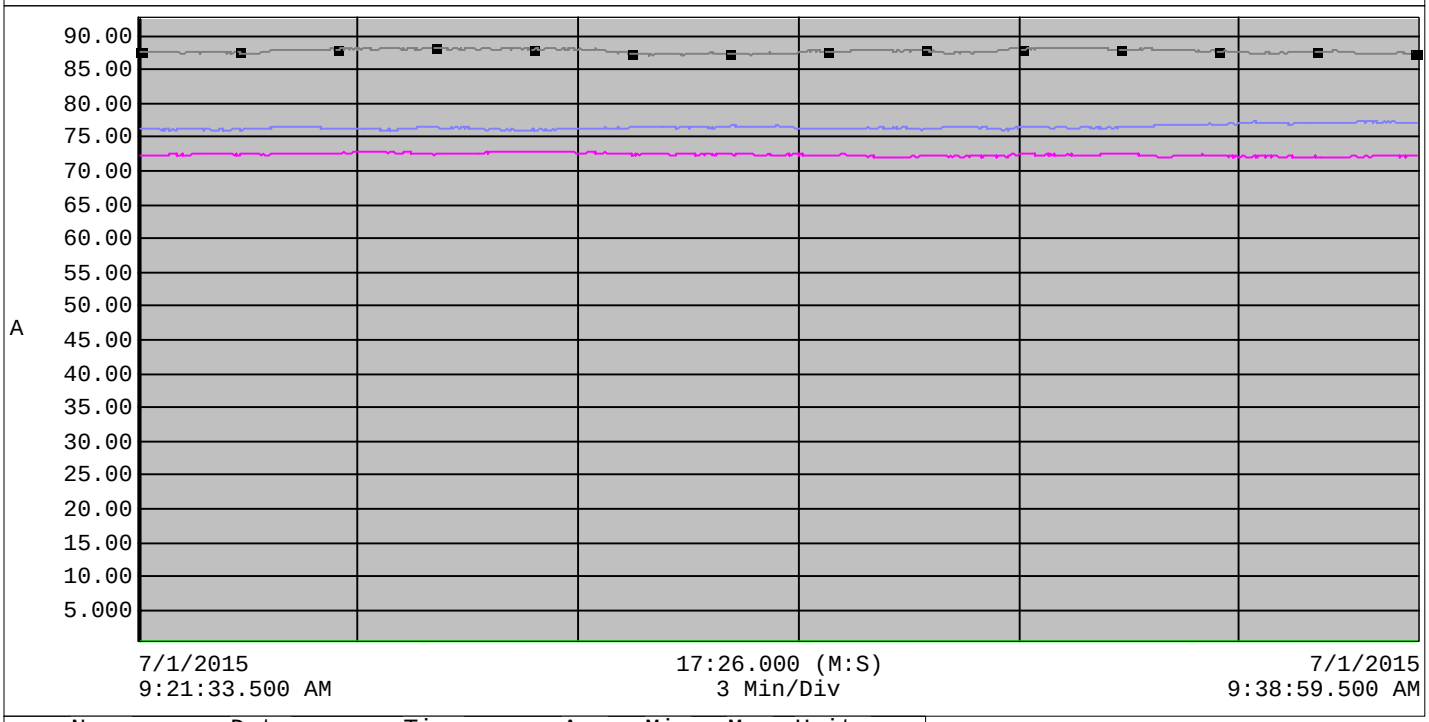
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/1/2015	9:21:33.500 AM	482.1	480.4	483.6	V
Urms Line2	7/1/2015	9:21:33.500 AM	471.3	469.5	472.5	V
Urms Line3	7/1/2015	9:21:33.500 AM	478.6	476.9	480.0	V

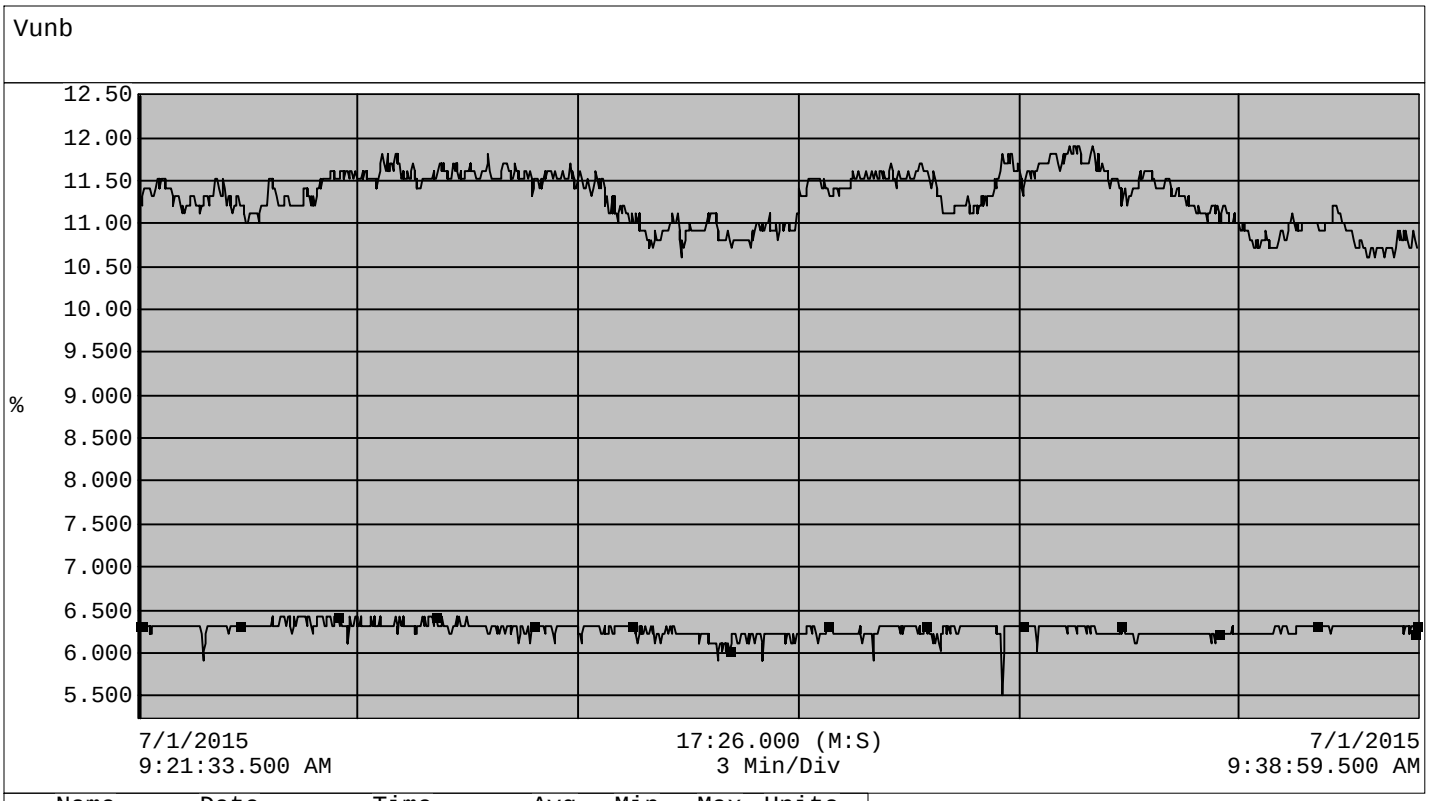
7/1/2015 - 9:21:33.000 AM
Val
481.0 Urms Line1
470.3 Urms Line2
477.4 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/1/2015	9:21:33.500 AM	87.63	87.00	88.20	A
Arms Line2	7/1/2015	9:21:33.500 AM	72.26	71.90	72.80	A
Arms Line3	7/1/2015	9:21:33.500 AM	76.34	75.80	77.30	A
Arms Neutral	7/1/2015	9:21:33.500 AM	0.300	0.300	0.300	A

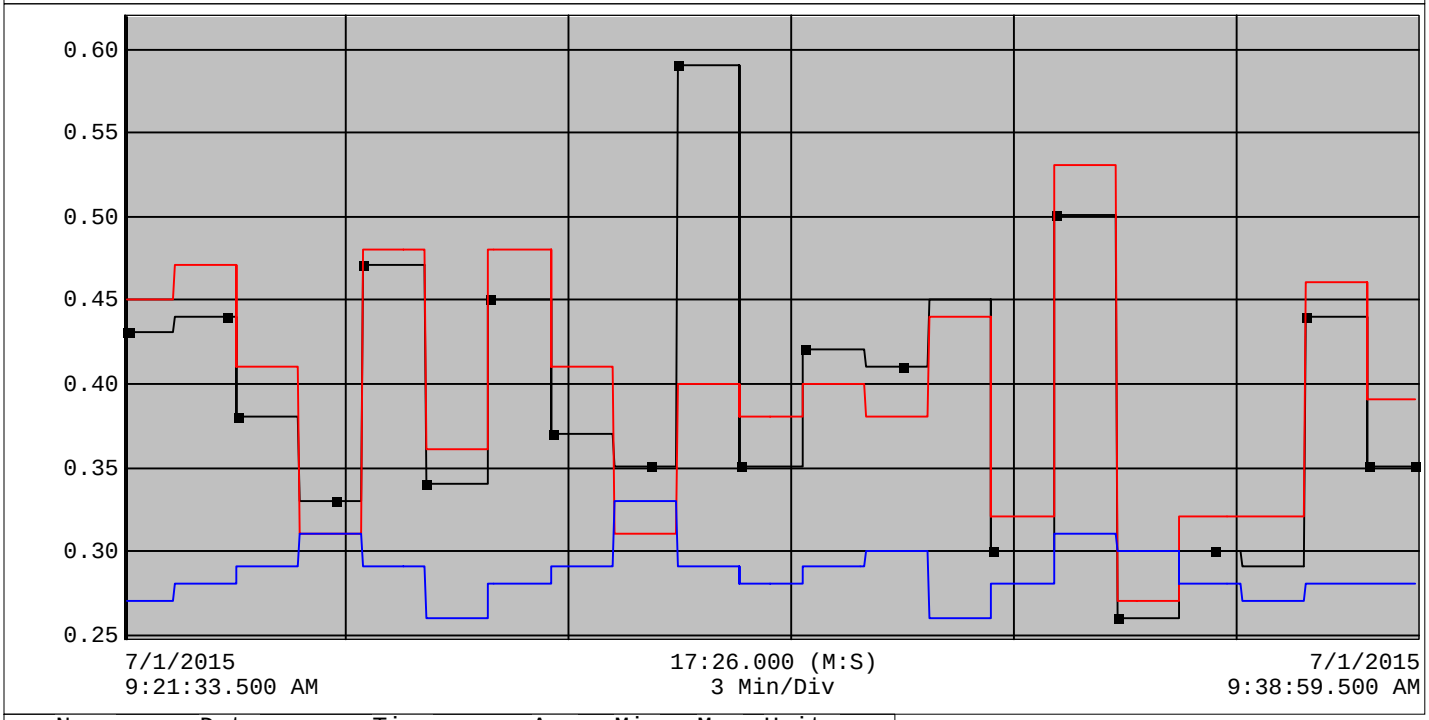
7/1/2015 - 9:21:33.000 AM
Val
87.40 — Arms Line1
72.20 — Arms Line2
76.10 — Arms Line3
0.300 — Arms Neutral



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/1/2015	9:21:33.500 AM	6.257	5.500	6.400	%
Aunb(IEEE)	7/1/2015	9:21:33.500 AM	11.28	10.60	11.90	%

7/1/2015 - 9:21:33.000 AM
Val
6.300 —— Vunb(IEEE)
11.20 —— Aunb(IEEE)

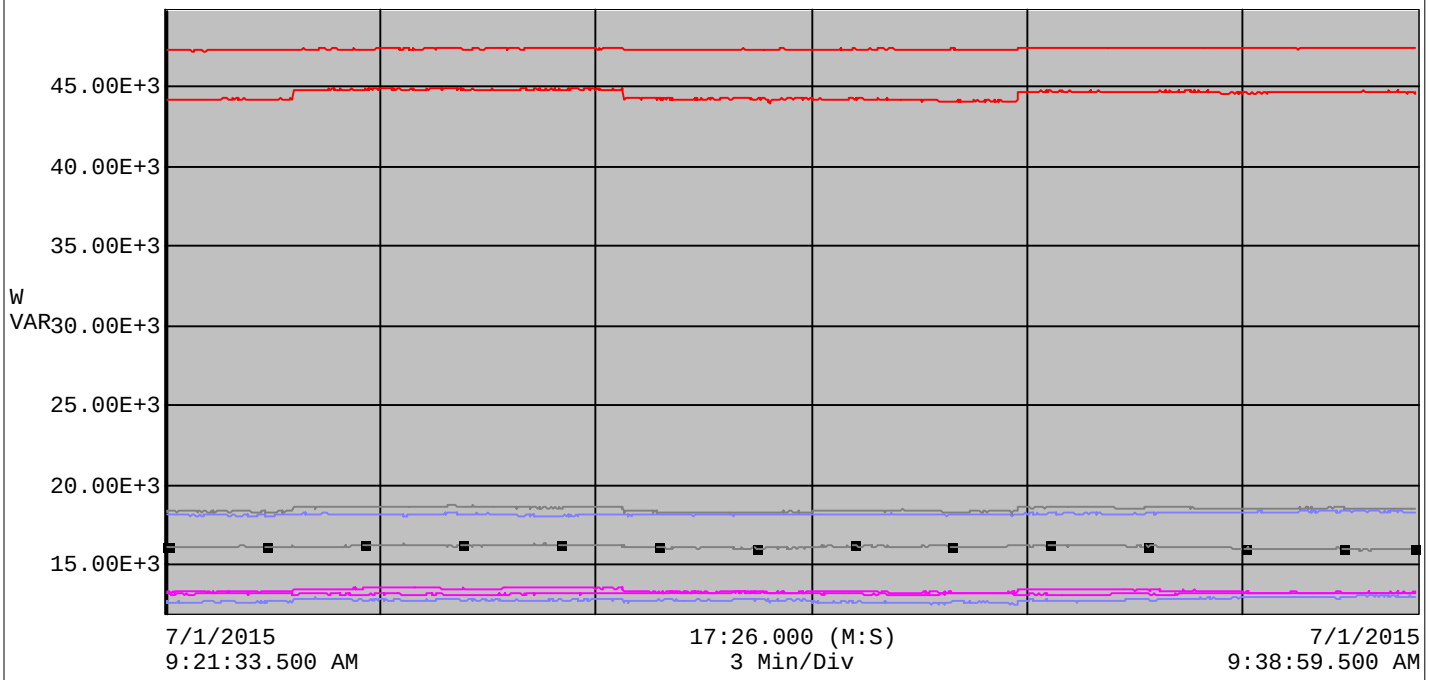
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/1/2015	9:21:33.500 AM	0.392	0.260	0.590	
Vflk Line2	7/1/2015	9:21:33.500 AM	0.394	0.270	0.530	
Vflk Line3	7/1/2015	9:21:33.500 AM	0.287	0.260	0.330	

7/1/2015 - 9:21:33.000 AM
Val
0.430 Vflk Line1
0.450 Vflk Line2
0.270 Vflk Line3

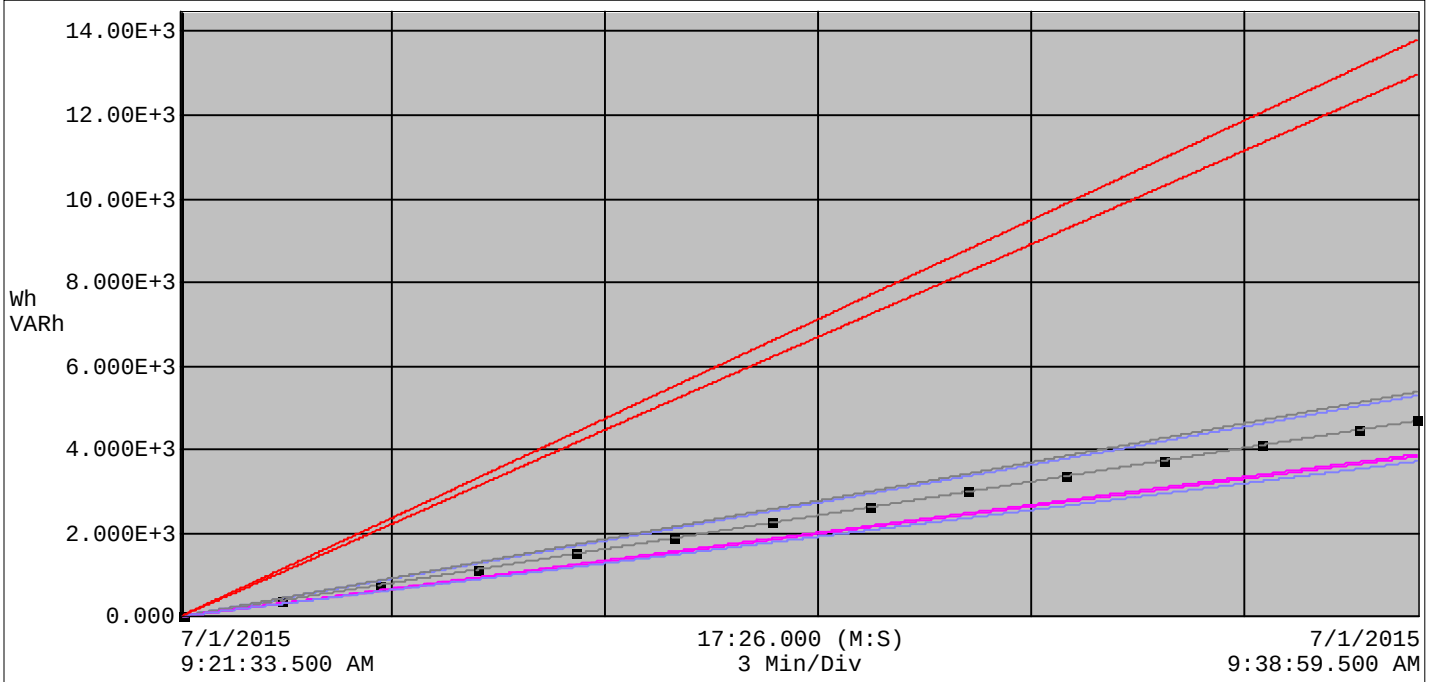
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/1/2015	9:21:33.500 AM	16.07E+3	15.85E+3	16.25E+3	W
W Line2	7/1/2015	9:21:33.500 AM	13.13E+3	13.02E+3	13.26E+3	W
W Line3	7/1/2015	9:21:33.500 AM	18.13E+3	17.94E+3	18.33E+3	W
W Sum of Phases	7/1/2015	9:21:33.500 AM	47.33E+3	47.19E+3	47.43E+3	W
VAR Line1	7/1/2015	9:21:33.500 AM	18.44E+3	18.14E+3	18.67E+3	VAR
VAR Line2	7/1/2015	9:21:33.500 AM	13.31E+3	13.13E+3	13.57E+3	VAR
VAR Line3	7/1/2015	9:21:33.500 AM	12.73E+3	12.46E+3	13.03E+3	VAR
VAR Sum of Phases	7/1/2015	9:21:33.500 AM	44.47E+3	43.95E+3	44.89E+3	VAR

7/1/2015 - 9:21:33.000 AM
Val
16.04E+3 — W Line1
13.13E+3 — W Line2
18.08E+3 — W Line3
47.25E+3 — W Sum of Phases
18.28E+3 — VAR Line1
13.21E+3 — VAR Line2
12.63E+3 — VAR Line3
44.13E+3 — VAR Sum of Phases

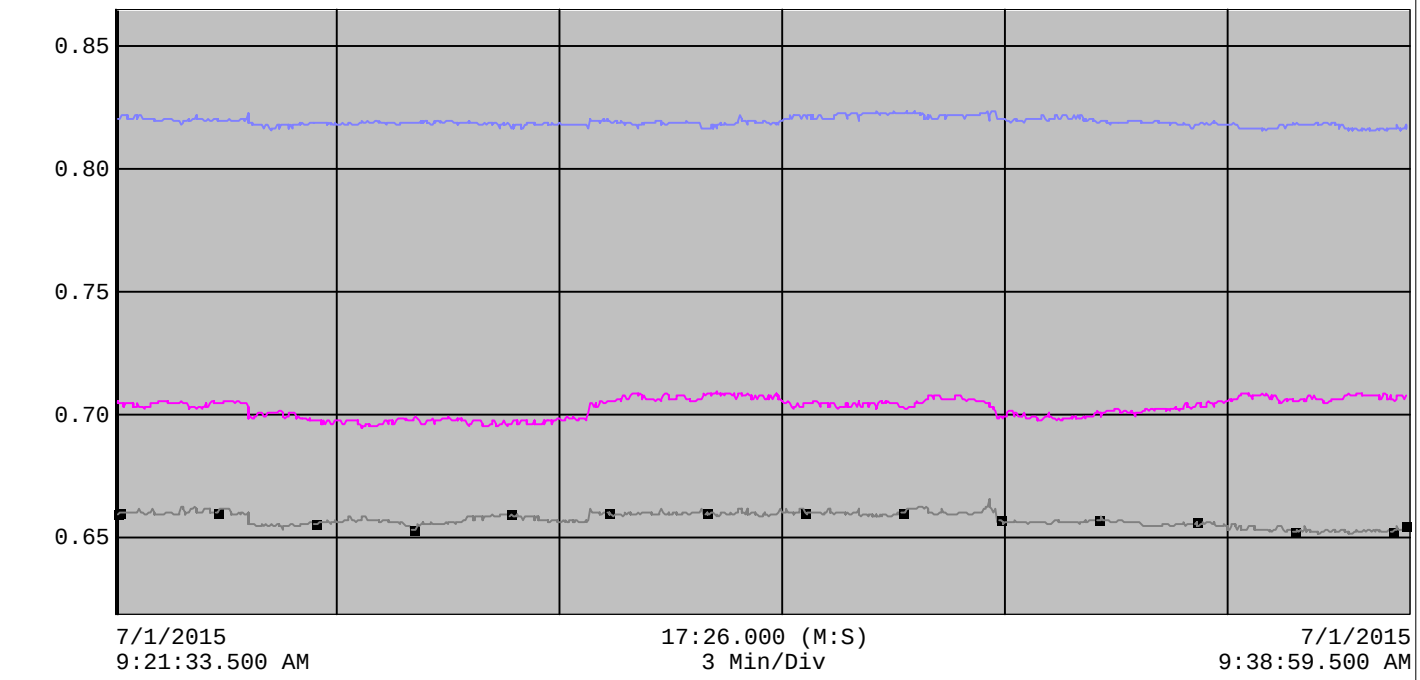
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/1/2015	9:21:33.500 AM	2.343E+3	4.422	4.674E+3	Wh
W-hours Line2	7/1/2015	9:21:33.500 AM	1.910E+3	3.613	3.819E+3	Wh
W-hours Line3	7/1/2015	9:21:33.500 AM	2.634E+3	4.989	5.273E+3	Wh
W-hours Sum of Phases	7/1/2015	9:21:33.500 AM	6.887E+3	13.02	13.77E+3	Wh
VAR-hours Line1	7/1/2015	9:21:33.500 AM	2.682E+3	5.073	5.362E+3	VARh
VAR-hours Line2	7/1/2015	9:21:33.500 AM	1.941E+3	3.662	3.871E+3	VARh
VAR-hours Line3	7/1/2015	9:21:33.500 AM	1.848E+3	3.502	3.702E+3	VARh
VAR-hours Sum of Phases	7/1/2015	9:21:33.500 AM	6.472E+3	12.24	12.93E+3	VARh

7/1/2015 - 9:21:33.000 AM
Val
4.422 — W-hours Line1
3.613 — W-hours Line2
4.989 — W-hours Line3
13.02 — W-hours Sum of Phases
5.073 — VAR-hours Line1
3.662 — VAR-hours Line2
3.502 — VAR-hours Line3
12.24 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/1/2015	9:21:33.500 AM	0.657	0.651	0.665	
PF Line2	7/1/2015	9:21:33.500 AM	0.702	0.694	0.709	
PF Line3	7/1/2015	9:21:33.500 AM	0.818	0.815	0.823	

7/1/2015 - 9:21:33.000 AM
Val
0.660 — PF Line1
0.705 — PF Line2
0.820 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F13\070104-F13.dvb	
Operator ,	Test Site ,
Comments	

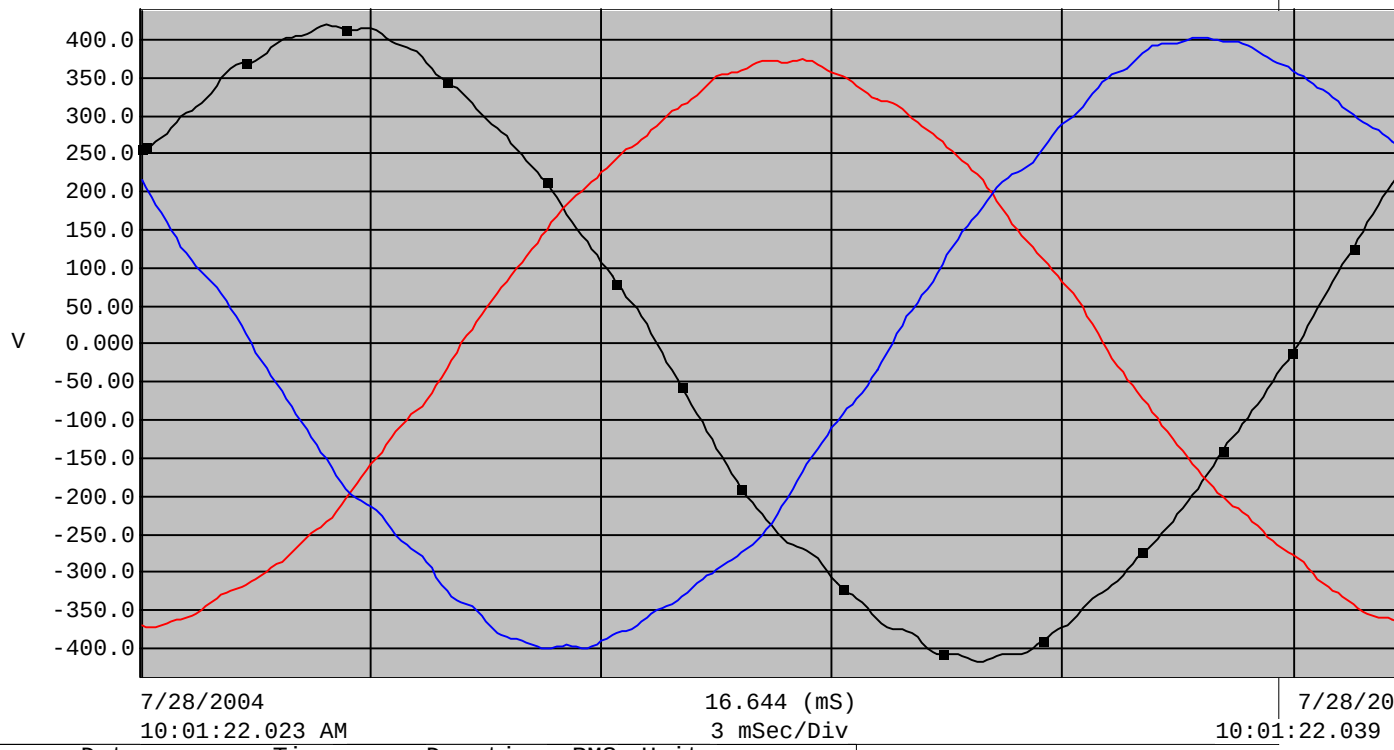
GWA Water Pumping Station Assessment				
Station Name: F-15	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/01/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.25	
Main Disconnect	10.0%	1	0.1	12
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.525	
Generator Condition	10.0%	2	0.2	11
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	4	0.1	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.7	
Main Breaker	5.0%	2	0.1	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	31, 32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	
Pump Instrumentation	**5.0%**		0.1	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	2	0.04	52
Building Electrical	**5.0%**		0.12	
Lighting	3.0%	2	0.06	61
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.3**

Comments:

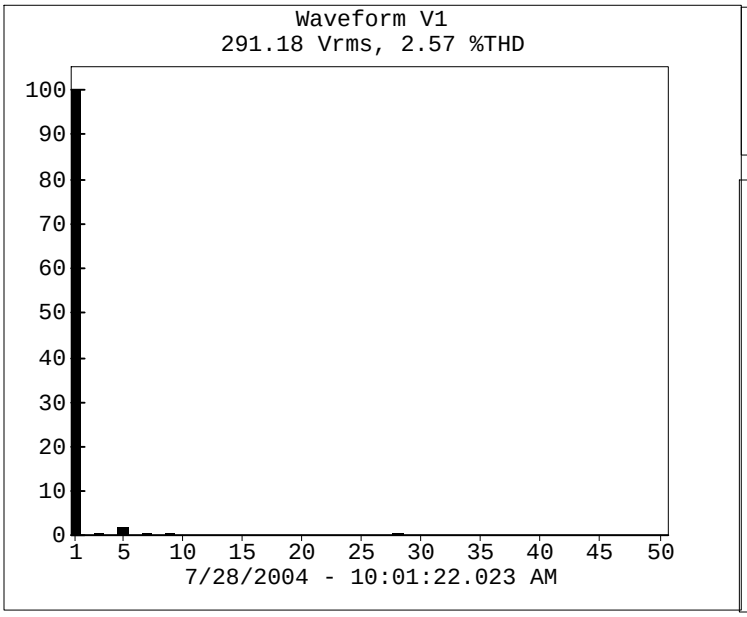
WPS F-15 - Photo

Recording Start Date	7/28/2004 - 10:01:22 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/28/2004	10:01:22.023 AM	16.644	291.2	V
Waveform V2	7/28/2004	10:01:22.023 AM	16.644	258.4	V
Waveform V3	7/28/2004	10:01:22.023 AM	16.644	280.7	V

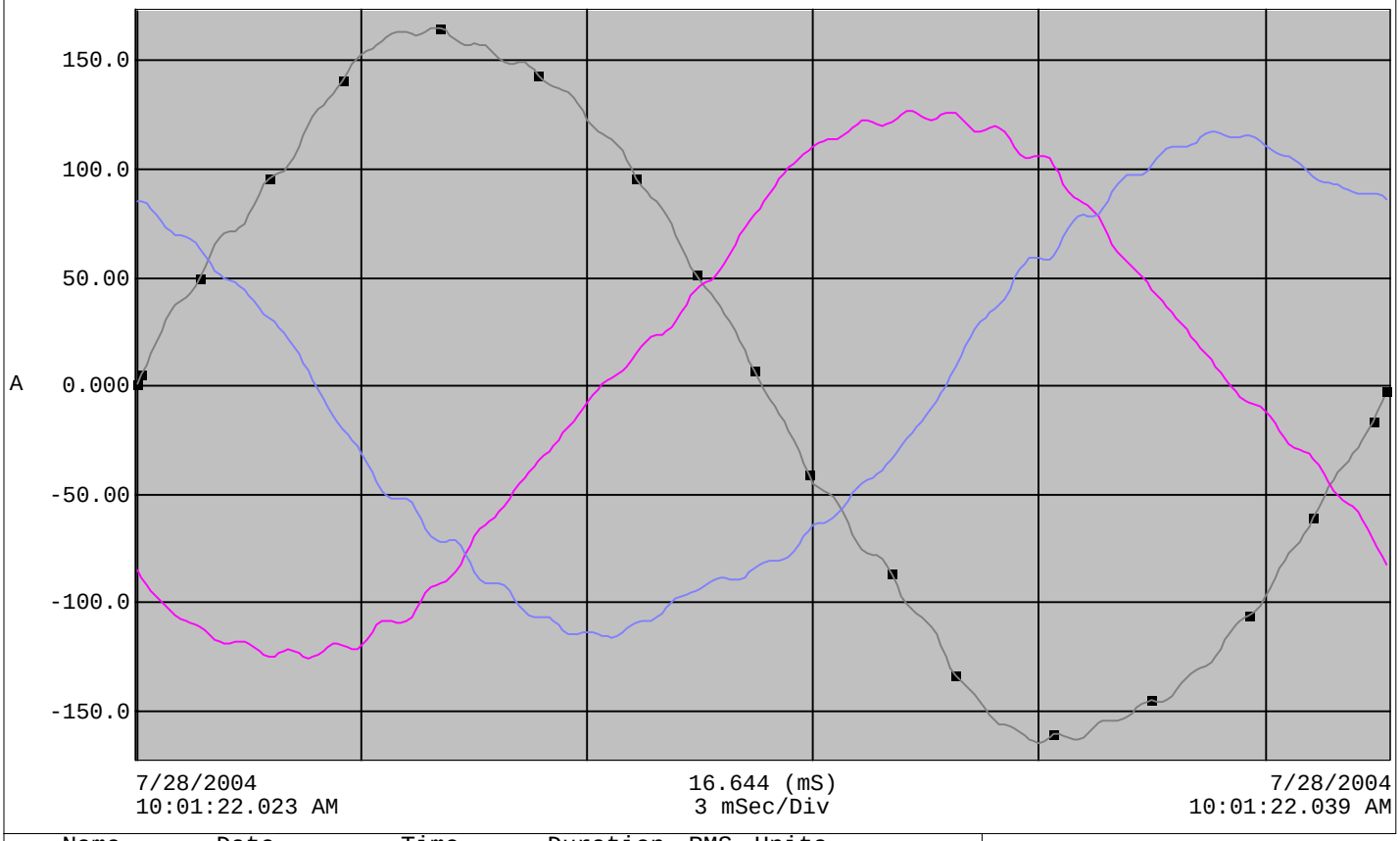


7/28/2004 - 10:01:22.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

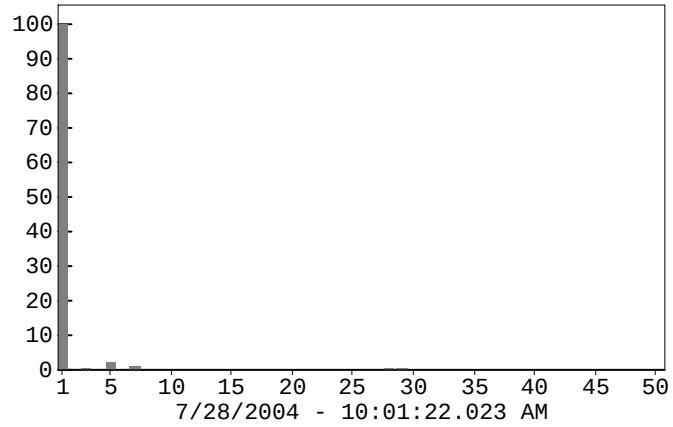
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.8	H20	0.1	H37	0.0
H04	0.1	H21	0.2	H38	0.0
H05	2.0	H22	0.2	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	0.7	H24	0.2	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.8	H26	0.2	H43	0.0
H10	0.0	H27	0.3	H44	0.0
H11	0.1	H28	0.4	H45	0.0
H12	0.0	H29	0.3	H46	0.0
H13	0.4	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.3	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.08 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/28/2004	10:01:22.023 AM	16.644	113.8	A
Waveform I2	7/28/2004	10:01:22.023 AM	16.644	86.70	A
Waveform I3	7/28/2004	10:01:22.023 AM	16.644	79.87	A

Waveform I1
113.78 Arms, 3.46 %THD

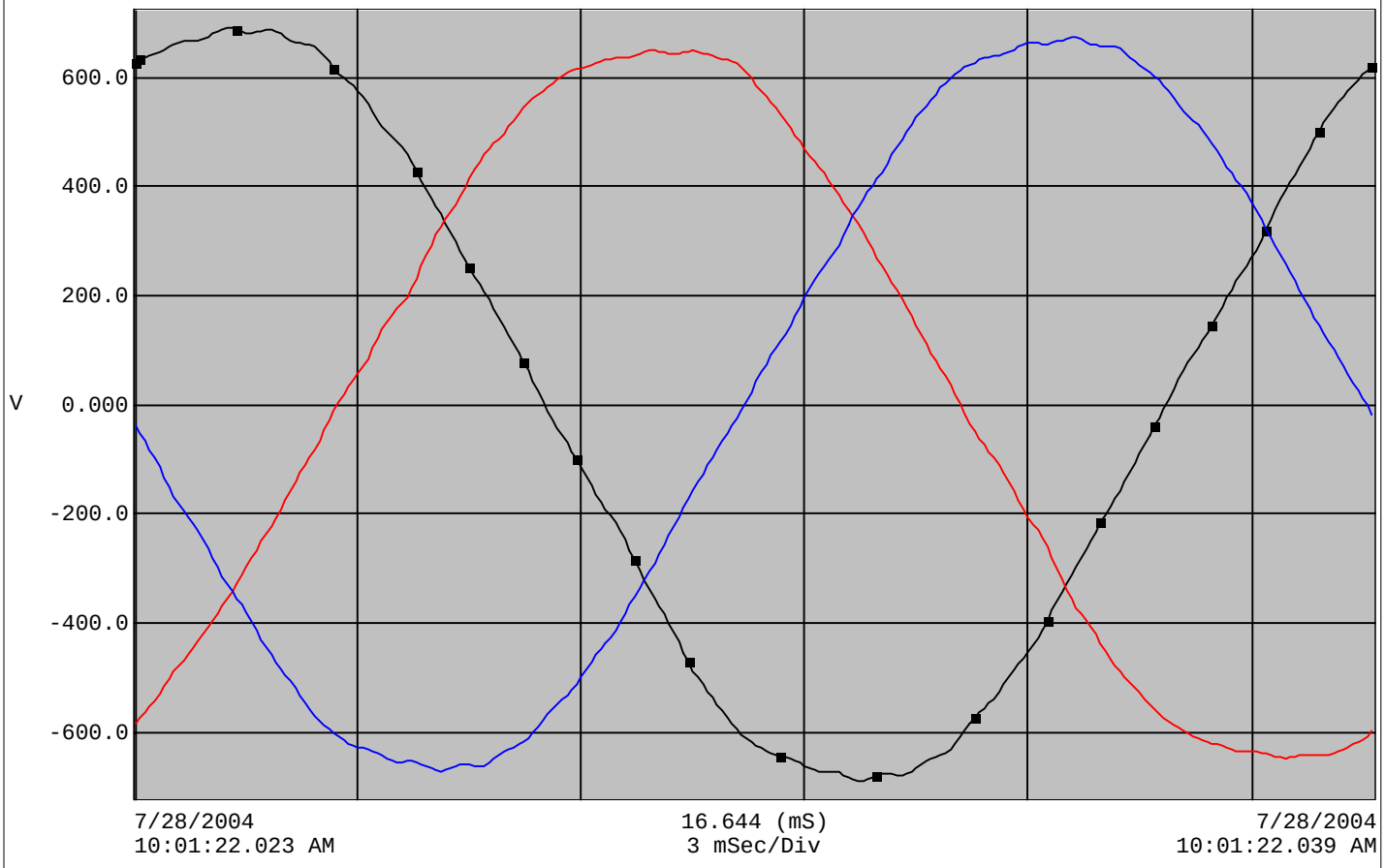


7/28/2004 - 10:01:22.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

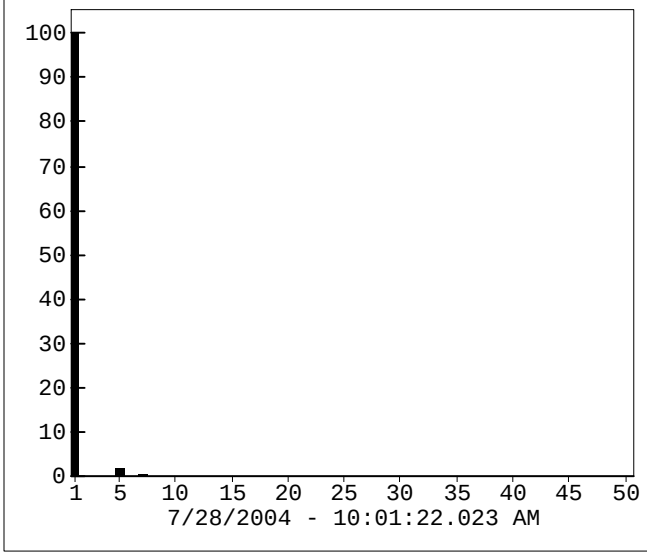
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	1.1	H20	0.1	H37	0.0
H04	0.1	H21	0.1	H38	0.0
H05	2.5	H22	0.5	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	1.4	H24	0.4	H41	0.0
H08	0.0	H25	0.5	H42	0.0
H09	0.4	H26	0.3	H43	0.0
H10	0.0	H27	0.4	H44	0.0
H11	0.2	H28	0.9	H45	0.0
H12	0.0	H29	0.6	H46	0.0
H13	0.4	H30	0.3	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/28/2004	10:01:22.023 AM	16.644	492.0	V
Waveform U2	7/28/2004	10:01:22.023 AM	16.644	467.3	V
Waveform U3	7/28/2004	10:01:22.023 AM	16.644	476.5	V

Waveform U1
492.01 Vrms, 2.19 %THD



7/28/2004 - 10:01:22.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.9	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.9	H24	0.1	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.3	H26	0.1	H43	0.0
H10	0.0	H27	0.2	H44	0.0
H11	0.2	H28	0.3	H45	0.0
H12	0.0	H29	0.2	H46	0.0
H13	0.3	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/28/2004
Start Time: 10:01:22 AM
Duration: 0:0.000 (M:S)
W: 26.76E+3 W
VAR: 19.55E+3 W
VA: 33.14E+3 W
Power Factor: 0.808
Displacement Power Factor: 0.808
TAN: 0.729
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F15\072804-F15-Photo.dvb

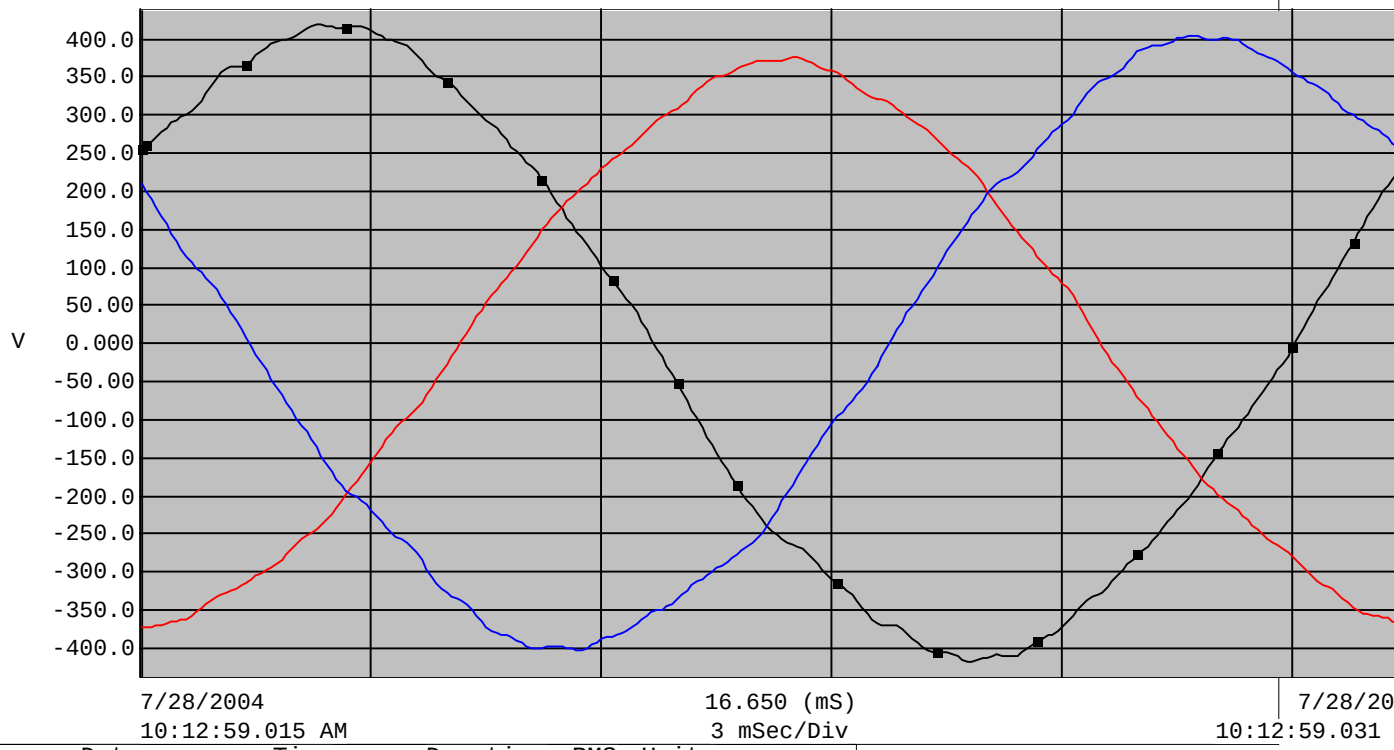
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS - F15 ,

Comments

WPS F-15 - Photo1

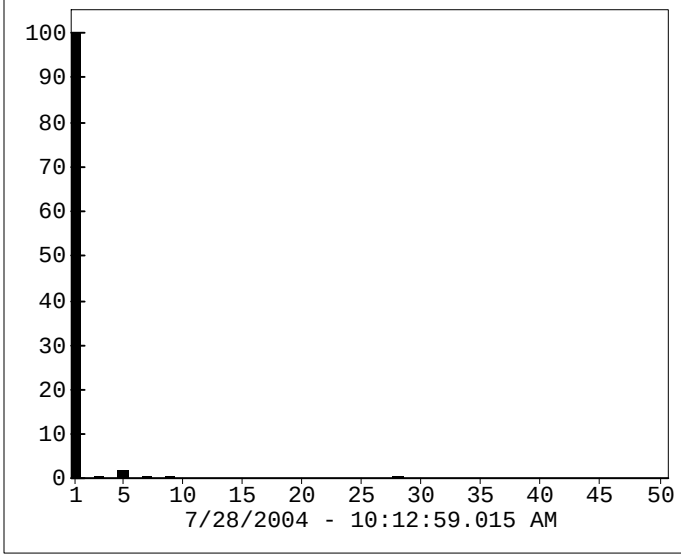
Recording Start Date	7/28/2004 - 10:12:59 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.06 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/28/2004	10:12:59.015 AM	16.650	291.4	V
Waveform V2	7/28/2004	10:12:59.015 AM	16.650	258.7	V
Waveform V3	7/28/2004	10:12:59.015 AM	16.650	281.5	V

Waveform V1
291.36 Vrms, 2.63 %THD

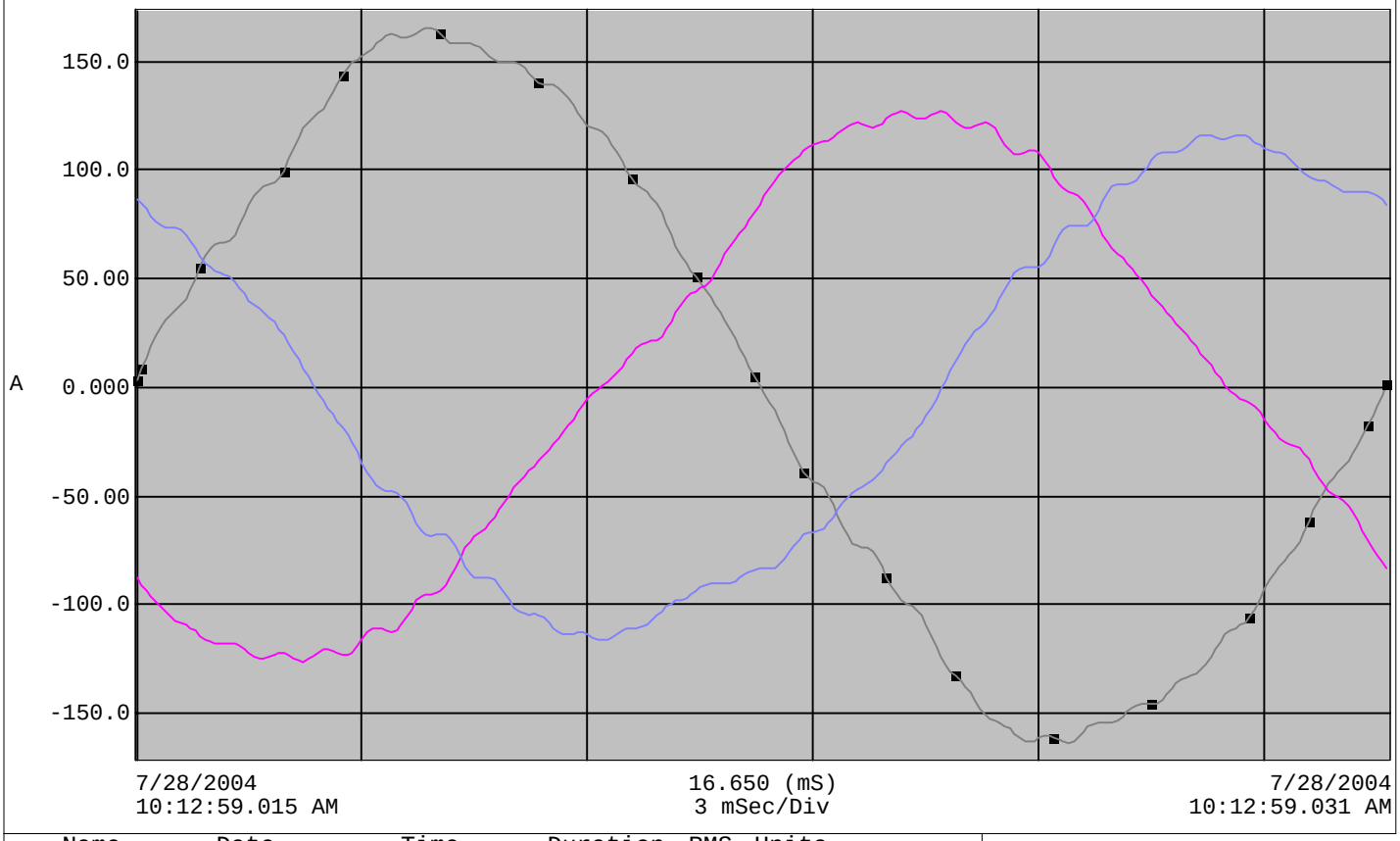


7/28/2004 - 10:12:59.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

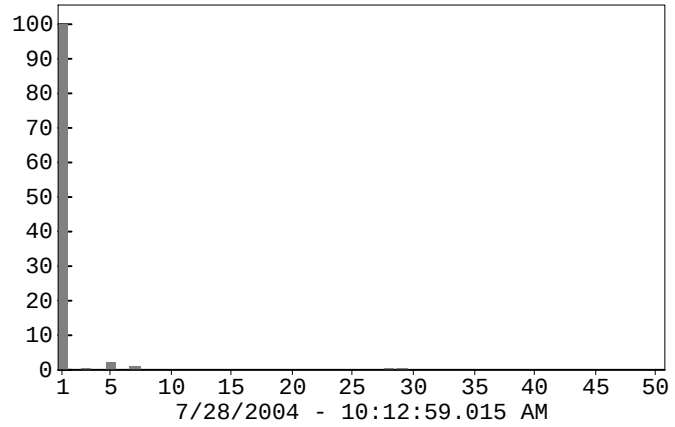
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	0.8	H20	0.1	H37	0.0
H04	0.1	H21	0.2	H38	0.0
H05	2.0	H22	0.2	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	0.7	H24	0.2	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.9	H26	0.2	H43	0.0
H10	0.0	H27	0.3	H44	0.0
H11	0.1	H28	0.4	H45	0.0
H12	0.0	H29	0.3	H46	0.0
H13	0.4	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.4	H32	0.0	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.06 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/28/2004	10:12:59.015 AM	16.650	113.2	A
Waveform I2	7/28/2004	10:12:59.015 AM	16.650	87.02	A
Waveform I3	7/28/2004	10:12:59.015 AM	16.650	79.75	A

Waveform I1
113.23 Arms, 3.52 %THD

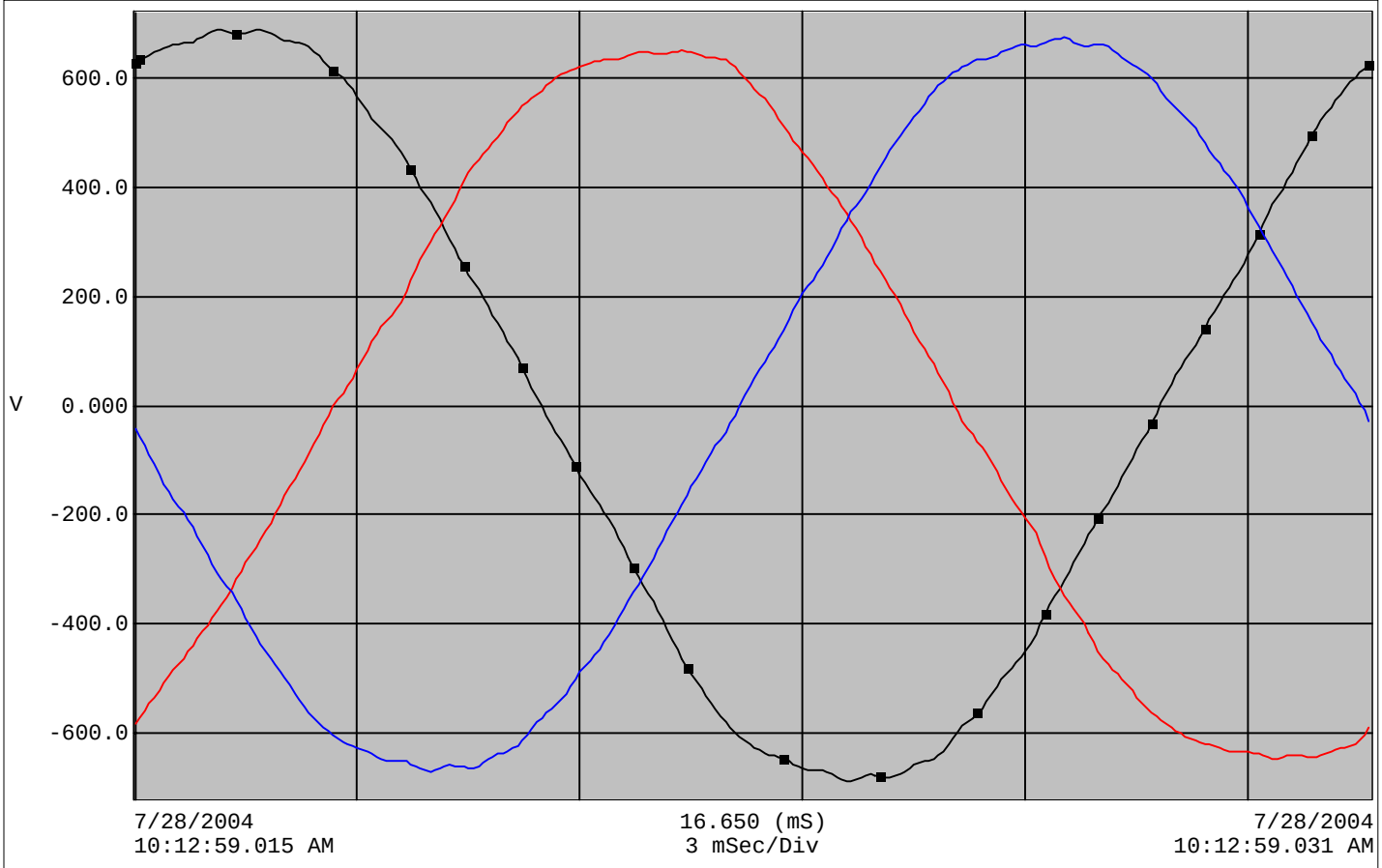


7/28/2004 - 10:12:59.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

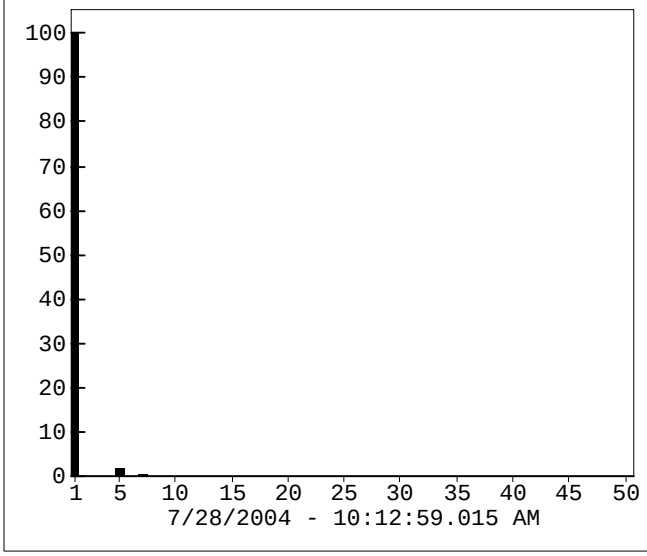
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	1.1	H20	0.1	H37	0.0
H04	0.0	H21	0.2	H38	0.0
H05	2.6	H22	0.5	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	1.4	H24	0.4	H41	0.0
H08	0.0	H25	0.5	H42	0.0
H09	0.4	H26	0.3	H43	0.0
H10	0.0	H27	0.4	H44	0.0
H11	0.2	H28	0.9	H45	0.0
H12	0.0	H29	0.6	H46	0.0
H13	0.4	H30	0.3	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.06 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/28/2004	10:12:59.015 AM	16.650	492.6	V
Waveform U2	7/28/2004	10:12:59.015 AM	16.650	468.4	V
Waveform U3	7/28/2004	10:12:59.015 AM	16.650	477.1	V

Waveform U1
492.56 Vrms, 2.23 %THD



7/28/2004 - 10:12:59.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.9	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.8	H24	0.1	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.3	H26	0.1	H43	0.0
H10	0.0	H27	0.2	H44	0.0
H11	0.2	H28	0.3	H45	0.0
H12	0.0	H29	0.2	H46	0.0
H13	0.4	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 7/28/2004
Start Time: 10:12:59 AM
Duration: 0:0.000 (M:S)
W: 26.65E+3 W
VAR: 19.46E+3 W
VA: 33.00E+3 W
Power Factor: 0.808
Displacement Power Factor: 0.808
TAN: 0.729
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F15\072804-F15-Photo1.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE ,	Test Site GWA - WPS - F15 ,
Comments	

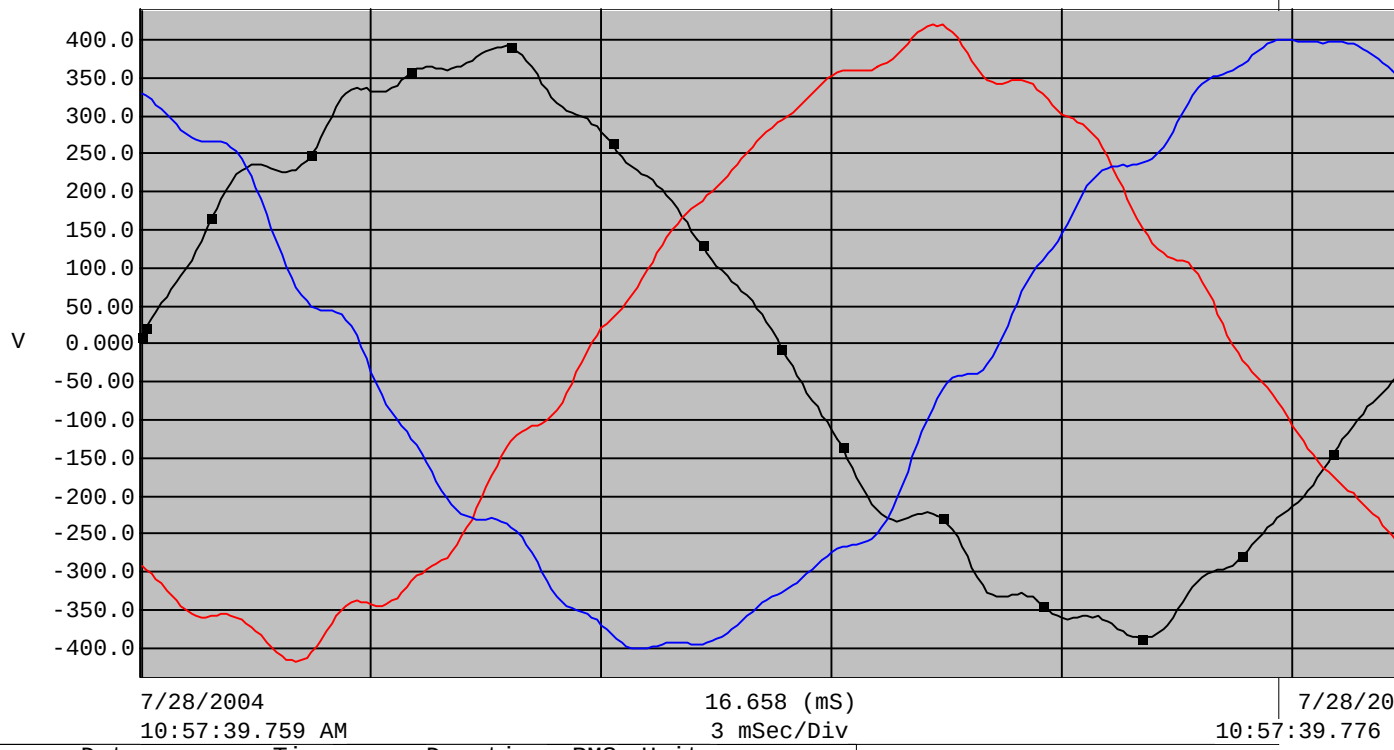
GWA Water Pumping Station Assessment				
Station Name: F-16	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/01/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.45	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	2	0.1	2
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.4	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	2	0.1	14
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.275	
Generator Condition	10.0%	2	0.2	22
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	0	0	
Pump Motor Starter	**25.0%**		0.6	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32, 34
Wiring	5.0%	2	0.1	37
Phase Monitor	5.0%	2	0.1	35
Chlorination Motor Starter	**5.0%**		0.06	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.035	
Pressure	1.5%	0	0	
Flow	1.5%	1	0.015	52
Automatic Controls	2.0%	1	0.02	52
Building Electrical	**5.0%**		0.12	
Lighting	3.0%	2	0.06	61
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**1.9**

Comments:

WPS F-16 - Photo

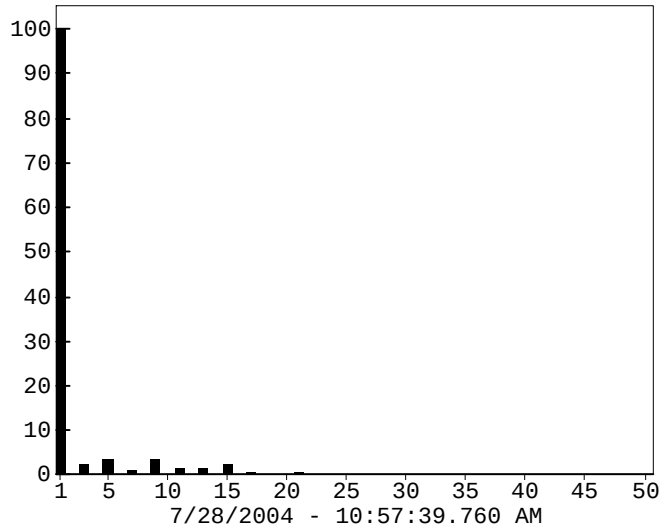
Recording Start Date	7/28/2004 - 10:57:39 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/28/2004	10:57:39.759 AM	16.658	262.8	V
Waveform V2	7/28/2004	10:57:39.759 AM	16.658	274.2	V
Waveform V3	7/28/2004	10:57:39.759 AM	16.658	279.2	V

Waveform V1
262.83 Vrms, 6.39 %THD



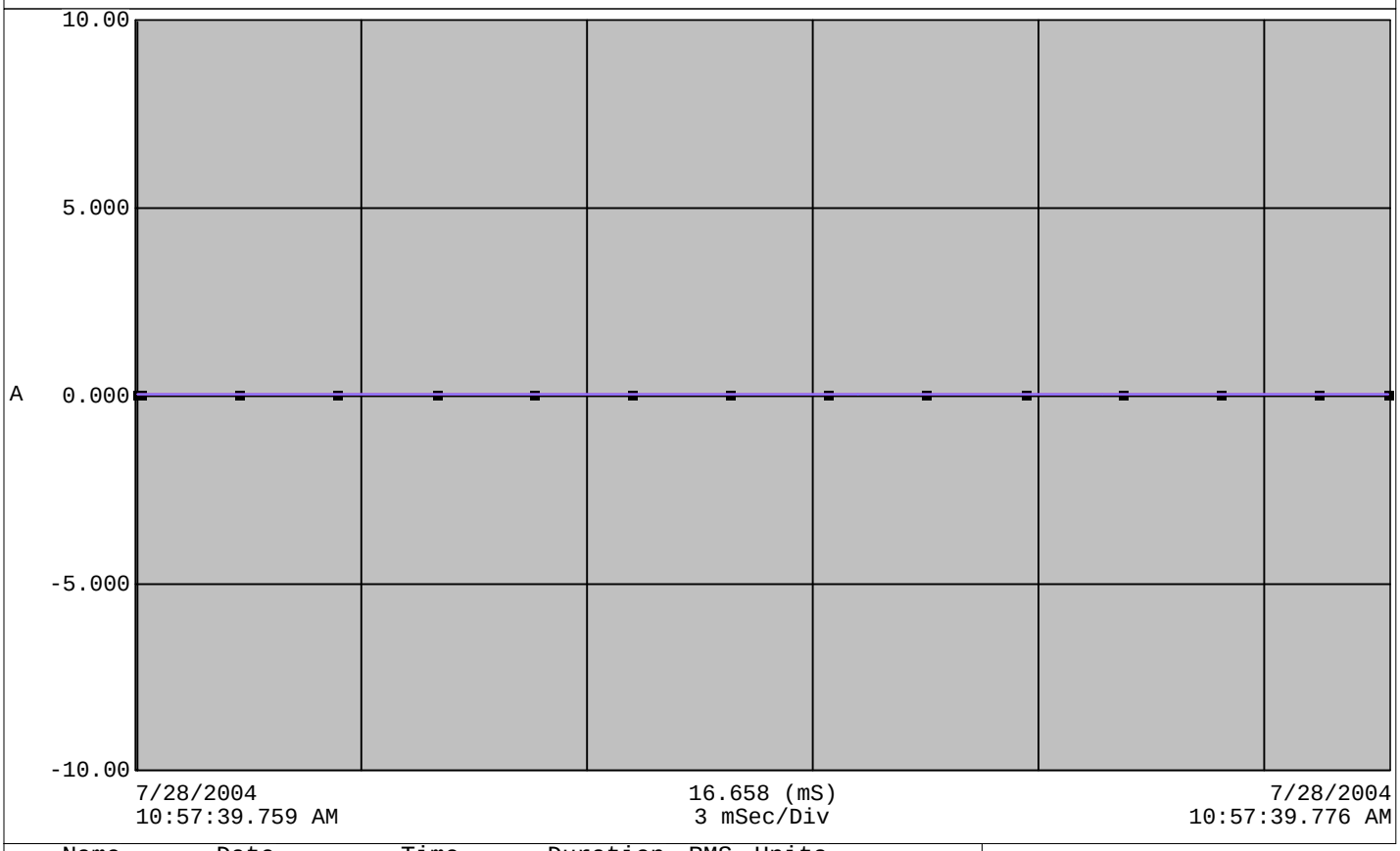
7/28/2004 - 10:57:39.000 AM

Val	
8.400	Waveform V1
-292.3	Waveform V2
328.4	Waveform V3

Waveform V1

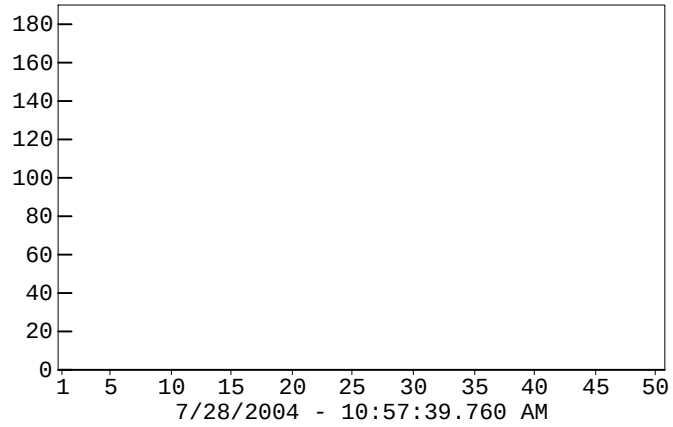
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.3	H36	0.0
H03	2.2	H20	0.0	H37	0.0
H04	0.1	H21	0.5	H38	0.0
H05	3.5	H22	0.0	H39	0.0
H06	0.3	H23	0.1	H40	0.0
H07	1.3	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	3.6	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	1.4	H28	0.0	H45	0.0
H12	0.2	H29	0.0	H46	0.0
H13	1.3	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	2.2	H32	0.0	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.6	H34	0.0		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/28/2004	10:57:39.759 AM	16.658	0.000	A
Waveform I2	7/28/2004	10:57:39.759 AM	16.658	0.000	A
Waveform I3	7/28/2004	10:57:39.759 AM	16.658	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



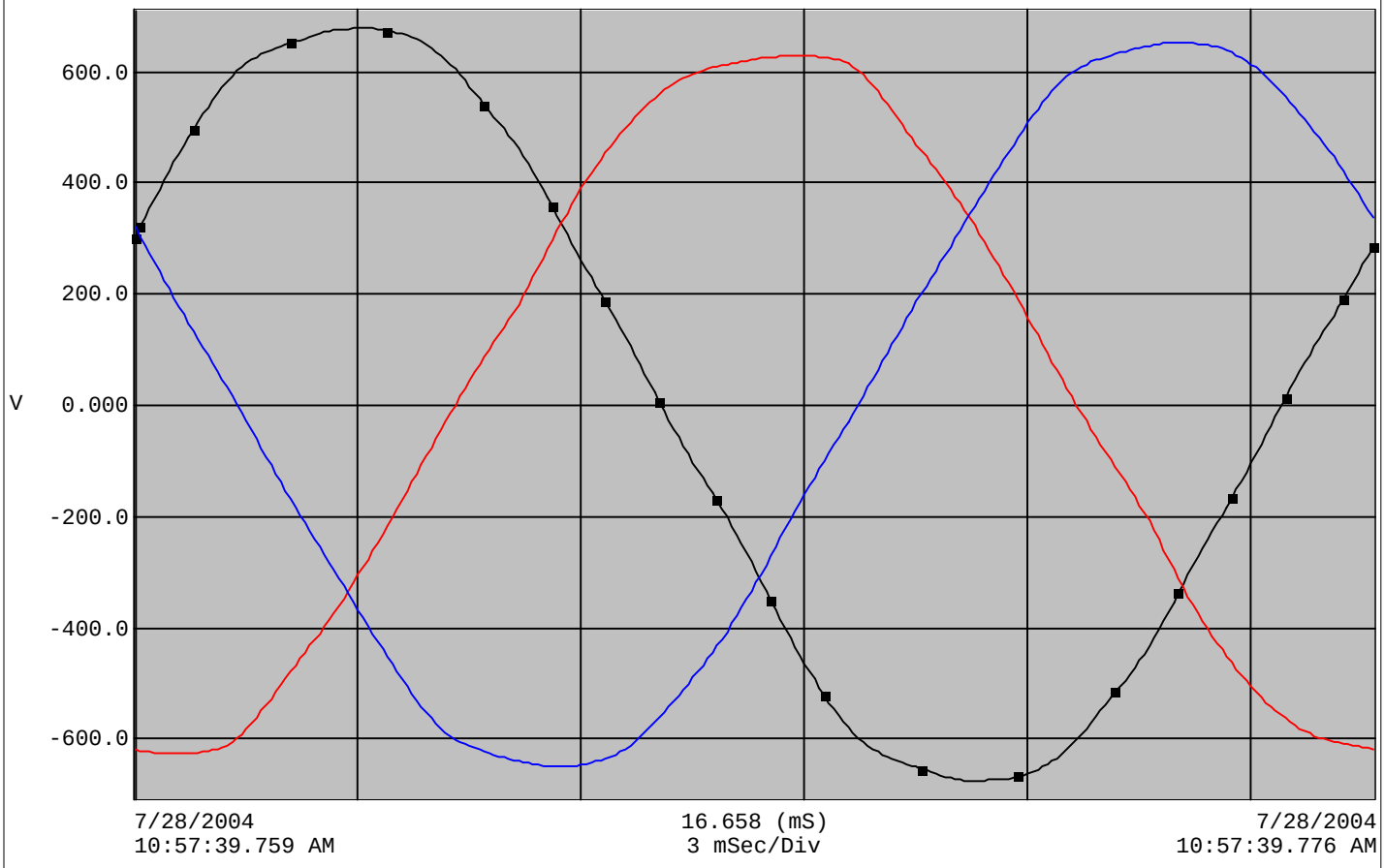
7/28/2004 - 10:57:39.000 AM

Val	
0.000	Waveform I1
0.000	Waveform I2
0.000	Waveform I3

Waveform I1

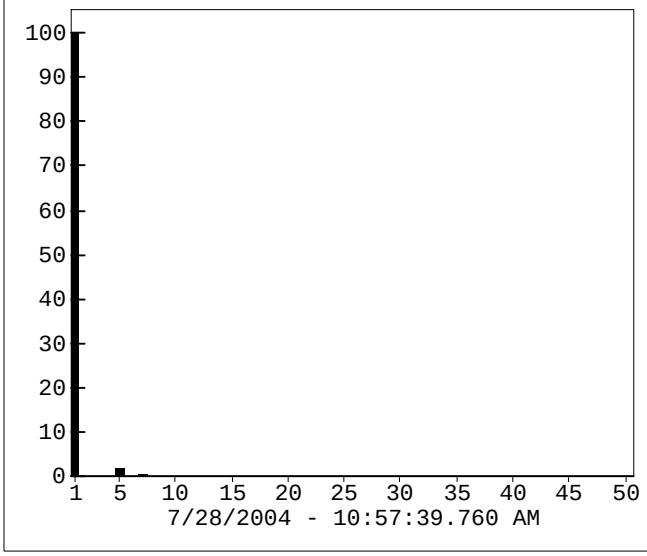
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/28/2004	10:57:39.759 AM	16.658	486.8	V
Waveform U2	7/28/2004	10:57:39.759 AM	16.658	454.8	V
Waveform U3	7/28/2004	10:57:39.759 AM	16.658	466.0	V

Waveform U1
486.77 Vrms, 2.26 %THD



7/28/2004 - 10:57:39.000 AM

	Val	
—	300.8	Waveform U1
—	-620.8	Waveform U2
—	320.0	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/28/2004
Start Time: 10:57:39 AM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F16\072804-F16-Photo.dvb

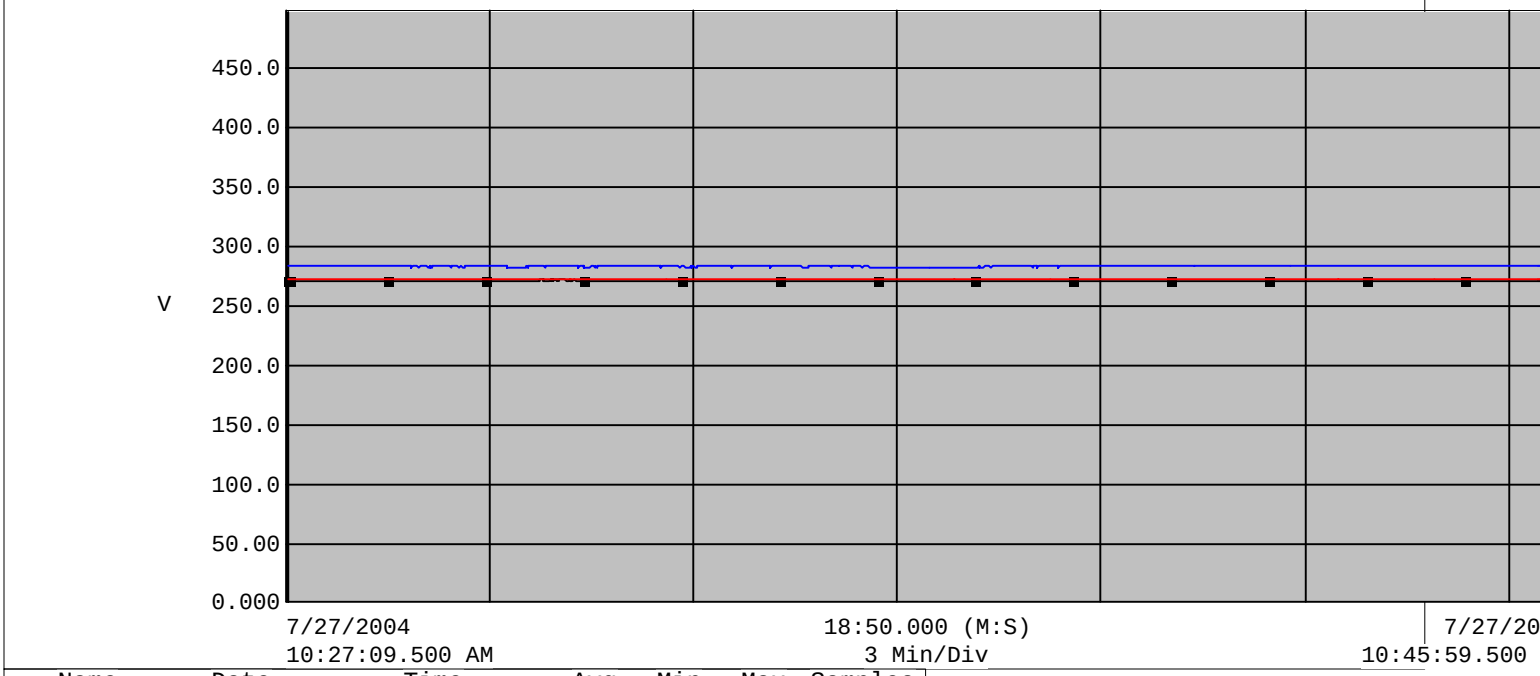
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS - F-16 ,

Comments

WPS F-16A

Recording Start Date	7/27/2004 - 10:27:09 AM
Recording Duration	1:03:50:47 (d:h:m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

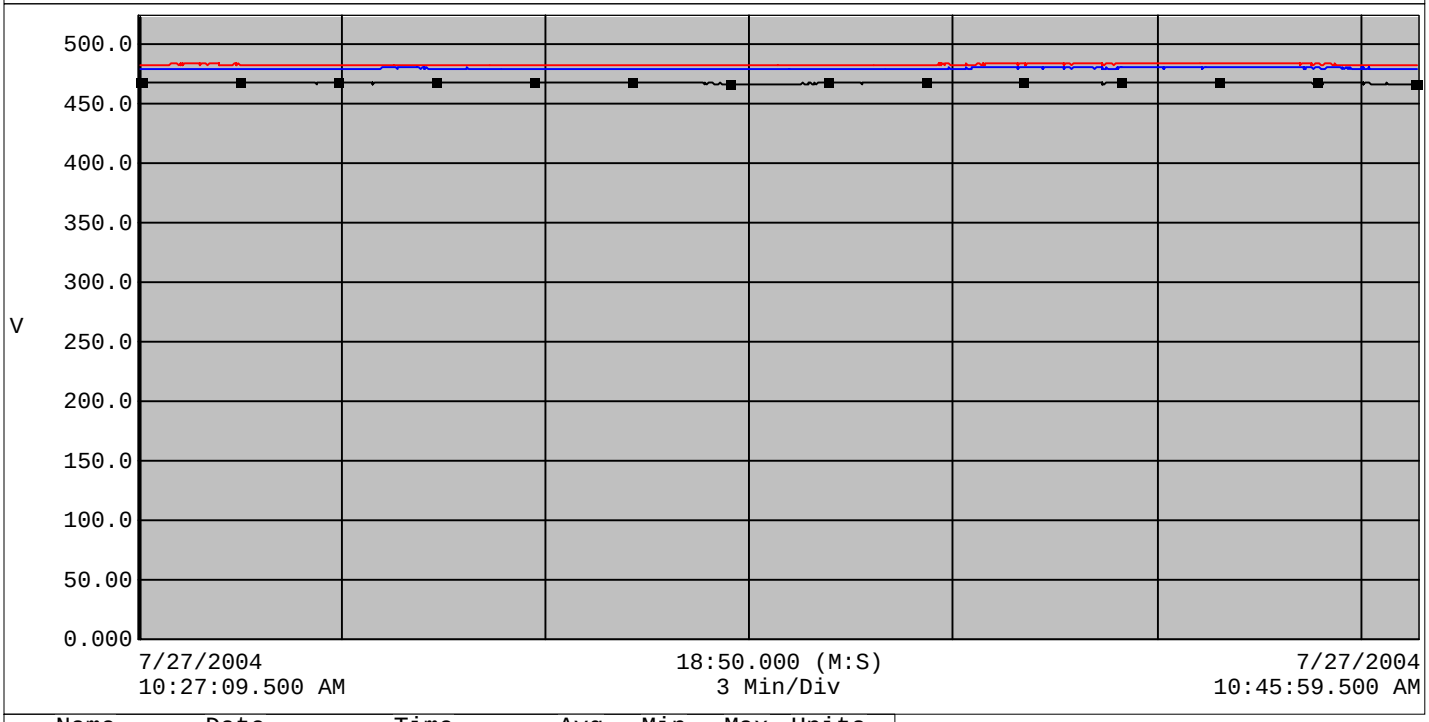
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/27/2004	10:27:09.500 AM	270.0	269.5	270.4	1131
Vrms Line1	7/27/2004	11:30:10.500 AM	267.7	0.000	276.0	472
Vrms Line1	7/28/2004	10:03:39.500 AM	291.2	290.2	292.9	1281
Vrms Line1	7/28/2004	10:55:56.500 AM	64.95	0.000	263.4	472
Vrms Line1	7/28/2004	1:07:14.500 PM	278.0	277.4	278.4	586
Vrms Line1	7/28/2004	2:00:35.500 PM	10.81	0.000	249.7	1042
Vrms Line2	7/27/2004	10:27:09.500 AM	271.2	270.6	271.6	1131
Vrms Line2	7/27/2004	11:30:10.500 AM	269.5	0.000	278.0	472
Vrms Line2	7/28/2004	10:03:39.500 AM	258.3	257.4	260.0	1281
Vrms Line2	7/28/2004	10:55:56.500 AM	67.78	0.000	274.4	472
Vrms Line2	7/28/2004	1:07:14.500 PM	247.2	246.6	247.8	586
Vrms Line2	7/28/2004	2:00:35.500 PM	88.37	0.000	417.7	1042

7/27/2004 - 10:27:09.000 AM
Val
269.9 Vrms Line1
271.4 Vrms Line2
281.7 Vrms Line3

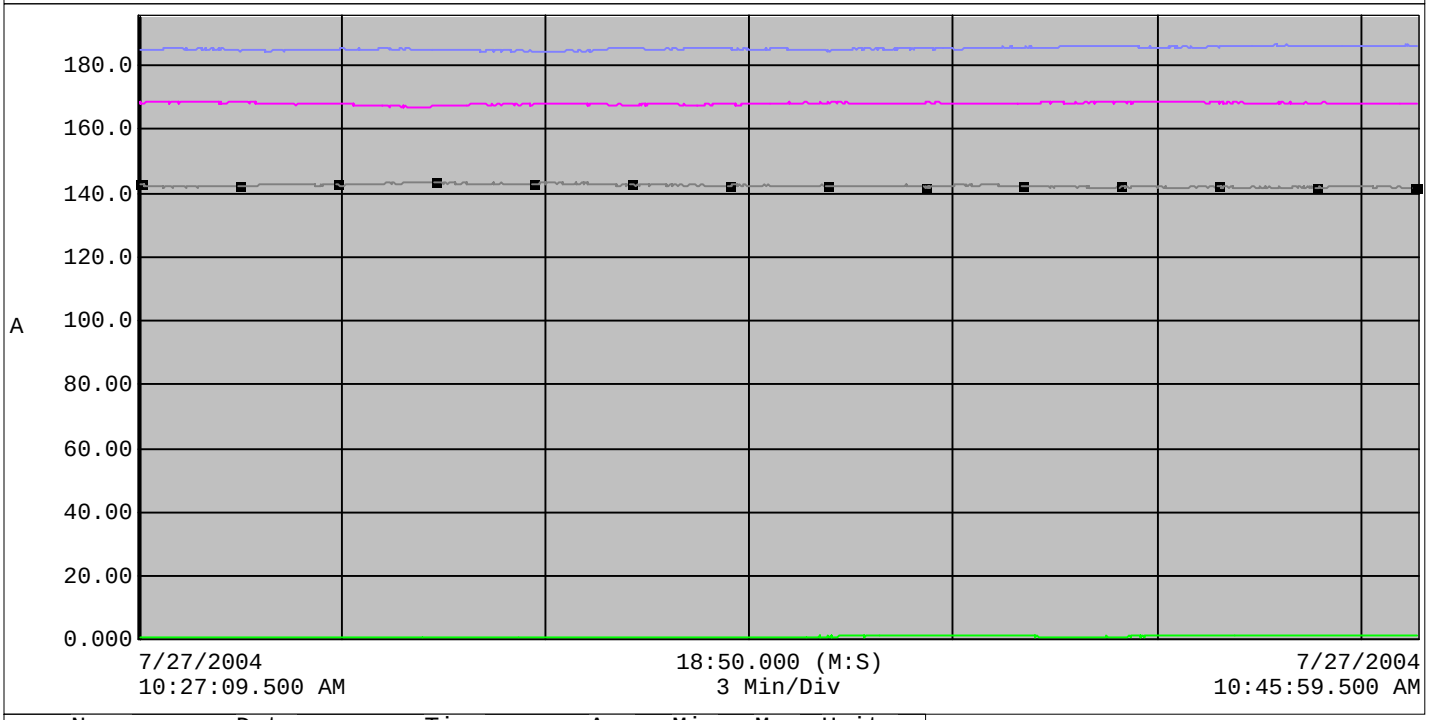
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/27/2004	10:27:09.500 AM	466.0	465.0	466.7	V
Urms Line1	7/27/2004	11:30:10.500 AM	462.3	0.000	476.6	V
Urms Line1	7/28/2004	10:03:39.500 AM	492.0	490.6	494.9	V
Urms Line1	7/28/2004	10:55:56.500 AM	120.3	0.000	487.1	V
Urms Line1	7/28/2004	1:07:14.500 PM	465.2	464.3	465.9	V
Urms Line1	7/28/2004	2:00:35.500 PM	96.65	0.000	455.1	V
Urms Line2	7/27/2004	10:27:09.500 AM	481.4	480.4	482.2	V
Urms Line2	7/27/2004	11:30:10.500 AM	479.0	0.000	494.1	V
Urms Line2	7/28/2004	10:03:39.500 AM	467.4	465.6	469.5	V
Urms Line2	7/28/2004	10:55:56.500 AM	112.4	0.000	455.4	V
Urms Line2	7/28/2004	1:07:14.500 PM	473.0	472.4	473.7	V
Urms Line2	7/28/2004	2:00:35.500 PM	97.90	0.000	462.5	V
Urms Line3	7/27/2004	10:27:09.500 AM	478.2	477.4	479.0	V
Urms Line3	7/27/2004	11:30:10.500 AM	474.8	0.000	489.9	V
Urms Line3	7/28/2004	10:03:39.500 AM	476.4	474.1	478.4	V
Urms Line3	7/28/2004	10:55:56.500 AM	115.2	0.000	466.4	V
Urms Line3	7/28/2004	1:07:14.500 PM	497.2	496.6	497.8	V
Urms Line3	7/28/2004	2:00:35.500 PM	103.3	0.000	487.2	V

7/27/2004 - 10:27:09.000 AM
Val
466.3 Urms Line1
481.4 Urms Line2
478.0 Urms Line3

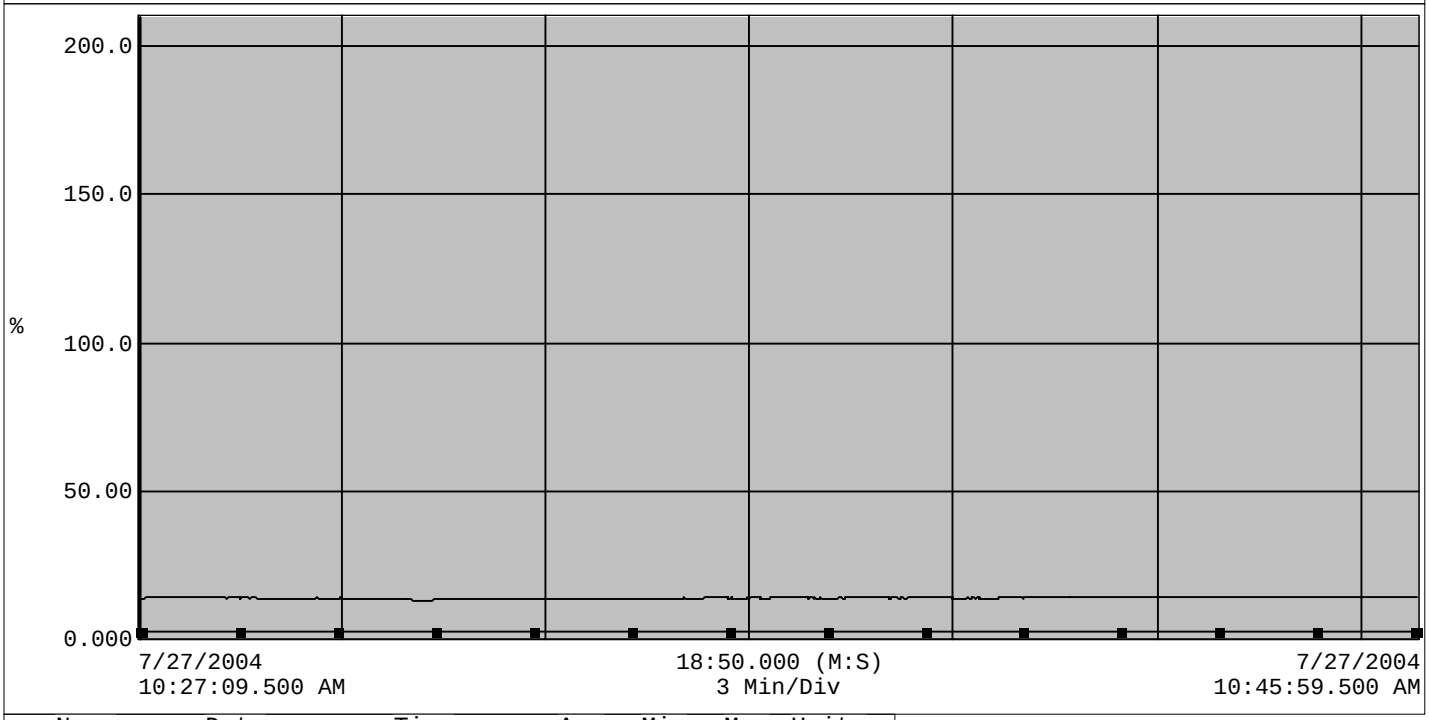
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/27/2004	10:27:09.500 AM	142.0	141.1	143.3	A
Arms Line1	7/27/2004	11:30:10.500 AM	40.71	0.000	147.9	A
Arms Line1	7/28/2004	10:03:39.500 AM	113.6	113.0	114.6	A
Arms Line1	7/28/2004	10:55:56.500 AM	0.000	0.000	0.000	A
Arms Line1	7/28/2004	1:07:14.500 PM	0.000	0.000	0.000	A
Arms Line2	7/27/2004	10:27:09.500 AM	167.7	166.5	168.6	A
Arms Line2	7/27/2004	11:30:10.500 AM	47.05	0.000	170.6	A
Arms Line2	7/28/2004	10:03:39.500 AM	86.83	86.00	87.60	A
Arms Line2	7/28/2004	10:55:56.500 AM	0.000	0.000	0.000	A
Arms Line2	7/28/2004	1:07:14.500 PM	0.000	0.000	0.000	A
Arms Line3	7/27/2004	10:27:09.500 AM	185.0	183.8	186.1	A
Arms Line3	7/27/2004	11:30:10.500 AM	50.45	0.000	183.4	A
Arms Line3	7/28/2004	10:03:39.500 AM	79.73	78.60	80.60	A
Arms Line3	7/28/2004	10:55:56.500 AM	0.000	0.000	0.000	A
Arms Line3	7/28/2004	1:07:14.500 PM	0.000	0.000	0.000	A
Arms Neutral	7/27/2004	10:27:09.500 AM	0.931	0.800	1.000	A
Arms Neutral	7/27/2004	11:30:10.500 AM	0.399	0.000	59.20	A
Arms Neutral	7/28/2004	10:03:39.500 AM	0.400	0.400	0.400	A

7/27/2004 - 10:27:09.000 AM
Val
142.2 — Arms Line1
168.1 — Arms Line2
184.4 — Arms Line3
0.800 — Arms Neutral

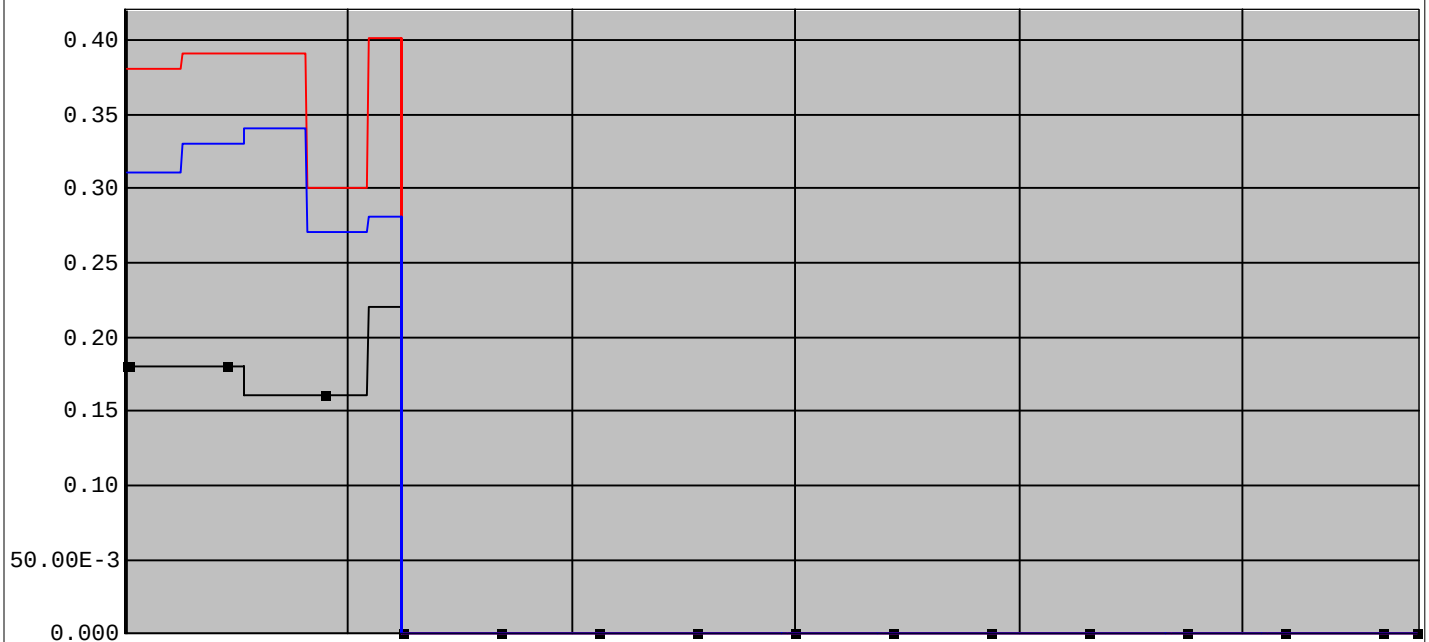
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/27/2004	10:27:09.500 AM	2.737	2.600	2.800	%
Vunb(IEEE)	7/27/2004	11:30:10.500 AM	2.808	0.000	3.000	%
Vunb(IEEE)	7/28/2004	10:03:39.500 AM	6.669	6.400	6.800	%
Vunb(IEEE)	7/28/2004	10:55:56.500 AM	0.851	0.000	3.500	%
Vunb(IEEE)	7/28/2004	1:07:14.500 PM	10.59	10.40	10.70	%
Vunb(IEEE)	7/28/2004	2:00:35.500 PM	18.13	0.000	200.0	%
Aunb(IEEE)	7/27/2004	10:27:09.500 AM	13.88	13.00	14.50	%
Aunb(IEEE)	7/27/2004	11:30:10.500 AM	3.227	0.000	11.90	%
Aunb(IEEE)	7/28/2004	10:03:39.500 AM	21.66	21.10	22.40	%
Aunb(IEEE)	7/28/2004	10:55:56.500 AM	0.000	0.000	0.000	%
Aunb(IEEE)	7/28/2004	1:07:14.500 PM	0.000	0.000	0.000	%

7/27/2004 - 10:27:09.000 AM
Val
2.700 —— Vunb(IEEE)
13.80 —— Aunb(IEEE)

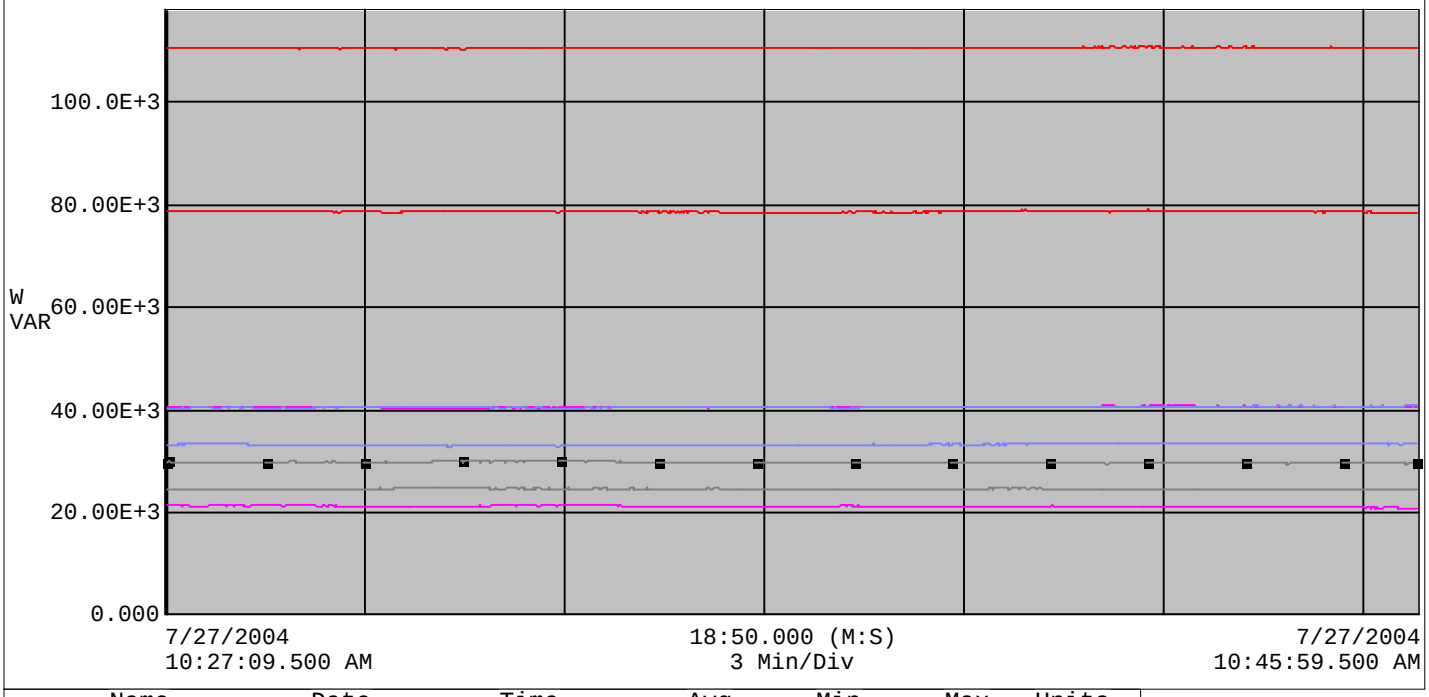
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/28/2004	2:00:35.500 PM	37.64E-3	0.000	0.220	
Vflk Line2	7/28/2004	2:00:35.500 PM	78.97E-3	0.000	0.400	
Vflk Line3	7/28/2004	2:00:35.500 PM	66.07E-3	0.000	0.340	

7/28/2004 - 2:00:35.000 PM
Val
0.180 Vflk Line1
0.380 Vflk Line2
0.310 Vflk Line3

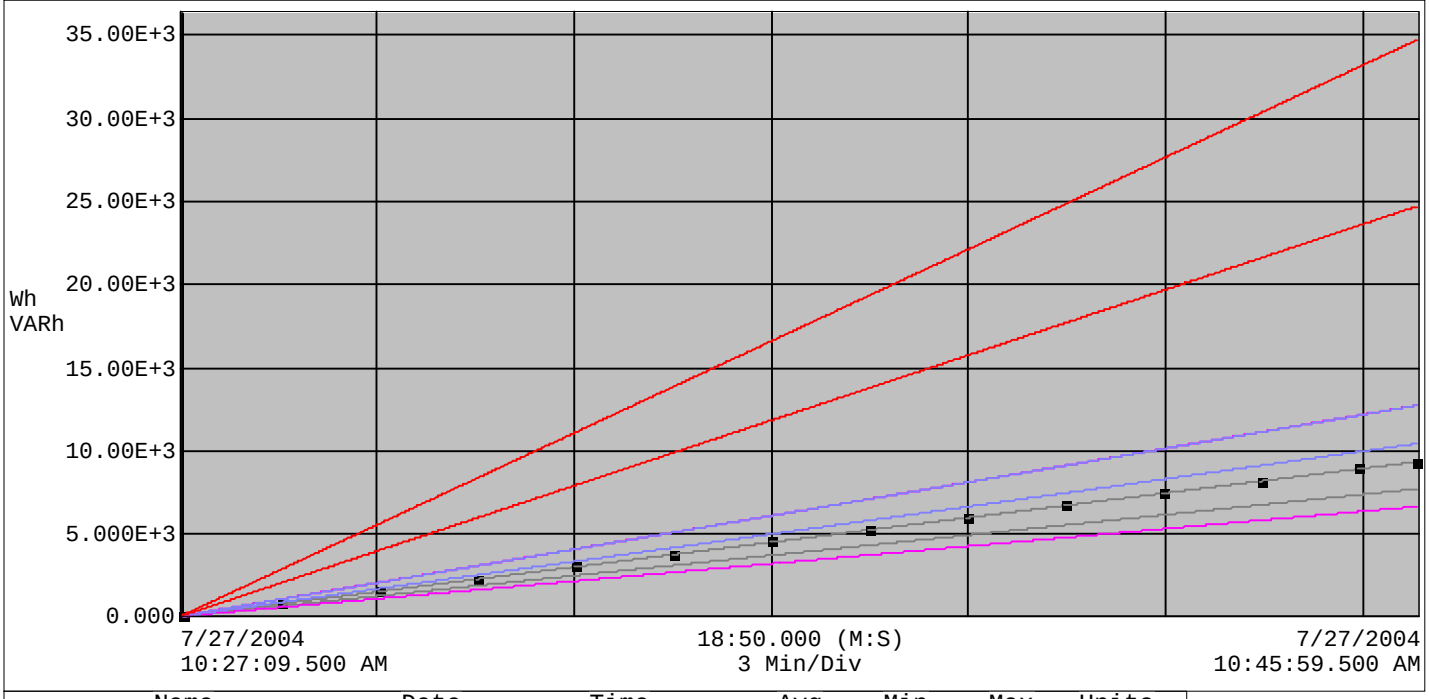
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/27/2004	10:27:09.500 AM	29.58E+3	29.32E+3	29.86E+3	W
W Line1	7/27/2004	11:30:10.500 AM	8.621E+3	0.000	31.39E+3	W
W Line1	7/28/2004	10:03:39.500 AM	26.73E+3	26.49E+3	27.09E+3	W
W Line1	7/28/2004	10:55:56.500 AM	0.000	0.000	0.000	W
W Line1	7/28/2004	1:07:14.500 PM	0.000	0.000	0.000	W
W Line2	7/27/2004	10:27:09.500 AM	40.36E+3	39.95E+3	40.64E+3	W
W Line2	7/27/2004	11:30:10.500 AM	11.15E+3	0.000	40.50E+3	W
W Line2	7/28/2004	10:03:39.500 AM	15.91E+3	15.74E+3	16.07E+3	W
W Line2	7/28/2004	10:55:56.500 AM	0.000	0.000	0.000	W
W Line2	7/28/2004	1:07:14.500 PM	0.000	0.000	0.000	W
W Line3	7/27/2004	10:27:09.500 AM	40.34E+3	40.06E+3	40.61E+3	W
W Line3	7/27/2004	11:30:10.500 AM	11.03E+3	0.000	40.27E+3	W
W Line3	7/28/2004	10:03:39.500 AM	21.16E+3	20.83E+3	21.42E+3	W
W Line3	7/28/2004	10:55:56.500 AM	0.000	0.000	0.000	W
W Line3	7/28/2004	1:07:14.500 PM	0.000	0.000	0.000	W
W Sum of Phases	7/27/2004	10:27:09.500 AM	110.3E+3	110.1E+3	110.5E+3	W
W Sum of Phases	7/27/2004	11:30:10.500 AM	30.80E+3	0.000	112.2E+3	W
W Sum of Phases	7/28/2004	10:03:39.500 AM	63.79E+3	63.71E+3	63.88E+3	W

7/27/2004 - 10:27:09.000 AM
Val
29.70E+3 — W Line1
40.38E+3 — W Line2
40.14E+3 — W Line3
110.2E+3 — W Sum of Phases
24.31E+3 — VAR Line1
21.21E+3 — VAR Line2
32.96E+3 — VAR Line3
78.48E+3 — VAR Sum of Phases

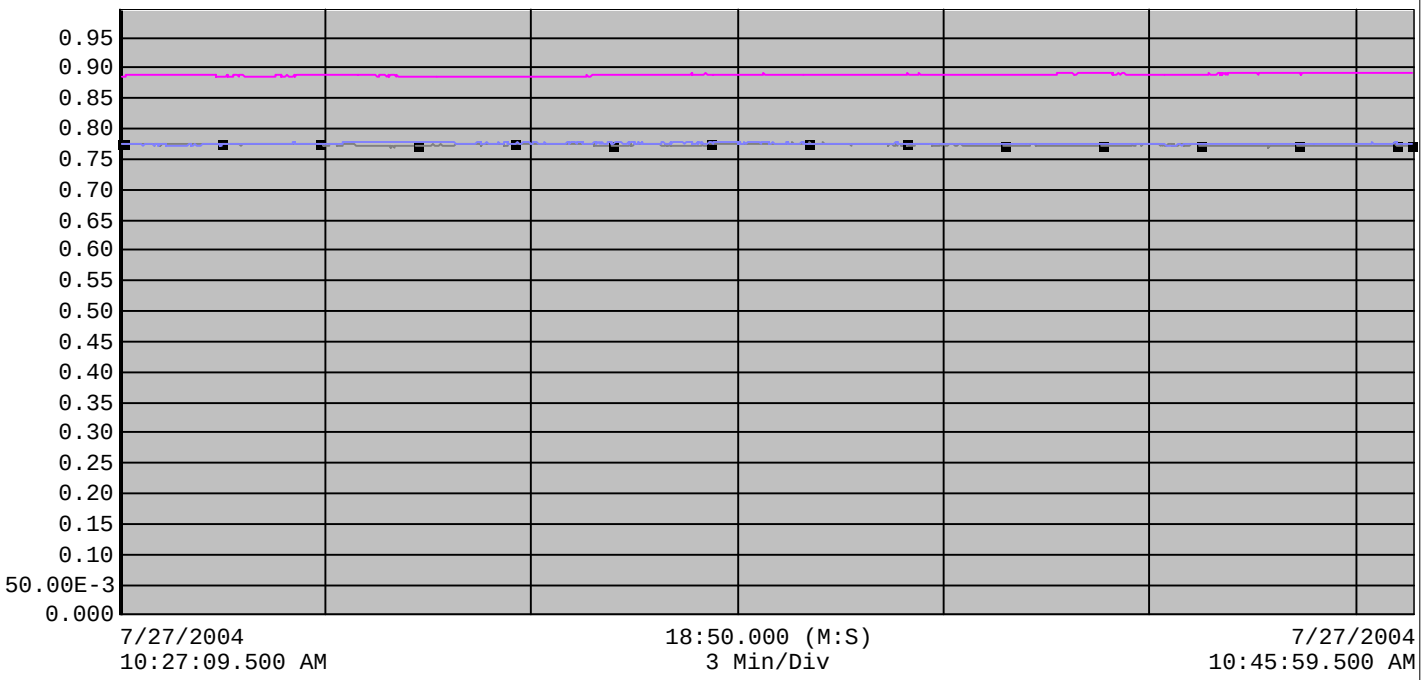
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/27/2004	10:27:09.500 AM	4.659E+3	8.225	9.294E+3	Wh
W-hours Line1	7/27/2004	11:30:10.500 AM	157.7	0.000	1.130E+3	Wh
W-hours Line1	7/28/2004	10:03:39.500 AM	4.756E+3	7.548	9.513E+3	Wh
W-hours Line1	7/28/2004	10:55:56.500 AM	0.000	0.000	0.000	Wh
W-hours Line1	7/28/2004	1:07:14.500 PM	0.000	0.000	0.000	Wh
W-hours Line2	7/27/2004	10:27:09.500 AM	6.337E+3	11.22	12.68E+3	Wh
W-hours Line2	7/27/2004	11:30:10.500 AM	204.0	0.000	1.462E+3	Wh
W-hours Line2	7/28/2004	10:03:39.500 AM	2.831E+3	4.491	5.660E+3	Wh
W-hours Line2	7/28/2004	10:55:56.500 AM	0.000	0.000	0.000	Wh
W-hours Line2	7/28/2004	1:07:14.500 PM	0.000	0.000	0.000	Wh
W-hours Line3	7/27/2004	10:27:09.500 AM	6.333E+3	11.22	12.67E+3	Wh
W-hours Line3	7/27/2004	11:30:10.500 AM	202.1	0.000	1.447E+3	Wh
W-hours Line3	7/28/2004	10:03:39.500 AM	3.773E+3	5.973	7.528E+3	Wh
W-hours Line3	7/28/2004	10:55:56.500 AM	0.000	0.000	0.000	Wh
W-hours Line3	7/28/2004	1:07:14.500 PM	0.000	0.000	0.000	Wh
W-hours Sum of Phases	7/27/2004	10:27:09.500 AM	17.33E+3	30.66	34.64E+3	Wh
W-hours Sum of Phases	7/27/2004	11:30:10.500 AM	563.9	0.000	4.039E+3	Wh
W-hours Sum of Phases	7/28/2004	10:03:39.500 AM	11.36E+3	18.01	22.70E+3	Wh

7/27/2004 - 10:27:09.000 AM
Val
8.225 — W-hours Line1
11.22 — W-hours Line2
11.22 — W-hours Line3
30.66 — W-hours Sum of Phases
6.783 — VAR-hours Line1
5.841 — VAR-hours Line2
9.188 — VAR-hours Line3
21.81 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/27/2004	10:27:09.500 AM	0.772	0.768	0.775	
PF Line1	7/27/2004	11:30:10.500 AM	0.217	0.000	0.787	
PF Line1	7/28/2004	10:03:39.500 AM	0.808	0.804	0.815	
PF Line1	7/28/2004	10:55:56.500 AM	0.000	0.000	0.000	
PF Line1	7/28/2004	1:07:14.500 PM	0.000	0.000	0.000	
PF Line2	7/27/2004	10:27:09.500 AM	0.887	0.884	0.891	
PF Line2	7/27/2004	11:30:10.500 AM	0.242	0.000	0.873	
PF Line2	7/28/2004	10:03:39.500 AM	0.709	0.696	0.714	
PF Line2	7/28/2004	10:55:56.500 AM	0.000	0.000	0.000	
PF Line2	7/28/2004	1:07:14.500 PM	0.000	0.000	0.000	
PF Line3	7/27/2004	10:27:09.500 AM	0.774	0.771	0.777	
PF Line3	7/27/2004	11:30:10.500 AM	0.215	0.000	0.777	
PF Line3	7/28/2004	10:03:39.500 AM	0.945	0.942	0.947	
PF Line3	7/28/2004	10:55:56.500 AM	0.000	0.000	0.000	
PF Line3	7/28/2004	1:07:14.500 PM	0.000	0.000	0.000	

7/27/2004 - 10:27:09.000 AM
Val
0.774 — PF Line1
0.885 — PF Line2
0.773 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F16\072804-F16A.dvb

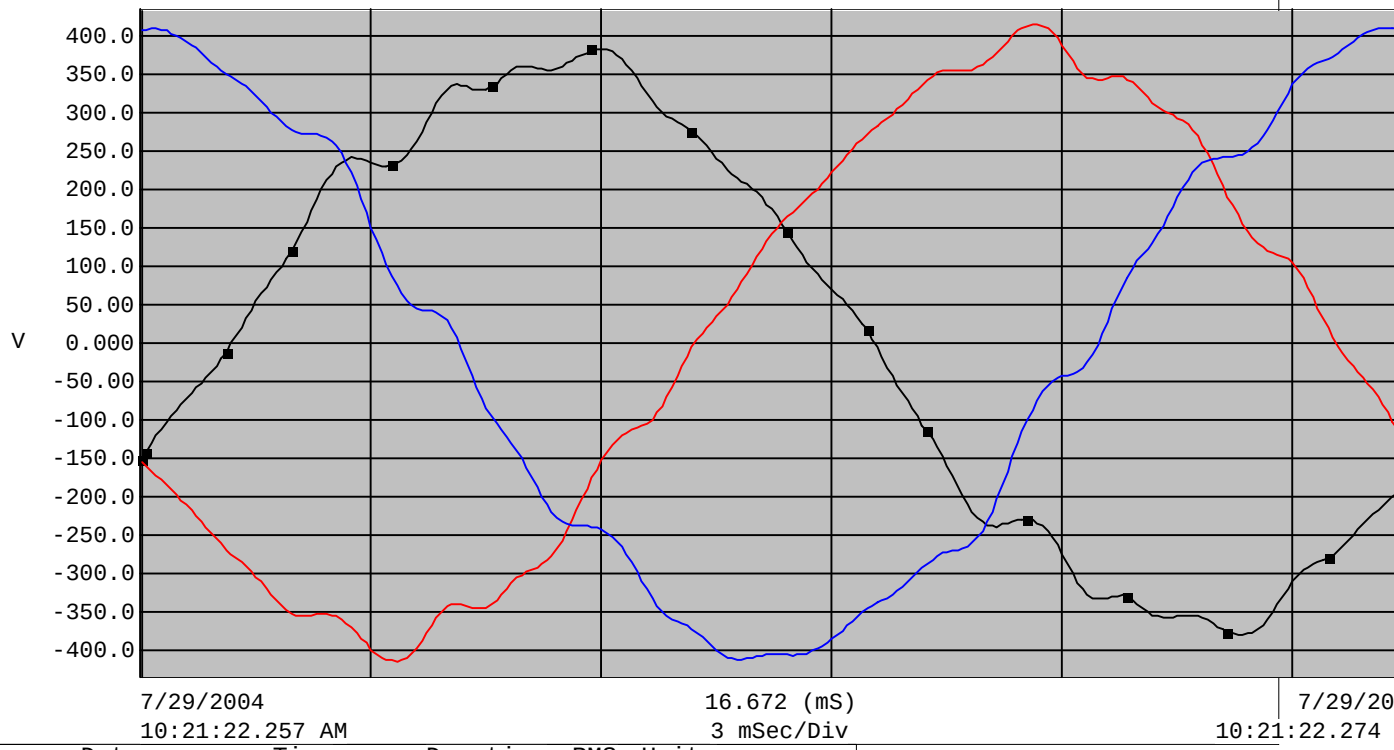
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS - F16A ,

Comments

WPS F-16 - Photo

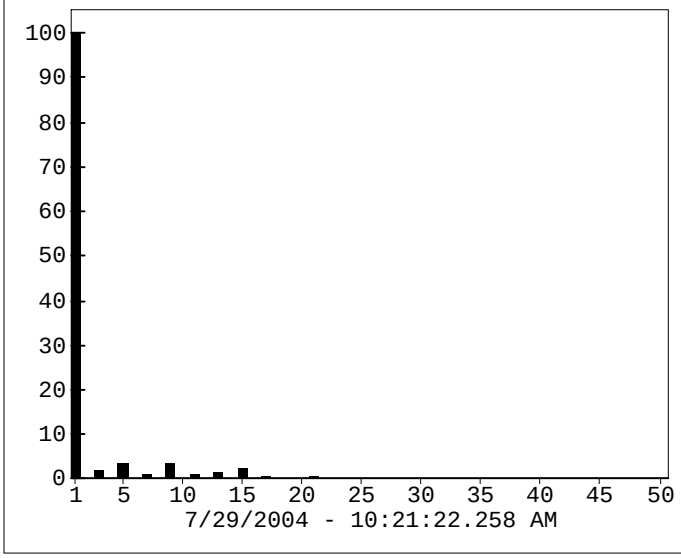
Recording Start Date	7/29/2004 - 10:21:22 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/29/2004	10:21:22.257 AM	16.672	259.6	V
Waveform V2	7/29/2004	10:21:22.257 AM	16.672	272.3	V
Waveform V3	7/29/2004	10:21:22.257 AM	16.672	287.4	V

Waveform V1
259.56 Vrms, 6.42 %THD



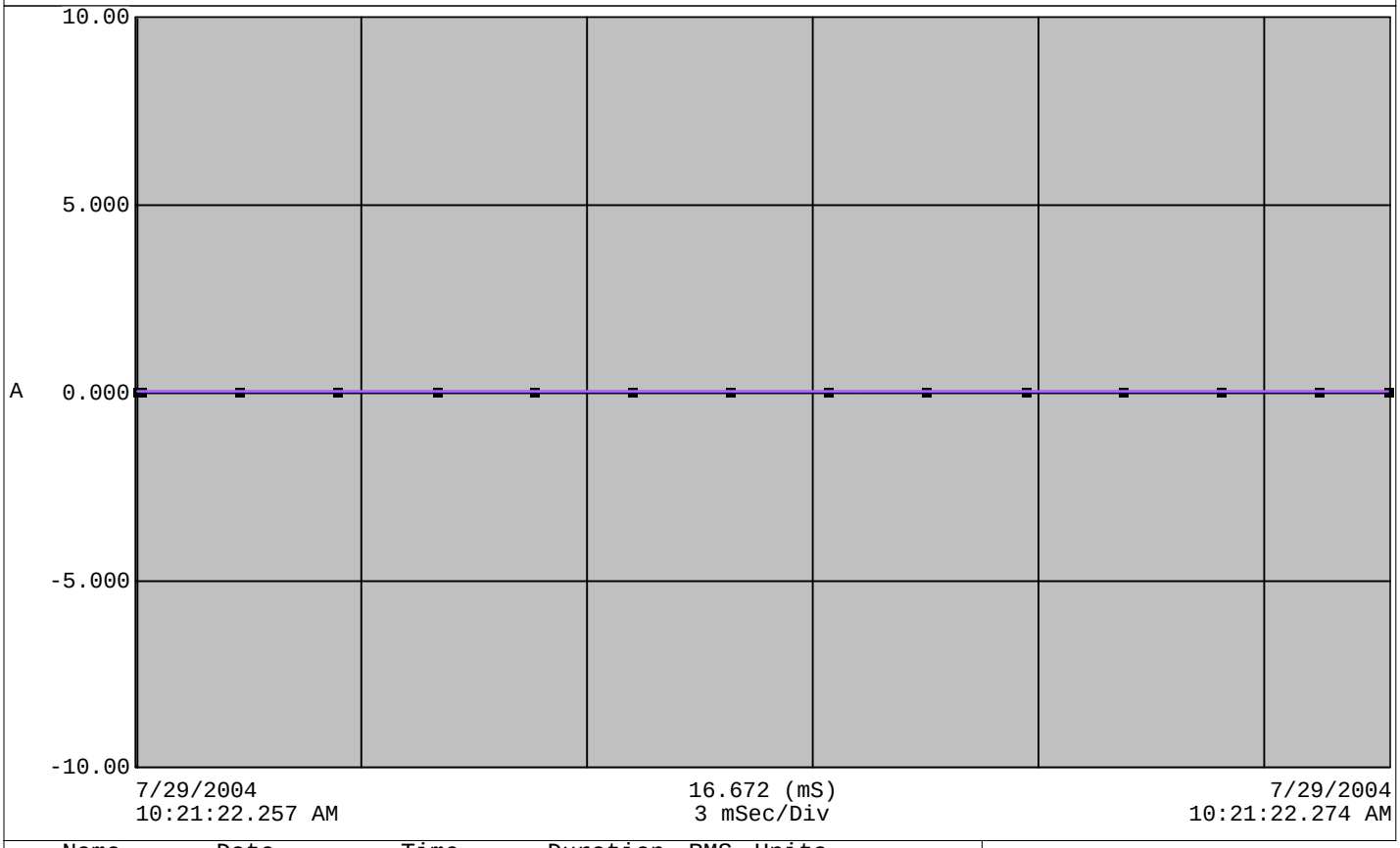
7/29/2004 - 10:21:22.000 AM

Val	
-152.3	Waveform V1
-155.2	Waveform V2
407.6	Waveform V3

Waveform V1

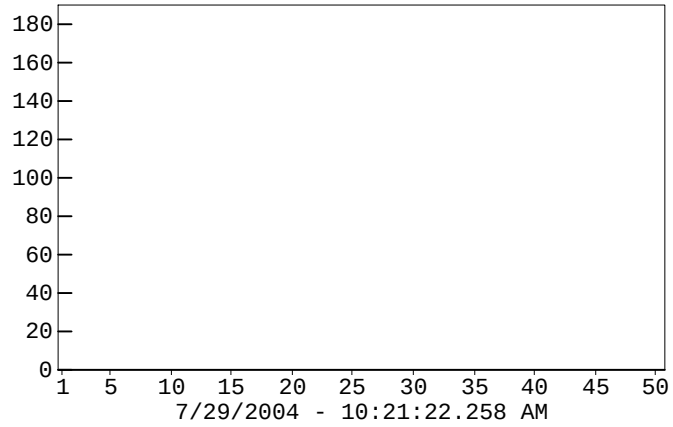
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.2	H19	0.3	H36	0.0
H03	2.1	H20	0.1	H37	0.0
H04	0.1	H21	0.6	H38	0.0
H05	3.6	H22	0.0	H39	0.0
H06	0.3	H23	0.2	H40	0.0
H07	1.3	H24	0.0	H41	0.0
H08	0.2	H25	0.0	H42	0.0
H09	3.6	H26	0.0	H43	0.0
H10	0.1	H27	0.1	H44	0.0
H11	1.3	H28	0.0	H45	0.0
H12	0.2	H29	0.0	H46	0.0
H13	1.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	2.2	H32	0.0	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.4	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/29/2004	10:21:22.257 AM	16.672	0.000	A
Waveform I2	7/29/2004	10:21:22.257 AM	16.672	0.000	A
Waveform I3	7/29/2004	10:21:22.257 AM	16.672	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD



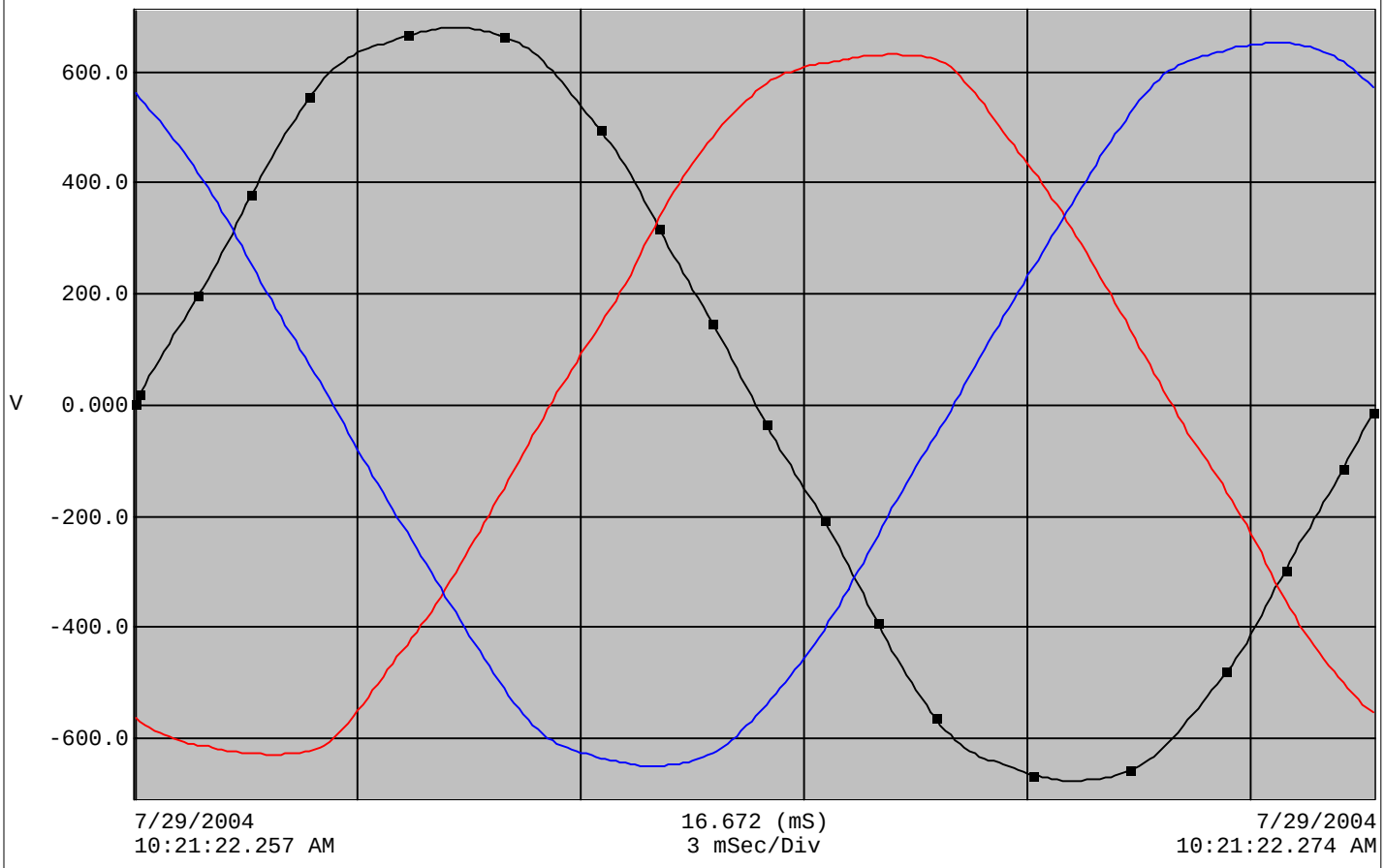
7/29/2004 - 10:21:22.000 AM

Val	
0.000	Waveform I1
0.000	Waveform I2
0.000	Waveform I3

Waveform I1

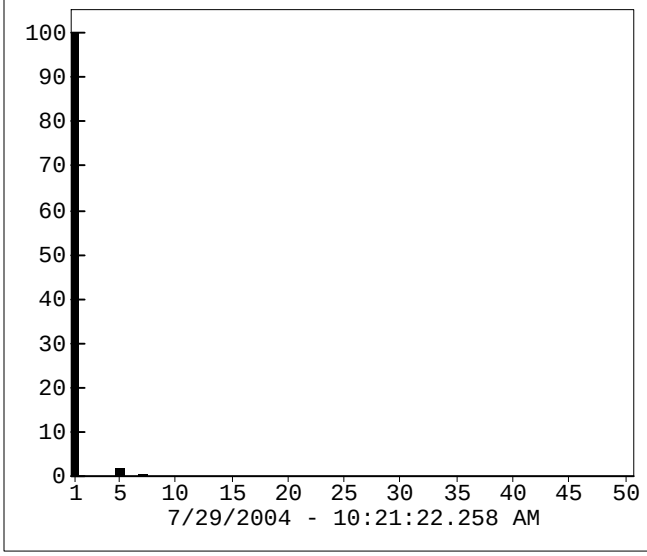
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/29/2004	10:21:22.257 AM	16.672	487.4	V
Waveform U2	7/29/2004	10:21:22.257 AM	16.672	456.8	V
Waveform U3	7/29/2004	10:21:22.257 AM	16.672	466.6	V

Waveform U1
487.44 Vrms, 2.31 %THD



7/29/2004 - 10:21:22.000 AM

	Val	
—	2.800	Waveform U1
—	-562.8	Waveform U2
—	560.0	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/29/2004
Start Time: 10:21:22 AM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F16\072904-F16-Photo.dvb

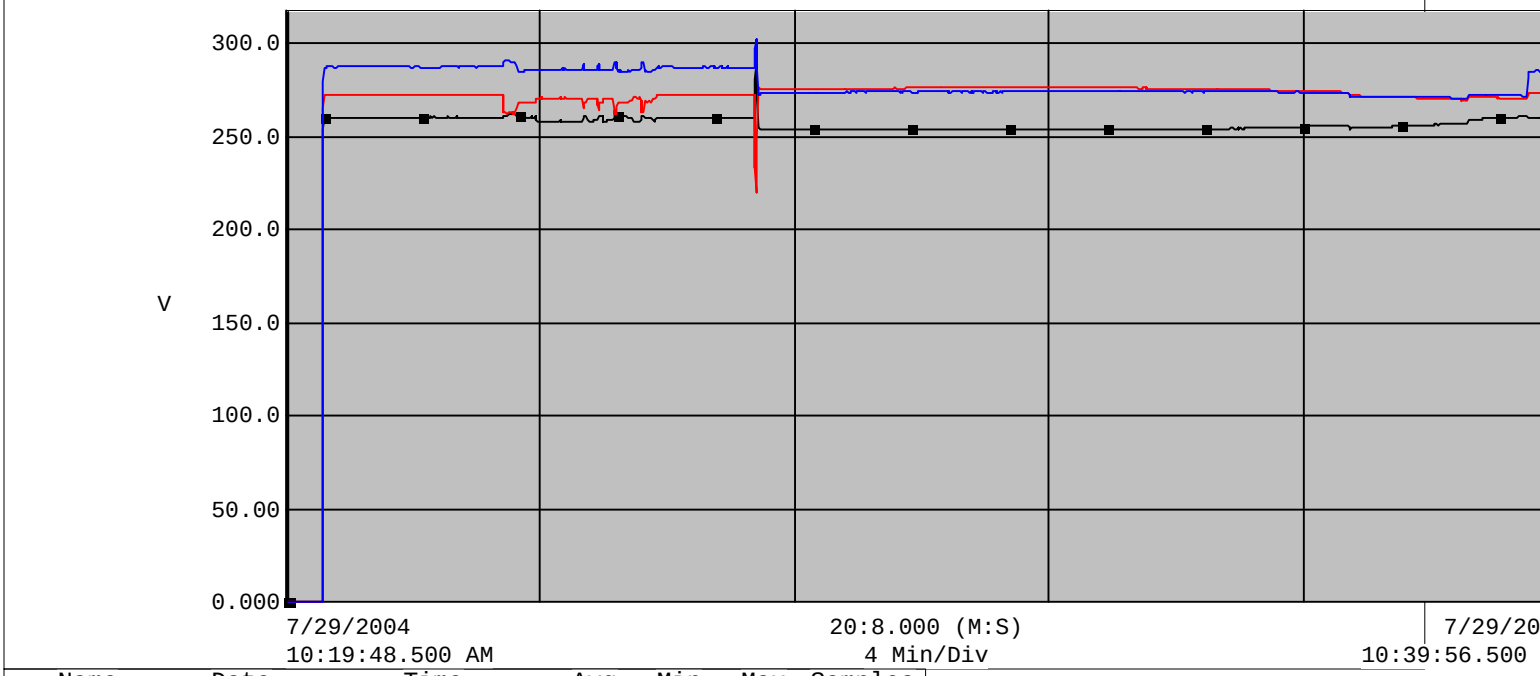
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS - F-16 Photo ,

Comments
Photo at motor starter, motor not operating.

WPS F-16

Recording Start Date	7/29/2004 - 10:19:48 AM
Recording Duration	20:08 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

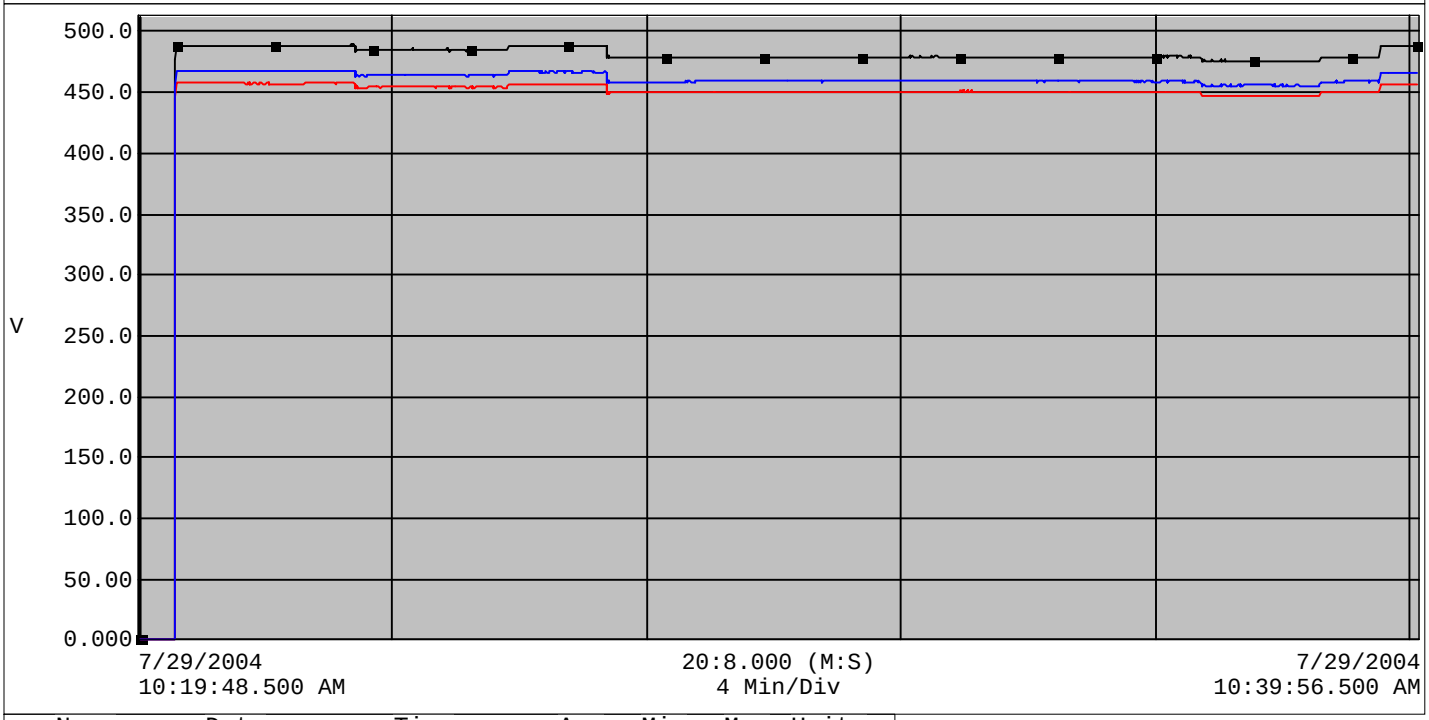
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/29/2004	10:19:48.500 AM	249.3	0.000	289.9	1209
Vrms Line2	7/29/2004	10:19:48.500 AM	265.2	0.000	276.1	1209
Vrms Line3	7/29/2004	10:19:48.500 AM	270.5	0.000	302.3	1209

7/29/2004 - 10:19:48.000 AM
Val
0.000 Vrms Line1
0.000 Vrms Line2
0.000 Vrms Line3

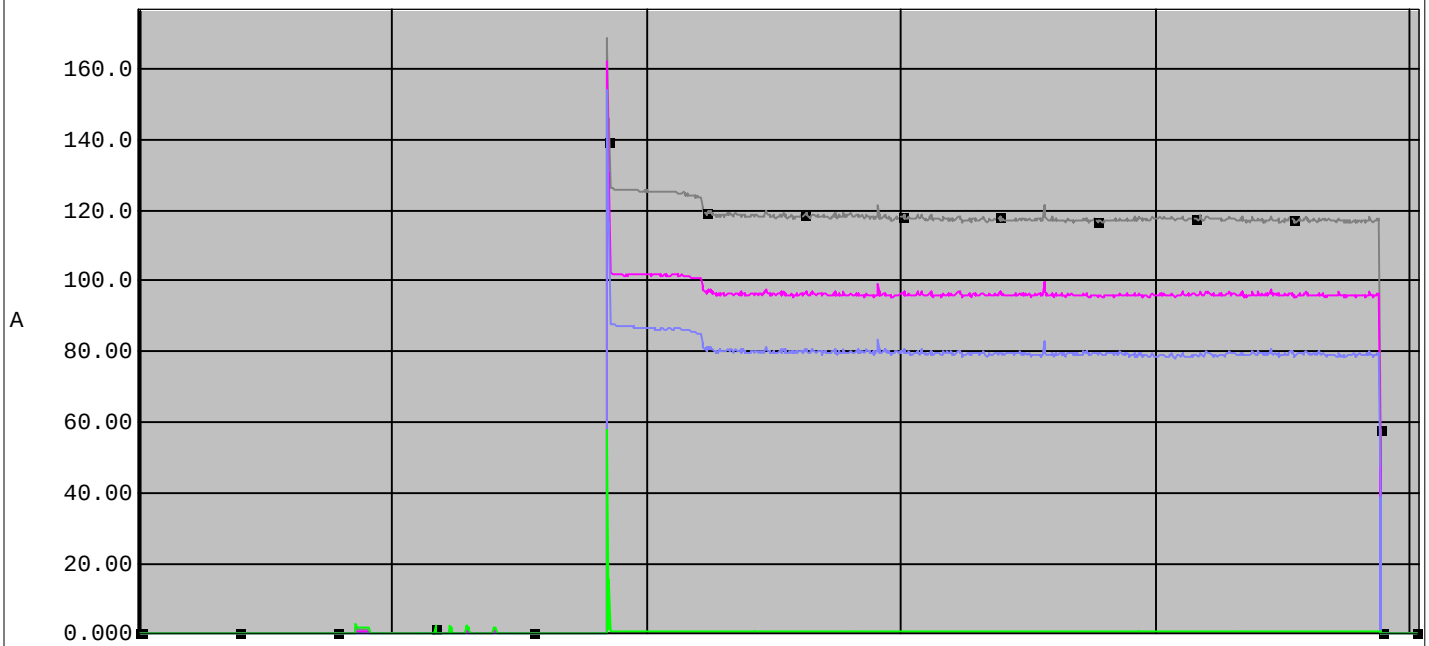
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/29/2004	10:19:48.500 AM	467.6	0.000	488.1	V
Urms Line2	7/29/2004	10:19:48.500 AM	438.8	0.000	457.1	V
Urms Line3	7/29/2004	10:19:48.500 AM	447.7	0.000	467.0	V

7/29/2004 - 10:19:48.000 AM
Val
0.000 Urms Line1
0.000 Urms Line2
0.000 Urms Line3

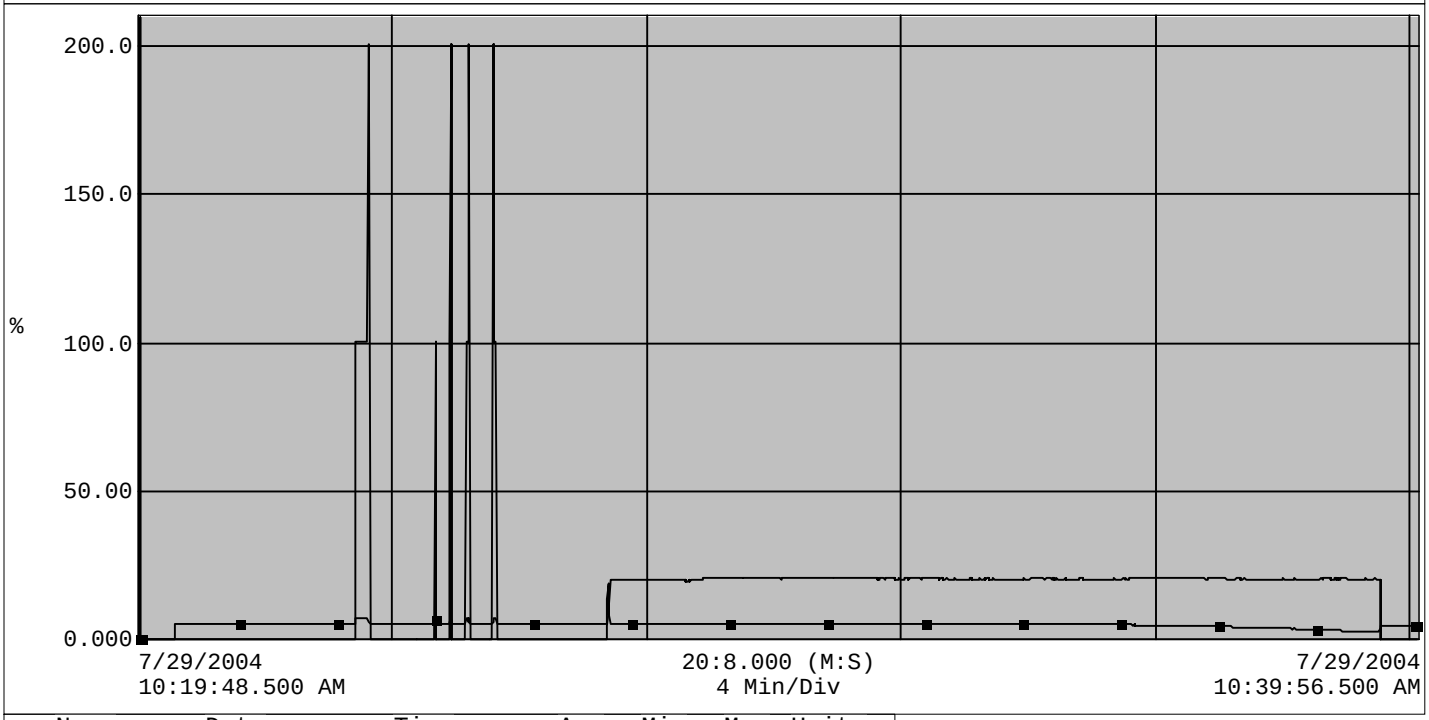
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/29/2004	10:19:48.500 AM	71.68	0.000	168.2	A
Arms Line2	7/29/2004	10:19:48.500 AM	58.51	0.000	161.9	A
Arms Line3	7/29/2004	10:19:48.500 AM	48.57	0.000	153.6	A
Arms Neutral	7/29/2004	10:19:48.500 AM	0.578	0.000	57.80	A

7/29/2004 - 10:19:48.000 AM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3
0.000 — Arms Neutral

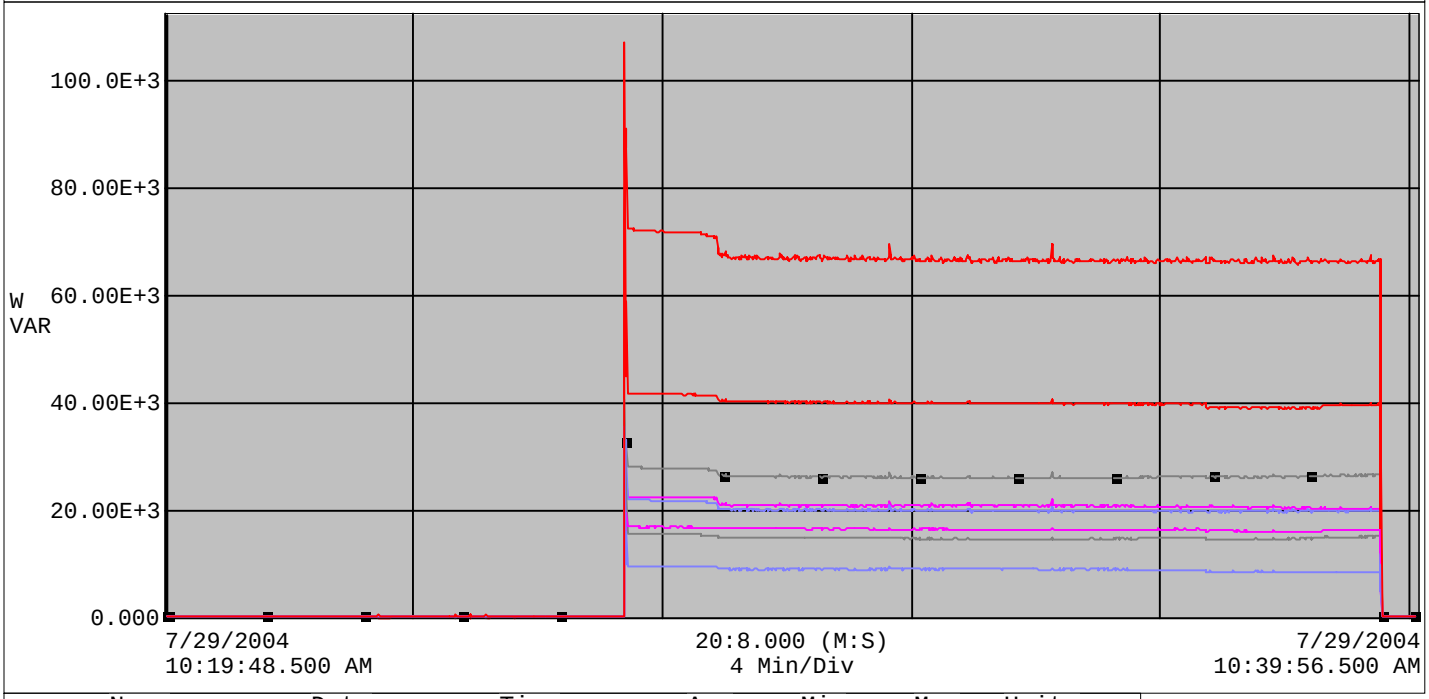
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/29/2004	10:19:48.500 AM	4.817	0.000	18.90	%
Aunb(IEEE)	7/29/2004	10:19:48.500 AM	14.53	0.000	200.0	%

7/29/2004 - 10:19:48.000 AM
Val
0.000 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

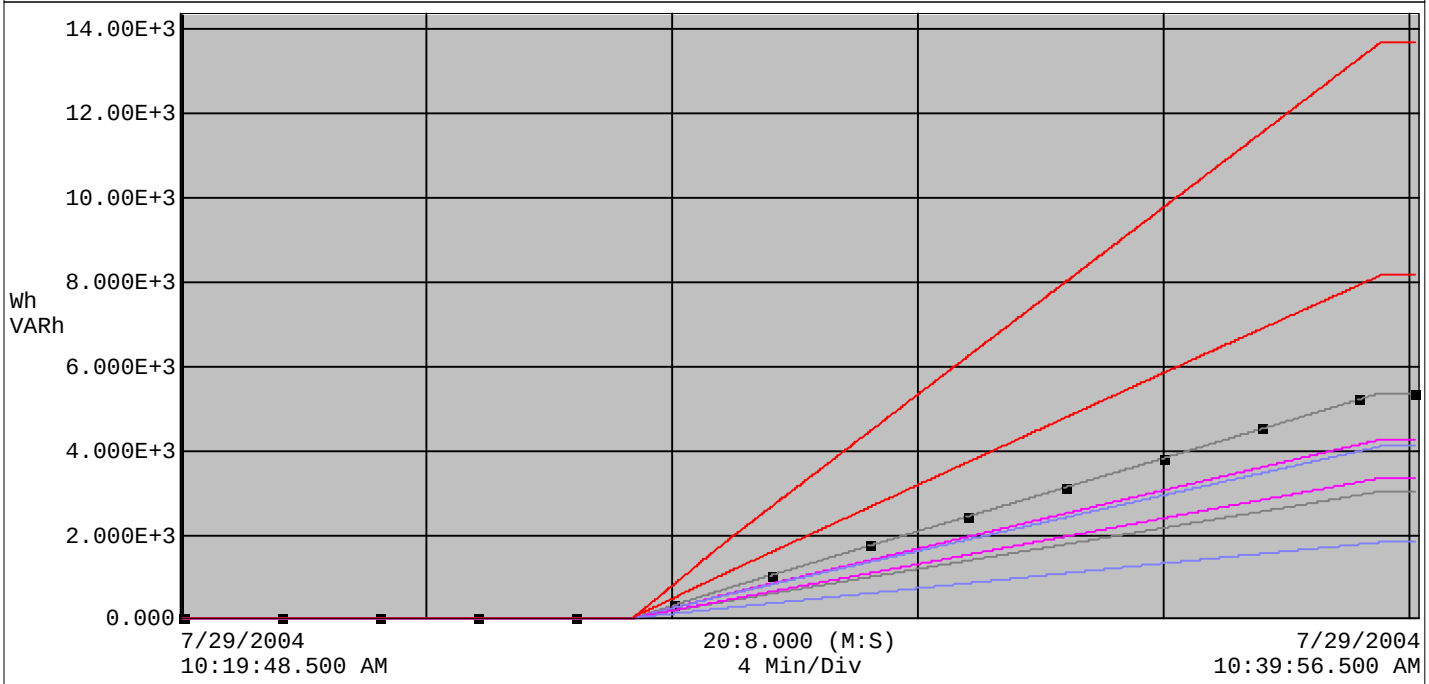
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/29/2004	10:19:48.500 AM	15.89E+3	-229.4	32.63E+3	W
W Line2	7/29/2004	10:19:48.500 AM	12.60E+3	0.000	25.74E+3	W
W Line3	7/29/2004	10:19:48.500 AM	12.13E+3	0.000	33.17E+3	W
W Sum of Phases	7/29/2004	10:19:48.500 AM	40.63E+3	-161.3	90.80E+3	W
VAR Line1	7/29/2004	10:19:48.500 AM	8.959E+3	0.000	40.37E+3	VAR
VAR Line2	7/29/2004	10:19:48.500 AM	9.899E+3	0.000	31.07E+3	VAR
VAR Line3	7/29/2004	10:19:48.500 AM	5.367E+3	0.000	35.60E+3	VAR
VAR Sum of Phases	7/29/2004	10:19:48.500 AM	24.22E+3	0.000	107.0E+3	VAR

7/29/2004 - 10:19:48.000 AM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

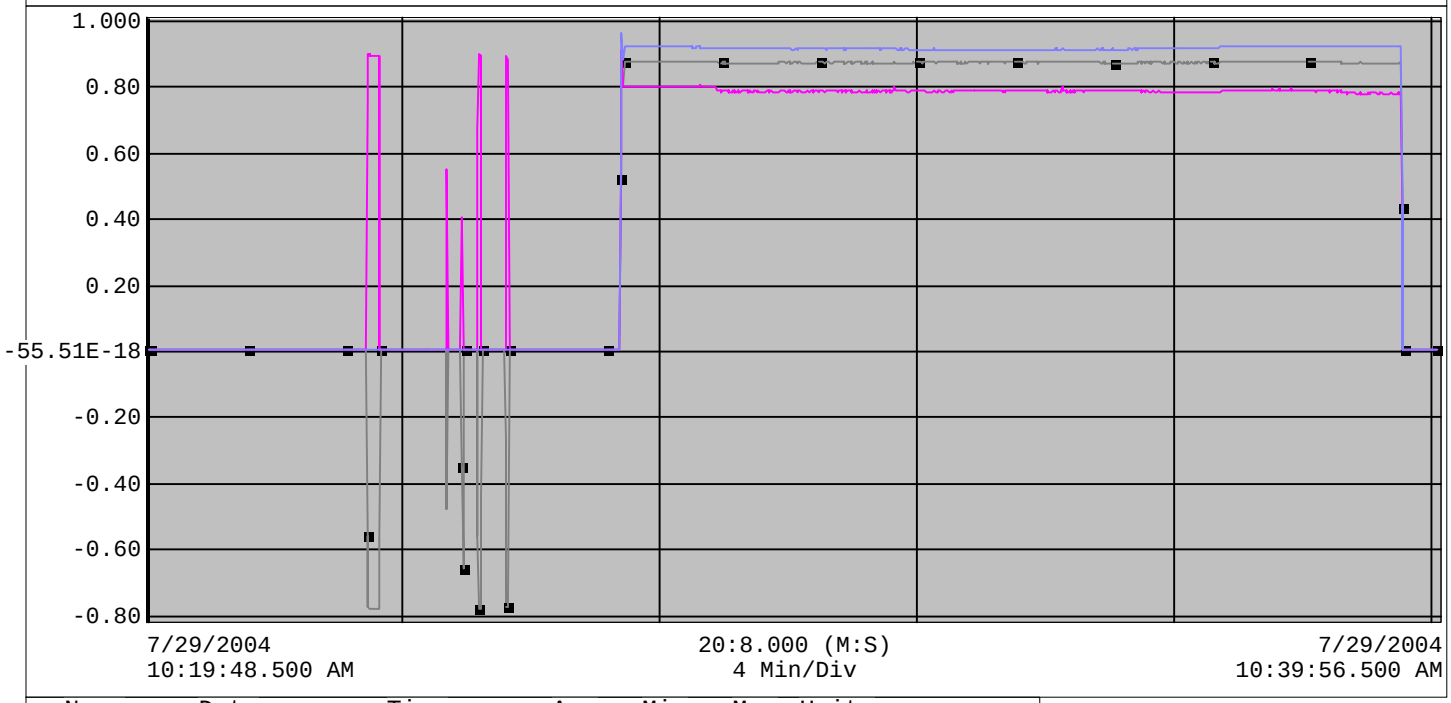
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/29/2004	10:19:48.500 AM	1.779E+3	-1.140	5.337E+3	Wh
W-hours Line2	7/29/2004	10:19:48.500 AM	1.421E+3	0.000	4.233E+3	Wh
W-hours Line3	7/29/2004	10:19:48.500 AM	1.368E+3	0.000	4.075E+3	Wh
W-hours Sum of Phases	7/29/2004	10:19:48.500 AM	4.568E+3	0.000	13.65E+3	Wh
VAR-hours Line1	7/29/2004	10:19:48.500 AM	1.006E+3	0.000	3.009E+3	VARh
VAR-hours Line2	7/29/2004	10:19:48.500 AM	1.109E+3	0.000	3.324E+3	VARh
VAR-hours Line3	7/29/2004	10:19:48.500 AM	608.9	0.000	1.802E+3	VARh
VAR-hours Sum of Phases	7/29/2004	10:19:48.500 AM	2.724E+3	0.000	8.135E+3	VARh

7/29/2004 - 10:19:48.000 AM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/29/2004	10:19:48.500 AM	0.514	-0.783	0.876	
PF Line2	7/29/2004	10:19:48.500 AM	0.489	0.000	0.908	
PF Line3	7/29/2004	10:19:48.500 AM	0.553	0.000	0.960	

7/29/2004 - 10:19:48.000 AM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F16\072904-F16.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS - F16 ,

Comments
Operation of Station F16 after control transformer is replaced (250 va).

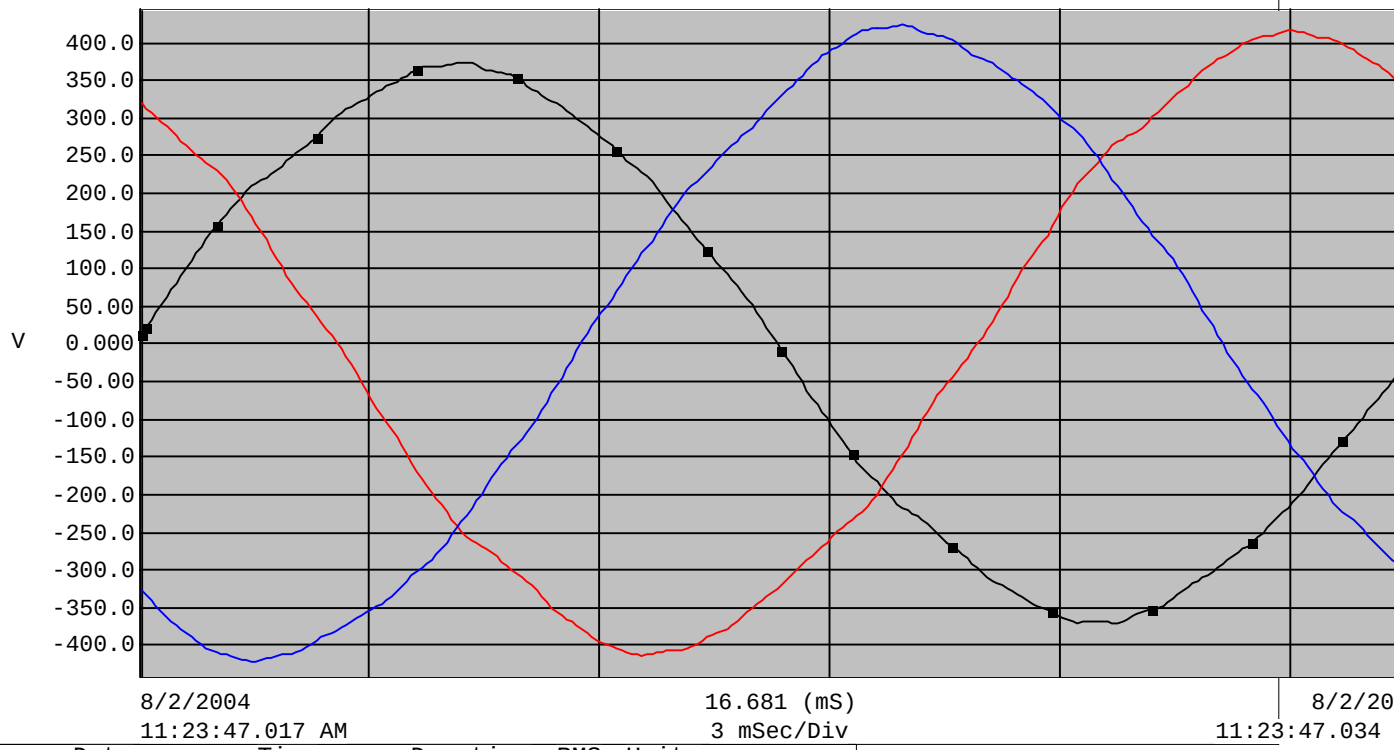
GWA Water Pumping Station Assessment				
Station Name: F-17	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/01/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.325	
Generator Condition	10.0%	2	0.2	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	2	0.05	
Pump Motor Starter	**25.0%**		0.65	
Main Breaker	5.0%	2	0.1	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	2	0.1	37
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.13	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	2	0.02	37
Phase Monitor	1.0%	2	0.02	
Pump Instrumentation	**5.0%**		0.08	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	1	0.02	52
Building Electrical	**5.0%**		0.12	
Lighting	3.0%	2	0.06	61
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.3**

Comments:

WPS F-17 - Photo1

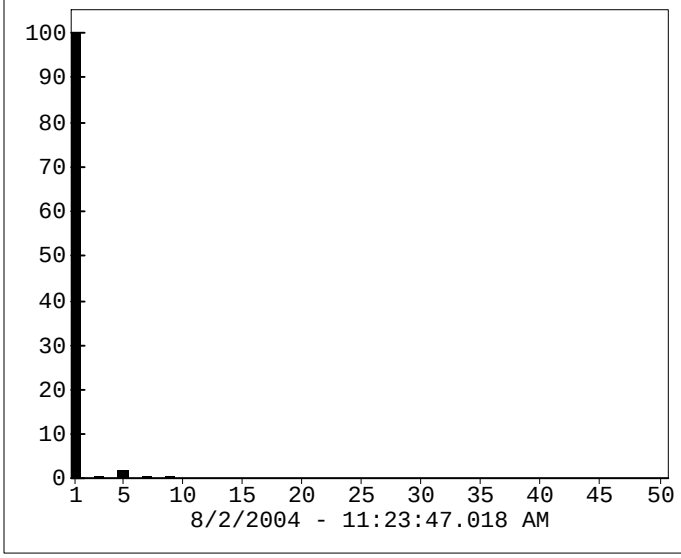
Recording Start Date	8/2/2004 - 11:23:47 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/2/2004	11:23:47.017 AM	16.681	258.8	V
Waveform V2	8/2/2004	11:23:47.017 AM	16.681	287.2	V
Waveform V3	8/2/2004	11:23:47.017 AM	16.681	291.8	V

Waveform V1
258.77 Vrms, 2.29 %THD



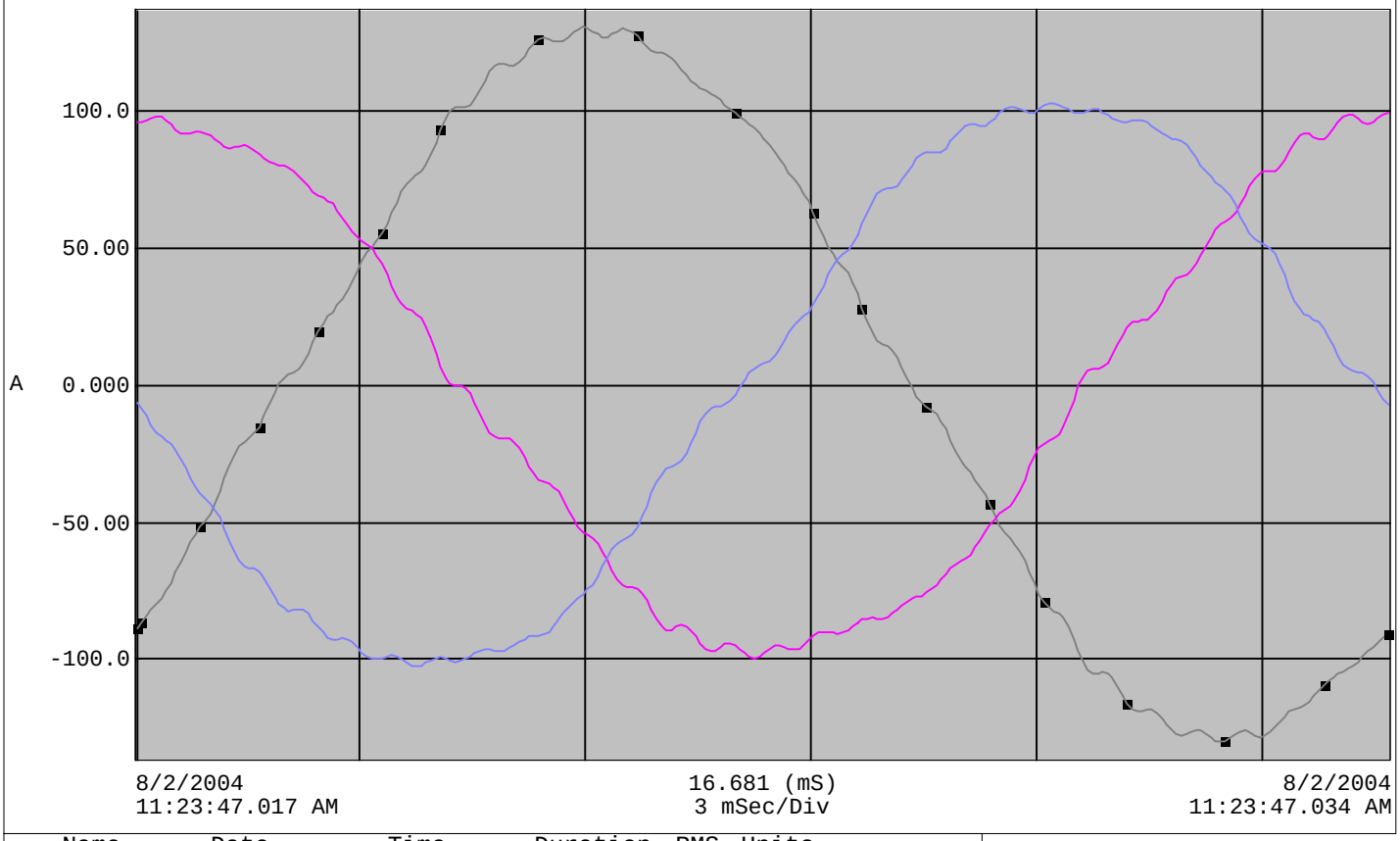
8/2/2004 - 11:23:47.000 AM

Val	
10.40	Waveform V1
319.4	Waveform V2
-327.9	Waveform V3

Waveform V1

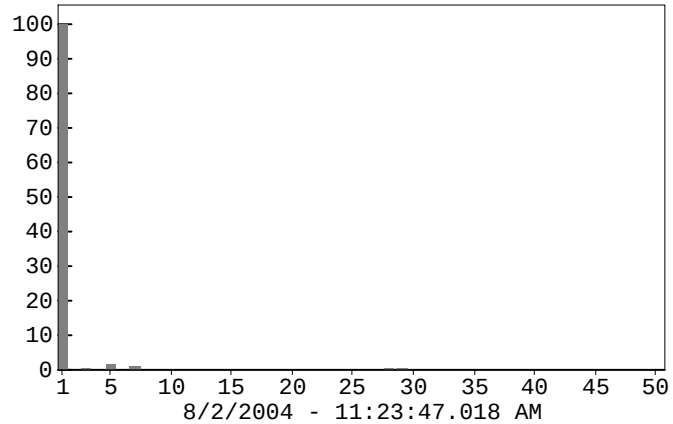
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.6	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.9	H22	0.0	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	0.7	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.6	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.1	H28	0.2	H45	0.0
H12	0.1	H29	0.3	H46	0.0
H13	0.4	H30	0.2	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.3	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.95 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/2/2004	11:23:47.017 AM	16.681	90.83	A
Waveform I2	8/2/2004	11:23:47.017 AM	16.681	69.87	A
Waveform I3	8/2/2004	11:23:47.017 AM	16.681	72.75	A

Waveform I1
90.83 Arms, 3.06 %THD



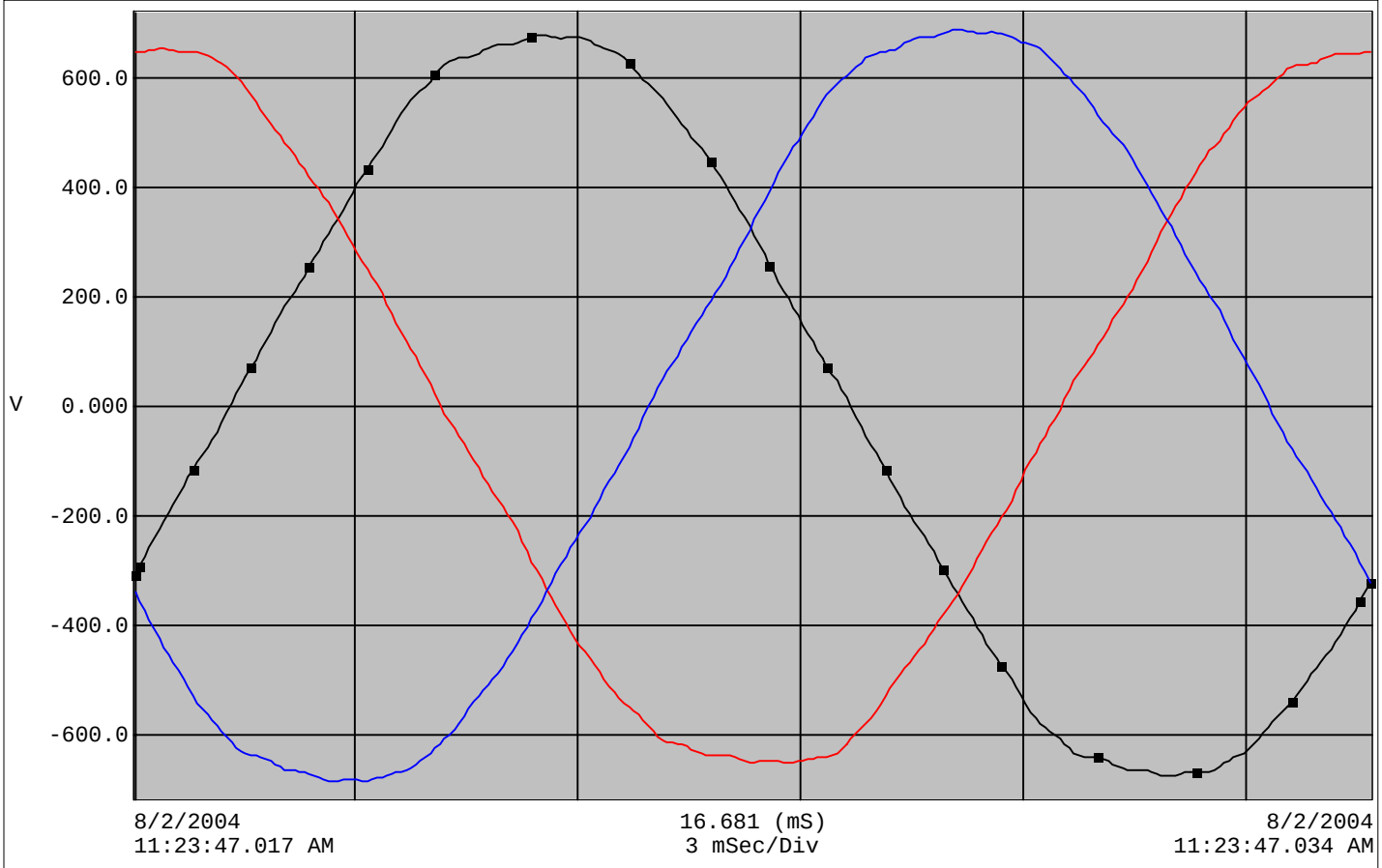
8/2/2004 - 11:23:47.000 AM

Val	
-89.00	Waveform I1
96.00	Waveform I2
-6.300	Waveform I3

Waveform I1

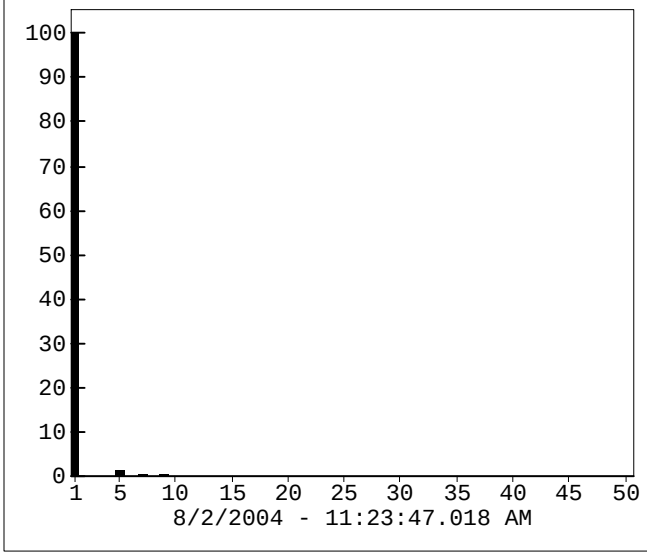
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.0	H19	0.1	H36	0.0
H03	1.1	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.7	H22	0.2	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	1.6	H24	0.3	H41	0.0
H08	0.0	H25	0.4	H42	0.0
H09	0.5	H26	0.3	H43	0.0
H10	0.0	H27	0.3	H44	0.0
H11	0.1	H28	0.7	H45	0.0
H12	0.0	H29	1.0	H46	0.0
H13	0.3	H30	0.5	H47	0.0
H14	0.0	H31	0.2	H48	0.0
H15	0.1	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/2/2004	11:23:47.017 AM	16.681	482.4	V
Waveform U2	8/2/2004	11:23:47.017 AM	16.681	472.7	V
Waveform U3	8/2/2004	11:23:47.017 AM	16.681	491.9	V

Waveform U1
482.37 Vrms, 1.90 %THD



8/2/2004 - 11:23:47.000 AM

	Val	
—	-309.0	Waveform U1
—	647.4	Waveform U2
—	-338.4	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.5	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.2	H28	0.2	H45	0.0
H12	0.0	H29	0.3	H46	0.0
H13	0.2	H30	0.2	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/2/2004
Start Time: 11:23:47 AM
Duration: 0:0.000 (M:S)
W: 16.76E+3 W
VAR: 16.41E+3 W
VA: 23.46E+3 W
Power Factor: 0.715
Displacement Power Factor: 0.715
TAN: 0.978
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F17\080204-F17-Photo1.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS - F-17 - Photo1 ,

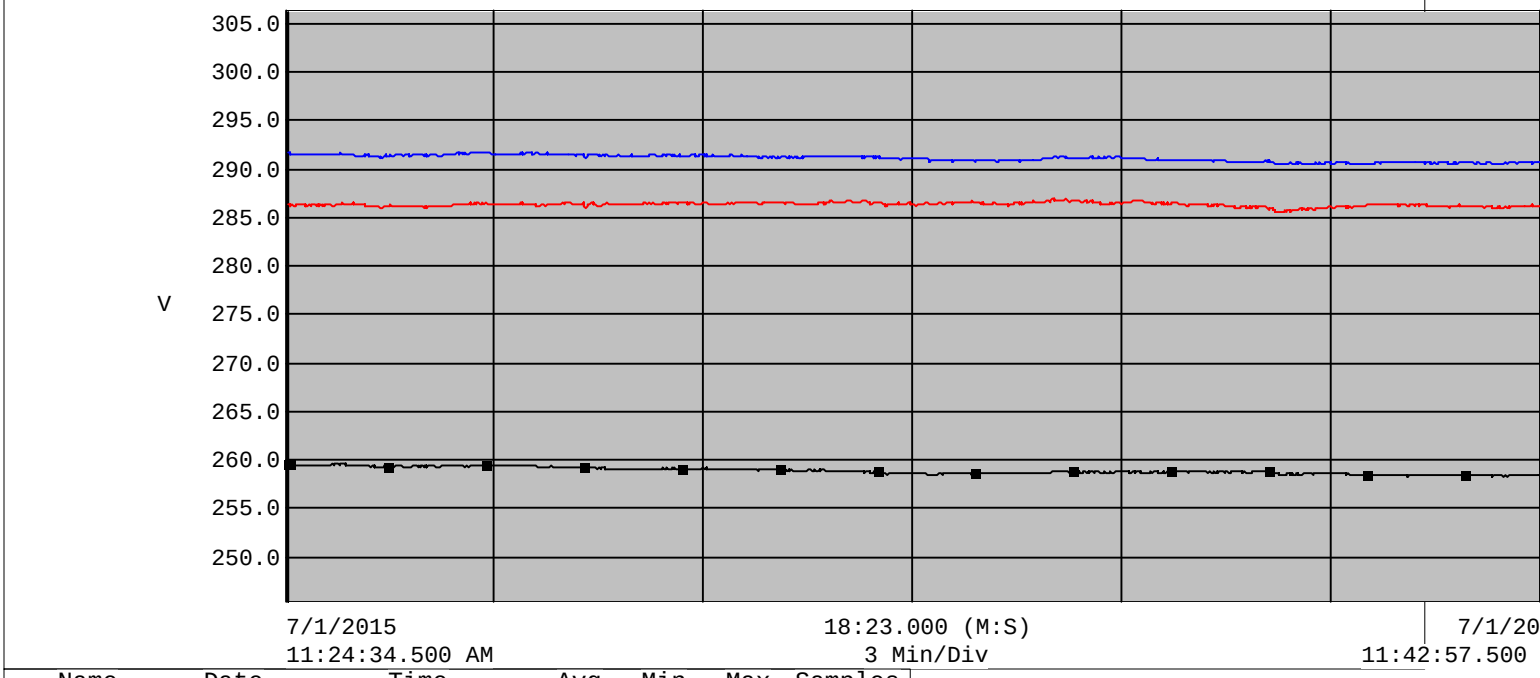
Comments

Snapshot taken at motor overload relay.

WPS F-17

Recording Start Date	7/1/2015 - 11:24:34 AM
Recording Duration	18:23 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

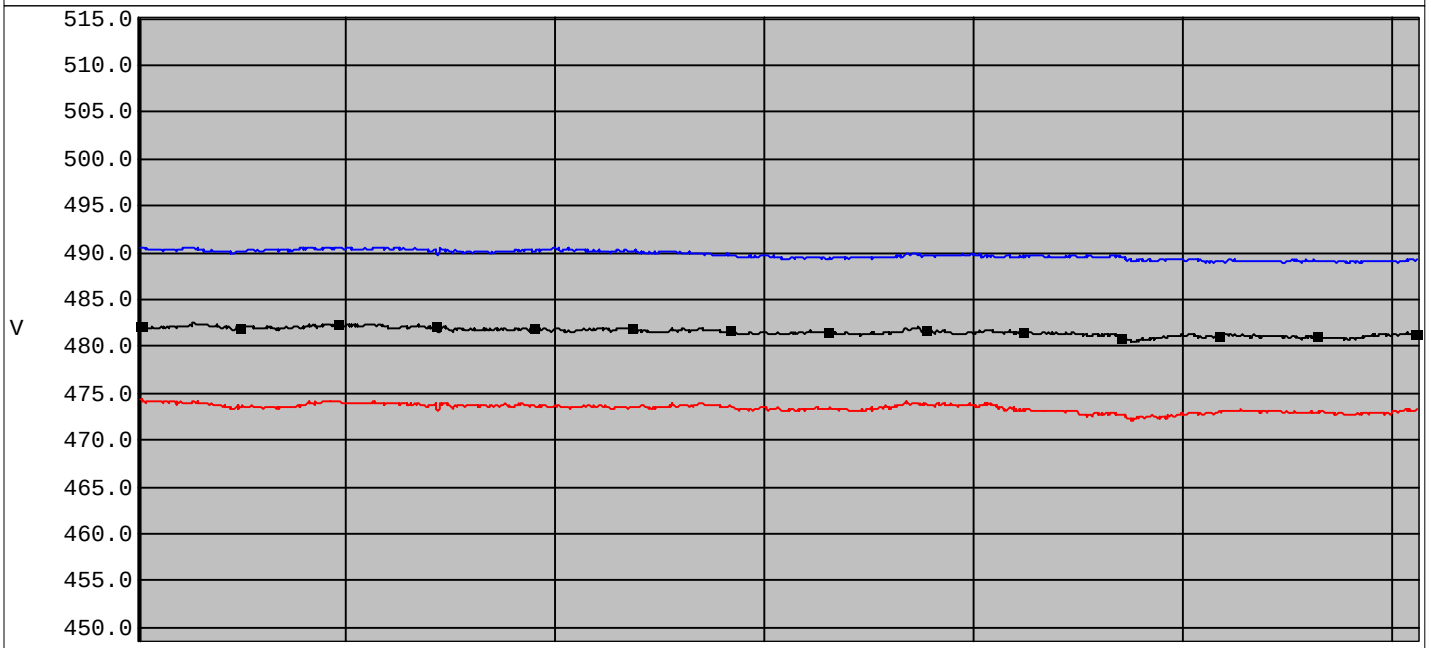
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/1/2015	11:24:34.500 AM	258.8	258.2	259.5	1104
Vrms Line2	7/1/2015	11:24:34.500 AM	286.2	285.4	286.8	1104
Vrms Line3	7/1/2015	11:24:34.500 AM	291.0	290.4	291.7	1104

7/1/2015 - 11:24:34.000 AM
Val
259.5 — Vrms Line1
286.2 — Vrms Line2
291.6 — Vrms Line3

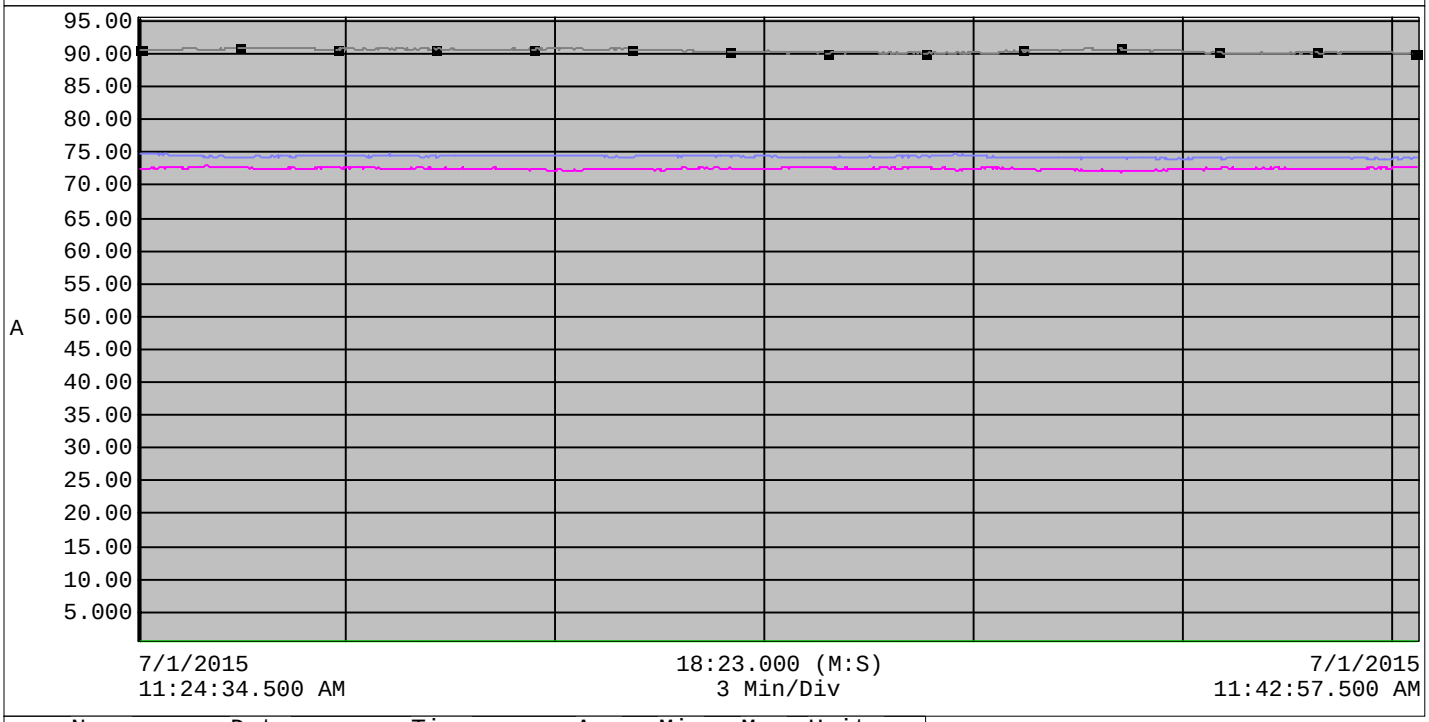
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/1/2015	11:24:34.500 AM	481.5	480.3	482.4	V
Urms Line2	7/1/2015	11:24:34.500 AM	473.3	472.0	474.2	V
Urms Line3	7/1/2015	11:24:34.500 AM	489.7	488.7	490.5	V

7/1/2015 - 11:24:34.000 AM
Val
482.0 Urms Line1
474.2 Urms Line2
490.5 Urms Line3

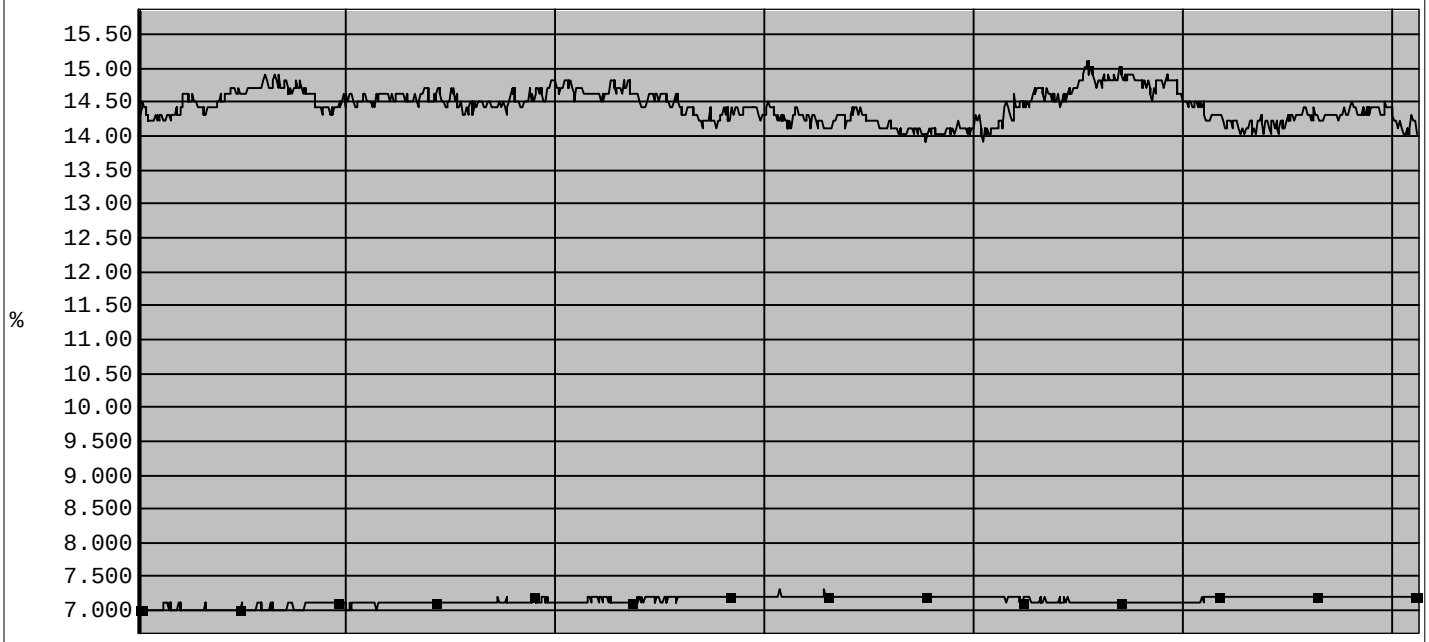
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/1/2015	11:24:34.500 AM	90.38	89.80	90.90	A
Arms Line2	7/1/2015	11:24:34.500 AM	72.35	71.80	72.90	A
Arms Line3	7/1/2015	11:24:34.500 AM	74.23	73.80	74.70	A
Arms Neutral	7/1/2015	11:24:34.500 AM	0.400	0.400	0.400	A

7/1/2015 - 11:24:34.000 AM
Val
90.50 — Arms Line1
72.30 — Arms Line2
74.70 — Arms Line3
0.400 — Arms Neutral

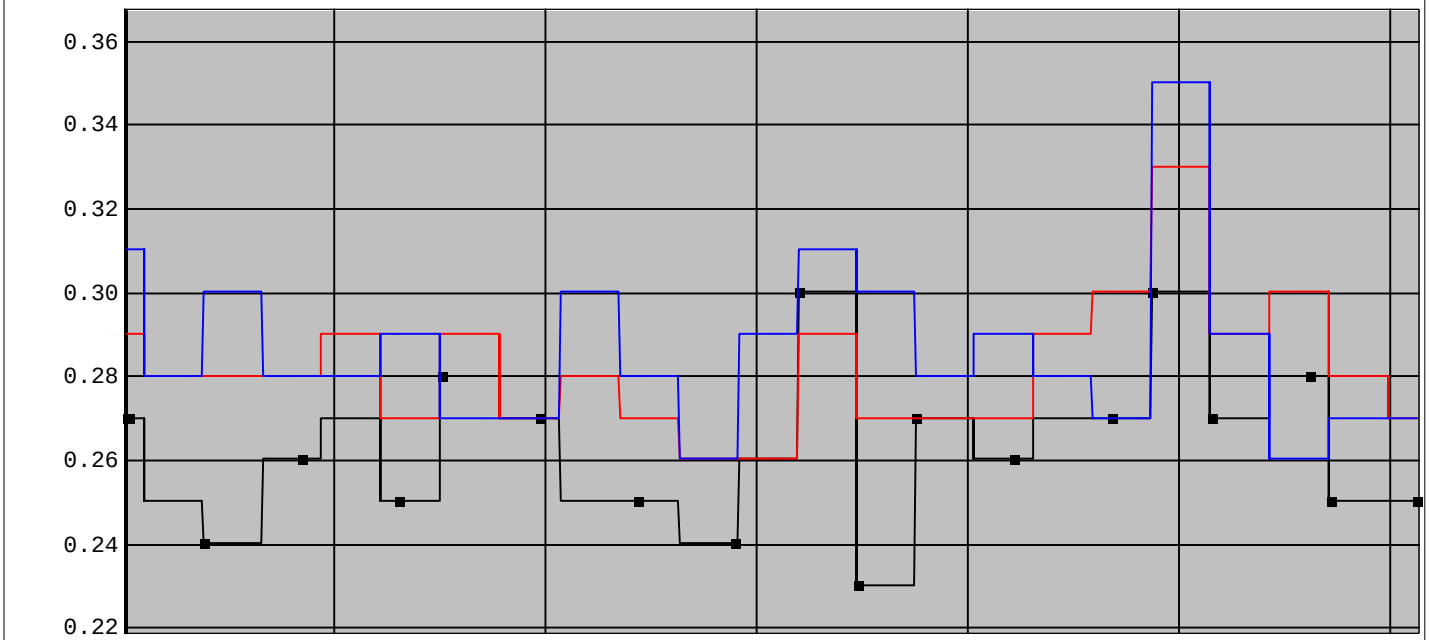
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/1/2015	11:24:34.500 AM	7.138	7.000	7.300	%
Aunb(IEEE)	7/1/2015	11:24:34.500 AM	14.43	13.90	15.10	%

7/1/2015 - 11:24:34.000 AM
Val
7.000 —— Vunb(IEEE)
14.30 —— Aunb(IEEE)

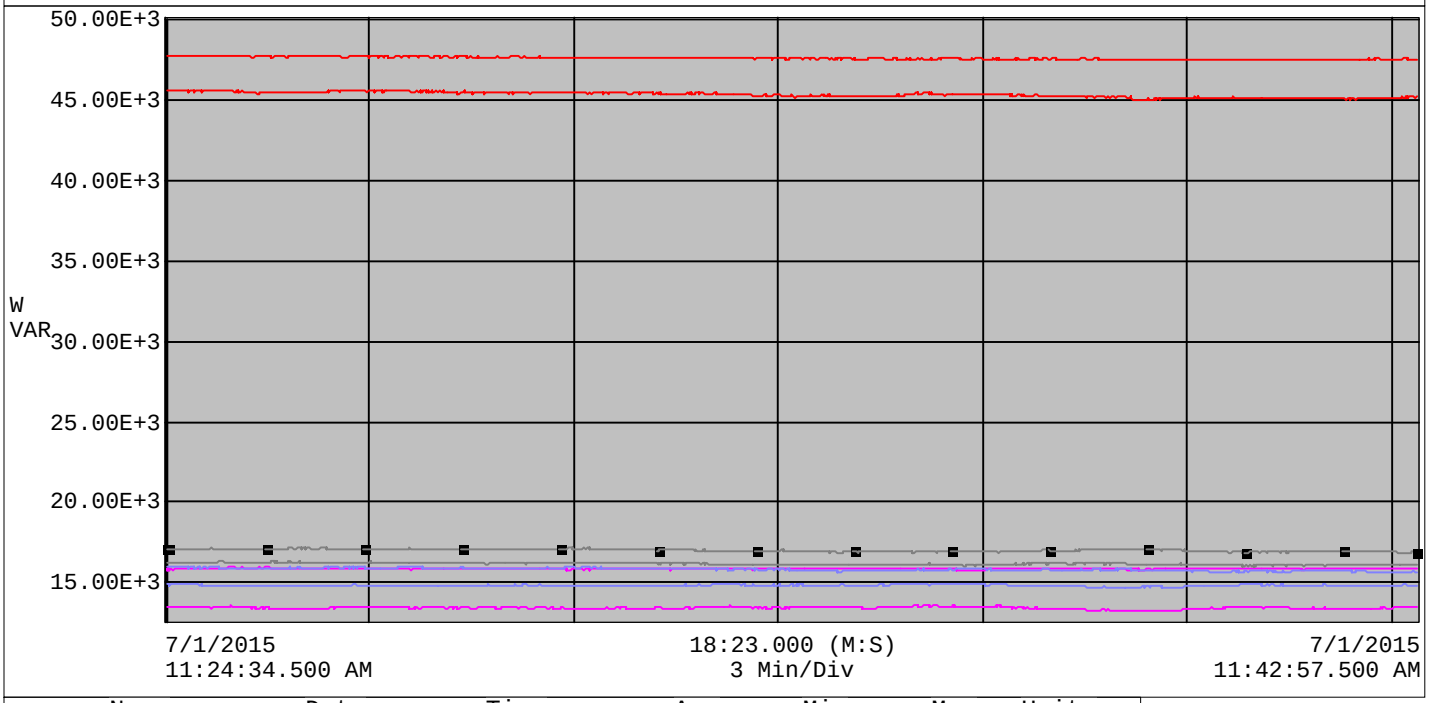
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/1/2015	11:24:34.500 AM	0.263	0.230	0.300	
Vflk Line2	7/1/2015	11:24:34.500 AM	0.282	0.260	0.330	
Vflk Line3	7/1/2015	11:24:34.500 AM	0.286	0.260	0.350	

7/1/2015 - 11:24:34.000 AM
Val
0.270 Vflk Line1
0.290 Vflk Line2
0.310 Vflk Line3

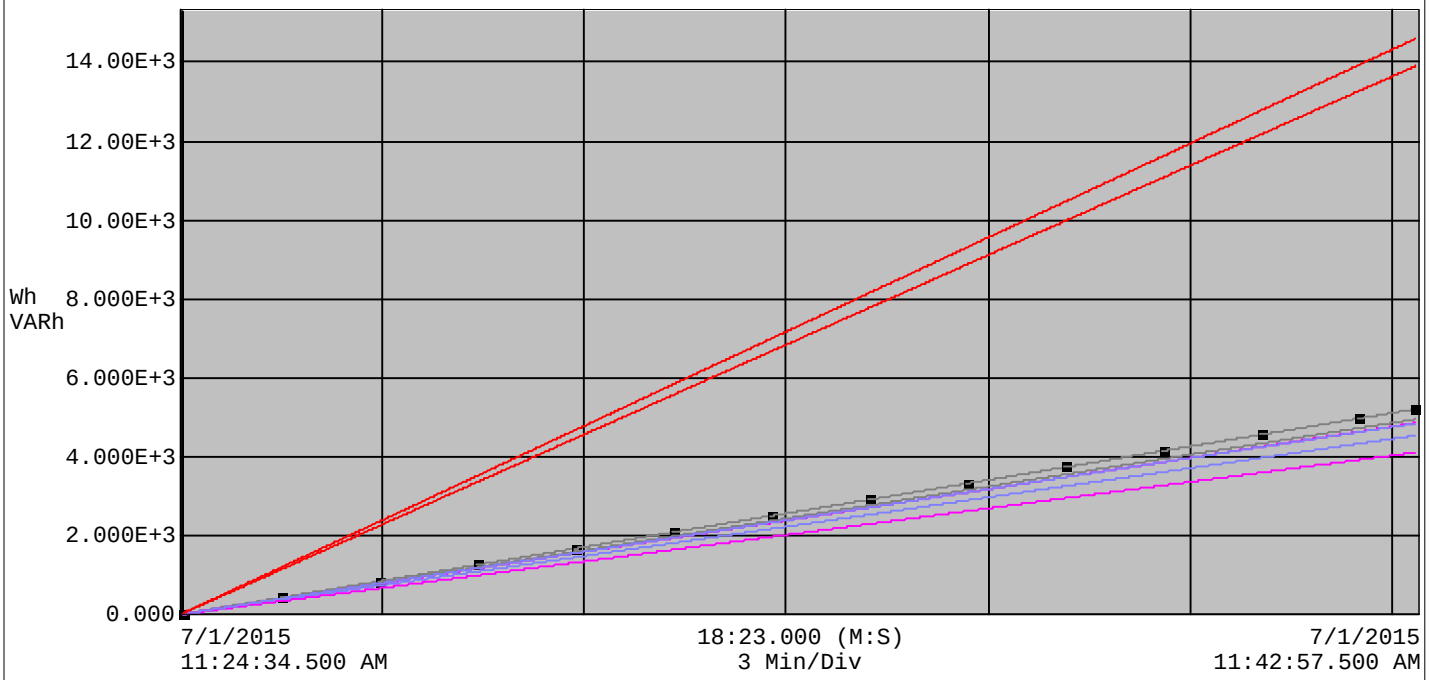
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/1/2015	11:24:34.500 AM	16.95E+3	16.81E+3	17.10E+3	W
W Line2	7/1/2015	11:24:34.500 AM	15.81E+3	15.69E+3	15.91E+3	W
W Line3	7/1/2015	11:24:34.500 AM	14.77E+3	14.64E+3	14.88E+3	W
W Sum of Phases	7/1/2015	11:24:34.500 AM	47.53E+3	47.40E+3	47.66E+3	W
VAR Line1	7/1/2015	11:24:34.500 AM	16.11E+3	15.99E+3	16.25E+3	VAR
VAR Line2	7/1/2015	11:24:34.500 AM	13.38E+3	13.14E+3	13.53E+3	VAR
VAR Line3	7/1/2015	11:24:34.500 AM	15.77E+3	15.58E+3	15.95E+3	VAR
VAR Sum of Phases	7/1/2015	11:24:34.500 AM	45.26E+3	44.91E+3	45.55E+3	VAR

7/1/2015 - 11:24:34.000 AM
Val
17.04E+3 — W Line1
15.76E+3 — W Line2
14.83E+3 — W Line3
47.63E+3 — W Sum of Phases
16.16E+3 — VAR Line1
13.43E+3 — VAR Line2
15.95E+3 — VAR Line3
45.54E+3 — VAR Sum of Phases

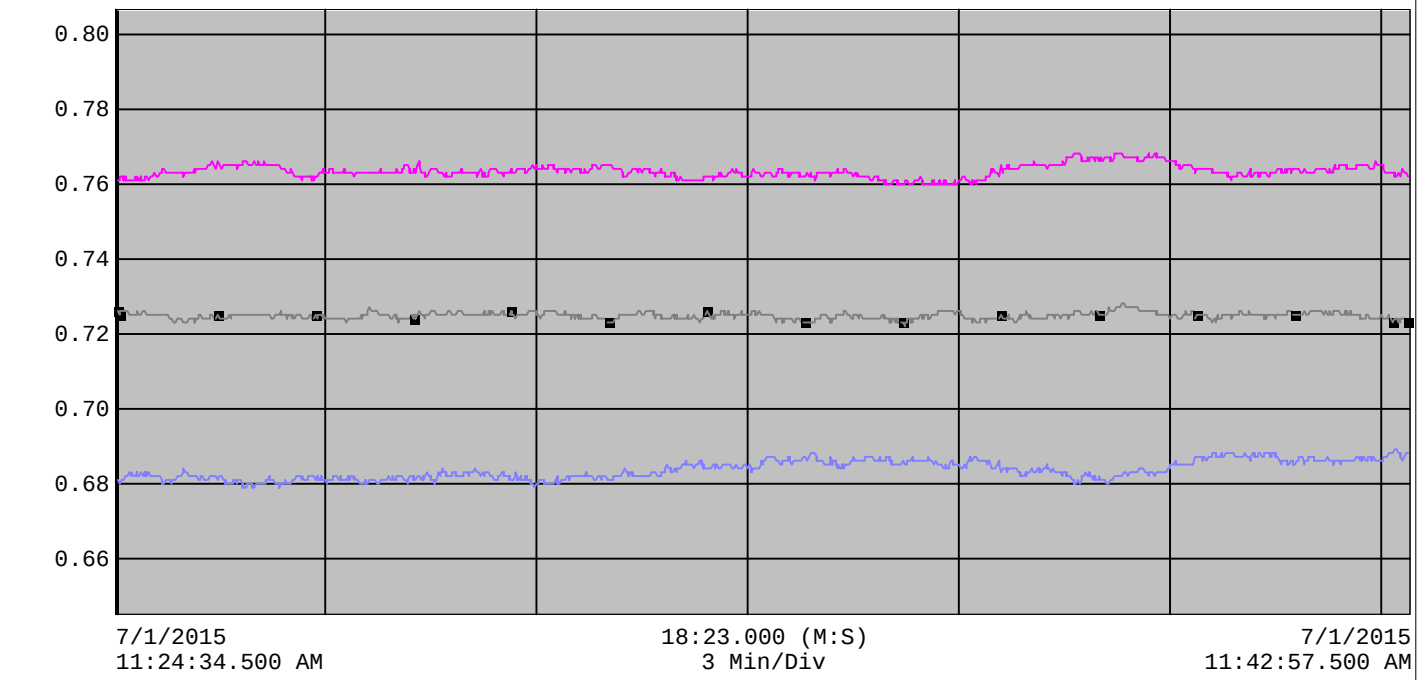
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/1/2015	11:24:34.500 AM	2.606E+3	4.759	5.198E+3	Wh
W-hours Line2	7/1/2015	11:24:34.500 AM	2.427E+3	4.439	4.848E+3	Wh
W-hours Line3	7/1/2015	11:24:34.500 AM	2.267E+3	4.146	4.528E+3	Wh
W-hours Sum of Phases	7/1/2015	11:24:34.500 AM	7.300E+3	13.34	14.57E+3	Wh
VAR-hours Line1	7/1/2015	11:24:34.500 AM	2.478E+3	4.525	4.942E+3	VARh
VAR-hours Line2	7/1/2015	11:24:34.500 AM	2.055E+3	3.756	4.102E+3	VARh
VAR-hours Line3	7/1/2015	11:24:34.500 AM	2.427E+3	4.427	4.835E+3	VARh
VAR-hours Sum of Phases	7/1/2015	11:24:34.500 AM	6.959E+3	12.71	13.88E+3	VARh

7/1/2015 - 11:24:34.000 AM
Val
4.759 — W-hours Line1
4.439 — W-hours Line2
4.146 — W-hours Line3
13.34 — W-hours Sum of Phases
4.525 — VAR-hours Line1
3.756 — VAR-hours Line2
4.427 — VAR-hours Line3
12.71 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/1/2015	11:24:34.500 AM	0.725	0.722	0.728	
PF Line2	7/1/2015	11:24:34.500 AM	0.763	0.760	0.768	
PF Line3	7/1/2015	11:24:34.500 AM	0.684	0.679	0.689	

7/1/2015 - 11:24:34.000 AM
Val
0.726 — PF Line1
0.761 — PF Line2
0.681 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F17\070104-F17.dvb	
Operator ,	Test Site ,
Comments	

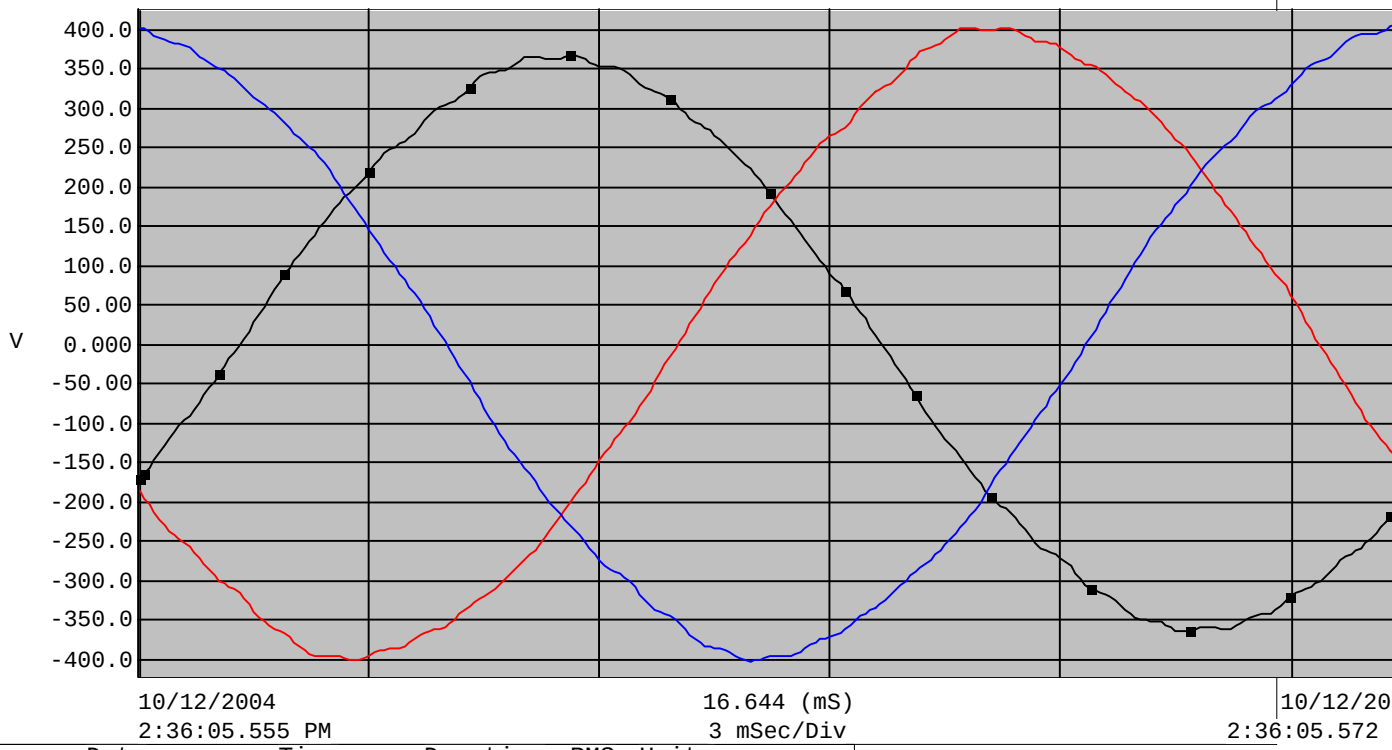
GWA Water Pumping Station Assessment				
Station Name: F-18	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/02/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.35	
Main Disconnect	10.0%	2	0.2	12
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.425	
Generator Condition	10.0%	2	0.2	22
Generator Battery	5.0%	2	0.1	22
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	2	0.05	22
Pump Motor Starter	**25.0%**		0.6	
Main Breaker	5.0%	2	0.1	36
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	2	0.1	37
Phase Monitor	5.0%	3	0.15	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44 (or 49)
Pump Instrumentation	**5.0%**		0.05	
Pressure	1.5%	0	0	
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	1	0.02	52
Building Electrical	**5.0%**		0.12	
Lighting	3.0%	2	0.06	61
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.2**

Comments:

WPS F-18 - Photo

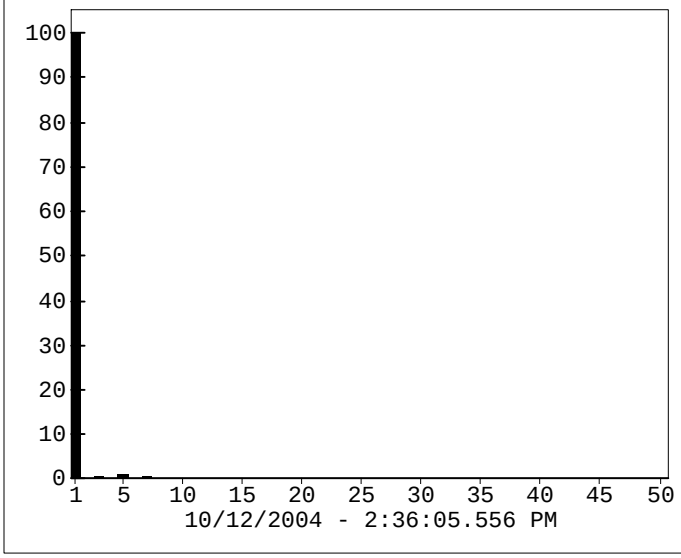
Recording Start Date	10/12/2004 - 2:36:05 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/12/2004	2:36:05.555 PM	16.644	256.8	V
Waveform V2	10/12/2004	2:36:05.555 PM	16.644	279.6	V
Waveform V3	10/12/2004	2:36:05.555 PM	16.644	280.6	V

Waveform V1
256.81 Vrms, 1.60 %THD



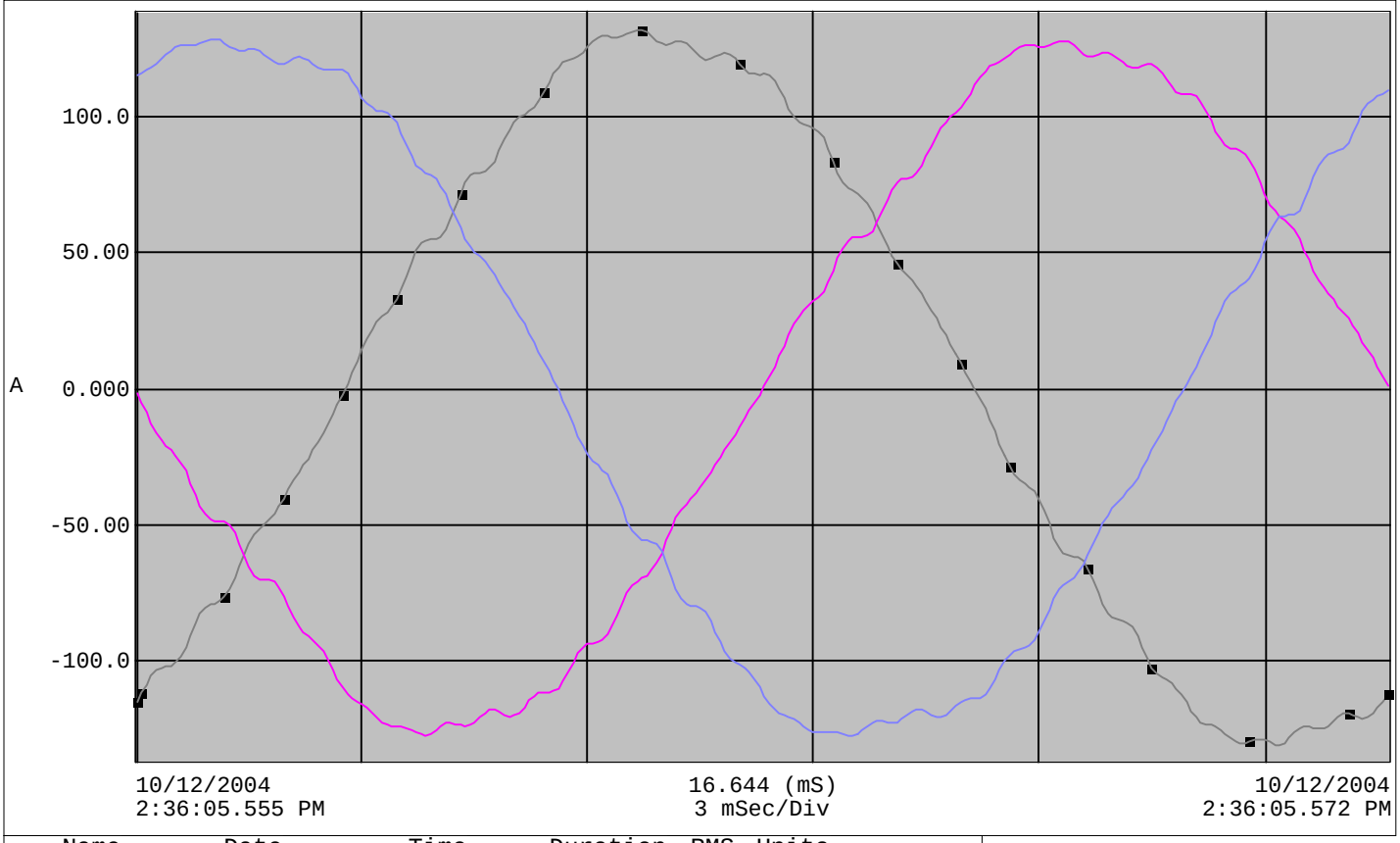
10/12/2004 - 2:36:05.000 PM

Val	
-174.1	Waveform V1
-187.9	Waveform V2
401.4	Waveform V3

Waveform V1

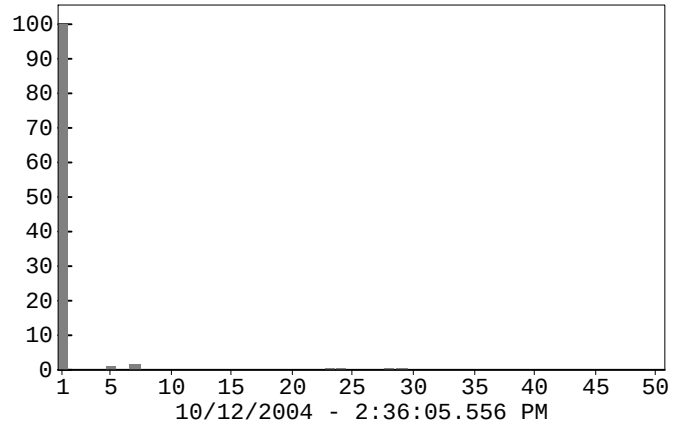
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.6	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.1	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.5	H24	0.2	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.4	H26	0.4	H43	0.0
H10	0.0	H27	0.4	H44	0.0
H11	0.3	H28	0.4	H45	0.0
H12	0.0	H29	0.3	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.08 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/12/2004	2:36:05.555 PM	16.644	91.83	A
Waveform I2	10/12/2004	2:36:05.555 PM	16.644	88.13	A
Waveform I3	10/12/2004	2:36:05.555 PM	16.644	90.86	A

Waveform I1
91.83 Arms, 2.86 %THD



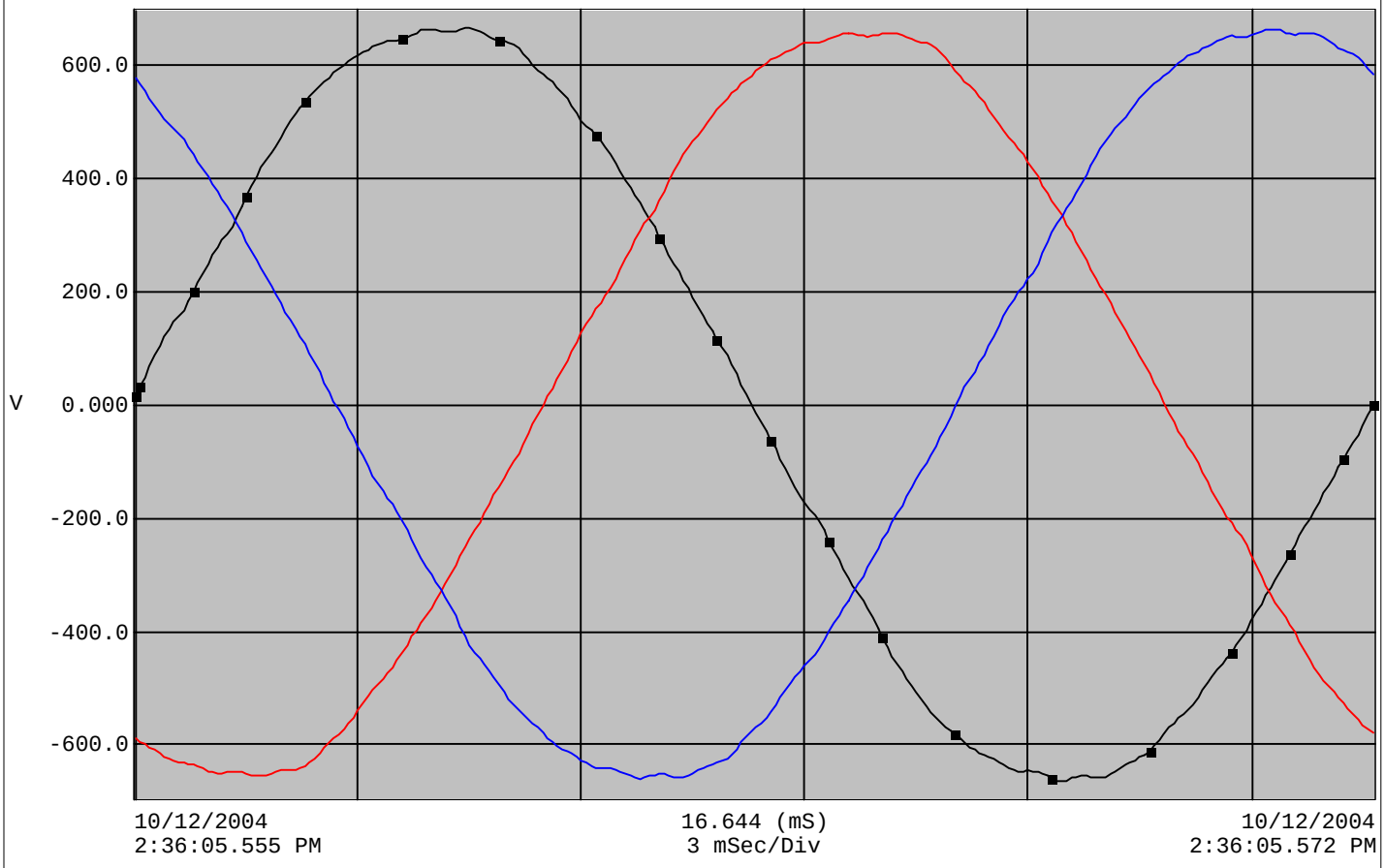
10/12/2004 - 2:36:05.000 PM

Val	
-114.9	Waveform I1
-1.700	Waveform I2
114.5	Waveform I3

Waveform I1

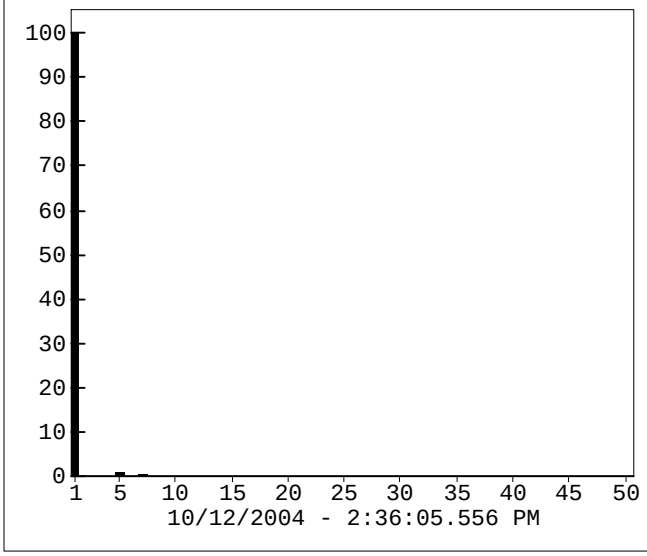
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.1
H02	0.1	H19	0.2	H36	0.1
H03	0.4	H20	0.1	H37	0.1
H04	0.1	H21	0.1	H38	0.1
H05	1.2	H22	0.3	H39	0.1
H06	0.1	H23	0.6	H40	0.1
H07	1.7	H24	0.9	H41	0.0
H08	0.0	H25	0.5	H42	0.0
H09	0.2	H26	0.1	H43	0.0
H10	0.0	H27	0.2	H44	0.0
H11	0.3	H28	0.9	H45	0.0
H12	0.1	H29	0.8	H46	0.0
H13	0.4	H30	0.4	H47	0.0
H14	0.0	H31	0.2	H48	0.0
H15	0.0	H32	0.2	H49	0.0
H16	0.1	H33	0.1	H50	0.0
H17	0.2	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.08 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/12/2004	2:36:05.555 PM	16.644	472.9	V
Waveform U2	10/12/2004	2:36:05.555 PM	16.644	470.0	V
Waveform U3	10/12/2004	2:36:05.555 PM	16.644	471.0	V

Waveform U1
472.93 Vrms, 1.58 %THD



10/12/2004 - 2:36:05.000 PM

Val	
13.70	Waveform U1
-589.3	Waveform U2
575.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.7	H24	0.2	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.3	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.4	H28	0.3	H45	0.0
H12	0.0	H29	0.3	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/12/2004
Start Time: 2:36:05 PM
Duration: 0:0.000 (M:S)
W: 20.10E+3 W
VAR: 12.35E+3 W
VA: 23.59E+3 W
Power Factor: 0.852
Displacement Power Factor: 0.852
TAN: 0.613
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F18\101204-F18-Photo.dvb

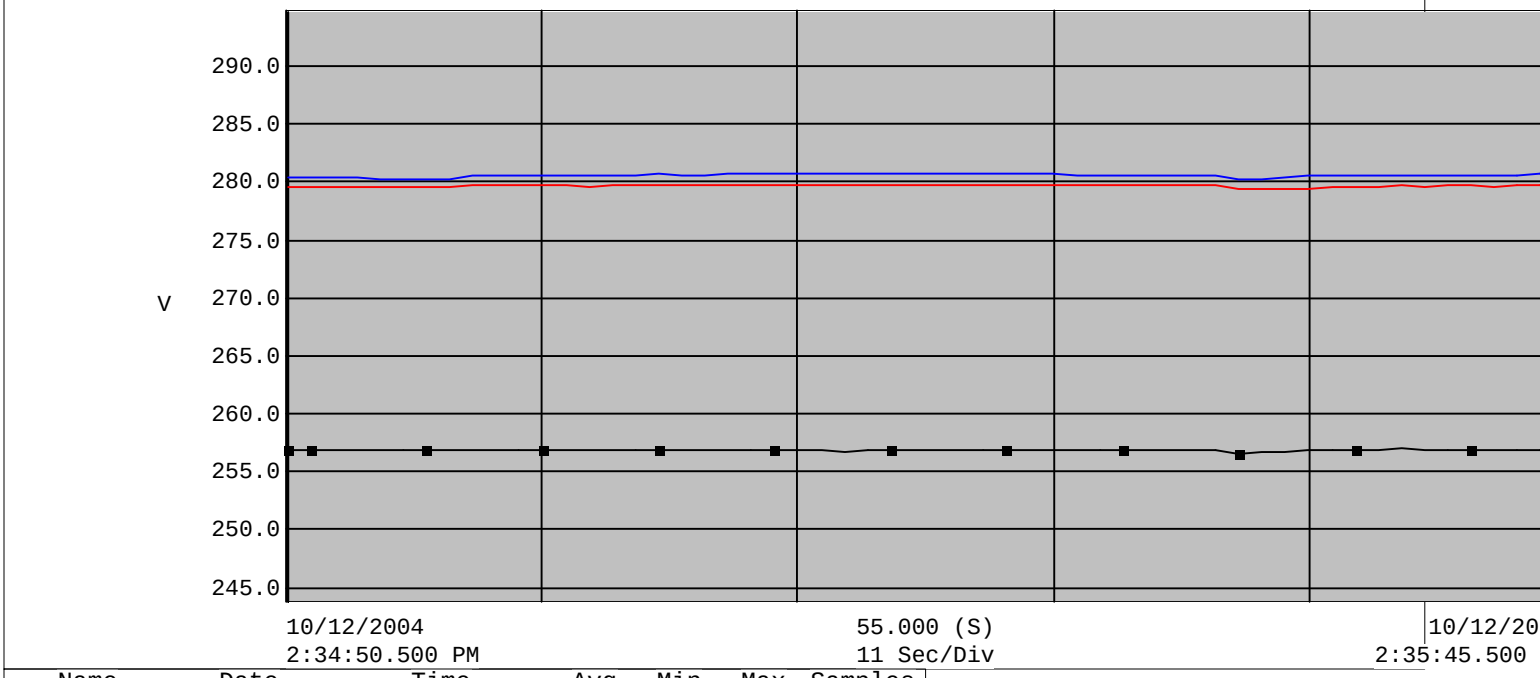
Operator	Test Site
GWA Victor Jardel ,	WPS F-18 Photo ,

Comments

WPS F-18

Recording Start Date	10/12/2004 - 2:34:50 PM
Recording Duration	55 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

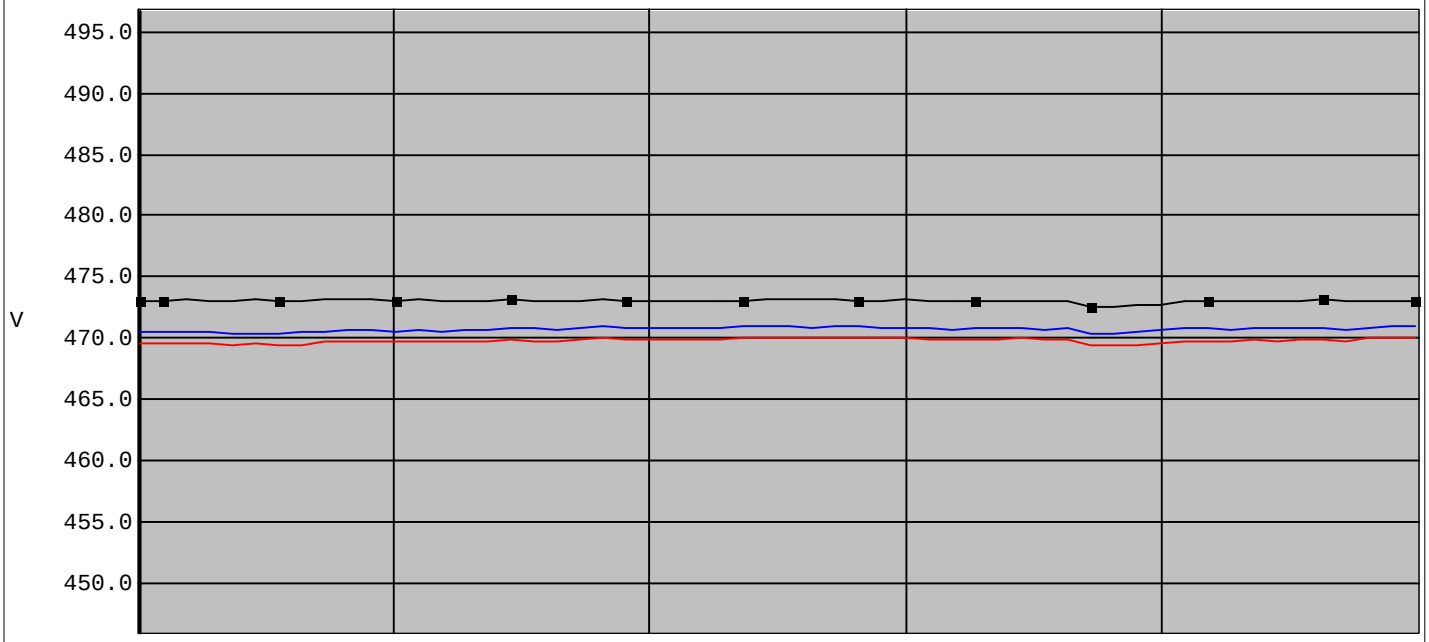
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/12/2004	2:34:50.500 PM	256.7	256.5	256.9	56
Vrms Line2	10/12/2004	2:34:50.500 PM	279.6	279.3	279.7	56
Vrms Line3	10/12/2004	2:34:50.500 PM	280.5	280.2	280.7	56

10/12/2004 - 2:34:50.000 PM
Val
256.7 — Vrms Line1
279.5 — Vrms Line2
280.3 — Vrms Line3

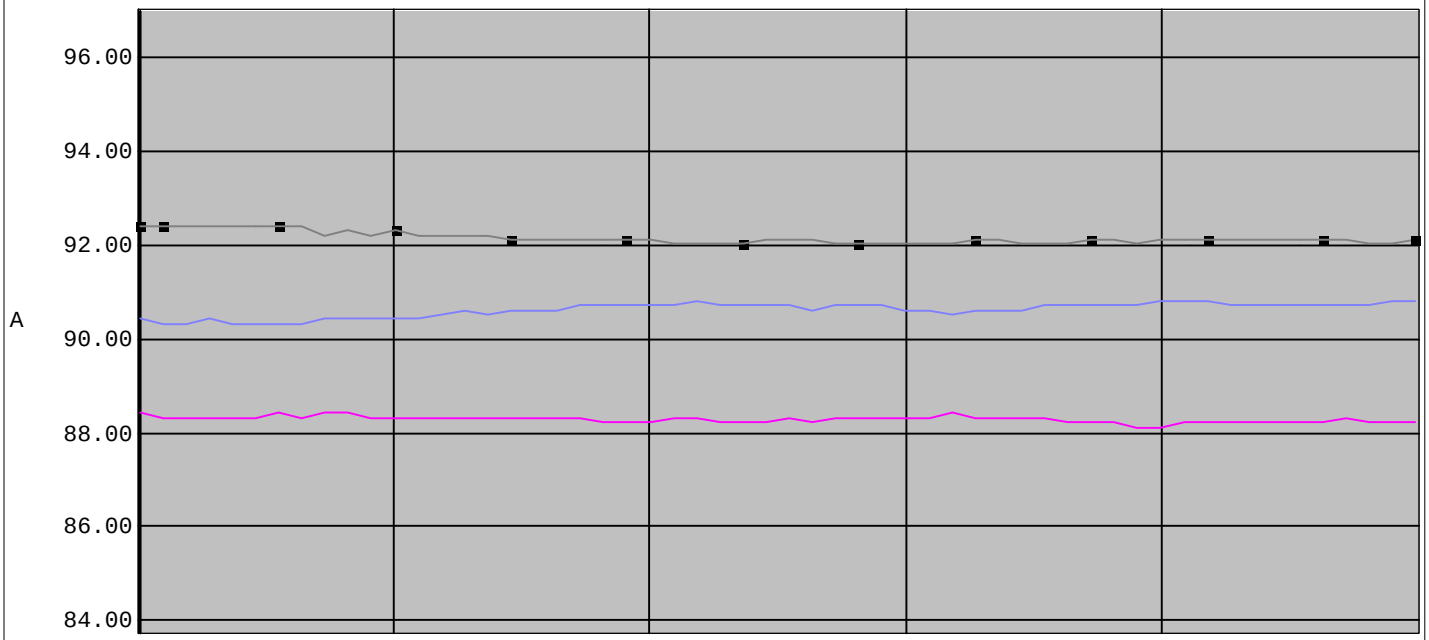
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/12/2004	2:34:50.500 PM	473.0	472.5	473.1	V
Urms Line2	10/12/2004	2:34:50.500 PM	469.7	469.3	470.0	V
Urms Line3	10/12/2004	2:34:50.500 PM	470.6	470.3	470.9	V

10/12/2004 - 2:34:50.000 PM
Val
473.0 — Urms Line1
469.5 — Urms Line2
470.4 — Urms Line3

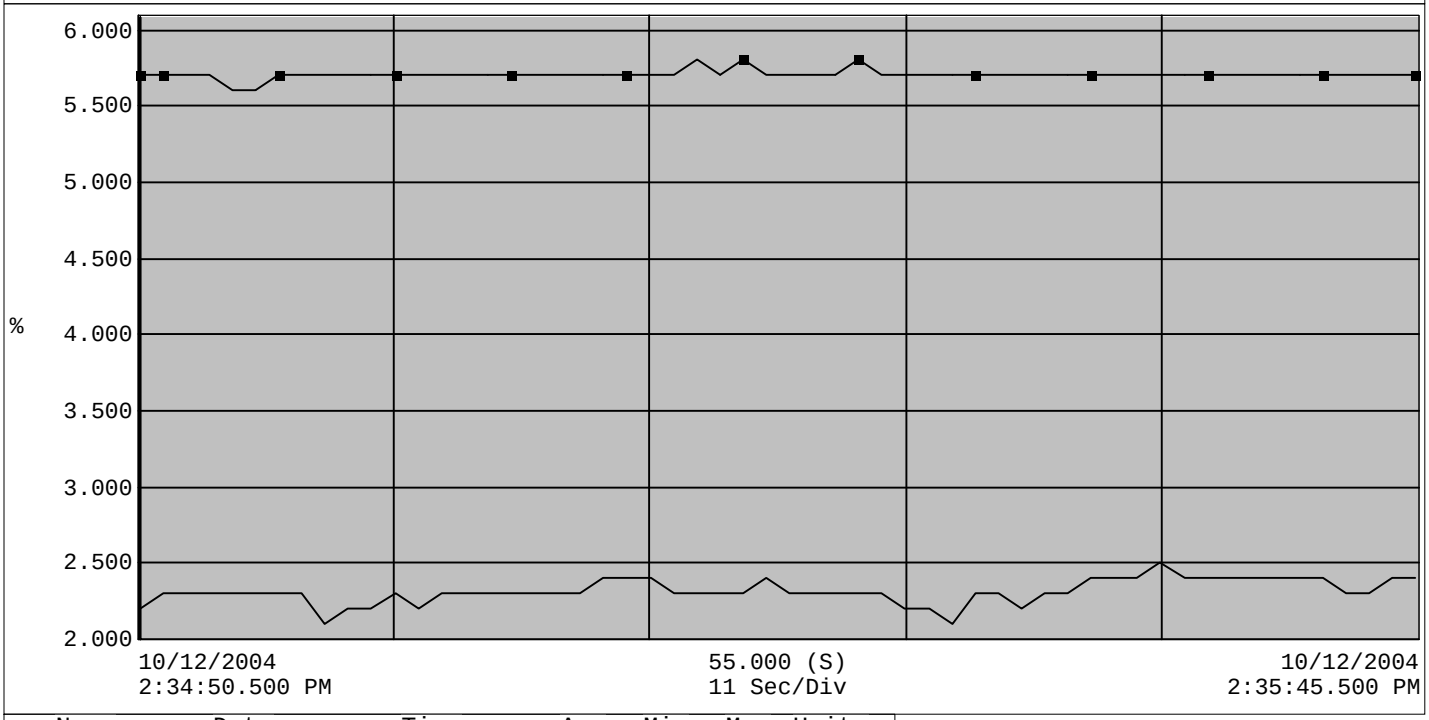
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/12/2004	2:34:50.500 PM	92.13	92.00	92.40	A
Arms Line2	10/12/2004	2:34:50.500 PM	88.27	88.10	88.40	A
Arms Line3	10/12/2004	2:34:50.500 PM	90.60	90.30	90.80	A

10/12/2004 - 2:34:50.000 PM
Val
92.40 — Arms Line1
88.40 — Arms Line2
90.40 — Arms Line3

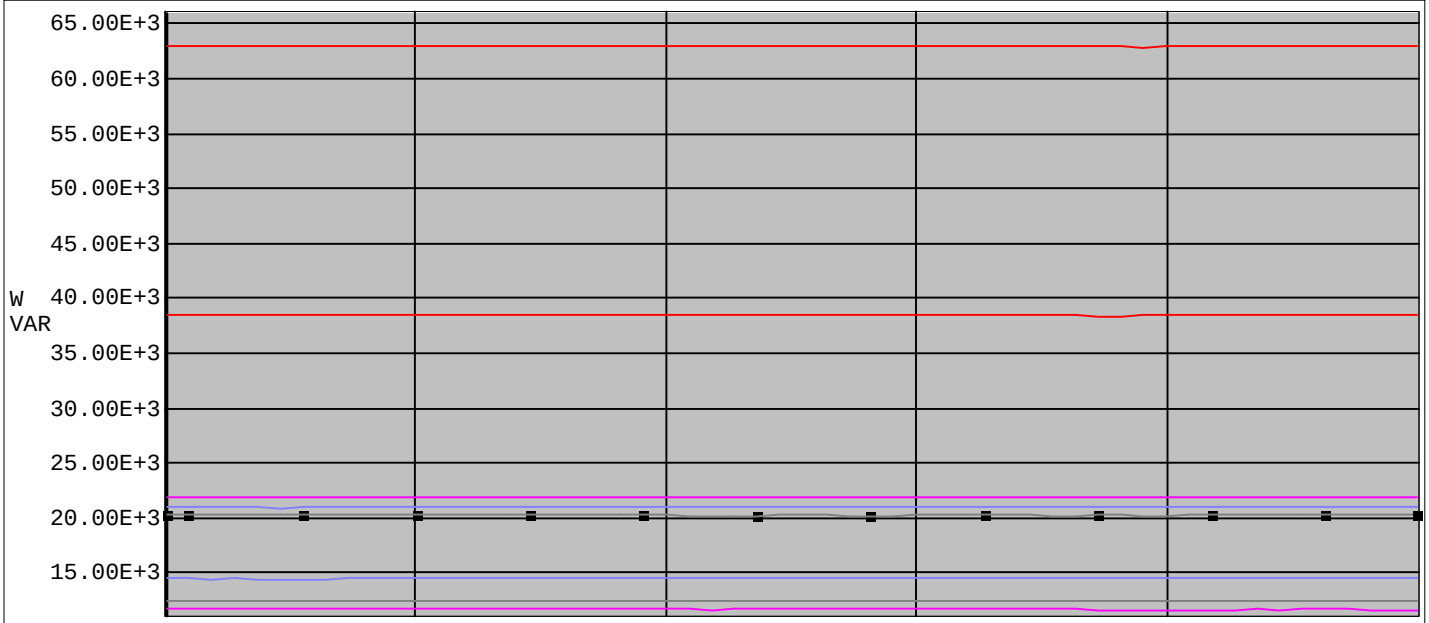
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/12/2004	2:34:50.500 PM	5.702	5.600	5.800	%
Aunb(IEEE)	10/12/2004	2:34:50.500 PM	2.313	2.100	2.500	%

10/12/2004 - 2:34:50.000 PM
Val
5.700 —— Vunb(IEEE)
2.200 —— Aunb(IEEE)

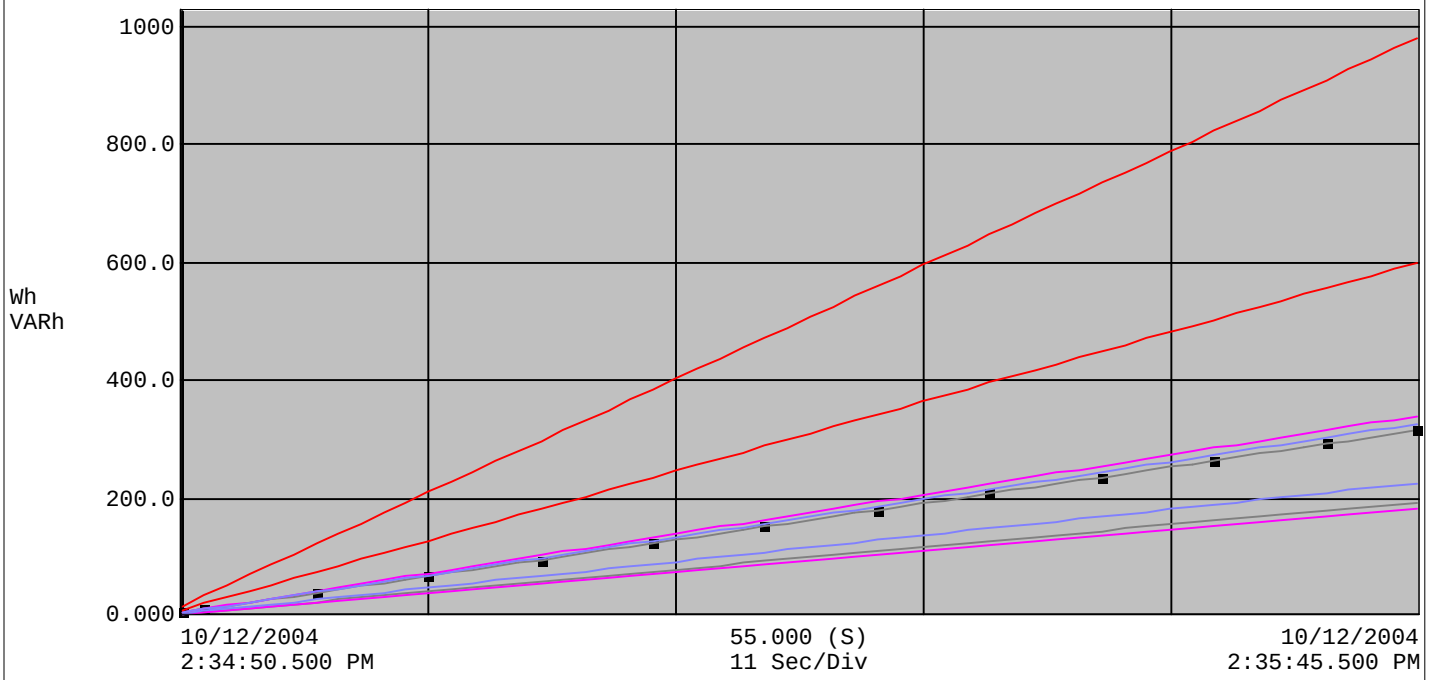
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/12/2004	2:34:50.500 PM	20.16E+3	20.11E+3	20.25E+3	W
W Line2	10/12/2004	2:34:50.500 PM	21.78E+3	21.74E+3	21.81E+3	W
W Line3	10/12/2004	2:34:50.500 PM	20.91E+3	20.83E+3	20.96E+3	W
W Sum of Phases	10/12/2004	2:34:50.500 PM	62.85E+3	62.81E+3	62.90E+3	W
VAR Line1	10/12/2004	2:34:50.500 PM	12.37E+3	12.33E+3	12.39E+3	VAR
VAR Line2	10/12/2004	2:34:50.500 PM	11.60E+3	11.53E+3	11.69E+3	VAR
VAR Line3	10/12/2004	2:34:50.500 PM	14.45E+3	14.35E+3	14.51E+3	VAR
VAR Sum of Phases	10/12/2004	2:34:50.500 PM	38.41E+3	38.30E+3	38.47E+3	VAR

10/12/2004 - 2:34:50.000 PM
Val
20.22E+3 — W Line1
21.76E+3 — W Line2
20.86E+3 — W Line3
62.85E+3 — W Sum of Phases
12.38E+3 — VAR Line1
11.66E+3 — VAR Line2
14.39E+3 — VAR Line3
38.44E+3 — VAR Sum of Phases

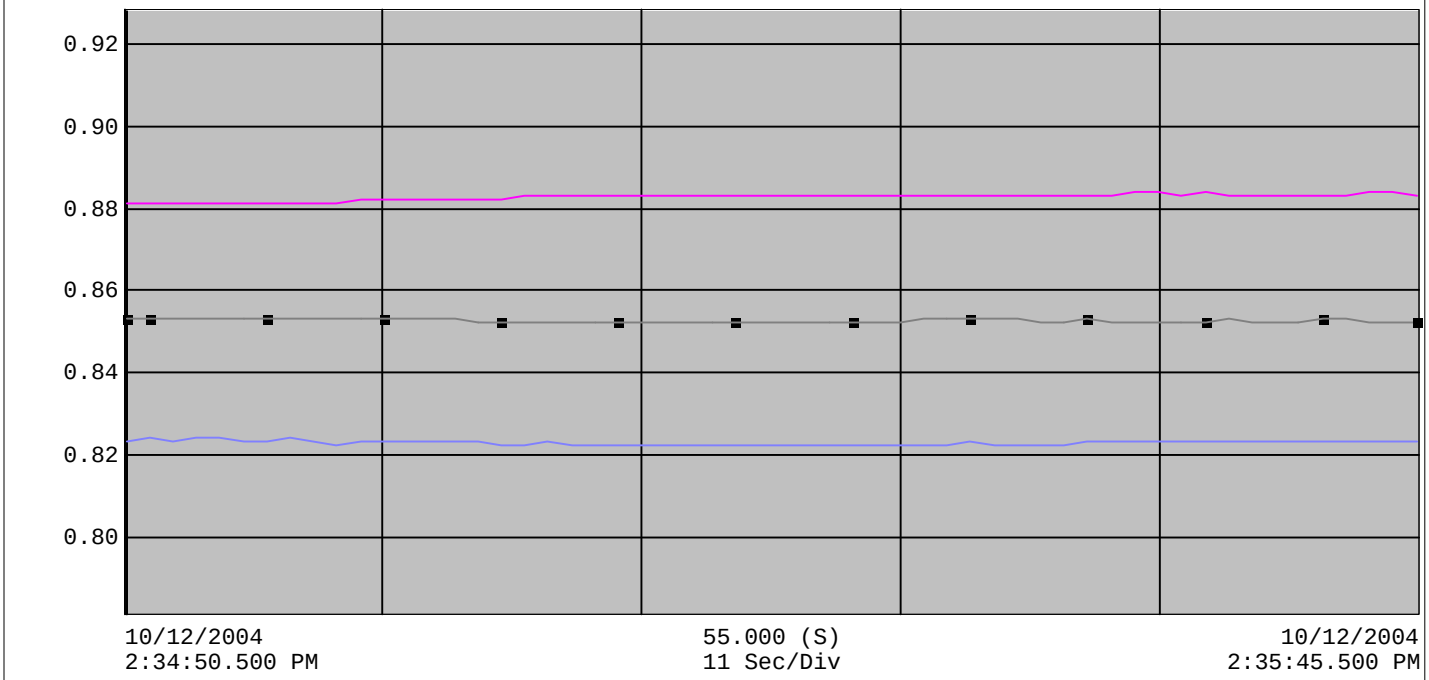
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/12/2004	2:34:50.500 PM	159.7	5.620	313.6	Wh
W-hours Line2	10/12/2004	2:34:50.500 PM	172.4	6.051	338.8	Wh
W-hours Line3	10/12/2004	2:34:50.500 PM	165.4	5.798	325.2	Wh
W-hours Sum of Phases	10/12/2004	2:34:50.500 PM	497.5	17.46	977.6	Wh
VAR-hours Line1	10/12/2004	2:34:50.500 PM	97.92	3.436	192.4	VARh
VAR-hours Line2	10/12/2004	2:34:50.500 PM	92.00	3.240	180.4	VARh
VAR-hours Line3	10/12/2004	2:34:50.500 PM	114.3	4.001	224.8	VARh
VAR-hours Sum of Phases	10/12/2004	2:34:50.500 PM	304.2	10.67	597.6	VARh

10/12/2004 - 2:34:50.000 PM
Val
5.620 — W-hours Line1
6.051 — W-hours Line2
5.798 — W-hours Line3
17.46 — W-hours Sum of Phases
3.436 — VAR-hours Line1
3.240 — VAR-hours Line2
4.001 — VAR-hours Line3
10.67 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/12/2004	2:34:50.500 PM	0.852	0.852	0.853	
PF Line2	10/12/2004	2:34:50.500 PM	0.883	0.881	0.884	
PF Line3	10/12/2004	2:34:50.500 PM	0.823	0.822	0.824	

10/12/2004 - 2:34:50.000 PM
Val
0.853 — PF Line1
0.881 — PF Line2
0.823 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F18\101204-F18.dvb

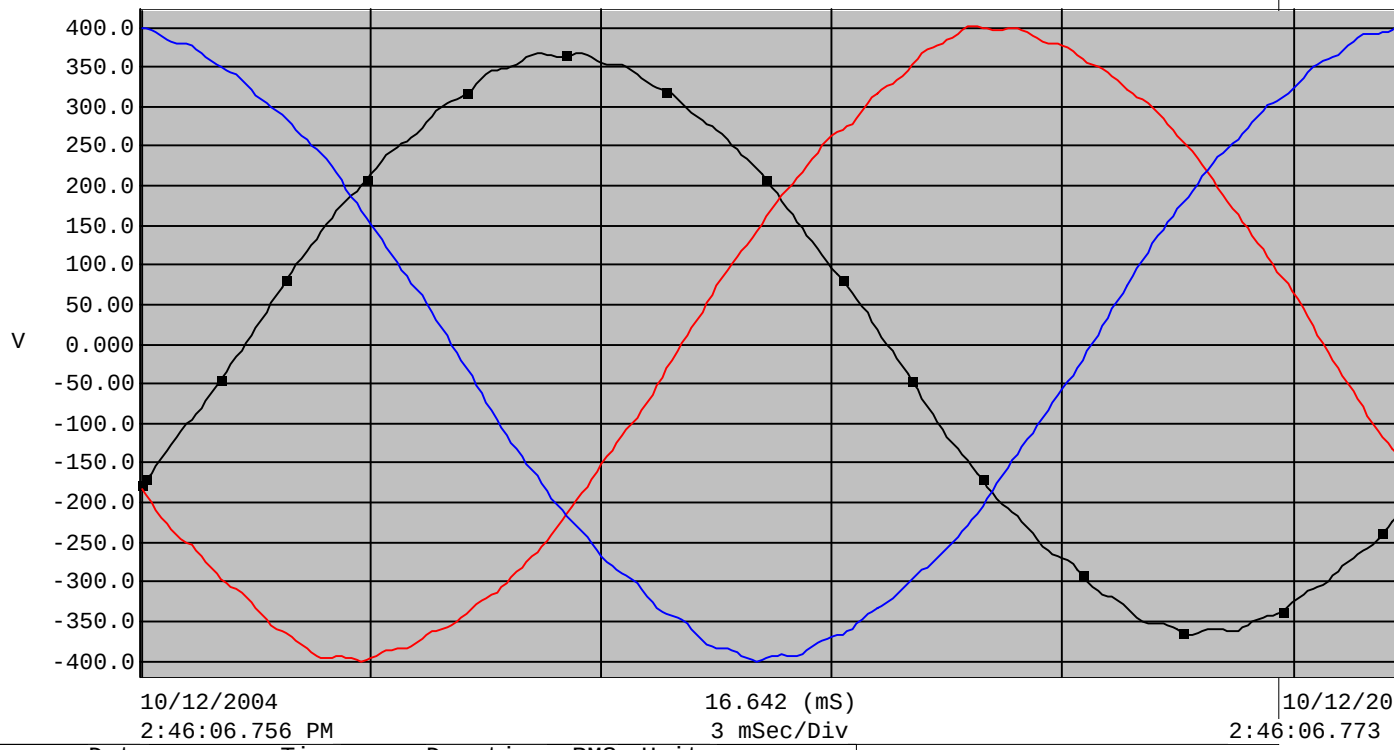
Operator	Test Site
GWA Victor Jardel ,	GWA WPS F-18 ,

Comments

WPS F-18 - Photo 2

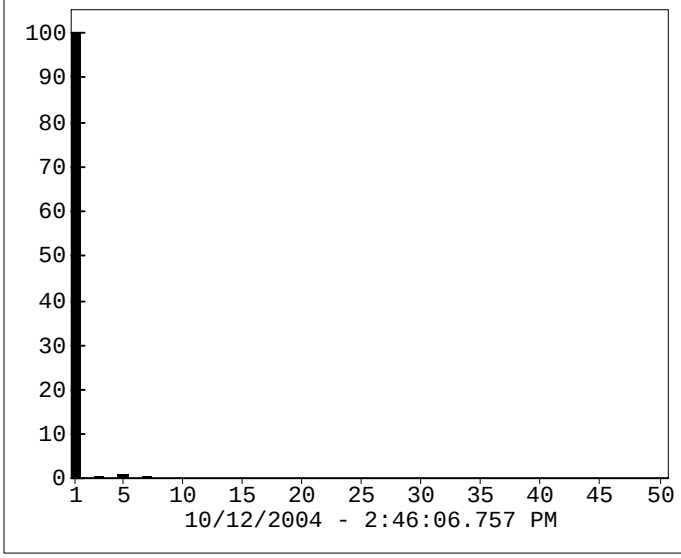
Recording Start Date	10/12/2004 - 2:46:06 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.09 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/12/2004	2:46:06.756 PM	16.642	257.3	V
Waveform V2	10/12/2004	2:46:06.756 PM	16.642	278.7	V
Waveform V3	10/12/2004	2:46:06.756 PM	16.642	278.7	V

Waveform V1
257.31 Vrms, 1.59 %THD



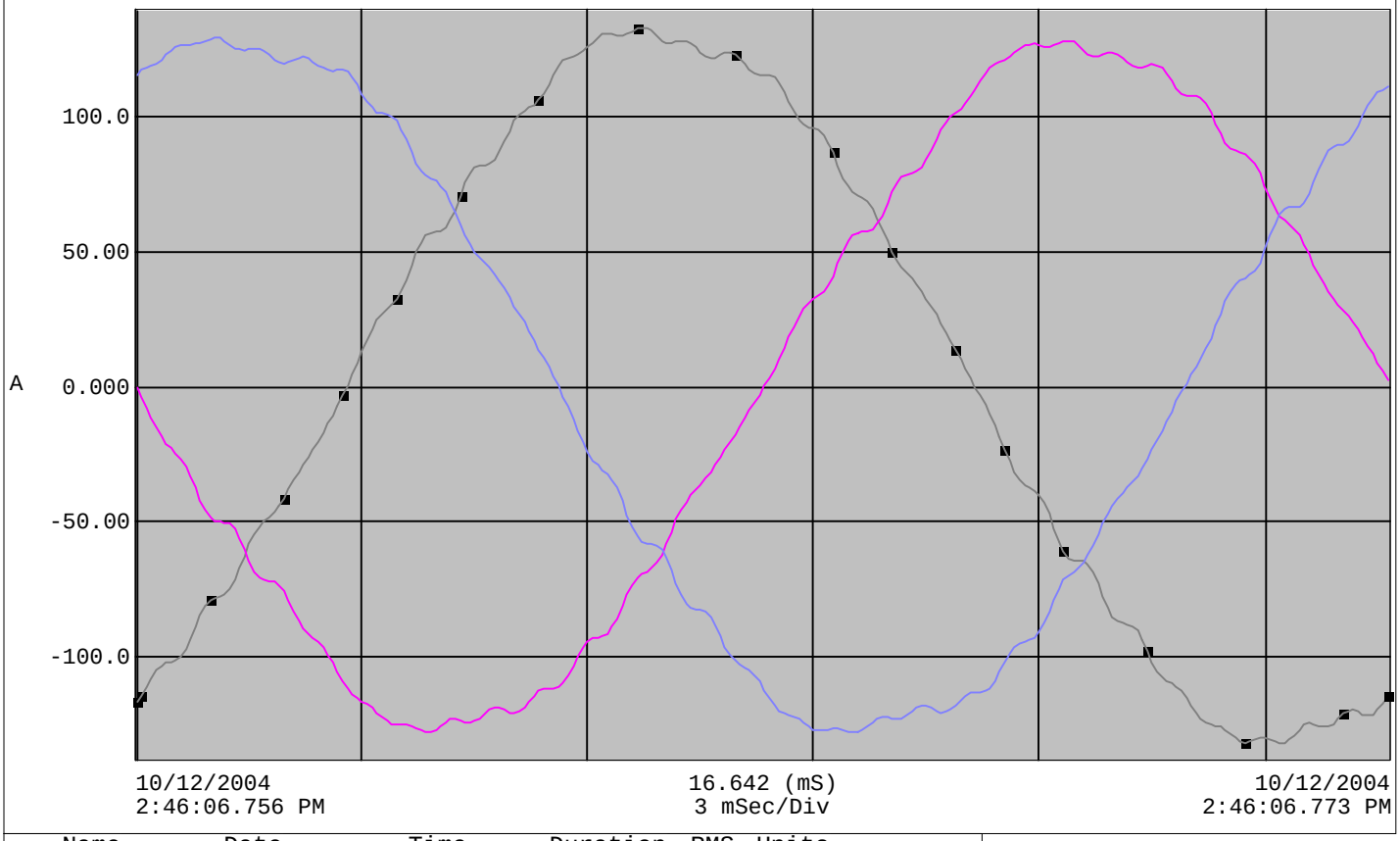
10/12/2004 - 2:46:06.000 PM

Val	
-180.2	Waveform V1
-184.2	Waveform V2
398.8	Waveform V3

Waveform V1

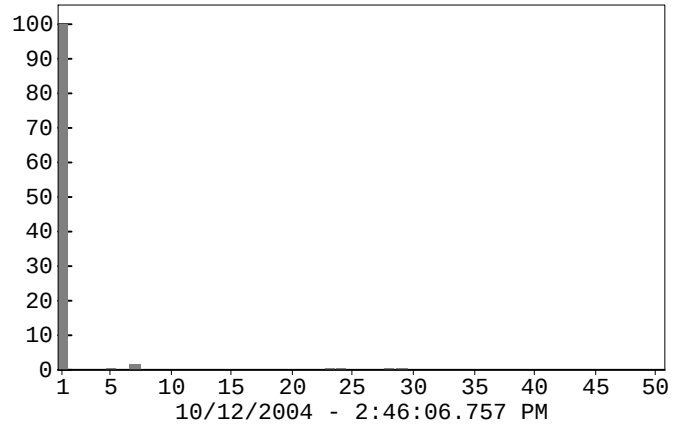
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.7	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.5	H24	0.2	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.4	H26	0.4	H43	0.0
H10	0.0	H27	0.3	H44	0.0
H11	0.3	H28	0.4	H45	0.0
H12	0.0	H29	0.2	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.09 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/12/2004	2:46:06.756 PM	16.642	92.86	A
Waveform I2	10/12/2004	2:46:06.756 PM	16.642	88.73	A
Waveform I3	10/12/2004	2:46:06.756 PM	16.642	91.44	A

Waveform I1
92.86 Arms, 2.82 %THD



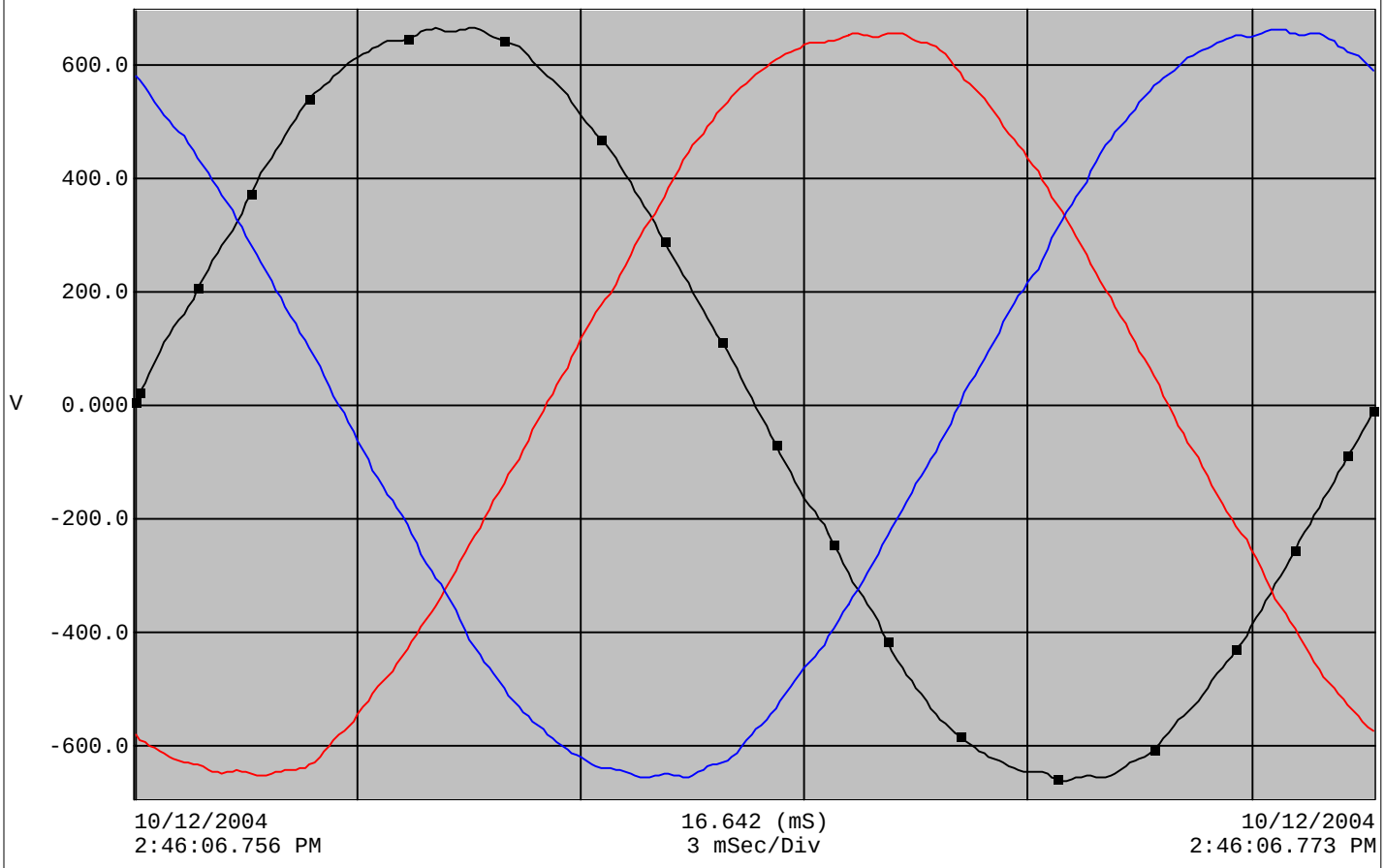
10/12/2004 - 2:46:06.000 PM

Val	
-117.1	Waveform I1
-0.400	Waveform I2
115.3	Waveform I3

Waveform I1

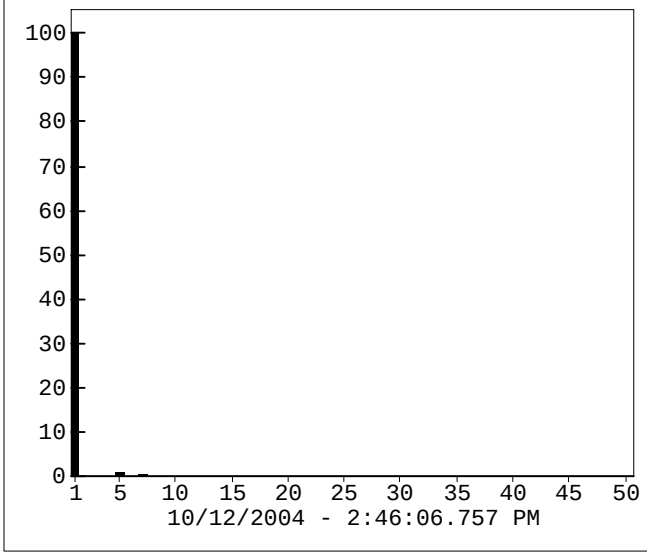
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.1
H02	0.0	H19	0.2	H36	0.1
H03	0.4	H20	0.1	H37	0.1
H04	0.1	H21	0.1	H38	0.1
H05	1.0	H22	0.3	H39	0.1
H06	0.0	H23	0.6	H40	0.0
H07	1.7	H24	1.0	H41	0.0
H08	0.0	H25	0.4	H42	0.0
H09	0.2	H26	0.2	H43	0.0
H10	0.1	H27	0.2	H44	0.0
H11	0.3	H28	0.9	H45	0.0
H12	0.1	H29	0.8	H46	0.0
H13	0.4	H30	0.3	H47	0.0
H14	0.0	H31	0.2	H48	0.0
H15	0.0	H32	0.2	H49	0.0
H16	0.1	H33	0.1	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.09 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/12/2004	2:46:06.756 PM	16.642	471.8	V
Waveform U2	10/12/2004	2:46:06.756 PM	16.642	468.5	V
Waveform U3	10/12/2004	2:46:06.756 PM	16.642	469.7	V

Waveform U1
471.83 Vrms, 1.56 %THD



10/12/2004 - 2:46:06.000 PM

Val	
3.900	Waveform U1
-583.0	Waveform U2
579.0	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.2	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.7	H24	0.2	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.3	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.4	H28	0.3	H45	0.0
H12	0.0	H29	0.2	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/12/2004
Start Time: 2:46:06 PM
Duration: 0:0.000 (M:S)
W: 20.48E+3 W
VAR: 12.29E+3 W
VA: 23.89E+3 W
Power Factor: 0.858
Displacement Power Factor: 0.858
TAN: 0.599
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F18\101204-F18-Photo 2.dvb

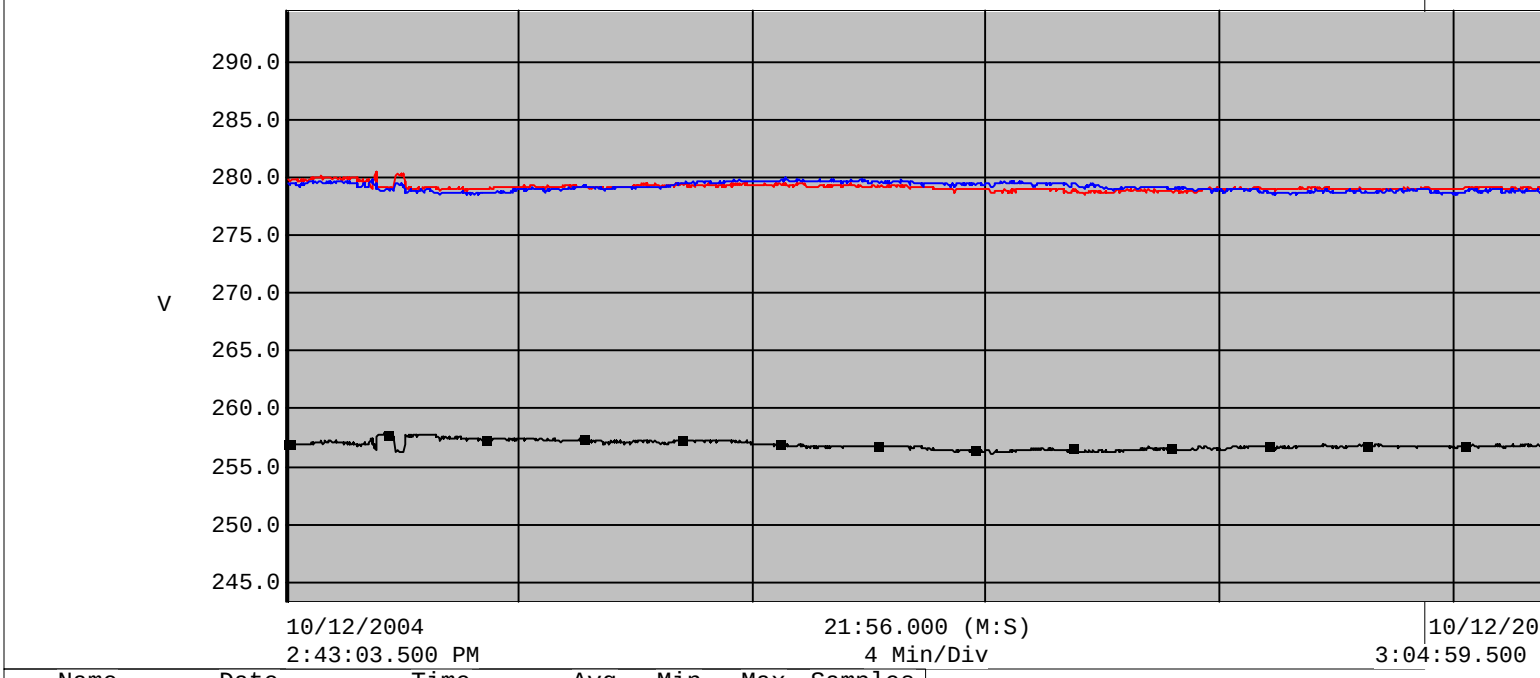
Operator	Test Site
GWA Victor Jardel ,	WPS F-18 Photo 2 ,

Comments

WPS F-18 - Trend 2

Recording Start Date	10/12/2004 - 2:43:03 PM
Recording Duration	21:56 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

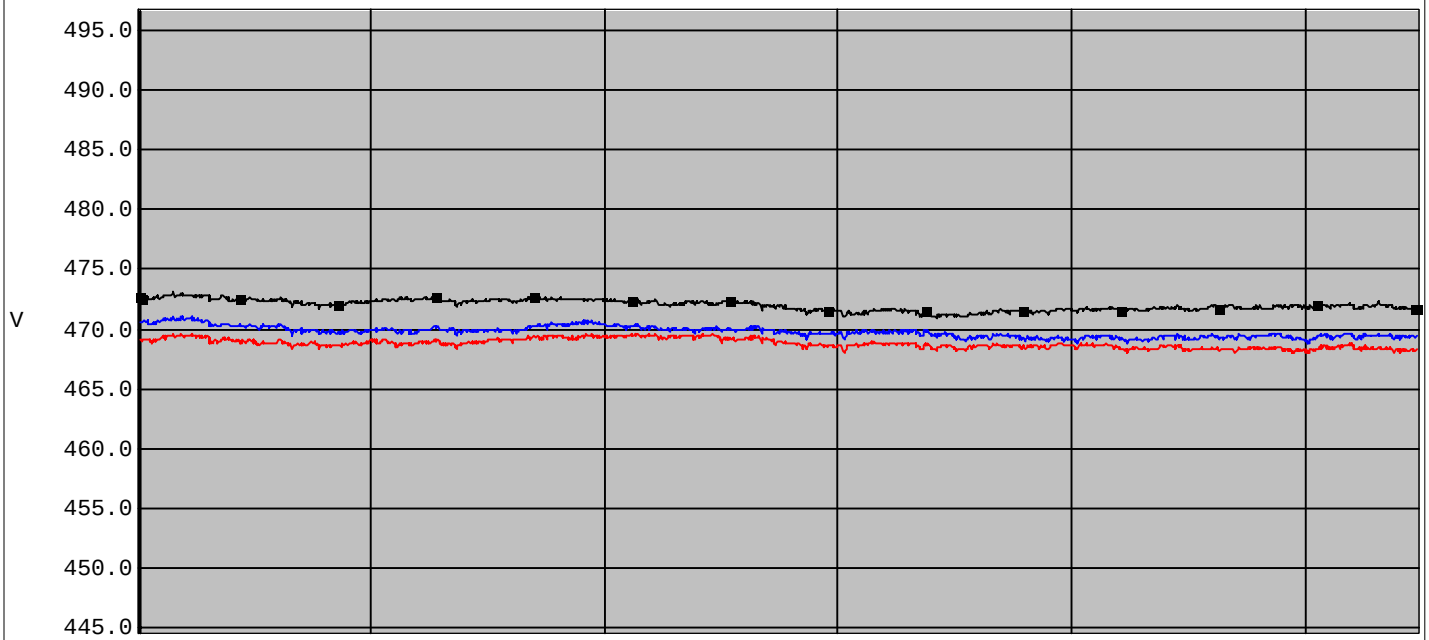
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/12/2004	2:43:03.500 PM	256.8	256.0	257.8	1317
Vrms Line2	10/12/2004	2:43:03.500 PM	279.1	278.5	280.4	1317
Vrms Line3	10/12/2004	2:43:03.500 PM	279.1	278.4	279.9	1317

10/12/2004 - 2:43:03.000 PM
Val
256.9 — Vrms Line1
279.8 — Vrms Line2
279.4 — Vrms Line3

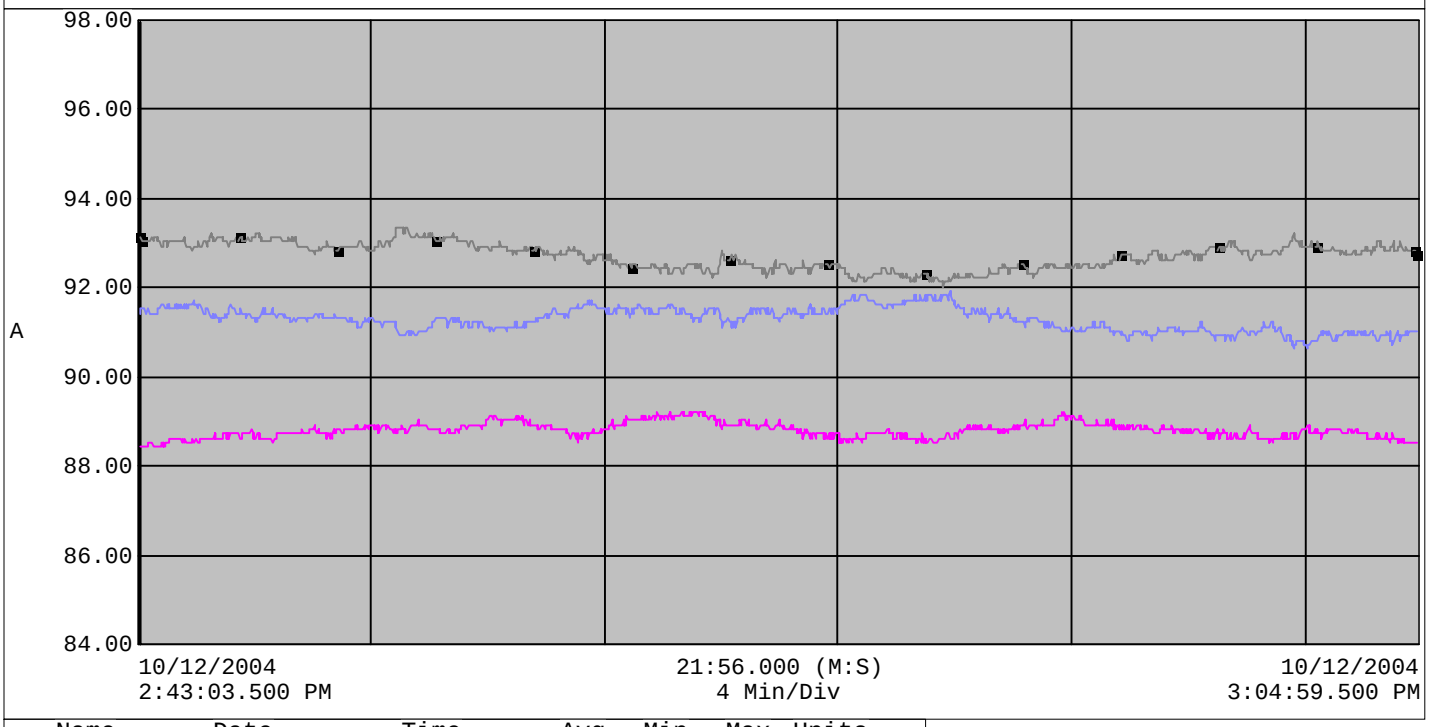
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/12/2004	2:43:03.500 PM	471.9	470.8	473.0	V
Urms Line2	10/12/2004	2:43:03.500 PM	468.7	467.9	469.6	V
Urms Line3	10/12/2004	2:43:03.500 PM	469.7	468.7	471.0	V

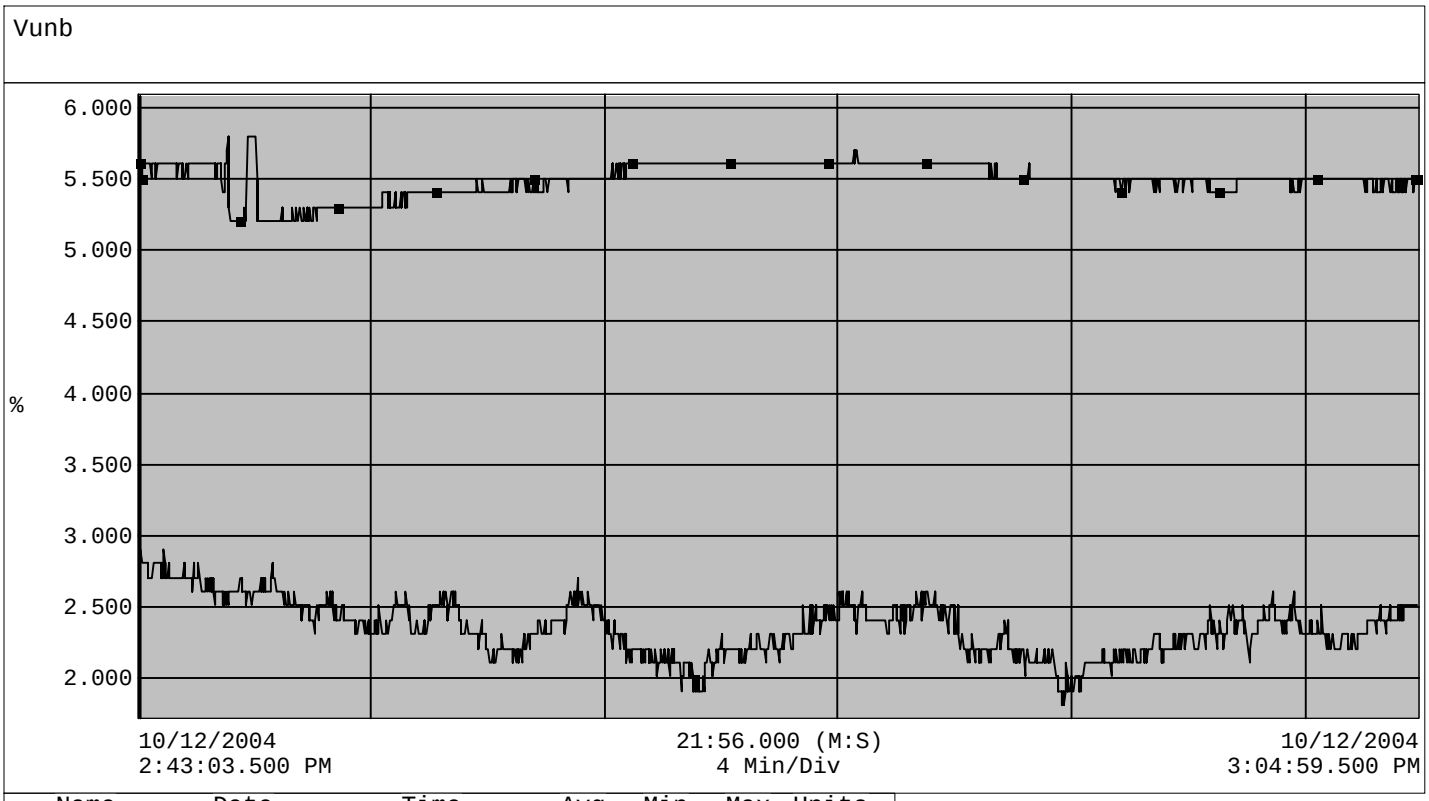
10/12/2004 - 2:43:03.000 PM
Val
472.6 — Urms Line1
469.0 — Urms Line2
470.5 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/12/2004	2:43:03.500 PM	92.68	92.00	93.30	A
Arms Line2	10/12/2004	2:43:03.500 PM	88.78	88.40	89.20	A
Arms Line3	10/12/2004	2:43:03.500 PM	91.26	90.60	91.90	A

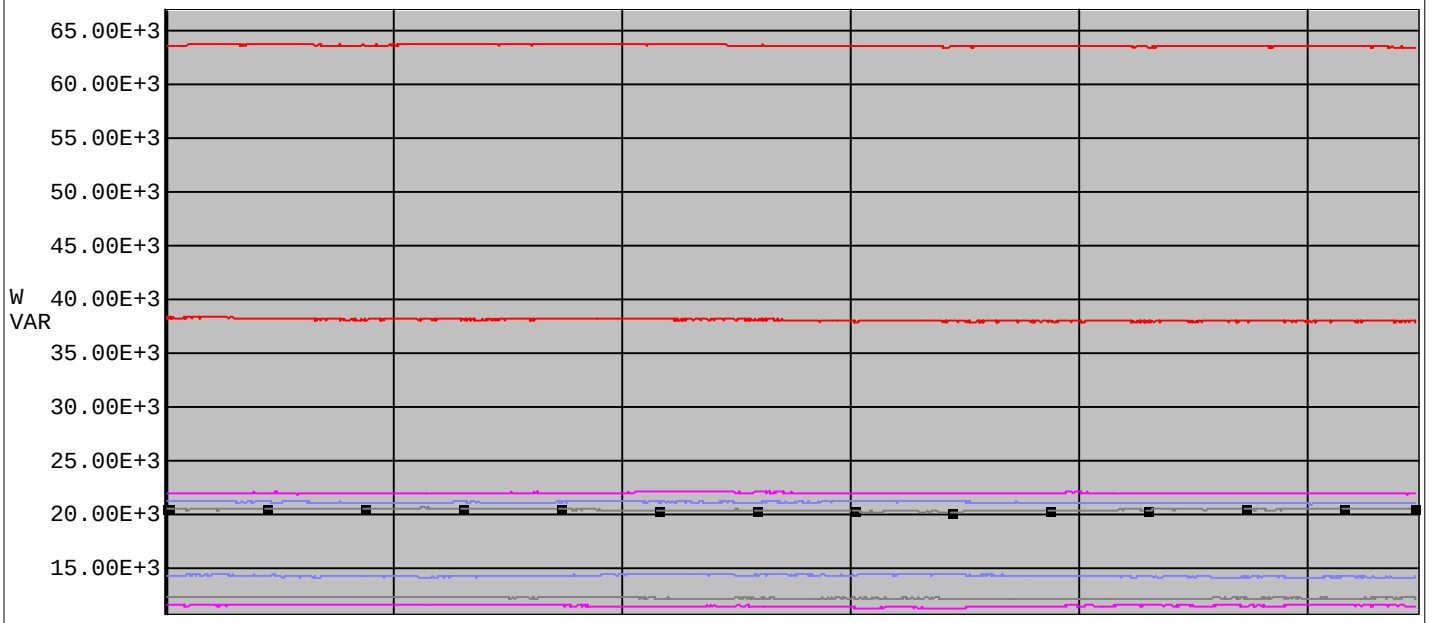
10/12/2004 - 2:43:03.000 PM
Val
93.10 — Arms Line1
88.40 — Arms Line2
91.40 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/12/2004	2:43:03.500 PM	5.493	5.200	5.800	%
Aunb(IEEE)	10/12/2004	2:43:03.500 PM	2.344	1.800	2.900	%

10/12/2004 - 2:43:03.000 PM
Val
5.600 —— Vunb(IEEE)
2.800 —— Aunb(IEEE)

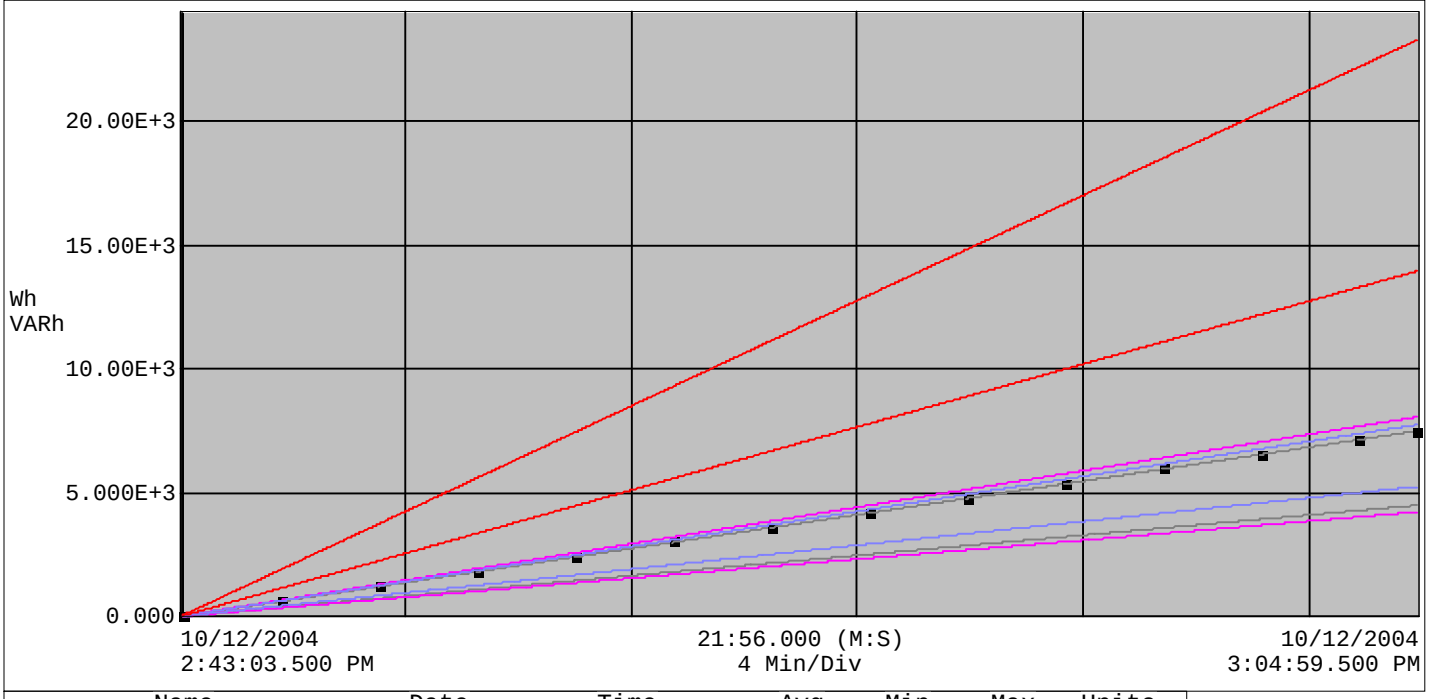
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/12/2004	2:43:03.500 PM	20.41E+3	20.19E+3	20.61E+3	W
W Line2	10/12/2004	2:43:03.500 PM	21.95E+3	21.83E+3	22.11E+3	W
W Line3	10/12/2004	2:43:03.500 PM	21.09E+3	20.93E+3	21.23E+3	W
W Sum of Phases	10/12/2004	2:43:03.500 PM	63.46E+3	63.30E+3	63.63E+3	W
VAR Line1	10/12/2004	2:43:03.500 PM	12.23E+3	12.08E+3	12.39E+3	VAR
VAR Line2	10/12/2004	2:43:03.500 PM	11.49E+3	11.27E+3	11.65E+3	VAR
VAR Line3	10/12/2004	2:43:03.500 PM	14.28E+3	14.06E+3	14.47E+3	VAR
VAR Sum of Phases	10/12/2004	2:43:03.500 PM	38.01E+3	37.79E+3	38.30E+3	VAR

10/12/2004 - 2:43:03.000 PM
Val
20.46E+3 — W Line1
21.88E+3 — W Line2
21.16E+3 — W Line3
63.50E+3 — W Sum of Phases
12.37E+3 — VAR Line1
11.53E+3 — VAR Line2
14.30E+3 — VAR Line3
38.20E+3 — VAR Sum of Phases

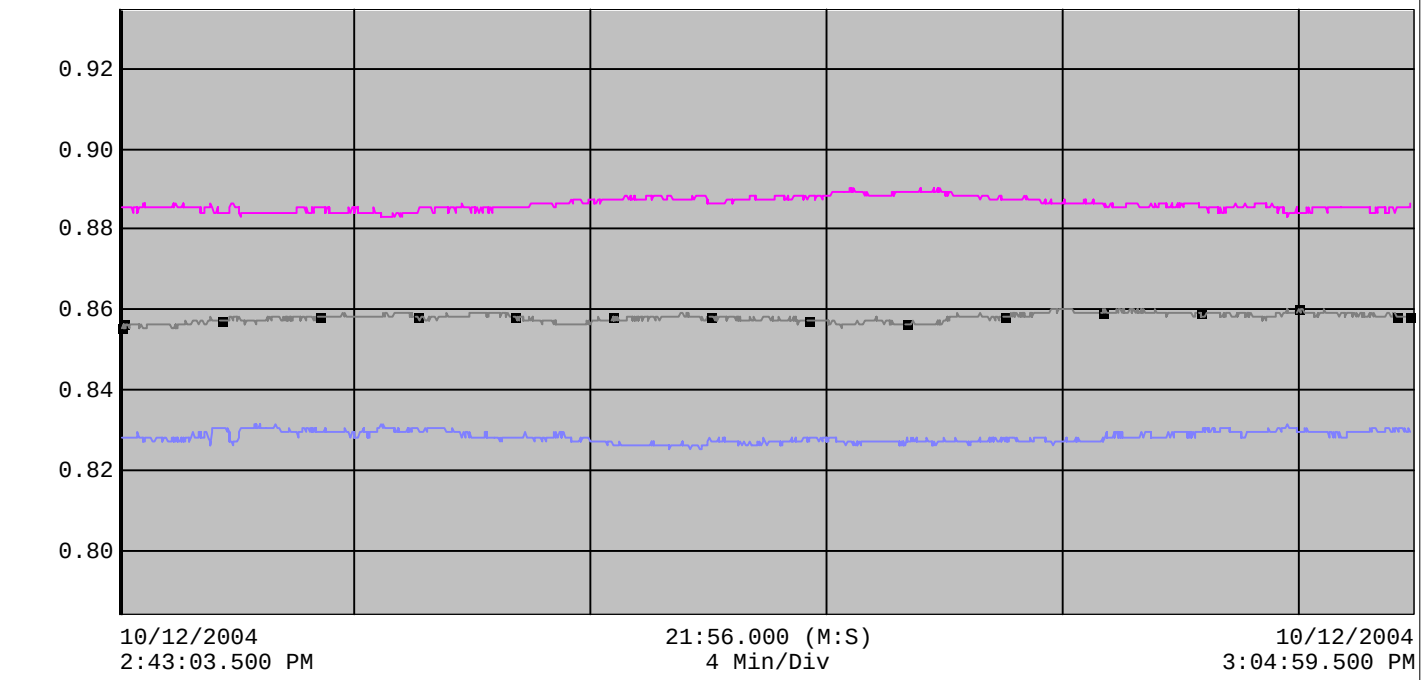
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/12/2004	2:43:03.500 PM	3.740E+3	5.697	7.467E+3	Wh
W-hours Line2	10/12/2004	2:43:03.500 PM	4.019E+3	6.127	8.031E+3	Wh
W-hours Line3	10/12/2004	2:43:03.500 PM	3.865E+3	5.888	7.717E+3	Wh
W-hours Sum of Phases	10/12/2004	2:43:03.500 PM	11.62E+3	17.71	23.21E+3	Wh
VAR-hours Line1	10/12/2004	2:43:03.500 PM	2.244E+3	3.415	4.475E+3	VARh
VAR-hours Line2	10/12/2004	2:43:03.500 PM	2.106E+3	3.208	4.204E+3	VARh
VAR-hours Line3	10/12/2004	2:43:03.500 PM	2.617E+3	3.987	5.225E+3	VARh
VAR-hours Sum of Phases	10/12/2004	2:43:03.500 PM	6.968E+3	10.61	13.90E+3	VARh

10/12/2004 - 2:43:03.000 PM
Val
5.697 — W-hours Line1
6.127 — W-hours Line2
5.888 — W-hours Line3
17.71 — W-hours Sum of Phases
3.415 — VAR-hours Line1
3.208 — VAR-hours Line2
3.987 — VAR-hours Line3
10.61 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/12/2004	2:43:03.500 PM	0.858	0.855	0.860	
PF Line2	10/12/2004	2:43:03.500 PM	0.886	0.883	0.890	
PF Line3	10/12/2004	2:43:03.500 PM	0.828	0.825	0.831	

10/12/2004 - 2:43:03.000 PM
Val
0.856 — PF Line1
0.885 — PF Line2
0.828 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\F18\101204-F18 Trend 2.dvb

Operator	Test Site
GWA Victor Jardel ,	GWA WPS F-18 Trend 2 ,

Comments

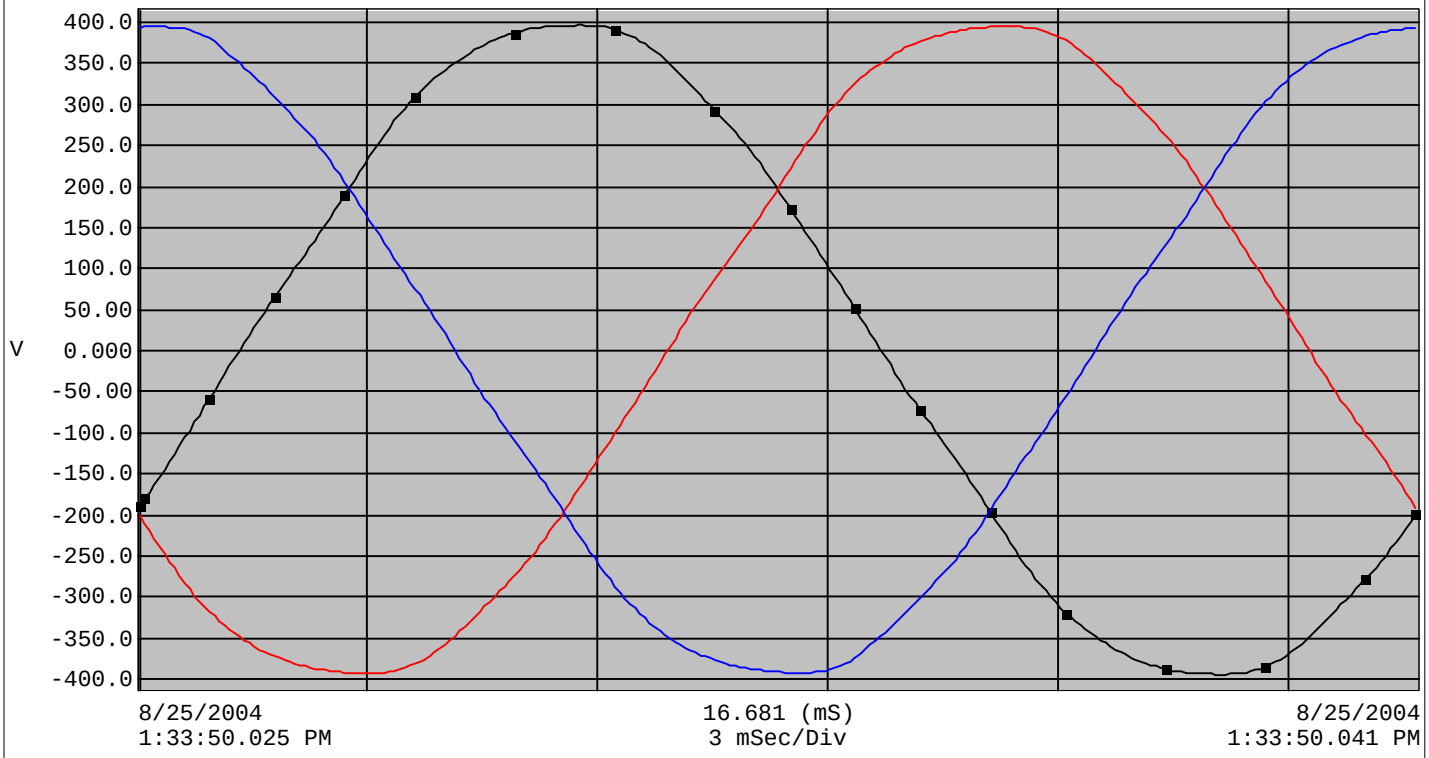
GWA Water Pumping Station Assessment				
Station Name: HCG2	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.45	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	2	0.1	2
Metering Arrangement	2.5%	1	0.025	7
Building Service Information	**20.0%**		0.5	
Main Disconnect	10.0%	2	0.2	36
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	3	0.15	
Standby Generator	**20.0%**		0	
Generator Condition	10.0%	0	0	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	0	0	
Auto Transfer Switch	2.5%	0	0	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	2	0.1	36
Motor Starter	5.0%	2	0.1	31
Overload Relay	5.0%	2	0.1	
Wiring	5.0%	2	0.1	37
Phase Monitor	5.0%	3	0.15	
Chlorination Motor Starter	**5.0%**		0.08	
Main Breaker	1.0%	2	0.02	
Motor Starter	1.0%	2	0.02	
Overload Relay	1.0%	2	0.02	
Wiring	1.0%	2	0.02	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.05	
Pressure	1.5%	1	0.015	52
Flow	1.5%	1	0.015	52
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.24	
Lighting	3.0%	8	0.24	
Power Devices	2.0%		0	
	100%	**Assessment Value**		**1.9**

Comments:

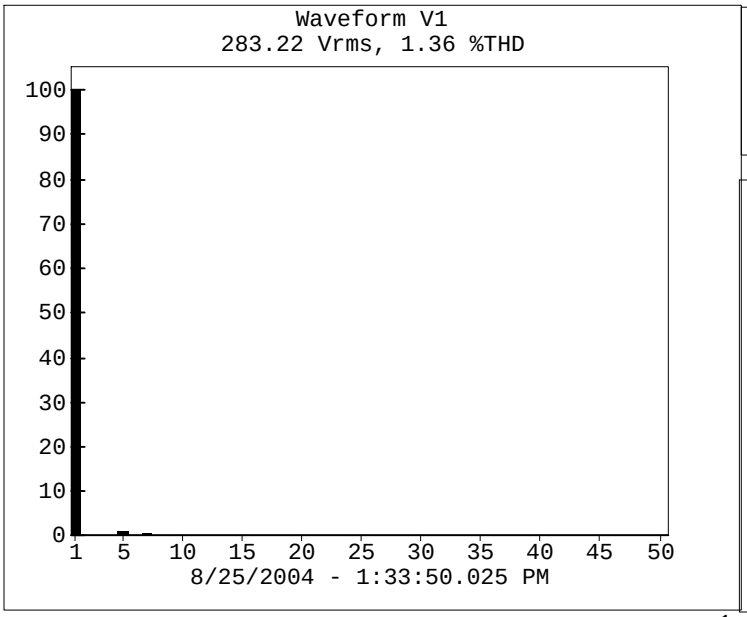
HCG2 - Photo1

Recording Start Date	8/25/2004 - 1:33:50 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/25/2004	1:33:50.025 PM	16.681	283.2	V
Waveform V2	8/25/2004	1:33:50.025 PM	16.681	282.6	V
Waveform V3	8/25/2004	1:33:50.025 PM	16.681	282.1	V

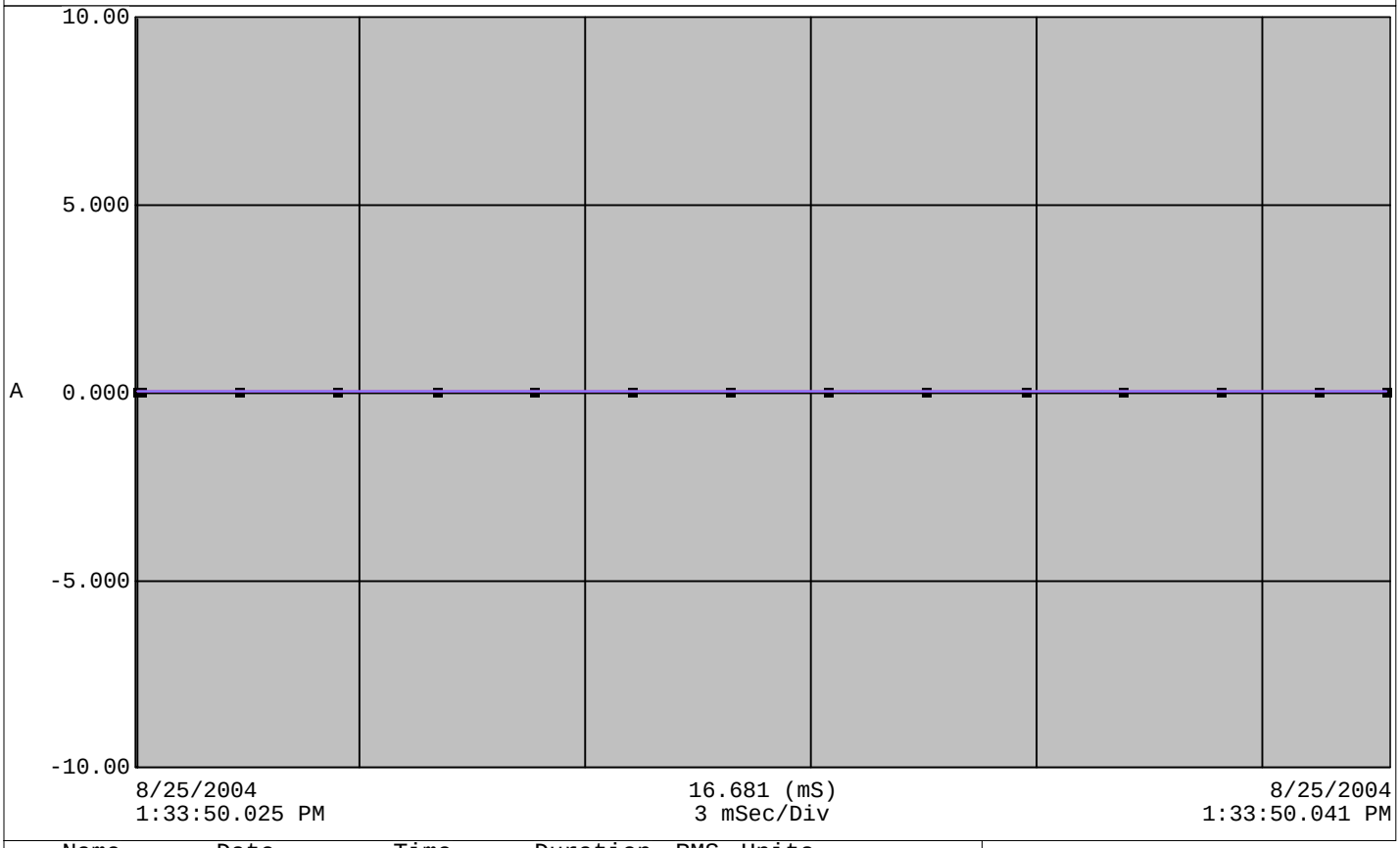


8/25/2004 - 1:33:50.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

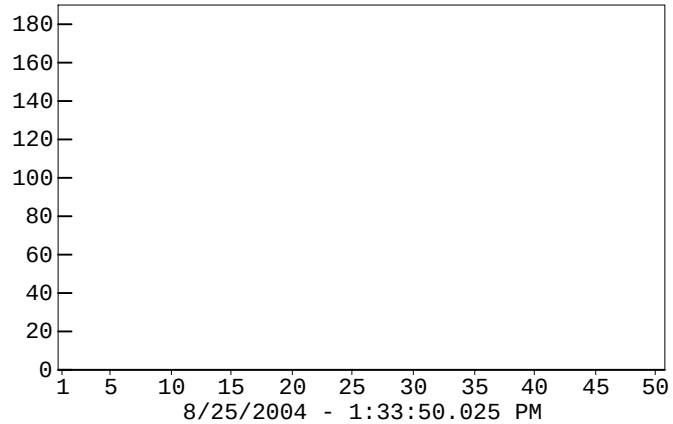
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.95 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/25/2004	1:33:50.025 PM	16.681	0.000	A
Waveform I2	8/25/2004	1:33:50.025 PM	16.681	0.000	A
Waveform I3	8/25/2004	1:33:50.025 PM	16.681	0.000	A

Waveform I1
0.00 Arms, 0.00 %THD

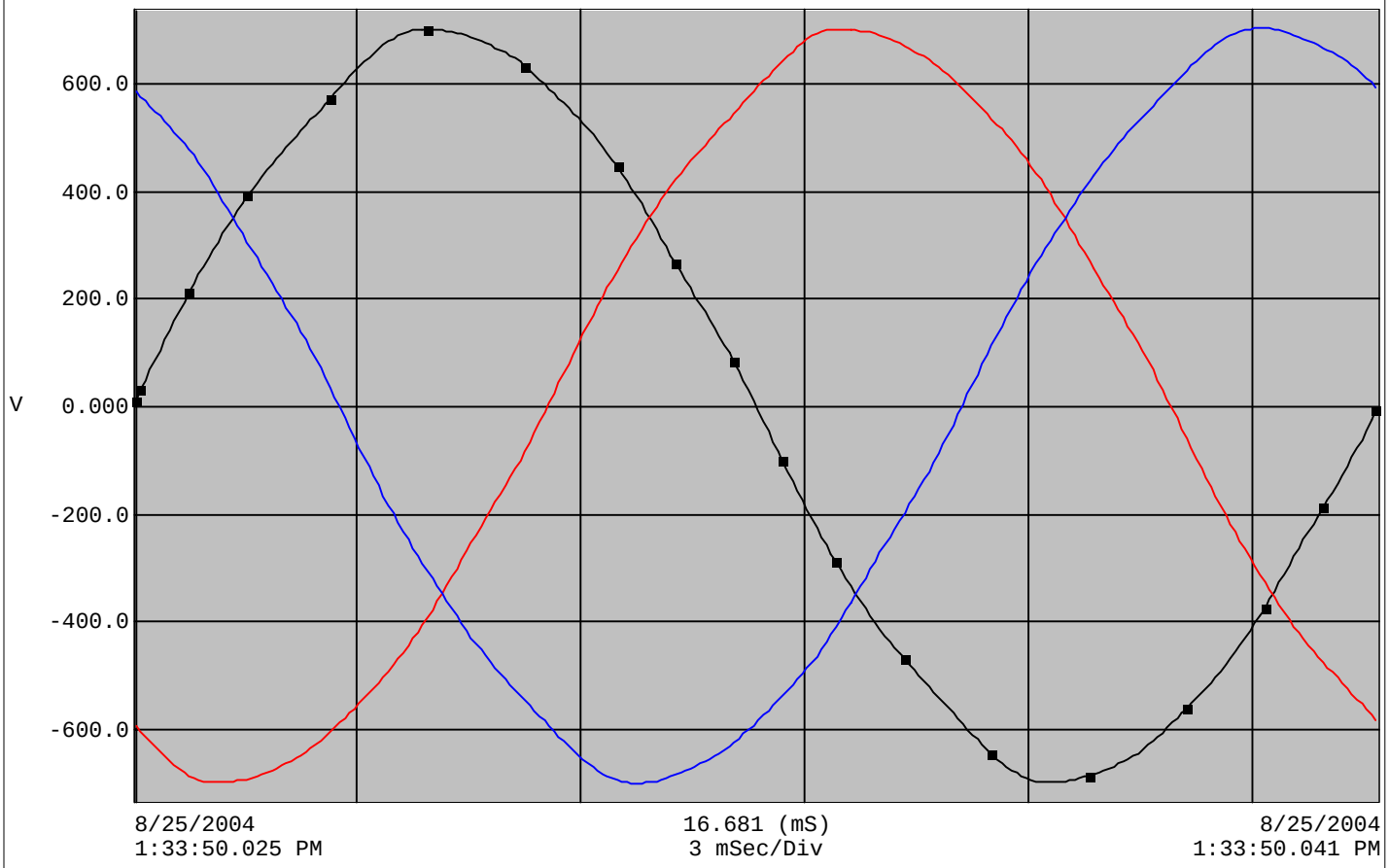


8/25/2004 - 1:33:50.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

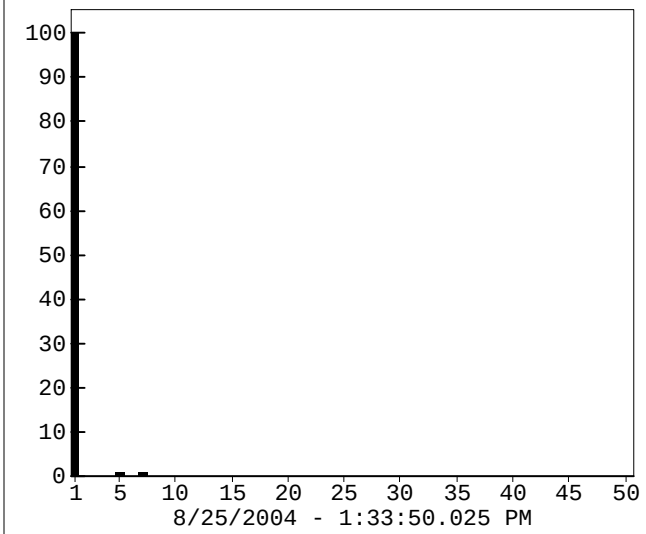
	(%)		(%)		(%)
H01	199.9	H18	199.9	H35	199.9
H02	199.9	H19	199.9	H36	199.9
H03	199.9	H20	199.9	H37	199.9
H04	199.9	H21	199.9	H38	199.9
H05	199.9	H22	199.9	H39	199.9
H06	199.9	H23	199.9	H40	199.9
H07	199.9	H24	199.9	H41	199.9
H08	199.9	H25	199.9	H42	199.9
H09	199.9	H26	199.9	H43	199.9
H10	199.9	H27	199.9	H44	199.9
H11	199.9	H28	199.9	H45	199.9
H12	199.9	H29	199.9	H46	199.9
H13	199.9	H30	199.9	H47	199.9
H14	199.9	H31	199.9	H48	199.9
H15	199.9	H32	199.9	H49	199.9
H16	199.9	H33	199.9	H50	199.9
H17	199.9	H34	199.9		

Waveform - Voltage (U)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/25/2004	1:33:50.025 PM	16.681	490.4	V
Waveform U2	8/25/2004	1:33:50.025 PM	16.681	488.7	V
Waveform U3	8/25/2004	1:33:50.025 PM	16.681	489.7	V

Waveform U1
490.39 Vrms, 1.45 %THD



8/25/2004 - 1:33:50.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/25/2004
Start Time: 1:33:50 PM
Duration: 0:0.000 (M:S)
W: 0.000 W
VAR: 0.000 W
VA: 0.000 W
Power Factor: 0.000
Displacement Power Factor: 0.000
TAN: 0.000
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\HCG2\082504-HCG2-Photo1.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa ,	GWA WPS - HCG2 - Photo ,

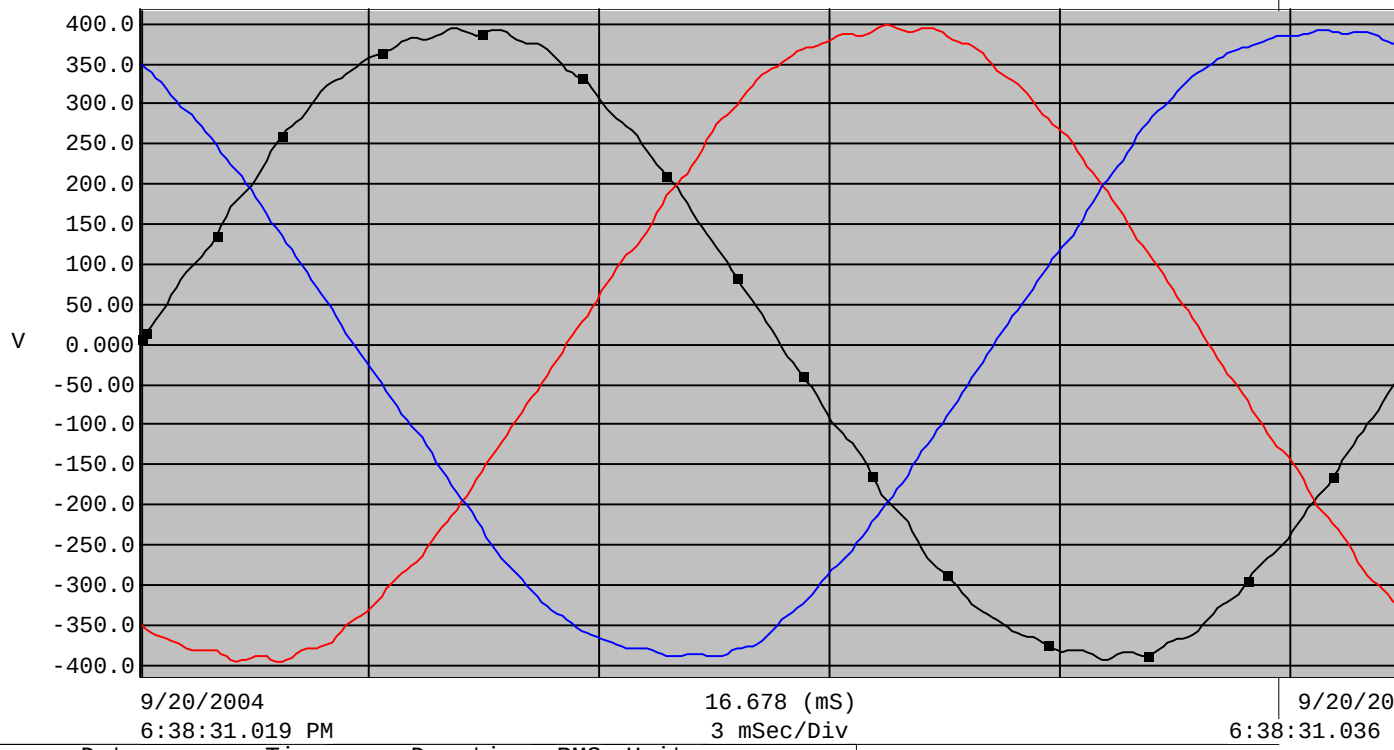
Comments

AEMC® INSTRUMENTS

HCG2 New Transf - Photo

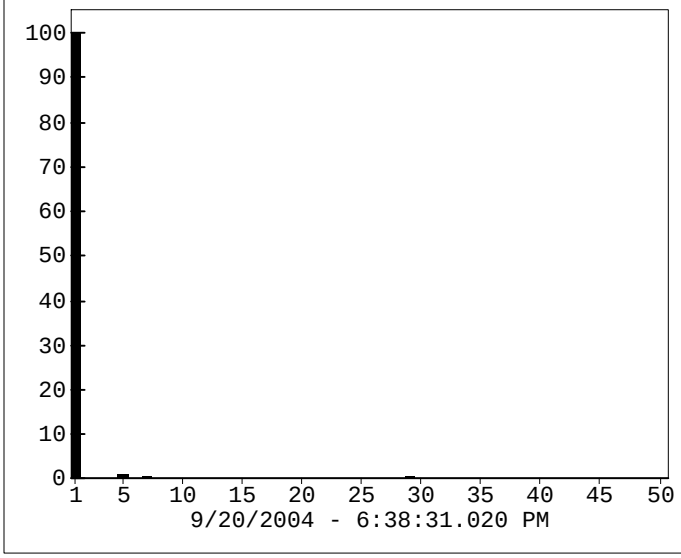
Recording Start Date	9/20/2004 - 6:38:31 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/20/2004	6:38:31.019 PM	16.678	278.3	V
Waveform V2	9/20/2004	6:38:31.019 PM	16.678	281.5	V
Waveform V3	9/20/2004	6:38:31.019 PM	16.678	279.9	V

Waveform V1
278.34 Vrms, 1.56 %THD



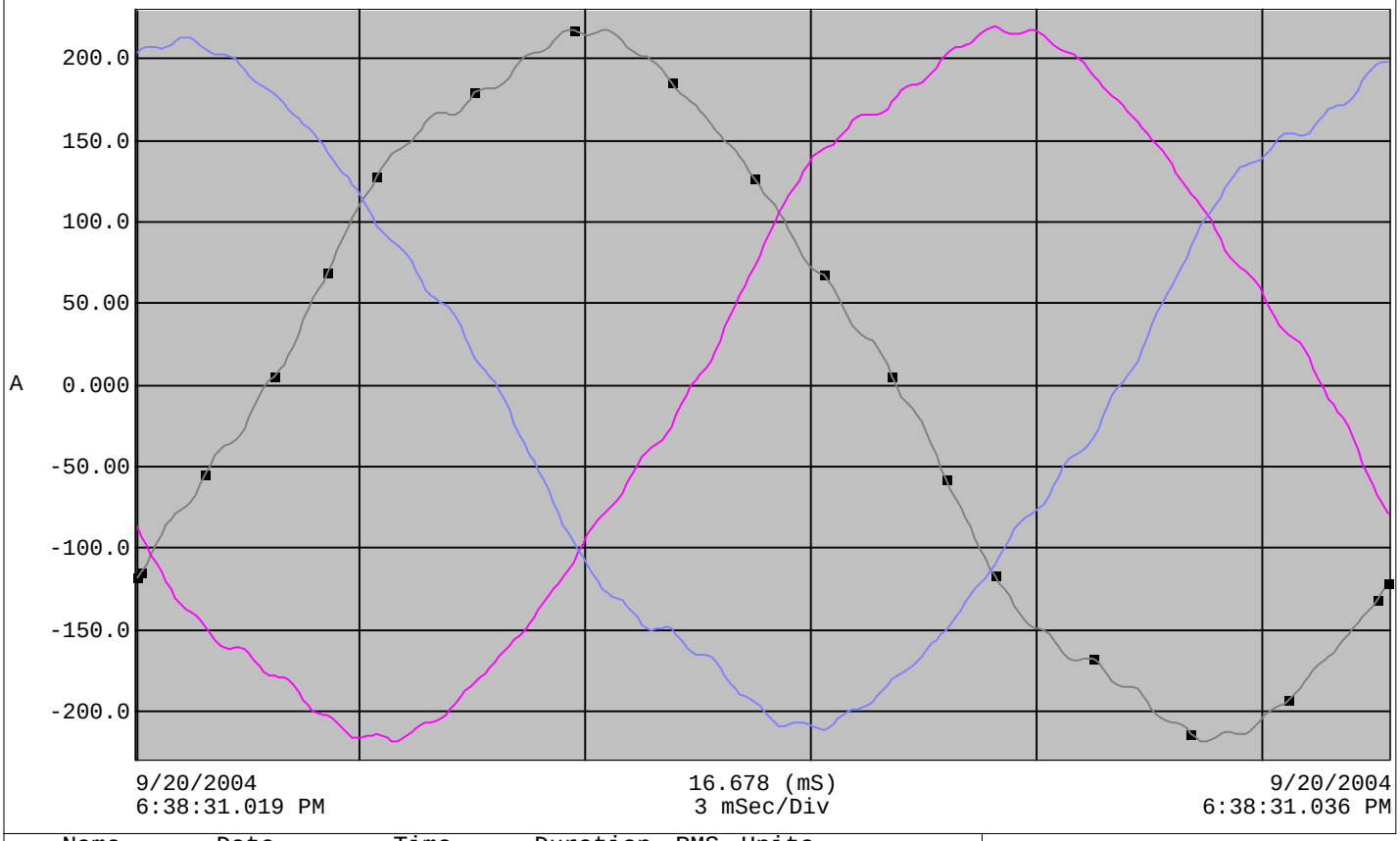
9/20/2004 - 6:38:31.000 PM

Val	
4.300	Waveform V1
-350.5	Waveform V2
346.7	Waveform V3

Waveform V1

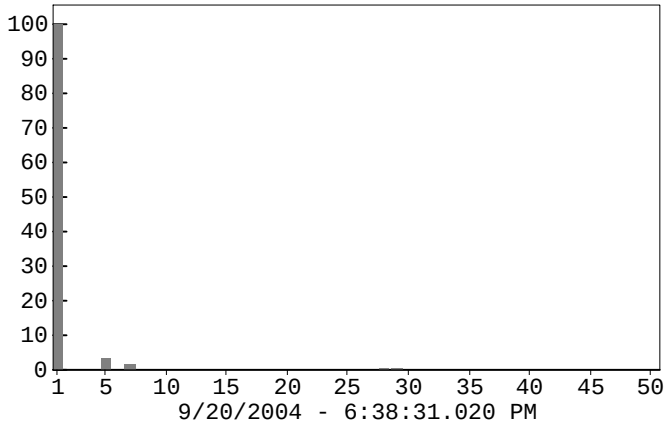
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.0	H22	0.2	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.7	H24	0.2	H41	0.0
H08	0.0	H25	0.3	H42	0.0
H09	0.1	H26	0.1	H43	0.0
H10	0.0	H27	0.2	H44	0.0
H11	0.2	H28	0.4	H45	0.0
H12	0.0	H29	0.6	H46	0.0
H13	0.1	H30	0.3	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/20/2004	6:38:31.019 PM	16.678	148.9	A
Waveform I2	9/20/2004	6:38:31.019 PM	16.678	150.1	A
Waveform I3	9/20/2004	6:38:31.019 PM	16.678	144.0	A

Waveform I1
148.86 Arms, 4.43 %THD

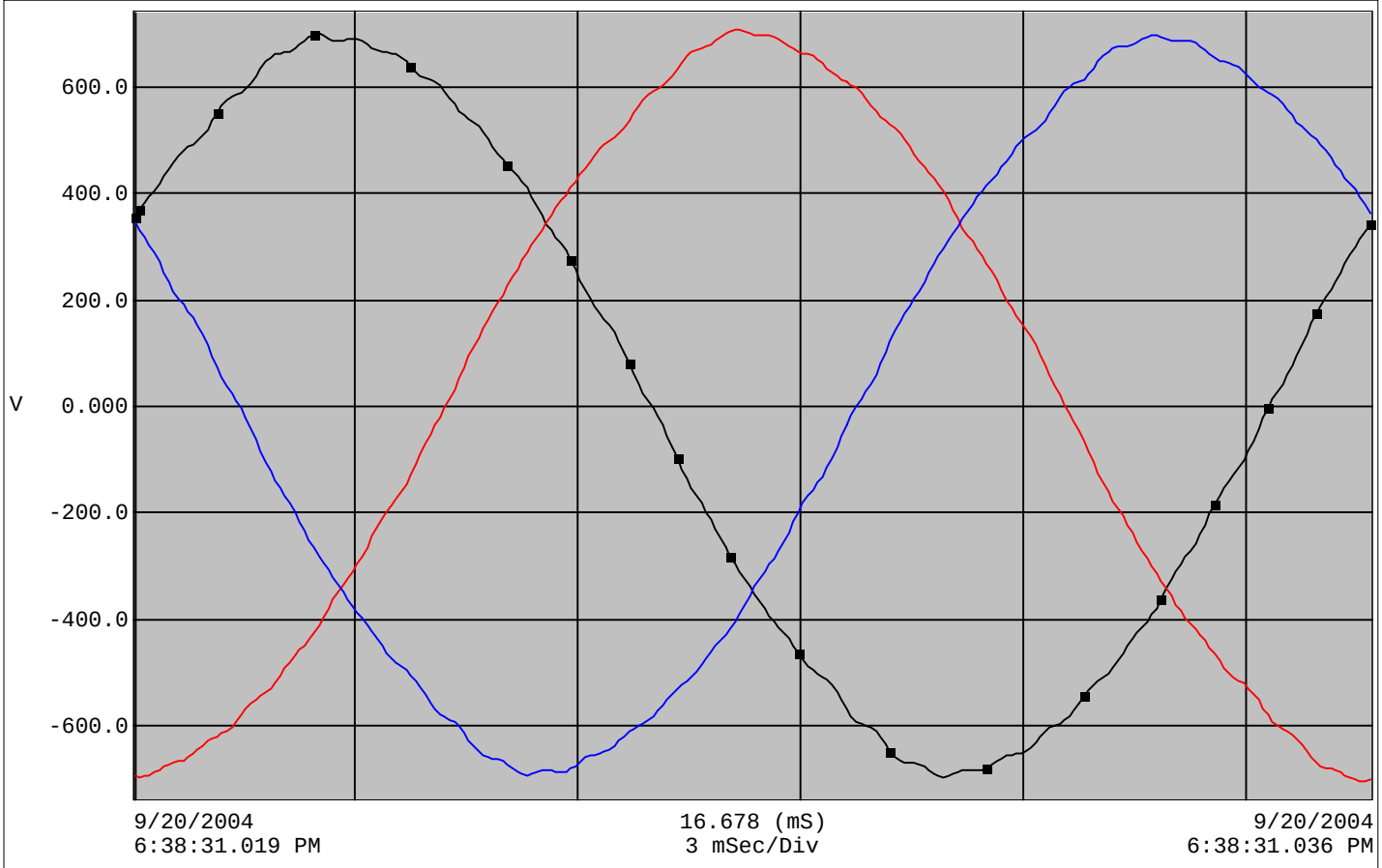


9/20/2004 - 6:38:31.000 PM
Val
-119.1 — Waveform I1
-87.10 — Waveform I2
203.5 — Waveform I3

Waveform I1

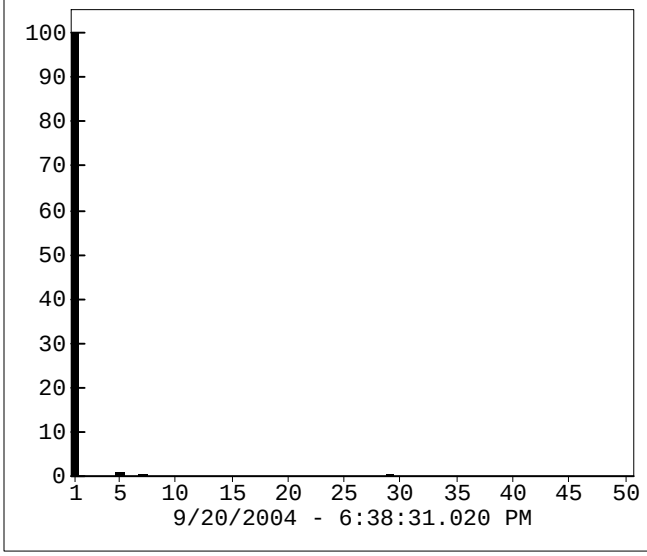
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	3.7	H22	0.2	H39	0.0
H06	0.0	H23	0.4	H40	0.0
H07	2.0	H24	0.3	H41	0.0
H08	0.0	H25	0.5	H42	0.0
H09	0.1	H26	0.2	H43	0.0
H10	0.0	H27	0.2	H44	0.0
H11	0.1	H28	0.6	H45	0.0
H12	0.0	H29	0.8	H46	0.0
H13	0.2	H30	0.3	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/20/2004	6:38:31.019 PM	16.678	485.1	V
Waveform U2	9/20/2004	6:38:31.019 PM	16.678	486.6	V
Waveform U3	9/20/2004	6:38:31.019 PM	16.678	482.8	V

Waveform U1
485.08 Vrms, 1.56 %THD



9/20/2004 - 6:38:31.000 PM

Val	
354.9	Waveform U1
-697.3	Waveform U2
342.3	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.0	H22	0.1	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.7	H24	0.1	H41	0.0
H08	0.0	H25	0.3	H42	0.0
H09	0.2	H26	0.2	H43	0.0
H10	0.0	H27	0.2	H44	0.0
H11	0.3	H28	0.4	H45	0.0
H12	0.0	H29	0.6	H46	0.0
H13	0.1	H30	0.2	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 9/20/2004
Start Time: 6:38:31 PM
Duration: 0:0.000 (M:S)
W: 33.53E+3 W
VAR: 24.40E+3 W
VA: 41.47E+3 W
Power Factor: 0.809
Displacement Power Factor: 0.810
TAN: 0.725
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\HCG2\092004-HCG2 New Transf-Photo.dvb

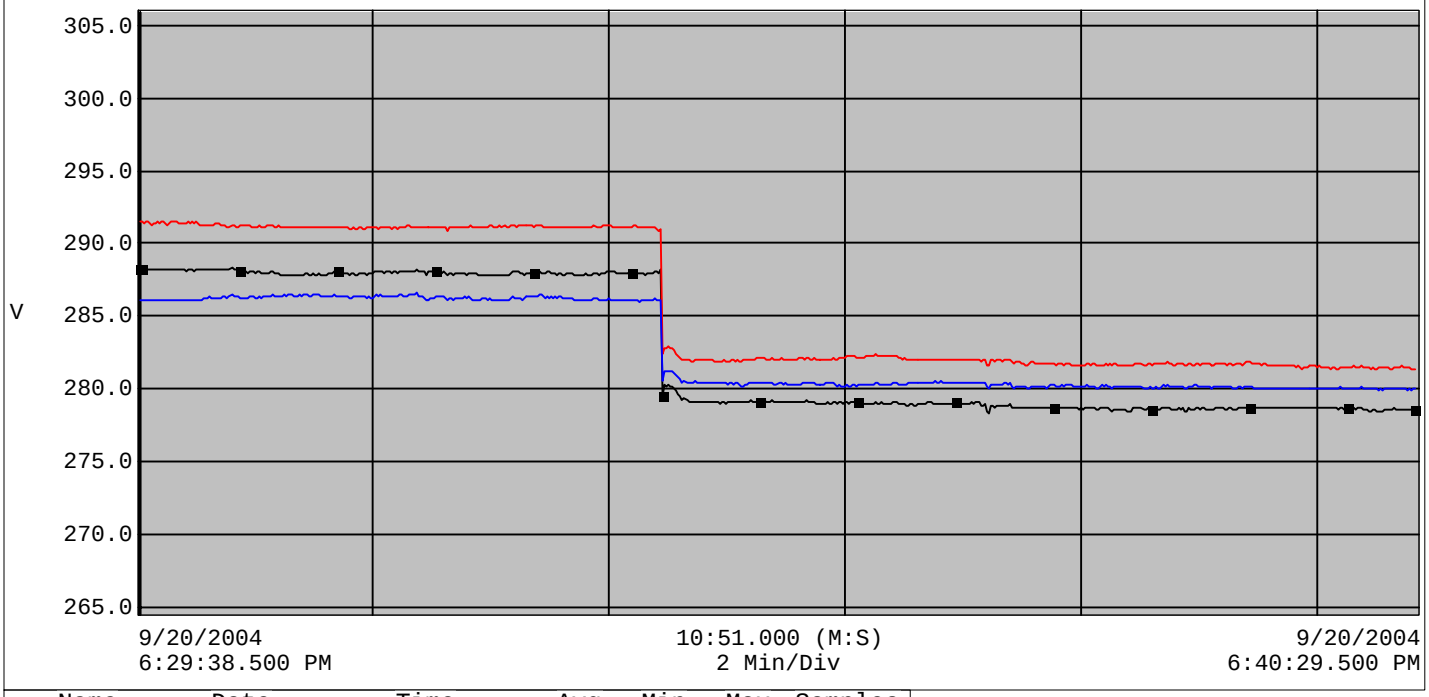
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	WPS HGC-2 - Transformer Replacement ,

Comments
Recording after the transformer was replaced and set to Tap 4.

HCG2 New Transf

Recording Start Date	9/20/2004 - 6:29:38 PM
Recording Duration	10:51 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

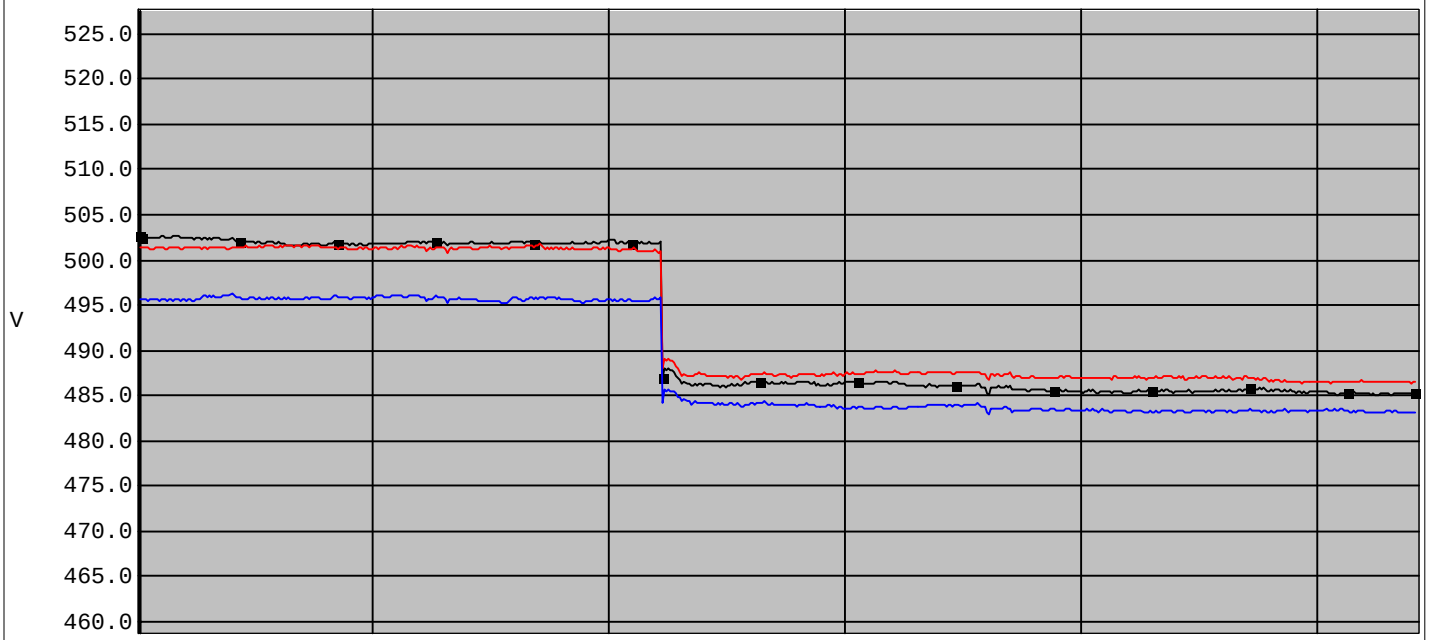
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/20/2004	6:29:38.500 PM	282.5	278.3	288.3	652
Vrms Line2	9/20/2004	6:29:38.500 PM	285.6	281.3	291.4	652
Vrms Line3	9/20/2004	6:29:38.500 PM	282.6	279.8	286.5	652

9/20/2004 - 6:29:38.000 PM
Val
288.1 Vrms Line1
291.4 Vrms Line2
286.1 Vrms Line3

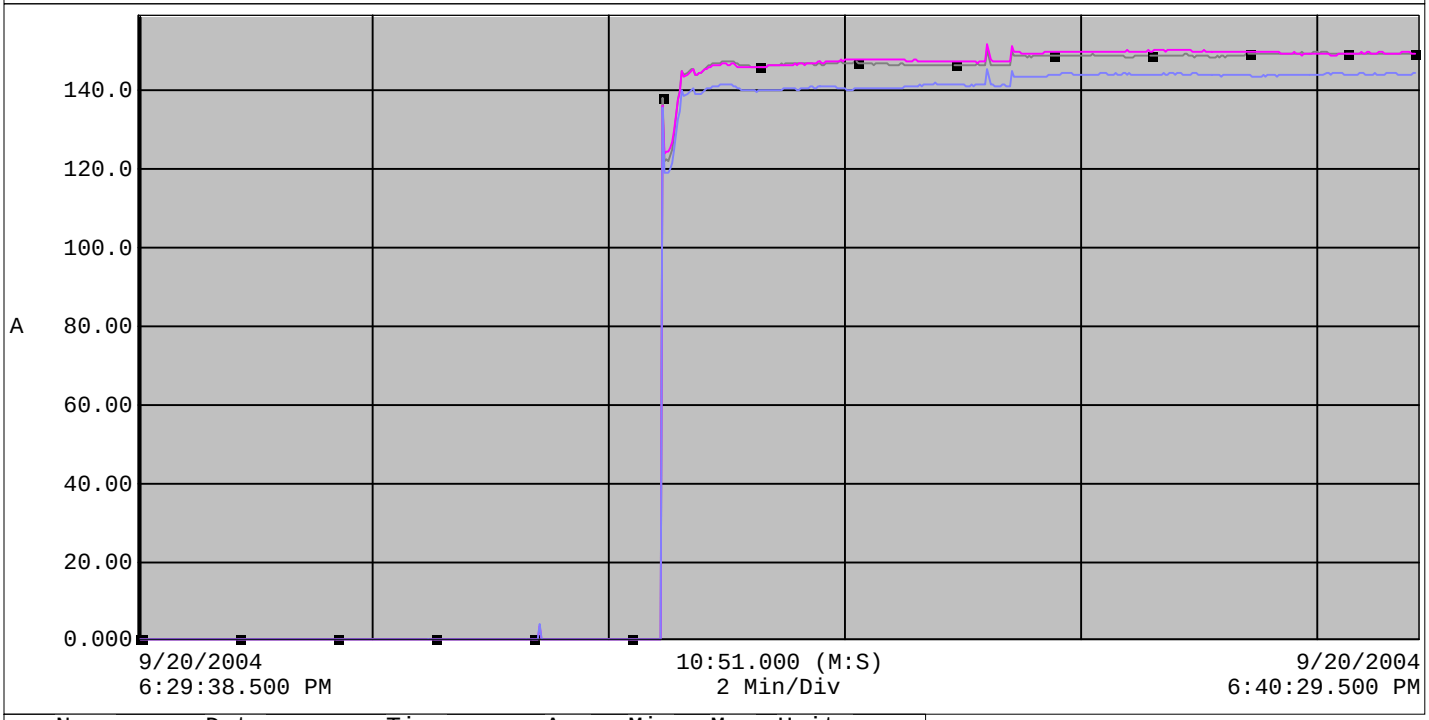
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/20/2004	6:29:38.500 PM	492.3	485.0	502.5	V
Urms Line2	9/20/2004	6:29:38.500 PM	492.8	486.2	501.6	V
Urms Line3	9/20/2004	6:29:38.500 PM	488.5	482.7	496.1	V

9/20/2004 - 6:29:38.000 PM
Val
502.5 Urms Line1
501.2 Urms Line2
495.5 Urms Line3

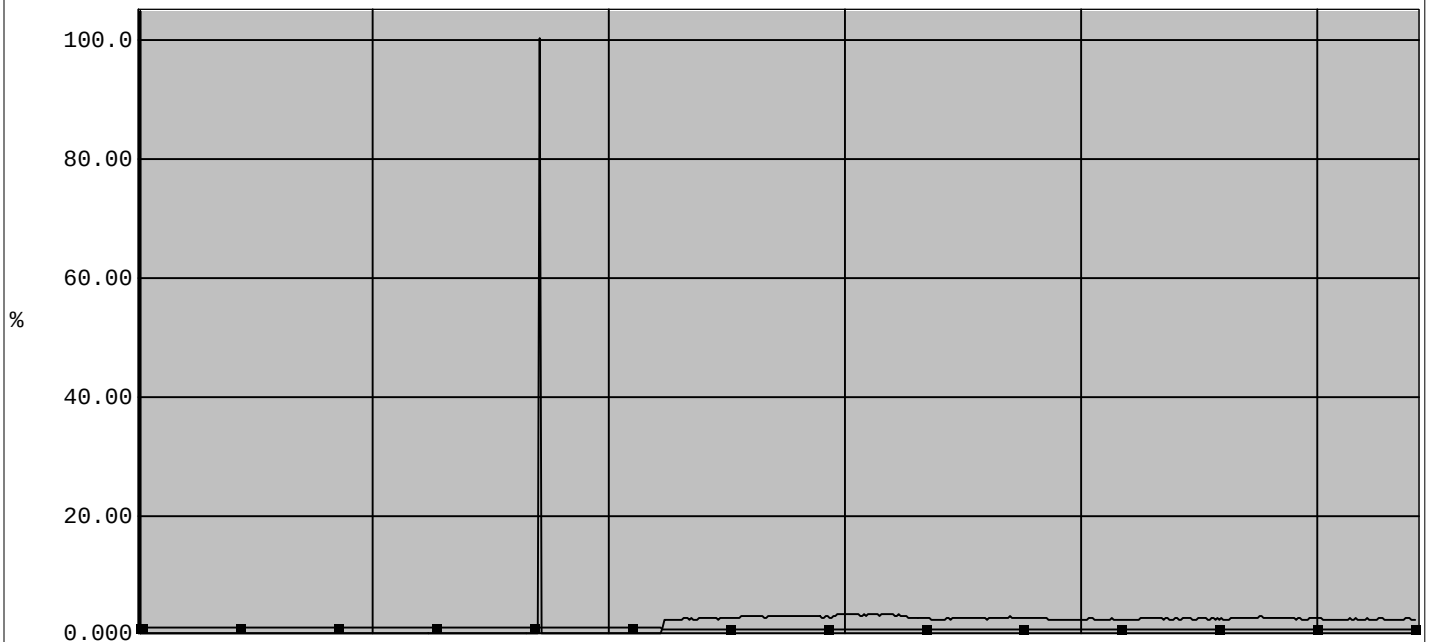
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/20/2004	6:29:38.500 PM	86.92	0.000	149.9	A
Arms Line2	9/20/2004	6:29:38.500 PM	87.26	0.000	151.3	A
Arms Line3	9/20/2004	6:29:38.500 PM	83.78	0.000	145.4	A

9/20/2004 - 6:29:38.000 PM
Val
0.000 Arms Line1
0.000 Arms Line2
0.000 Arms Line3

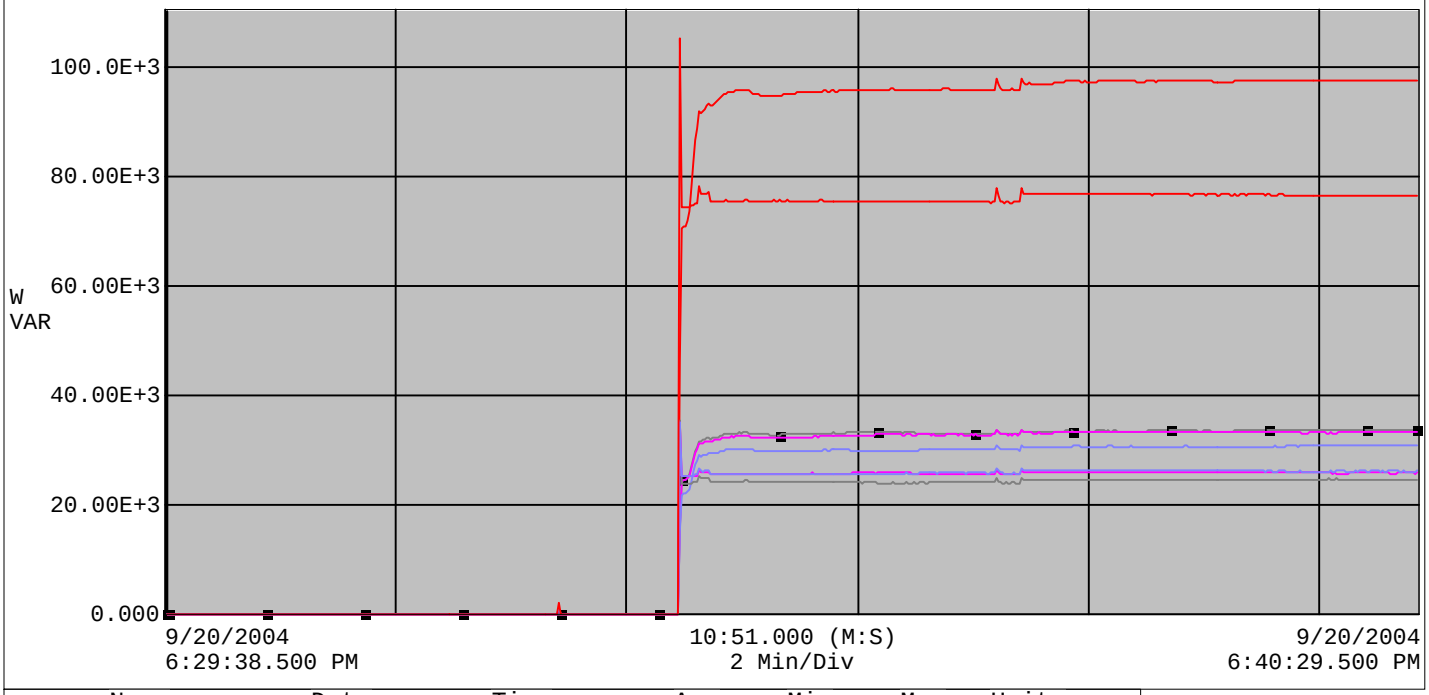
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/20/2004	6:29:38.500 PM	0.706	0.500	1.000	%
Aunb(IEEE)	9/20/2004	6:29:38.500 PM	1.673	0.000	100.0	%

9/20/2004 - 6:29:38.000 PM
Val
1.000 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

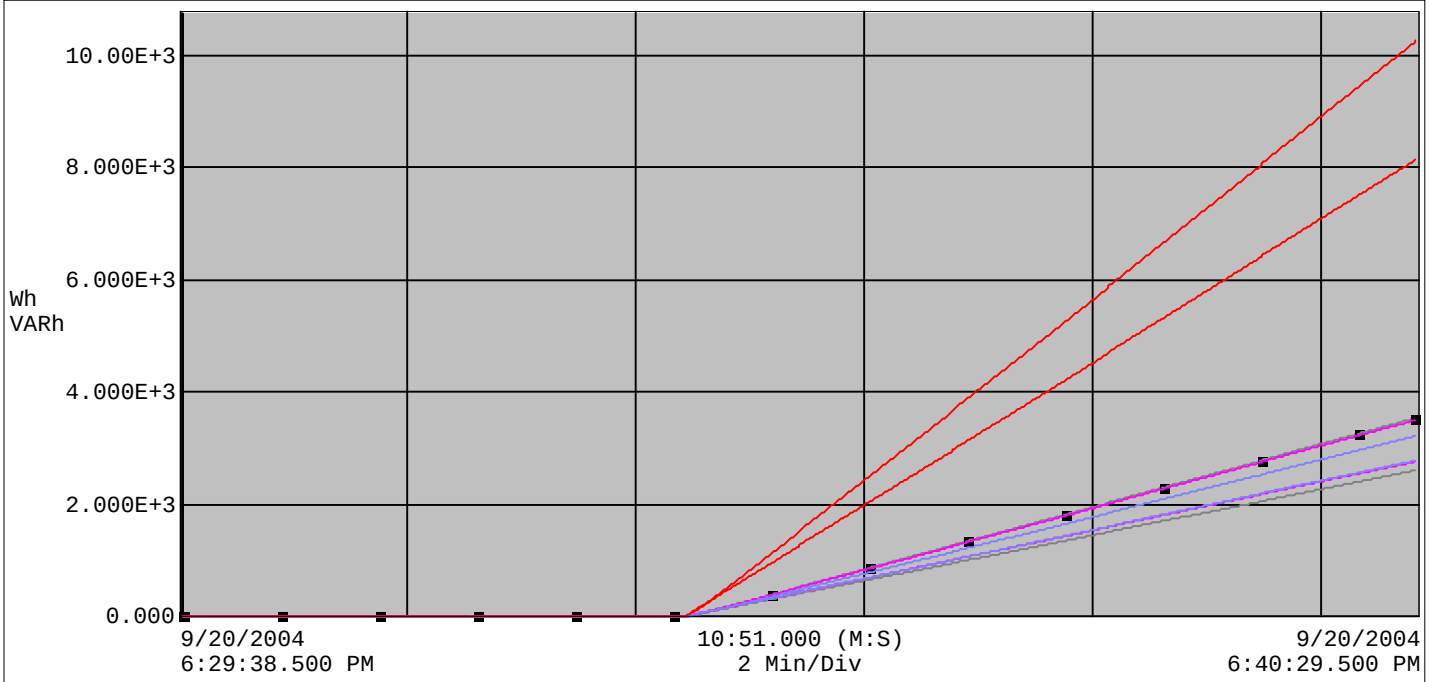
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/20/2004	6:29:38.500 PM	19.50E+3	0.000	33.63E+3	W
W Line2	9/20/2004	6:29:38.500 PM	19.30E+3	0.000	33.52E+3	W
W Line3	9/20/2004	6:29:38.500 PM	17.76E+3	-38.99	30.83E+3	W
W Sum of Phases	9/20/2004	6:29:38.500 PM	56.56E+3	0.000	97.83E+3	W
VAR Line1	9/20/2004	6:29:38.500 PM	14.37E+3	0.000	35.33E+3	VAR
VAR Line2	9/20/2004	6:29:38.500 PM	15.22E+3	0.000	34.91E+3	VAR
VAR Line3	9/20/2004	6:29:38.500 PM	15.32E+3	0.000	34.82E+3	VAR
VAR Sum of Phases	9/20/2004	6:29:38.500 PM	44.91E+3	0.000	105.1E+3	VAR

9/20/2004 - 6:29:38.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

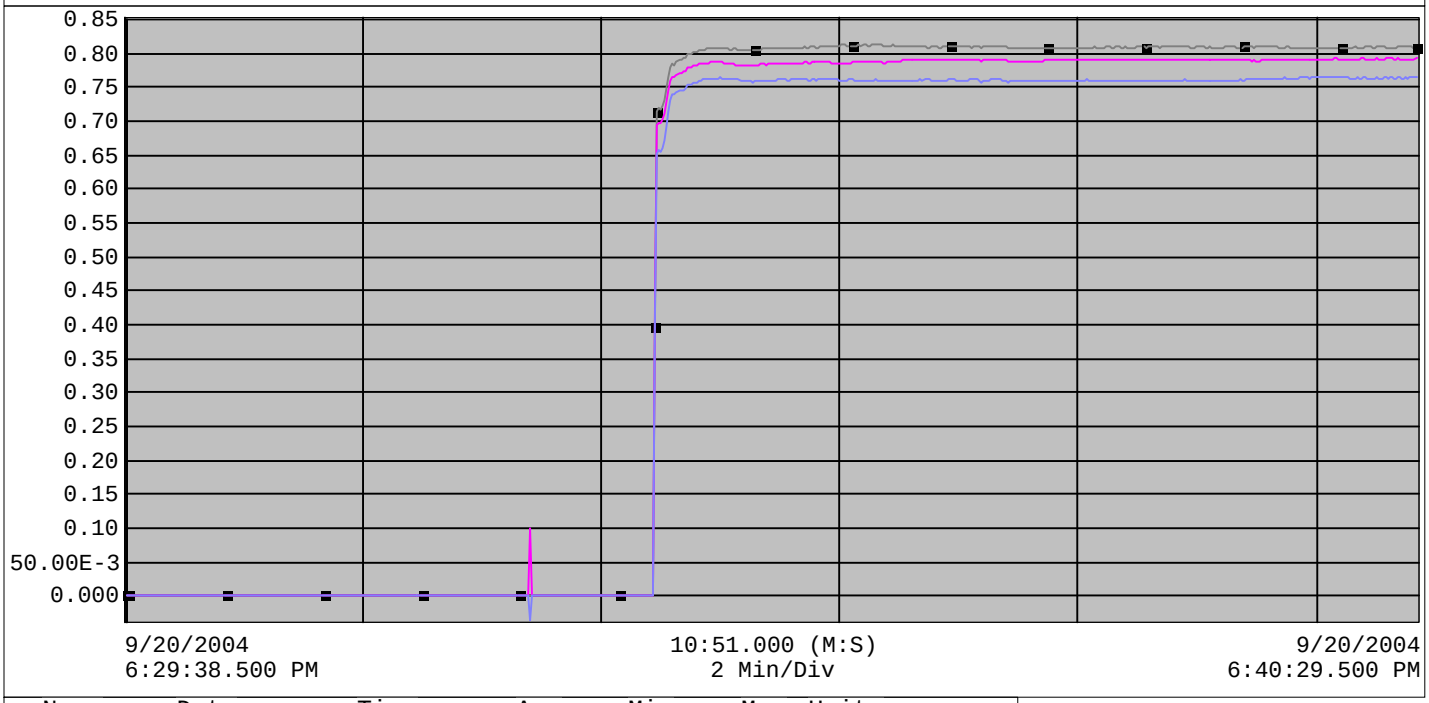
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/20/2004	6:29:38.500 PM	1.034E+3	0.000	3.531E+3	Wh
W-hours Line2	9/20/2004	6:29:38.500 PM	1.022E+3	0.000	3.495E+3	Wh
W-hours Line3	9/20/2004	6:29:38.500 PM	940.3	0.000	3.217E+3	Wh
W-hours Sum of Phases	9/20/2004	6:29:38.500 PM	2.997E+3	0.000	10.24E+3	Wh
VAR-hours Line1	9/20/2004	6:29:38.500 PM	768.6	0.000	2.602E+3	VARh
VAR-hours Line2	9/20/2004	6:29:38.500 PM	815.0	0.000	2.756E+3	VARh
VAR-hours Line3	9/20/2004	6:29:38.500 PM	818.6	0.000	2.775E+3	VARh
VAR-hours Sum of Phases	9/20/2004	6:29:38.500 PM	2.402E+3	0.000	8.134E+3	VARh

9/20/2004 - 6:29:38.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/20/2004	6:29:38.500 PM	0.475	0.000	0.811	
PF Line2	9/20/2004	6:29:38.500 PM	0.463	0.000	0.791	
PF Line3	9/20/2004	6:29:38.500 PM	0.447	-38.00E-3	0.764	

9/20/2004 - 6:29:38.000 PM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\HCG2\092004-HCG2 New Transf.dvb

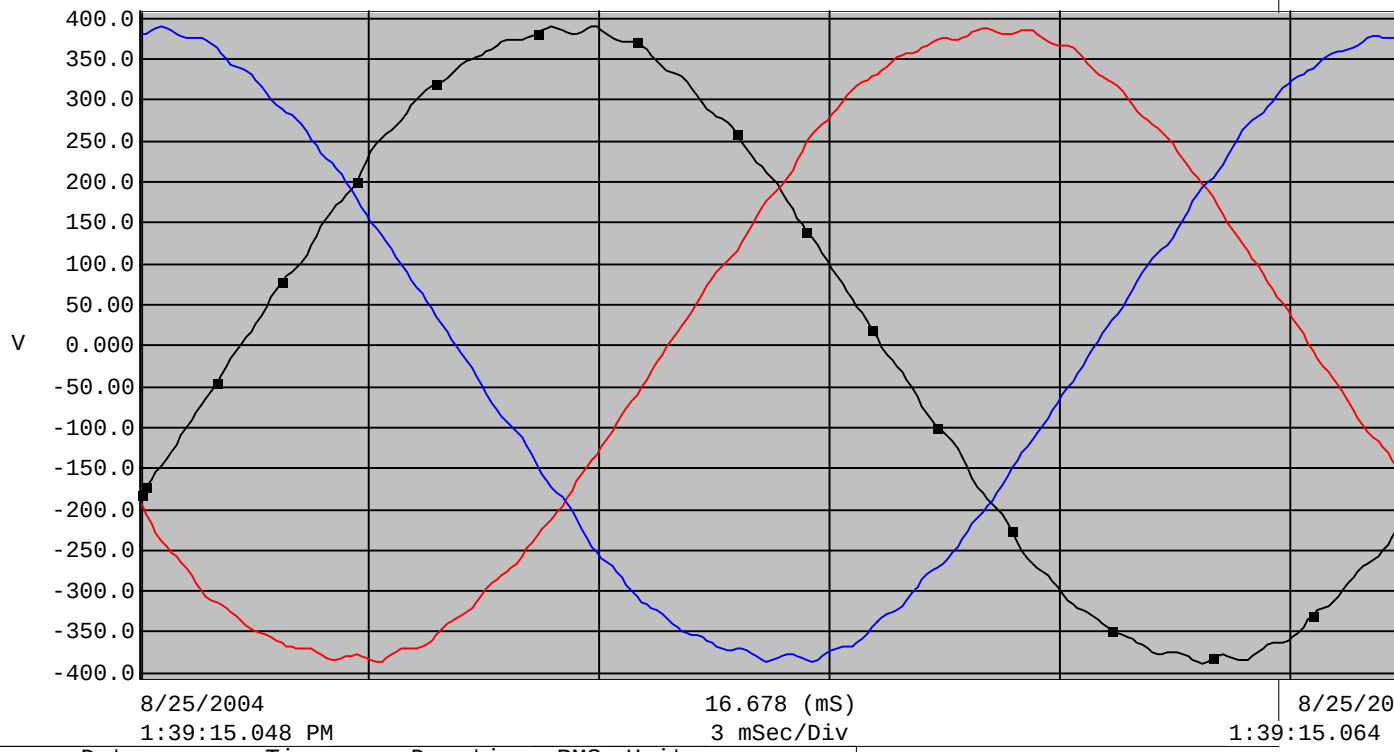
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	WPS HCG-2 New Transformer ,

Comments
Recordings made after the middle transformer was replaced due to internal short circuit. Bank connected WYE, grounded.

WPS HCG2 - Photo

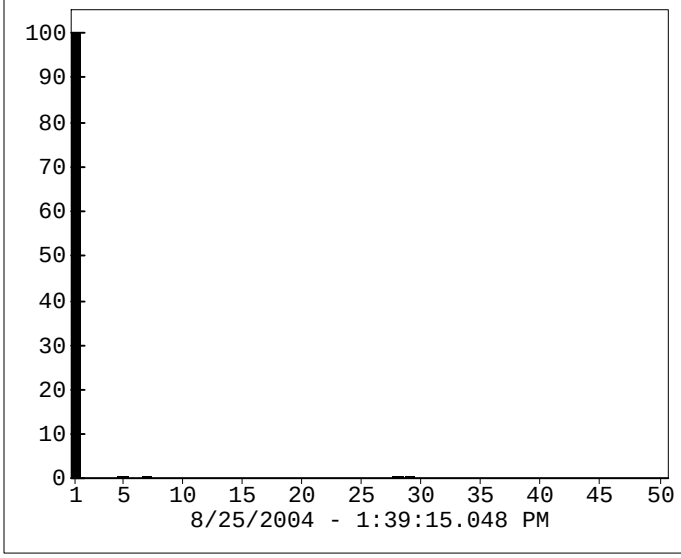
Recording Start Date	8/25/2004 - 1:39:15 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/25/2004	1:39:15.048 PM	16.678	273.8	V
Waveform V2	8/25/2004	1:39:15.048 PM	16.678	273.5	V
Waveform V3	8/25/2004	1:39:15.048 PM	16.678	273.5	V

Waveform V1
273.83 Vrms, 1.50 %THD

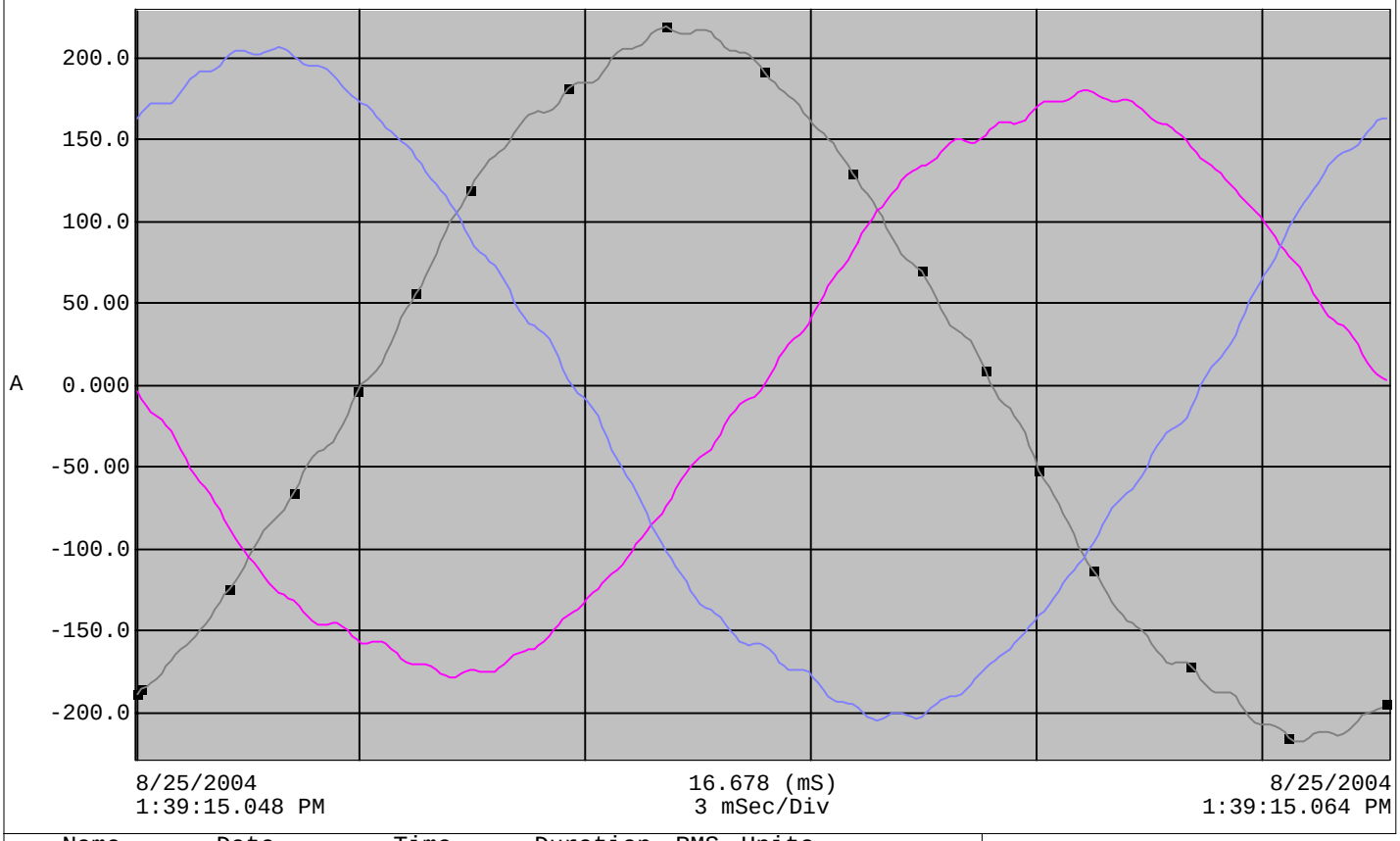


8/25/2004 - 1:39:15.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

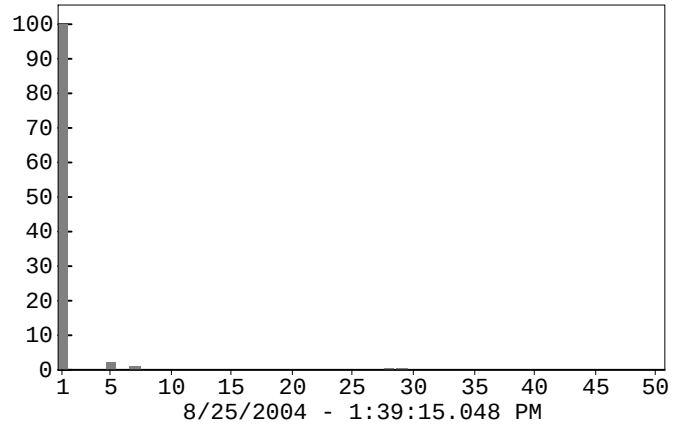
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.0	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	0.8	H22	0.2	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.7	H24	0.2	H41	0.0
H08	0.0	H25	0.3	H42	0.0
H09	0.1	H26	0.2	H43	0.0
H10	0.0	H27	0.2	H44	0.0
H11	0.3	H28	0.5	H45	0.0
H12	0.0	H29	0.7	H46	0.0
H13	0.1	H30	0.2	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/25/2004	1:39:15.048 PM	16.678	150.0	A
Waveform I2	8/25/2004	1:39:15.048 PM	16.678	124.1	A
Waveform I3	8/25/2004	1:39:15.048 PM	16.678	142.2	A

Waveform I1
149.96 Arms, 3.30 %THD

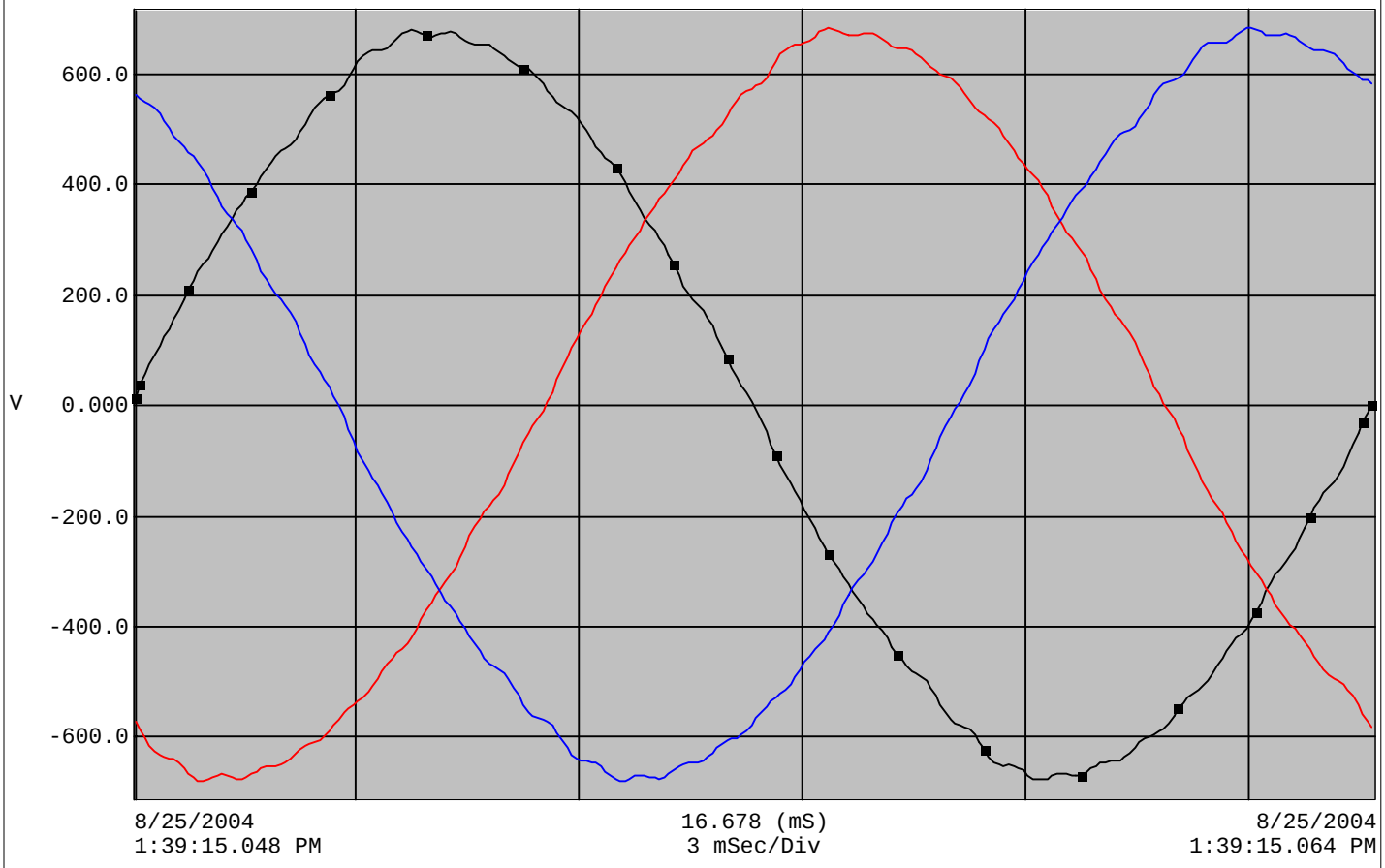


8/25/2004 - 1:39:15.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

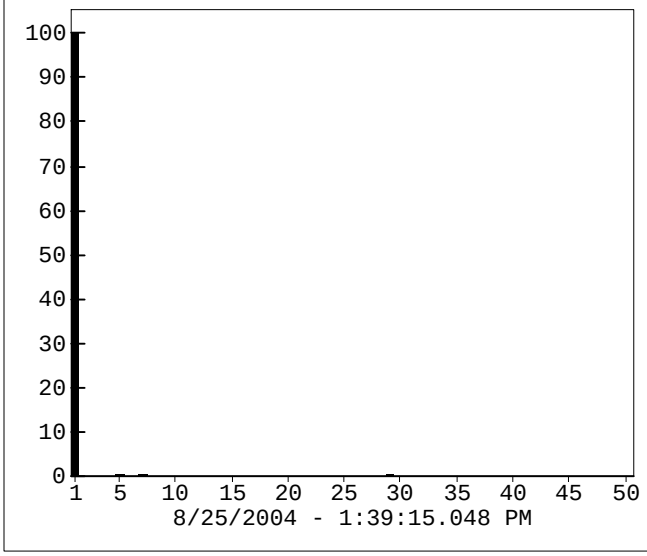
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.1	H19	0.1	H36	0.0
H03	0.5	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	2.5	H22	0.2	H39	0.0
H06	0.0	H23	0.3	H40	0.0
H07	1.6	H24	0.3	H41	0.0
H08	0.0	H25	0.5	H42	0.0
H09	0.1	H26	0.2	H43	0.0
H10	0.0	H27	0.2	H44	0.0
H11	0.1	H28	0.6	H45	0.0
H12	0.0	H29	0.8	H46	0.0
H13	0.3	H30	0.3	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.1	H33	0.1	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/25/2004	1:39:15.048 PM	16.678	474.0	V
Waveform U2	8/25/2004	1:39:15.048 PM	16.678	473.5	V
Waveform U3	8/25/2004	1:39:15.048 PM	16.678	474.2	V

Waveform U1
474.01 Vrms, 1.53 %THD



8/25/2004 - 1:39:15.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	0.8	H22	0.2	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.8	H24	0.2	H41	0.0
H08	0.0	H25	0.3	H42	0.0
H09	0.1	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.3	H28	0.4	H45	0.0
H12	0.0	H29	0.6	H46	0.0
H13	0.1	H30	0.3	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 8/25/2004
Start Time: 1:39:15 PM
Duration: 0:0.000 (M:S)
W: 33.48E+3 W
VAR: 23.86E+3 W
VA: 41.11E+3 W
Power Factor: 0.814
Displacement Power Factor: 0.815
TAN: 0.711
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\HCG2\082504-HCG2-Photo.dvb

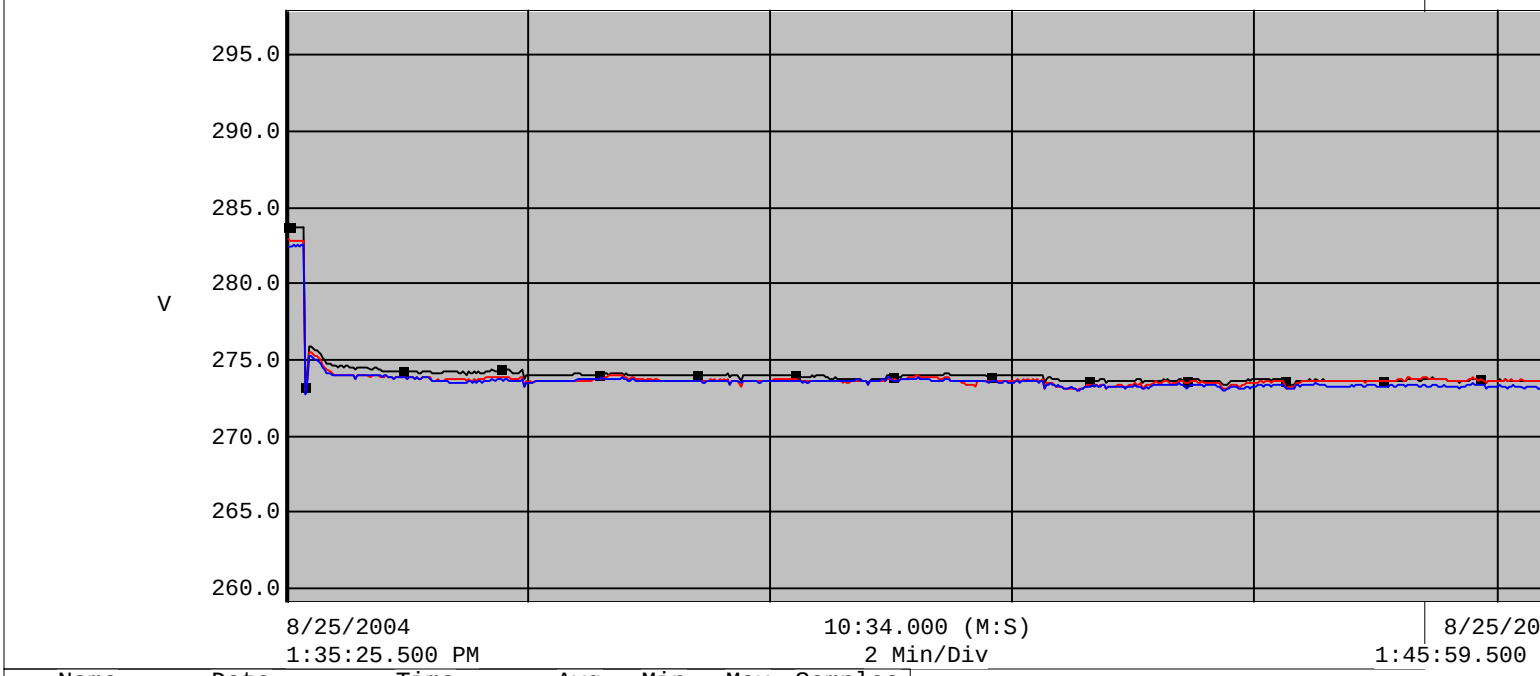
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa ,	GWA WPS HCG2 - Photo ,

Comments

WPS HCG2

Recording Start Date	8/25/2004 - 1:35:25 PM
Recording Duration	10:34 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

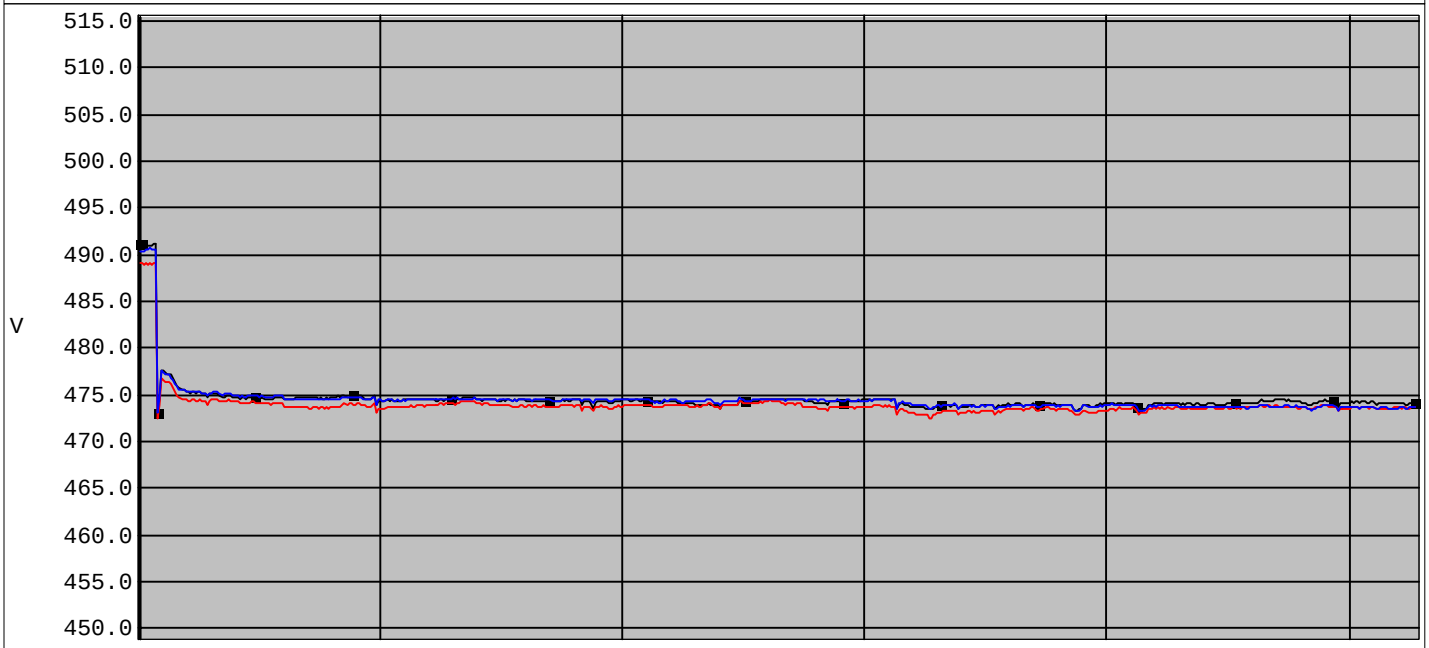
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/25/2004	1:35:25.500 PM	274.0	273.2	283.7	635
Vrms Line2	8/25/2004	1:35:25.500 PM	273.7	272.9	282.9	635
Vrms Line3	8/25/2004	1:35:25.500 PM	273.6	272.7	282.5	635

8/25/2004 - 1:35:25.000 PM
Val
283.6 Vrms Line1
282.9 Vrms Line2
282.4 Vrms Line3

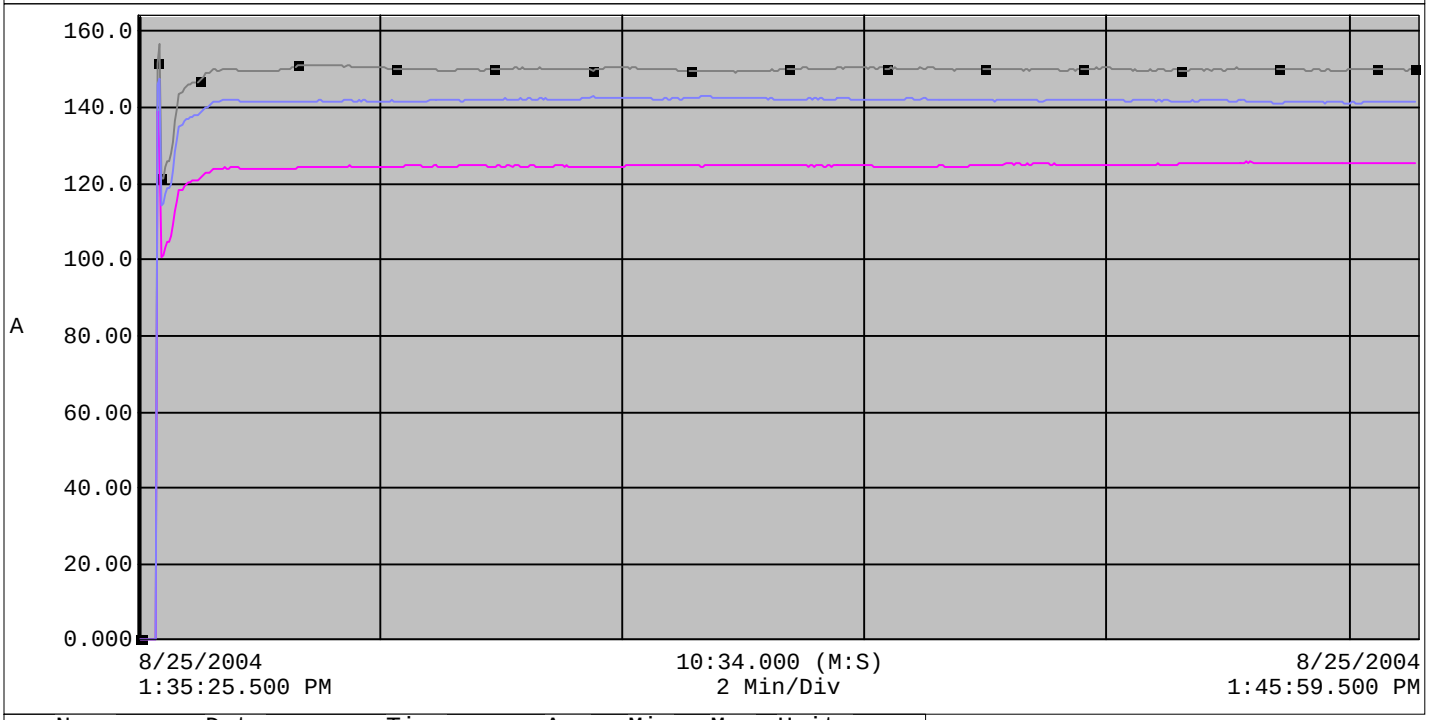
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/25/2004	1:35:25.500 PM	474.4	473.0	491.0	V
Urms Line2	8/25/2004	1:35:25.500 PM	473.8	472.3	489.1	V
Urms Line3	8/25/2004	1:35:25.500 PM	474.3	472.9	490.6	V

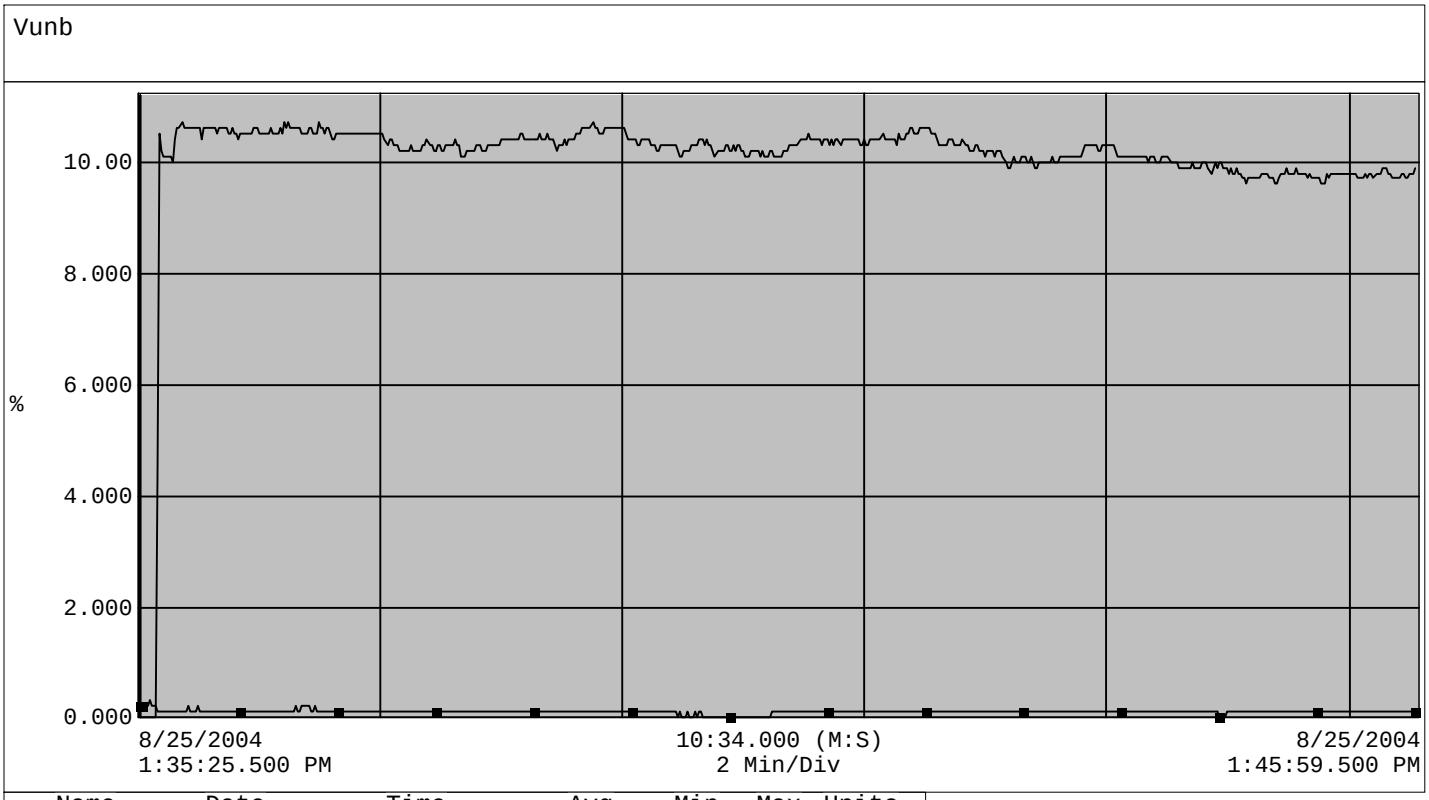
8/25/2004 - 1:35:25.000 PM
Val
491.0 Urms Line1
489.0 Urms Line2
490.3 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/25/2004	1:35:25.500 PM	147.4	0.000	156.2	A
Arms Line2	8/25/2004	1:35:25.500 PM	122.4	0.000	138.6	A
Arms Line3	8/25/2004	1:35:25.500 PM	139.3	0.000	147.4	A

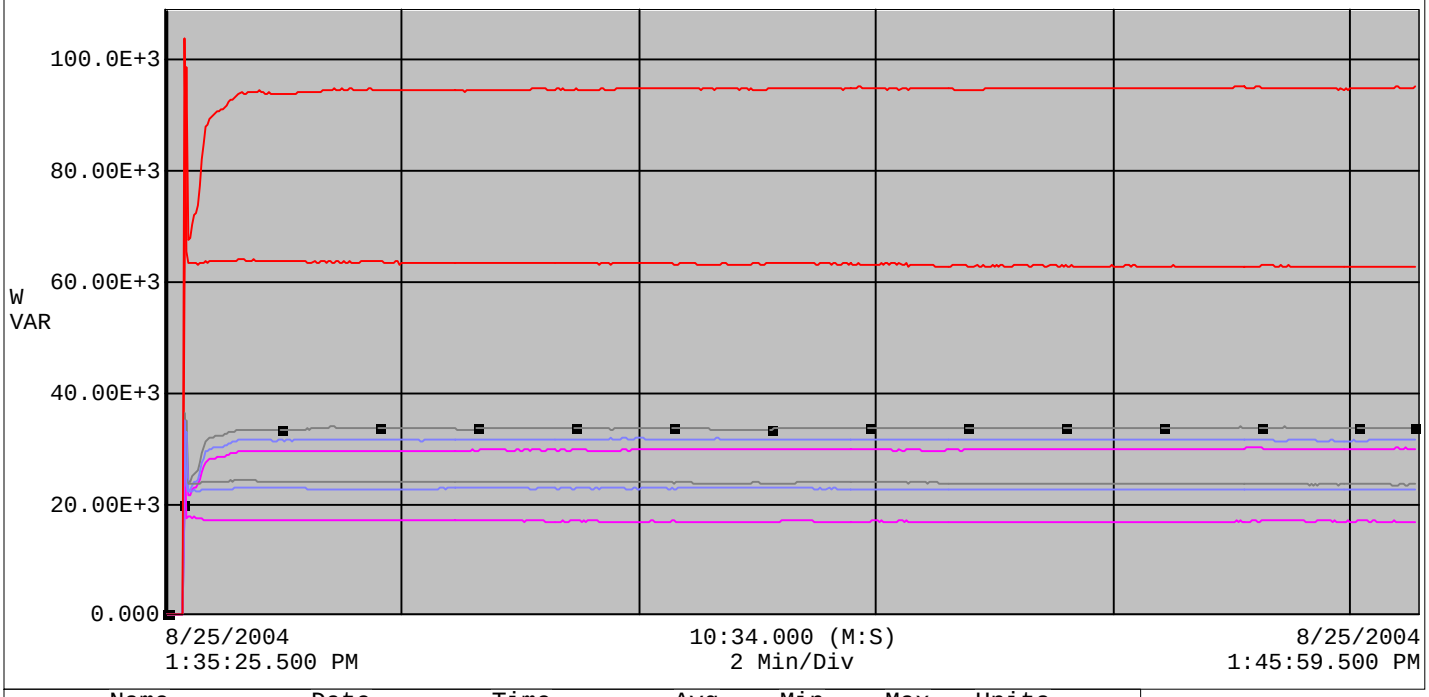
8/25/2004 - 1:35:25.000 PM
Val
0.000 — Arms Line1
0.000 — Arms Line2
0.000 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/25/2004	1:35:25.500 PM	95.59E-3	0.000	0.300	%
Aunb(IEEE)	8/25/2004	1:35:25.500 PM	10.08	0.000	10.70	%

8/25/2004 - 1:35:25.000 PM
Val
0.200 —— Vunb(IEEE)
0.000 —— Aunb(IEEE)

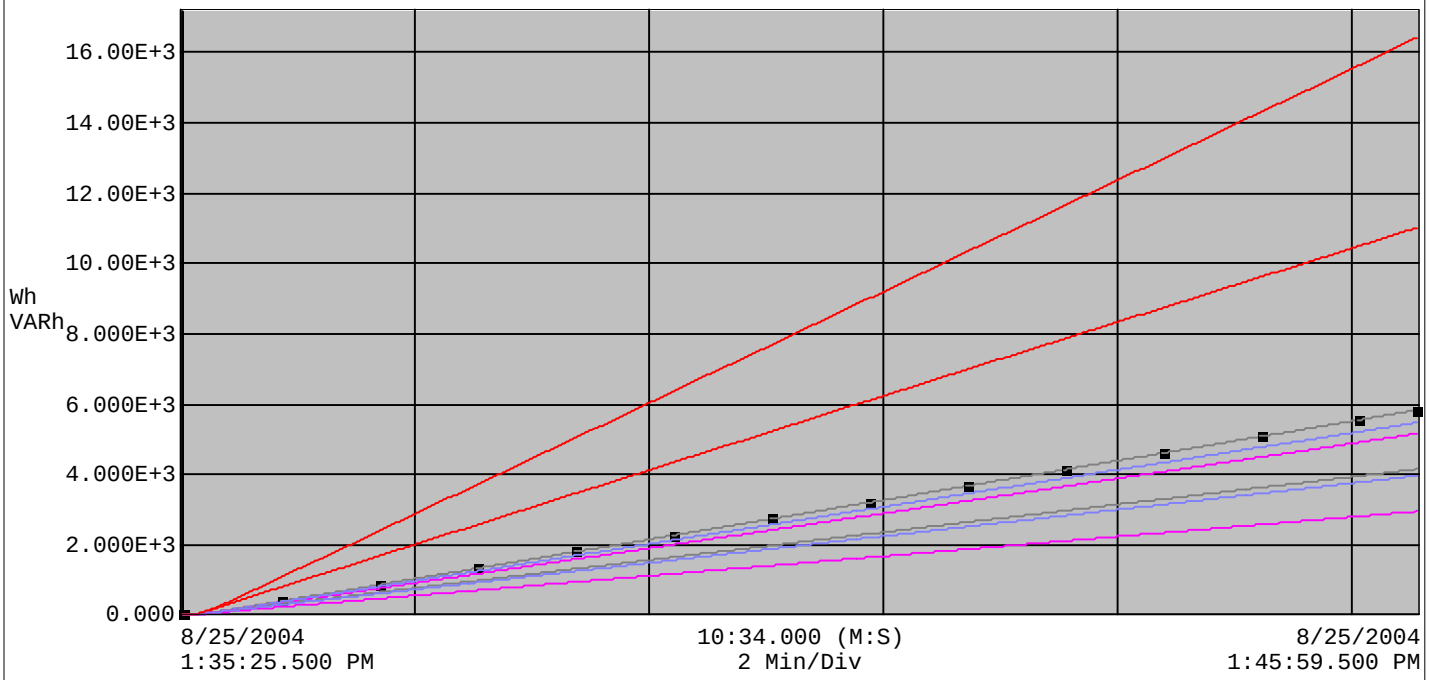
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/25/2004	1:35:25.500 PM	32.89E+3	0.000	34.99E+3	W
W Line2	8/25/2004	1:35:25.500 PM	29.10E+3	0.000	30.74E+3	W
W Line3	8/25/2004	1:35:25.500 PM	30.87E+3	0.000	32.91E+3	W
W Sum of Phases	8/25/2004	1:35:25.500 PM	92.86E+3	0.000	98.64E+3	W
VAR Line1	8/25/2004	1:35:25.500 PM	23.37E+3	0.000	36.29E+3	VAR
VAR Line2	8/25/2004	1:35:25.500 PM	16.57E+3	0.000	32.61E+3	VAR
VAR Line3	8/25/2004	1:35:25.500 PM	22.31E+3	0.000	34.89E+3	VAR
VAR Sum of Phases	8/25/2004	1:35:25.500 PM	62.25E+3	0.000	103.8E+3	VAR

8/25/2004 - 1:35:25.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

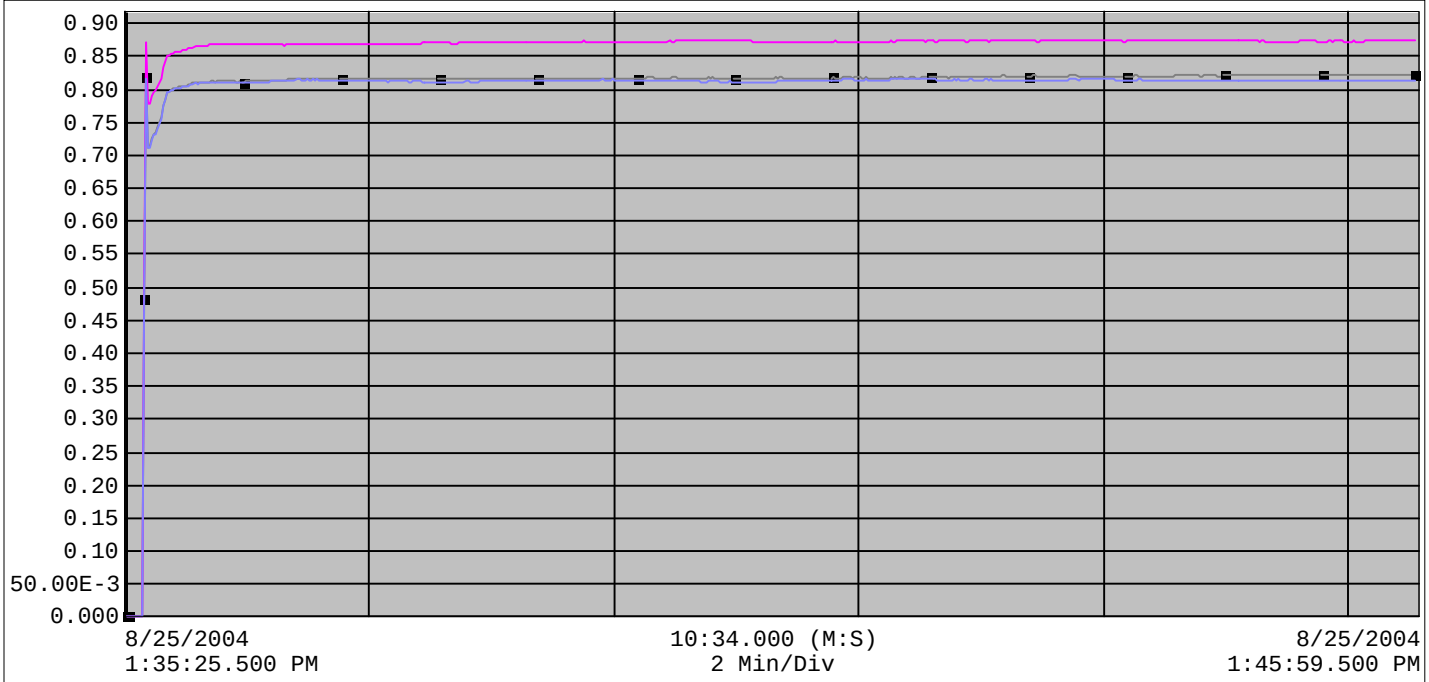
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/25/2004	1:35:25.500 PM	2.848E+3	0.000	5.802E+3	Wh
W-hours Line2	8/25/2004	1:35:25.500 PM	2.516E+3	0.000	5.132E+3	Wh
W-hours Line3	8/25/2004	1:35:25.500 PM	2.677E+3	0.000	5.445E+3	Wh
W-hours Sum of Phases	8/25/2004	1:35:25.500 PM	8.041E+3	0.000	16.38E+3	Wh
VAR-hours Line1	8/25/2004	1:35:25.500 PM	2.046E+3	0.000	4.122E+3	VARh
VAR-hours Line2	8/25/2004	1:35:25.500 PM	1.450E+3	0.000	2.923E+3	VARh
VAR-hours Line3	8/25/2004	1:35:25.500 PM	1.947E+3	0.000	3.935E+3	VARh
VAR-hours Sum of Phases	8/25/2004	1:35:25.500 PM	5.442E+3	0.000	10.98E+3	VARh

8/25/2004 - 1:35:25.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/25/2004	1:35:25.500 PM	0.803	0.000	0.822	
PF Line2	8/25/2004	1:35:25.500 PM	0.856	0.000	0.873	
PF Line3	8/25/2004	1:35:25.500 PM	0.799	0.000	0.816	

8/25/2004 - 1:35:25.000 PM
Val
0.000 — PF Line1
0.000 — PF Line2
0.000 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\HCG2\082504-HCG2.dvb

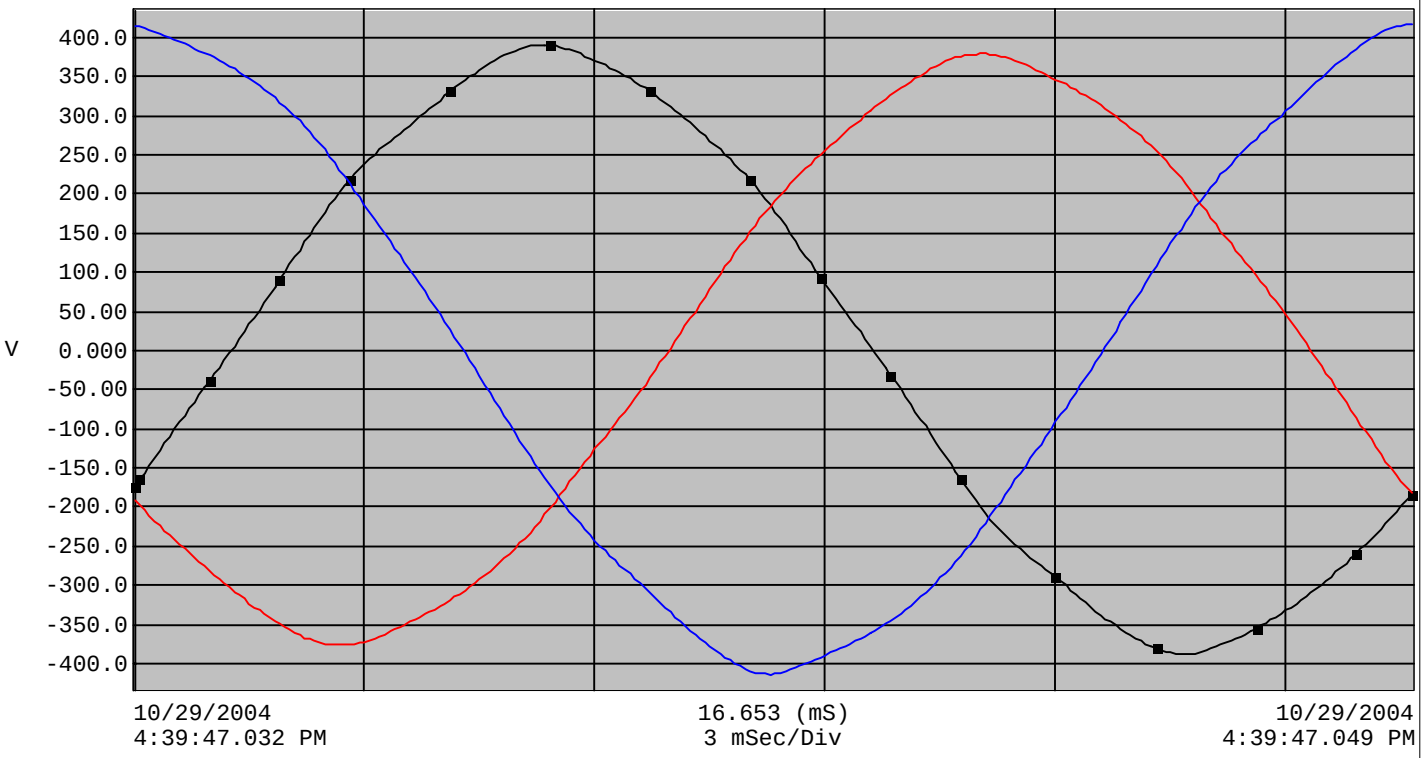
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa ,	GWA WPS HCG2 ,

Comments

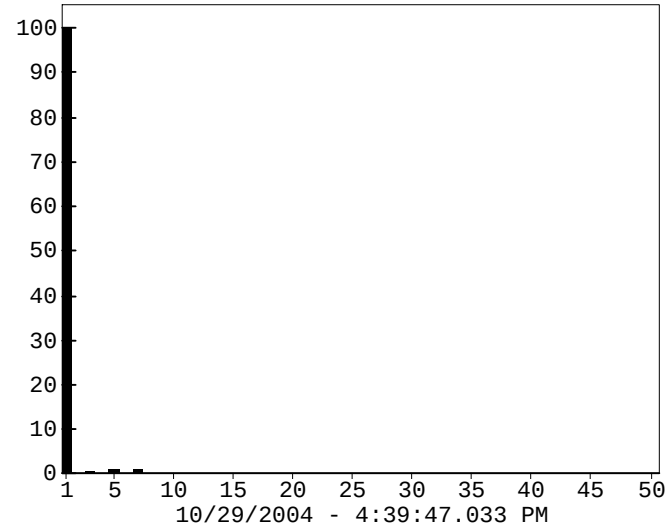
WPS M1A - Photo

Recording Start Date	10/29/2004 - 4:39:47 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/29/2004	4:39:47.032 PM	16.653	268.6	V
Waveform V2	10/29/2004	4:39:47.032 PM	16.653	261.8	V
Waveform V3	10/29/2004	4:39:47.032 PM	16.653	285.6	V



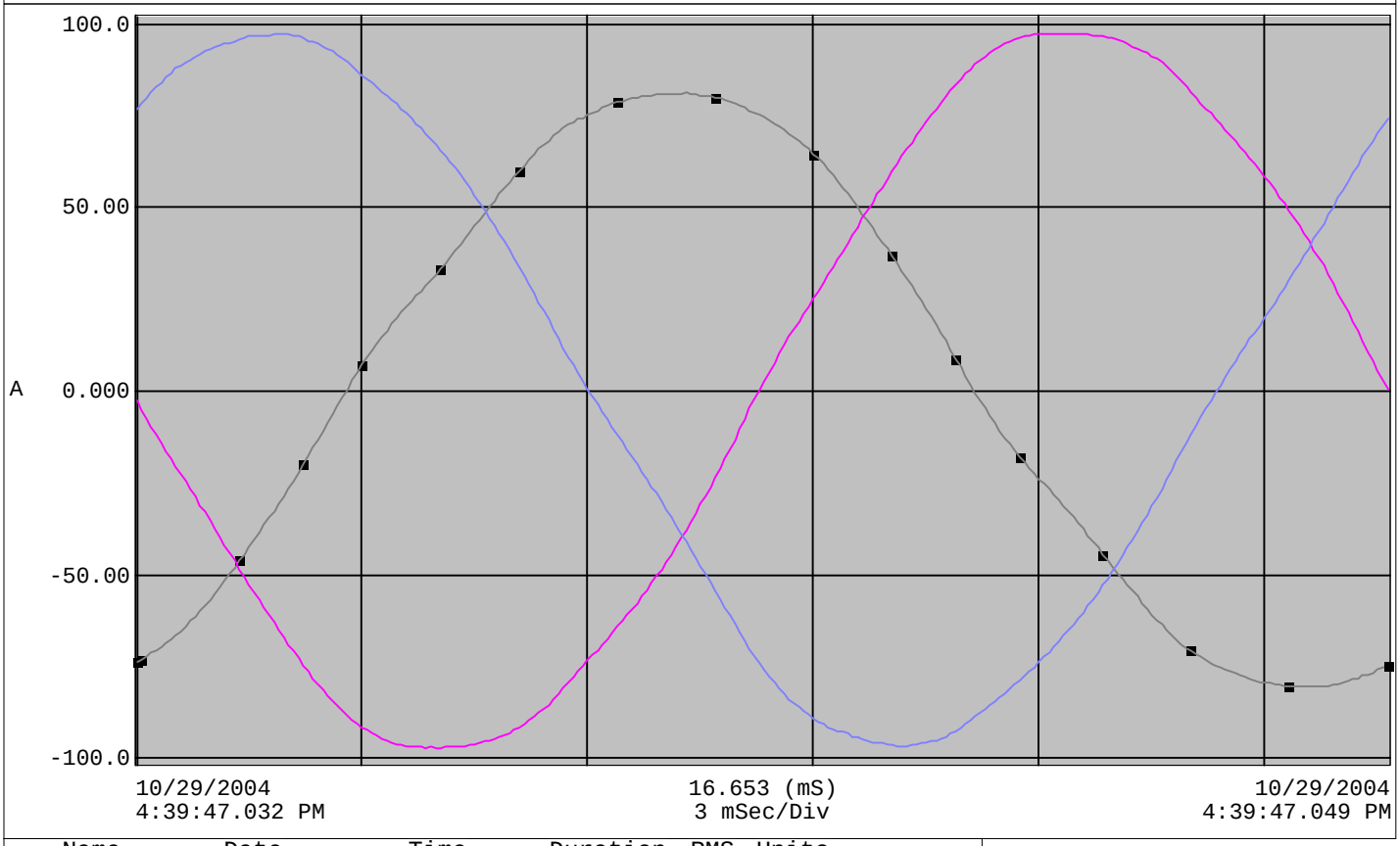
10/29/2004 - 4:39:47.000 PM

Val	
-175.5	Waveform V1
-191.7	Waveform V2
414.2	Waveform V3

Waveform V1

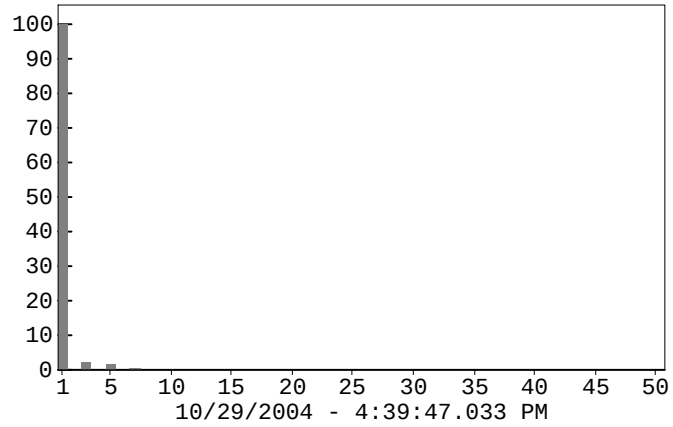
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.05 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/29/2004	4:39:47.032 PM	16.653	58.12	A
Waveform I2	10/29/2004	4:39:47.032 PM	16.653	69.65	A
Waveform I3	10/29/2004	4:39:47.032 PM	16.653	68.21	A

Waveform I1
58.12 Arms, 3.03 %THD



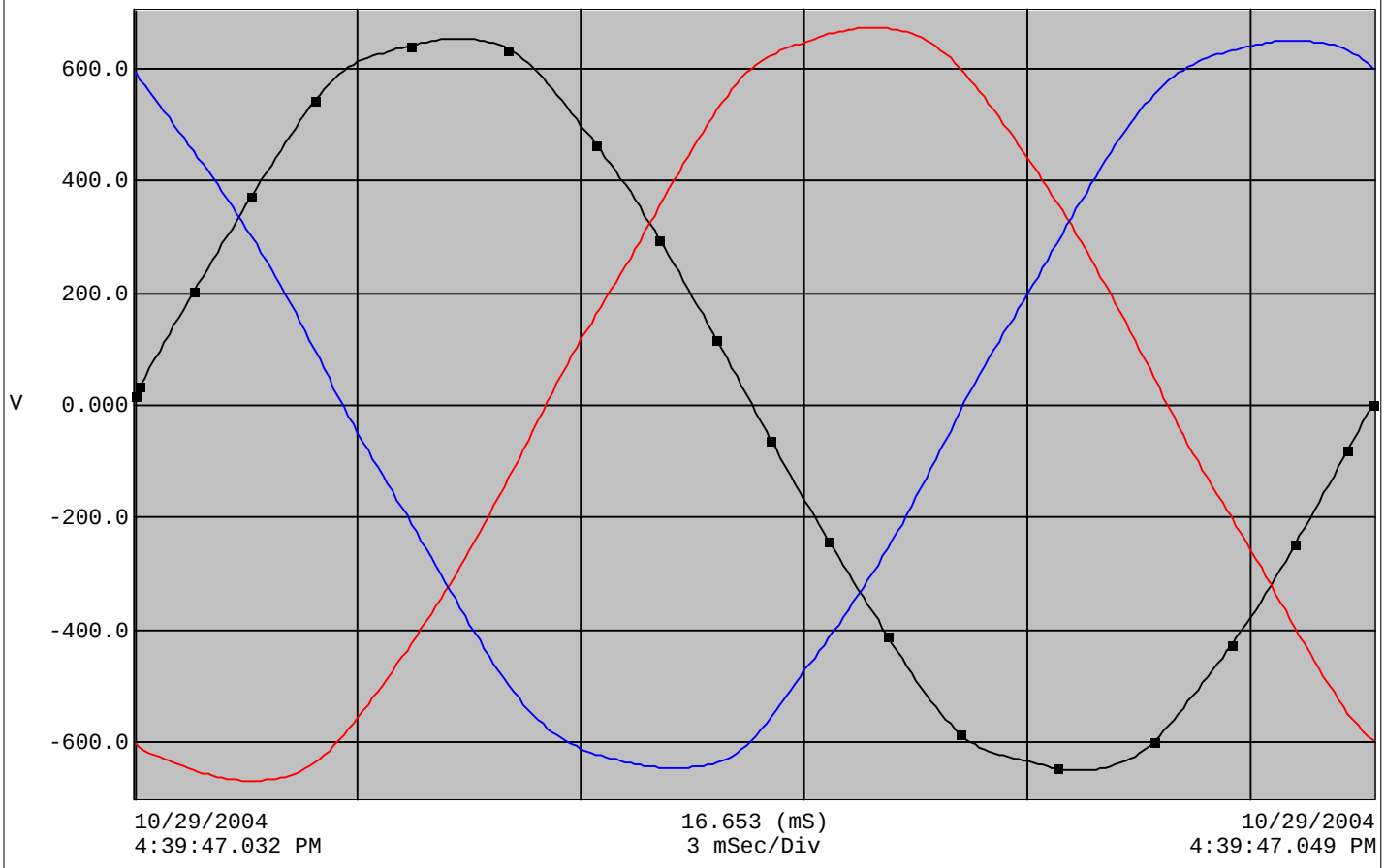
10/29/2004 - 4:39:47.000 PM

	Val
Waveform I1	-74.10
Waveform I2	-2.600
Waveform I3	76.40

Waveform I1

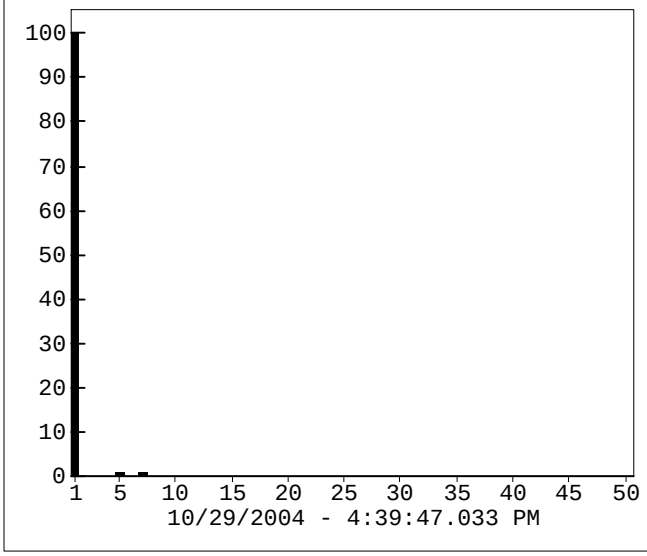
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	2.2	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	1.8	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/29/2004	4:39:47.032 PM	16.653	465.9	V
Waveform U2	10/29/2004	4:39:47.032 PM	16.653	479.8	V
Waveform U3	10/29/2004	4:39:47.032 PM	16.653	467.0	V

Waveform U1
465.95 Vrms, 1.51 %THD



10/29/2004 - 4:39:47.000 PM

Val	
16.10	Waveform U1
-605.9	Waveform U2
589.7	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 10/29/2004
Start Time: 4:39:47 PM
Duration: 0:0.000 (M:S)
W: 12.77E+3 W
VAR: 9.135E+3 W
VA: 15.70E+3 W
Power Factor: 0.813
Displacement Power Factor: 0.814
TAN: 0.714
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M1\102904-M1A-Photo.dvb

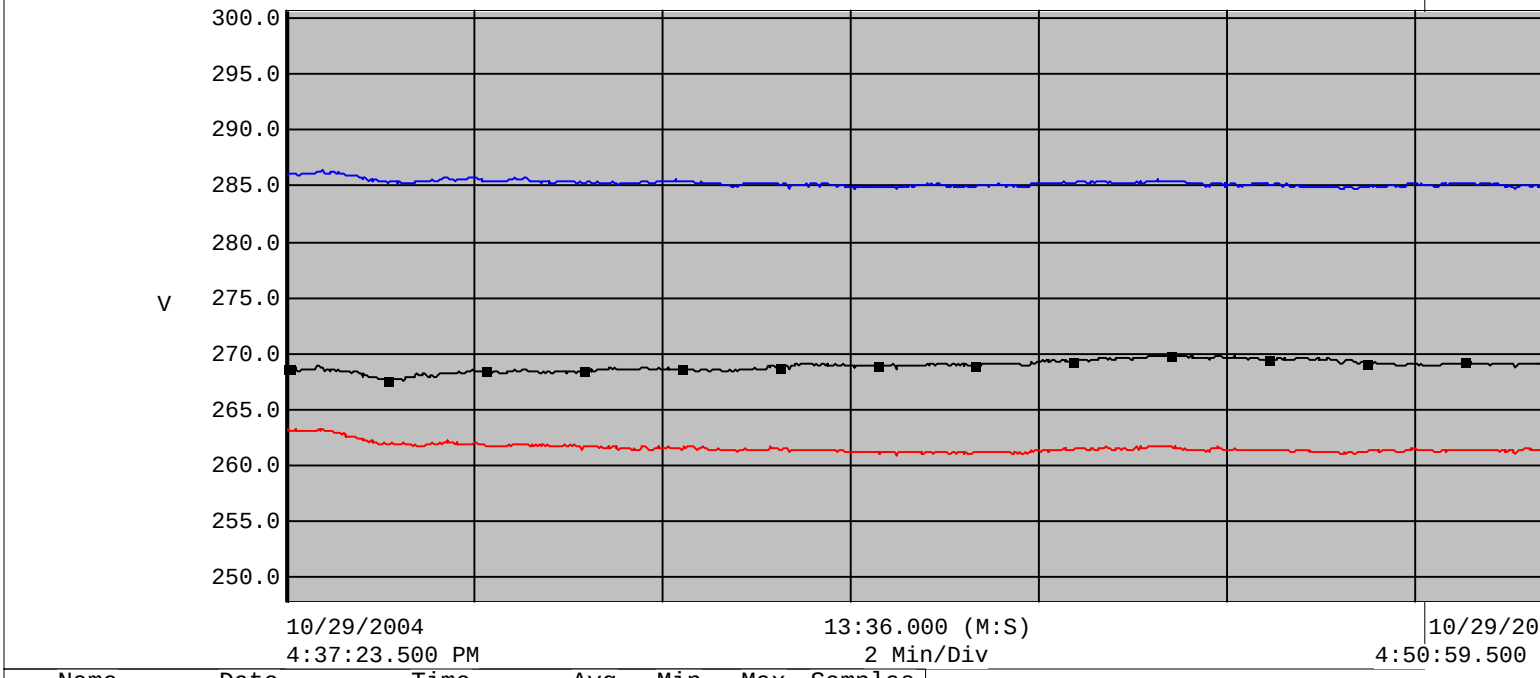
Operator	Test Site
GWA Victor Jardel ,	M-1A - Photo ,

Comments

WPS M1A

Recording Start Date	10/29/2004 - 4:37:23 PM
Recording Duration	13:36 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

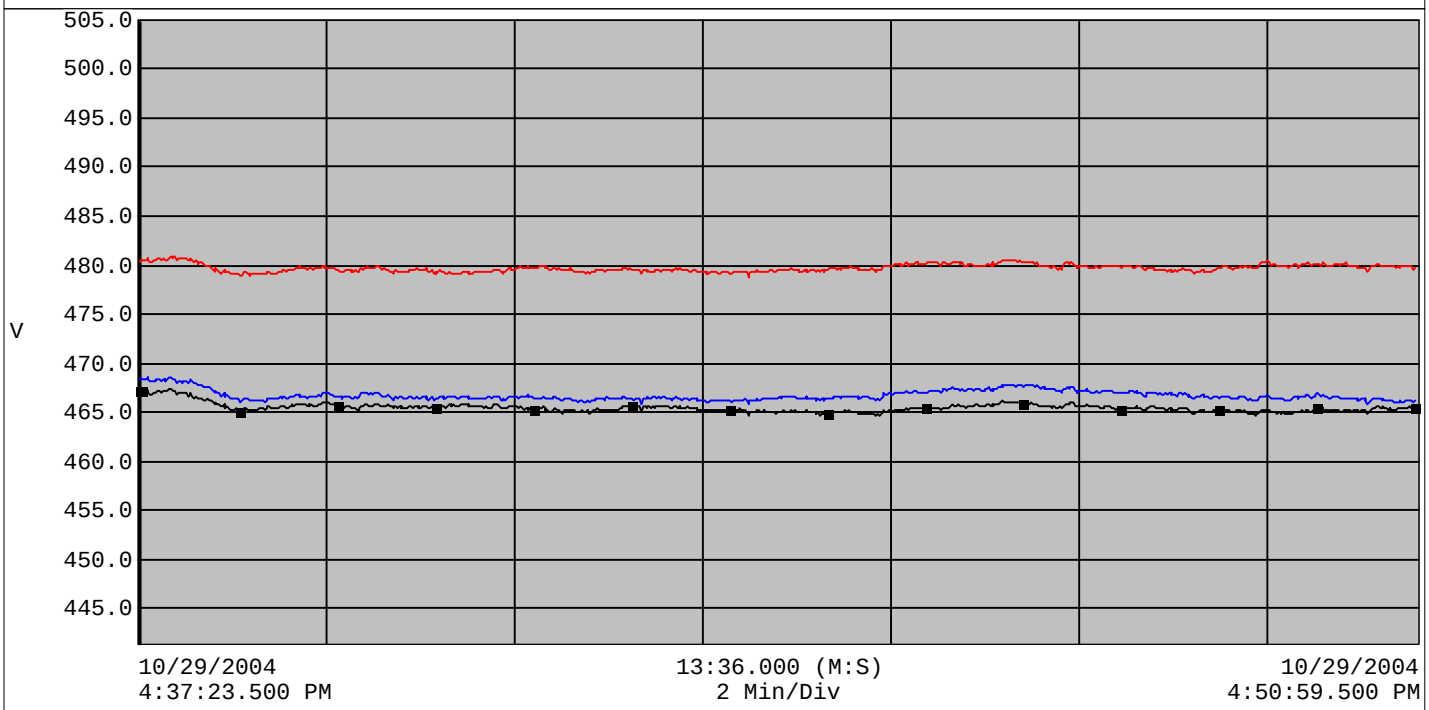
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/29/2004	4:37:23.500 PM	268.9	267.5	269.8	817
Vrms Line2	10/29/2004	4:37:23.500 PM	261.5	260.8	263.2	817
Vrms Line3	10/29/2004	4:37:23.500 PM	285.2	284.6	286.3	817

10/29/2004 - 4:37:23.000 PM
Val
268.6 — Vrms Line1
263.1 — Vrms Line2
285.9 — Vrms Line3

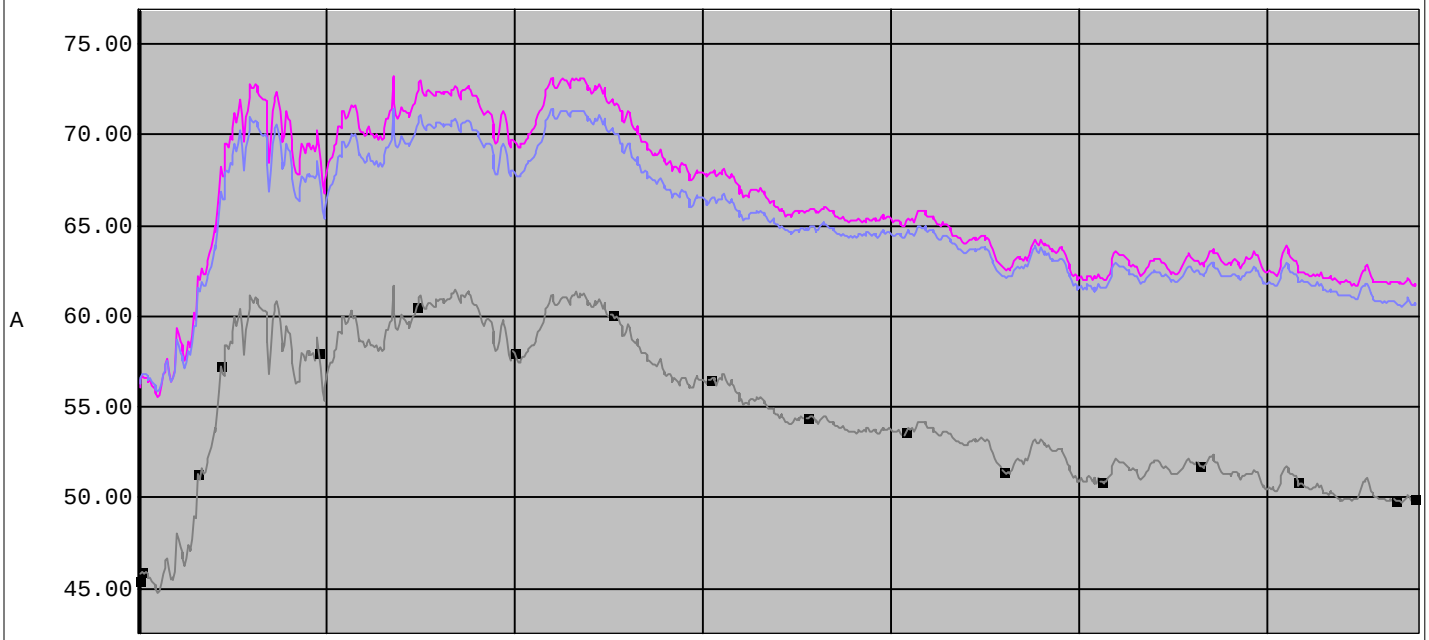
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/29/2004	4:37:23.500 PM	465.4	464.5	467.3	V
Urms Line2	10/29/2004	4:37:23.500 PM	479.6	478.7	480.8	V
Urms Line3	10/29/2004	4:37:23.500 PM	466.6	465.7	468.5	V

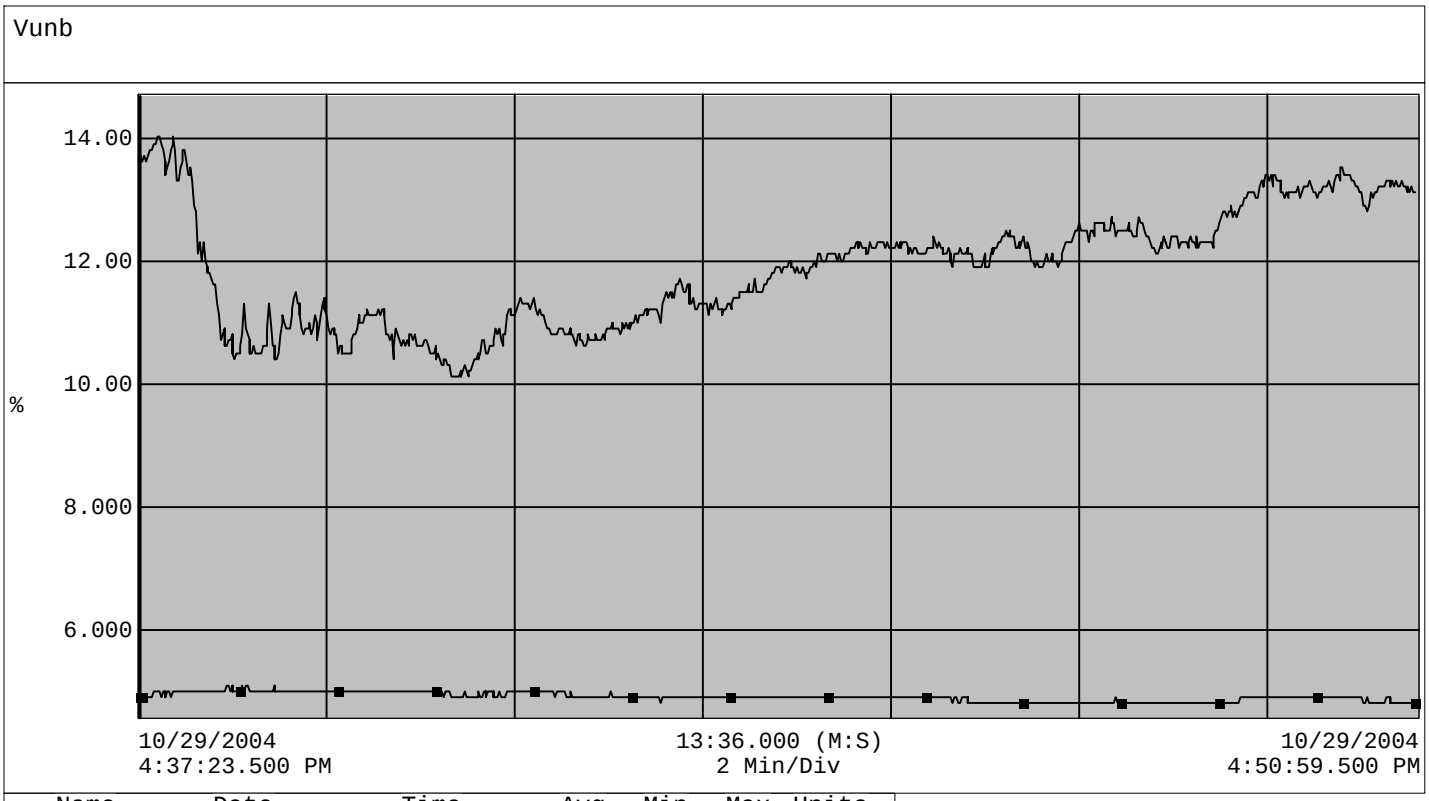
10/29/2004 - 4:37:23.000 PM
Val
467.0 Urms Line1
480.2 Urms Line2
468.3 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/29/2004	4:37:23.500 PM	54.65	44.70	61.60	A
Arms Line2	10/29/2004	4:37:23.500 PM	66.15	55.50	73.20	A
Arms Line3	10/29/2004	4:37:23.500 PM	65.08	55.80	71.40	A

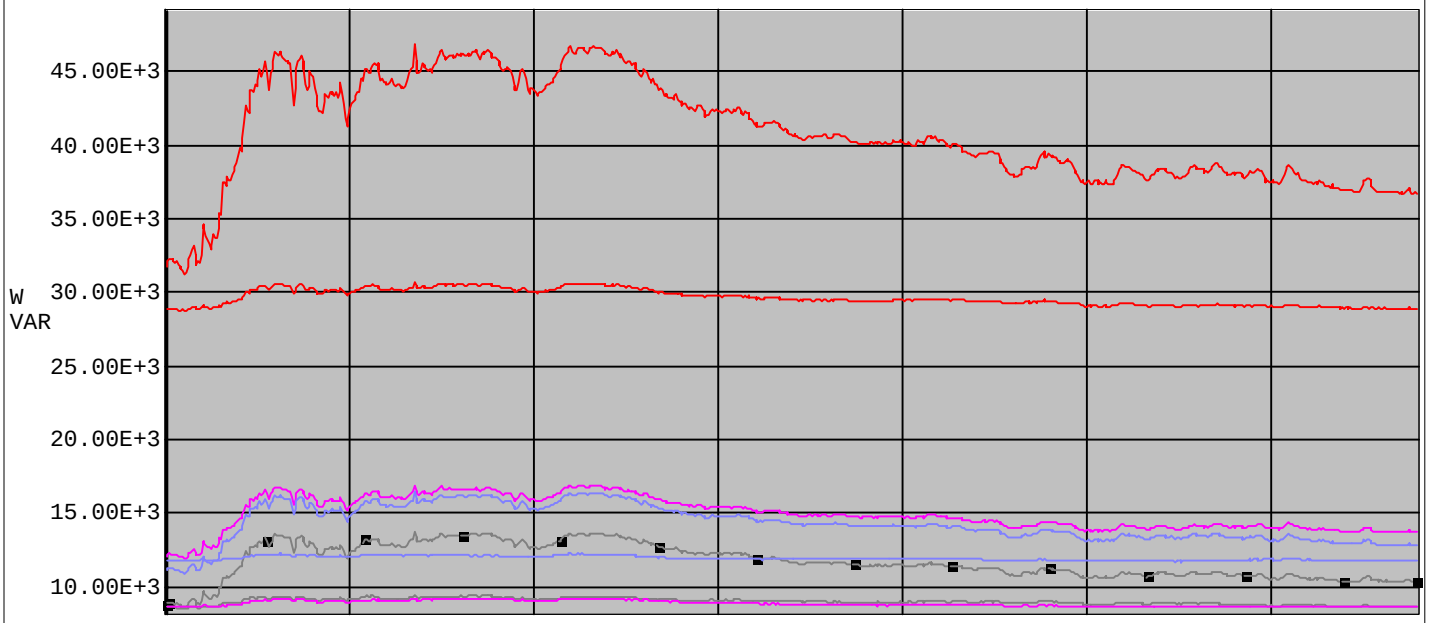
10/29/2004 - 4:37:23.000 PM
Val
45.30 — Arms Line1
56.00 — Arms Line2
56.20 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/29/2004	4:37:23.500 PM	4.904	4.800	5.100	%
Aunb(IEEE)	10/29/2004	4:37:23.500 PM	11.85	10.10	14.00	%

10/29/2004 - 4:37:23.000 PM
Val
4.900 —— Vunb(IEEE)
13.70 —— Aunb(IEEE)

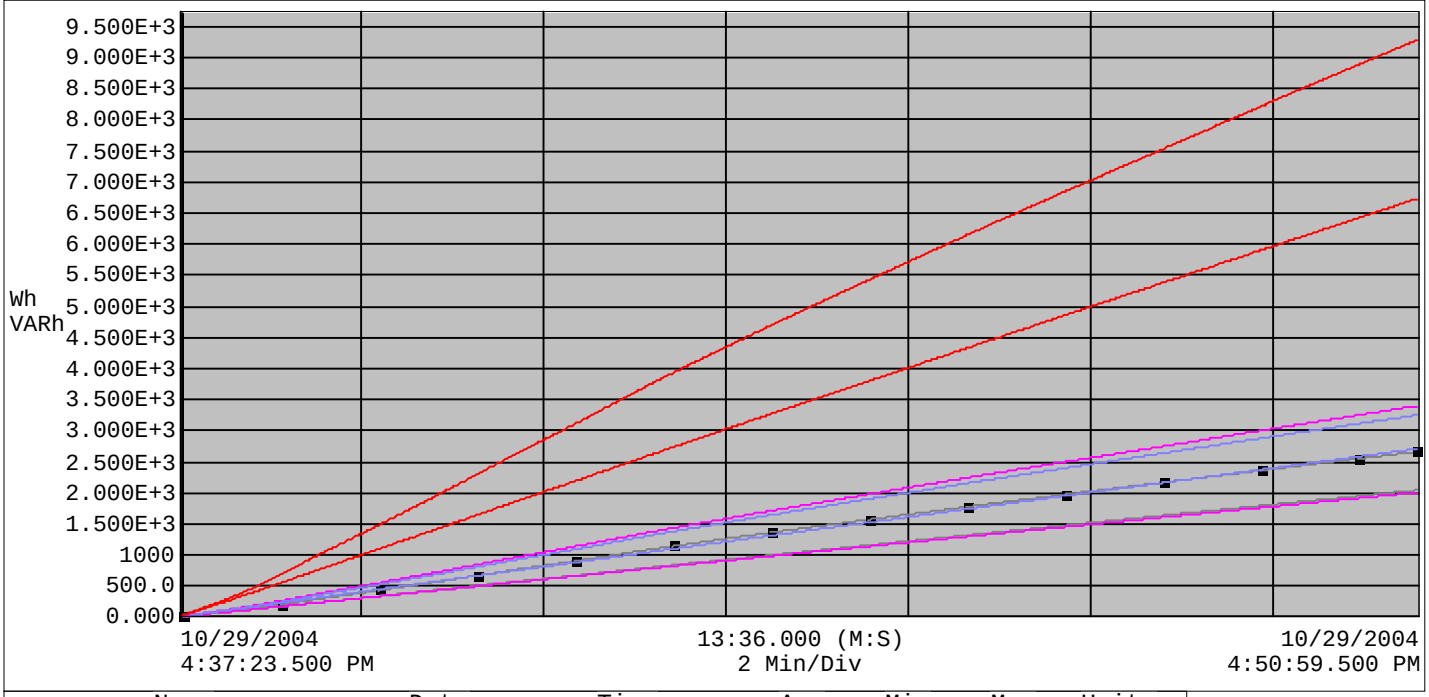
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/29/2004	4:37:23.500 PM	11.65E+3	8.514E+3	13.64E+3	W
W Line2	10/29/2004	4:37:23.500 PM	14.90E+3	11.86E+3	16.84E+3	W
W Line3	10/29/2004	4:37:23.500 PM	14.25E+3	10.83E+3	16.35E+3	W
W Sum of Phases	10/29/2004	4:37:23.500 PM	40.81E+3	31.21E+3	46.83E+3	W
VAR Line1	10/29/2004	4:37:23.500 PM	8.929E+3	8.478E+3	9.350E+3	VAR
VAR Line2	10/29/2004	4:37:23.500 PM	8.777E+3	8.519E+3	9.157E+3	VAR
VAR Line3	10/29/2004	4:37:23.500 PM	11.87E+3	11.64E+3	12.18E+3	VAR
VAR Sum of Phases	10/29/2004	4:37:23.500 PM	29.57E+3	28.74E+3	30.60E+3	VAR

10/29/2004 - 4:37:23.000 PM
Val
8.710E+3 — W Line1
11.99E+3 — W Line2
11.01E+3 — W Line3
31.71E+3 — W Sum of Phases
8.518E+3 — VAR Line1
8.557E+3 — VAR Line2
11.69E+3 — VAR Line3
28.77E+3 — VAR Sum of Phases

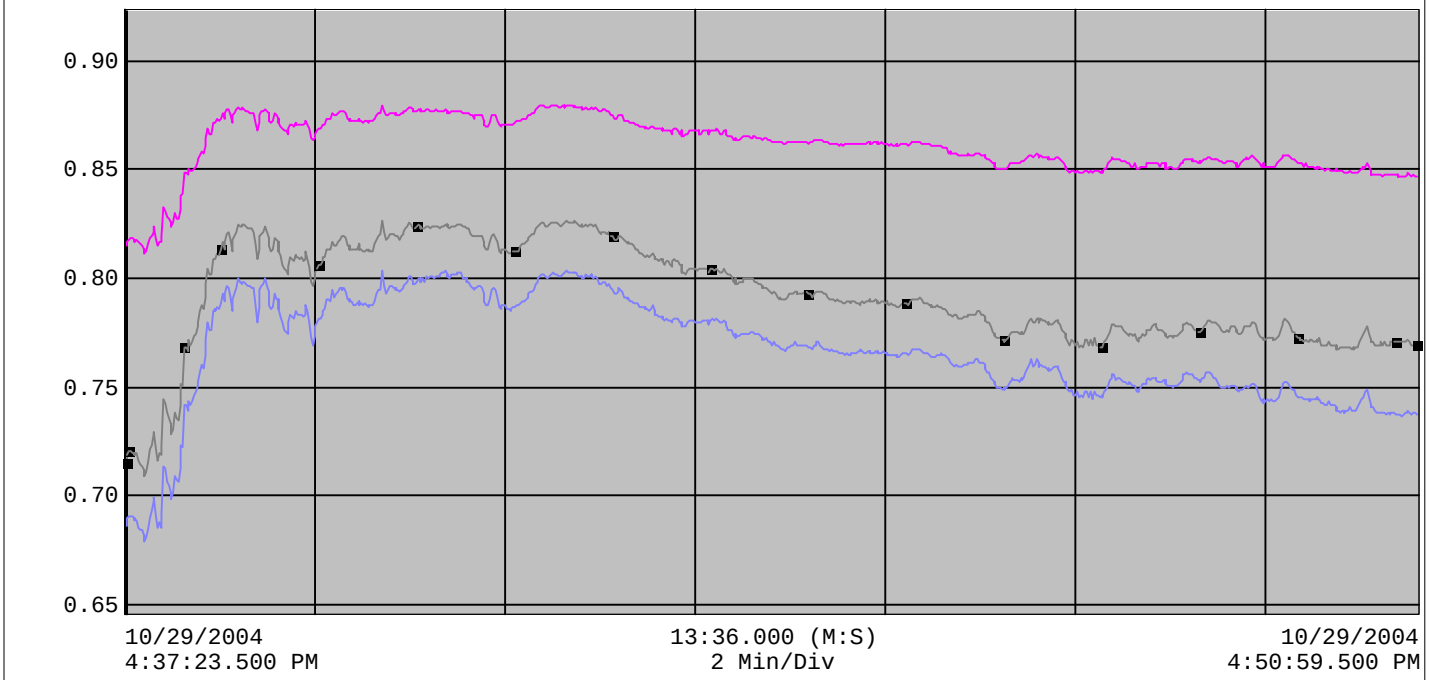
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/29/2004	4:37:23.500 PM	1.365E+3	2.422	2.645E+3	Wh
W-hours Line2	10/29/2004	4:37:23.500 PM	1.732E+3	3.302	3.381E+3	Wh
W-hours Line3	10/29/2004	4:37:23.500 PM	1.660E+3	3.060	3.235E+3	Wh
W-hours Sum of Phases	10/29/2004	4:37:23.500 PM	4.757E+3	8.762	9.261E+3	Wh
VAR-hours Line1	10/29/2004	4:37:23.500 PM	1.023E+3	2.350	2.026E+3	VARh
VAR-hours Line2	10/29/2004	4:37:23.500 PM	1.006E+3	2.371	1.992E+3	VARh
VAR-hours Line3	10/29/2004	4:37:23.500 PM	1.355E+3	3.287	2.693E+3	VARh
VAR-hours Sum of Phases	10/29/2004	4:37:23.500 PM	3.385E+3	7.988	6.711E+3	VARh

10/29/2004 - 4:37:23.000 PM
Val
2.422 — W-hours Line1
3.302 — W-hours Line2
3.060 — W-hours Line3
8.762 — W-hours Sum of Phases
2.350 — VAR-hours Line1
2.371 — VAR-hours Line2
3.287 — VAR-hours Line3
7.988 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/29/2004	4:37:23.500 PM	0.791	0.709	0.826	
PF Line2	10/29/2004	4:37:23.500 PM	0.861	0.811	0.879	
PF Line3	10/29/2004	4:37:23.500 PM	0.767	0.679	0.803	

10/29/2004 - 4:37:23.000 PM
Val
0.715 — PF Line1
0.814 — PF Line2
0.686 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M1\102904-M1A.dvb

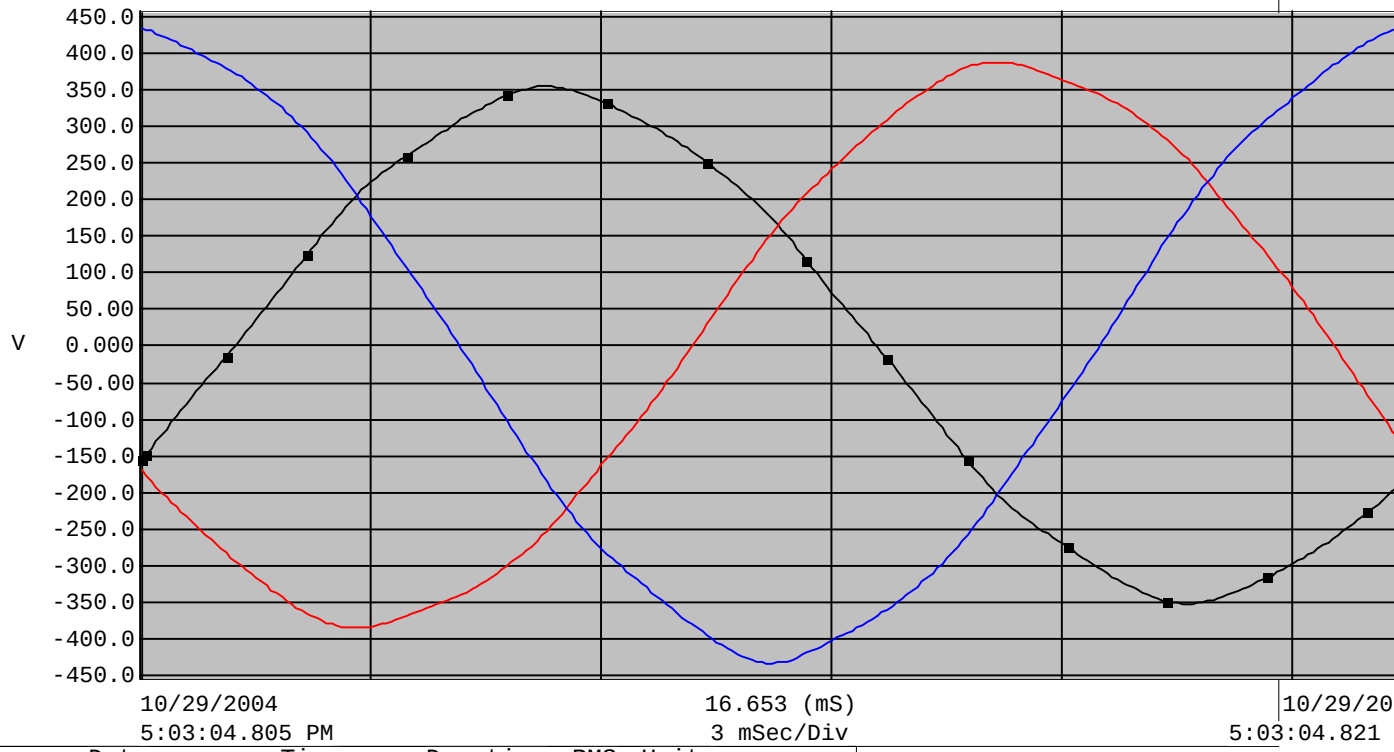
Operator	Test Site
GWA Victor Jardel ,	WPS M-1 ,

Comments

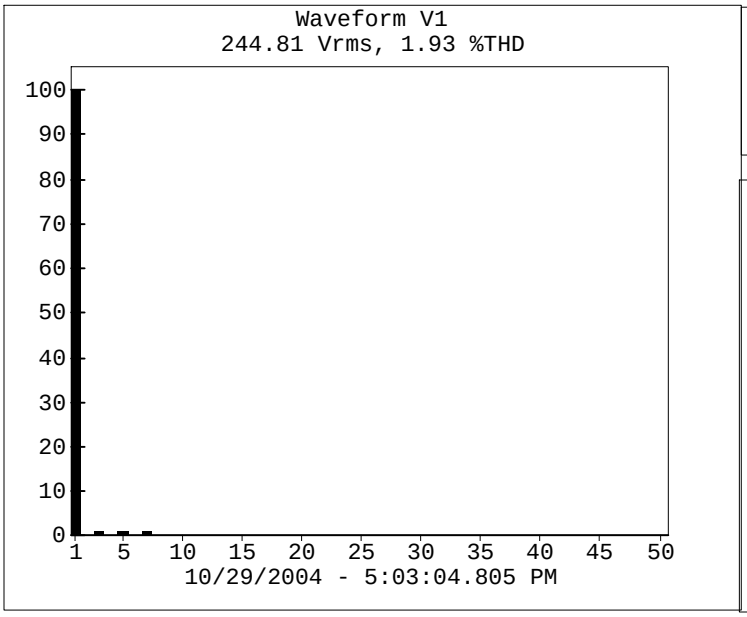
WPS M1B - Photo

Recording Start Date	10/29/2004 - 5:03:04 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/29/2004	5:03:04.805 PM	16.653	244.8	V
Waveform V2	10/29/2004	5:03:04.805 PM	16.653	270.3	V
Waveform V3	10/29/2004	5:03:04.805 PM	16.653	300.6	V

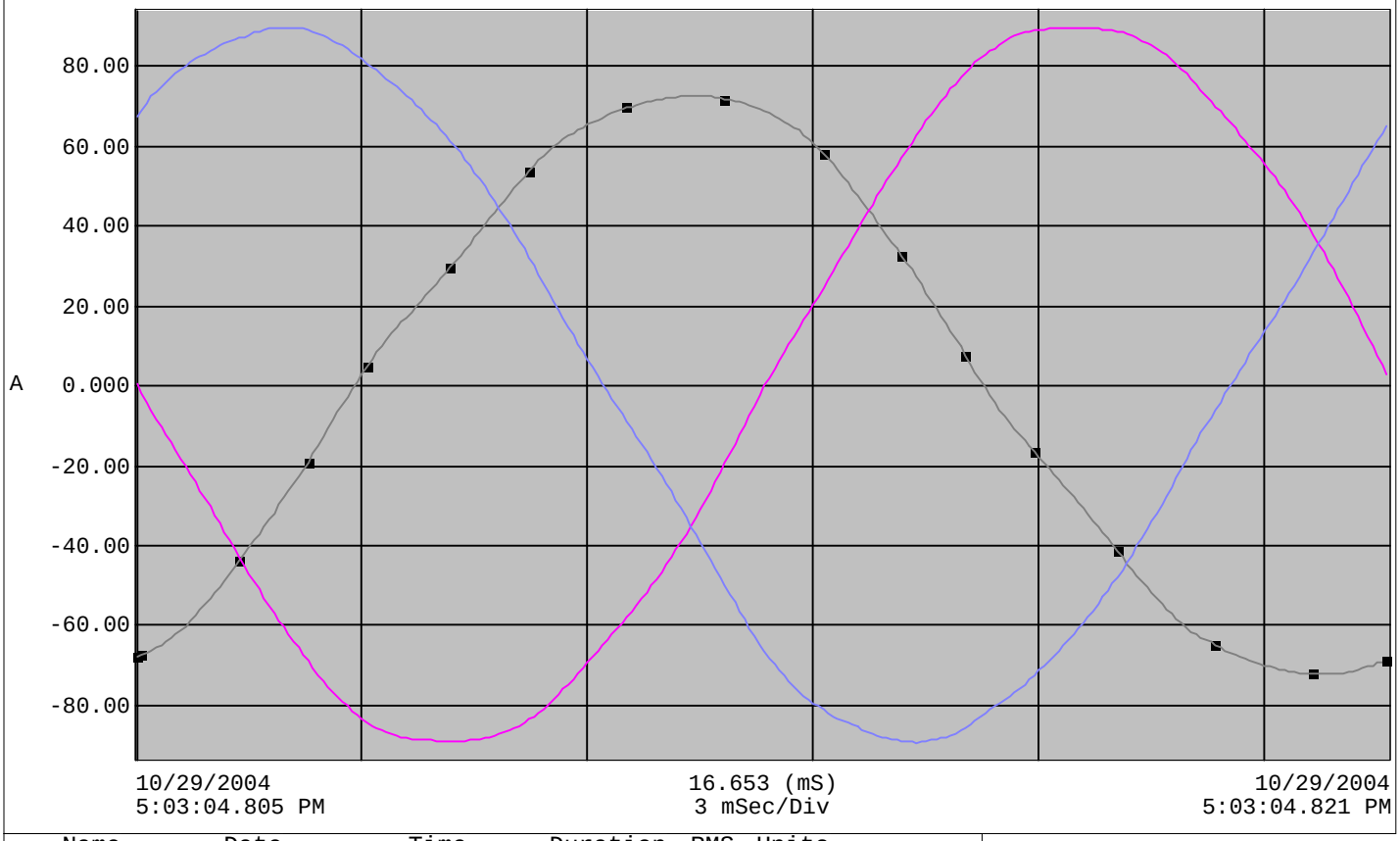


10/29/2004 - 5:03:04.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

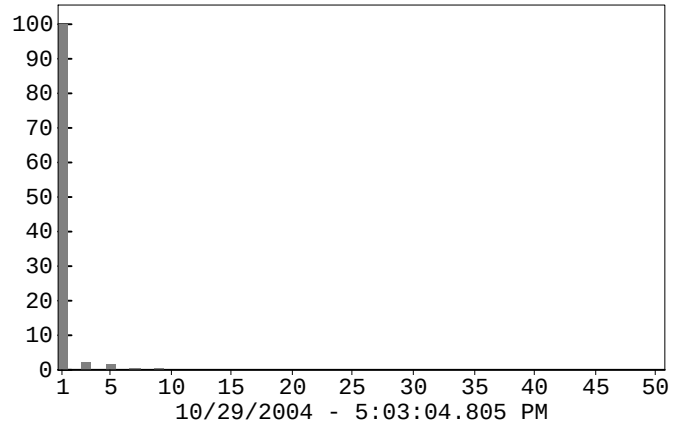
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.9	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.05 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/29/2004	5:03:04.805 PM	16.653	51.98	A
Waveform I2	10/29/2004	5:03:04.805 PM	16.653	64.23	A
Waveform I3	10/29/2004	5:03:04.805 PM	16.653	63.01	A

Waveform I1
51.98 Arms, 3.29 %THD

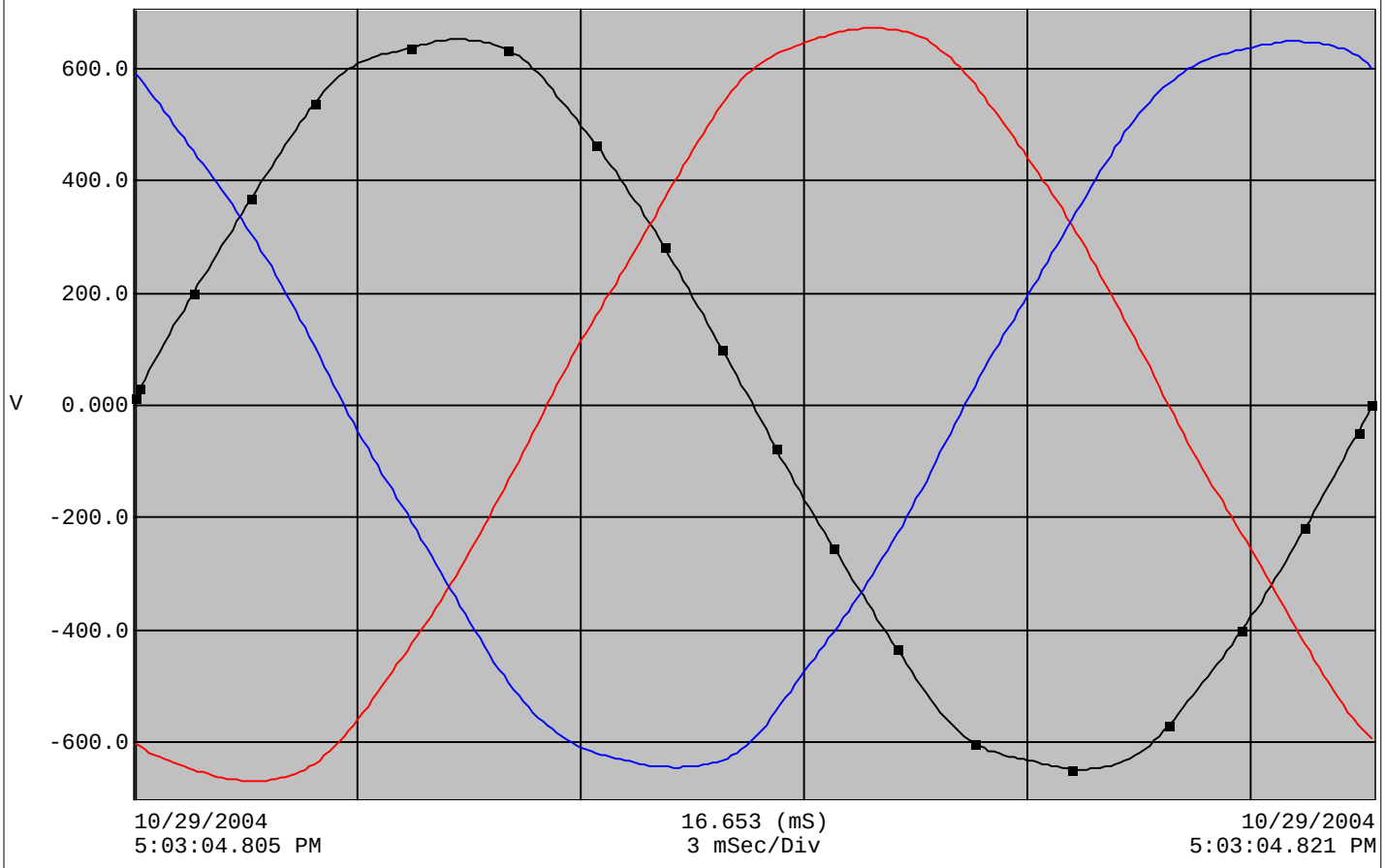


10/29/2004 - 5:03:04.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

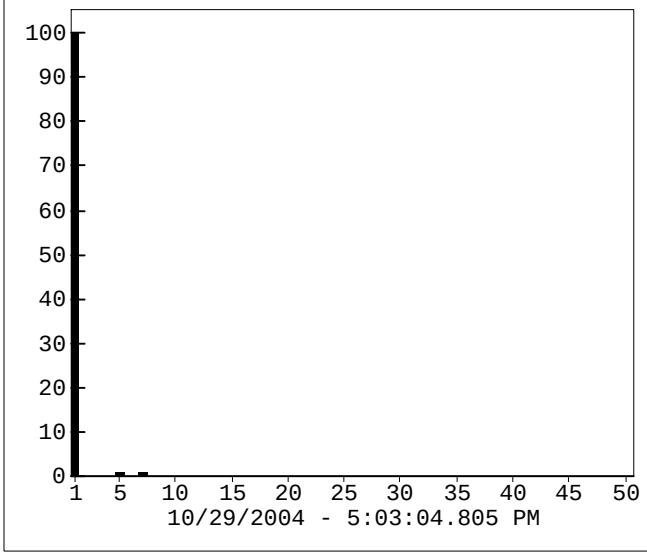
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	2.6	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.8	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.6	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/29/2004	5:03:04.805 PM	16.653	464.6	V
Waveform U2	10/29/2004	5:03:04.805 PM	16.653	479.8	V
Waveform U3	10/29/2004	5:03:04.805 PM	16.653	465.9	V

Waveform U1
464.63 Vrms, 1.49 %THD



10/29/2004 - 5:03:04.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 10/29/2004
Start Time: 5:03:04 PM
Duration: 0:0.000 (M:S)
W: 9.834E+3 W
VAR: 8.106E+3 W
VA: 12.74E+3 W
Power Factor: 0.772
Displacement Power Factor: 0.772
TAN: 0.824
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M1\102904-M1B-Photo.dvb

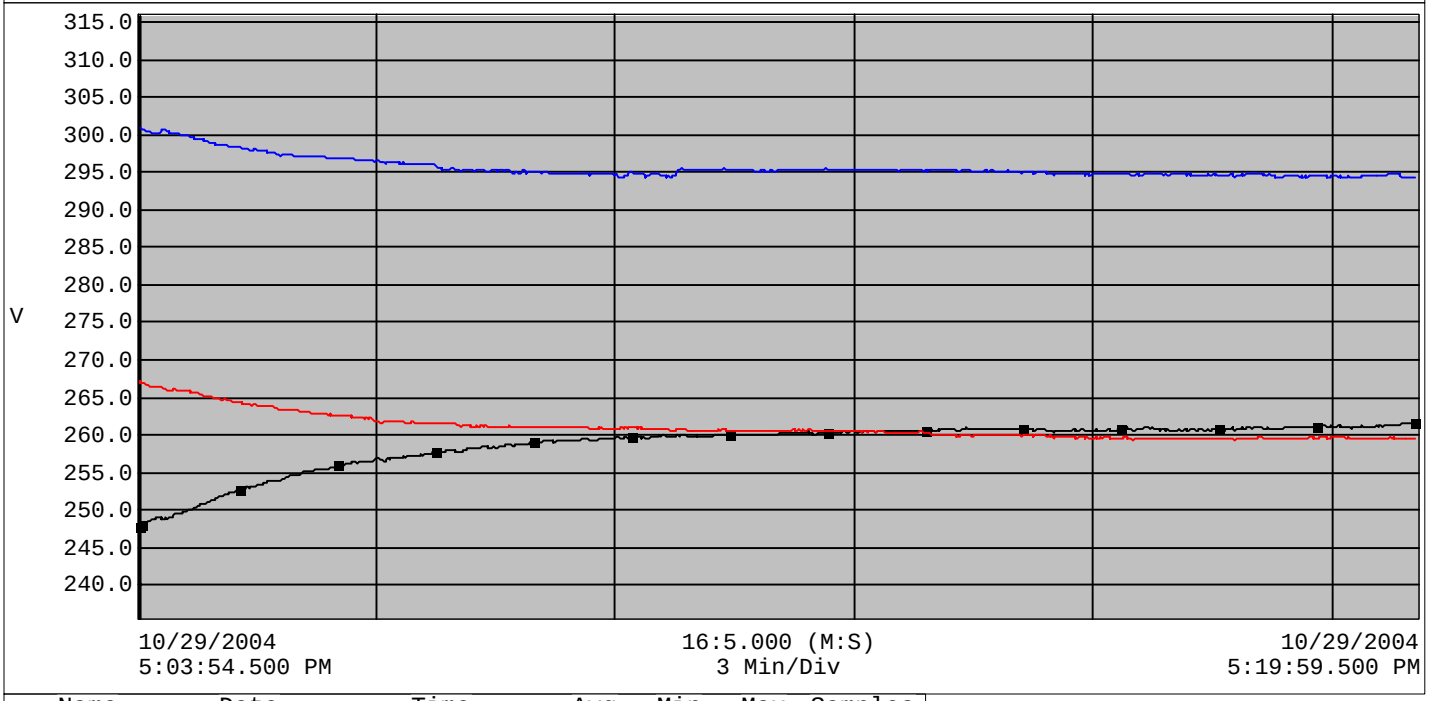
Operator	Test Site
GWA Victor Jardel ,	M1B- Photo ,

Comments

WPS M1B

Recording Start Date	10/29/2004 - 5:03:54 PM
Recording Duration	16:05 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

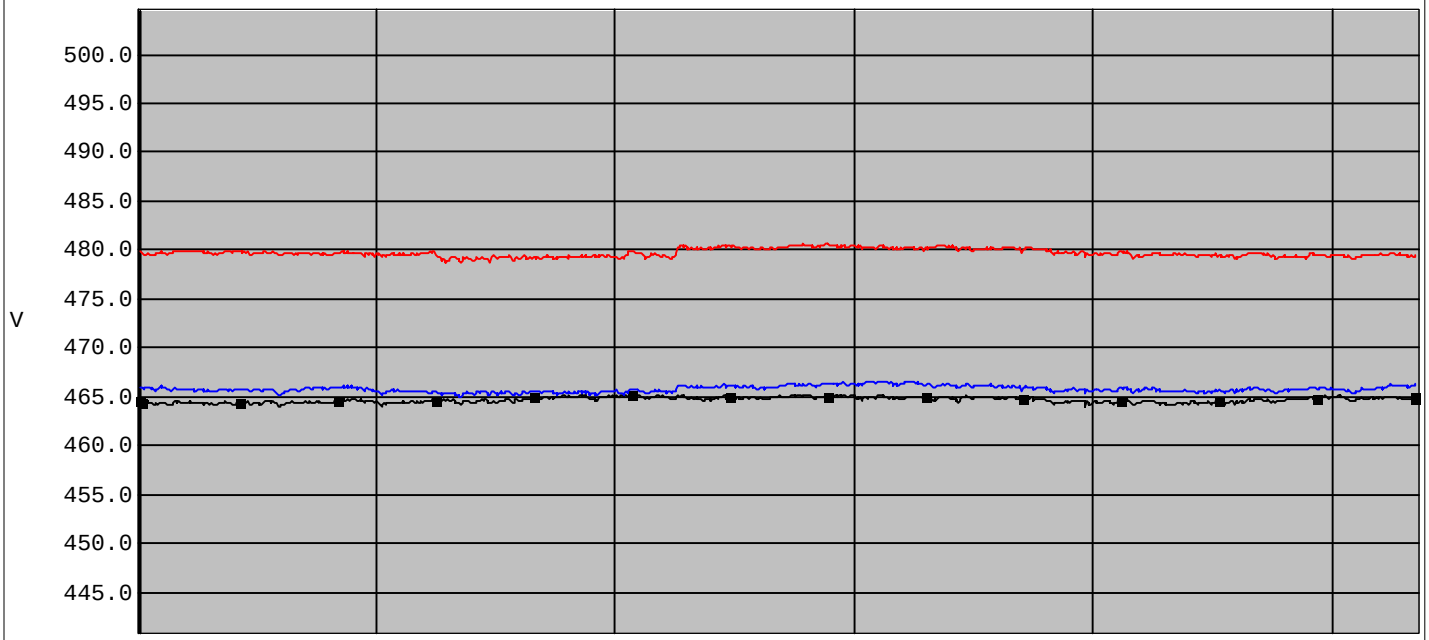
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	10/29/2004	5:03:54.500 PM	258.6	247.7	261.5	966
Vrms Line2	10/29/2004	5:03:54.500 PM	260.9	259.2	267.0	966
Vrms Line3	10/29/2004	5:03:54.500 PM	295.5	294.1	300.9	966

10/29/2004 - 5:03:54.000 PM
Val
247.7 — Vrms Line1
267.0 — Vrms Line2
300.9 — Vrms Line3

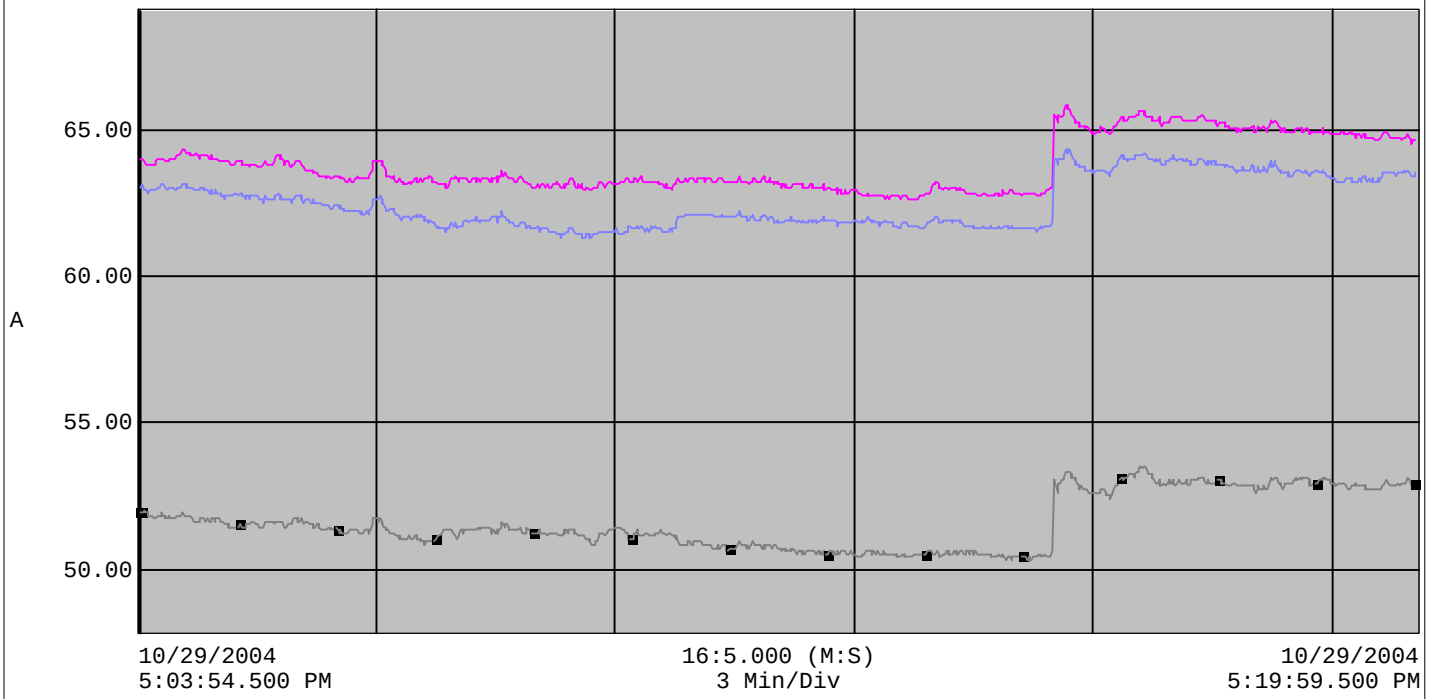
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	10/29/2004	5:03:54.500 PM	464.6	463.9	465.2	V
Urms Line2	10/29/2004	5:03:54.500 PM	479.6	478.7	480.5	V
Urms Line3	10/29/2004	5:03:54.500 PM	465.7	464.8	466.5	V

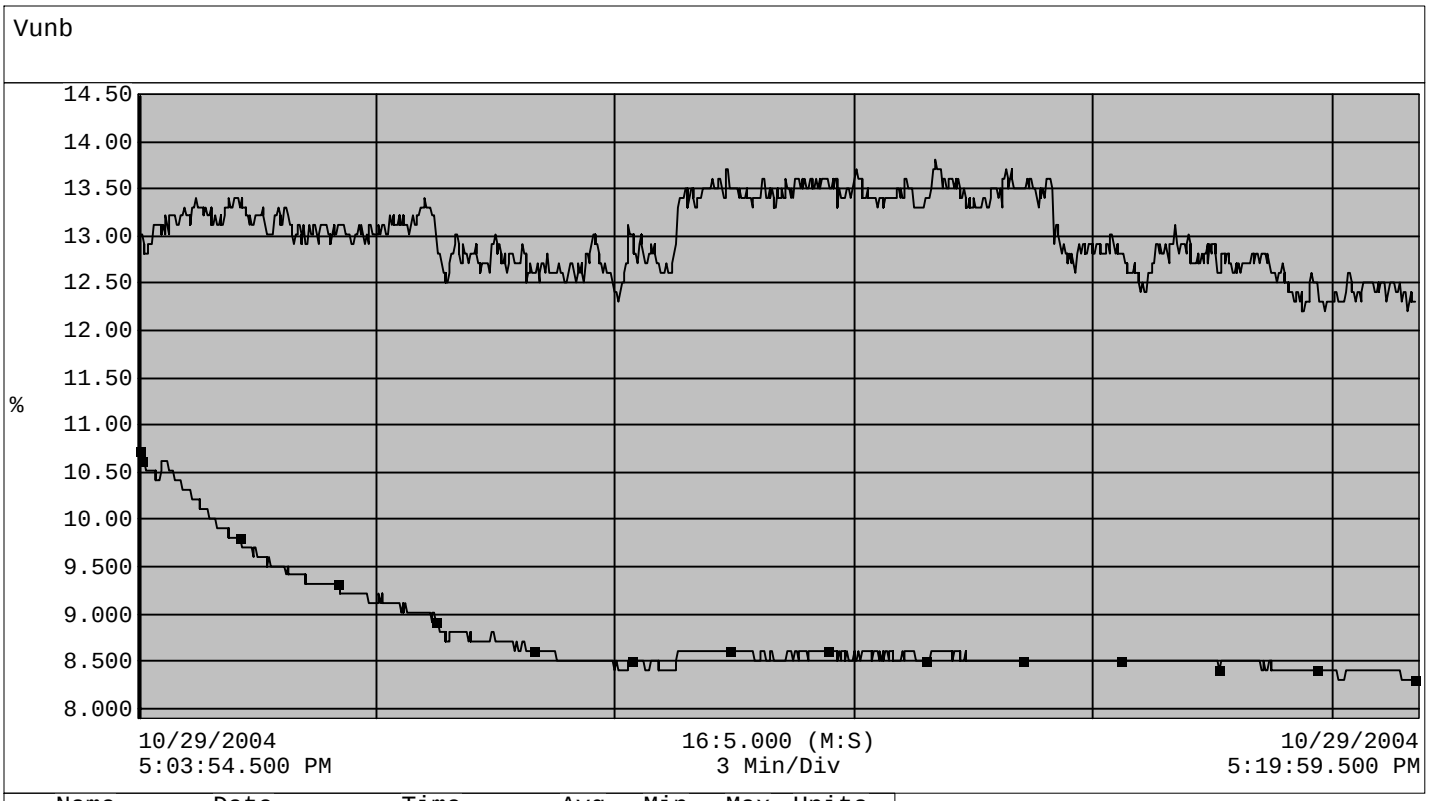
10/29/2004 - 5:03:54.000 PM
Val
464.5 Urms Line1
479.8 Urms Line2
465.9 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	10/29/2004	5:03:54.500 PM	51.57	50.30	53.50	A
Arms Line2	10/29/2004	5:03:54.500 PM	63.76	62.60	65.80	A
Arms Line3	10/29/2004	5:03:54.500 PM	62.48	61.30	64.30	A

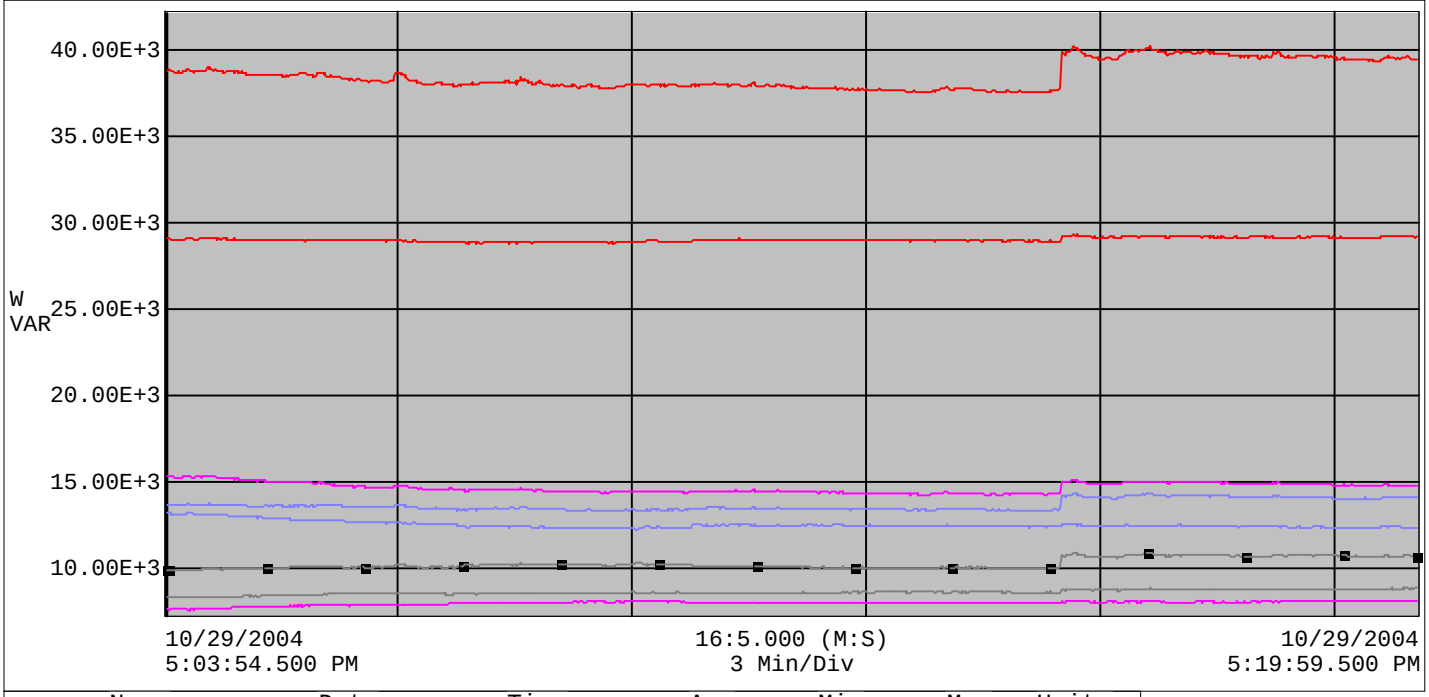
10/29/2004 - 5:03:54.000 PM
Val
51.90 — Arms Line1
64.00 — Arms Line2
63.00 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	10/29/2004	5:03:54.500 PM	8.776	8.300	10.70	%
Aunb(IEEE)	10/29/2004	5:03:54.500 PM	13.01	12.20	13.80	%

10/29/2004 - 5:03:54.000 PM
Val
10.70 —— Vunb(IEEE)
13.00 —— Aunb(IEEE)

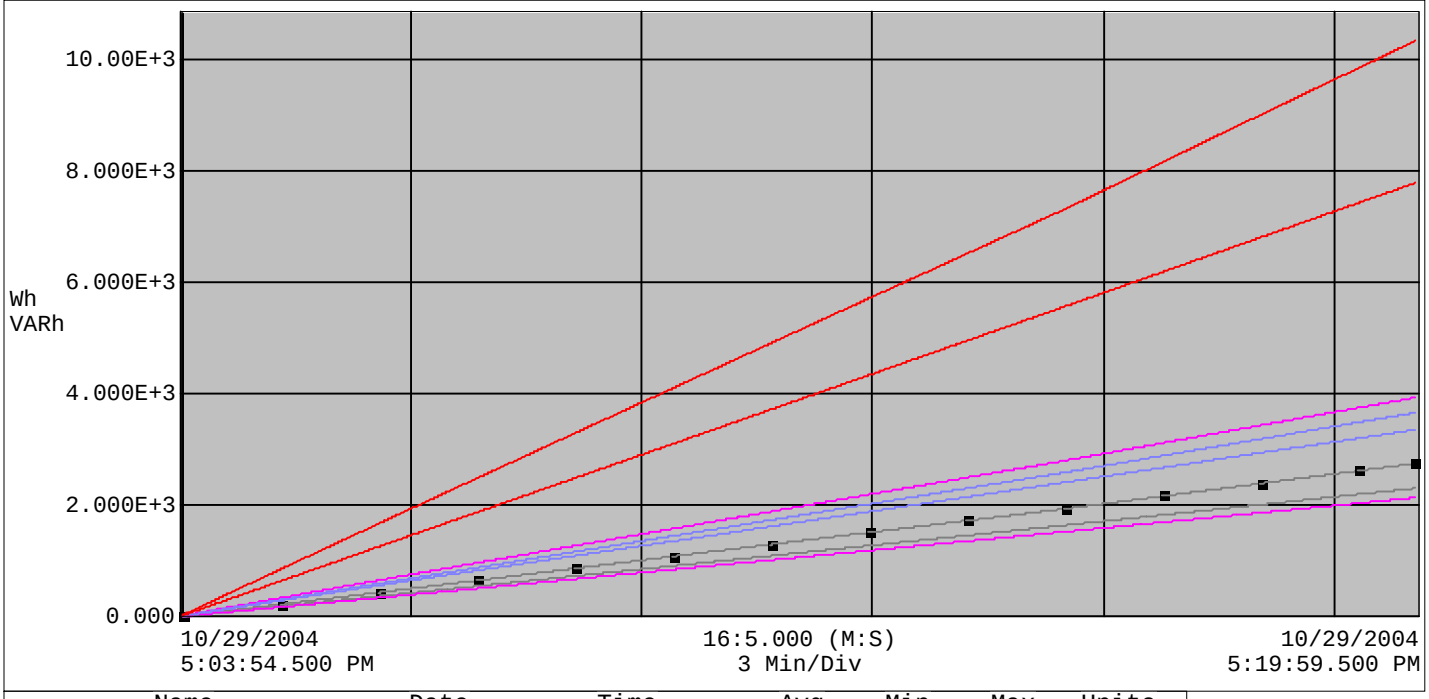
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	10/29/2004	5:03:54.500 PM	10.22E+3	9.818E+3	10.84E+3	W
W Line2	10/29/2004	5:03:54.500 PM	14.62E+3	14.20E+3	15.32E+3	W
W Line3	10/29/2004	5:03:54.500 PM	13.61E+3	13.25E+3	14.28E+3	W
W Sum of Phases	10/29/2004	5:03:54.500 PM	38.45E+3	37.46E+3	40.15E+3	W
VAR Line1	10/29/2004	5:03:54.500 PM	8.563E+3	8.269E+3	8.801E+3	VAR
VAR Line2	10/29/2004	5:03:54.500 PM	7.933E+3	7.552E+3	8.075E+3	VAR
VAR Line3	10/29/2004	5:03:54.500 PM	12.47E+3	12.21E+3	13.19E+3	VAR
VAR Sum of Phases	10/29/2004	5:03:54.500 PM	28.97E+3	28.74E+3	29.25E+3	VAR

10/29/2004 - 5:03:54.000 PM
Val
9.833E+3 — W Line1
15.32E+3 — W Line2
13.60E+3 — W Line3
38.75E+3 — W Sum of Phases
8.274E+3 — VAR Line1
7.586E+3 — VAR Line2
13.19E+3 — VAR Line3
29.05E+3 — VAR Sum of Phases

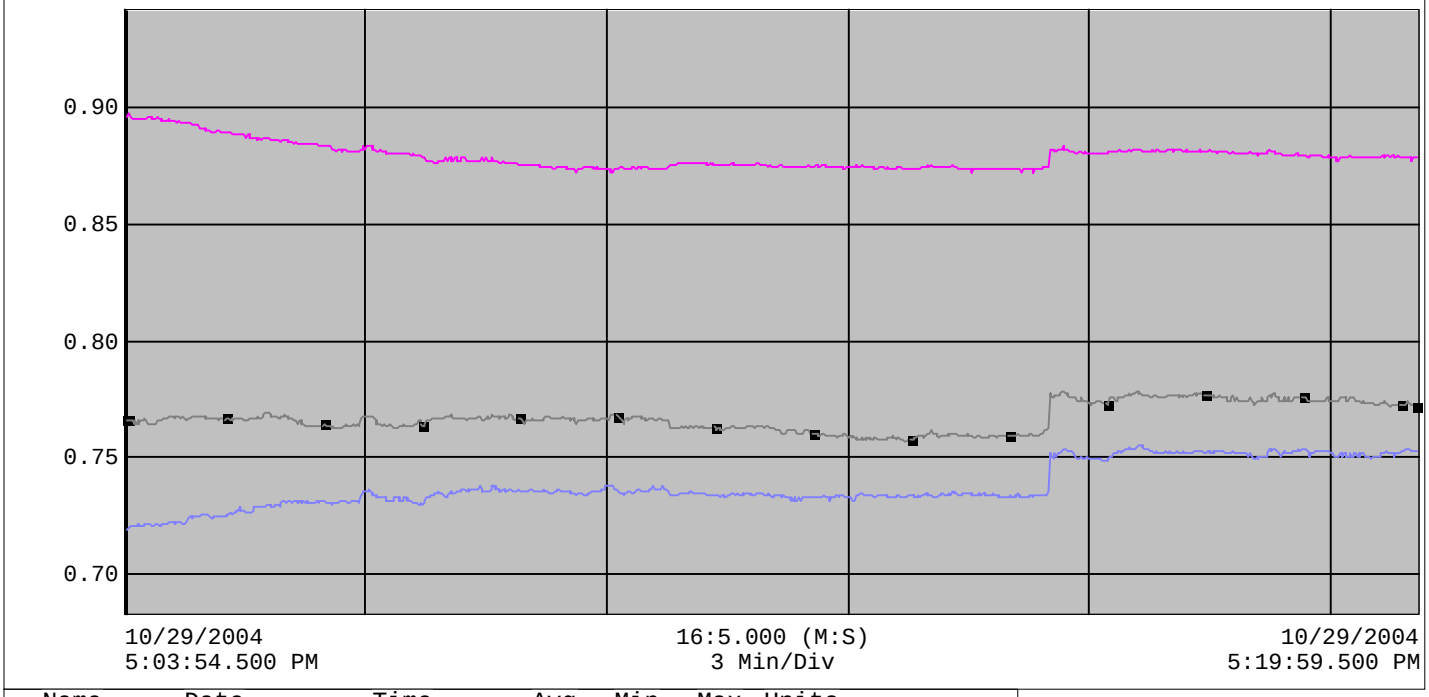
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	10/29/2004	5:03:54.500 PM	1.355E+3	2.762	2.743E+3	Wh
W-hours Line2	10/29/2004	5:03:54.500 PM	1.965E+3	4.311	3.923E+3	Wh
W-hours Line3	10/29/2004	5:03:54.500 PM	1.814E+3	3.790	3.653E+3	Wh
W-hours Sum of Phases	10/29/2004	5:03:54.500 PM	5.134E+3	10.71	10.32E+3	Wh
VAR-hours Line1	10/29/2004	5:03:54.500 PM	1.141E+3	2.314	2.298E+3	VARh
VAR-hours Line2	10/29/2004	5:03:54.500 PM	1.059E+3	2.079	2.129E+3	VARh
VAR-hours Line3	10/29/2004	5:03:54.500 PM	1.685E+3	3.677	3.347E+3	VARh
VAR-hours Sum of Phases	10/29/2004	5:03:54.500 PM	3.885E+3	8.066	7.773E+3	VARh

10/29/2004 - 5:03:54.000 PM
Val
2.762 — W-hours Line1
4.311 — W-hours Line2
3.790 — W-hours Line3
10.71 — W-hours Sum of Phases
2.314 — VAR-hours Line1
2.079 — VAR-hours Line2
3.677 — VAR-hours Line3
8.066 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	10/29/2004	5:03:54.500 PM	0.766	0.756	0.778	
PF Line2	10/29/2004	5:03:54.500 PM	0.879	0.872	0.897	
PF Line3	10/29/2004	5:03:54.500 PM	0.737	0.718	0.755	

10/29/2004 - 5:03:54.000 PM
Val
0.765 — PF Line1
0.896 — PF Line2
0.718 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M1\102904-M1B.dvb

Operator	Test Site
GWA Victor Jardel ,	WPS M-1 B ,

Comments

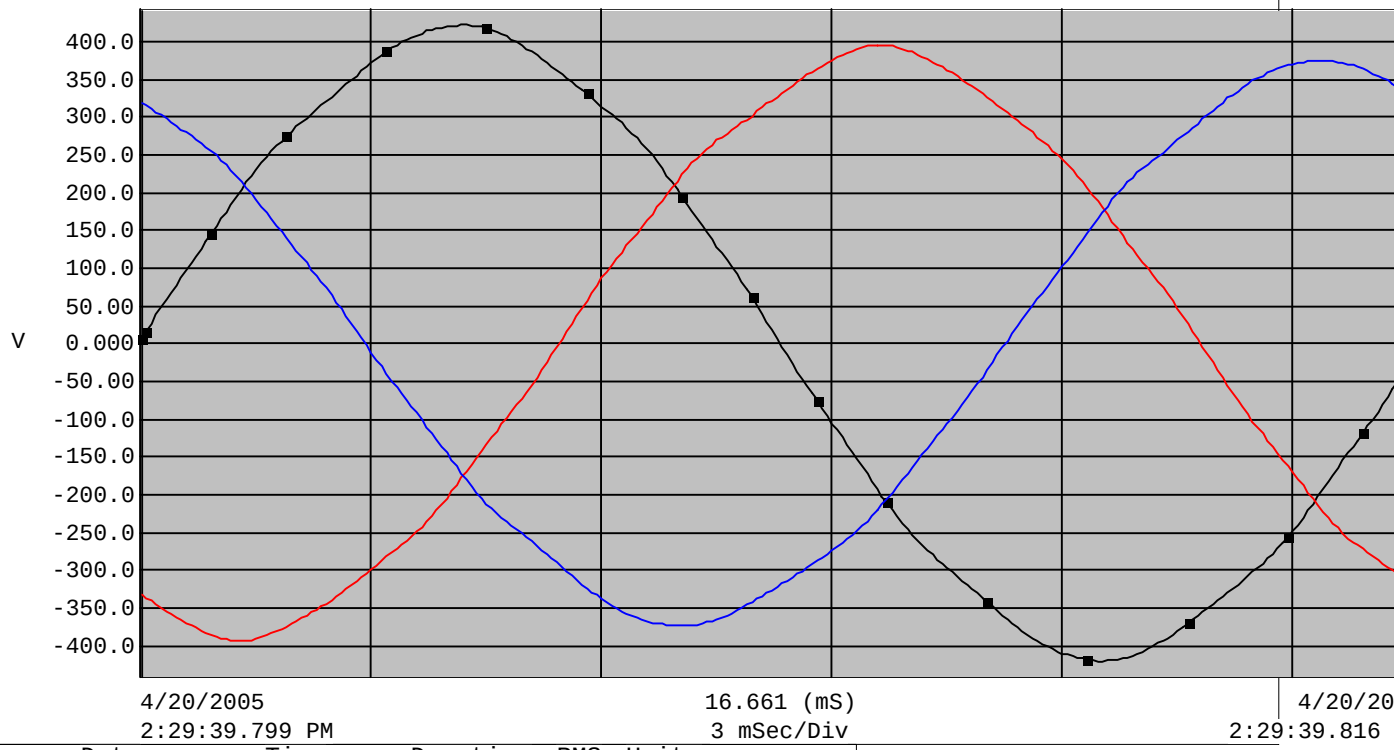
GWA Water Pumping Station Assessment				
Station Name: M-02	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/01/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.475	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	2	0.05	OVERLOADED
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.7	
Main Breaker	5.0%	2	0.1	36
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.05	
Pressure	1.5%	0	0	
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.4**

Comments:

WPS M2 - Photo

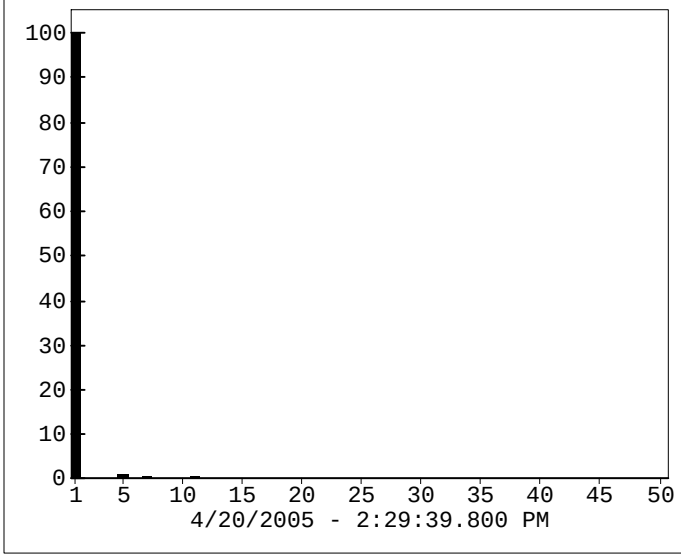
Recording Start Date	4/20/2005 - 2:29:39 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:260152 2.7

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	4/20/2005	2:29:39.799 PM	16.661	292.9	V
Waveform V2	4/20/2005	2:29:39.799 PM	16.661	271.6	V
Waveform V3	4/20/2005	2:29:39.799 PM	16.661	260.5	V

Waveform V1
292.93 Vrms, 1.54 %THD



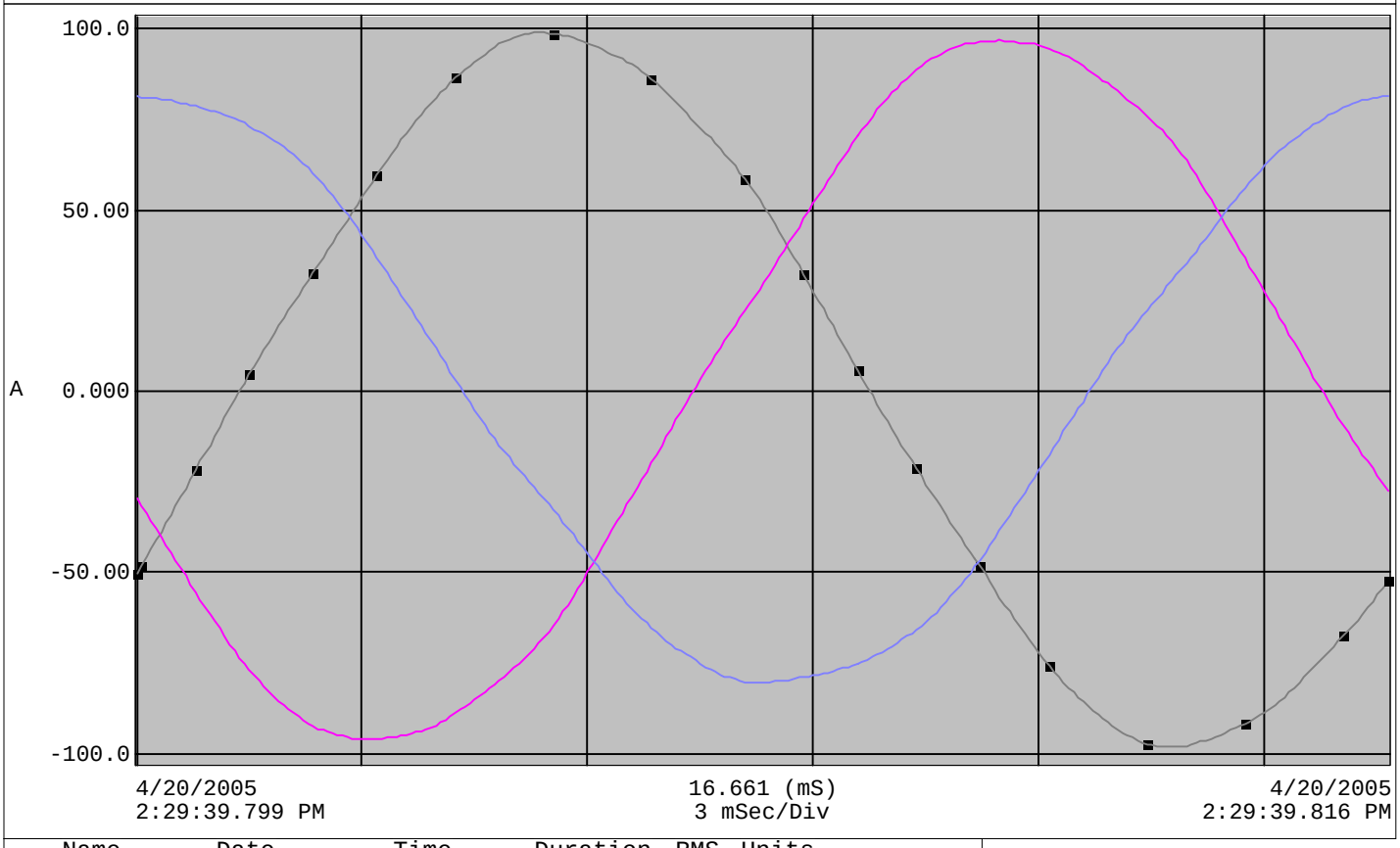
4/20/2005 - 2:29:39.000 PM

Val	
3.700	Waveform V1
-332.8	Waveform V2
318.4	Waveform V3

Waveform V1

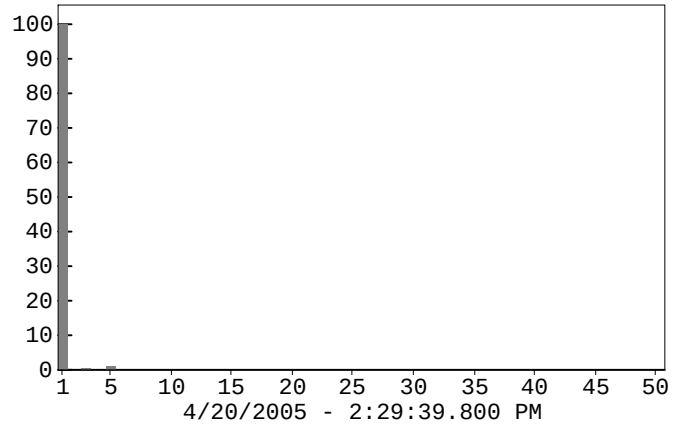
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	4/20/2005	2:29:39.799 PM	16.661	68.91	A
Waveform I2	4/20/2005	2:29:39.799 PM	16.661	68.37	A
Waveform I3	4/20/2005	2:29:39.799 PM	16.661	57.98	A

Waveform I1
68.91 Arms, 1.54 %THD

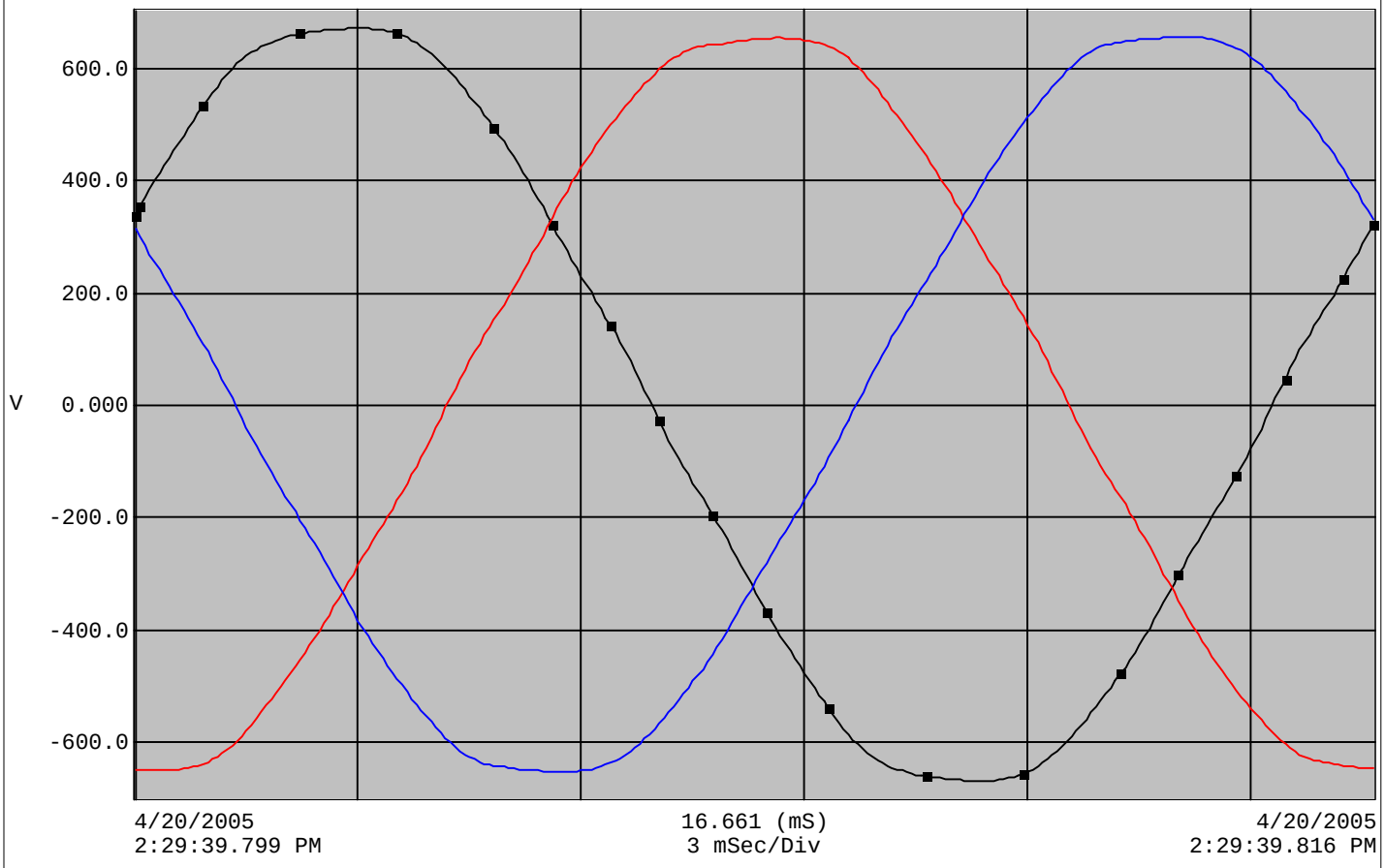


4/20/2005 - 2:29:39.000 PM
Val
-50.60 — Waveform I1
-29.70 — Waveform I2
81.00 — Waveform I3

Waveform I1

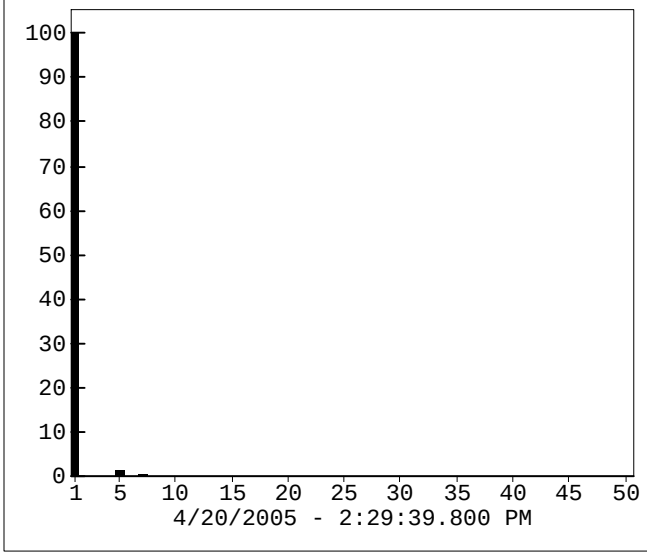
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.8	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.3	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	4/20/2005	2:29:39.799 PM	16.661	483.6	V
Waveform U2	4/20/2005	2:29:39.799 PM	16.661	472.9	V
Waveform U3	4/20/2005	2:29:39.799 PM	16.661	471.6	V

Waveform U1
483.63 Vrms, 1.73 %THD



4/20/2005 - 2:29:39.000 PM

	Val	
—	336.5	Waveform U1
—	-651.3	Waveform U2
—	314.7	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 4/20/2005
Start Time: 2:29:39 PM
Duration: 0:0.000 (M:S)
W: 17.29E+3 W
VAR: 10.40E+3 W
VA: 20.18E+3 W
Power Factor: 0.857
Displacement Power Factor: 0.857
TAN: 0.601
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M2\042005-M2-Photo.dvb

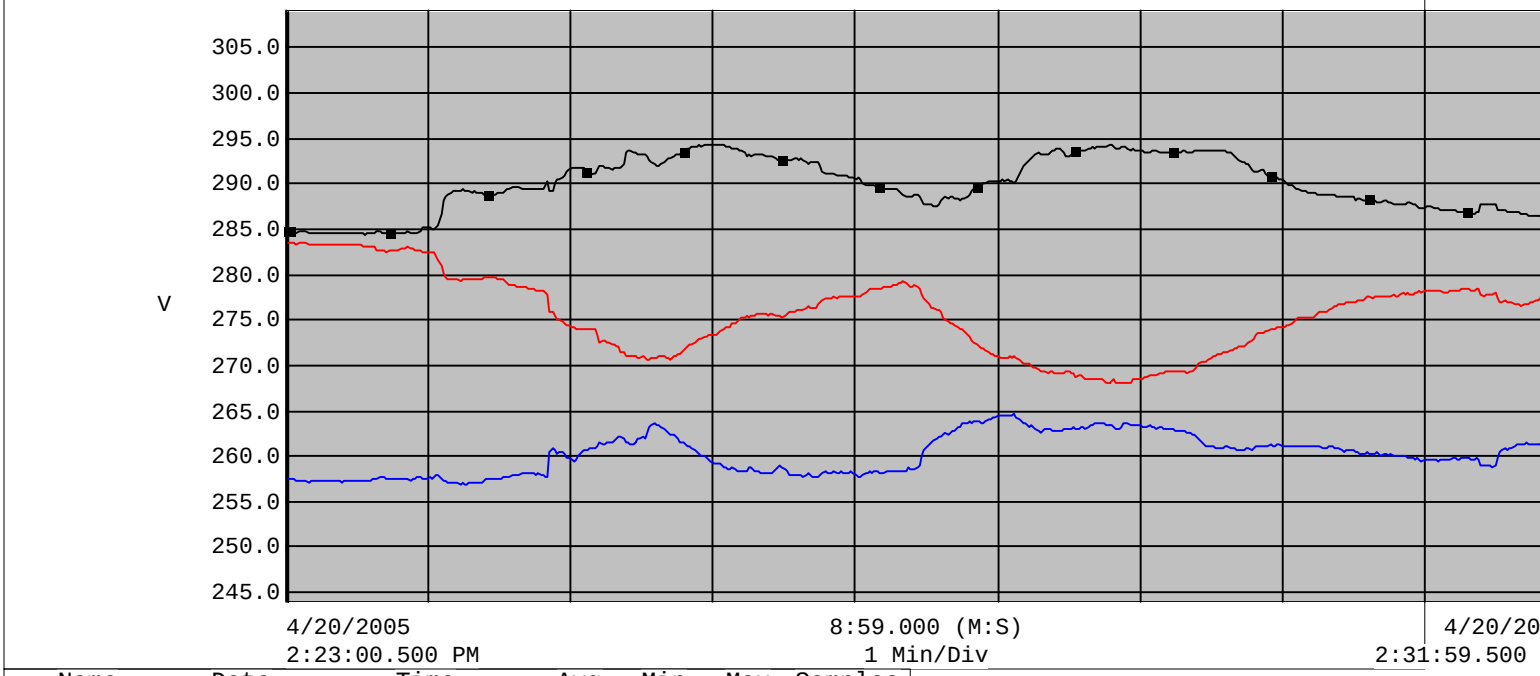
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS M-2 ,

Comments
Measured at the motor overload heater, 50 HP, 460 Volts.

WPS M2

Recording Start Date	4/20/2005 - 2:23:00 PM
Recording Duration	8:59 (m:s)
Instrument ID	Model: 3945 - 1 1:260152 2.7

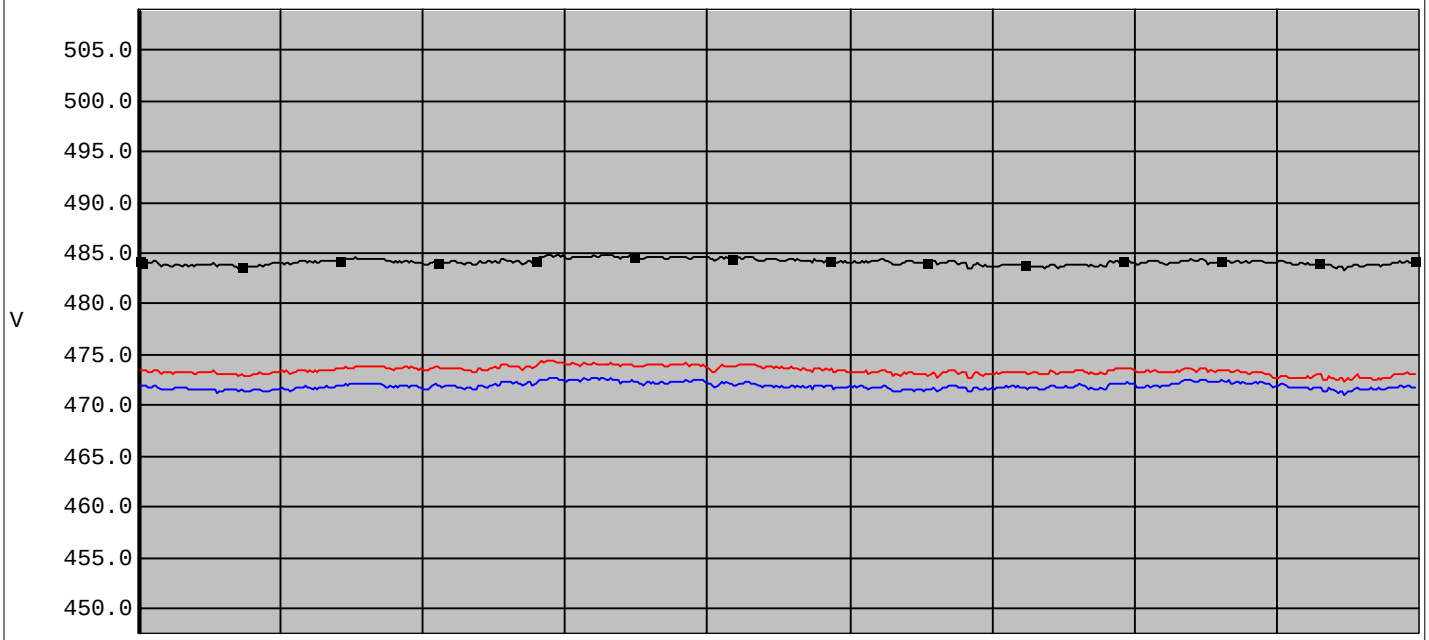
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	4/20/2005	2:23:00.500 PM	289.8	284.3	294.3	540
Vrms Line2	4/20/2005	2:23:00.500 PM	275.5	267.9	283.5	540
Vrms Line3	4/20/2005	2:23:00.500 PM	260.1	256.7	264.5	540

4/20/2005 - 2:23:00.000 PM
Val
284.7 — Vrms Line1
283.4 — Vrms Line2
257.3 — Vrms Line3

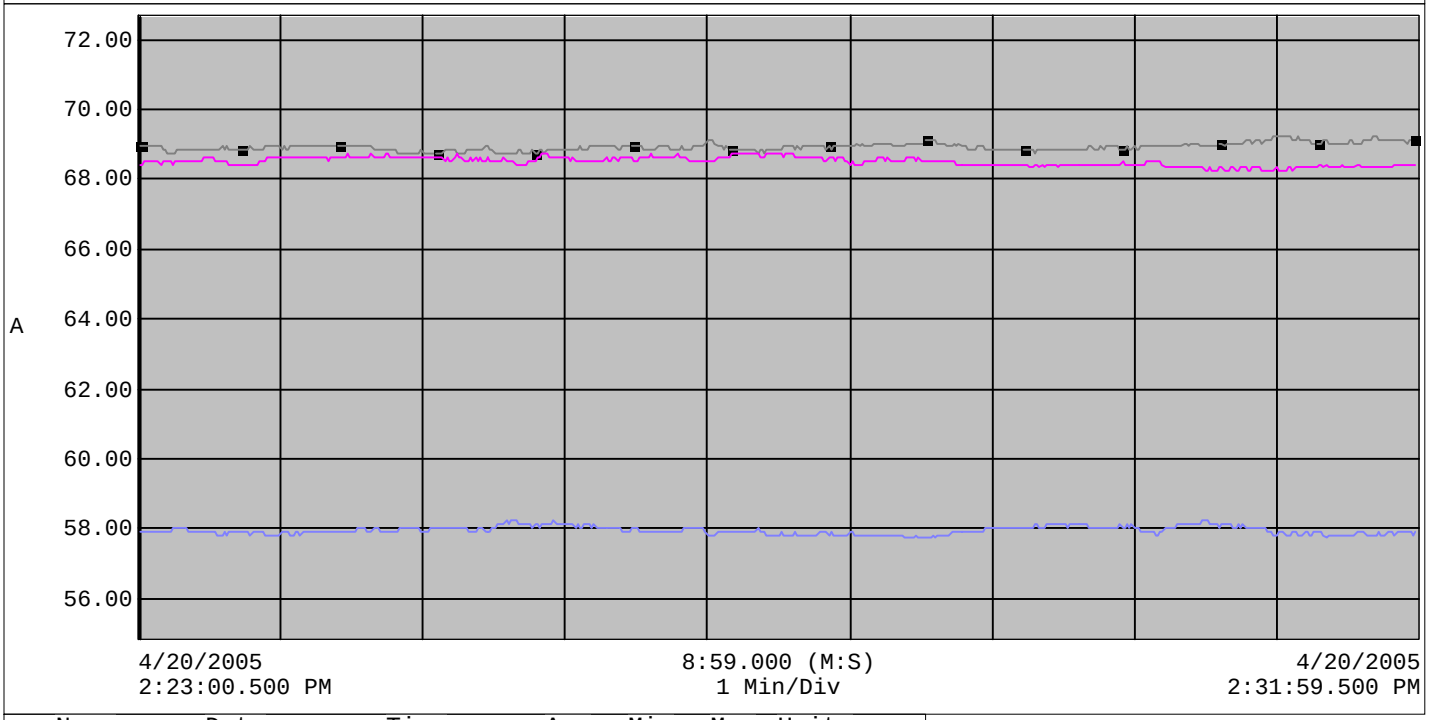
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	4/20/2005	2:23:00.500 PM	484.0	483.3	484.7	V
Urms Line2	4/20/2005	2:23:00.500 PM	473.3	472.3	474.4	V
Urms Line3	4/20/2005	2:23:00.500 PM	471.8	471.0	472.6	V

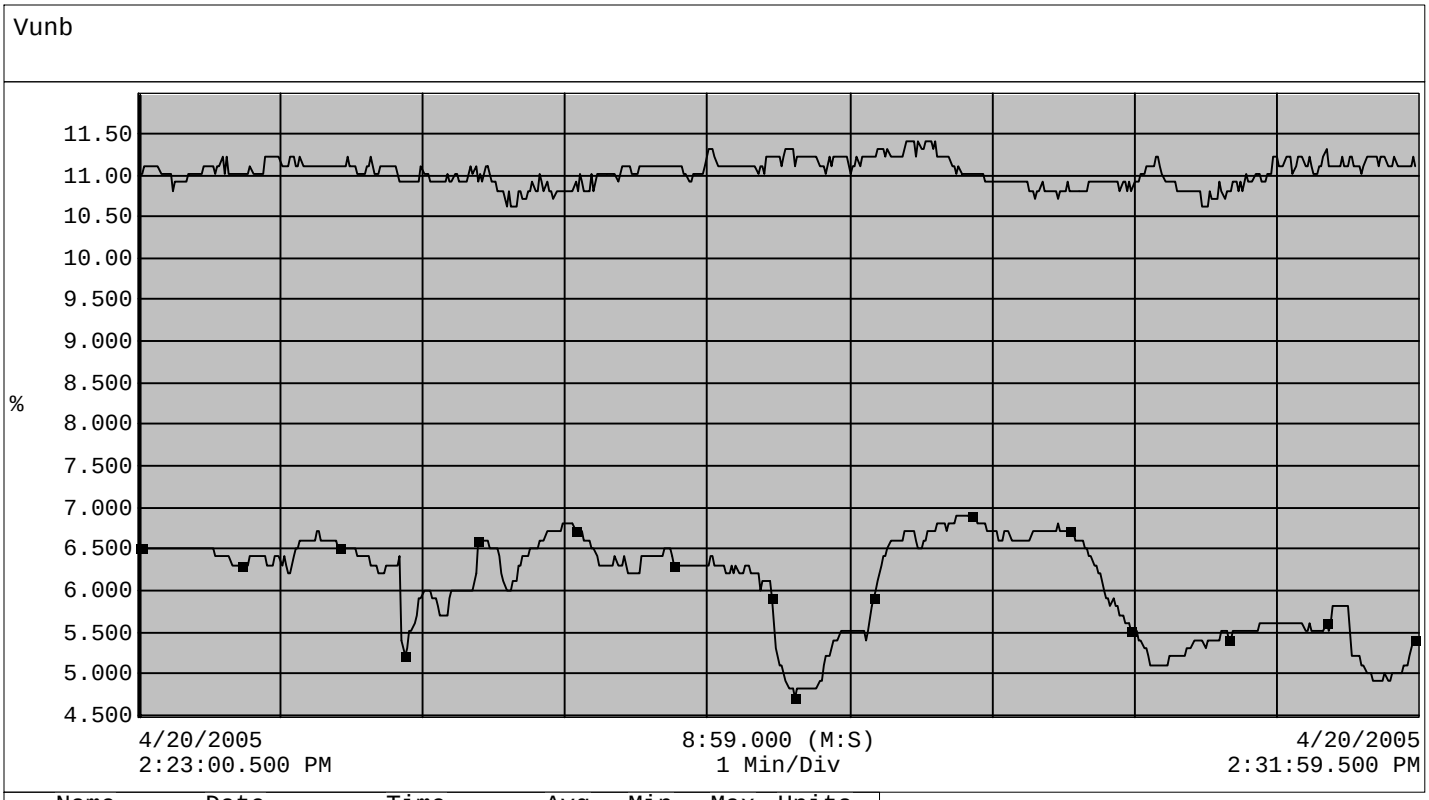
4/20/2005 - 2:23:00.000 PM
Val
484.1 — Urms Line1
473.4 — Urms Line2
471.9 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	4/20/2005	2:23:00.500 PM	68.88	68.70	69.20	A
Arms Line2	4/20/2005	2:23:00.500 PM	68.48	68.20	68.70	A
Arms Line3	4/20/2005	2:23:00.500 PM	57.93	57.70	58.20	A

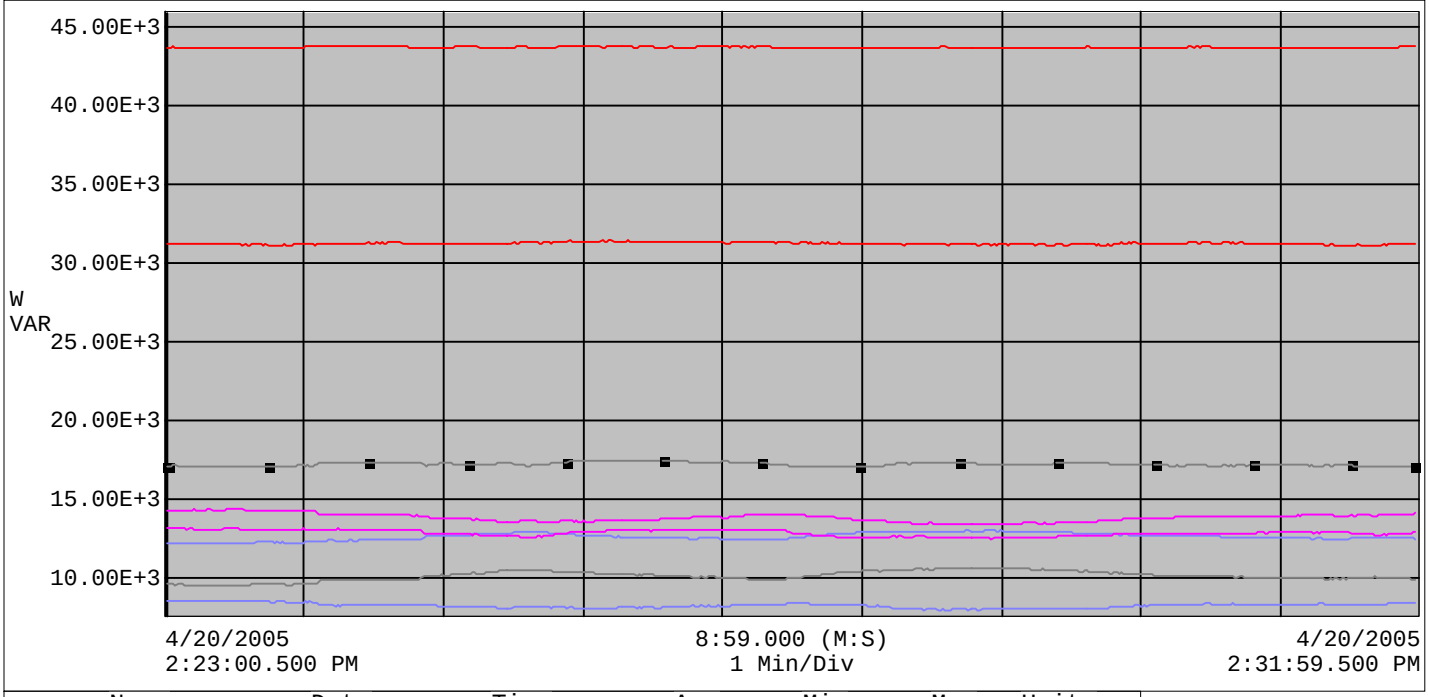
4/20/2005 - 2:23:00.000 PM
Val
68.90 — Arms Line1
68.40 — Arms Line2
57.90 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	4/20/2005	2:23:00.500 PM	6.072	4.700	6.900	%
Aunb(IEEE)	4/20/2005	2:23:00.500 PM	11.02	10.60	11.40	%

4/20/2005 - 2:23:00.000 PM
Val
6.500 —— Vunb(IEEE)
11.00 —— Aunb(IEEE)

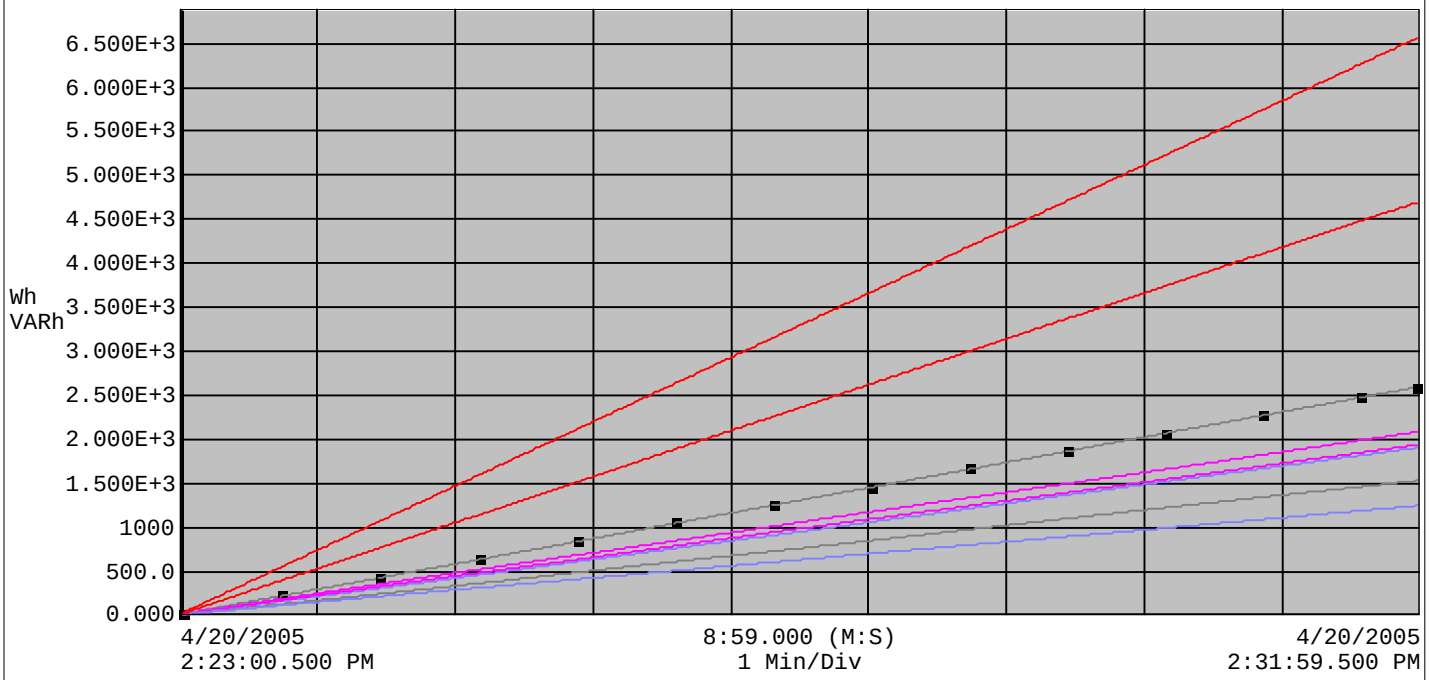
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	4/20/2005	2:23:00.500 PM	17.20E+3	17.01E+3	17.44E+3	W
W Line2	4/20/2005	2:23:00.500 PM	13.82E+3	13.37E+3	14.33E+3	W
W Line3	4/20/2005	2:23:00.500 PM	12.61E+3	12.20E+3	12.99E+3	W
W Sum of Phases	4/20/2005	2:23:00.500 PM	43.64E+3	43.57E+3	43.72E+3	W
VAR Line1	4/20/2005	2:23:00.500 PM	10.13E+3	9.515E+3	10.65E+3	VAR
VAR Line2	4/20/2005	2:23:00.500 PM	12.84E+3	12.48E+3	13.13E+3	VAR
VAR Line3	4/20/2005	2:23:00.500 PM	8.236E+3	7.958E+3	8.525E+3	VAR
VAR Sum of Phases	4/20/2005	2:23:00.500 PM	31.20E+3	31.02E+3	31.38E+3	VAR

4/20/2005 - 2:23:00.000 PM
Val
17.12E+3 — W Line1
14.29E+3 — W Line2
12.24E+3 — W Line3
43.65E+3 — W Sum of Phases
9.595E+3 — VAR Line1
13.11E+3 — VAR Line2
8.502E+3 — VAR Line3
31.21E+3 — VAR Sum of Phases

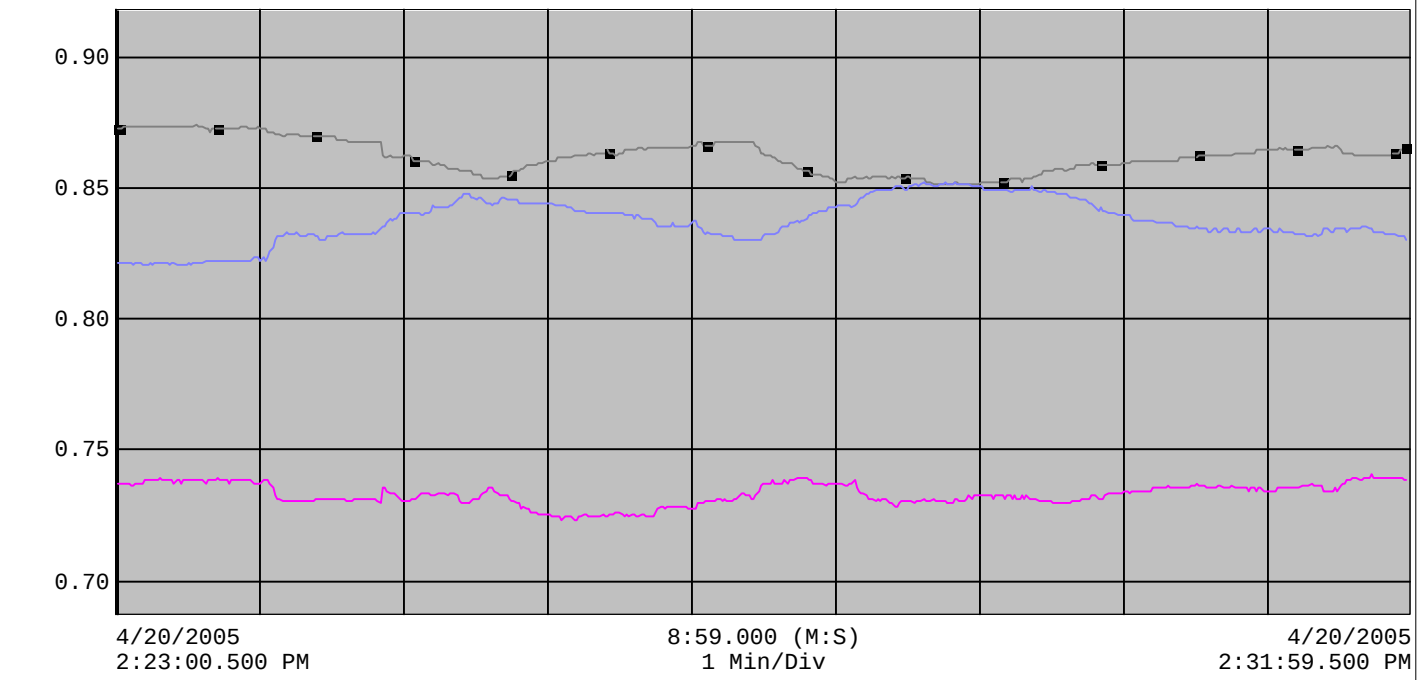
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	4/20/2005	2:23:00.500 PM	1.294E+3	4.726	2.581E+3	Wh
W-hours Line2	4/20/2005	2:23:00.500 PM	1.042E+3	3.987	2.074E+3	Wh
W-hours Line3	4/20/2005	2:23:00.500 PM	943.4	3.407	1.892E+3	Wh
W-hours Sum of Phases	4/20/2005	2:23:00.500 PM	3.279E+3	12.19	6.546E+3	Wh
VAR-hours Line1	4/20/2005	2:23:00.500 PM	755.5	2.643	1.519E+3	VARh
VAR-hours Line2	4/20/2005	2:23:00.500 PM	969.2	3.644	1.926E+3	VARh
VAR-hours Line3	4/20/2005	2:23:00.500 PM	620.3	2.375	1.235E+3	VARh
VAR-hours Sum of Phases	4/20/2005	2:23:00.500 PM	2.345E+3	8.713	4.680E+3	VARh

4/20/2005 - 2:23:00.000 PM
Val
4.726 — W-hours Line1
3.987 — W-hours Line2
3.407 — W-hours Line3
12.19 — W-hours Sum of Phases
2.643 — VAR-hours Line1
3.644 — VAR-hours Line2
2.375 — VAR-hours Line3
8.713 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	4/20/2005	2:23:00.500 PM	0.862	0.851	0.874	
PF Line2	4/20/2005	2:23:00.500 PM	0.733	0.723	0.740	
PF Line3	4/20/2005	2:23:00.500 PM	0.837	0.820	0.852	

4/20/2005 - 2:23:00.000 PM
Val
0.872 — PF Line1
0.737 — PF Line2
0.821 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M2\042005-M2.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS M-2 ,

Comments
Measured at motor overload heater conductors to motor.

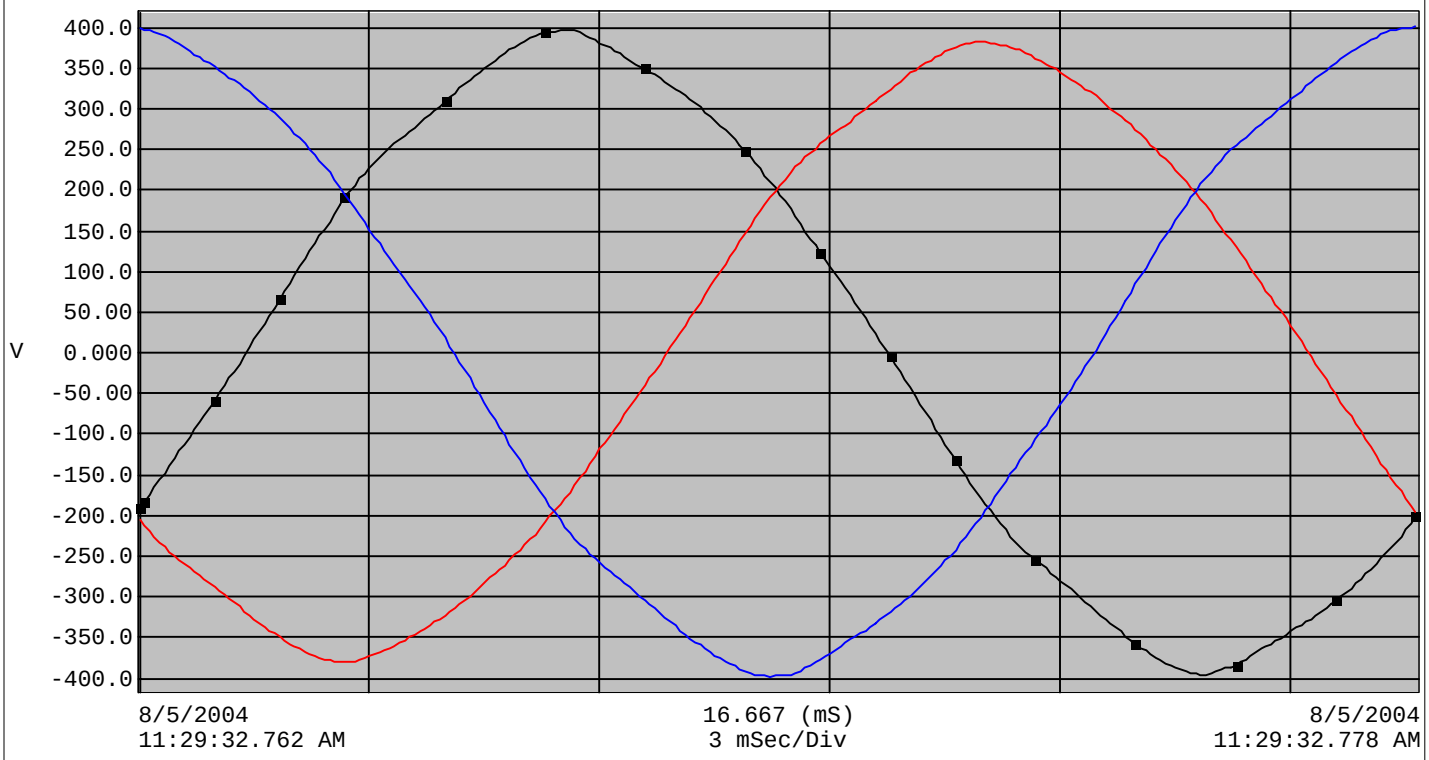
GWA Water Pumping Station Assessment				
Station Name: M-03	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/05/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.2	
Transformer Pole Condition and Grounding	2.5%	0	0	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	0	0	
Metering Arrangement	2.5%	0	0	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.045	
Pressure	1.5%	2	0.03	52
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.2**

Comments:

WPS M3 - Photo

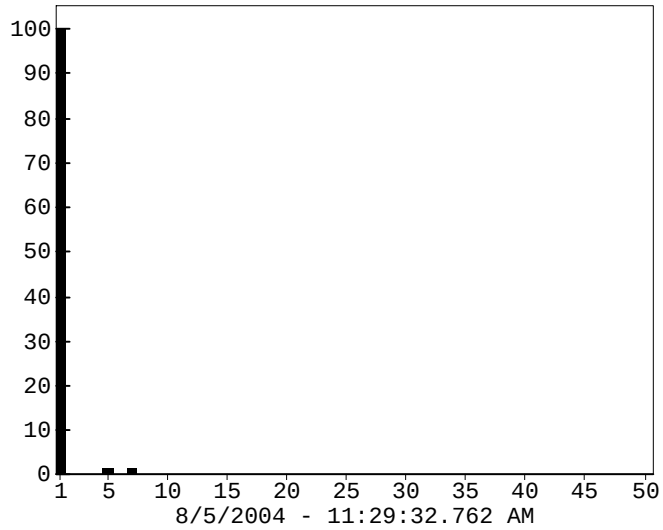
Recording Start Date	8/5/2004 - 11:29:32 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/5/2004	11:29:32.762 AM	16.667	271.4	V
Waveform V2	8/5/2004	11:29:32.762 AM	16.667	262.8	V
Waveform V3	8/5/2004	11:29:32.762 AM	16.667	274.5	V

Waveform V1
271.38 Vrms, 2.16 %THD

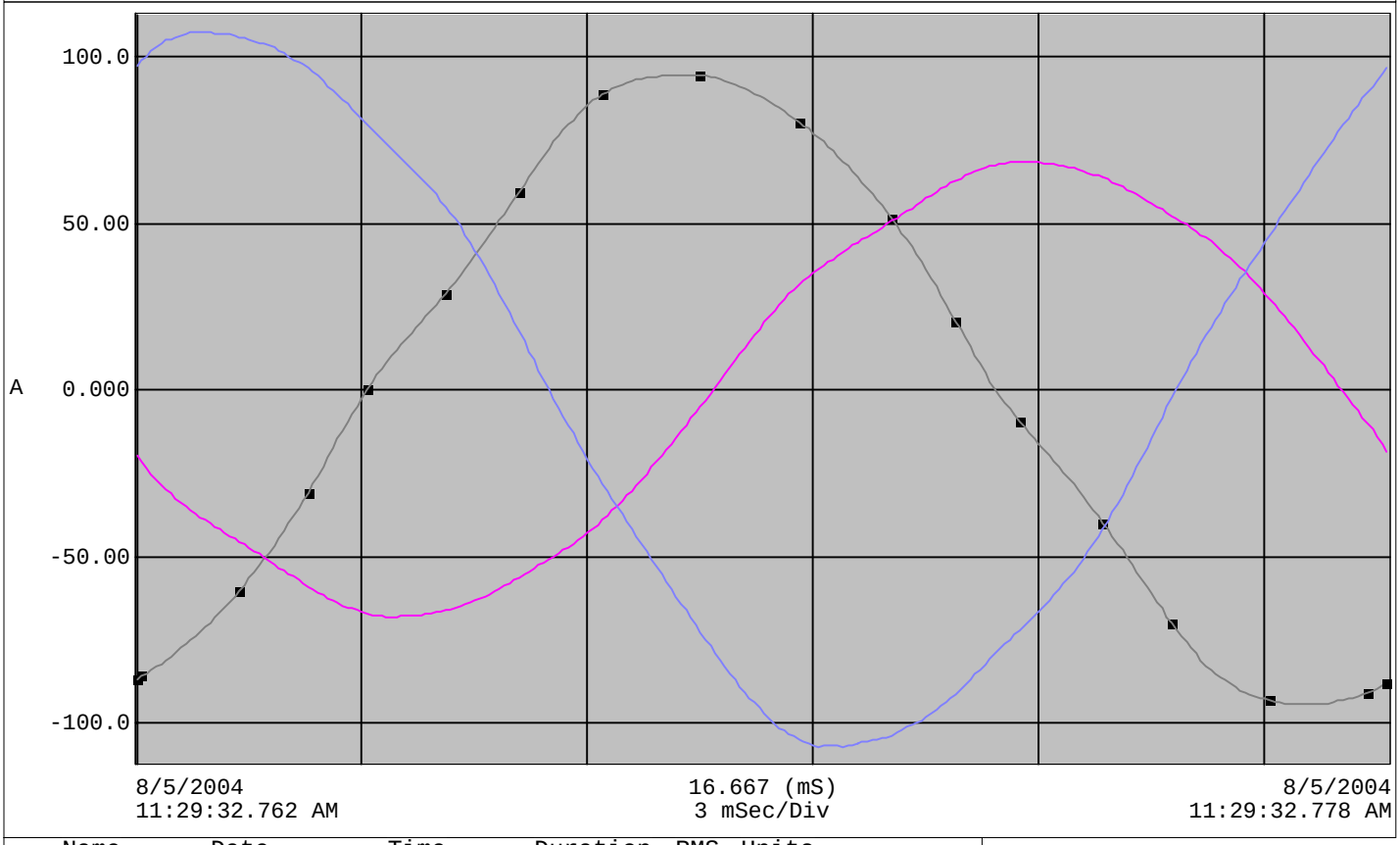


8/5/2004 - 11:29:32.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

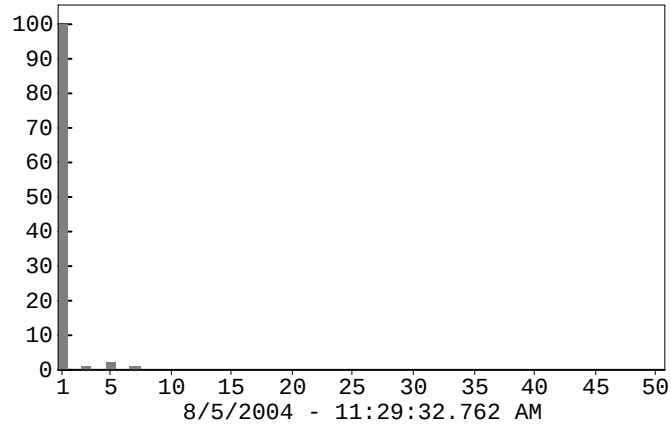
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.1
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.6	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.4	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.0	H34	0.1		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/5/2004	11:29:32.762 AM	16.667	66.81	A
Waveform I2	8/5/2004	11:29:32.762 AM	16.667	48.45	A
Waveform I3	8/5/2004	11:29:32.762 AM	16.667	75.23	A

Waveform I1
66.81 Arms, 3.30 %THD

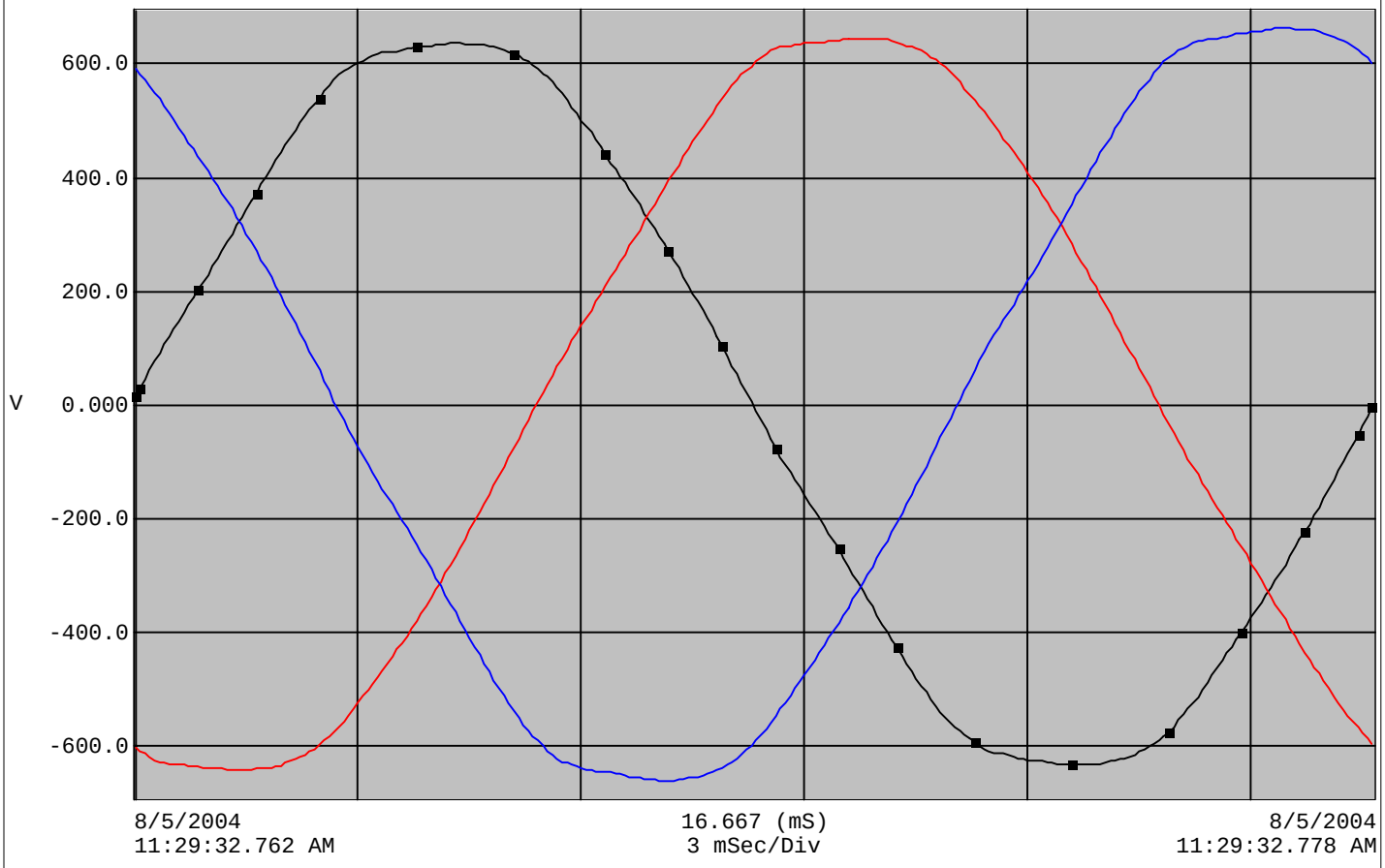


8/5/2004 - 11:29:32.015 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

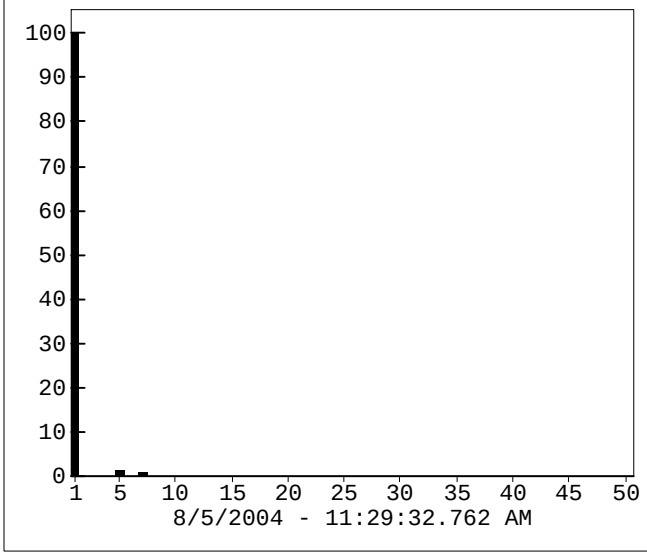
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	1.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.2	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/5/2004	11:29:32.762 AM	16.667	458.4	V
Waveform U2	8/5/2004	11:29:32.762 AM	16.667	464.7	V
Waveform U3	8/5/2004	11:29:32.762 AM	16.667	477.7	V

Waveform U1
458.35 Vrms, 2.02 %THD



8/5/2004 - 11:29:32.015 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.0	H19	0.0	H36	0.1
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.2	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.0	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/5/2004
Start Time: 11:29:32 AM
Duration: 0:0.000 (M:S)
W: 14.11E+3 W
VAR: 11.41E+3 W
VA: 18.15E+3 W
Power Factor: 0.778
Displacement Power Factor: 0.778
TAN: 0.807
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M3\080504-M3-Photo.dvb

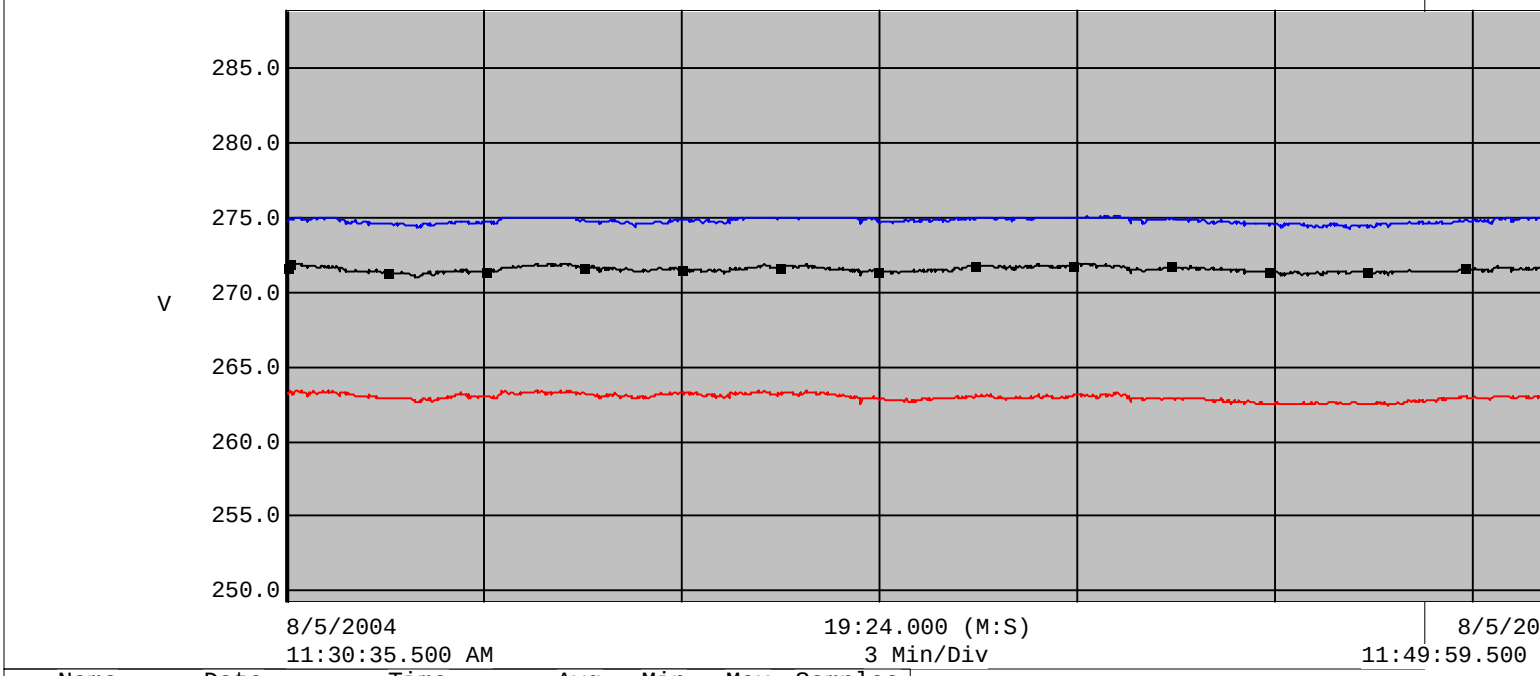
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS M3 - Photo ,

Comments
Recording at motor overload relay.

WPS M3

Recording Start Date	8/5/2004 - 11:30:35 AM
Recording Duration	19:24 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

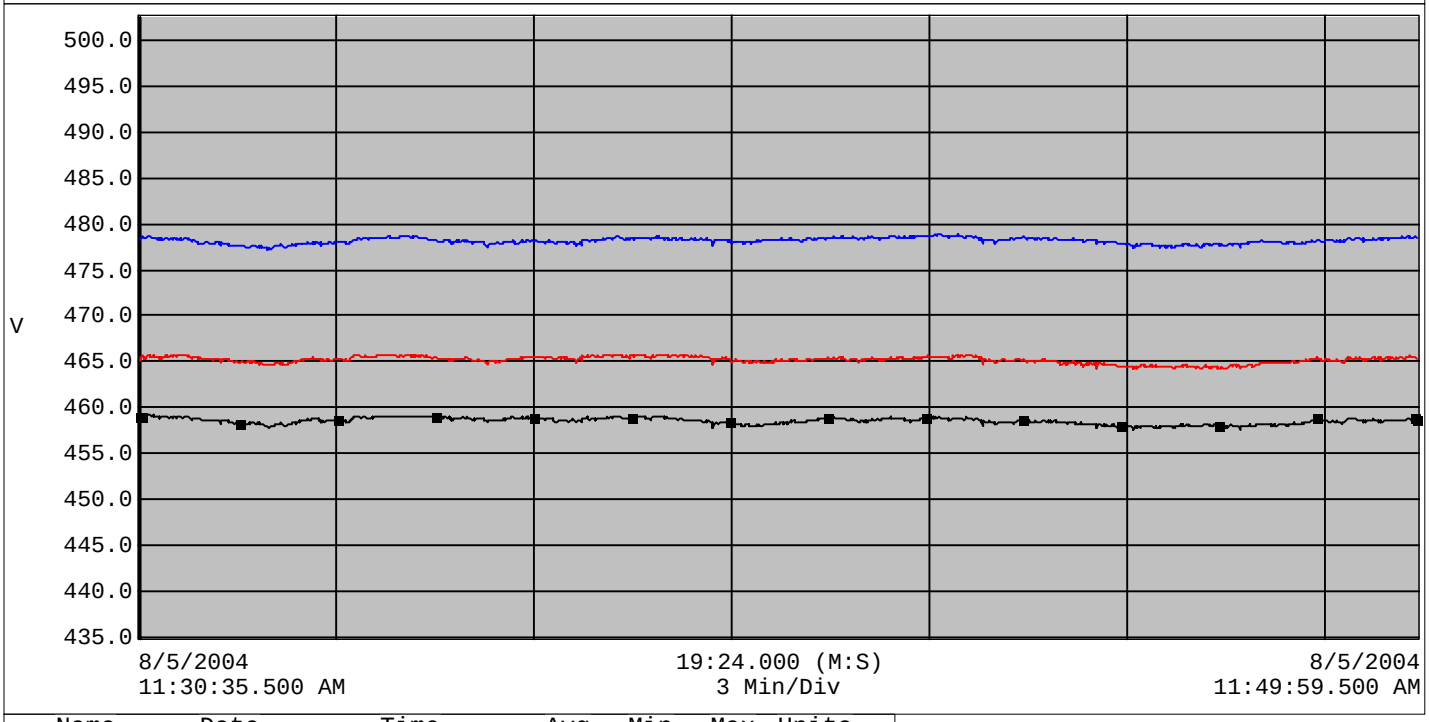
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/5/2004	11:30:35.500 AM	271.5	271.0	271.9	1165
Vrms Line2	8/5/2004	11:30:35.500 AM	262.9	262.3	263.3	1165
Vrms Line3	8/5/2004	11:30:35.500 AM	274.7	274.2	275.1	1165

8/5/2004 - 11:30:35.000 AM
Val
271.6 — Vrms Line1
263.1 — Vrms Line2
274.7 — Vrms Line3

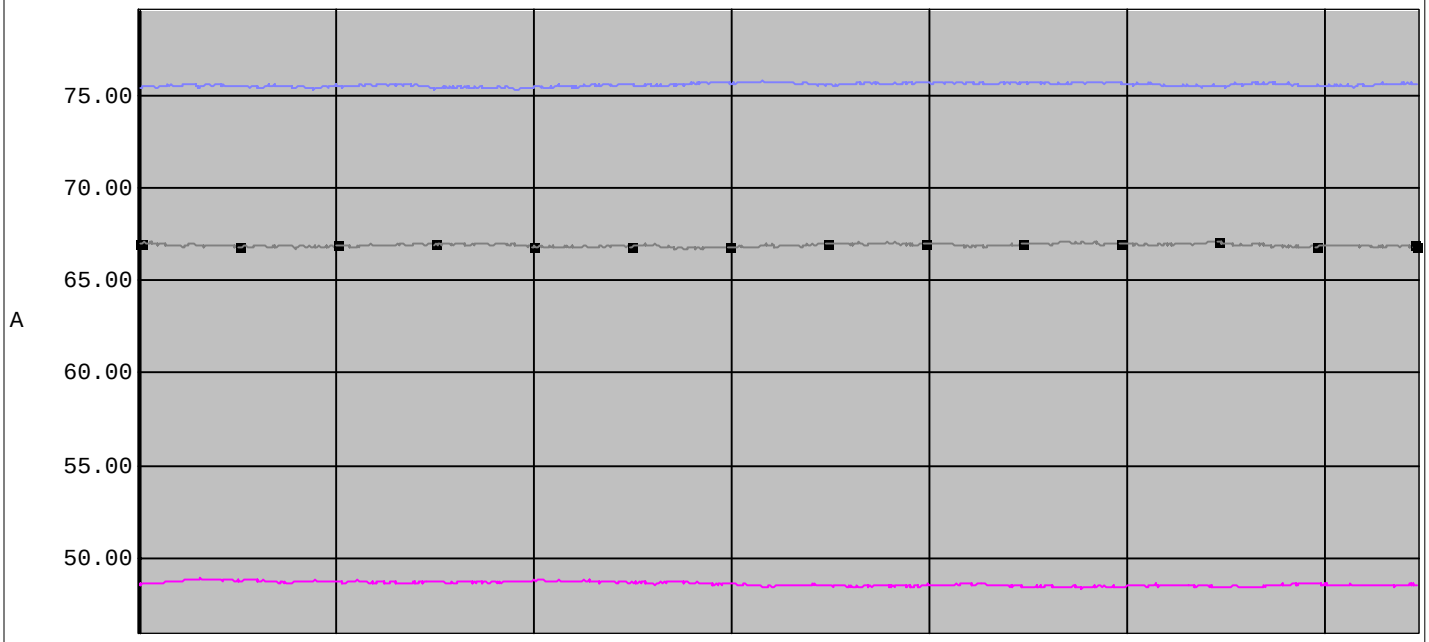
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/5/2004	11:30:35.500 AM	458.4	457.5	459.1	V
Urms Line2	8/5/2004	11:30:35.500 AM	465.0	464.1	465.7	V
Urms Line3	8/5/2004	11:30:35.500 AM	478.1	477.2	478.7	V

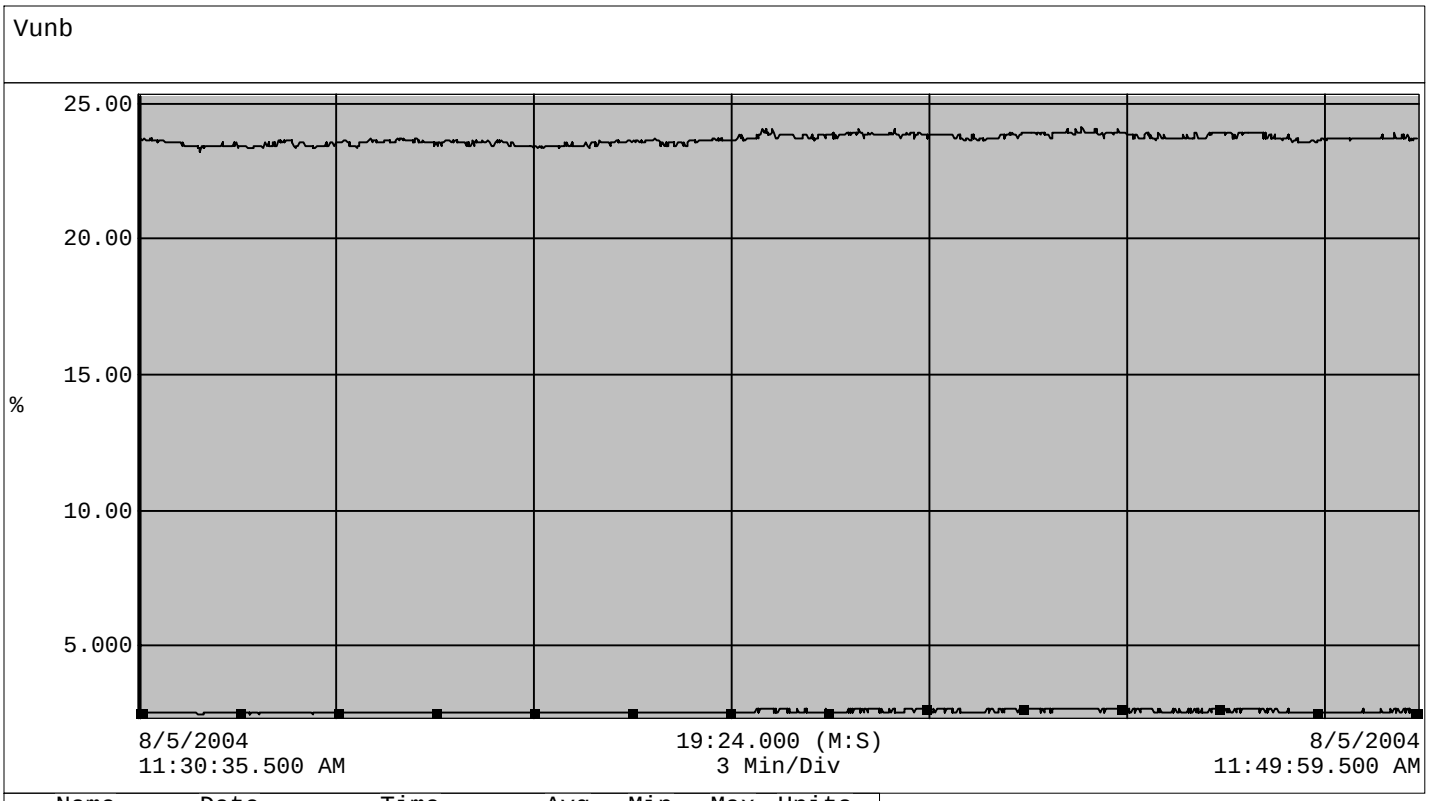
8/5/2004 - 11:30:35.000 AM
Val
458.8 Urms Line1
465.0 Urms Line2
478.1 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/5/2004	11:30:35.500 AM	66.81	66.60	67.00	A
Arms Line2	8/5/2004	11:30:35.500 AM	48.58	48.30	48.90	A
Arms Line3	8/5/2004	11:30:35.500 AM	75.47	75.20	75.80	A

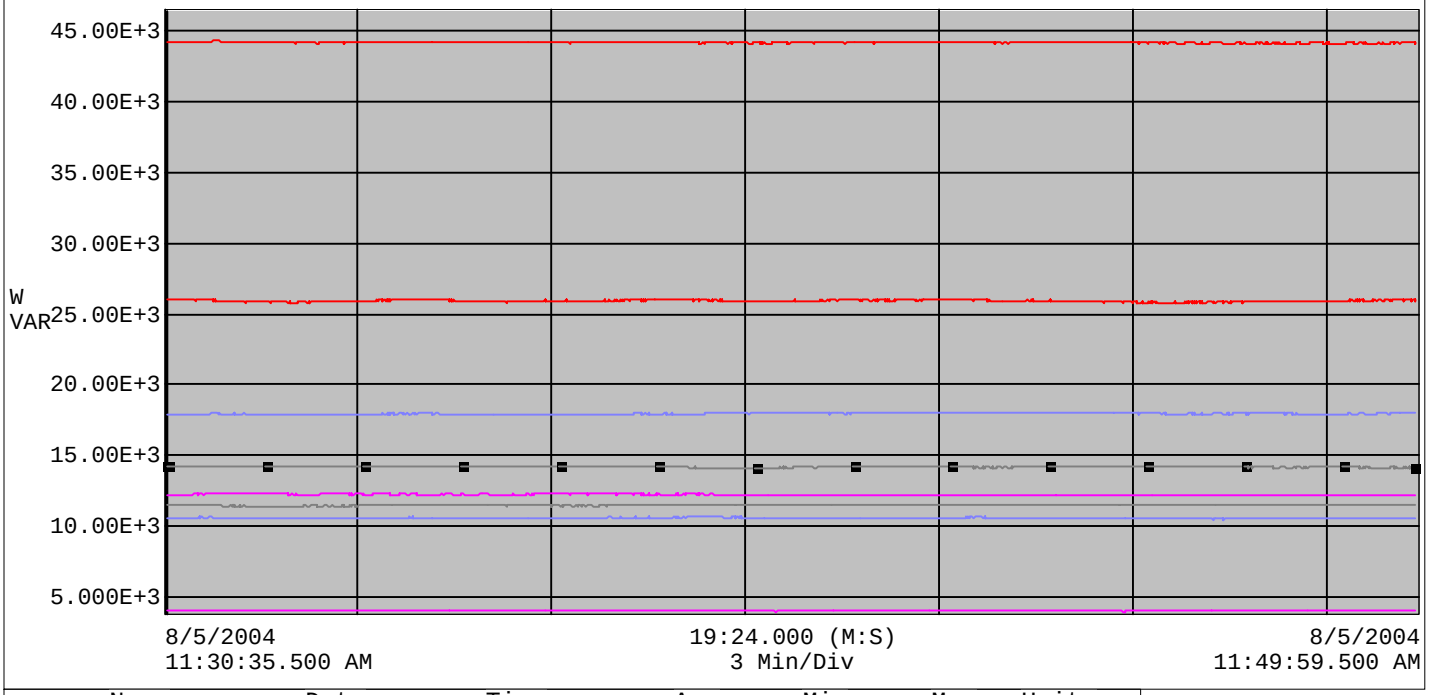
8/5/2004 - 11:30:35.000 AM
Val
66.90 — Arms Line1
48.60 — Arms Line2
75.30 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/5/2004	11:30:35.500 AM	2.525	2.400	2.600	%
Aunb(IEEE)	8/5/2004	11:30:35.500 AM	23.64	23.20	24.10	%

8/5/2004 - 11:30:35.000 AM
Val
2.500 —— Vunb(IEEE)
23.60 —— Aunb(IEEE)

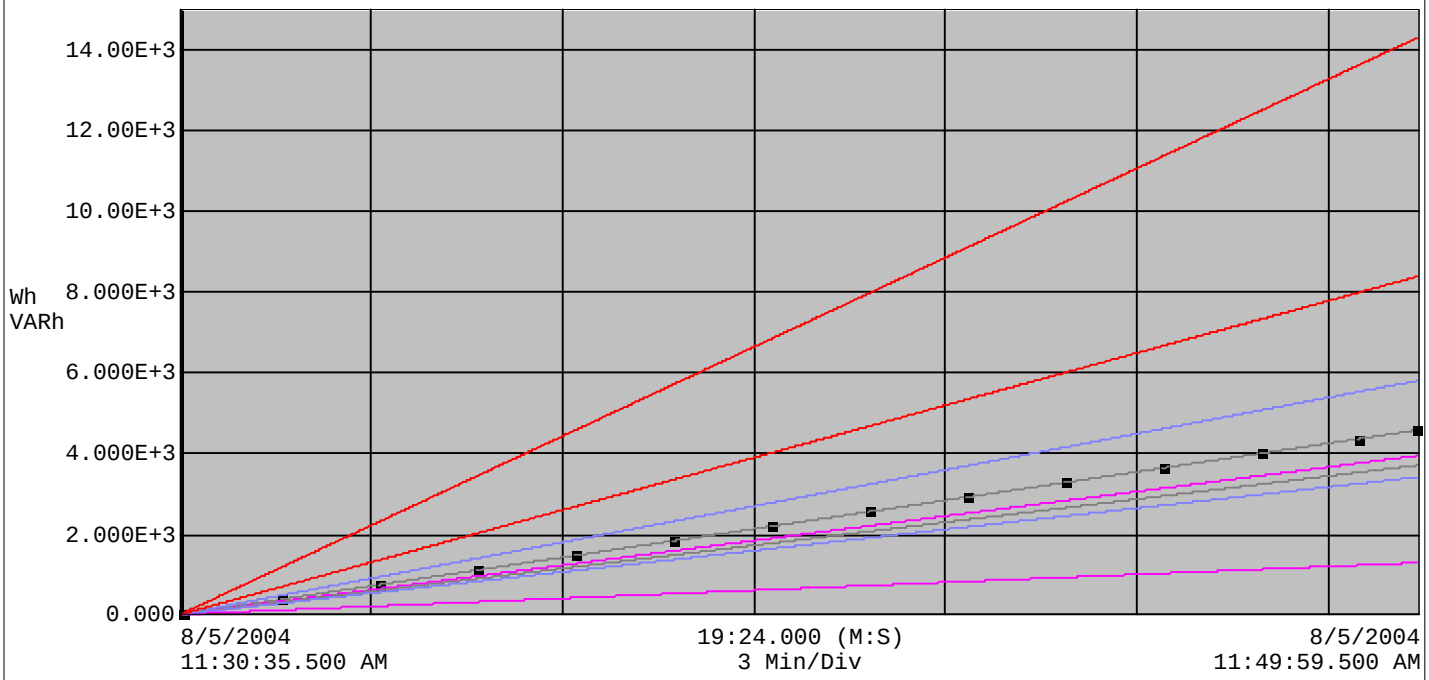
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/5/2004	11:30:35.500 AM	14.10E+3	14.04E+3	14.17E+3	W
W Line2	8/5/2004	11:30:35.500 AM	12.15E+3	12.07E+3	12.23E+3	W
W Line3	8/5/2004	11:30:35.500 AM	17.88E+3	17.80E+3	17.96E+3	W
W Sum of Phases	8/5/2004	11:30:35.500 AM	44.13E+3	44.04E+3	44.25E+3	W
VAR Line1	8/5/2004	11:30:35.500 AM	11.41E+3	11.31E+3	11.48E+3	VAR
VAR Line2	8/5/2004	11:30:35.500 AM	3.946E+3	3.880E+3	4.013E+3	VAR
VAR Line3	8/5/2004	11:30:35.500 AM	10.50E+3	10.41E+3	10.57E+3	VAR
VAR Sum of Phases	8/5/2004	11:30:35.500 AM	25.86E+3	25.68E+3	25.97E+3	VAR

8/5/2004 - 11:30:35.000 AM
Val
14.15E+3 — W Line1
12.13E+3 — W Line2
17.82E+3 — W Line3
44.10E+3 — W Sum of Phases
11.42E+3 — VAR Line1
4.006E+3 — VAR Line2
10.47E+3 — VAR Line3
25.90E+3 — VAR Sum of Phases

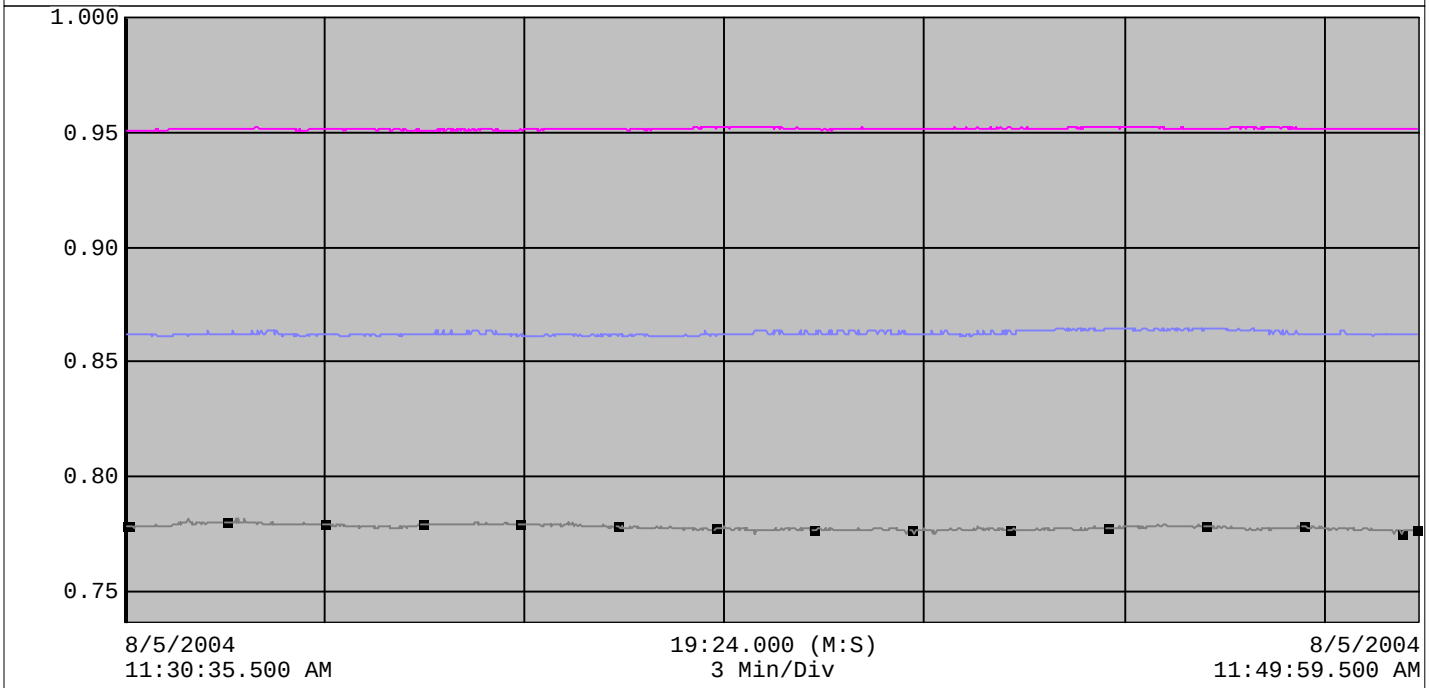
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/5/2004	11:30:35.500 AM	2.285E+3	3.900	4.564E+3	Wh
W-hours Line2	8/5/2004	11:30:35.500 AM	1.969E+3	3.359	3.931E+3	Wh
W-hours Line3	8/5/2004	11:30:35.500 AM	2.894E+3	4.944	5.786E+3	Wh
W-hours Sum of Phases	8/5/2004	11:30:35.500 AM	7.148E+3	12.20	14.28E+3	Wh
VAR-hours Line1	8/5/2004	11:30:35.500 AM	1.846E+3	3.155	3.692E+3	VARh
VAR-hours Line2	8/5/2004	11:30:35.500 AM	641.0	1.130	1.277E+3	VARh
VAR-hours Line3	8/5/2004	11:30:35.500 AM	1.701E+3	2.904	3.398E+3	VARh
VAR-hours Sum of Phases	8/5/2004	11:30:35.500 AM	4.188E+3	7.150	8.367E+3	VARh

8/5/2004 - 11:30:35.000 AM
Val
3.900 — W-hours Line1
3.359 — W-hours Line2
4.944 — W-hours Line3
12.20 — W-hours Sum of Phases
3.155 — VAR-hours Line1
1.130 — VAR-hours Line2
2.904 — VAR-hours Line3
7.150 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/5/2004	11:30:35.500 AM	0.778	0.775	0.781	
PF Line2	8/5/2004	11:30:35.500 AM	0.951	0.950	0.952	
PF Line3	8/5/2004	11:30:35.500 AM	0.862	0.861	0.864	

8/5/2004 - 11:30:35.000 AM
Val
0.778 — PF Line1
0.950 — PF Line2
0.862 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M3\080504-M3.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA - WPS M-3 ,

Comments
Recorded at motor starter overload relay.

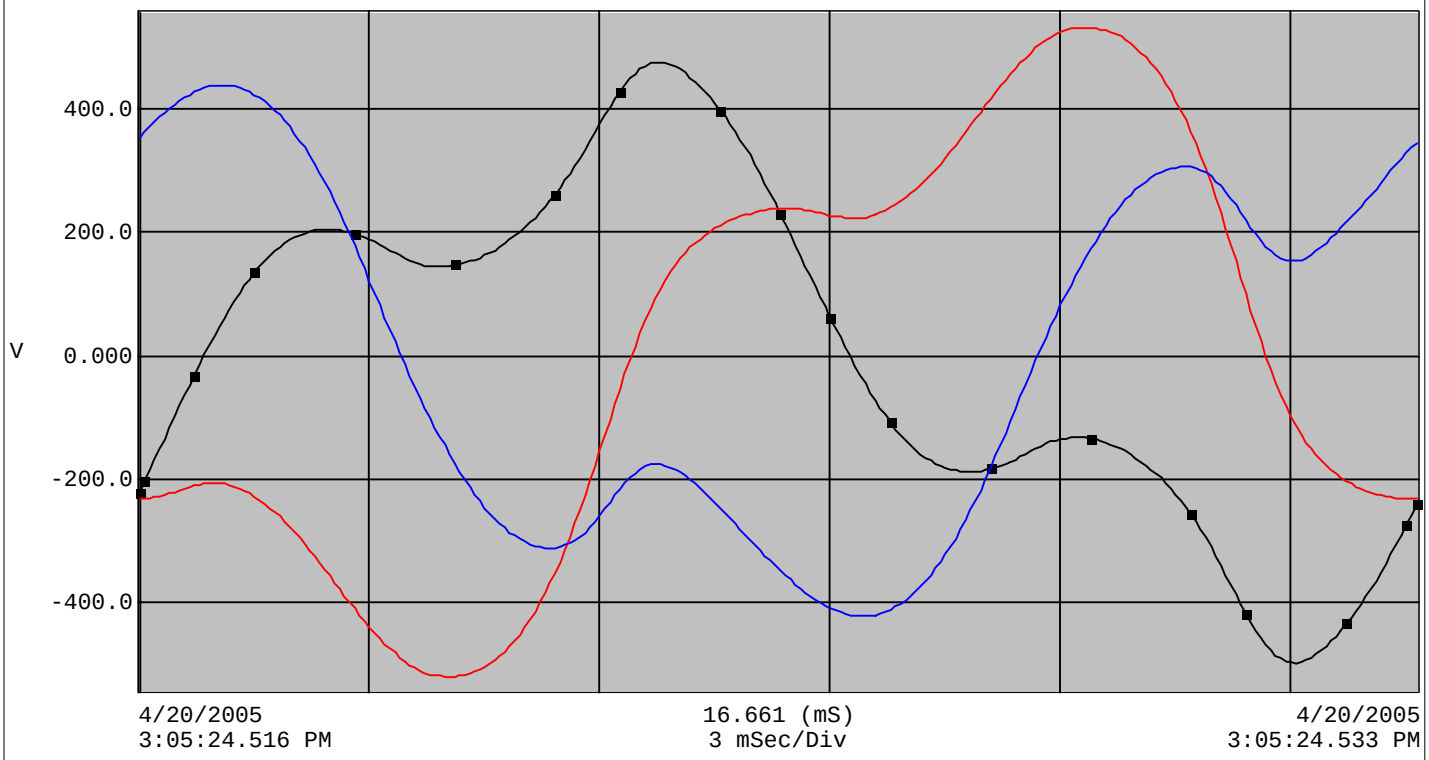
GWA Water Pumping Station Assessment				
Station Name: M-04	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 02/12/05		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.425	
Transformer Pole Condition and Grounding	2.5%	2	0.05	4
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	2	0.1	2
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0	
Main Disconnect	10.0%	0	0	
Grounding	5.0%	0	0	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.05	
Generator Condition	10.0%	0	0	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	0	0	
Pump Motor Starter	**25.0%**		0	
Main Breaker	5.0%	0	0	
Motor Starter	5.0%	0	0	
Overload Relay	5.0%	0	0	
Wiring	5.0%	0	0	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.03	
Pressure	1.5%	1	0.015	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0	
Lighting	3.0%	0	0	
Power Devices	2.0%	0	0	
	100%	**Assessment Value**		**0.5**

Comments: Exterior of station only

WPS M-4 - Photo

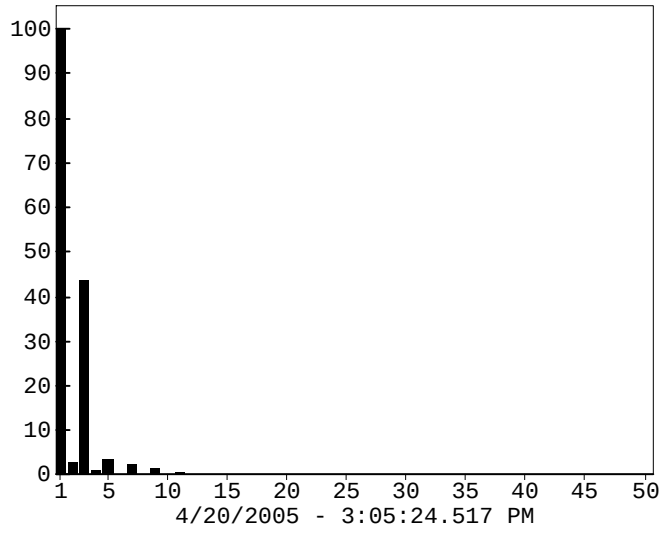
Recording Start Date	4/20/2005 - 3:05:24 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:260152 2.7

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	4/20/2005	3:05:24.516 PM	16.661	270.6	V
Waveform V2	4/20/2005	3:05:24.516 PM	16.661	333.6	V
Waveform V3	4/20/2005	3:05:24.516 PM	16.661	285.8	V

Waveform V1
270.56 Vrms, 43.99 %THD



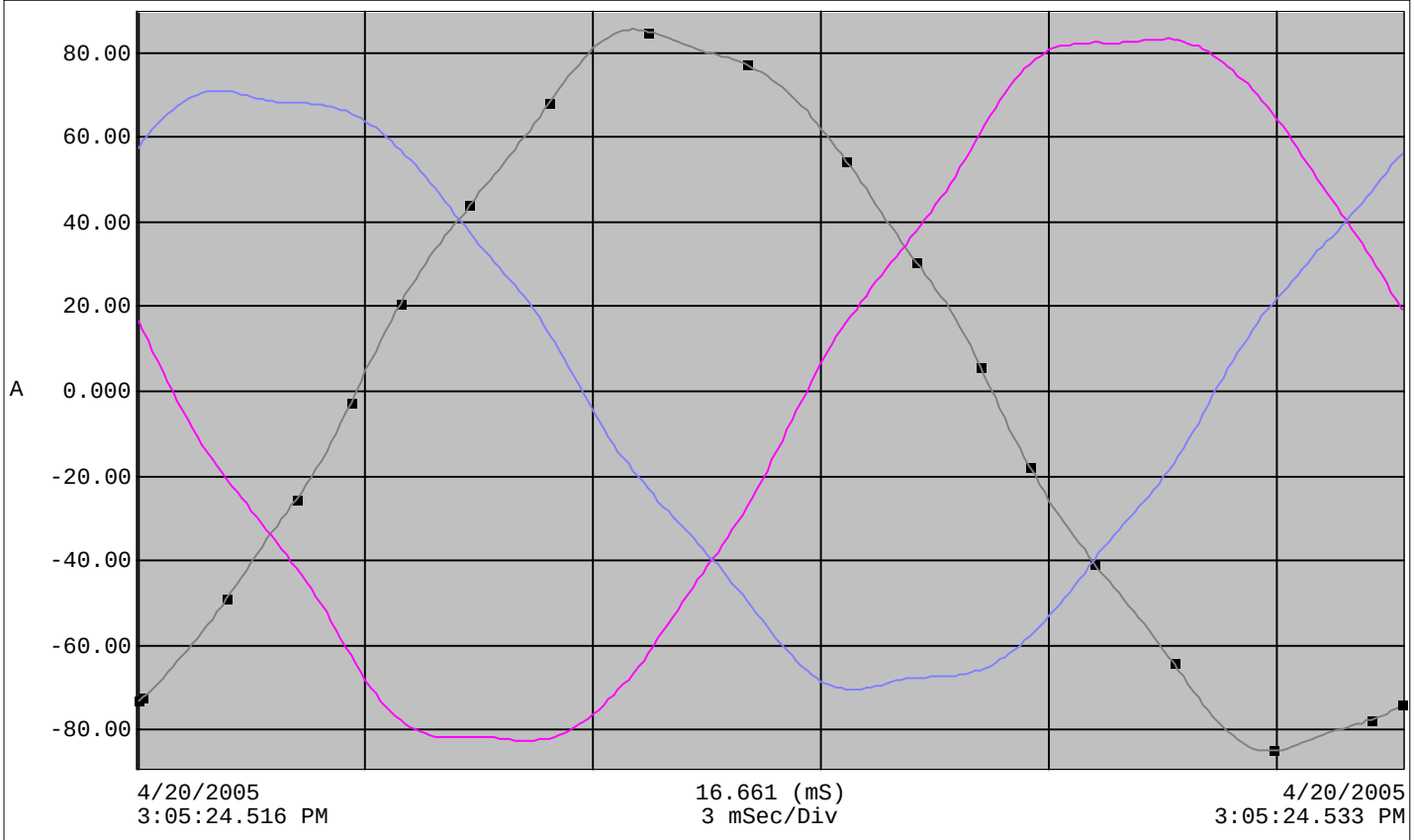
4/20/2005 - 3:05:24.000 PM

Val	
-223.8	Waveform V1
-234.6	Waveform V2
353.9	Waveform V3

Waveform V1

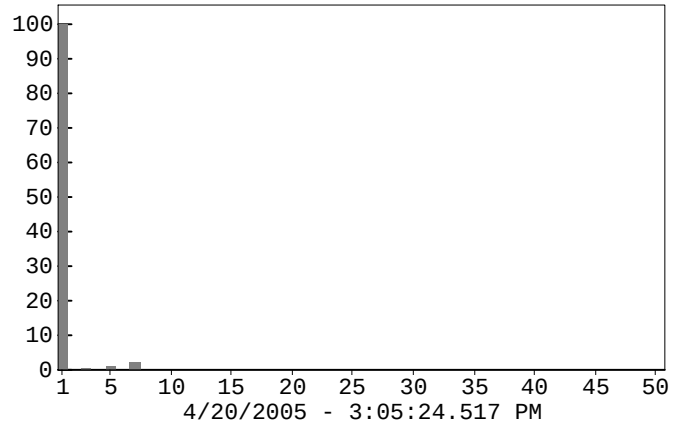
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	2.8	H19	0.0	H36	0.0
H03	43.7	H20	0.0	H37	0.0
H04	1.0	H21	0.0	H38	0.0
H05	3.5	H22	0.0	H39	0.0
H06	0.4	H23	0.0	H40	0.0
H07	2.2	H24	0.0	H41	0.0
H08	0.3	H25	0.0	H42	0.0
H09	1.4	H26	0.0	H43	0.0
H10	0.2	H27	0.0	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	4/20/2005	3:05:24.516 PM	16.661	59.20	A
Waveform I2	4/20/2005	3:05:24.516 PM	16.661	59.69	A
Waveform I3	4/20/2005	3:05:24.516 PM	16.661	50.25	A

Waveform I1
59.20 Arms, 2.98 %THD

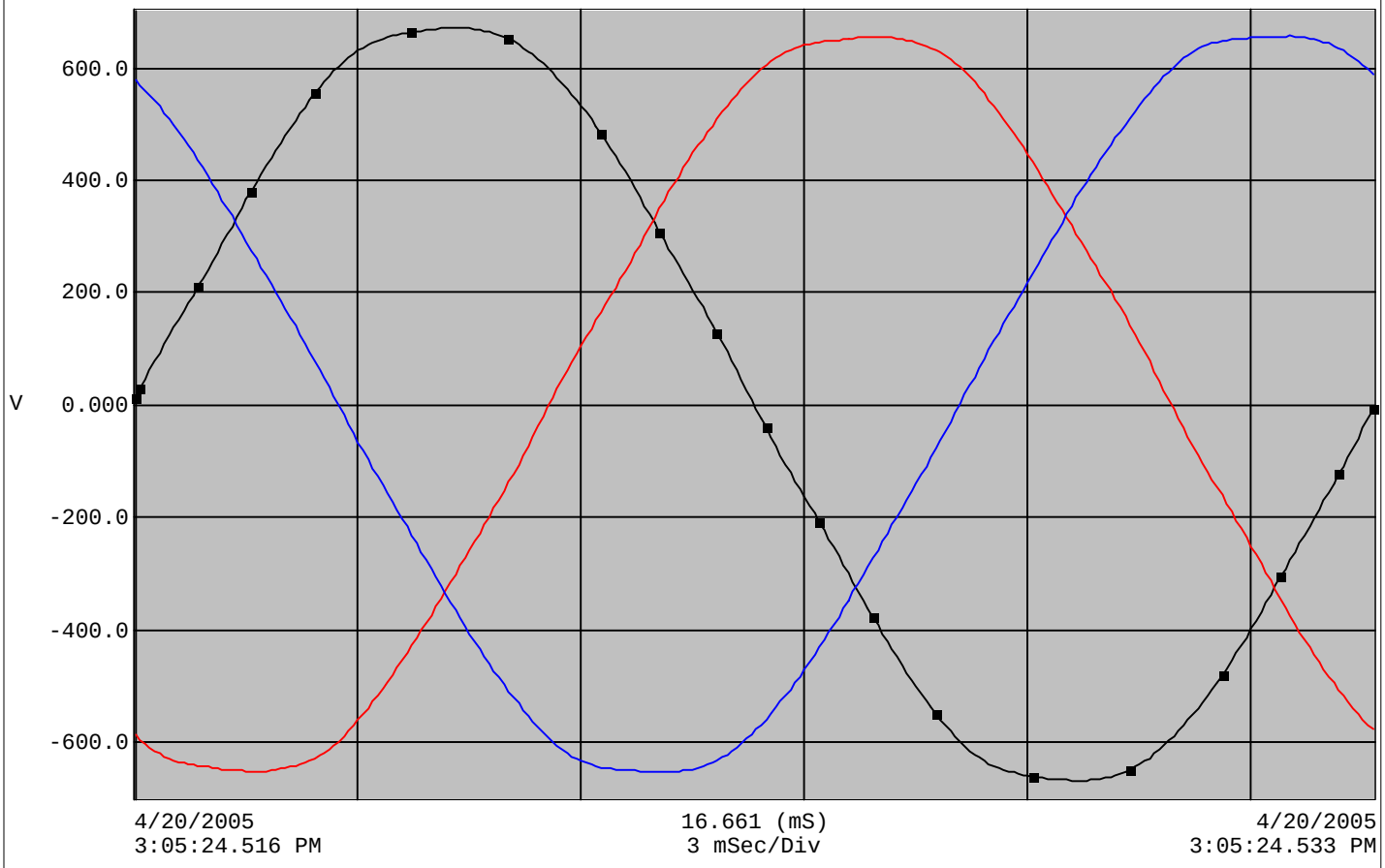


4/20/2005 - 3:05:24.000 PM
Val
-73.30 — Waveform I1
16.40 — Waveform I2
57.40 — Waveform I3

Waveform I1

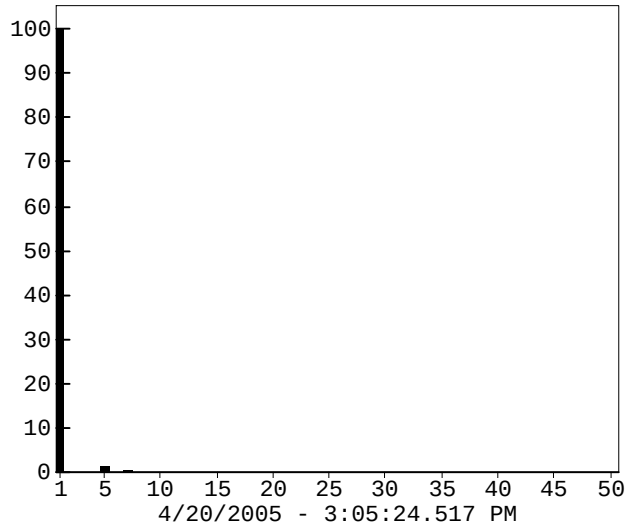
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	1.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.6	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	2.3	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	4/20/2005	3:05:24.516 PM	16.661	482.0	V
Waveform U2	4/20/2005	3:05:24.516 PM	16.661	472.4	V
Waveform U3	4/20/2005	3:05:24.516 PM	16.661	471.1	V

Waveform U1
482.04 Vrms, 1.57 %THD



4/20/2005 - 3:05:24.000 PM

	Val	
—	10.70	Waveform U1
—	-588.5	Waveform U2
—	577.7	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 4/20/2005
Start Time: 3:05:24 PM
Duration: 0:0.000 (M:S)
W: 13.12E+3 W
VAR: 6.607E+3 W
VA: 16.04E+3 W
Power Factor: 0.818
Displacement Power Factor: 0.893
TAN: 0.504
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M4\042005-M4-Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS M-4 ,

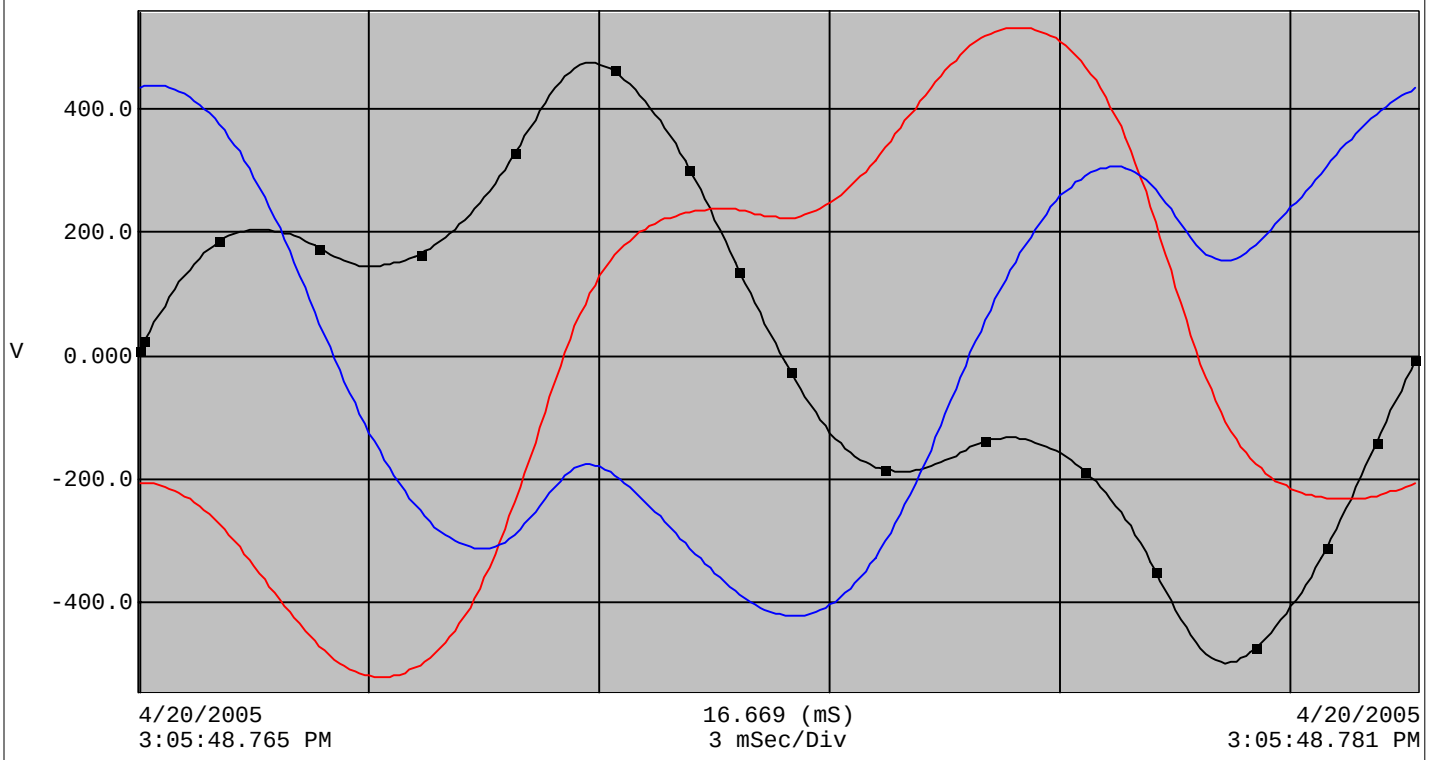
Comments

Measured at the motor starter overload relay. 50 HP, 460 Volts, Previous phase to phase short at station. Ungrounded Delta Configuration at GPA Transformer Bank.

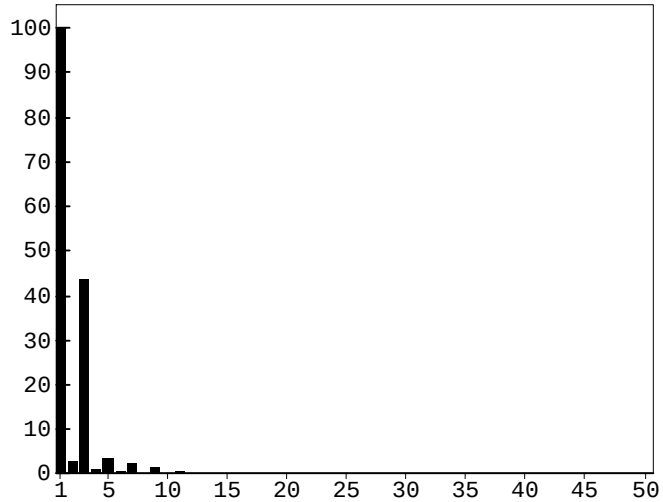
WPS M-4 - Photo2

Recording Start Date	4/20/2005 - 3:05:48 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:260152 2.7

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	4/20/2005	3:05:48.765 PM	16.669	270.1	V
Waveform V2	4/20/2005	3:05:48.765 PM	16.669	333.3	V
Waveform V3	4/20/2005	3:05:48.765 PM	16.669	285.5	V

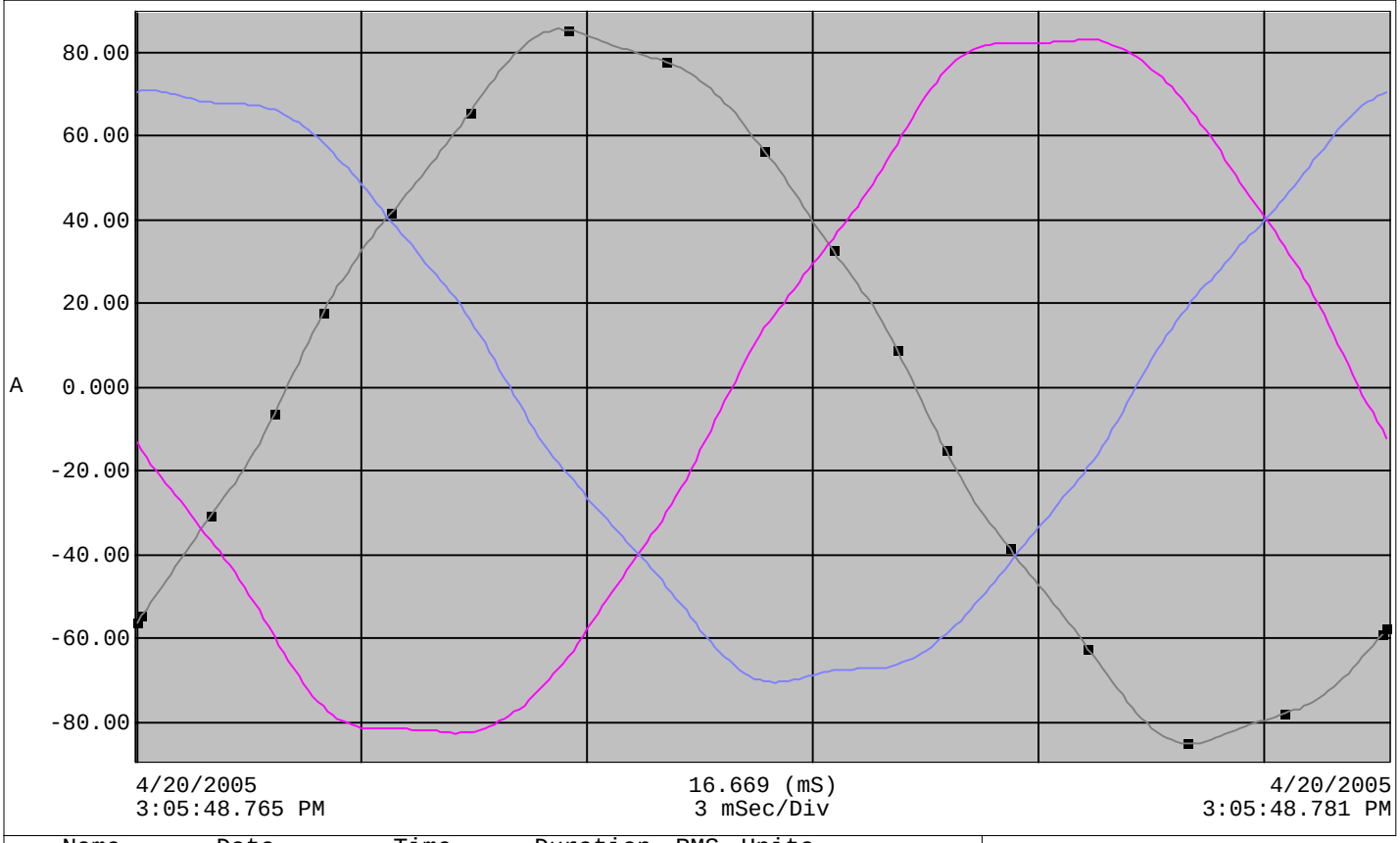


4/20/2005 - 3:05:48.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

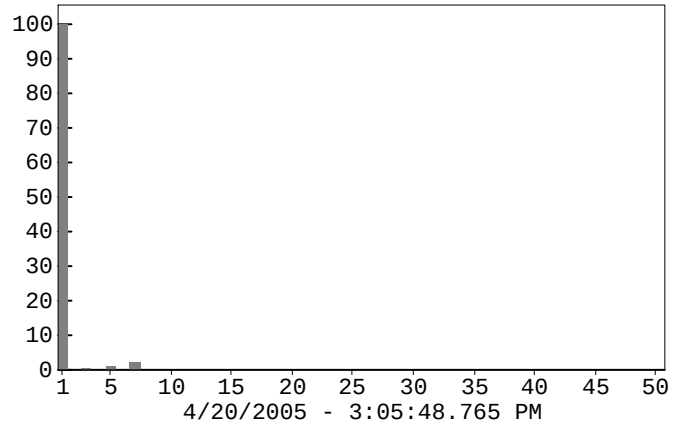
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	2.8	H19	0.0	H36	0.0
H03	43.5	H20	0.0	H37	0.0
H04	1.0	H21	0.0	H38	0.0
H05	3.5	H22	0.0	H39	0.0
H06	0.4	H23	0.0	H40	0.0
H07	2.2	H24	0.0	H41	0.0
H08	0.3	H25	0.0	H42	0.0
H09	1.4	H26	0.0	H43	0.0
H10	0.2	H27	0.0	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.1	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.1	H31	0.0	H48	0.0
H15	0.1	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	4/20/2005	3:05:48.765 PM	16.669	59.17	A
Waveform I2	4/20/2005	3:05:48.765 PM	16.669	59.56	A
Waveform I3	4/20/2005	3:05:48.765 PM	16.669	50.14	A

Waveform I1
59.17 Arms, 3.03 %THD

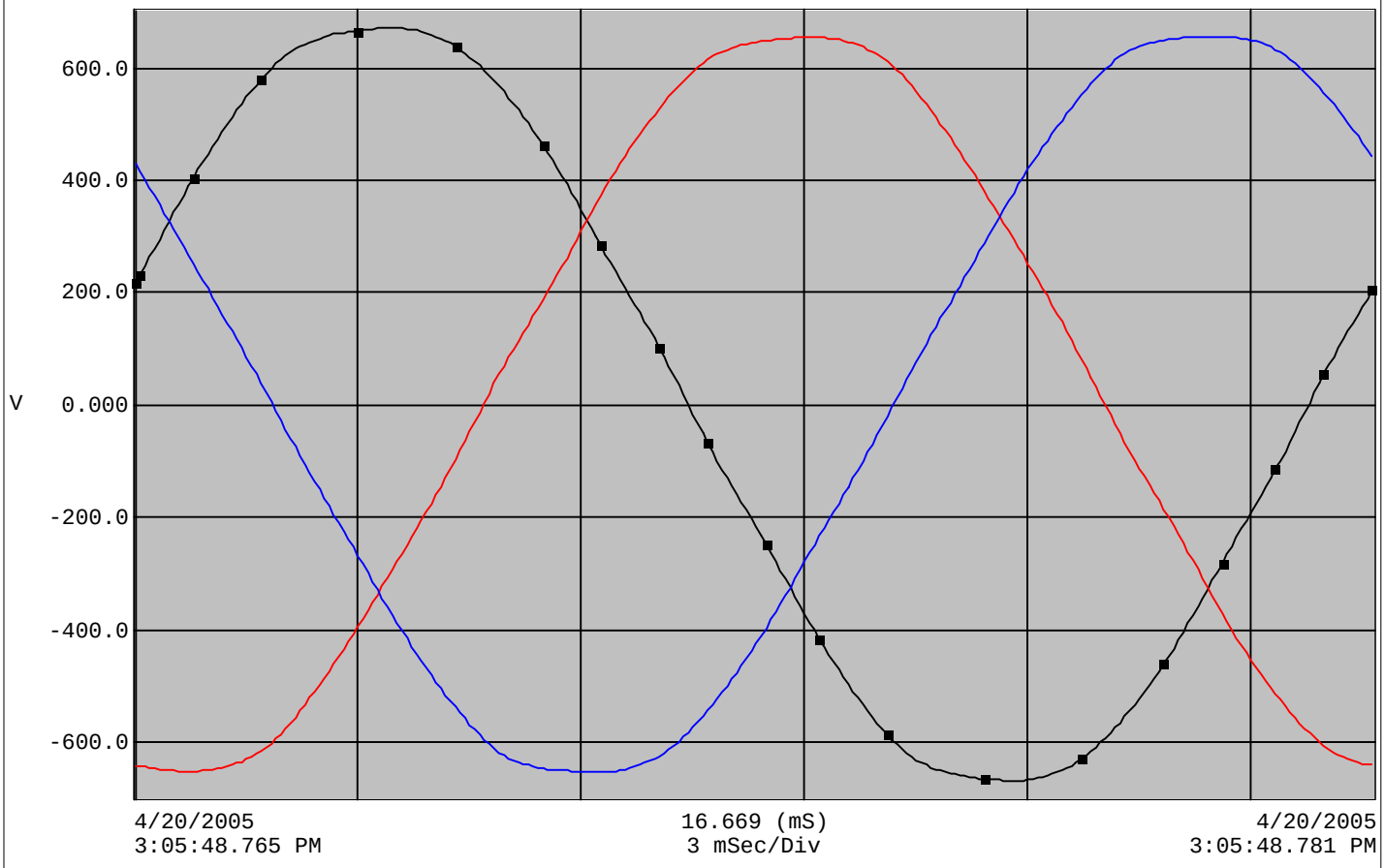


4/20/2005 - 3:05:48.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

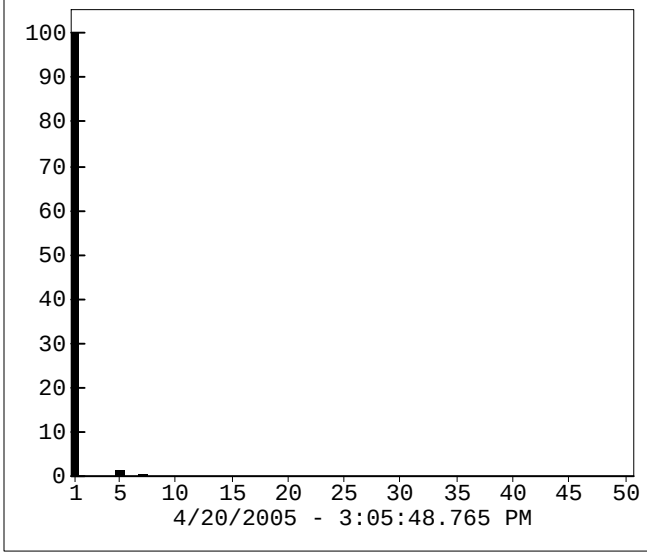
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	1.0	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	1.6	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	2.3	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	4/20/2005	3:05:48.765 PM	16.669	481.6	V
Waveform U2	4/20/2005	3:05:48.765 PM	16.669	472.2	V
Waveform U3	4/20/2005	3:05:48.765 PM	16.669	470.8	V

Waveform U1
481.65 Vrms, 1.59 %THD



4/20/2005 - 3:05:48.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 4/20/2005
Start Time: 3:05:48 PM
Duration: 0:0.000 (M:S)
W: 13.11E+3 W
VAR: 6.572E+3 W
VA: 16.01E+3 W
Power Factor: 0.819
Displacement Power Factor: 0.894
TAN: 0.502
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M4\042005-M4-Photo2.dvb

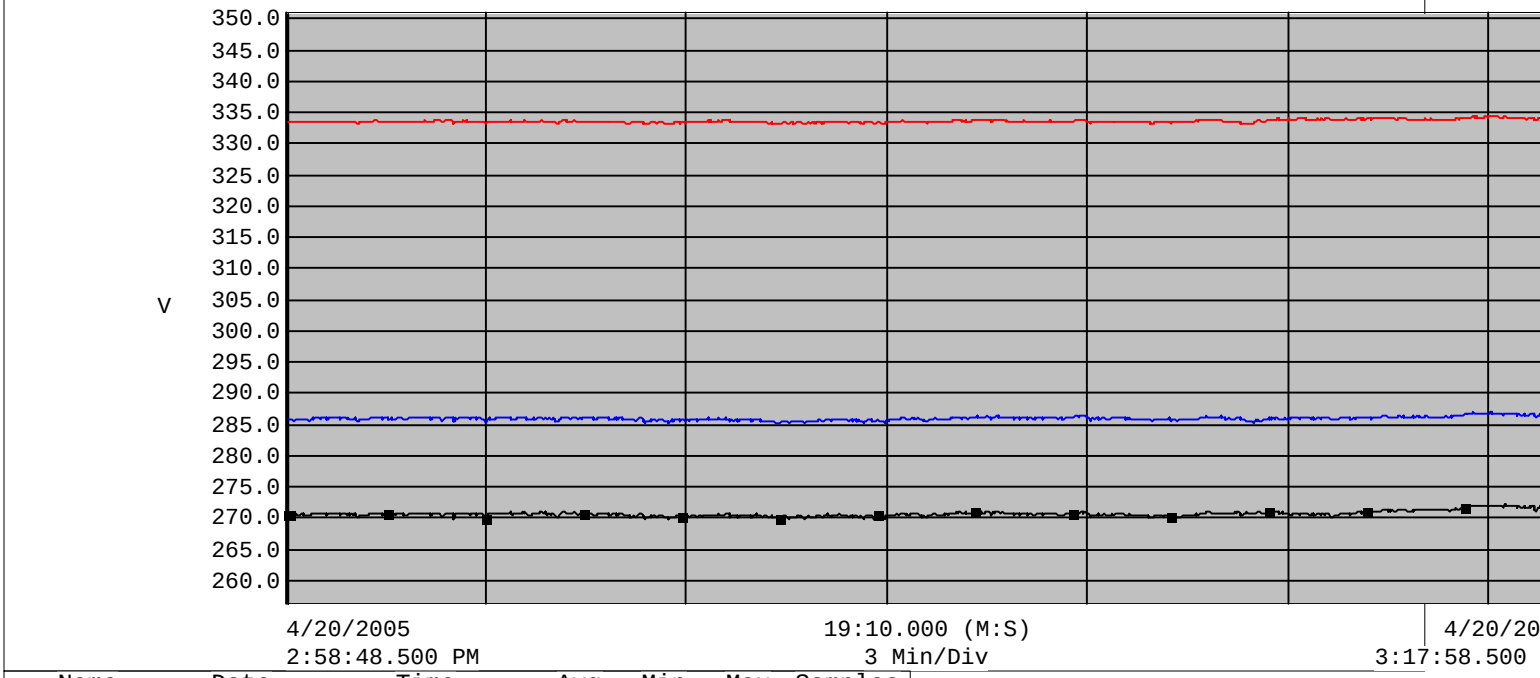
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS M-4 ,

Comments
Measured at the motor starter overload relay.

WPS M4

Recording Start Date	4/20/2005 - 2:58:48 PM
Recording Duration	19:10 (m:s)
Instrument ID	Model: 3945 - 1 1:260152 2.7

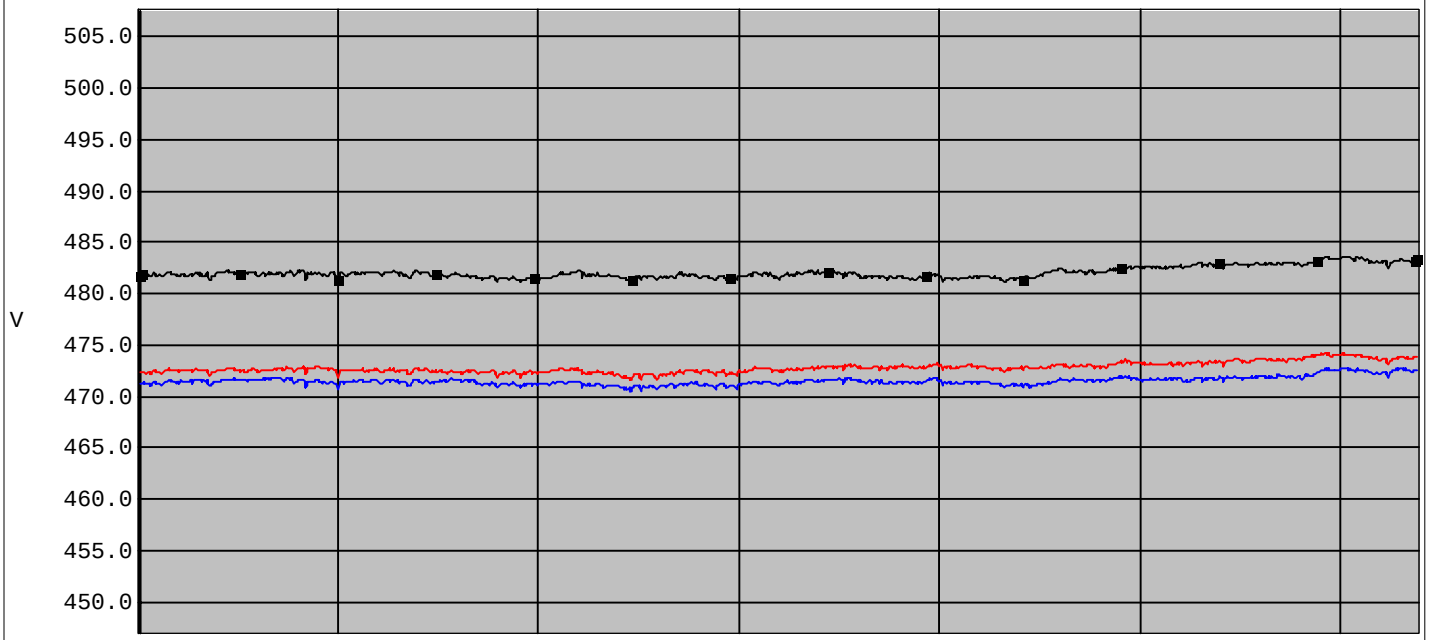
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	4/20/2005	2:58:48.500 PM	270.6	269.6	272.0	1151
Vrms Line2	4/20/2005	2:58:48.500 PM	333.5	333.0	334.2	1151
Vrms Line3	4/20/2005	2:58:48.500 PM	285.9	285.0	286.8	1151

4/20/2005 - 2:58:48.000 PM
Val
270.3 — Vrms Line1
333.3 — Vrms Line2
285.6 — Vrms Line3

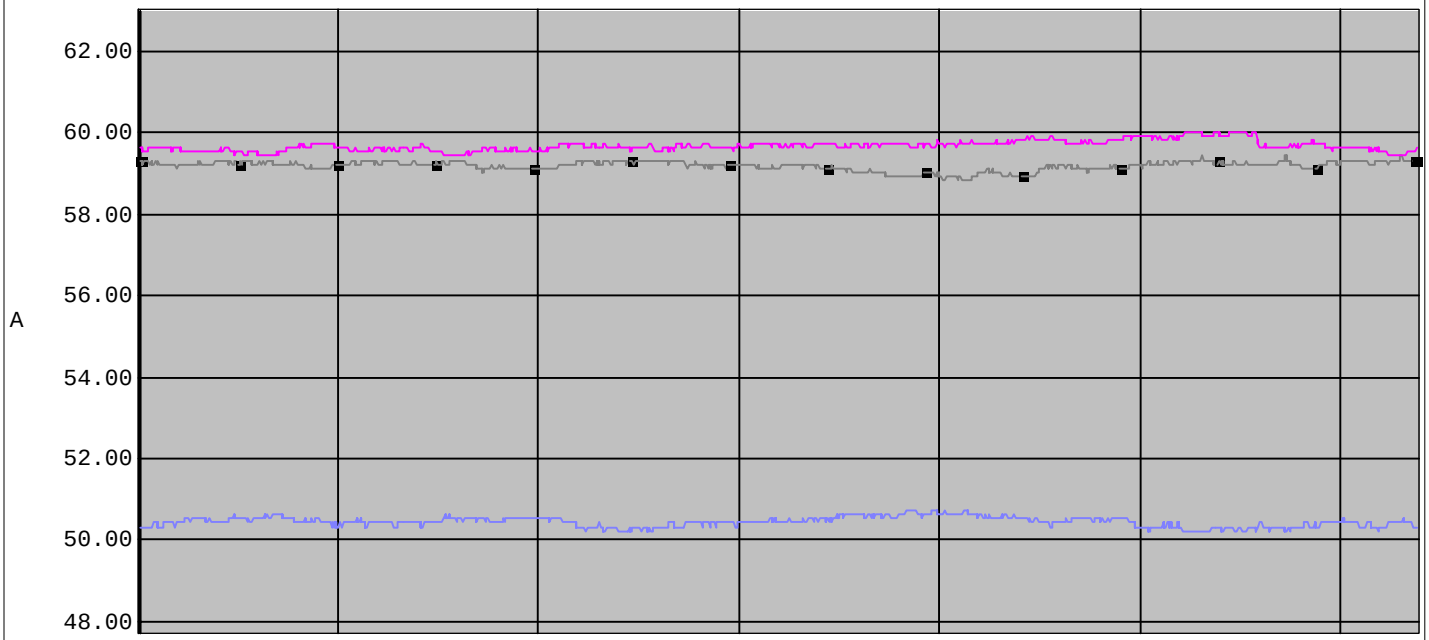
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	4/20/2005	2:58:48.500 PM	482.0	481.0	483.4	V
Urms Line2	4/20/2005	2:58:48.500 PM	472.7	471.5	474.1	V
Urms Line3	4/20/2005	2:58:48.500 PM	471.4	470.4	472.7	V

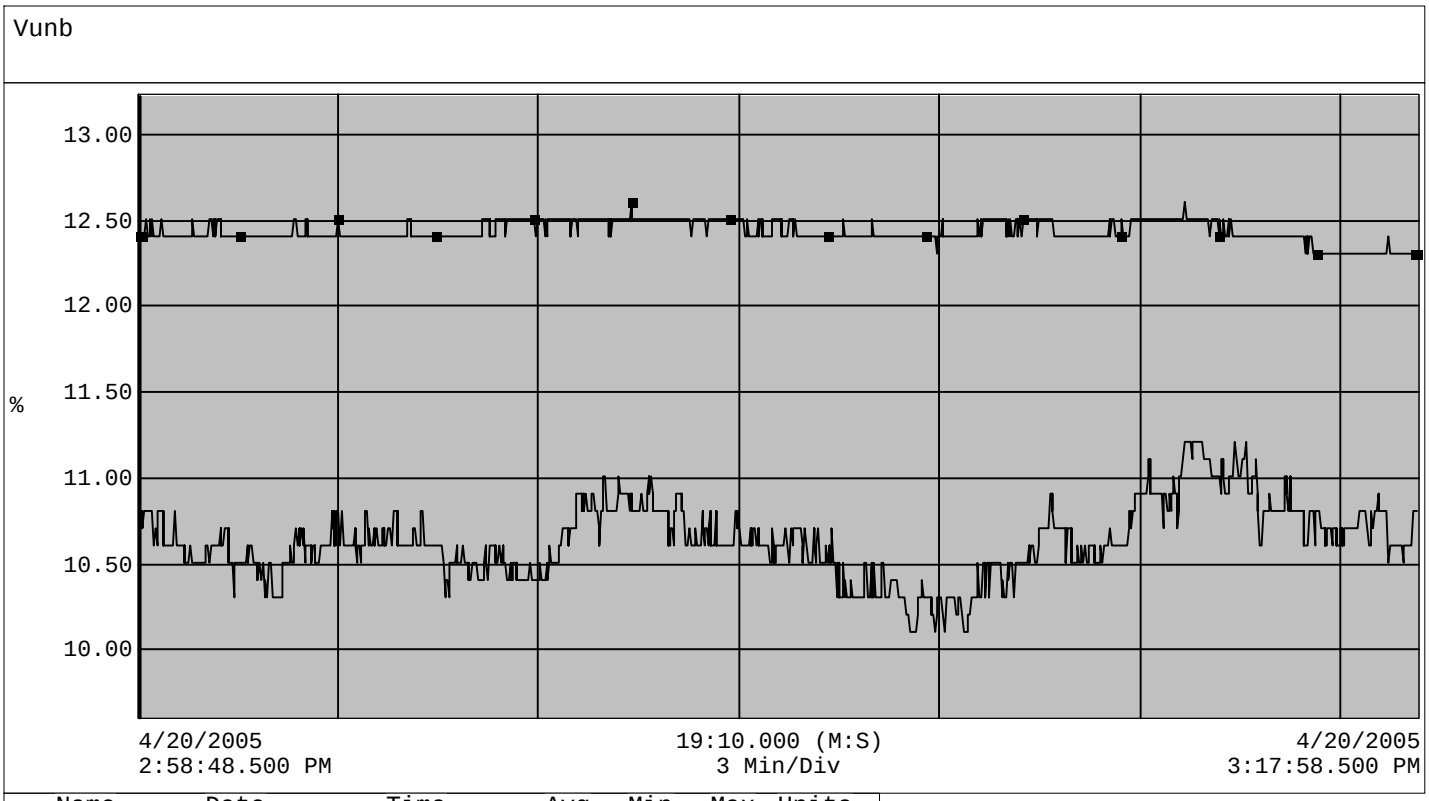
4/20/2005 - 2:58:48.000 PM
Val
481.7 — Urms Line1
472.2 — Urms Line2
471.1 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	4/20/2005	2:58:48.500 PM	59.17	58.80	59.40	A
Arms Line2	4/20/2005	2:58:48.500 PM	59.65	59.40	60.00	A
Arms Line3	4/20/2005	2:58:48.500 PM	50.42	50.20	50.70	A

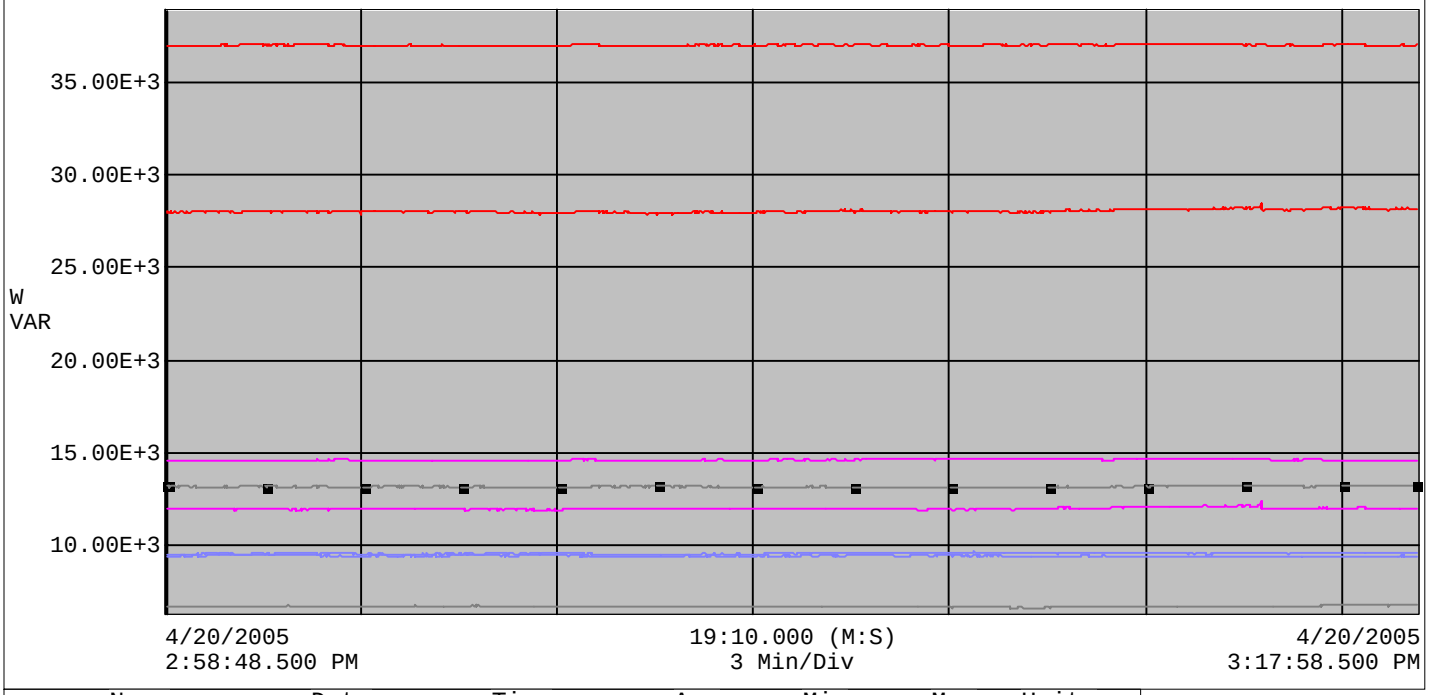
4/20/2005 - 2:58:48.000 PM
Val
59.30 — Arms Line1
59.60 — Arms Line2
50.30 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	4/20/2005	2:58:48.500 PM	12.43	12.30	12.60	%
Aunb(IEEE)	4/20/2005	2:58:48.500 PM	10.62	10.10	11.20	%

4/20/2005 - 2:58:48.000 PM
Val
12.40 —— Vunb(IEEE)
10.80 —— Aunb(IEEE)

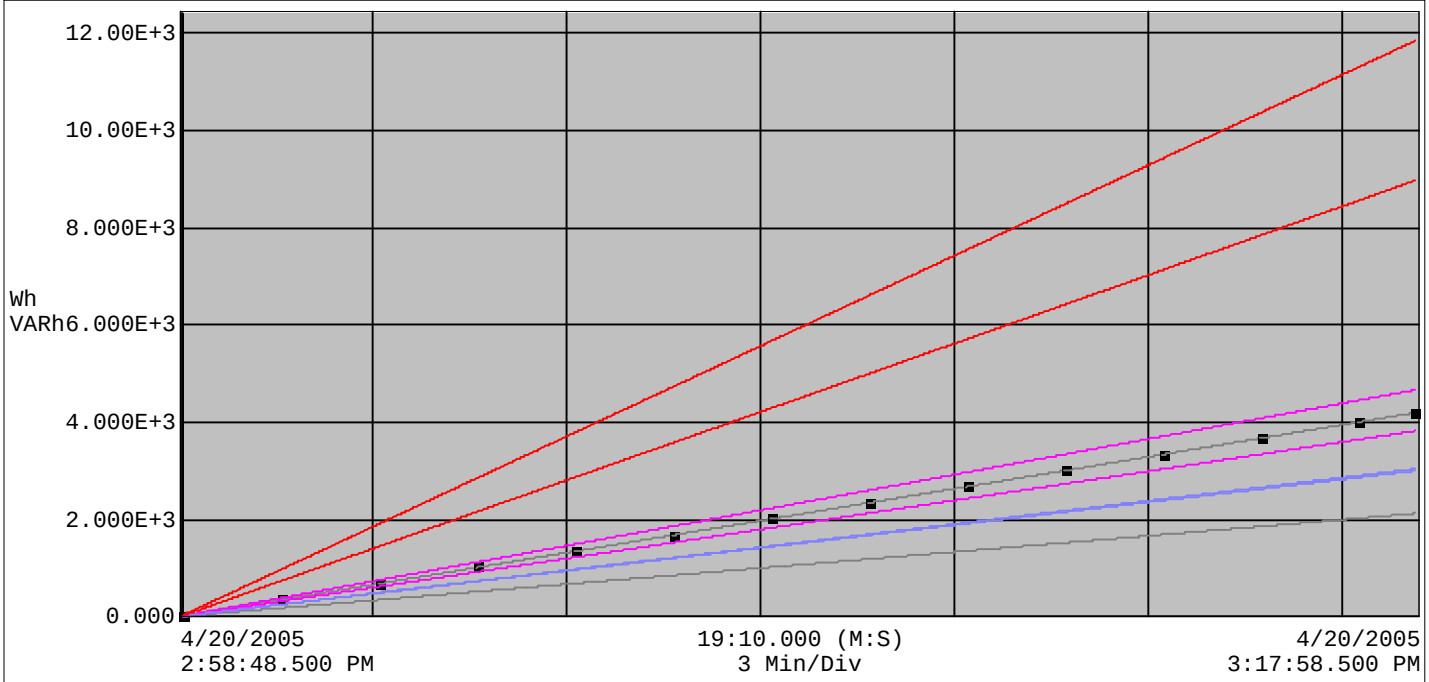
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	4/20/2005	2:58:48.500 PM	13.09E+3	13.00E+3	13.16E+3	W
W Line2	4/20/2005	2:58:48.500 PM	14.55E+3	14.47E+3	14.64E+3	W
W Line3	4/20/2005	2:58:48.500 PM	9.352E+3	9.279E+3	9.418E+3	W
W Sum of Phases	4/20/2005	2:58:48.500 PM	36.99E+3	36.93E+3	37.07E+3	W
VAR Line1	4/20/2005	2:58:48.500 PM	6.615E+3	6.519E+3	6.733E+3	VAR
VAR Line2	4/20/2005	2:58:48.500 PM	11.91E+3	11.82E+3	12.29E+3	VAR
VAR Line3	4/20/2005	2:58:48.500 PM	9.485E+3	9.390E+3	9.570E+3	VAR
VAR Sum of Phases	4/20/2005	2:58:48.500 PM	28.01E+3	27.83E+3	28.40E+3	VAR

4/20/2005 - 2:58:48.000 PM
Val
13.11E+3 — W Line1
14.52E+3 — W Line2
9.343E+3 — W Line3
36.97E+3 — W Sum of Phases
6.609E+3 — VAR Line1
11.91E+3 — VAR Line2
9.429E+3 — VAR Line3
27.95E+3 — VAR Sum of Phases

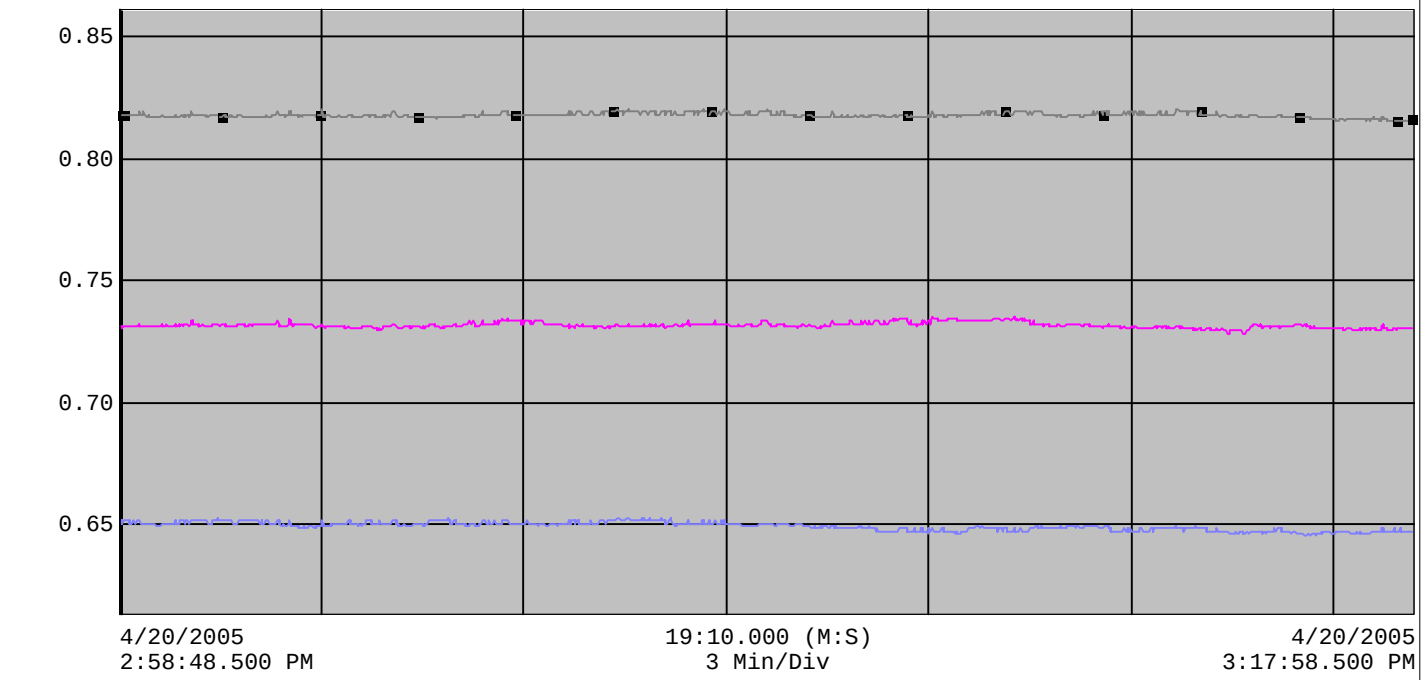
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	4/20/2005	2:58:48.500 PM	2.094E+3	3.705	4.186E+3	Wh
W-hours Line2	4/20/2005	2:58:48.500 PM	2.326E+3	3.975	4.652E+3	Wh
W-hours Line3	4/20/2005	2:58:48.500 PM	1.498E+3	2.555	2.990E+3	Wh
W-hours Sum of Phases	4/20/2005	2:58:48.500 PM	5.918E+3	10.11	11.83E+3	Wh
VAR-hours Line1	4/20/2005	2:58:48.500 PM	1.058E+3	1.807	2.115E+3	VARh
VAR-hours Line2	4/20/2005	2:58:48.500 PM	1.904E+3	3.255	3.809E+3	VARh
VAR-hours Line3	4/20/2005	2:58:48.500 PM	1.516E+3	2.591	3.032E+3	VARh
VAR-hours Sum of Phases	4/20/2005	2:58:48.500 PM	4.477E+3	7.654	8.957E+3	VARh

4/20/2005 - 2:58:48.000 PM
Val
3.705 — W-hours Line1
3.975 — W-hours Line2
2.555 — W-hours Line3
10.11 — W-hours Sum of Phases
1.807 — VAR-hours Line1
3.255 — VAR-hours Line2
2.591 — VAR-hours Line3
7.654 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	4/20/2005	2:58:48.500 PM	0.818	0.815	0.820	
PF Line2	4/20/2005	2:58:48.500 PM	0.731	0.728	0.735	
PF Line3	4/20/2005	2:58:48.500 PM	0.649	0.645	0.652	

4/20/2005 - 2:58:48.000 PM
Val
0.818 — PF Line1
0.731 — PF Line2
0.651 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M4\042005-M4.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS M-4 ,

Comments
Measured at motor starter overload relay, 460 volts, 50 HP

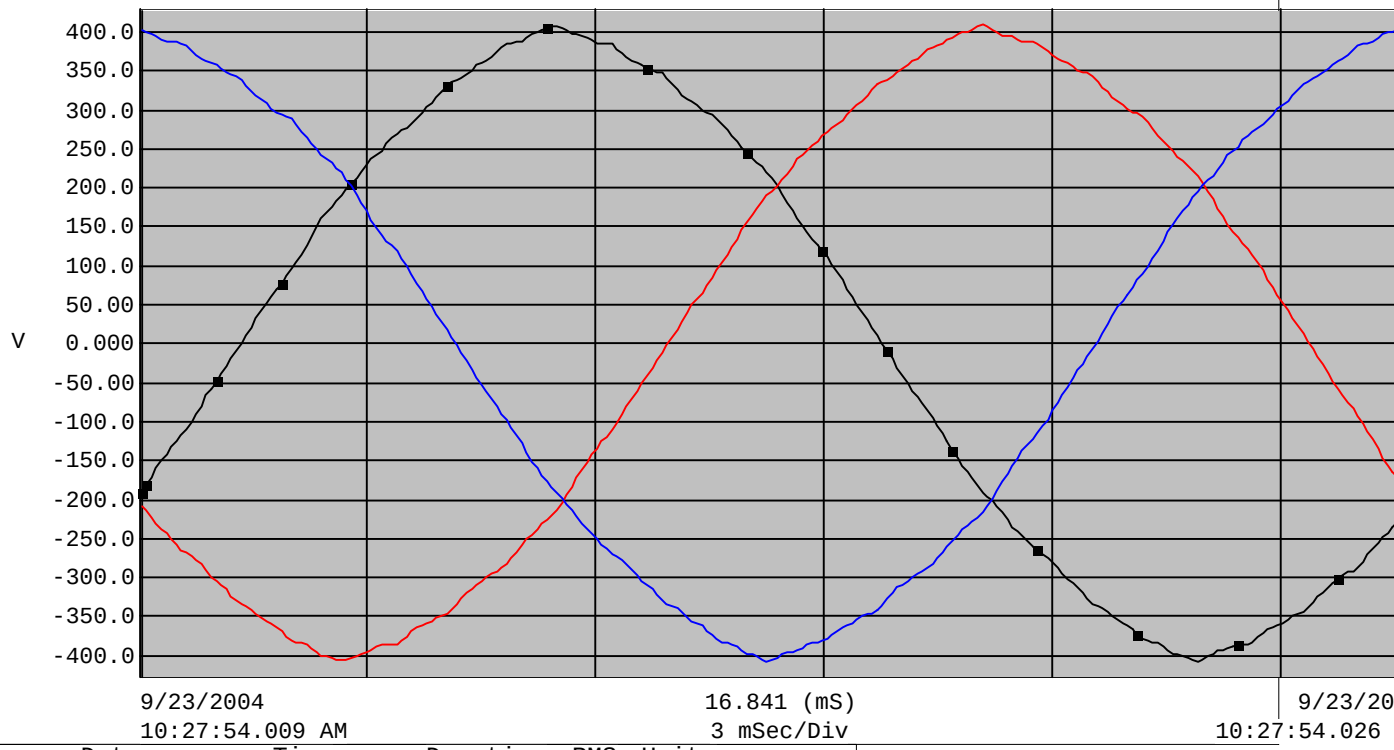
GWA Water Pumping Station Assessment				
Station Name: M-06	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/23/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.425	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	2	0.1	2
Metering Arrangement	2.5%	2	0.05	5
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.07	
Main Breaker	1.0%	1	0.01	
Motor Starter	1.0%	2	0.02	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	1	0.01	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.05	
Pressure	1.5%	1	0.015	52
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.3**

Comments:

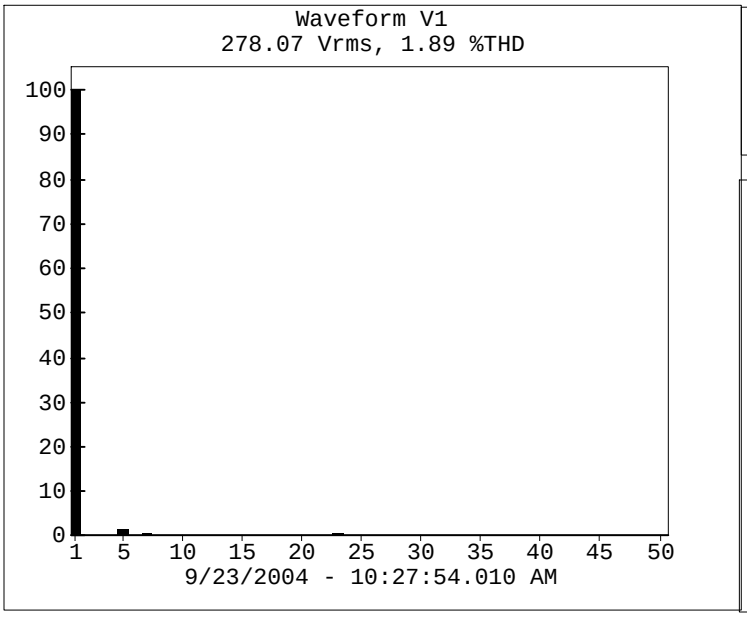
WPS M-6 - Generator Photo

Recording Start Date	9/23/2004 - 10:27:54 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.38 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	9/23/2004	10:27:54.009 AM	16.841	278.1	V
Waveform V2	9/23/2004	10:27:54.009 AM	16.841	278.0	V
Waveform V3	9/23/2004	10:27:54.009 AM	16.841	278.2	V



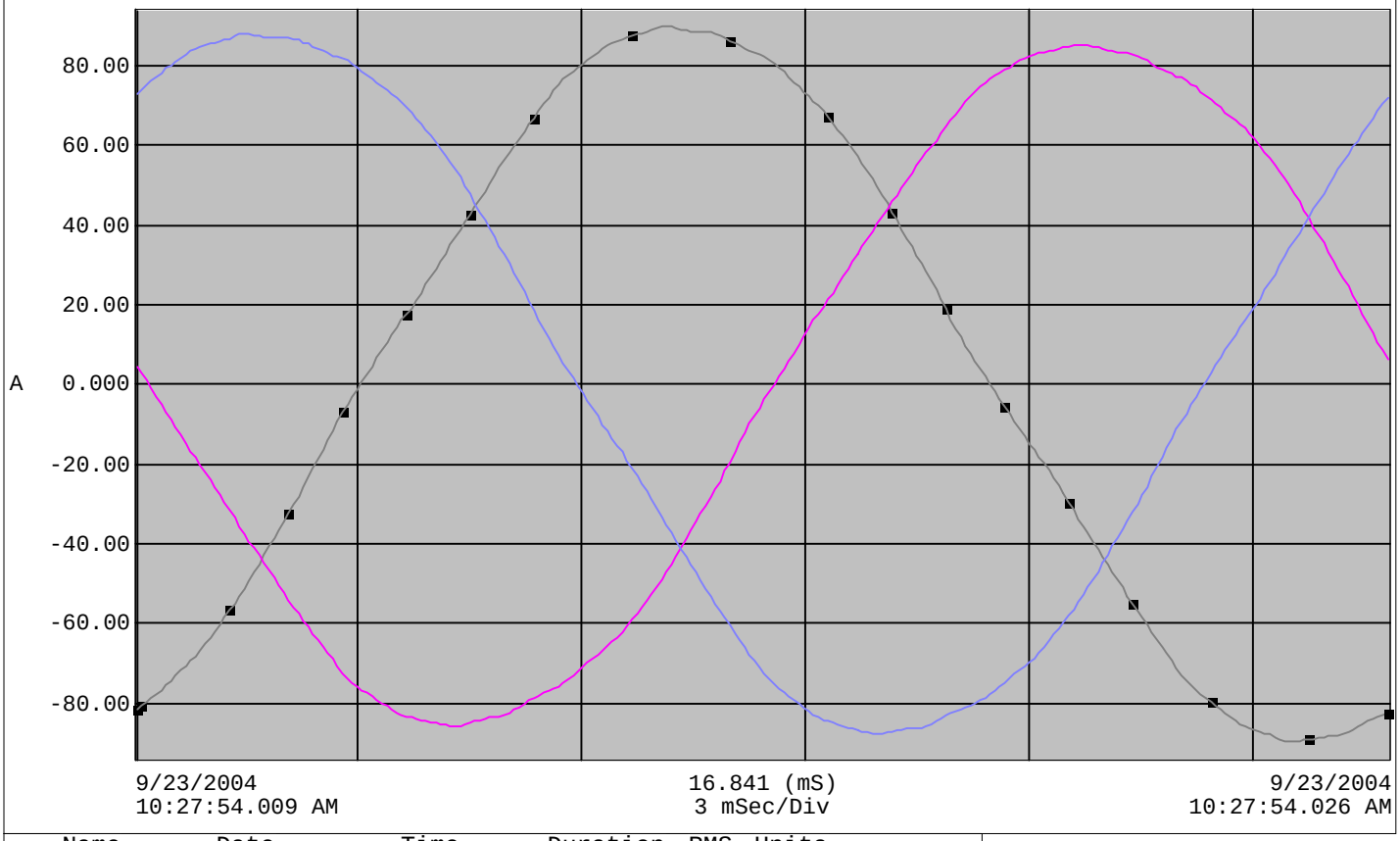
9/23/2004 - 10:27:54.000 AM

Val	
-193.5	Waveform V1
-208.6	Waveform V2
401.0	Waveform V3

Waveform V1

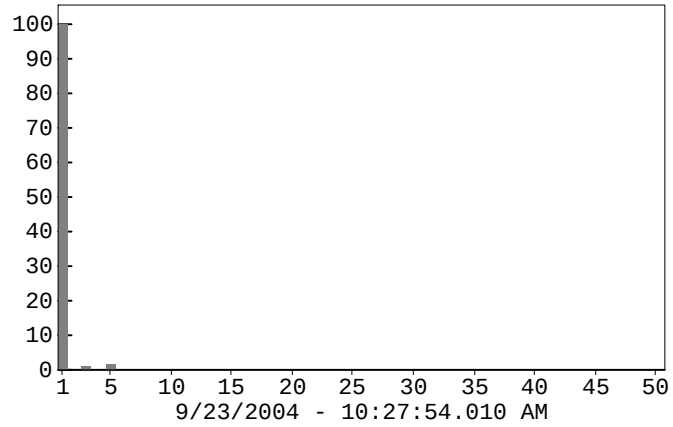
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	1.5	H22	0.0	H39	0.0
H06	0.0	H23	0.6	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.2
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.1	H49	0.2
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.1		

Waveform - Current
Frequency: 59.38 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	9/23/2004	10:27:54.009 AM	16.841	63.13	A
Waveform I2	9/23/2004	10:27:54.009 AM	16.841	60.77	A
Waveform I3	9/23/2004	10:27:54.009 AM	16.841	62.62	A

Waveform I1
63.13 Arms, 2.23 %THD



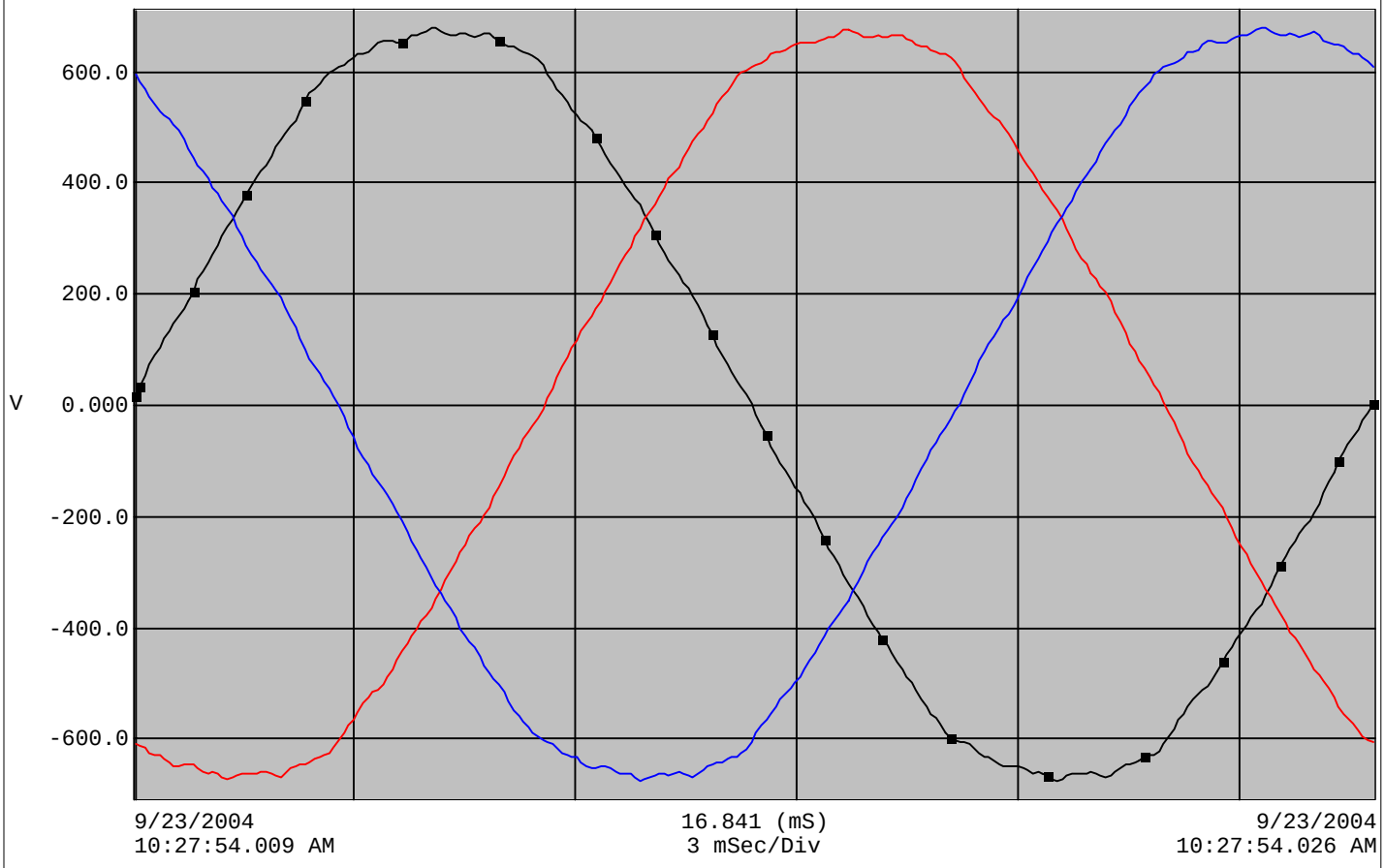
9/23/2004 - 10:27:54.000 AM

	Val	
—	-81.70	Waveform I1
—	4.400	Waveform I2
—	72.60	Waveform I3

Waveform I1

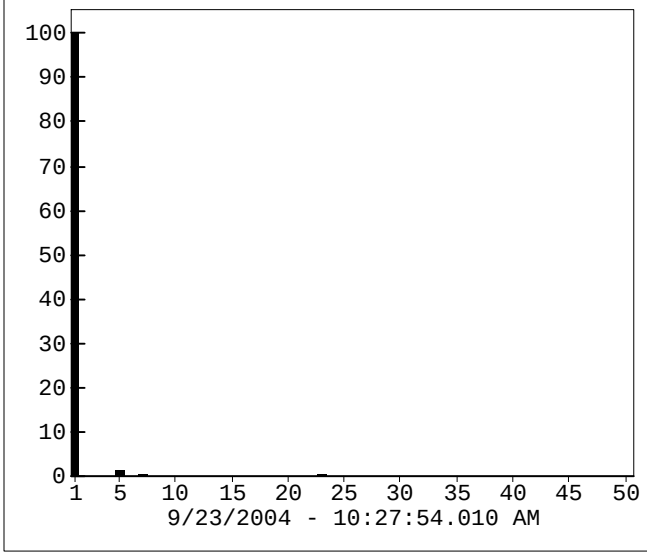
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.3	H19	0.1	H36	0.0
H03	1.1	H20	0.0	H37	0.0
H04	0.2	H21	0.0	H38	0.0
H05	1.8	H22	0.0	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.38 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	9/23/2004	10:27:54.009 AM	16.841	481.4	V
Waveform U2	9/23/2004	10:27:54.009 AM	16.841	481.8	V
Waveform U3	9/23/2004	10:27:54.009 AM	16.841	481.9	V

Waveform U1
481.45 Vrms, 1.91 %THD



9/23/2004 - 10:27:54.000 AM

	Val	
—	15.10	Waveform U1
—	-609.7	Waveform U2
—	594.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	1.5	H22	0.0	H39	0.0
H06	0.0	H23	0.6	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.4	H30	0.0	H47	0.2
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.1	H49	0.2
H16	0.0	H33	0.0	H50	0.0
H17	0.2	H34	0.1		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 9/23/2004
Start Time: 10:27:54 AM
Duration: 0:0.000 (M:S)
W: 13.85E+3 W
VAR: 10.69E+3 W
VA: 17.50E+3 W
Power Factor: 0.792
Displacement Power Factor: 0.792
TAN: 0.771
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M6\092304 - M6 - Generator Photo.dvb

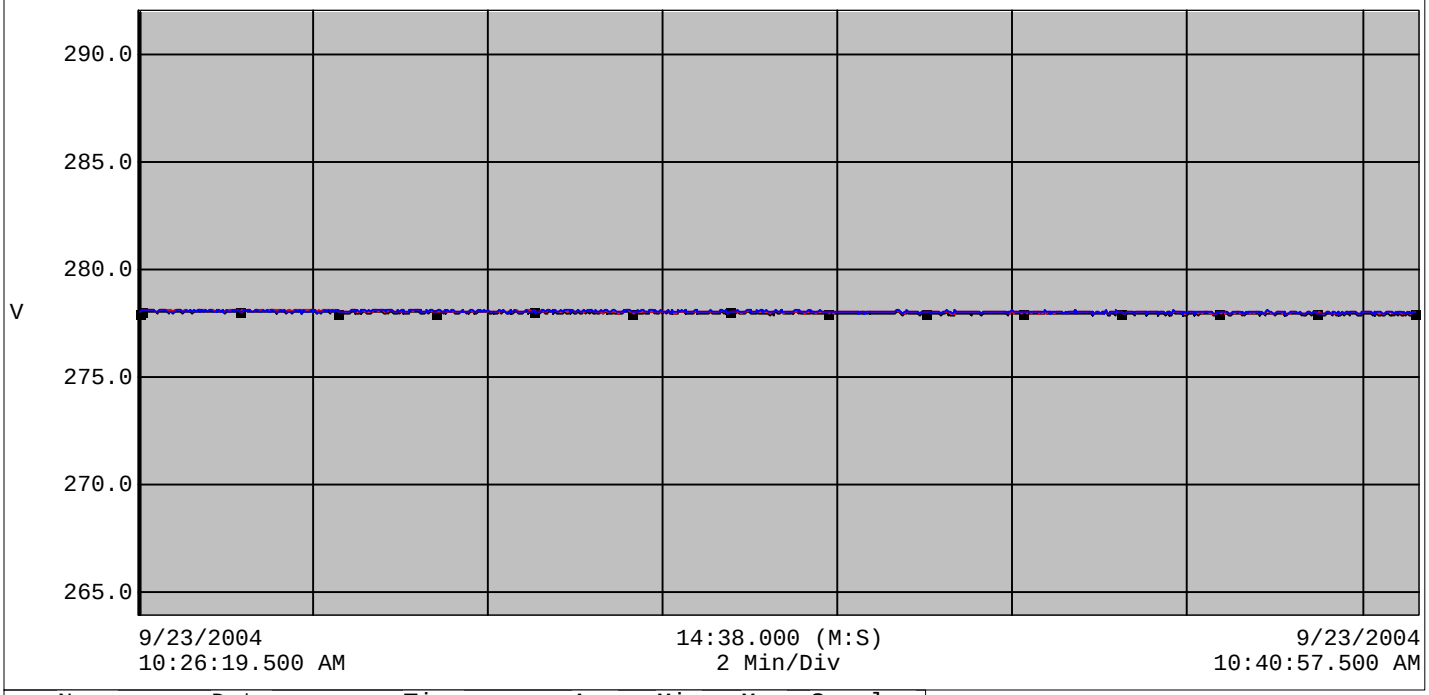
Operator	Test Site
Morikaw & Associates, LLC Lyman Morikawa, PE ,	WPS - M-6 - Photo on Generator Power ,

Comments
Recording at motor starter overload relay. 50 HP pump operating on generator power. GPA meter socket being replaced.

WPS M-6

Recording Start Date	9/23/2004 - 10:26:19 AM
Recording Duration	14:38 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

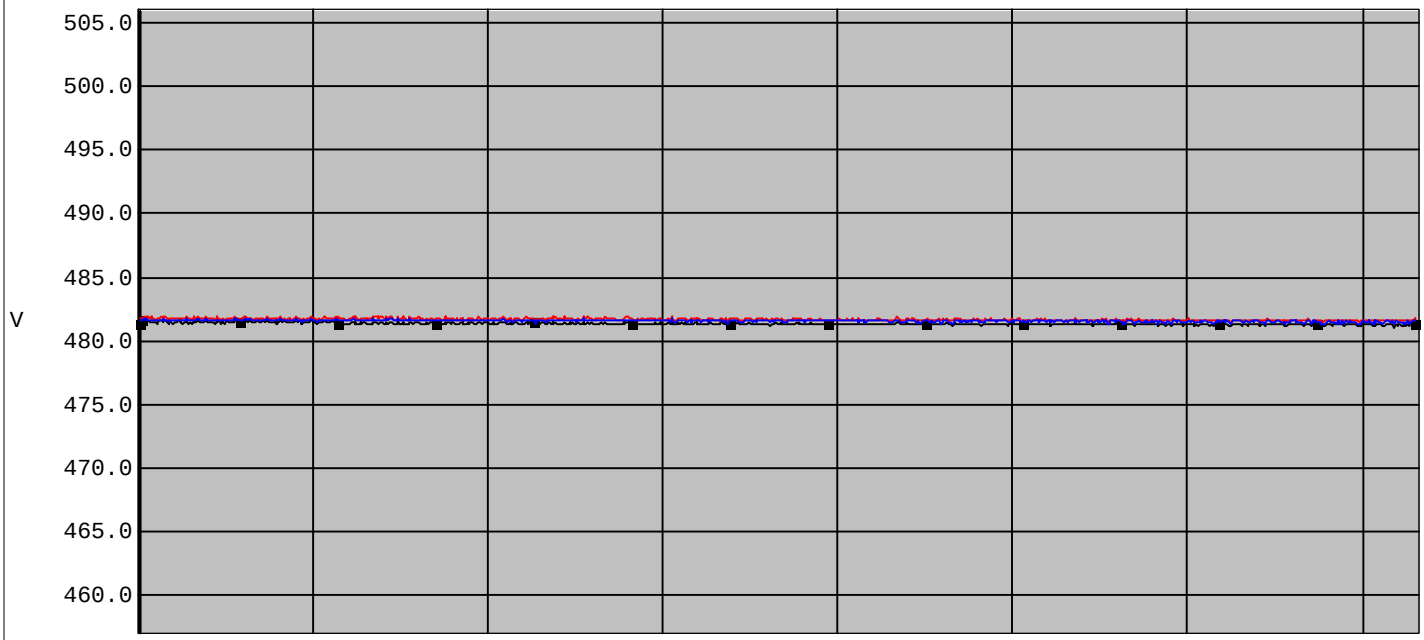
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	9/23/2004	10:26:19.500 AM	277.9	277.8	278.1	879
Vrms Line2	9/23/2004	10:26:19.500 AM	278.0	277.9	278.1	879
Vrms Line3	9/23/2004	10:26:19.500 AM	278.0	277.9	278.1	879

9/23/2004 - 10:26:19.000 AM
Val
277.9 — Vrms Line1
278.0 — Vrms Line2
278.0 — Vrms Line3

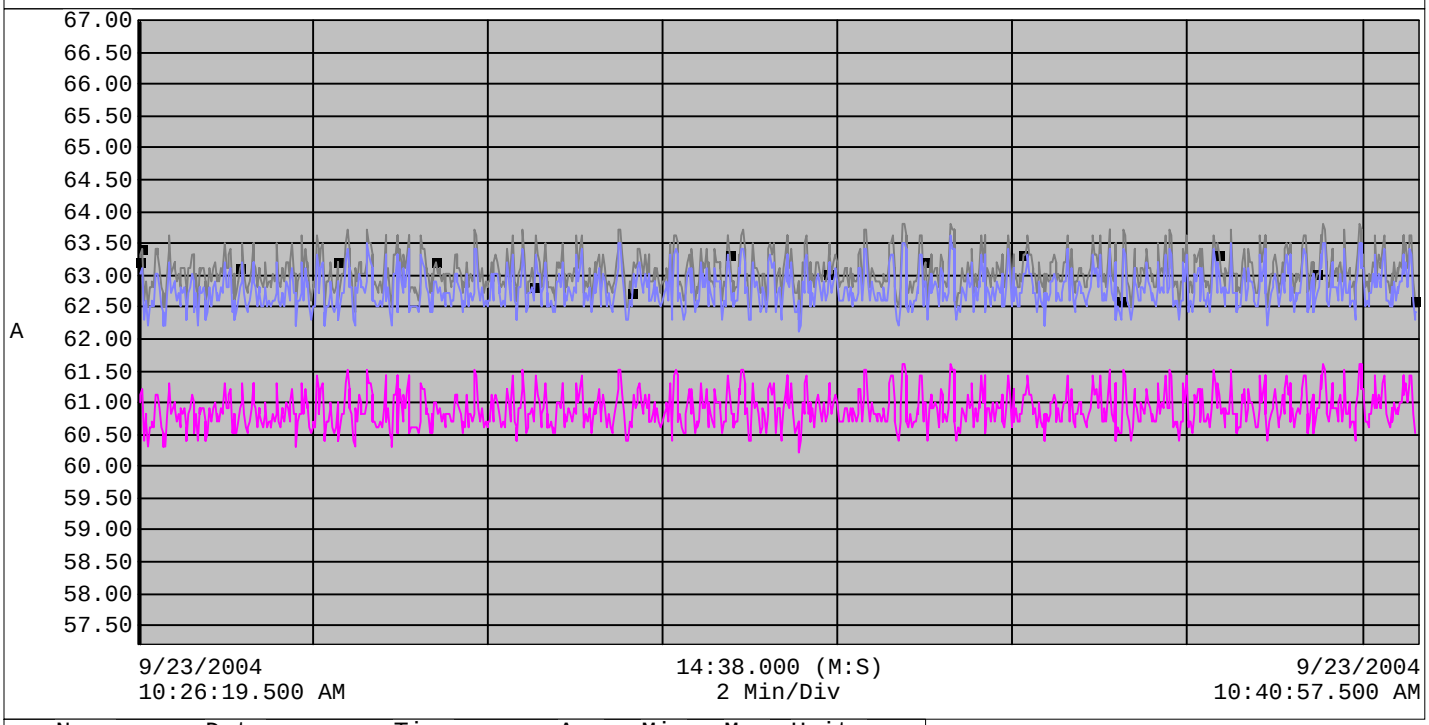
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	9/23/2004	10:26:19.500 AM	481.3	481.0	481.5	V
Urms Line2	9/23/2004	10:26:19.500 AM	481.6	481.4	481.9	V
Urms Line3	9/23/2004	10:26:19.500 AM	481.5	481.2	481.7	V

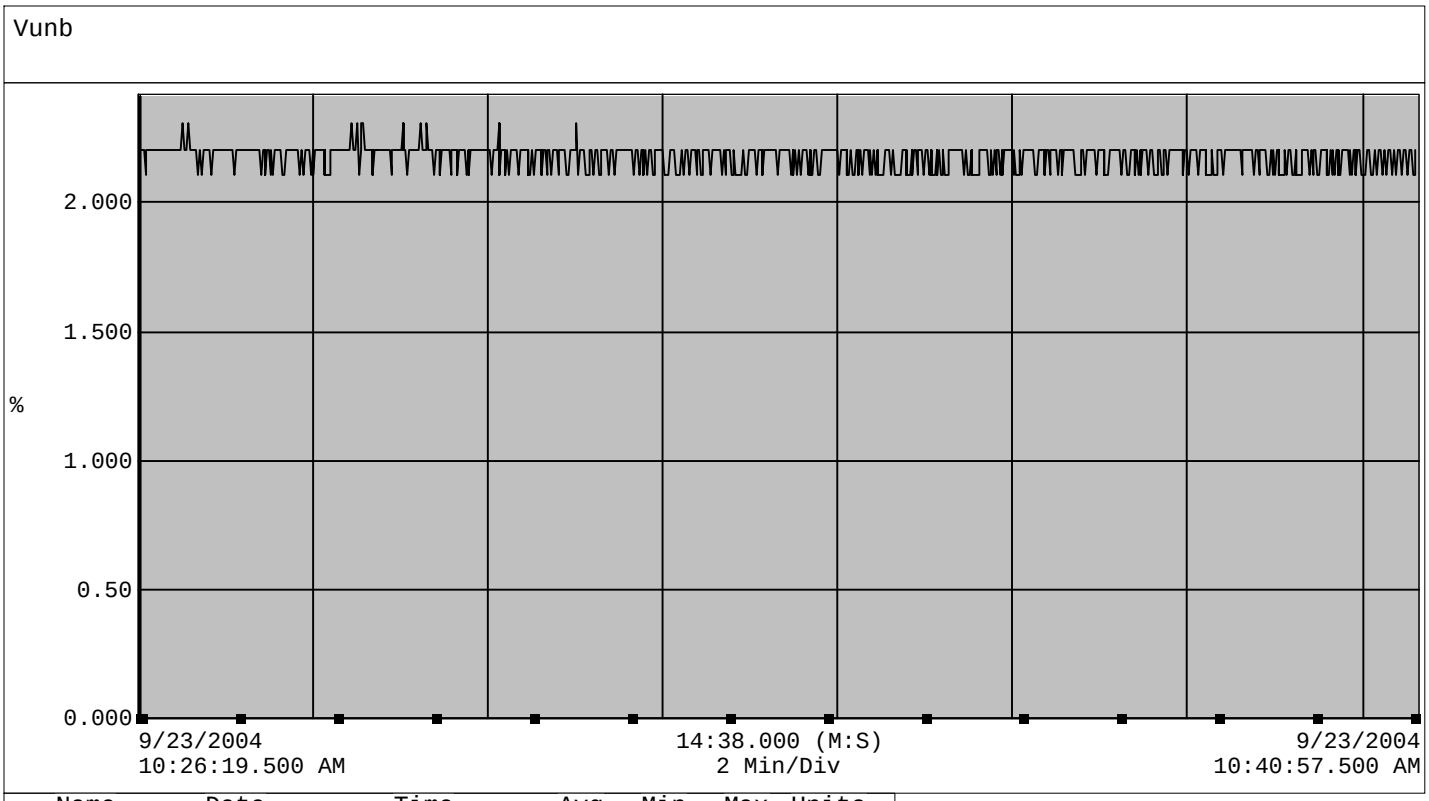
9/23/2004 - 10:26:19.000 AM
Val
481.4 Urms Line1
481.7 Urms Line2
481.5 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	9/23/2004	10:26:19.500 AM	63.05	62.30	63.80	A
Arms Line2	9/23/2004	10:26:19.500 AM	60.88	60.20	61.60	A
Arms Line3	9/23/2004	10:26:19.500 AM	62.78	62.10	63.60	A

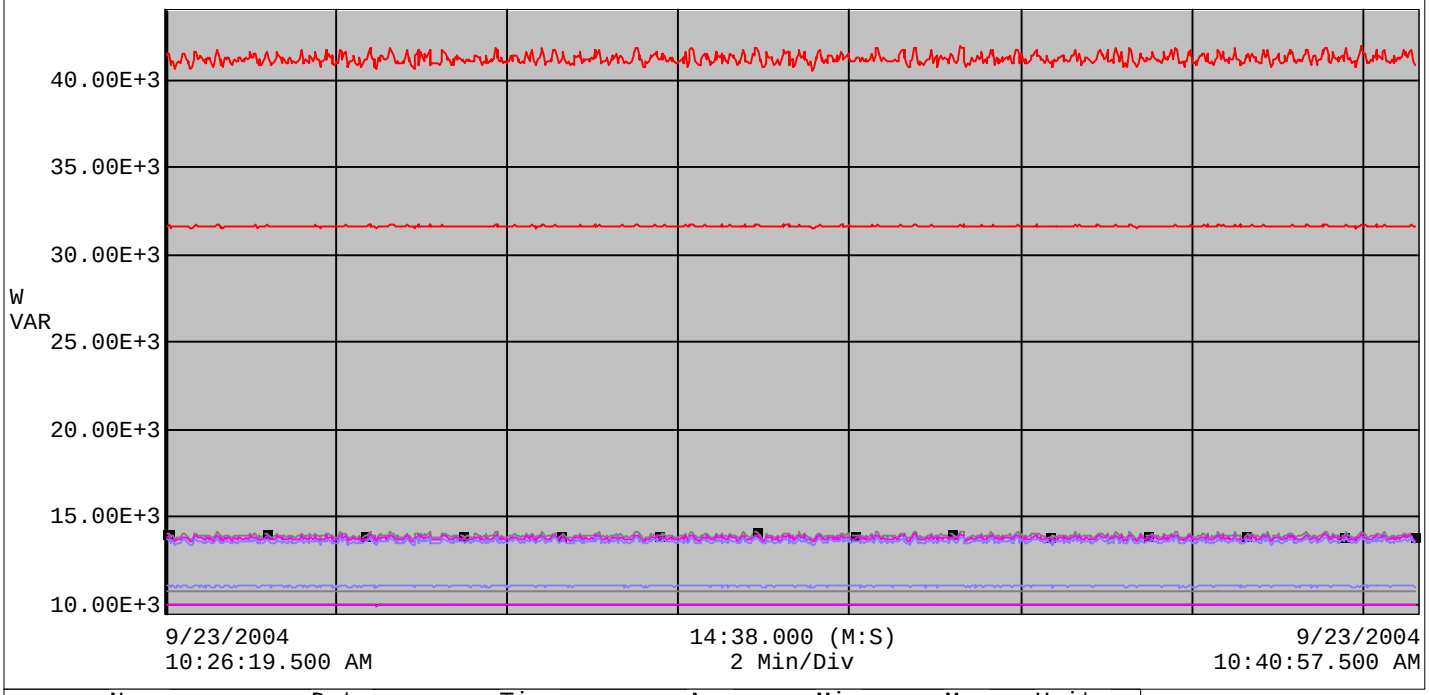
9/23/2004 - 10:26:19.000 AM
Val
63.20 — Arms Line1
61.00 — Arms Line2
63.00 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	9/23/2004	10:26:19.500 AM	0.000	0.000	0.000	%
Aunb(IEEE)	9/23/2004	10:26:19.500 AM	2.173	2.100	2.300	%

9/23/2004 - 10:26:19.000 AM
Val
0.000 —— Vunb(IEEE)
2.200 —— Aunb(IEEE)

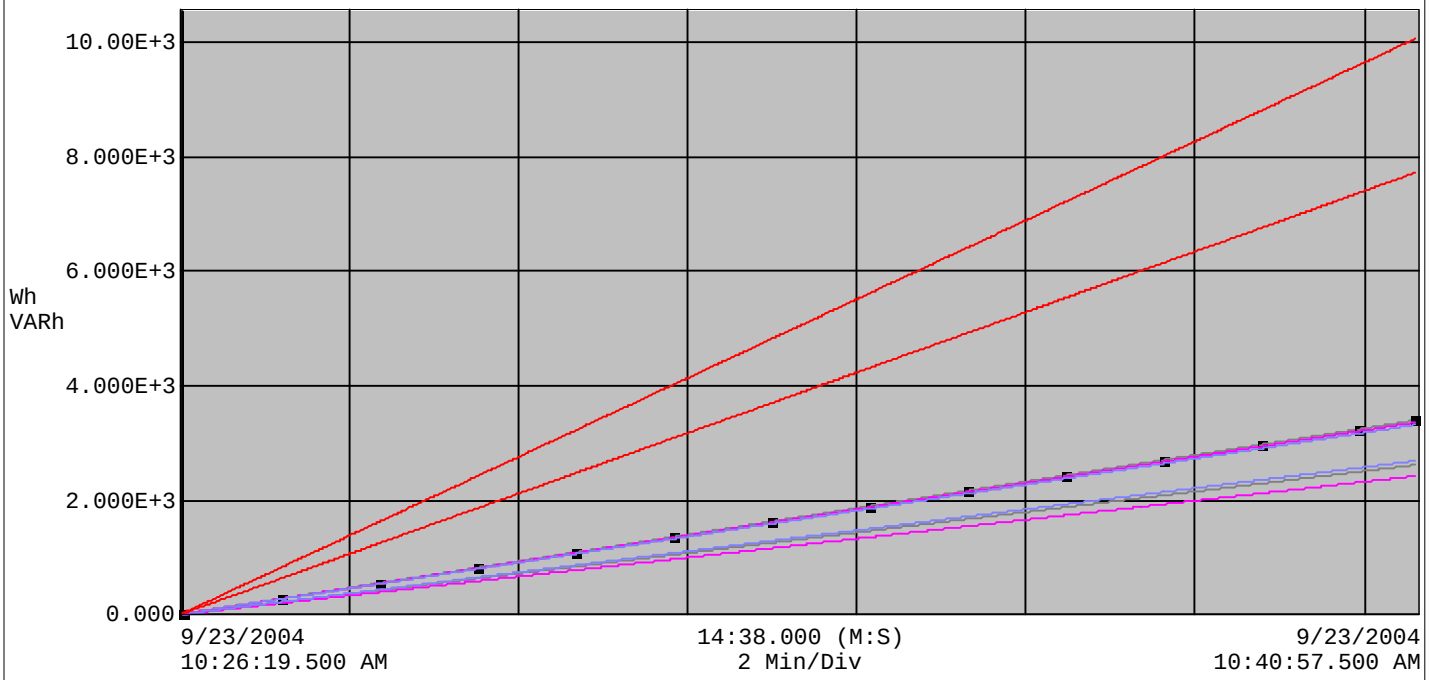
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	9/23/2004	10:26:19.500 AM	13.88E+3	13.65E+3	14.12E+3	W
W Line2	9/23/2004	10:26:19.500 AM	13.73E+3	13.51E+3	13.97E+3	W
W Line3	9/23/2004	10:26:19.500 AM	13.56E+3	13.33E+3	13.80E+3	W
W Sum of Phases	9/23/2004	10:26:19.500 AM	41.17E+3	40.50E+3	41.89E+3	W
VAR Line1	9/23/2004	10:26:19.500 AM	10.70E+3	10.67E+3	10.74E+3	VAR
VAR Line2	9/23/2004	10:26:19.500 AM	9.896E+3	9.875E+3	9.924E+3	VAR
VAR Line3	9/23/2004	10:26:19.500 AM	10.99E+3	10.95E+3	11.03E+3	VAR
VAR Sum of Phases	9/23/2004	10:26:19.500 AM	31.58E+3	31.50E+3	31.69E+3	VAR

9/23/2004 - 10:26:19.000 AM
Val
13.95E+3 — W Line1
13.79E+3 — W Line2
13.62E+3 — W Line3
41.36E+3 — W Sum of Phases
10.70E+3 — VAR Line1
9.895E+3 — VAR Line2
10.99E+3 — VAR Line3
31.58E+3 — VAR Sum of Phases

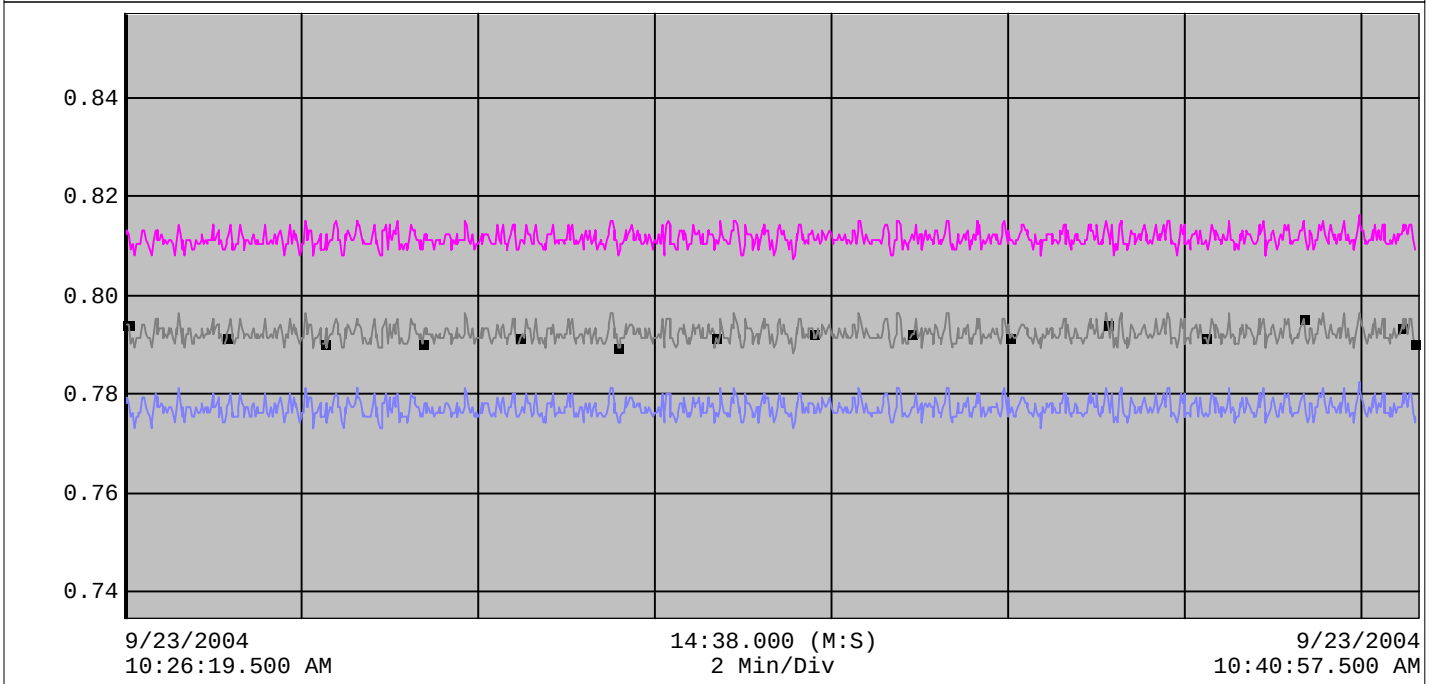
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	9/23/2004	10:26:19.500 AM	1.696E+3	3.827	3.389E+3	Wh
W-hours Line2	9/23/2004	10:26:19.500 AM	1.677E+3	3.786	3.353E+3	Wh
W-hours Line3	9/23/2004	10:26:19.500 AM	1.657E+3	3.739	3.311E+3	Wh
W-hours Sum of Phases	9/23/2004	10:26:19.500 AM	5.030E+3	11.35	10.05E+3	Wh
VAR-hours Line1	9/23/2004	10:26:19.500 AM	1.307E+3	2.950	2.612E+3	VARh
VAR-hours Line2	9/23/2004	10:26:19.500 AM	1.209E+3	2.728	2.416E+3	VARh
VAR-hours Line3	9/23/2004	10:26:19.500 AM	1.343E+3	3.030	2.683E+3	VARh
VAR-hours Sum of Phases	9/23/2004	10:26:19.500 AM	3.860E+3	8.708	7.711E+3	VARh

9/23/2004 - 10:26:19.000 AM
Val
3.827 — W-hours Line1
3.786 — W-hours Line2
3.739 — W-hours Line3
11.35 — W-hours Sum of Phases
2.950 — VAR-hours Line1
2.728 — VAR-hours Line2
3.030 — VAR-hours Line3
8.708 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	9/23/2004	10:26:19.500 AM	0.792	0.788	0.796	
PF Line2	9/23/2004	10:26:19.500 AM	0.811	0.807	0.816	
PF Line3	9/23/2004	10:26:19.500 AM	0.777	0.773	0.782	

9/23/2004 - 10:26:19.000 AM
Val
0.794 — PF Line1
0.812 — PF Line2
0.778 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M6\092304 - M6.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS M-6 - Generator Power ,

Comments

Recorded at the motor starter overload relay. Station operated on generator power as GPA meter socket was being replaced. 50 HP Franklin Electric Motor.

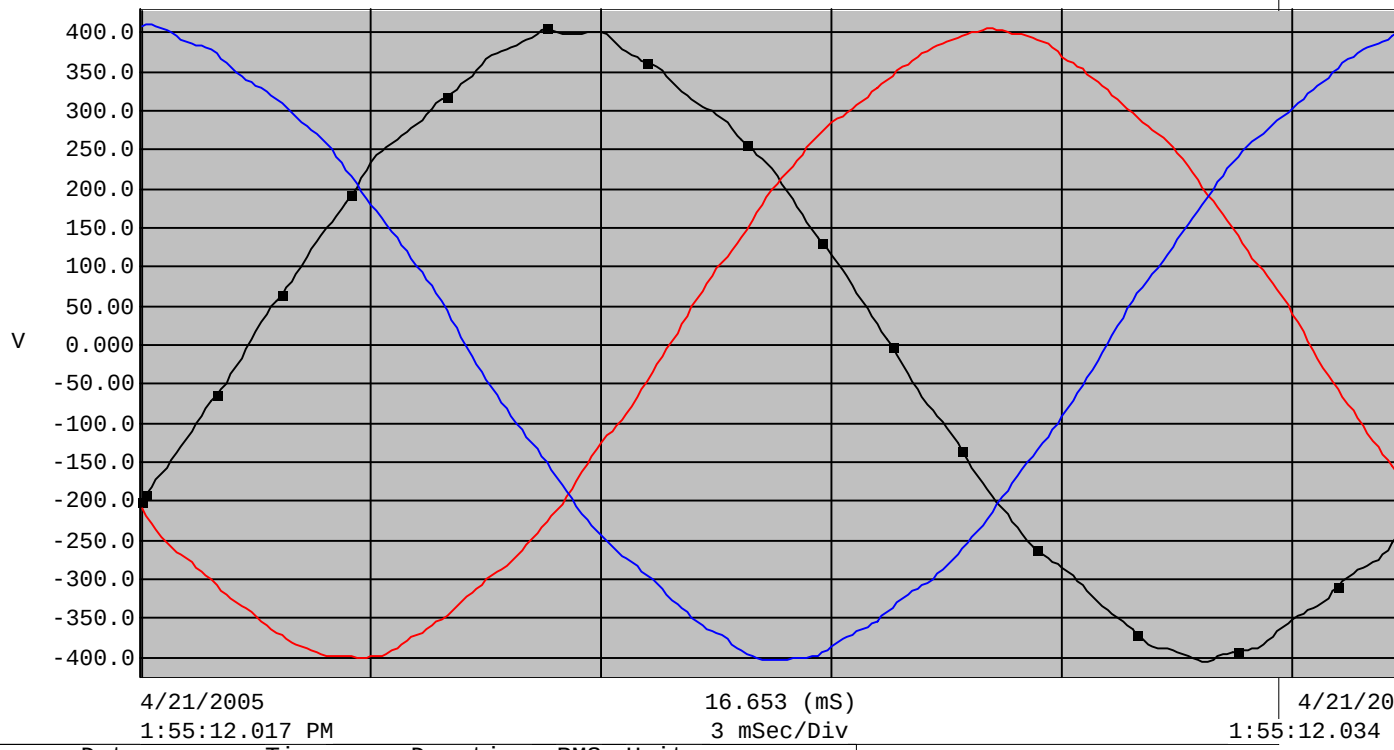
GWA Water Pumping Station Assessment				
Station Name: M-07	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 02/12/05 (pump operational)		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0	
Main Disconnect	10.0%	0	0	
Grounding	5.0%	0	0	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.05	
Generator Condition	10.0%	0	0	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	2	0.05	24
Auto Transfer Switch	2.5%	0	0	
Pump Motor Starter	**25.0%**		0	
Main Breaker	5.0%	0	0	
Motor Starter	5.0%	0	0	
Overload Relay	5.0%	0	0	
Wiring	5.0%	0	0	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.03	
Pressure	1.5%	0	0	
Flow	1.5%	2	0.03	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0	
Lighting	3.0%	0	0	
Power Devices	2.0%	0	0	
	100%	**Assessment Value**		**0.6**

Comments: Exterior assessment only (info only - do not use for total assessment)

WPS M-7 - Photo

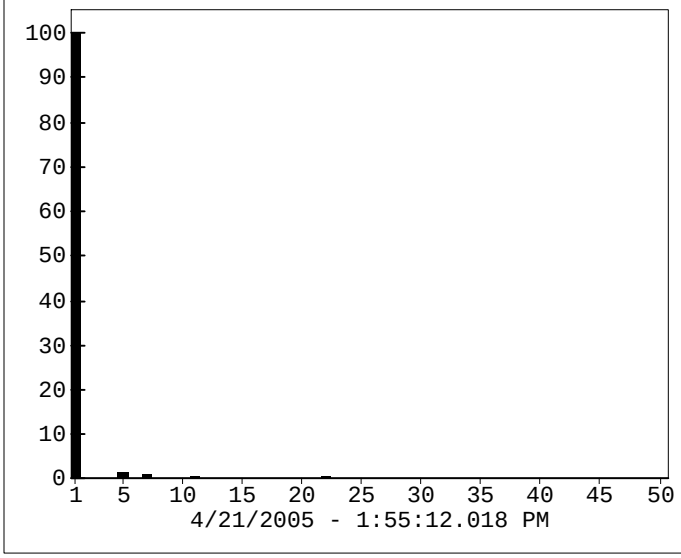
Recording Start Date	4/21/2005 - 1:55:12 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:260152 2.7

Waveform - Voltage (V)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	4/21/2005	1:55:12.017 PM	16.653	279.3	V
Waveform V2	4/21/2005	1:55:12.017 PM	16.653	280.1	V
Waveform V3	4/21/2005	1:55:12.017 PM	16.653	280.4	V

Waveform V1
279.33 Vrms, 2.03 %THD



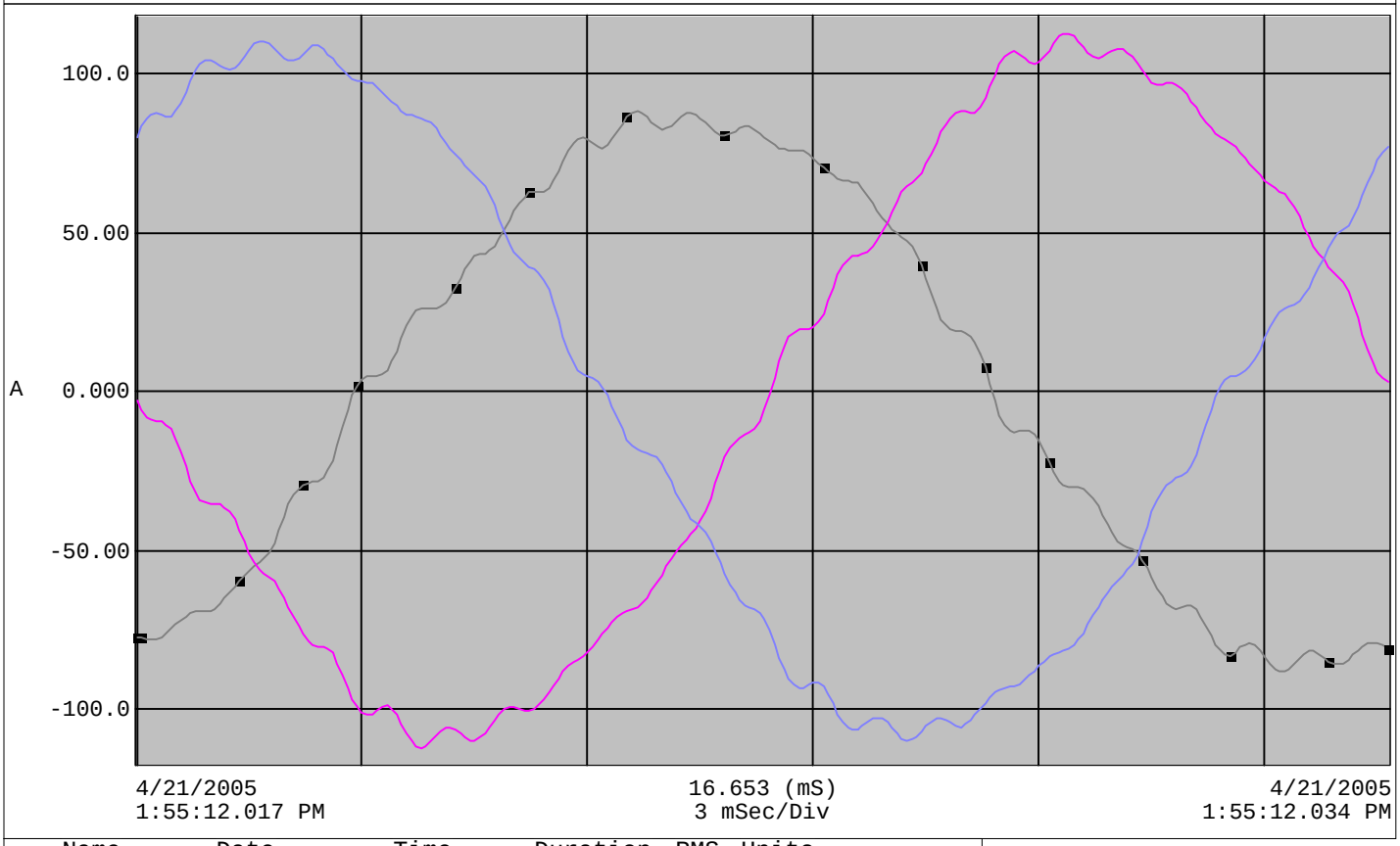
4/21/2005 - 1:55:12.000 PM

Val	
-202.7	Waveform V1
-210.9	Waveform V2
407.3	Waveform V3

Waveform V1

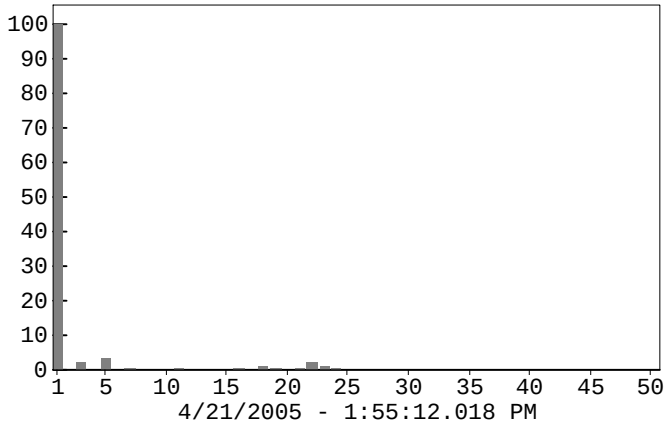
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	0.2	H20	0.2	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.4	H22	0.6	H39	0.0
H06	0.1	H23	0.3	H40	0.0
H07	0.9	H24	0.3	H41	0.0
H08	0.0	H25	0.0	H42	0.1
H09	0.2	H26	0.1	H43	0.0
H10	0.0	H27	0.0	H44	0.1
H11	0.6	H28	0.1	H45	0.1
H12	0.0	H29	0.1	H46	0.1
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.05 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	4/21/2005	1:55:12.017 PM	16.653	61.89	A
Waveform I2	4/21/2005	1:55:12.017 PM	16.653	75.60	A
Waveform I3	4/21/2005	1:55:12.017 PM	16.653	75.46	A

Waveform I1
61.89 Arms, 5.98 %THD

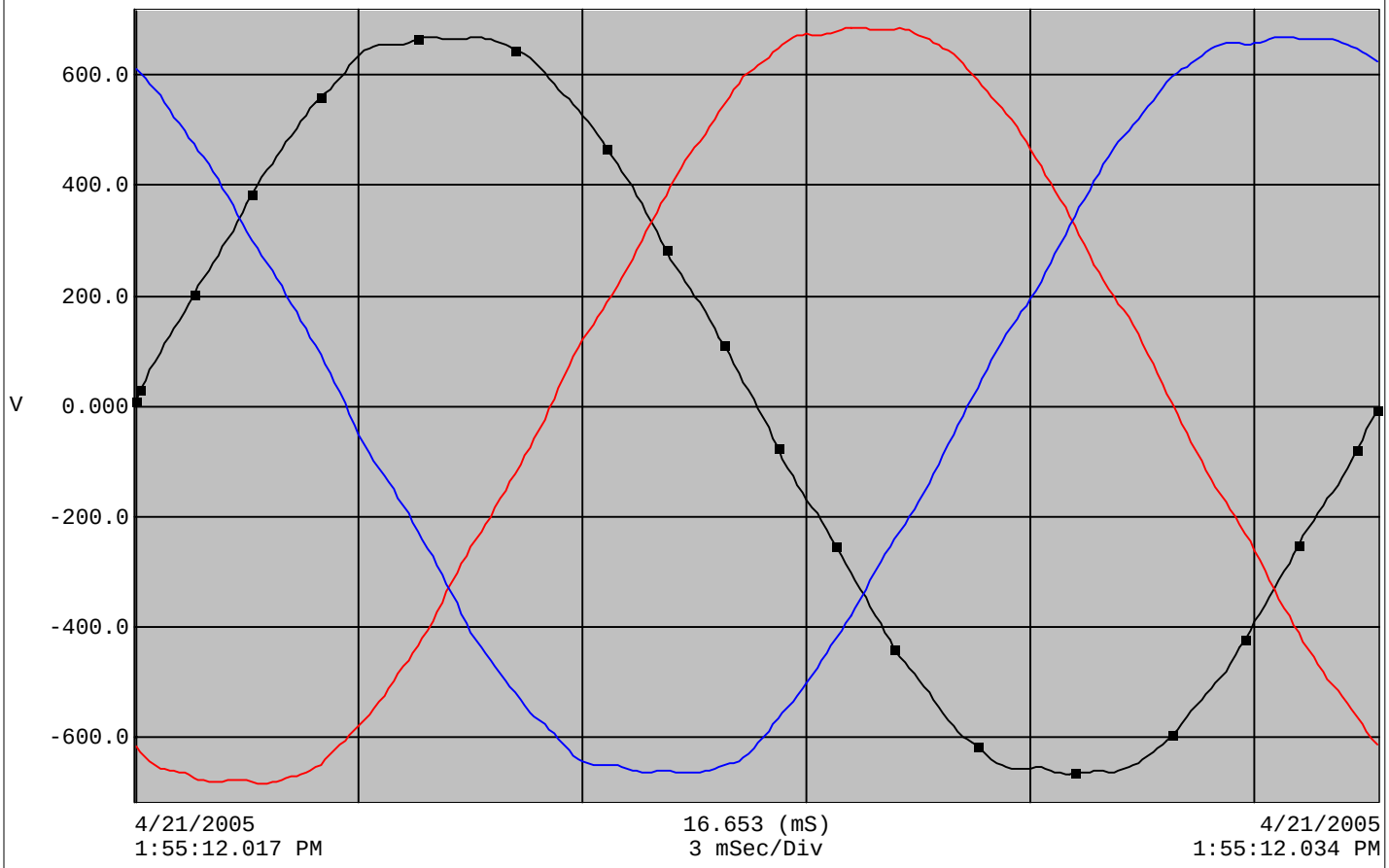


4/21/2005 - 1:55:12.000 PM
Val
-77.90 Waveform I1
-2.900 Waveform I2
79.60 Waveform I3

Waveform I1

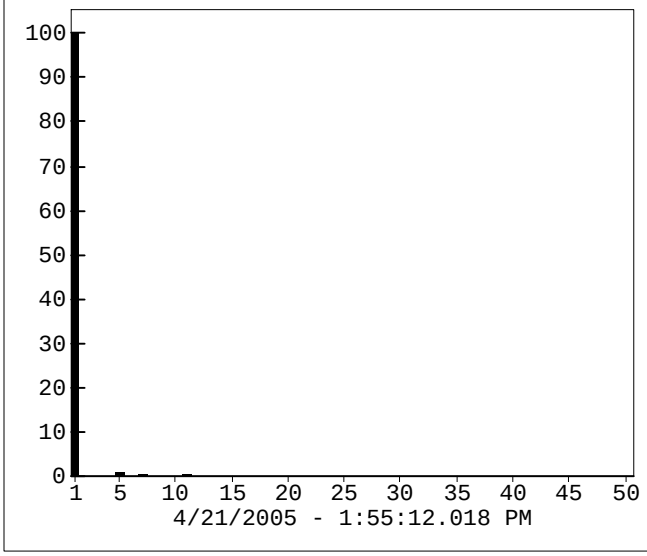
	(%)		(%)		(%)
H01	100.0	H18	1.3	H35	0.1
H02	0.2	H19	0.8	H36	0.1
H03	2.6	H20	0.5	H37	0.1
H04	0.1	H21	0.8	H38	0.0
H05	3.6	H22	2.6	H39	0.0
H06	0.1	H23	1.5	H40	0.1
H07	0.9	H24	1.0	H41	0.1
H08	0.1	H25	0.1	H42	0.2
H09	0.4	H26	0.2	H43	0.1
H10	0.1	H27	0.1	H44	0.0
H11	0.6	H28	0.1	H45	0.1
H12	0.3	H29	0.1	H46	0.1
H13	0.4	H30	0.1	H47	0.0
H14	0.2	H31	0.1	H48	0.1
H15	0.3	H32	0.0	H49	0.1
H16	0.6	H33	0.0	H50	0.0
H17	0.5	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	4/21/2005	1:55:12.017 PM	16.653	479.7	V
Waveform U2	4/21/2005	1:55:12.017 PM	16.653	492.9	V
Waveform U3	4/21/2005	1:55:12.017 PM	16.653	481.8	V

Waveform U1
479.67 Vrms, 1.72 %THD



4/21/2005 - 1:55:12.000 PM

	Val	
—	8.100	Waveform U1
—	-618.2	Waveform U2
—	610.0	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.3	H22	0.3	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.8	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 4/21/2005
Start Time: 1:55:12 PM
Duration: 0:0.000 (M:S)
W: 13.56E+3 W
VAR: 10.67E+3 W
VA: 17.29E+3 W
Power Factor: 0.785
Displacement Power Factor: 0.786
TAN: 0.786
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M7\042105-M7-PHOTO.dvb

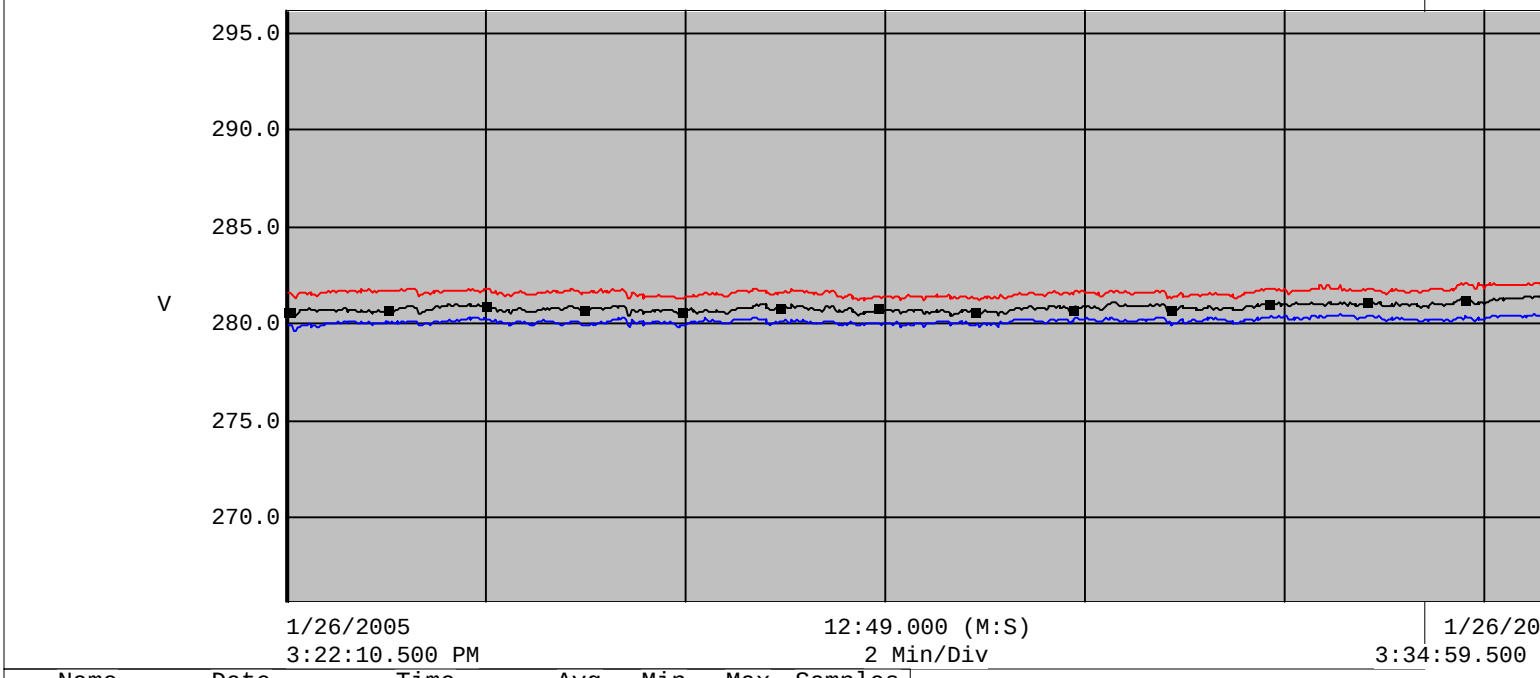
Operator	Test Site
MORIKAWA & ASSOCIATES, LLC LYMAN MORIKAWA,, PE ,	GWA WPS M-7 ,

Comments
MEASURED AT THE OVERLOAD RELAY. 37 KW, 50 HP, 460 VOLTS.

WPS M-7

Recording Start Date	1/26/2005 - 3:22:10 PM
Recording Duration	12:49 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

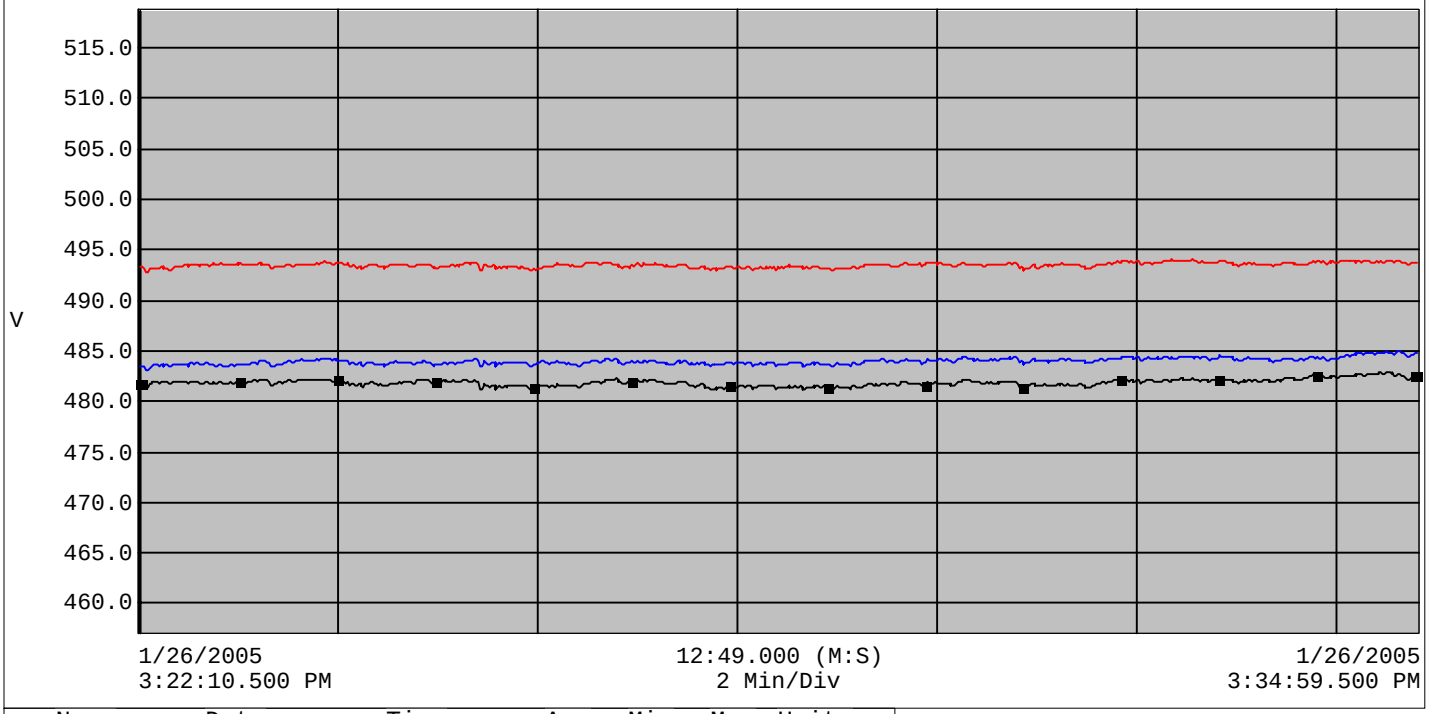
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	1/26/2005	3:22:10.500 PM	280.8	280.4	281.4	770
Vrms Line2	1/26/2005	3:22:10.500 PM	281.6	281.2	282.0	770
Vrms Line3	1/26/2005	3:22:10.500 PM	280.1	279.6	280.5	770

1/26/2005 - 3:22:10.000 PM
Val
280.6 — Vrms Line1
281.6 — Vrms Line2
279.9 — Vrms Line3

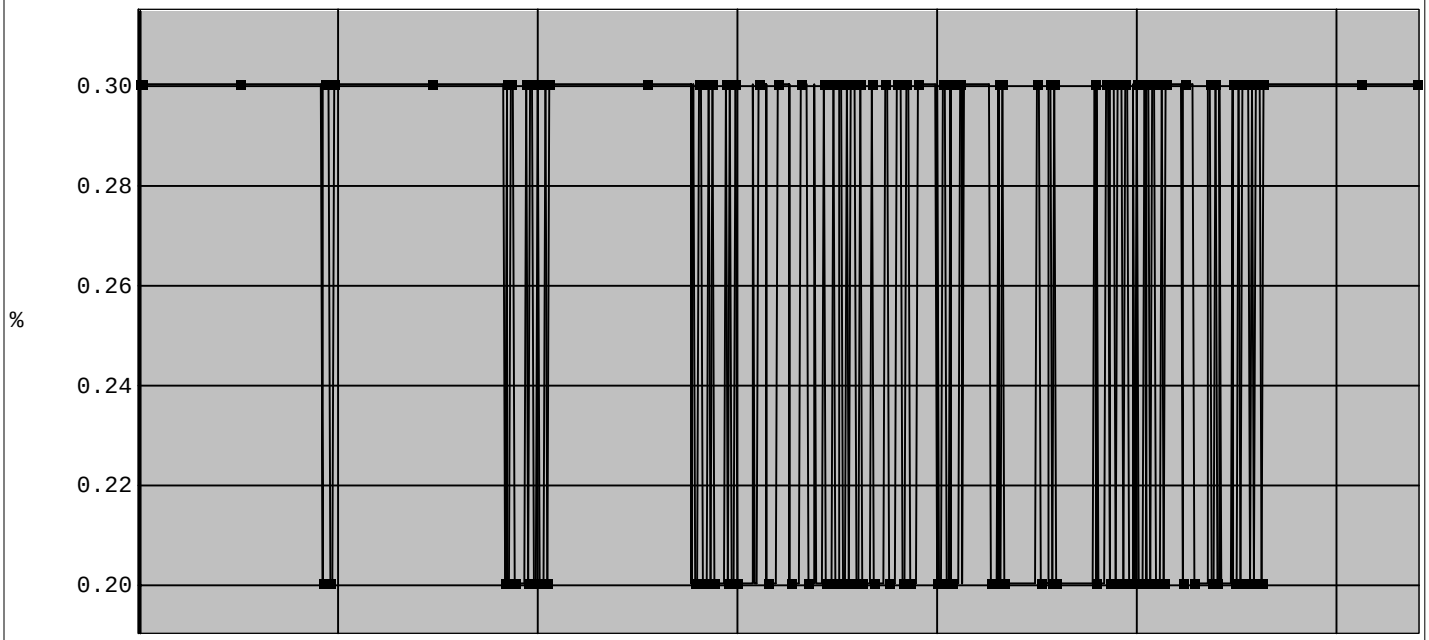
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	1/26/2005	3:22:10.500 PM	481.8	481.0	482.7	V
Urms Line2	1/26/2005	3:22:10.500 PM	493.4	492.7	494.0	V
Urms Line3	1/26/2005	3:22:10.500 PM	483.9	482.9	484.8	V

1/26/2005 - 3:22:10.000 PM
Val
481.7 — Urms Line1
493.3 — Urms Line2
483.4 — Urms Line3

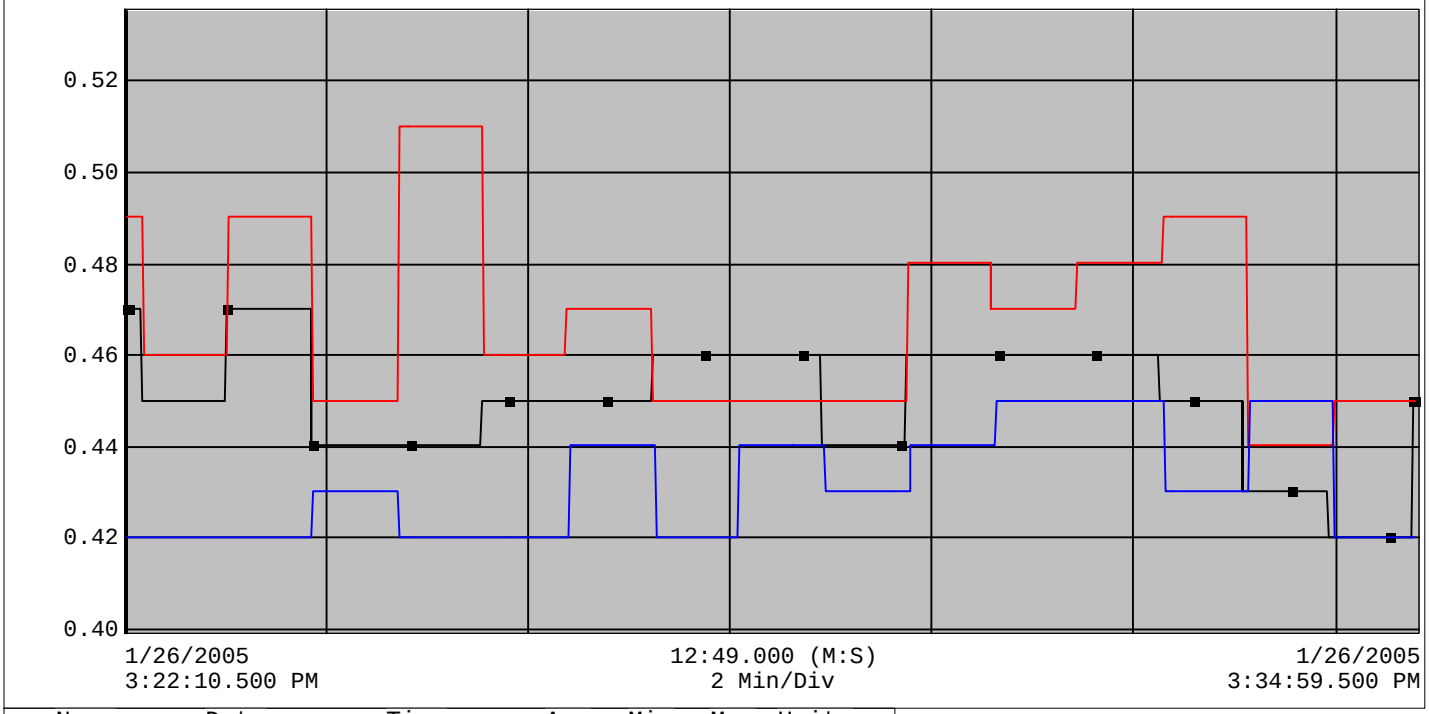
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	1/26/2005	3:22:10.500 PM	0.271	0.200	0.300	%

1/26/2005 - 3:22:10.000 PM
Val
0.300 —— Vunb(IEEE)

Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	1/26/2005	3:22:10.500 PM	0.450	0.420	0.470	
Vflk Line2	1/26/2005	3:22:10.500 PM	0.467	0.440	0.510	
Vflk Line3	1/26/2005	3:22:10.500 PM	0.432	0.420	0.450	

1/26/2005 - 3:22:10.000 PM
Val
0.470 Vflk Line1
0.490 Vflk Line2
0.420 Vflk Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M7\012605-M7.dvb

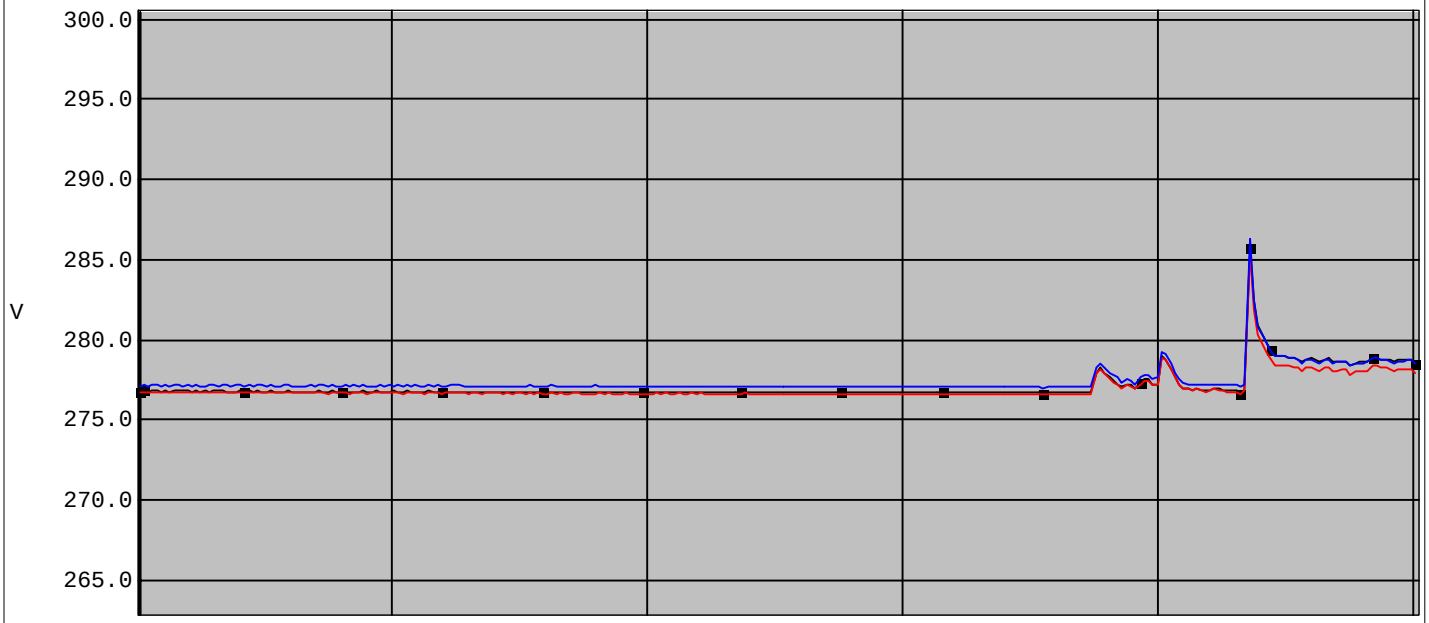
Operator	Test Site
GWA Victor Jardel ,	WPS M-7 ,

Comments

WPS M-7 Gen Pwr

Recording Start Date	1/21/2005 - 4:06:26 PM
Recording Duration	4:51 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

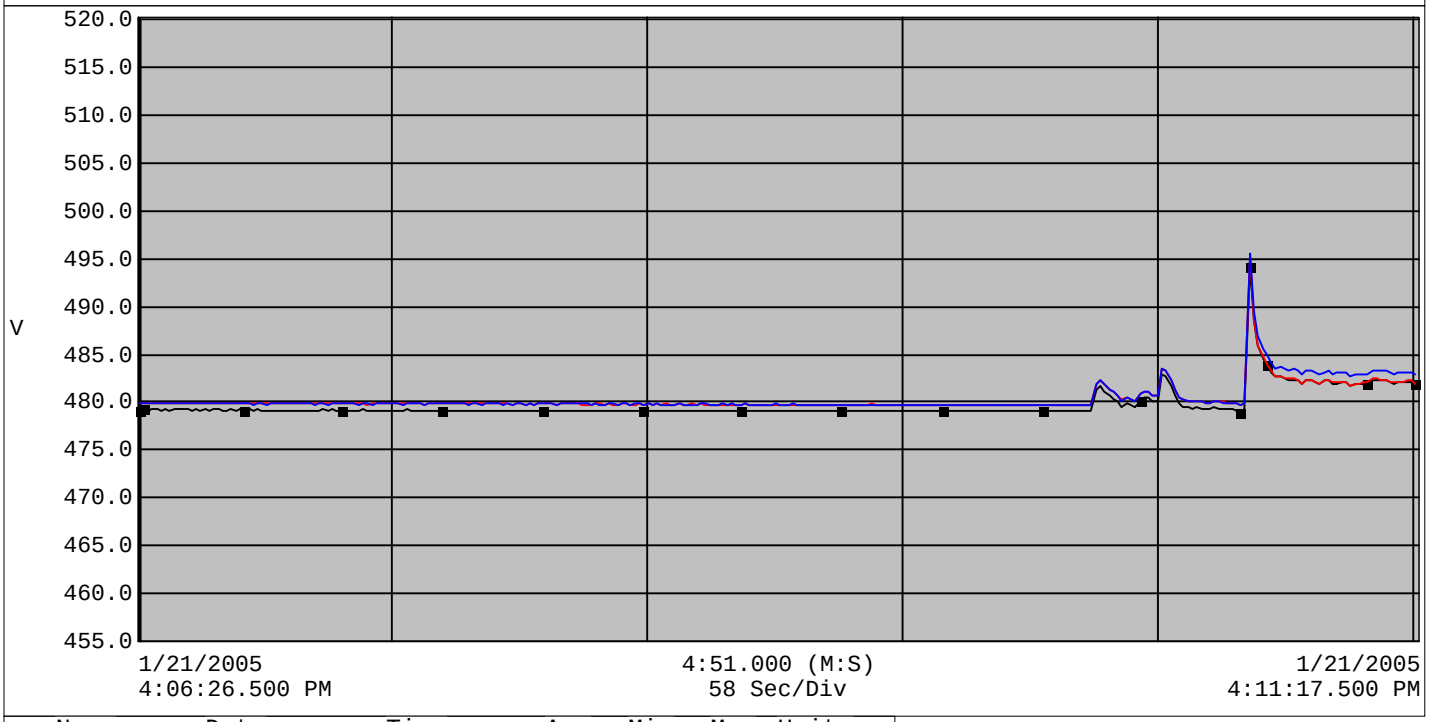
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	1/21/2005	4:06:26.500 PM	277.1	276.6	285.6	292
Vrms Line2	1/21/2005	4:06:26.500 PM	277.0	276.6	285.4	292
Vrms Line3	1/21/2005	4:06:26.500 PM	277.4	276.9	286.2	292

1/21/2005 - 4:06:26.000 PM
Val
276.7 Vrms Line1
276.7 Vrms Line2
277.0 Vrms Line3

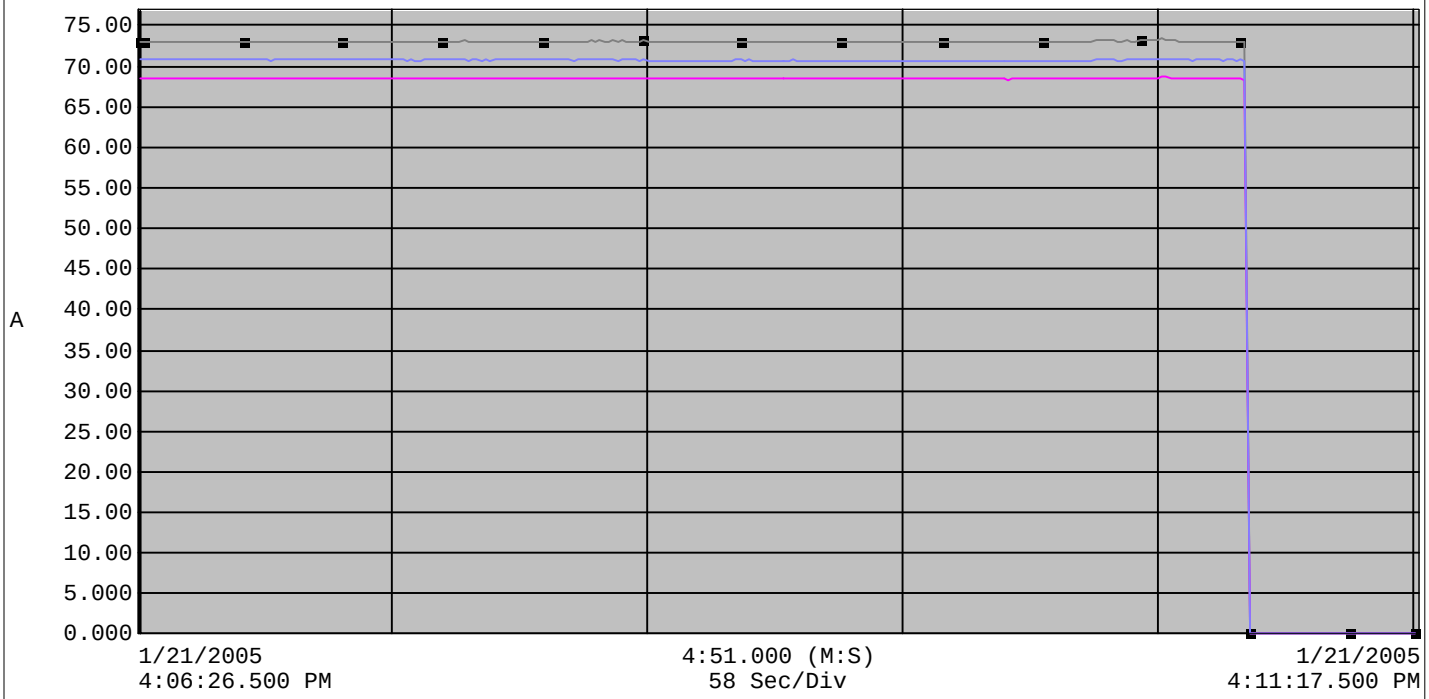
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	1/21/2005	4:06:26.500 PM	479.6	478.8	494.0	V
Urms Line2	1/21/2005	4:06:26.500 PM	480.2	479.5	495.2	V
Urms Line3	1/21/2005	4:06:26.500 PM	480.3	479.5	495.4	V

1/21/2005 - 4:06:26.000 PM
Val
479.0 Urms Line1
479.7 Urms Line2
479.7 Urms Line3

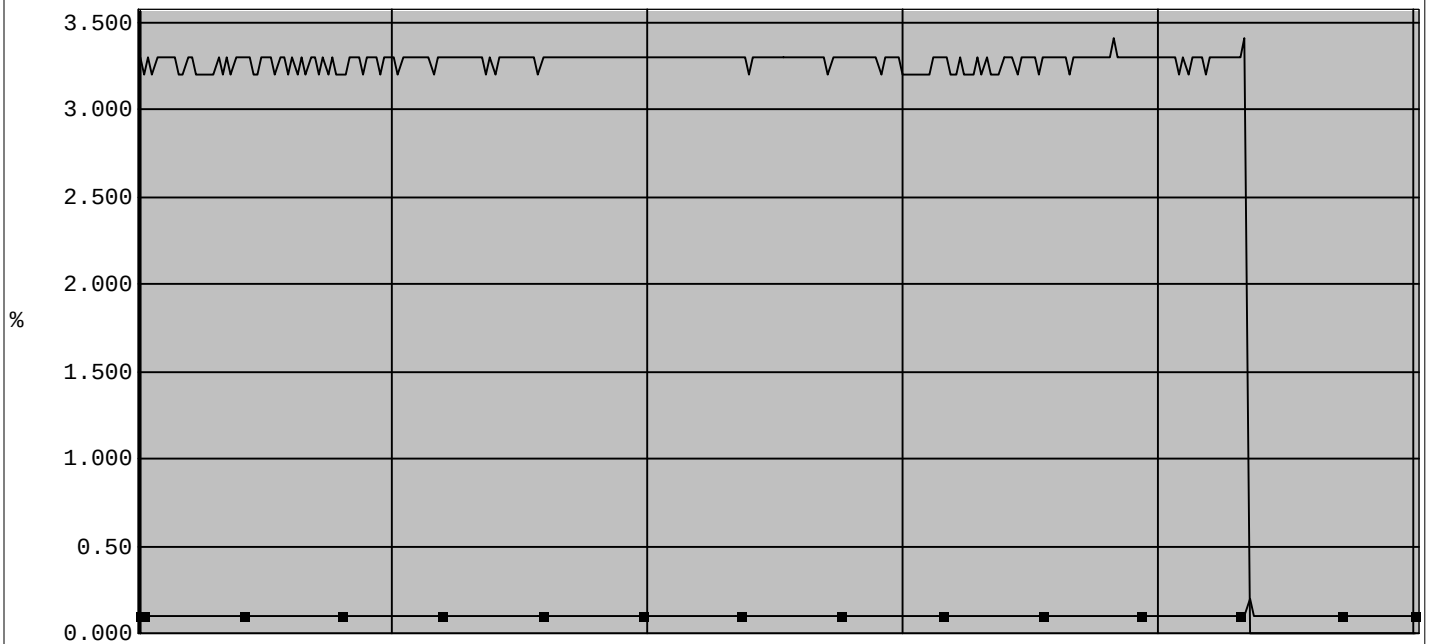
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	1/21/2005	4:06:26.500 PM	63.16	0.000	73.20	A
Arms Line2	1/21/2005	4:06:26.500 PM	59.20	0.000	68.50	A
Arms Line3	1/21/2005	4:06:26.500 PM	61.13	0.000	70.80	A

1/21/2005 - 4:06:26.000 PM
Val
72.90 — Arms Line1
68.30 — Arms Line2
70.60 — Arms Line3

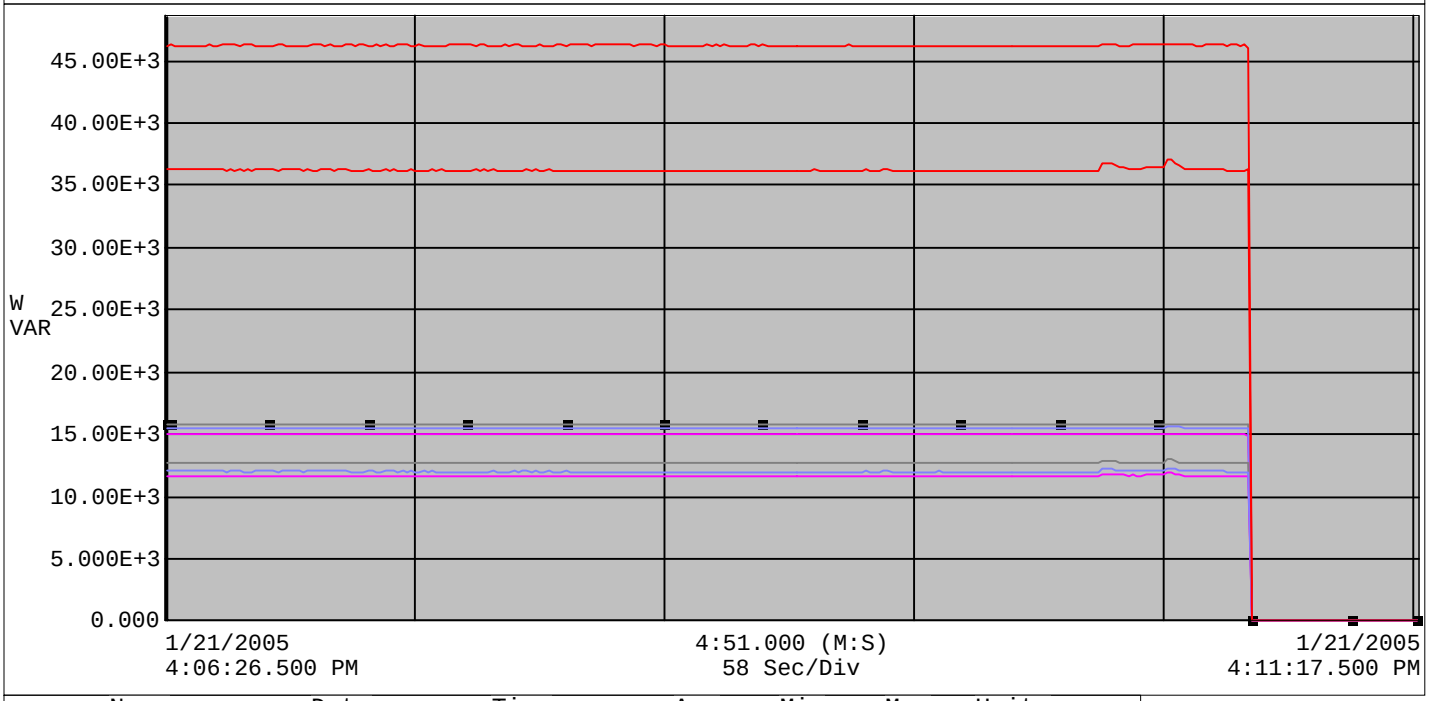
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	1/21/2005	4:06:26.500 PM	0.100	0.100	0.200	%
Aunb(IEEE)	1/21/2005	4:06:26.500 PM	2.841	0.000	3.400	%

1/21/2005 - 4:06:26.000 PM
Val
0.100 —— Vunb(IEEE)
3.300 —— Aunb(IEEE)

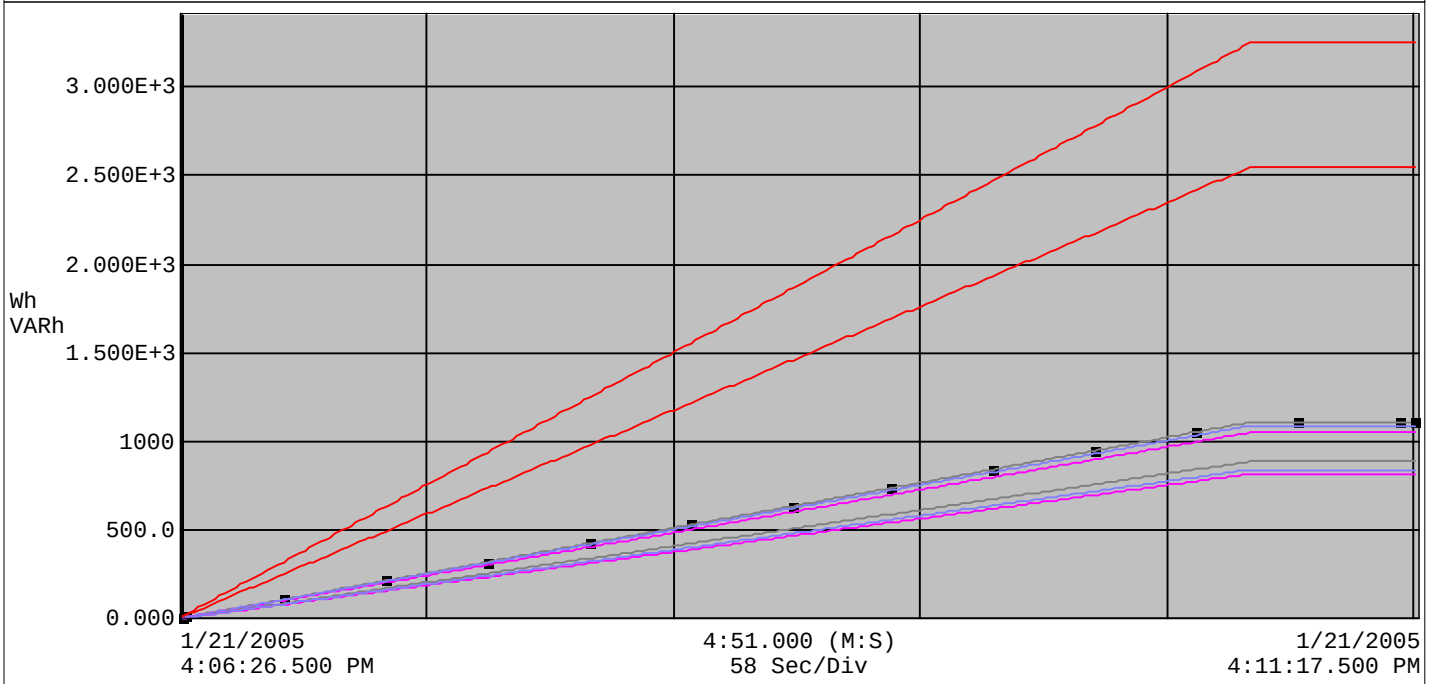
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	1/21/2005	4:06:26.500 PM	13.65E+3	0.000	15.79E+3	W
W Line2	1/21/2005	4:06:26.500 PM	12.93E+3	0.000	14.95E+3	W
W Line3	1/21/2005	4:06:26.500 PM	13.41E+3	0.000	15.51E+3	W
W Sum of Phases	1/21/2005	4:06:26.500 PM	39.99E+3	0.000	46.25E+3	W
VAR Line1	1/21/2005	4:06:26.500 PM	10.92E+3	0.000	12.92E+3	VAR
VAR Line2	1/21/2005	4:06:26.500 PM	10.05E+3	0.000	11.90E+3	VAR
VAR Line3	1/21/2005	4:06:26.500 PM	10.35E+3	0.000	12.24E+3	VAR
VAR Sum of Phases	1/21/2005	4:06:26.500 PM	31.33E+3	0.000	37.06E+3	VAR

1/21/2005 - 4:06:26.000 PM
Val
15.74E+3 — W Line1
14.92E+3 — W Line2
15.47E+3 — W Line3
46.13E+3 — W Sum of Phases
12.61E+3 — VAR Line1
11.60E+3 — VAR Line2
11.96E+3 — VAR Line3
36.17E+3 — VAR Sum of Phases

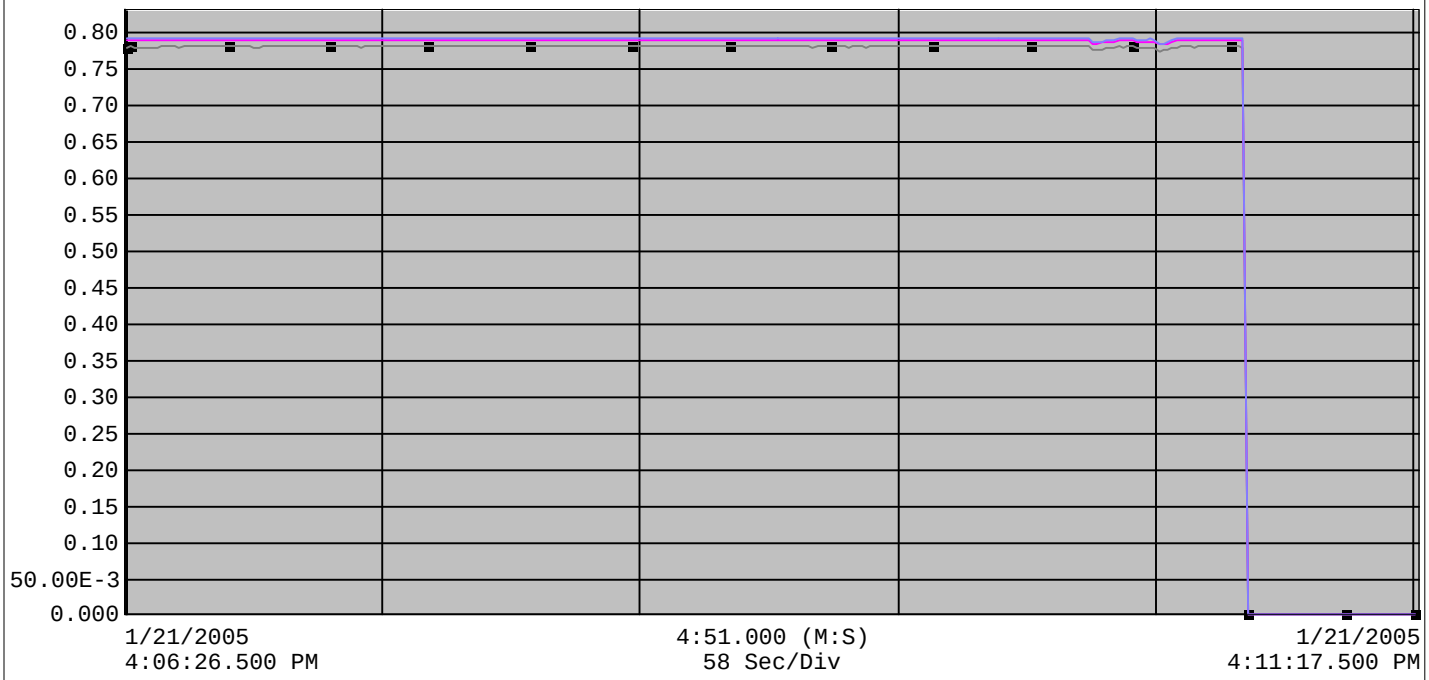
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	1/21/2005	4:06:26.500 PM	629.4	4.360	1.107E+3	Wh
W-hours Line2	1/21/2005	4:06:26.500 PM	596.5	4.131	1.049E+3	Wh
W-hours Line3	1/21/2005	4:06:26.500 PM	618.2	4.281	1.087E+3	Wh
W-hours Sum of Phases	1/21/2005	4:06:26.500 PM	1.844E+3	12.77	3.244E+3	Wh
VAR-hours Line1	1/21/2005	4:06:26.500 PM	503.6	3.516	886.0	VARh
VAR-hours Line2	1/21/2005	4:06:26.500 PM	463.4	3.235	815.4	VARh
VAR-hours Line3	1/21/2005	4:06:26.500 PM	477.3	3.333	839.9	VARh
VAR-hours Sum of Phases	1/21/2005	4:06:26.500 PM	1.444E+3	10.08	2.541E+3	VARh

1/21/2005 - 4:06:26.000 PM
Val
4.360 — W-hours Line1
4.131 — W-hours Line2
4.281 — W-hours Line3
12.77 — W-hours Sum of Phases
3.516 — VAR-hours Line1
3.235 — VAR-hours Line2
3.333 — VAR-hours Line3
10.08 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	1/21/2005	4:06:26.500 PM	0.677	0.000	0.782	
PF Line2	1/21/2005	4:06:26.500 PM	0.684	0.000	0.790	
PF Line3	1/21/2005	4:06:26.500 PM	0.686	0.000	0.792	

1/21/2005 - 4:06:26.000 PM
Val
0.780 — PF Line1
0.789 — PF Line2
0.791 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M7\012105-M7 Gen Pwr.dvb

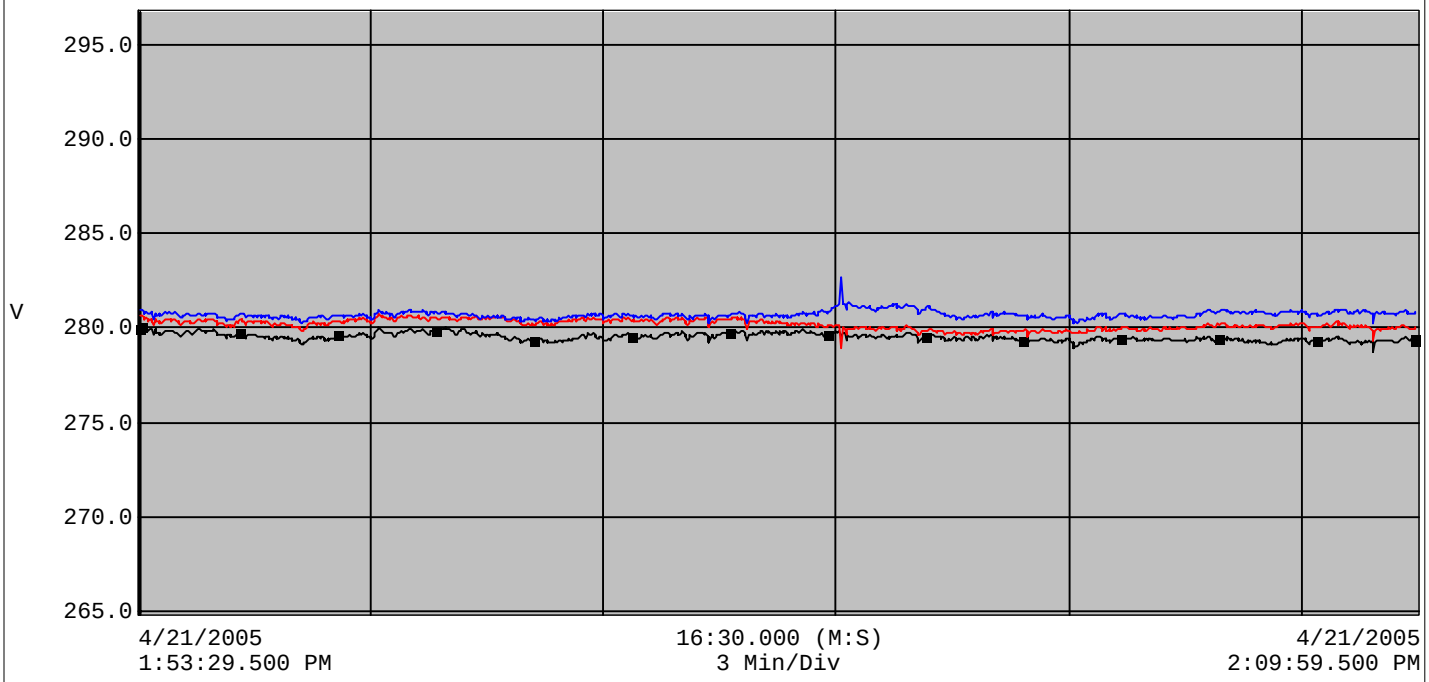
Operator	Test Site
GWA Victor Jardel ,	WPS M-7 Gen Pwr ,

Comments

WPS M-7

Recording Start Date	4/21/2005 - 1:53:29 PM
Recording Duration	16:30 (m:s)
Instrument ID	Model: 3945 - 1 1:260152 2.7

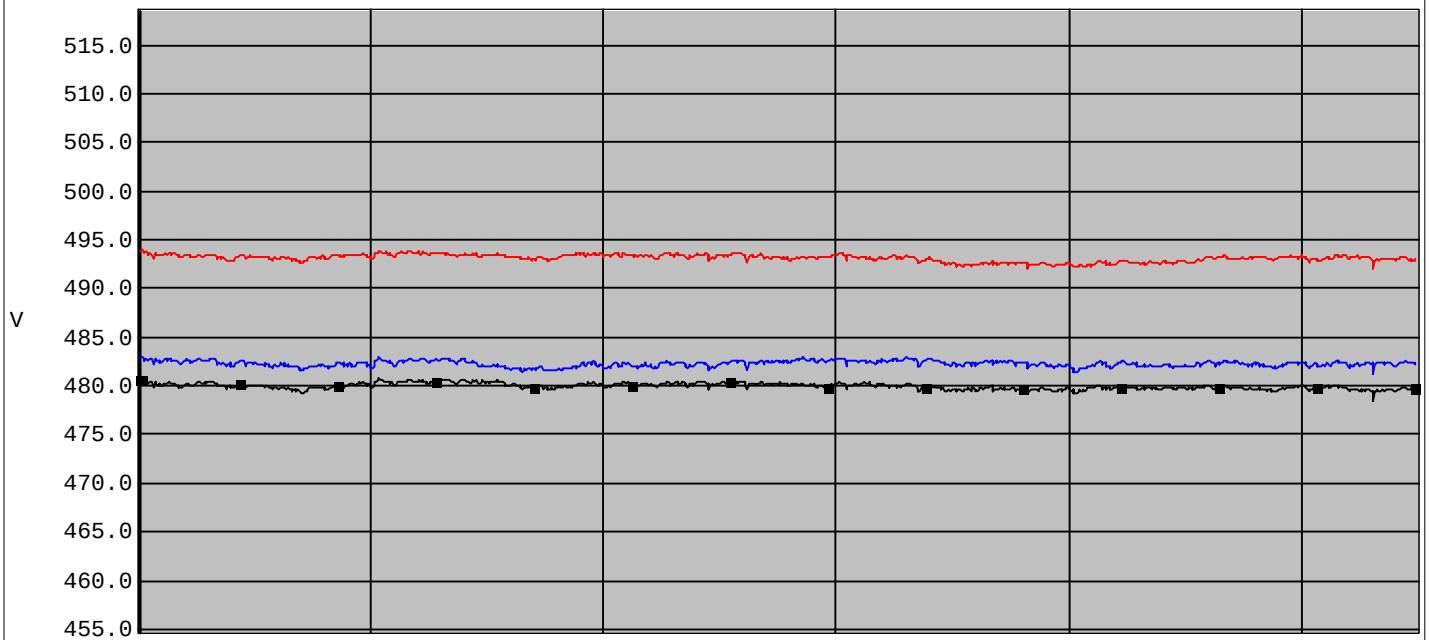
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	4/21/2005	1:53:29.500 PM	279.5	278.7	280.0	991
Vrms Line2	4/21/2005	1:53:29.500 PM	280.1	278.9	280.7	991
Vrms Line3	4/21/2005	1:53:29.500 PM	280.7	280.2	282.6	991

4/21/2005 - 1:53:29.000 PM
Val
279.9 Vrms Line1
280.6 Vrms Line2
280.9 Vrms Line3

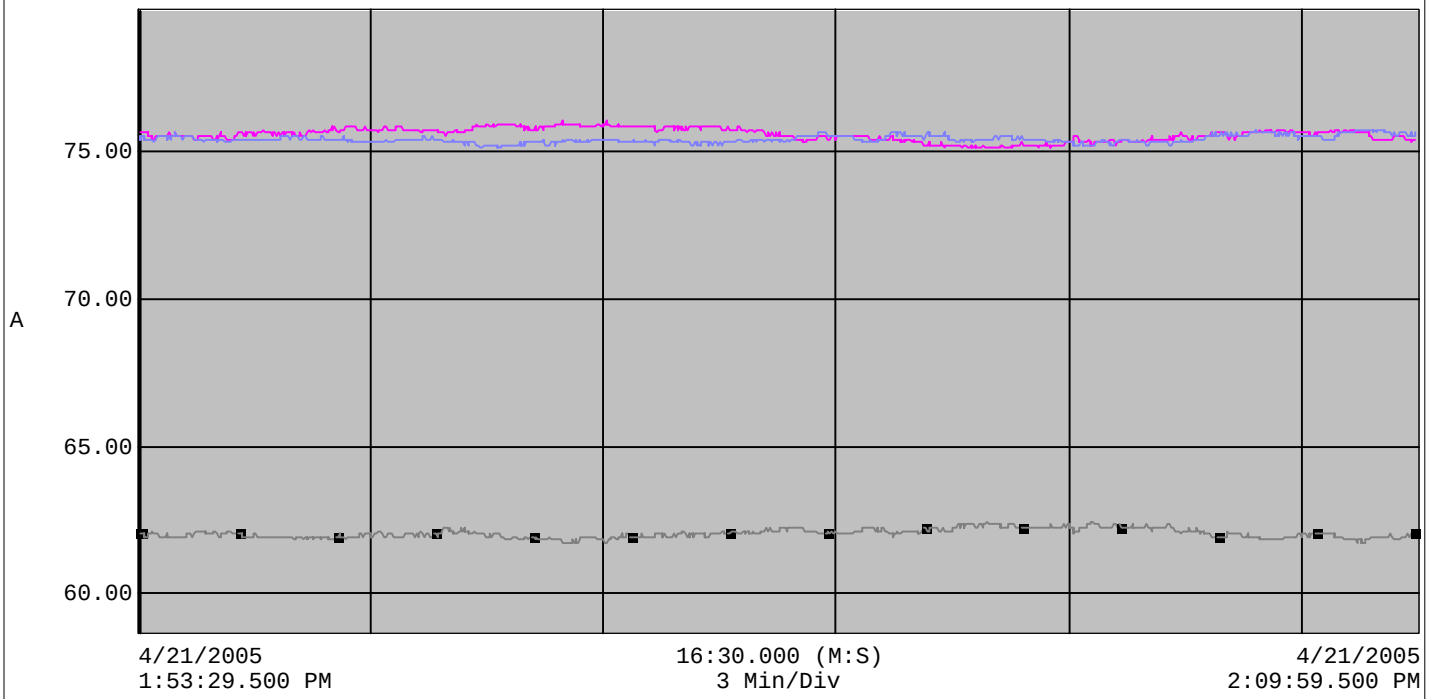
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	4/21/2005	1:53:29.500 PM	479.9	478.4	480.8	V
Urms Line2	4/21/2005	1:53:29.500 PM	493.0	492.0	493.9	V
Urms Line3	4/21/2005	1:53:29.500 PM	482.2	481.2	482.9	V

4/21/2005 - 1:53:29.000 PM
Val
480.5 Urms Line1
493.8 Urms Line2
482.8 Urms Line3

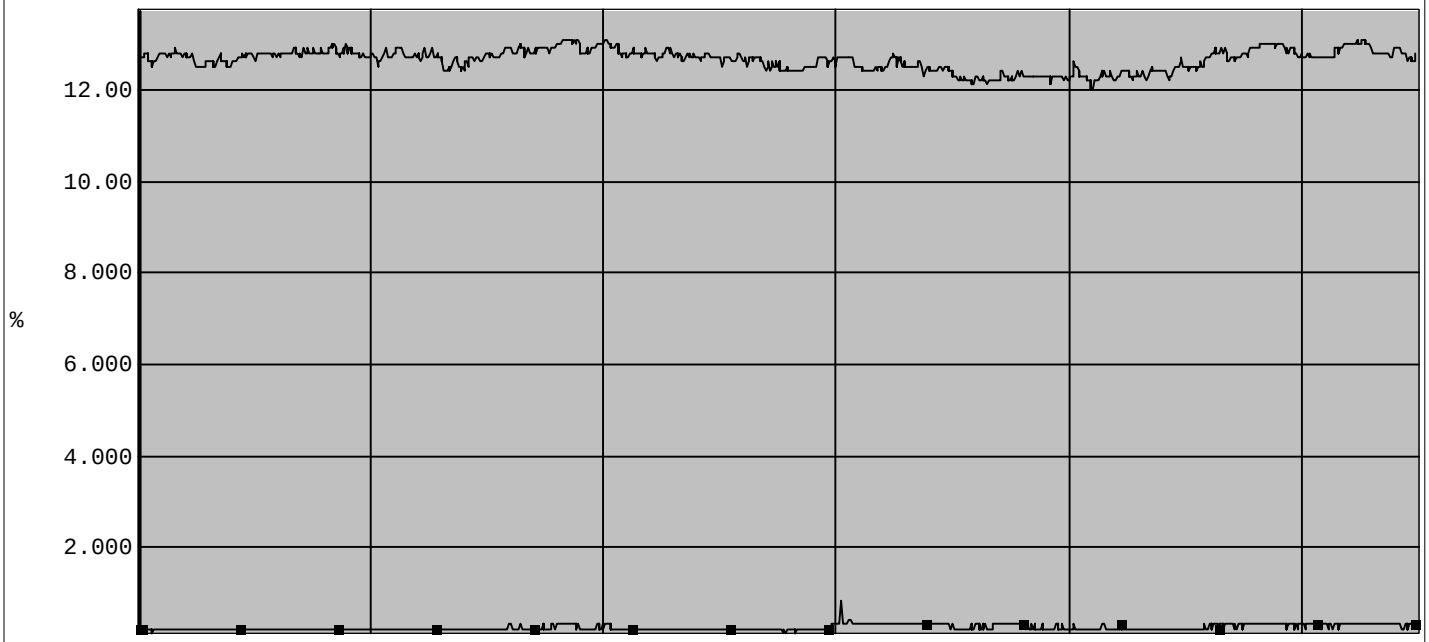
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	4/21/2005	1:53:29.500 PM	62.01	61.70	62.40	A
Arms Line2	4/21/2005	1:53:29.500 PM	75.55	75.10	76.00	A
Arms Line3	4/21/2005	1:53:29.500 PM	75.40	75.10	75.70	A

4/21/2005 - 1:53:29.000 PM
Val
62.00 — Arms Line1
75.60 — Arms Line2
75.50 — Arms Line3

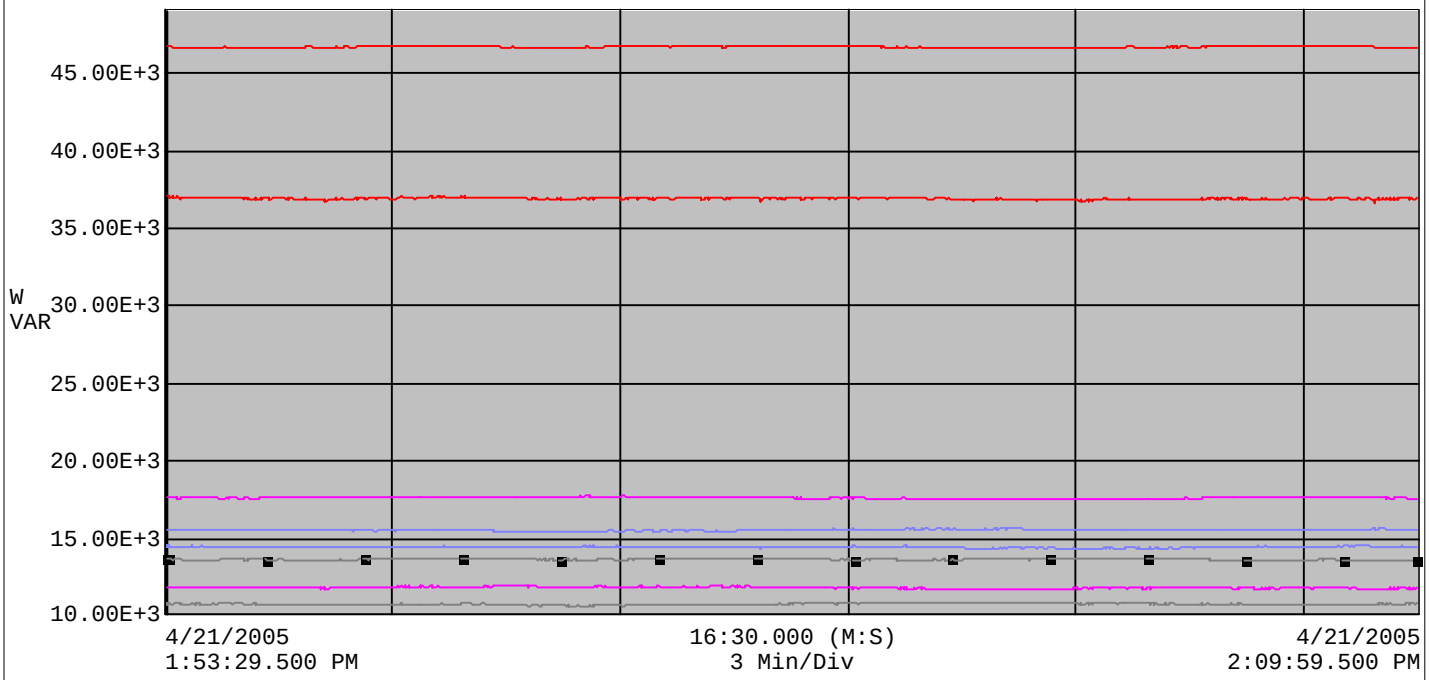
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	4/21/2005	1:53:29.500 PM	0.232	0.100	0.800	%
Aunb(IEEE)	4/21/2005	1:53:29.500 PM	12.65	12.00	13.10	%

4/21/2005 - 1:53:29.000 PM
Val
0.200 —— Vunb(IEEE)
12.70 —— Aunb(IEEE)

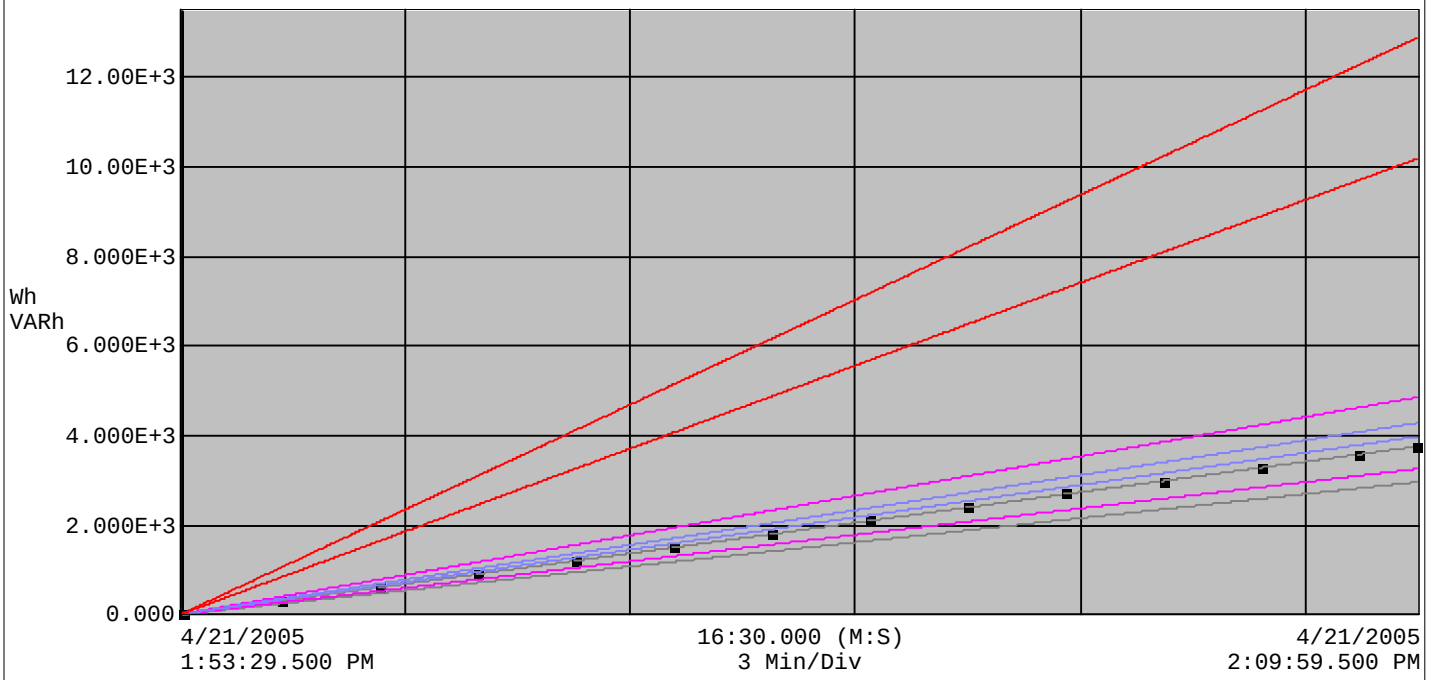
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	4/21/2005	1:53:29.500 PM	13.59E+3	13.49E+3	13.66E+3	W
W Line2	4/21/2005	1:53:29.500 PM	17.56E+3	17.43E+3	17.68E+3	W
W Line3	4/21/2005	1:53:29.500 PM	15.49E+3	15.37E+3	15.65E+3	W
W Sum of Phases	4/21/2005	1:53:29.500 PM	46.64E+3	46.54E+3	46.72E+3	W
VAR Line1	4/21/2005	1:53:29.500 PM	10.71E+3	10.58E+3	10.84E+3	VAR
VAR Line2	4/21/2005	1:53:29.500 PM	11.77E+3	11.61E+3	11.90E+3	VAR
VAR Line3	4/21/2005	1:53:29.500 PM	14.39E+3	14.27E+3	14.49E+3	VAR
VAR Sum of Phases	4/21/2005	1:53:29.500 PM	36.86E+3	36.60E+3	37.03E+3	VAR

4/21/2005 - 1:53:29.000 PM
Val
13.58E+3 — W Line1
17.59E+3 — W Line2
15.49E+3 — W Line3
46.67E+3 — W Sum of Phases
10.74E+3 — VAR Line1
11.80E+3 — VAR Line2
14.45E+3 — VAR Line3
37.00E+3 — VAR Sum of Phases

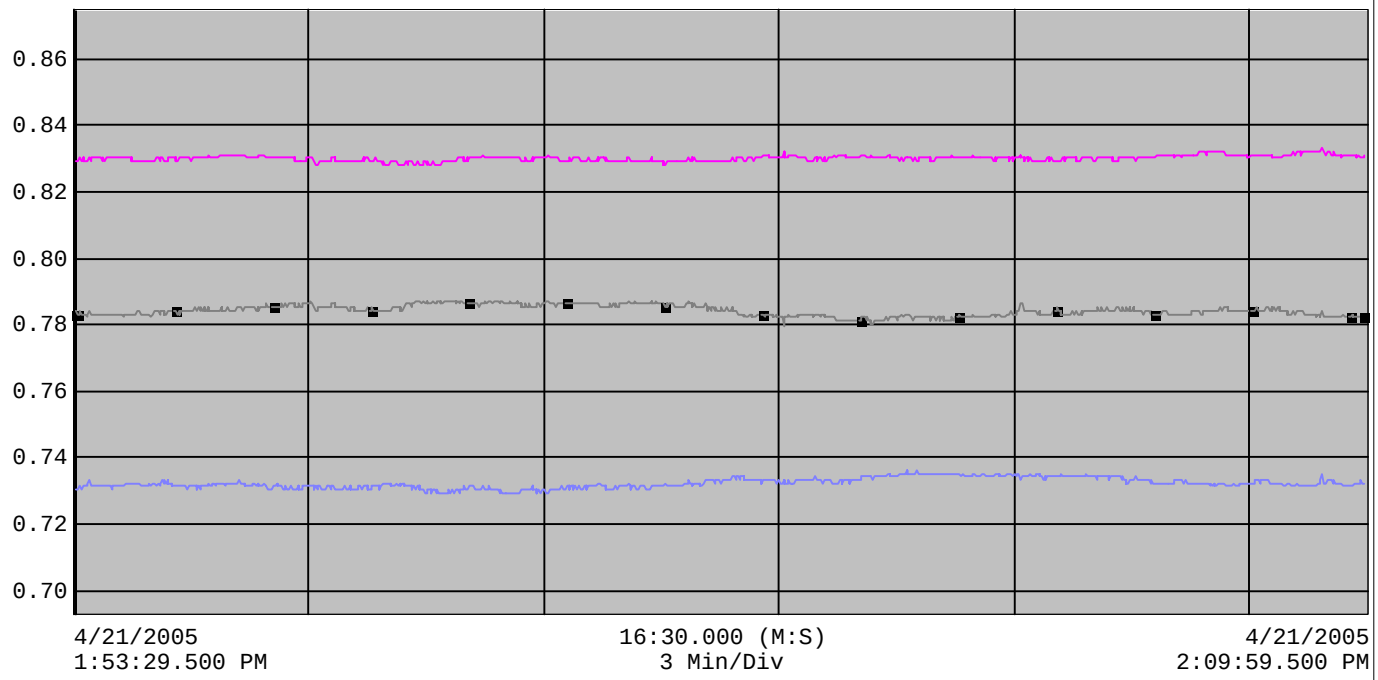
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	4/21/2005	1:53:29.500 PM	1.873E+3	3.767	3.740E+3	Wh
W-hours Line2	4/21/2005	1:53:29.500 PM	2.421E+3	4.869	4.835E+3	Wh
W-hours Line3	4/21/2005	1:53:29.500 PM	2.132E+3	4.294	4.264E+3	Wh
W-hours Sum of Phases	4/21/2005	1:53:29.500 PM	6.426E+3	12.93	12.84E+3	Wh
VAR-hours Line1	4/21/2005	1:53:29.500 PM	1.474E+3	2.969	2.948E+3	VARh
VAR-hours Line2	4/21/2005	1:53:29.500 PM	1.624E+3	3.263	3.240E+3	VARh
VAR-hours Line3	4/21/2005	1:53:29.500 PM	1.983E+3	3.988	3.960E+3	VARh
VAR-hours Sum of Phases	4/21/2005	1:53:29.500 PM	5.081E+3	10.22	10.15E+3	VARh

4/21/2005 - 1:53:29.000 PM
Val
3.767 — W-hours Line1
4.869 — W-hours Line2
4.294 — W-hours Line3
12.93 — W-hours Sum of Phases
2.969 — VAR-hours Line1
3.263 — VAR-hours Line2
3.988 — VAR-hours Line3
10.22 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	4/21/2005	1:53:29.500 PM	0.784	0.779	0.787	
PF Line2	4/21/2005	1:53:29.500 PM	0.830	0.828	0.833	
PF Line3	4/21/2005	1:53:29.500 PM	0.732	0.729	0.736	

4/21/2005 - 1:53:29.000 PM
Val
0.783 — PF Line1
0.829 — PF Line2
0.730 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M7\042105-M7.dvb

Operator	Test Site
MORIKAWA & ASSOCIATES, LLC LYMAN MORIKAWA, PE ,	GWA WPS M-7 ,

Comments
RECORDED AT THE MOTOR STARTER OVERLOAD RELAY. GRUNDFOS 37 KW (50 HP), 460 VOLT MOTOR

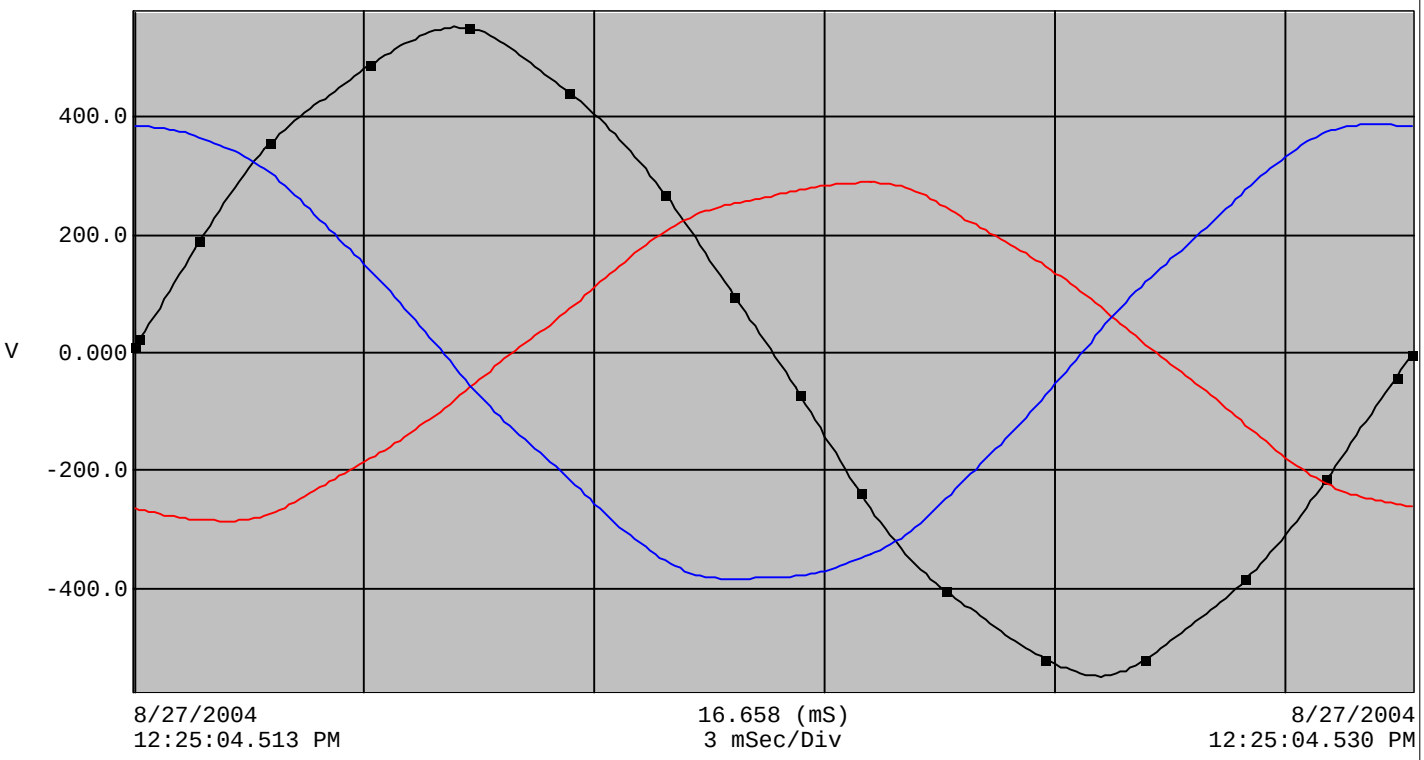
GWA Water Pumping Station Assessment				
Station Name: M-09	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/27/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.475	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	2	0.05	4
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.5	
Generator Condition	10.0%	2	0.2	31
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0.06	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.5**

Comments:

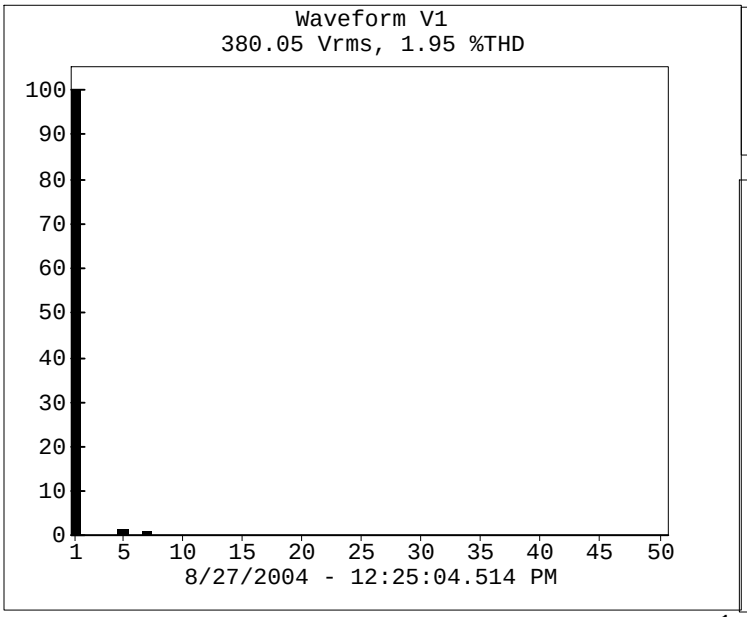
GWA WPS M-9
Photo Report 1

Recording Start Date	8/27/2004 - 12:25:04 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/27/2004	12:25:04.513 PM	16.658	380.0	V
Waveform V2	8/27/2004	12:25:04.513 PM	16.658	202.8	V
Waveform V3	8/27/2004	12:25:04.513 PM	16.658	277.2	V



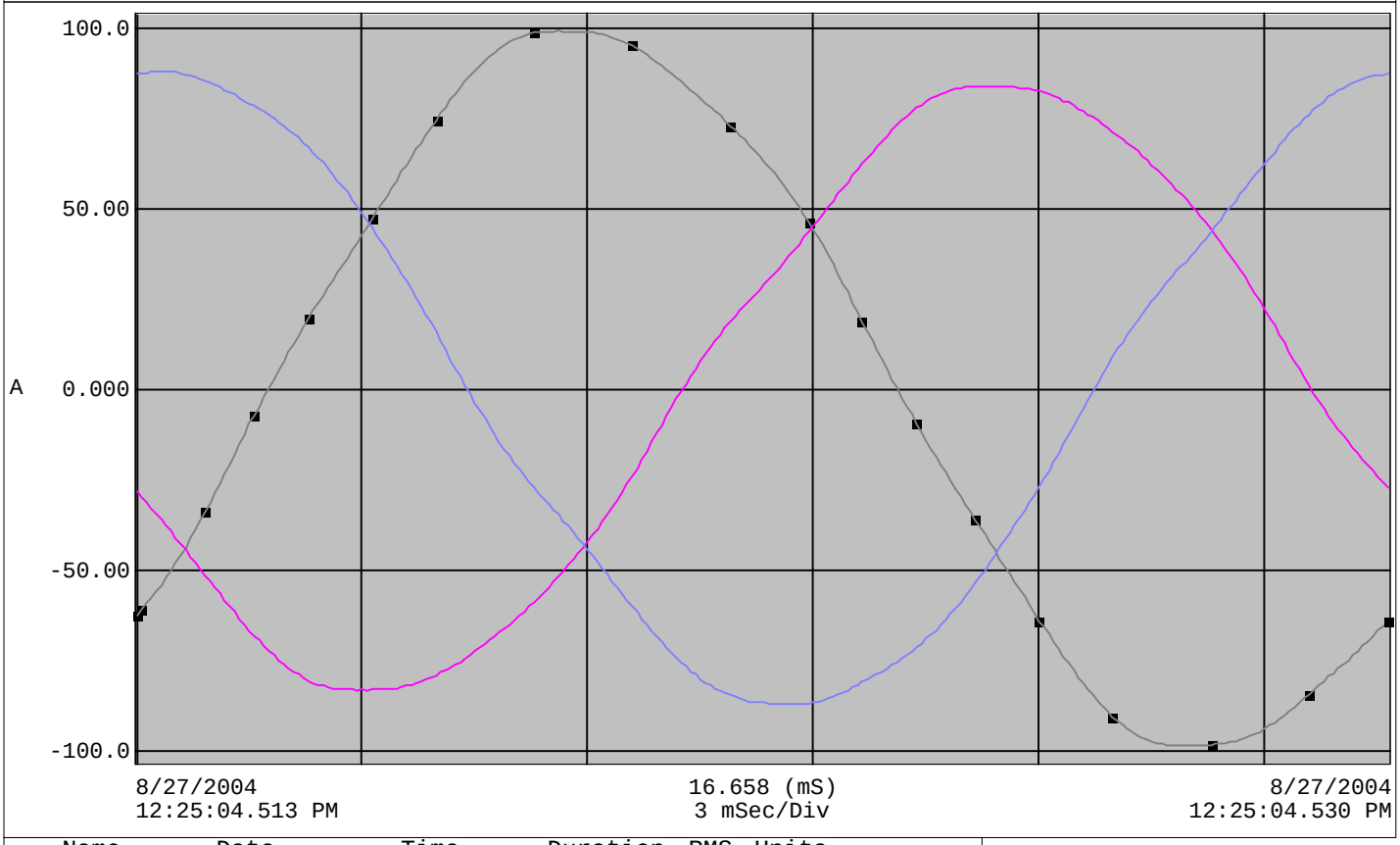
8/27/2004 - 12:25:04.000 PM

	Val	
—	7.400	Waveform V1
—	-265.0	Waveform V2
—	382.9	Waveform V3

Waveform V1

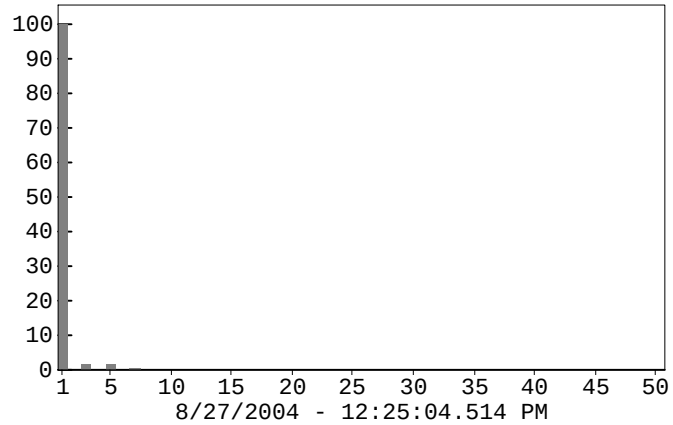
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.5	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/27/2004	12:25:04.513 PM	16.658	70.42	A
Waveform I2	8/27/2004	12:25:04.513 PM	16.658	59.07	A
Waveform I3	8/27/2004	12:25:04.513 PM	16.658	62.25	A

Waveform I1
70.42 Arms, 2.72 %THD

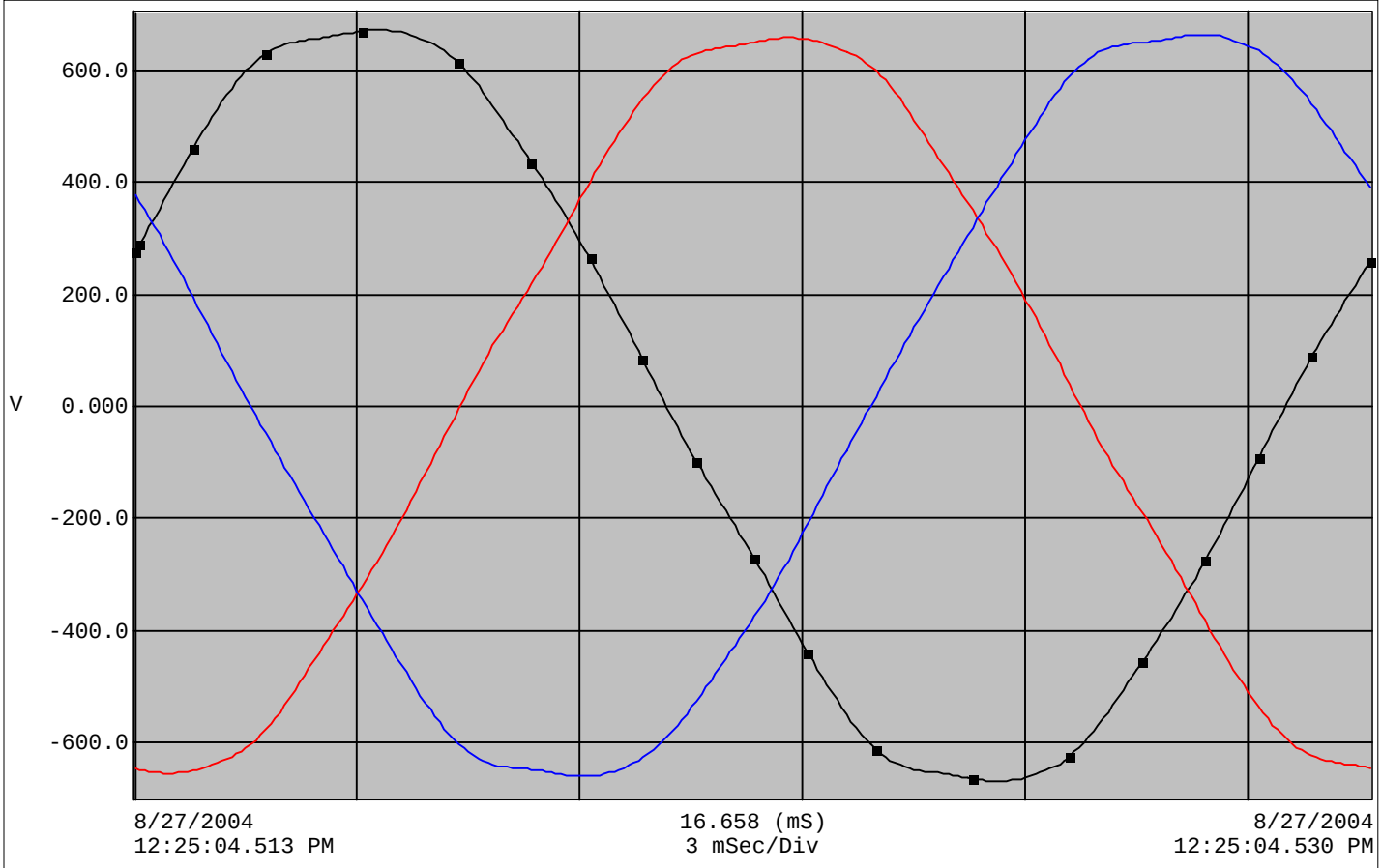


8/27/2004 - 12:25:04.000 PM
Val
-62.70 — Waveform I1
-28.70 — Waveform I2
87.20 — Waveform I3

Waveform I1

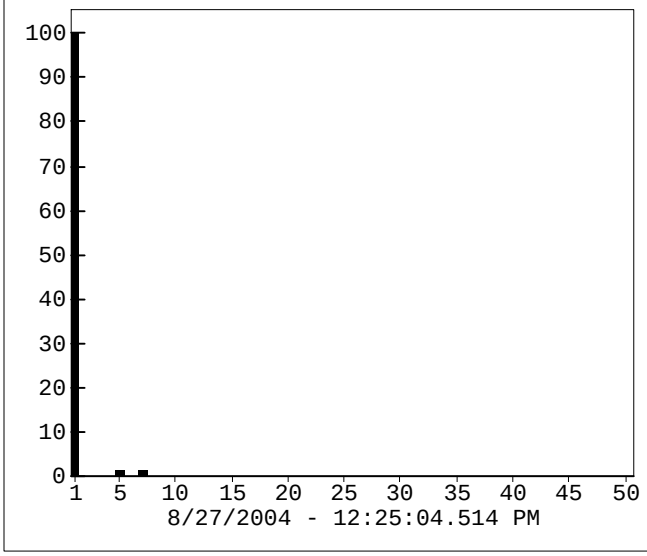
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	1.8	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.8	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/27/2004	12:25:04.513 PM	16.658	482.8	V
Waveform U2	8/27/2004	12:25:04.513 PM	16.658	473.3	V
Waveform U3	8/27/2004	12:25:04.513 PM	16.658	476.2	V

Waveform U1
482.81 Vrms, 2.20 %THD



8/27/2004 - 12:25:04.000 PM
Val
272.5 — Waveform U1
-648.0 — Waveform U2
375.5 — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/27/2004
Start Time: 12:25:04 PM
Duration: 0:0.000 (M:S)
W: 20.57E+3 W
VAR: 17.17E+3 W
VA: 26.79E+3 W
Power Factor: 0.768
Displacement Power Factor: 0.768
TAN: 0.834
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M9\082704-M9-Photo1.dvb

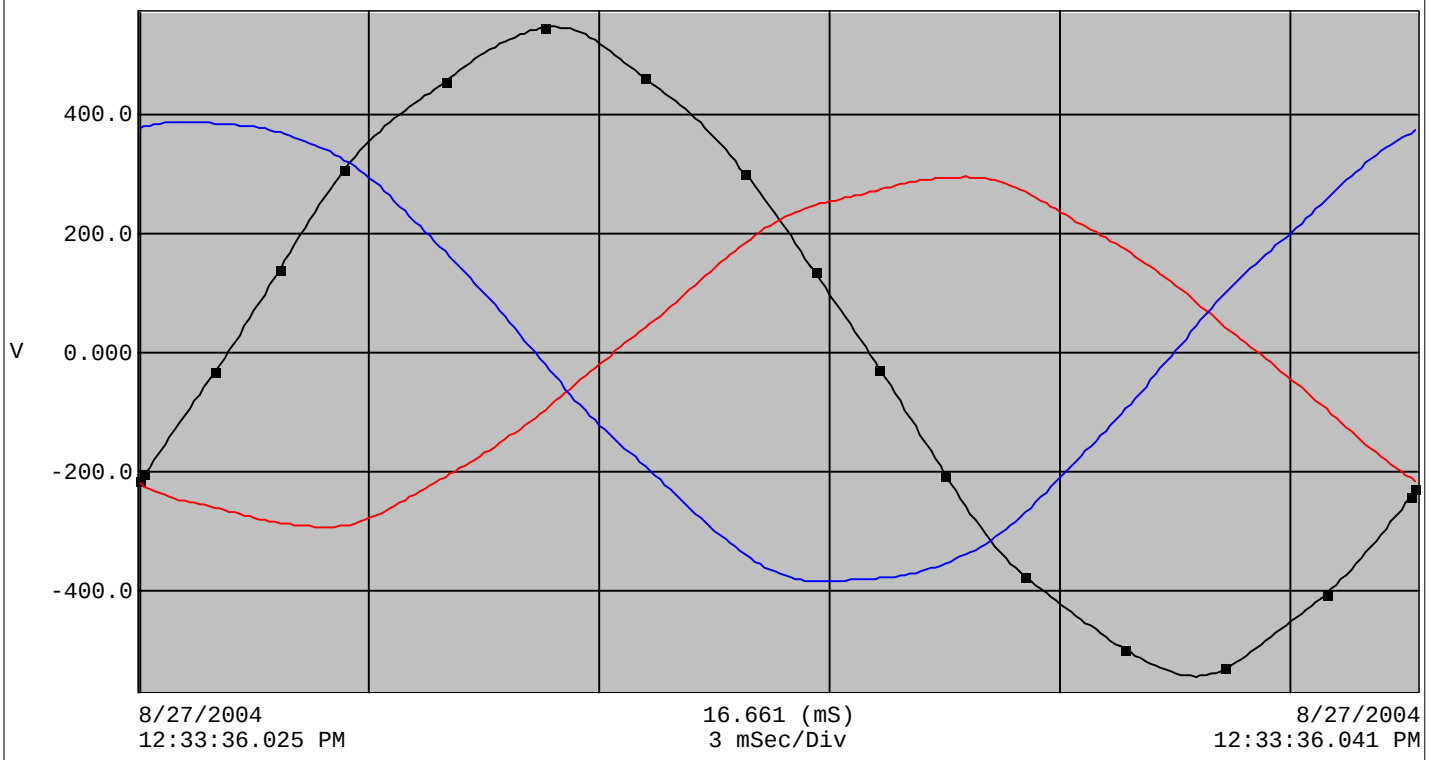
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS M-9 Photo1 ,

Comments

WPS M-9
Photo Report 2

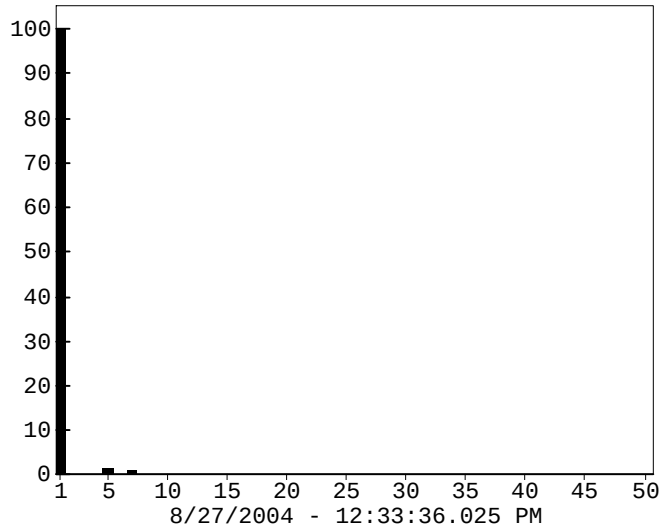
Recording Start Date	8/27/2004 - 12:33:36 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/27/2004	12:33:36.025 PM	16.661	374.9	V
Waveform V2	8/27/2004	12:33:36.025 PM	16.661	206.2	V
Waveform V3	8/27/2004	12:33:36.025 PM	16.661	276.2	V

Waveform V1
374.87 Vrms, 1.99 %THD

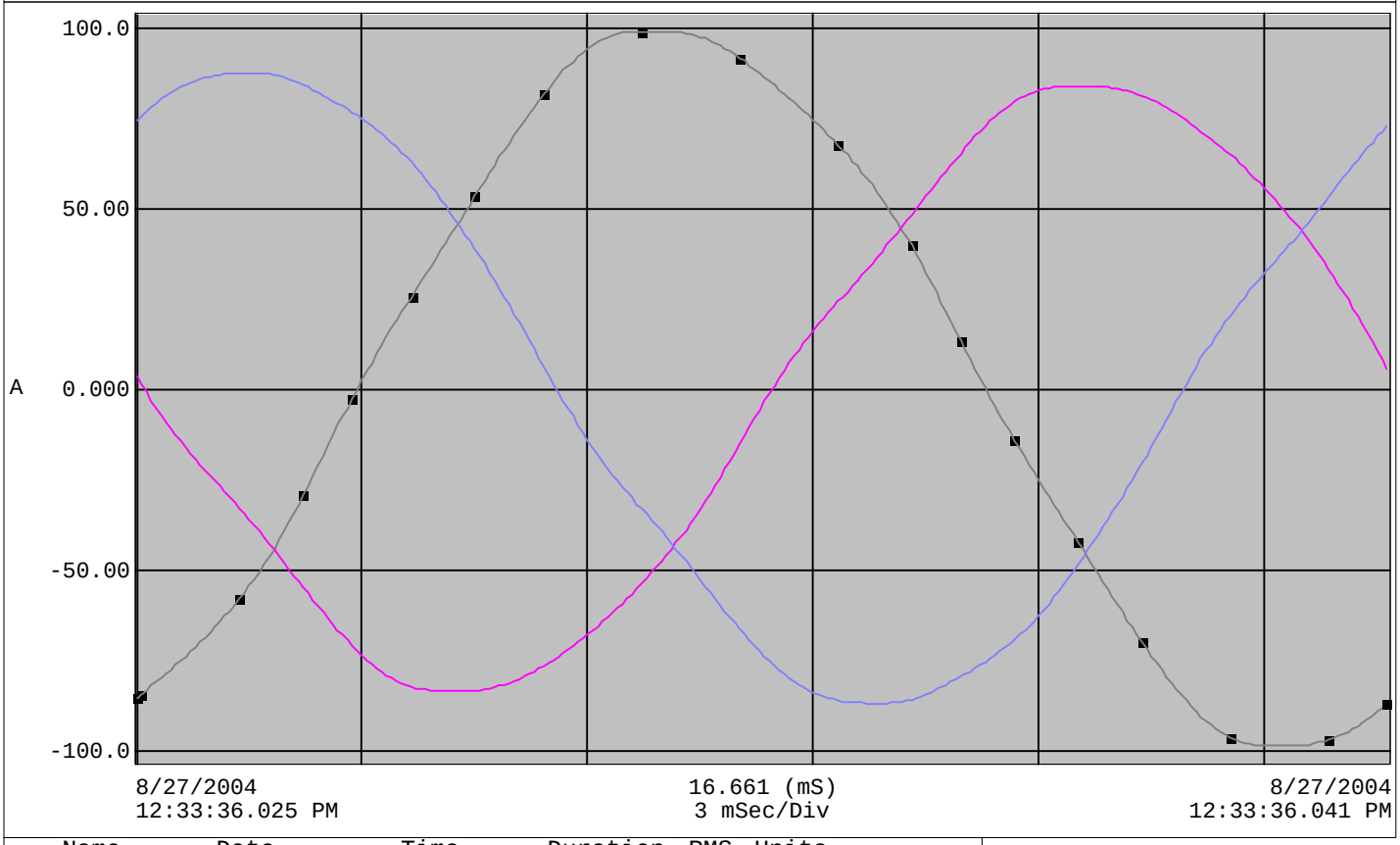


8/27/2004 - 12:33:36.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

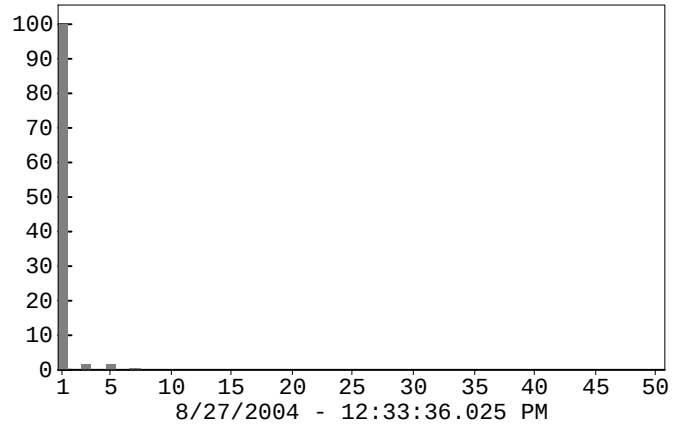
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.5	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/27/2004	12:33:36.025 PM	16.661	70.45	A
Waveform I2	8/27/2004	12:33:36.025 PM	16.661	59.17	A
Waveform I3	8/27/2004	12:33:36.025 PM	16.661	62.11	A

Waveform I1
70.45 Arms, 2.73 %THD

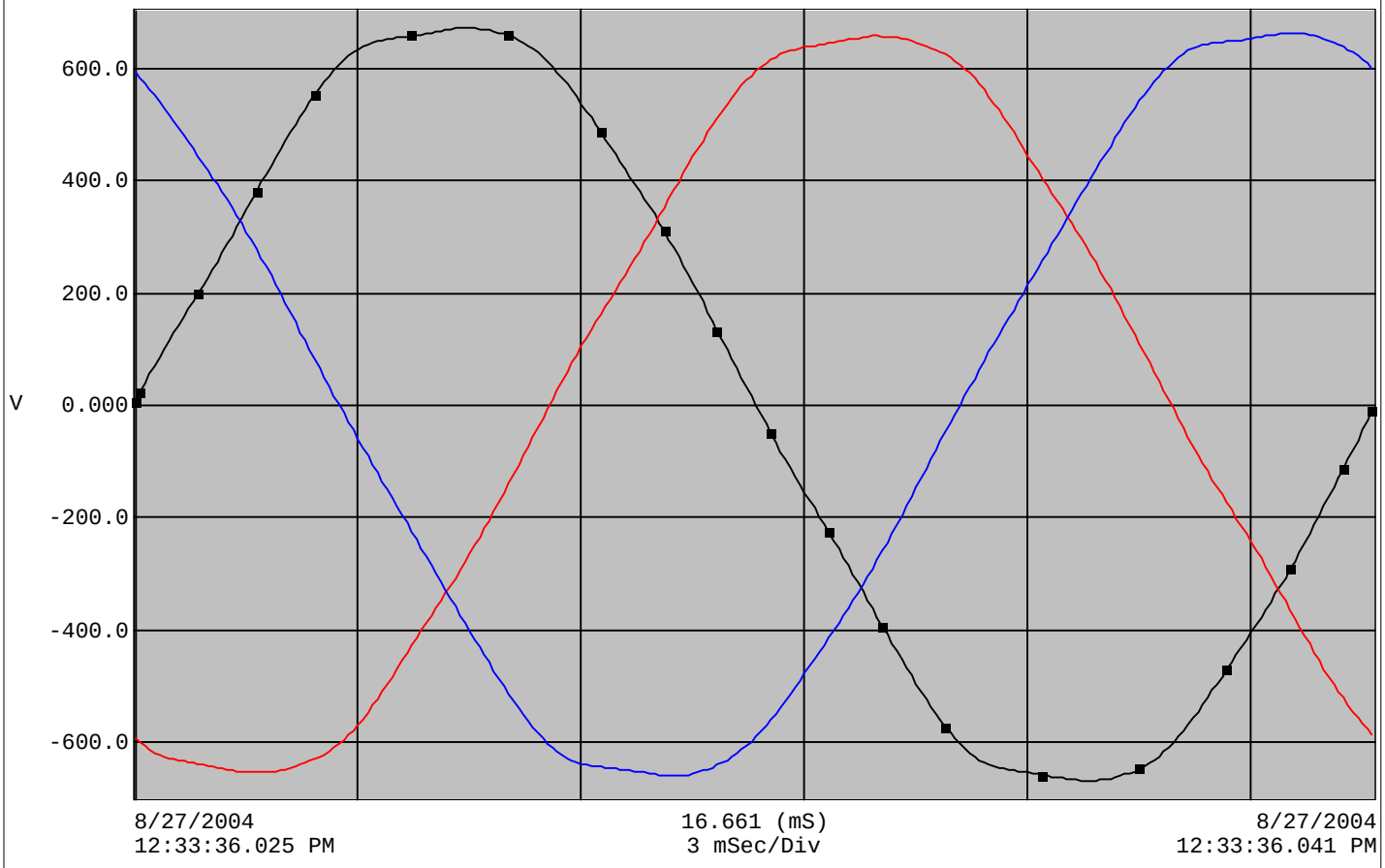


8/27/2004 - 12:33:36.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

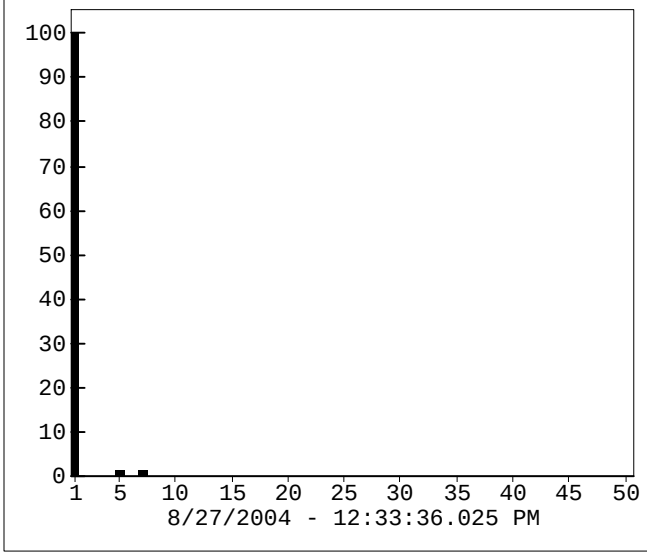
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	1.9	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/27/2004	12:33:36.025 PM	16.661	483.3	V
Waveform U2	8/27/2004	12:33:36.025 PM	16.661	473.8	V
Waveform U3	8/27/2004	12:33:36.025 PM	16.661	476.5	V

Waveform U1
483.26 Vrms, 2.20 %THD



8/27/2004 - 12:33:36.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.7	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/27/2004
Start Time: 12:33:36 PM
Duration: 0:0.000 (M:S)
W: 20.36E+3 W
VAR: 16.85E+3 W
VA: 26.43E+3 W
Power Factor: 0.770
Displacement Power Factor: 0.771
TAN: 0.827
VoltageRatio: 1.000
CurrentRatio: 1.000
```

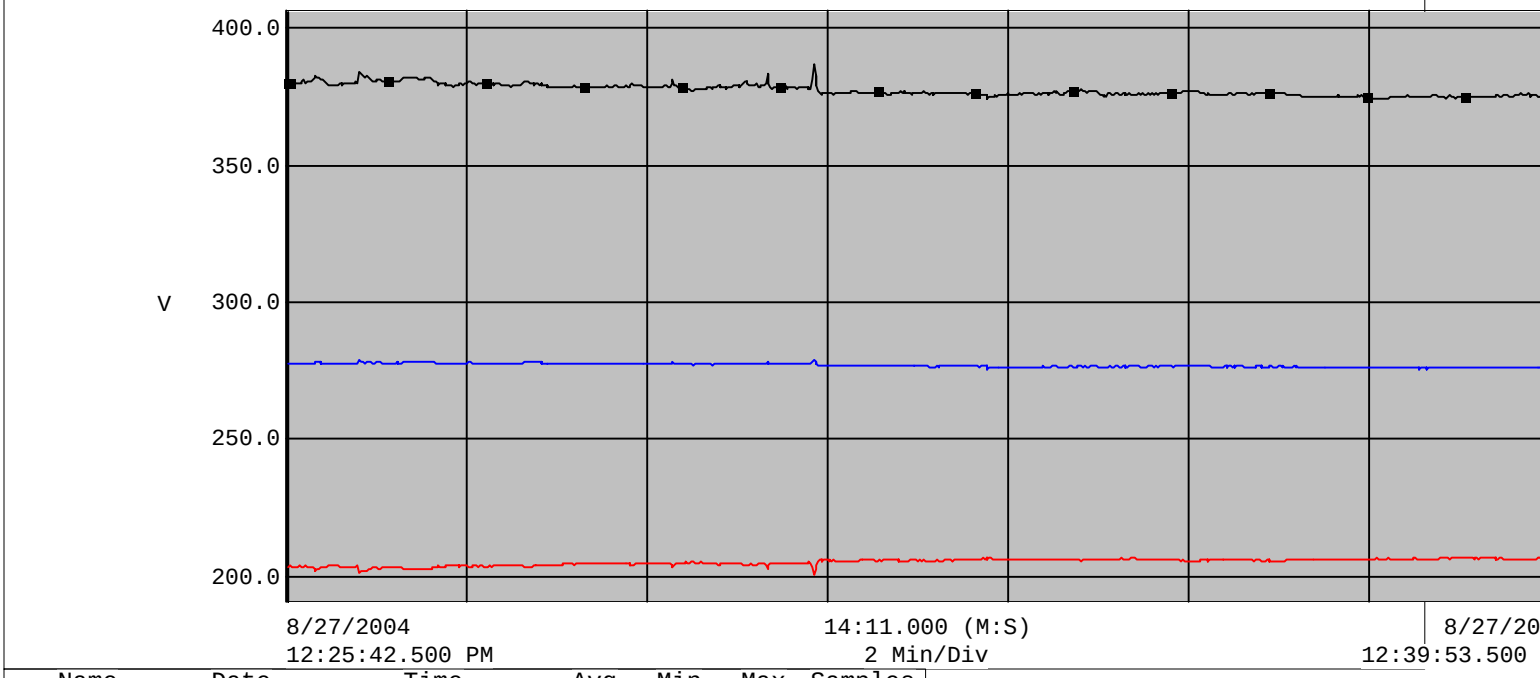
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M9\082704-M9-Photo2.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa,PE and Victor Jardel ,	Test Site GWA WPS M-9 Photo2 ,
Comments	

WPS M-9

Recording Start Date	8/27/2004 - 12:25:42 PM
Recording Duration	14:11 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

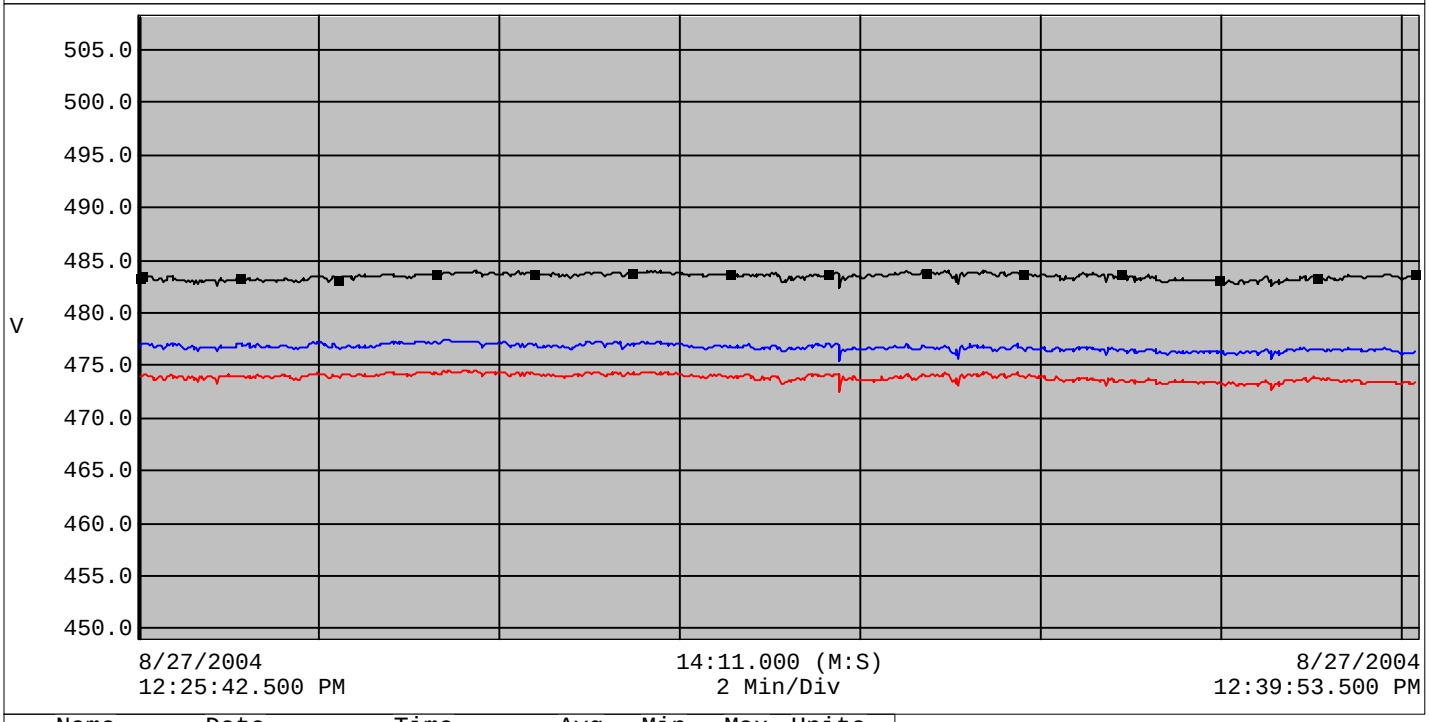
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/27/2004	12:25:42.500 PM	377.0	373.8	386.8	852
Vrms Line2	8/27/2004	12:25:42.500 PM	205.0	200.5	206.6	852
Vrms Line3	8/27/2004	12:25:42.500 PM	276.7	275.4	278.7	852

8/27/2004 - 12:25:42.000 PM
Val
379.8 Vrms Line1
203.3 Vrms Line2
277.4 Vrms Line3

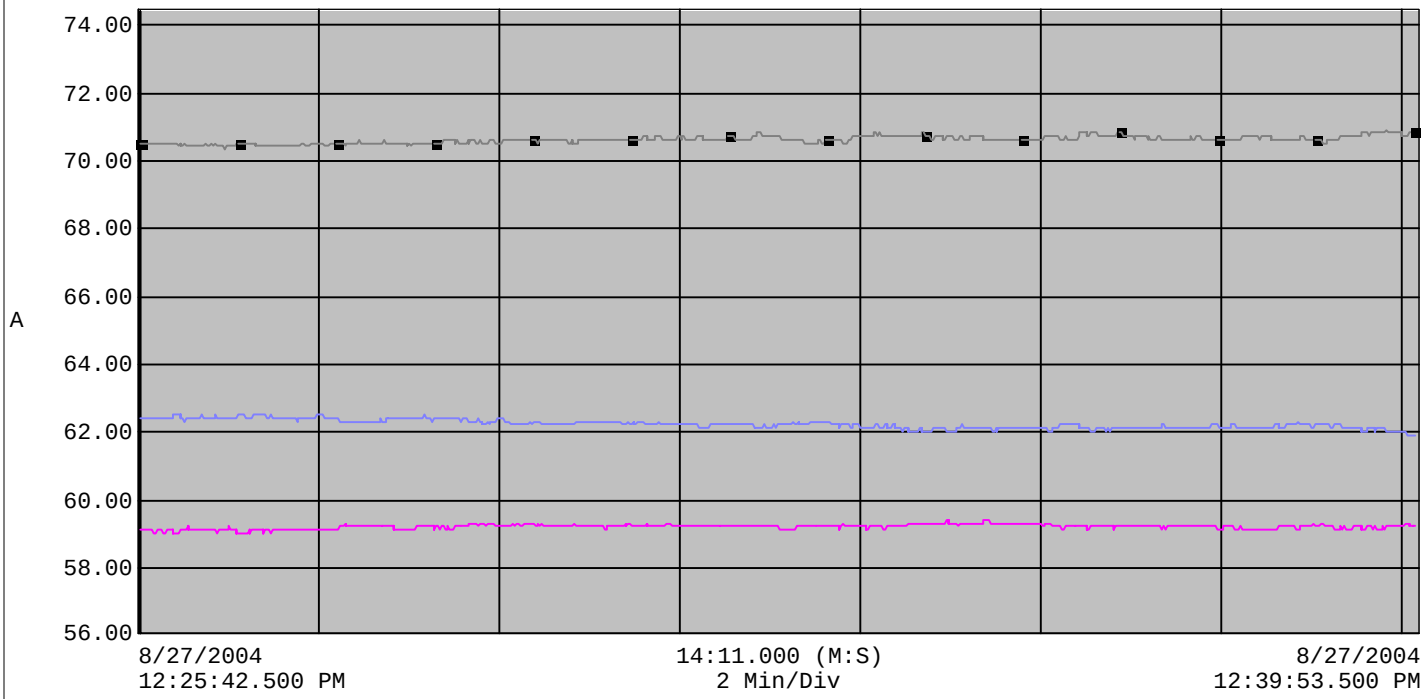
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/27/2004	12:25:42.500 PM	483.4	482.2	484.0	V
Urms Line2	8/27/2004	12:25:42.500 PM	473.8	472.5	474.5	V
Urms Line3	8/27/2004	12:25:42.500 PM	476.6	475.3	477.4	V

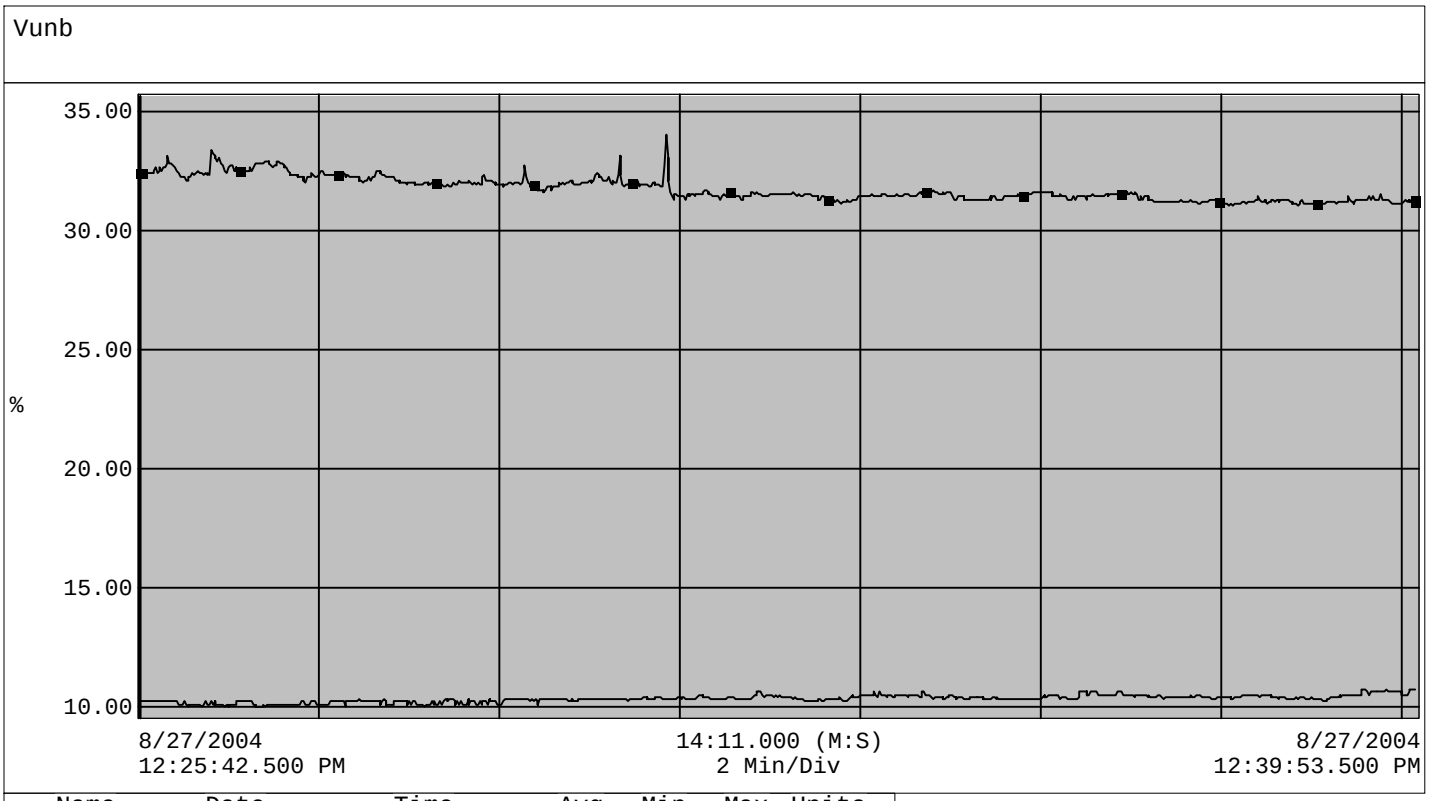
8/27/2004 - 12:25:42.000 PM
Val
483.2 Urms Line1
473.8 Urms Line2
476.7 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/27/2004	12:25:42.500 PM	70.60	70.30	70.90	A
Arms Line2	8/27/2004	12:25:42.500 PM	59.19	59.00	59.40	A
Arms Line3	8/27/2004	12:25:42.500 PM	62.22	61.90	62.50	A

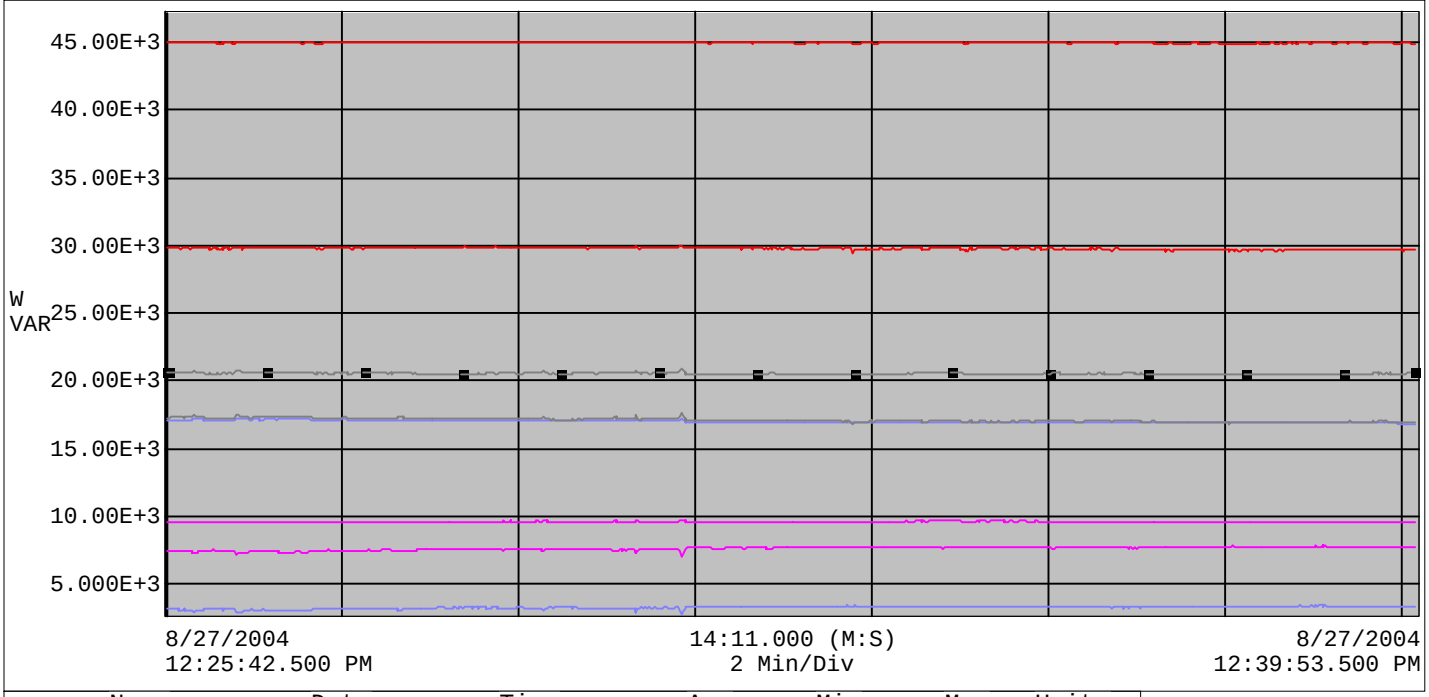
8/27/2004 - 12:25:42.000 PM
Val
70.50 — Arms Line1
59.10 — Arms Line2
62.40 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/27/2004	12:25:42.500 PM	31.71	31.00	34.00	%
Aunb(IEEE)	8/27/2004	12:25:42.500 PM	10.32	10.00	10.70	%

8/27/2004 - 12:25:42.000 PM
Val
32.40 —— Vunb(IEEE)
10.20 —— Aunb(IEEE)

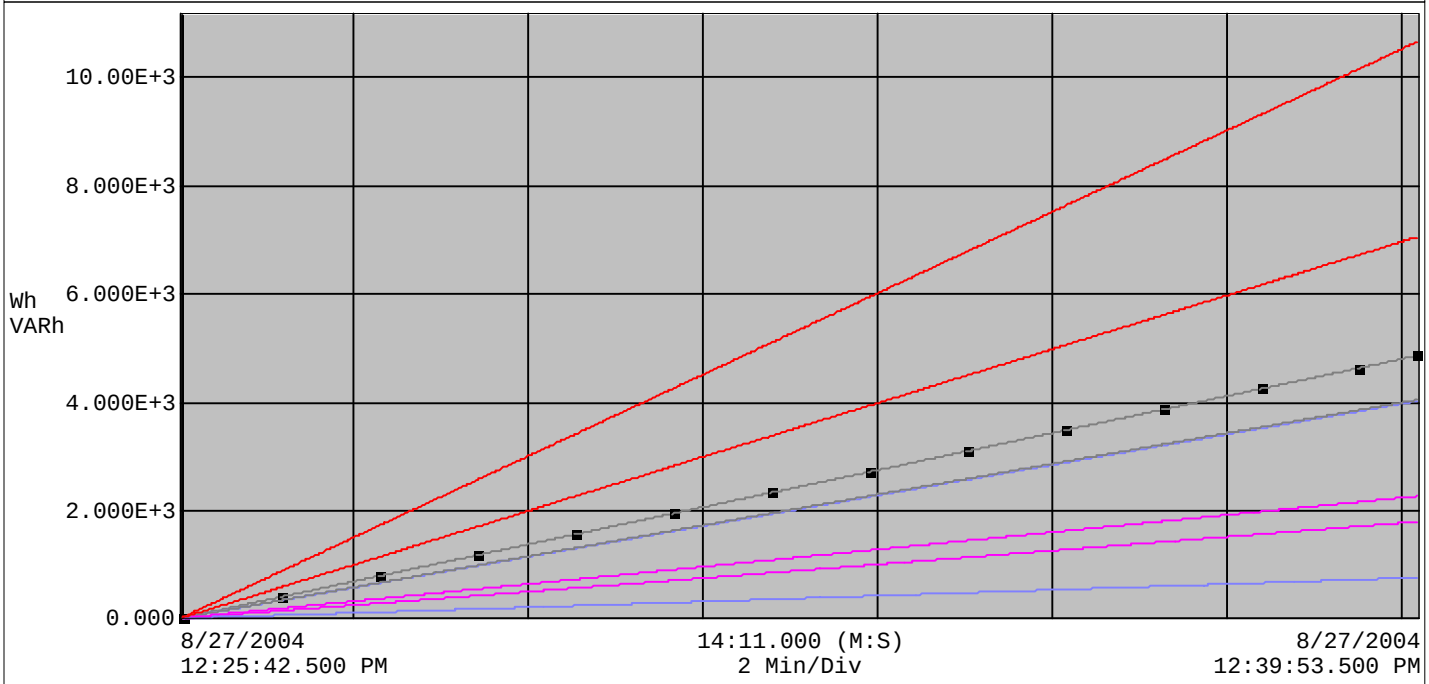
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/27/2004	12:25:42.500 PM	20.46E+3	20.34E+3	20.88E+3	W
W Line2	8/27/2004	12:25:42.500 PM	7.529E+3	6.962E+3	7.706E+3	W
W Line3	8/27/2004	12:25:42.500 PM	16.92E+3	16.75E+3	17.15E+3	W
W Sum of Phases	8/27/2004	12:25:42.500 PM	44.91E+3	44.85E+3	44.98E+3	W
VAR Line1	8/27/2004	12:25:42.500 PM	17.02E+3	16.75E+3	17.59E+3	VAR
VAR Line2	8/27/2004	12:25:42.500 PM	9.515E+3	9.445E+3	9.623E+3	VAR
VAR Line3	8/27/2004	12:25:42.500 PM	3.171E+3	2.655E+3	3.318E+3	VAR
VAR Sum of Phases	8/27/2004	12:25:42.500 PM	29.71E+3	29.40E+3	29.86E+3	VAR

8/27/2004 - 12:25:42.000 PM
Val
20.53E+3 — W Line1
7.353E+3 — W Line2
17.04E+3 — W Line3
44.92E+3 — W Sum of Phases
17.20E+3 — VAR Line1
9.512E+3 — VAR Line2
3.024E+3 — VAR Line3
29.73E+3 — VAR Sum of Phases

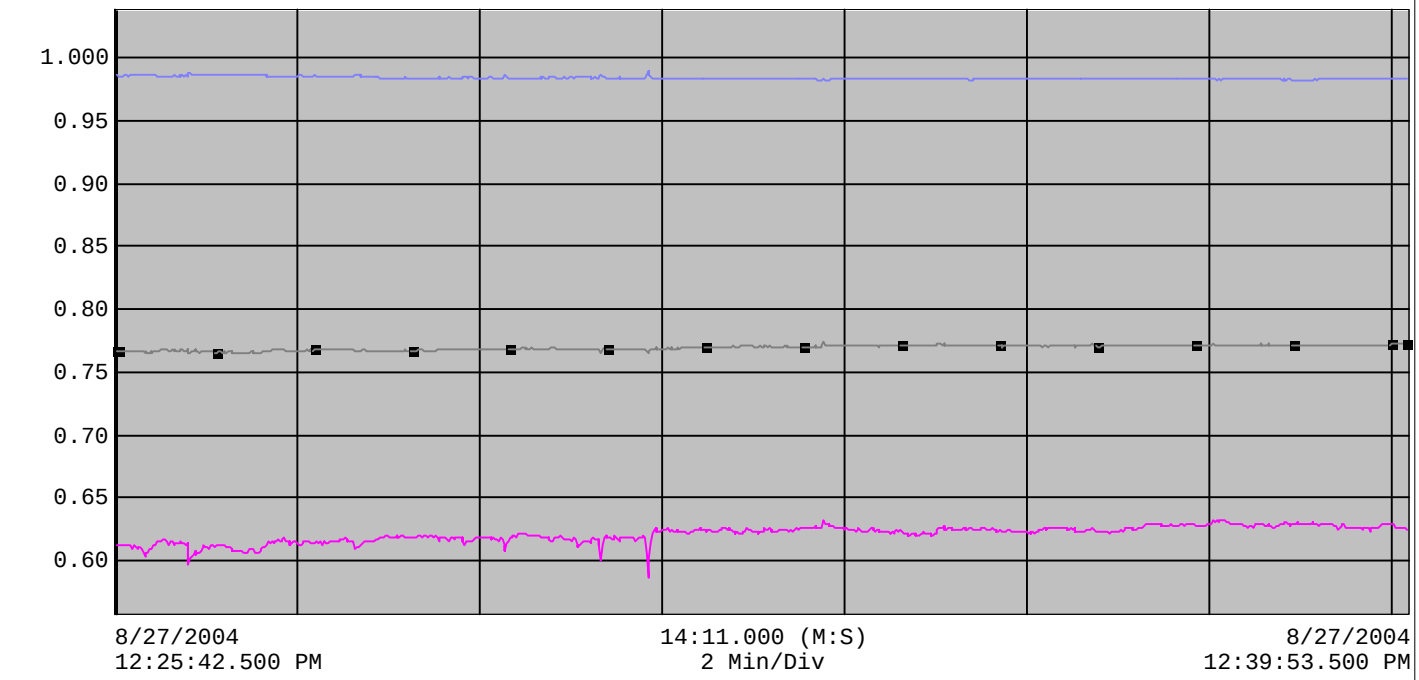
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/27/2004	12:25:42.500 PM	2.426E+3	5.763	4.842E+3	Wh
W-hours Line2	8/27/2004	12:25:42.500 PM	884.6	2.067	1.782E+3	Wh
W-hours Line3	8/27/2004	12:25:42.500 PM	2.010E+3	4.766	4.004E+3	Wh
W-hours Sum of Phases	8/27/2004	12:25:42.500 PM	5.321E+3	12.33	10.63E+3	Wh
VAR-hours Line1	8/27/2004	12:25:42.500 PM	2.025E+3	4.795	4.028E+3	VARh
VAR-hours Line2	8/27/2004	12:25:42.500 PM	1.127E+3	2.612	2.252E+3	VARh
VAR-hours Line3	8/27/2004	12:25:42.500 PM	370.6	0.848	750.5	VARh
VAR-hours Sum of Phases	8/27/2004	12:25:42.500 PM	3.523E+3	8.154	7.031E+3	VARh

8/27/2004 - 12:25:42.000 PM
Val
5.763 — W-hours Line1
2.067 — W-hours Line2
4.766 — W-hours Line3
12.33 — W-hours Sum of Phases
4.795 — VAR-hours Line1
2.612 — VAR-hours Line2
0.848 — VAR-hours Line3
8.154 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/27/2004	12:25:42.500 PM	0.769	0.764	0.773	
PF Line2	8/27/2004	12:25:42.500 PM	0.620	0.586	0.631	
PF Line3	8/27/2004	12:25:42.500 PM	0.983	0.981	0.988	

8/27/2004 - 12:25:42.000 PM
Val
0.767 — PF Line1
0.612 — PF Line2
0.985 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M9\082704-M9.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS M-9 ,

Comments

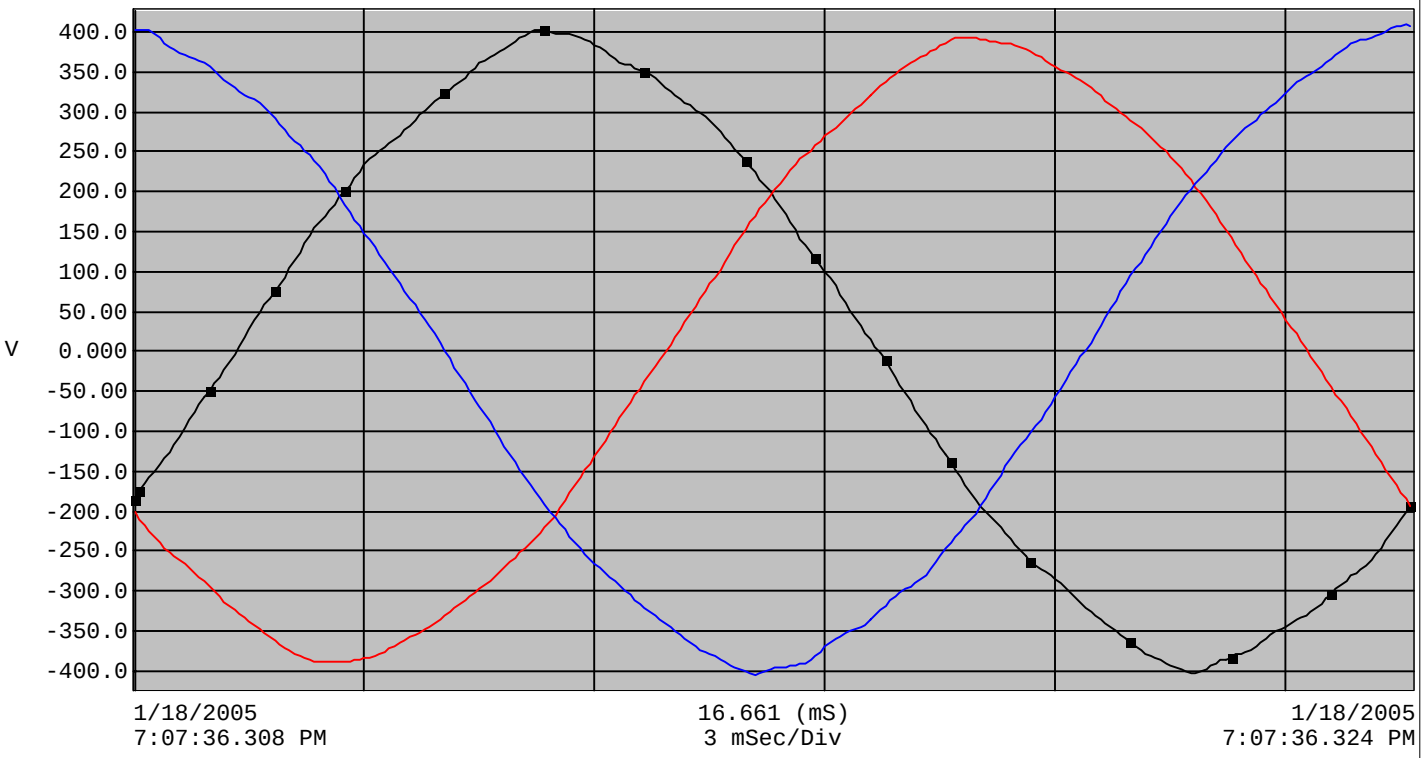
GWA Water Pumping Station Assessment				
Station Name: M-15	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.6	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	3	0.15	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.55	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	2	0.1	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.6	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	3	0.15	
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.085	
Pressure	1.5%	2	0.03	52
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**5.0%**		0.1	
Lighting	3.0%	2	0.06	61
Power Devices	2.0%	2	0.04	62
	100%	**Assessment Value**		**2.5**

Comments:

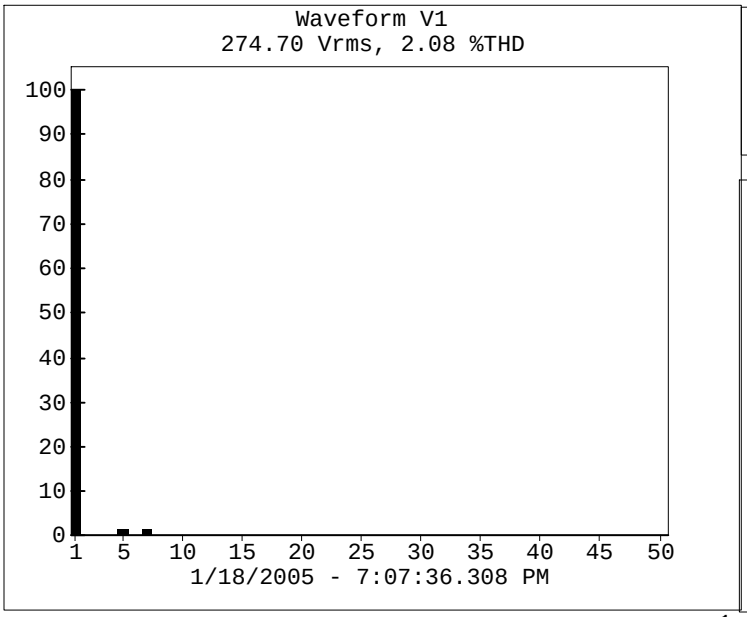
WPS M-15 Photo

Recording Start Date	1/18/2005 - 7:07:36 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	1/18/2005	7:07:36.308 PM	16.661	274.7	V
Waveform V2	1/18/2005	7:07:36.308 PM	16.661	272.0	V
Waveform V3	1/18/2005	7:07:36.308 PM	16.661	279.0	V

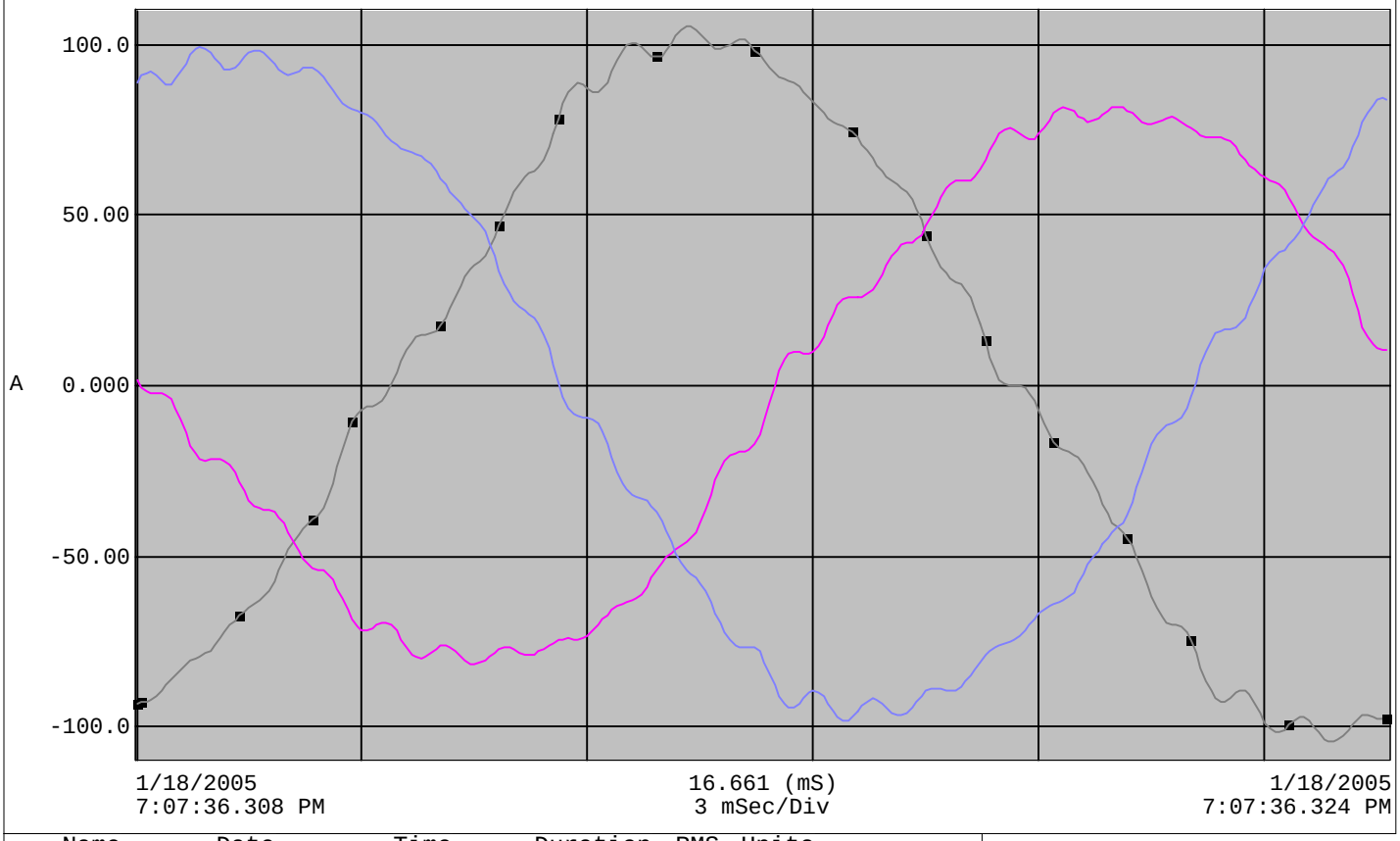


1/18/2005 - 7:07:36.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

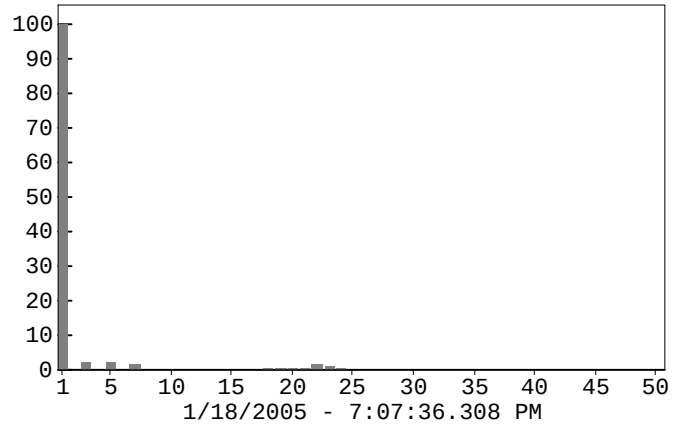
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.4	H20	0.2	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.3	H39	0.0
H06	0.1	H23	0.2	H40	0.0
H07	1.3	H24	0.2	H41	0.0
H08	0.0	H25	0.0	H42	0.1
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.1
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	1/18/2005	7:07:36.308 PM	16.661	70.99	A
Waveform I2	1/18/2005	7:07:36.308 PM	16.661	57.76	A
Waveform I3	1/18/2005	7:07:36.308 PM	16.661	68.72	A

Waveform I1
70.99 Arms, 5.26 %THD

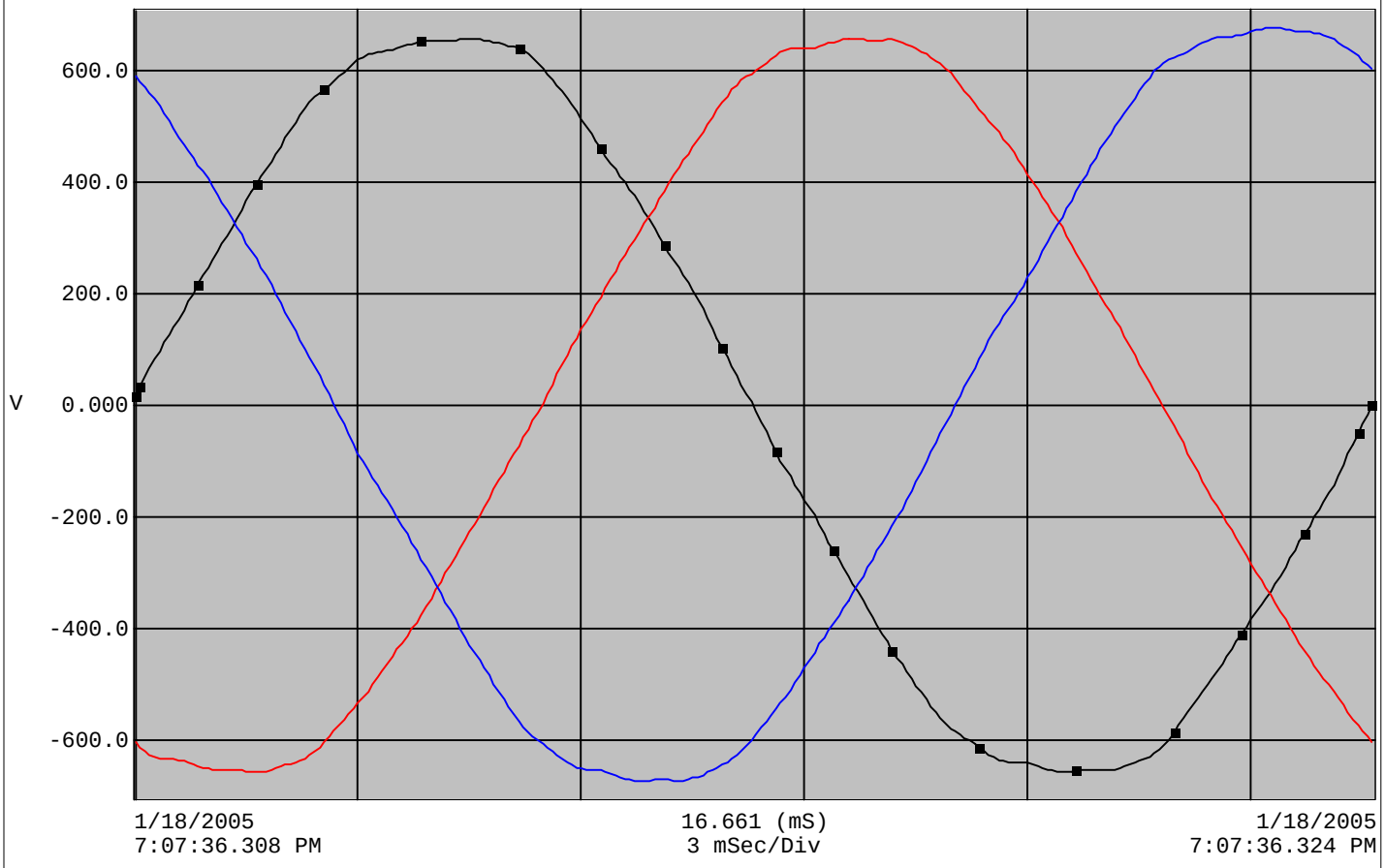


1/18/2005 - 7:07:36.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

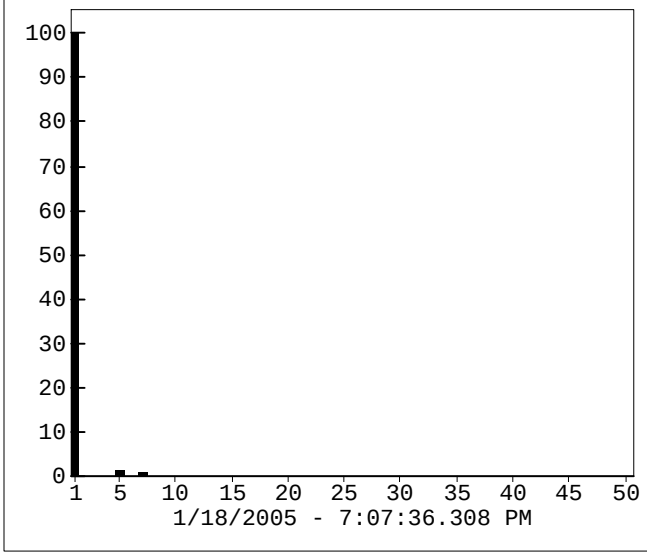
	(%)		(%)		(%)
H01	100.0	H18	1.0	H35	0.0
H02	0.1	H19	0.9	H36	0.1
H03	2.7	H20	0.6	H37	0.1
H04	0.1	H21	0.6	H38	0.0
H05	2.5	H22	1.8	H39	0.0
H06	0.1	H23	1.5	H40	0.0
H07	2.1	H24	0.9	H41	0.0
H08	0.0	H25	0.1	H42	0.2
H09	0.1	H26	0.1	H43	0.1
H10	0.2	H27	0.1	H44	0.1
H11	0.2	H28	0.0	H45	0.0
H12	0.3	H29	0.1	H46	0.1
H13	0.3	H30	0.1	H47	0.0
H14	0.1	H31	0.1	H48	0.1
H15	0.1	H32	0.1	H49	0.0
H16	0.3	H33	0.1	H50	0.0
H17	0.4	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	1/18/2005	7:07:36.308 PM	16.661	474.7	V
Waveform U2	1/18/2005	7:07:36.308 PM	16.661	471.2	V
Waveform U3	1/18/2005	7:07:36.308 PM	16.661	484.2	V

Waveform U1
474.71 Vrms, 1.96 %THD



1/18/2005 - 7:07:36.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.4	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.4	H22	0.2	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	1.2	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 1/18/2005
Start Time: 7:07:36 PM
Duration: 0:0.000 (M:S)
W: 13.95E+3 W
VAR: 13.67E+3 W
VA: 19.53E+3 W
Power Factor: 0.714
Displacement Power Factor: 0.715
TAN: 0.977
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M-15\011805-M15 Photo.dvb

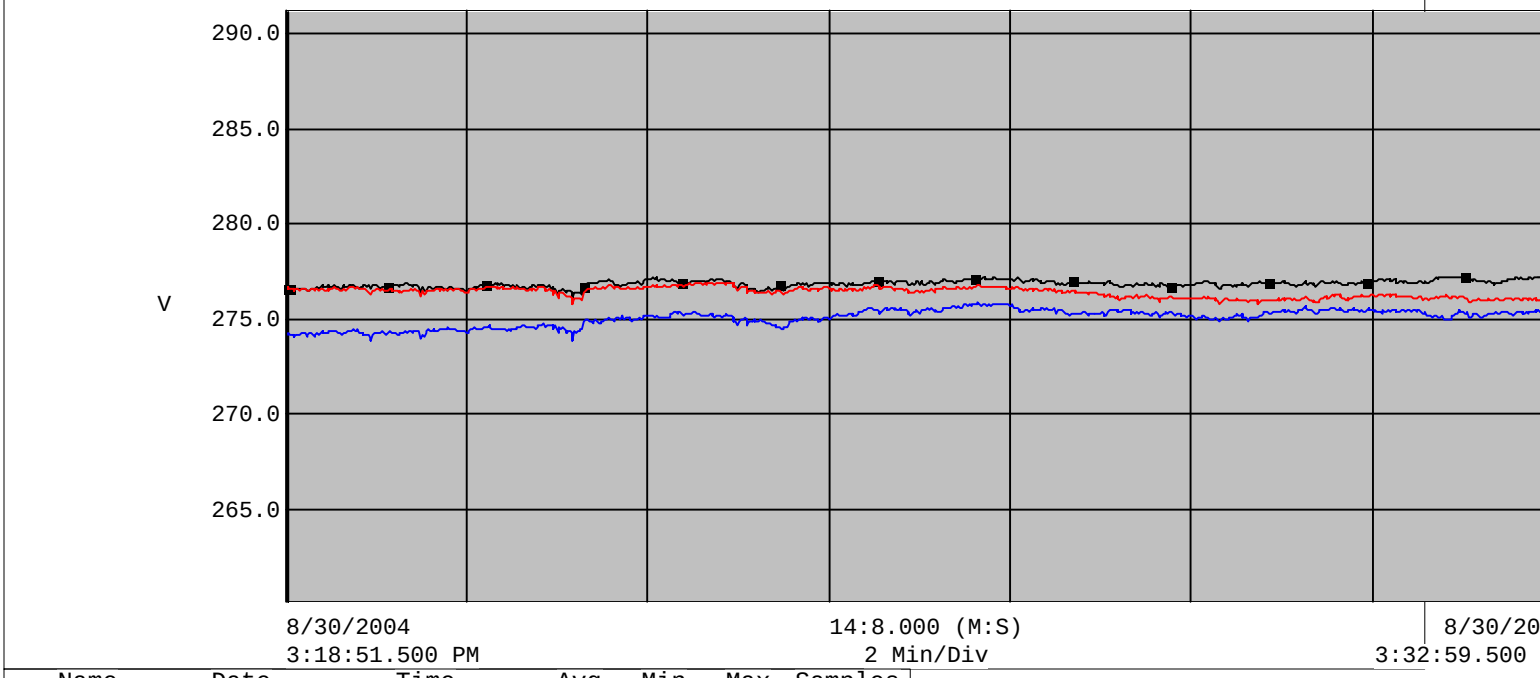
Operator	Test Site
GWA Victor Jardel ,	WPS M15 Photo ,

Comments

WPS M-15

Recording Start Date	8/30/2004 - 3:18:51 PM
Recording Duration	14:08 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

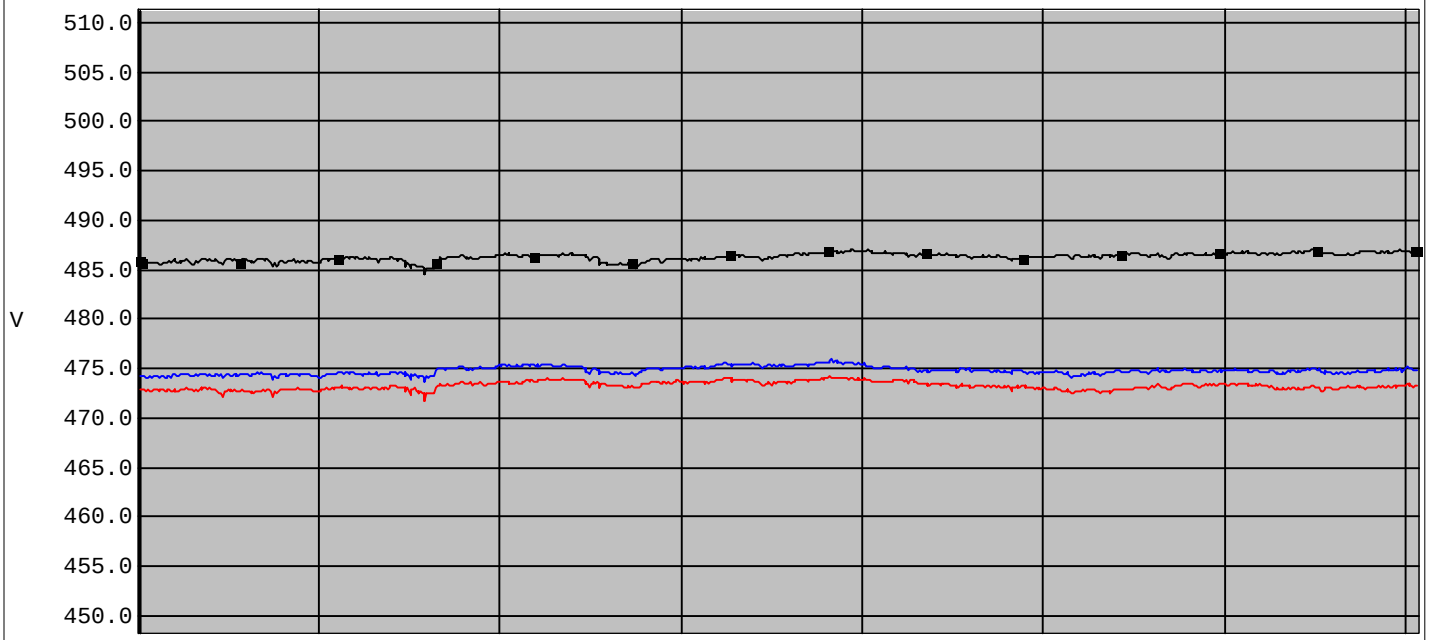
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/30/2004	3:18:51.500 PM	276.8	276.0	277.3	849
Vrms Line2	8/30/2004	3:18:51.500 PM	276.3	275.7	276.8	849
Vrms Line3	8/30/2004	3:18:51.500 PM	275.0	273.8	275.8	849

8/30/2004 - 3:18:51.000 PM
Val
276.6 Vrms Line1
276.6 Vrms Line2
274.1 Vrms Line3

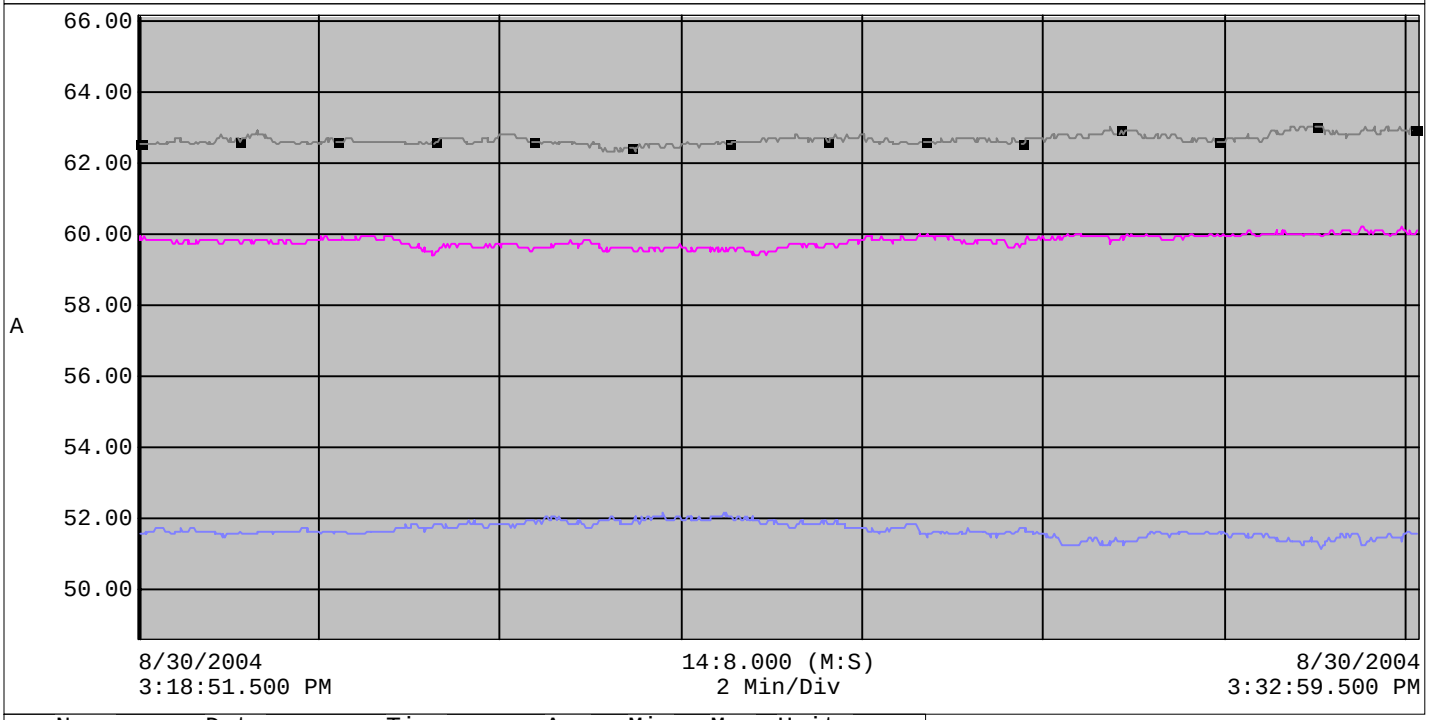
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/30/2004	3:18:51.500 PM	486.2	484.5	486.9	V
Urms Line2	8/30/2004	3:18:51.500 PM	473.1	471.7	474.1	V
Urms Line3	8/30/2004	3:18:51.500 PM	474.7	473.5	475.8	V

8/30/2004 - 3:18:51.000 PM
Val
485.8 Urms Line1
472.7 Urms Line2
474.1 Urms Line3

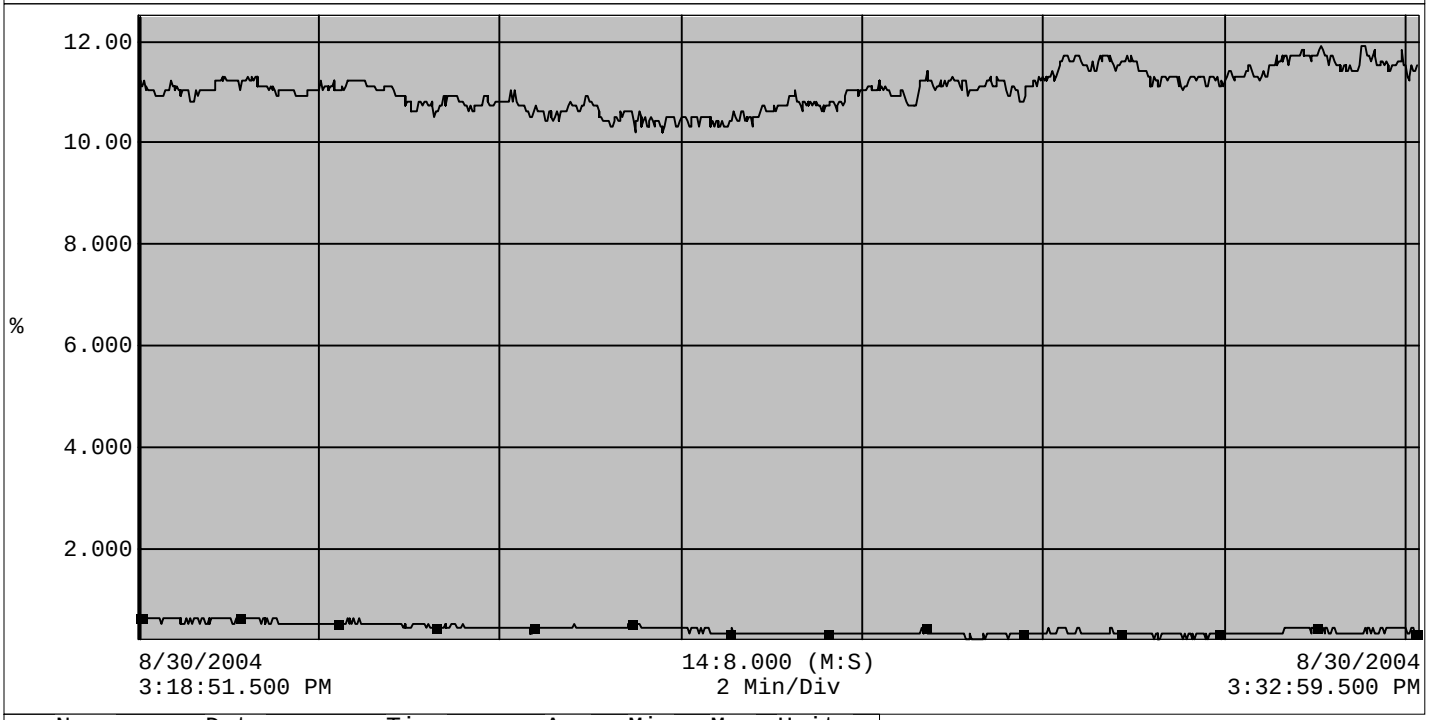
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/30/2004	3:18:51.500 PM	62.66	62.30	63.00	A
Arms Line2	8/30/2004	3:18:51.500 PM	59.78	59.40	60.20	A
Arms Line3	8/30/2004	3:18:51.500 PM	51.62	51.10	52.10	A

8/30/2004 - 3:18:51.000 PM
Val
62.50 — Arms Line1
59.90 — Arms Line2
51.50 — Arms Line3

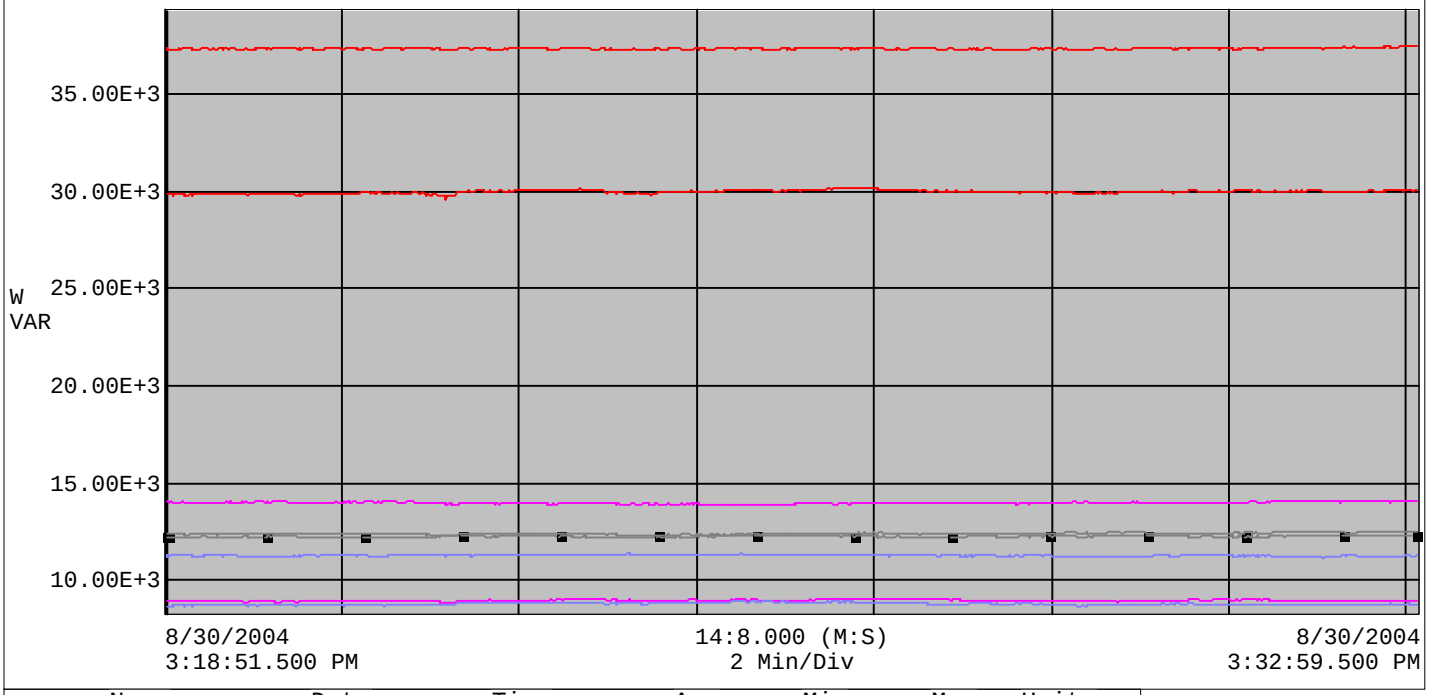
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/30/2004	3:18:51.500 PM	0.382	0.200	0.600	%
Aunb(IEEE)	8/30/2004	3:18:51.500 PM	11.02	10.20	11.90	%

8/30/2004 - 3:18:51.000 PM
Val
0.600 —— Vunb(IEEE)
11.20 —— Aunb(IEEE)

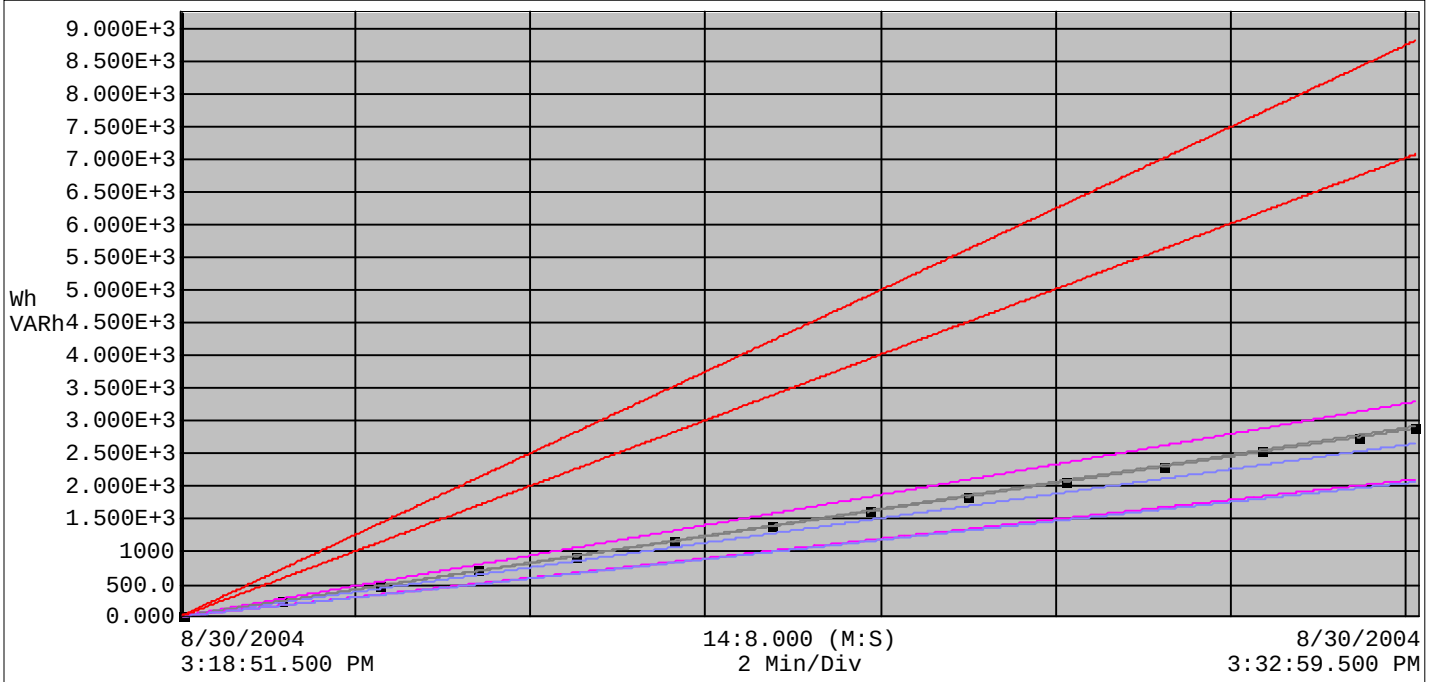
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/30/2004	3:18:51.500 PM	12.19E+3	12.12E+3	12.27E+3	W
W Line2	8/30/2004	3:18:51.500 PM	13.92E+3	13.81E+3	14.03E+3	W
W Line3	8/30/2004	3:18:51.500 PM	11.21E+3	11.09E+3	11.31E+3	W
W Sum of Phases	8/30/2004	3:18:51.500 PM	37.32E+3	37.22E+3	37.46E+3	W
VAR Line1	8/30/2004	3:18:51.500 PM	12.34E+3	12.19E+3	12.46E+3	VAR
VAR Line2	8/30/2004	3:18:51.500 PM	8.890E+3	8.748E+3	8.963E+3	VAR
VAR Line3	8/30/2004	3:18:51.500 PM	8.714E+3	8.607E+3	8.849E+3	VAR
VAR Sum of Phases	8/30/2004	3:18:51.500 PM	29.94E+3	29.59E+3	30.15E+3	VAR

8/30/2004 - 3:18:51.000 PM
Val
12.13E+3 — W Line1
13.98E+3 — W Line2
11.20E+3 — W Line3
37.31E+3 — W Sum of Phases
12.33E+3 — VAR Line1
8.875E+3 — VAR Line2
8.616E+3 — VAR Line3
29.82E+3 — VAR Sum of Phases

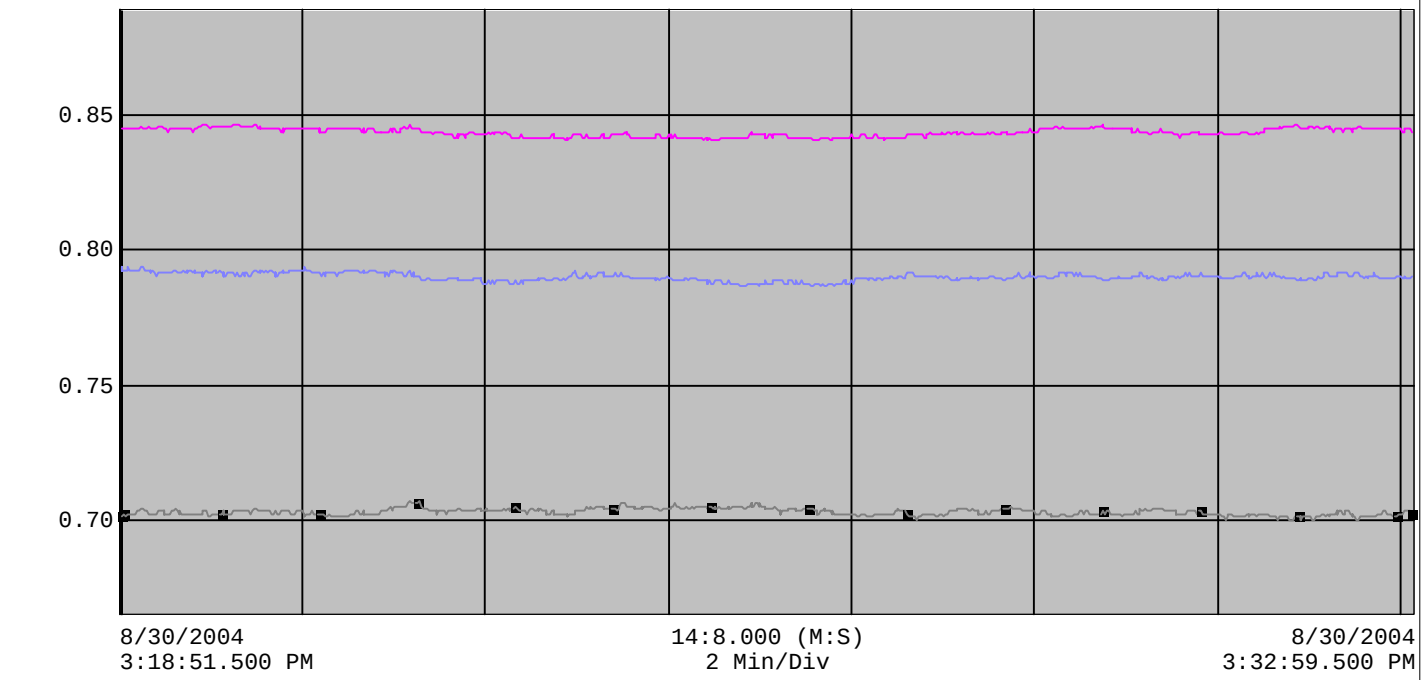
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/30/2004	3:18:51.500 PM	1.438E+3	3.333	2.874E+3	Wh
W-hours Line2	8/30/2004	3:18:51.500 PM	1.643E+3	3.908	3.283E+3	Wh
W-hours Line3	8/30/2004	3:18:51.500 PM	1.324E+3	3.146	2.643E+3	Wh
W-hours Sum of Phases	8/30/2004	3:18:51.500 PM	4.405E+3	10.47	8.800E+3	Wh
VAR-hours Line1	8/30/2004	3:18:51.500 PM	1.455E+3	3.463	2.910E+3	VARh
VAR-hours Line2	8/30/2004	3:18:51.500 PM	1.049E+3	2.496	2.097E+3	VARh
VAR-hours Line3	8/30/2004	3:18:51.500 PM	1.029E+3	2.383	2.055E+3	VARh
VAR-hours Sum of Phases	8/30/2004	3:18:51.500 PM	3.532E+3	8.189	7.061E+3	VARh

8/30/2004 - 3:18:51.000 PM
Val
3.333 — W-hours Line1
3.908 — W-hours Line2
3.146 — W-hours Line3
10.47 — W-hours Sum of Phases
3.463 — VAR-hours Line1
2.496 — VAR-hours Line2
2.383 — VAR-hours Line3
8.189 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/30/2004	3:18:51.500 PM	0.703	0.700	0.707	
PF Line2	8/30/2004	3:18:51.500 PM	0.843	0.840	0.846	
PF Line3	8/30/2004	3:18:51.500 PM	0.789	0.786	0.793	

8/30/2004 - 3:18:51.000 PM
Val
0.701 — PF Line1
0.844 — PF Line2
0.793 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M-15\083004-M15.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS M-15 ,

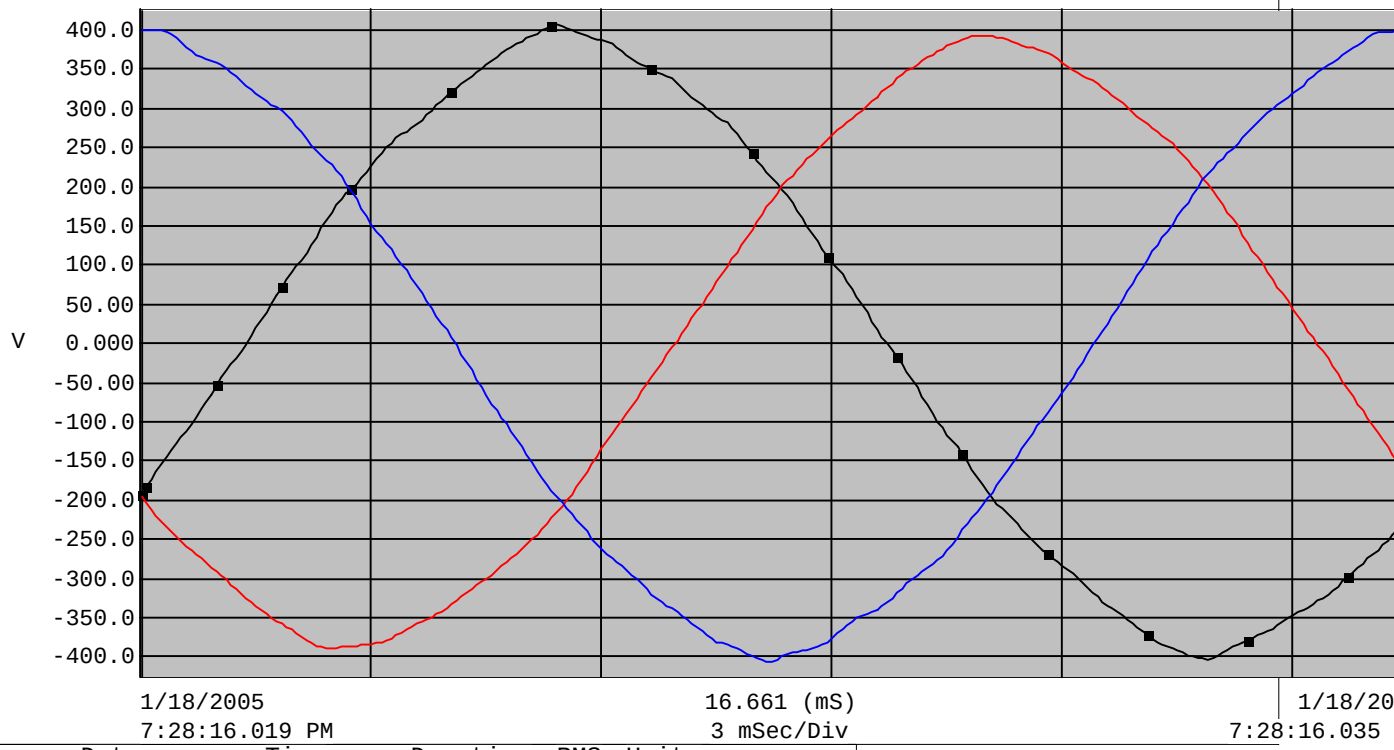
Comments

Power for M5 and M15 come from the same transformer bank. M5 Motor was grounded and not operational.

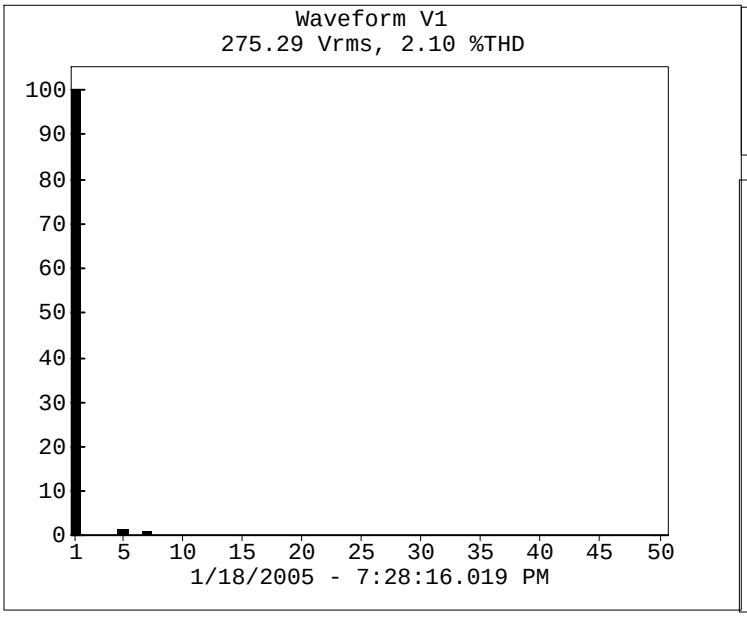
WPS M-15A Photo

Recording Start Date	1/18/2005 - 7:28:16 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	1/18/2005	7:28:16.019 PM	16.661	275.3	V
Waveform V2	1/18/2005	7:28:16.019 PM	16.661	271.3	V
Waveform V3	1/18/2005	7:28:16.019 PM	16.661	279.0	V

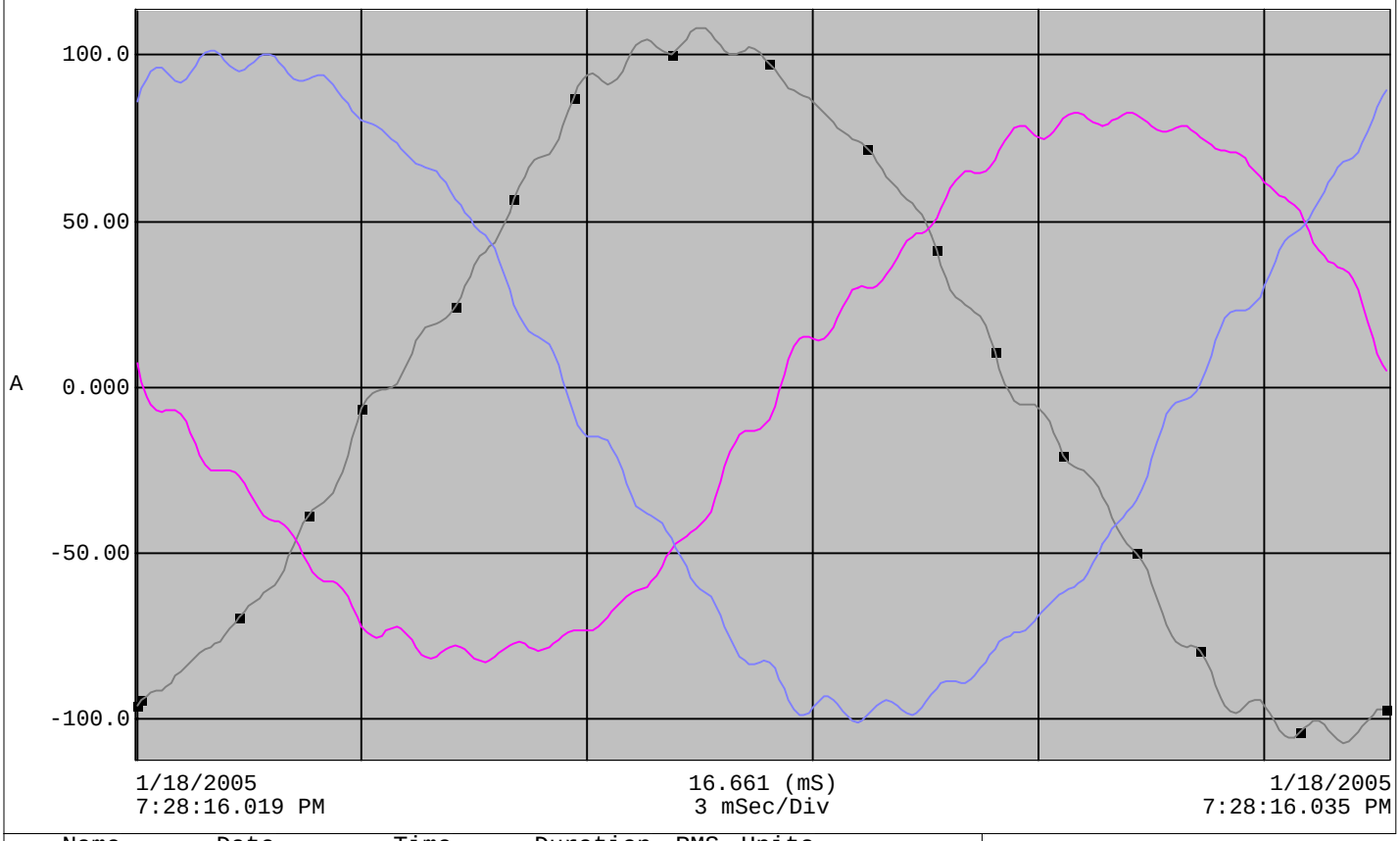


1/18/2005 - 7:28:16.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

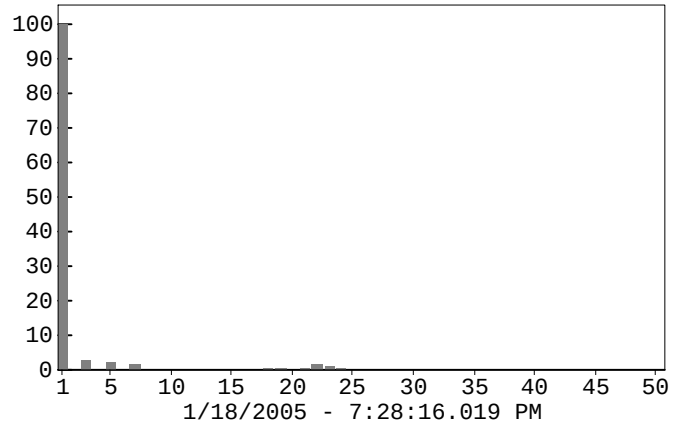
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.4	H20	0.2	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.5	H22	0.3	H39	0.0
H06	0.1	H23	0.4	H40	0.0
H07	1.3	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.1
H09	0.2	H26	0.0	H43	0.1
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.1
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	1/18/2005	7:28:16.019 PM	16.661	72.74	A
Waveform I2	1/18/2005	7:28:16.019 PM	16.661	58.62	A
Waveform I3	1/18/2005	7:28:16.019 PM	16.661	70.37	A

Waveform I1
72.74 Arms, 5.38 %THD

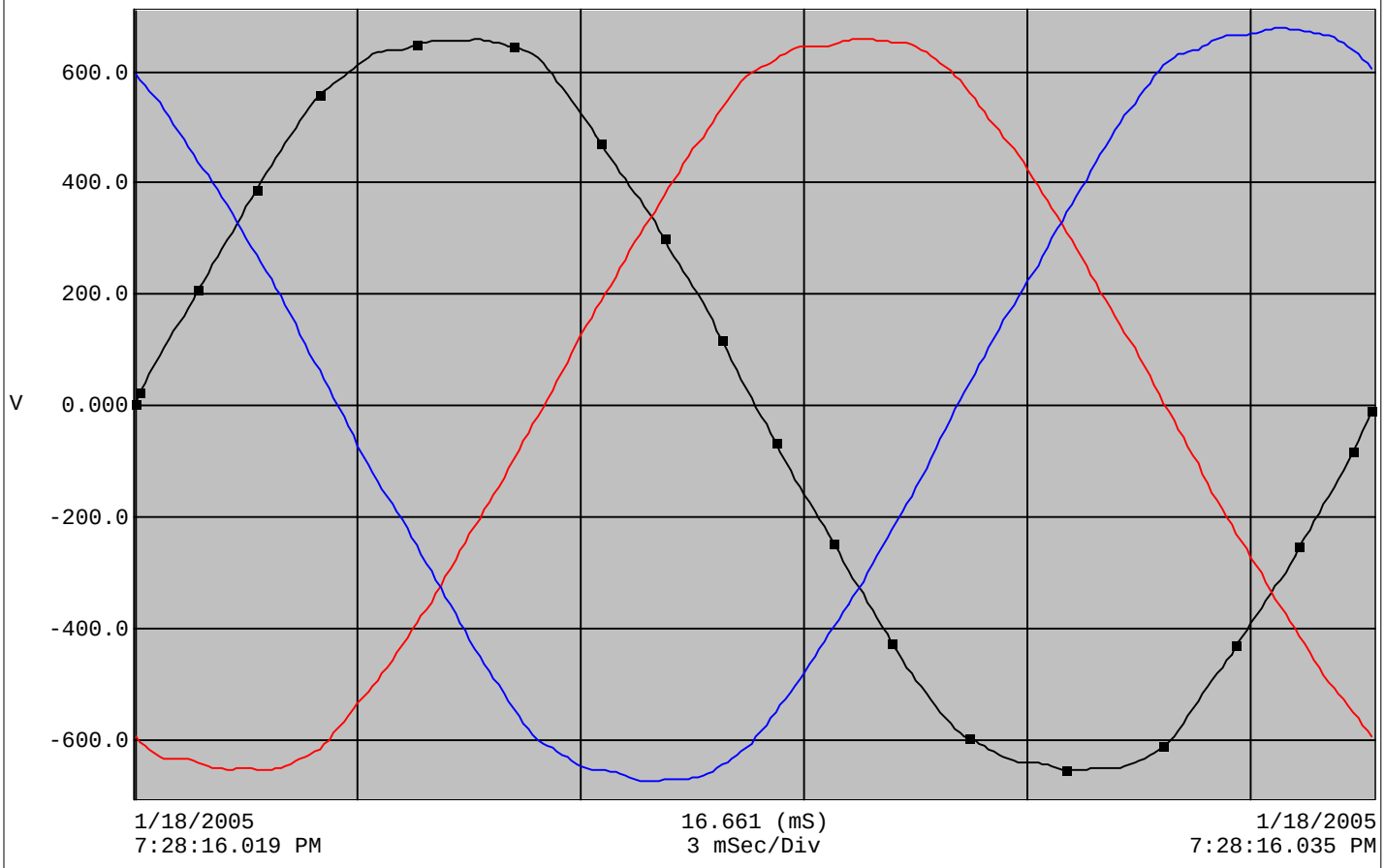


1/18/2005 - 7:28:16.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

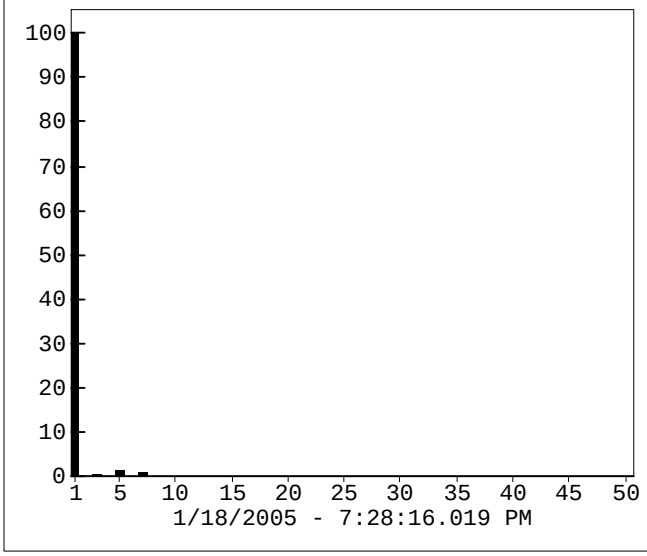
	(%)		(%)		(%)
H01	100.0	H18	1.1	H35	0.0
H02	0.1	H19	0.8	H36	0.0
H03	2.8	H20	0.5	H37	0.0
H04	0.1	H21	0.6	H38	0.0
H05	2.6	H22	2.0	H39	0.0
H06	0.0	H23	1.3	H40	0.1
H07	2.1	H24	0.9	H41	0.1
H08	0.0	H25	0.1	H42	0.2
H09	0.1	H26	0.0	H43	0.0
H10	0.2	H27	0.1	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.3	H29	0.1	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.2	H31	0.1	H48	0.1
H15	0.2	H32	0.0	H49	0.0
H16	0.4	H33	0.0	H50	0.0
H17	0.5	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	1/18/2005	7:28:16.019 PM	16.661	474.6	V
Waveform U2	1/18/2005	7:28:16.019 PM	16.661	470.9	V
Waveform U3	1/18/2005	7:28:16.019 PM	16.661	484.6	V

Waveform U1
474.57 Vrms, 2.00 %THD



1/18/2005 - 7:28:16.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.5	H20	0.1	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.4	H22	0.2	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	1.2	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 1/18/2005
Start Time: 7:28:16 PM
Duration: 0:0.000 (M:S)
W: 14.50E+3 W
VAR: 13.80E+3 W
VA: 20.02E+3 W
Power Factor: 0.724
Displacement Power Factor: 0.725
TAN: 0.949
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M-15\011805-M15A Photo.dvb

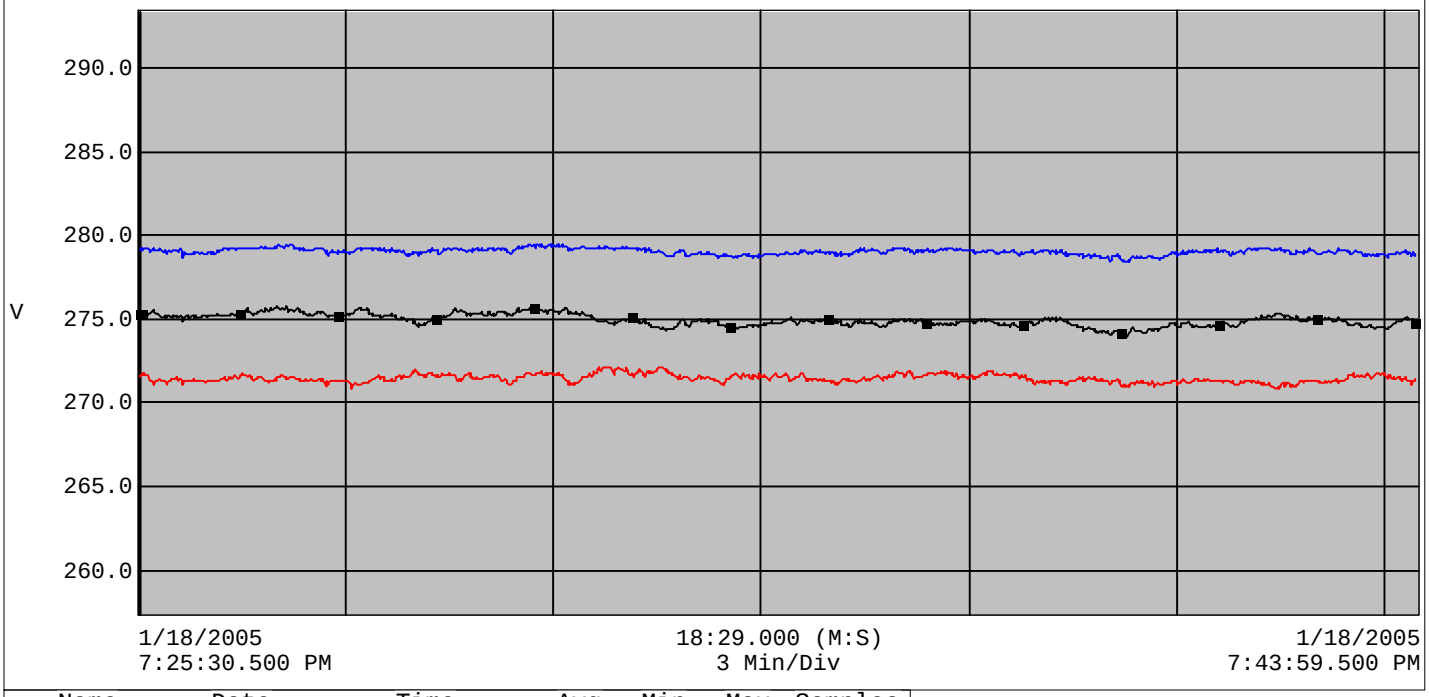
Operator	Test Site
GWA Victor Jardel ,	WPS M15A Photo ,

Comments

WPS M-15A

Recording Start Date	1/18/2005 - 7:25:30 PM
Recording Duration	18:29 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Vrms

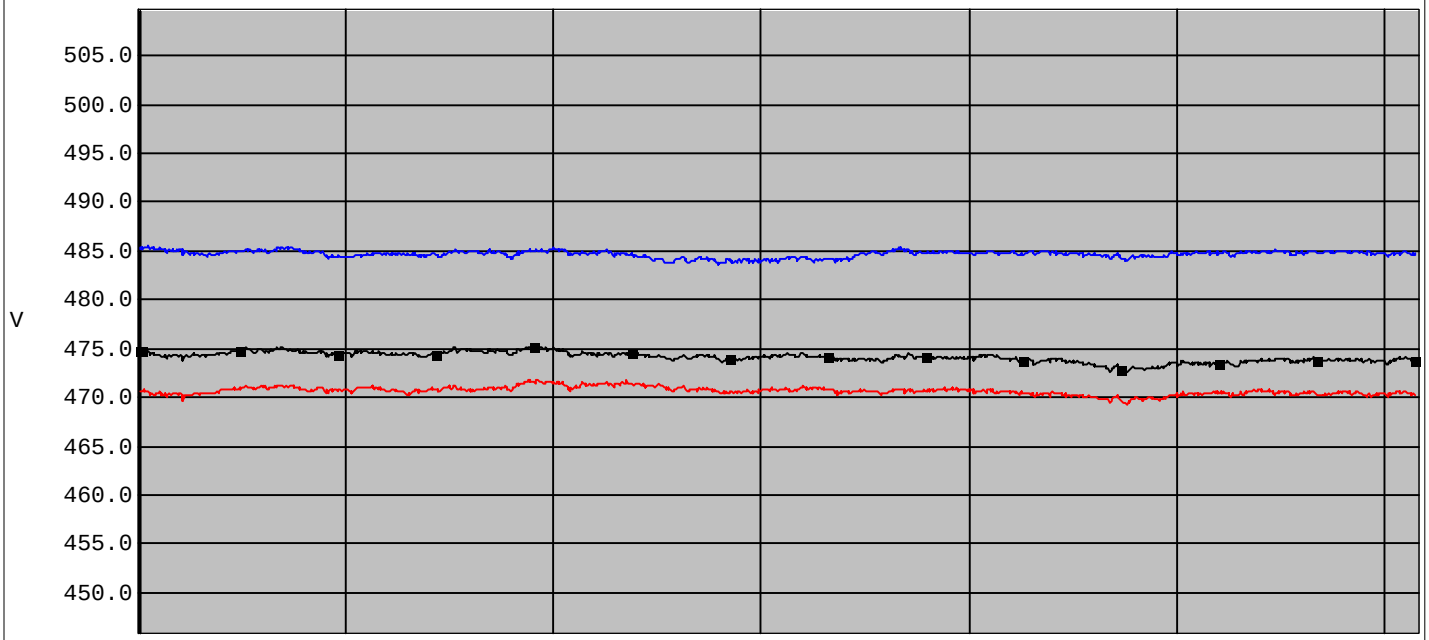


Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	1/18/2005	7:25:30.500 PM	274.9	273.9	275.7	1110
Vrms Line2	1/18/2005	7:25:30.500 PM	271.4	270.8	272.1	1110
Vrms Line3	1/18/2005	7:25:30.500 PM	278.9	278.3	279.4	1110

1/18/2005 - 7:25:30.000 PM

Val	
275.3	Vrms Line1
271.5	Vrms Line2
279.0	Vrms Line3

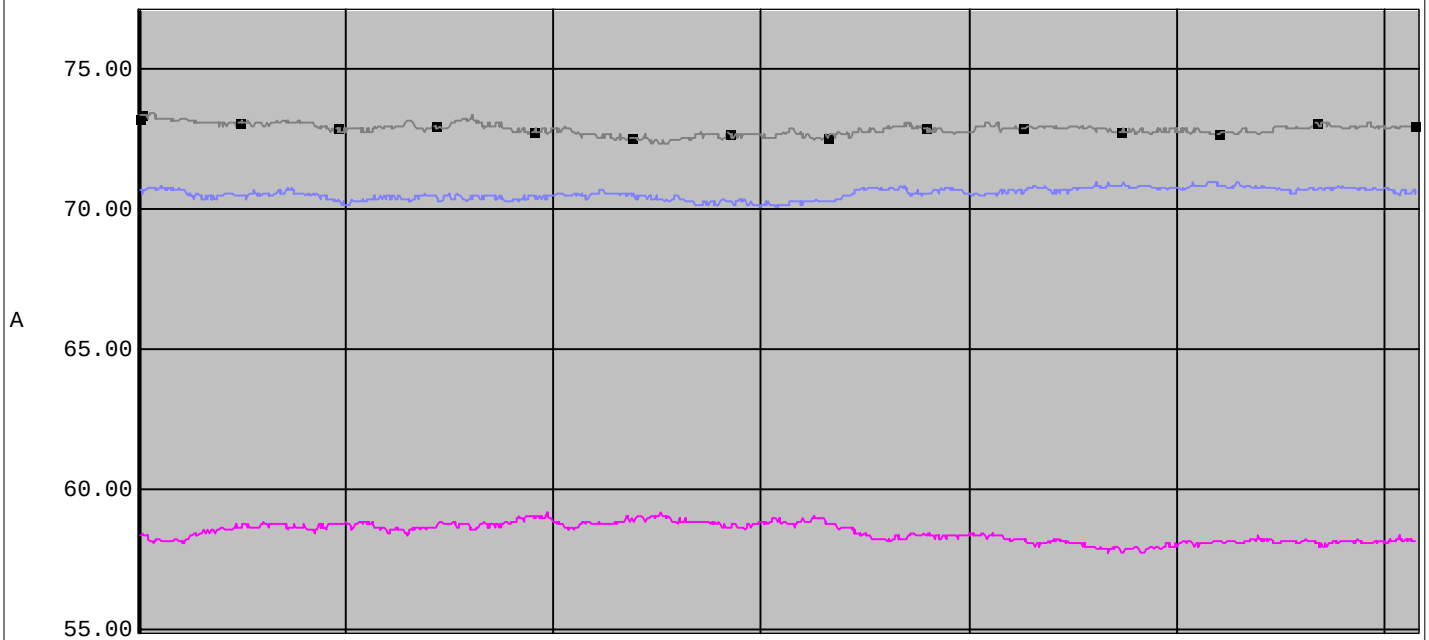
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	1/18/2005	7:25:30.500 PM	474.0	472.4	475.1	V
Urms Line2	1/18/2005	7:25:30.500 PM	470.6	469.2	471.7	V
Urms Line3	1/18/2005	7:25:30.500 PM	484.6	483.6	485.4	V

1/18/2005 - 7:25:30.000 PM
Val
474.6 Urms Line1
470.5 Urms Line2
485.1 Urms Line3

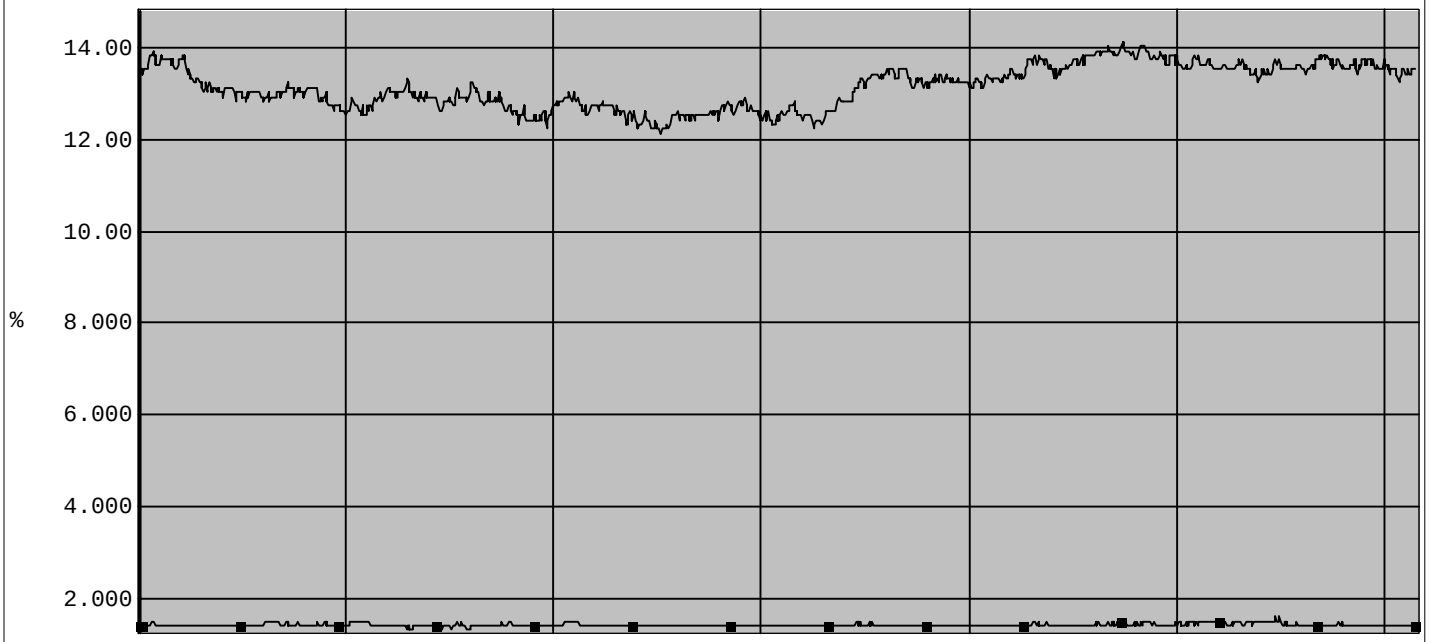
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	1/18/2005	7:25:30.500 PM	72.79	72.30	73.40	A
Arms Line2	1/18/2005	7:25:30.500 PM	58.41	57.70	59.10	A
Arms Line3	1/18/2005	7:25:30.500 PM	70.49	70.00	70.90	A

1/18/2005 - 7:25:30.000 PM
Val
73.20 — Arms Line1
58.30 — Arms Line2
70.60 — Arms Line3

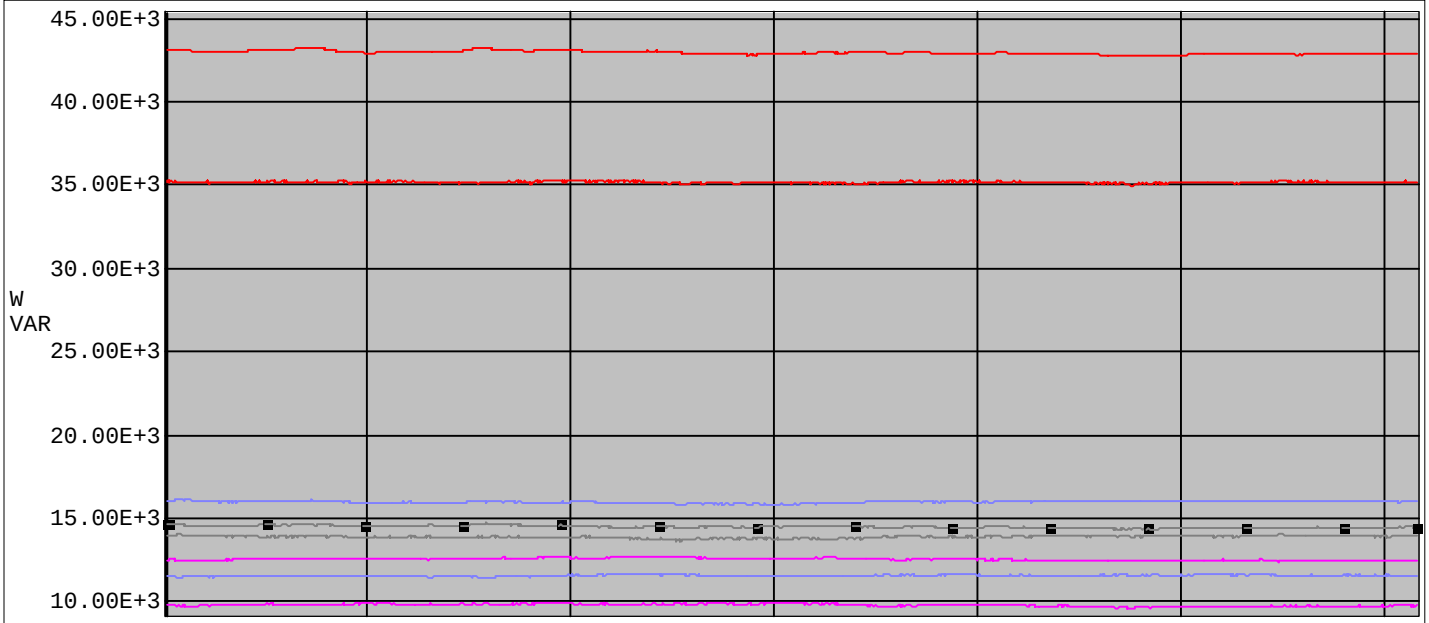
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	1/18/2005	7:25:30.500 PM	1.415	1.300	1.600	%
Aunb(IEEE)	1/18/2005	7:25:30.500 PM	13.11	12.10	14.10	%

1/18/2005 - 7:25:30.000 PM
Val
1.400 —— Vunb(IEEE)
13.50 —— Aunb(IEEE)

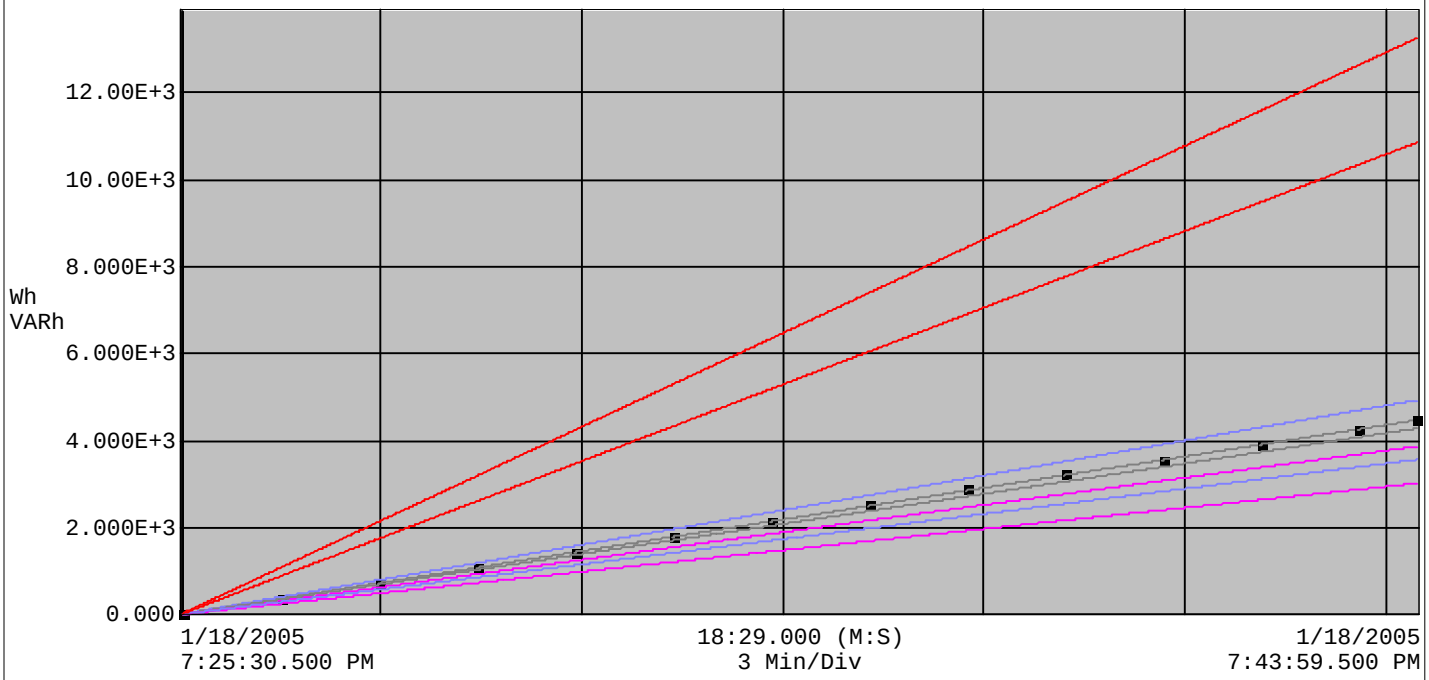
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	1/18/2005	7:25:30.500 PM	14.45E+3	14.30E+3	14.66E+3	W
W Line2	1/18/2005	7:25:30.500 PM	12.50E+3	12.36E+3	12.70E+3	W
W Line3	1/18/2005	7:25:30.500 PM	15.94E+3	15.77E+3	16.10E+3	W
W Sum of Phases	1/18/2005	7:25:30.500 PM	42.88E+3	42.65E+3	43.19E+3	W
VAR Line1	1/18/2005	7:25:30.500 PM	13.84E+3	13.61E+3	14.02E+3	VAR
VAR Line2	1/18/2005	7:25:30.500 PM	9.753E+3	9.553E+3	9.879E+3	VAR
VAR Line3	1/18/2005	7:25:30.500 PM	11.52E+3	11.37E+3	11.63E+3	VAR
VAR Sum of Phases	1/18/2005	7:25:30.500 PM	35.11E+3	34.92E+3	35.23E+3	VAR

1/18/2005 - 7:25:30.000 PM
Val
14.57E+3 — W Line1
12.45E+3 — W Line2
16.01E+3 — W Line3
43.03E+3 — W Sum of Phases
13.94E+3 — VAR Line1
9.755E+3 — VAR Line2
11.45E+3 — VAR Line3
35.14E+3 — VAR Sum of Phases

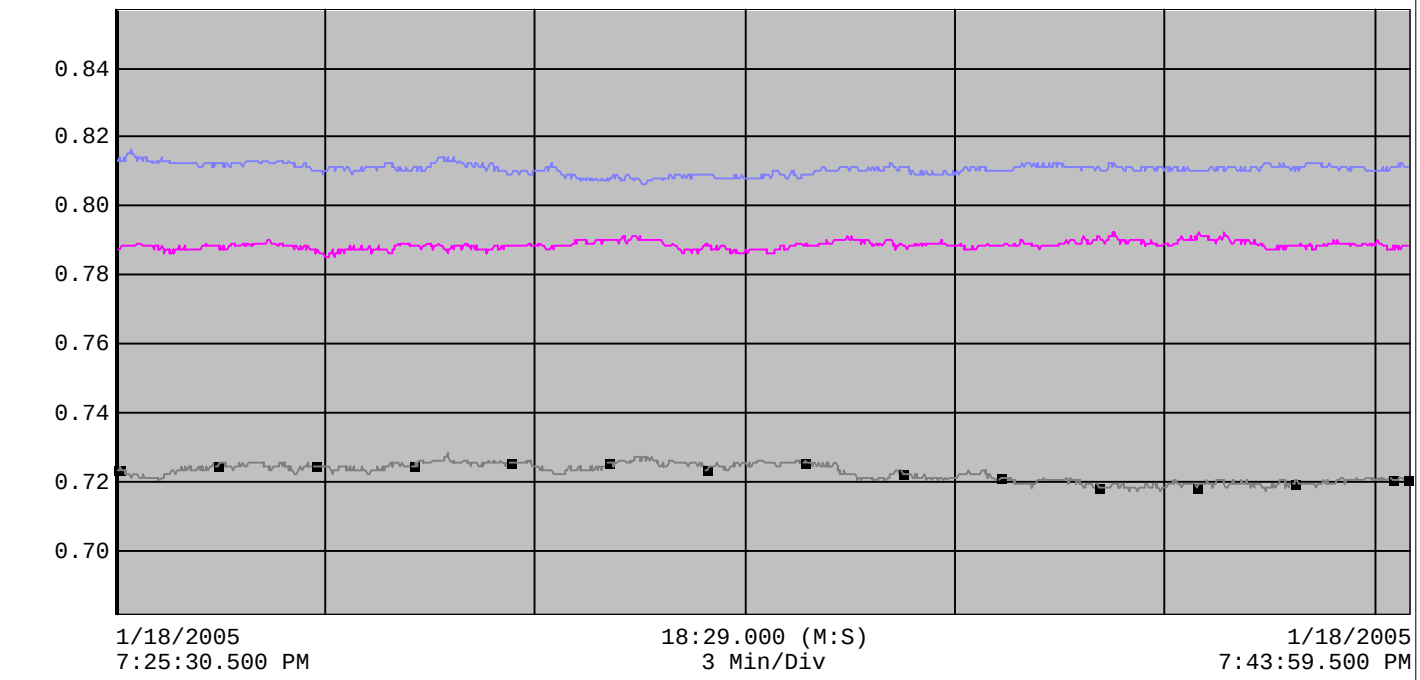
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	1/18/2005	7:25:30.500 PM	2.235E+3	4.080	4.456E+3	Wh
W-hours Line2	1/18/2005	7:25:30.500 PM	1.932E+3	3.411	3.853E+3	Wh
W-hours Line3	1/18/2005	7:25:30.500 PM	2.458E+3	4.499	4.913E+3	Wh
W-hours Sum of Phases	1/18/2005	7:25:30.500 PM	6.625E+3	12.11	13.22E+3	Wh
VAR-hours Line1	1/18/2005	7:25:30.500 PM	2.134E+3	3.906	4.266E+3	VARh
VAR-hours Line2	1/18/2005	7:25:30.500 PM	1.509E+3	2.754	3.007E+3	VARh
VAR-hours Line3	1/18/2005	7:25:30.500 PM	1.775E+3	3.143	3.551E+3	VARh
VAR-hours Sum of Phases	1/18/2005	7:25:30.500 PM	5.418E+3	9.911	10.83E+3	VARh

1/18/2005 - 7:25:30.000 PM
Val
4.080 — W-hours Line1
3.411 — W-hours Line2
4.499 — W-hours Line3
12.11 — W-hours Sum of Phases
3.906 — VAR-hours Line1
2.754 — VAR-hours Line2
3.143 — VAR-hours Line3
9.911 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	1/18/2005	7:25:30.500 PM	0.722	0.717	0.728	
PF Line2	1/18/2005	7:25:30.500 PM	0.788	0.785	0.792	
PF Line3	1/18/2005	7:25:30.500 PM	0.810	0.806	0.816	

1/18/2005 - 7:25:30.000 PM
Val
0.723 — PF Line1
0.787 — PF Line2
0.813 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M-15\011805-M15A.dvb

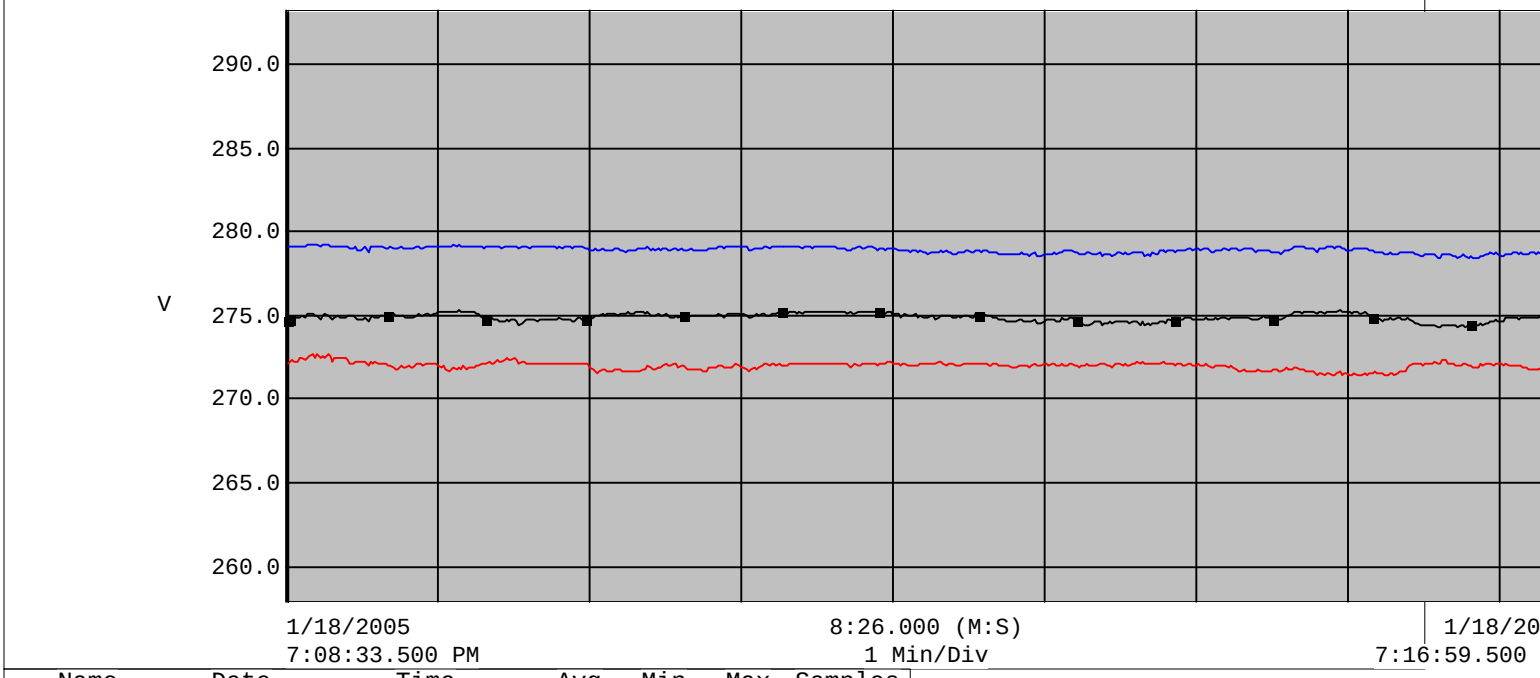
Operator	Test Site
GWA Victor Jardel ,	WPS M-15A ,

Comments

WPS M-15

Recording Start Date	1/18/2005 - 7:08:33 PM
Recording Duration	8:26 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

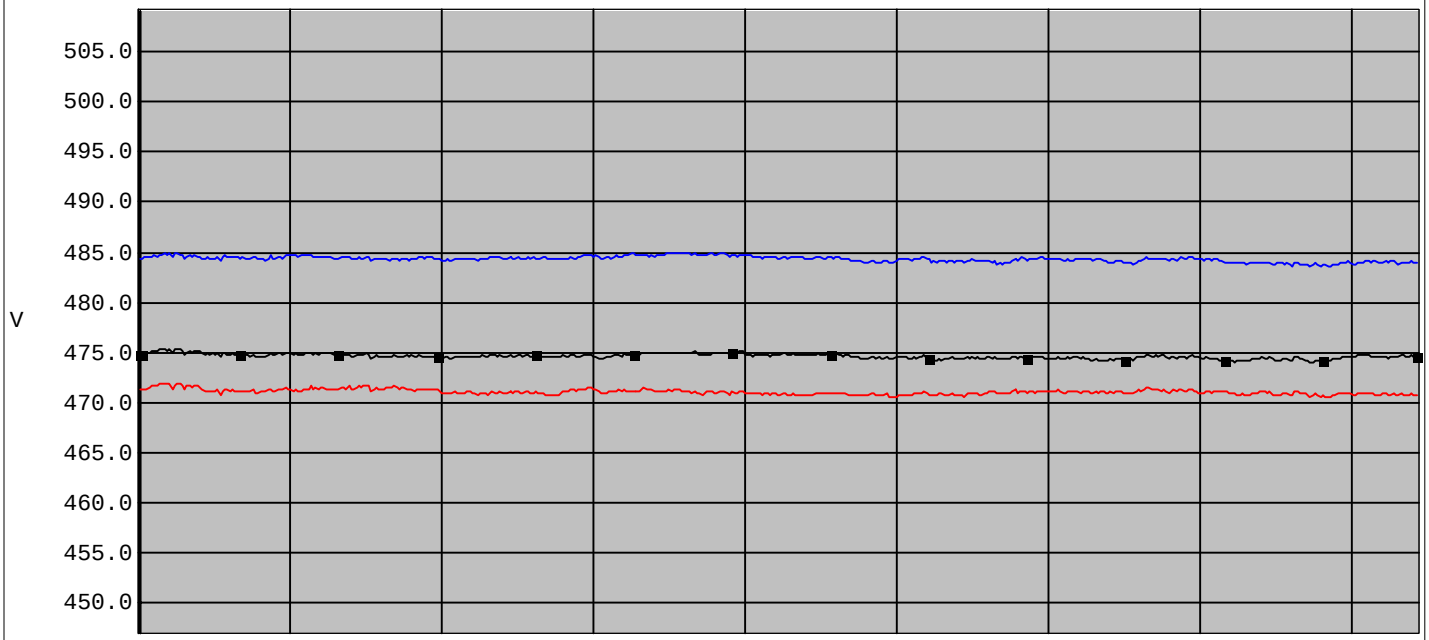
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	1/18/2005	7:08:33.500 PM	274.8	274.2	275.3	507
Vrms Line2	1/18/2005	7:08:33.500 PM	271.9	271.4	272.6	507
Vrms Line3	1/18/2005	7:08:33.500 PM	278.8	278.4	279.2	507

1/18/2005 - 7:08:33.000 PM
Val
274.6 — Vrms Line1
272.1 — Vrms Line2
279.0 — Vrms Line3

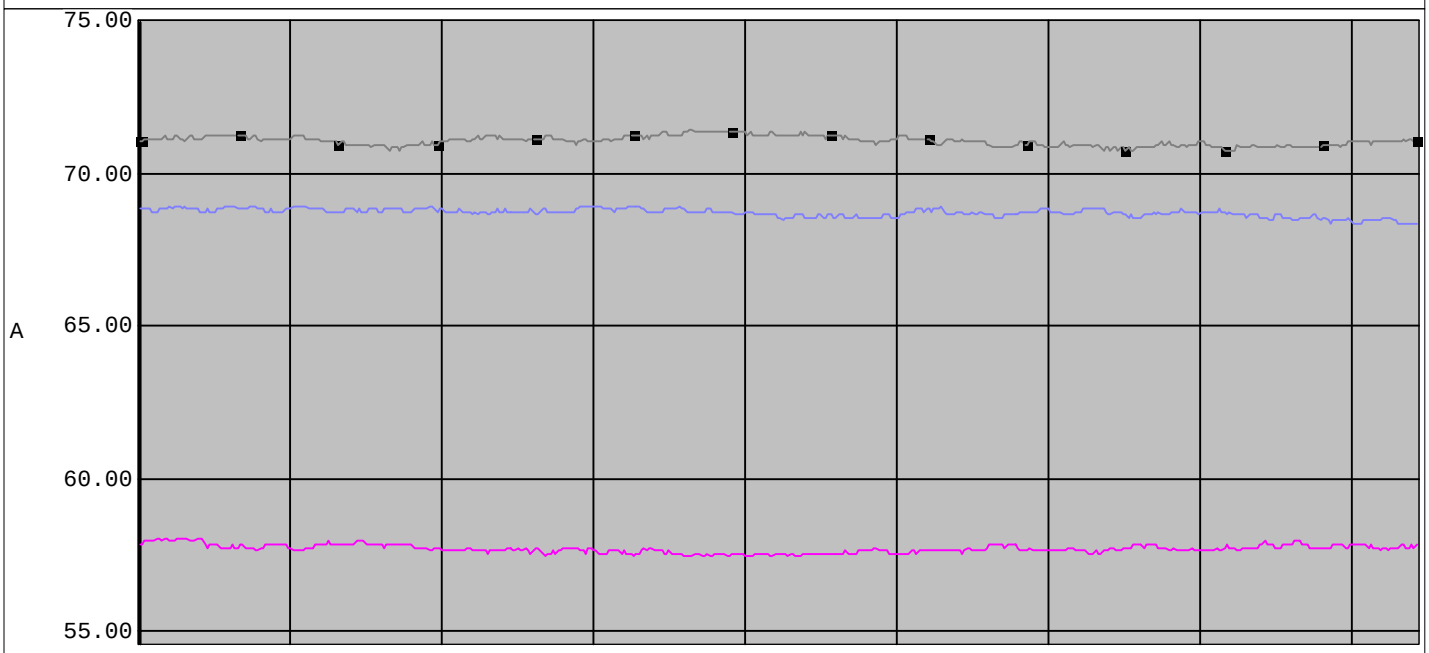
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	1/18/2005	7:08:33.500 PM	474.5	473.9	475.3	V
Urms Line2	1/18/2005	7:08:33.500 PM	471.0	470.4	471.8	V
Urms Line3	1/18/2005	7:08:33.500 PM	484.2	483.5	484.9	V

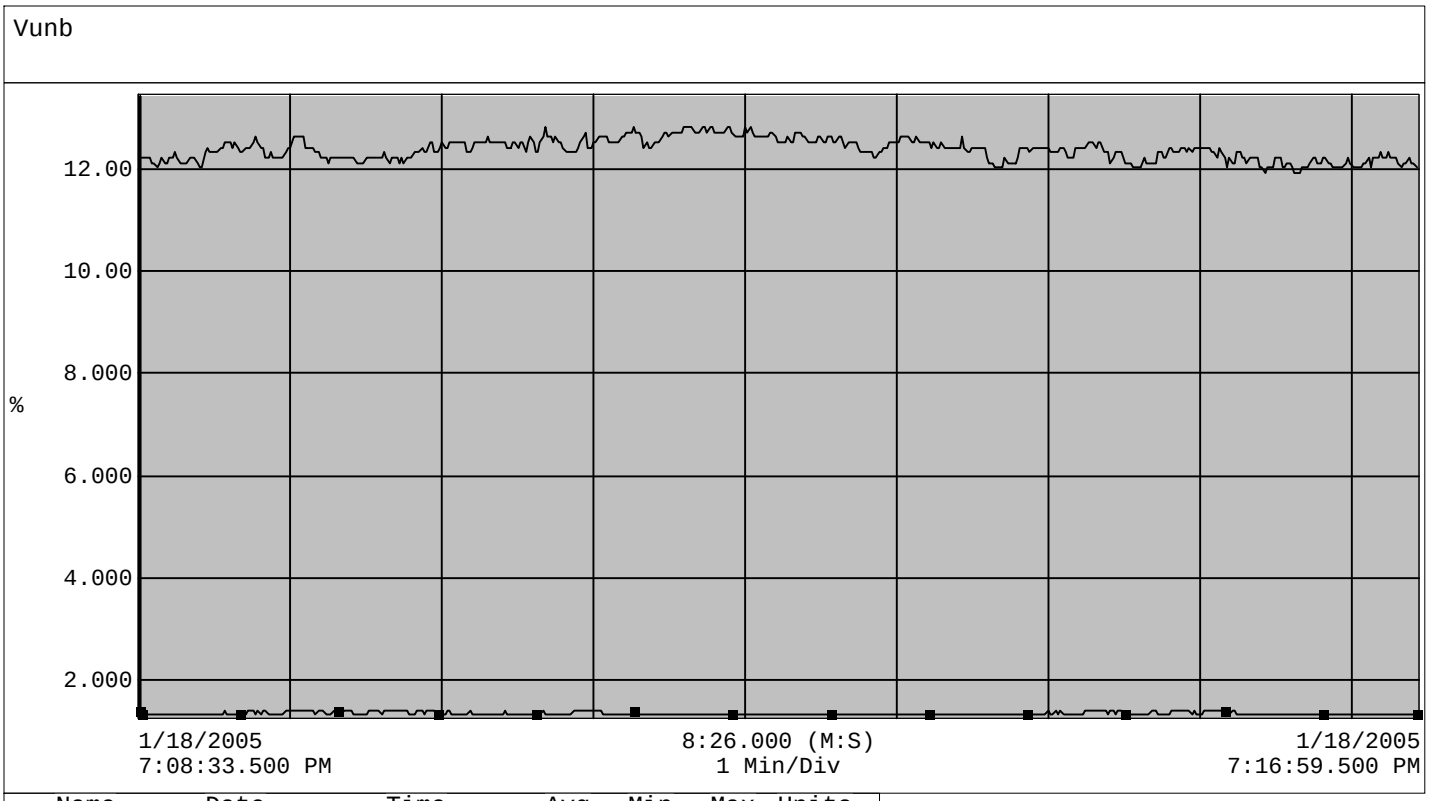
1/18/2005 - 7:08:33.000 PM
Val
474.6 Urms Line1
471.2 Urms Line2
484.3 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	1/18/2005	7:08:33.500 PM	71.02	70.70	71.40	A
Arms Line2	1/18/2005	7:08:33.500 PM	57.66	57.40	58.00	A
Arms Line3	1/18/2005	7:08:33.500 PM	68.67	68.30	68.90	A

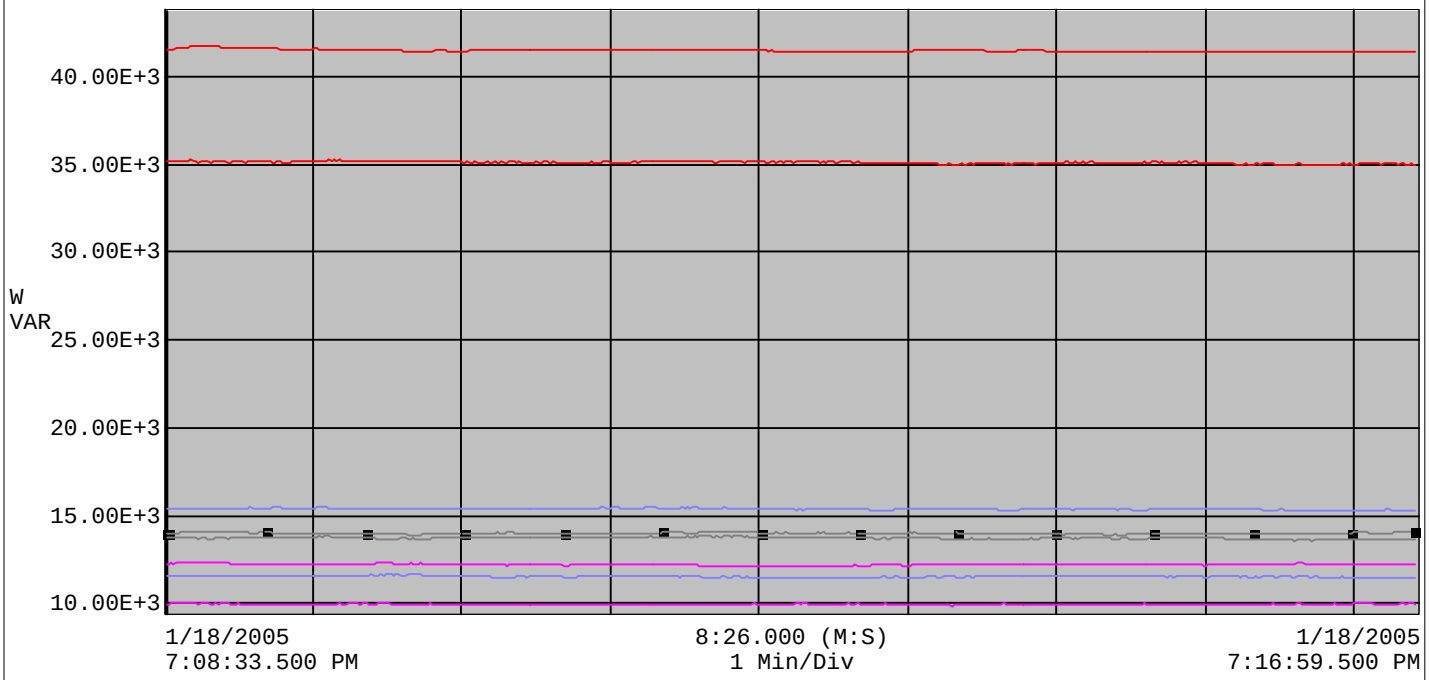
1/18/2005 - 7:08:33.000 PM
Val
71.00 — Arms Line1
57.80 — Arms Line2
68.80 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	1/18/2005	7:08:33.500 PM	1.321	1.300	1.400	%
Aunb(IEEE)	1/18/2005	7:08:33.500 PM	12.36	11.90	12.80	%

1/18/2005 - 7:08:33.000 PM
Val
1.400 —— Vunb(IEEE)
12.20 —— Aunb(IEEE)

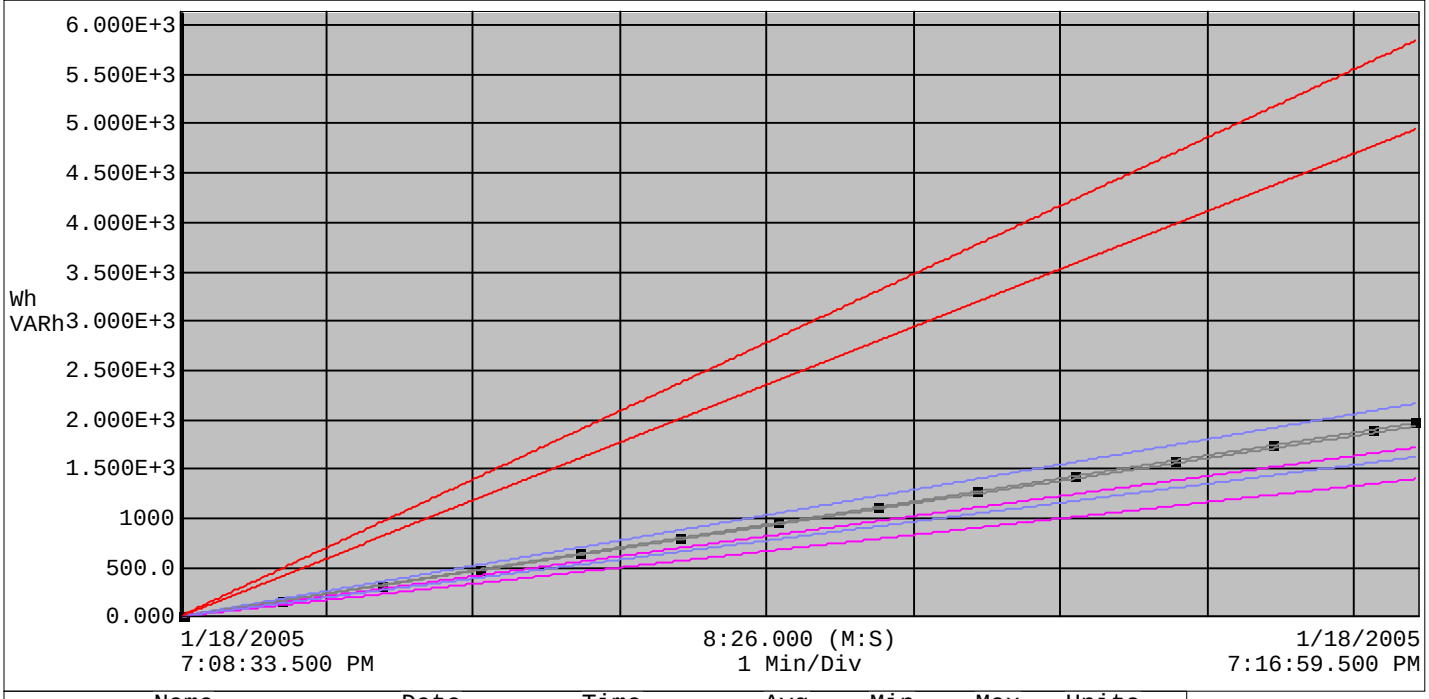
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	1/18/2005	7:08:33.500 PM	13.93E+3	13.83E+3	14.01E+3	W
W Line2	1/18/2005	7:08:33.500 PM	12.16E+3	12.07E+3	12.29E+3	W
W Line3	1/18/2005	7:08:33.500 PM	15.32E+3	15.21E+3	15.42E+3	W
W Sum of Phases	1/18/2005	7:08:33.500 PM	41.42E+3	41.29E+3	41.67E+3	W
VAR Line1	1/18/2005	7:08:33.500 PM	13.67E+3	13.52E+3	13.77E+3	VAR
VAR Line2	1/18/2005	7:08:33.500 PM	9.896E+3	9.817E+3	9.962E+3	VAR
VAR Line3	1/18/2005	7:08:33.500 PM	11.48E+3	11.37E+3	11.59E+3	VAR
VAR Sum of Phases	1/18/2005	7:08:33.500 PM	35.04E+3	34.85E+3	35.20E+3	VAR

1/18/2005 - 7:08:33.000 PM
Val
13.92E+3 — W Line1
12.21E+3 — W Line2
15.34E+3 — W Line3
41.48E+3 — W Sum of Phases
13.66E+3 — VAR Line1
9.906E+3 — VAR Line2
11.54E+3 — VAR Line3
35.10E+3 — VAR Sum of Phases

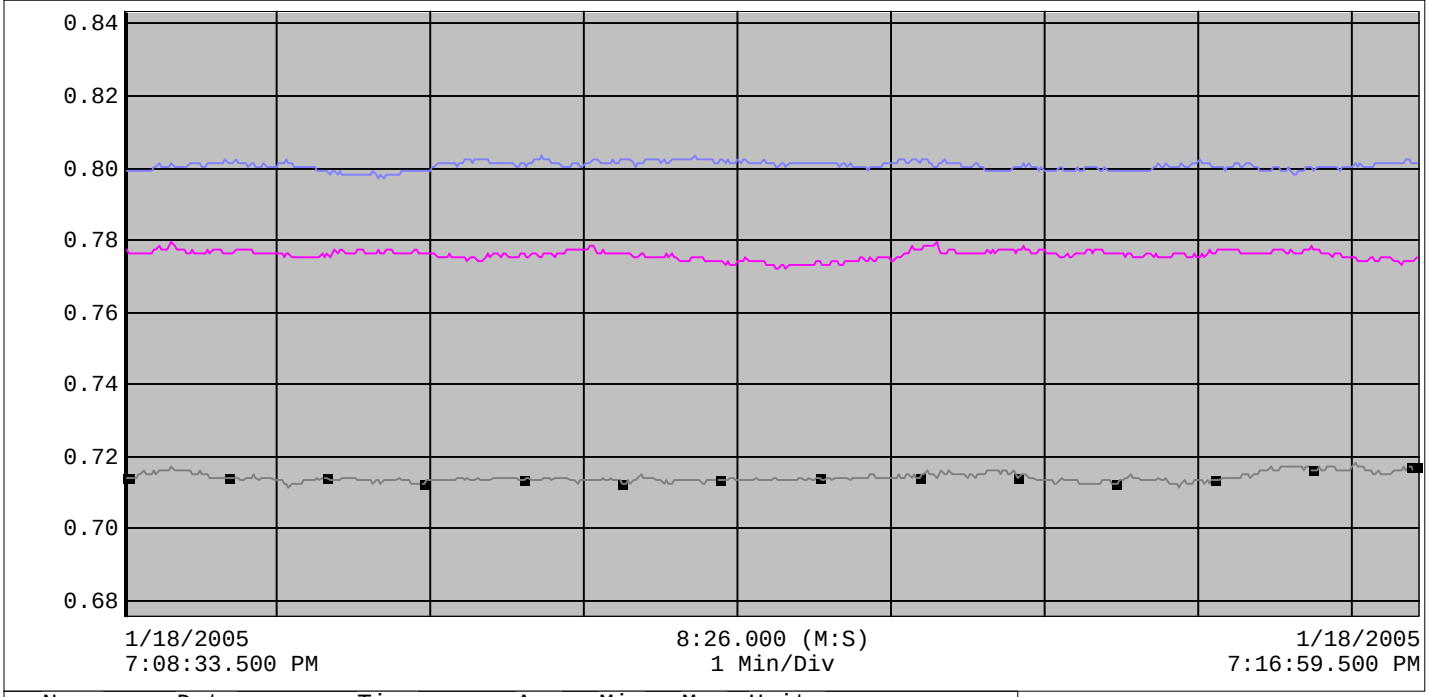
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	1/18/2005	7:08:33.500 PM	983.6	3.893	1.962E+3	Wh
W-hours Line2	1/18/2005	7:08:33.500 PM	858.4	3.397	1.713E+3	Wh
W-hours Line3	1/18/2005	7:08:33.500 PM	1.082E+3	4.281	2.158E+3	Wh
W-hours Sum of Phases	1/18/2005	7:08:33.500 PM	2.924E+3	11.57	5.833E+3	Wh
VAR-hours Line1	1/18/2005	7:08:33.500 PM	965.4	3.819	1.925E+3	VARh
VAR-hours Line2	1/18/2005	7:08:33.500 PM	698.4	2.765	1.394E+3	VARh
VAR-hours Line3	1/18/2005	7:08:33.500 PM	810.7	3.207	1.617E+3	VARh
VAR-hours Sum of Phases	1/18/2005	7:08:33.500 PM	2.474E+3	9.790	4.935E+3	VARh

1/18/2005 - 7:08:33.000 PM
Val
3.893 — W-hours Line1
3.397 — W-hours Line2
4.281 — W-hours Line3
11.57 — W-hours Sum of Phases
3.819 — VAR-hours Line1
2.765 — VAR-hours Line2
3.207 — VAR-hours Line3
9.790 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	1/18/2005	7:08:33.500 PM	0.714	0.711	0.718	
PF Line2	1/18/2005	7:08:33.500 PM	0.776	0.772	0.779	
PF Line3	1/18/2005	7:08:33.500 PM	0.800	0.797	0.803	

1/18/2005 - 7:08:33.000 PM
Val
0.714 — PF Line1
0.777 — PF Line2
0.799 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M-15\011805-M15.dvb

Operator	Test Site
GWA Victor Jardel ,	WPS M-15 ,

Comments

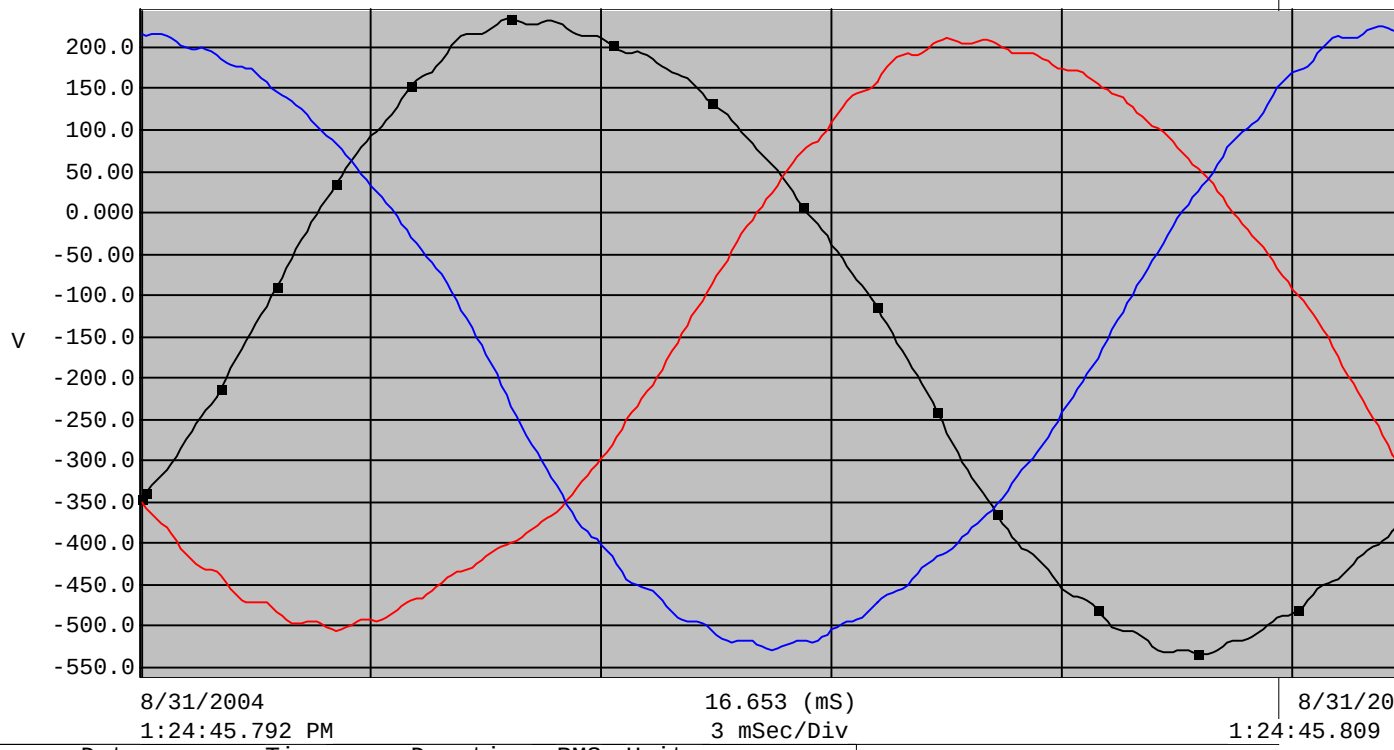
GWA Water Pumping Station Assessment				
Station Name: M-17-B	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/31/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.525	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	3	0.15	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	2	0.05	11
Building Service Information	**20.0%**		0.6	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	3	0.15	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	22
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	3	0.15	
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	3	0.15	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.05	
Pressure	1.5%	1	0.015	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.12	
Lighting	3.0%	2	0.06	61
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.7**

Comments:

WPS M-17B - Photo1

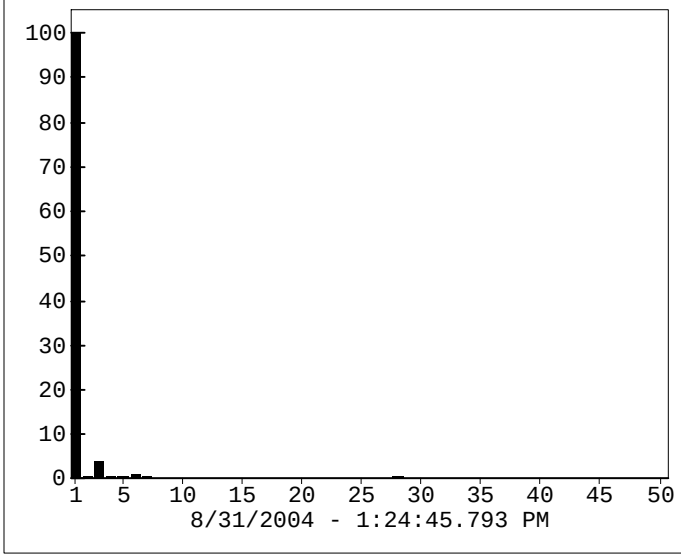
Recording Start Date	8/31/2004 - 1:24:45 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/31/2004	1:24:45.792 PM	16.653	310.4	V
Waveform V2	8/31/2004	1:24:45.792 PM	16.653	294.2	V
Waveform V3	8/31/2004	1:24:45.792 PM	16.653	307.5	V

Waveform V1
310.36 Vrms, 4.73 %THD



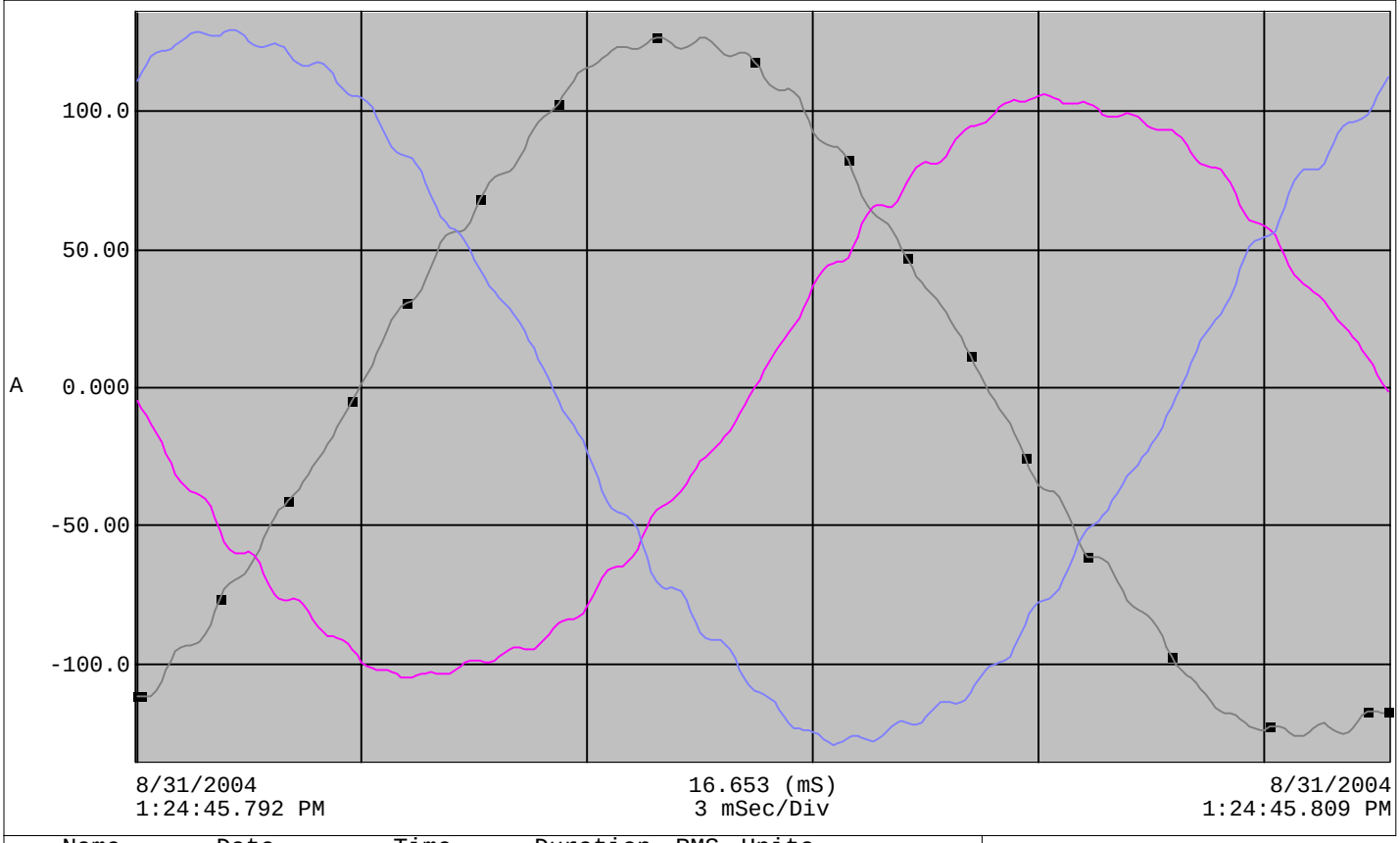
8/31/2004 - 1:24:45.000 PM

Val	
-346.8	Waveform V1
-350.9	Waveform V2
214.0	Waveform V3

Waveform V1

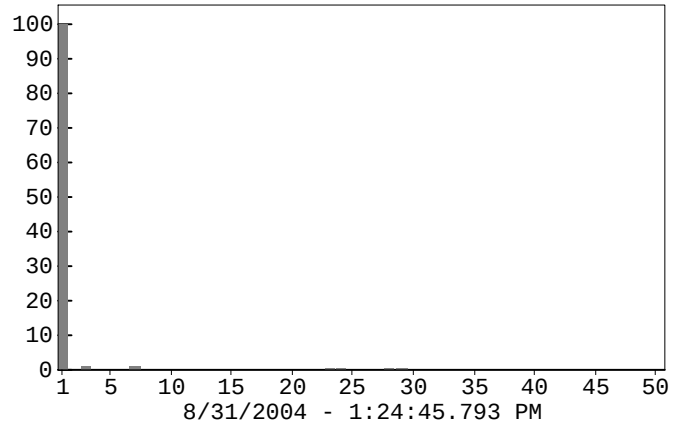
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.8	H19	0.0	H36	0.0
H03	4.3	H20	0.0	H37	0.0
H04	0.5	H21	0.0	H38	0.0
H05	0.8	H22	0.1	H39	0.0
H06	1.2	H23	0.2	H40	0.0
H07	0.7	H24	0.3	H41	0.0
H08	0.1	H25	0.3	H42	0.0
H09	0.2	H26	0.3	H43	0.0
H10	0.1	H27	0.3	H44	0.0
H11	0.2	H28	0.4	H45	0.0
H12	0.1	H29	0.3	H46	0.0
H13	0.1	H30	0.2	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.0	H34	0.1		

Waveform - Current
Frequency: 60.05 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/31/2004	1:24:45.792 PM	16.653	88.06	A
Waveform I2	8/31/2004	1:24:45.792 PM	16.653	74.23	A
Waveform I3	8/31/2004	1:24:45.792 PM	16.653	89.97	A

Waveform I1
88.06 Arms, 3.02 %THD

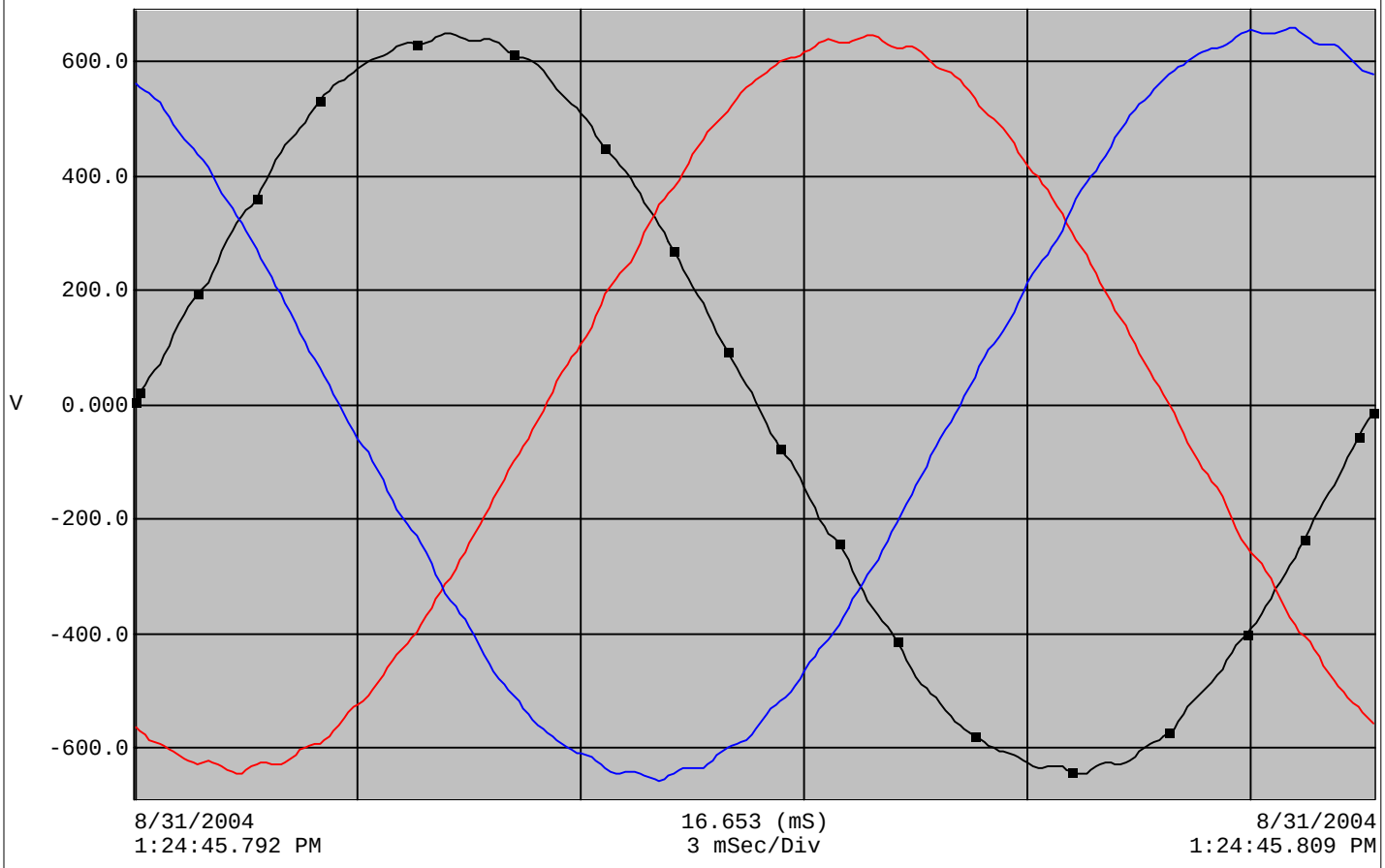


8/31/2004 - 1:24:45.000 PM
Val
-112.0 — Waveform I1
-5.000 — Waveform I2
110.5 — Waveform I3

Waveform I1

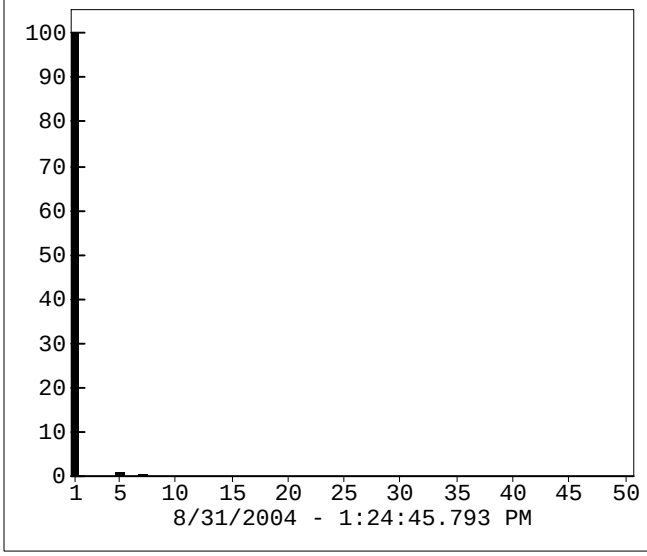
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.1
H02	0.1	H19	0.2	H36	0.1
H03	1.6	H20	0.1	H37	0.1
H04	0.0	H21	0.2	H38	0.1
H05	0.5	H22	0.3	H39	0.1
H06	0.0	H23	0.7	H40	0.0
H07	1.4	H24	1.0	H41	0.0
H08	0.0	H25	0.5	H42	0.1
H09	0.4	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.1
H11	0.3	H28	0.9	H45	0.0
H12	0.0	H29	0.9	H46	0.1
H13	0.3	H30	0.4	H47	0.0
H14	0.1	H31	0.3	H48	0.1
H15	0.1	H32	0.2	H49	0.0
H16	0.1	H33	0.1	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.05 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/31/2004	1:24:45.792 PM	16.653	457.9	V
Waveform U2	8/31/2004	1:24:45.792 PM	16.653	454.3	V
Waveform U3	8/31/2004	1:24:45.792 PM	16.653	463.0	V

Waveform U1
457.93 Vrms, 1.38 %THD



8/31/2004 - 1:24:45.000 PM

	Val	
—	4.100	Waveform U1
—	-565.0	Waveform U2
—	560.9	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	0.9	H22	0.2	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.7	H24	0.3	H41	0.0
H08	0.0	H25	0.3	H42	0.0
H09	0.1	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.2	H28	0.4	H45	0.0
H12	0.0	H29	0.4	H46	0.0
H13	0.1	H30	0.2	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 8/31/2004
Start Time: 1:24:45 PM
Duration: 0:0.000 (M:S)
W: 19.47E+3 W
VAR: 19.37E+3 W
VA: 27.47E+3 W
Power Factor: 0.709
Displacement Power Factor: 0.811
TAN: 0.722
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M17B\083104-M17B-Photo1.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS M-17B - Photo ,

Comments

Recorded at motor starter overload relay. 75 HP motor. GPA Meter 02-465-778 with a indicated demand of 63.11 KW. Measured demand during test of 57.56 KW.

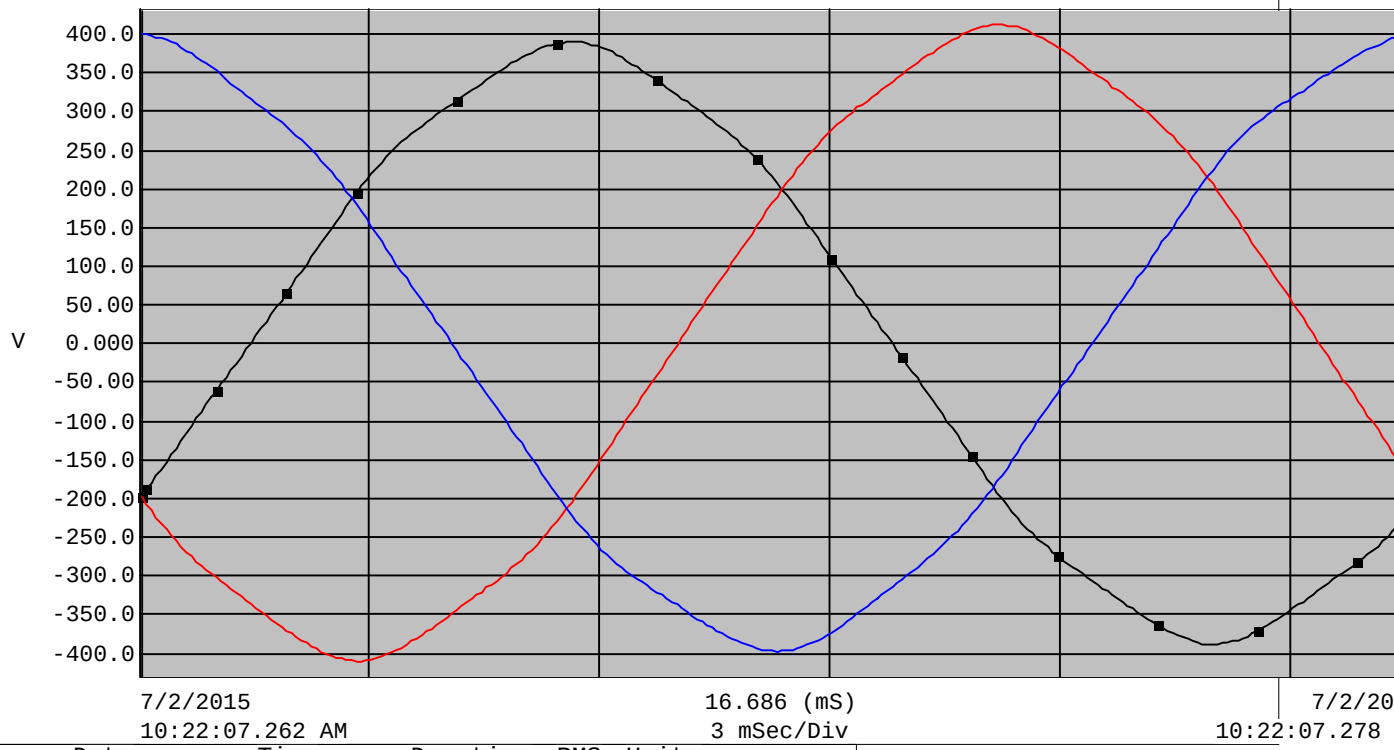
GWA Water Pumping Station Assessment				
Station Name: M-18	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/02/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.55	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.45	
Generator Condition	10.0%	2	0.2	22
Generator Battery	5.0%	2	0.1	22
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.6	
Main Breaker	5.0%	2	0.1	12
Motor Starter	5.0%	2	0.1	34
Overload Relay	5.0%	3	0.15	
Wiring	5.0%	2	0.1	34
Phase Monitor	5.0%	3	0.15	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.1	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	2	0.04	
Building Electrical	**5.0%**		0.1	
Lighting	3.0%	2	0.06	61
Power Devices	2.0%	2	0.04	62
	100%	**Assessment Value**		**2.4**

Comments:

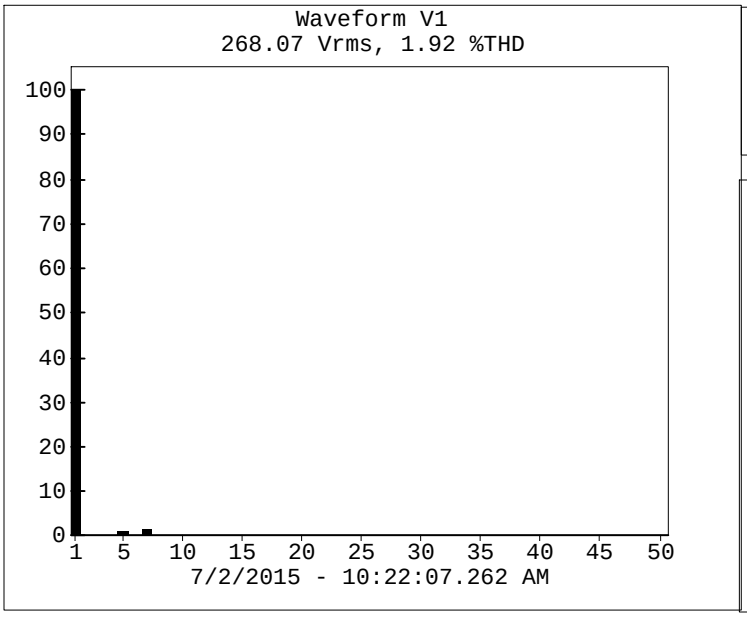
WPS M-18 - Photo1

Recording Start Date	7/2/2015 - 10:22:07 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/2/2015	10:22:07.262 AM	16.686	268.1	V
Waveform V2	7/2/2015	10:22:07.262 AM	16.686	283.1	V
Waveform V3	7/2/2015	10:22:07.262 AM	16.686	275.5	V

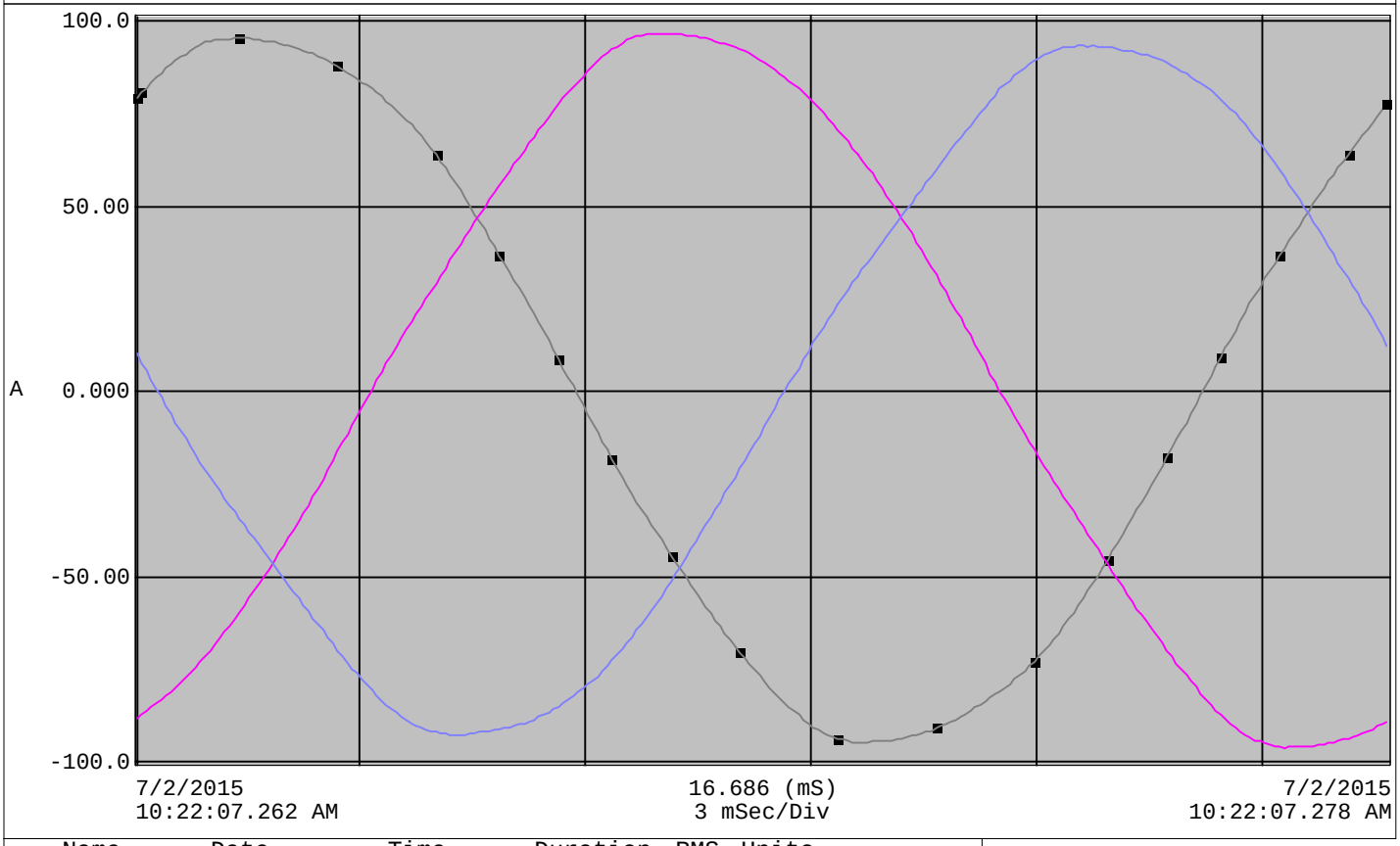


7/2/2015 - 10:22:07.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

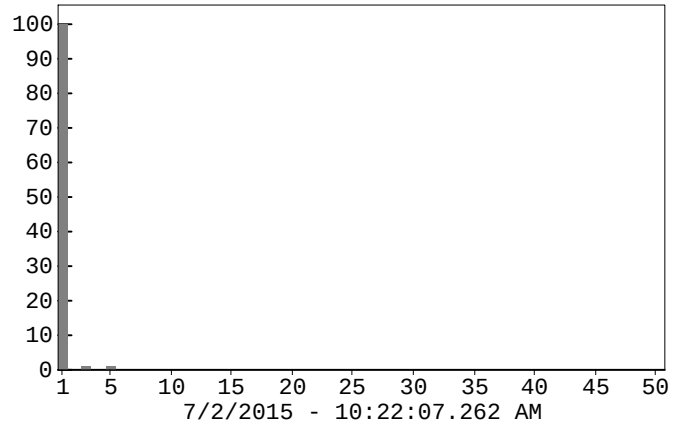
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/2/2015	10:22:07.262 AM	16.686	67.94	A
Waveform I2	7/2/2015	10:22:07.262 AM	16.686	68.07	A
Waveform I3	7/2/2015	10:22:07.262 AM	16.686	65.57	A

Waveform I1
67.94 Arms, 1.78 %THD

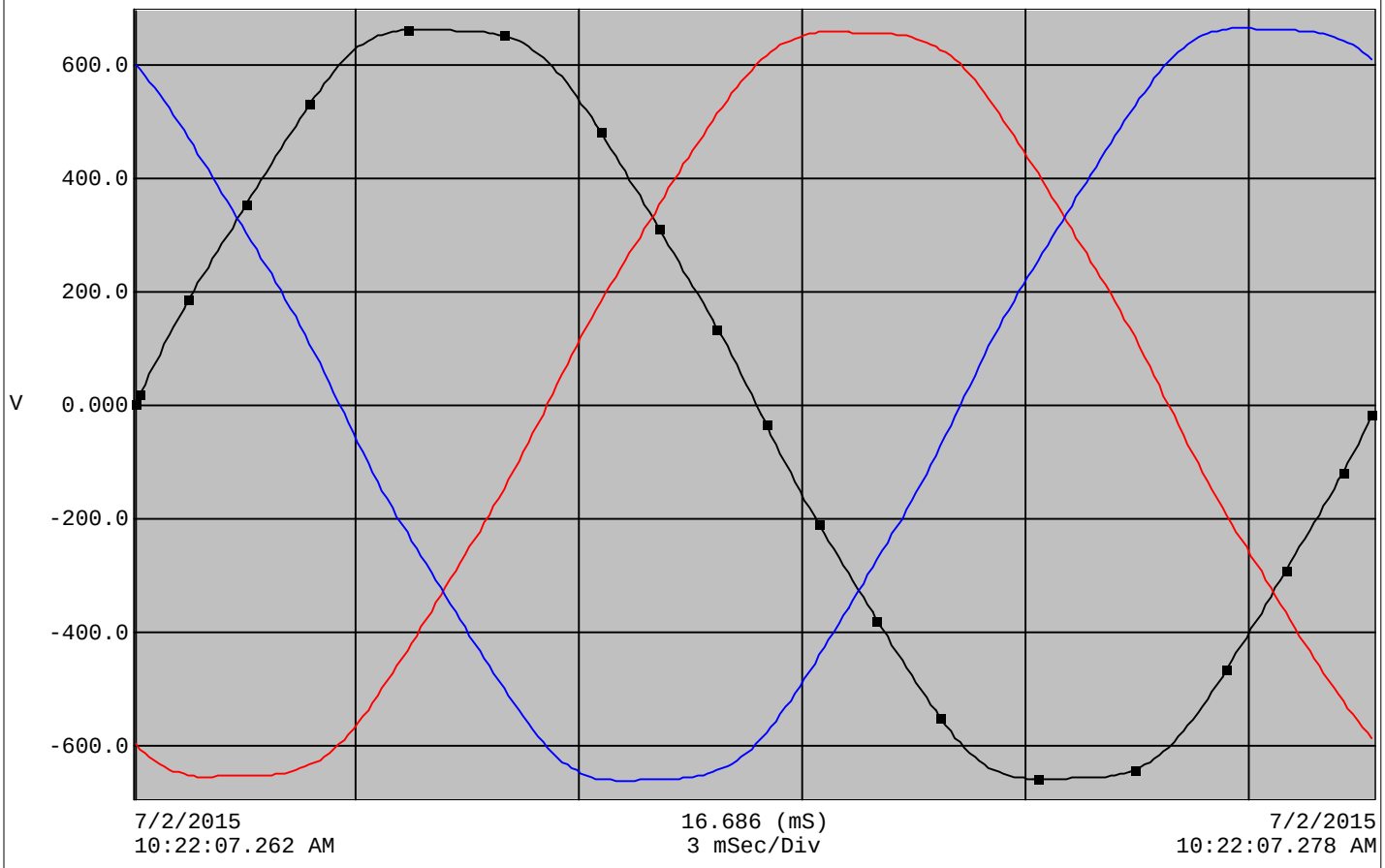


7/2/2015 - 10:22:07.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

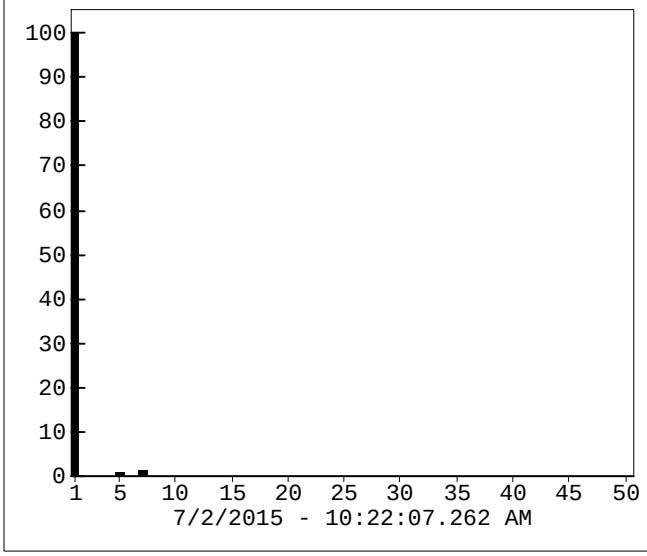
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	1.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/2/2015	10:22:07.262 AM	16.686	477.9	V
Waveform U2	7/2/2015	10:22:07.262 AM	16.686	474.3	V
Waveform U3	7/2/2015	10:22:07.262 AM	16.686	479.1	V

Waveform U1
477.91 Vrms, 1.92 %THD



7/2/2015 - 10:22:07.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/2/2015
Start Time: 10:22:07 AM
Duration: 0:0.000 (M:S)
W: 1.644E+3 W
VAR: -18.17E+3 W
VA: 18.25E+3 W
Power Factor: 90.00E-3
Displacement Power Factor: 90.00E-3
TAN: -11.05
VoltageRatio: 1.000
CurrentRatio: 1.000
```

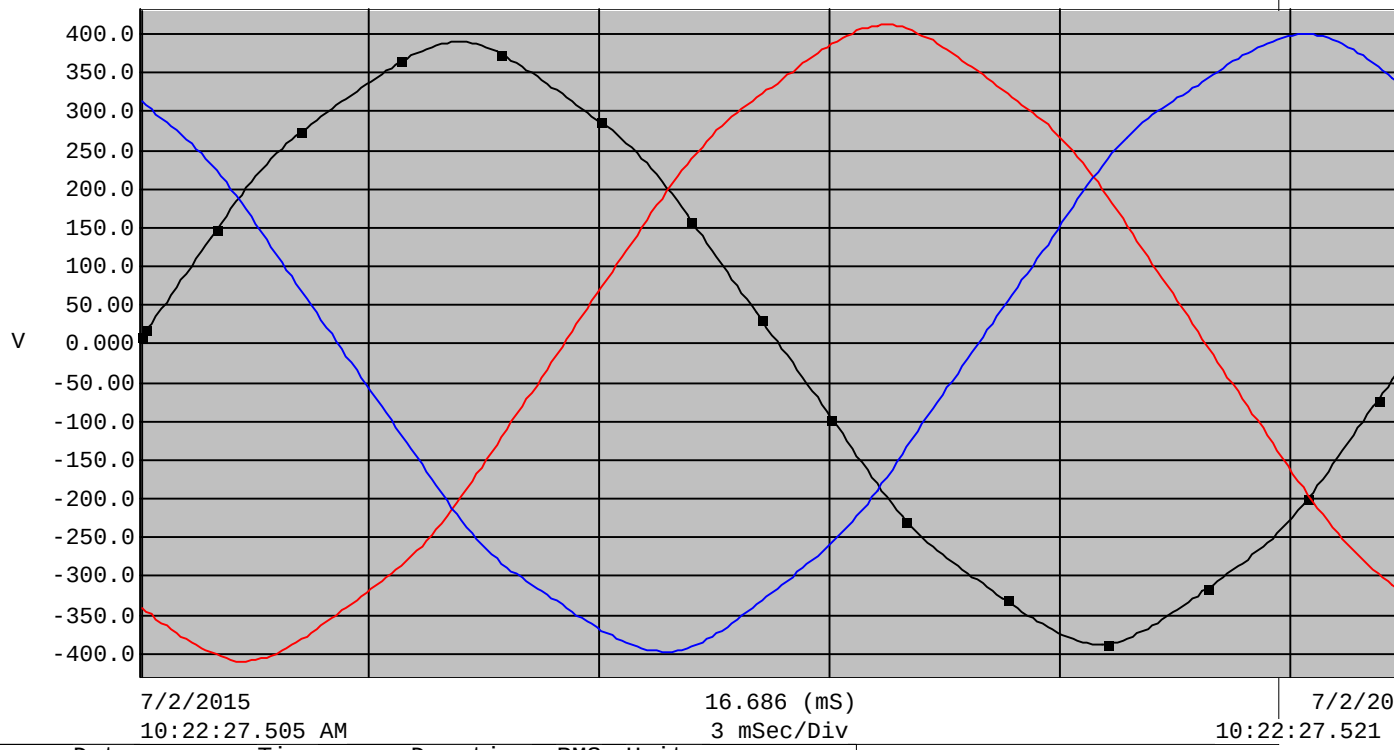
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M18\070204-M18-Photo1.dvb	
Operator ,	Test Site ,
Comments	

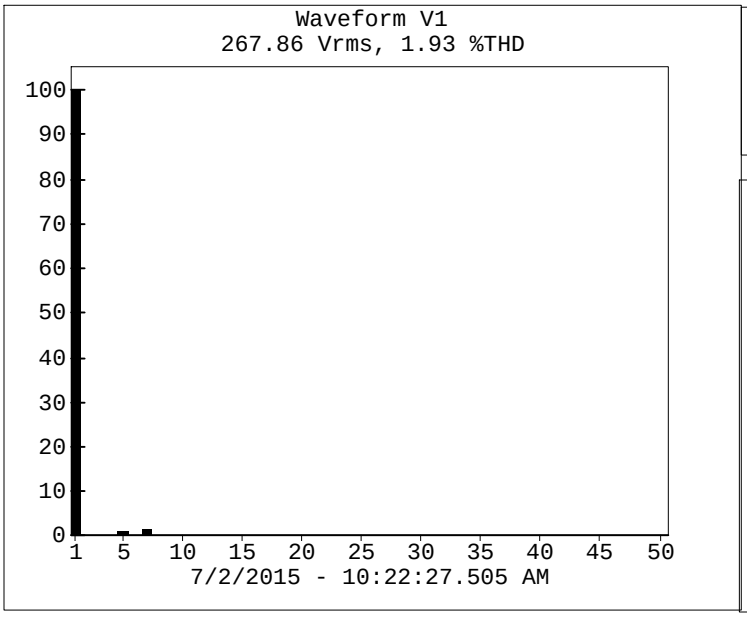
WPS M-18 - Photo2

Recording Start Date	7/2/2015 - 10:22:27 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/2/2015	10:22:27.505 AM	16.686	267.9	V
Waveform V2	7/2/2015	10:22:27.505 AM	16.686	282.8	V
Waveform V3	7/2/2015	10:22:27.505 AM	16.686	275.5	V

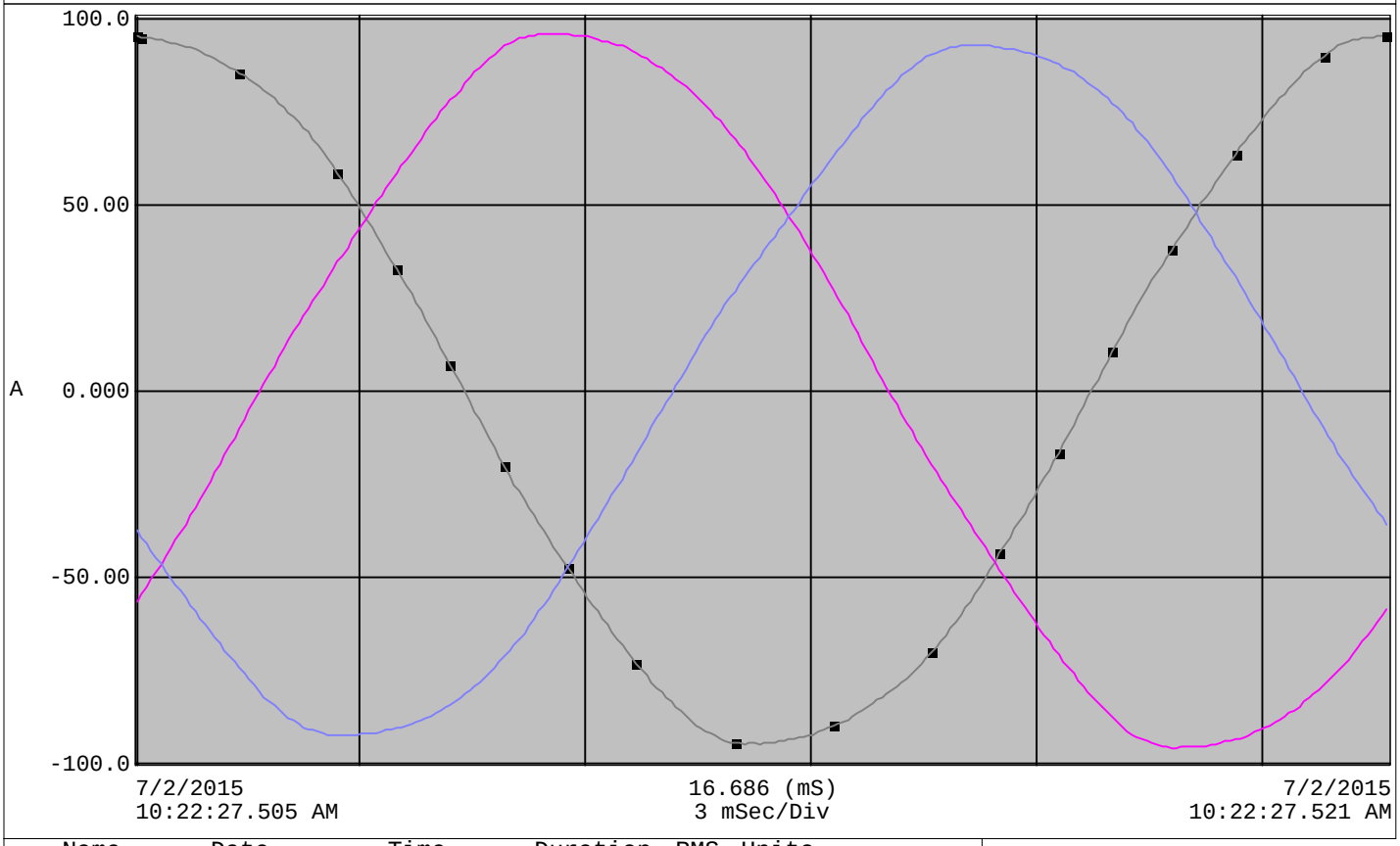


7/2/2015 - 10:22:27.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

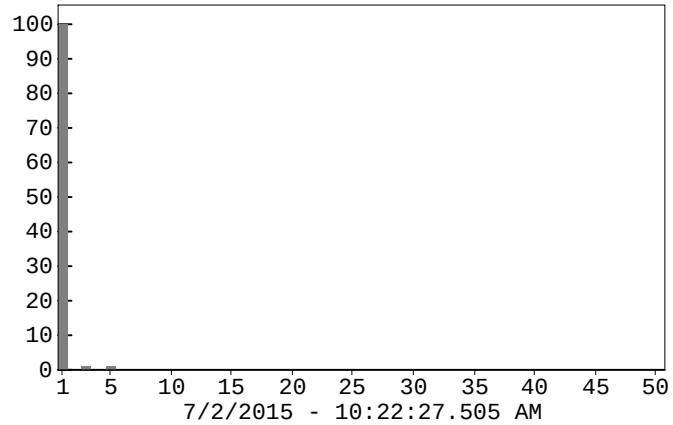
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.93 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/2/2015	10:22:27.505 AM	16.686	67.99	A
Waveform I2	7/2/2015	10:22:27.505 AM	16.686	67.87	A
Waveform I3	7/2/2015	10:22:27.505 AM	16.686	65.45	A

Waveform I1
67.99 Arms, 1.75 %THD

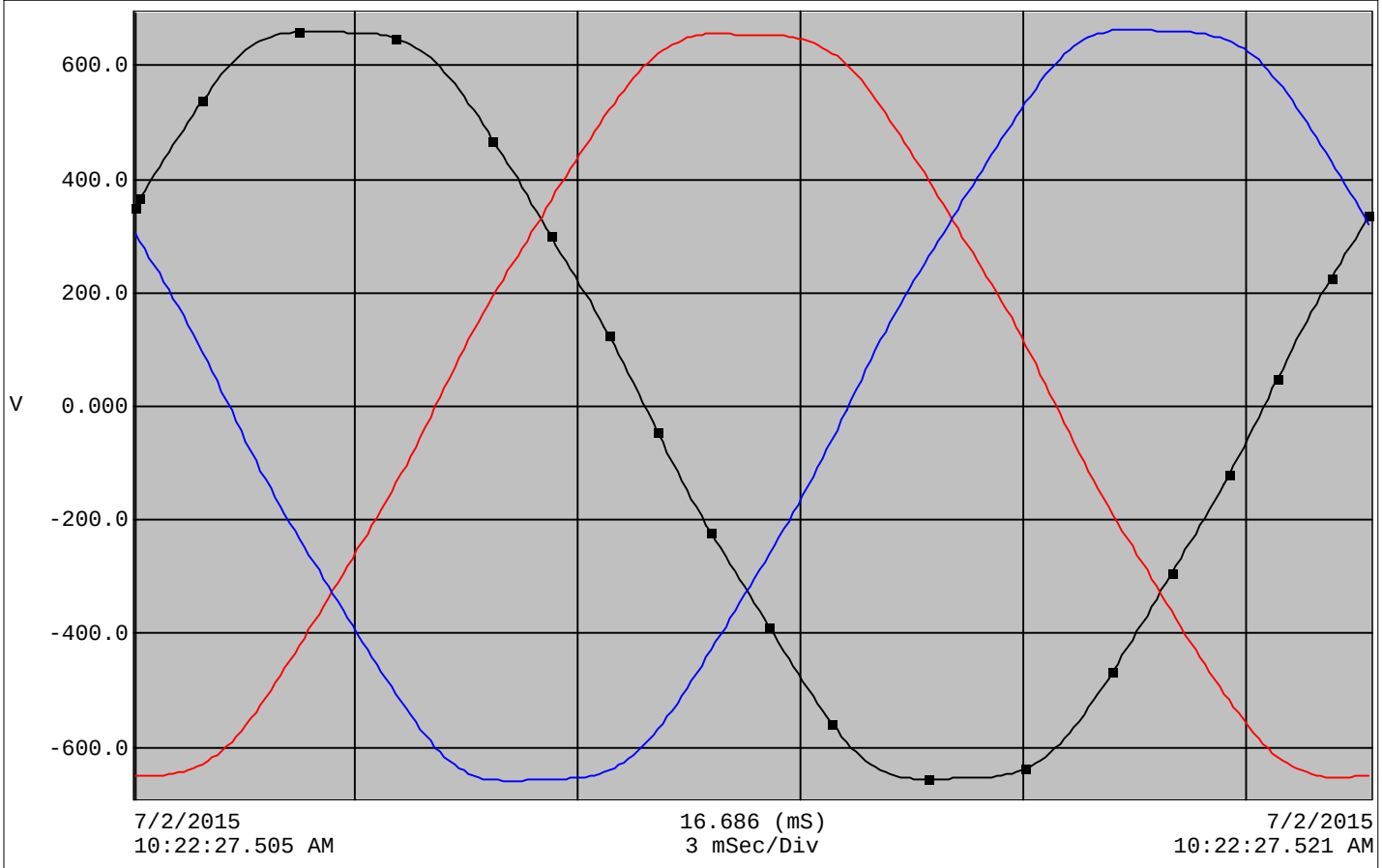


7/2/2015 - 10:22:27.015 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

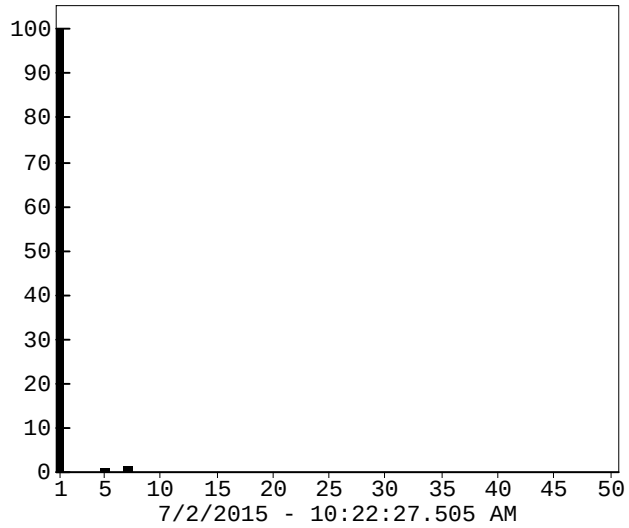
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	1.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.93 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/2/2015	10:22:27.505 AM	16.686	477.4	V
Waveform U2	7/2/2015	10:22:27.505 AM	16.686	474.0	V
Waveform U3	7/2/2015	10:22:27.505 AM	16.686	478.9	V

Waveform U1
477.42 Vrms, 1.93 %THD



7/2/2015 - 10:22:27.015 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/2/2015
Start Time: 10:22:27 AM
Duration: 0:0.000 (M:S)
W: 1.627E+3 W
VAR: -18.17E+3 W
VA: 18.25E+3 W
Power Factor: 89.00E-3
Displacement Power Factor: 89.00E-3
TAN: -11.17
VoltageRatio: 1.000
CurrentRatio: 1.000
```

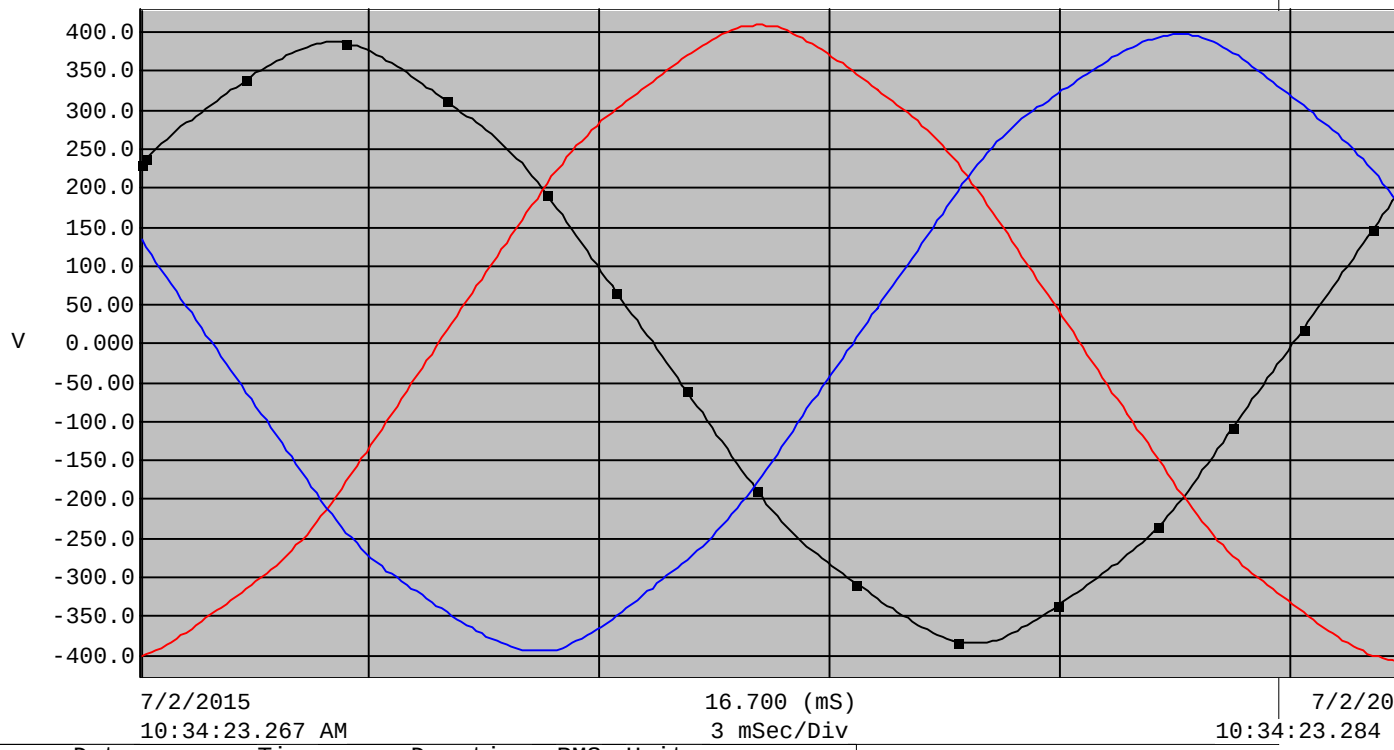
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M18\070204-M18-Photo2.dvb	
Operator ,	Test Site ,
Comments	

WPS M-18 - Photo3

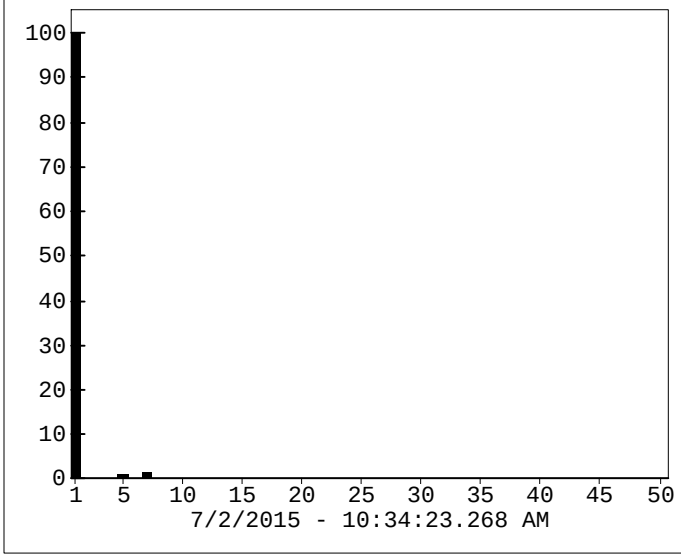
Recording Start Date	7/2/2015 - 10:34:23 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.88 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/2/2015	10:34:23.267 AM	16.700	266.5	V
Waveform V2	7/2/2015	10:34:23.267 AM	16.700	281.5	V
Waveform V3	7/2/2015	10:34:23.267 AM	16.700	274.1	V

Waveform V1
266.48 Vrms, 1.83 %THD



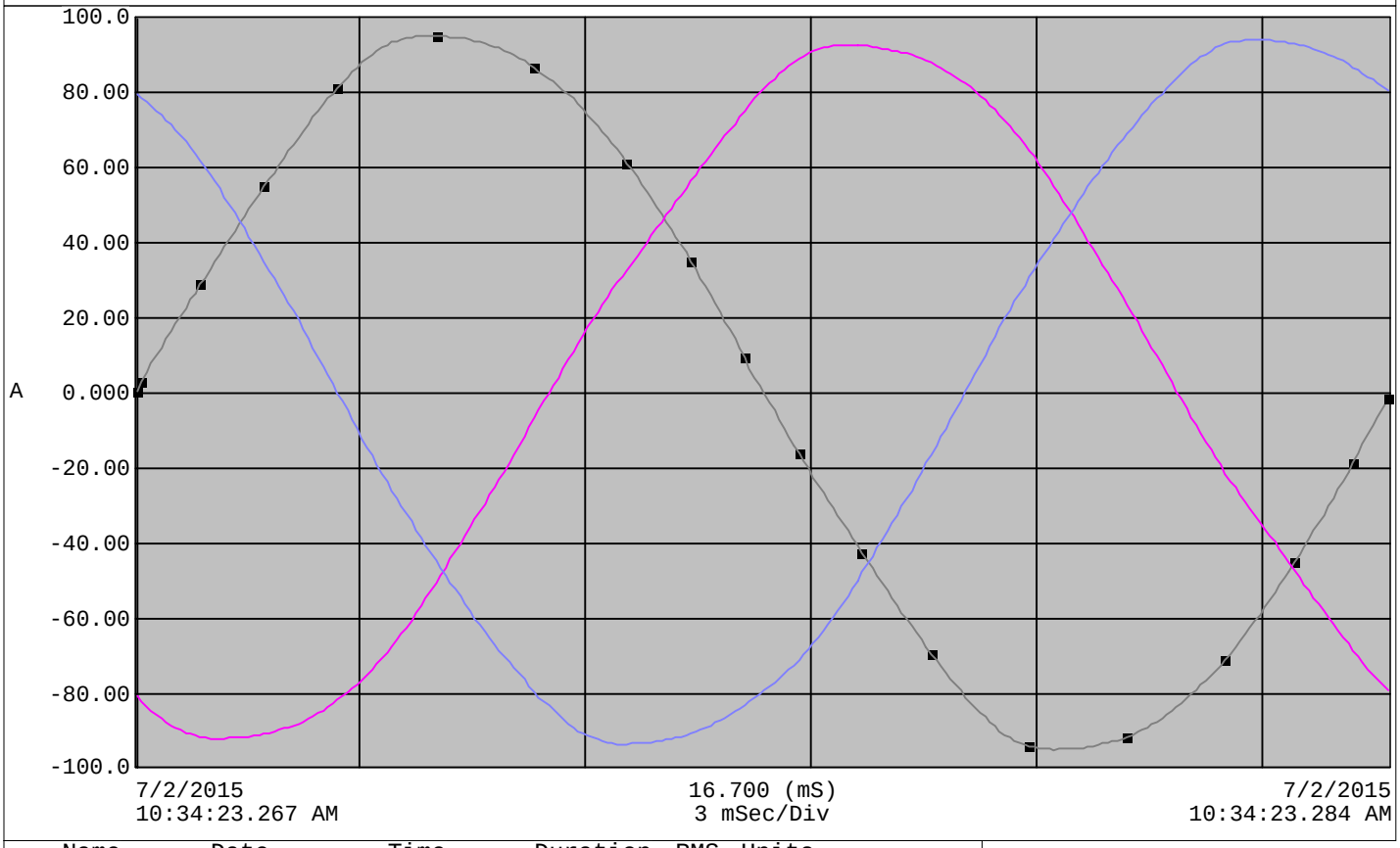
7/2/2015 - 10:34:23.000 AM

Val	
229.4	Waveform V1
-403.2	Waveform V2
132.9	Waveform V3

Waveform V1

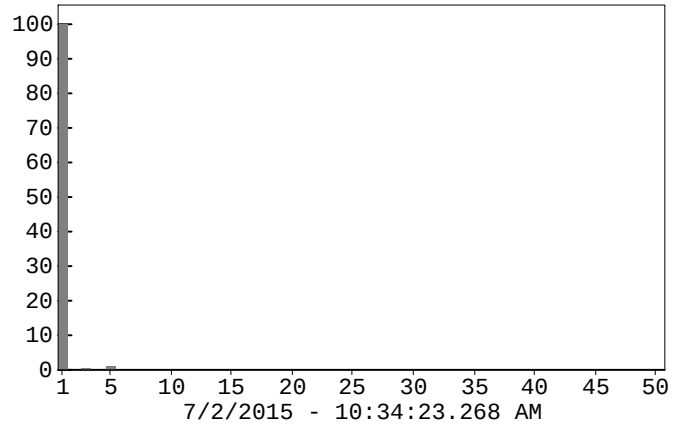
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.88 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/2/2015	10:34:23.267 AM	16.700	67.35	A
Waveform I2	7/2/2015	10:34:23.267 AM	16.700	65.28	A
Waveform I3	7/2/2015	10:34:23.267 AM	16.700	67.02	A

Waveform I1
67.35 Arms, 1.47 %THD



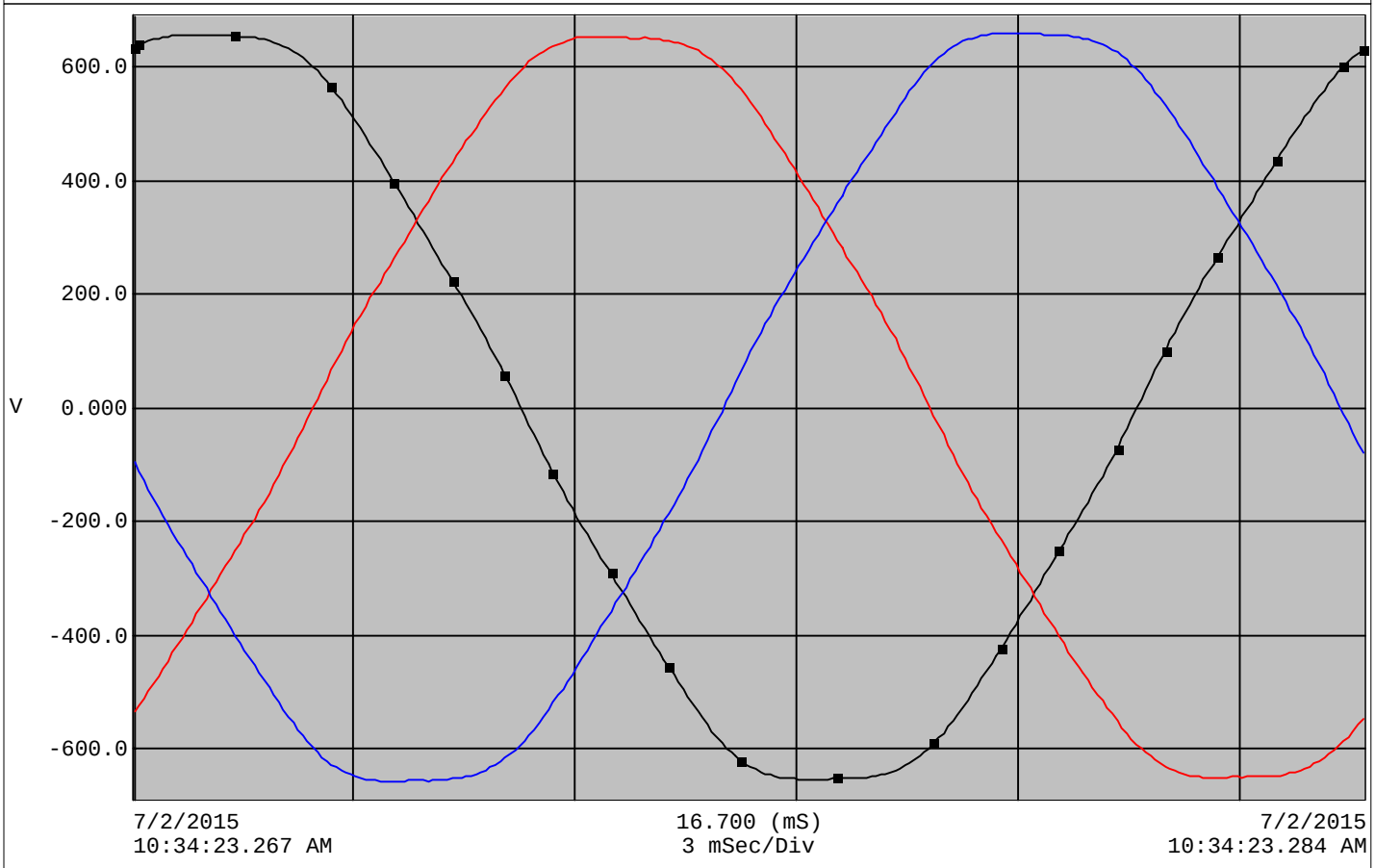
7/2/2015 - 10:34:23.000 AM

Val	
0.500	Waveform I1
-80.90	Waveform I2
79.50	Waveform I3

Waveform I1

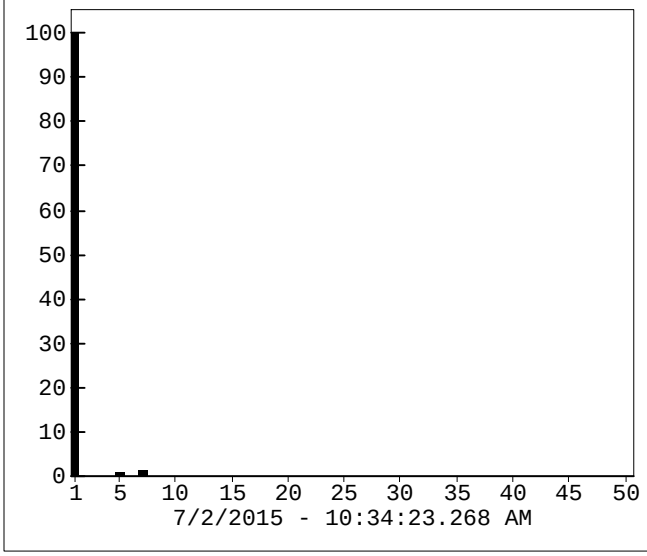
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	0.6	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.88 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/2/2015	10:34:23.267 AM	16.700	475.1	V
Waveform U2	7/2/2015	10:34:23.267 AM	16.700	471.8	V
Waveform U3	7/2/2015	10:34:23.267 AM	16.700	476.5	V

Waveform U1
475.06 Vrms, 1.85 %THD



7/2/2015 - 10:34:23.000 AM

	Val	
—	632.7	Waveform U1
—	-536.2	Waveform U2
—	-96.50	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 7/2/2015
Start Time: 10:34:23 AM
Duration: 0:0.000 (M:S)
W: 14.38E+3 W
VAR: 10.74E+3 W
VA: 17.95E+3 W
Power Factor: 0.801
Displacement Power Factor: 0.802
TAN: 0.746
VoltageRatio: 1.000
CurrentRatio: 1.000

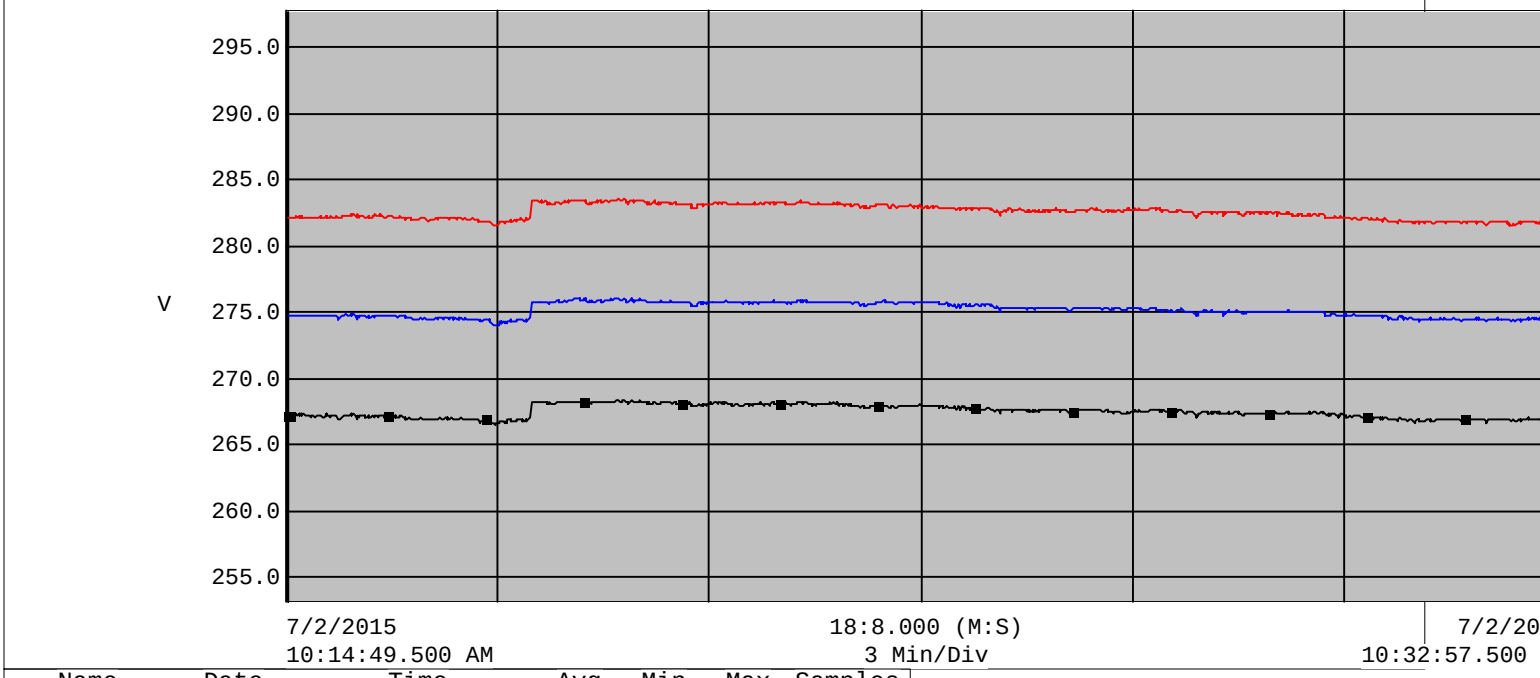
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M18\070204-M18-Photo3.dvb	
Operator ,	Test Site ,
Comments	

WPS M-18 -1

Recording Start Date	7/2/2015 - 10:14:49 AM
Recording Duration	18:08 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

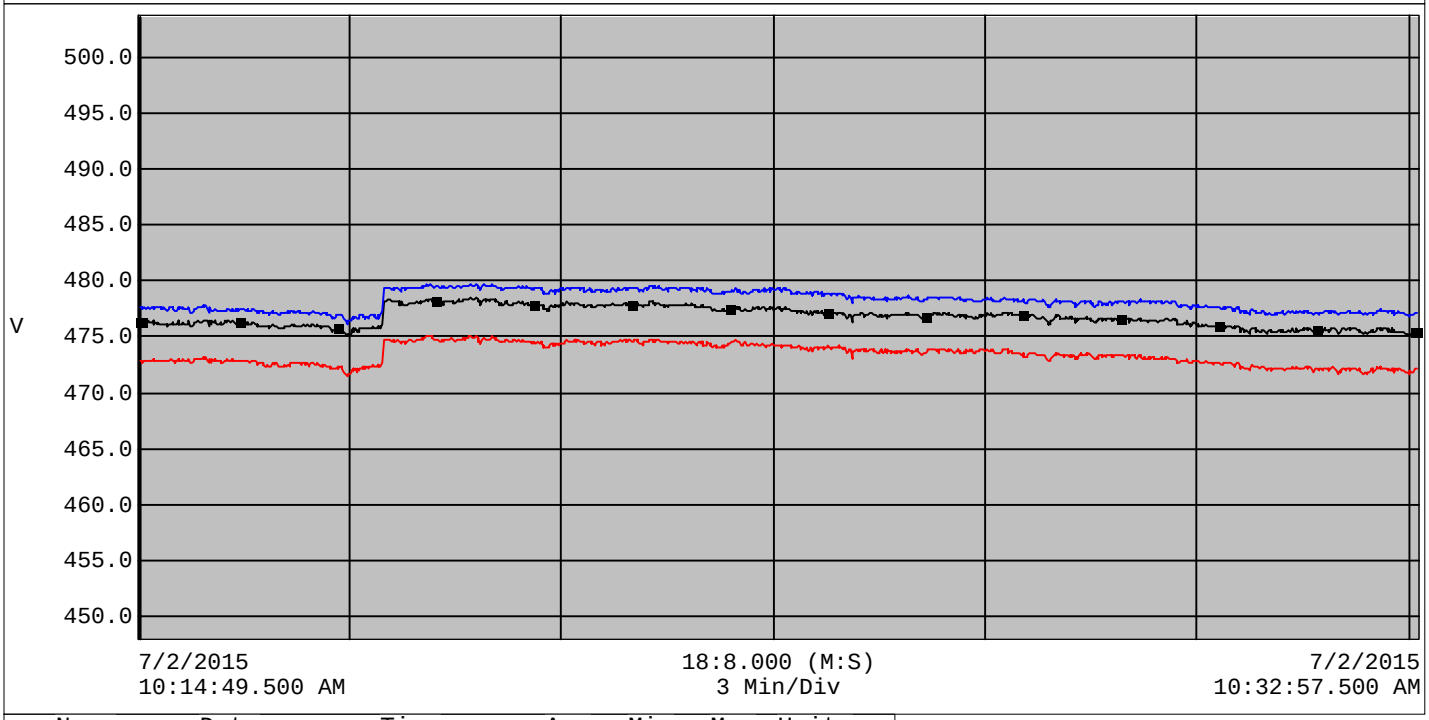
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/2/2015	10:14:49.500 AM	267.4	266.4	268.3	1089
Vrms Line2	7/2/2015	10:14:49.500 AM	282.5	281.4	283.5	1089
Vrms Line3	7/2/2015	10:14:49.500 AM	275.1	273.9	275.9	1089

7/2/2015 - 10:14:49.000 AM
Val
267.1 — Vrms Line1
282.1 — Vrms Line2
274.7 — Vrms Line3

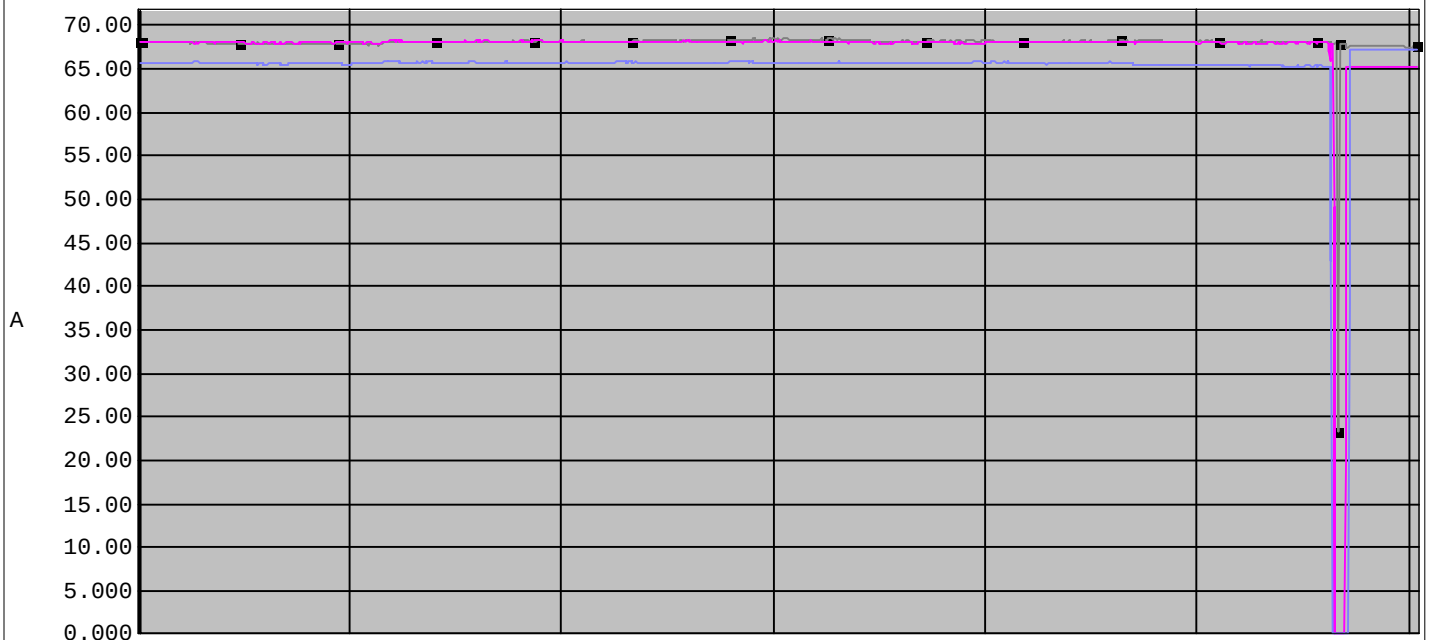
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/2/2015	10:14:49.500 AM	476.7	474.9	478.4	V
Urms Line2	7/2/2015	10:14:49.500 AM	473.3	471.4	475.0	V
Urms Line3	7/2/2015	10:14:49.500 AM	478.1	476.1	479.7	V

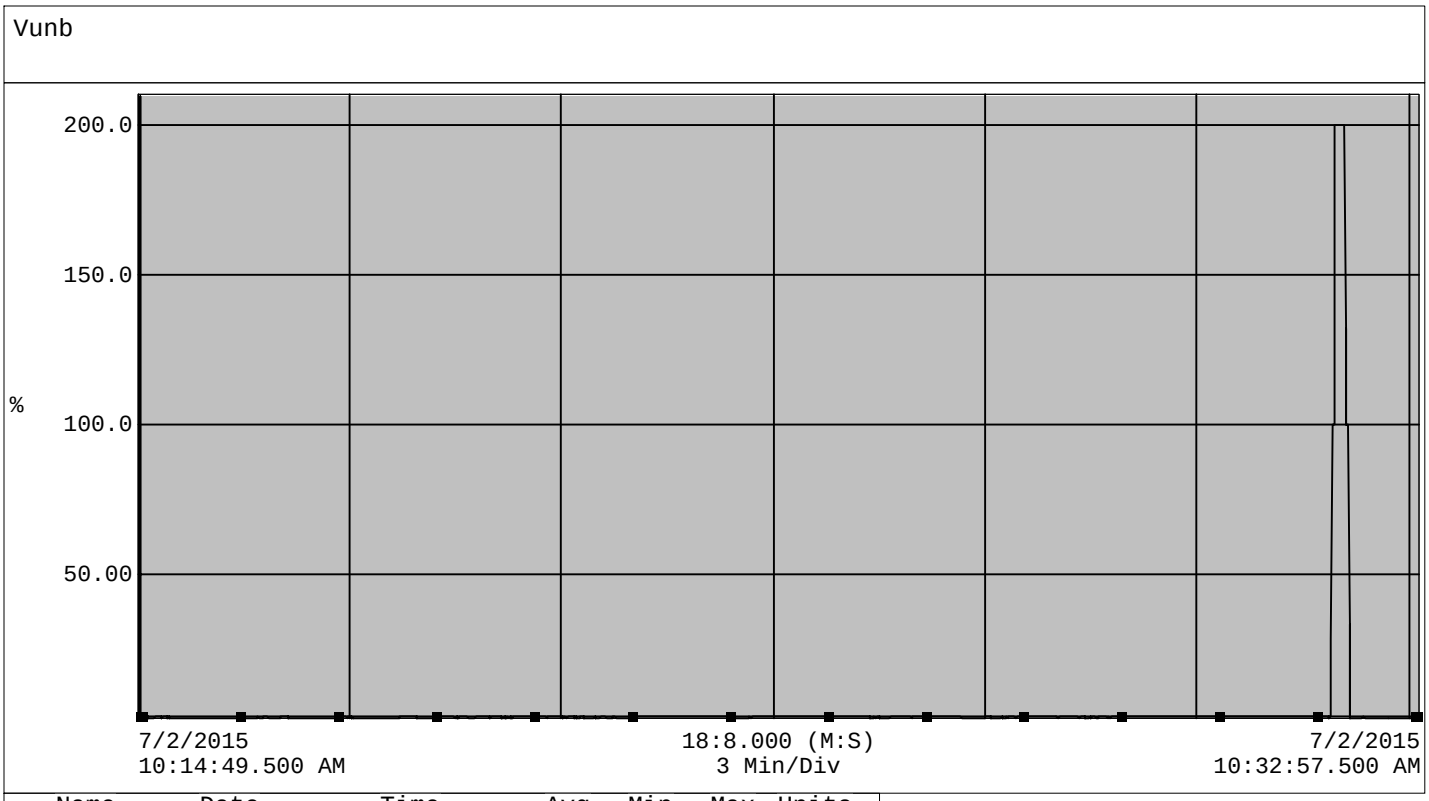
7/2/2015 - 10:14:49.000 AM
Val
476.2 Urms Line1
472.8 Urms Line2
477.5 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/2/2015	10:14:49.500 AM	67.89	23.20	68.30	A
Arms Line2	7/2/2015	10:14:49.500 AM	67.15	0.000	68.10	A
Arms Line3	7/2/2015	10:14:49.500 AM	64.72	0.000	67.10	A

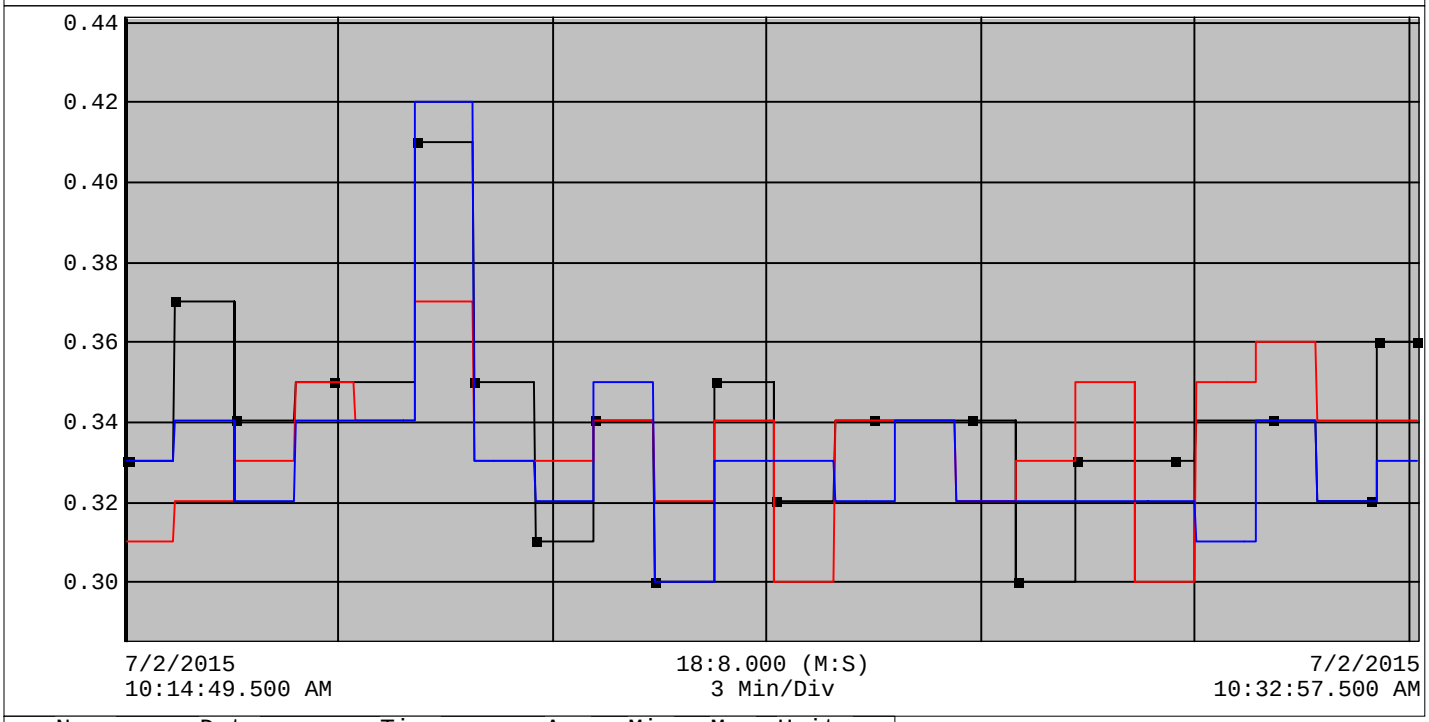
7/2/2015 - 10:14:49.000 AM
Val
67.90 — Arms Line1
67.90 — Arms Line2
65.50 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/2/2015	10:14:49.500 AM	2.752	2.700	2.800	%
Aunb(IEEE)	7/2/2015	10:14:49.500 AM	4.560	2.100	200.0	%

7/2/2015 - 10:14:49.000 AM
Val
2.700 —— Vunb(IEEE)
2.400 —— Aunb(IEEE)

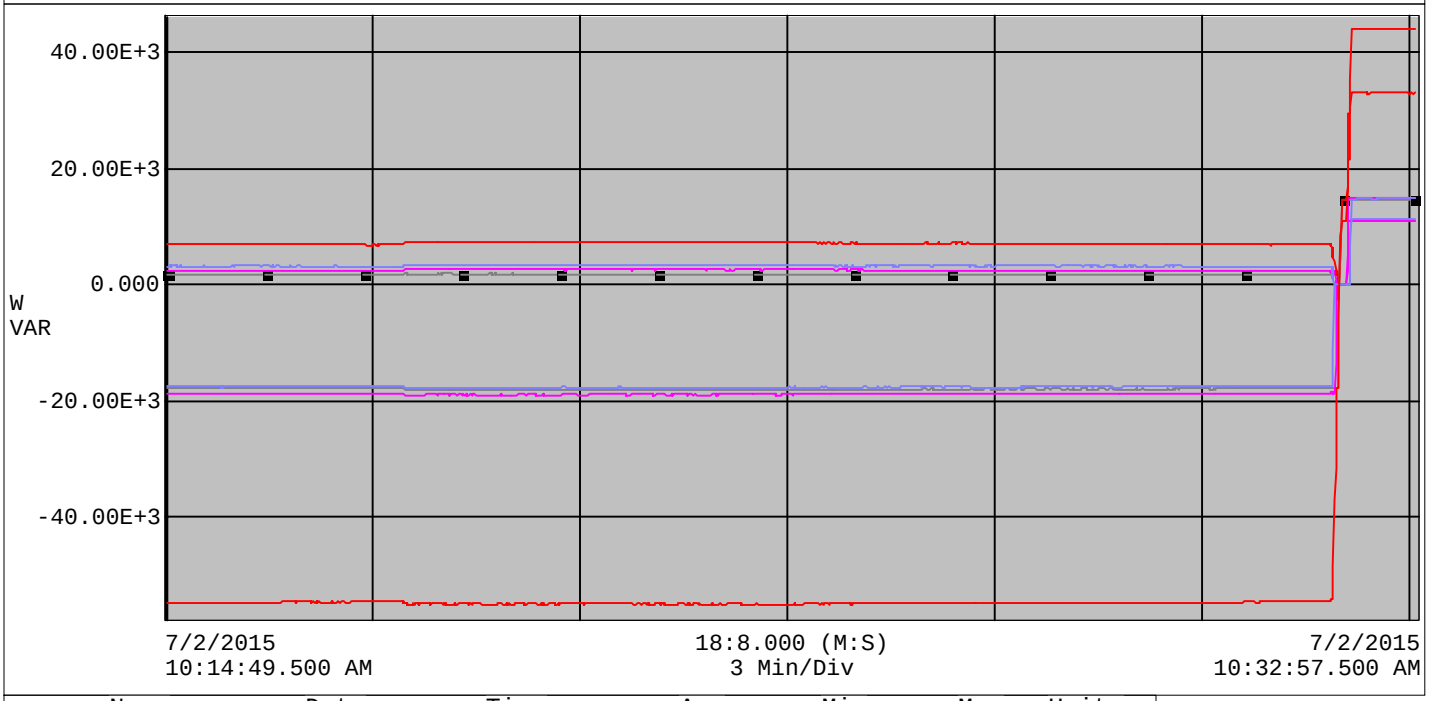
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/2/2015	10:14:49.500 AM	0.339	0.300	0.410	
Vflk Line2	7/2/2015	10:14:49.500 AM	0.334	0.300	0.370	
Vflk Line3	7/2/2015	10:14:49.500 AM	0.331	0.300	0.420	

7/2/2015 - 10:14:49.000 AM
Val
0.330 Vflk Line1
0.310 Vflk Line2
0.330 Vflk Line3

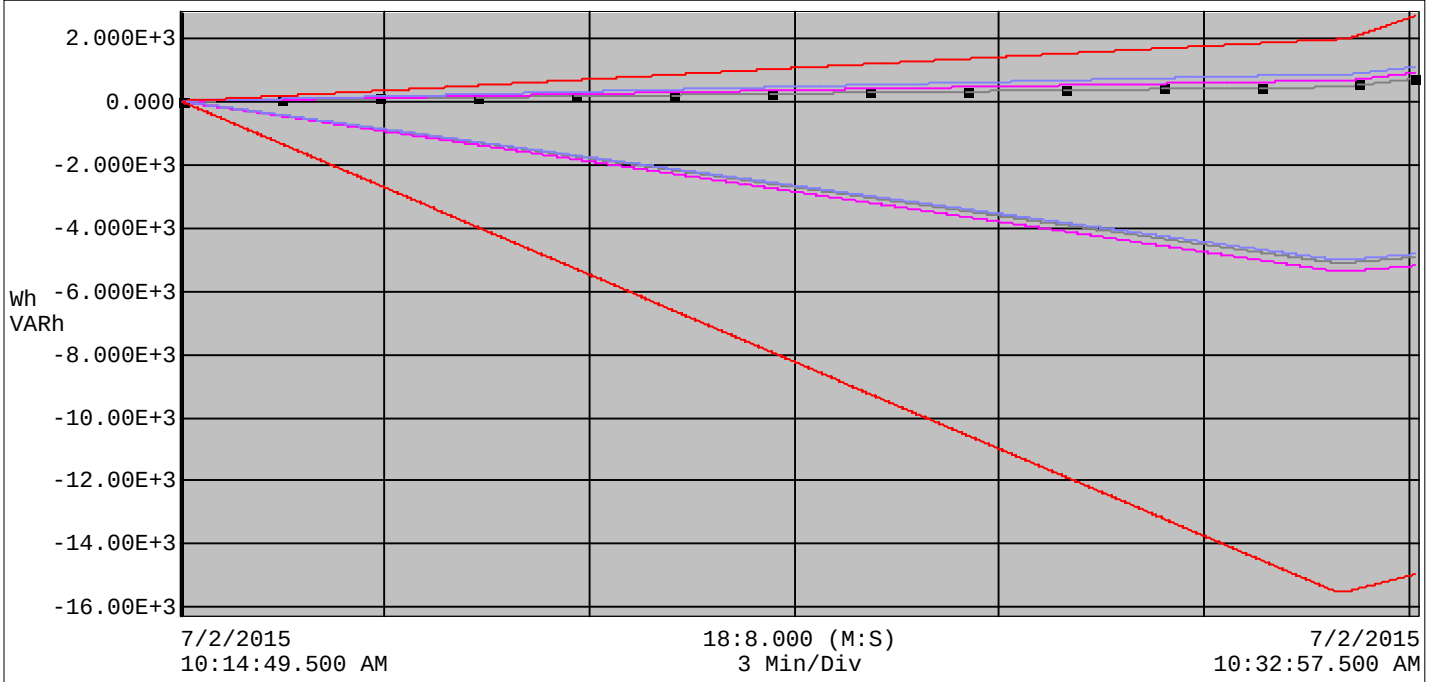
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/2/2015	10:14:49.500 AM	2.355E+3	-2.700E+3	14.44E+3	W
W Line2	7/2/2015	10:14:49.500 AM	2.987E+3	0.000	14.89E+3	W
W Line3	7/2/2015	10:14:49.500 AM	3.607E+3	0.000	14.59E+3	W
W Sum of Phases	7/2/2015	10:14:49.500 AM	8.950E+3	-2.699E+3	43.89E+3	W
VAR Line1	7/2/2015	10:14:49.500 AM	-16.33E+3	-18.22E+3	10.90E+3	VAR
VAR Line2	7/2/2015	10:14:49.500 AM	-17.22E+3	-19.14E+3	10.77E+3	VAR
VAR Line3	7/2/2015	10:14:49.500 AM	-15.99E+3	-17.86E+3	11.25E+3	VAR
VAR Sum of Phases	7/2/2015	10:14:49.500 AM	-49.54E+3	-55.13E+3	32.83E+3	VAR

7/2/2015 - 10:14:49.000 AM
Val
1.542E+3 — W Line1
2.248E+3 — W Line2
3.008E+3 — W Line3
6.797E+3 — W Sum of Phases
-18.07E+3 — VAR Line1
-19.03E+3 — VAR Line2
-17.75E+3 — VAR Line3
-54.85E+3 — VAR Sum of Phases

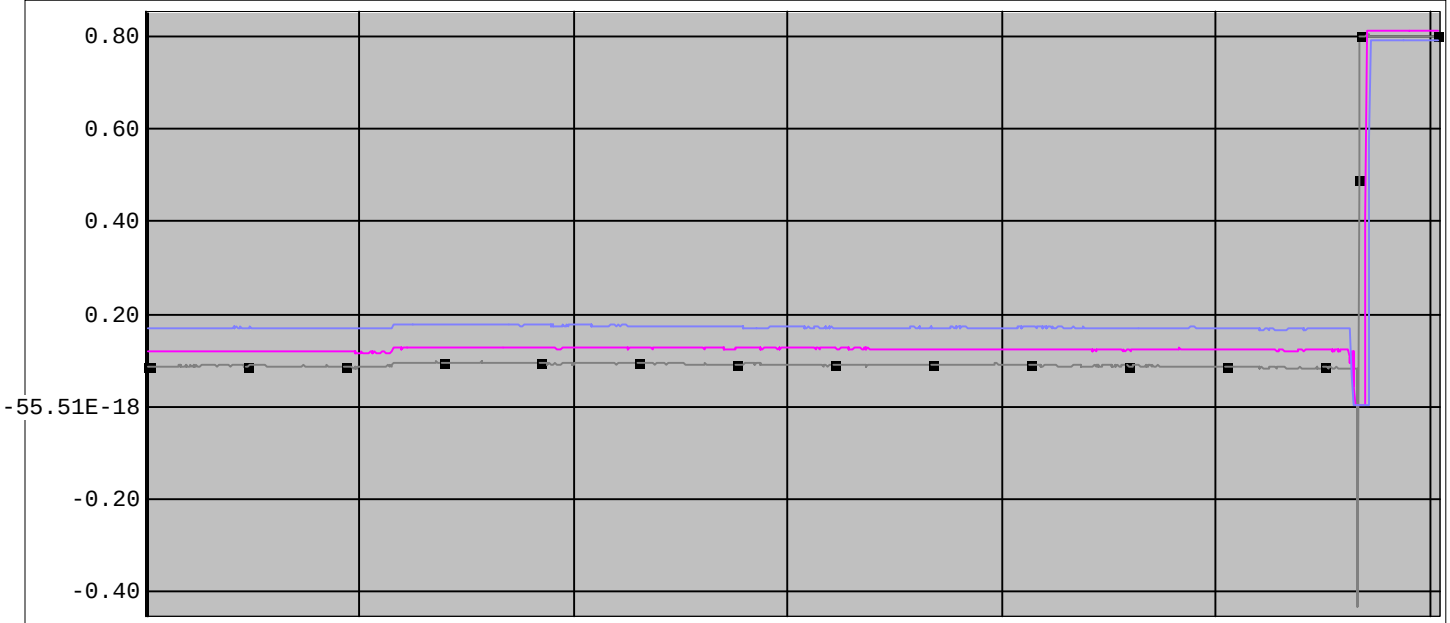
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/2/2015	10:14:49.500 AM	248.0	0.435	712.5	Wh
W-hours Line2	7/2/2015	10:14:49.500 AM	355.7	0.634	903.6	Wh
W-hours Line3	7/2/2015	10:14:49.500 AM	466.4	0.833	1.091E+3	Wh
W-hours Sum of Phases	7/2/2015	10:14:49.500 AM	1.070E+3	1.900	2.707E+3	Wh
VAR-hours Line1	7/2/2015	10:14:49.500 AM	-2.725E+3	-5.139E+3	-4.863	VARh
VAR-hours Line2	7/2/2015	10:14:49.500 AM	-2.867E+3	-5.390E+3	-5.100	VARh
VAR-hours Line3	7/2/2015	10:14:49.500 AM	-2.674E+3	-5.018E+3	-4.747	VARh
VAR-hours Sum of Phases	7/2/2015	10:14:49.500 AM	-8.266E+3	-15.55E+3	-14.71	VARh

7/2/2015 - 10:14:49.000 AM
Val
0.435 — W-hours Line1
0.634 — W-hours Line2
0.833 — W-hours Line3
1.900 — W-hours Sum of Phases
-4.863 — VAR-hours Line1
-5.100 — VAR-hours Line2
-4.747 — VAR-hours Line3
-14.71 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/2/2015	10:14:49.500 AM	0.130	-0.436	0.802	
PF Line2	7/2/2015	10:14:49.500 AM	0.158	0.000	0.813	
PF Line3	7/2/2015	10:14:49.500 AM	0.199	0.000	0.793	

7/2/2015 - 10:14:49.000 AM
Val
85.00E-3 — PF Line1
0.117 — PF Line2
0.167 — PF Line3

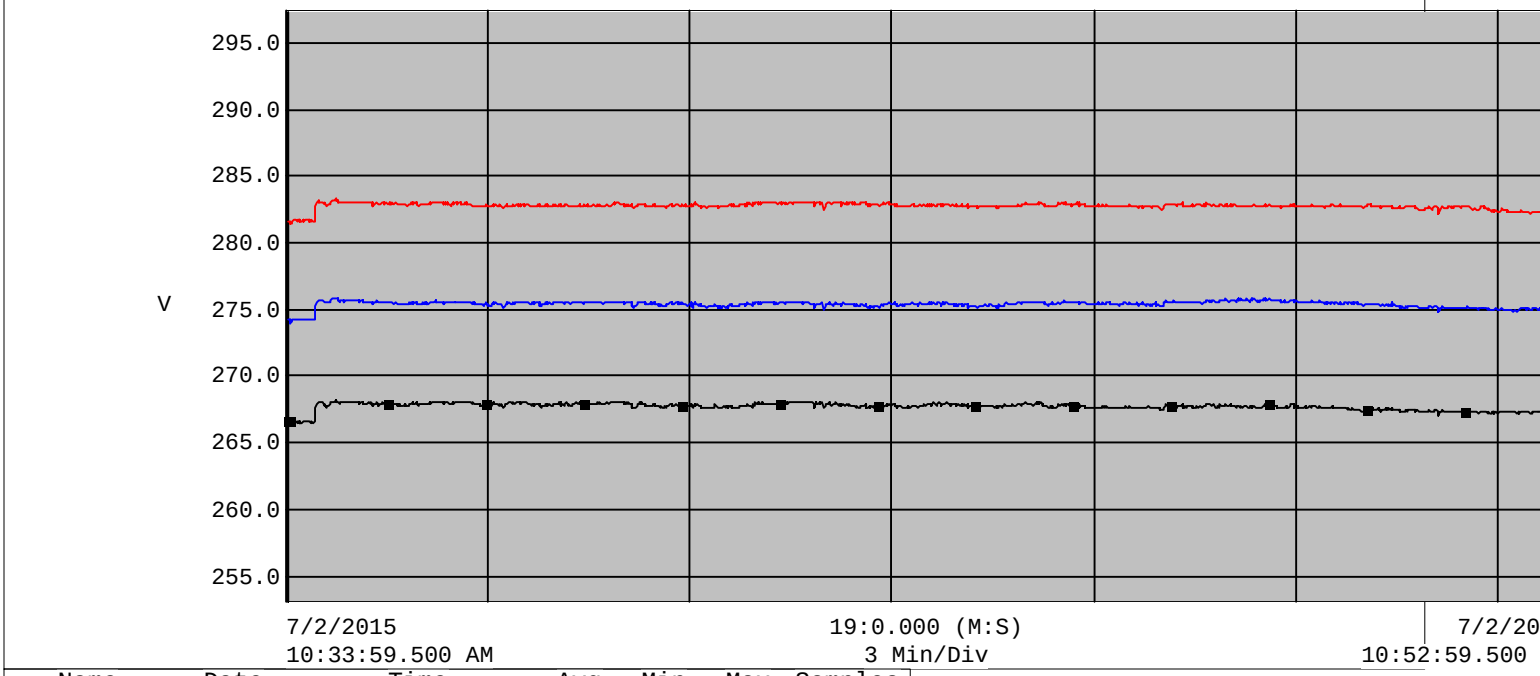
Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M18\070204-M18-1.dvb	
Operator ,	Test Site ,
Comments	

WPS M-18 -2

Recording Start Date	7/2/2015 - 10:33:59 AM
Recording Duration	19:00 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

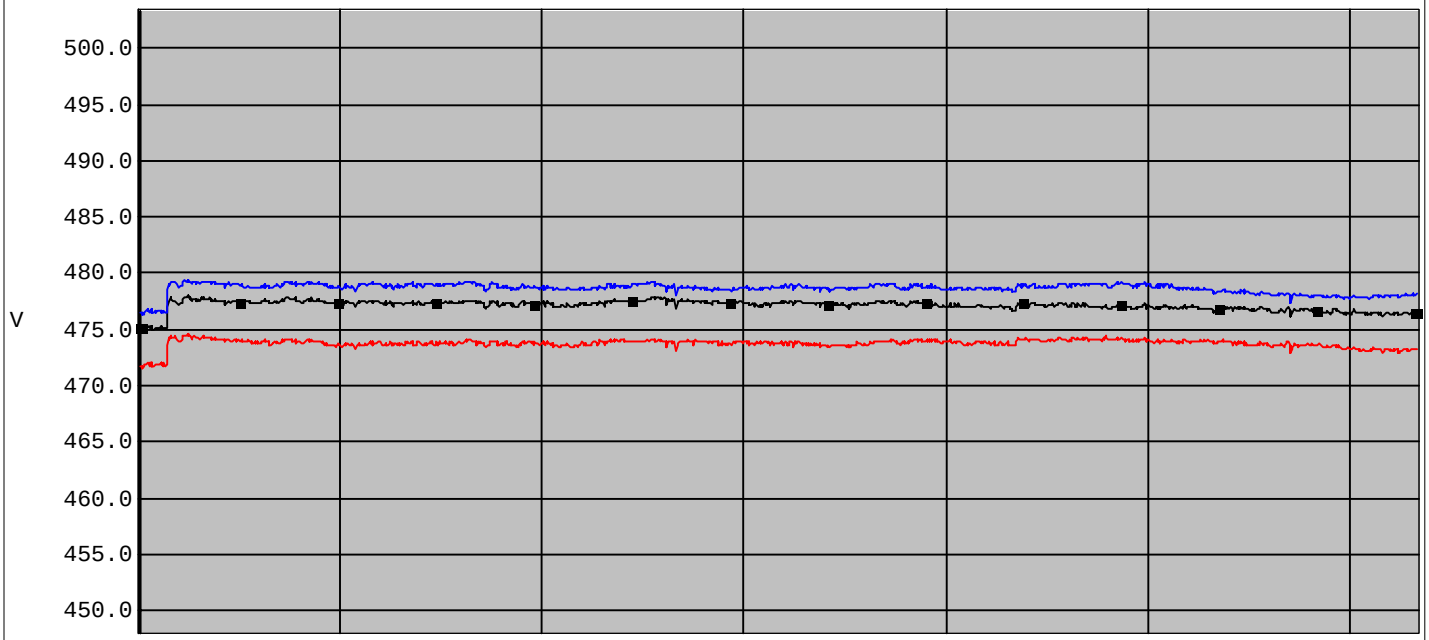
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/2/2015	10:33:59.500 AM	267.6	266.3	268.1	1141
Vrms Line2	7/2/2015	10:33:59.500 AM	282.7	281.4	283.2	1141
Vrms Line3	7/2/2015	10:33:59.500 AM	275.3	273.9	275.8	1141

7/2/2015 - 10:33:59.000 AM
Val
266.5 Vrms Line1
281.5 Vrms Line2
274.1 Vrms Line3

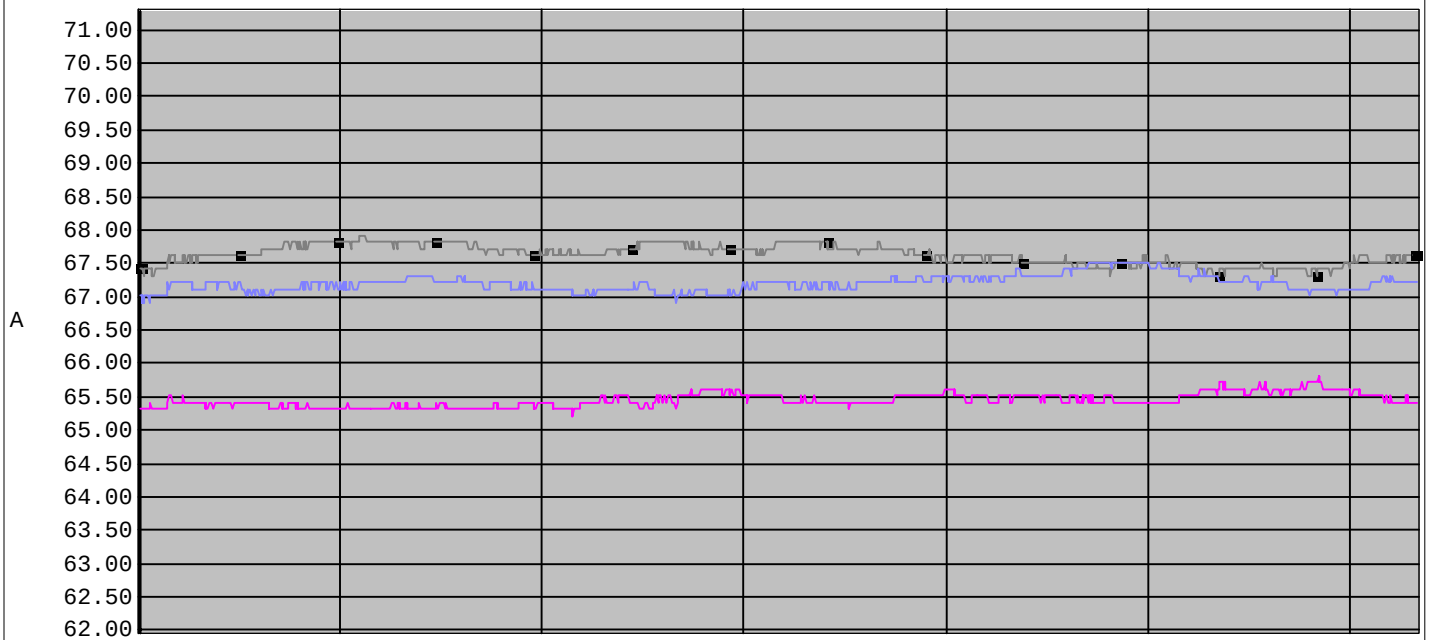
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/2/2015	10:33:59.500 AM	477.1	474.8	477.9	V
Urms Line2	7/2/2015	10:33:59.500 AM	473.7	471.5	474.5	V
Urms Line3	7/2/2015	10:33:59.500 AM	478.6	476.2	479.4	V

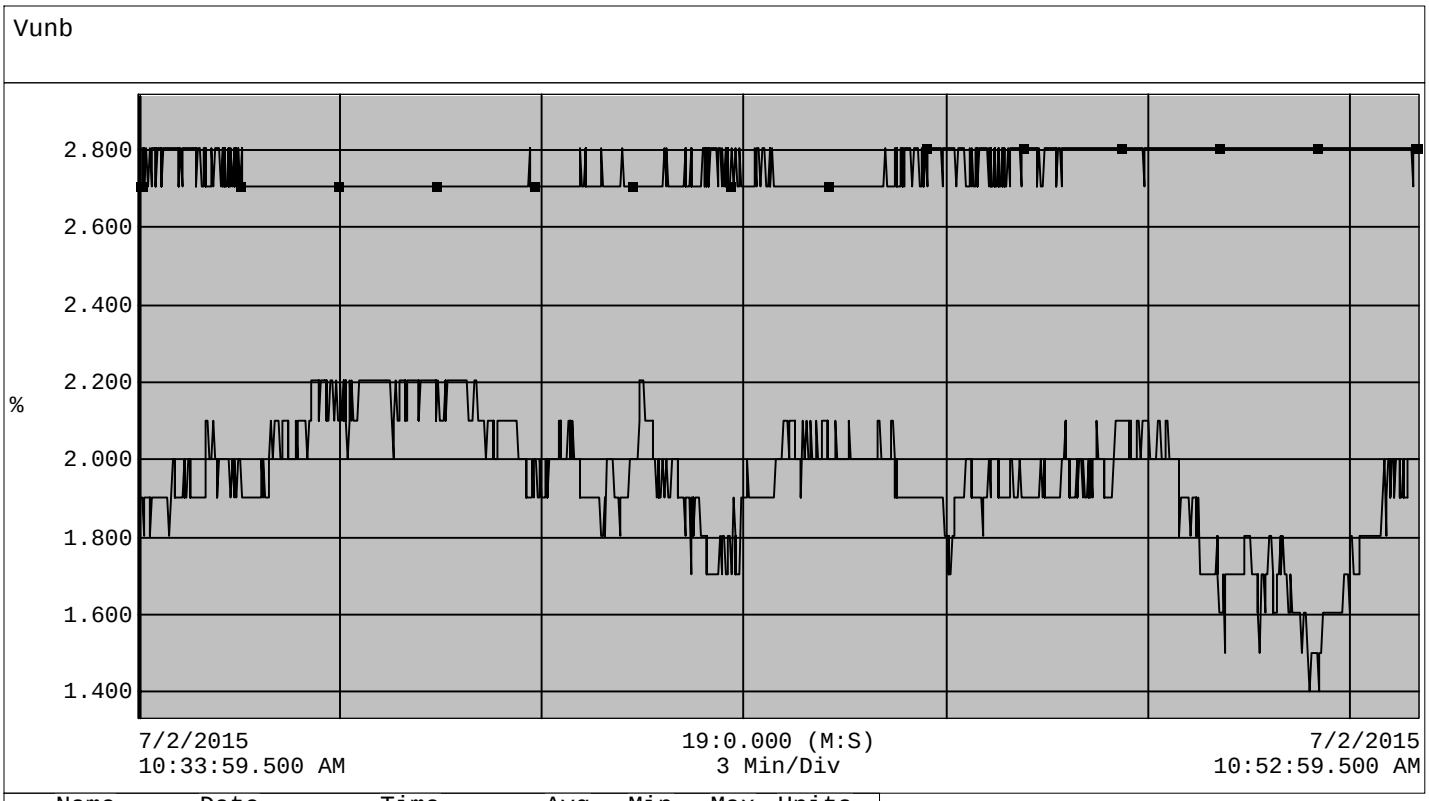
7/2/2015 - 10:33:59.000 AM
Val
475.0 — Urms Line1
471.7 — Urms Line2
476.5 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/2/2015	10:33:59.500 AM	67.61	67.30	67.90	A
Arms Line2	7/2/2015	10:33:59.500 AM	65.43	65.20	65.80	A
Arms Line3	7/2/2015	10:33:59.500 AM	67.19	66.90	67.50	A

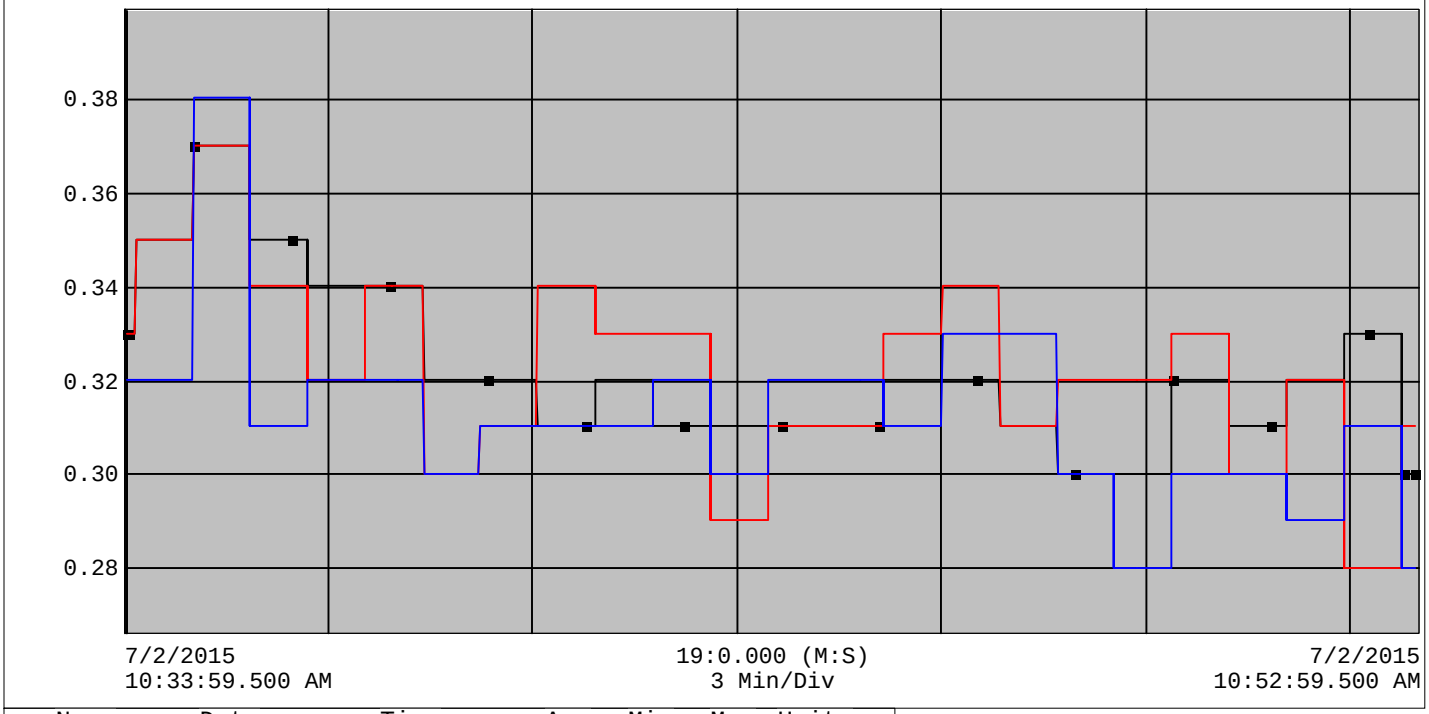
7/2/2015 - 10:33:59.000 AM
Val
67.40 — Arms Line1
65.30 — Arms Line2
67.00 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/2/2015	10:33:59.500 AM	2.746	2.700	2.800	%
Aunb(IEEE)	7/2/2015	10:33:59.500 AM	1.945	1.400	2.200	%

7/2/2015 - 10:33:59.000 AM
Val
2.700 —— Vunb(IEEE)
1.900 —— Aunb(IEEE)

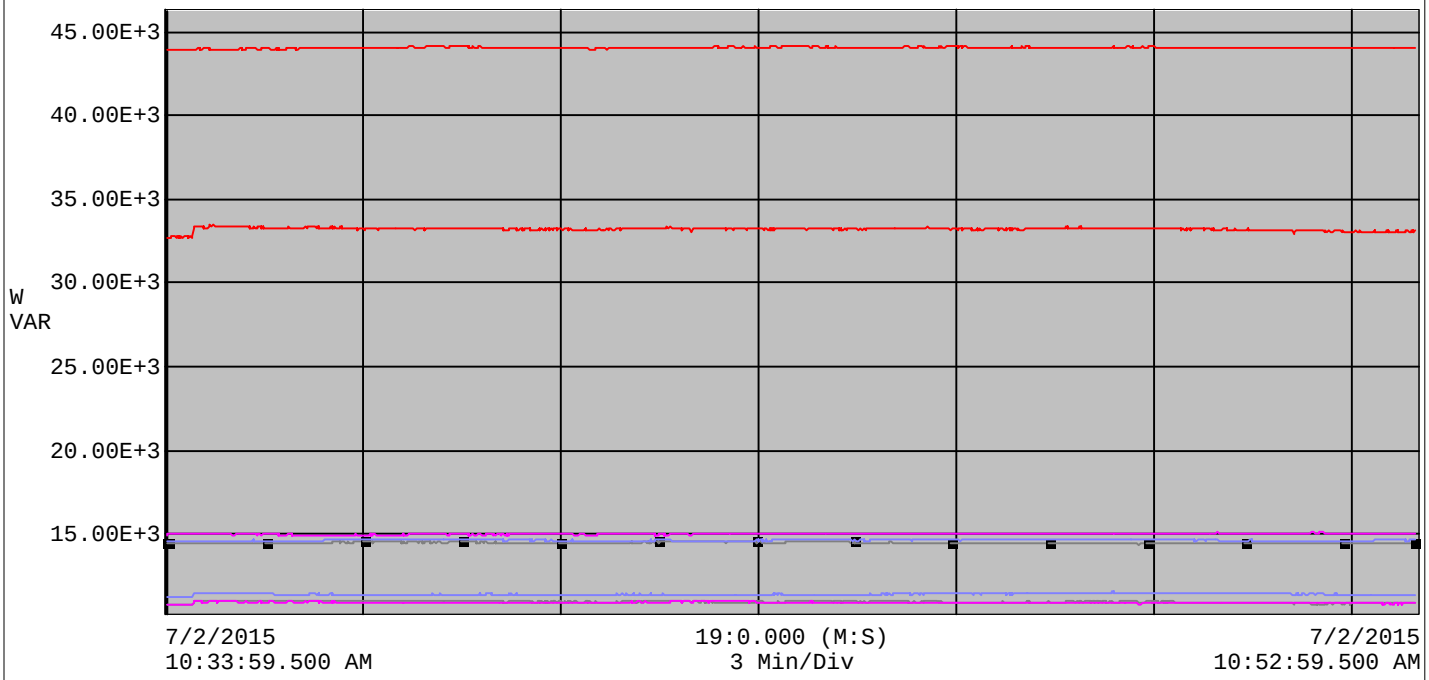
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/2/2015	10:33:59.500 AM	0.322	0.300	0.370	
Vflk Line2	7/2/2015	10:33:59.500 AM	0.322	0.280	0.370	
Vflk Line3	7/2/2015	10:33:59.500 AM	0.313	0.280	0.380	

7/2/2015 - 10:33:59.000 AM
Val
0.330 Vflk Line1
0.330 Vflk Line2
0.320 Vflk Line3

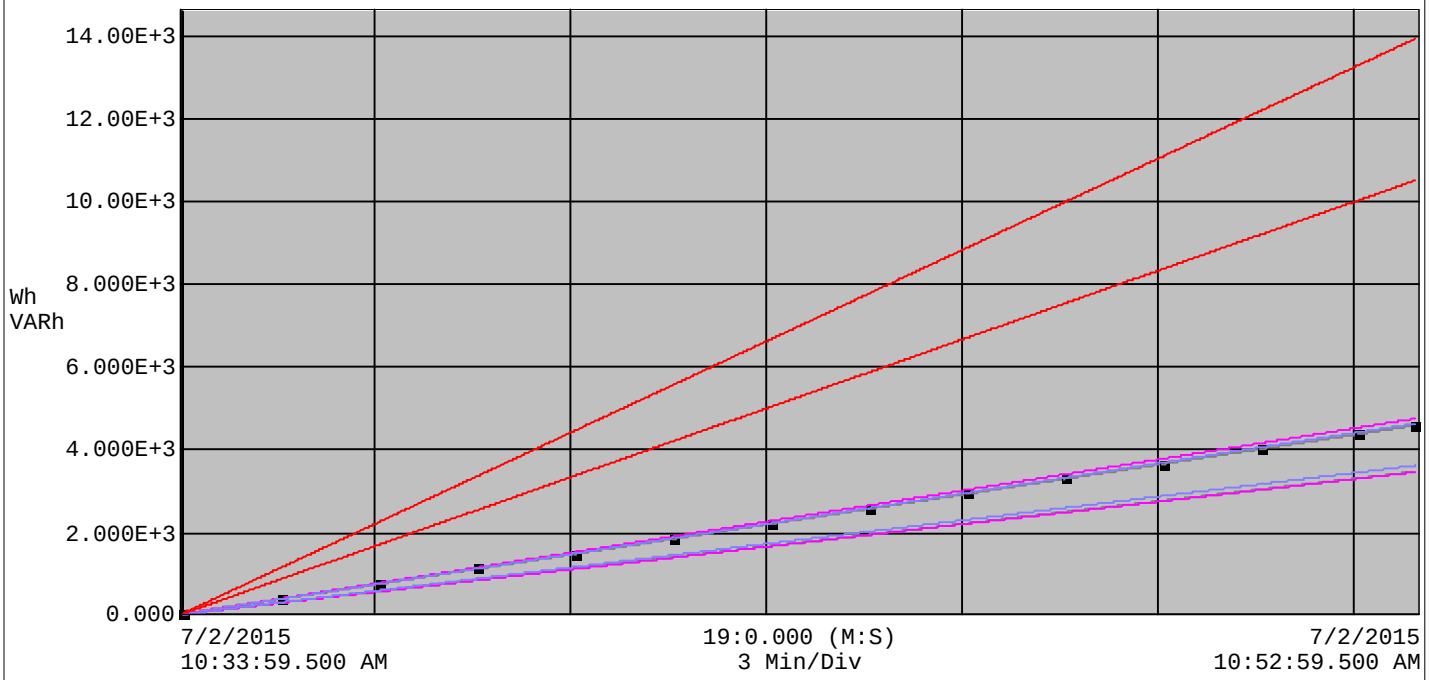
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/2/2015	10:33:59.500 AM	14.44E+3	14.35E+3	14.51E+3	W
W Line2	7/2/2015	10:33:59.500 AM	14.96E+3	14.90E+3	15.06E+3	W
W Line3	7/2/2015	10:33:59.500 AM	14.59E+3	14.51E+3	14.66E+3	W
W Sum of Phases	7/2/2015	10:33:59.500 AM	43.99E+3	43.84E+3	44.06E+3	W
VAR Line1	7/2/2015	10:33:59.500 AM	10.91E+3	10.71E+3	11.00E+3	VAR
VAR Line2	7/2/2015	10:33:59.500 AM	10.87E+3	10.71E+3	10.95E+3	VAR
VAR Line3	7/2/2015	10:33:59.500 AM	11.38E+3	11.19E+3	11.49E+3	VAR
VAR Sum of Phases	7/2/2015	10:33:59.500 AM	33.16E+3	32.61E+3	33.40E+3	VAR

7/2/2015 - 10:33:59.000 AM
Val
14.40E+3 — W Line1
14.93E+3 — W Line2
14.53E+3 — W Line3
43.86E+3 — W Sum of Phases
10.74E+3 — VAR Line1
10.72E+3 — VAR Line2
11.21E+3 — VAR Line3
32.67E+3 — VAR Sum of Phases

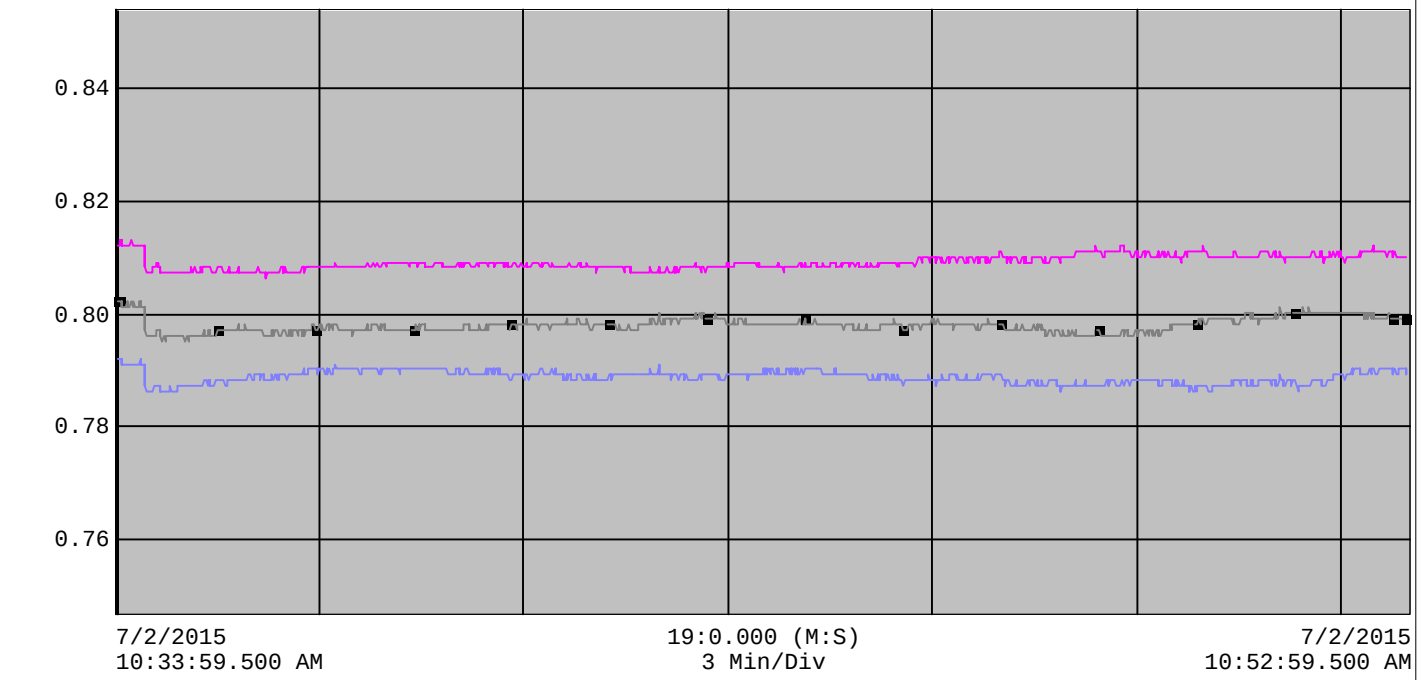
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/2/2015	10:33:59.500 AM	2.291E+3	4.050	4.576E+3	Wh
W-hours Line2	7/2/2015	10:33:59.500 AM	2.371E+3	4.198	4.743E+3	Wh
W-hours Line3	7/2/2015	10:33:59.500 AM	2.313E+3	4.092	4.623E+3	Wh
W-hours Sum of Phases	7/2/2015	10:33:59.500 AM	6.975E+3	12.34	13.94E+3	Wh
VAR-hours Line1	7/2/2015	10:33:59.500 AM	1.733E+3	2.955	3.458E+3	VARh
VAR-hours Line2	7/2/2015	10:33:59.500 AM	1.726E+3	2.945	3.446E+3	VARh
VAR-hours Line3	7/2/2015	10:33:59.500 AM	1.803E+3	3.081	3.606E+3	VARh
VAR-hours Sum of Phases	7/2/2015	10:33:59.500 AM	5.262E+3	8.981	10.51E+3	VARh

7/2/2015 - 10:33:59.000 AM
Val
4.050 — W-hours Line1
4.198 — W-hours Line2
4.092 — W-hours Line3
12.34 — W-hours Sum of Phases
2.955 — VAR-hours Line1
2.945 — VAR-hours Line2
3.081 — VAR-hours Line3
8.981 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/2/2015	10:33:59.500 AM	0.798	0.795	0.802	
PF Line2	7/2/2015	10:33:59.500 AM	0.809	0.806	0.813	
PF Line3	7/2/2015	10:33:59.500 AM	0.789	0.786	0.792	

7/2/2015 - 10:33:59.000 AM
Val
0.802 — PF Line1
0.812 — PF Line2
0.792 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M18\070204-M18-2.dvb	
Operator ,	Test Site ,
Comments	

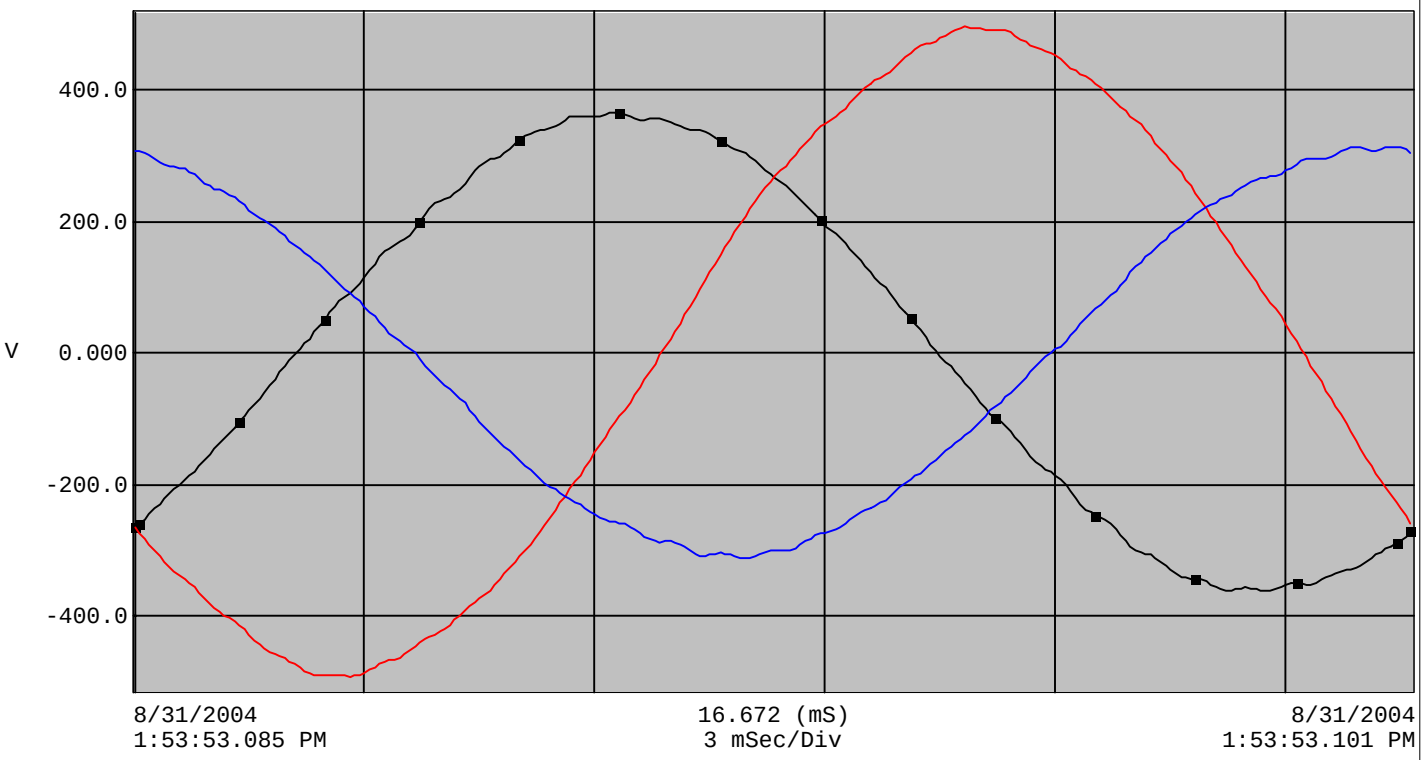
GWA Water Pumping Station Assessment				
Station Name: M-20-A	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/31/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.55	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.5	
Generator Condition	10.0%	2	0.2	25
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.7	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	2	0.1	
Overload Relay	5.0%	3	0.15	
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	3	0.15	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.055	
Pressure	1.5%	1	0.015	
Flow	1.5%	0	0	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**5.0%**		0.12	
Lighting	3.0%	2	0.06	61
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.5**

Comments:

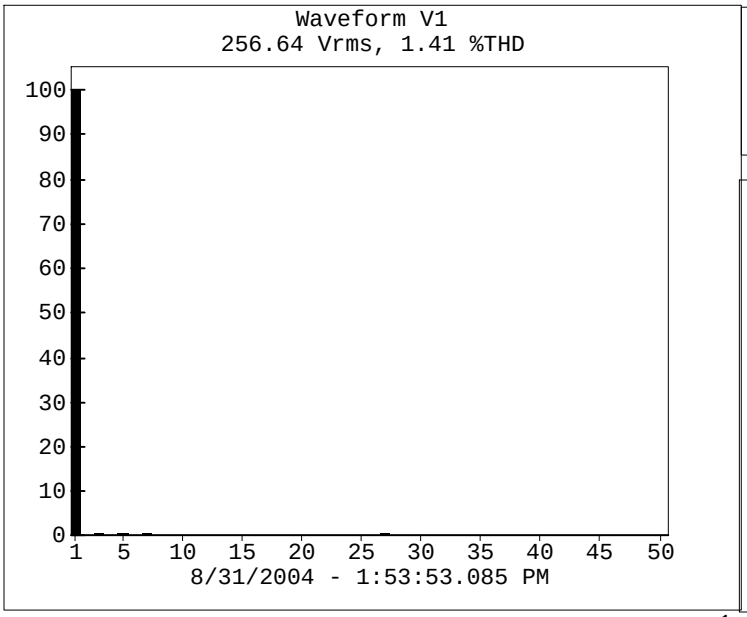
WPS M-20A - Photo

Recording Start Date	8/31/2004 - 1:53:53 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/31/2004	1:53:53.085 PM	16.672	256.6	V
Waveform V2	8/31/2004	1:53:53.085 PM	16.672	343.2	V
Waveform V3	8/31/2004	1:53:53.085 PM	16.672	218.8	V

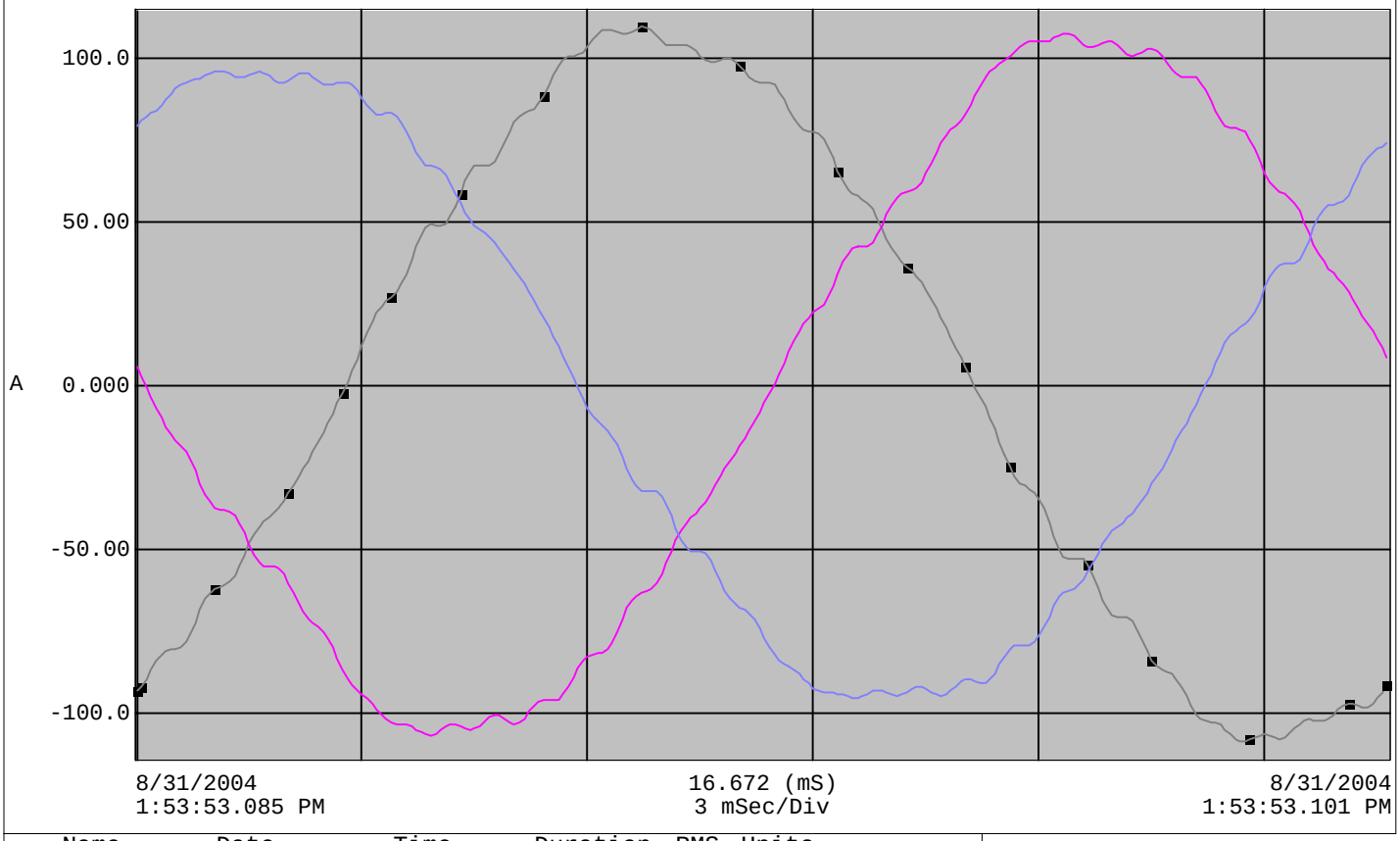


8/31/2004 - 1:53:53.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

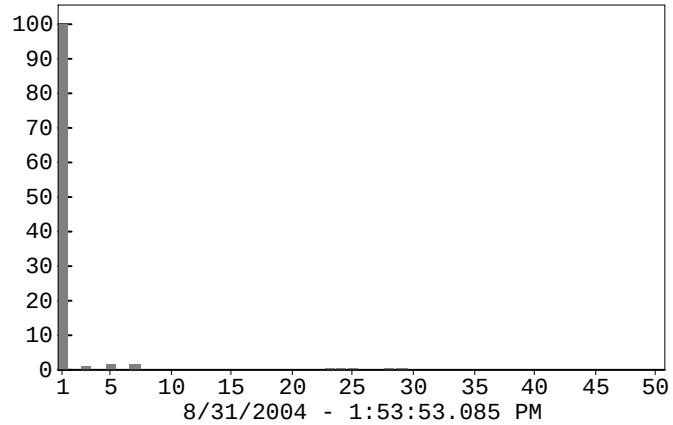
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.4	H20	0.1	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.7	H22	0.1	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.5	H24	0.3	H41	0.0
H08	0.0	H25	0.3	H42	0.0
H09	0.2	H26	0.3	H43	0.0
H10	0.0	H27	0.5	H44	0.0
H11	0.1	H28	0.4	H45	0.0
H12	0.0	H29	0.4	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.1	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/31/2004	1:53:53.085 PM	16.672	75.81	A
Waveform I2	8/31/2004	1:53:53.085 PM	16.672	74.21	A
Waveform I3	8/31/2004	1:53:53.085 PM	16.672	68.90	A

Waveform I1
75.81 Arms, 3.57 %THD

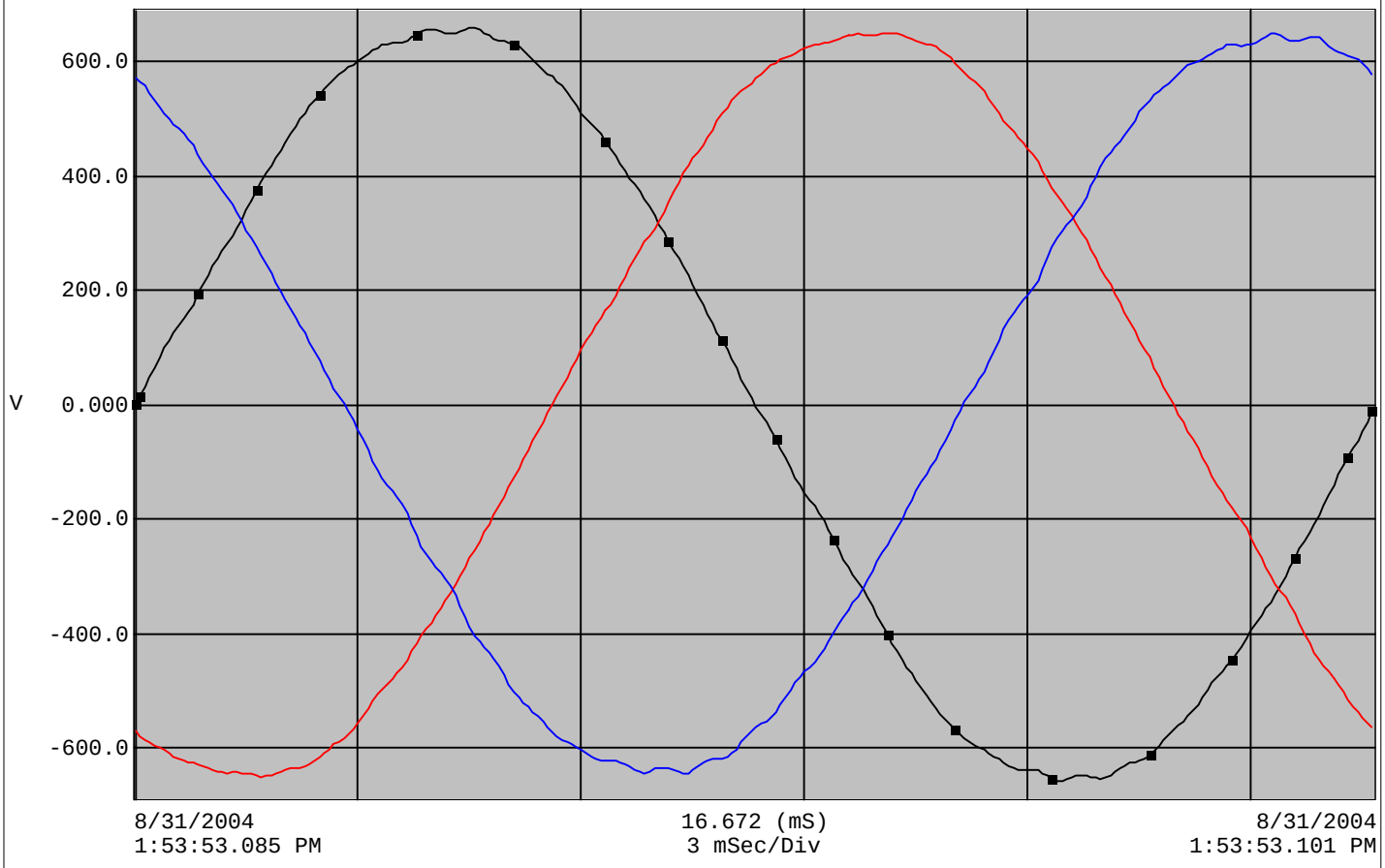


8/31/2004 - 1:53:53.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

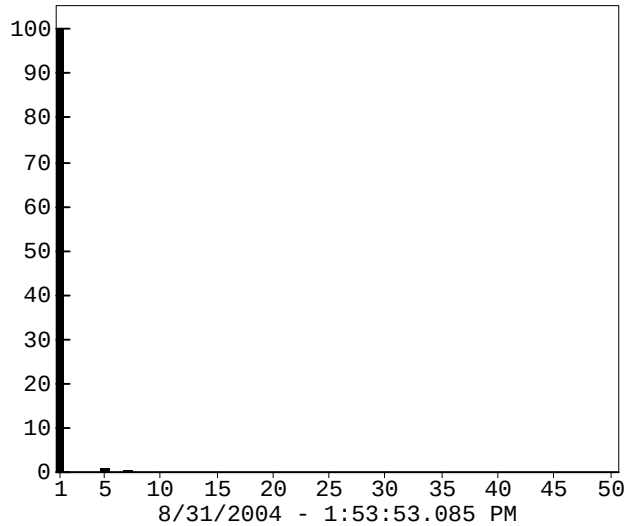
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.0
H02	0.0	H19	0.2	H36	0.1
H03	1.1	H20	0.1	H37	0.1
H04	0.0	H21	0.1	H38	0.0
H05	1.7	H22	0.3	H39	0.1
H06	0.0	H23	0.6	H40	0.0
H07	2.1	H24	0.8	H41	0.1
H08	0.0	H25	0.7	H42	0.0
H09	0.3	H26	0.3	H43	0.0
H10	0.0	H27	0.3	H44	0.0
H11	0.3	H28	0.8	H45	0.0
H12	0.0	H29	1.1	H46	0.0
H13	0.4	H30	0.4	H47	0.0
H14	0.1	H31	0.2	H48	0.0
H15	0.1	H32	0.2	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.2	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/31/2004	1:53:53.085 PM	16.672	467.2	V
Waveform U2	8/31/2004	1:53:53.085 PM	16.672	464.5	V
Waveform U3	8/31/2004	1:53:53.085 PM	16.672	458.4	V

Waveform U1
467.18 Vrms, 1.44 %THD



8/31/2004 - 1:53:53.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.1	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.8	H24	0.2	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.0	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.1	H28	0.2	H45	0.0
H12	0.0	H29	0.3	H46	0.0
H13	0.0	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/31/2004
Start Time: 1:53:53 PM
Duration: 0:0.000 (M:S)
W: 18.98E+3 W
VAR: 4.507E+3 W
VA: 19.51E+3 W
Power Factor: 0.973
Displacement Power Factor: 0.974
TAN: 0.234
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M20A\083104-M20A-Photo.dvb

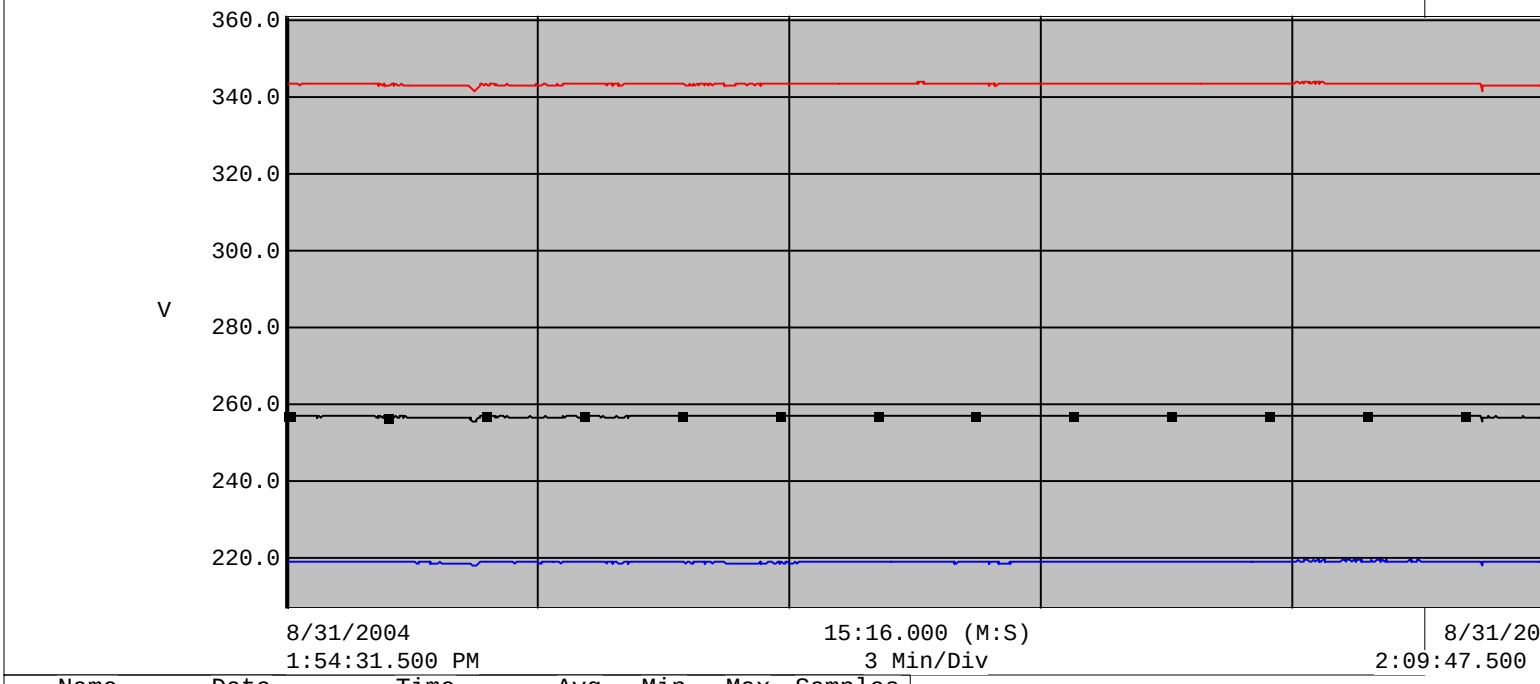
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS M-20A - Photo ,

Comments
Recorded at motor starter overload relay. Full voltage starter. GPA meter 57-396-216 (non demand meter).

WPS M-20A

Recording Start Date	8/31/2004 - 1:54:31 PM
Recording Duration	15:16 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

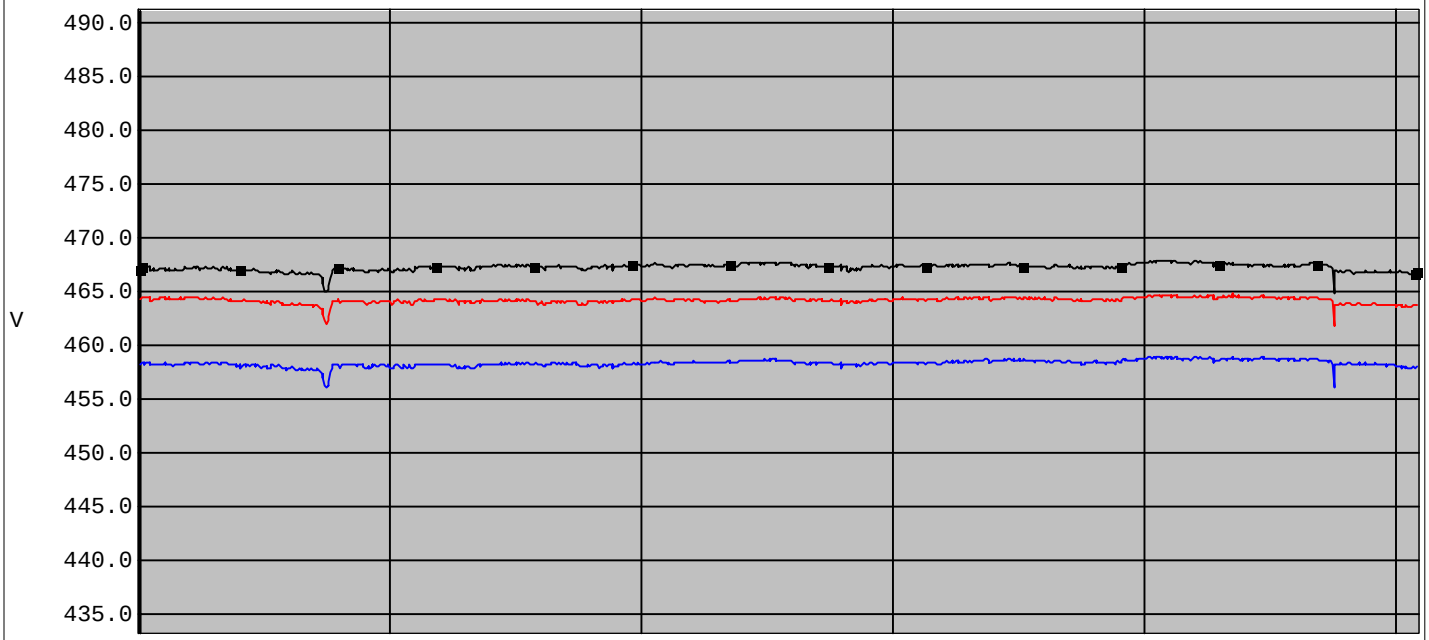
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/31/2004	1:54:31.500 PM	256.6	255.2	256.9	917
Vrms Line2	8/31/2004	1:54:31.500 PM	343.0	341.2	343.4	917
Vrms Line3	8/31/2004	1:54:31.500 PM	218.6	217.6	219.0	917

8/31/2004 - 1:54:31.000 PM
Val
256.5 Vrms Line1
342.9 Vrms Line2
218.6 Vrms Line3

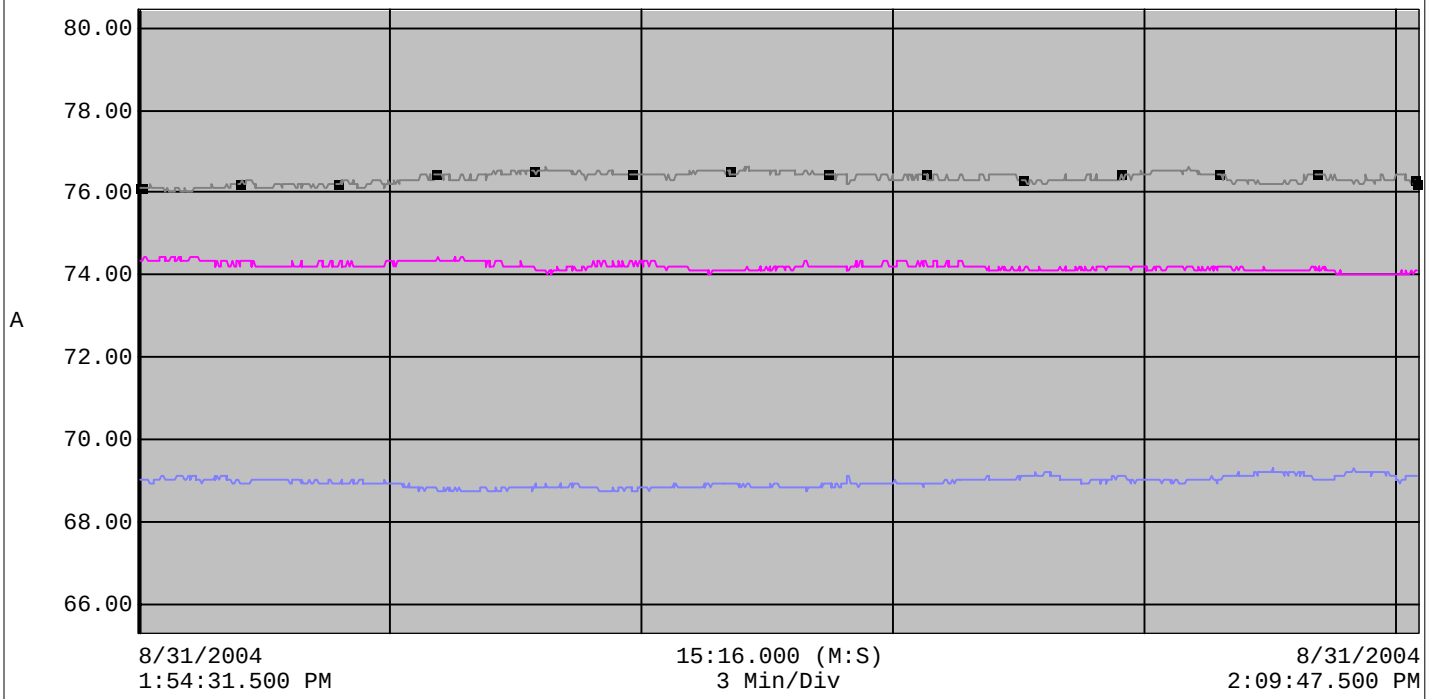
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/31/2004	1:54:31.500 PM	467.1	464.7	467.7	V
Urms Line2	8/31/2004	1:54:31.500 PM	464.1	461.7	464.6	V
Urms Line3	8/31/2004	1:54:31.500 PM	458.2	455.9	458.8	V

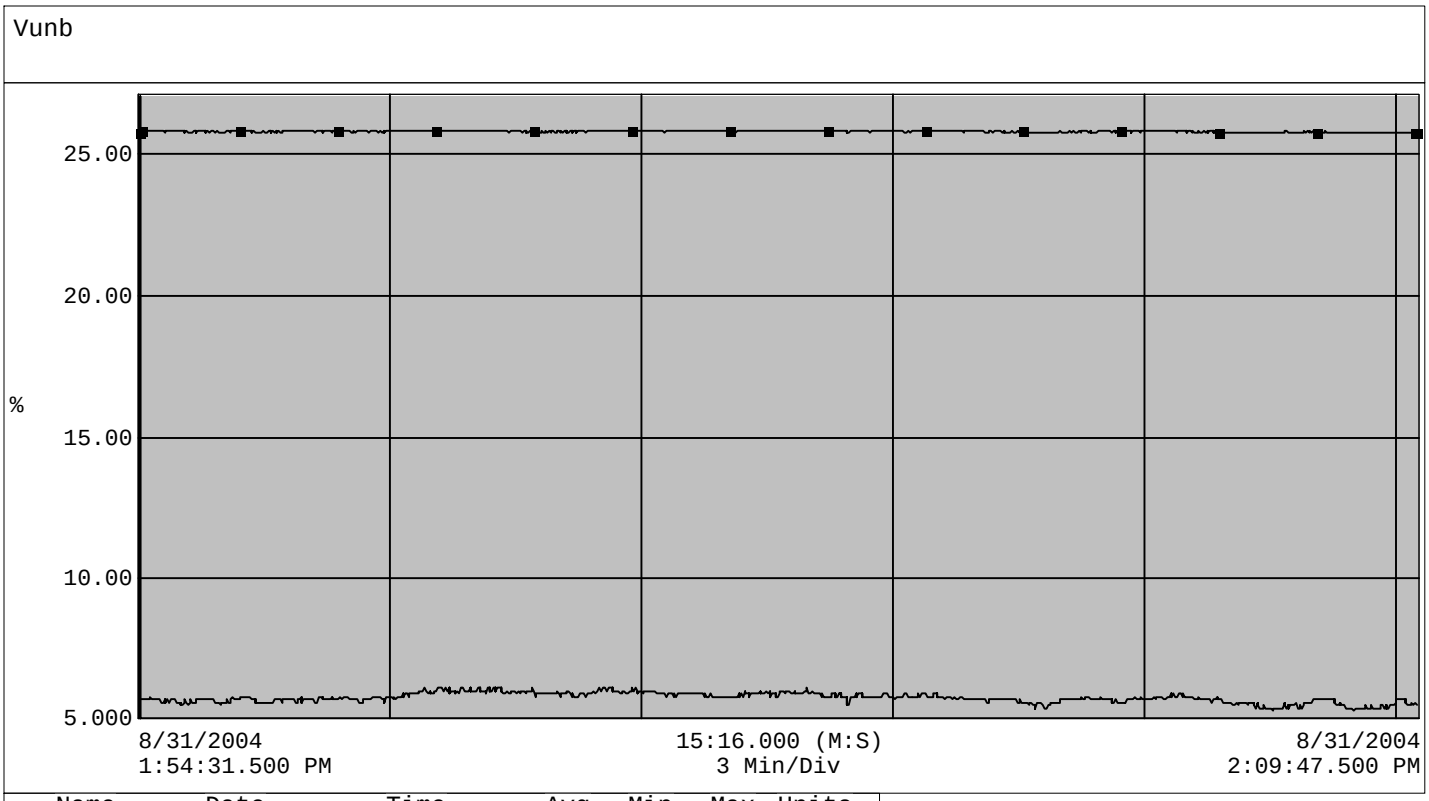
8/31/2004 - 1:54:31.000 PM
Val
466.9 Urms Line1
464.2 Urms Line2
458.0 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/31/2004	1:54:31.500 PM	76.33	76.00	76.60	A
Arms Line2	8/31/2004	1:54:31.500 PM	74.19	74.00	74.40	A
Arms Line3	8/31/2004	1:54:31.500 PM	68.94	68.70	69.30	A

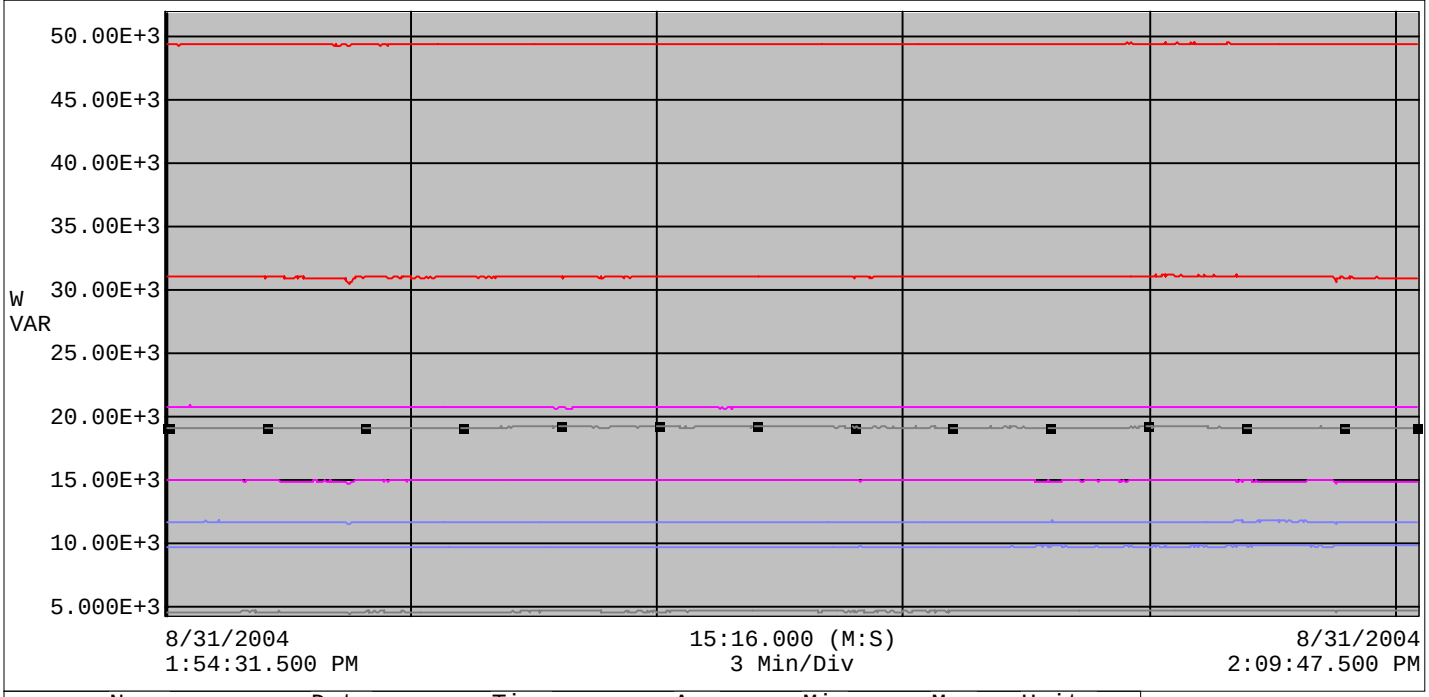
8/31/2004 - 1:54:31.000 PM
Val
76.10 — Arms Line1
74.30 — Arms Line2
69.00 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/31/2004	1:54:31.500 PM	25.77	25.70	25.80	%
Aunb(IEEE)	8/31/2004	1:54:31.500 PM	5.758	5.300	6.100	%

8/31/2004 - 1:54:31.000 PM
Val
25.80 —— Vunb(IEEE)
5.700 —— Aunb(IEEE)

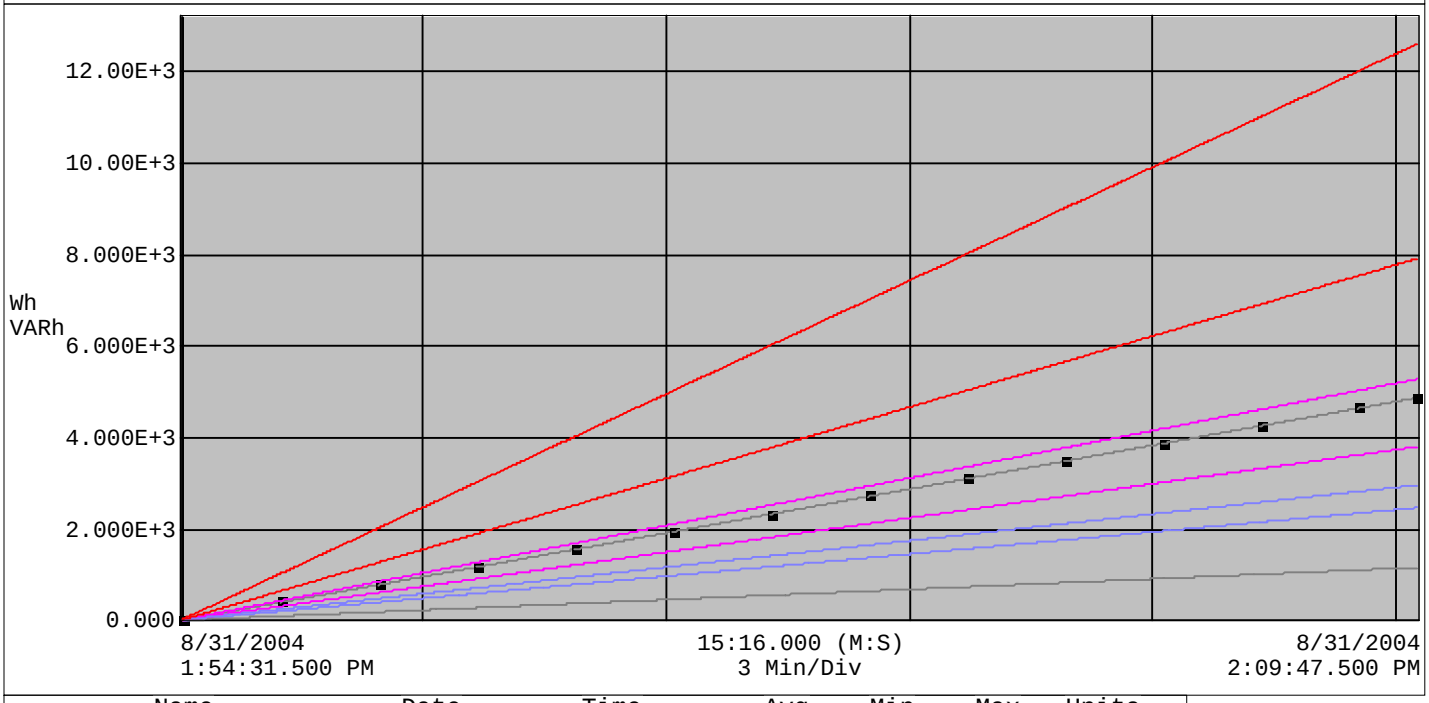
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/31/2004	1:54:31.500 PM	19.06E+3	18.95E+3	19.13E+3	W
W Line2	8/31/2004	1:54:31.500 PM	20.66E+3	20.57E+3	20.75E+3	W
W Line3	8/31/2004	1:54:31.500 PM	9.641E+3	9.582E+3	9.724E+3	W
W Sum of Phases	8/31/2004	1:54:31.500 PM	49.35E+3	49.26E+3	49.46E+3	W
VAR Line1	8/31/2004	1:54:31.500 PM	4.523E+3	4.346E+3	4.582E+3	VAR
VAR Line2	8/31/2004	1:54:31.500 PM	14.86E+3	14.61E+3	14.95E+3	VAR
VAR Line3	8/31/2004	1:54:31.500 PM	11.58E+3	11.47E+3	11.67E+3	VAR
VAR Sum of Phases	8/31/2004	1:54:31.500 PM	30.97E+3	30.44E+3	31.08E+3	VAR

8/31/2004 - 1:54:31.000 PM
Val
18.99E+3 — W Line1
20.72E+3 — W Line2
9.610E+3 — W Line3
49.32E+3 — W Sum of Phases
4.484E+3 — VAR Line1
14.86E+3 — VAR Line2
11.62E+3 — VAR Line3
30.96E+3 — VAR Sum of Phases

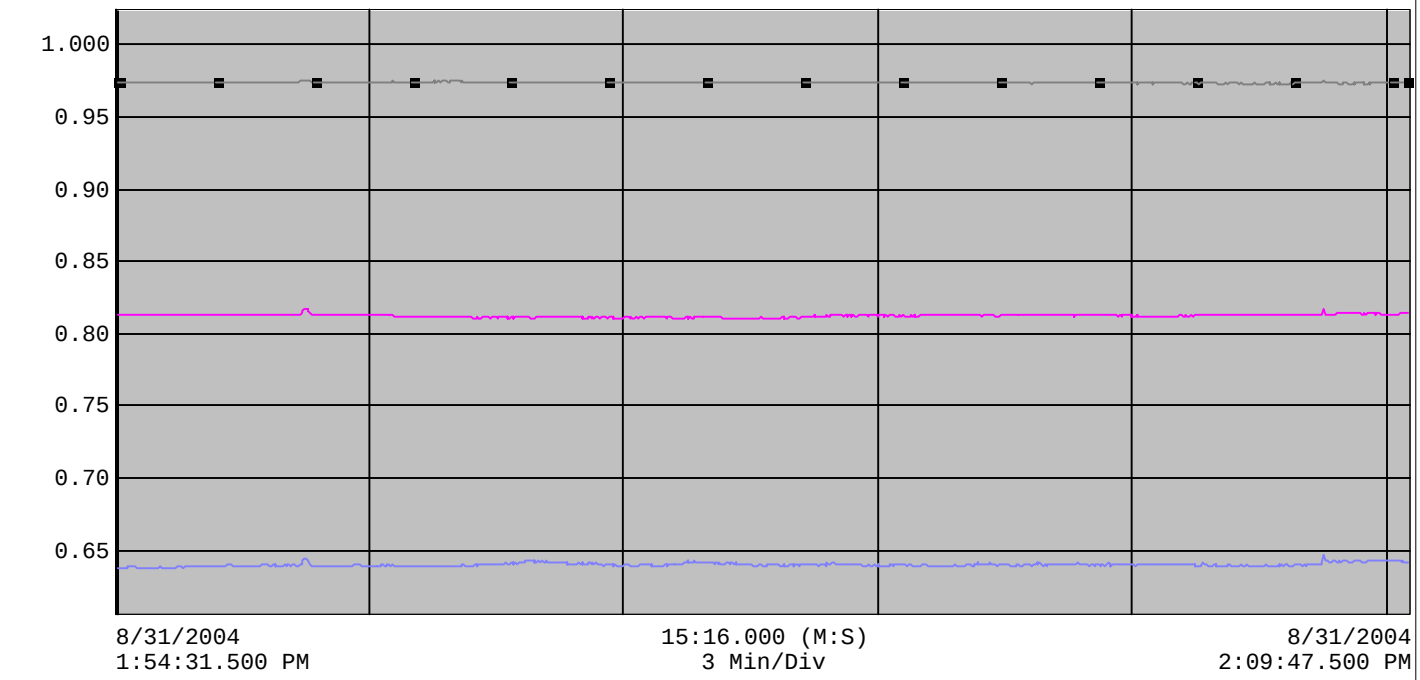
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/31/2004	1:54:31.500 PM	2.429E+3	5.333	4.854E+3	Wh
W-hours Line2	8/31/2004	1:54:31.500 PM	2.634E+3	5.781	5.261E+3	Wh
W-hours Line3	8/31/2004	1:54:31.500 PM	1.228E+3	2.698	2.456E+3	Wh
W-hours Sum of Phases	8/31/2004	1:54:31.500 PM	6.291E+3	13.81	12.57E+3	Wh
VAR-hours Line1	8/31/2004	1:54:31.500 PM	575.0	1.231	1.152E+3	VARh
VAR-hours Line2	8/31/2004	1:54:31.500 PM	1.896E+3	4.159	3.785E+3	VARh
VAR-hours Line3	8/31/2004	1:54:31.500 PM	1.476E+3	3.242	2.951E+3	VARh
VAR-hours Sum of Phases	8/31/2004	1:54:31.500 PM	3.947E+3	8.667	7.888E+3	VARh

8/31/2004 - 1:54:31.000 PM
Val
5.333 — W-hours Line1
5.781 — W-hours Line2
2.698 — W-hours Line3
13.81 — W-hours Sum of Phases
1.231 — VAR-hours Line1
4.159 — VAR-hours Line2
3.242 — VAR-hours Line3
8.667 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/31/2004	1:54:31.500 PM	0.973	0.972	0.975	
PF Line2	8/31/2004	1:54:31.500 PM	0.812	0.810	0.816	
PF Line3	8/31/2004	1:54:31.500 PM	0.640	0.637	0.646	

8/31/2004 - 1:54:31.000 PM
Val
0.973 — PF Line1
0.813 — PF Line2
0.637 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M20A\083104-M20A.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS M-20A ,

Comments

Recording at motor starter overload relay. Autotransformer motor starter disconnected. Phase monitor installed but not connected to circuit. GWA Generator and transfer swtich. GPA meter 57-396-216, non-demand type. GPA power served by (3) 100 KVA transformers.

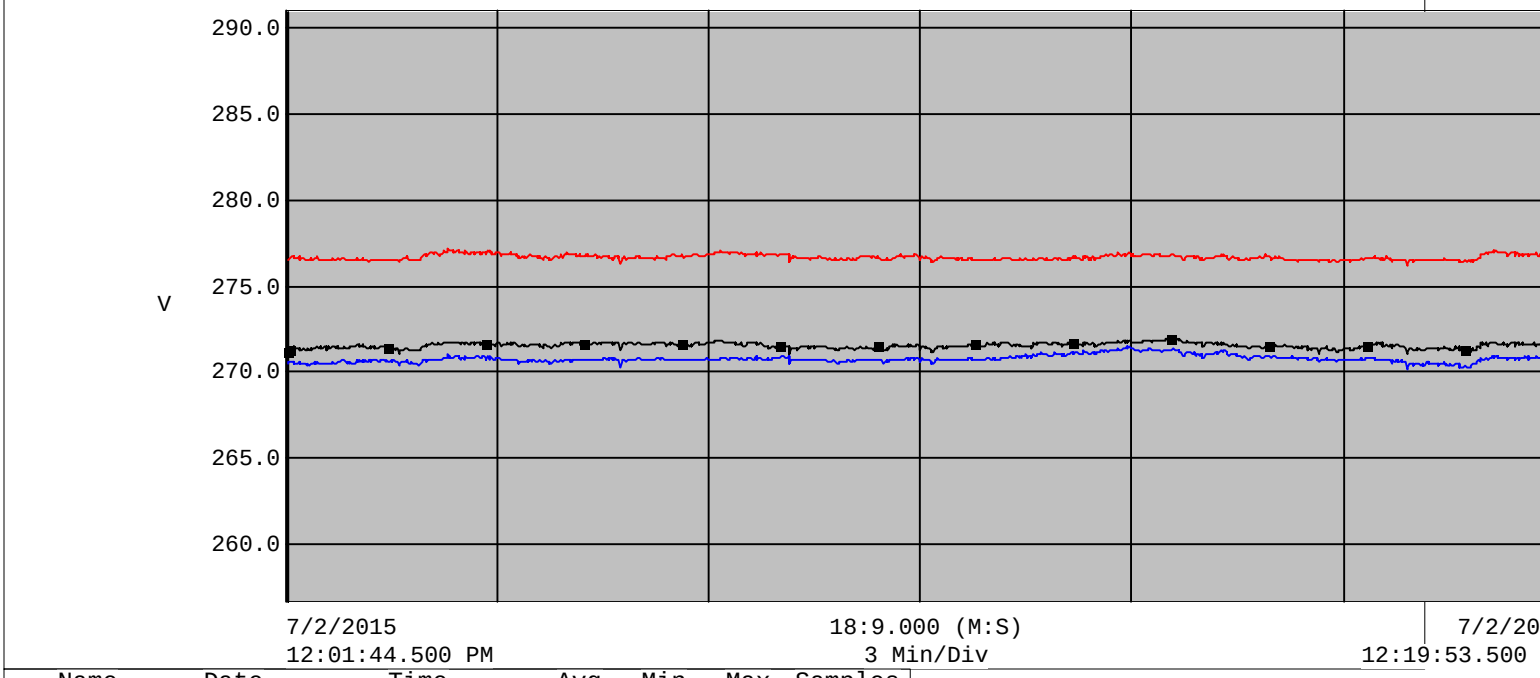
GWA Water Pumping Station Assessment				
Station Name: M-23	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 07/02/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.6	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	3	0.15	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.5	
Generator Condition	10.0%	2	0.2	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	3	0.15	
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	3	0.15	
Chlorination Motor Starter	**5.0%**		0.11	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	2	0.02	37
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.085	
Pressure	1.5%	0	0	
Flow	1.5%	3	0.045	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**5.0%**		0.1	
Lighting	3.0%	2	0.06	61
Power Devices	2.0%	2	0.04	62
	100%	**Assessment Value**		**2.6**

Comments:

WPS M-23

Recording Start Date	7/2/2015 - 12:01:44 PM
Recording Duration	18:09 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

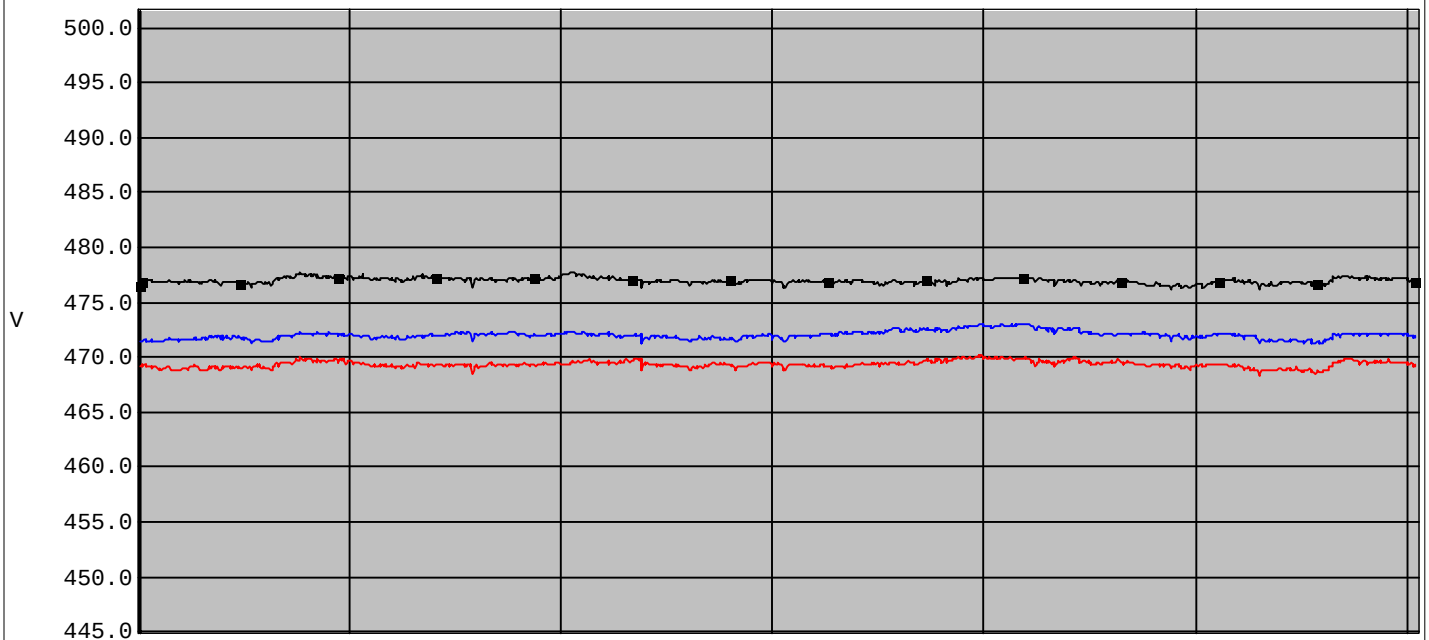
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	7/2/2015	12:01:44.500 PM	271.5	271.0	271.9	1090
Vrms Line2	7/2/2015	12:01:44.500 PM	276.6	276.1	277.1	1090
Vrms Line3	7/2/2015	12:01:44.500 PM	270.7	270.1	271.4	1090

7/2/2015 - 12:01:44.000 PM
Val
271.1 Vrms Line1
276.5 Vrms Line2
270.4 Vrms Line3

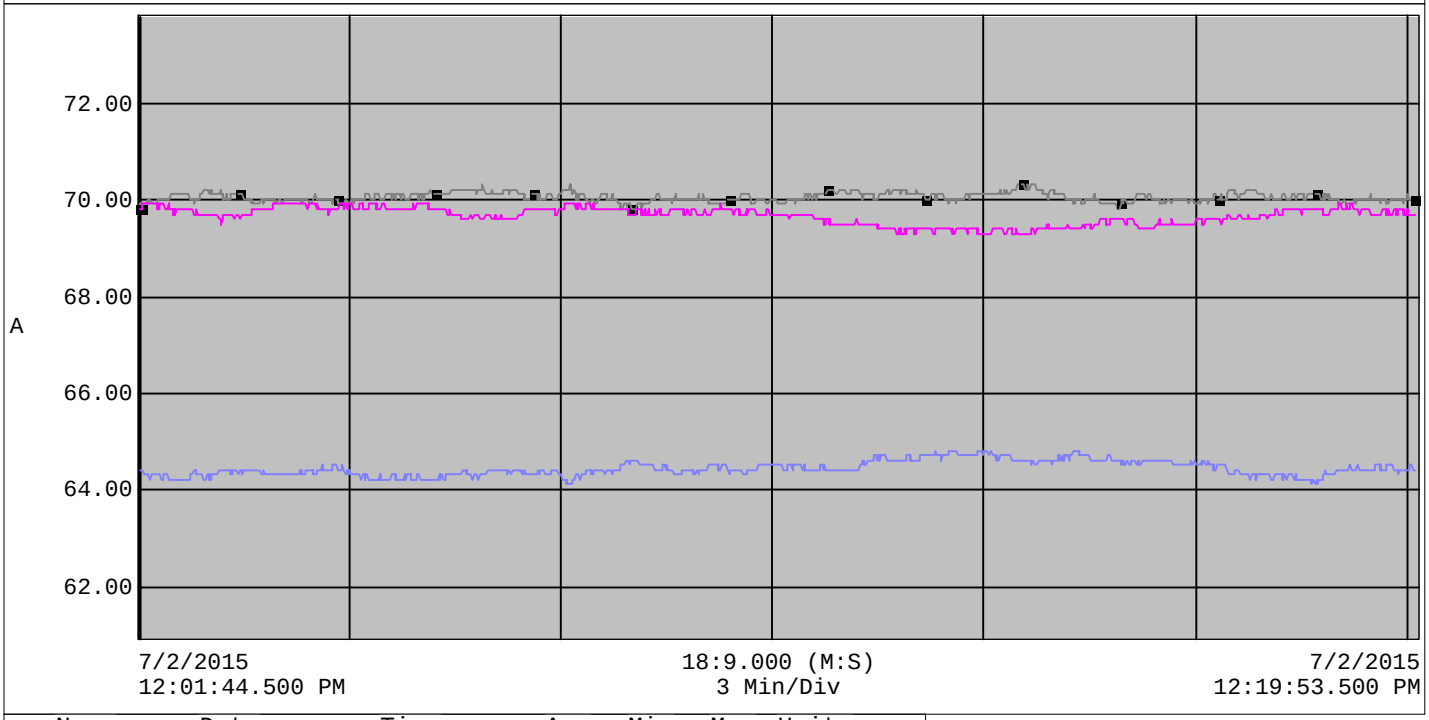
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	7/2/2015	12:01:44.500 PM	476.9	476.0	477.7	V
Urms Line2	7/2/2015	12:01:44.500 PM	469.3	468.2	470.1	V
Urms Line3	7/2/2015	12:01:44.500 PM	471.9	471.1	473.0	V

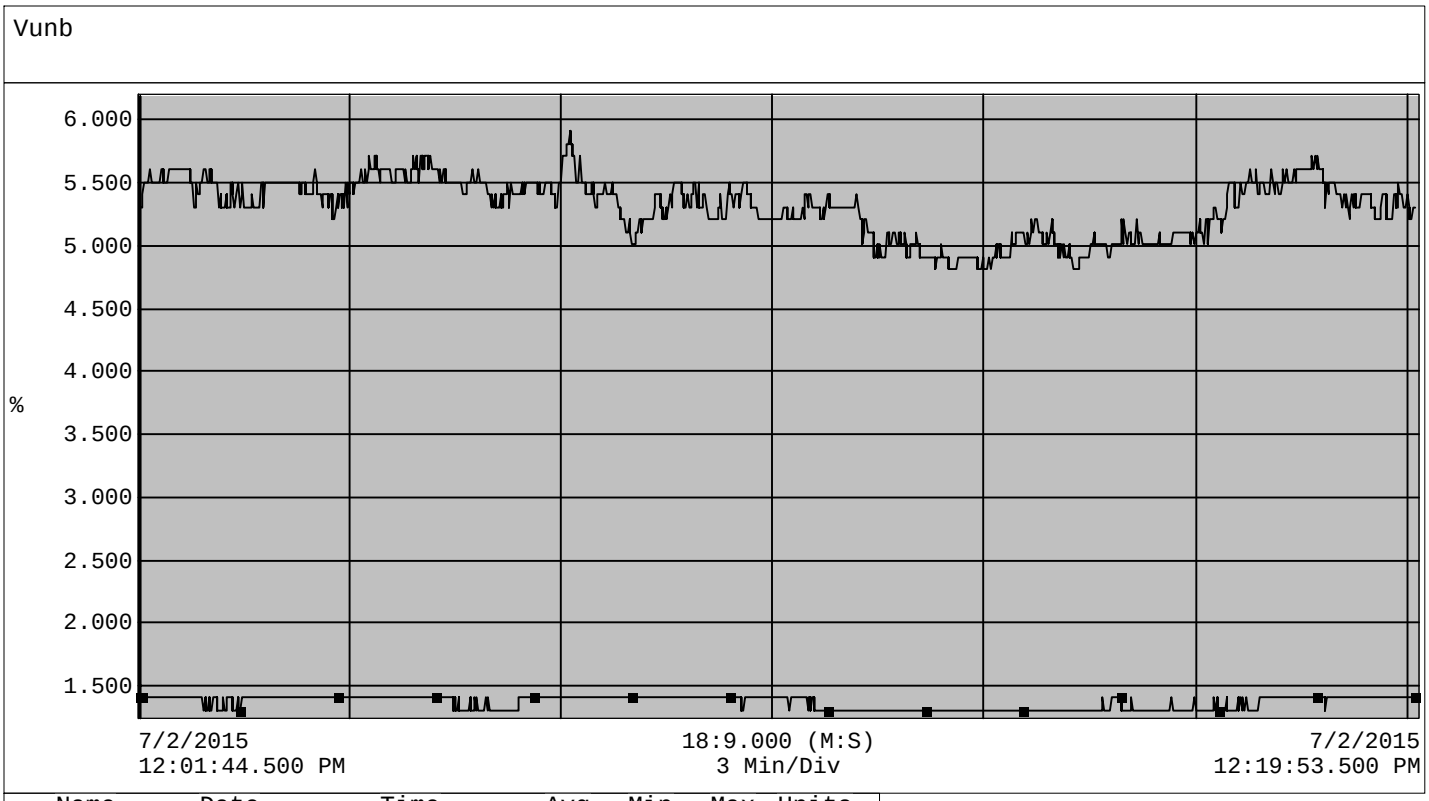
7/2/2015 - 12:01:44.000 PM
Val
476.5 — Urms Line1
469.0 — Urms Line2
471.3 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	7/2/2015	12:01:44.500 PM	70.04	69.80	70.30	A
Arms Line2	7/2/2015	12:01:44.500 PM	69.66	69.30	69.90	A
Arms Line3	7/2/2015	12:01:44.500 PM	64.43	64.10	64.80	A

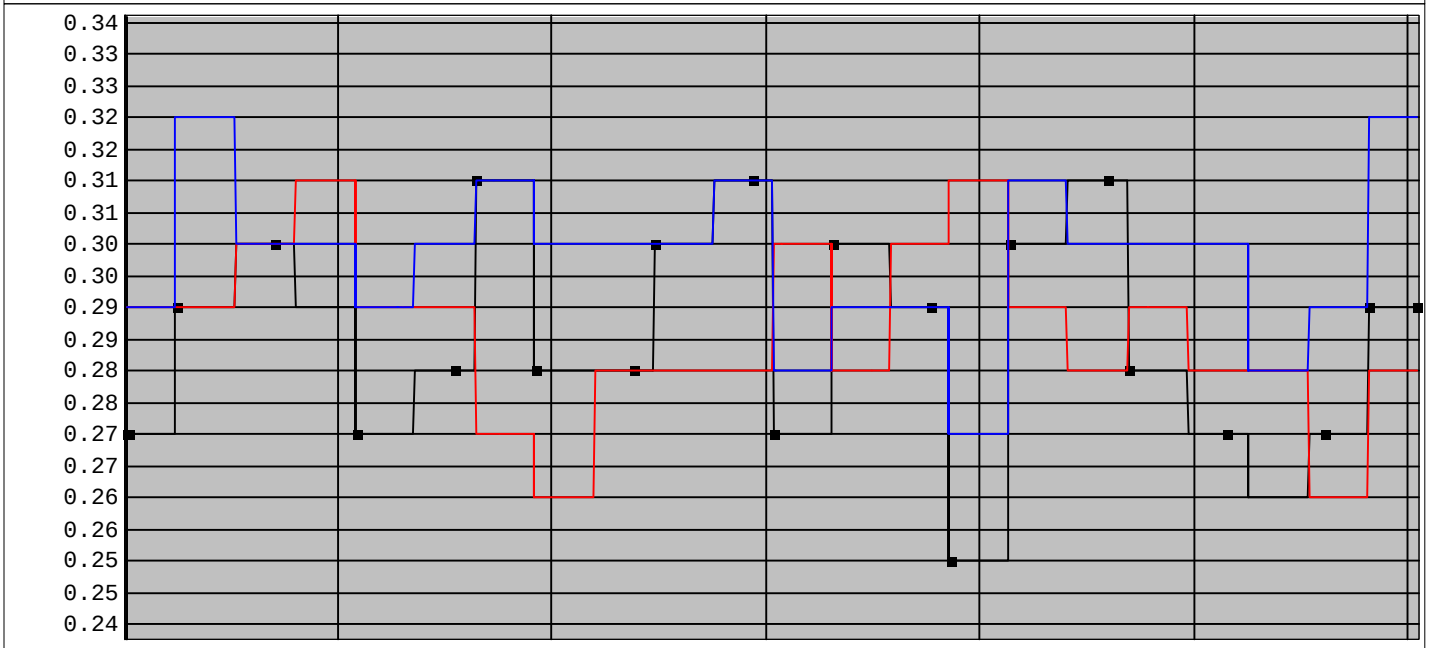
7/2/2015 - 12:01:44.000 PM
Val
69.90 — Arms Line1
69.80 — Arms Line2
64.40 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	7/2/2015	12:01:44.500 PM	1.360	1.300	1.400	%
Aunb(IEEE)	7/2/2015	12:01:44.500 PM	5.299	4.800	5.900	%

7/2/2015 - 12:01:44.000 PM
Val
1.400 —— Vunb(IEEE)
5.300 —— Aunb(IEEE)

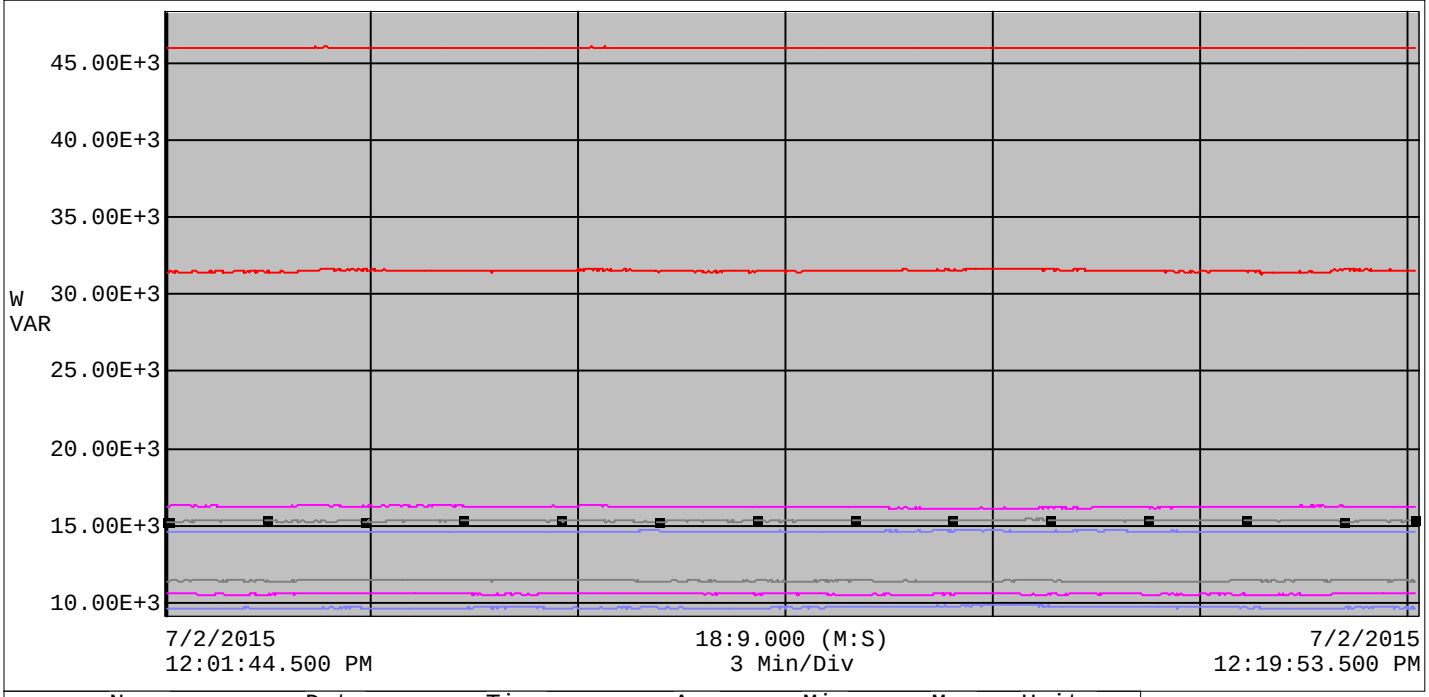
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	7/2/2015	12:01:44.500 PM	0.285	0.250	0.310	
Vflk Line2	7/2/2015	12:01:44.500 PM	0.286	0.260	0.310	
Vflk Line3	7/2/2015	12:01:44.500 PM	0.298	0.270	0.320	

7/2/2015 - 12:01:44.000 PM
Val
0.270 — Vflk Line1
0.290 — Vflk Line2
0.290 — Vflk Line3

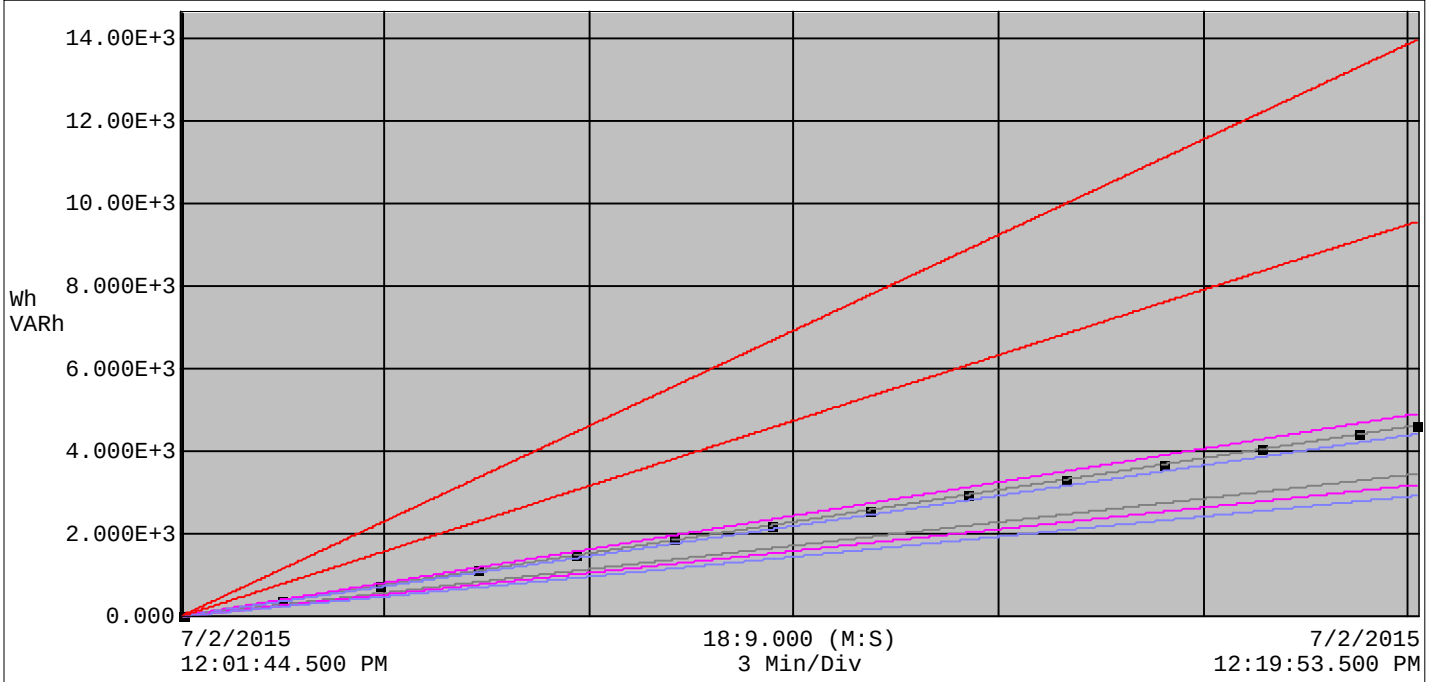
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	7/2/2015	12:01:44.500 PM	15.25E+3	15.17E+3	15.36E+3	W
W Line2	7/2/2015	12:01:44.500 PM	16.16E+3	16.04E+3	16.26E+3	W
W Line3	7/2/2015	12:01:44.500 PM	14.55E+3	14.47E+3	14.64E+3	W
W Sum of Phases	7/2/2015	12:01:44.500 PM	45.96E+3	45.90E+3	46.00E+3	W
VAR Line1	7/2/2015	12:01:44.500 PM	11.36E+3	11.26E+3	11.47E+3	VAR
VAR Line2	7/2/2015	12:01:44.500 PM	10.50E+3	10.40E+3	10.59E+3	VAR
VAR Line3	7/2/2015	12:01:44.500 PM	9.621E+3	9.522E+3	9.781E+3	VAR
VAR Sum of Phases	7/2/2015	12:01:44.500 PM	31.48E+3	31.26E+3	31.64E+3	VAR

7/2/2015 - 12:01:44.000 PM
Val
15.19E+3 — W Line1
16.19E+3 — W Line2
14.56E+3 — W Line3
45.94E+3 — W Sum of Phases
11.31E+3 — VAR Line1
10.51E+3 — VAR Line2
9.551E+3 — VAR Line3
31.38E+3 — VAR Sum of Phases

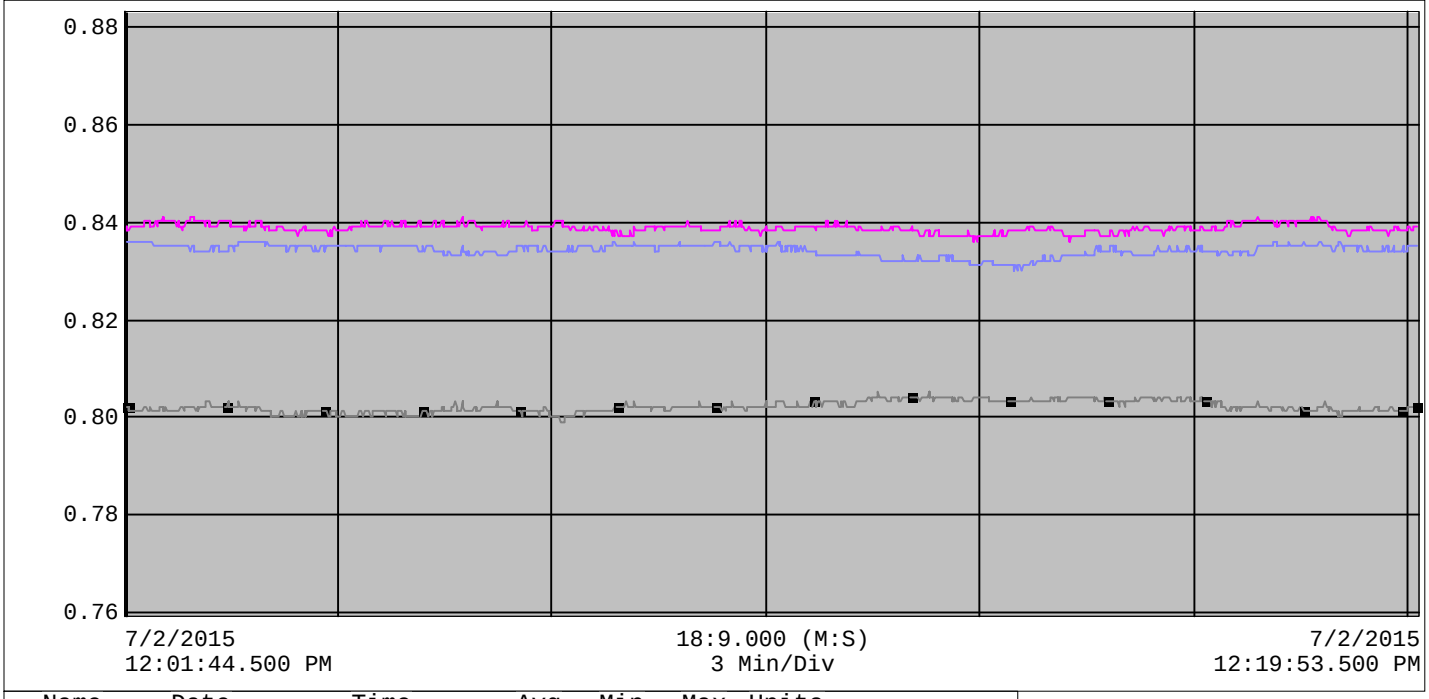
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	7/2/2015	12:01:44.500 PM	2.310E+3	4.227	4.617E+3	Wh
W-hours Line2	7/2/2015	12:01:44.500 PM	2.451E+3	4.480	4.893E+3	Wh
W-hours Line3	7/2/2015	12:01:44.500 PM	2.203E+3	4.033	4.405E+3	Wh
W-hours Sum of Phases	7/2/2015	12:01:44.500 PM	6.964E+3	12.74	13.91E+3	Wh
VAR-hours Line1	7/2/2015	12:01:44.500 PM	1.722E+3	3.148	3.439E+3	VARh
VAR-hours Line2	7/2/2015	12:01:44.500 PM	1.591E+3	2.910	3.178E+3	VARh
VAR-hours Line3	7/2/2015	12:01:44.500 PM	1.456E+3	2.667	2.913E+3	VARh
VAR-hours Sum of Phases	7/2/2015	12:01:44.500 PM	4.769E+3	8.726	9.530E+3	VARh

7/2/2015 - 12:01:44.000 PM
Val
4.227 — W-hours Line1
4.480 — W-hours Line2
4.033 — W-hours Line3
12.74 — W-hours Sum of Phases
3.148 — VAR-hours Line1
2.910 — VAR-hours Line2
2.667 — VAR-hours Line3
8.726 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	7/2/2015	12:01:44.500 PM	0.802	0.799	0.805	
PF Line2	7/2/2015	12:01:44.500 PM	0.839	0.836	0.841	
PF Line3	7/2/2015	12:01:44.500 PM	0.834	0.830	0.836	

7/2/2015 - 12:01:44.000 PM
Val
0.802 — PF Line1
0.839 — PF Line2
0.836 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\M23\070204-M23.dvb	
Operator ,	Test Site ,
Comments	

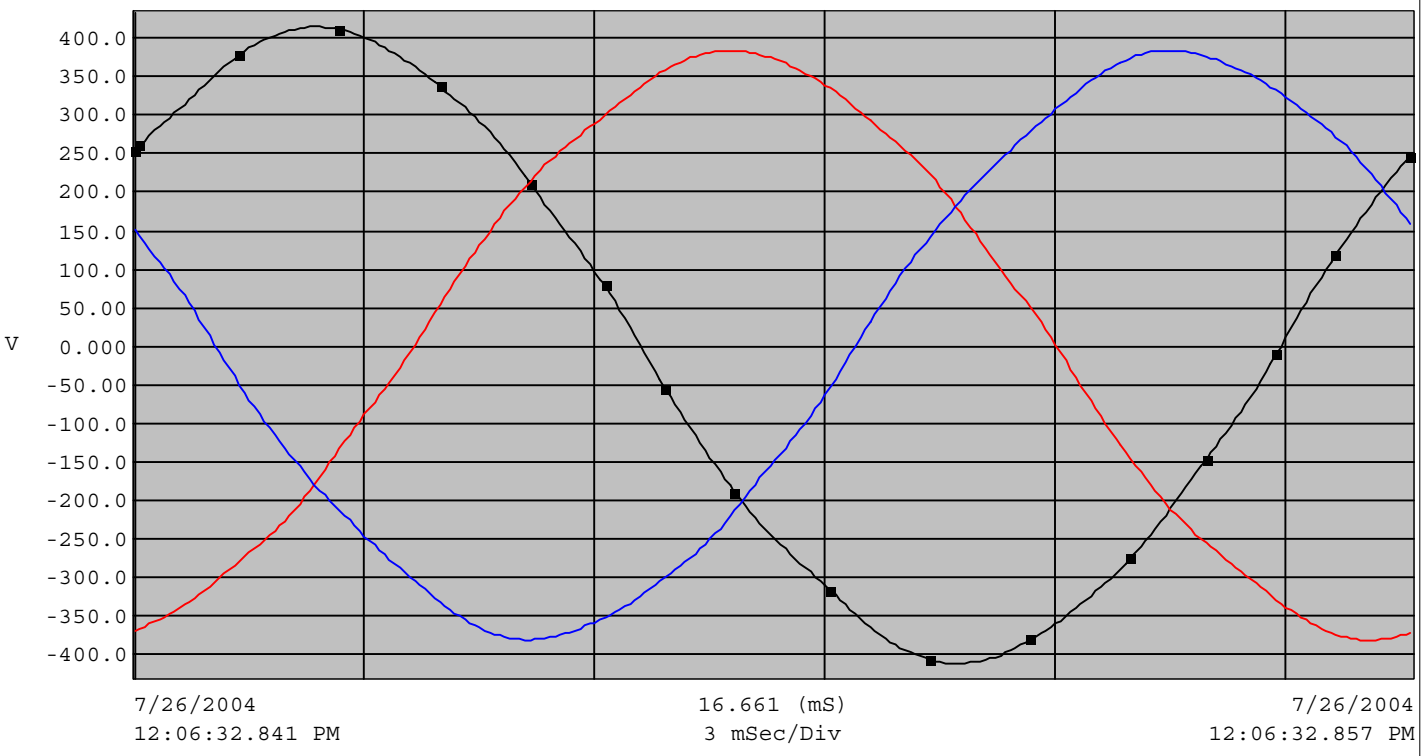
GWA Water Pumping Station Assessment				
Station Name: Y-01	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 06/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.3	
Main Disconnect	10.0%	2	0.2	10
Grounding	5.0%	2	0.1	14
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.55	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	2	0.1	23
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.45	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	1	0.05	34
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.06	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.1**

Comments:

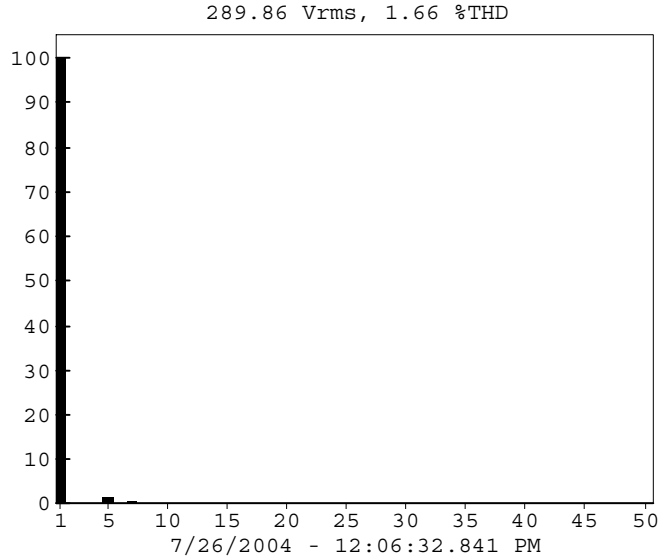
072604 - Y-01 Photo 1

Recording Start Date	7/26/2004 - 12:06:32 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/26/2004	12:06:32.841 PM	16.661	289.9	V
Waveform V2	7/26/2004	12:06:32.841 PM	16.661	268.5	V
Waveform V3	7/26/2004	12:06:32.841 PM	16.661	268.0	V

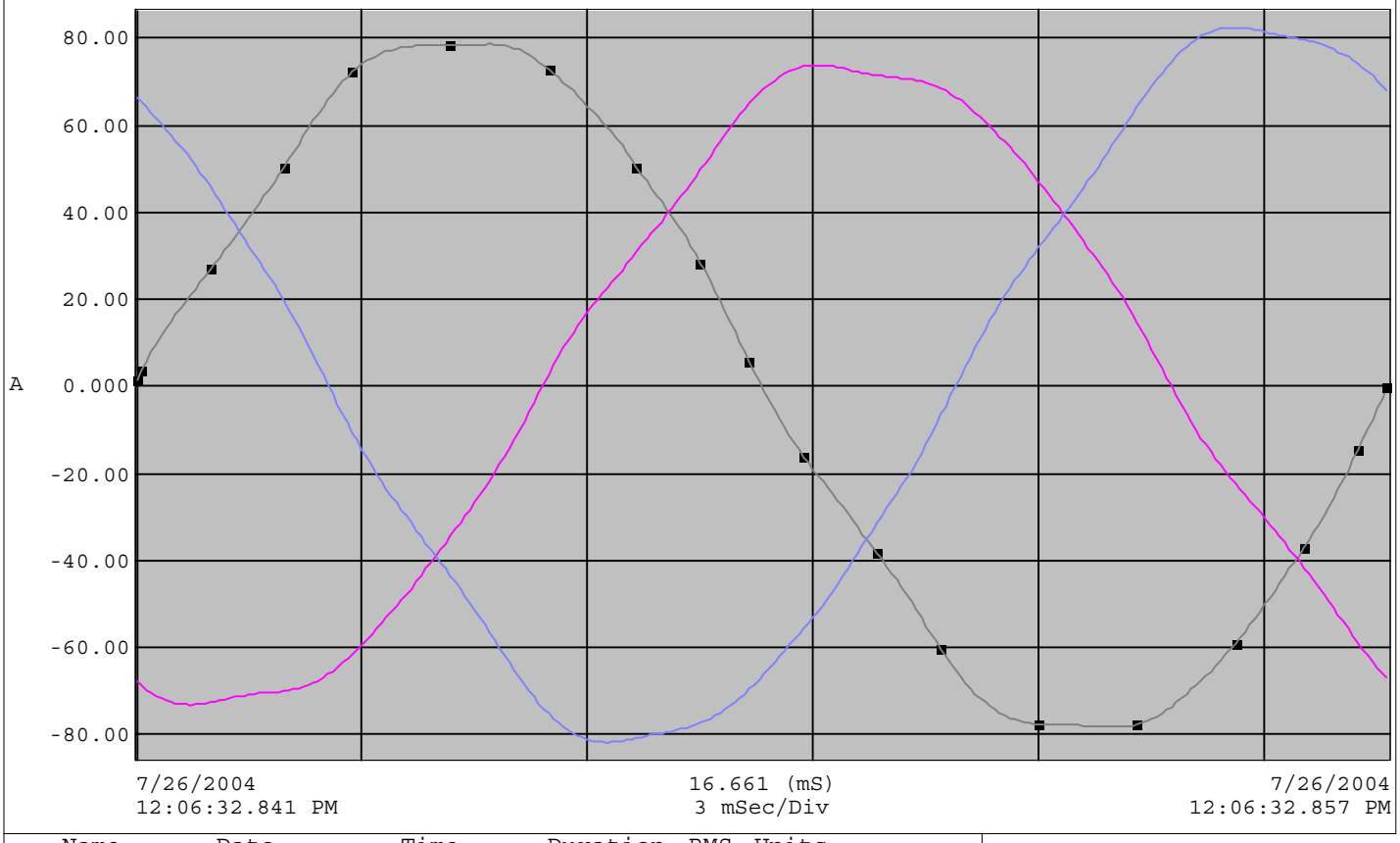


7/26/2004 - 12:06:32.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

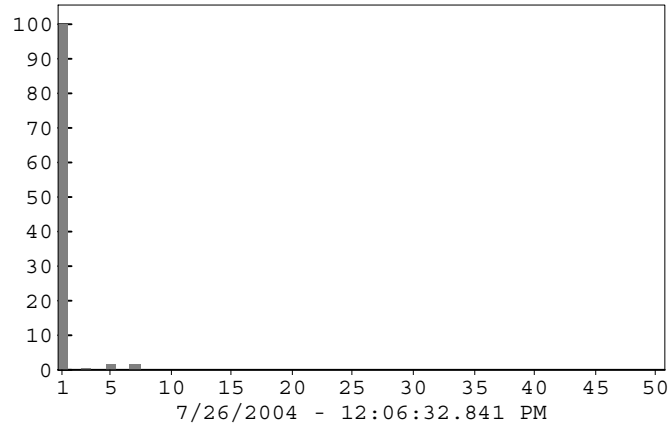
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/26/2004	12:06:32.841 PM	16.661	56.84	A
Waveform I2	7/26/2004	12:06:32.841 PM	16.661	52.27	A
Waveform I3	7/26/2004	12:06:32.841 PM	16.661	57.75	A

Waveform I1
56.84 Arms, 3.02 %THD

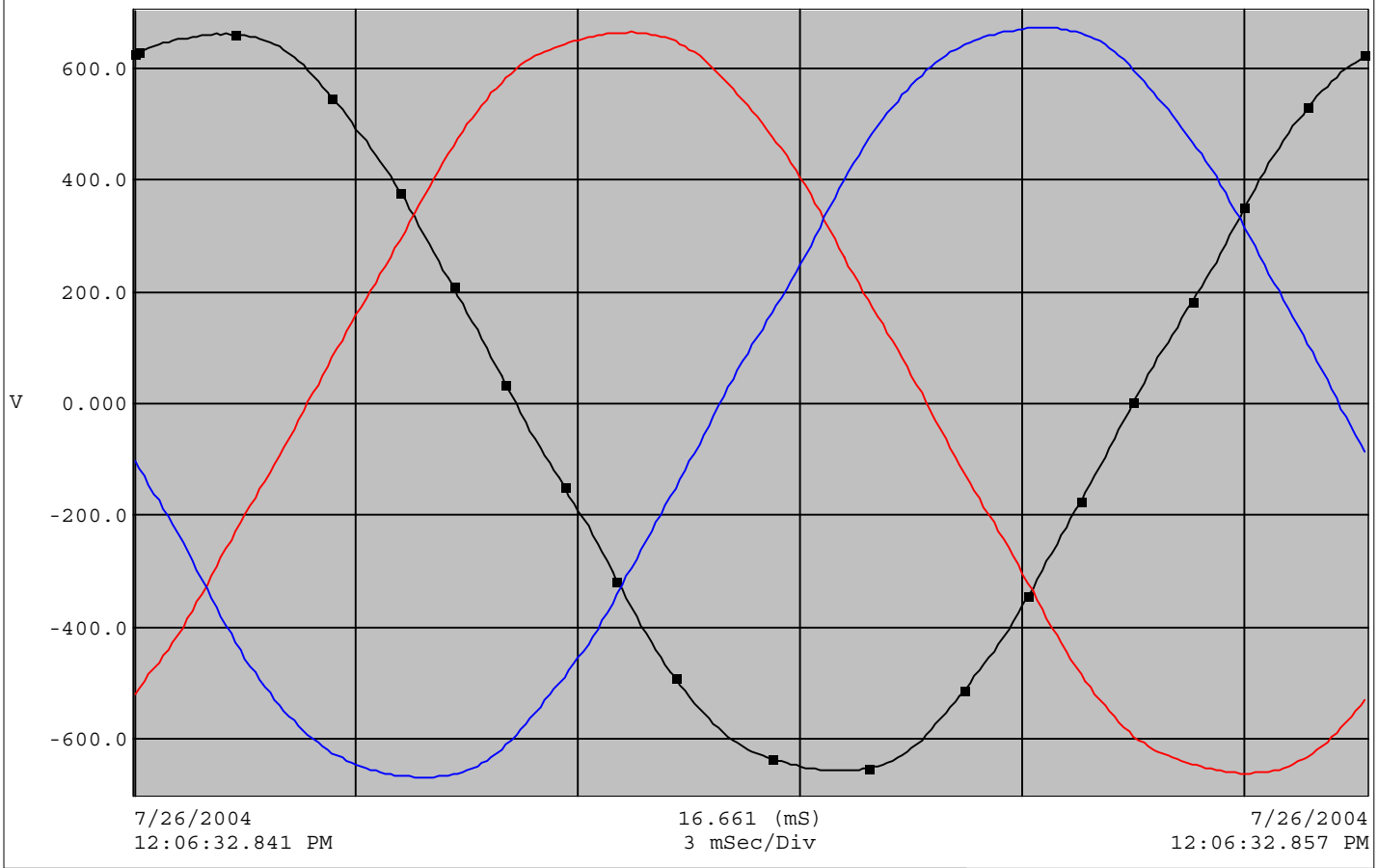


7/26/2004 - 12:06:32.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

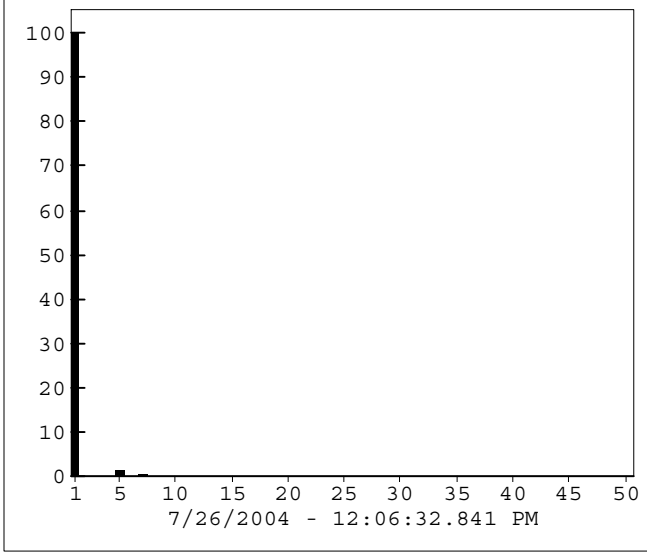
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	1.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/26/2004	12:06:32.841 PM	16.661	474.2	V
Waveform U2	7/26/2004	12:06:32.841 PM	16.661	475.2	V
Waveform U3	7/26/2004	12:06:32.841 PM	16.661	481.2	V

Waveform U1
474.22 Vrms, 1.71 %THD



7/26/2004 - 12:06:32.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/26/2004
Start Time: 12:06:32 PM
Duration: 0:0.000 (M:S)
W: 12.72E+3 W
VAR: 10.56E+3 W
VA: 16.53E+3 W
Power Factor: 0.770
Displacement Power Factor: 0.770
TAN: 0.828
VoltageRatio: 1.000
CurrentRatio: 1.000
```

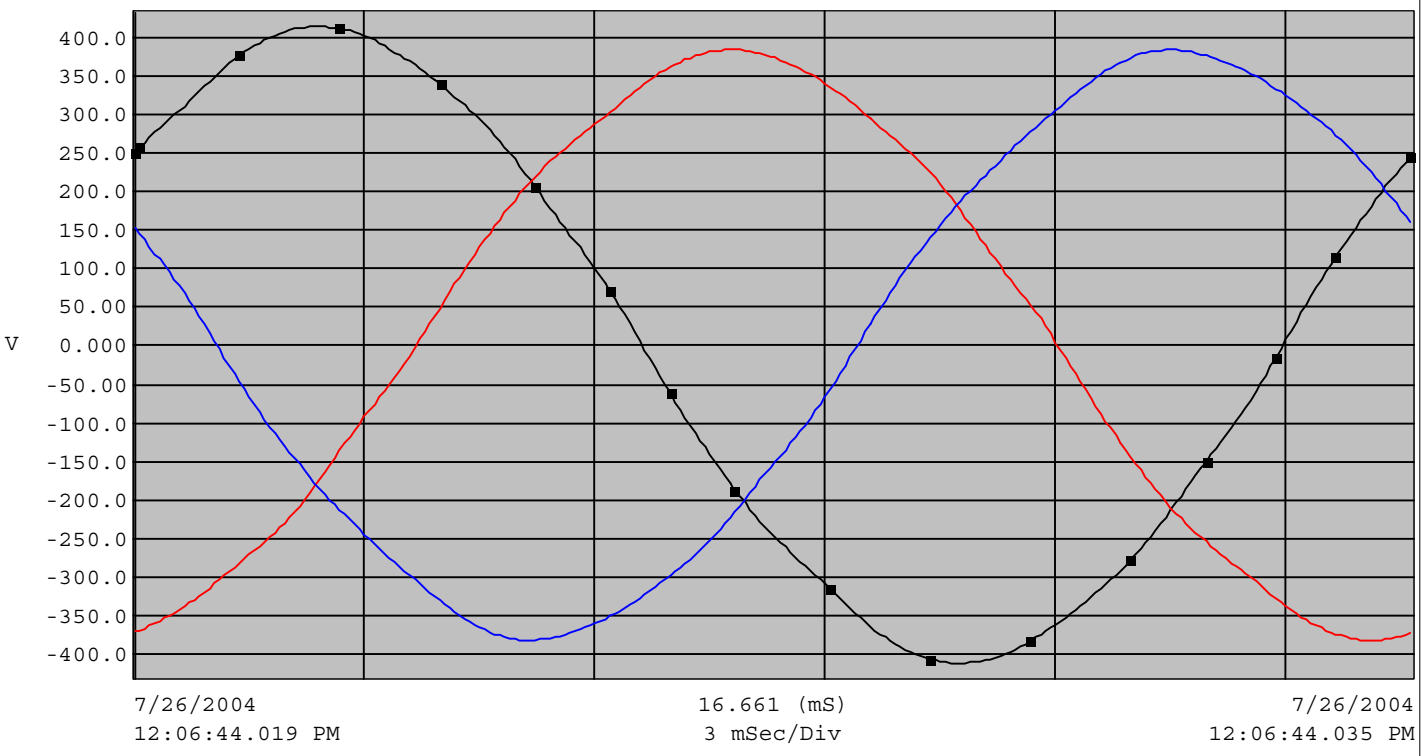
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Y1\072604-Y1-Photo.dvb	
Operator ,	Test Site ,
Comments	

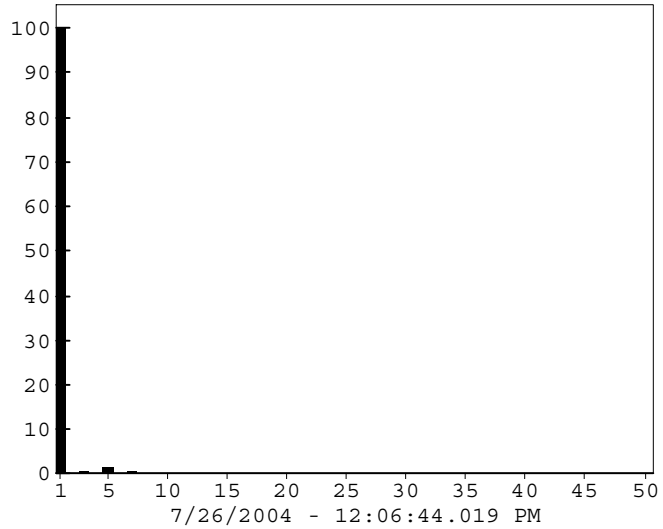
072604 - Y-01 Photo 2

Recording Start Date	7/26/2004 - 12:06:44 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/26/2004	12:06:44.019 PM	16.661	289.9	V
Waveform V2	7/26/2004	12:06:44.019 PM	16.661	268.9	V
Waveform V3	7/26/2004	12:06:44.019 PM	16.661	268.4	V

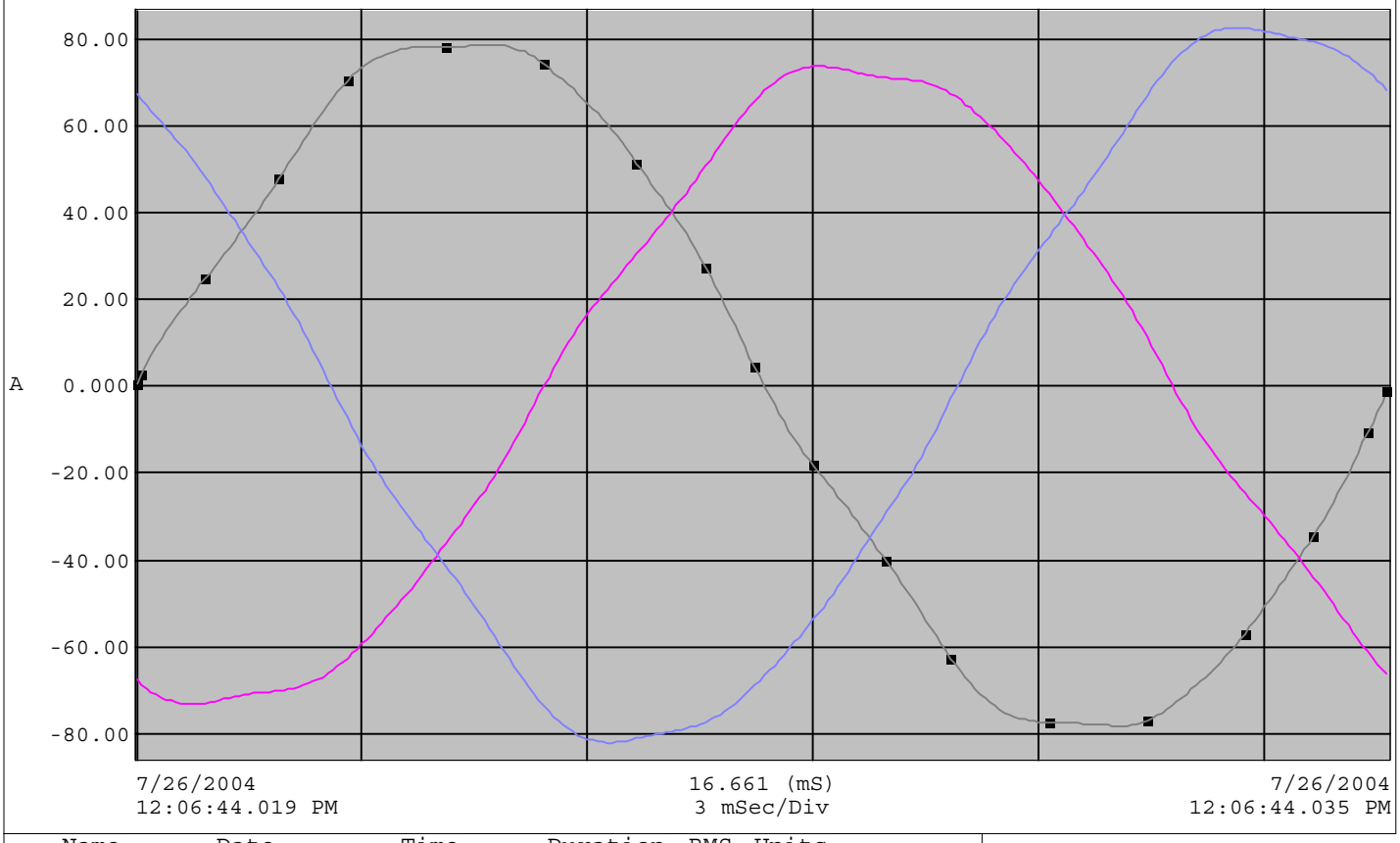


7/26/2004 - 12:06:44.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

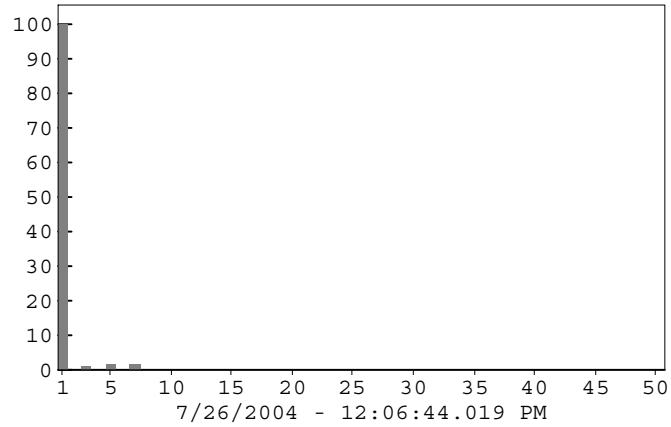
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.4	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/26/2004	12:06:44.019 PM	16.661	56.69	A
Waveform I2	7/26/2004	12:06:44.019 PM	16.661	52.15	A
Waveform I3	7/26/2004	12:06:44.019 PM	16.661	57.84	A

Waveform I1
56.69 Arms, 3.07 %THD

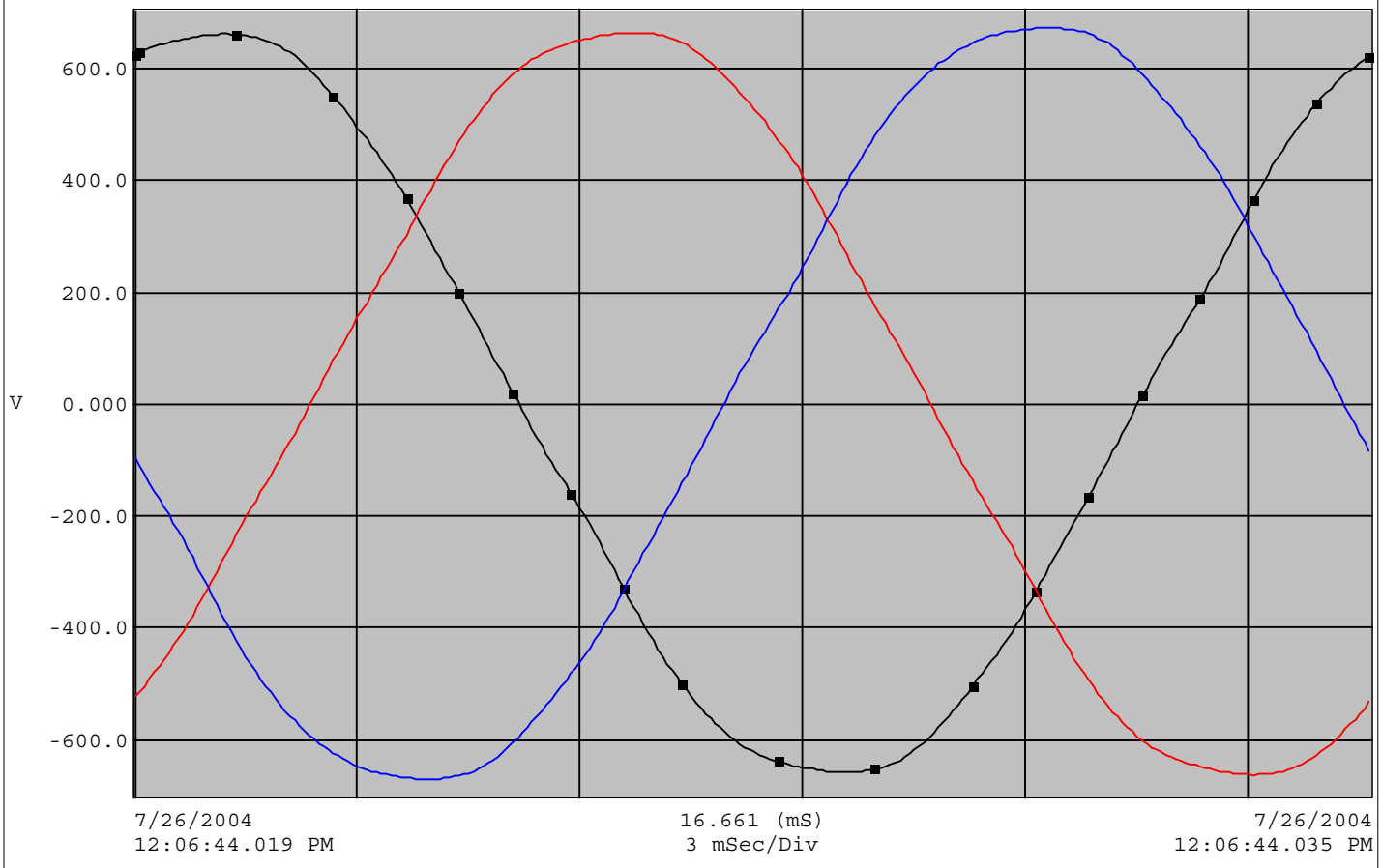


7/26/2004 - 12:06:44.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

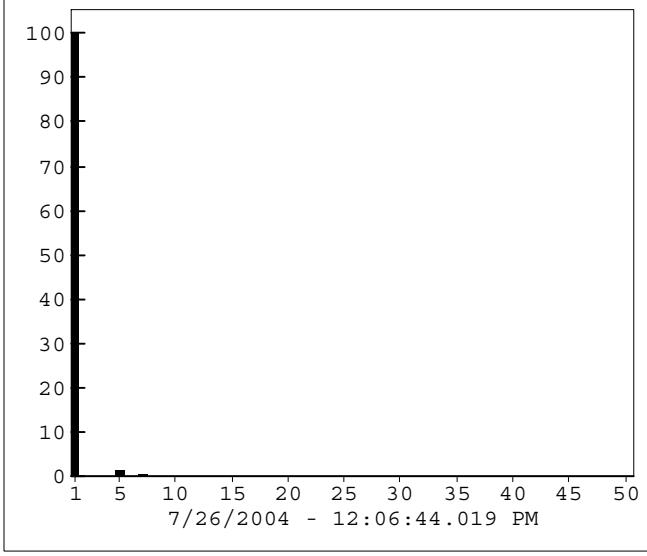
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	1.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.9	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/26/2004	12:06:44.019 PM	16.661	474.5	V
Waveform U2	7/26/2004	12:06:44.019 PM	16.661	475.8	V
Waveform U3	7/26/2004	12:06:44.019 PM	16.661	481.8	V

Waveform U1
474.54 Vrms, 1.73 %THD



7/26/2004 - 12:06:44.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.5	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/26/2004
Start Time: 12:06:44 PM
Duration: 0:0.000 (M:S)
W: 12.70E+3 W
VAR: 10.56E+3 W
VA: 16.52E+3 W
Power Factor: 0.769
Displacement Power Factor: 0.769
TAN: 0.830
VoltageRatio: 1.000
CurrentRatio: 1.000
```

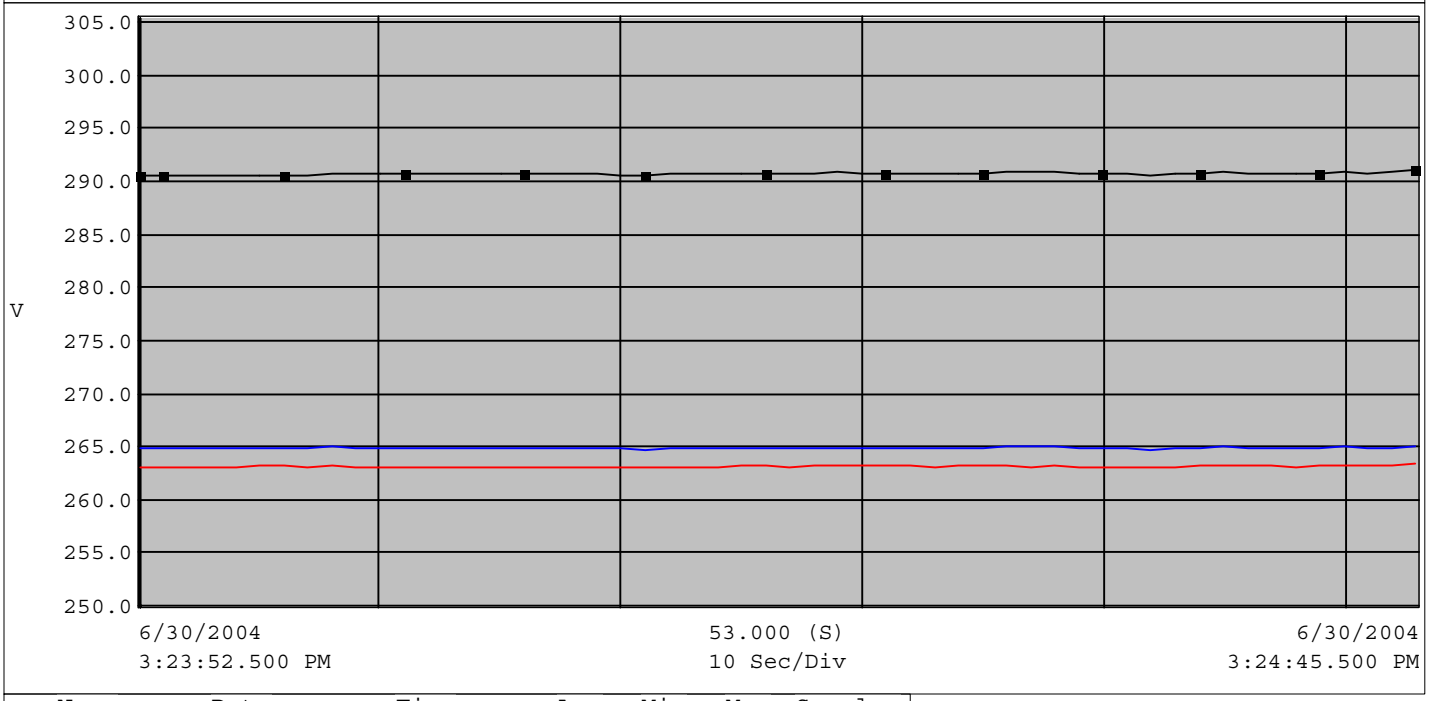
Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Y1\072604-Y1-Photo2.dvb	
Operator ,	Test Site ,
Comments	

063004 - Y-01 Trend

Recording Start Date	6/30/2004 - 3:23:52 PM
Recording Duration	53 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

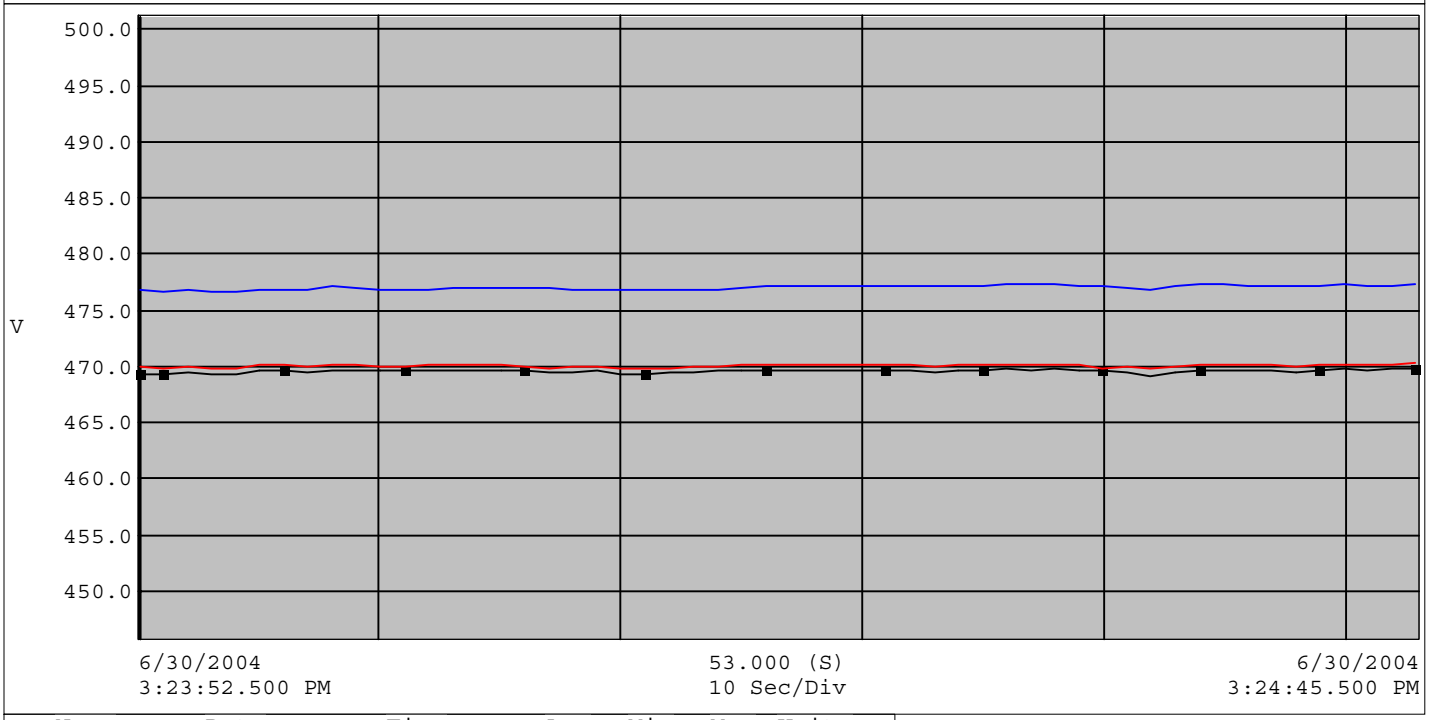
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	6/30/2004	3:23:52.500 PM	290.6	290.4	290.9	54
Vrms Line2	6/30/2004	3:23:52.500 PM	263.0	262.9	263.3	54
Vrms Line3	6/30/2004	3:23:52.500 PM	264.8	264.6	264.9	54

6/30/2004 - 3:23:52.000 PM
Val
290.4 — Vrms Line1
263.0 — Vrms Line2
264.7 — Vrms Line3

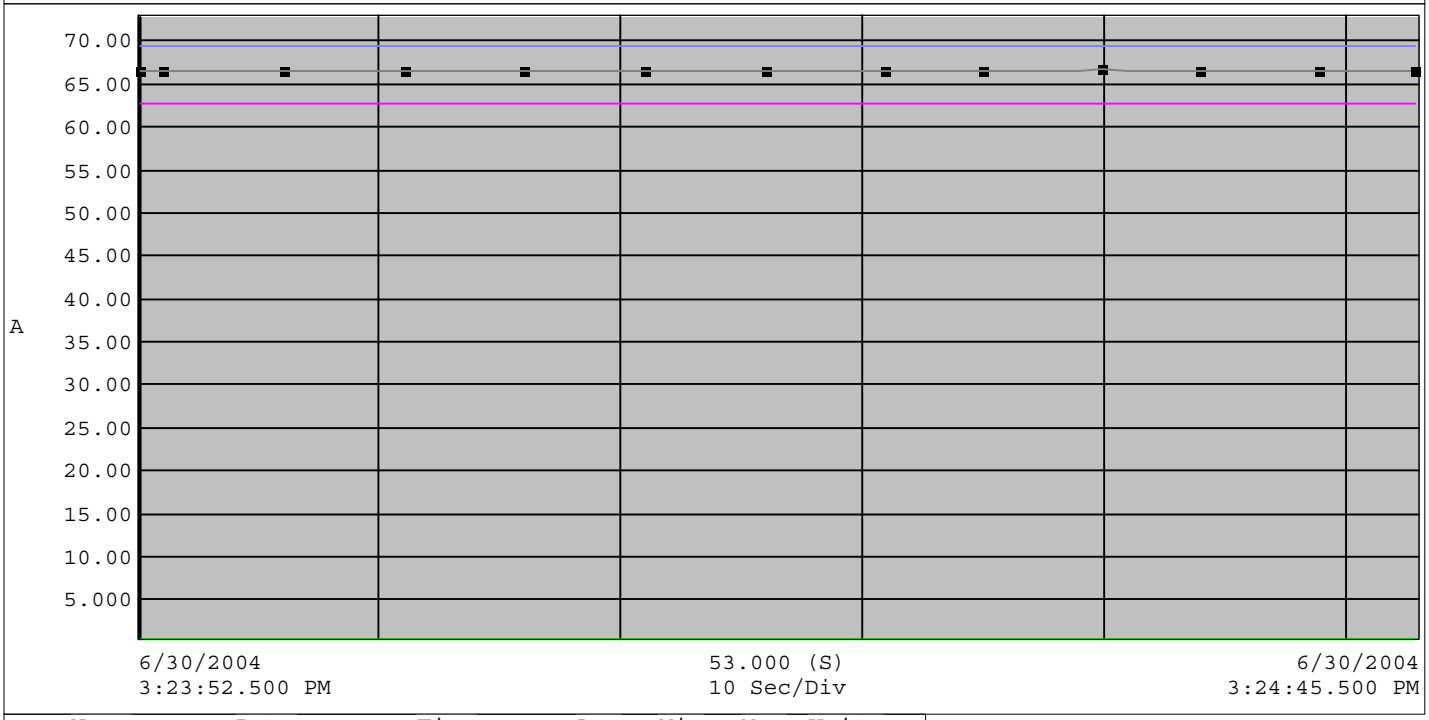
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	6/30/2004	3:23:52.500 PM	469.5	469.1	469.8	V
Urms Line2	6/30/2004	3:23:52.500 PM	470.0	469.7	470.2	V
Urms Line3	6/30/2004	3:23:52.500 PM	476.9	476.6	477.3	V

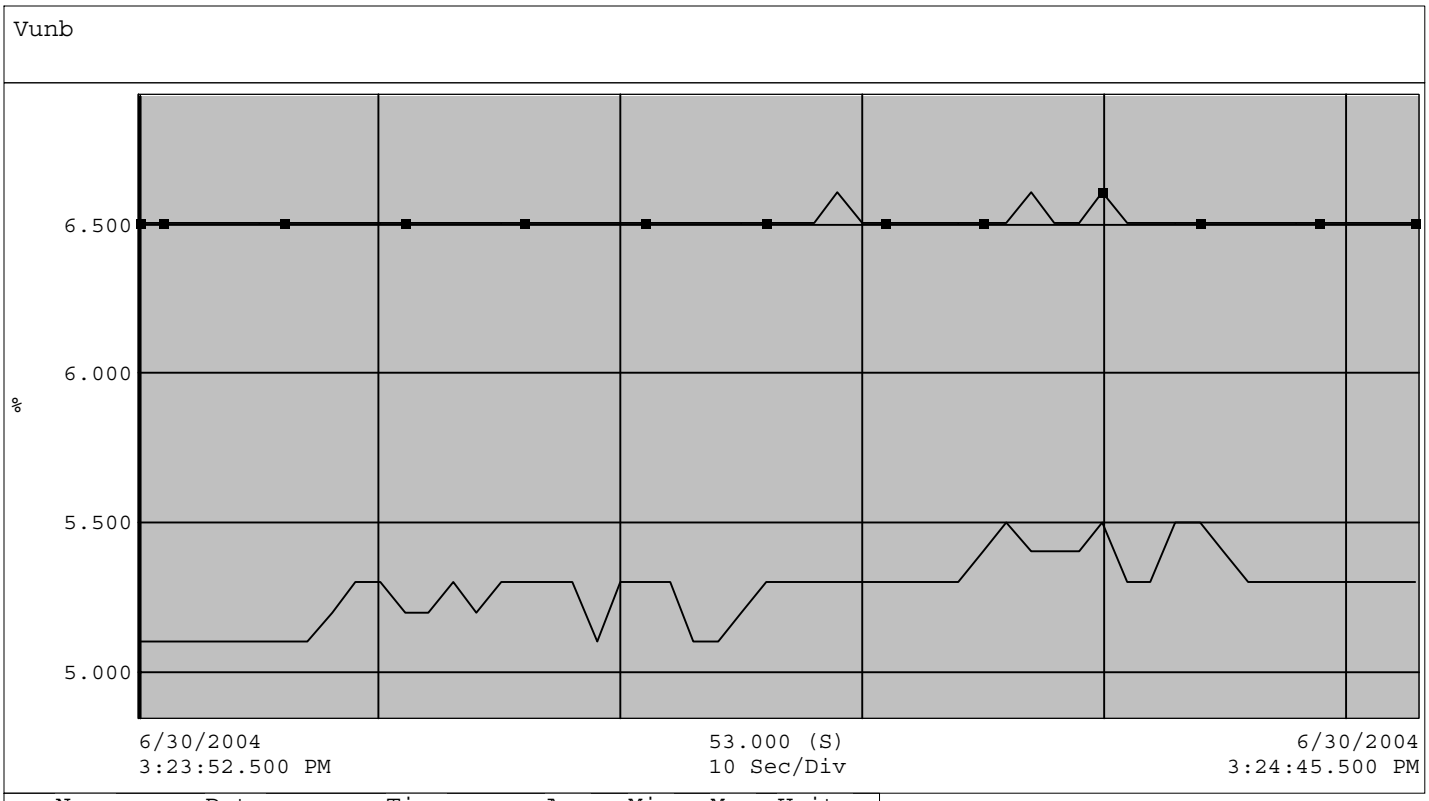
6/30/2004 - 3:23:52.000 PM
Val
469.3 — Urms Line1
469.9 — Urms Line2
476.7 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	6/30/2004	3:23:52.500 PM	66.46	66.40	66.60	A
Arms Line2	6/30/2004	3:23:52.500 PM	62.61	62.50	62.70	A
Arms Line3	6/30/2004	3:23:52.500 PM	69.27	69.20	69.40	A
Arms Neutral	6/30/2004	3:23:52.500 PM	0.300	0.300	0.300	A

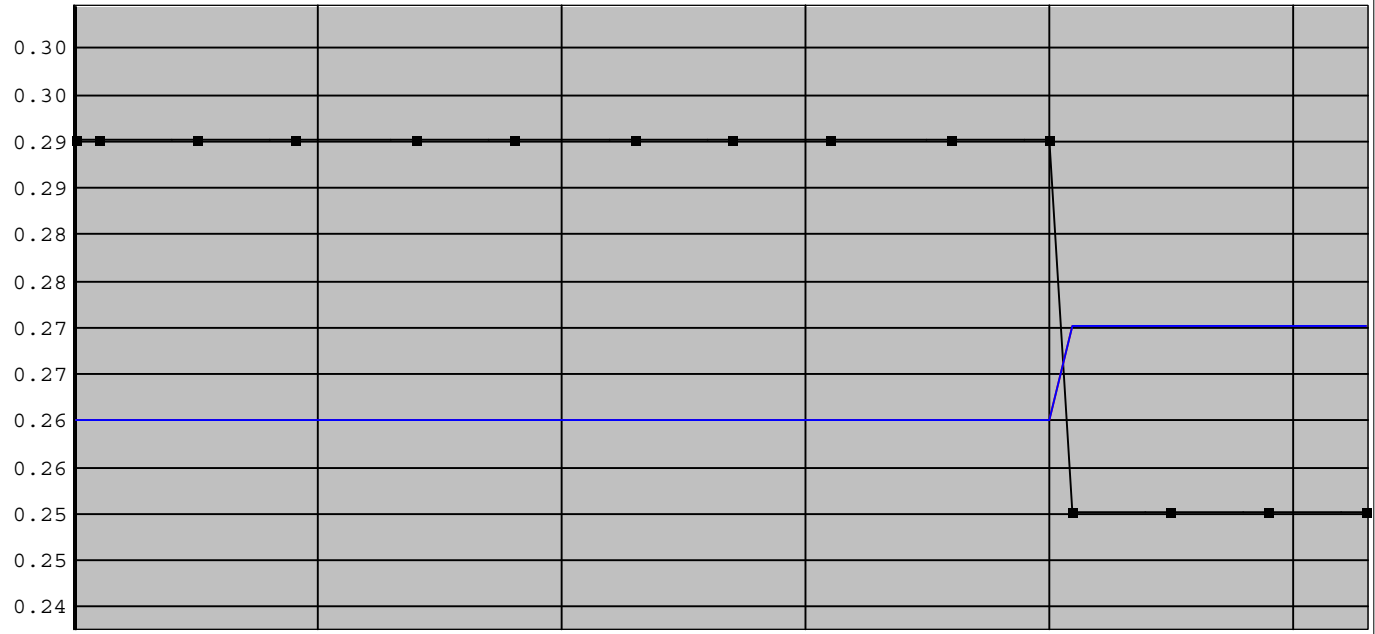
6/30/2004 - 3:23:52.000 PM
Val
66.40 — Arms Line1
62.70 — Arms Line2
69.20 — Arms Line3
0.300 — Arms Neutral



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	6/30/2004	3:23:52.500 PM	6.506	6.500	6.600	%
Aunb(IEEE)	6/30/2004	3:23:52.500 PM	5.274	5.100	5.500	%

6/30/2004 - 3:23:52.000 PM
Val
6.500 ── Vunb(IEEE)
5.100 ── Aunb(IEEE)

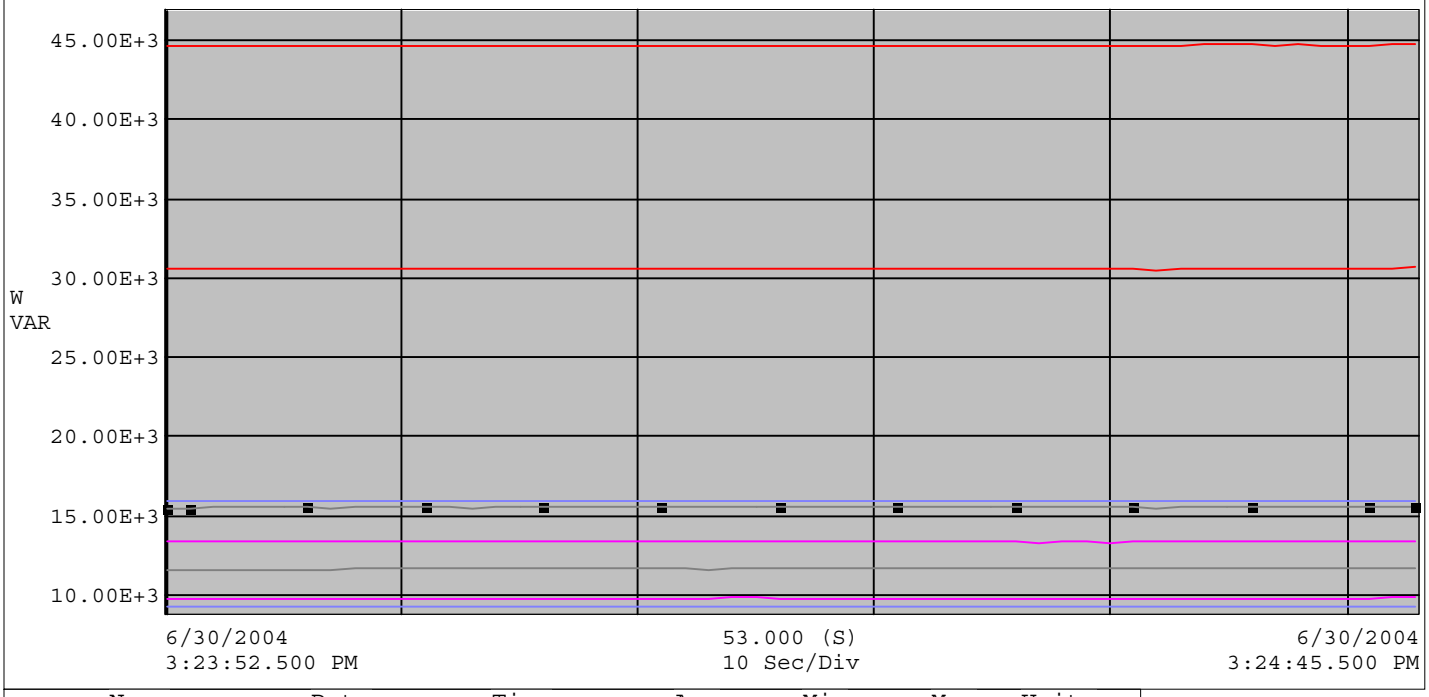
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	6/30/2004	3:23:52.500 PM	0.280	0.250	0.290	
Vflk Line2	6/30/2004	3:23:52.500 PM	0.262	0.260	0.270	
Vflk Line3	6/30/2004	3:23:52.500 PM	0.262	0.260	0.270	

6/30/2004 - 3:23:52.000 PM
Val
0.290 Vflk Line1
0.260 Vflk Line2
0.260 Vflk Line3

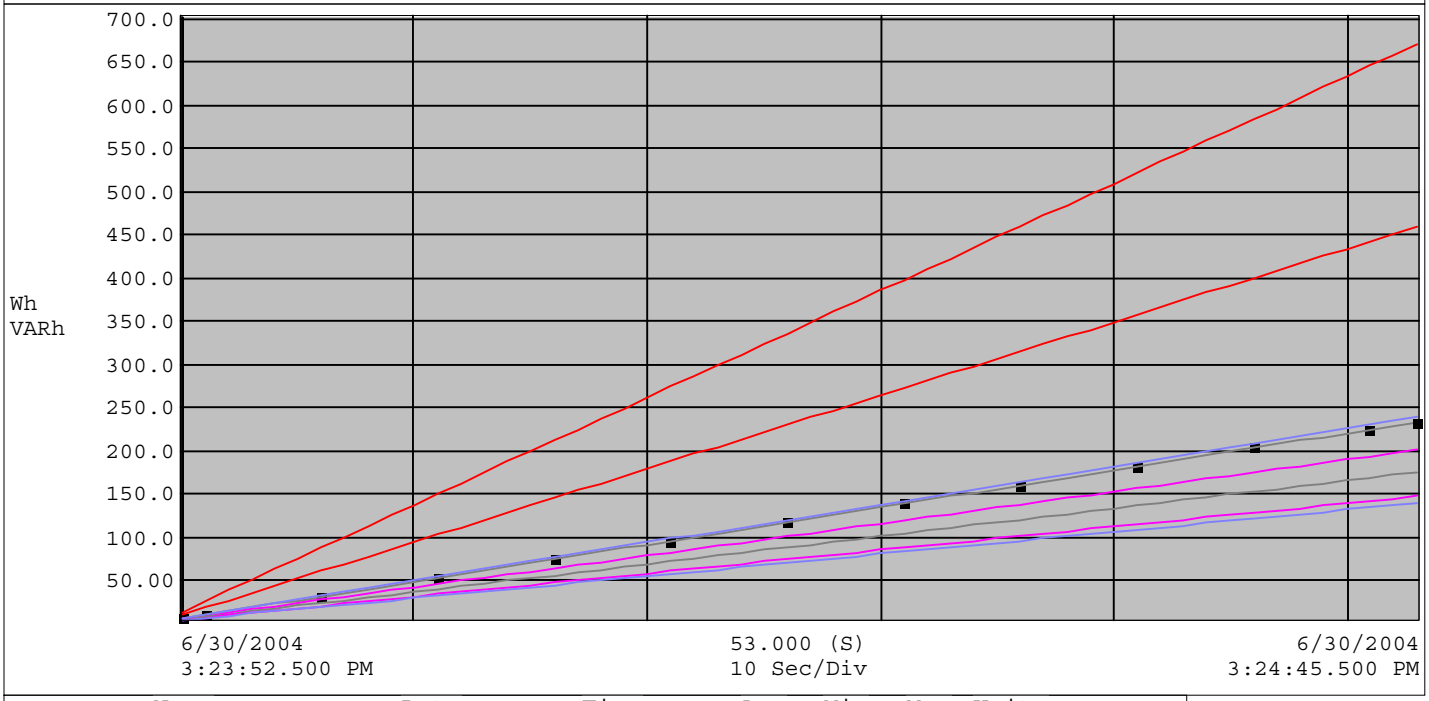
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	6/30/2004	3:23:52.500 PM	15.46E+3	15.44E+3	15.48E+3	W
W Line2	6/30/2004	3:23:52.500 PM	13.28E+3	13.25E+3	13.31E+3	W
W Line3	6/30/2004	3:23:52.500 PM	15.87E+3	15.84E+3	15.91E+3	W
W Sum of Phases	6/30/2004	3:23:52.500 PM	44.61E+3	44.59E+3	44.65E+3	W
VAR Line1	6/30/2004	3:23:52.500 PM	11.59E+3	11.54E+3	11.64E+3	VAR
VAR Line2	6/30/2004	3:23:52.500 PM	9.733E+3	9.700E+3	9.762E+3	VAR
VAR Line3	6/30/2004	3:23:52.500 PM	9.200E+3	9.177E+3	9.216E+3	VAR
VAR Sum of Phases	6/30/2004	3:23:52.500 PM	30.53E+3	30.46E+3	30.60E+3	VAR

6/30/2004 - 3:23:52.000 PM
Val
15.44E+3 — W Line1
13.30E+3 — W Line2
15.85E+3 — W Line3
44.59E+3 — W Sum of Phases
11.55E+3 — VAR Line1
9.724E+3 — VAR Line2
9.200E+3 — VAR Line3
30.47E+3 — VAR Sum of Phases

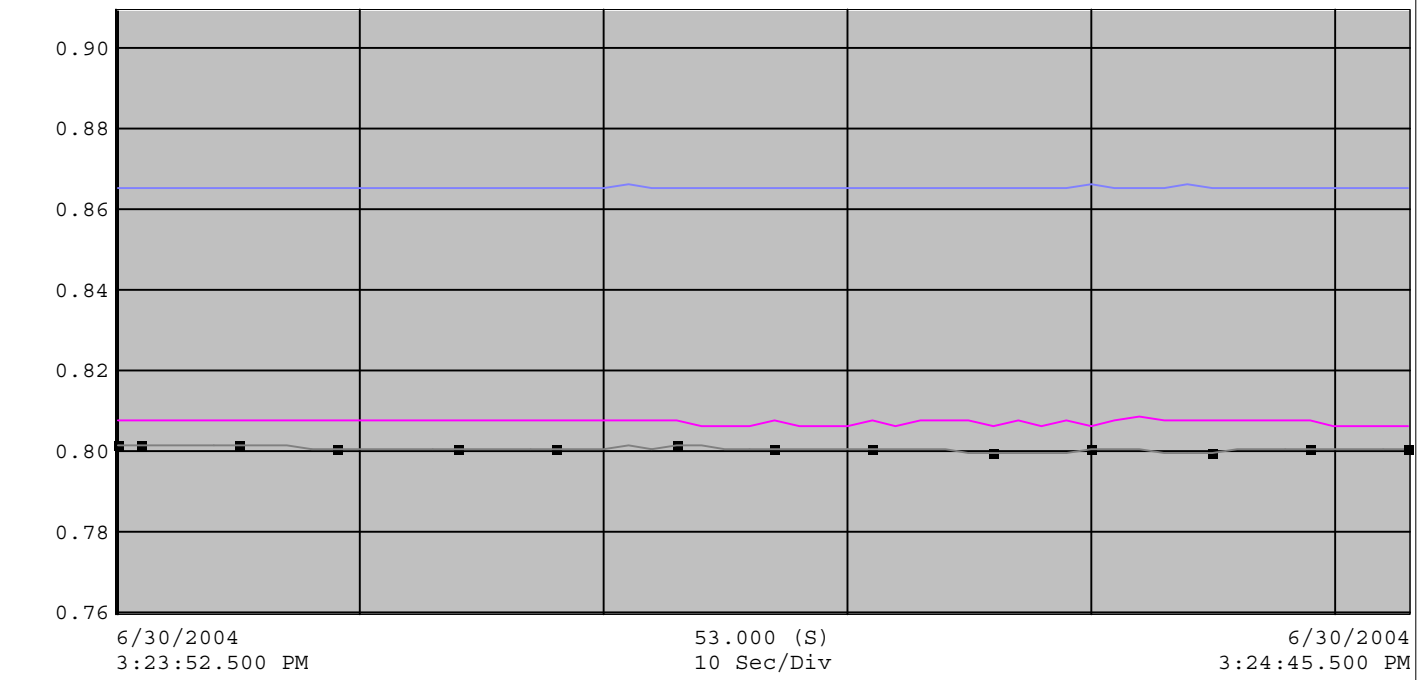
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	6/30/2004	3:23:52.500 PM	118.0	4.289	231.8	Wh
W-hours Line2	6/30/2004	3:23:52.500 PM	101.5	3.693	199.3	Wh
W-hours Line3	6/30/2004	3:23:52.500 PM	121.2	4.404	238.0	Wh
W-hours Sum of Phases	6/30/2004	3:23:52.500 PM	340.7	12.38	669.1	Wh
VAR-hours Line1	6/30/2004	3:23:52.500 PM	88.47	3.207	173.9	VARh
VAR-hours Line2	6/30/2004	3:23:52.500 PM	74.35	2.702	146.0	VARh
VAR-hours Line3	6/30/2004	3:23:52.500 PM	70.27	2.554	138.0	VARh
VAR-hours Sum of Phases	6/30/2004	3:23:52.500 PM	233.1	8.470	457.9	VARh

6/30/2004 - 3:23:52.000 PM
Val
4.289 — W-hours Line1
3.693 — W-hours Line2
4.404 — W-hours Line3
12.38 — W-hours Sum of Phases
3.207 — VAR-hours Line1
2.702 — VAR-hours Line2
2.554 — VAR-hours Line3
8.470 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	6/30/2004	3:23:52.500 PM	0.800	0.799	0.801	
PF Line2	6/30/2004	3:23:52.500 PM	0.807	0.806	0.808	
PF Line3	6/30/2004	3:23:52.500 PM	0.865	0.865	0.866	

6/30/2004 - 3:23:52.000 PM
Val
0.801 PF Line1
0.807 PF Line2
0.865 PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Y1\063004-Y1.dvb

Operator	Test Site
,	,

Comments

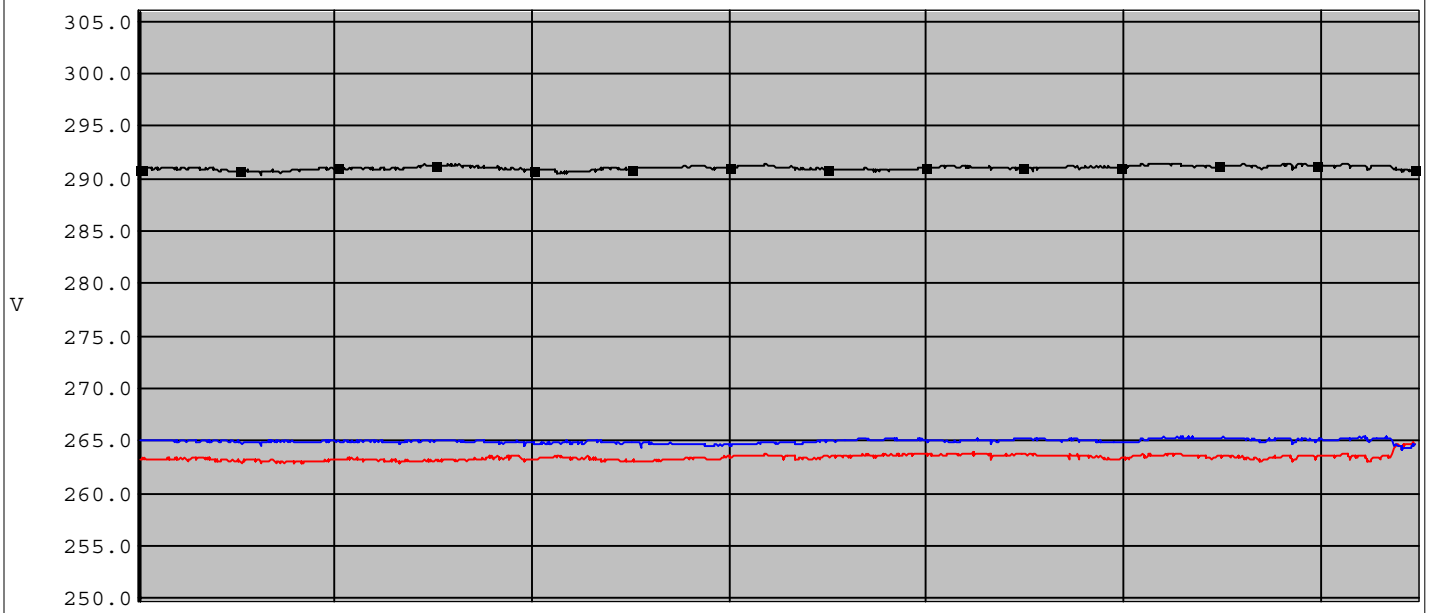
GWA Water Pumping Station Assessment				
Station Name: Y-02	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 06/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.3	
Main Disconnect	10.0%	2	0.2	10
Grounding	5.0%	2	0.1	14
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.55	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	2	0.1	23
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.045	
Pressure	1.5%	2	0.03	52
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.1**

Comments:

063004 - Y-02 Trend

Recording Start Date	6/30/2004 - 3:25:30 PM
Recording Duration	19:29 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

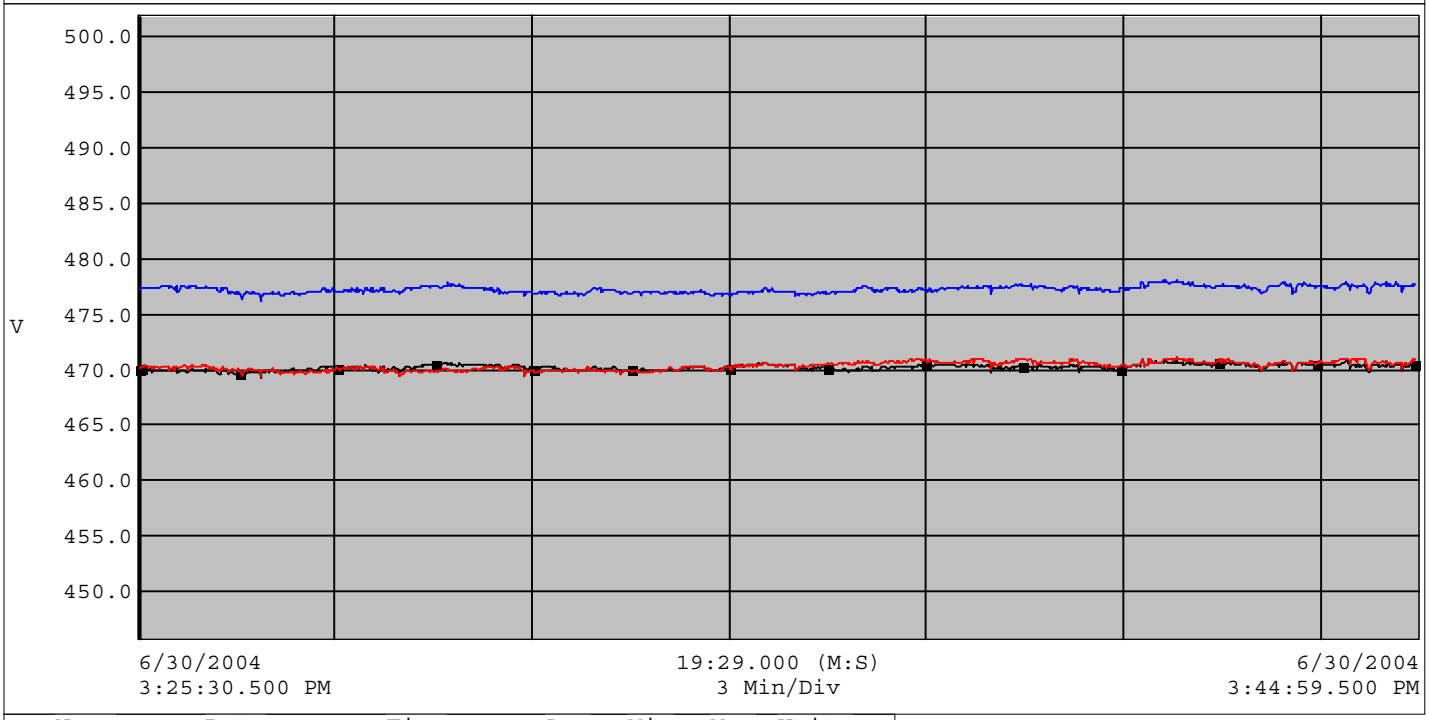
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	6/30/2004	3:25:30.500 PM	290.9	290.2	291.4	1170
Vrms Line2	6/30/2004	3:25:30.500 PM	263.3	262.7	264.7	1170
Vrms Line3	6/30/2004	3:25:30.500 PM	264.9	264.1	265.3	1170

6/30/2004 - 3:25:30.000 PM
Val
290.8 — Vrms Line1
263.2 — Vrms Line2
264.9 — Vrms Line3

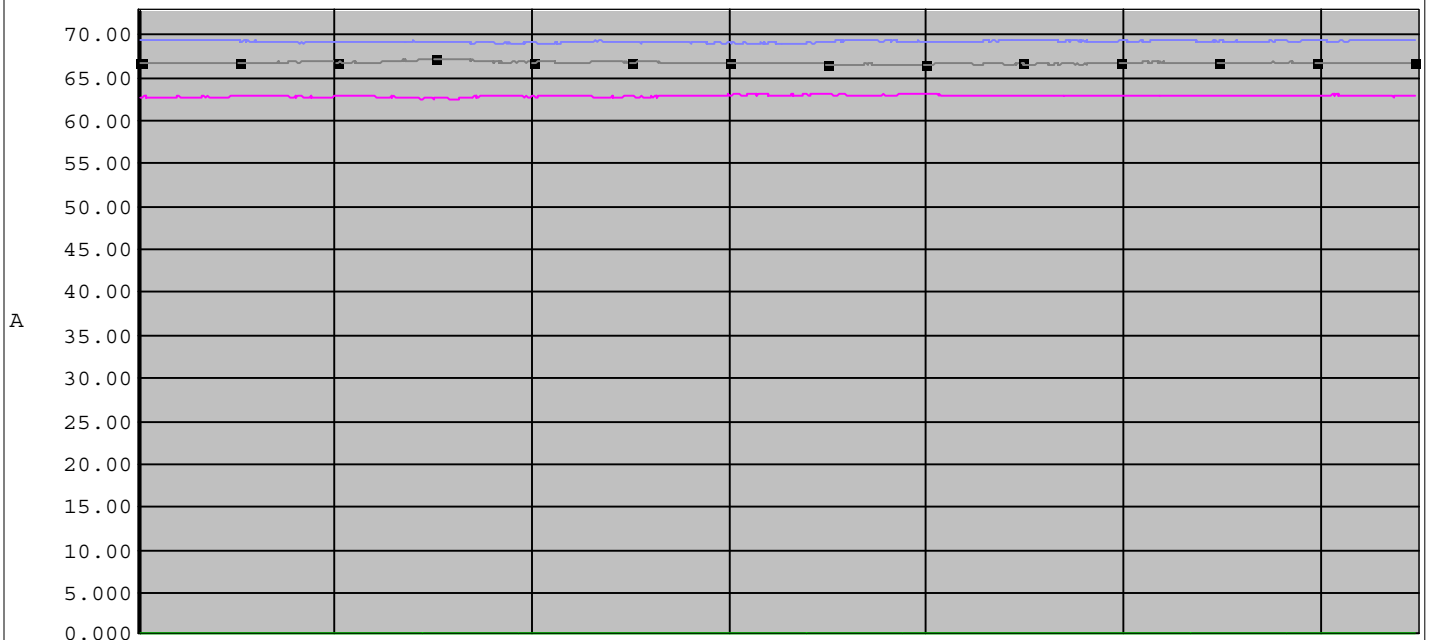
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	6/30/2004	3:25:30.500 PM	470.1	469.1	470.8	V
Urms Line2	6/30/2004	3:25:30.500 PM	470.2	469.3	471.0	V
Urms Line3	6/30/2004	3:25:30.500 PM	477.1	476.1	477.9	V

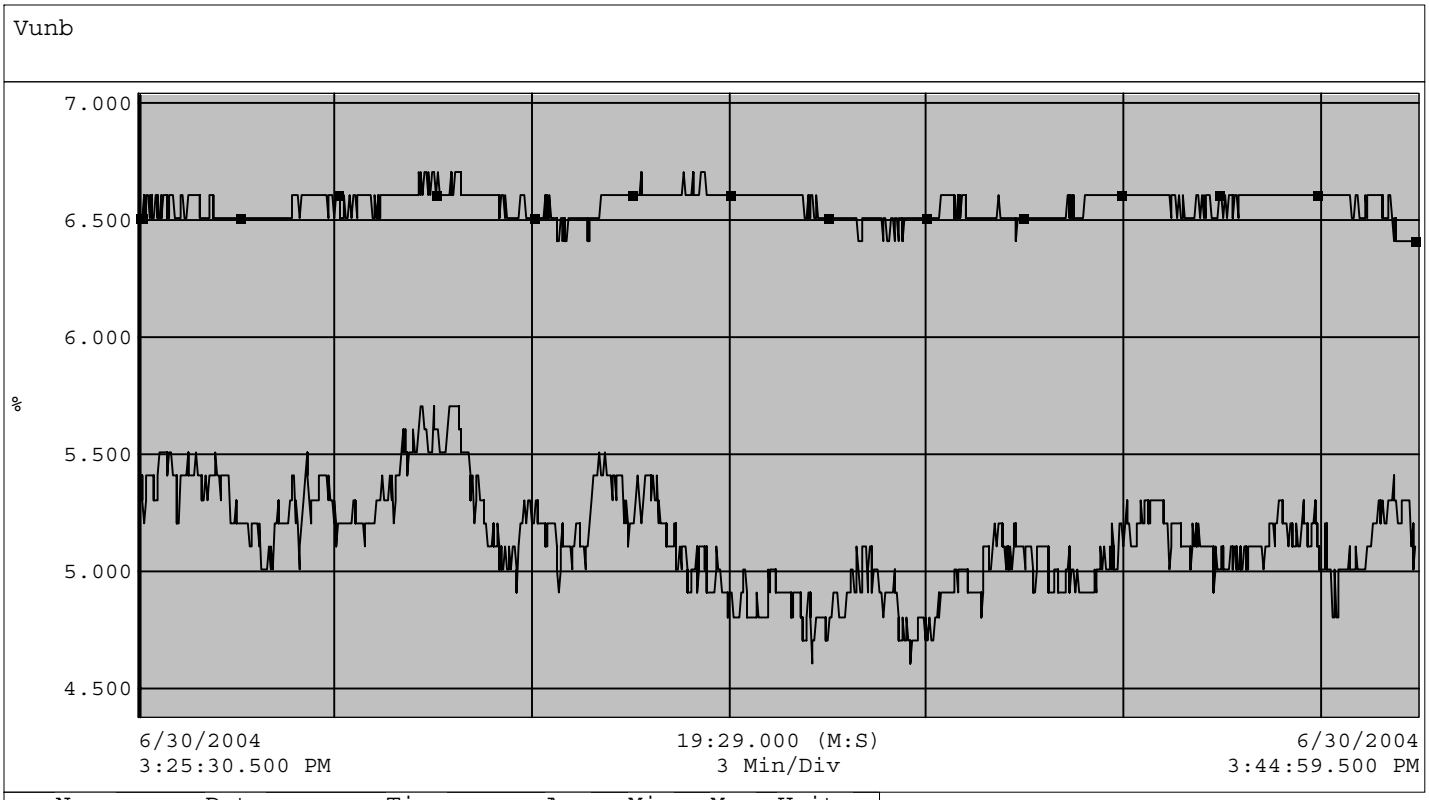
6/30/2004 - 3:25:30.000 PM
Val
469.9 — Urms Line1
470.0 — Urms Line2
477.1 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	6/30/2004	3:25:30.500 PM	66.65	66.30	67.10	A
Arms Line2	6/30/2004	3:25:30.500 PM	62.77	62.40	63.10	A
Arms Line3	6/30/2004	3:25:30.500 PM	69.10	68.90	69.40	A
Arms Neutral	6/30/2004	3:25:30.500 PM	0.272	0.200	0.300	A

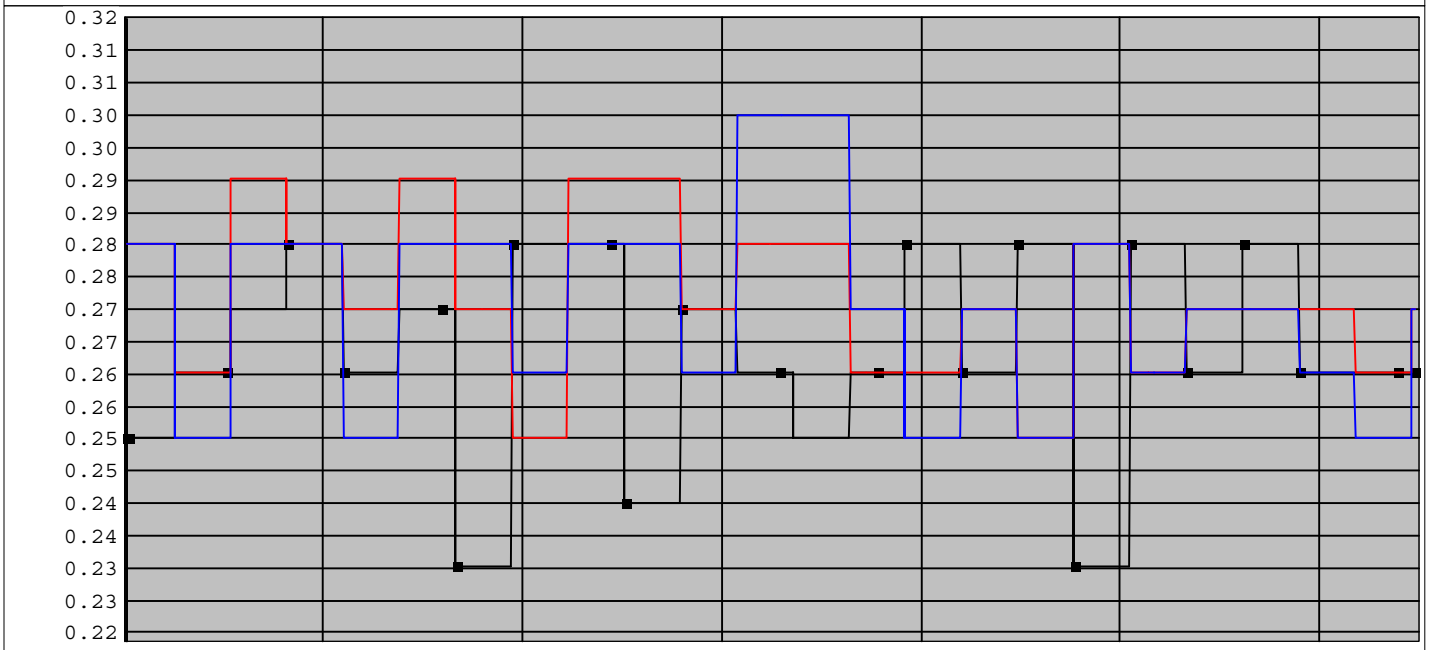
6/30/2004 - 3:25:30.000 PM
Val
66.60 — Arms Line1
62.60 — Arms Line2
69.20 — Arms Line3
0.300 — Arms Neutral



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	6/30/2004	3:25:30.500 PM	6.556	6.400	6.700	%
Aunb(IEEE)	6/30/2004	3:25:30.500 PM	5.132	4.600	5.700	%

6/30/2004 - 3:25:30.000 PM
Val
6.500 ── Vunb(IEEE)
5.300 ── Aunb(IEEE)

Vflk

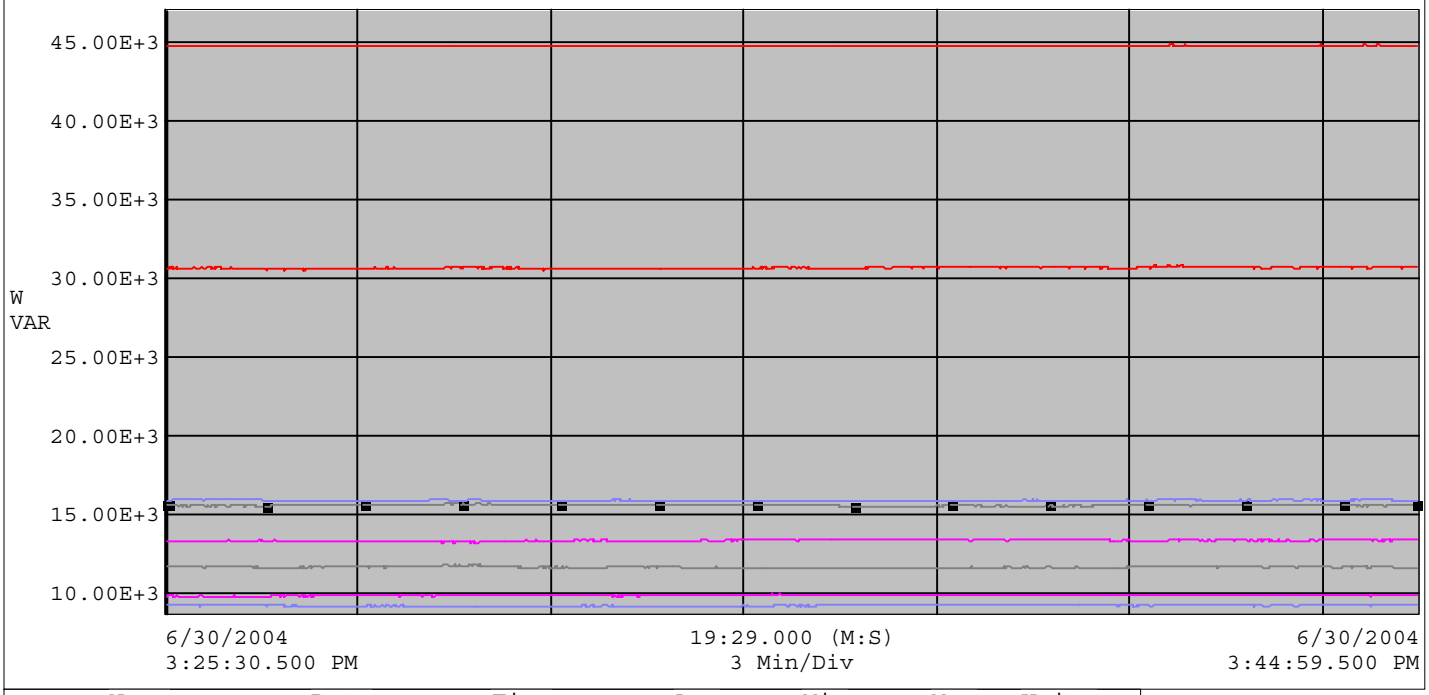


Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	6/30/2004	3:25:30.500 PM	0.263	0.230	0.280	
Vflk Line2	6/30/2004	3:25:30.500 PM	0.272	0.250	0.290	
Vflk Line3	6/30/2004	3:25:30.500 PM	0.270	0.250	0.300	

6/30/2004 - 3:25:30.000 PM
Val
0.250 Vflk Line1
0.280 Vflk Line2
0.280 Vflk Line3

Appendix 1K - Electrical

Power
VoltageRatio: 1.000
CurrentRatio: 1.000

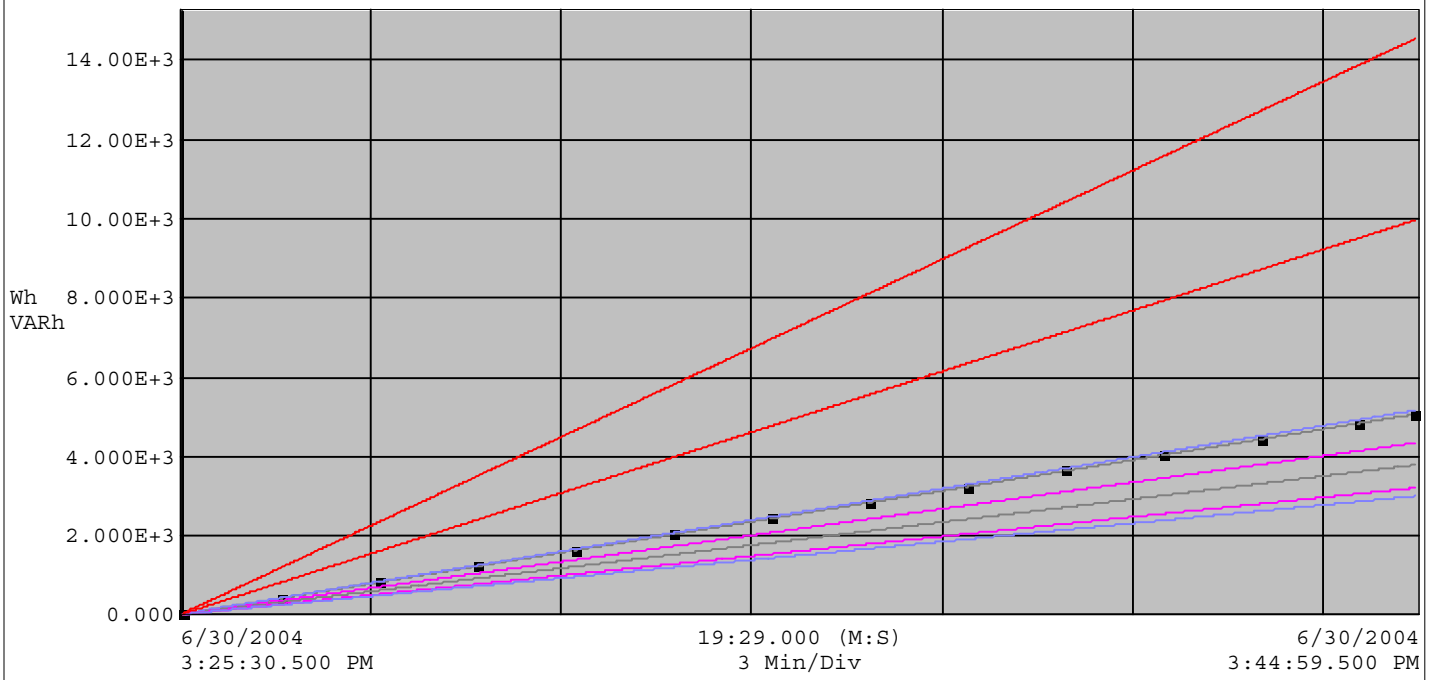


Name	Date	Time	Avg	Min	Max	Units
W Line1	6/30/2004	3:25:30.500 PM	15.53E+3	15.43E+3	15.63E+3	W
W Line2	6/30/2004	3:25:30.500 PM	13.30E+3	13.17E+3	13.40E+3	W
W Line3	6/30/2004	3:25:30.500 PM	15.83E+3	15.76E+3	15.91E+3	W
W Sum of Phases	6/30/2004	3:25:30.500 PM	44.67E+3	44.61E+3	44.75E+3	W
VAR Line1	6/30/2004	3:25:30.500 PM	11.60E+3	11.51E+3	11.74E+3	VAR
VAR Line2	6/30/2004	3:25:30.500 PM	9.814E+3	9.724E+3	9.903E+3	VAR
VAR Line3	6/30/2004	3:25:30.500 PM	9.179E+3	9.067E+3	9.279E+3	VAR
VAR Sum of Phases	6/30/2004	3:25:30.500 PM	30.59E+3	30.38E+3	30.74E+3	VAR

6/30/2004 - 3:25:30.000 PM

Val	
15.50E+3	W Line1
13.27E+3	W Line2
15.86E+3	W Line3
44.64E+3	W Sum of Phases
11.62E+3	VAR Line1
9.770E+3	VAR Line2
9.184E+3	VAR Line3
30.57E+3	VAR Sum of Phases

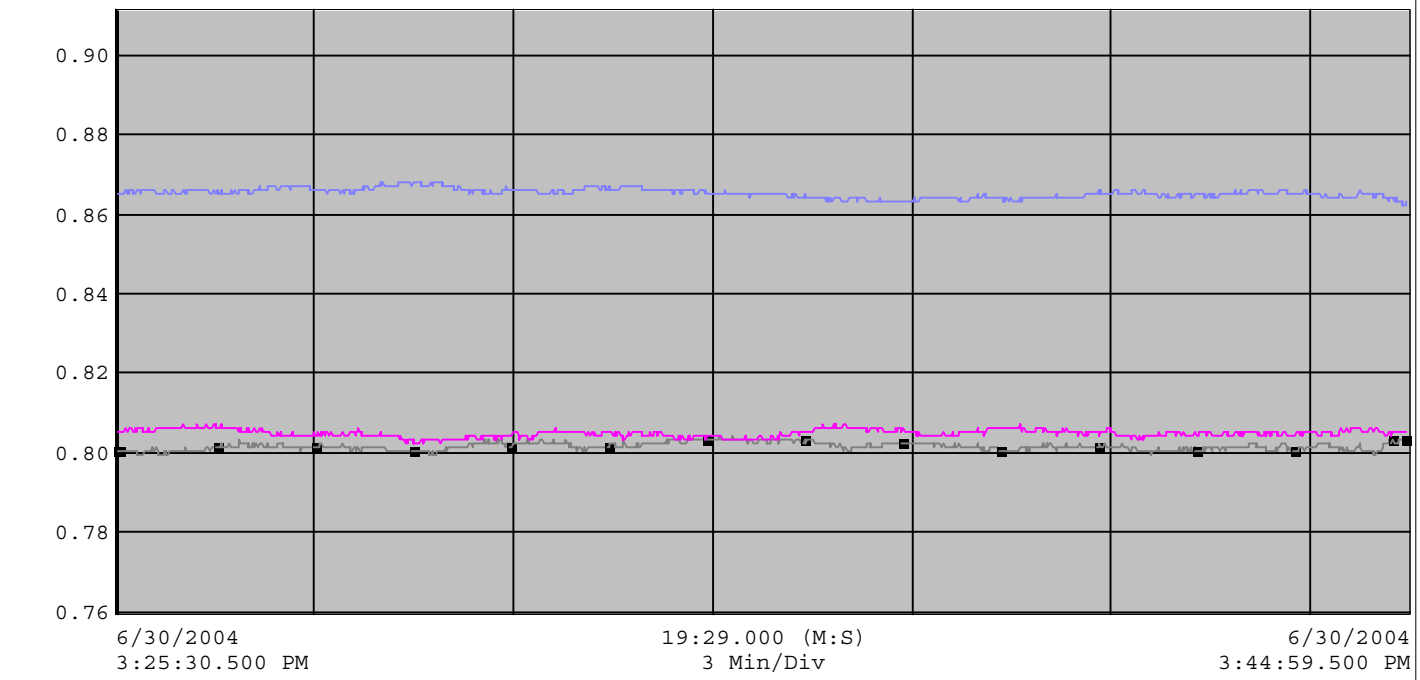
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	6/30/2004	3:25:30.500 PM	2.527E+3	4.315	5.049E+3	Wh
W-hours Line2	6/30/2004	3:25:30.500 PM	2.161E+3	3.693	4.322E+3	Wh
W-hours Line3	6/30/2004	3:25:30.500 PM	2.575E+3	4.398	5.146E+3	Wh
W-hours Sum of Phases	6/30/2004	3:25:30.500 PM	7.263E+3	12.41	14.52E+3	Wh
VAR-hours Line1	6/30/2004	3:25:30.500 PM	1.888E+3	3.222	3.771E+3	VARh
VAR-hours Line2	6/30/2004	3:25:30.500 PM	1.595E+3	2.726	3.189E+3	VARh
VAR-hours Line3	6/30/2004	3:25:30.500 PM	1.490E+3	2.549	2.983E+3	VARh
VAR-hours Sum of Phases	6/30/2004	3:25:30.500 PM	4.973E+3	8.497	9.943E+3	VARh

6/30/2004 - 3:25:30.000 PM
Val
4.315 — W-hours Line1
3.693 — W-hours Line2
4.398 — W-hours Line3
12.41 — W-hours Sum of Phases
3.222 — VAR-hours Line1
2.726 — VAR-hours Line2
2.549 — VAR-hours Line3
8.497 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	6/30/2004	3:25:30.500 PM	0.801	0.799	0.804	
PF Line2	6/30/2004	3:25:30.500 PM	0.805	0.802	0.807	
PF Line3	6/30/2004	3:25:30.500 PM	0.865	0.862	0.868	

6/30/2004 - 3:25:30.000 PM
Val
0.800 — PF Line1
0.805 — PF Line2
0.865 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Y1\063004-Y2.dvb	
Operator ,	Test Site ,
Comments	

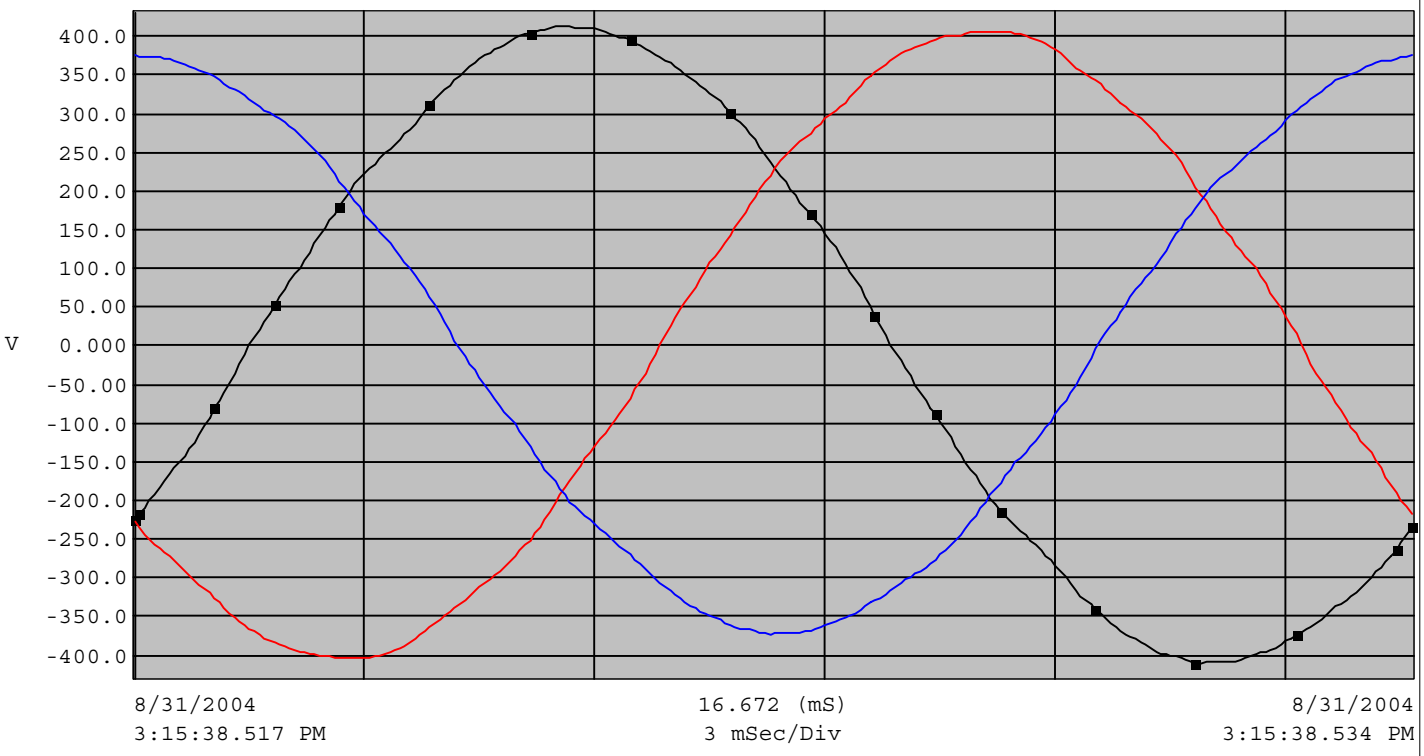
GWA Water Pumping Station Assessment				
Station Name: Y-05	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/31/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.425	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	0	0	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.085	
Pressure	1.5%	2	0.03	52
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	2	0.04	52
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.4**

Comments:

GWA WPS Y-5 Photo Report

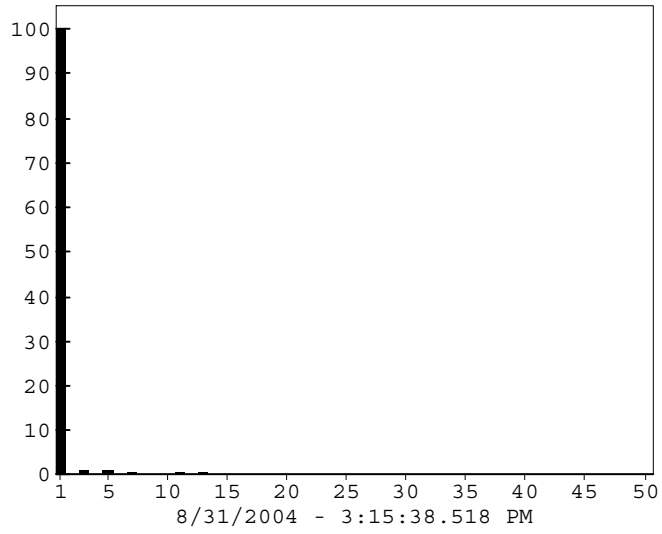
Recording Start Date	8/31/2004 - 3:15:38 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/31/2004	3:15:38.517 PM	16.672	291.5	V
Waveform V2	8/31/2004	3:15:38.517 PM	16.672	288.3	V
Waveform V3	8/31/2004	3:15:38.517 PM	16.672	264.7	V

Waveform V1
291.46 Vrms, 1.70 %THD



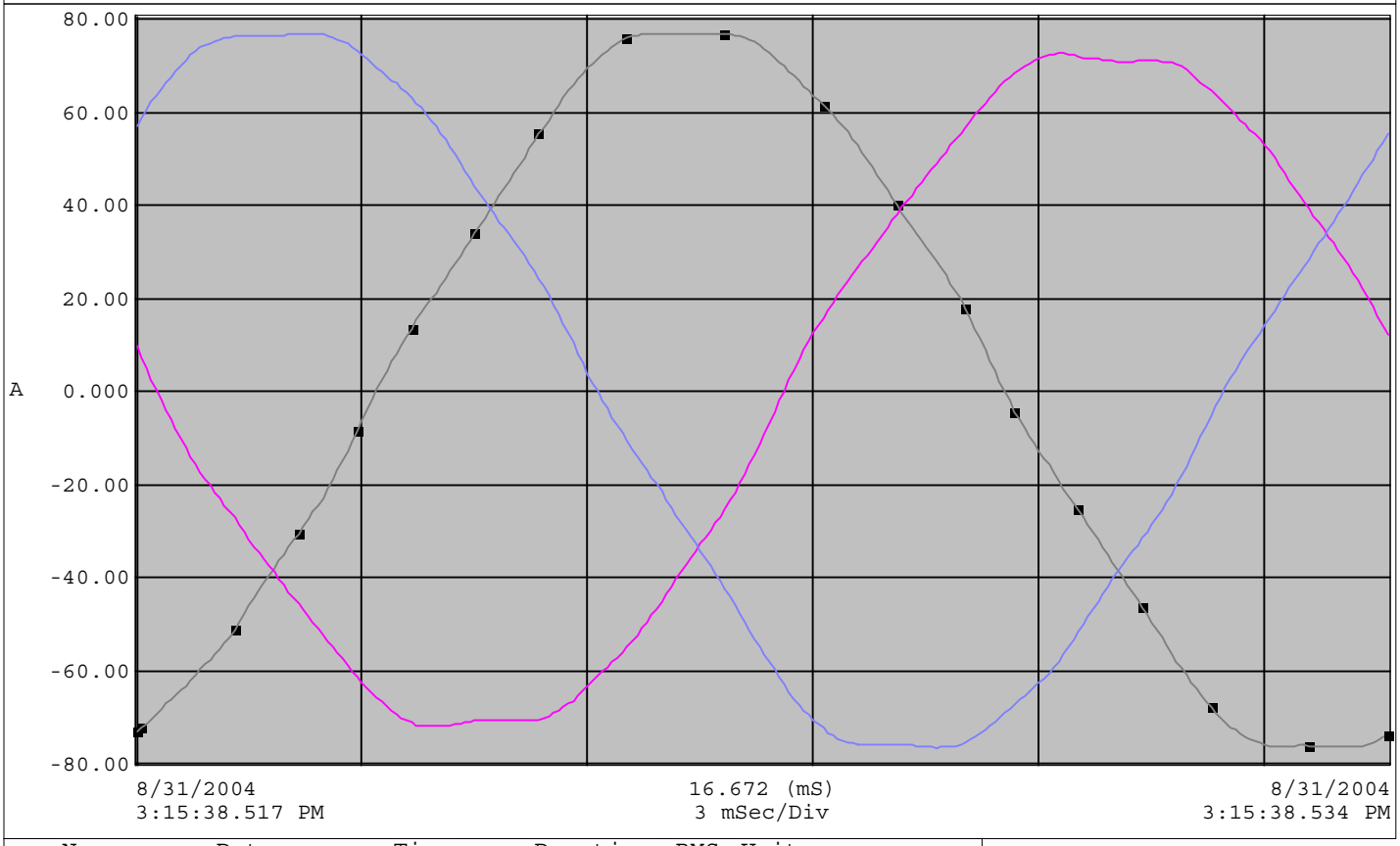
8/31/2004 - 3:15:38.000 PM

	Val	
—	-227.1	Waveform V1
—	-227.3	Waveform V2
—	373.8	Waveform V3

Waveform V1

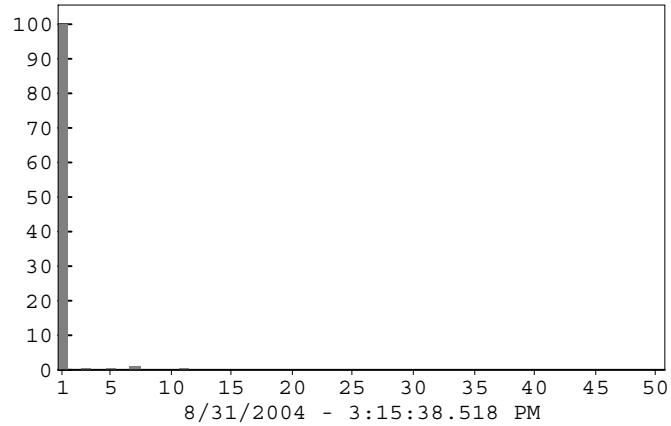
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	1.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.5	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.1	H32	0.1	H49	0.0
H16	0.0	H33	0.2	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/31/2004	3:15:38.517 PM	16.672	54.93	A
Waveform I2	8/31/2004	3:15:38.517 PM	16.672	52.39	A
Waveform I3	8/31/2004	3:15:38.517 PM	16.672	54.81	A

Waveform I1
54.93 Arms, 2.18 %THD



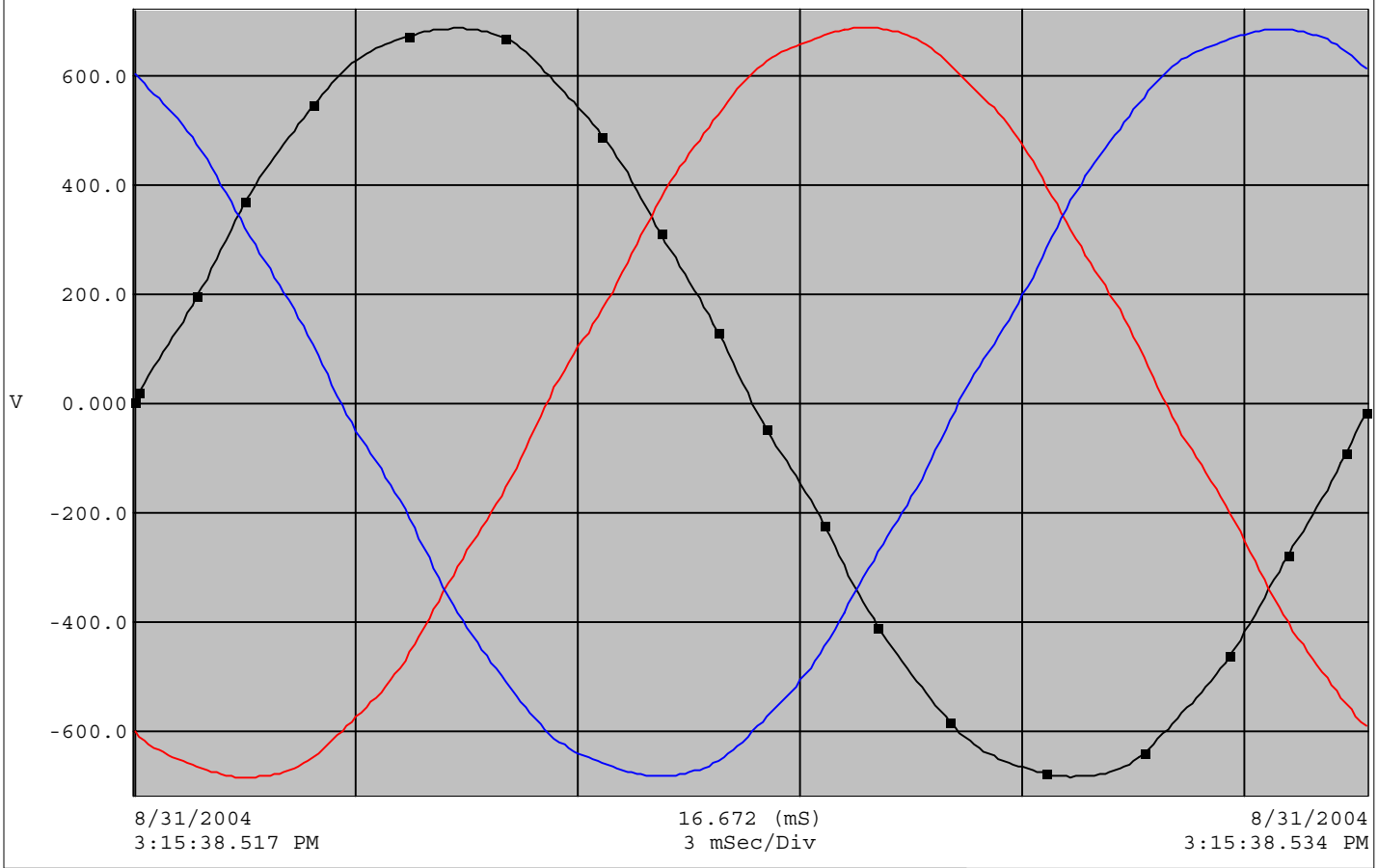
8/31/2004 - 3:15:38.000 PM

Val	
-73.40	Waveform I1
9.400	Waveform I2
56.80	Waveform I3

Waveform I1

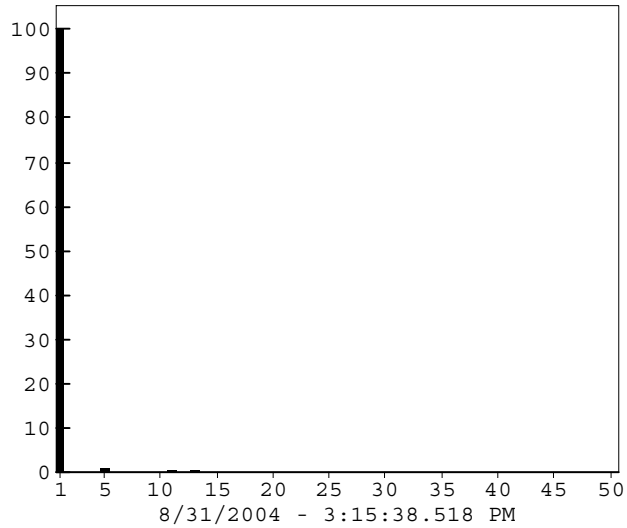
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.9	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.5	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.7	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/31/2004	3:15:38.517 PM	16.672	487.4	V
Waveform U2	8/31/2004	3:15:38.517 PM	16.672	487.7	V
Waveform U3	8/31/2004	3:15:38.517 PM	16.672	486.3	V

Waveform U1
487.43 Vrms, 1.26 %THD



8/31/2004 - 3:15:38.000 PM

Val	
0.200	Waveform U1
-601.2	Waveform U2
601.0	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/31/2004
Start Time: 3:15:38 PM
Duration: 0:0.000 (M:S)
W: 12.92E+3 W
VAR: 9.505E+3 W
VA: 16.04E+3 W
Power Factor: 0.806
Displacement Power Factor: 0.806
TAN: 0.735
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Y5\083104-Y5-Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS Y-5 Photo ,

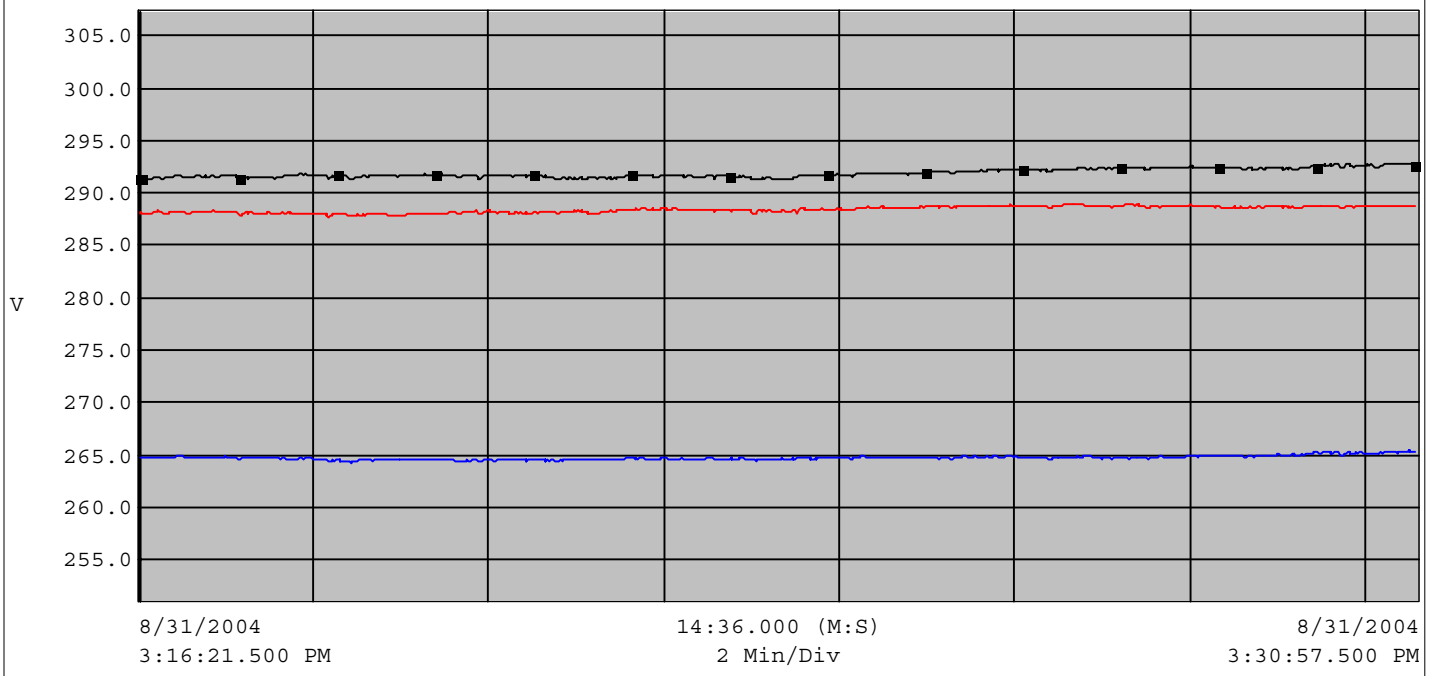
Comments

Recorded at motor starter overload relay. GPA meter 86-188-275, 39.75KW demand with 35.50 KW load measured.

Y-05 Trend

Recording Start Date	8/31/2004 - 3:16:21 PM
Recording Duration	14:36 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

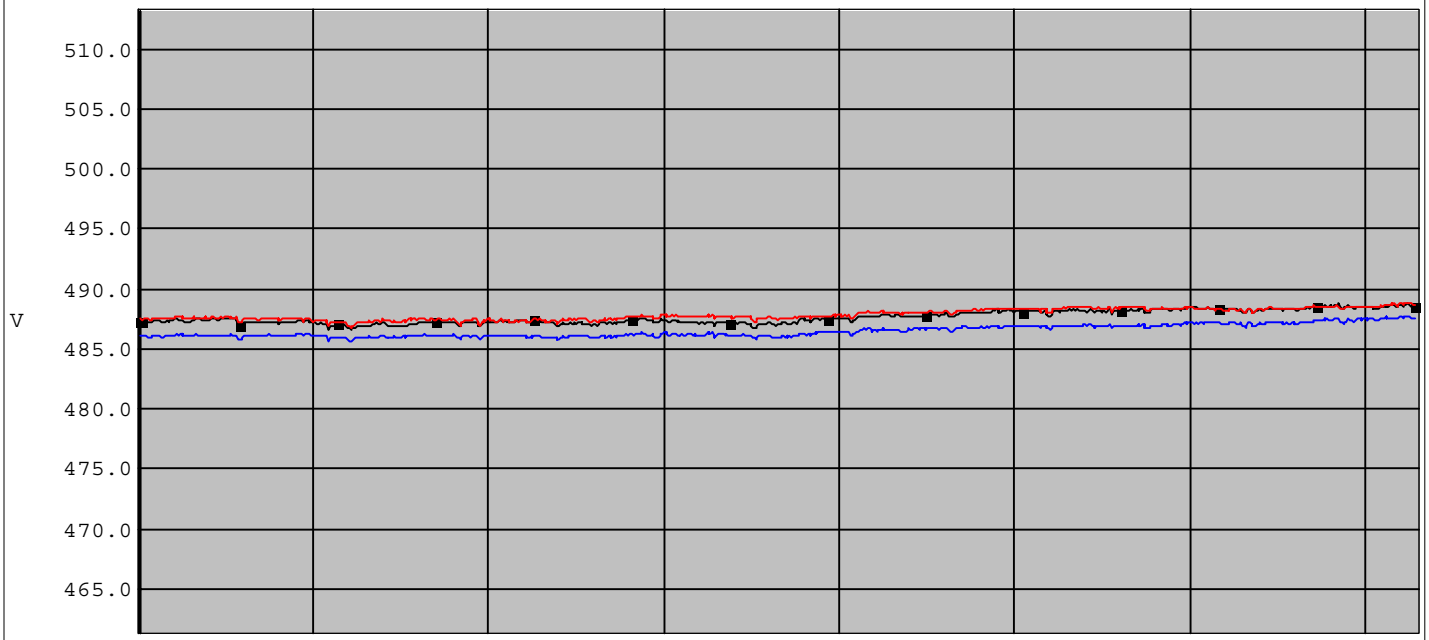
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/31/2004	3:16:21.500 PM	291.8	291.2	292.7	877
Vrms Line2	8/31/2004	3:16:21.500 PM	288.3	287.6	288.8	877
Vrms Line3	8/31/2004	3:16:21.500 PM	264.6	264.1	265.3	877

8/31/2004 - 3:16:21.000 PM
Val
291.3 — Vrms Line1
288.0 — Vrms Line2
264.7 — Vrms Line3

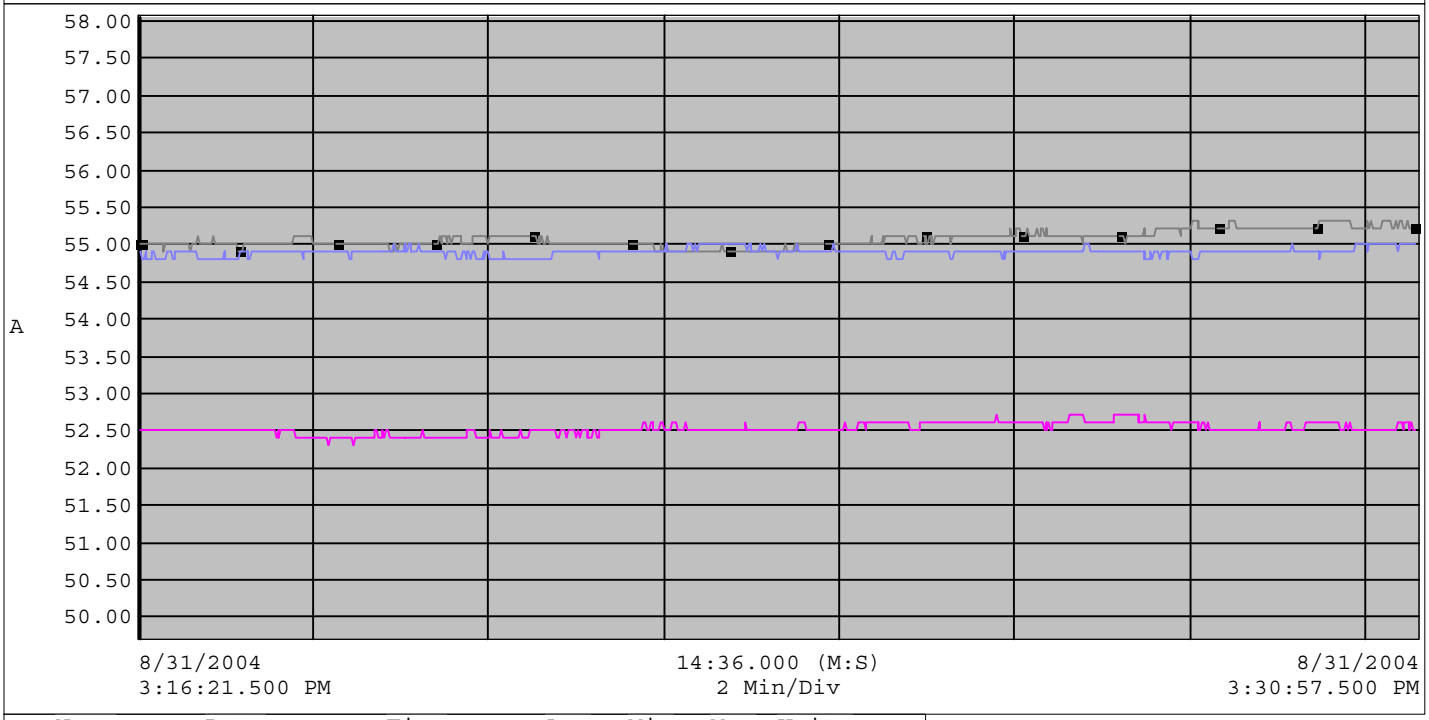
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/31/2004	3:16:21.500 PM	487.6	486.5	488.7	V
Urms Line2	8/31/2004	3:16:21.500 PM	487.8	486.7	488.8	V
Urms Line3	8/31/2004	3:16:21.500 PM	486.4	485.5	487.6	V

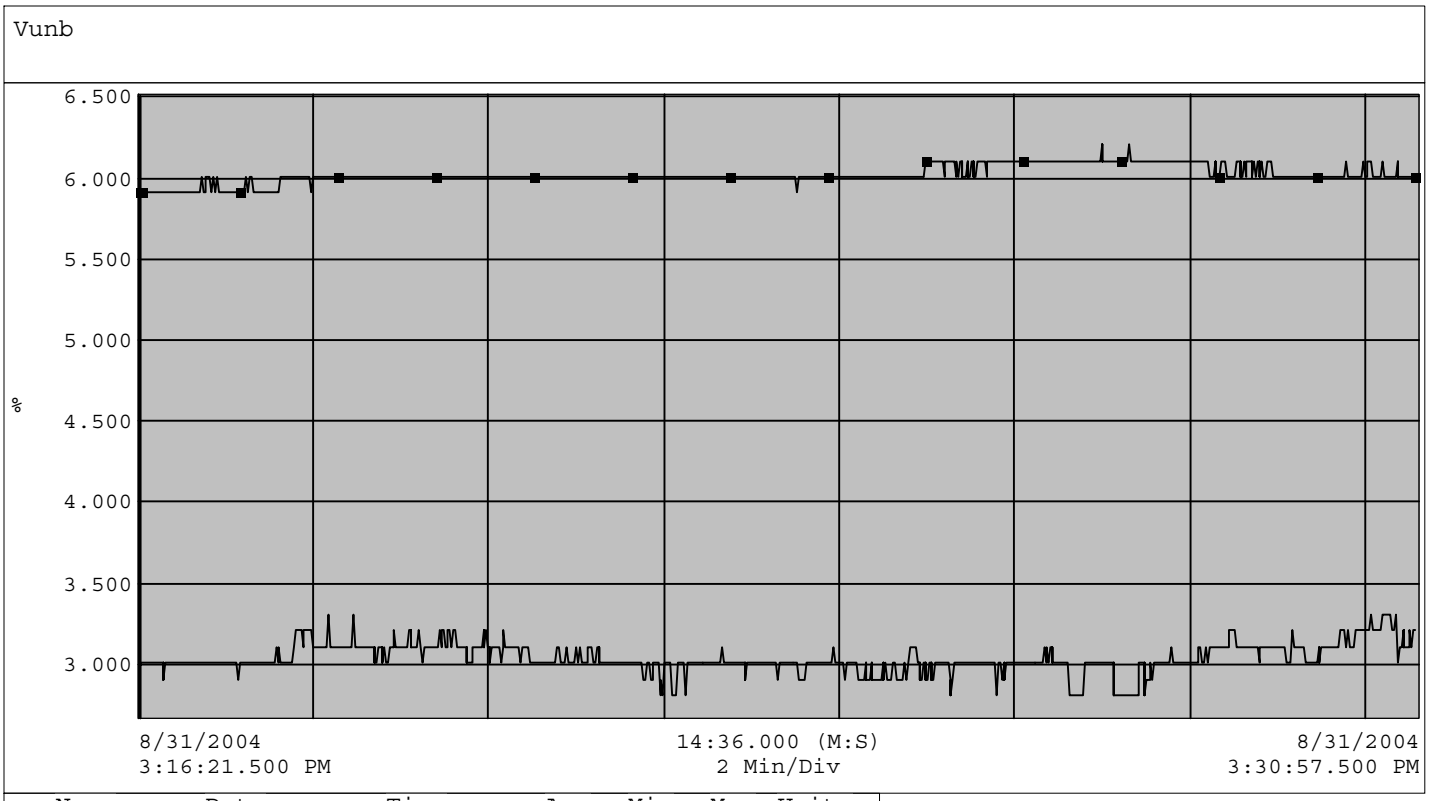
8/31/2004 - 3:16:21.000 PM
Val
487.2 — Urms Line1
487.4 — Urms Line2
486.0 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/31/2004	3:16:21.500 PM	55.06	54.90	55.30	A
Arms Line2	8/31/2004	3:16:21.500 PM	52.52	52.30	52.70	A
Arms Line3	8/31/2004	3:16:21.500 PM	54.90	54.80	55.00	A

8/31/2004 - 3:16:21.000 PM
Val
55.00 Arms Line1
52.50 Arms Line2
54.90 Arms Line3

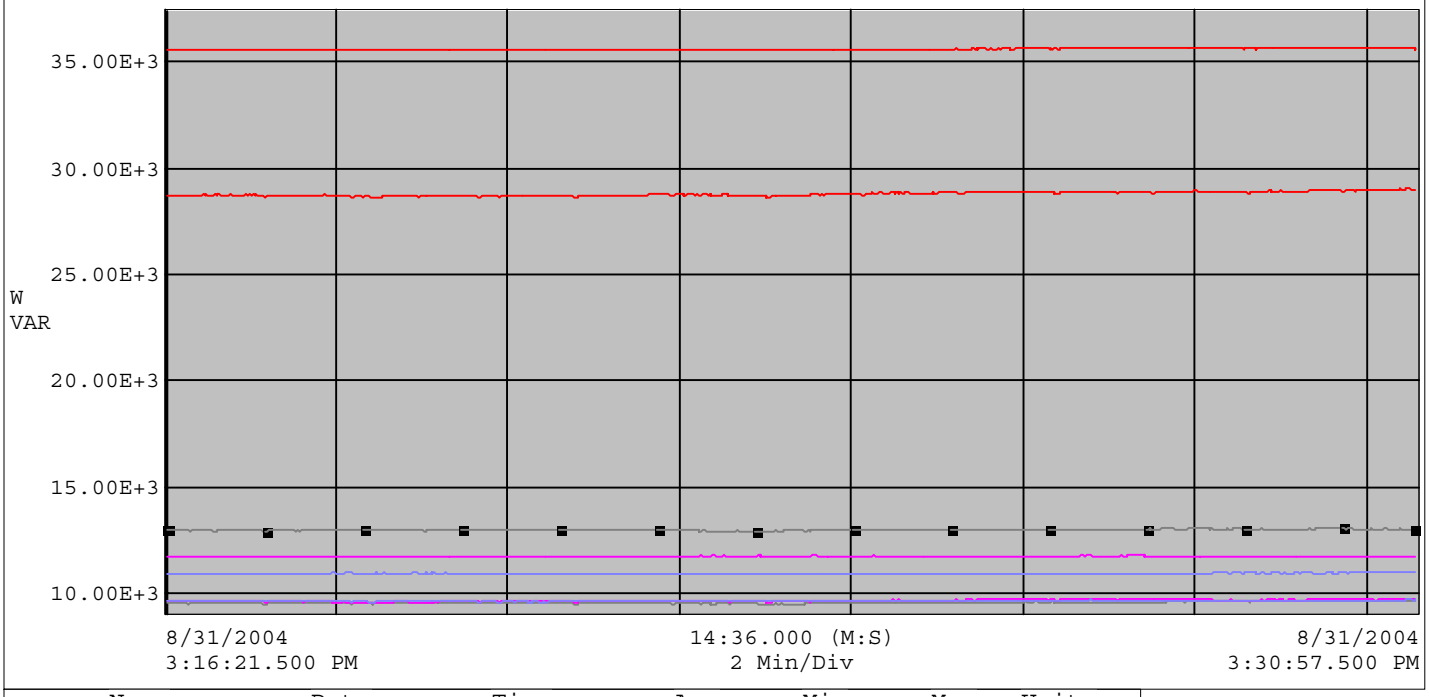


Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/31/2004	3:16:21.500 PM	6.014	5.900	6.200	%
Aunb(IEEE)	8/31/2004	3:16:21.500 PM	3.029	2.800	3.300	%

8/31/2004 - 3:16:21.000 PM
Val
5.900 ── Vunb(IEEE)
3.000 ── Aunb(IEEE)

Appendix 1K - Electrical

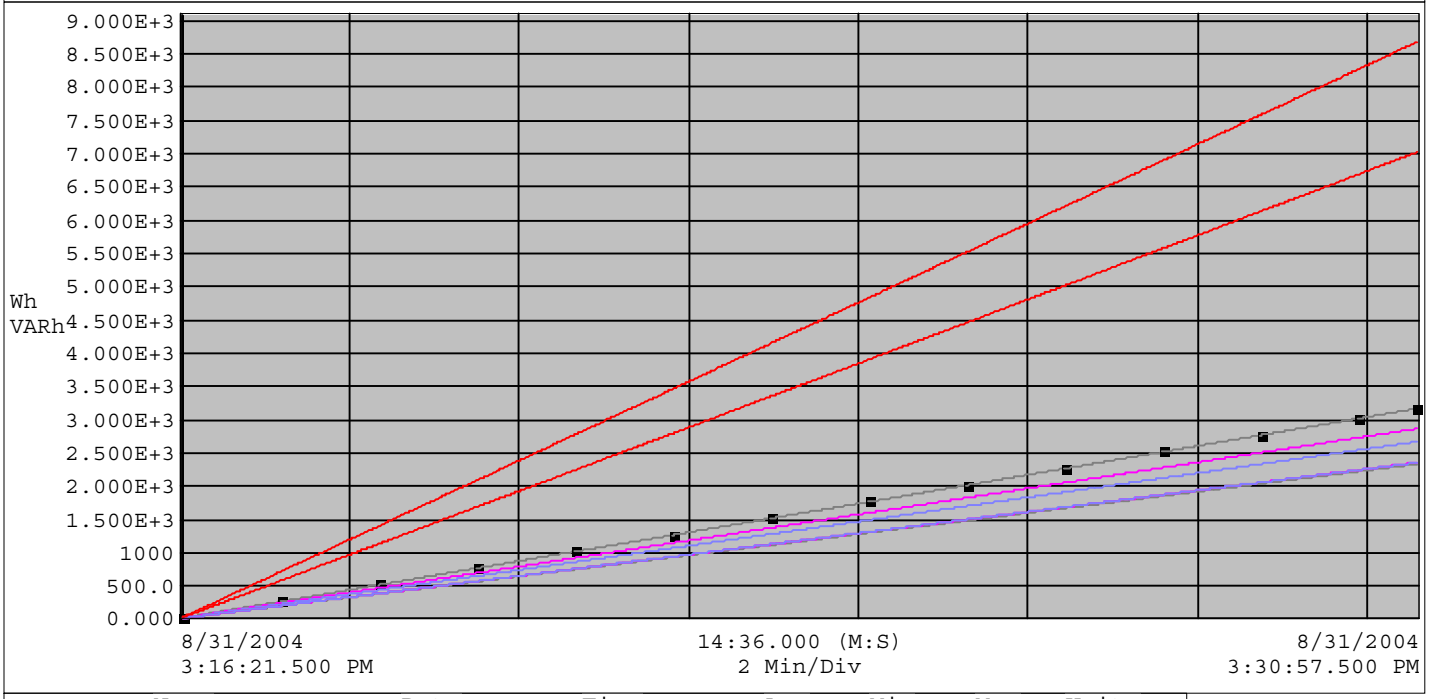
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/31/2004	3:16:21.500 PM	12.94E+3	12.87E+3	13.02E+3	W
W Line2	8/31/2004	3:16:21.500 PM	11.70E+3	11.66E+3	11.75E+3	W
W Line3	8/31/2004	3:16:21.500 PM	10.90E+3	10.86E+3	10.95E+3	W
W Sum of Phases	8/31/2004	3:16:21.500 PM	35.54E+3	35.48E+3	35.62E+3	W
VAR Line1	8/31/2004	3:16:21.500 PM	9.523E+3	9.447E+3	9.641E+3	VAR
VAR Line2	8/31/2004	3:16:21.500 PM	9.614E+3	9.511E+3	9.695E+3	VAR
VAR Line3	8/31/2004	3:16:21.500 PM	9.607E+3	9.536E+3	9.661E+3	VAR
VAR Sum of Phases	8/31/2004	3:16:21.500 PM	28.74E+3	28.52E+3	28.97E+3	VAR

8/31/2004 - 3:16:21.000 PM
Val
12.91E+3 — W Line1
11.71E+3 — W Line2
10.90E+3 — W Line3
35.52E+3 — W Sum of Phases
9.485E+3 — VAR Line1
9.569E+3 — VAR Line2
9.603E+3 — VAR Line3
28.66E+3 — VAR Sum of Phases

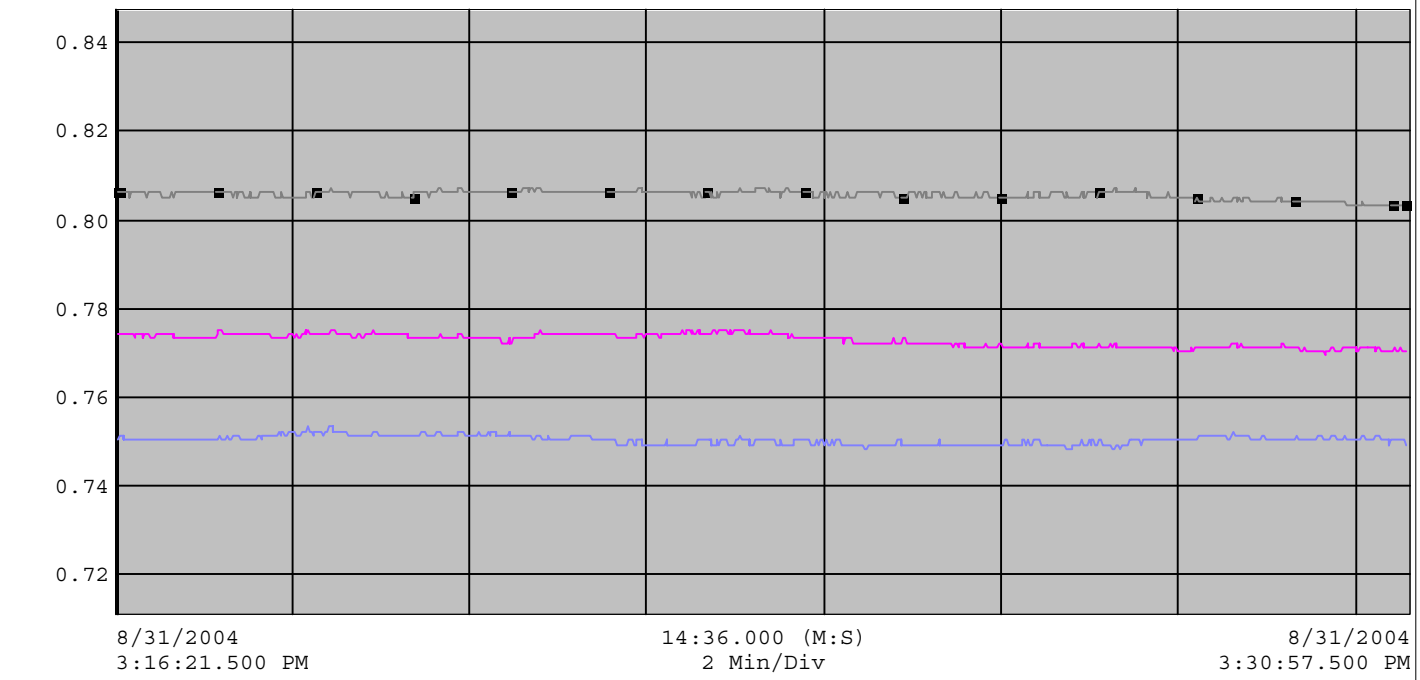
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/31/2004	3:16:21.500 PM	1.576E+3	3.560	3.153E+3	Wh
W-hours Line2	8/31/2004	3:16:21.500 PM	1.426E+3	3.218	2.850E+3	Wh
W-hours Line3	8/31/2004	3:16:21.500 PM	1.328E+3	2.997	2.654E+3	Wh
W-hours Sum of Phases	8/31/2004	3:16:21.500 PM	4.331E+3	9.776	8.657E+3	Wh
VAR-hours Line1	8/31/2004	3:16:21.500 PM	1.159E+3	2.620	2.320E+3	VARh
VAR-hours Line2	8/31/2004	3:16:21.500 PM	1.170E+3	2.645	2.342E+3	VARh
VAR-hours Line3	8/31/2004	3:16:21.500 PM	1.171E+3	2.643	2.340E+3	VARh
VAR-hours Sum of Phases	8/31/2004	3:16:21.500 PM	3.499E+3	7.907	7.002E+3	VARh

8/31/2004 - 3:16:21.000 PM
Val
3.560 — W-hours Line1
3.218 — W-hours Line2
2.997 — W-hours Line3
9.776 — W-hours Sum of Phases
2.620 — VAR-hours Line1
2.645 — VAR-hours Line2
2.643 — VAR-hours Line3
7.907 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/31/2004	3:16:21.500 PM	0.805	0.803	0.807	
PF Line2	8/31/2004	3:16:21.500 PM	0.773	0.769	0.775	
PF Line3	8/31/2004	3:16:21.500 PM	0.750	0.748	0.753	

8/31/2004 - 3:16:21.000 PM
Val
0.806 — PF Line1
0.774 — PF Line2
0.750 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Y5\083104-Y5.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS Y-5 ,

Comments
Recorded at motor starter overload heat. No phase monitor. GPA Meter 86-188-275 with a measured demand of 39.75 KW. Overload relay connection loose and by-passed. To be repaired on 09/01/04

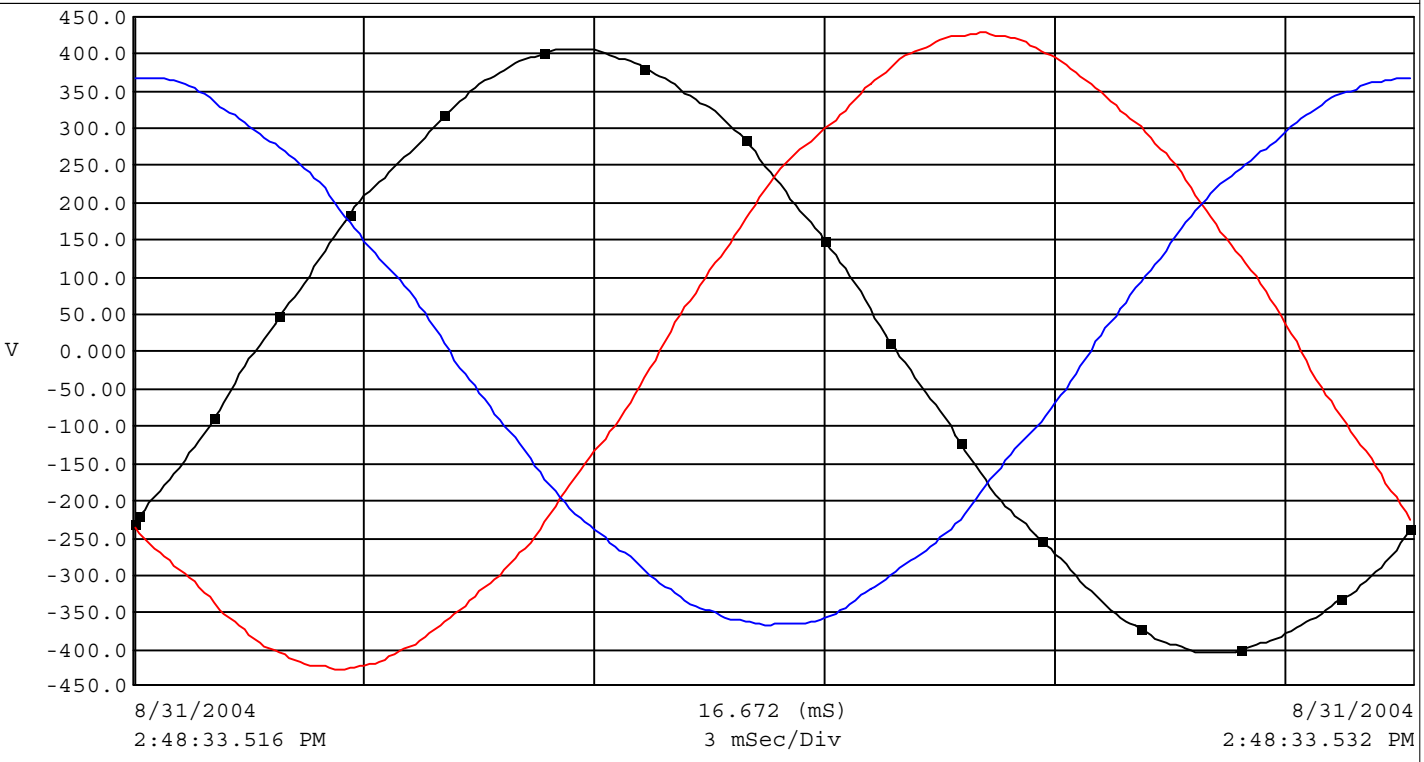
GWA Water Pumping Station Assessment				
Station Name: Y-06	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/31/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.5	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.08	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	1	0.02	
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.5**

Comments:

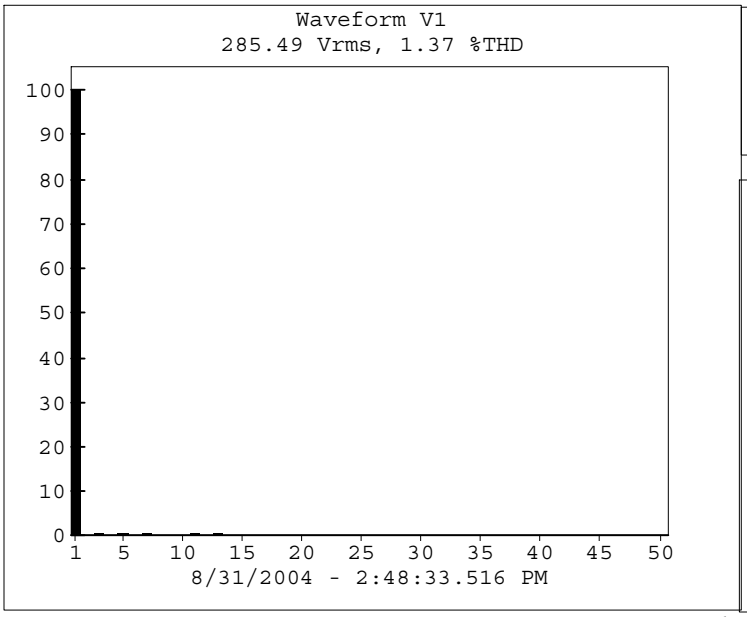
083104 - Y-06 Photo

Recording Start Date	8/31/2004 - 2:48:33 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/31/2004	2:48:33.516 PM	16.672	285.5	V
Waveform V2	8/31/2004	2:48:33.516 PM	16.672	298.9	V
Waveform V3	8/31/2004	2:48:33.516 PM	16.672	259.5	V

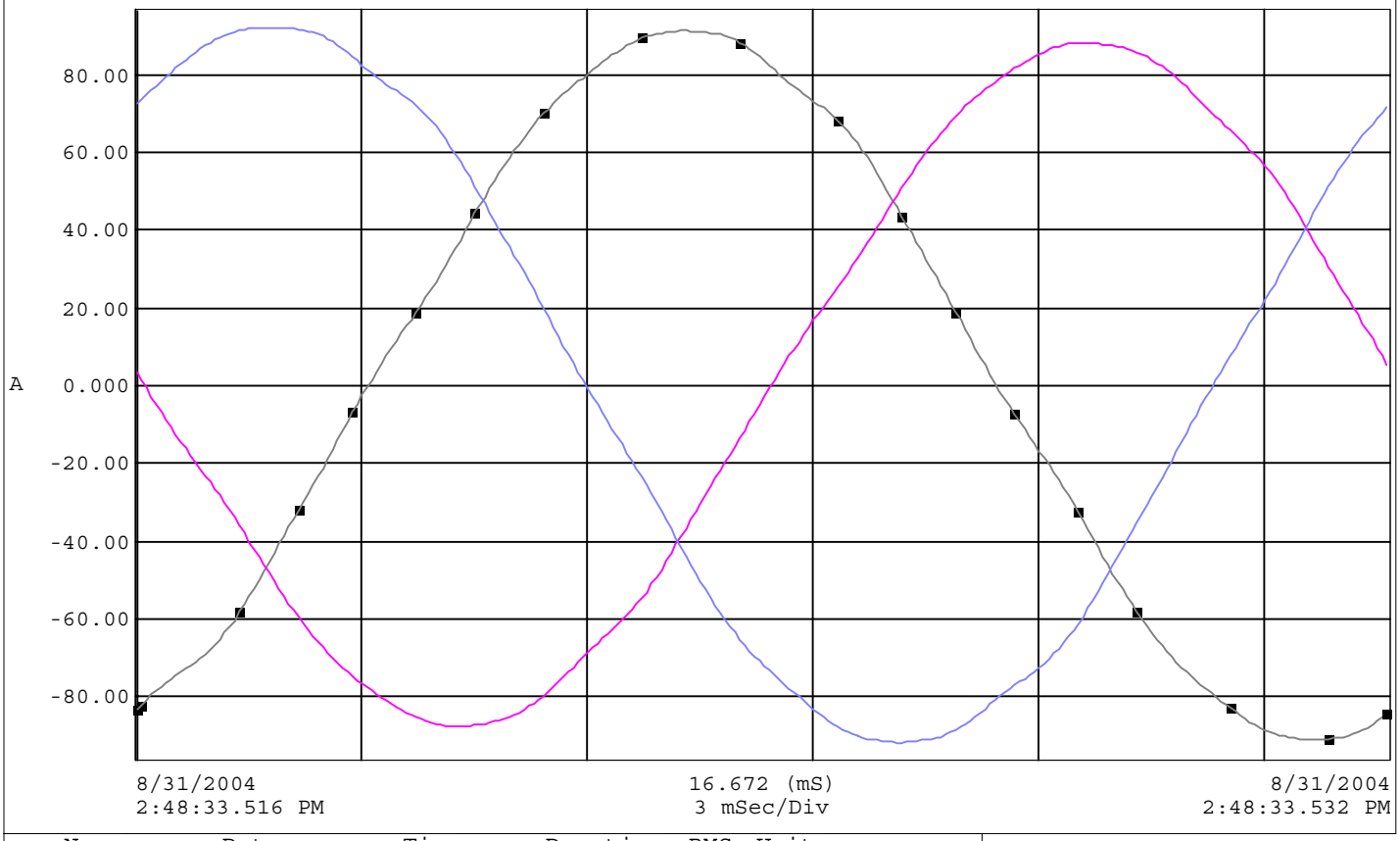


8/31/2004 - 2:48:33.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

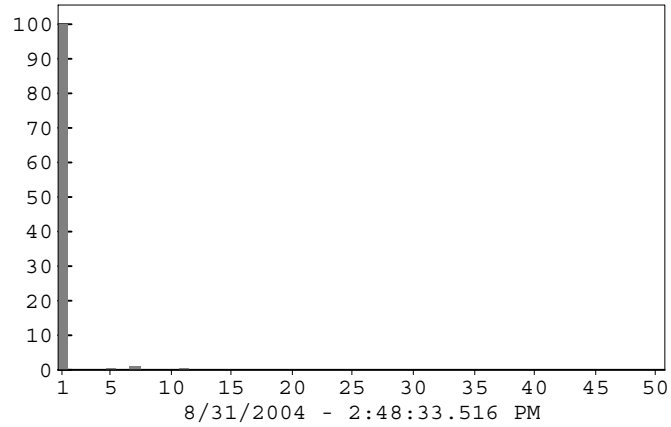
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.8	H22	0.0	H39	0.1
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.5	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.3	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.98 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/31/2004	2:48:33.516 PM	16.672	64.51	A
Waveform I2	8/31/2004	2:48:33.516 PM	16.672	61.61	A
Waveform I3	8/31/2004	2:48:33.516 PM	16.672	65.59	A

Waveform I1
64.51 Arms, 1.72 %THD

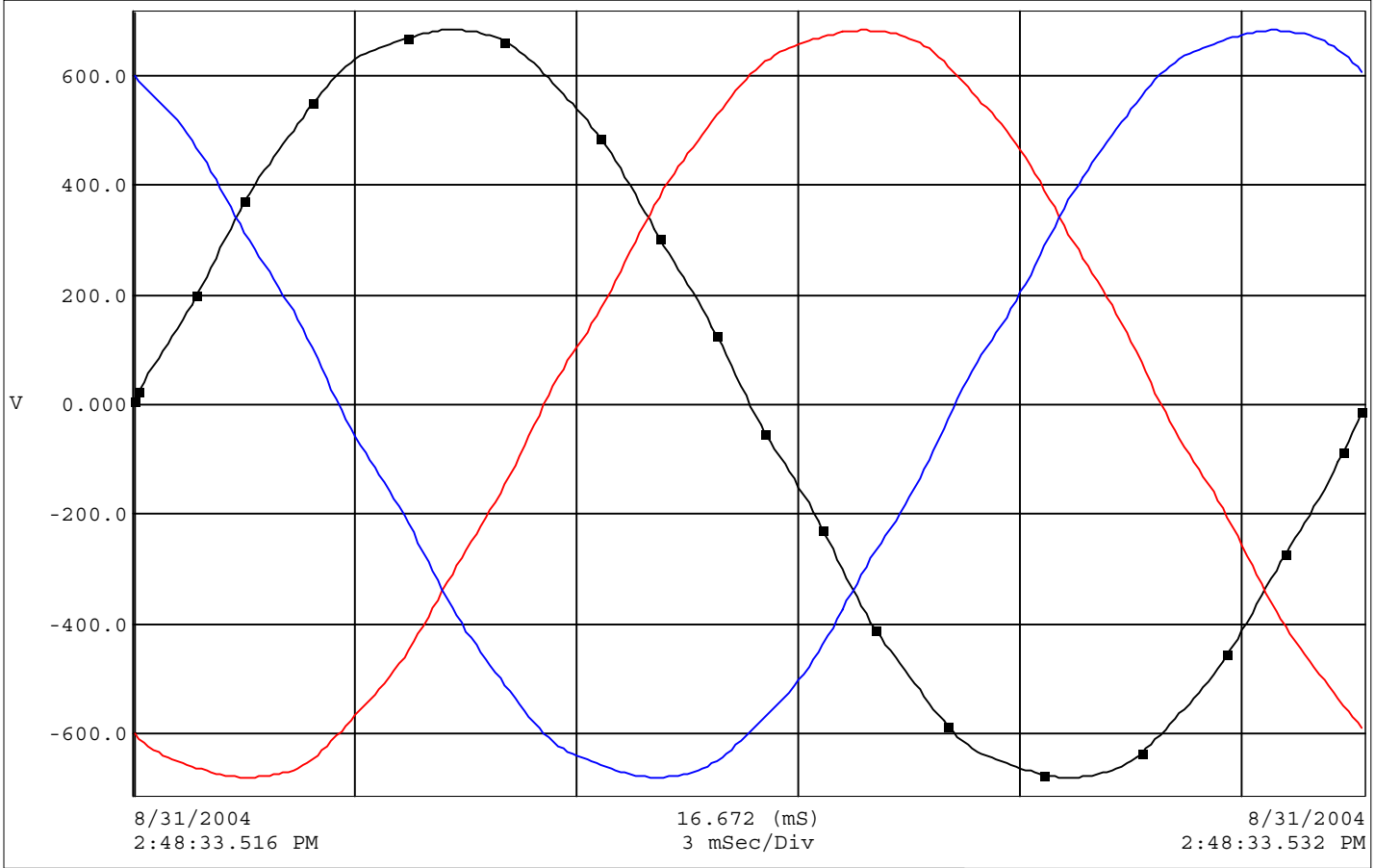


8/31/2004 - 2:48:33.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

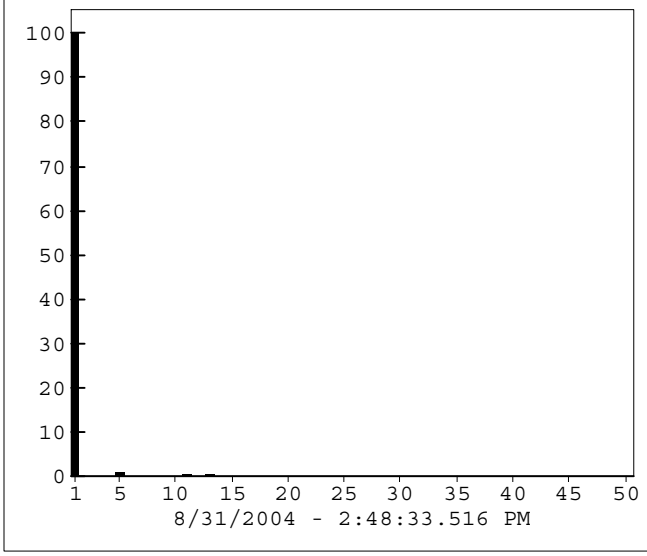
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.2	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.98 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/31/2004	2:48:33.516 PM	16.672	486.9	V
Waveform U2	8/31/2004	2:48:33.516 PM	16.672	486.5	V
Waveform U3	8/31/2004	2:48:33.516 PM	16.672	486.0	V

Waveform U1
486.94 Vrms, 1.34 %THD



8/31/2004 - 2:48:33.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.0	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.0	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.6	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.6	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/31/2004
Start Time: 2:48:33 PM
Duration: 0:0.000 (M:S)
W: 15.49E+3 W
VAR: 9.984E+3 W
VA: 18.43E+3 W
Power Factor: 0.840
Displacement Power Factor: 0.841
TAN: 0.644
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Y6\083104-Y6-Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS Y-6 Photo ,

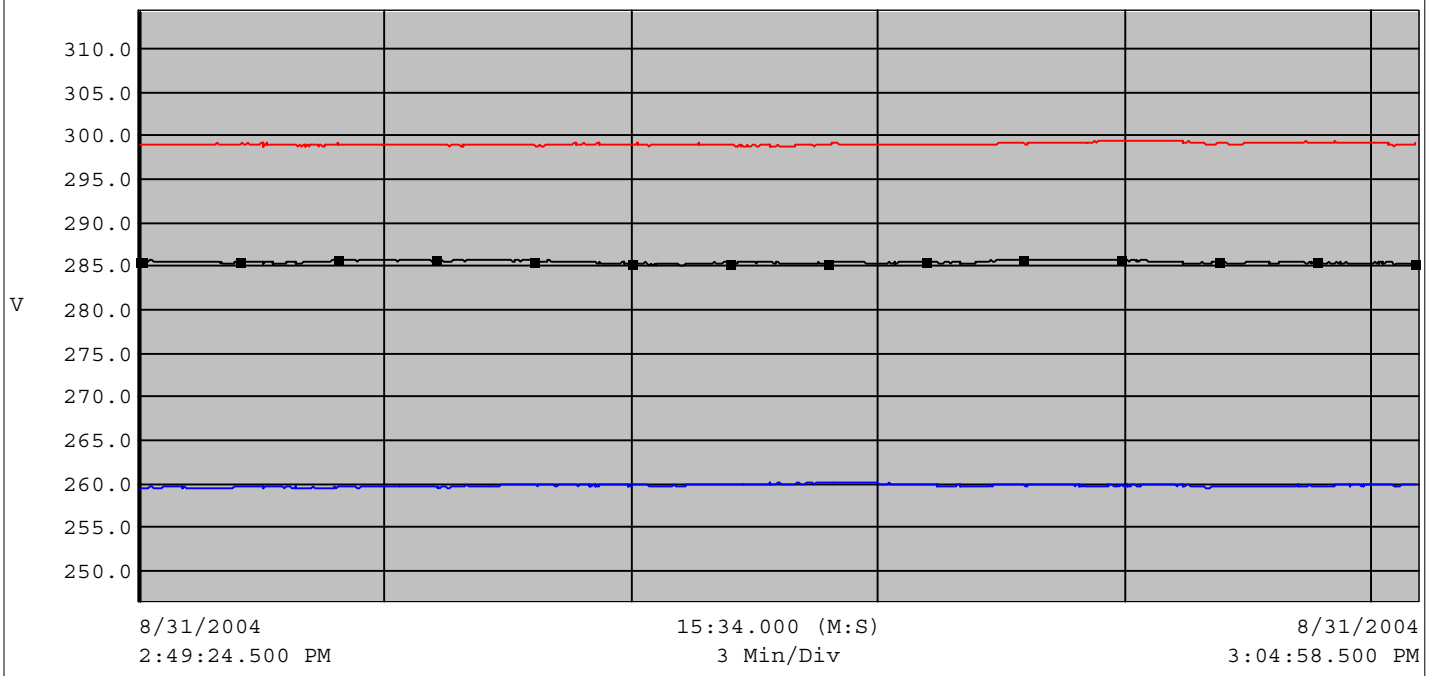
Comments

Recorded at motor starter overload relay, 50 HP motor. GPA Meter 04565824 with a recorded demand of 47.4 KW. Measured demand was 43.47 KW.

083104 - Y-06 Trend

Recording Start Date	8/31/2004 - 2:49:24 PM
Recording Duration	15:34 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

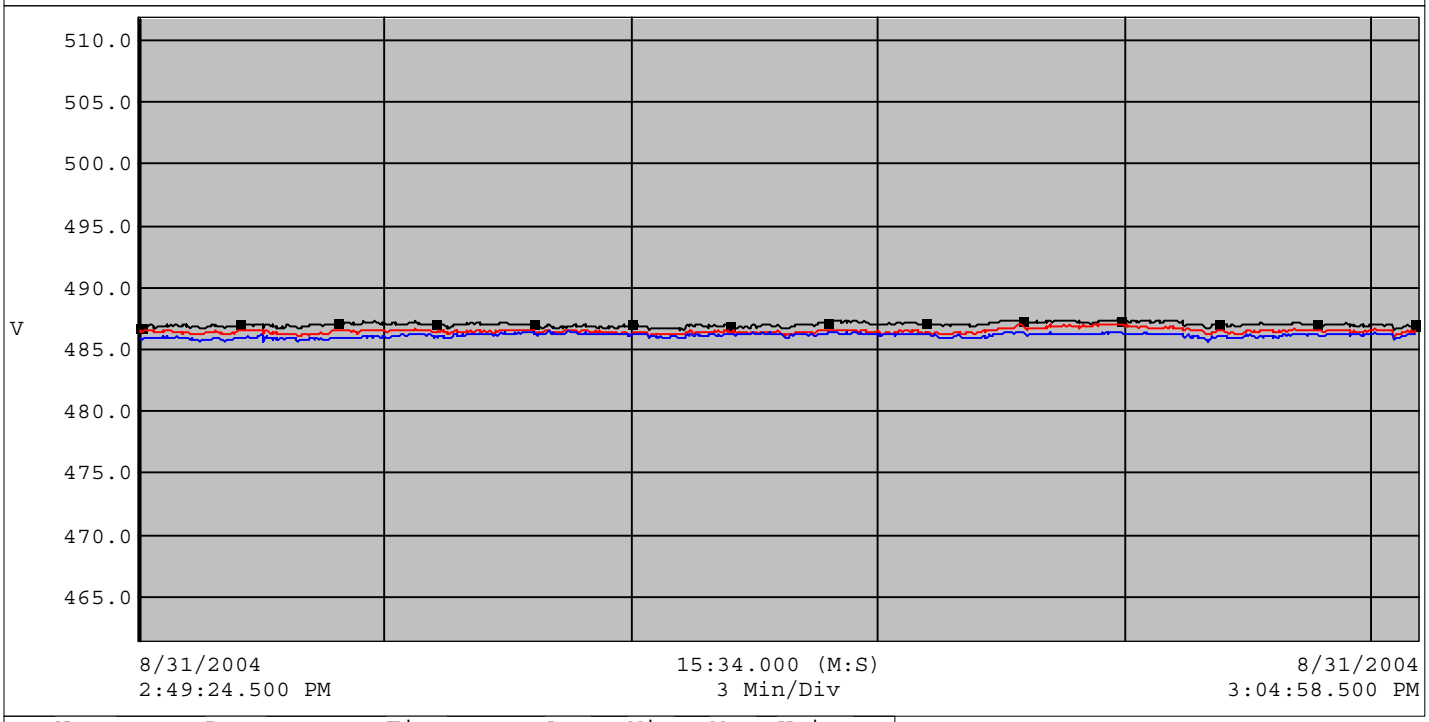
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/31/2004	2:49:24.500 PM	285.3	284.9	285.7	935
Vrms Line2	8/31/2004	2:49:24.500 PM	298.9	298.6	299.3	935
Vrms Line3	8/31/2004	2:49:24.500 PM	259.6	259.3	260.1	935

8/31/2004 - 2:49:24.000 PM
Val
285.4 — Vrms Line1
298.8 — Vrms Line2
259.4 — Vrms Line3

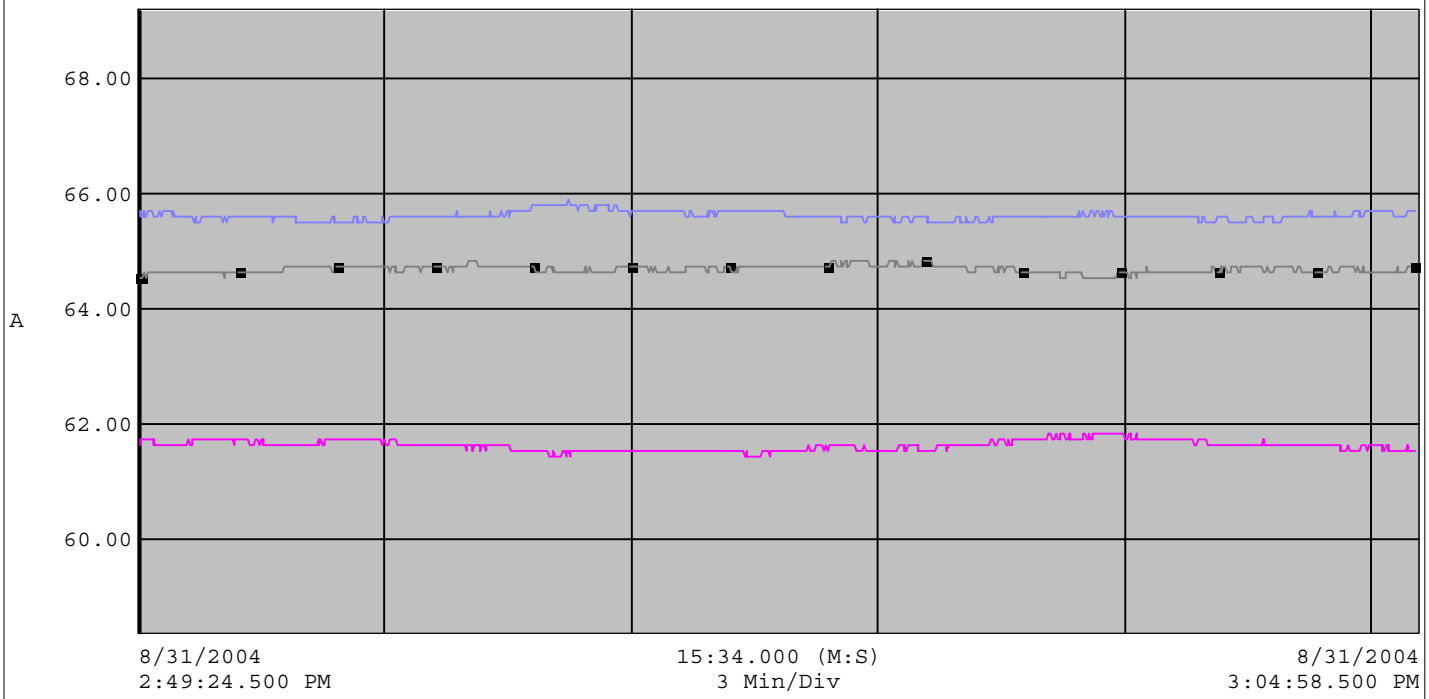
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/31/2004	2:49:24.500 PM	486.9	486.4	487.4	V
Urms Line2	8/31/2004	2:49:24.500 PM	486.4	485.9	487.0	V
Urms Line3	8/31/2004	2:49:24.500 PM	486.0	485.6	486.4	V

8/31/2004 - 2:49:24.000 PM
Val
486.7 — Urms Line1
486.3 — Urms Line2
485.8 — Urms Line3

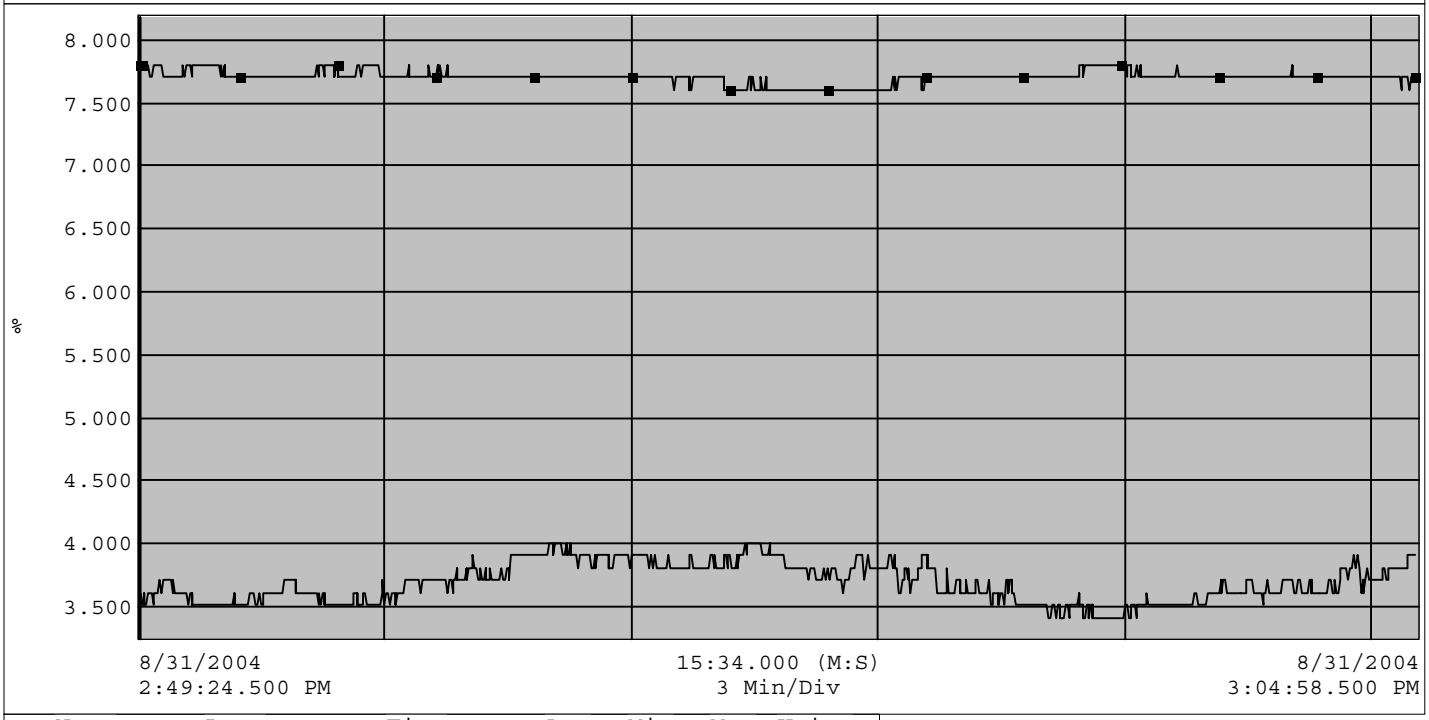
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/31/2004	2:49:24.500 PM	64.65	64.50	64.80	A
Arms Line2	8/31/2004	2:49:24.500 PM	61.60	61.40	61.80	A
Arms Line3	8/31/2004	2:49:24.500 PM	65.62	65.50	65.90	A

8/31/2004 - 2:49:24.000 PM
Val
64.50 — Arms Line1
61.60 — Arms Line2
65.60 — Arms Line3

Vunb

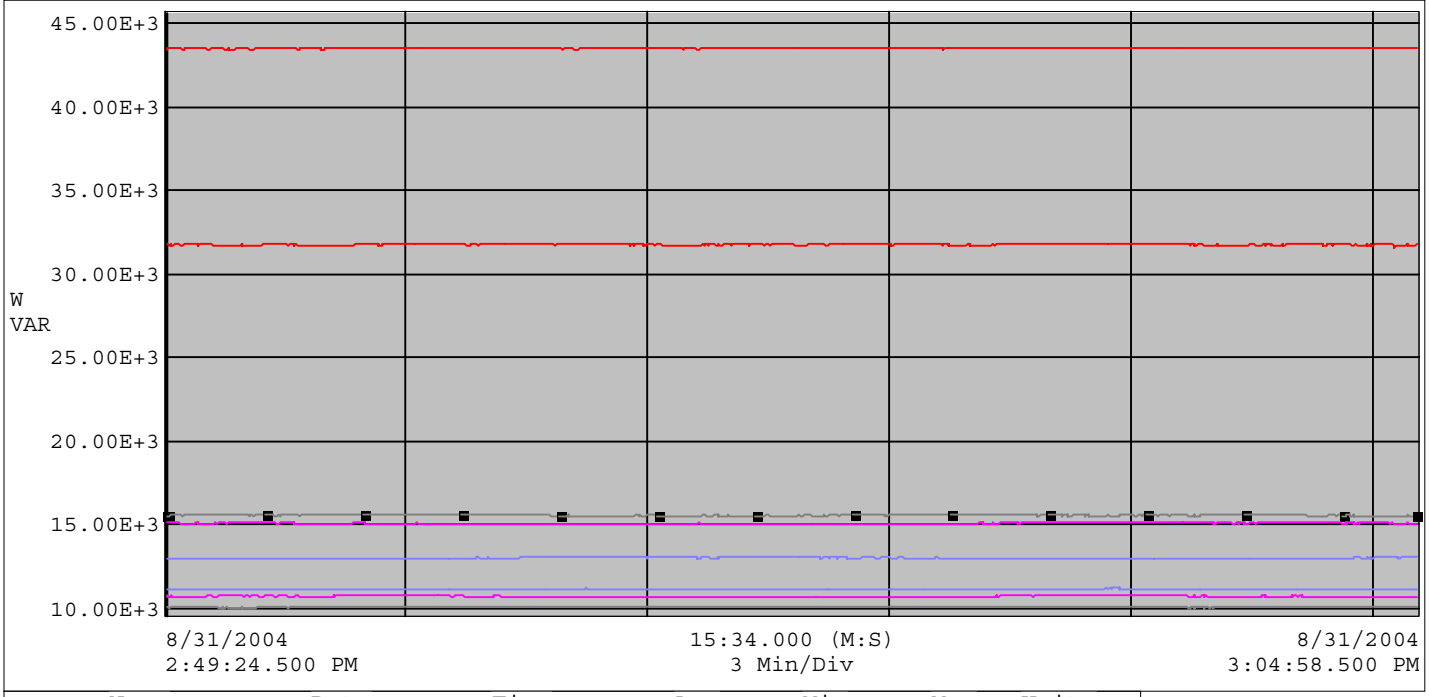


Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/31/2004	2:49:24.500 PM	7.699	7.600	7.800	%
Aunb(IEEE)	8/31/2004	2:49:24.500 PM	3.680	3.400	4.000	%

8/31/2004 - 2:49:24.000 PM
Val
7.800 ── Vunb(IEEE)
3.600 ── Aunb(IEEE)

Appendix 1K - Electrical

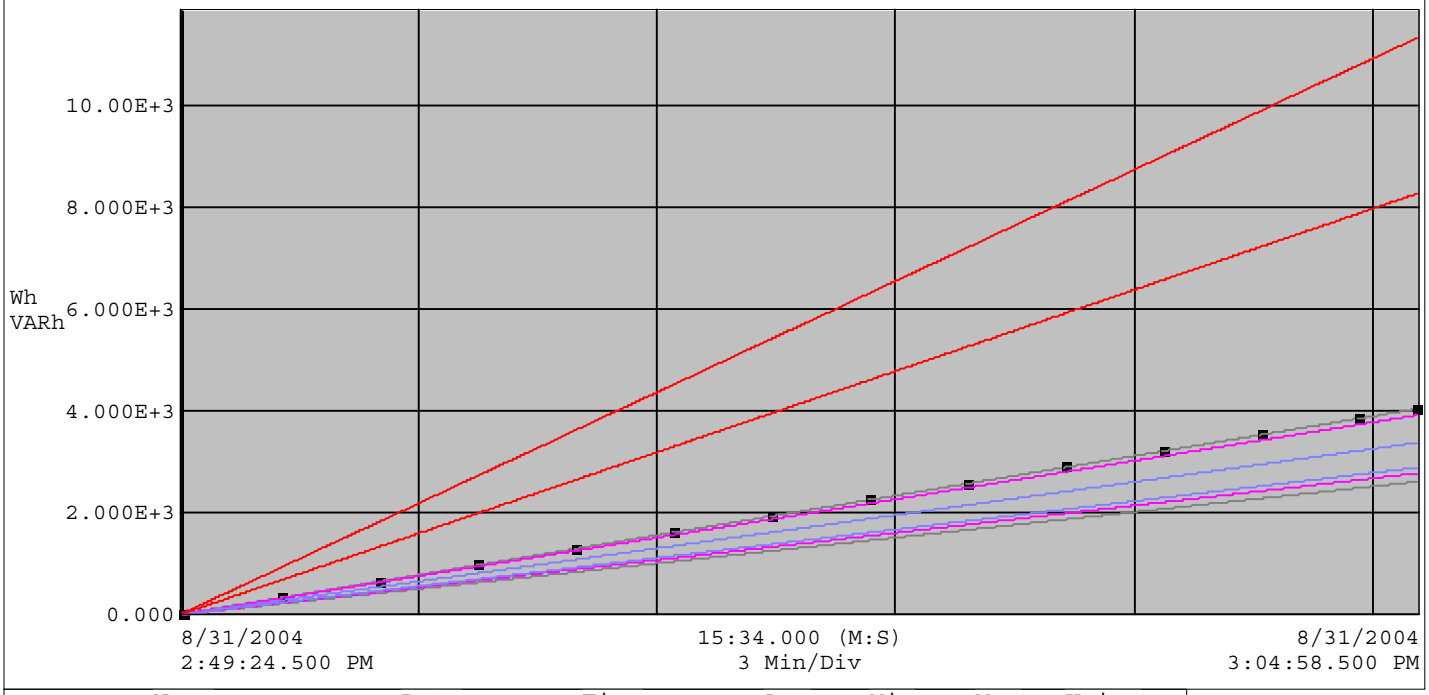
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/31/2004	2:49:24.500 PM	15.50E+3	15.45E+3	15.55E+3	W
W Line2	8/31/2004	2:49:24.500 PM	15.02E+3	14.98E+3	15.09E+3	W
W Line3	8/31/2004	2:49:24.500 PM	12.95E+3	12.90E+3	13.01E+3	W
W Sum of Phases	8/31/2004	2:49:24.500 PM	43.47E+3	43.43E+3	43.51E+3	W
VAR Line1	8/31/2004	2:49:24.500 PM	10.01E+3	9.946E+3	10.07E+3	VAR
VAR Line2	8/31/2004	2:49:24.500 PM	10.64E+3	10.57E+3	10.71E+3	VAR
VAR Line3	8/31/2004	2:49:24.500 PM	11.07E+3	11.02E+3	11.12E+3	VAR
VAR Sum of Phases	8/31/2004	2:49:24.500 PM	31.73E+3	31.59E+3	31.82E+3	VAR

8/31/2004 - 2:49:24.000 PM
Val
15.48E+3 — W Line1
15.03E+3 — W Line2
12.93E+3 — W Line3
43.44E+3 — W Sum of Phases
9.978E+3 — VAR Line1
10.66E+3 — VAR Line2
11.08E+3 — VAR Line3
31.71E+3 — VAR Sum of Phases

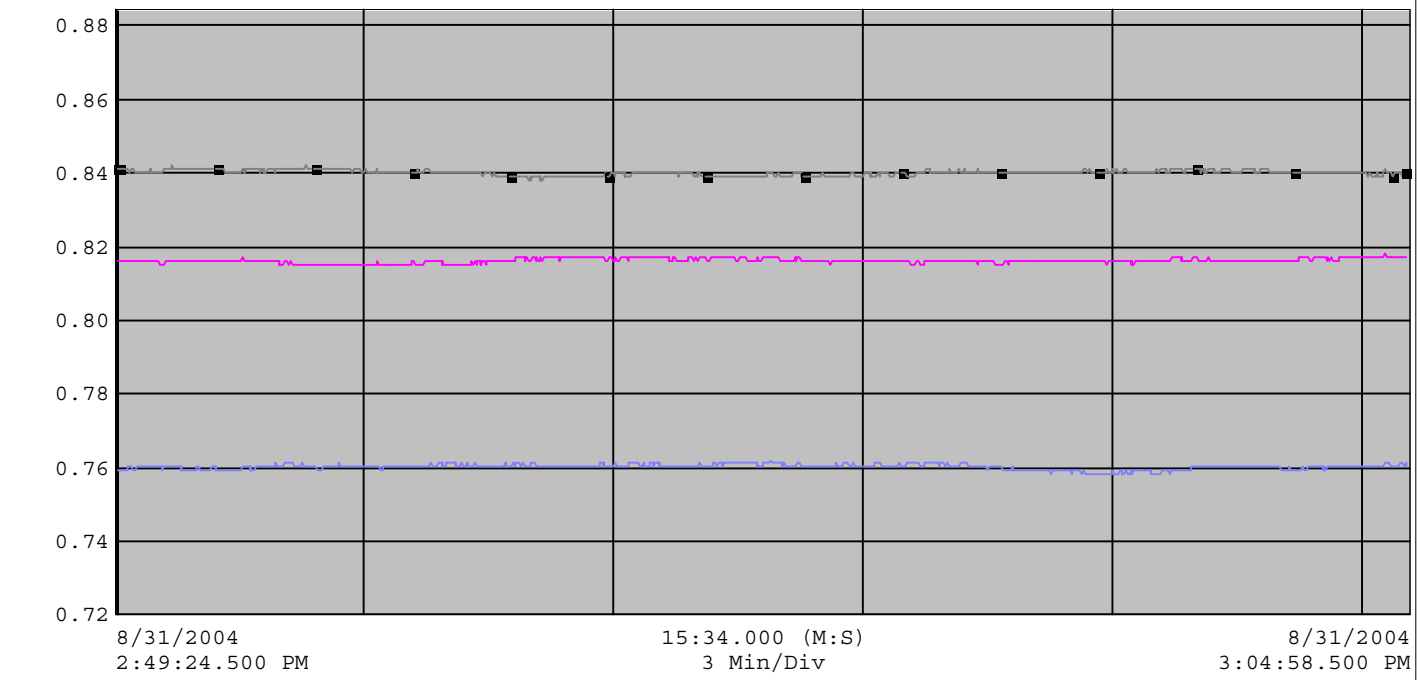
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/31/2004	2:49:24.500 PM	2.015E+3	4.299	4.025E+3	Wh
W-hours Line2	8/31/2004	2:49:24.500 PM	1.952E+3	4.168	3.902E+3	Wh
W-hours Line3	8/31/2004	2:49:24.500 PM	1.683E+3	3.592	3.362E+3	Wh
W-hours Sum of Phases	8/31/2004	2:49:24.500 PM	5.650E+3	12.06	11.29E+3	Wh
VAR-hours Line1	8/31/2004	2:49:24.500 PM	1.301E+3	2.777	2.600E+3	VARh
VAR-hours Line2	8/31/2004	2:49:24.500 PM	1.384E+3	2.953	2.764E+3	VARh
VAR-hours Line3	8/31/2004	2:49:24.500 PM	1.439E+3	3.072	2.876E+3	VARh
VAR-hours Sum of Phases	8/31/2004	2:49:24.500 PM	4.124E+3	8.802	8.240E+3	VARh

8/31/2004 - 2:49:24.000 PM
Val
4.299 — W-hours Line1
4.168 — W-hours Line2
3.592 — W-hours Line3
12.06 — W-hours Sum of Phases
2.777 — VAR-hours Line1
2.953 — VAR-hours Line2
3.072 — VAR-hours Line3
8.802 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/31/2004	2:49:24.500 PM	0.840	0.838	0.842	
PF Line2	8/31/2004	2:49:24.500 PM	0.816	0.815	0.818	
PF Line3	8/31/2004	2:49:24.500 PM	0.760	0.758	0.762	

8/31/2004 - 2:49:24.000 PM
Val
0.841 PF Line1
0.816 PF Line2
0.759 PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Y6\083104-Y6.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE and Victor Jardel ,	GWA WPS Y-6 ,

Comments
Recorded at motor starter overload relay. No Phase monitor. GPA Meter 04-565-824 with a demand reading of 47.4 KW. Ungrounded delta connected transformer bank.

GWA Water Pumping Station Assessment				
Station Name: Y-07	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 09/01/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.075	
Transformer Pole Condition and Grounding	2.5%	0	0	
Transformer Connection Type	5.0%	0	0	
Transformer Wiring Method	5.0%	0	0	
Lightning Arrester Condition	5.0%	0	0	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0	
Main Disconnect	10.0%	0	0	
Grounding	5.0%	0	0	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0	
Generator Condition	10.0%	0	0	
Generator Battery	5.0%	0	0	
Diesel Fuel Line Condition	2.5%	0	0	
Auto Transfer Switch	2.5%	0	0	
Pump Motor Starter	**25.0%**		0	
Main Breaker	5.0%	0	0	
Motor Starter	5.0%	0	0	
Overload Relay	5.0%	0	0	
Wiring	5.0%	0	0	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.03	
Pressure	1.5%	1	0.015	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	0	0	
Building Electrical	**5.0%**		0	
Lighting	3.0%	0	0	
Power Devices	2.0%	0	0	
	100%	**Assessment Value**		**0.1**

Comments: Exterior assessment only. Do not include in total assessment.

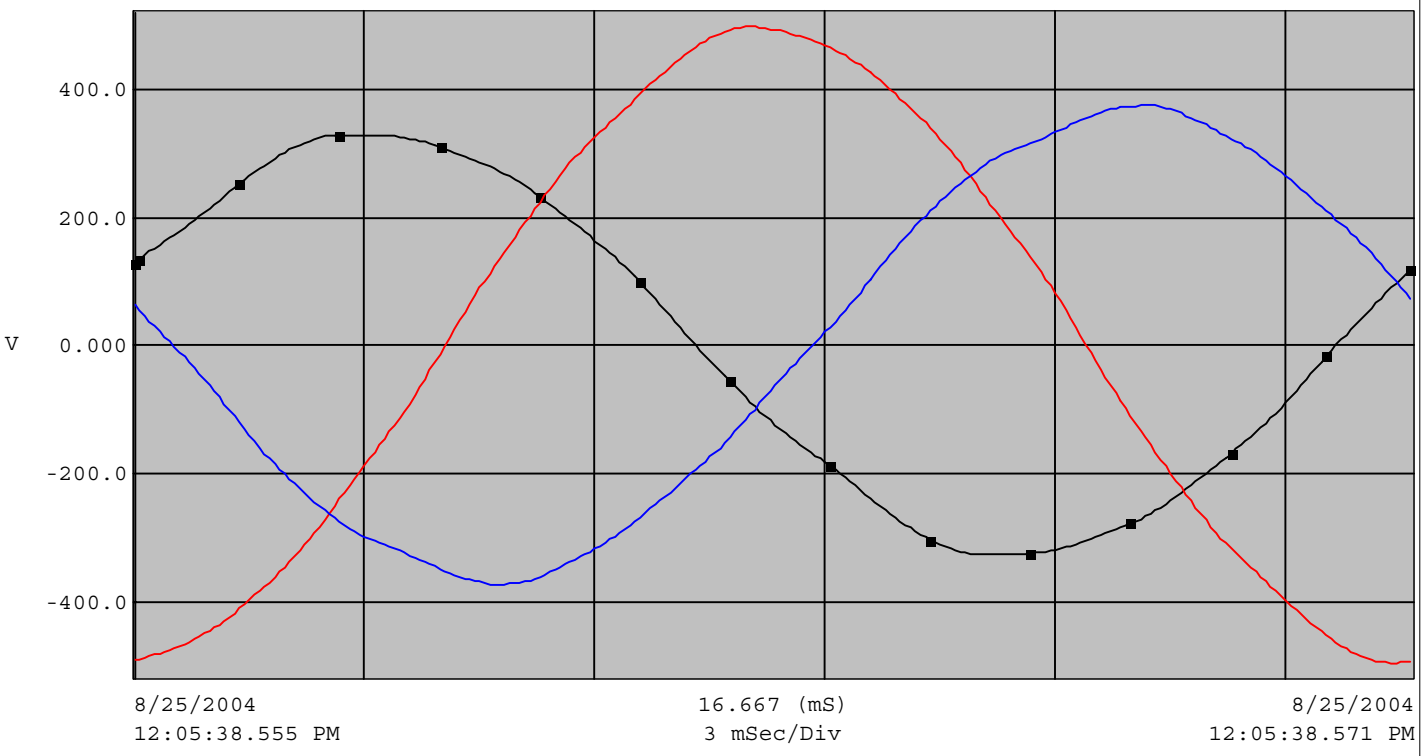
GWA Water Pumping Station Assessment				
Station Name: Y-09	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/25/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.425	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	3	0.15	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	0	0	2
Metering Arrangement	2.5%	2	0.05	7
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.575	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	2	0.05	23
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.6	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	3	0.15	
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.12	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.07	
Pressure	1.5%	1	0.015	
Flow	1.5%	1	0.015	
Automatic Controls	2.0%	2	0.04	
Building Electrical	**5.0%**		0.1	
Lighting	3.0%	2	0.06	
Power Devices	2.0%	2	0.04	
	100%	**Assessment Value**		**2.3**

Comments:

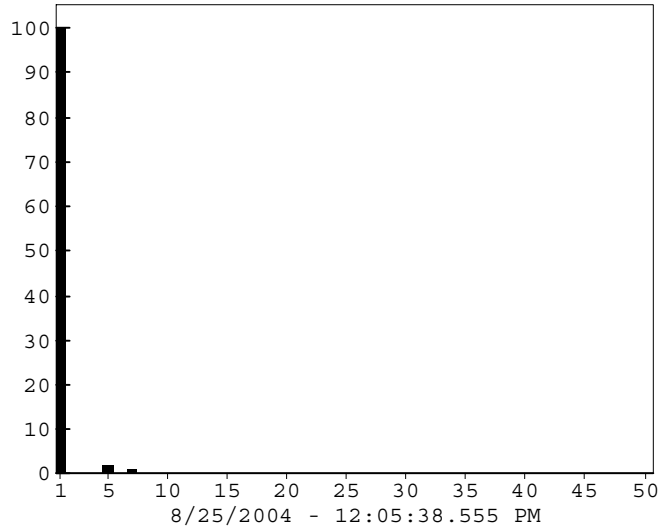
082504 - Y-09 Photo

Recording Start Date	8/25/2004 - 12:05:38 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/25/2004	12:05:38.555 PM	16.667	232.5	V
Waveform V2	8/25/2004	12:05:38.555 PM	16.667	347.2	V
Waveform V3	8/25/2004	12:05:38.555 PM	16.667	259.9	V

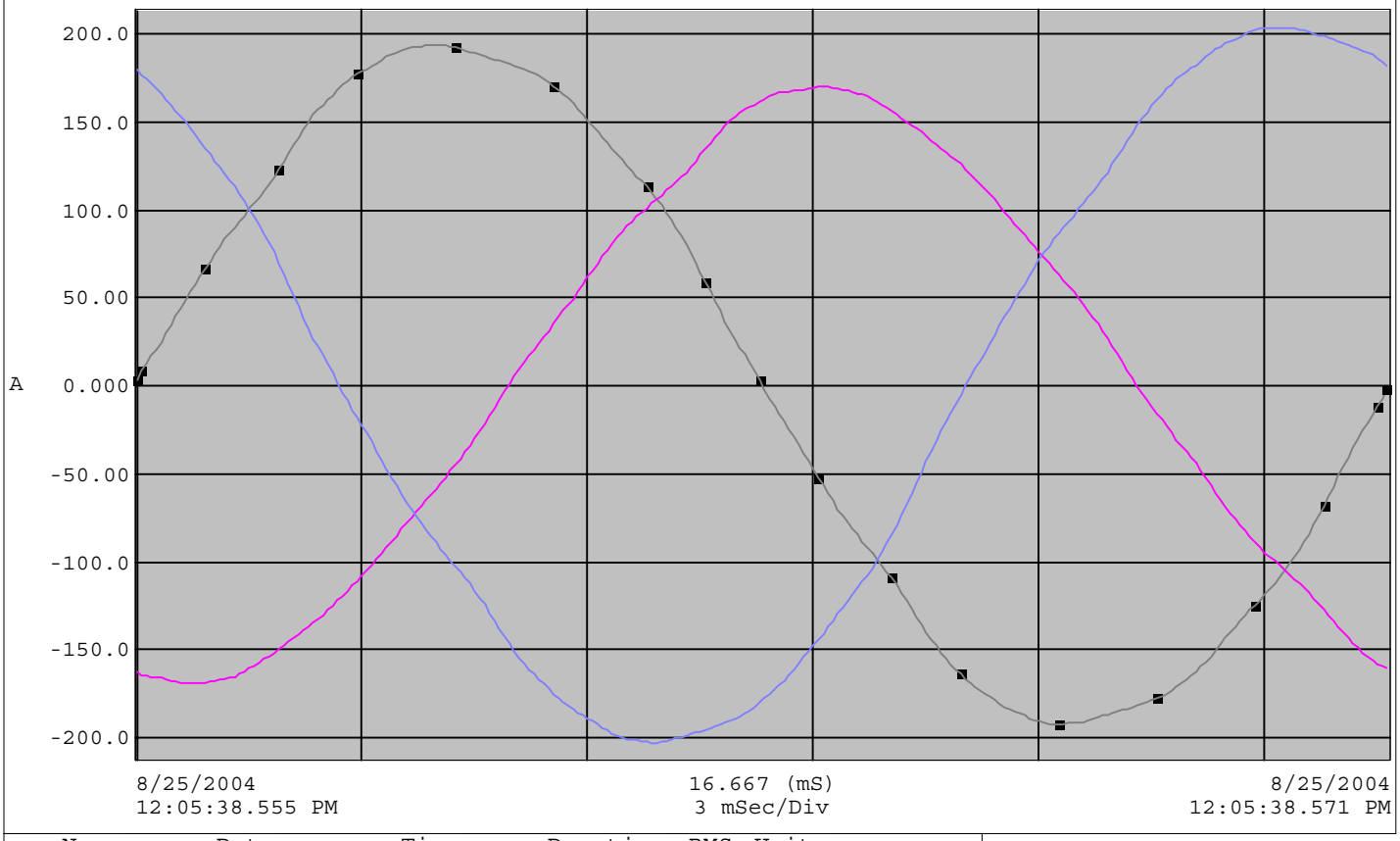


8/25/2004 - 12:05:38.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

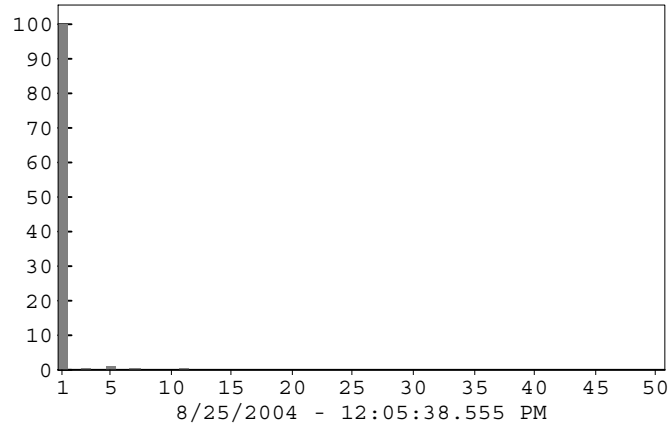
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.8	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.0	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.1	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/25/2004	12:05:38.555 PM	16.667	137.3	A
Waveform I2	8/25/2004	12:05:38.555 PM	16.667	116.8	A
Waveform I3	8/25/2004	12:05:38.555 PM	16.667	144.2	A

Waveform I1
137.29 Arms, 2.08 %THD

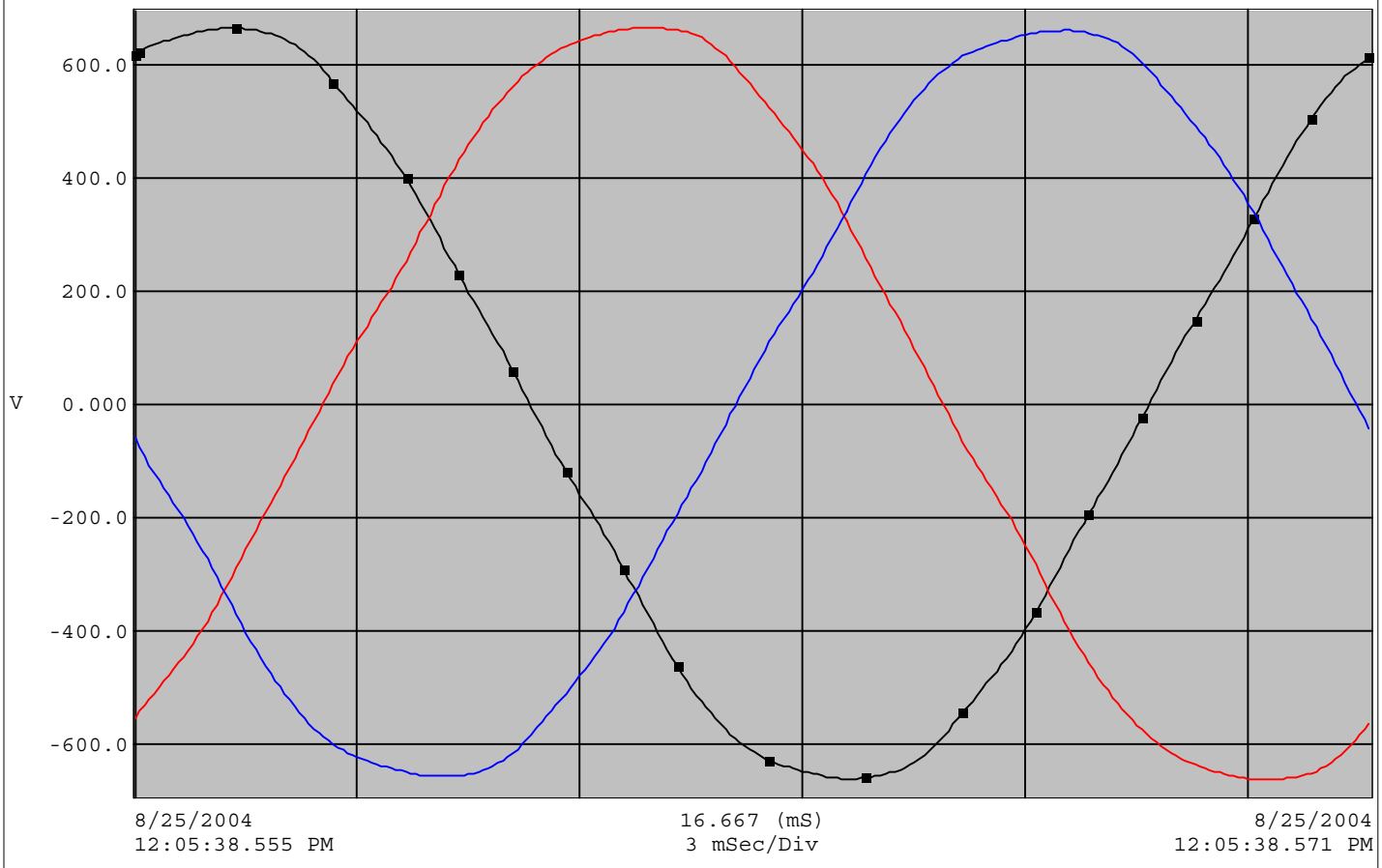


8/25/2004 - 12:05:38.015 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

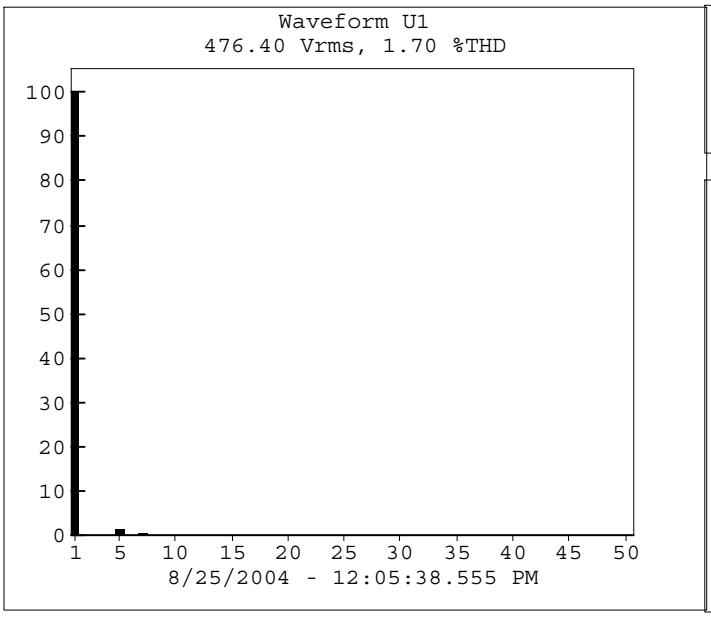
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.1
H02	0.0	H19	0.1	H36	0.0
H03	0.7	H20	0.0	H37	0.1
H04	0.0	H21	0.0	H38	0.0
H05	1.6	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.7	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.8	H28	0.0	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/25/2004	12:05:38.555 PM	16.667	476.4	V
Waveform U2	8/25/2004	12:05:38.555 PM	16.667	477.5	V
Waveform U3	8/25/2004	12:05:38.555 PM	16.667	473.9	V



8/25/2004 - 12:05:38.015 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/25/2004
Start Time: 12:05:38 PM
Duration: 0:0.000 (M:S)
W: 29.64E+3 W
VAR: 11.87E+3 W
VA: 31.93E+3 W
Power Factor: 0.928
Displacement Power Factor: 0.929
TAN: 0.399
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Y9\082504-Y9-Photo.dvb

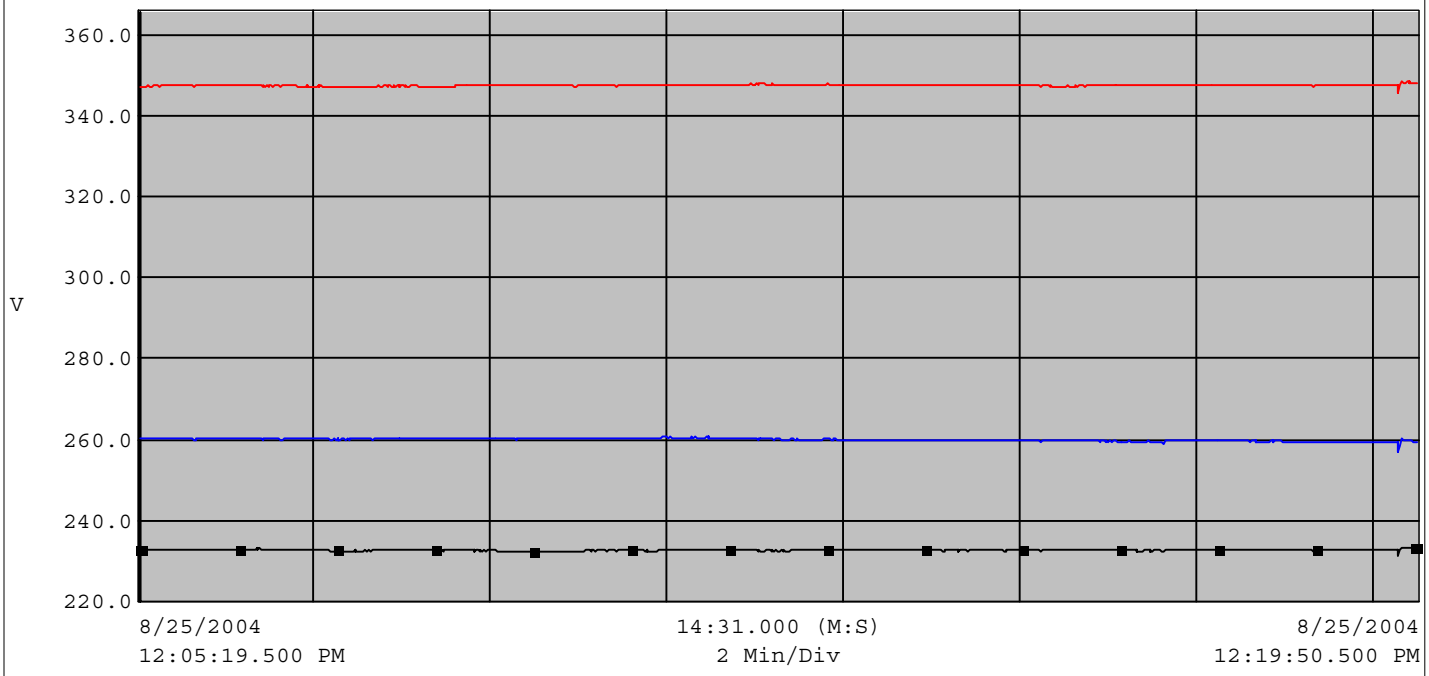
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS - Y9 Photo ,

Comments

082504 - Y-09 Trend

Recording Start Date	8/25/2004 - 12:05:19 PM
Recording Duration	14:31 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

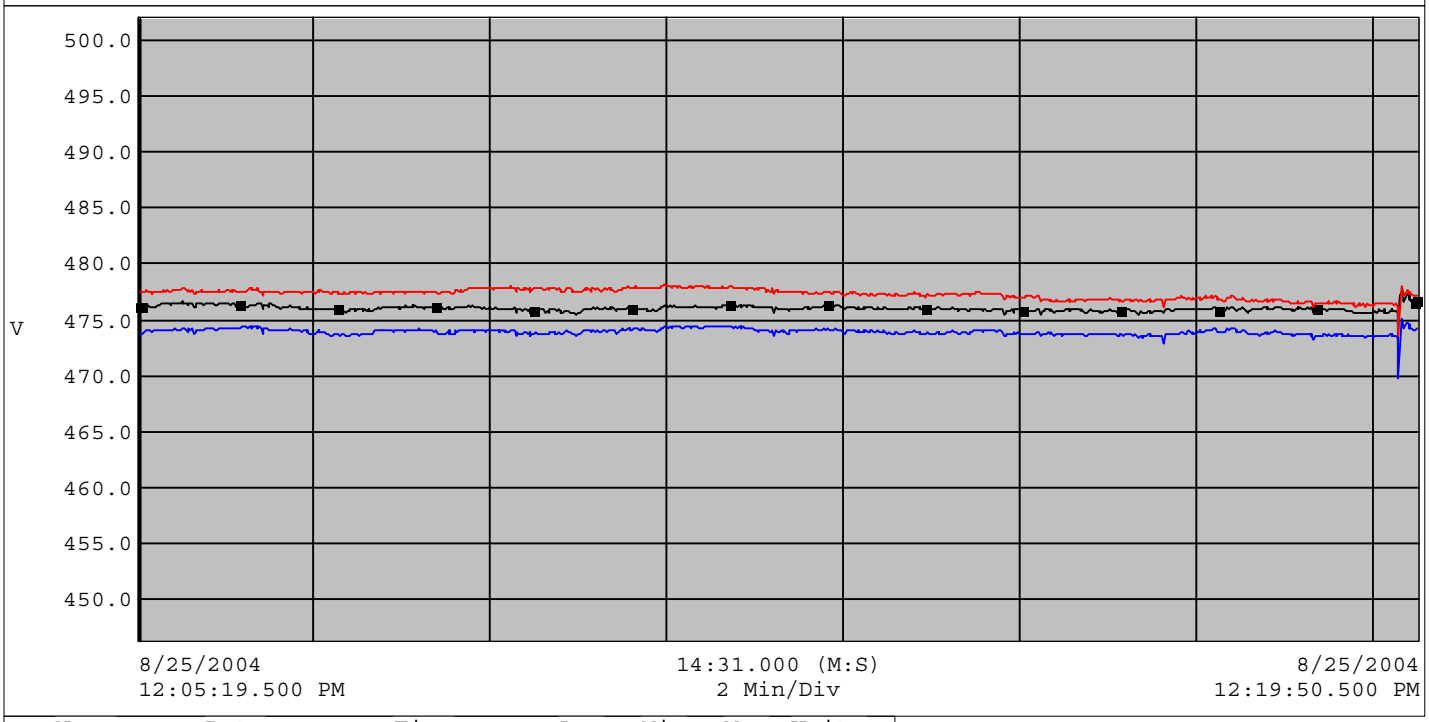
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/25/2004	12:05:19.500 PM	232.5	231.3	233.2	872
Vrms Line2	8/25/2004	12:05:19.500 PM	347.2	345.5	348.4	872
Vrms Line3	8/25/2004	12:05:19.500 PM	259.7	256.6	260.3	872

8/25/2004 - 12:05:19.000 PM
Val
232.4 — Vrms Line1
346.9 — Vrms Line2
260.1 — Vrms Line3

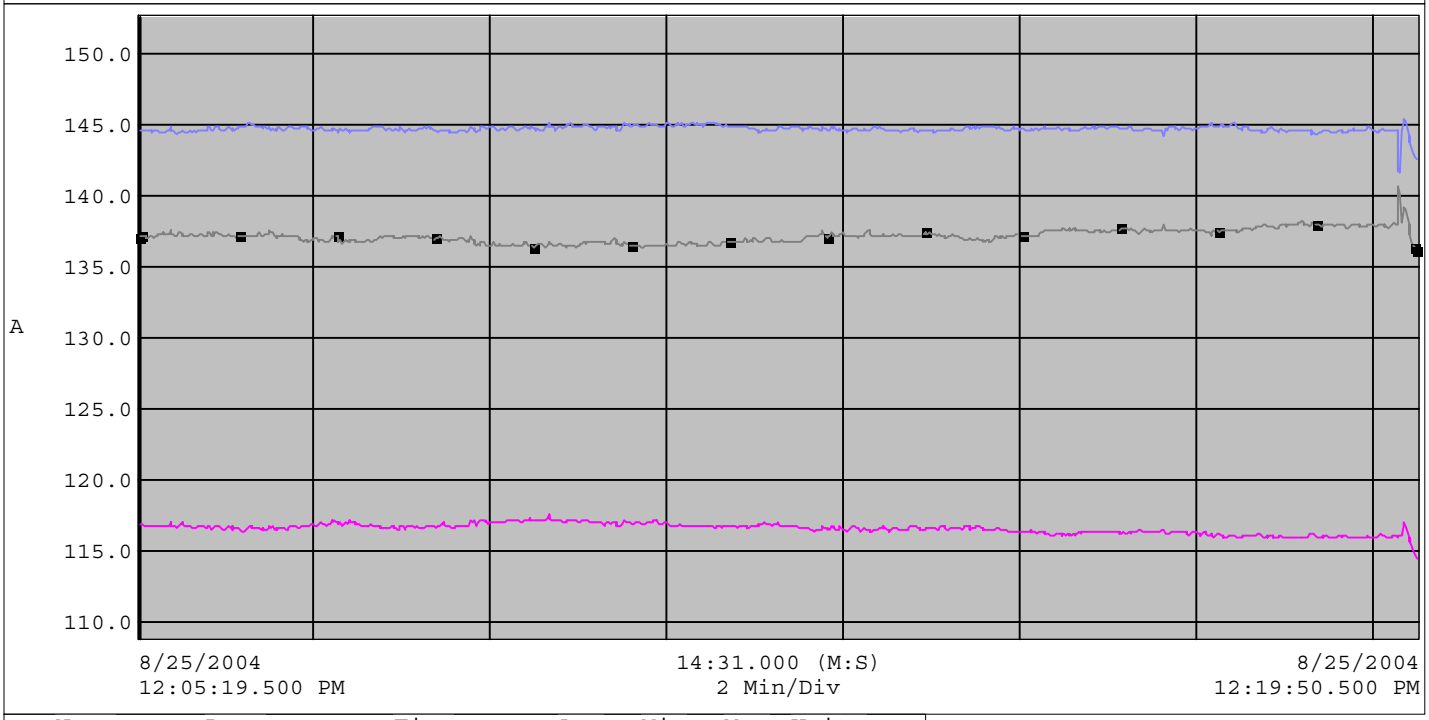
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/25/2004	12:05:19.500 PM	475.9	474.5	477.4	V
Urms Line2	8/25/2004	12:05:19.500 PM	477.2	472.9	478.1	V
Urms Line3	8/25/2004	12:05:19.500 PM	473.8	469.6	475.0	V

8/25/2004 - 12:05:19.000 PM
Val
476.0 — Urms Line1
477.5 — Urms Line2
473.7 — Urms Line3

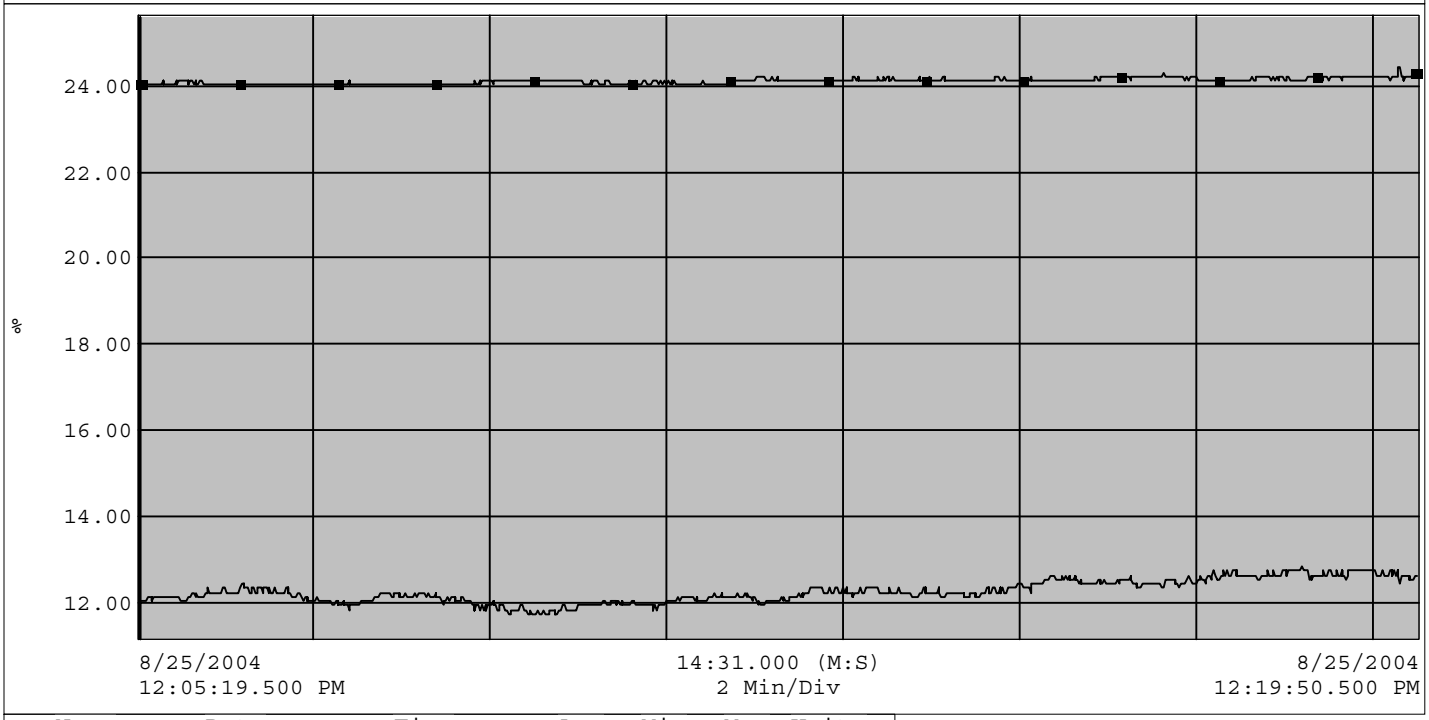
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/25/2004	12:05:19.500 PM	137.2	136.1	140.6	A
Arms Line2	8/25/2004	12:05:19.500 PM	116.6	114.5	117.5	A
Arms Line3	8/25/2004	12:05:19.500 PM	144.7	141.6	145.4	A

8/25/2004 - 12:05:19.000 PM
Val
137.0 — Arms Line1
116.9 — Arms Line2
144.5 — Arms Line3

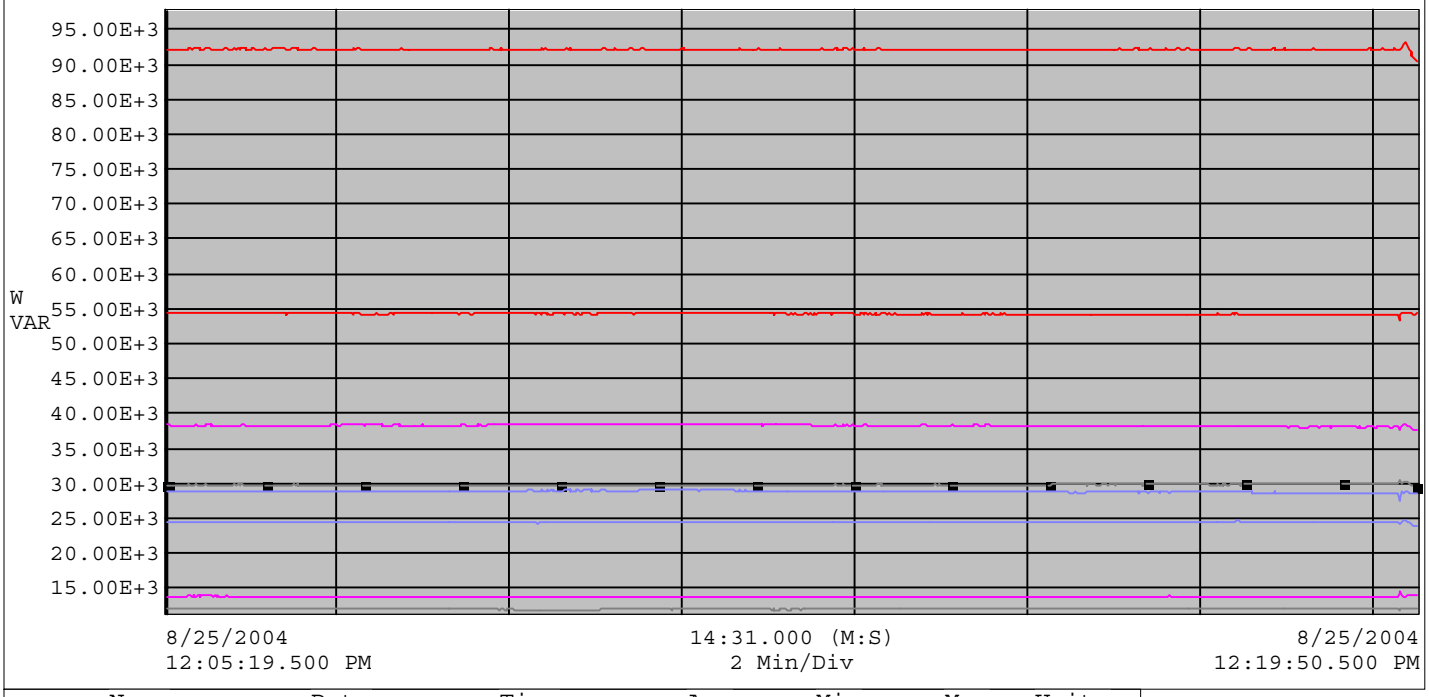
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/25/2004	12:05:19.500 PM	24.09	24.00	24.40	%
Aunb(IEEE)	8/25/2004	12:05:19.500 PM	12.22	11.70	12.80	%

8/25/2004 - 12:05:19.000 PM
Val
24.00 ── Vunb(IEEE)
12.00 ── Aunb(IEEE)

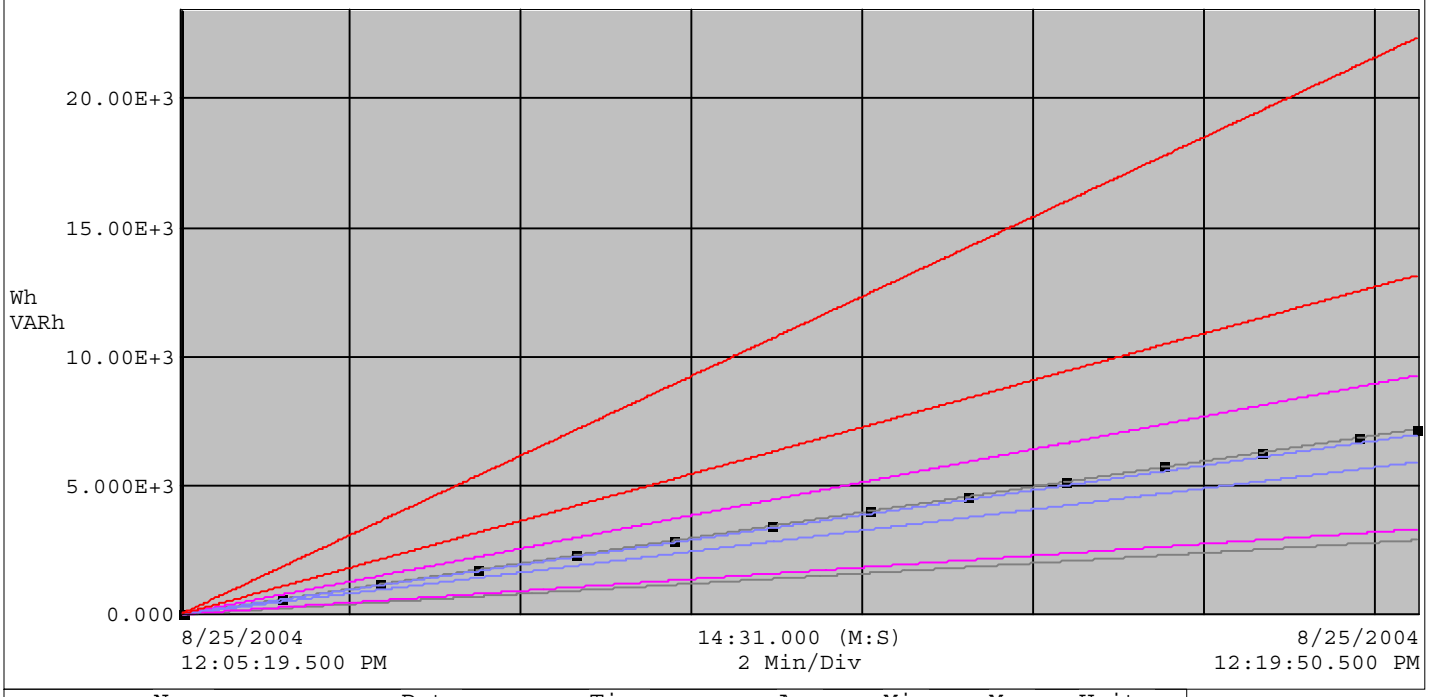
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/25/2004	12:05:19.500 PM	29.59E+3	29.32E+3	30.35E+3	W
W Line2	8/25/2004	12:05:19.500 PM	38.13E+3	37.39E+3	38.45E+3	W
W Line3	8/25/2004	12:05:19.500 PM	24.29E+3	23.72E+3	24.63E+3	W
W Sum of Phases	8/25/2004	12:05:19.500 PM	92.01E+3	90.43E+3	93.06E+3	W
VAR Line1	8/25/2004	12:05:19.500 PM	11.87E+3	11.68E+3	12.03E+3	VAR
VAR Line2	8/25/2004	12:05:19.500 PM	13.59E+3	13.45E+3	14.44E+3	VAR
VAR Line3	8/25/2004	12:05:19.500 PM	28.67E+3	27.28E+3	28.90E+3	VAR
VAR Sum of Phases	8/25/2004	12:05:19.500 PM	54.13E+3	53.03E+3	54.39E+3	VAR

8/25/2004 - 12:05:19.000 PM
Val
29.55E+3 — W Line1
38.20E+3 — W Line2
24.30E+3 — W Line3
92.04E+3 — W Sum of Phases
11.85E+3 — VAR Line1
13.64E+3 — VAR Line2
28.68E+3 — VAR Line3
54.18E+3 — VAR Sum of Phases

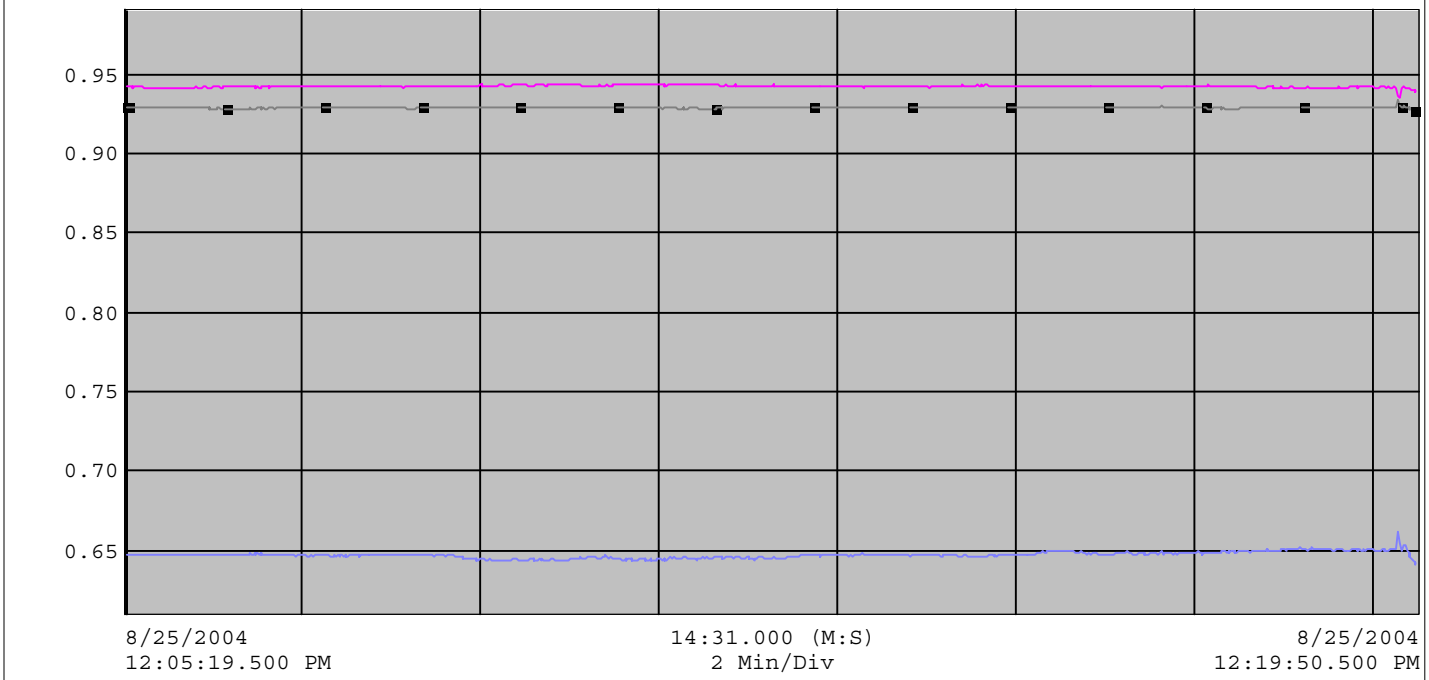
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/25/2004	12:05:19.500 PM	3.584E+3	8.313	7.168E+3	Wh
W-hours Line2	8/25/2004	12:05:19.500 PM	4.629E+3	10.71	9.235E+3	Wh
W-hours Line3	8/25/2004	12:05:19.500 PM	2.944E+3	6.823	5.883E+3	Wh
W-hours Sum of Phases	8/25/2004	12:05:19.500 PM	11.16E+3	25.85	22.29E+3	Wh
VAR-hours Line1	8/25/2004	12:05:19.500 PM	1.438E+3	3.334	2.875E+3	VARh
VAR-hours Line2	8/25/2004	12:05:19.500 PM	1.649E+3	3.818	3.292E+3	VARh
VAR-hours Line3	8/25/2004	12:05:19.500 PM	3.482E+3	8.055	6.945E+3	VARh
VAR-hours Sum of Phases	8/25/2004	12:05:19.500 PM	6.568E+3	15.21	13.11E+3	VARh

8/25/2004 - 12:05:19.000 PM
Val
8.313 — W-hours Line1
10.71 — W-hours Line2
6.823 — W-hours Line3
25.85 — W-hours Sum of Phases
3.334 — VAR-hours Line1
3.818 — VAR-hours Line2
8.055 — VAR-hours Line3
15.21 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/25/2004	12:05:19.500 PM	0.928	0.925	0.933	
PF Line2	8/25/2004	12:05:19.500 PM	0.942	0.934	0.943	
PF Line3	8/25/2004	12:05:19.500 PM	0.646	0.641	0.661	

8/25/2004 - 12:05:19.000 PM
Val
0.928 — PF Line1
0.942 — PF Line2
0.646 — PF Line3

Trend Summary Report

Database: Y:\2004 Projects\04-063 Guam Water Master Plan\Temp\temp2\Guam Data\Y9\082504-Y9.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa ,	GWA - WPS Y9 ,

Comments

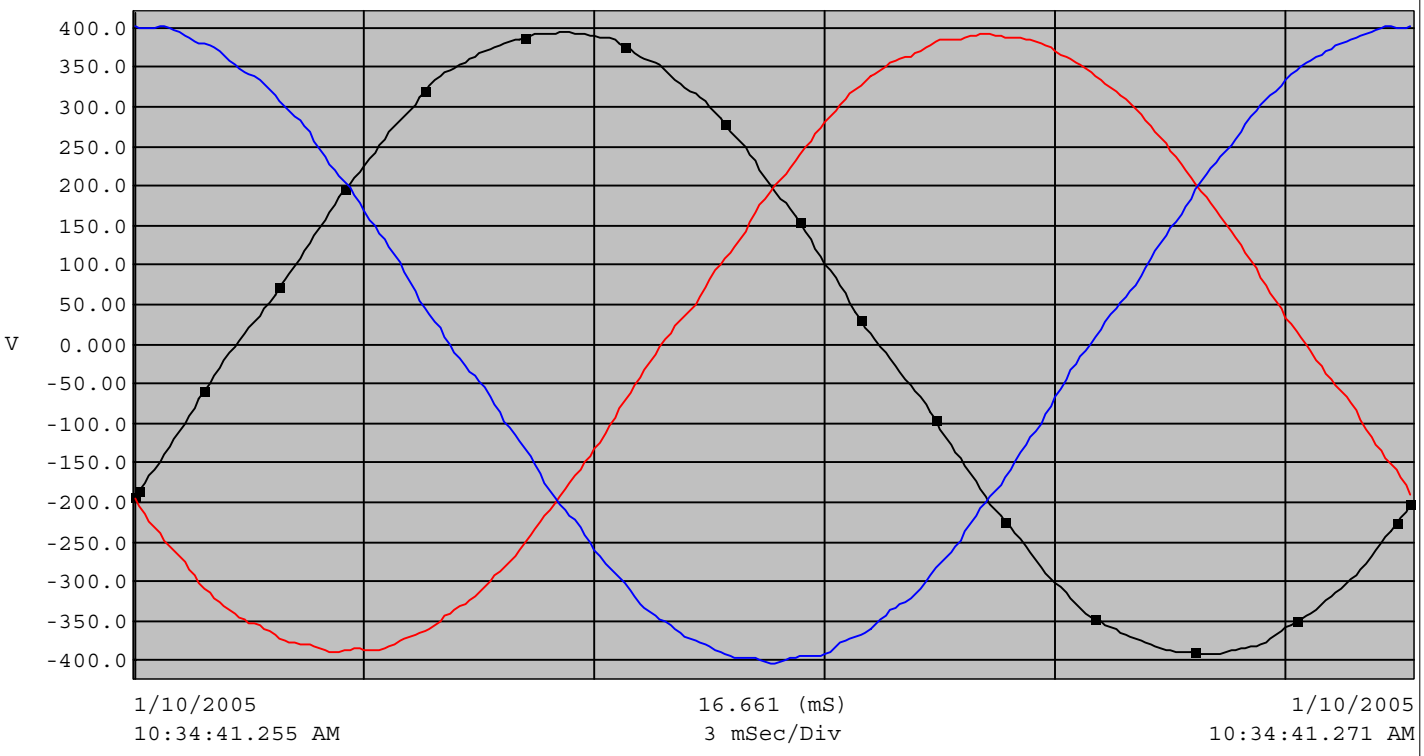
GWA Water Pumping Station Assessment				
Station Name: Y-10	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 08/03/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.45	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	3	0.15	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	0	0	3
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.45	
Generator Condition	10.0%	2	0.2	22
Generator Battery	5.0%	2	0.1	22
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.7	
Main Breaker	5.0%	2	0.1	36
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	3	0.15	
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	3	0.15	
Chlorination Motor Starter	**5.0%**		0.11	
Main Breaker	1.0%	2	0.02	36
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.1	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	2	0.04	
Building Electrical	**5.0%**		0.1	
Lighting	3.0%	2	0.06	
Power Devices	2.0%	2	0.04	
	100%	**Assessment Value**		**2.4**

Comments:

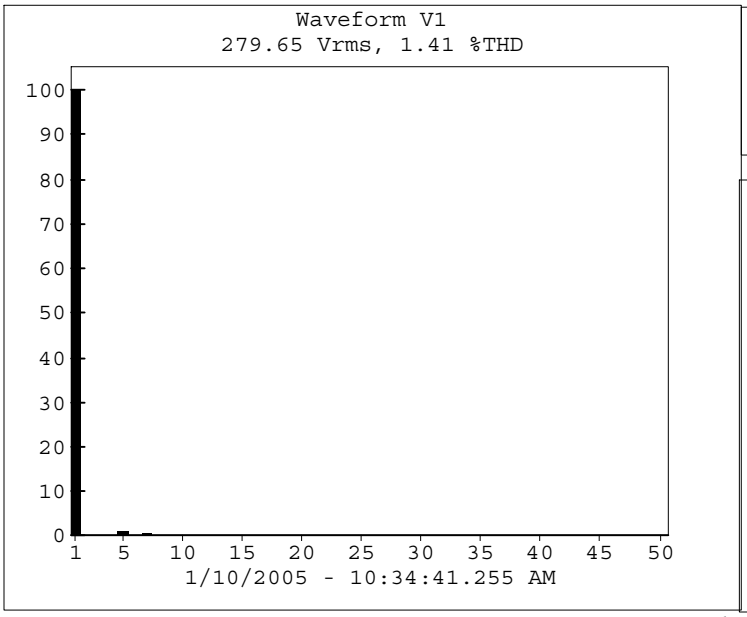
011005 - Y-10 Photo

Recording Start Date	1/10/2005 - 10:34:41 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	1/10/2005	10:34:41.255 AM	16.661	279.6	V
Waveform V2	1/10/2005	10:34:41.255 AM	16.661	277.6	V
Waveform V3	1/10/2005	10:34:41.255 AM	16.661	286.0	V

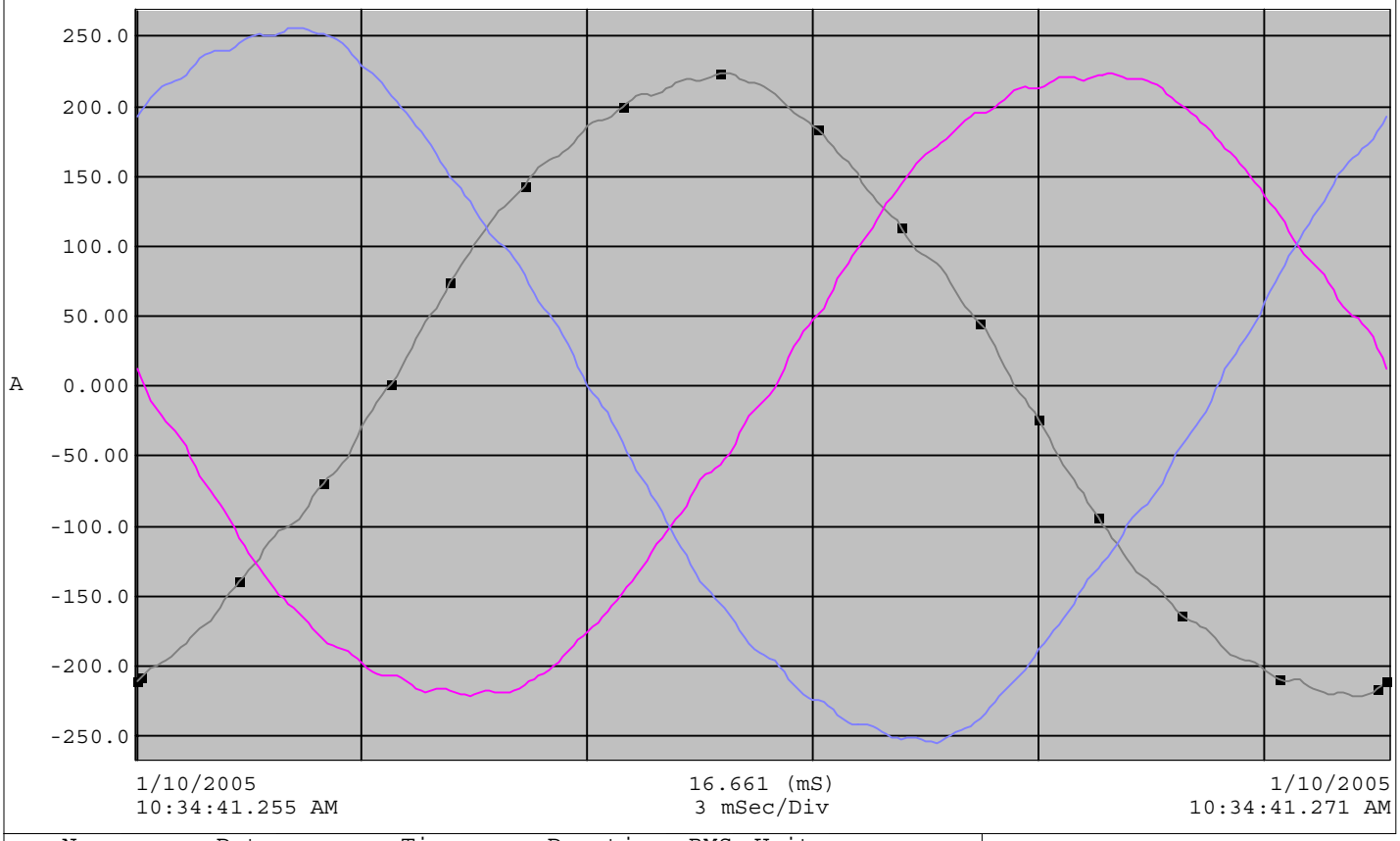


1/10/2005 - 10:34:41.016 AM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.5	H24	0.2	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.2	H45	0.0
H12	0.0	H29	0.3	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Current
Frequency: 60.02 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	1/10/2005	10:34:41.255 AM	16.661	154.8	A
Waveform I2	1/10/2005	10:34:41.255 AM	16.661	158.2	A
Waveform I3	1/10/2005	10:34:41.255 AM	16.661	177.2	A

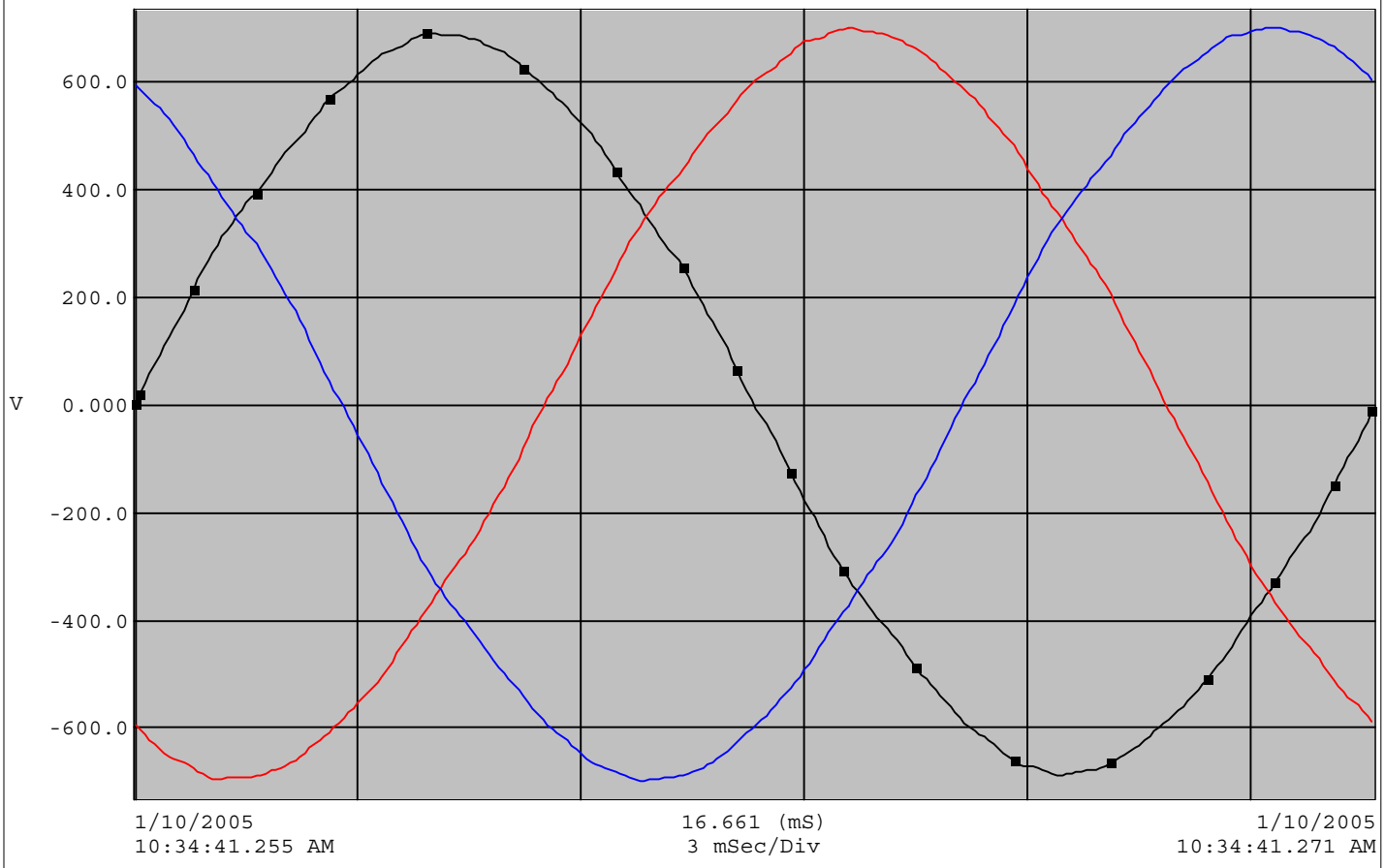
Waveform I1
154.83 Arms, 2.70 %THD

1/10/2005 - 10:34:41.016 AM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

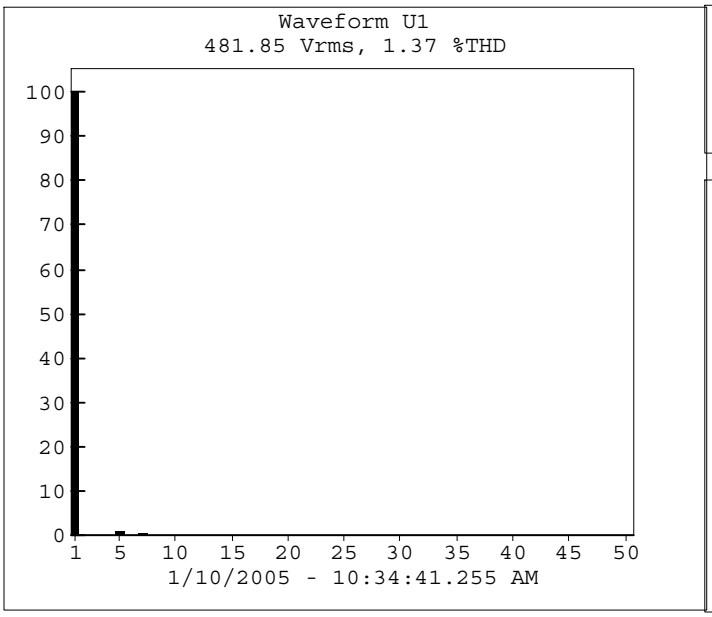
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	2.4	H22	0.2	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.5	H24	0.4	H41	0.0
H08	0.0	H25	0.3	H42	0.0
H09	0.1	H26	0.1	H43	0.0
H10	0.0	H27	0.2	H44	0.0
H11	0.6	H28	0.6	H45	0.0
H12	0.1	H29	0.3	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.02 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	1/10/2005	10:34:41.255 AM	16.661	481.9	V
Waveform U2	1/10/2005	10:34:41.255 AM	16.661	488.2	V
Waveform U3	1/10/2005	10:34:41.255 AM	16.661	490.6	V



1/10/2005 - 10:34:41.016 AM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.5	H24	0.2	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.1	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.2	H45	0.0
H12	0.0	H29	0.2	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 1/10/2005
Start Time: 10:34:41 AM
Duration: 0:0.000 (M:S)
W: 32.26E+3 W
VAR: 28.97E+3 W
VA: 43.36E+3 W
Power Factor: 0.744
Displacement Power Factor: 0.744
TAN: 0.897
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Y10\011005-Y10 Photo.dvb

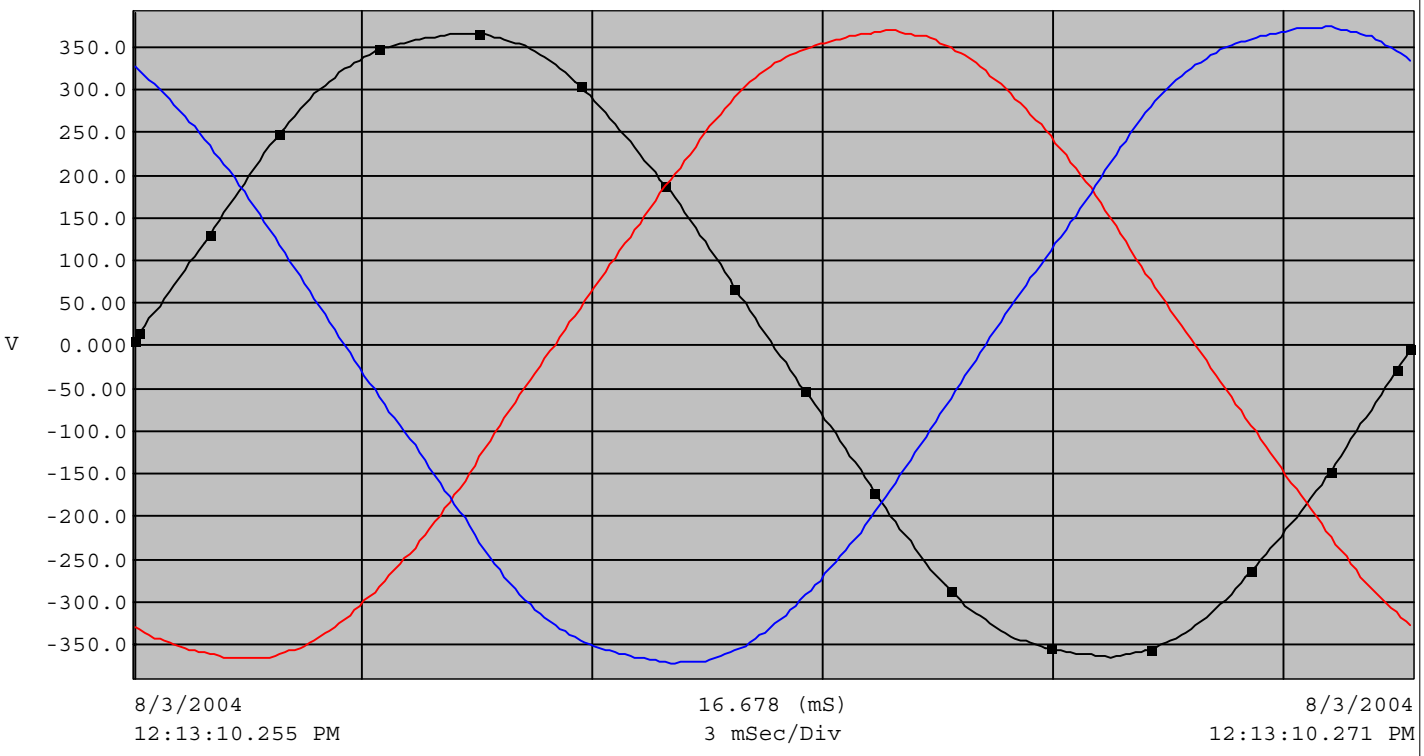
Operator	Test Site
GWA Victor Jardel ,	WPS Y-10 Photo ,

Comments

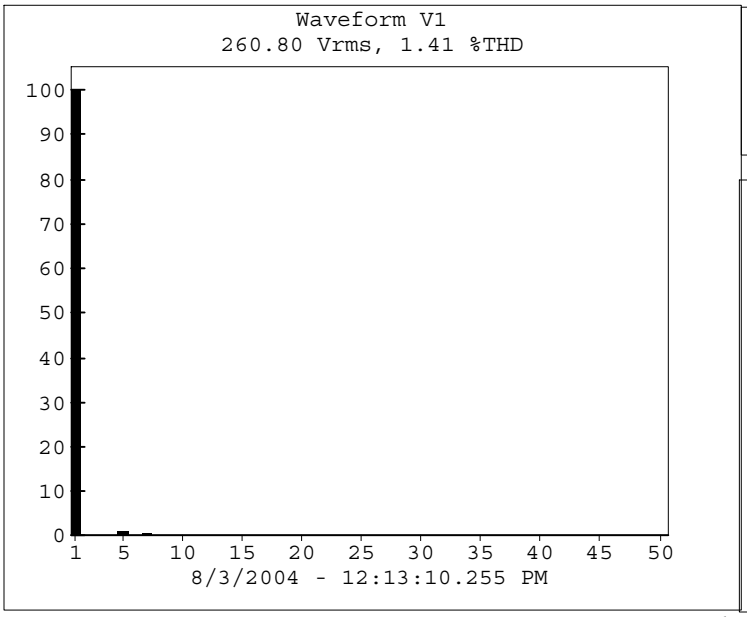
080304 - WPS Y-10 Photo 1

Recording Start Date	8/3/2004 - 12:13:10 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/3/2004	12:13:10.255 PM	16.678	260.8	V
Waveform V2	8/3/2004	12:13:10.255 PM	16.678	261.5	V
Waveform V3	8/3/2004	12:13:10.255 PM	16.678	266.0	V

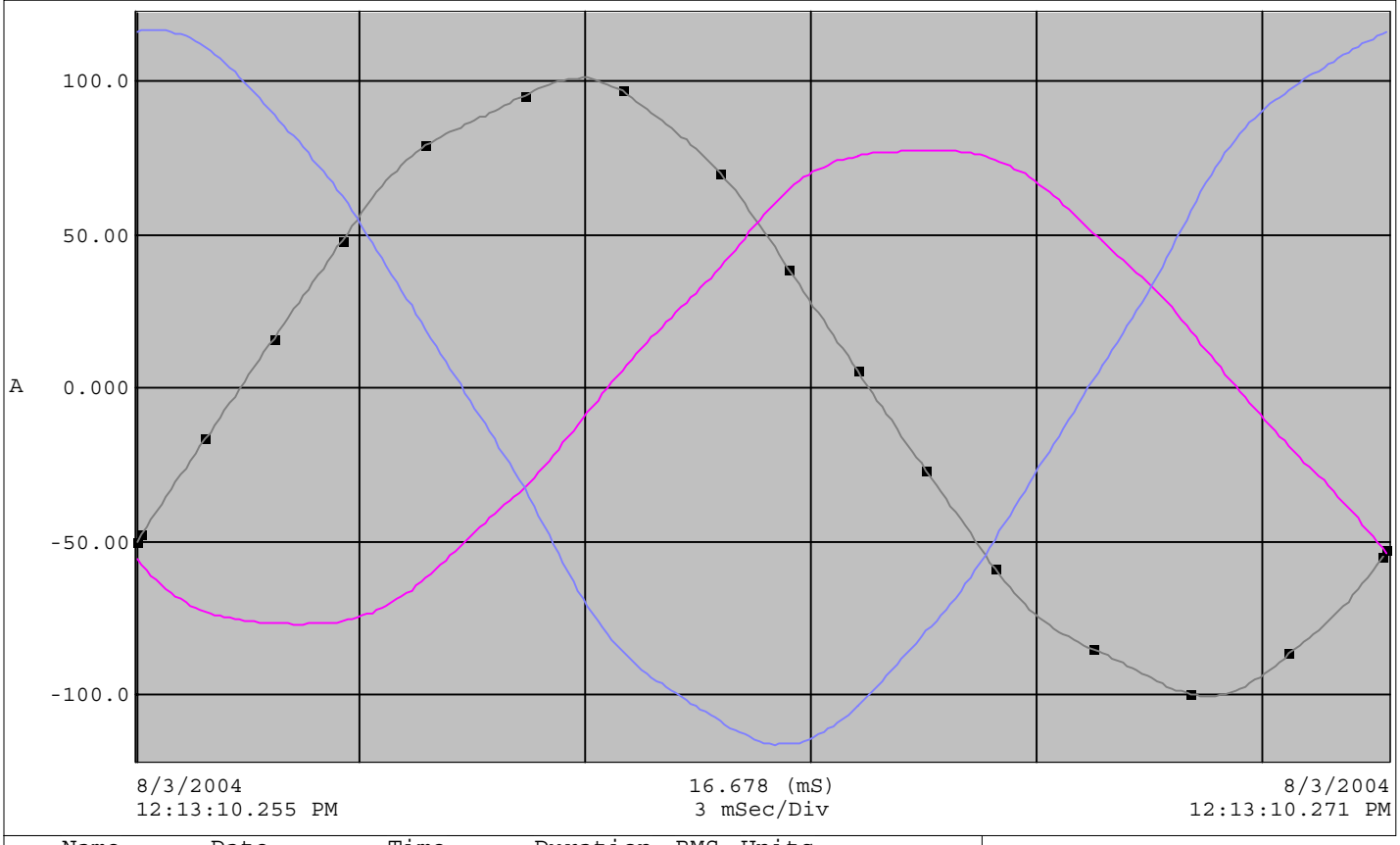


8/3/2004 - 12:13:10.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

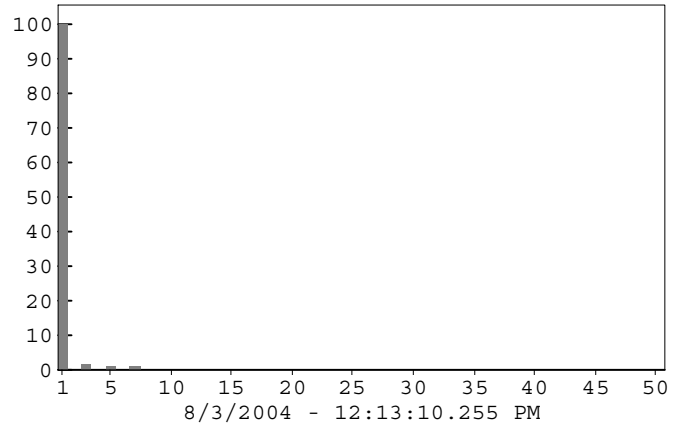
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/3/2004	12:13:10.255 PM	16.678	70.24	A
Waveform I2	8/3/2004	12:13:10.255 PM	16.678	55.65	A
Waveform I3	8/3/2004	12:13:10.255 PM	16.678	80.87	A

Waveform I1
70.24 Arms, 2.72 %THD

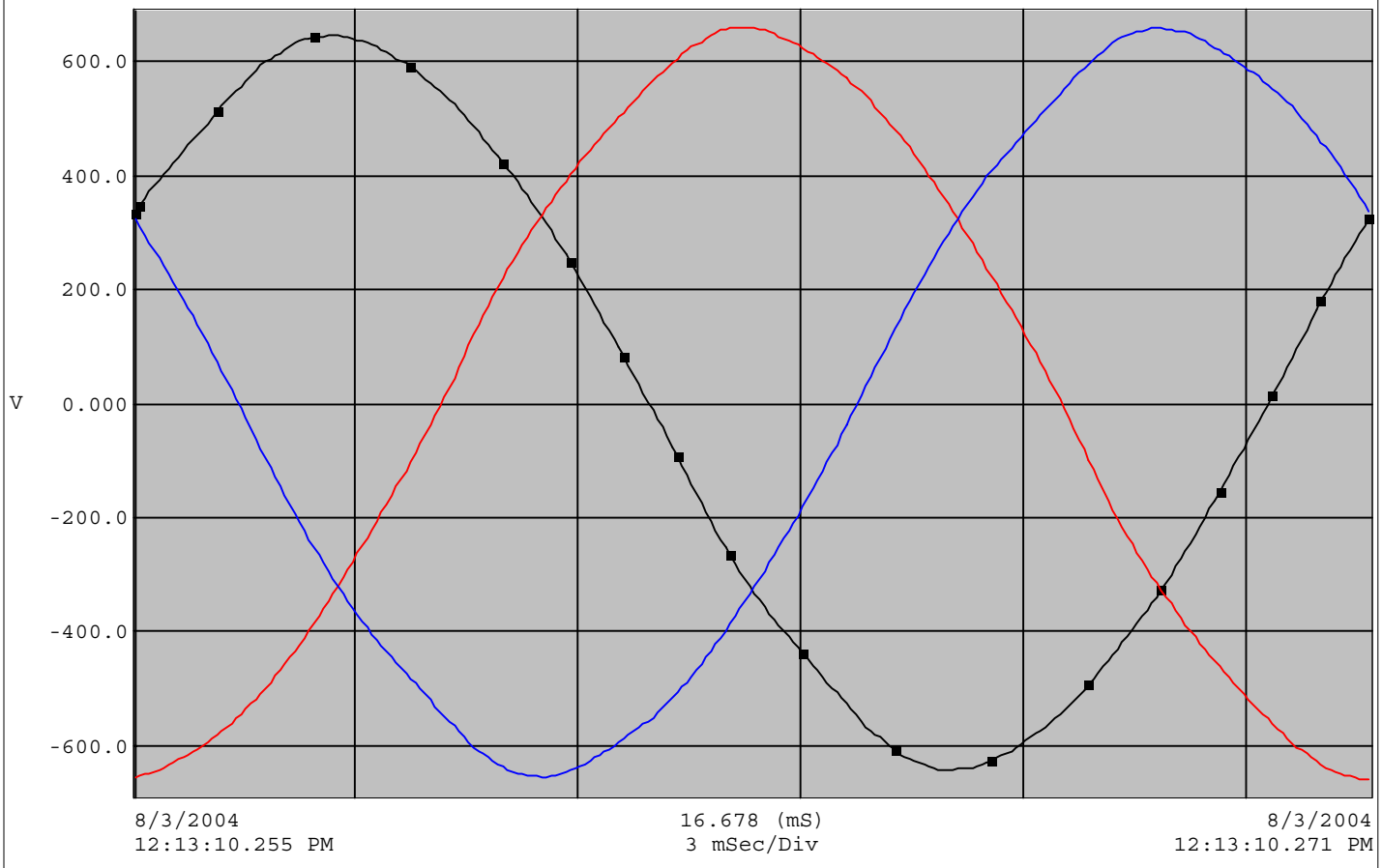


8/3/2004 - 12:13:10.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

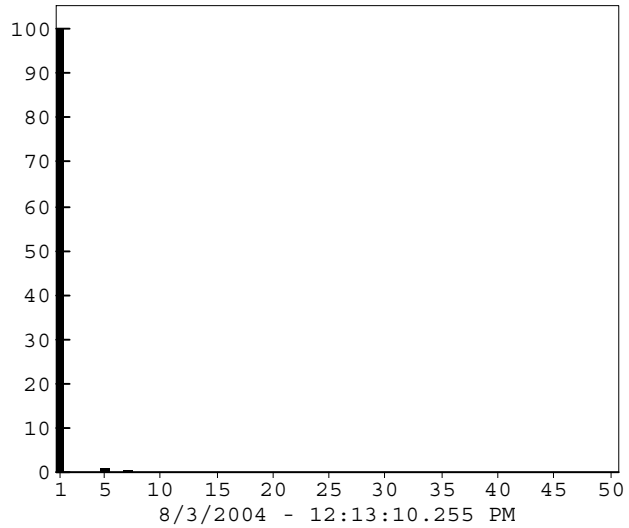
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	1.9	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.3	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/3/2004	12:13:10.255 PM	16.678	449.4	V
Waveform U2	8/3/2004	12:13:10.255 PM	16.678	459.3	V
Waveform U3	8/3/2004	12:13:10.255 PM	16.678	456.8	V

Waveform U1
449.36 Vrms, 1.35 %THD



8/3/2004 - 12:13:10.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/3/2004
Start Time: 12:13:10 PM
Duration: 0:0.000 (M:S)
W: 15.71E+3 W
VAR: 9.419E+3 W
VA: 18.32E+3 W
Power Factor: 0.858
Displacement Power Factor: 0.858
TAN: 0.598
VoltageRatio: 1.000
CurrentRatio: 1.000
```

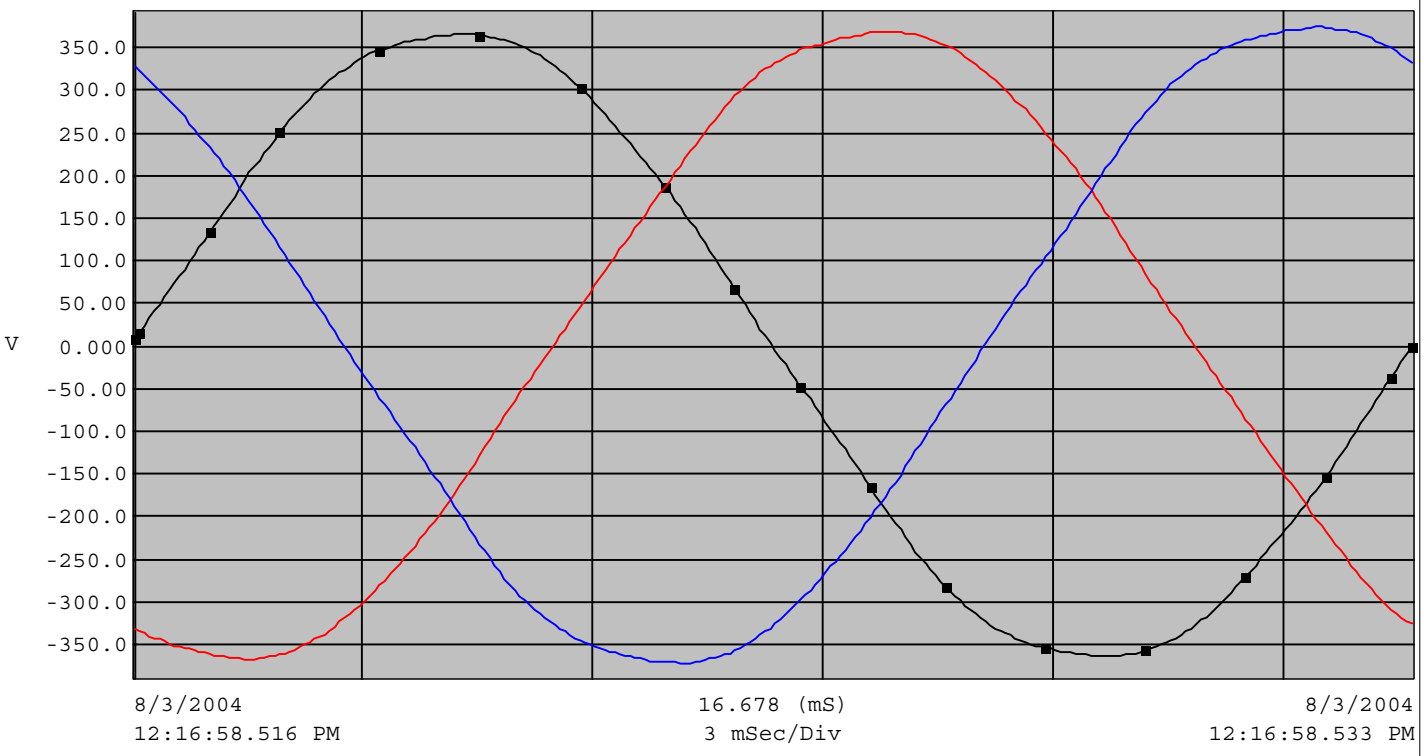
Photo Report

Database: X:\Y10\080304-Y10-Photo1.dvb	
Operator ,	Test Site ,
Comments	

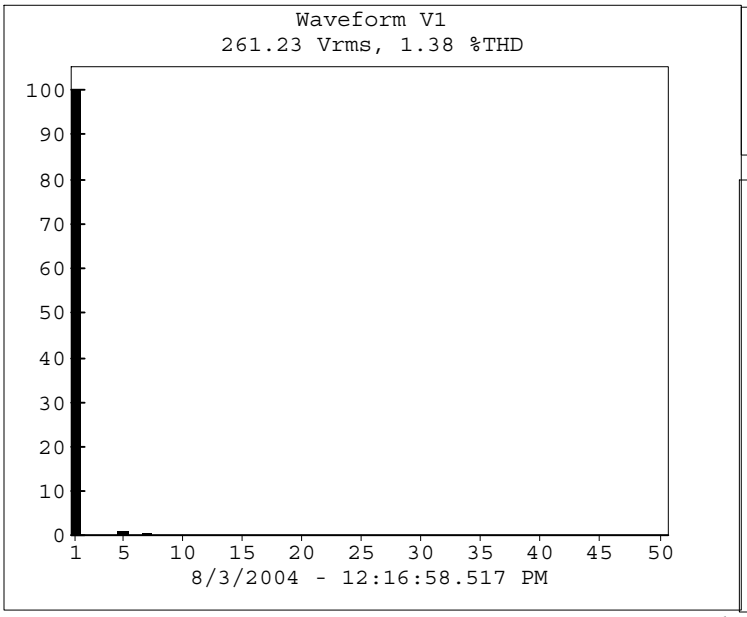
080304 - WPS Y-10 Photo 2

Recording Start Date	8/3/2004 - 12:16:58 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/3/2004	12:16:58.516 PM	16.678	261.2	V
Waveform V2	8/3/2004	12:16:58.516 PM	16.678	261.9	V
Waveform V3	8/3/2004	12:16:58.516 PM	16.678	266.4	V



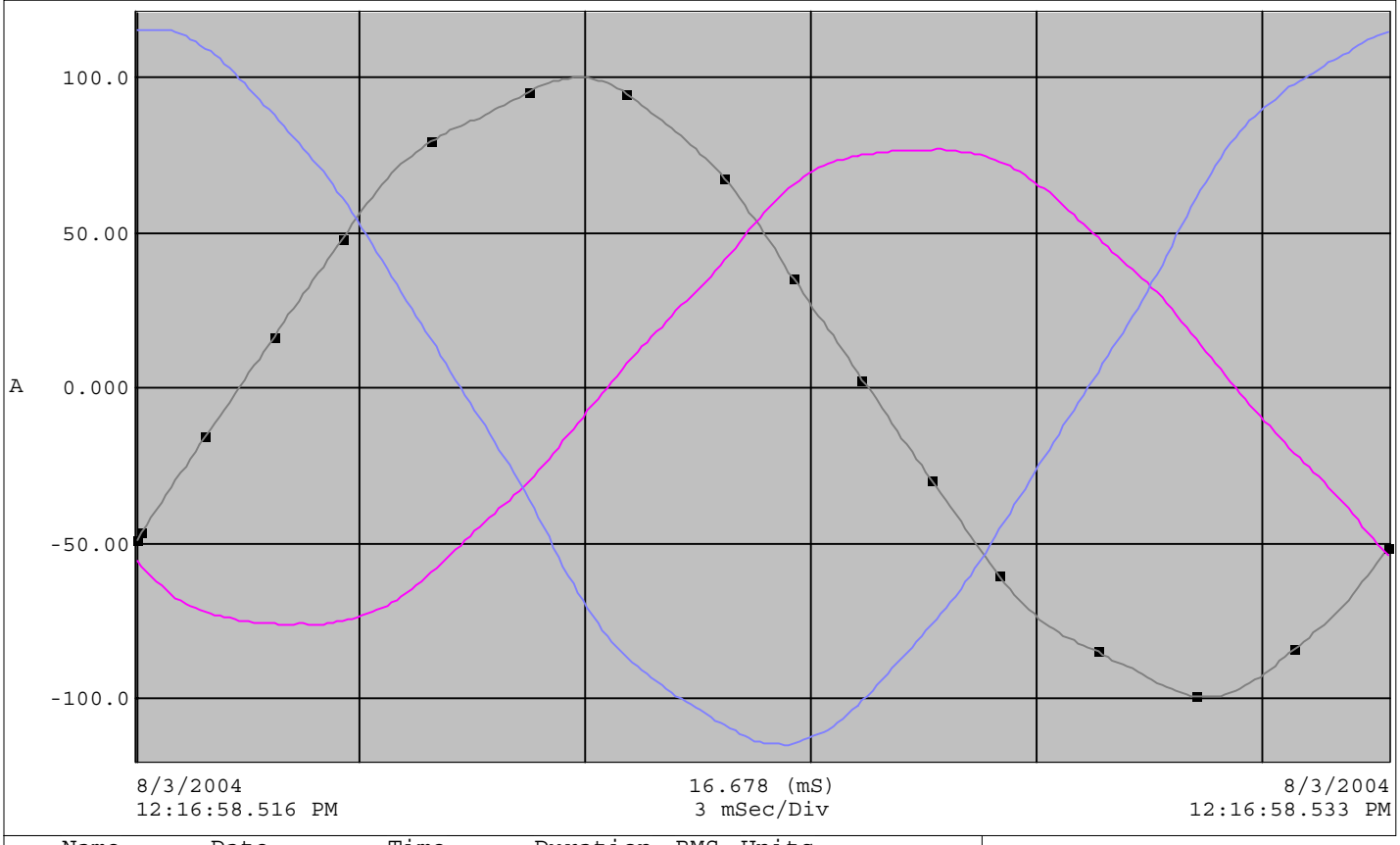
8/3/2004 - 12:16:58.000 PM

Val	
7.000	Waveform V1
-332.1	Waveform V2
325.7	Waveform V3

Waveform V1

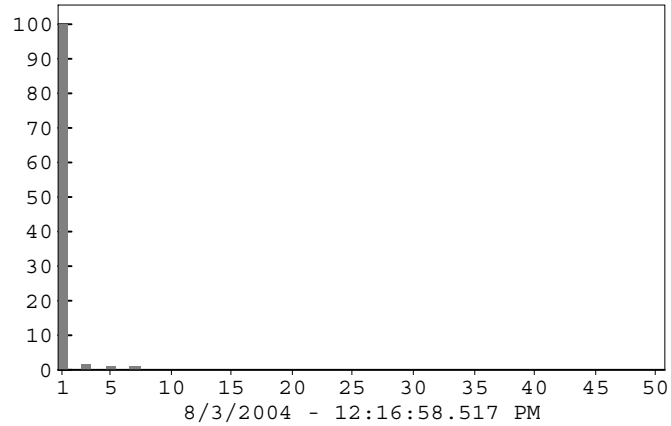
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/3/2004	12:16:58.516 PM	16.678	69.59	A
Waveform I2	8/3/2004	12:16:58.516 PM	16.678	55.06	A
Waveform I3	8/3/2004	12:16:58.516 PM	16.678	80.06	A

Waveform I1
69.59 Arms, 2.75 %THD

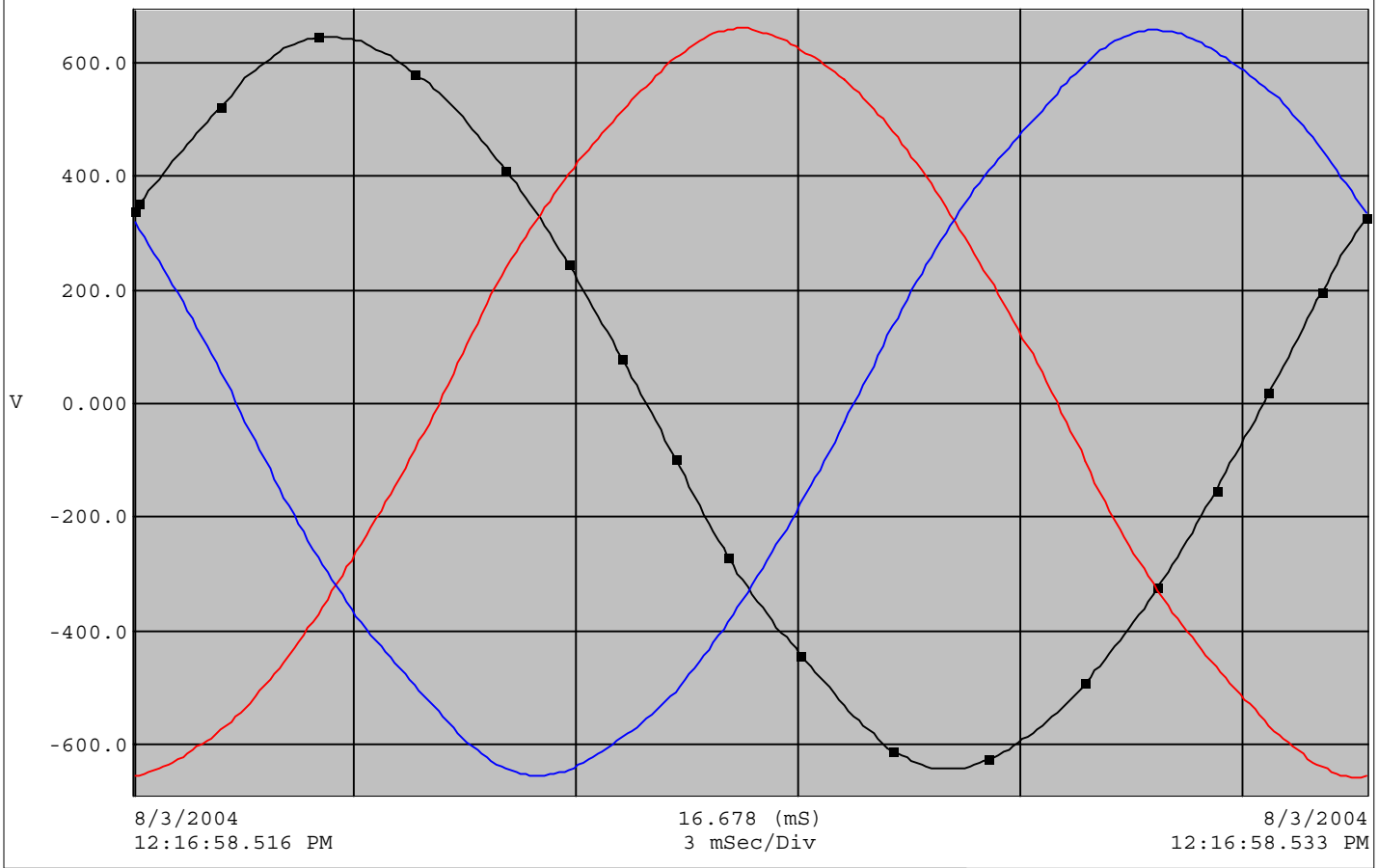


8/3/2004 - 12:16:58.000 PM
Val
-49.30 — Waveform I1
-56.30 — Waveform I2
114.9 — Waveform I3

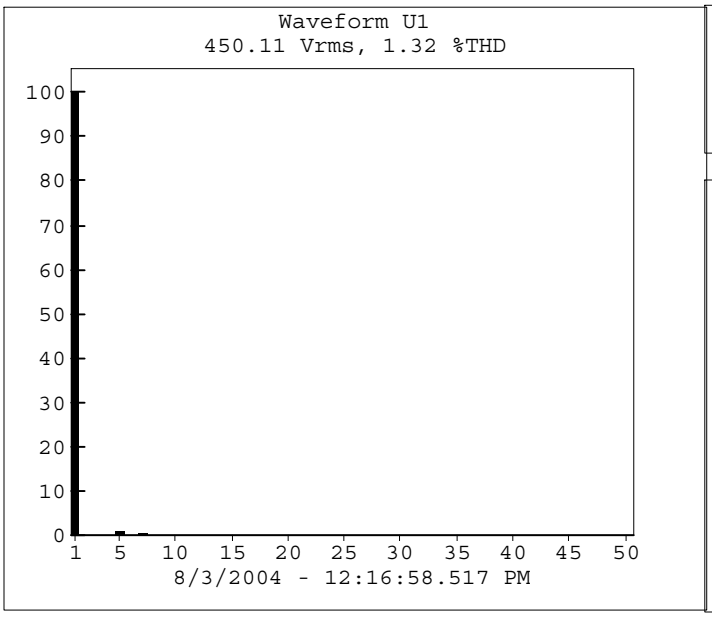
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	1.9	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	1.3	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.5	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.0	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.1		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/3/2004	12:16:58.516 PM	16.678	450.1	V
Waveform U2	8/3/2004	12:16:58.516 PM	16.678	460.1	V
Waveform U3	8/3/2004	12:16:58.516 PM	16.678	457.5	V



8/3/2004 - 12:16:58.000 PM

	Val
Waveform U1	339.2
Waveform U2	-657.8
Waveform U3	318.6

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.1	H50	0.0
H17	0.0	H34	0.1		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 8/3/2004
Start Time: 12:16:58 PM
Duration: 0:0.000 (M:S)
W: 15.61E+3 W
VAR: 9.368E+3 W
VA: 18.20E+3 W
Power Factor: 0.857
Displacement Power Factor: 0.858
TAN: 0.599
VoltageRatio: 1.000
CurrentRatio: 1.000
```

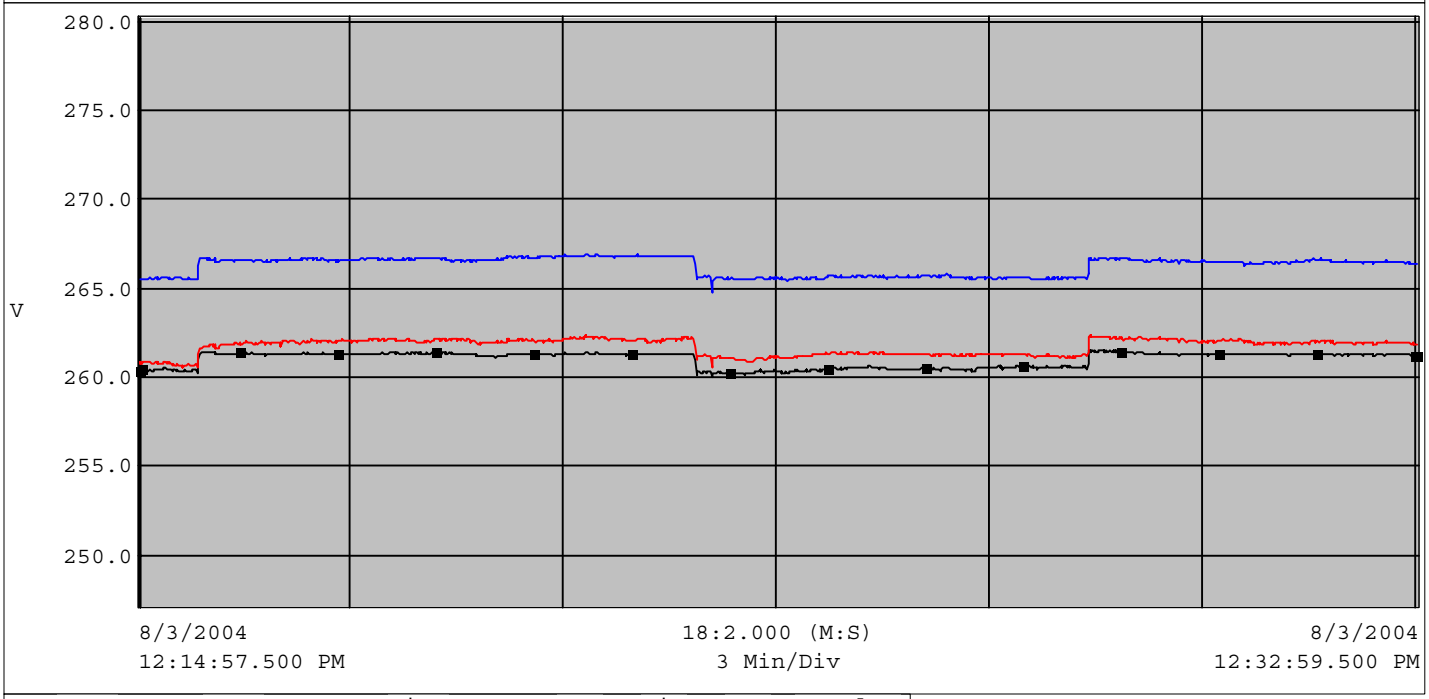
Photo Report

Database: X:\Y10\080304-Y10-Photo2.dvb	
Operator ,	Test Site ,
Comments	

080304 - WPS Y-10 Trend

Recording Start Date	8/3/2004 - 12:14:57 PM
Recording Duration	18:02 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

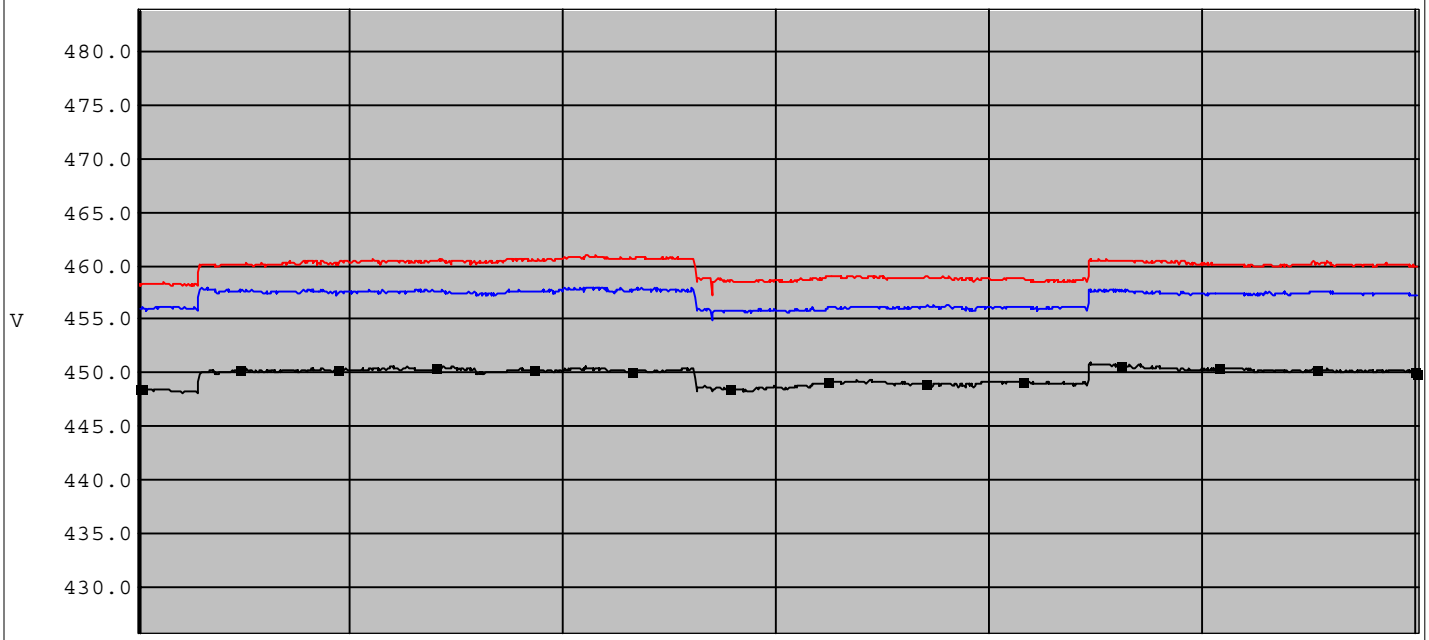
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	8/3/2004	12:14:57.500 PM	261.0	260.0	261.5	1083
Vrms Line2	8/3/2004	12:14:57.500 PM	261.7	260.5	262.3	1083
Vrms Line3	8/3/2004	12:14:57.500 PM	266.2	264.7	266.9	1083

8/3/2004 - 12:14:57.000 PM
Val
260.4 — Vrms Line1
260.8 — Vrms Line2
265.5 — Vrms Line3

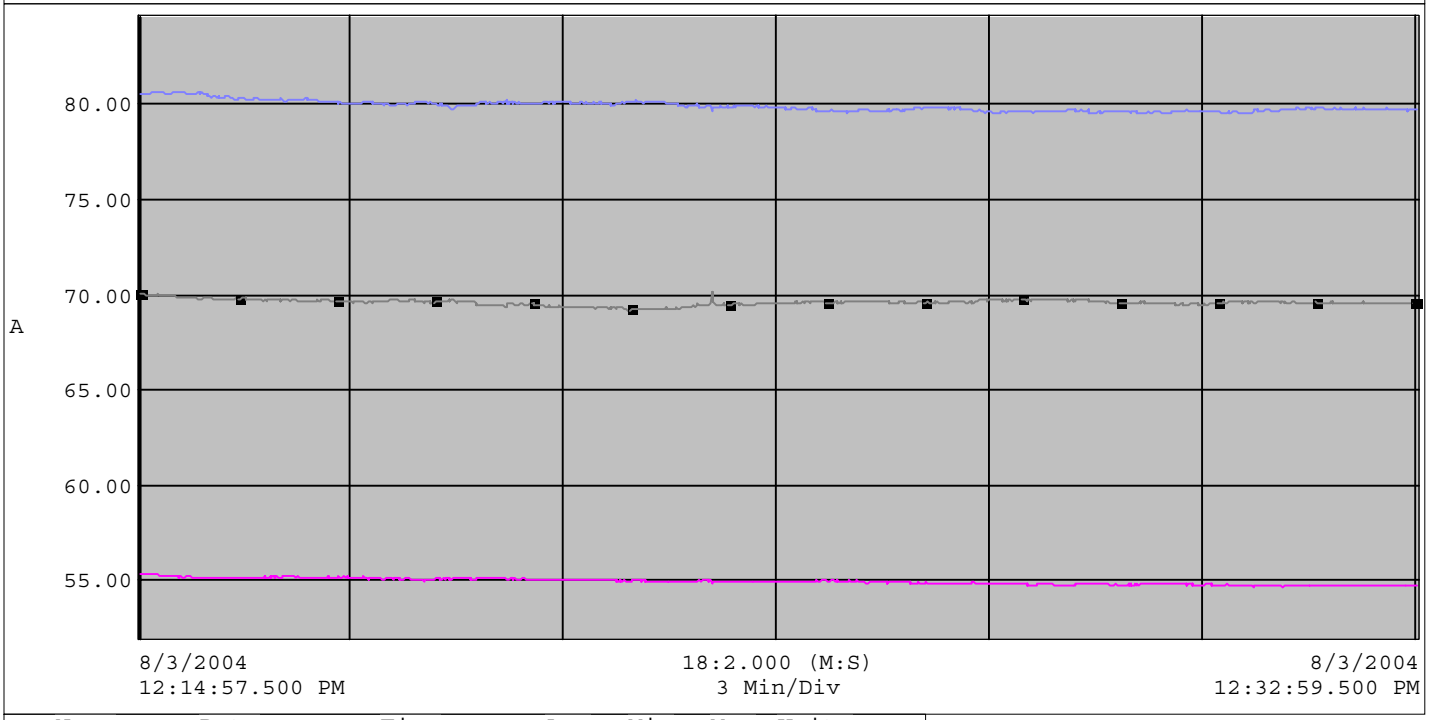
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	8/3/2004	12:14:57.500 PM	449.7	447.9	450.8	V
Urms Line2	8/3/2004	12:14:57.500 PM	459.7	457.2	460.9	V
Urms Line3	8/3/2004	12:14:57.500 PM	456.9	454.9	457.9	V

8/3/2004 - 12:14:57.000 PM
Val
448.3 — Urms Line1
458.2 — Urms Line2
455.9 — Urms Line3

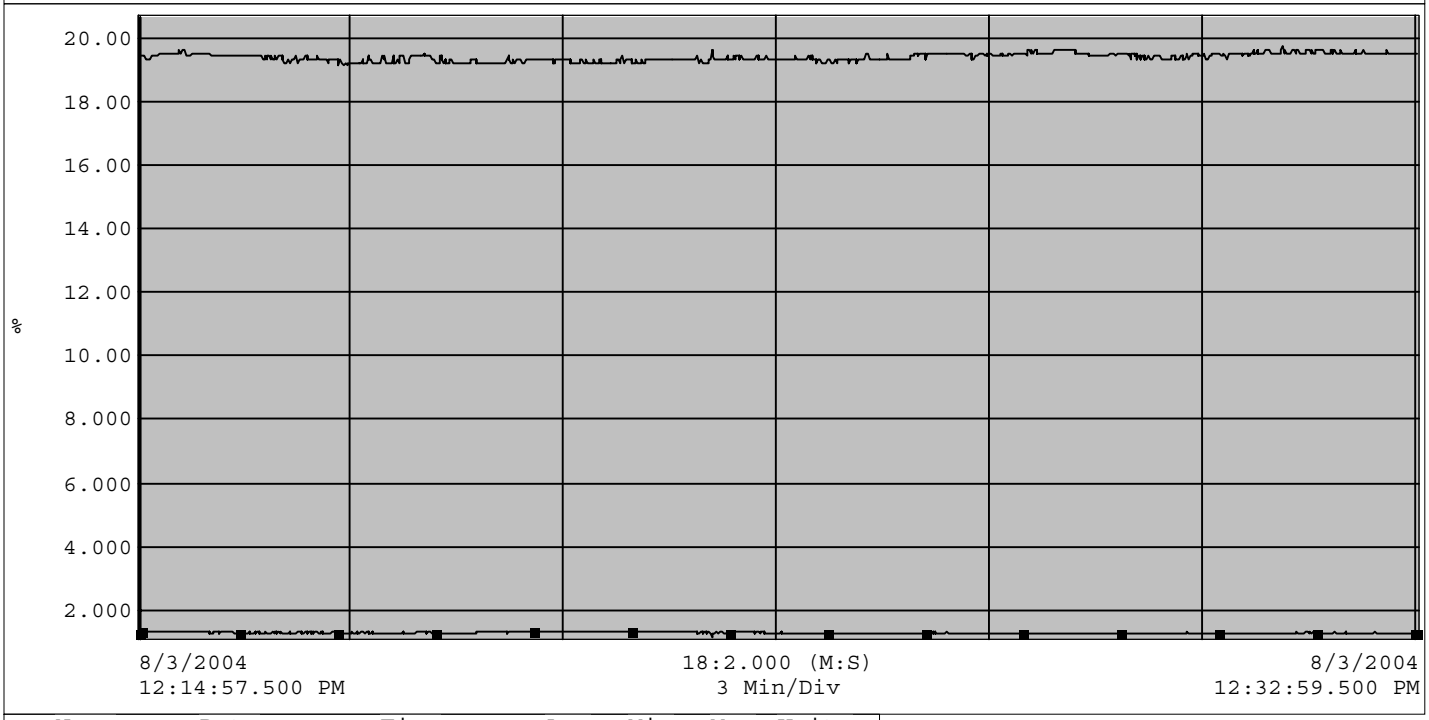
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	8/3/2004	12:14:57.500 PM	69.54	69.10	70.10	A
Arms Line2	8/3/2004	12:14:57.500 PM	54.91	54.60	55.30	A
Arms Line3	8/3/2004	12:14:57.500 PM	79.87	79.50	80.60	A

8/3/2004 - 12:14:57.000 PM
Val
70.00 — Arms Line1
55.30 — Arms Line2
80.50 — Arms Line3

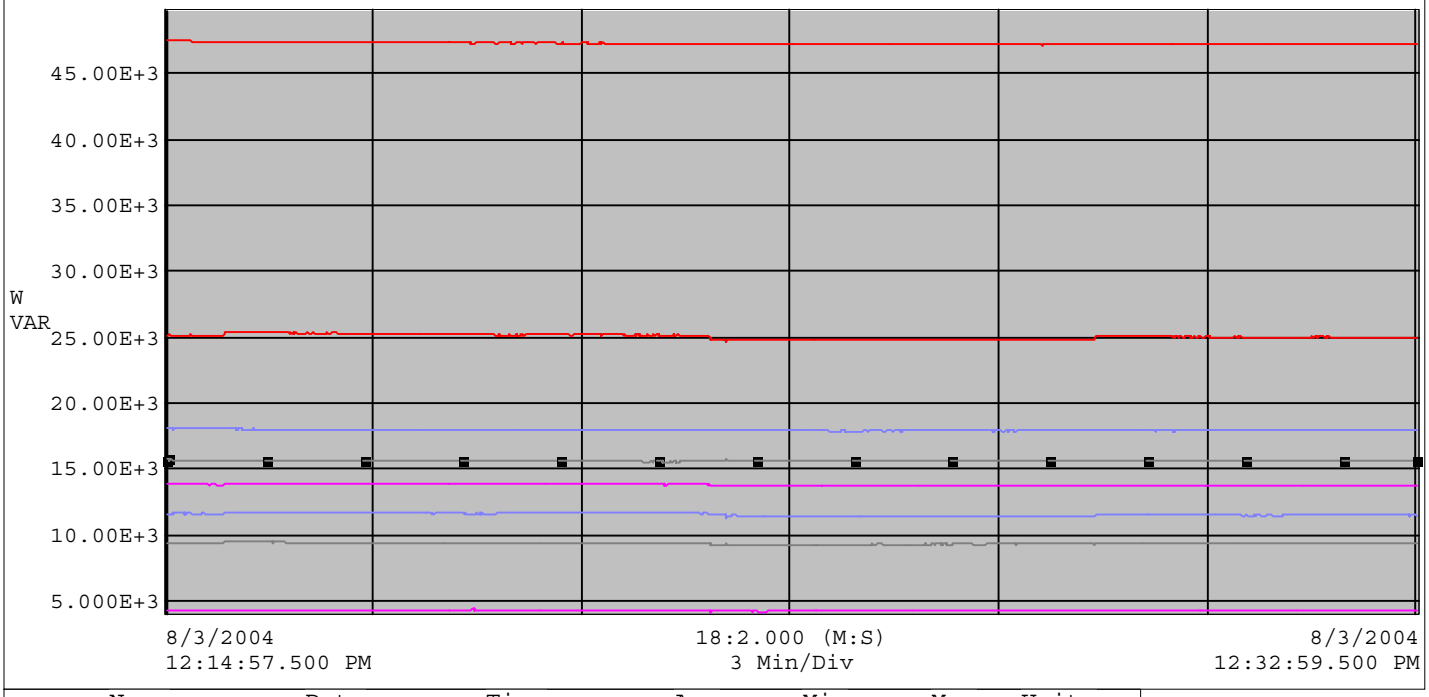
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	8/3/2004	12:14:57.500 PM	1.233	1.100	1.300	%
Aunb(IEEE)	8/3/2004	12:14:57.500 PM	19.37	19.10	19.70	%

8/3/2004 - 12:14:57.000 PM
Val
1.200 ── Vunb(IEEE)
19.40 ── Aunb(IEEE)

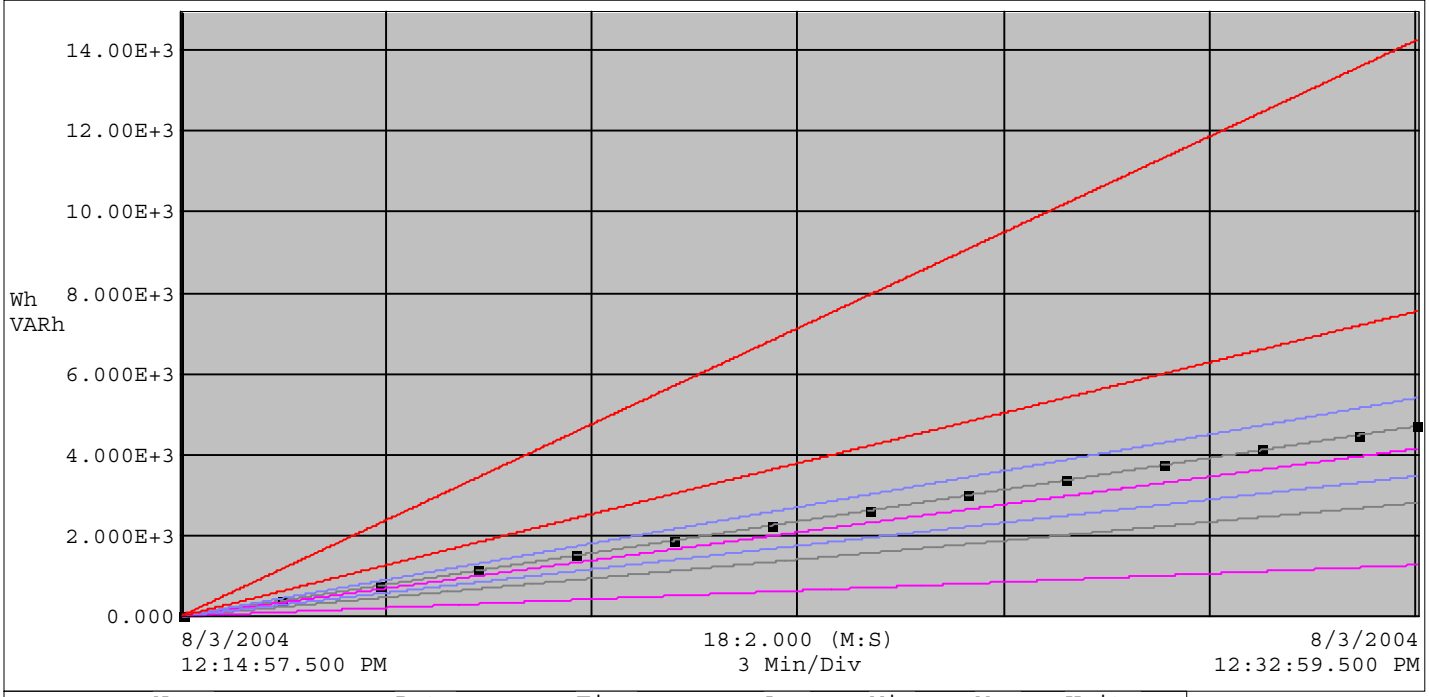
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	8/3/2004	12:14:57.500 PM	15.59E+3	15.47E+3	15.70E+3	W
W Line2	8/3/2004	12:14:57.500 PM	13.74E+3	13.65E+3	13.81E+3	W
W Line3	8/3/2004	12:14:57.500 PM	17.89E+3	17.80E+3	18.02E+3	W
W Sum of Phases	8/3/2004	12:14:57.500 PM	47.22E+3	47.11E+3	47.43E+3	W
VAR Line1	8/3/2004	12:14:57.500 PM	9.297E+3	9.195E+3	9.434E+3	VAR
VAR Line2	8/3/2004	12:14:57.500 PM	4.206E+3	4.123E+3	4.287E+3	VAR
VAR Line3	8/3/2004	12:14:57.500 PM	11.49E+3	11.22E+3	11.68E+3	VAR
VAR Sum of Phases	8/3/2004	12:14:57.500 PM	24.99E+3	24.63E+3	25.34E+3	VAR

8/3/2004 - 12:14:57.000 PM
Val
15.64E+3 — W Line1
13.79E+3 — W Line2
17.99E+3 — W Line3
47.42E+3 — W Sum of Phases
9.336E+3 — VAR Line1
4.211E+3 — VAR Line2
11.56E+3 — VAR Line3
25.11E+3 — VAR Sum of Phases

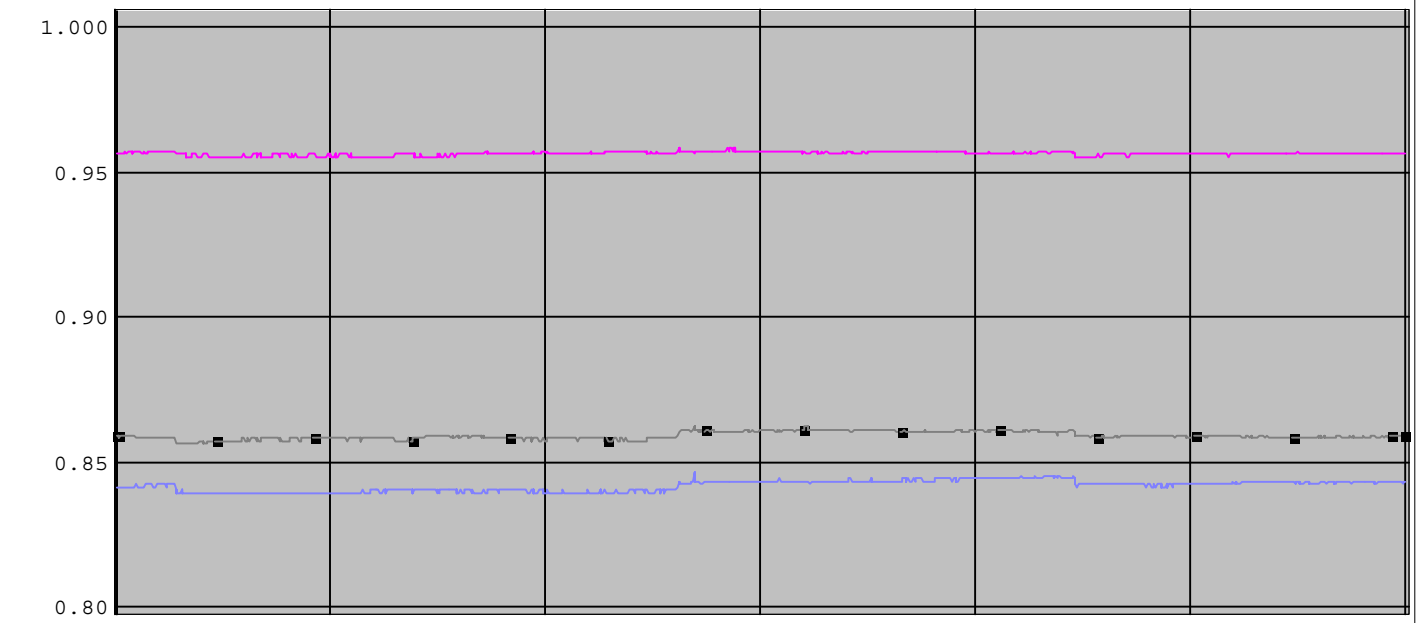
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	8/3/2004	12:14:57.500 PM	2.347E+3	4.293	4.689E+3	Wh
W-hours Line2	8/3/2004	12:14:57.500 PM	2.072E+3	3.784	4.133E+3	Wh
W-hours Line3	8/3/2004	12:14:57.500 PM	2.696E+3	4.928	5.382E+3	Wh
W-hours Sum of Phases	8/3/2004	12:14:57.500 PM	7.114E+3	13.00	14.20E+3	Wh
VAR-hours Line1	8/3/2004	12:14:57.500 PM	1.402E+3	2.561	2.797E+3	VARh
VAR-hours Line2	8/3/2004	12:14:57.500 PM	634.7	1.159	1.265E+3	VARh
VAR-hours Line3	8/3/2004	12:14:57.500 PM	1.736E+3	3.164	3.456E+3	VARh
VAR-hours Sum of Phases	8/3/2004	12:14:57.500 PM	3.773E+3	6.884	7.518E+3	VARh

8/3/2004 - 12:14:57.000 PM
Val
4.293 — W-hours Line1
3.784 — W-hours Line2
4.928 — W-hours Line3
13.00 — W-hours Sum of Phases
2.561 — VAR-hours Line1
1.159 — VAR-hours Line2
3.164 — VAR-hours Line3
6.884 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	8/3/2004	12:14:57.500 PM	0.859	0.856	0.862	
PF Line2	8/3/2004	12:14:57.500 PM	0.956	0.955	0.958	
PF Line3	8/3/2004	12:14:57.500 PM	0.841	0.839	0.846	

8/3/2004 - 12:14:57.000 PM
Val
0.859 PF Line1
0.956 PF Line2
0.841 PF Line3

Trend Summary Report

Database: X:\Y10\080304-Y10.dvb

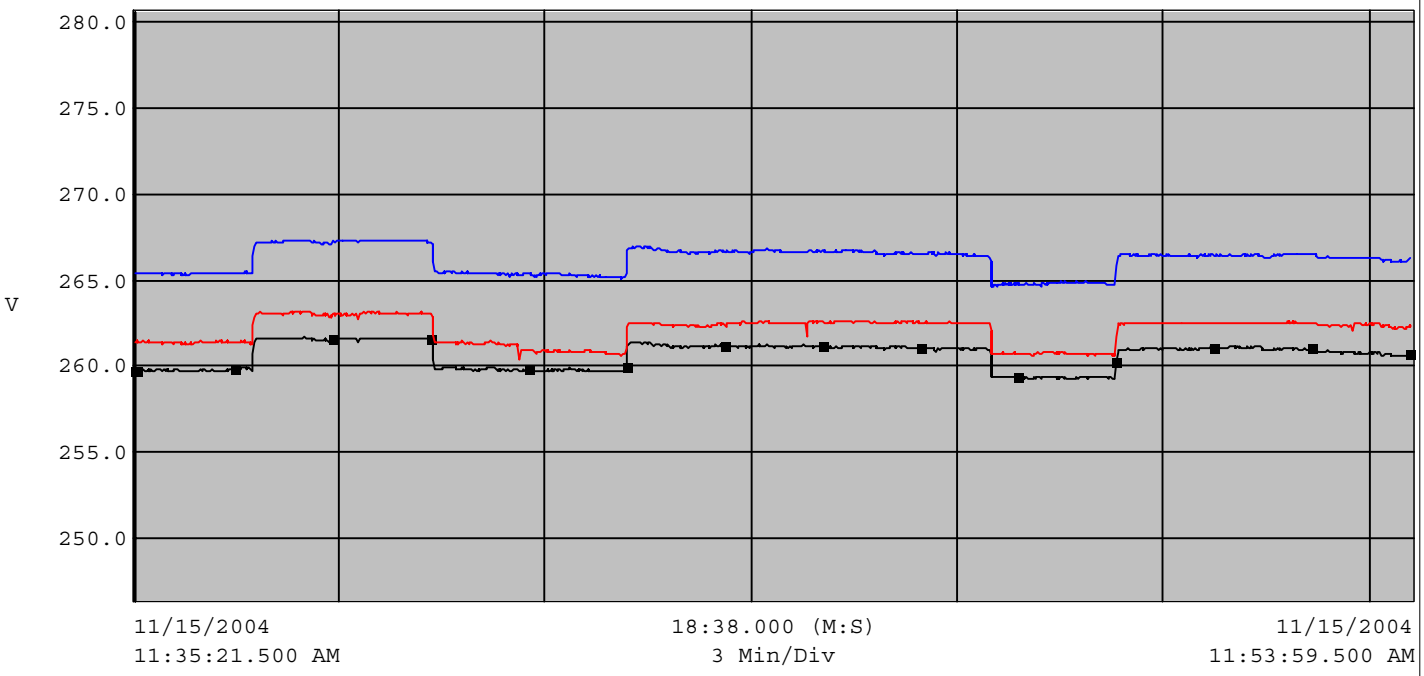
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS Y-10 ,

Comments
Recordings taken at motor starter overload relay.

111504 - WPS Y-10 Trend

Recording Start Date	11/15/2004 - 11:35:21 AM
Recording Duration	18:38 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Vrms

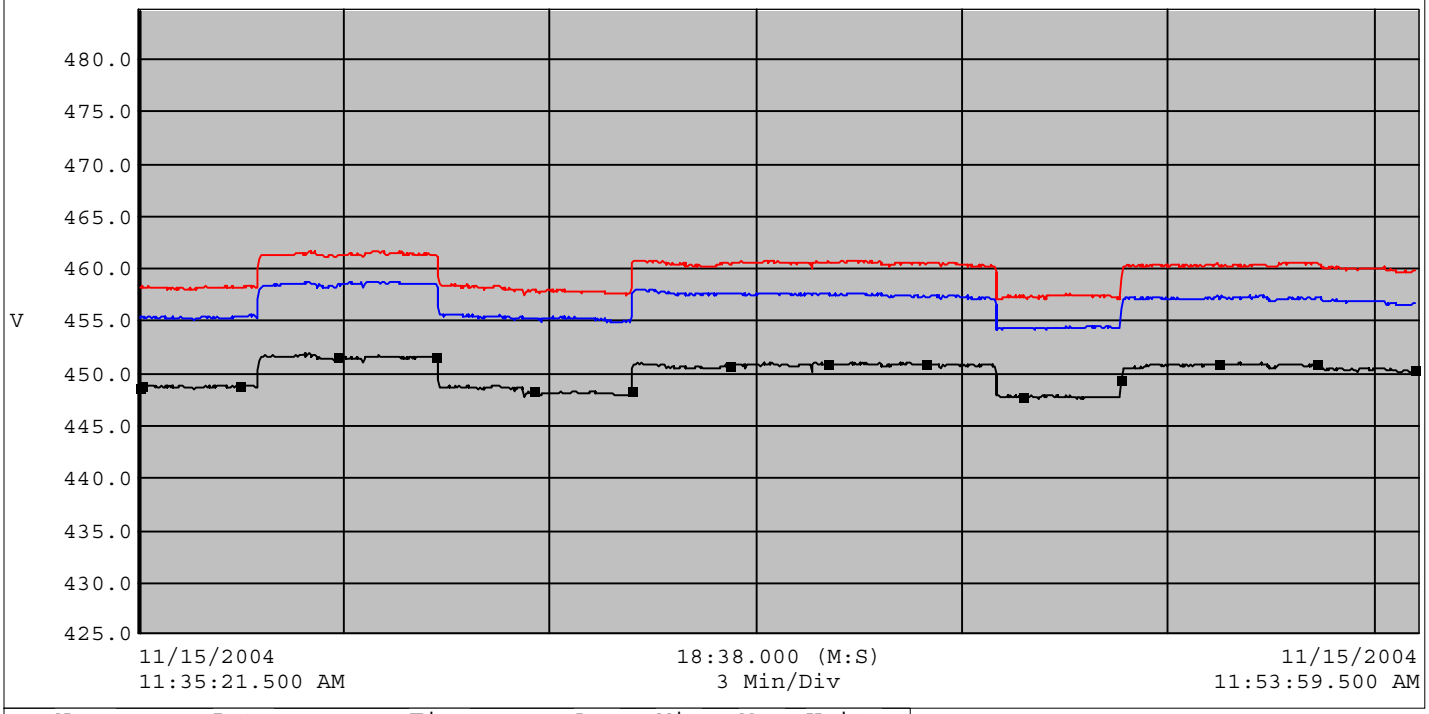


Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	11/15/2004	11:35:21.500 AM	260.6	259.2	261.7	1119
Vrms Line2	11/15/2004	11:35:21.500 AM	262.0	260.3	263.1	1119
Vrms Line3	11/15/2004	11:35:21.500 AM	266.1	264.6	267.3	1119

11/15/2004 - 11:35:21.000 AM

Val	
259.7	Vrms Line1
261.3	Vrms Line2
265.3	Vrms Line3

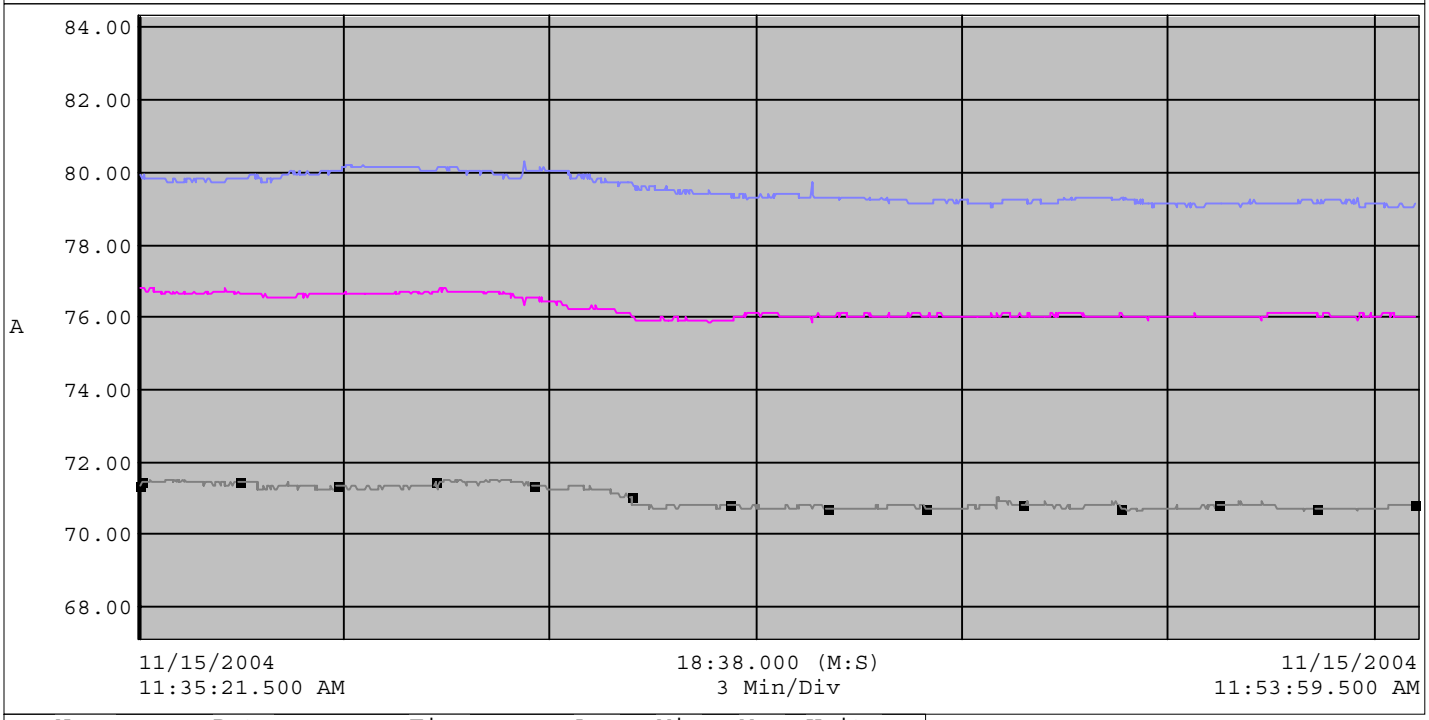
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	11/15/2004	11:35:21.500 AM	449.9	447.5	451.8	V
Urms Line2	11/15/2004	11:35:21.500 AM	459.6	457.1	461.6	V
Urms Line3	11/15/2004	11:35:21.500 AM	456.6	454.1	458.7	V

11/15/2004 - 11:35:21.000 AM
Val
448.5 — Urms Line1
458.2 — Urms Line2
455.2 — Urms Line3

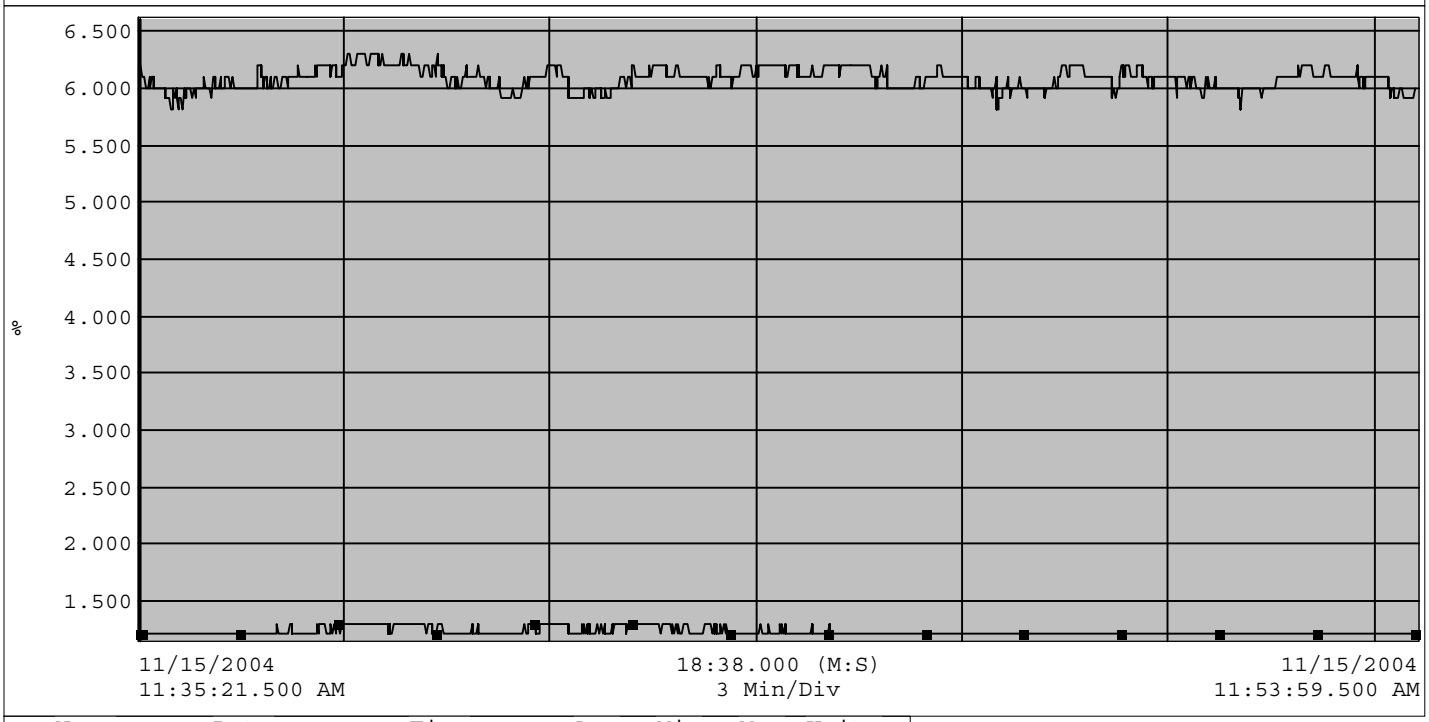
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	11/15/2004	11:35:21.500 AM	70.97	70.60	71.50	A
Arms Line2	11/15/2004	11:35:21.500 AM	76.22	75.80	76.80	A
Arms Line3	11/15/2004	11:35:21.500 AM	79.48	79.00	80.30	A

11/15/2004 - 11:35:21.000 AM
Val
71.30 — Arms Line1
76.80 — Arms Line2
79.90 — Arms Line3

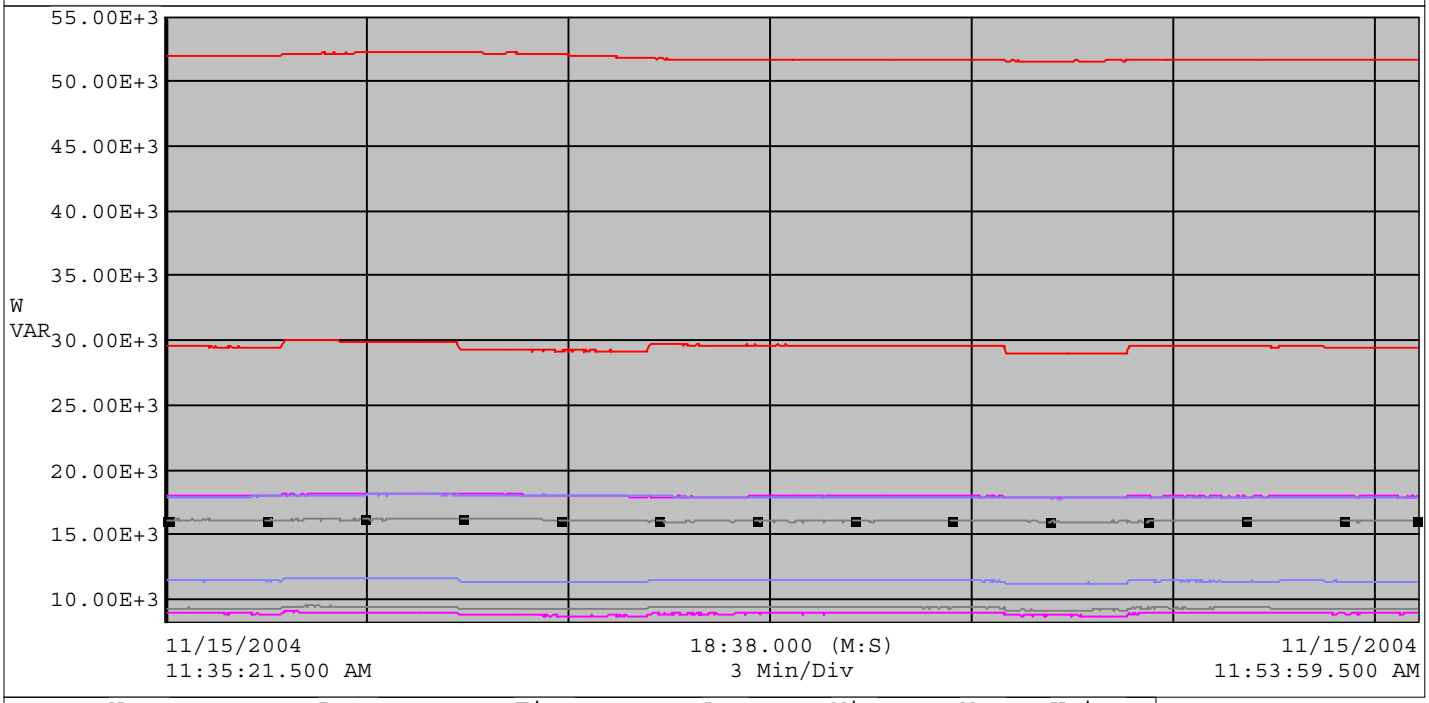
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	11/15/2004	11:35:21.500 AM	1.219	1.200	1.300	%
Aunb(IEEE)	11/15/2004	11:35:21.500 AM	6.082	5.800	6.300	%

11/15/2004 - 11:35:21.000 AM
Val
1.200 ── Vunb(IEEE)
6.200 ── Aunb(IEEE)

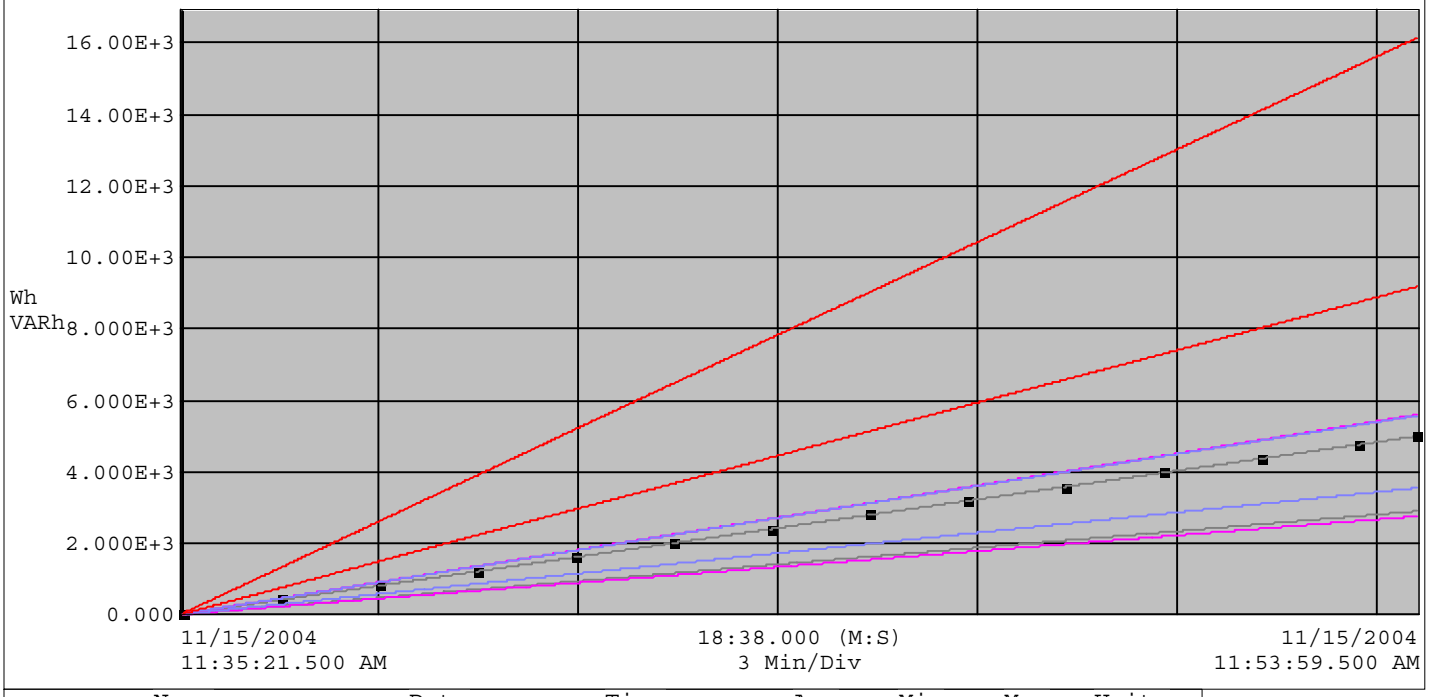
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	11/15/2004	11:35:21.500 AM	16.01E+3	15.90E+3	16.14E+3	W
W Line2	11/15/2004	11:35:21.500 AM	17.92E+3	17.80E+3	18.12E+3	W
W Line3	11/15/2004	11:35:21.500 AM	17.85E+3	17.71E+3	18.08E+3	W
W Sum of Phases	11/15/2004	11:35:21.500 AM	51.77E+3	51.47E+3	52.26E+3	W
VAR Line1	11/15/2004	11:35:21.500 AM	9.265E+3	9.094E+3	9.425E+3	VAR
VAR Line2	11/15/2004	11:35:21.500 AM	8.815E+3	8.584E+3	8.985E+3	VAR
VAR Line3	11/15/2004	11:35:21.500 AM	11.36E+3	11.13E+3	11.56E+3	VAR
VAR Sum of Phases	11/15/2004	11:35:21.500 AM	29.44E+3	28.91E+3	29.93E+3	VAR

11/15/2004 - 11:35:21.000 AM
Val
16.04E+3 — W Line1
18.01E+3 — W Line2
17.87E+3 — W Line3
51.92E+3 — W Sum of Phases
9.245E+3 — VAR Line1
8.837E+3 — VAR Line2
11.42E+3 — VAR Line3
29.51E+3 — VAR Sum of Phases

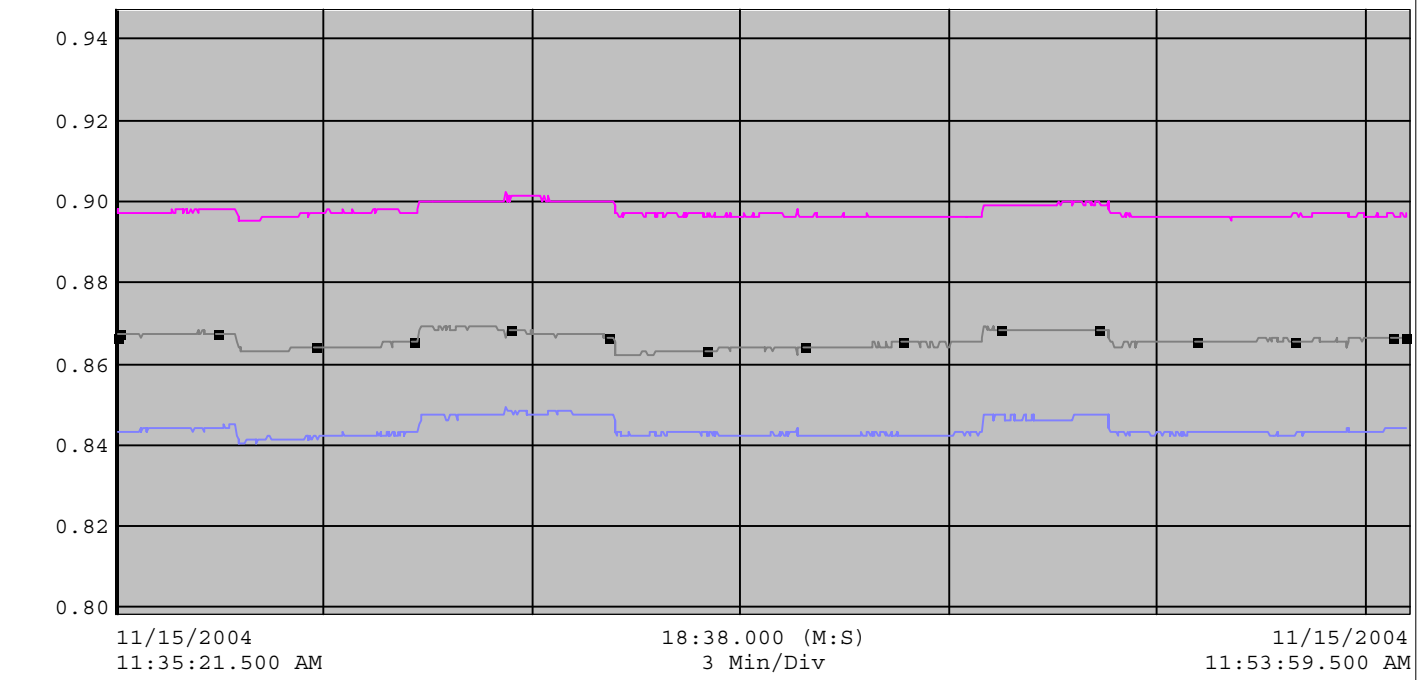
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	11/15/2004	11:35:21.500 AM	2.494E+3	4.403	4.975E+3	Wh
W-hours Line2	11/15/2004	11:35:21.500 AM	2.793E+3	4.930	5.570E+3	Wh
W-hours Line3	11/15/2004	11:35:21.500 AM	2.783E+3	4.909	5.547E+3	Wh
W-hours Sum of Phases	11/15/2004	11:35:21.500 AM	8.070E+3	14.24	16.09E+3	Wh
VAR-hours Line1	11/15/2004	11:35:21.500 AM	1.444E+3	2.549	2.880E+3	VARh
VAR-hours Line2	11/15/2004	11:35:21.500 AM	1.372E+3	2.425	2.740E+3	VARh
VAR-hours Line3	11/15/2004	11:35:21.500 AM	1.770E+3	3.124	3.530E+3	VARh
VAR-hours Sum of Phases	11/15/2004	11:35:21.500 AM	4.586E+3	8.098	9.150E+3	VARh

11/15/2004 - 11:35:21.000 AM
Val
4.403 — W-hours Line1
4.930 — W-hours Line2
4.909 — W-hours Line3
14.24 — W-hours Sum of Phases
2.549 — VAR-hours Line1
2.425 — VAR-hours Line2
3.124 — VAR-hours Line3
8.098 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	11/15/2004	11:35:21.500 AM	0.865	0.862	0.869	
PF Line2	11/15/2004	11:35:21.500 AM	0.897	0.895	0.902	
PF Line3	11/15/2004	11:35:21.500 AM	0.844	0.840	0.849	

11/15/2004 - 11:35:21.000 AM
Val
0.866 — PF Line1
0.898 — PF Line2
0.843 — PF Line3

Trend Summary Report

Database: X:\Y10\111504-Y10.dvb

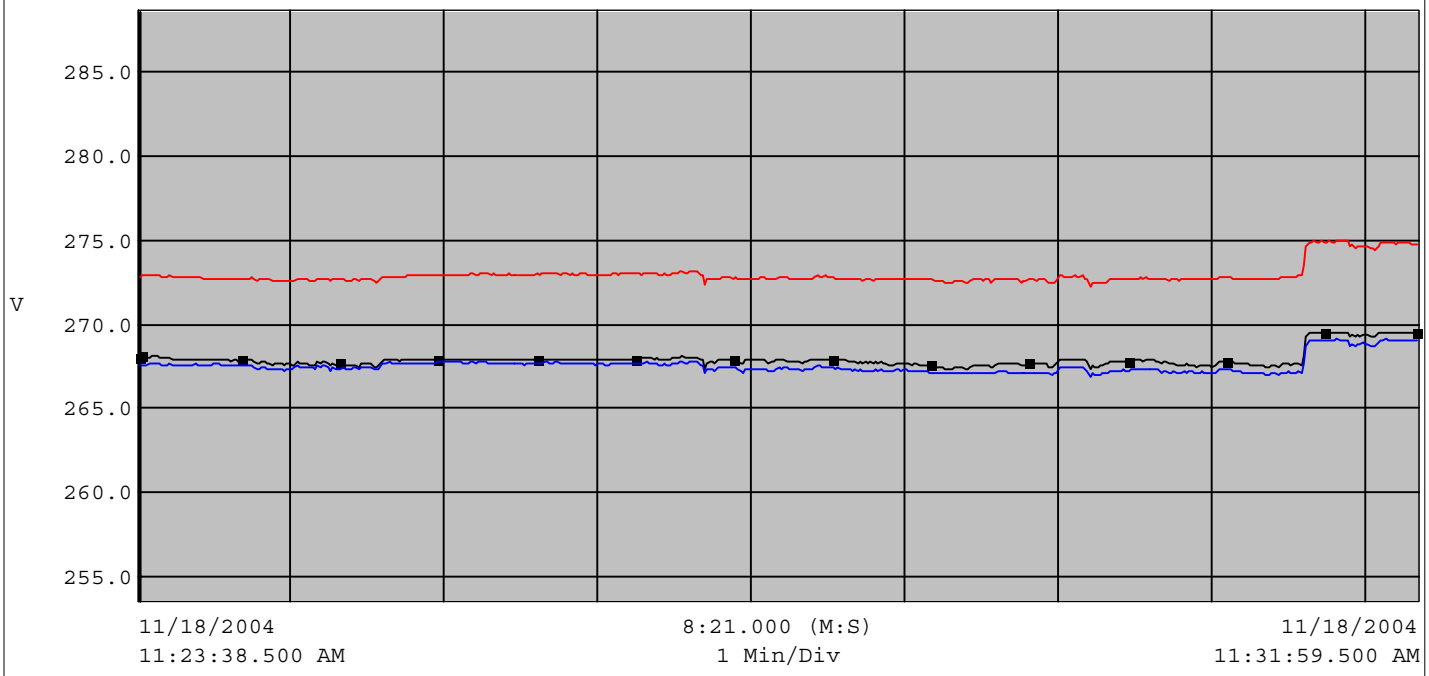
Operator	Test Site
GWA Victor Jardel ,	WPS Y-10 ,

Comments

111804 - WPS Y-10 Trend

Recording Start Date	11/18/2004 - 11:23:38 AM
Recording Duration	8:21 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

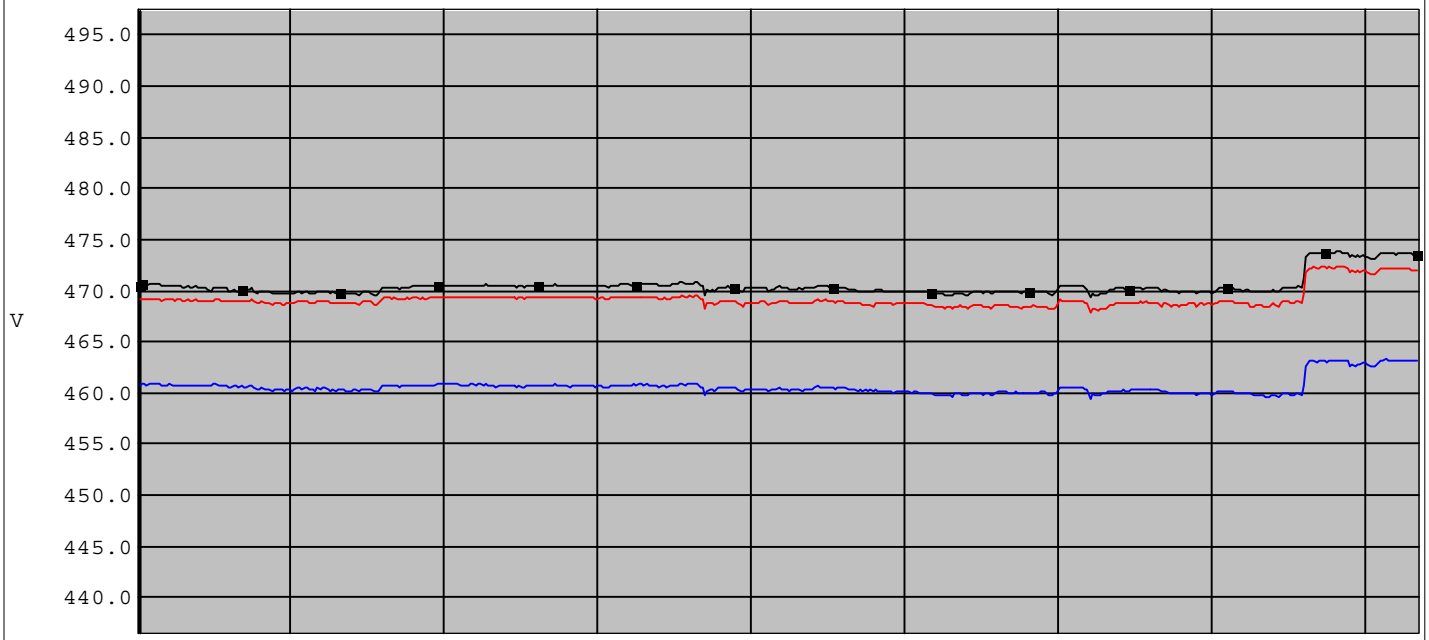
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	11/18/2004	11:23:38.500 AM	267.9	267.3	269.5	502
Vrms Line2	11/18/2004	11:23:38.500 AM	272.9	272.2	274.9	502
Vrms Line3	11/18/2004	11:23:38.500 AM	267.5	266.8	269.1	502

11/18/2004 - 11:23:38.000 AM
Val
268.0 — Vrms Line1
272.8 — Vrms Line2
267.5 — Vrms Line3

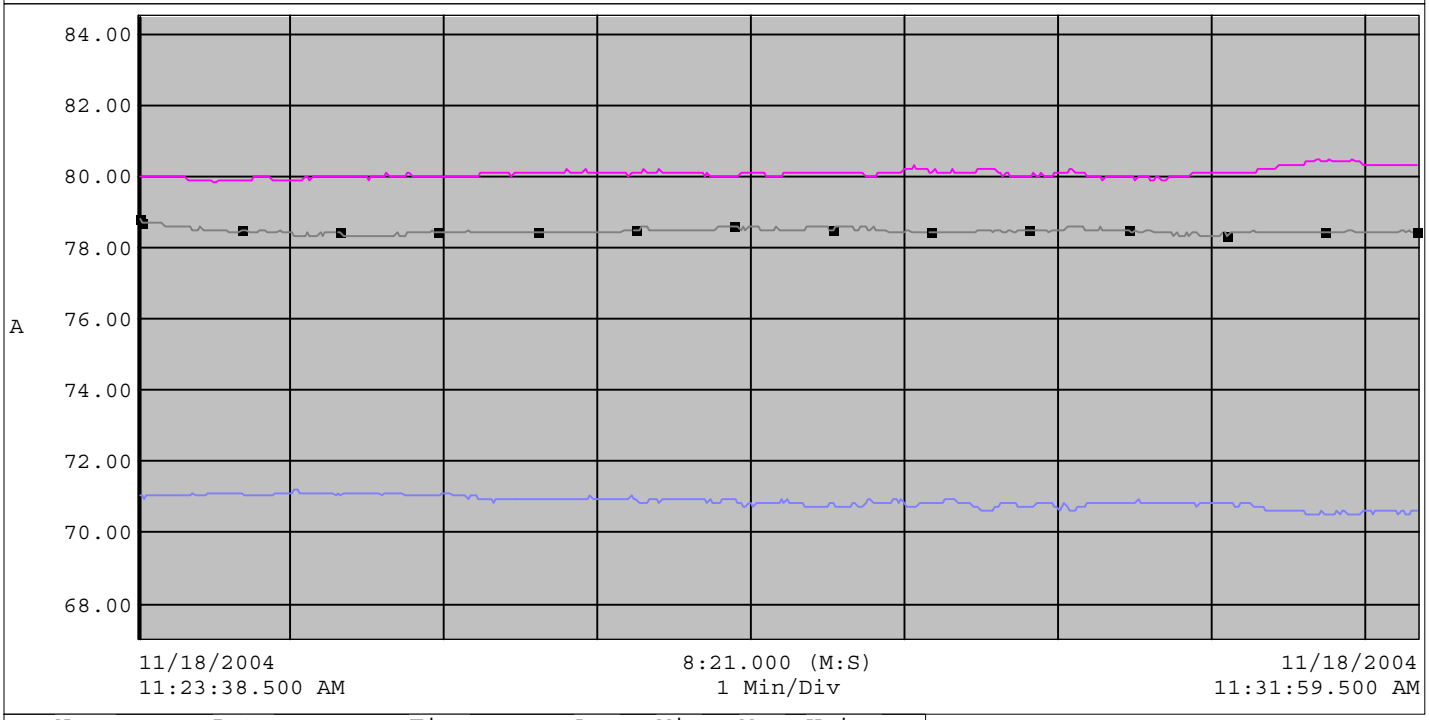
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	11/18/2004	11:23:38.500 AM	470.4	469.3	473.7	V
Urms Line2	11/18/2004	11:23:38.500 AM	469.1	467.8	472.2	V
Urms Line3	11/18/2004	11:23:38.500 AM	460.5	459.4	463.2	V

11/18/2004 - 11:23:38.000 AM
Val
470.4 — Urms Line1
469.0 — Urms Line2
460.7 — Urms Line3

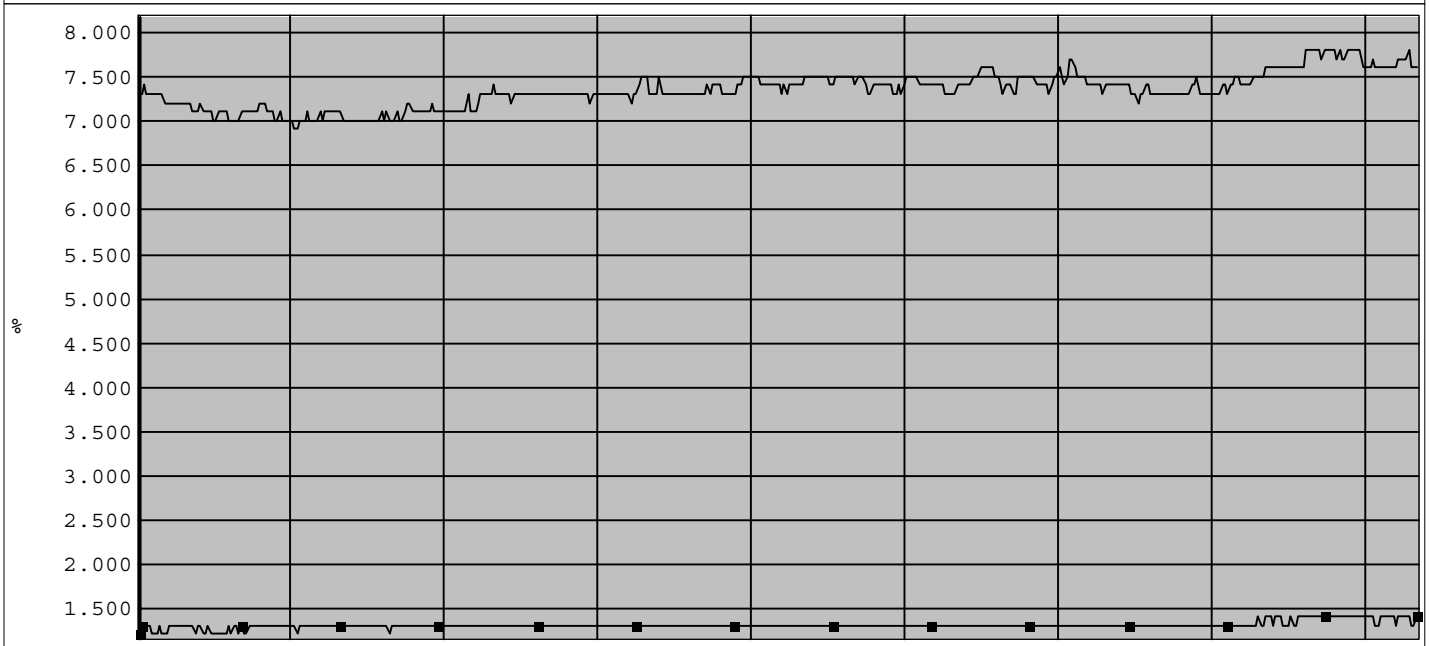
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	11/18/2004	11:23:38.500 AM	78.45	78.30	78.80	A
Arms Line2	11/18/2004	11:23:38.500 AM	80.08	79.80	80.50	A
Arms Line3	11/18/2004	11:23:38.500 AM	70.84	70.50	71.20	A

11/18/2004 - 11:23:38.000 AM
Val
78.80 — Arms Line1
80.00 — Arms Line2
71.00 — Arms Line3

Vunb

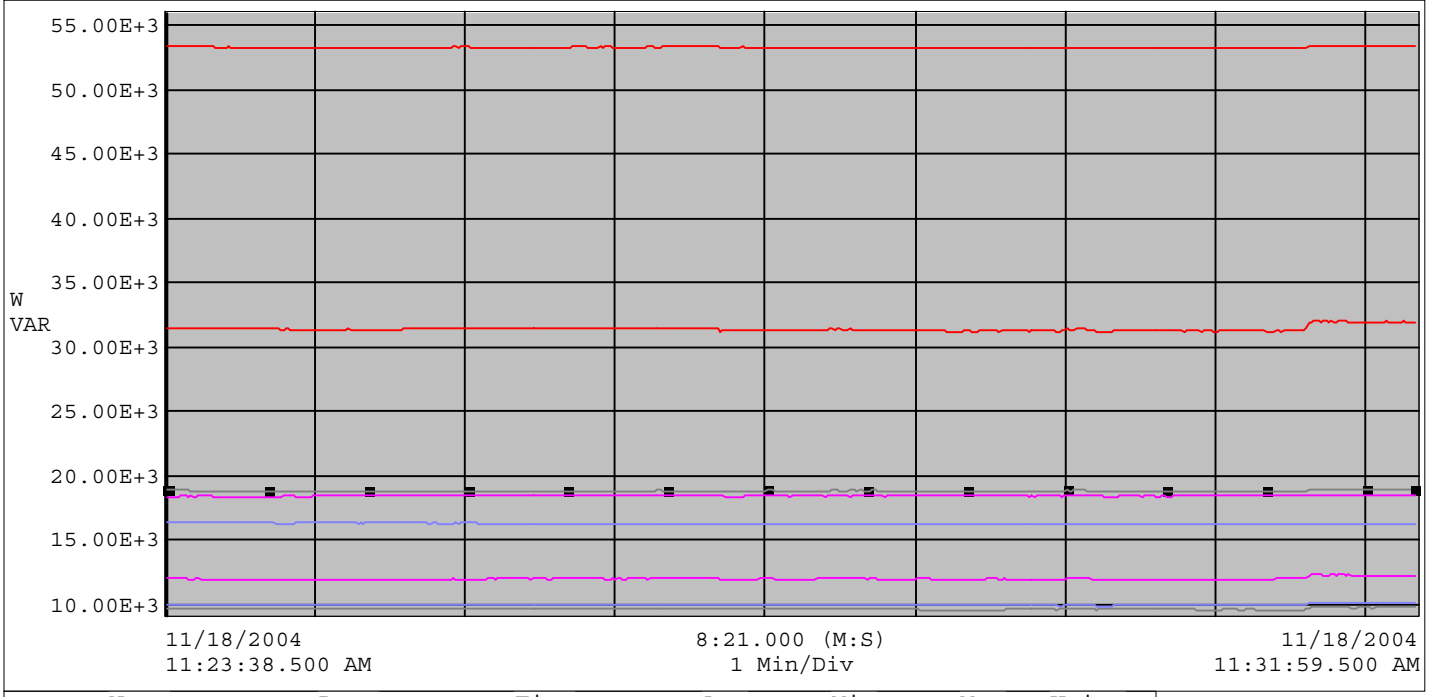


Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	11/18/2004	11:23:38.500 AM	1.305	1.200	1.400	%
Aunb(IEEE)	11/18/2004	11:23:38.500 AM	7.341	6.900	7.800	%

11/18/2004 - 11:23:38.000 AM
Val
1.200 ── Vunb(IEEE)
7.300 ── Aunb(IEEE)

Appendix 1K - Electrical

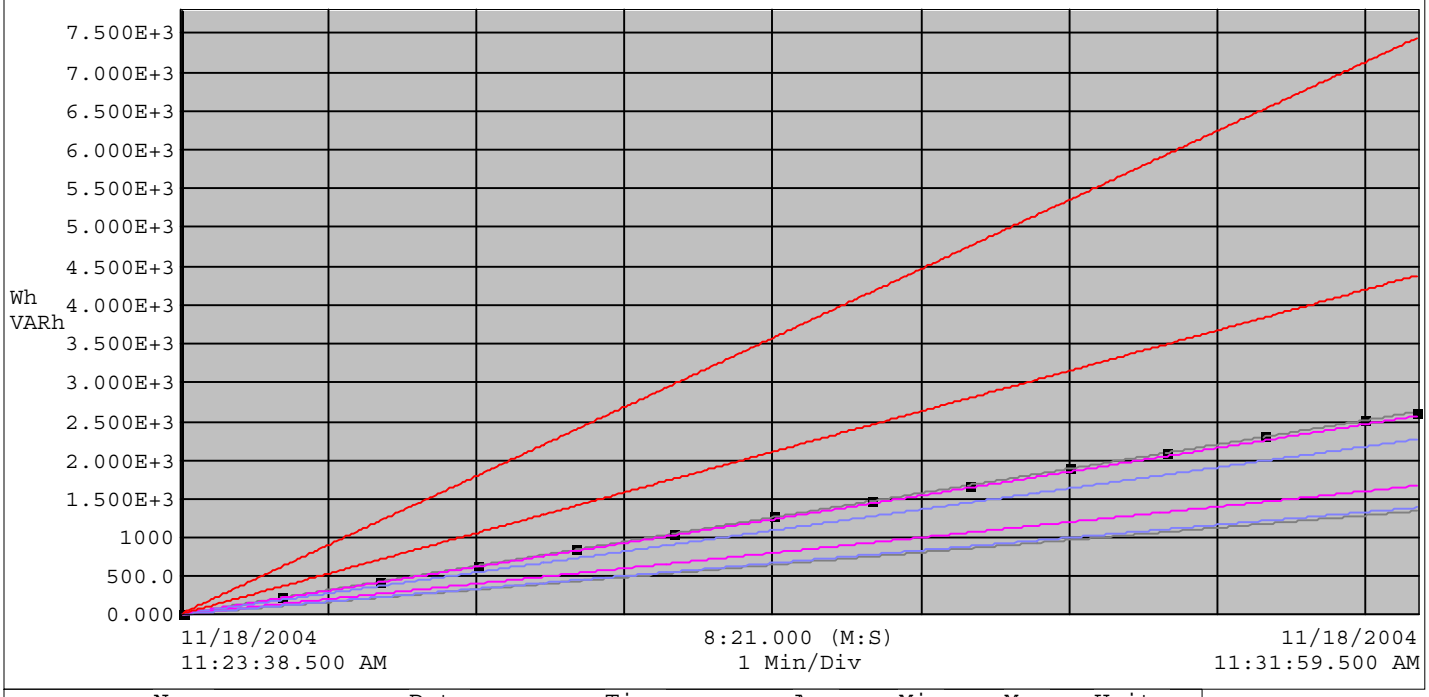
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	11/18/2004	11:23:38.500 AM	18.72E+3	18.64E+3	18.80E+3	W
W Line2	11/18/2004	11:23:38.500 AM	18.34E+3	18.27E+3	18.46E+3	W
W Line3	11/18/2004	11:23:38.500 AM	16.18E+3	16.08E+3	16.26E+3	W
W Sum of Phases	11/18/2004	11:23:38.500 AM	53.23E+3	53.16E+3	53.34E+3	W
VAR Line1	11/18/2004	11:23:38.500 AM	9.553E+3	9.445E+3	9.691E+3	VAR
VAR Line2	11/18/2004	11:23:38.500 AM	11.89E+3	11.79E+3	12.20E+3	VAR
VAR Line3	11/18/2004	11:23:38.500 AM	9.873E+3	9.764E+3	10.06E+3	VAR
VAR Sum of Phases	11/18/2004	11:23:38.500 AM	31.32E+3	31.05E+3	31.91E+3	VAR

11/18/2004 - 11:23:38.000 AM
Val
18.79E+3 — W Line1
18.30E+3 — W Line2
16.23E+3 — W Line3
53.32E+3 — W Sum of Phases
9.628E+3 — VAR Line1
11.90E+3 — VAR Line2
9.846E+3 — VAR Line3
31.38E+3 — VAR Sum of Phases

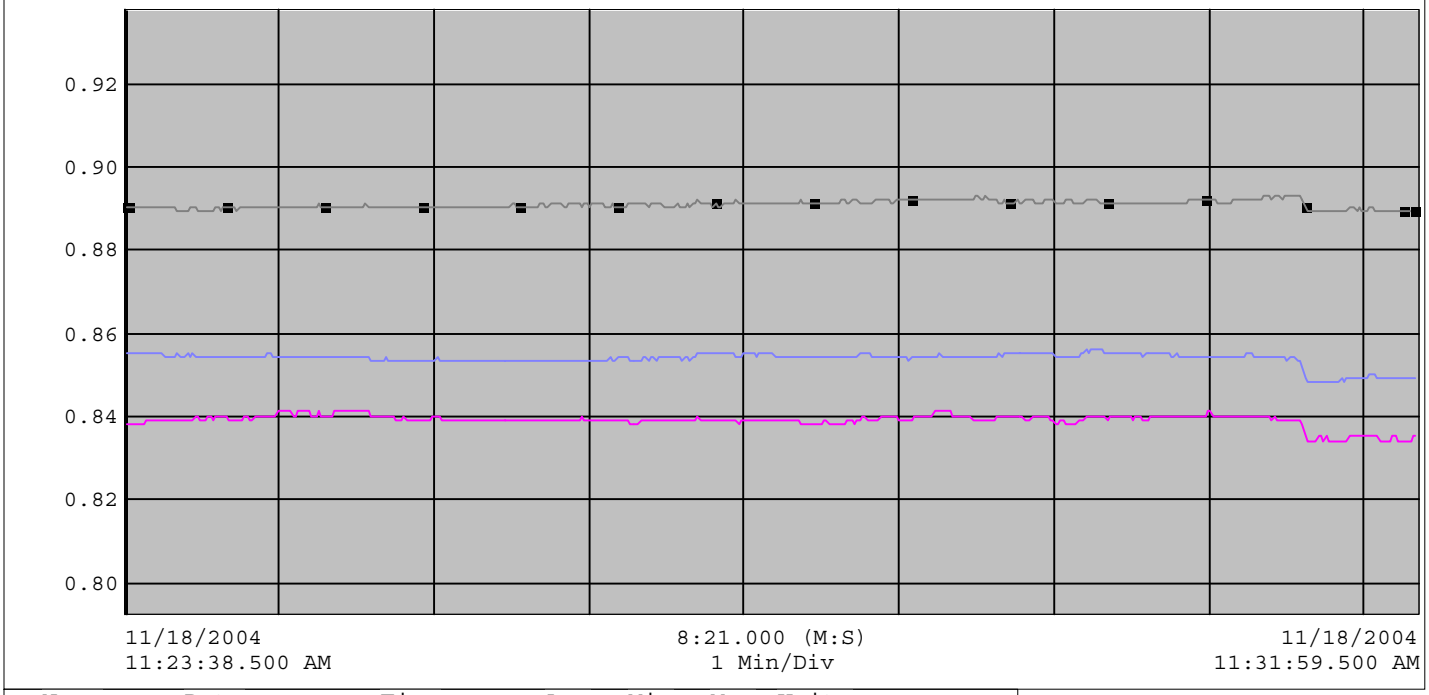
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	11/18/2004	11:23:38.500 AM	1.307E+3	5.258	2.610E+3	Wh
W-hours Line2	11/18/2004	11:23:38.500 AM	1.280E+3	5.073	2.557E+3	Wh
W-hours Line3	11/18/2004	11:23:38.500 AM	1.132E+3	4.475	2.256E+3	Wh
W-hours Sum of Phases	11/18/2004	11:23:38.500 AM	3.719E+3	14.72	7.423E+3	Wh
VAR-hours Line1	11/18/2004	11:23:38.500 AM	667.9	2.684	1.332E+3	VARh
VAR-hours Line2	11/18/2004	11:23:38.500 AM	829.1	3.290	1.658E+3	VARh
VAR-hours Line3	11/18/2004	11:23:38.500 AM	689.7	2.731	1.377E+3	VARh
VAR-hours Sum of Phases	11/18/2004	11:23:38.500 AM	2.187E+3	8.664	4.367E+3	VARh

11/18/2004 - 11:23:38.000 AM
Val
5.258 — W-hours Line1
5.073 — W-hours Line2
4.475 — W-hours Line3
14.72 — W-hours Sum of Phases
2.684 — VAR-hours Line1
3.290 — VAR-hours Line2
2.731 — VAR-hours Line3
8.664 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	11/18/2004	11:23:38.500 AM	0.891	0.889	0.893	
PF Line2	11/18/2004	11:23:38.500 AM	0.839	0.834	0.841	
PF Line3	11/18/2004	11:23:38.500 AM	0.854	0.848	0.856	

11/18/2004 - 11:23:38.000 AM
Val
0.890 PF Line1
0.838 PF Line2
0.855 PF Line3

Trend Summary Report

Database: X:\Y10\111804-Y10.dvb

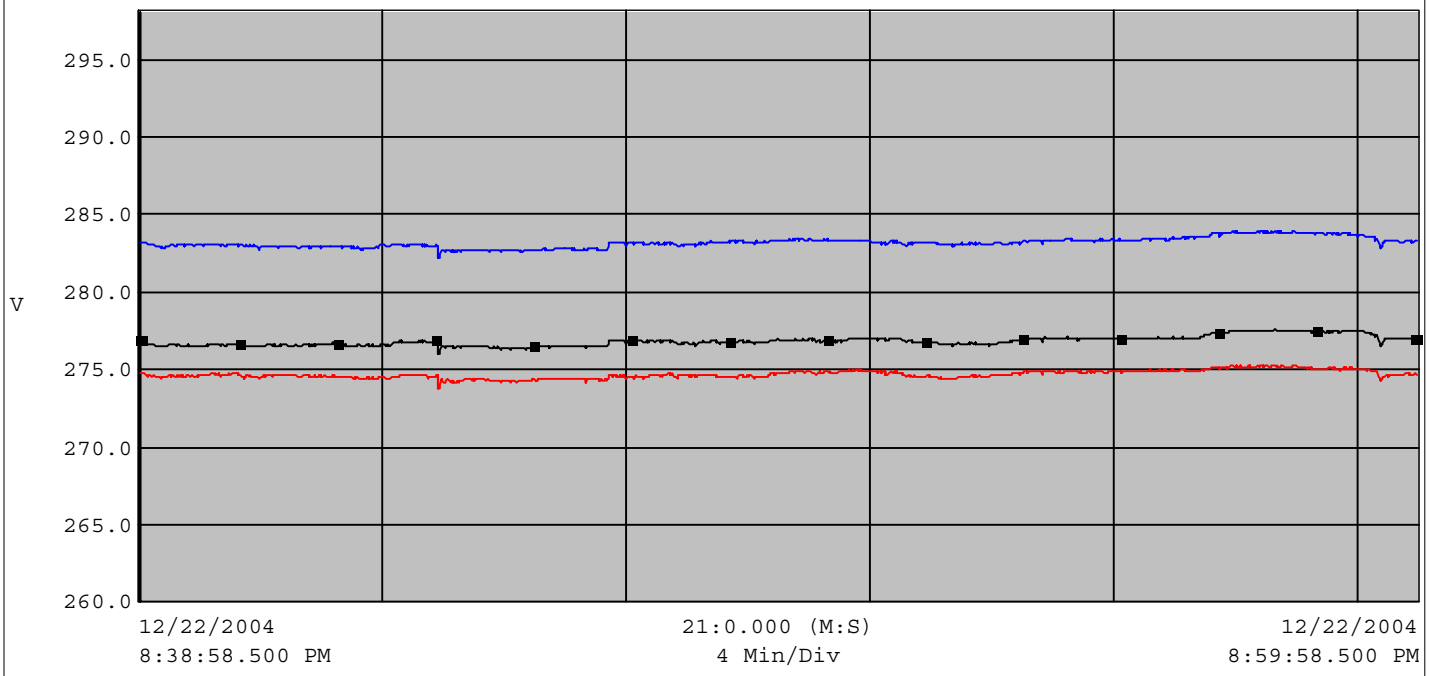
Operator	Test Site
GWA Victor Jardel ,	WPS Y-10 ,

Comments

122204 - WPS Y-10 Trend

Recording Start Date	12/22/2004 - 8:38:58 PM
Recording Duration	21:00 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

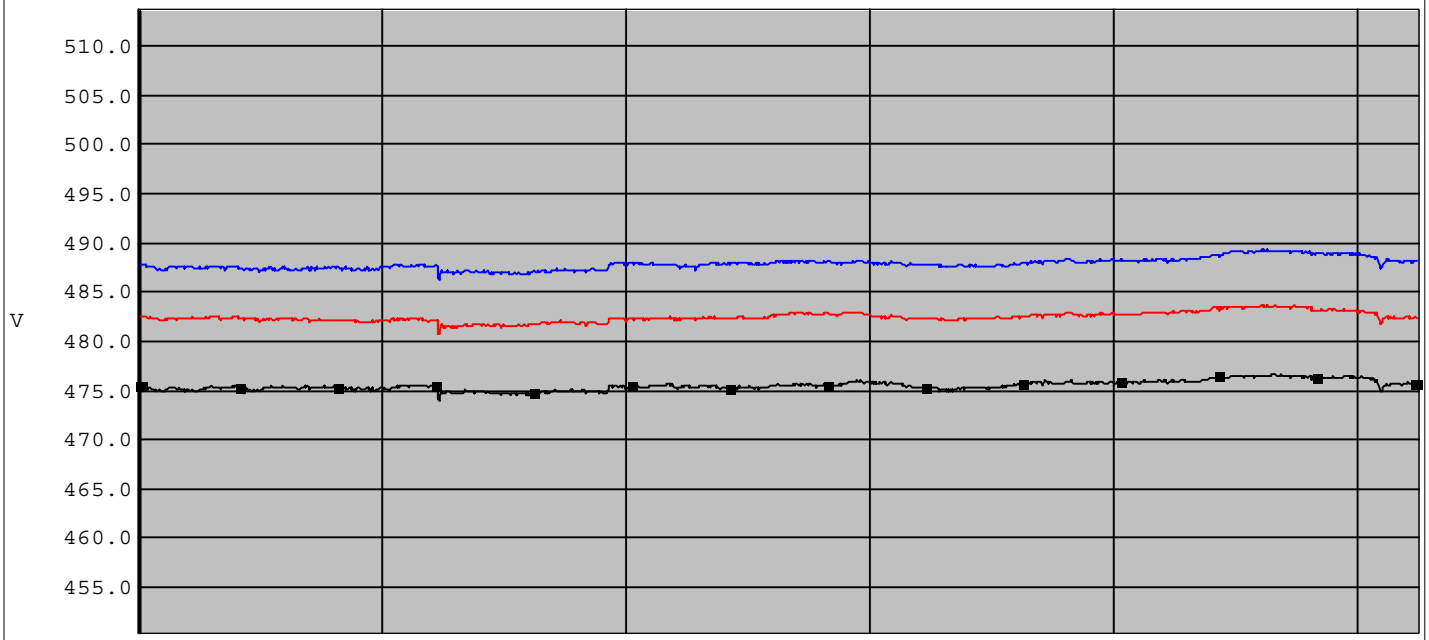
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	12/22/2004	8:38:58.500 PM	276.8	276.0	277.6	1261
Vrms Line2	12/22/2004	8:38:58.500 PM	274.6	273.7	275.2	1261
Vrms Line3	12/22/2004	8:38:58.500 PM	283.1	282.1	283.9	1261

12/22/2004 - 8:38:58.000 PM
Val
276.8 — Vrms Line1
274.7 — Vrms Line2
283.1 — Vrms Line3

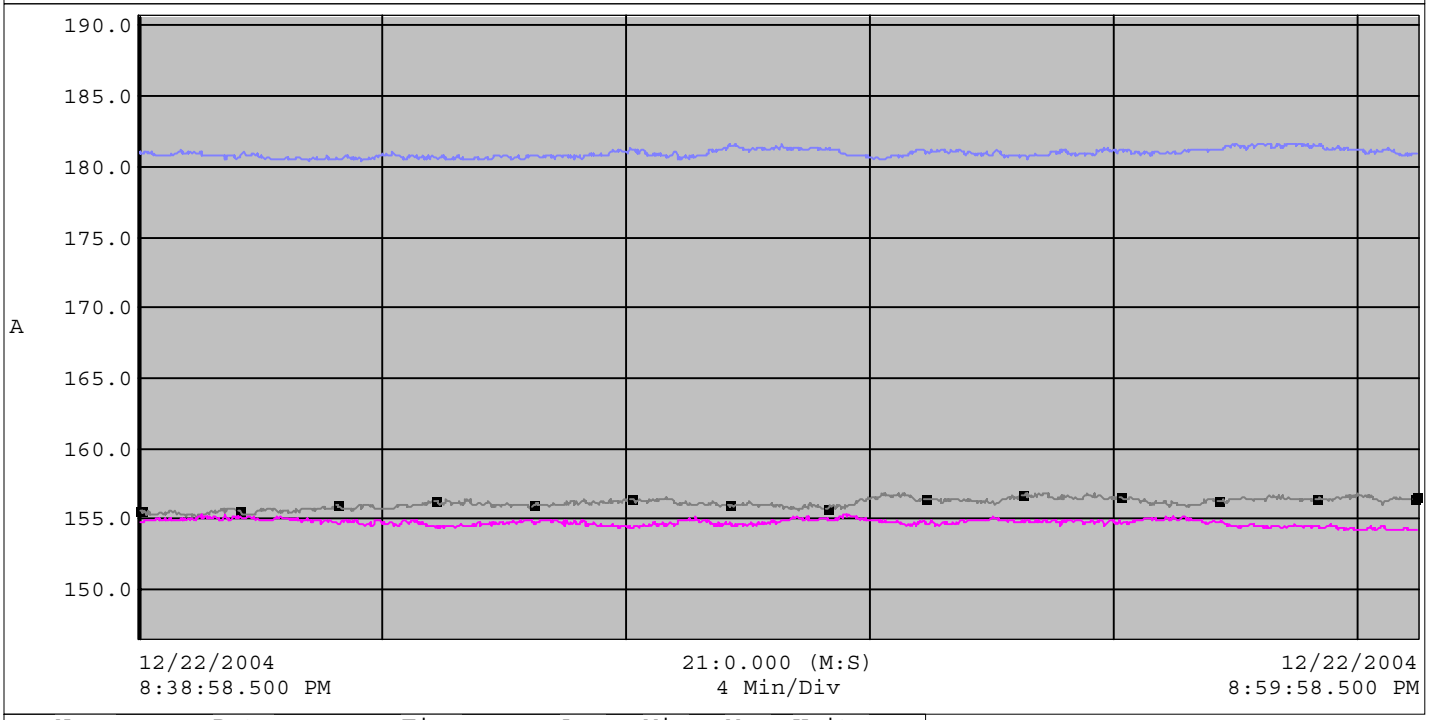
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	12/22/2004	8:38:58.500 PM	475.4	473.9	476.5	V
Urms Line2	12/22/2004	8:38:58.500 PM	482.4	480.6	483.5	V
Urms Line3	12/22/2004	8:38:58.500 PM	487.8	486.2	489.2	V

12/22/2004 - 8:38:58.000 PM
Val
475.3 — Urms Line1
482.5 — Urms Line2
487.7 — Urms Line3

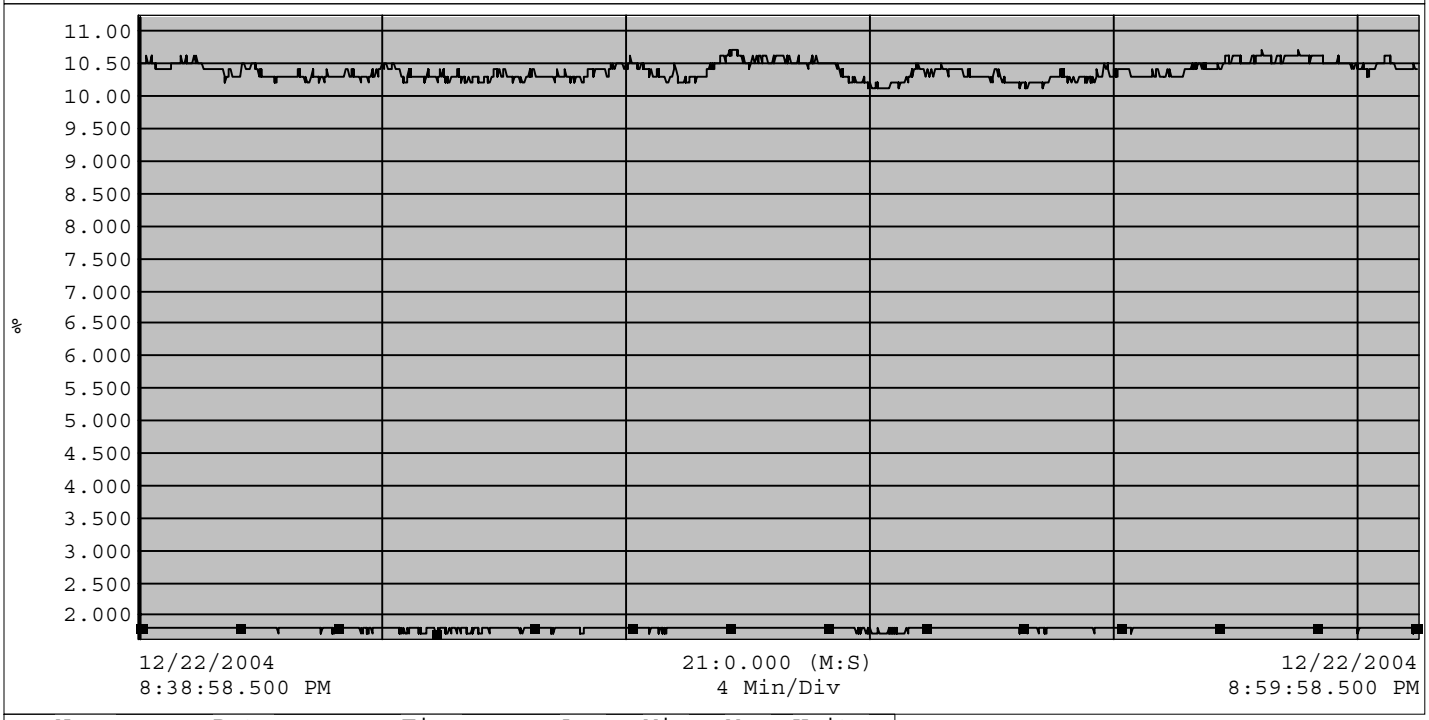
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	12/22/2004	8:38:58.500 PM	156.1	155.0	156.8	A
Arms Line2	12/22/2004	8:38:58.500 PM	154.7	154.1	155.3	A
Arms Line3	12/22/2004	8:38:58.500 PM	180.9	180.3	181.6	A

12/22/2004 - 8:38:58.000 PM
Val
155.5 — Arms Line1
154.7 — Arms Line2
181.0 — Arms Line3

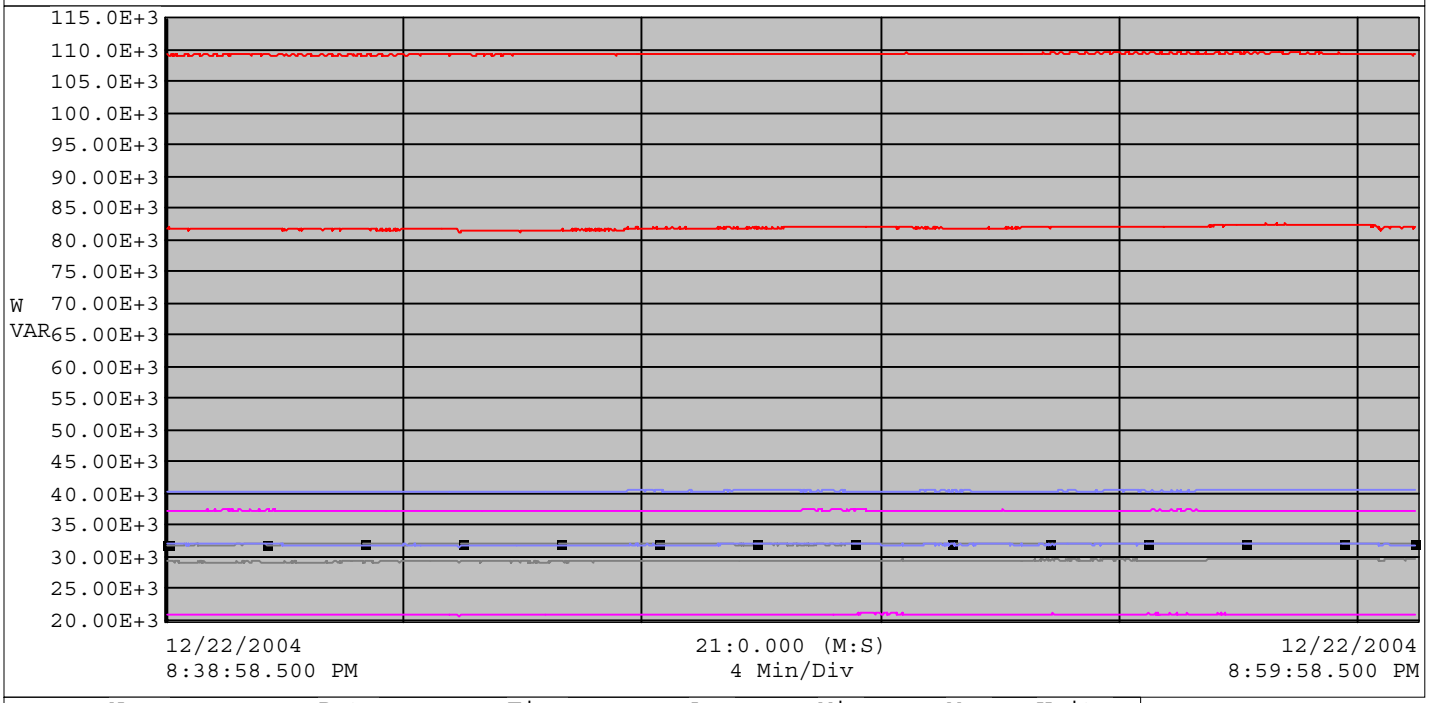
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	12/22/2004	8:38:58.500 PM	1.792	1.700	1.800	%
Aunb(IEEE)	12/22/2004	8:38:58.500 PM	10.38	10.10	10.70	%

12/22/2004 - 8:38:58.000 PM
Val
1.800 ── Vunb(IEEE)
10.50 ── Aunb(IEEE)

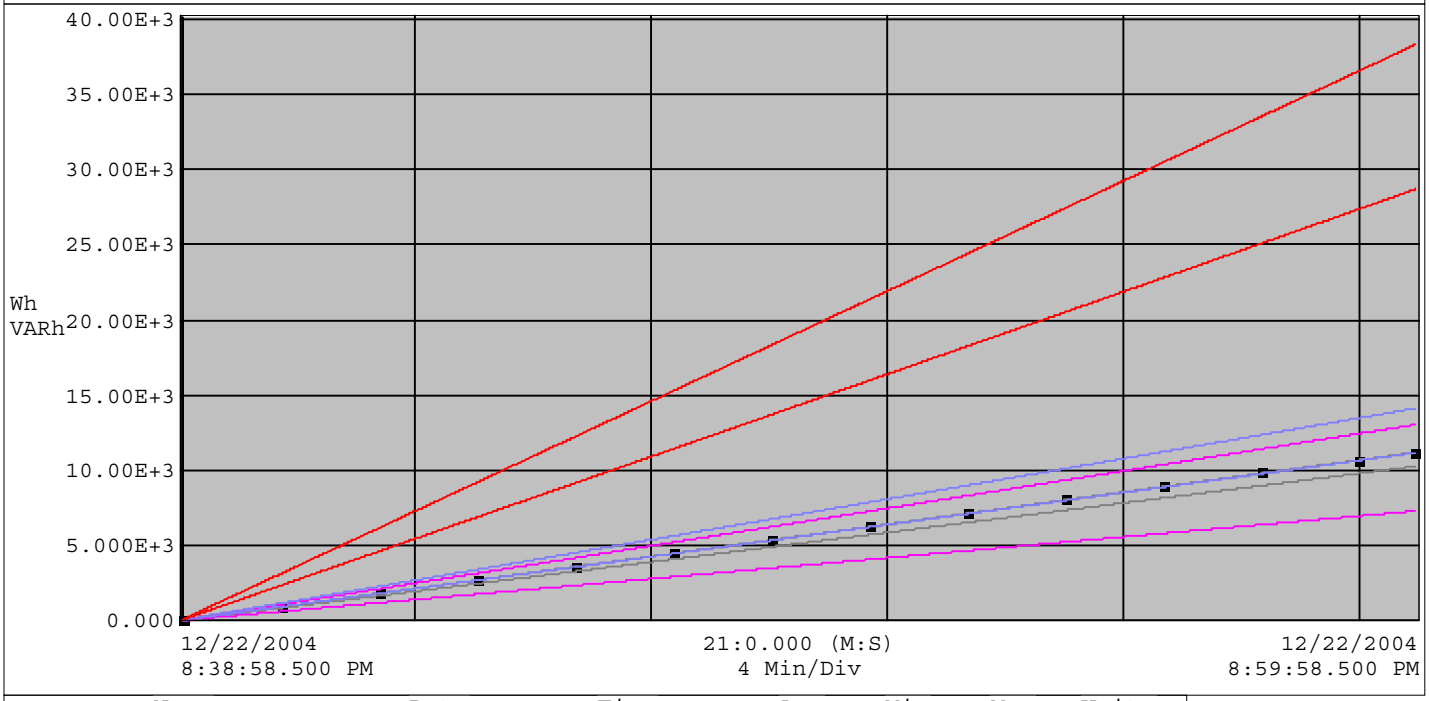
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	12/22/2004	8:38:58.500 PM	31.83E+3	31.62E+3	32.03E+3	W
W Line2	12/22/2004	8:38:58.500 PM	37.09E+3	36.90E+3	37.24E+3	W
W Line3	12/22/2004	8:38:58.500 PM	40.19E+3	39.99E+3	40.43E+3	W
W Sum of Phases	12/22/2004	8:38:58.500 PM	109.1E+3	108.9E+3	109.4E+3	W
VAR Line1	12/22/2004	8:38:58.500 PM	29.20E+3	28.90E+3	29.57E+3	VAR
VAR Line2	12/22/2004	8:38:58.500 PM	20.73E+3	20.50E+3	20.90E+3	VAR
VAR Line3	12/22/2004	8:38:58.500 PM	31.75E+3	31.34E+3	32.02E+3	VAR
VAR Sum of Phases	12/22/2004	8:38:58.500 PM	81.68E+3	80.79E+3	82.35E+3	VAR

12/22/2004 - 8:38:58.000 PM
Val
31.71E+3 — W Line1
37.10E+3 — W Line2
40.16E+3 — W Line3
109.0E+3 — W Sum of Phases
29.10E+3 — VAR Line1
20.71E+3 — VAR Line2
31.82E+3 — VAR Line3
81.63E+3 — VAR Sum of Phases

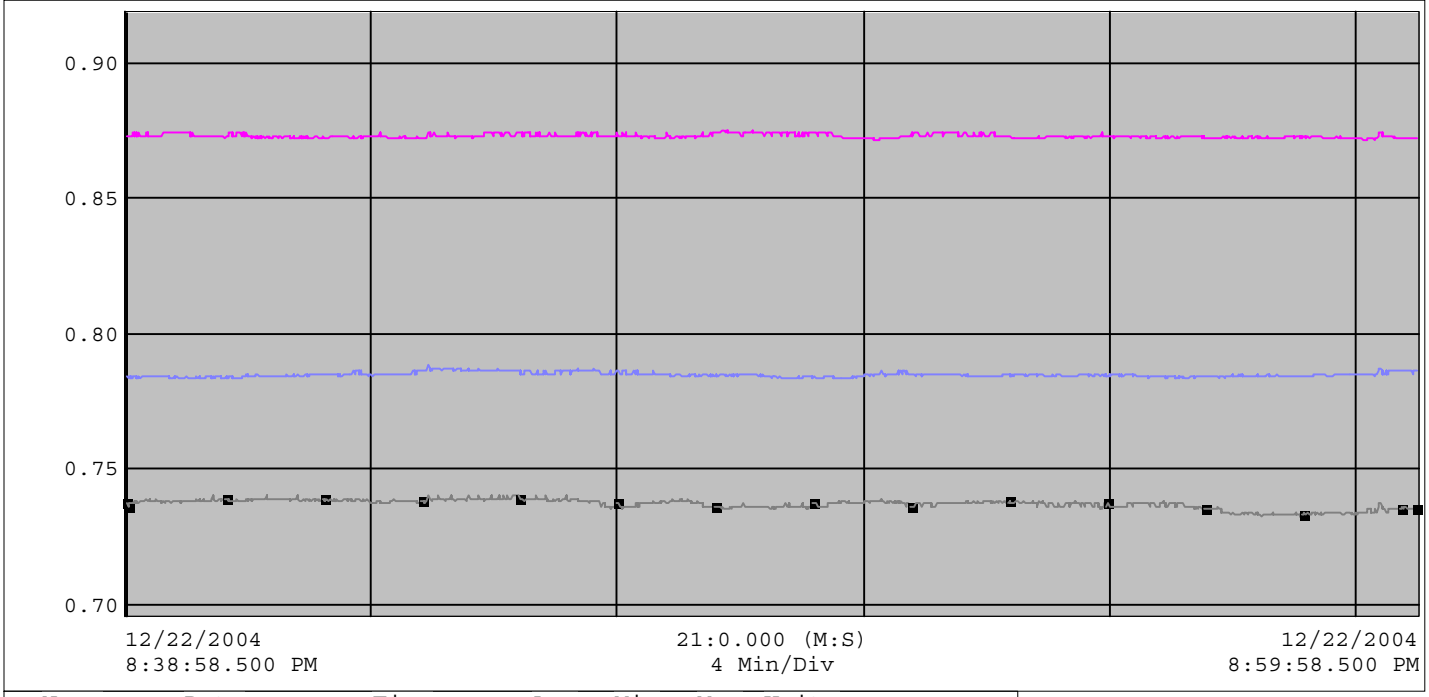
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	12/22/2004	8:38:58.500 PM	5.576E+3	8.847	11.15E+3	Wh
W-hours Line2	12/22/2004	8:38:58.500 PM	6.501E+3	10.31	12.99E+3	Wh
W-hours Line3	12/22/2004	8:38:58.500 PM	7.037E+3	11.17	14.08E+3	Wh
W-hours Sum of Phases	12/22/2004	8:38:58.500 PM	19.11E+3	30.33	38.22E+3	Wh
VAR-hours Line1	12/22/2004	8:38:58.500 PM	5.104E+3	8.116	10.23E+3	VARh
VAR-hours Line2	12/22/2004	8:38:58.500 PM	3.632E+3	5.761	7.261E+3	VARh
VAR-hours Line3	12/22/2004	8:38:58.500 PM	5.559E+3	8.825	11.12E+3	VARh
VAR-hours Sum of Phases	12/22/2004	8:38:58.500 PM	14.29E+3	22.70	28.61E+3	VARh

12/22/2004 - 8:38:58.000 PM
Val
8.847 — W-hours Line1
10.31 — W-hours Line2
11.17 — W-hours Line3
30.33 — W-hours Sum of Phases
8.116 — VAR-hours Line1
5.761 — VAR-hours Line2
8.825 — VAR-hours Line3
22.70 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	12/22/2004	8:38:58.500 PM	0.737	0.732	0.740	
PF Line2	12/22/2004	8:38:58.500 PM	0.873	0.871	0.875	
PF Line3	12/22/2004	8:38:58.500 PM	0.785	0.783	0.788	

12/22/2004 - 8:38:58.000 PM
Val
0.737 PF Line1
0.873 PF Line2
0.784 PF Line3

Trend Summary Report

Database: X:\Y10\122204-Y10.dvb

Operator	Test Site
GWA Victor Jardel ,	WPS Y-10 ,

Comments

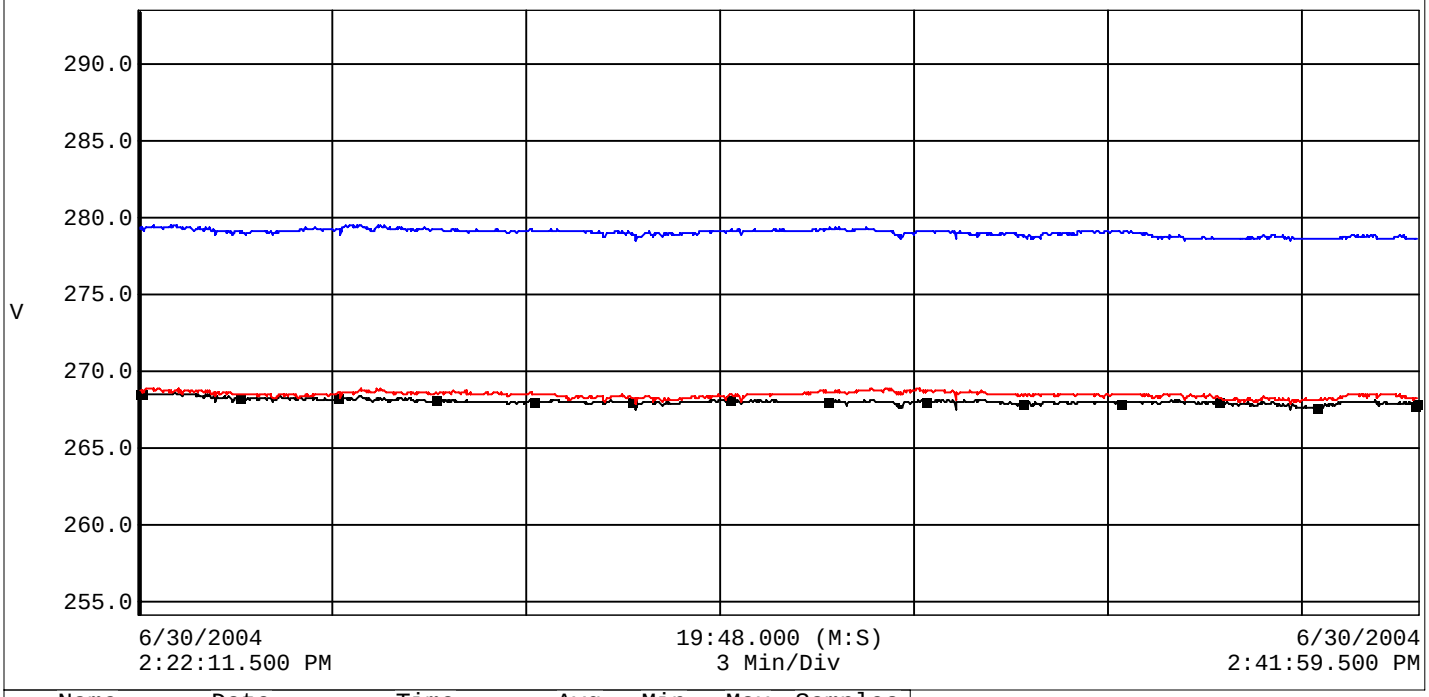
GWA Water Pumping Station Assessment				
Station Name: Y-15	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 02/07/05		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.675	
Transformer Pole Condition and Grounding	2.5%	4	0.1	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	4	0.2	
Lightning Arrester Condition	5.0%	4	0.2	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.6	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	3	0.15	
Standby Generator	**20.0%**		0.5	
Generator Condition	10.0%	2	0.2	25
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.65	
Main Breaker	5.0%	2	0.1	36
Motor Starter	5.0%	2	0.1	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0.1	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	2	0.04	52
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.8**

Comments:

WPS: Y-15 Recorded June 30, 2004

Recording Start Date	6/30/2004 - 2:22:11 PM
Recording Duration	19:48 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

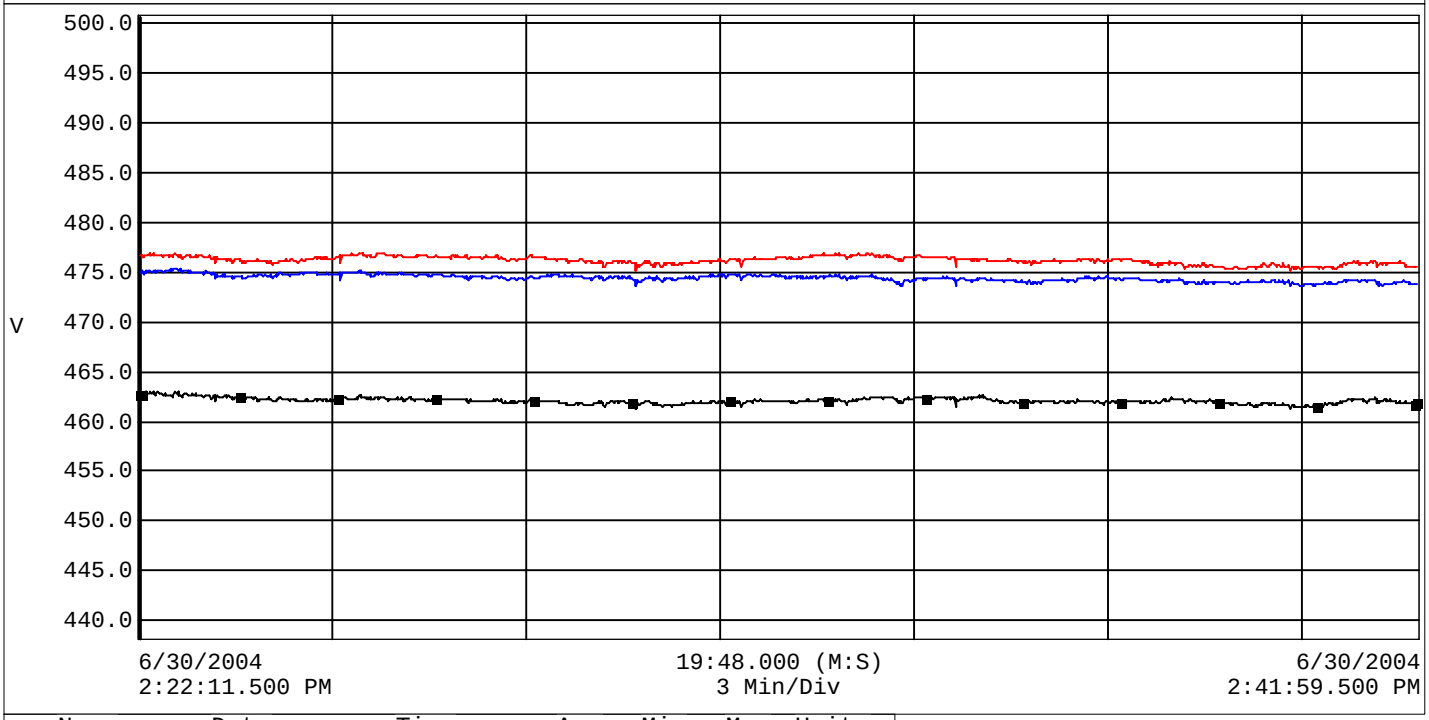
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	6/30/2004	2:22:11.500 PM	268.0	267.5	268.6	1189
Vrms Line2	6/30/2004	2:22:11.500 PM	268.4	267.8	268.8	1189
Vrms Line3	6/30/2004	2:22:11.500 PM	279.0	278.4	279.4	1189

6/30/2004 - 2:22:11.000 PM
Val
268.4 — Vrms Line1
268.7 — Vrms Line2
279.2 — Vrms Line3

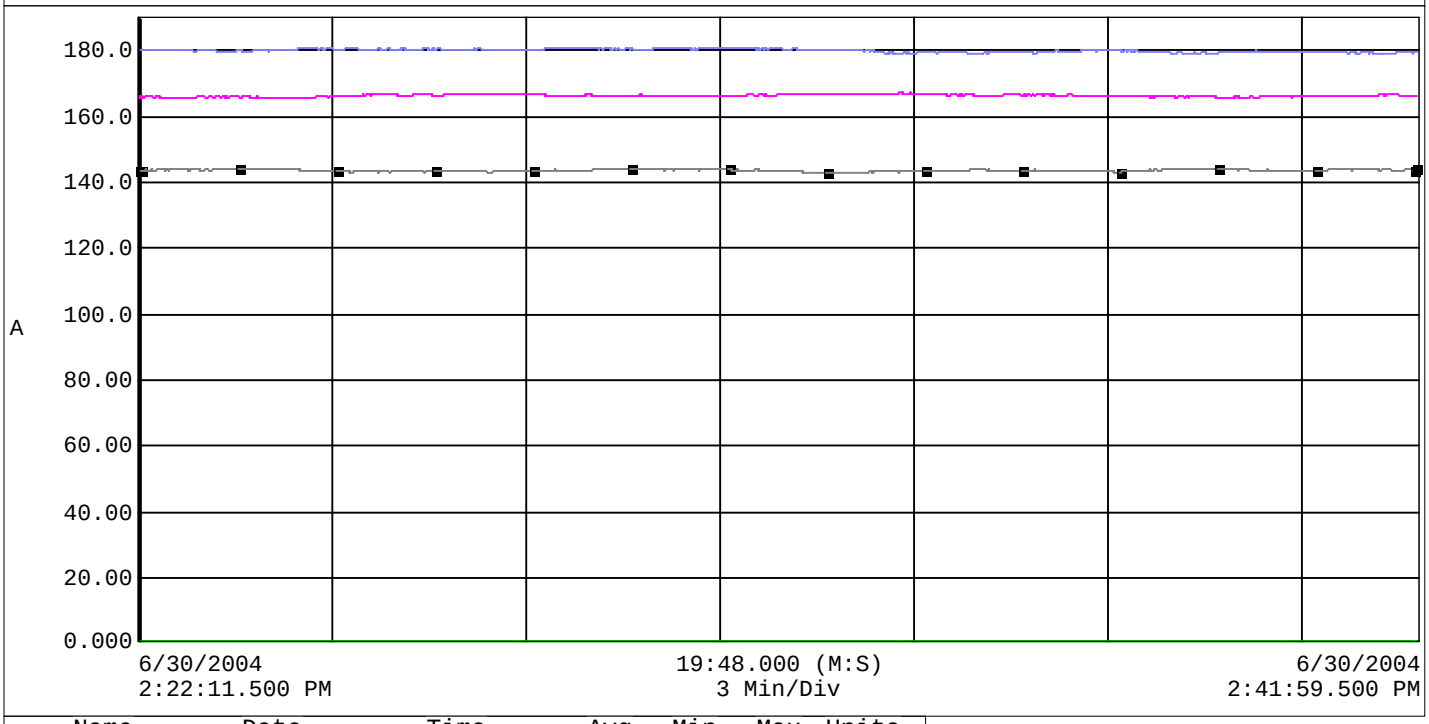
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	6/30/2004	2:22:11.500 PM	462.0	461.1	462.8	V
Urms Line2	6/30/2004	2:22:11.500 PM	476.0	475.0	476.8	V
Urms Line3	6/30/2004	2:22:11.500 PM	474.3	473.4	475.3	V

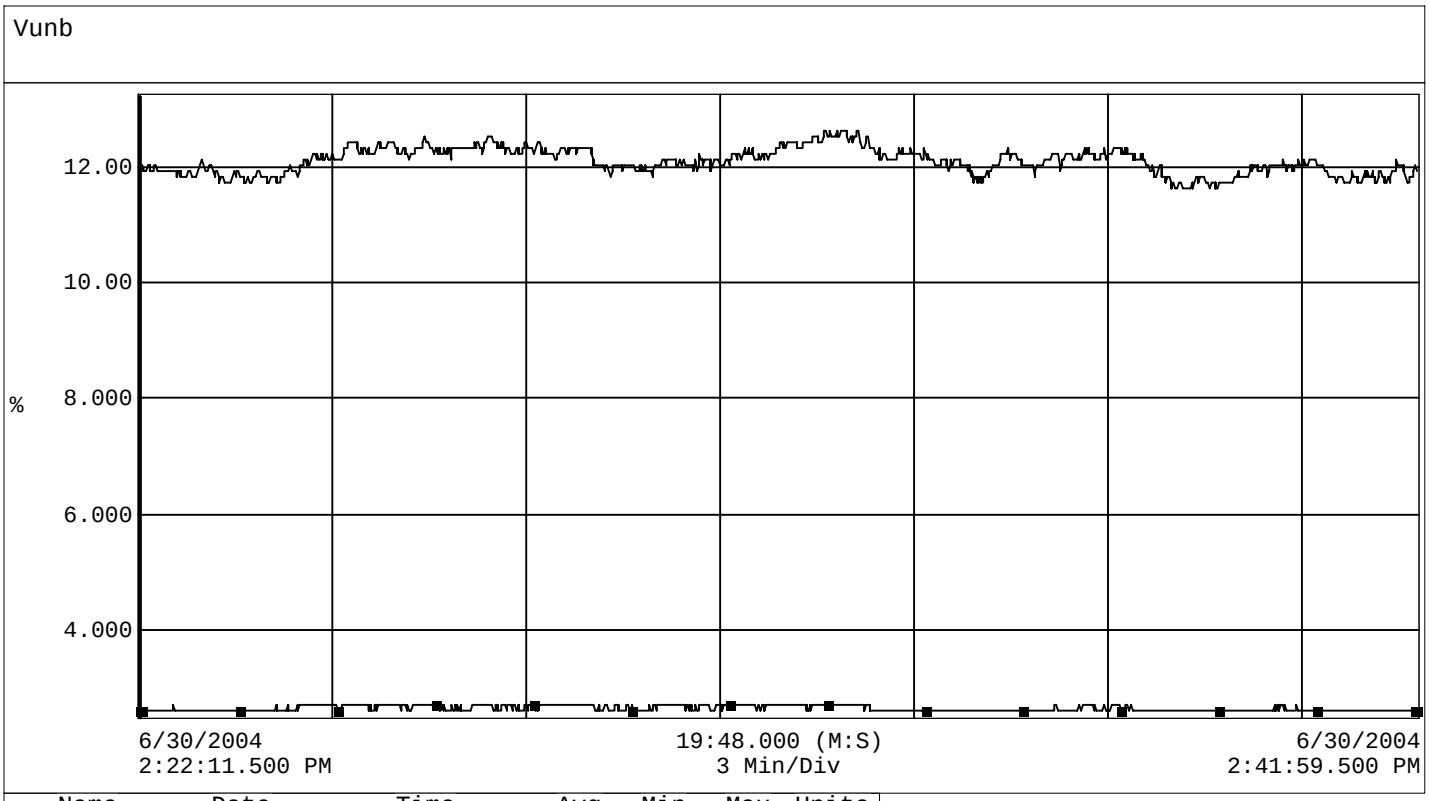
6/30/2004 - 2:22:11.000 PM
Val
462.6 Urms Line1
476.5 Urms Line2
474.9 Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	6/30/2004	2:22:11.500 PM	143.4	142.5	144.0	A
Arms Line2	6/30/2004	2:22:11.500 PM	166.1	165.1	166.9	A
Arms Line3	6/30/2004	2:22:11.500 PM	179.8	178.5	180.8	A
Arms Neutral	6/30/2004	2:22:11.500 PM	0.610	0.600	0.700	A

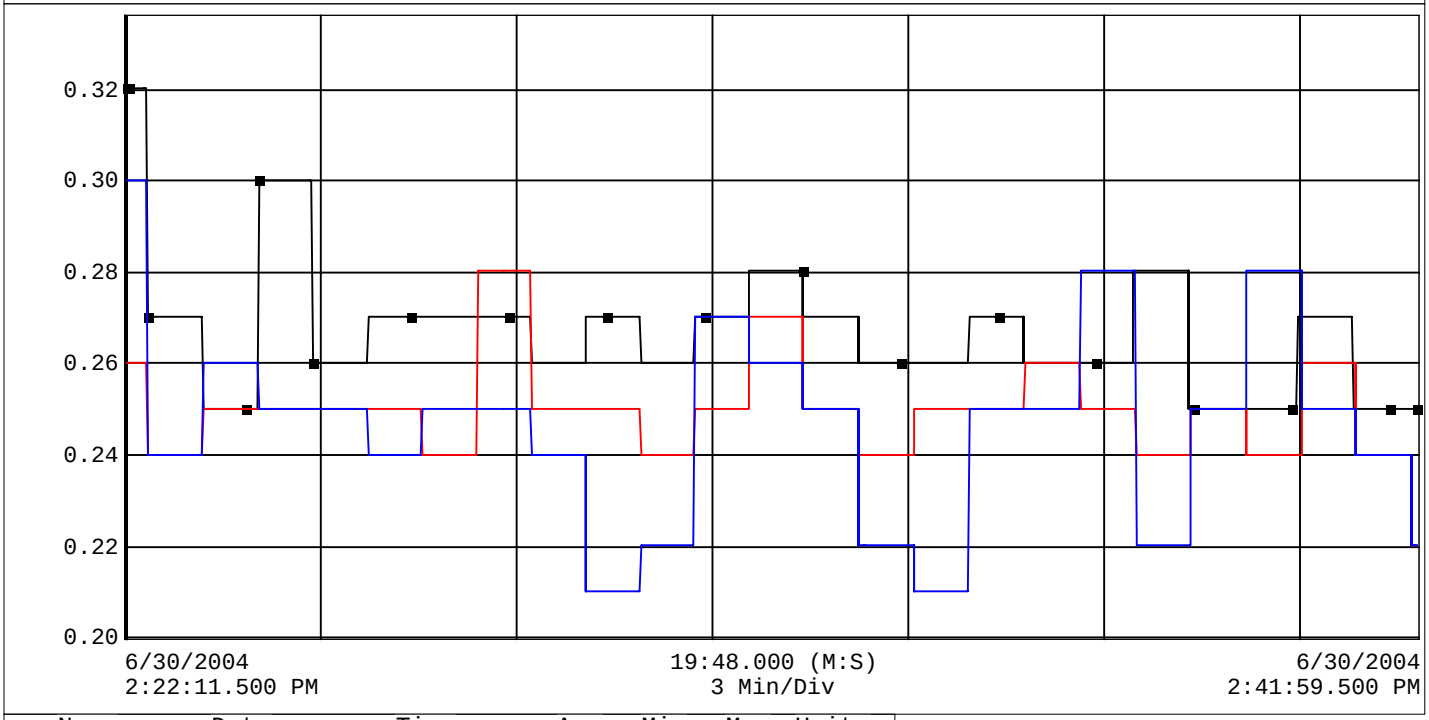
6/30/2004 - 2:22:11.000 PM
Val
143.6 — Arms Line1
165.7 — Arms Line2
179.8 — Arms Line3
0.600 — Arms Neutral



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	6/30/2004	2:22:11.500 PM	2.638	2.600	2.700	%
Aunb(IEEE)	6/30/2004	2:22:11.500 PM	12.07	11.60	12.60	%

6/30/2004 - 2:22:11.000 PM
Val
2.600 —— Vunb(IEEE)
11.90 —— Aunb(IEEE)

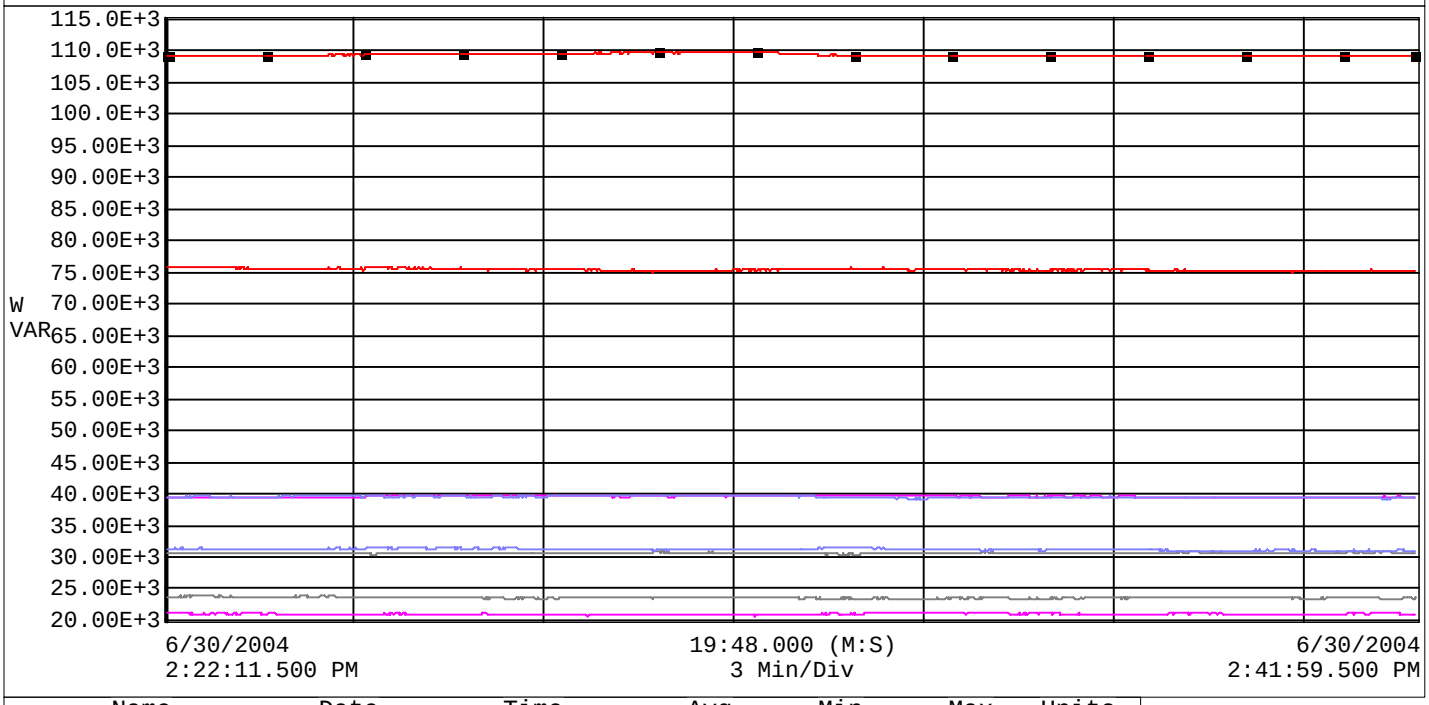
Vflk



Name	Date	Time	Avg	Min	Max	Units
Vflk Line1	6/30/2004	2:22:11.500 PM	0.266	0.250	0.320	
Vflk Line2	6/30/2004	2:22:11.500 PM	0.250	0.220	0.280	
Vflk Line3	6/30/2004	2:22:11.500 PM	0.246	0.210	0.300	

6/30/2004 - 2:22:11.000 PM
Val
0.320 — Vflk Line1
0.260 — Vflk Line2
0.300 — Vflk Line3

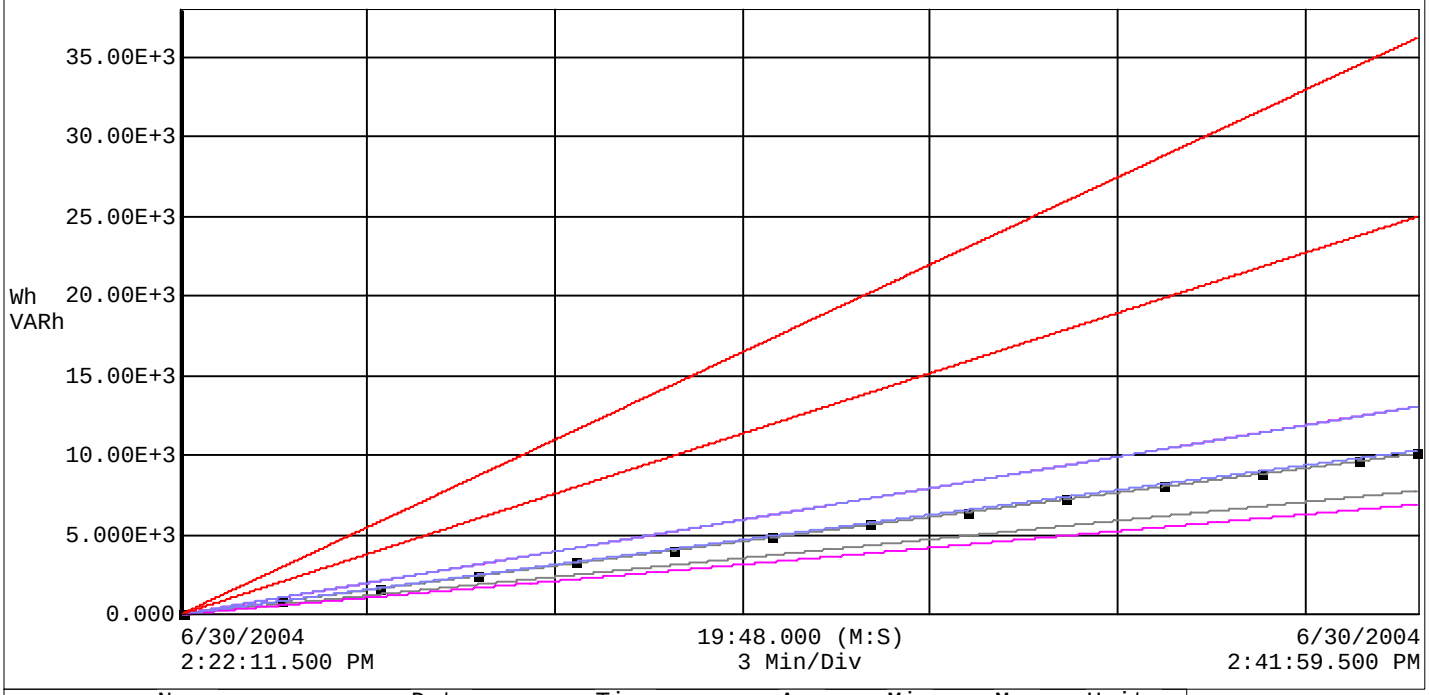
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	6/30/2004	2:22:11.500 PM	30.47E+3	30.27E+3	30.69E+3	W
W Line2	6/30/2004	2:22:11.500 PM	39.41E+3	39.16E+3	39.64E+3	W
W Line3	6/30/2004	2:22:11.500 PM	39.37E+3	39.03E+3	39.70E+3	W
W Sum of Phases	6/30/2004	2:22:11.500 PM	109.3E+3	109.0E+3	109.7E+3	W
VAR Line1	6/30/2004	2:22:11.500 PM	23.41E+3	23.10E+3	23.73E+3	VAR
VAR Line2	6/30/2004	2:22:11.500 PM	20.83E+3	20.56E+3	21.11E+3	VAR
VAR Line3	6/30/2004	2:22:11.500 PM	31.06E+3	30.70E+3	31.38E+3	VAR
VAR Sum of Phases	6/30/2004	2:22:11.500 PM	75.30E+3	74.78E+3	75.82E+3	VAR

6/30/2004 - 2:22:11.000 PM
Val
30.46E+3 — W Line1
39.28E+3 — W Line2
39.36E+3 — W Line3
109.1E+3 — W Sum of Phases
23.61E+3 — VAR Line1
20.93E+3 — VAR Line2
31.16E+3 — VAR Line3
75.70E+3 — VAR Sum of Phases

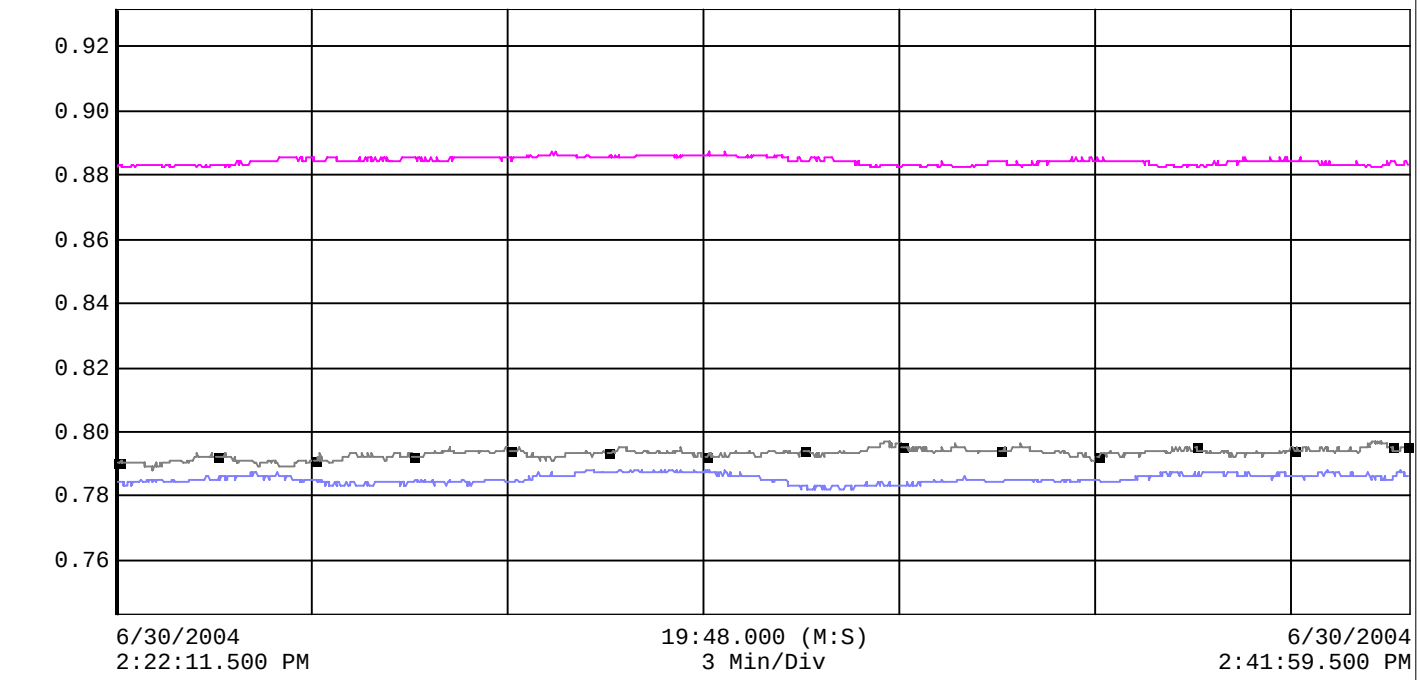
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	6/30/2004	2:22:11.500 PM	5.034E+3	8.601	10.06E+3	Wh
W-hours Line2	6/30/2004	2:22:11.500 PM	6.515E+3	10.73	13.02E+3	Wh
W-hours Line3	6/30/2004	2:22:11.500 PM	6.515E+3	11.11	13.00E+3	Wh
W-hours Sum of Phases	6/30/2004	2:22:11.500 PM	18.06E+3	30.84	36.08E+3	Wh
VAR-hours Line1	6/30/2004	2:22:11.500 PM	3.875E+3	6.607	7.732E+3	VARh
VAR-hours Line2	6/30/2004	2:22:11.500 PM	3.442E+3	5.880	6.881E+3	VARh
VAR-hours Line3	6/30/2004	2:22:11.500 PM	5.143E+3	8.766	10.26E+3	VARh
VAR-hours Sum of Phases	6/30/2004	2:22:11.500 PM	12.46E+3	21.25	24.87E+3	VARh

6/30/2004 - 2:22:11.000 PM
Val
8.601 — W-hours Line1
10.73 — W-hours Line2
11.11 — W-hours Line3
30.84 — W-hours Sum of Phases
6.607 — VAR-hours Line1
5.880 — VAR-hours Line2
8.766 — VAR-hours Line3
21.25 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	6/30/2004	2:22:11.500 PM	0.793	0.788	0.797	
PF Line2	6/30/2004	2:22:11.500 PM	0.884	0.882	0.887	
PF Line3	6/30/2004	2:22:11.500 PM	0.785	0.782	0.788	

6/30/2004 - 2:22:11.000 PM
Val
0.790 — PF Line1
0.882 — PF Line2
0.784 — PF Line3

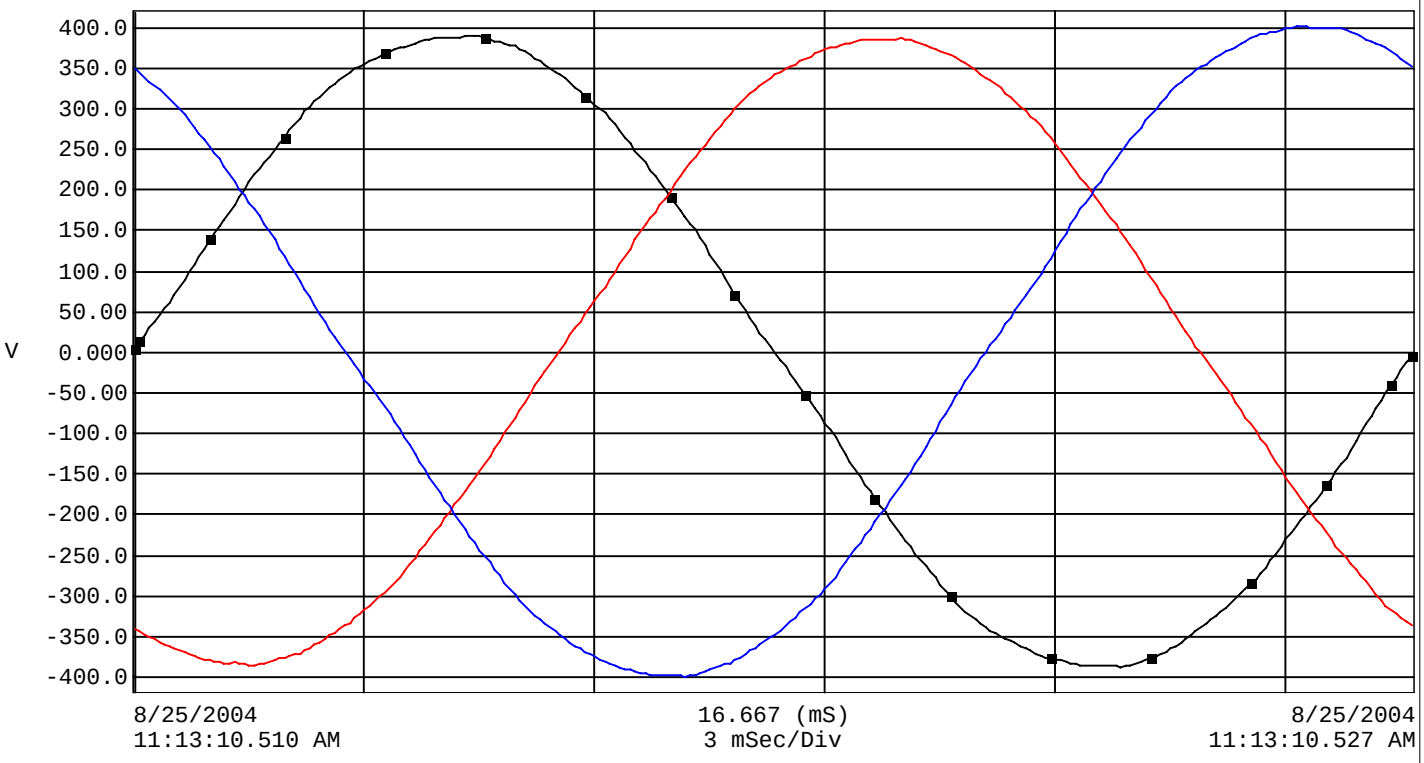
Trend Summary Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Y15\063004-Y15.dvb	
Operator ,	Test Site ,
Comments	

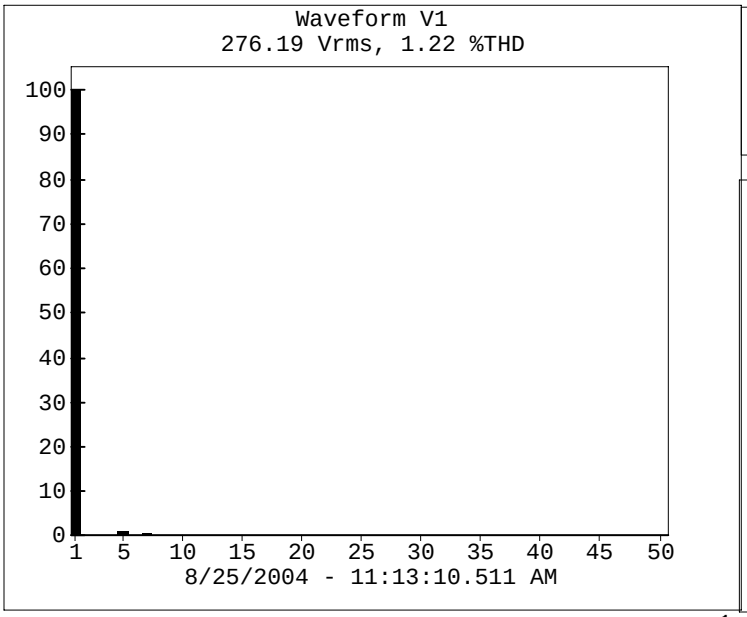
WPS: Y-15 Recording of Aug 25, 2004

Recording Start Date	8/25/2004 - 11:13:10 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	8/25/2004	11:13:10.510 AM	16.667	276.2	V
Waveform V2	8/25/2004	11:13:10.510 AM	16.667	274.1	V
Waveform V3	8/25/2004	11:13:10.510 AM	16.667	284.3	V



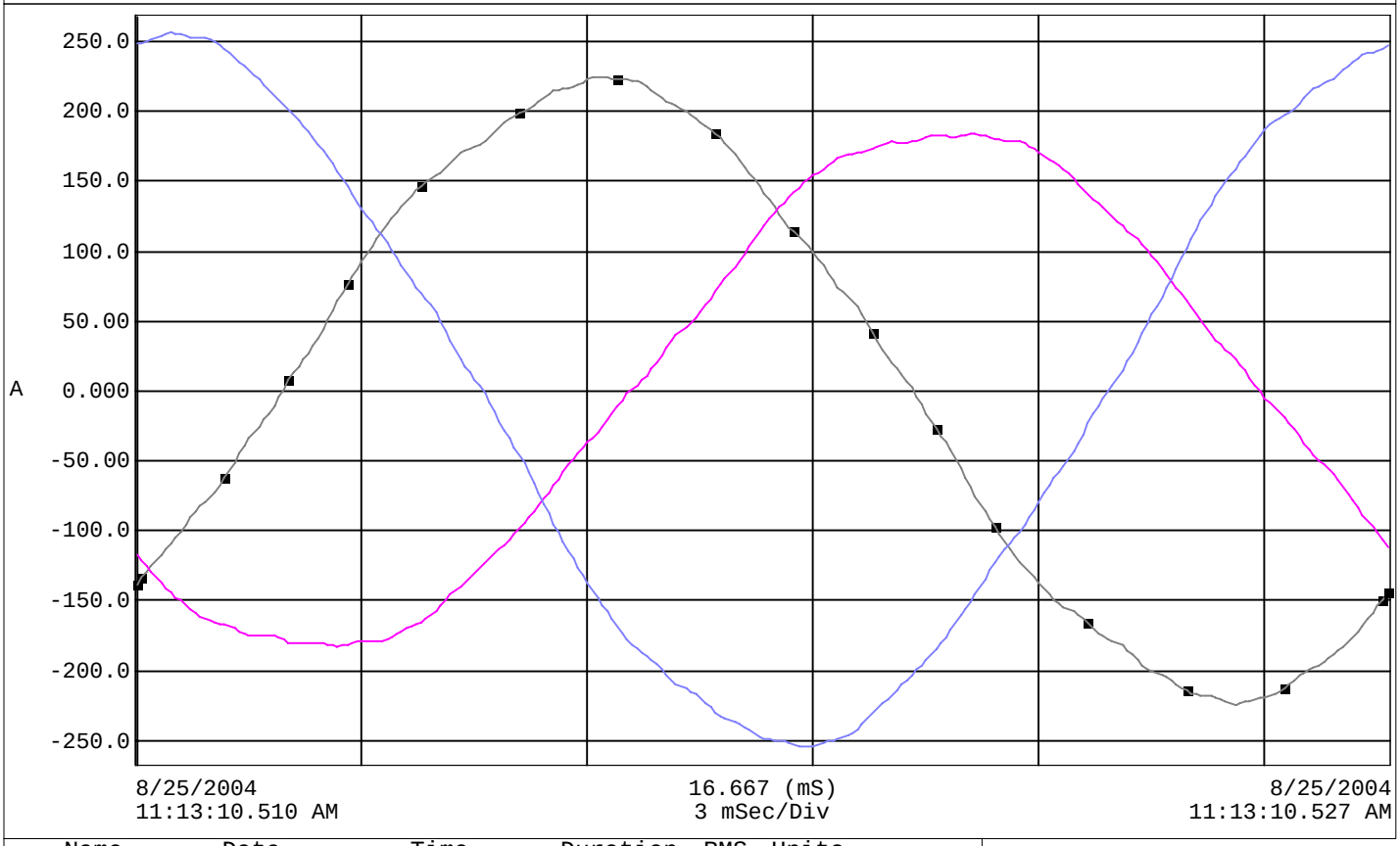
8/25/2004 - 11:13:10.000 AM

Val	
2.600	Waveform V1
-341.3	Waveform V2
348.2	Waveform V3

Waveform V1

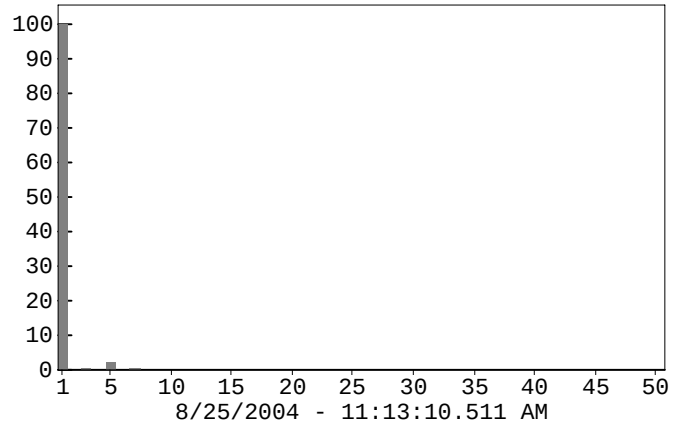
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.3	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	8/25/2004	11:13:10.510 AM	16.667	155.2	A
Waveform I2	8/25/2004	11:13:10.510 AM	16.667	131.8	A
Waveform I3	8/25/2004	11:13:10.510 AM	16.667	177.7	A

Waveform I1
155.20 Arms, 2.73 %THD



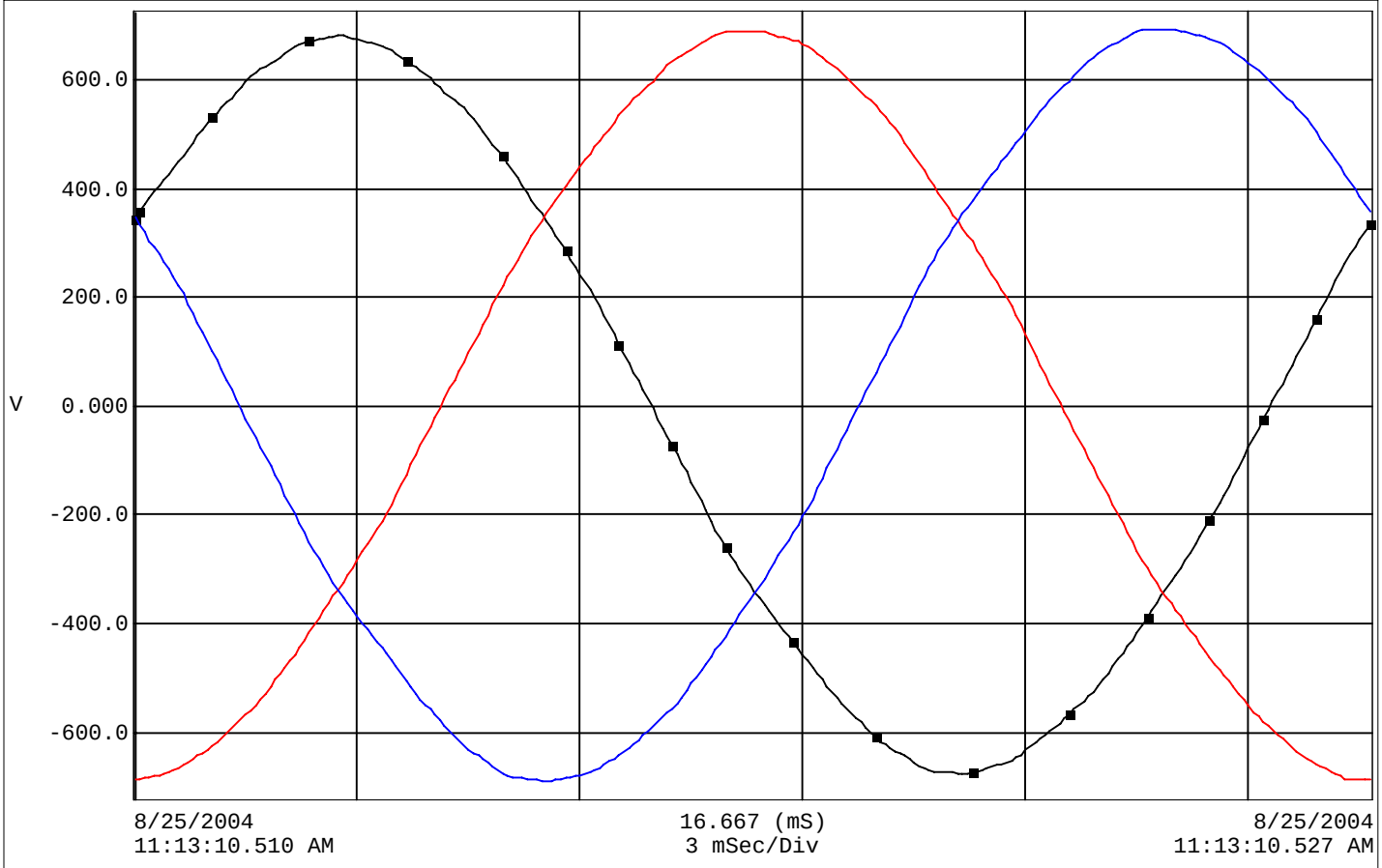
8/25/2004 - 11:13:10.000 AM

Val	
-139.8	Waveform I1
-117.8	Waveform I2
248.3	Waveform I3

Waveform I1

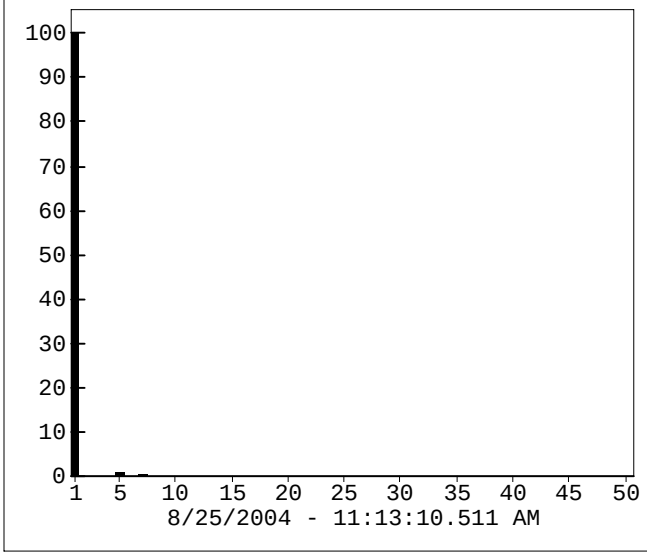
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.8	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.3	H22	0.1	H39	0.0
H06	0.0	H23	0.2	H40	0.0
H07	0.8	H24	0.2	H41	0.0
H08	0.0	H25	0.2	H42	0.0
H09	0.3	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.5	H28	0.3	H45	0.0
H12	0.0	H29	0.3	H46	0.0
H13	0.3	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	8/25/2004	11:13:10.510 AM	16.667	475.4	V
Waveform U2	8/25/2004	11:13:10.510 AM	16.667	484.1	V
Waveform U3	8/25/2004	11:13:10.510 AM	16.667	486.2	V

Waveform U1
475.38 Vrms, 1.13 %THD



8/25/2004 - 11:13:10.000 AM

	Val	
—	344.0	Waveform U1
—	-689.5	Waveform U2
—	345.5	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.9	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.5	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.3	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.3	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 8/25/2004
Start Time: 11:13:10 AM
Duration: 0:0.000 (M:S)
W: 32.19E+3 W
VAR: 28.35E+3 W
VA: 42.89E+3 W
Power Factor: 0.750
Displacement Power Factor: 0.751
TAN: 0.880
VoltageRatio: 1.000
CurrentRatio: 1.000

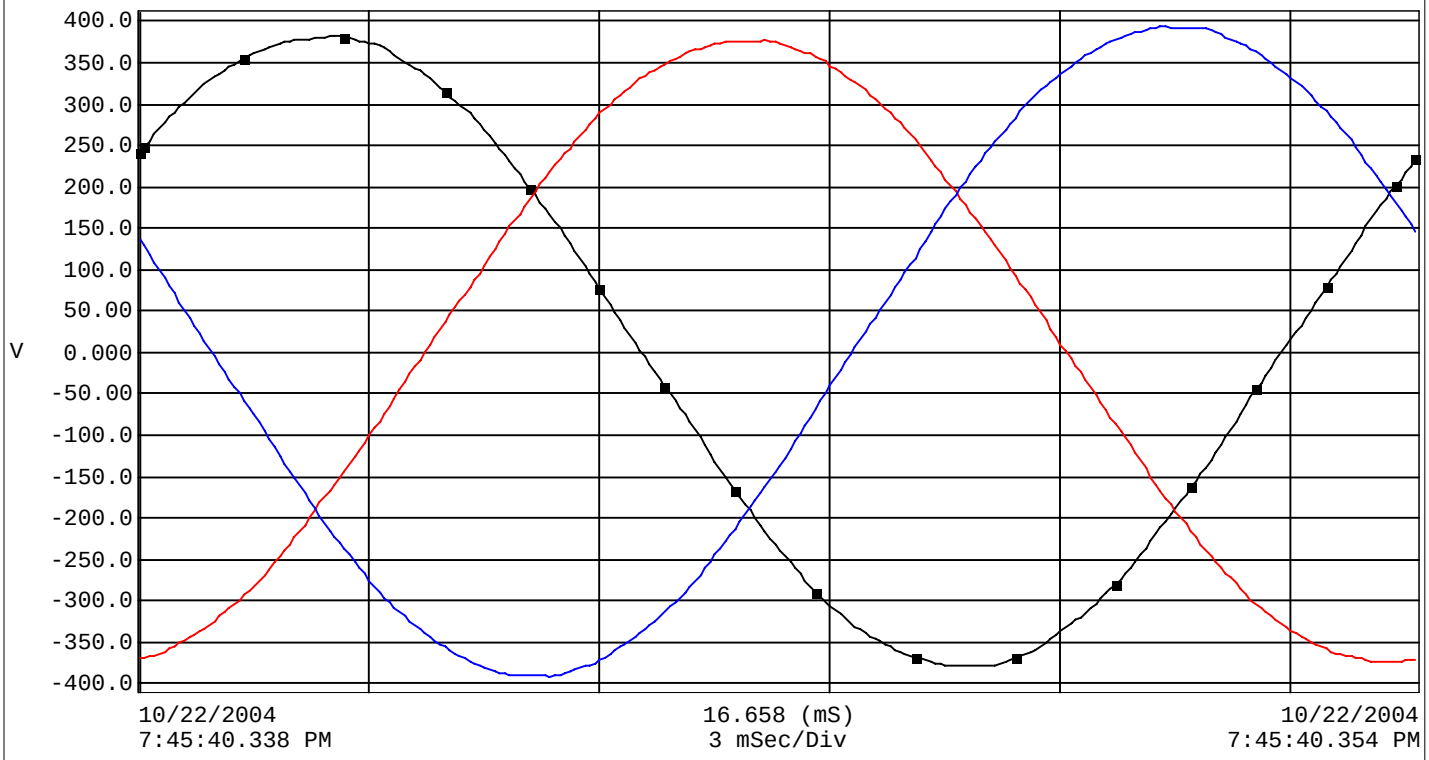
Photo Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Y15\082504-Y15-Photo.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa ,	Test Site GWA WPS - Y15 - Photo ,
Comments	

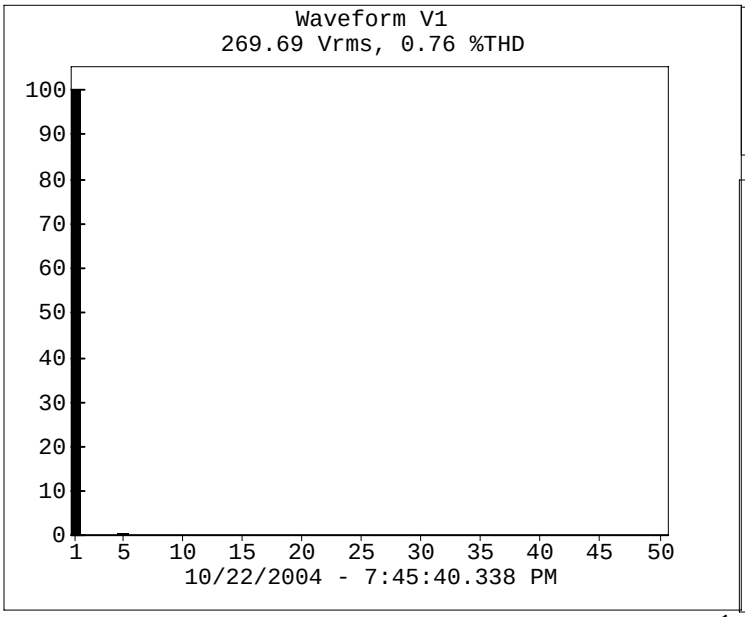
WPS: Y-15 Recorded Oct 22, 2004

Recording Start Date	10/22/2004 - 7:45:40 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	10/22/2004	7:45:40.338 PM	16.658	269.7	V
Waveform V2	10/22/2004	7:45:40.338 PM	16.658	266.4	V
Waveform V3	10/22/2004	7:45:40.338 PM	16.658	277.9	V

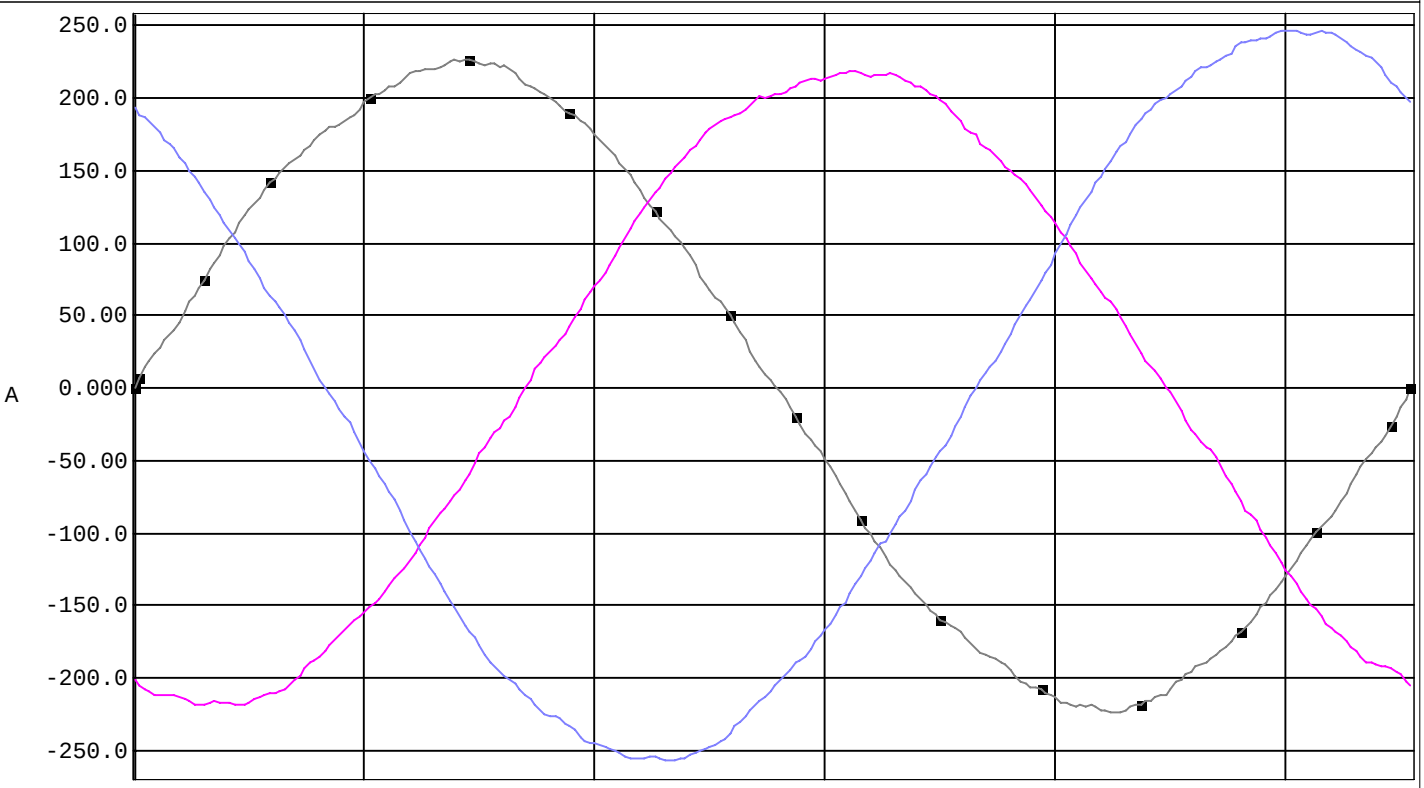


10/22/2004 - 7:45:40.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

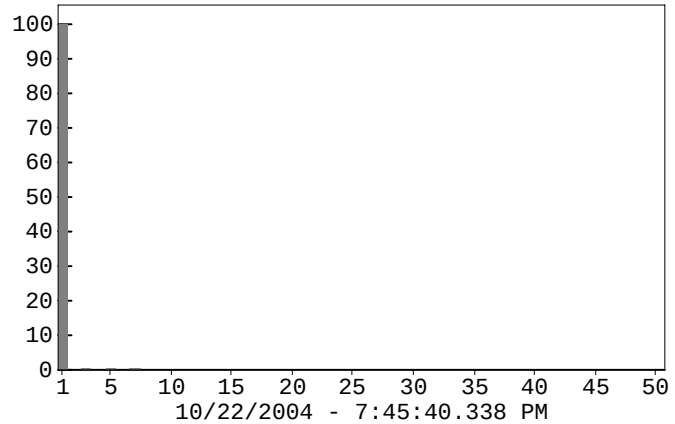
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.6	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.3	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.2	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.3	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	10/22/2004	7:45:40.338 PM	16.658	156.3	A
Waveform I2	10/22/2004	7:45:40.338 PM	16.658	155.1	A
Waveform I3	10/22/2004	7:45:40.338 PM	16.658	176.5	A

Waveform I1
156.29 Arms, 1.83 %THD

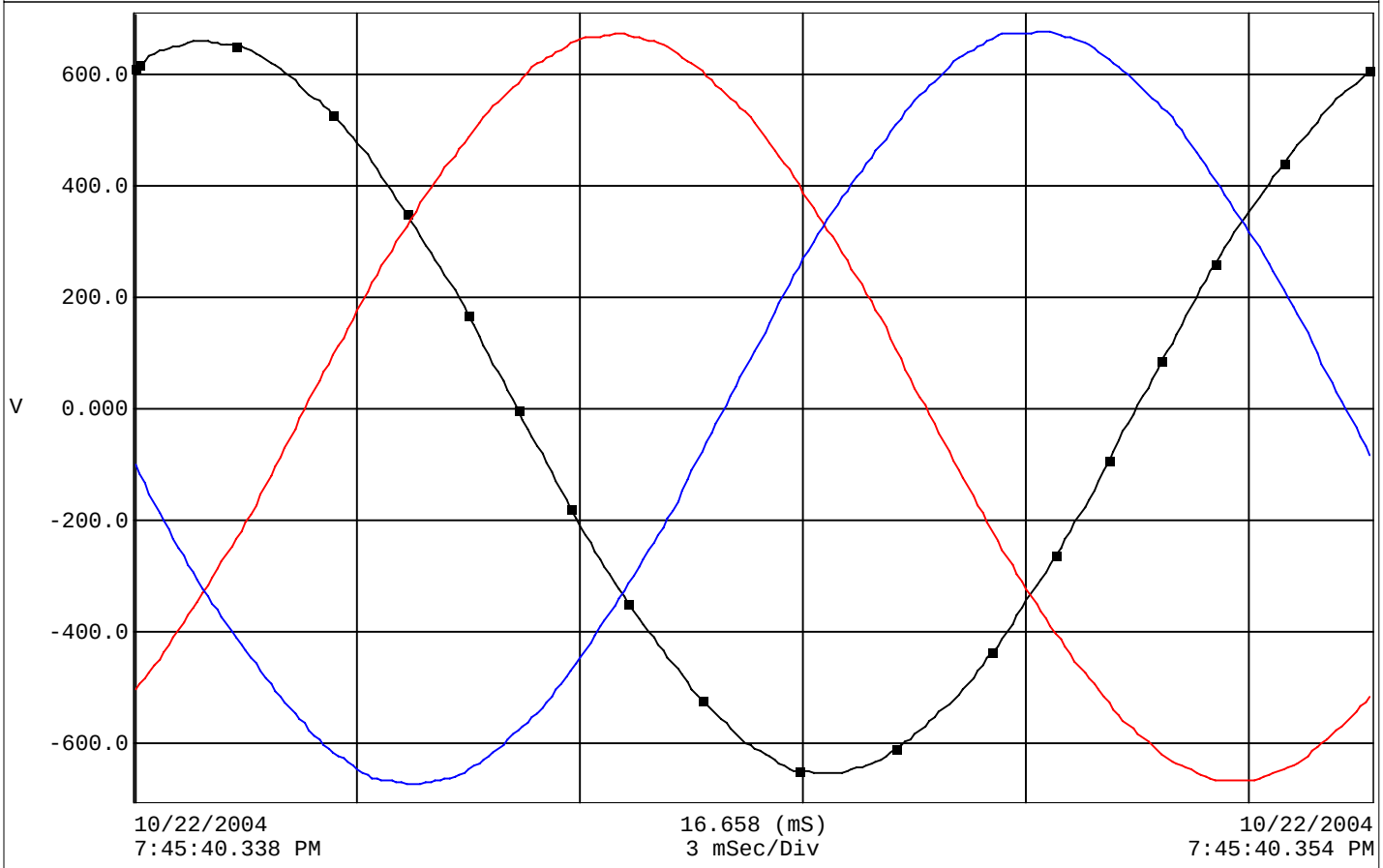


10/22/2004 - 7:45:40.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

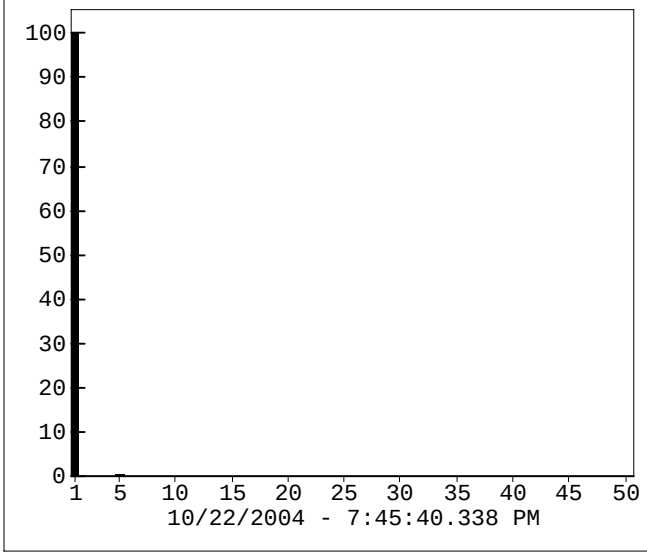
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.1
H02	0.1	H19	0.1	H36	0.1
H03	0.9	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.0	H22	0.2	H39	0.1
H06	0.0	H23	0.1	H40	0.0
H07	0.9	H24	0.2	H41	0.1
H08	0.0	H25	0.2	H42	0.0
H09	0.2	H26	0.0	H43	0.1
H10	0.1	H27	0.1	H44	0.0
H11	0.4	H28	0.3	H45	0.0
H12	0.0	H29	0.3	H46	0.0
H13	0.3	H30	0.2	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.2	H32	0.1	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.1	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	10/22/2004	7:45:40.338 PM	16.658	462.6	V
Waveform U2	10/22/2004	7:45:40.338 PM	16.658	471.6	V
Waveform U3	10/22/2004	7:45:40.338 PM	16.658	475.9	V

Waveform U1
462.56 Vrms, 0.73 %THD



10/22/2004 - 7:45:40.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	0.6	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.2	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.2	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

Start Date: 10/22/2004
Start Time: 7:45:40 PM
Duration: 0:0.000 (M:S)
W: 109.4E+3 W
VAR: 74.43E+3 W
VA: 132.7E+3 W
Power Factor: 2.477
Displacement Power Factor: 2.477
TAN: 2.048
VoltageRatio: 1.000
CurrentRatio: 1.000

Photo Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Y15\102204 - Y15 Photo.dvb

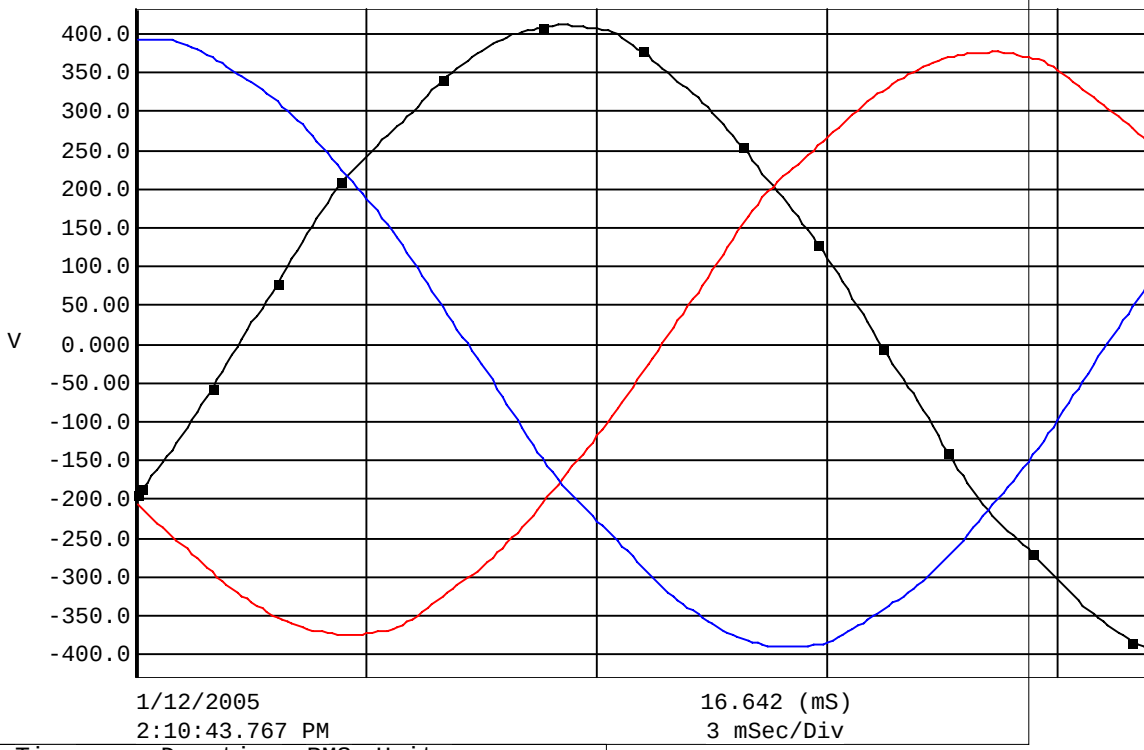
Operator	Test Site
Morikawa & Associates LLC Lyman Morikawa ,	GWA ,

Comments
Y15 Photo

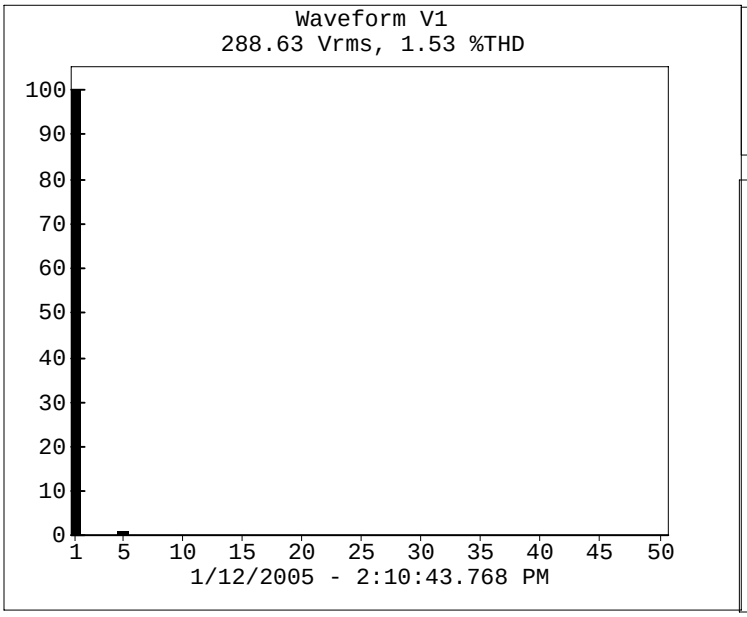
WPS: Y-15 After Transformer Change Out

Recording Start Date	1/12/2005 - 2:10:43 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.09 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	1/12/2005	2:10:43.767 PM	16.642	288.6	V
Waveform V2	1/12/2005	2:10:43.767 PM	16.642	264.5	V
Waveform V3	1/12/2005	2:10:43.767 PM	16.642	275.1	V



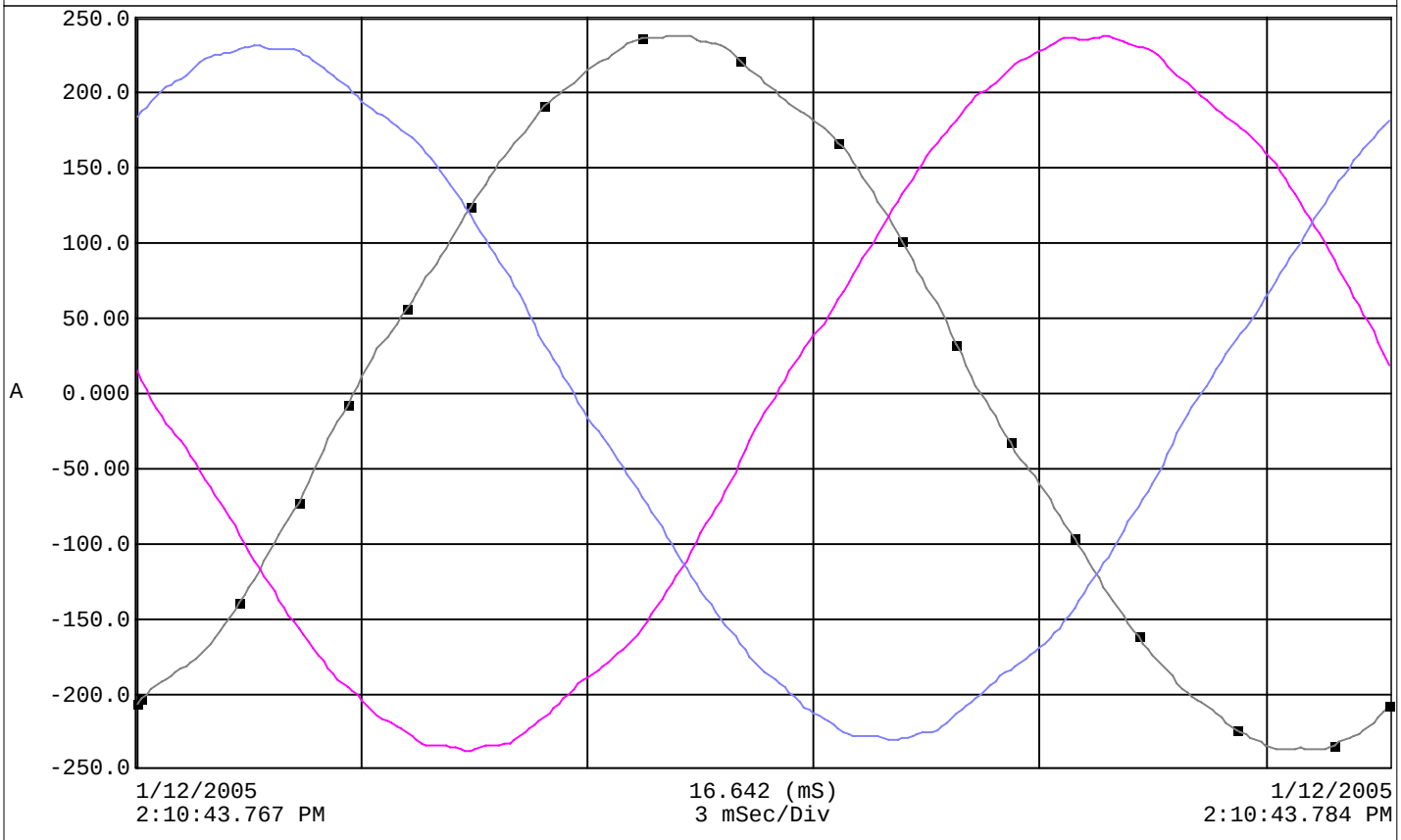
1/12/2005 - 2:10:43.000 PM

Val	
-195.8	Waveform V1
-207.7	Waveform V2
391.0	Waveform V3

Waveform V1

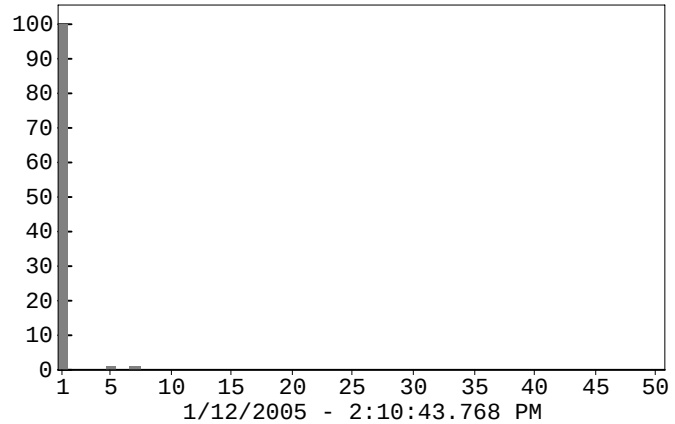
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 60.09 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	1/12/2005	2:10:43.767 PM	16.642	167.2	A
Waveform I2	1/12/2005	2:10:43.767 PM	16.642	166.7	A
Waveform I3	1/12/2005	2:10:43.767 PM	16.642	161.3	A

Waveform I1
167.24 Arms, 2.11 %THD



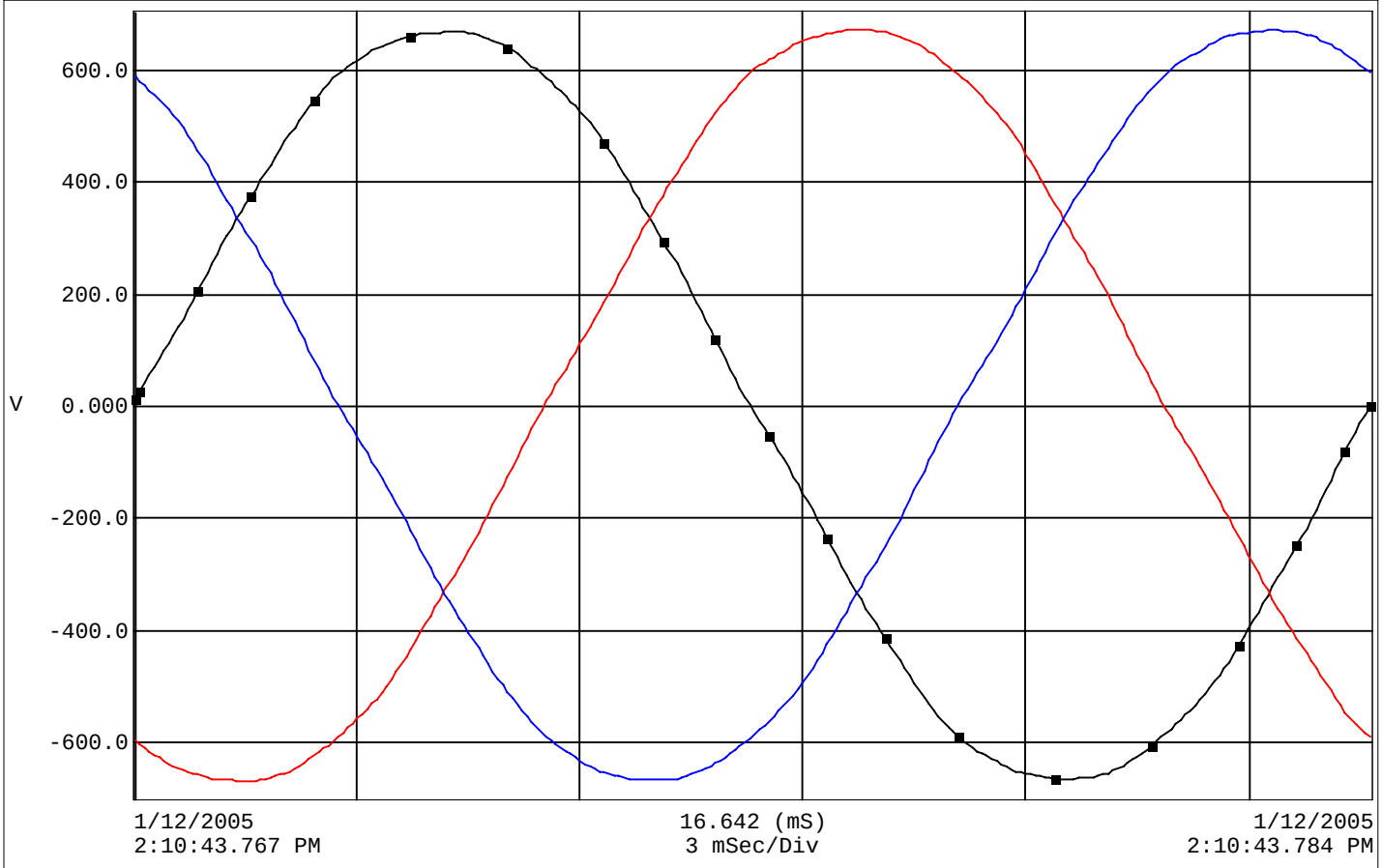
1/12/2005 - 2:10:43.000 PM

Val	
-206.6	Waveform I1
14.80	Waveform I2
184.0	Waveform I3

Waveform I1

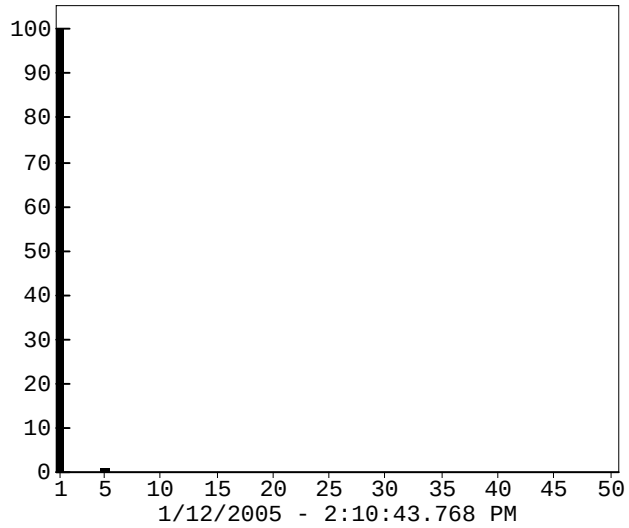
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	1.2	H24	0.2	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.5	H28	0.2	H45	0.0
H12	0.0	H29	0.2	H46	0.0
H13	0.4	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.09 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	1/12/2005	2:10:43.767 PM	16.642	476.2	V
Waveform U2	1/12/2005	2:10:43.767 PM	16.642	479.4	V
Waveform U3	1/12/2005	2:10:43.767 PM	16.642	477.9	V

Waveform U1
476.22 Vrms, 1.42 %THD



1/12/2005 - 2:10:43.000 PM

	Val	
—	11.80	Waveform U1
—	-598.7	Waveform U2
—	586.9	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.4	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.1	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.4	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.4	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 1/12/2005
Start Time: 2:10:43 PM
Duration: 0:0.000 (M:S)
W: 111.5E+3 W
VAR: 78.88E+3 W
VA: 136.7E+3 W
Power Factor: 2.447
Displacement Power Factor: 2.449
TAN: 2.124
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Y15\011205-Y15 Photo.dvb

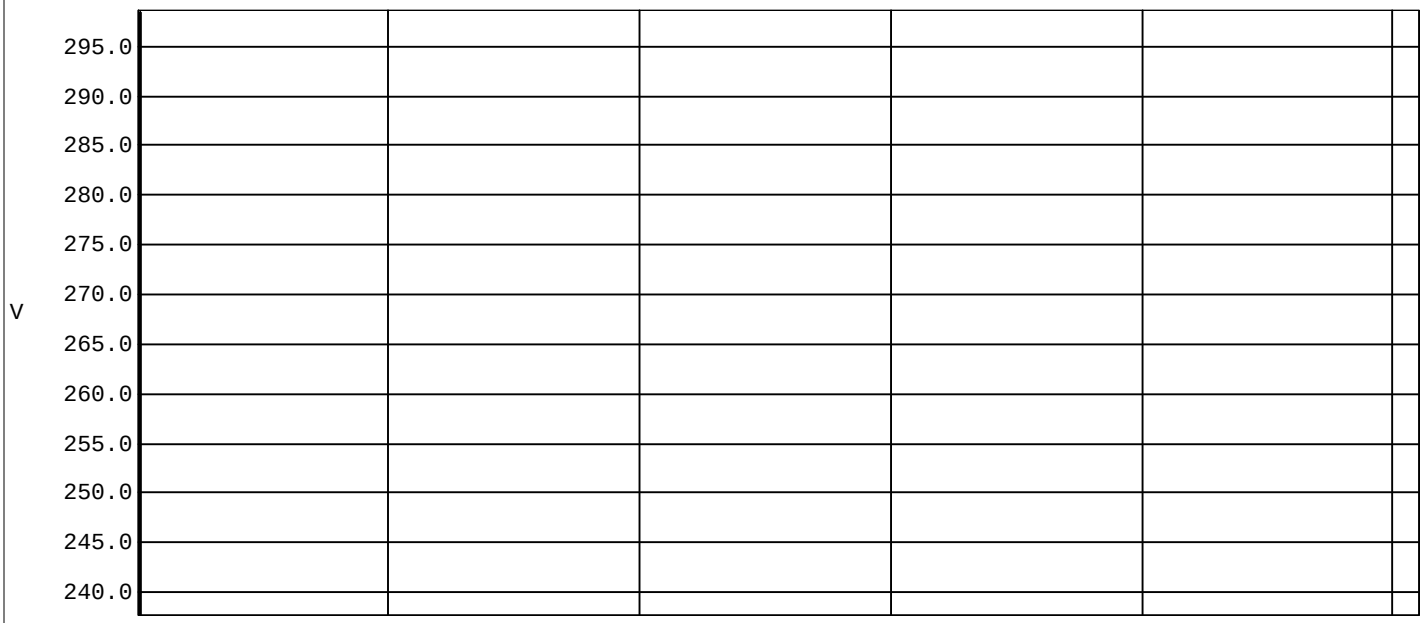
Operator	Test Site
GWA Victor Jardel ,	WPS Y-15 ,

Comments
Photo Recording after the Electrical System was reworked. New Transformer, Lightning Arrester, Service conductors, grounding were installed with new motor.

WPS: Y-15 Trend
April 20, 2005

Recording Start Date	4/20/2005 - 3:49:41 PM
Recording Duration	15:18 (m:s)
Instrument ID	Model: 3945 - 1 1:260152 2.7

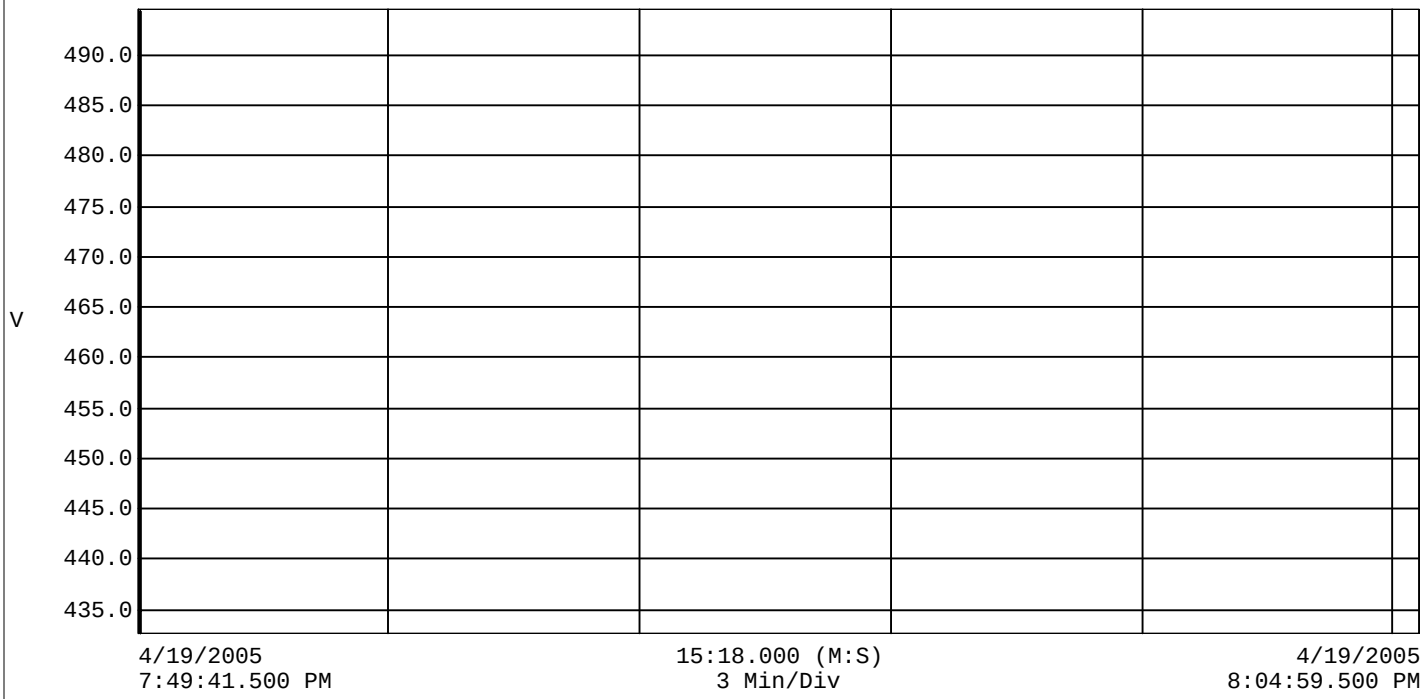
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	4/20/2005	3:49:41.500 PM	280.0	278.3	284.3	919
Vrms Line2	4/20/2005	3:49:41.500 PM	251.8	250.1	255.8	919
Vrms Line3	4/20/2005	3:49:41.500 PM	266.7	264.8	270.9	919

4/19/2005 - 7:49:41.500 PM
Val
X.XX — Vrms Line1
X.XX — Vrms Line2
X.XX — Vrms Line3

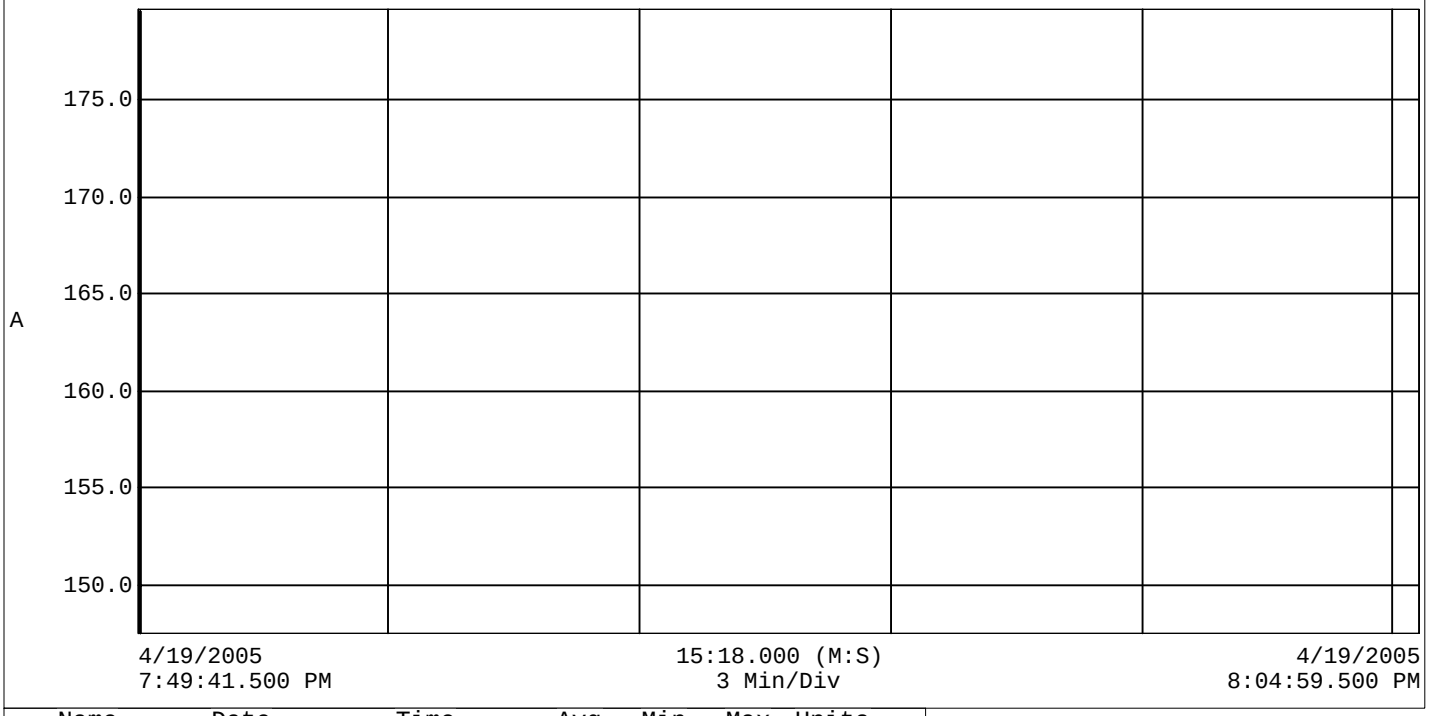
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	4/20/2005	3:49:41.500 PM	458.0	455.3	465.1	V
Urms Line2	4/20/2005	3:49:41.500 PM	463.8	460.8	470.9	V
Urms Line3	4/20/2005	3:49:41.500 PM	459.3	456.4	466.3	V

4/19/2005 - 7:49:41.500 PM
Val
X.XX — Urms Line1
X.XX — Urms Line2
X.XX — Urms Line3

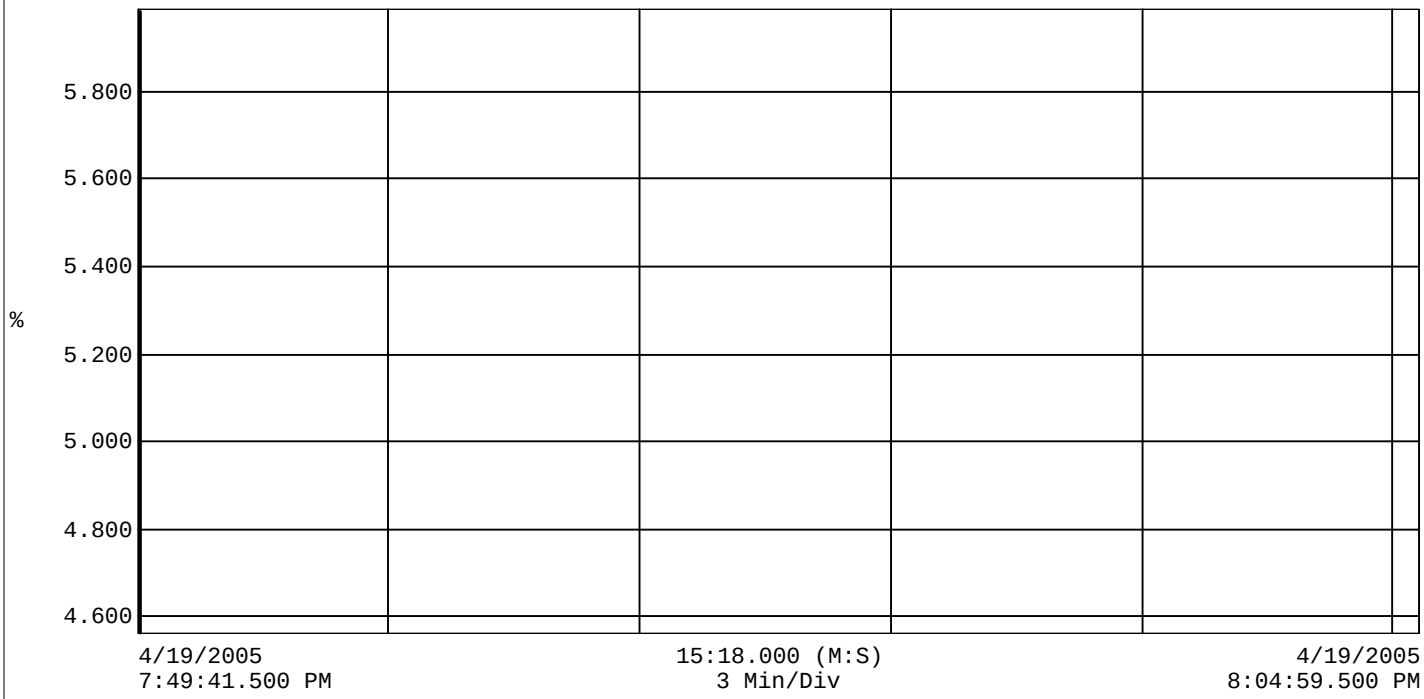
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	4/20/2005	3:49:41.500 PM	156.3	155.2	157.2	A
Arms Line2	4/20/2005	3:49:41.500 PM	170.1	169.3	171.1	A
Arms Line3	4/20/2005	3:49:41.500 PM	158.8	158.0	159.4	A

4/19/2005 - 7:49:41.500 PM
Val
X.XX — Arms Line1
X.XX — Arms Line2
X.XX — Arms Line3

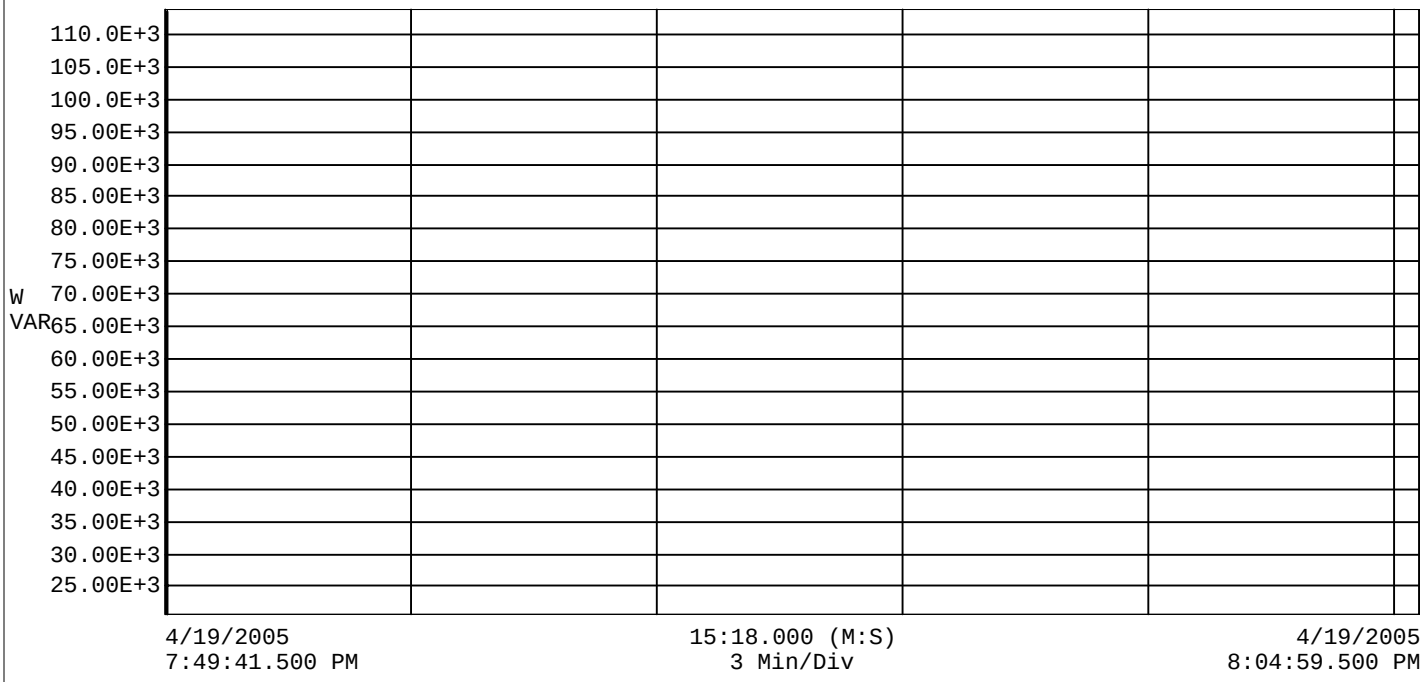
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	4/20/2005	3:49:41.500 PM	5.401	5.300	5.600	%
Aunb(IEEE)	4/20/2005	3:49:41.500 PM	5.173	4.800	5.700	%

4/19/2005 - 7:49:41.500 PM
Val
X.XX —— Vunb(IEEE)
X.XX —— Aunb(IEEE)

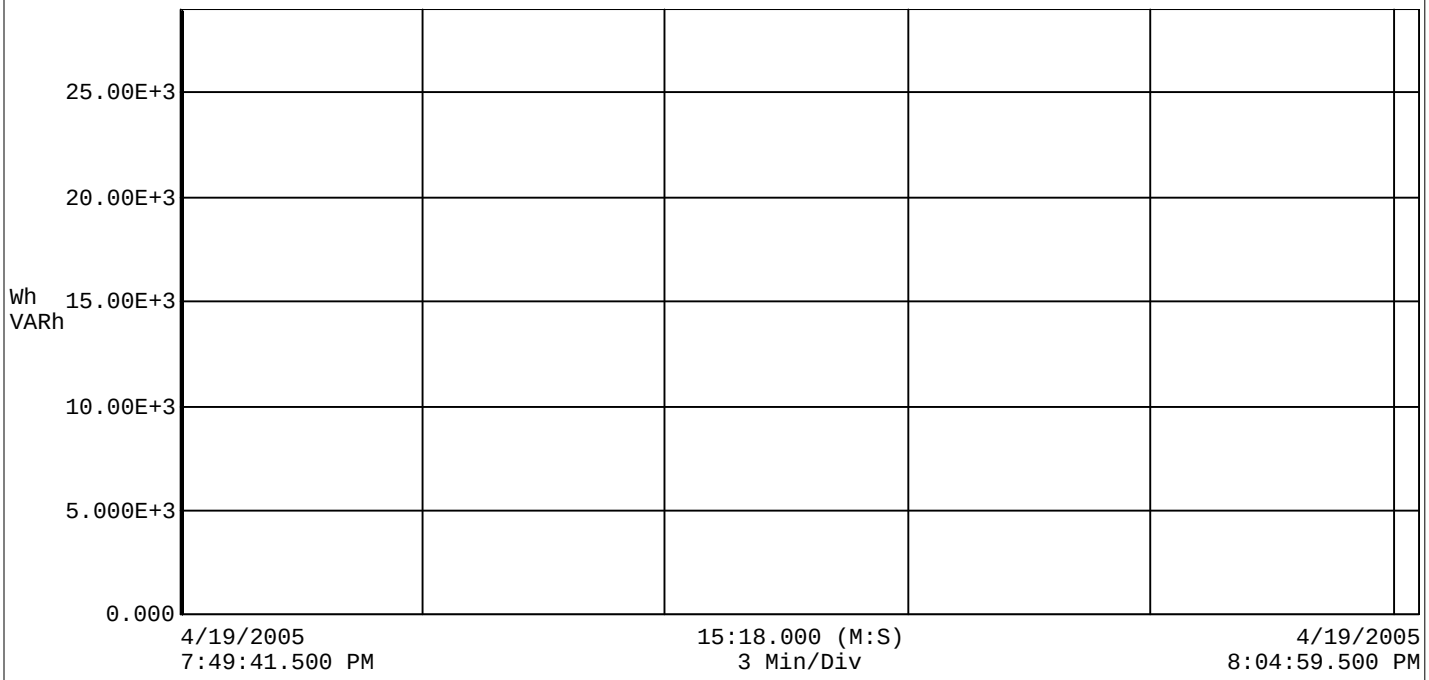
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	4/20/2005	3:49:41.500 PM	36.94E+3	36.73E+3	37.18E+3	W
W Line2	4/20/2005	3:49:41.500 PM	34.92E+3	34.71E+3	35.28E+3	W
W Line3	4/20/2005	3:49:41.500 PM	36.04E+3	35.77E+3	36.27E+3	W
W Sum of Phases	4/20/2005	3:49:41.500 PM	107.9E+3	107.7E+3	108.3E+3	W
VAR Line1	4/20/2005	3:49:41.500 PM	23.45E+3	22.91E+3	24.53E+3	VAR
VAR Line2	4/20/2005	3:49:41.500 PM	24.77E+3	24.41E+3	25.83E+3	VAR
VAR Line3	4/20/2005	3:49:41.500 PM	22.21E+3	21.64E+3	23.47E+3	VAR
VAR Sum of Phases	4/20/2005	3:49:41.500 PM	70.44E+3	69.23E+3	73.47E+3	VAR

4/19/2005 - 7:49:41.500 PM
Val
X.XX — W Line1
X.XX — W Line2
X.XX — W Line3
X.XX — W Sum of Phases
X.XX — VAR Line1
X.XX — VAR Line2
X.XX — VAR Line3
X.XX — VAR Sum of Phases

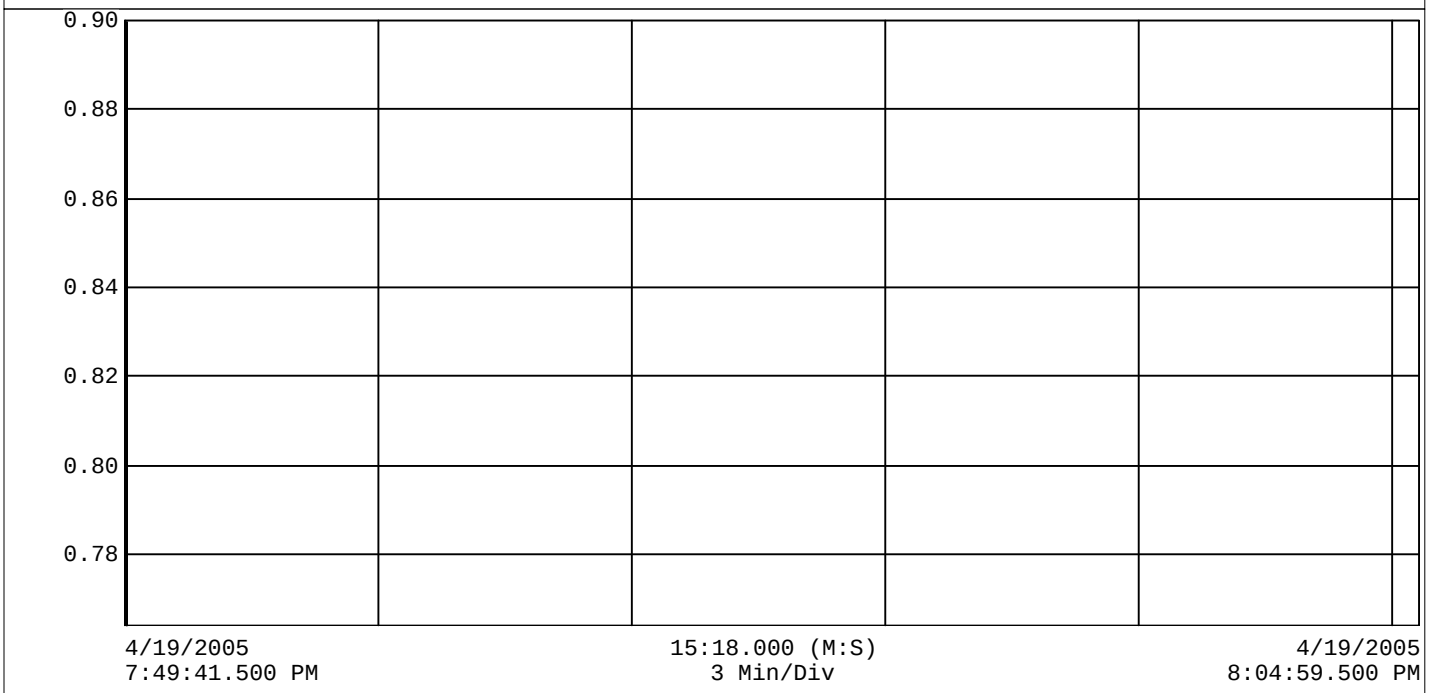
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	4/20/2005	3:49:41.500 PM	4.717E+3	10.36	9.429E+3	Wh
W-hours Line2	4/20/2005	3:49:41.500 PM	4.459E+3	9.794	8.914E+3	Wh
W-hours Line3	4/20/2005	3:49:41.500 PM	4.604E+3	10.11	9.199E+3	Wh
W-hours Sum of Phases	4/20/2005	3:49:41.500 PM	13.78E+3	30.26	27.54E+3	Wh
VAR-hours Line1	4/20/2005	3:49:41.500 PM	2.976E+3	6.395	5.986E+3	VARh
VAR-hours Line2	4/20/2005	3:49:41.500 PM	3.142E+3	6.755	6.324E+3	VARh
VAR-hours Line3	4/20/2005	3:49:41.500 PM	2.817E+3	6.231	5.671E+3	VARh
VAR-hours Sum of Phases	4/20/2005	3:49:41.500 PM	8.935E+3	19.21	17.98E+3	VARh

4/19/2005 - 7:49:41.500 PM
Val
X.XX — W-hours Line1
X.XX — W-hours Line2
X.XX — W-hours Line3
X.XX — W-hours Sum of Phases
X.XX — VAR-hours Line1
X.XX — VAR-hours Line2
X.XX — VAR-hours Line3
X.XX — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	4/20/2005	3:49:41.500 PM	0.844	0.833	0.850	
PF Line2	4/20/2005	3:49:41.500 PM	0.815	0.804	0.820	
PF Line3	4/20/2005	3:49:41.500 PM	0.851	0.839	0.857	

4/19/2005 - 7:49:41.500 PM
Val
X.XX — PF Line1
X.XX — PF Line2
X.XX — PF Line3

Trend Summary Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Y15\042005-Y15.dvb

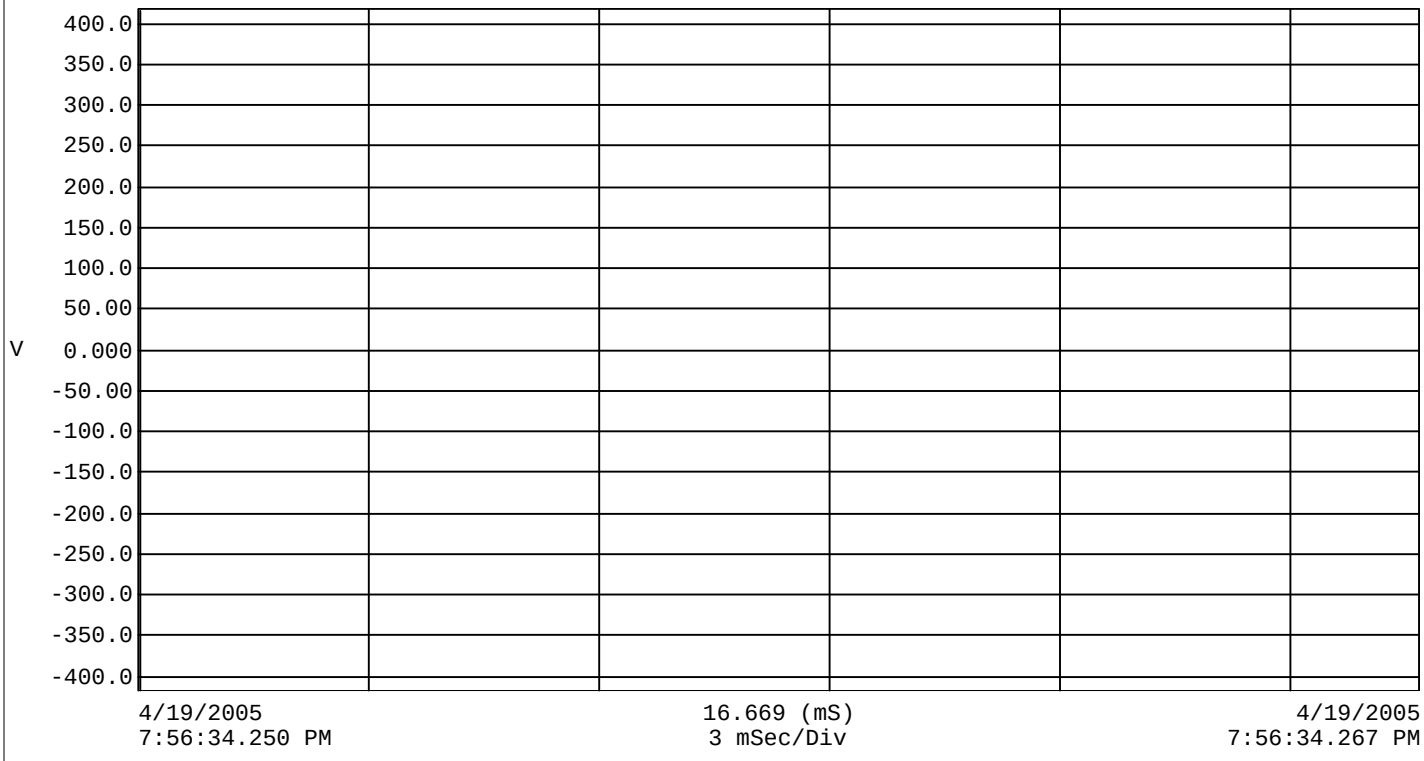
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA Y-15 ,

Comments
Recorded at the motor starter overload relay, 125 HP, 460 Volts.

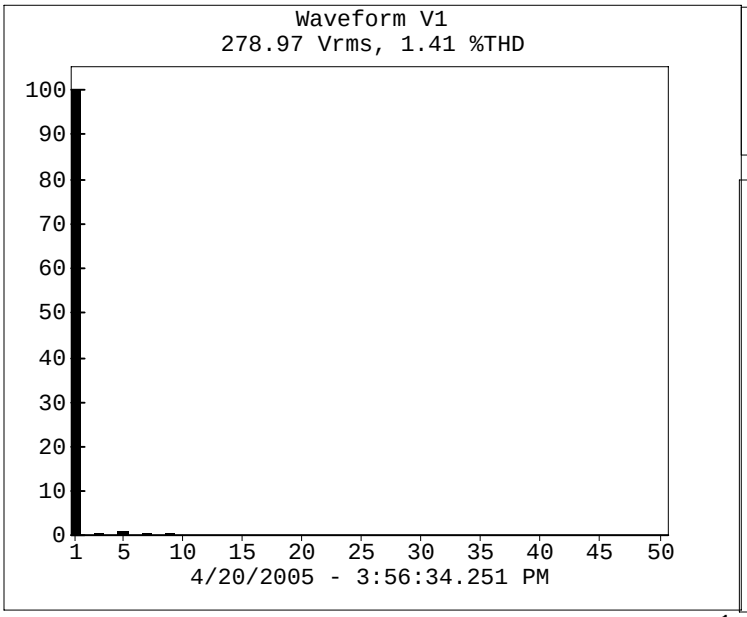
WPS: Y-15 Photo
April 20, 2005

Recording Start Date	4/20/2005 - 3:56:34 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:260152 2.7

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	4/20/2005	3:56:34.250 PM	16.669	279.0	V
Waveform V2	4/20/2005	3:56:34.250 PM	16.669	251.0	V
Waveform V3	4/20/2005	3:56:34.250 PM	16.669	265.7	V

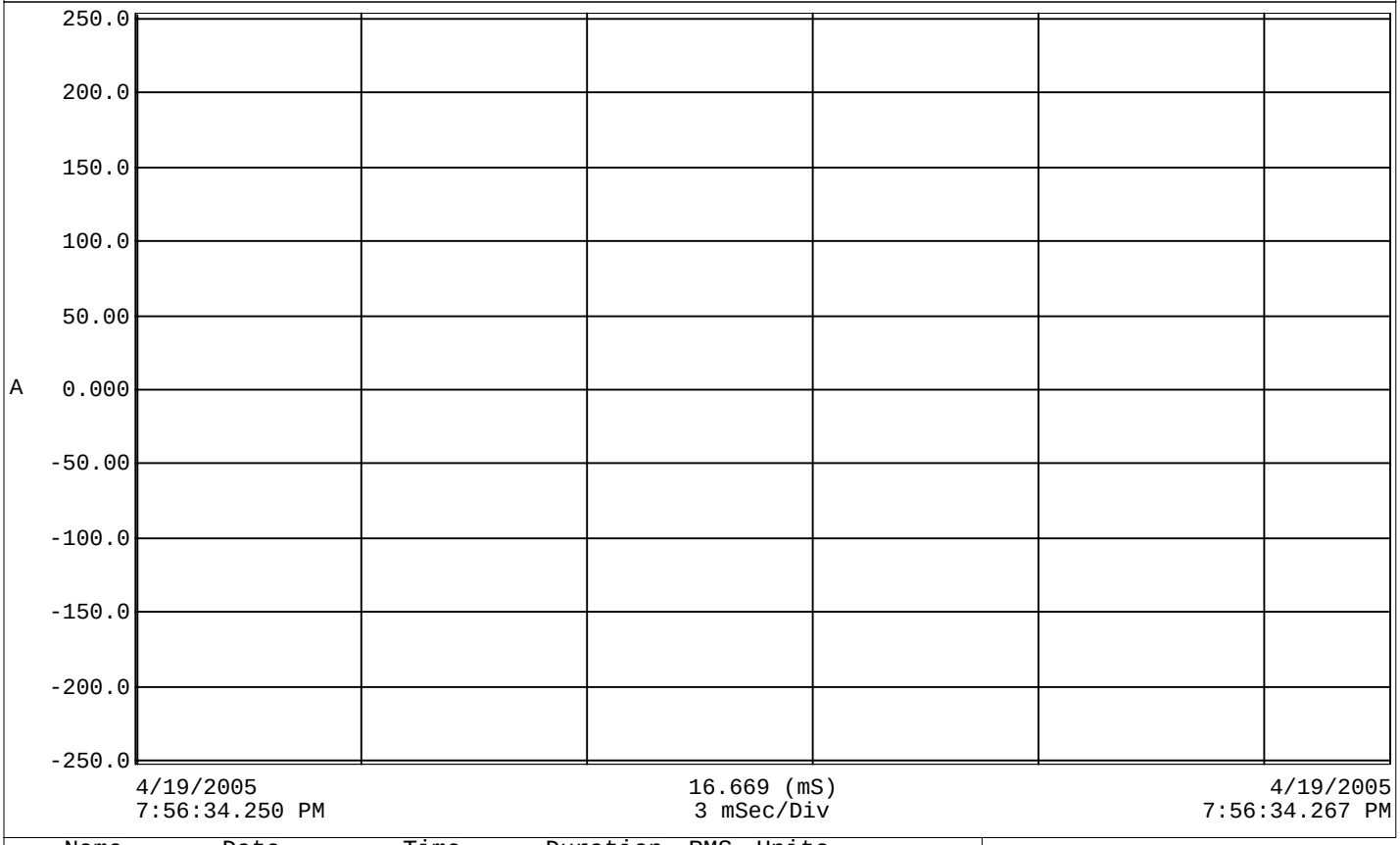


4/19/2005 - 7:56:34.250 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

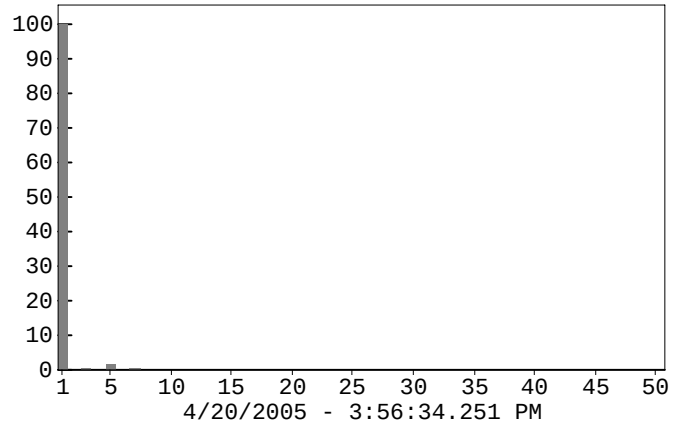
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.1	H36	0.0
H03	0.5	H20	0.0	H37	0.0
H04	0.0	H21	0.1	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.4	H26	0.0	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.1	H28	0.2	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.2	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	4/20/2005	3:56:34.250 PM	16.669	156.0	A
Waveform I2	4/20/2005	3:56:34.250 PM	16.669	170.0	A
Waveform I3	4/20/2005	3:56:34.250 PM	16.669	158.9	A

Waveform I1
155.97 Arms, 2.49 %THD

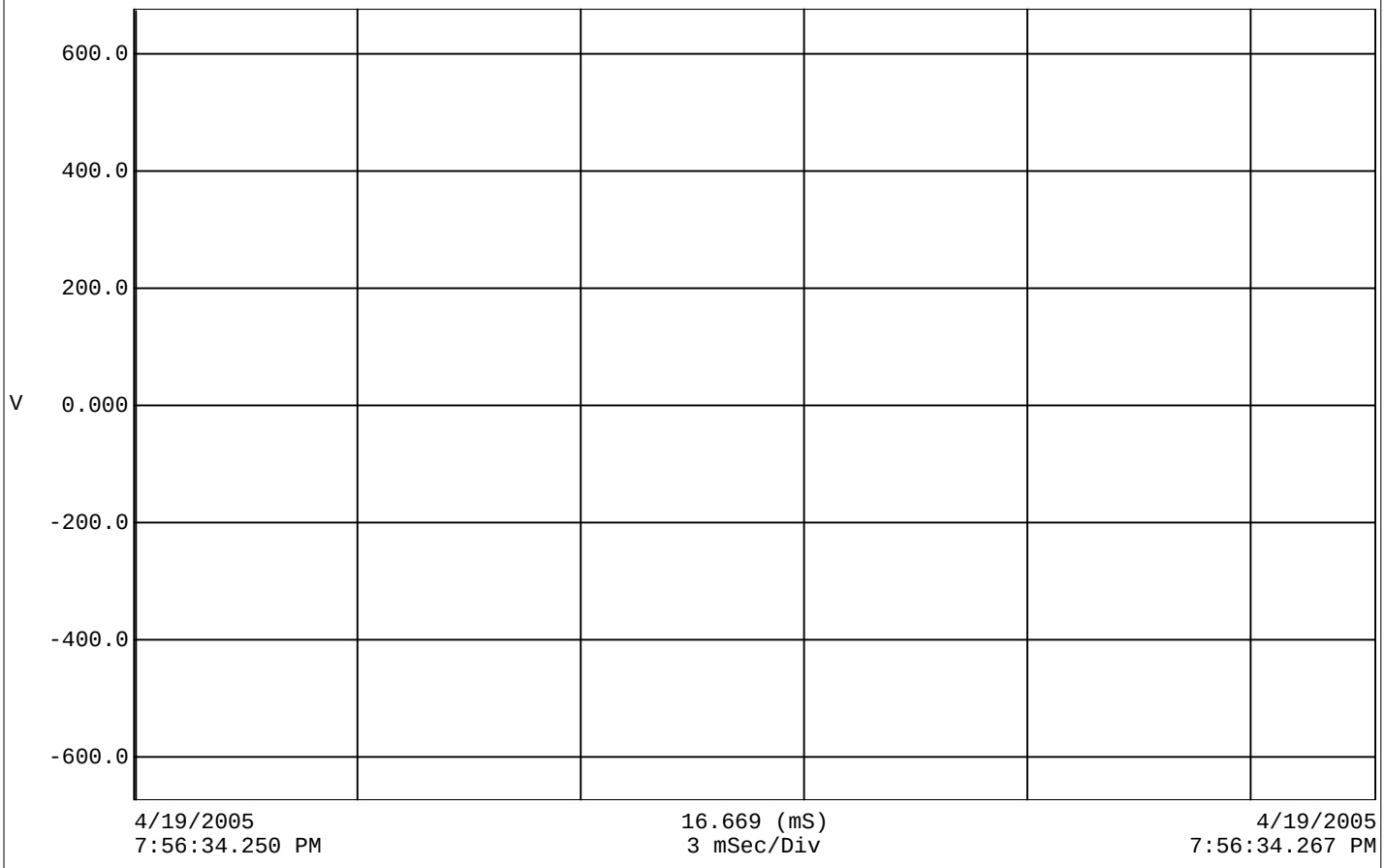


4/19/2005 - 7:56:34.250 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

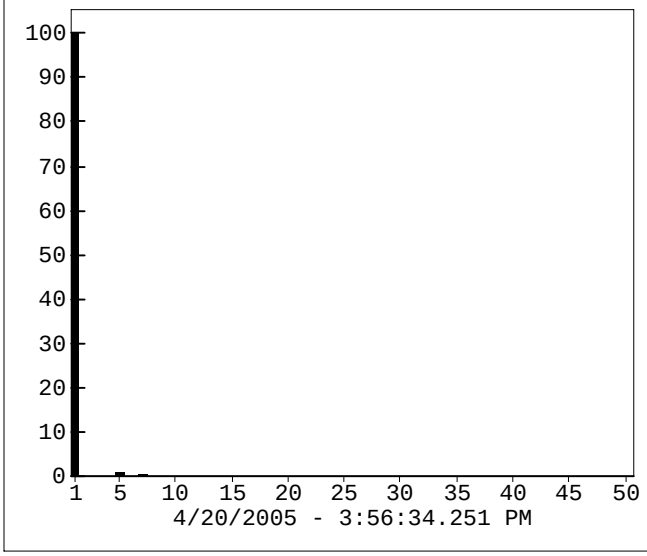
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	1.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	2.0	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.7	H24	0.2	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.2	H26	0.1	H43	0.0
H10	0.0	H27	0.1	H44	0.0
H11	0.2	H28	0.3	H45	0.0
H12	0.0	H29	0.2	H46	0.0
H13	0.2	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	4/20/2005	3:56:34.250 PM	16.669	456.4	V
Waveform U2	4/20/2005	3:56:34.250 PM	16.669	462.2	V
Waveform U3	4/20/2005	3:56:34.250 PM	16.669	457.7	V

Waveform U1
456.42 Vrms, 1.51 %THD



4/19/2005 - 7:56:34.250 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.1	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.1	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.0
H13	0.0	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 4/20/2005
Start Time: 3:56:34 PM
Duration: 0:0.000 (M:S)
W: 107.8E+3 W
VAR: 69.72E+3 W
VA: 128.5E+3 W
Power Factor: 2.517
Displacement Power Factor: 2.518
TAN: 1.942
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Y15\042005-Y15-Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	GWA WPS Y-15 ,

Comments
Recorded at the motor starter overload relay. 125 HP, 460 Volts.

AEMC® INSTRUMENTS

GWA Water Pumping Station Assessment				
Station Name: Y-17	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 06/29/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.65	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	4	0.2	
Transformer Wiring Method	5.0%	3	0.15	
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.3	
Main Disconnect	10.0%	2	0.2	12
Grounding	5.0%	2	0.1	14
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.6	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	3	0.15	
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.75	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	3	0.15	
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	3	0.15	
Chlorination Motor Starter	**5.0%**		0	
Main Breaker	1.0%	0	0	
Motor Starter	1.0%	0	0	
Overload Relay	1.0%	0	0	
Wiring	1.0%	0	0	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.1	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	2	0.04	52
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.6**

Comments:

GWA Water Pumping Station Assessment				
Station Name: Y-21-A	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 06/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.45	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	2	0.1	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	2	0.1	2
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.35	
Main Disconnect	10.0%	2	0.2	12
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.45	
Generator Condition	10.0%	3	0.3	
Generator Battery	5.0%	0	0	21
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.55	
Main Breaker	5.0%	2	0.1	36
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	3	0.15	
Wiring	5.0%	3	0.15	
Phase Monitor	5.0%	0	0	
Chlorination Motor Starter	**5.0%**		0.11	
Main Breaker	1.0%	2	0.02	36
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	0	0	
Pump Instrumentation	**5.0%**		0.1	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	2	0.04	52
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.2**

Comments:

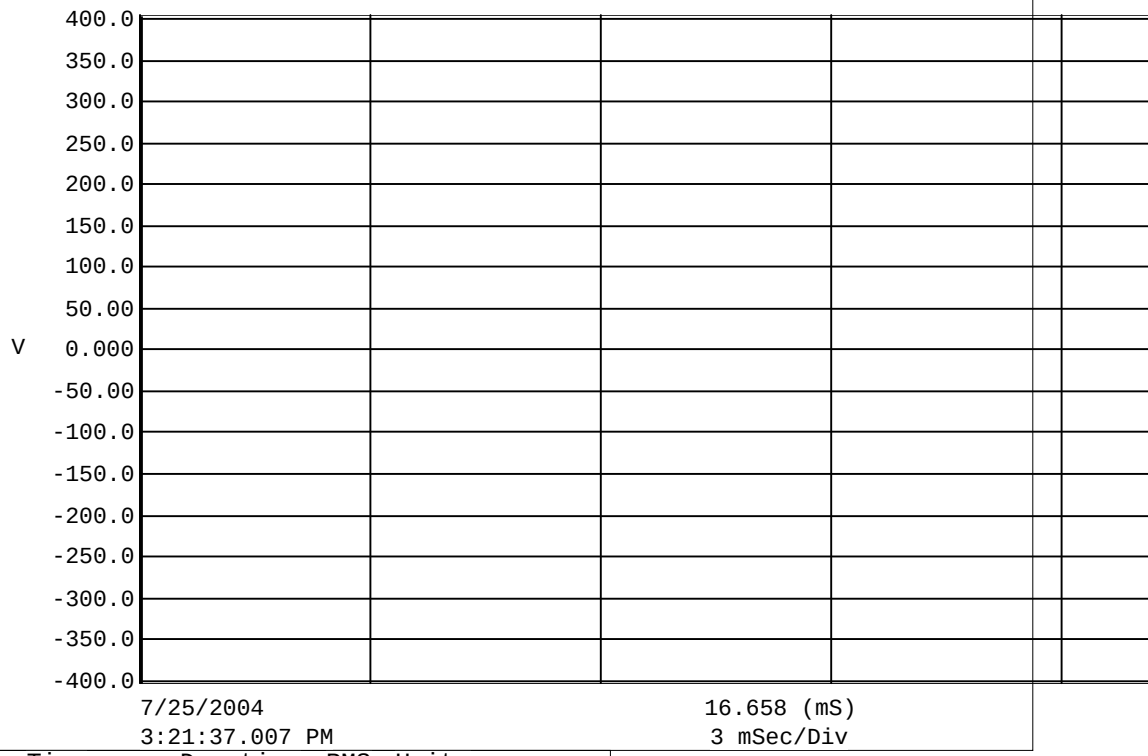
GWA Water Pumping Station Assessment				
Station Name: Y-23	**Weight**	**Condition**	**Weighted**	**Notes**
Date: 06/30/04		**Assessment**	**Value**	**See Guide**
Utility Service Information	**20.0%**		0.6	
Transformer Pole Condition and Grounding	2.5%	3	0.075	
Transformer Connection Type	5.0%	4	0.2	
Transformer Wiring Method	5.0%	2	0.1	3
Lightning Arrester Condition	5.0%	3	0.15	
Metering Arrangement	2.5%	3	0.075	
Building Service Information	**20.0%**		0.45	
Main Disconnect	10.0%	3	0.3	
Grounding	5.0%	3	0.15	
Surge Protection	5.0%	0	0	
Standby Generator	**20.0%**		0.35	
Generator Condition	10.0%	2	0.2	25
Generator Battery	5.0%	0	0	21
Diesel Fuel Line Condition	2.5%	3	0.075	
Auto Transfer Switch	2.5%	3	0.075	
Pump Motor Starter	**25.0%**		0.7	
Main Breaker	5.0%	3	0.15	
Motor Starter	5.0%	3	0.15	
Overload Relay	5.0%	2	0.1	32
Wiring	5.0%	2	0.1	37
Phase Monitor	5.0%	4	0.2	
Chlorination Motor Starter	**5.0%**		0.14	
Main Breaker	1.0%	3	0.03	
Motor Starter	1.0%	3	0.03	
Overload Relay	1.0%	3	0.03	
Wiring	1.0%	3	0.03	
Phase Monitor	1.0%	2	0.02	44
Pump Instrumentation	**5.0%**		0.1	
Pressure	1.5%	2	0.03	52
Flow	1.5%	2	0.03	52
Automatic Controls	2.0%	2	0.04	52
Building Electrical	**5.0%**		0.15	
Lighting	3.0%	3	0.09	
Power Devices	2.0%	3	0.06	
	100%	**Assessment Value**		**2.5**

Comments:

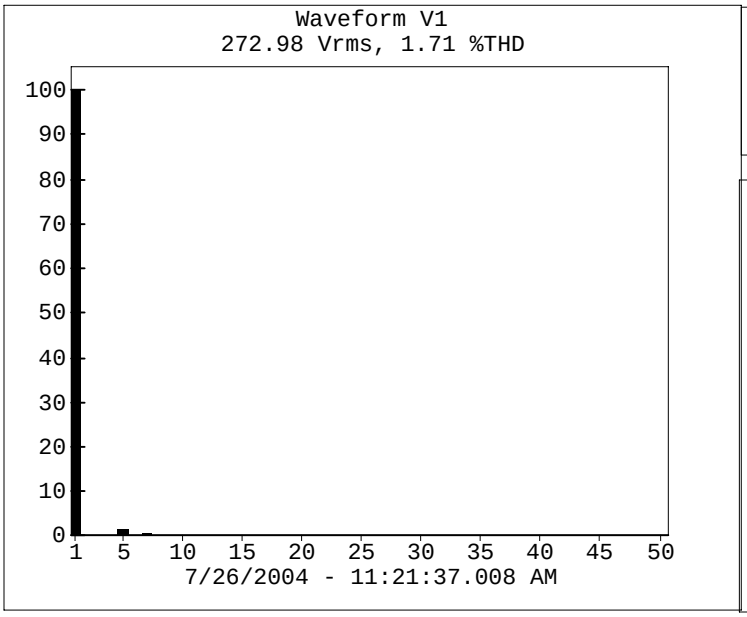
WPS - Y23

Recording Start Date	7/26/2004 - 11:21:37 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Channel Name: Waveform V1
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	7/26/2004	11:21:37.007 AM	16.658	273.0	V
Waveform V2	7/26/2004	11:21:37.007 AM	16.658	271.9	V
Waveform V3	7/26/2004	11:21:37.007 AM	16.658	275.5	V

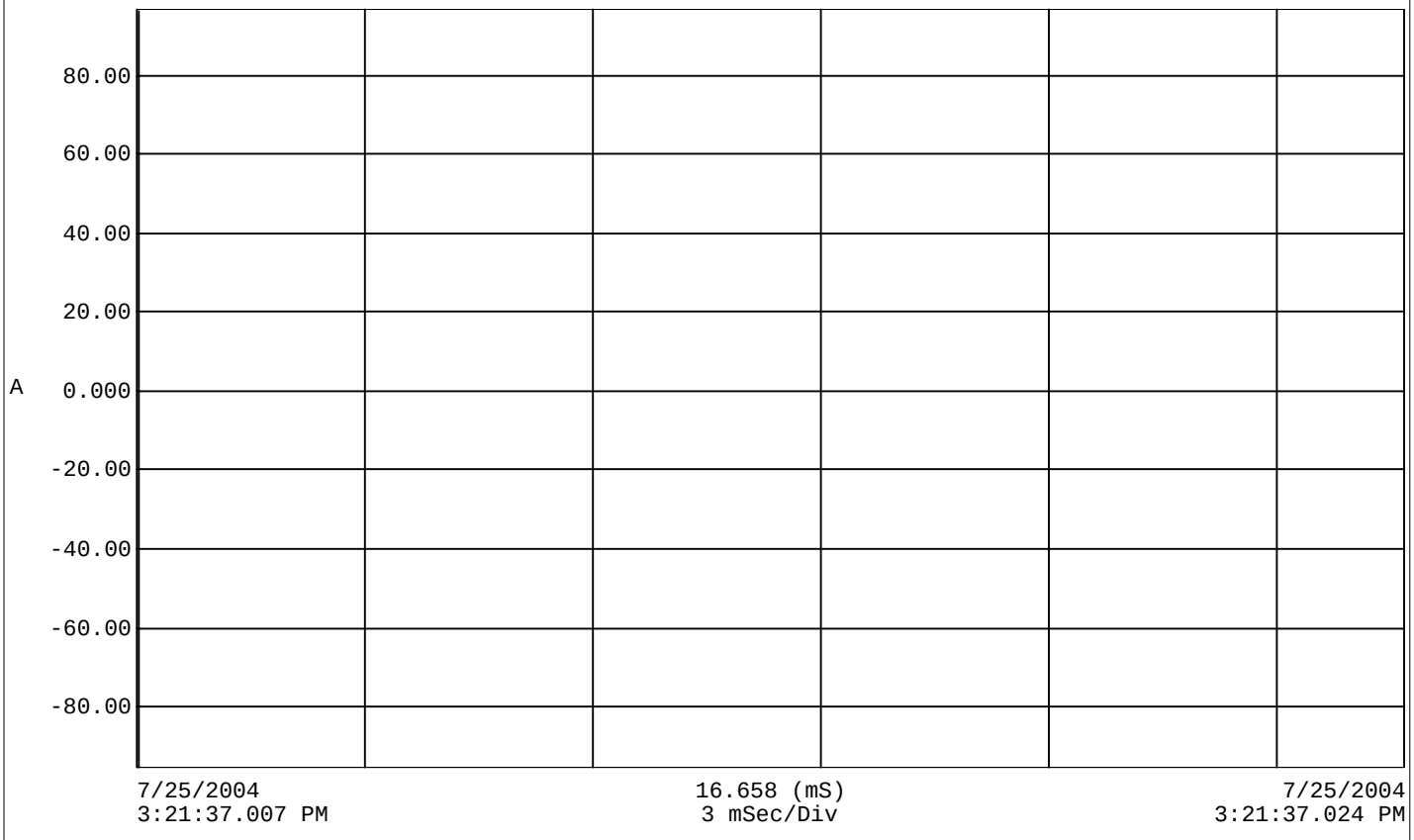


7/25/2004 - 3:21:37.007 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

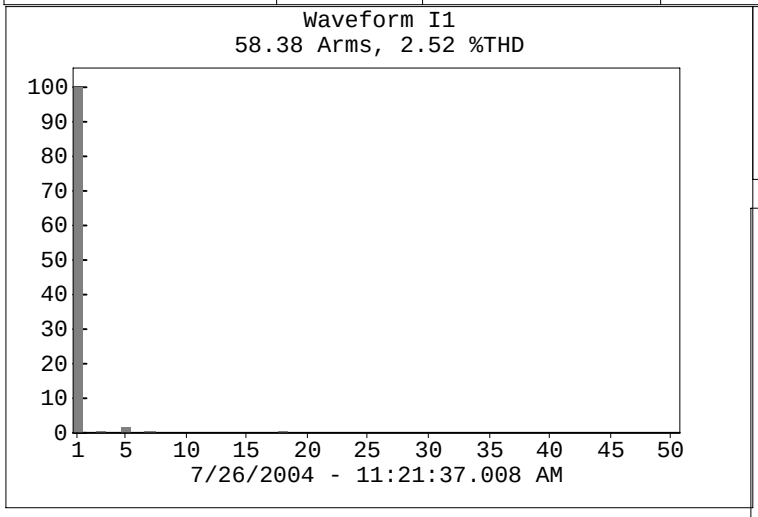
Waveform V1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.8	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.2	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Channel Name: Waveform I1
Frequency: 60.03 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	7/26/2004	11:21:37.007 AM	16.658	58.38	A
Waveform I2	7/26/2004	11:21:37.007 AM	16.658	63.34	A
Waveform I3	7/26/2004	11:21:37.007 AM	16.658	62.95	A
Waveform INeutral	7/26/2004	11:21:37.007 AM	16.658	2.415	A

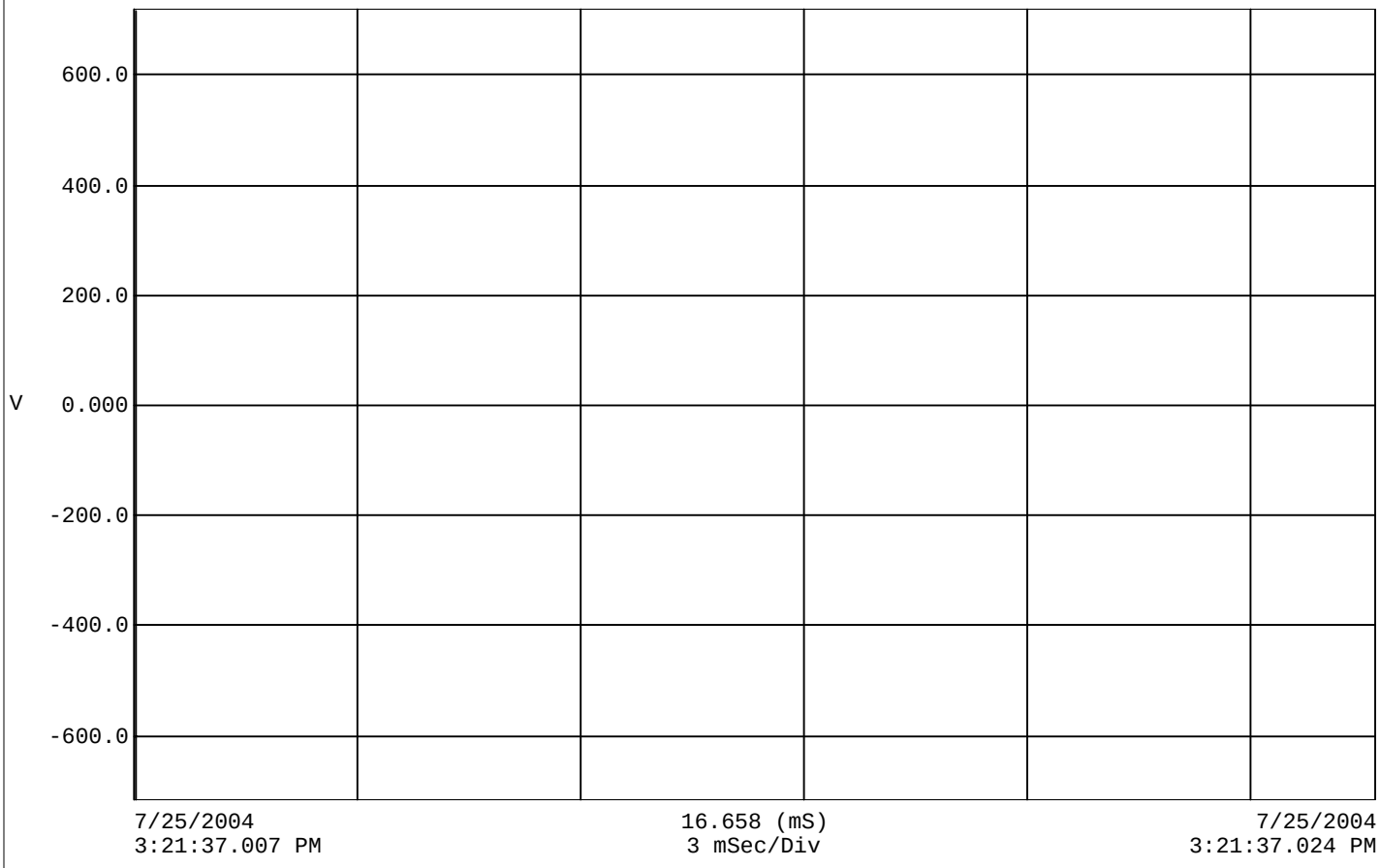


7/25/2004 - 3:21:37.007 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3
X.XX — Waveform INeutral

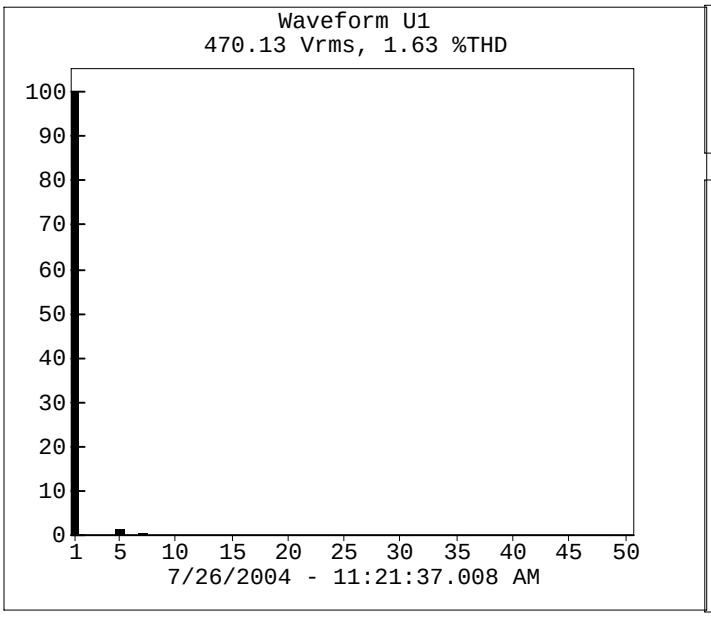
Waveform I1

	(%)		(%)		(%)
H01	100.0	H18	0.7	H35	0.0
H02	0.1	H19	0.3	H36	0.0
H03	0.8	H20	0.1	H37	0.0
H04	0.2	H21	0.1	H38	0.0
H05	1.9	H22	0.5	H39	0.0
H06	0.4	H23	0.2	H40	0.0
H07	0.9	H24	0.2	H41	0.0
H08	0.2	H25	0.1	H42	0.0
H09	0.2	H26	0.1	H43	0.0
H10	0.2	H27	0.0	H44	0.0
H11	0.2	H28	0.1	H45	0.0
H12	0.2	H29	0.0	H46	0.0
H13	0.1	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.1	H32	0.0	H49	0.0
H16	0.3	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Channel Name: Waveform U1
Frequency: 60.03 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	7/26/2004	11:21:37.007 AM	16.658	470.1	V
Waveform U2	7/26/2004	11:21:37.007 AM	16.658	474.7	V
Waveform U3	7/26/2004	11:21:37.007 AM	16.658	476.2	V



7/25/2004 - 3:21:37.007 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.4	H22	0.1	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 7/26/2004
Start Time: 11:21:37 AM
Duration: 0:0.000 (M:S)
W: 13.00E+3 W
VAR: 9.262E+3 W
VA: 15.96E+3 W
Power Factor: 0.814
Displacement Power Factor: 0.815
TAN: 0.712
VoltageRatio: 1.000
CurrentRatio: 1.000
```

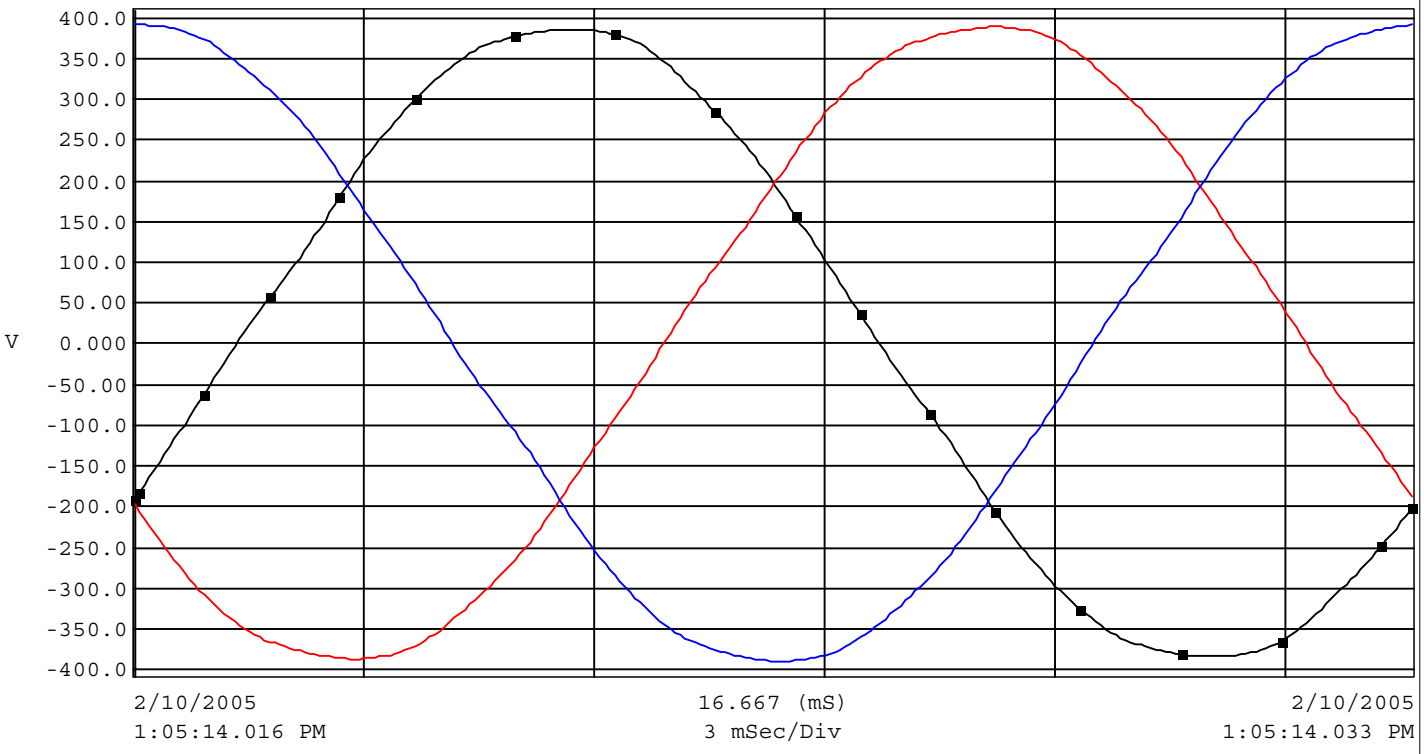
Photo Report

Database: E:\2004 Projects\04-063 Guam Water Master Plan\Elec Assessment Report\Electrical Appendices\Guam Data\Y23\072604-Y23-Photo.dvb	
Operator Morikawa & Associates, LLC Lyman Morikawa, PE ,	Test Site GWA WPS Y-23 ,
Comments	

Ugum River Pump Station Pump No. 1

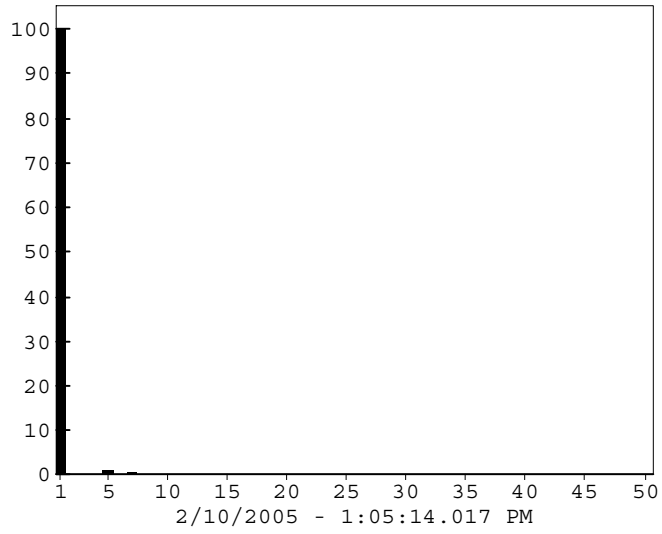
Recording Start Date	2/10/2005 - 1:05:14 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	2/10/2005	1:05:14.016 PM	16.667	275.8	V
Waveform V2	2/10/2005	1:05:14.016 PM	16.667	277.2	V
Waveform V3	2/10/2005	1:05:14.016 PM	16.667	279.1	V

Waveform V1
275.82 Vrms, 1.44 %THD



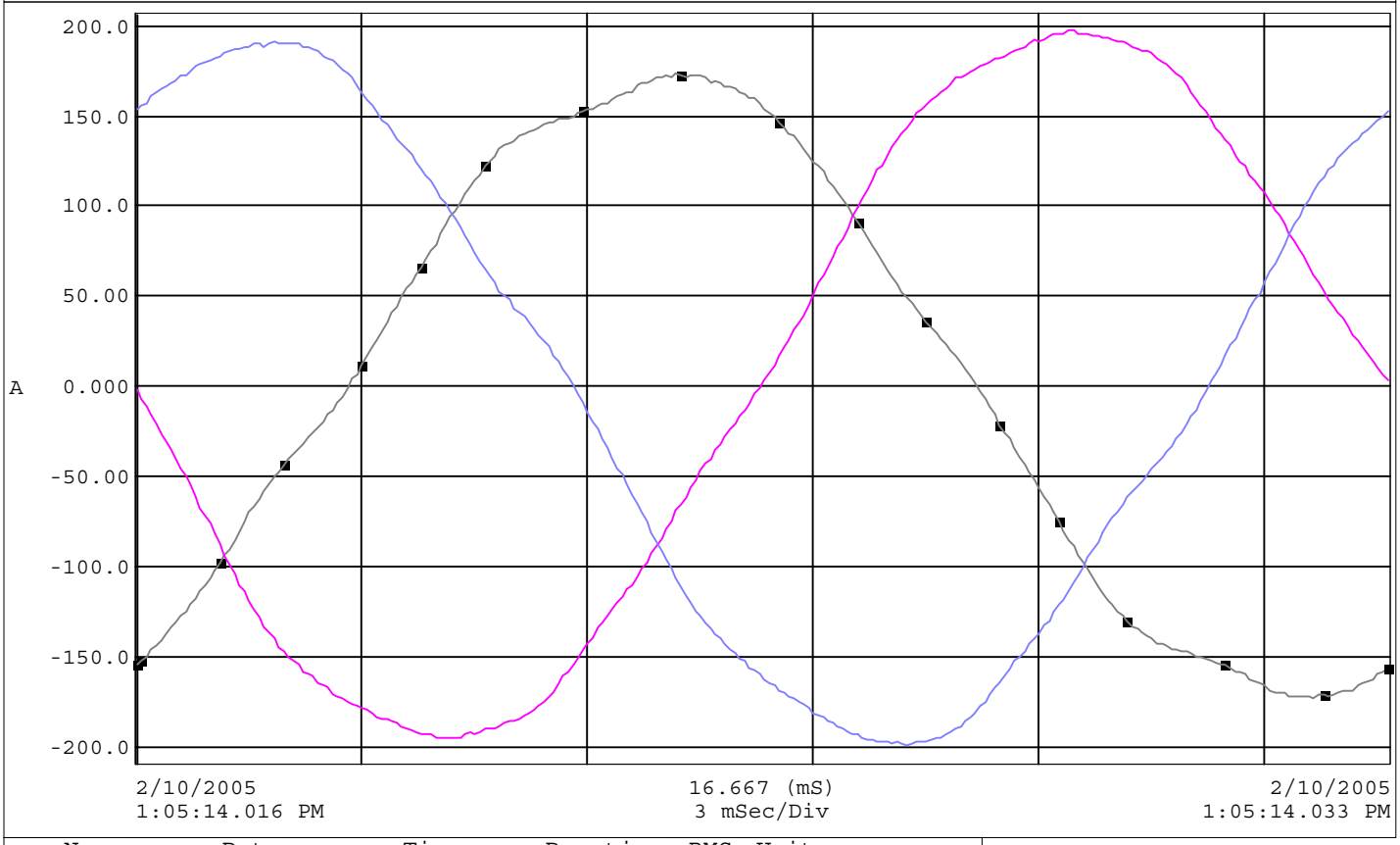
2/10/2005 - 1:05:14.000 PM

Val	
-192.8	Waveform V1
-197.5	Waveform V2
390.3	Waveform V3

Waveform V1

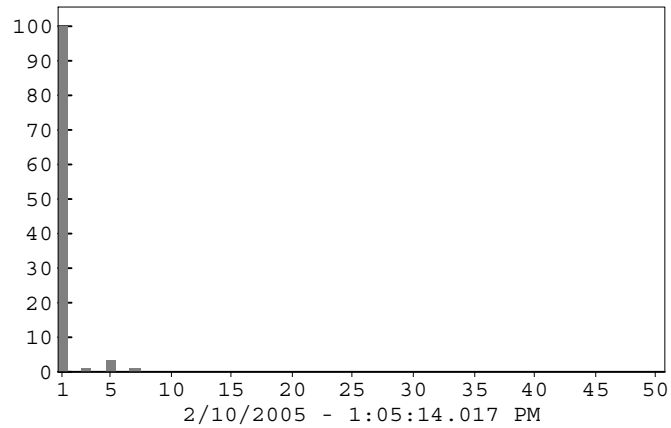
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.00 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	2/10/2005	1:05:14.016 PM	16.667	122.4	A
Waveform I2	2/10/2005	1:05:14.016 PM	16.667	139.2	A
Waveform I3	2/10/2005	1:05:14.016 PM	16.667	136.1	A

Waveform I1
122.40 Arms, 4.22 %THD



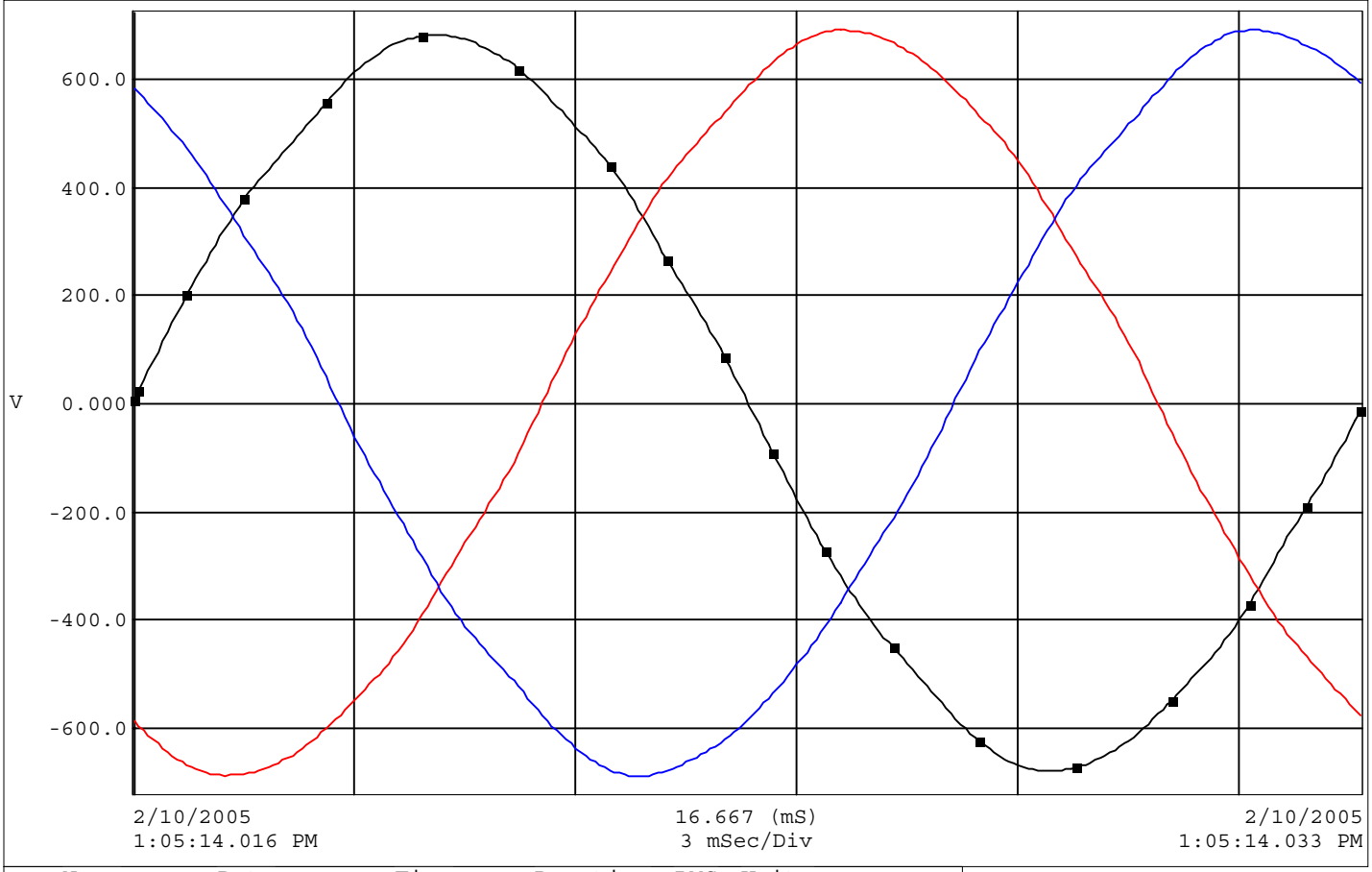
2/10/2005 - 1:05:14.000 PM

Val	
-155.5	Waveform I1
-2.400	Waveform I2
153.1	Waveform I3

Waveform I1

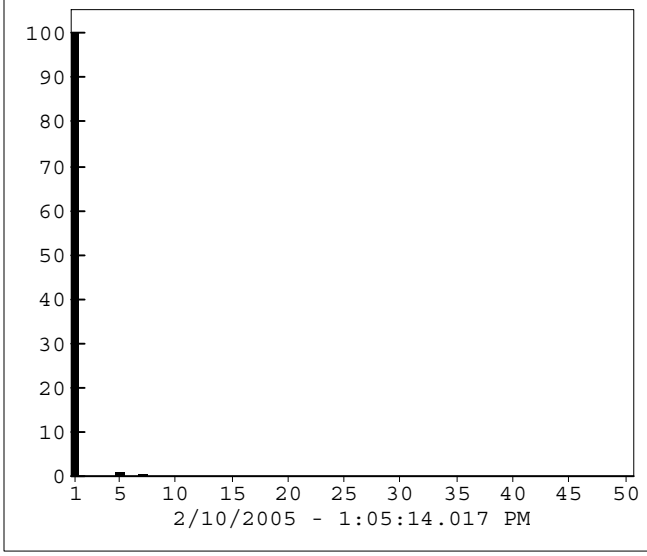
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.2	H19	0.1	H36	0.0
H03	1.4	H20	0.0	H37	0.0
H04	0.1	H21	0.0	H38	0.0
H05	3.7	H22	0.0	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	1.1	H24	0.0	H41	0.0
H08	0.1	H25	0.1	H42	0.0
H09	0.5	H26	0.1	H43	0.1
H10	0.1	H27	0.1	H44	0.0
H11	0.4	H28	0.0	H45	0.1
H12	0.0	H29	0.0	H46	0.0
H13	0.3	H30	0.1	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Voltage (U)
Frequency: 60.00 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	2/10/2005	1:05:14.016 PM	16.667	477.6	V
Waveform U2	2/10/2005	1:05:14.016 PM	16.667	483.2	V
Waveform U3	2/10/2005	1:05:14.016 PM	16.667	480.6	V

Waveform U1
477.57 Vrms, 1.38 %THD



2/10/2005 - 1:05:14.000 PM

	Val	
—	4.700	Waveform U1
—	-587.9	Waveform U2
—	583.1	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 2/10/2005
Start Time: 1:05:14 PM
Duration: 0:0.000 (M:S)
W: 94.91E+3 W
VAR: 55.80E+3 W
VA: 110.2E+3 W
Power Factor: 2.584
Displacement Power Factor: 2.587
TAN: 1.760
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Ugum WTP\Ugum River Pump Station\021005-Raw Water Pump 1 Photo.dvb

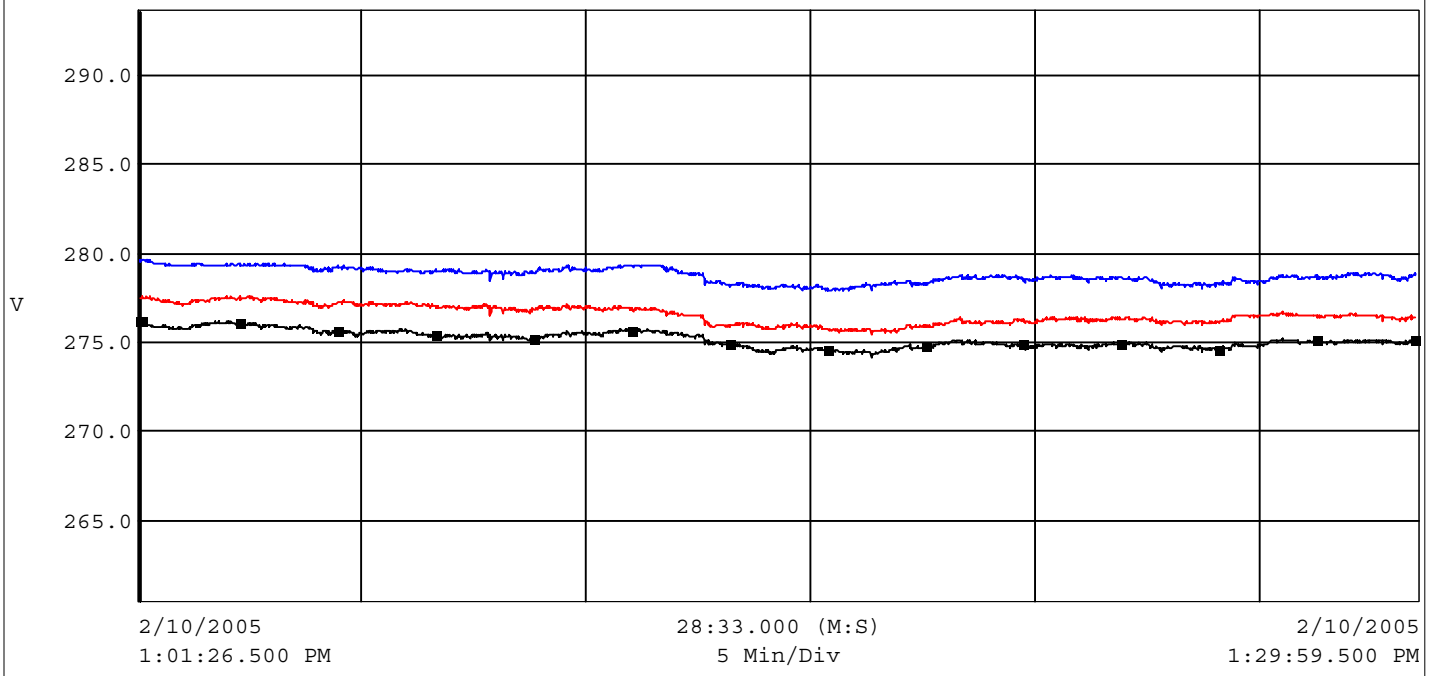
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Ugum River PS - Raw Water Pump 1 Photo ,

Comments
Recorded at the motor starter. 200 HP, 460 Volts

Ugum River Pump Station Pump No. 1

Recording Start Date	2/10/2005 - 1:01:26 PM
Recording Duration	28:33 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

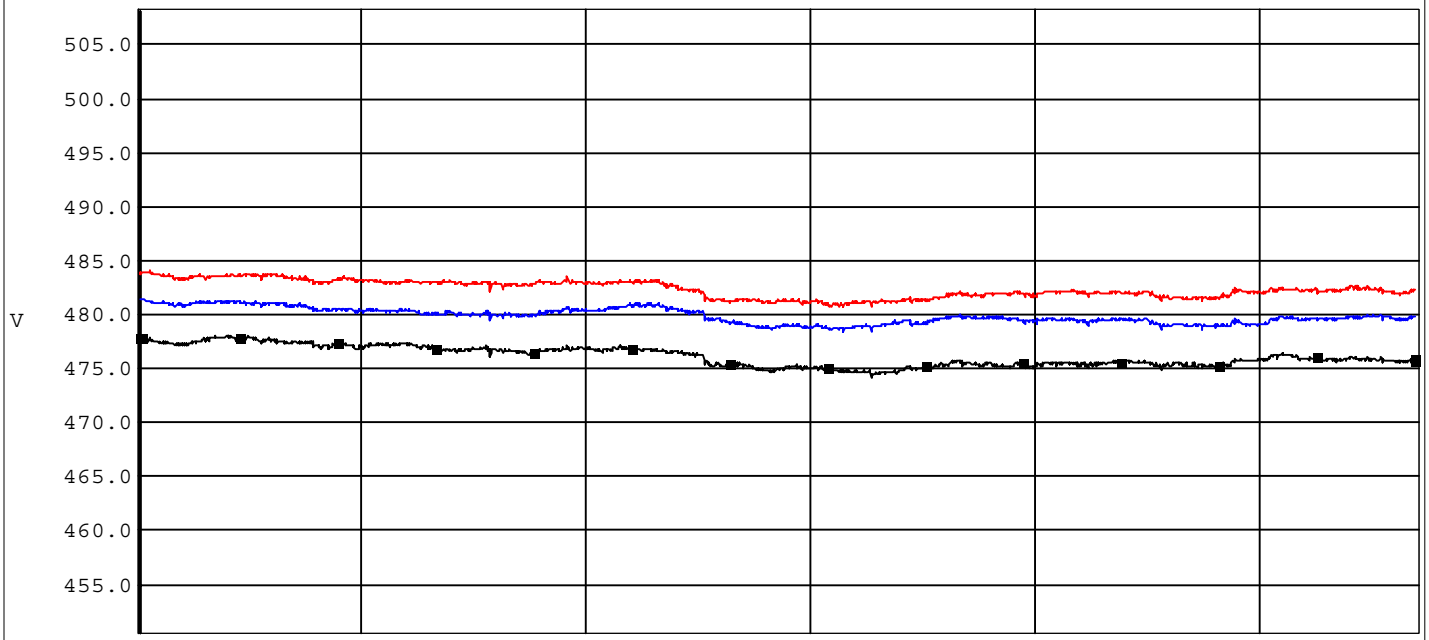
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	2/10/2005	1:01:26.500 PM	275.1	274.1	276.1	1714
Vrms Line2	2/10/2005	1:01:26.500 PM	276.5	275.4	277.5	1714
Vrms Line3	2/10/2005	1:01:26.500 PM	278.7	277.8	279.6	1714

2/10/2005 - 1:01:26.000 PM
Val
276.1 — Vrms Line1
277.4 — Vrms Line2
279.6 — Vrms Line3

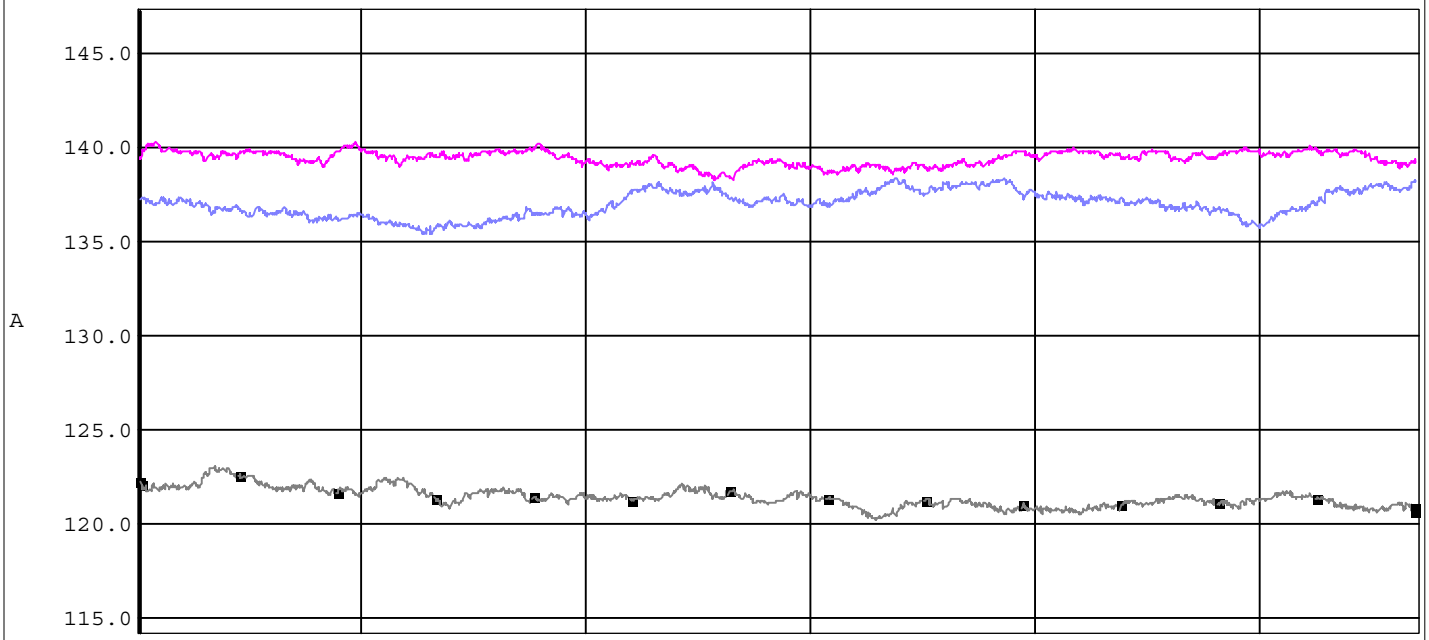
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	2/10/2005	1:01:26.500 PM	476.0	474.1	477.9	V
Urms Line2	2/10/2005	1:01:26.500 PM	482.3	480.7	484.0	V
Urms Line3	2/10/2005	1:01:26.500 PM	479.8	478.4	481.4	V

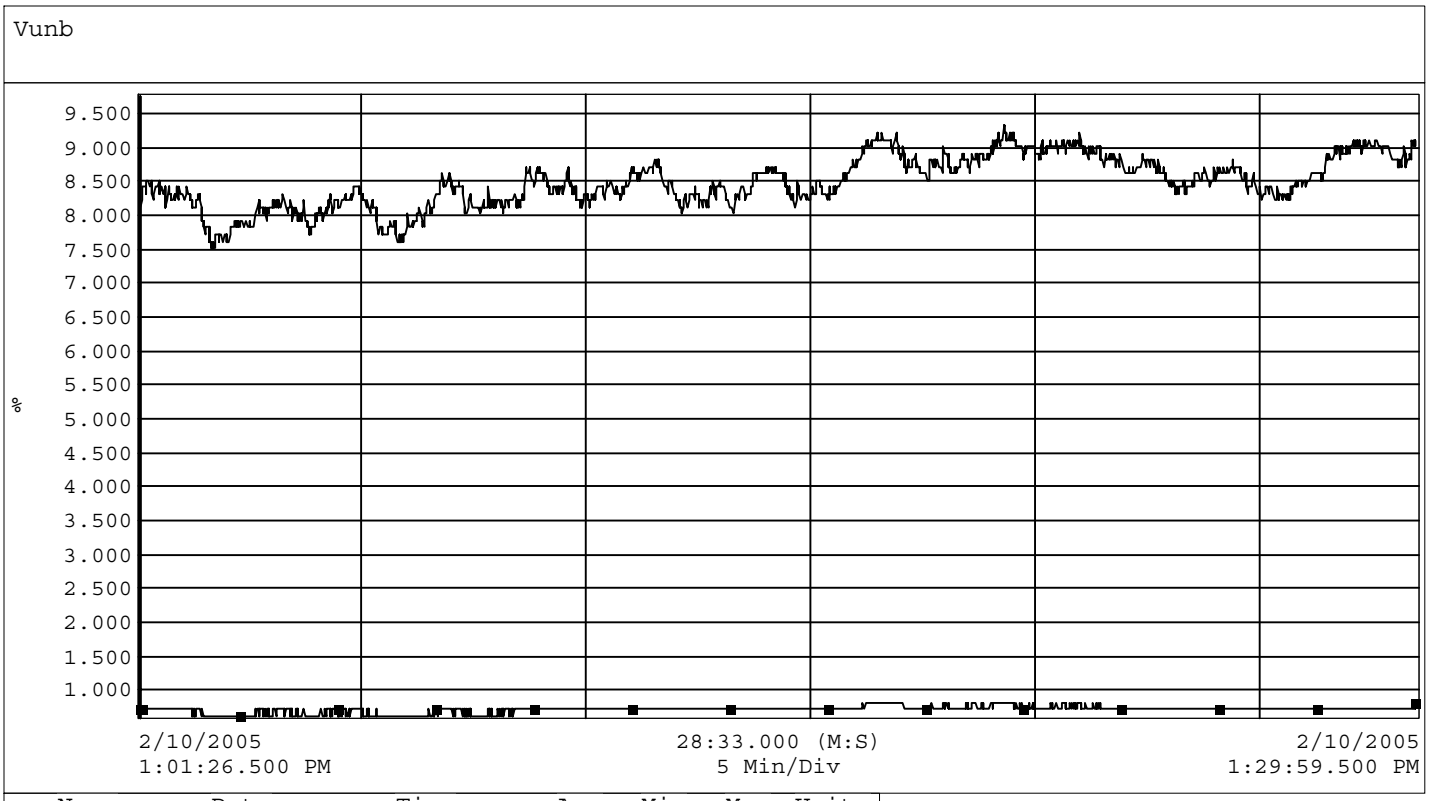
2/10/2005 - 1:01:26.000 PM
Val
477.8 — Urms Line1
483.8 — Urms Line2
481.4 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	2/10/2005	1:01:26.500 PM	121.3	120.1	123.0	A
Arms Line2	2/10/2005	1:01:26.500 PM	139.4	138.2	140.3	A
Arms Line3	2/10/2005	1:01:26.500 PM	137.0	135.4	138.3	A

2/10/2005 - 1:01:26.000 PM
Val
122.3 — Arms Line1
139.4 — Arms Line2
137.2 — Arms Line3

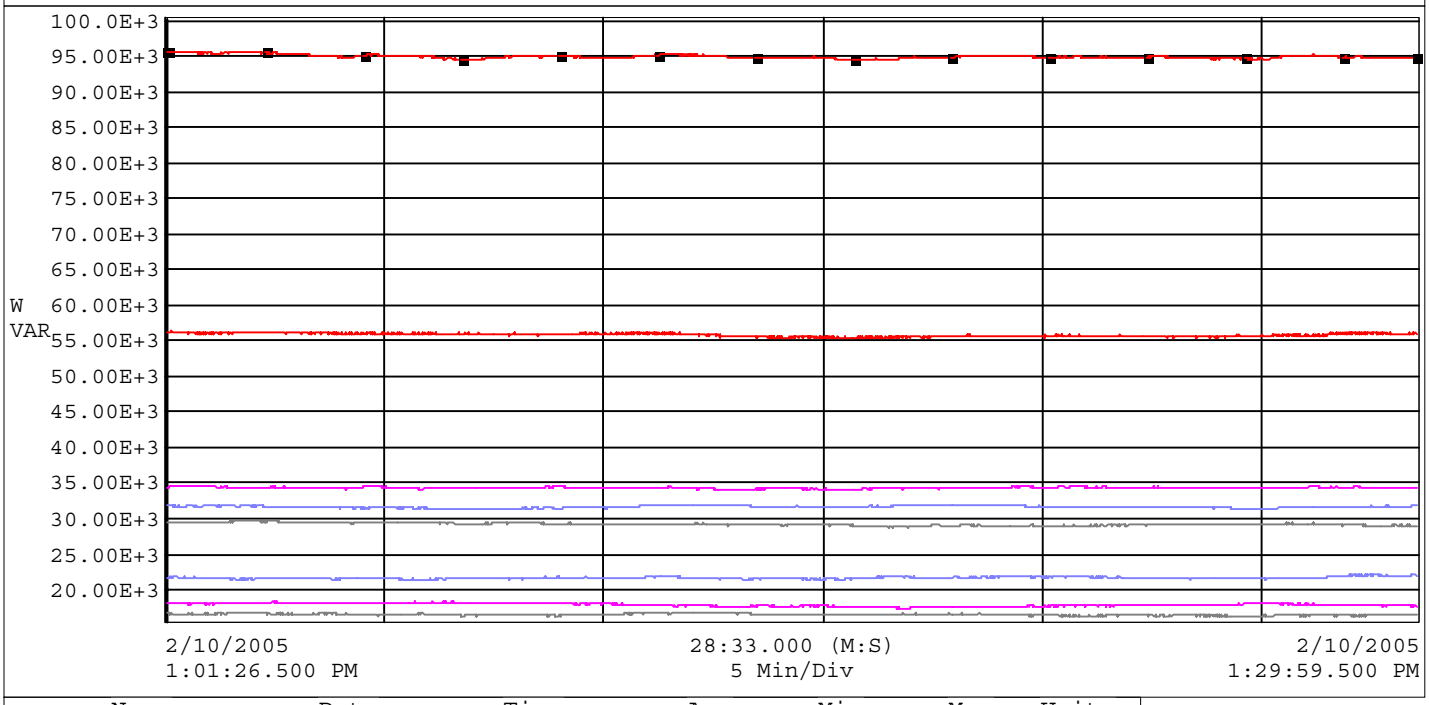


Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	2/10/2005	1:01:26.500 PM	0.692	0.600	0.800	%
Aunb(IEEE)	2/10/2005	1:01:26.500 PM	8.468	7.500	9.300	%

2/10/2005 - 1:01:26.000 PM
Val
0.700 — Vunb(IEEE)
8.000 — Aunb(IEEE)

Appendix 1K - Electrical

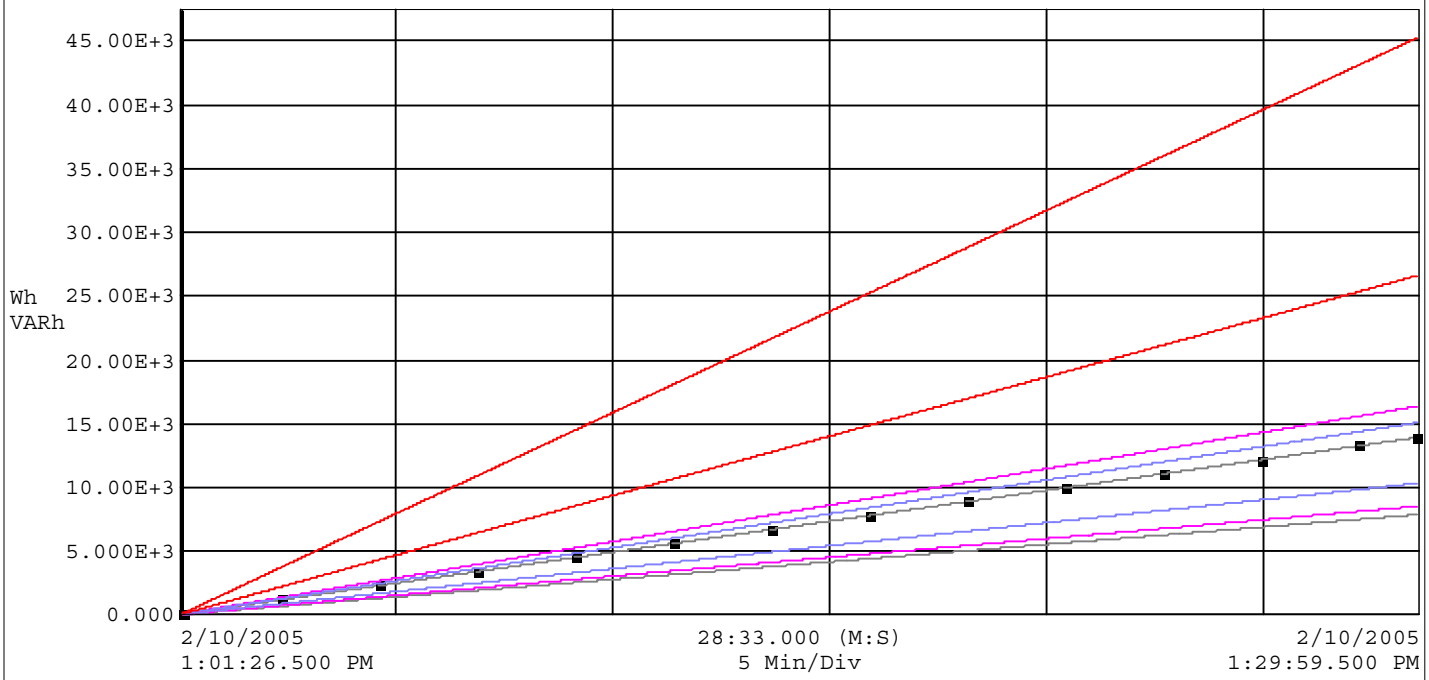
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	2/10/2005	1:01:26.500 PM	29.08E+3	28.64E+3	29.61E+3	W
W Line2	2/10/2005	1:01:26.500 PM	34.19E+3	33.87E+3	34.49E+3	W
W Line3	2/10/2005	1:01:26.500 PM	31.51E+3	31.09E+3	31.86E+3	W
W Sum of Phases	2/10/2005	1:01:26.500 PM	94.78E+3	94.30E+3	95.51E+3	W
VAR Line1	2/10/2005	1:01:26.500 PM	16.39E+3	16.10E+3	16.72E+3	VAR
VAR Line2	2/10/2005	1:01:26.500 PM	17.76E+3	17.24E+3	18.15E+3	VAR
VAR Line3	2/10/2005	1:01:26.500 PM	21.54E+3	21.22E+3	21.96E+3	VAR
VAR Sum of Phases	2/10/2005	1:01:26.500 PM	55.69E+3	55.22E+3	56.18E+3	VAR

2/10/2005 - 1:01:26.000 PM
Val
29.39E+3 — W Line1
34.28E+3 — W Line2
31.74E+3 — W Line3
95.41E+3 — W Sum of Phases
16.62E+3 — VAR Line1
17.92E+3 — VAR Line2
21.52E+3 — VAR Line3
56.07E+3 — VAR Sum of Phases

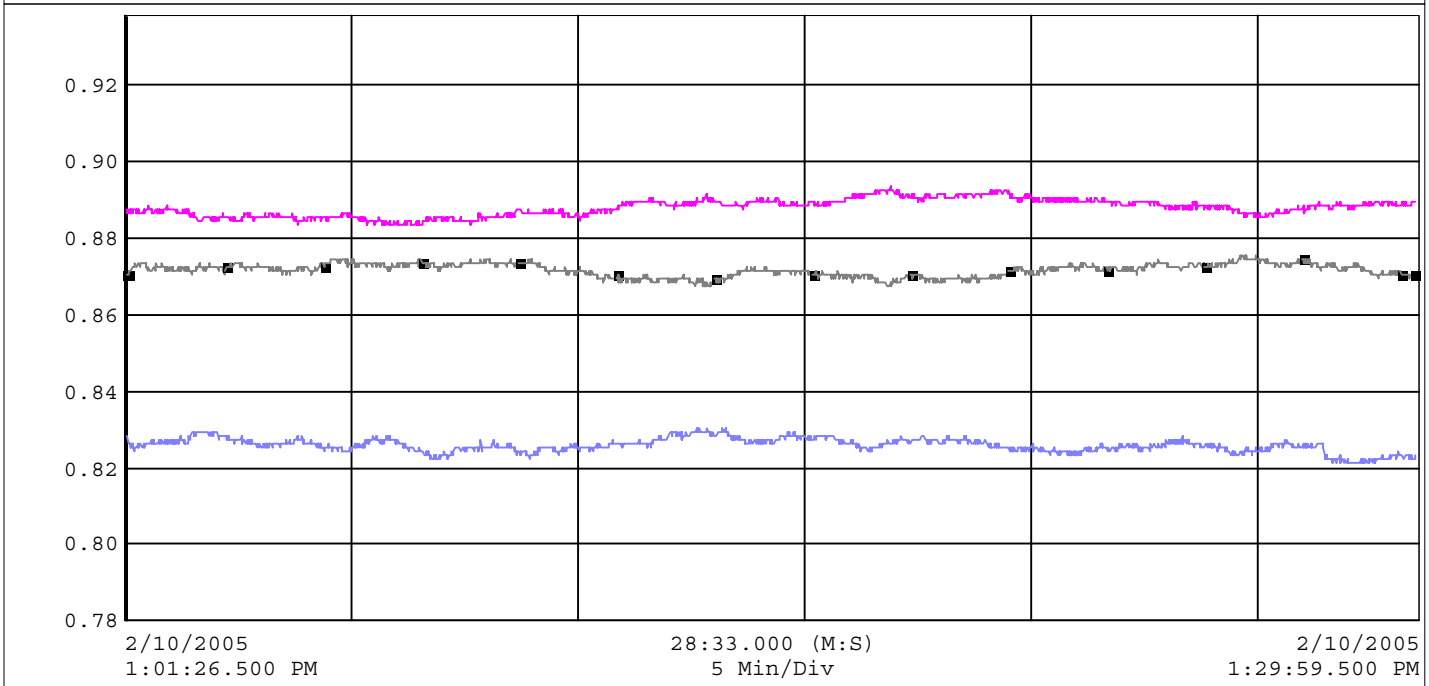
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	2/10/2005	1:01:26.500 PM	6.945E+3	8.028	13.84E+3	Wh
W-hours Line2	2/10/2005	1:01:26.500 PM	8.145E+3	9.440	16.28E+3	Wh
W-hours Line3	2/10/2005	1:01:26.500 PM	7.505E+3	8.700	15.00E+3	Wh
W-hours Sum of Phases	2/10/2005	1:01:26.500 PM	22.59E+3	26.17	45.13E+3	Wh
VAR-hours Line1	2/10/2005	1:01:26.500 PM	3.912E+3	4.524	7.802E+3	VARh
VAR-hours Line2	2/10/2005	1:01:26.500 PM	4.247E+3	4.903	8.456E+3	VARh
VAR-hours Line3	2/10/2005	1:01:26.500 PM	5.122E+3	5.947	10.26E+3	VARh
VAR-hours Sum of Phases	2/10/2005	1:01:26.500 PM	13.28E+3	15.37	26.51E+3	VARh

2/10/2005 - 1:01:26.000 PM
Val
8.028 — W-hours Line1
9.440 — W-hours Line2
8.700 — W-hours Line3
26.17 — W-hours Sum of Phases
4.524 — VAR-hours Line1
4.903 — VAR-hours Line2
5.947 — VAR-hours Line3
15.37 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	2/10/2005	1:01:26.500 PM	0.871	0.867	0.875	
PF Line2	2/10/2005	1:01:26.500 PM	0.887	0.883	0.893	
PF Line3	2/10/2005	1:01:26.500 PM	0.826	0.821	0.830	

2/10/2005 - 1:01:26.000 PM
Val
0.870 PF Line1
0.886 PF Line2
0.828 PF Line3

Trend Summary Report

Database: X:\Ugum WTP\Ugum River Pump Station\021005-Raw Water Pump 1.dvb

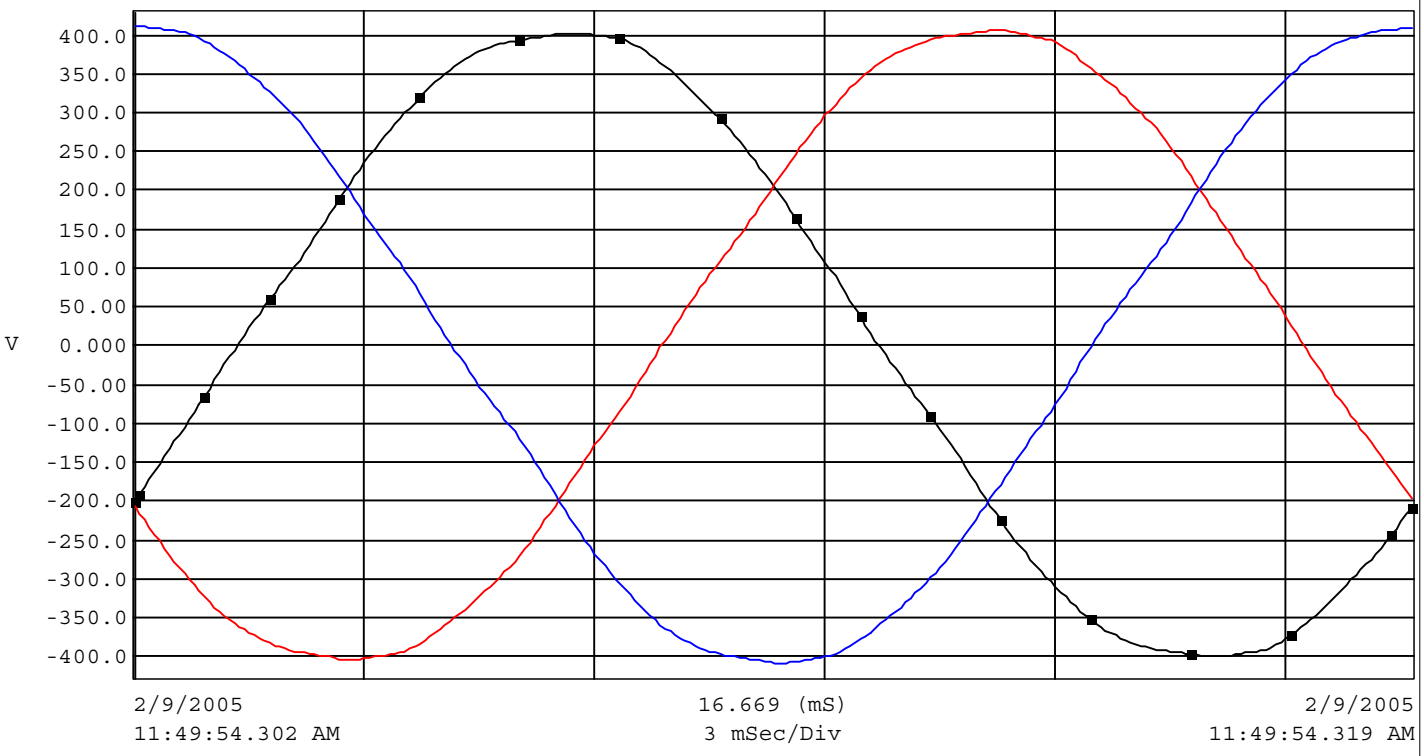
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Ugum River PS - Raw Water Pump 1 ,

Comments
Recorded at motor starter, 200 HP, 460 volt motor

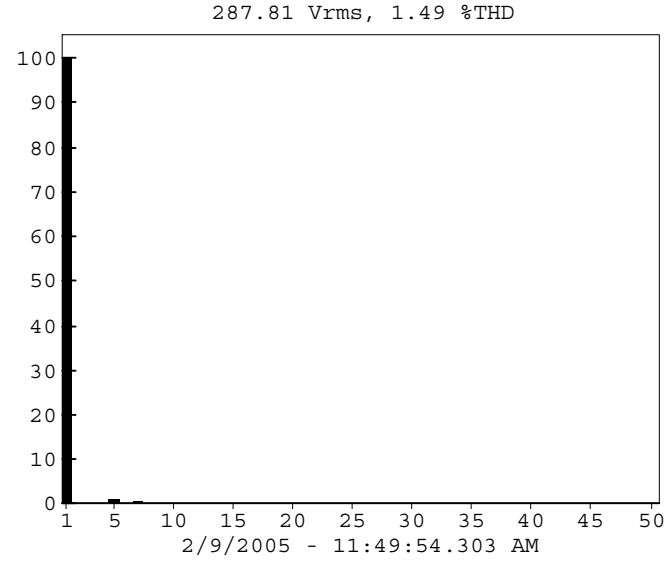
Ugum Water Treatment Plt Plant MCC Main

Recording Start Date	2/9/2005 - 11:49:54 AM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	2/9/2005	11:49:54.302 AM	16.669	287.8	V
Waveform V2	2/9/2005	11:49:54.302 AM	16.669	289.6	V
Waveform V3	2/9/2005	11:49:54.302 AM	16.669	292.7	V



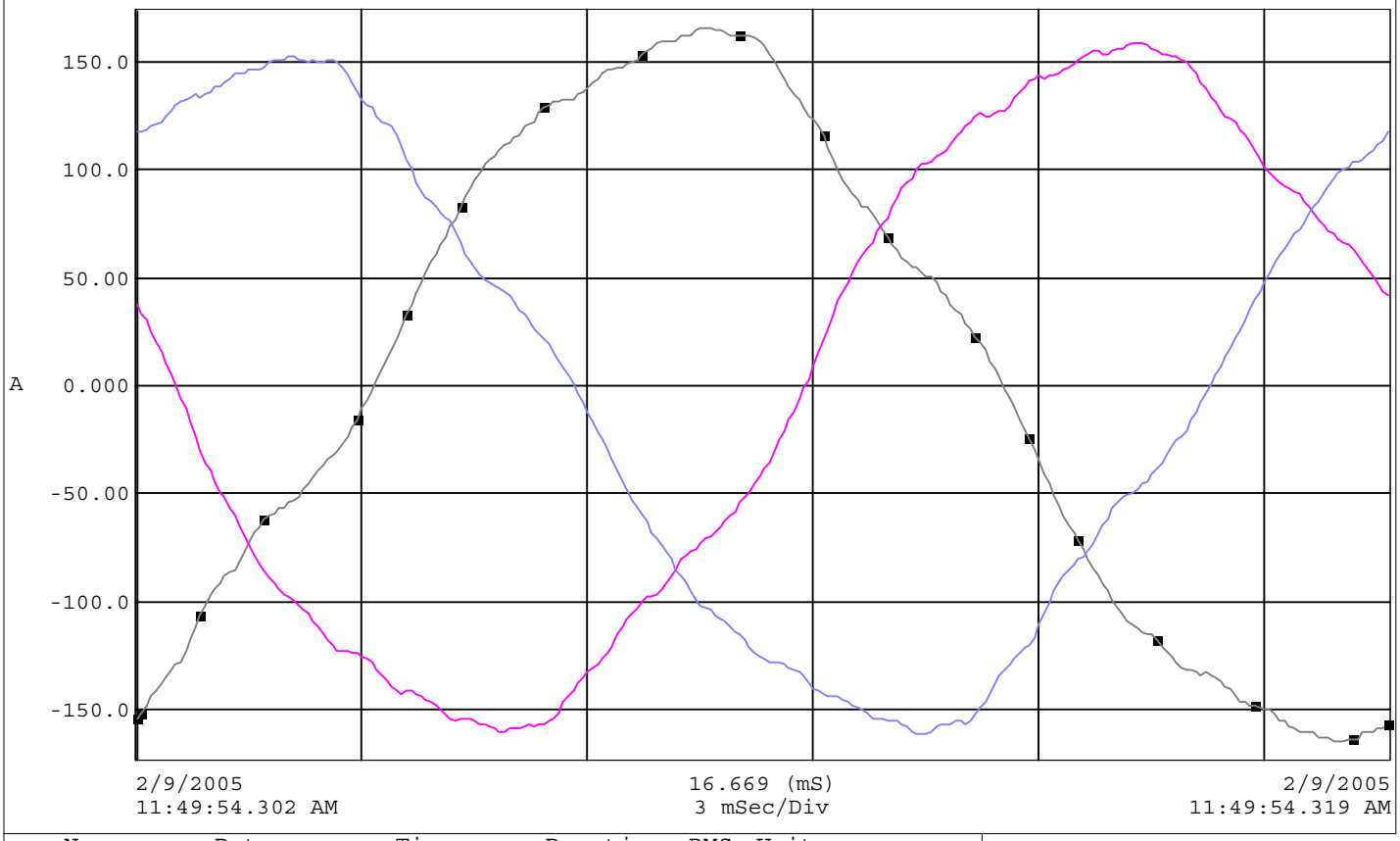
2/9/2005 - 11:49:54.000 AM

	Val
Waveform V1	-202.0
Waveform V2	-207.6
Waveform V3	409.3

Waveform V1

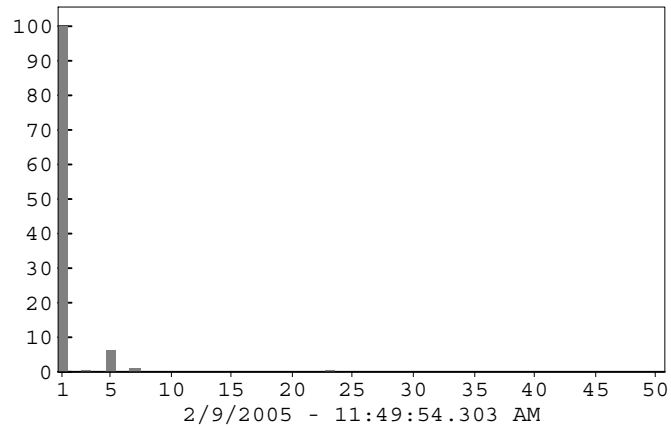
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.99 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	2/9/2005	11:49:54.302 AM	16.669	113.3	A
Waveform I2	2/9/2005	11:49:54.302 AM	16.669	111.2	A
Waveform I3	2/9/2005	11:49:54.302 AM	16.669	107.3	A

Waveform I1
113.32 Arms, 6.45 %THD

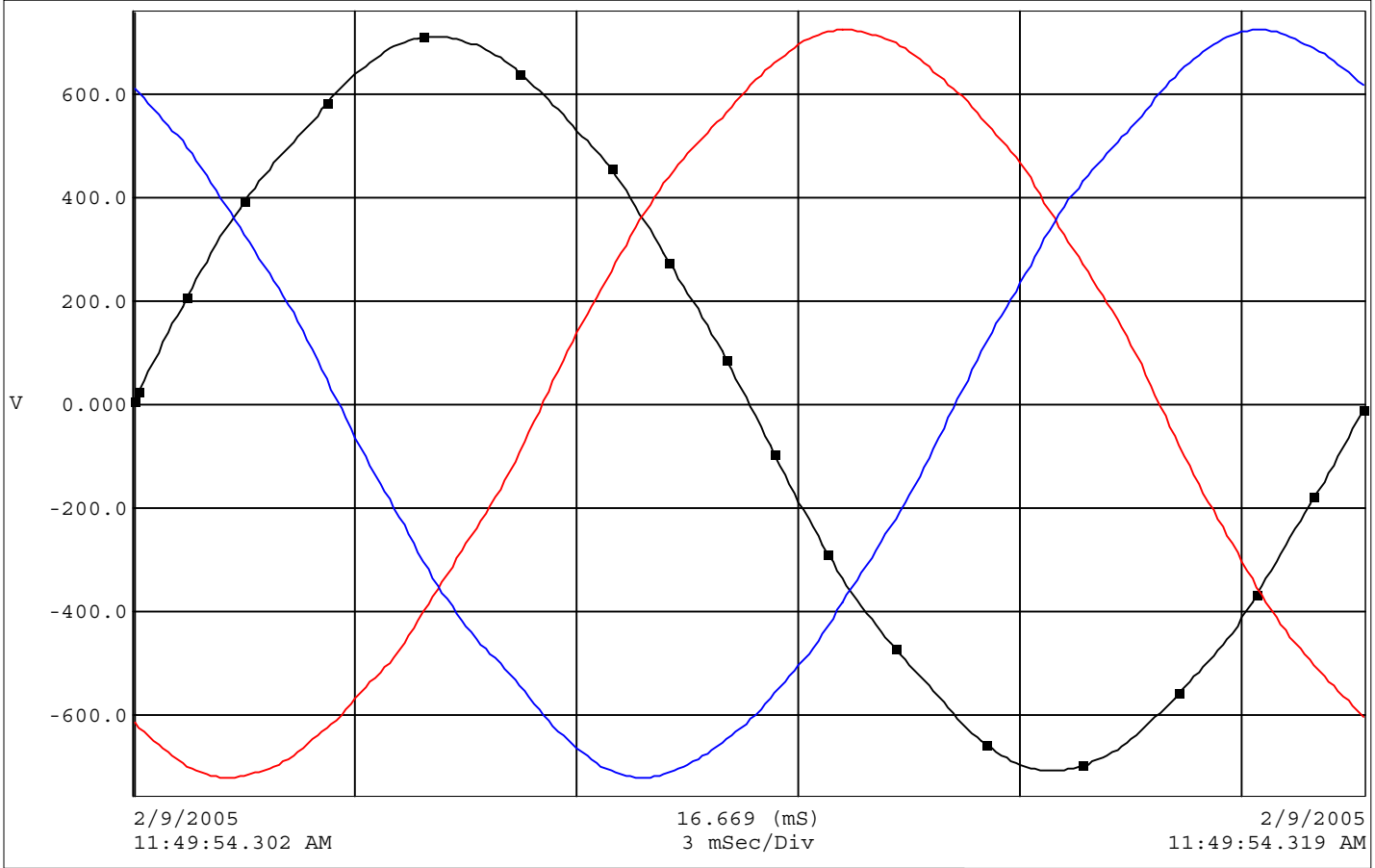


2/9/2005 - 11:49:54.000 AM
Val
-154.3 Waveform I1
37.30 Waveform I2
117.0 Waveform I3

Waveform I1

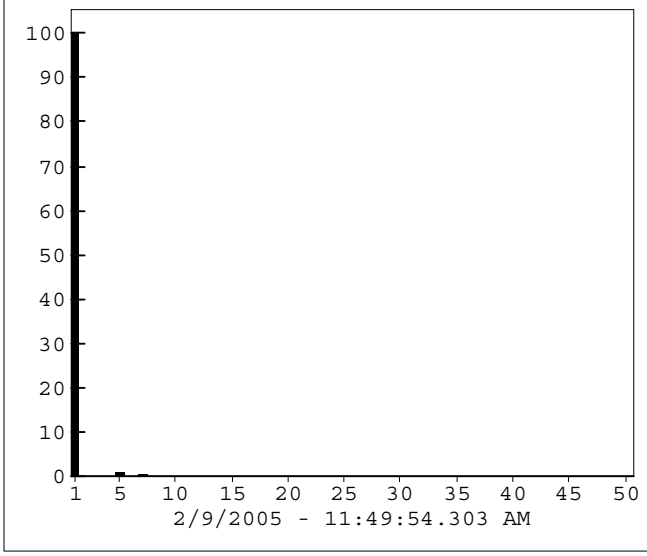
	(%)		(%)		(%)
H01	100.0	H18	0.2	H35	0.1
H02	0.1	H19	0.4	H36	0.0
H03	0.9	H20	0.2	H37	0.0
H04	0.1	H21	0.2	H38	0.0
H05	6.2	H22	0.4	H39	0.0
H06	0.1	H23	0.6	H40	0.1
H07	1.1	H24	0.1	H41	0.0
H08	0.1	H25	0.4	H42	0.0
H09	0.2	H26	0.2	H43	0.1
H10	0.1	H27	0.1	H44	0.0
H11	0.1	H28	0.1	H45	0.0
H12	0.0	H29	0.1	H46	0.1
H13	0.1	H30	0.0	H47	0.0
H14	0.1	H31	0.1	H48	0.0
H15	0.0	H32	0.1	H49	0.0
H16	0.1	H33	0.0	H50	0.0
H17	0.2	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.99 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	2/9/2005	11:49:54.302 AM	16.669	497.7	V
Waveform U2	2/9/2005	11:49:54.302 AM	16.669	506.3	V
Waveform U3	2/9/2005	11:49:54.302 AM	16.669	503.2	V

Waveform U1
497.68 Vrms, 1.39 %THD



2/9/2005 - 11:49:54.000 AM

	Val	
—	5.600	Waveform U1
—	-617.0	Waveform U2
—	611.4	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:
Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 2/9/2005
Start Time: 11:49:54 AM
Duration: 0:0.000 (M:S)
W: 76.74E+3 W
VAR: 57.40E+3 W
VA: 95.91E+3 W
Power Factor: 2.401
Displacement Power Factor: 2.405
TAN: 2.238
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Ugum WTP\020905-Ugum MCC Main Photo.dvb

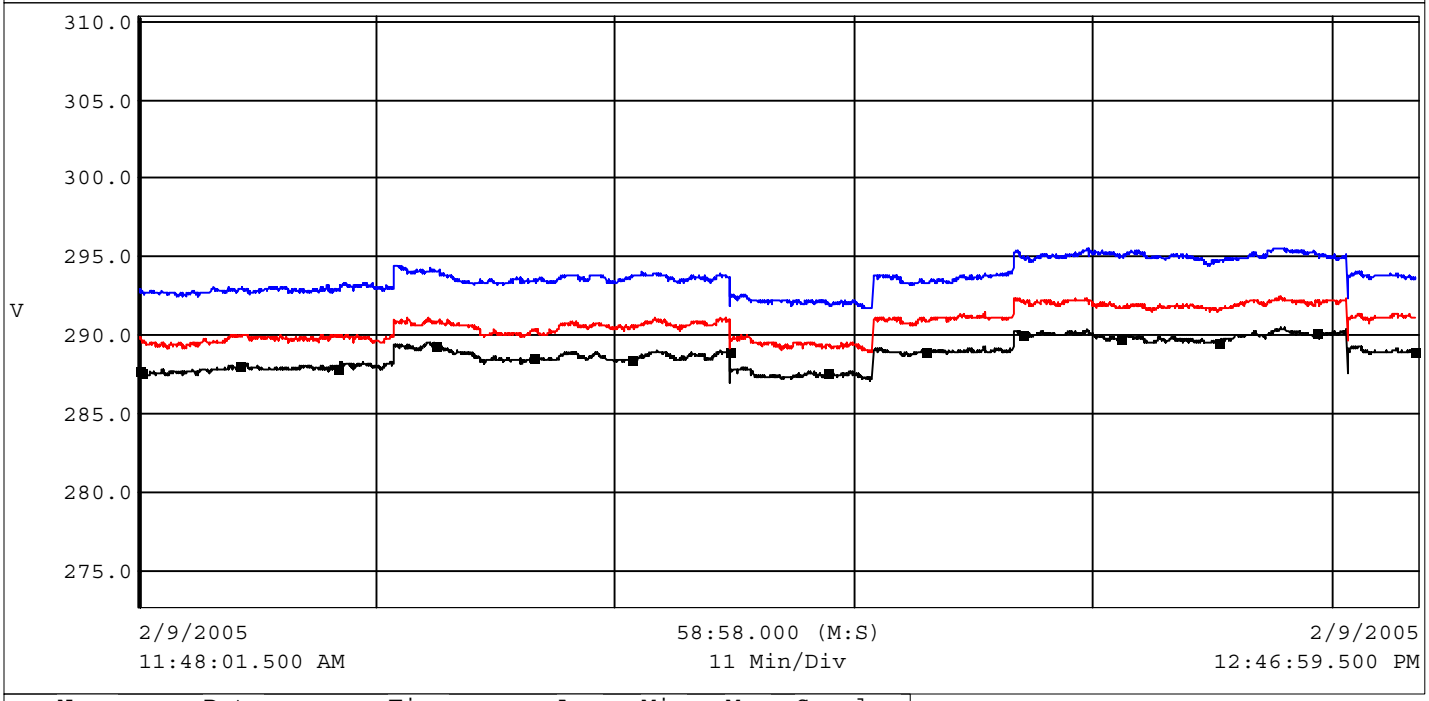
Operator	Test Site
Morikawa & Assocaites, LLC Lyman Morikawa, PE ,	Ugum Water Plant MCC Main Photo ,

Comments
Photo Recorded at MCC Main Breaker, 1000A, 460 Volts

Ugum Water Treatment Plt Plant MCC Main

Recording Start Date	2/9/2005 - 11:48:01 AM
Recording Duration	58:58 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

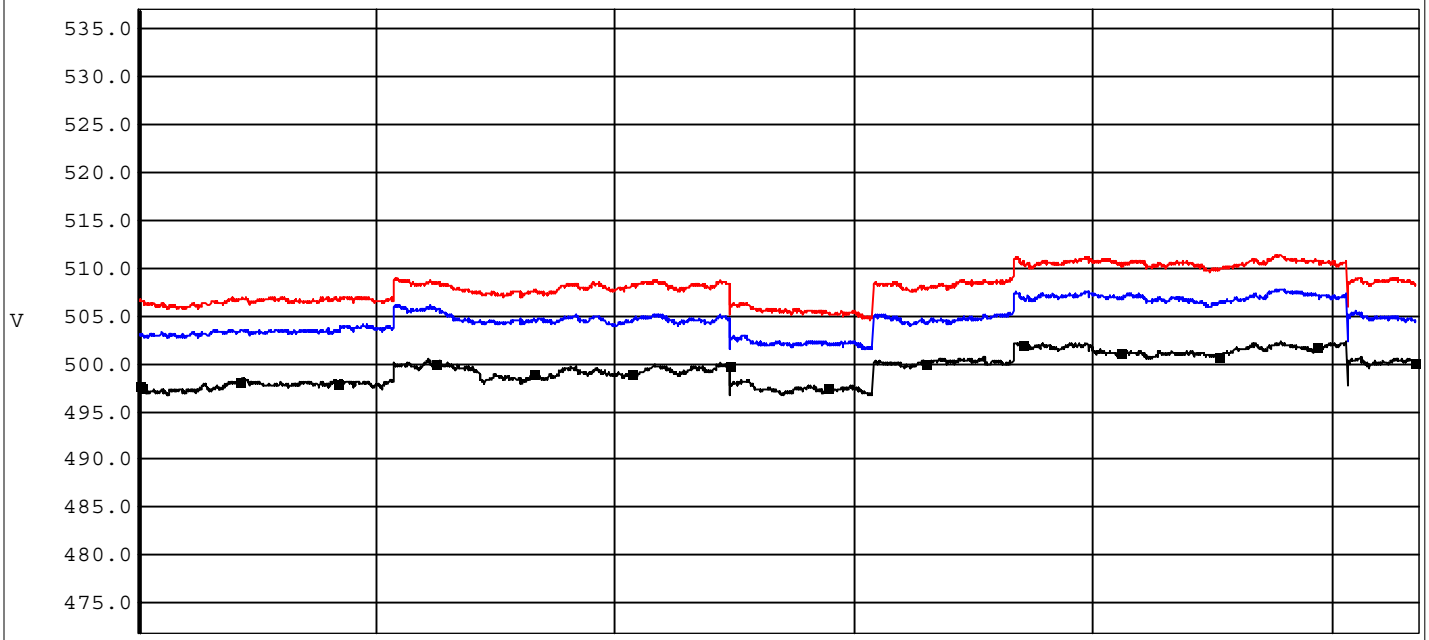
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	2/9/2005	11:48:01.500 AM	288.7	286.9	290.4	3539
Vrms Line2	2/9/2005	11:48:01.500 AM	290.6	288.8	292.4	3539
Vrms Line3	2/9/2005	11:48:01.500 AM	293.6	291.6	295.5	3539

2/9/2005 - 11:48:01.000 AM
Val
287.8 — Vrms Line1
289.8 — Vrms Line2
292.9 — Vrms Line3

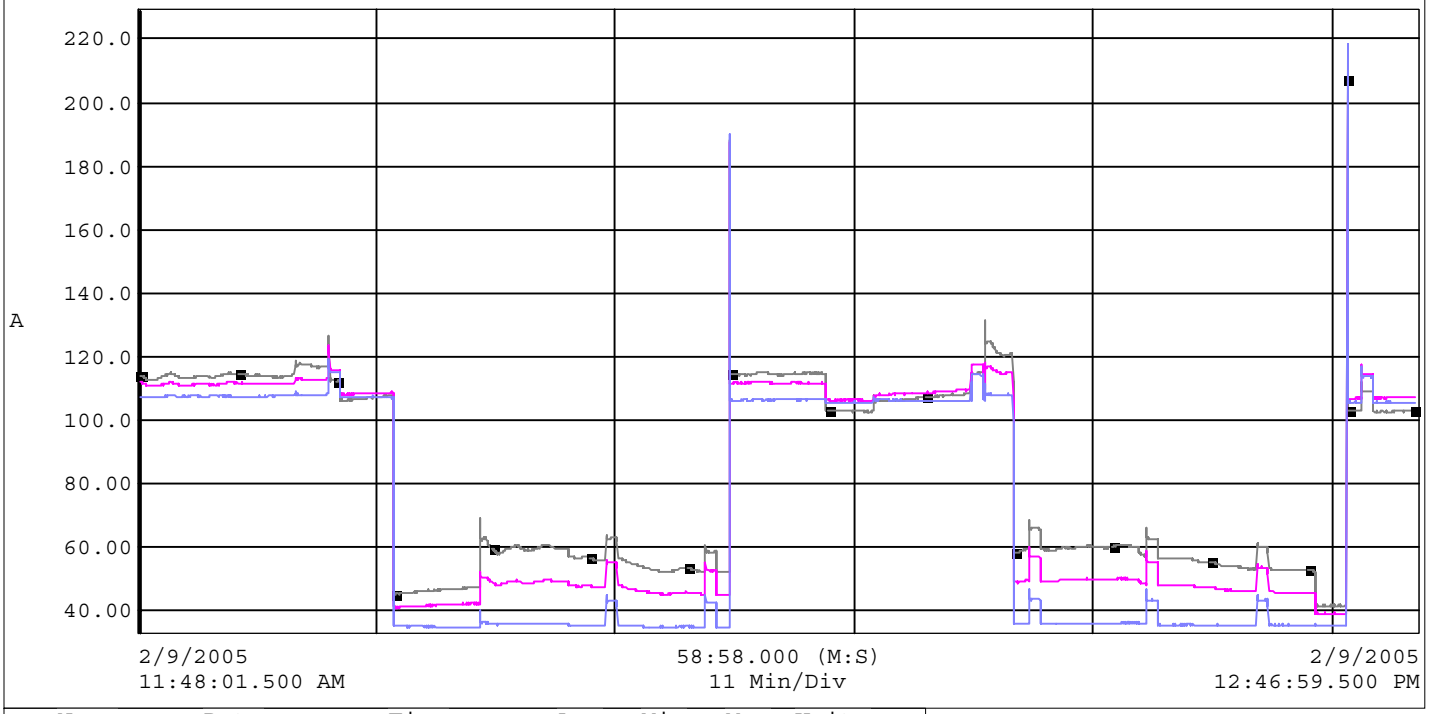
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	2/9/2005	11:48:01.500 AM	499.4	496.6	502.3	V
Urms Line2	2/9/2005	11:48:01.500 AM	508.0	504.5	511.3	V
Urms Line3	2/9/2005	11:48:01.500 AM	504.7	501.4	507.7	V

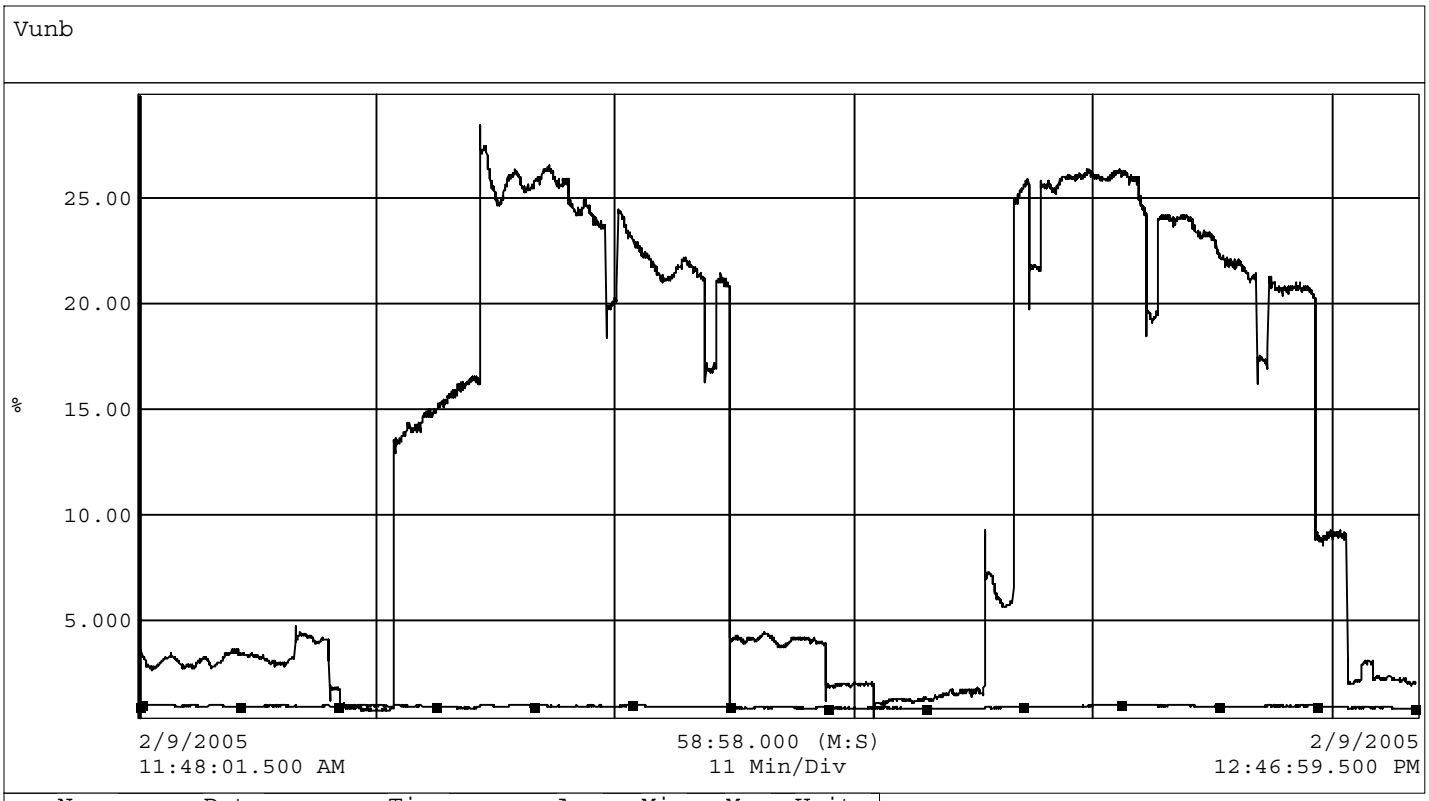
2/9/2005 - 11:48:01.000 AM
Val
497.8 — Urms Line1
506.7 — Urms Line2
503.1 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	2/9/2005	11:48:01.500 AM	81.37	41.30	206.8	A
Arms Line2	2/9/2005	11:48:01.500 AM	77.07	38.80	209.1	A
Arms Line3	2/9/2005	11:48:01.500 AM	69.72	34.40	218.1	A

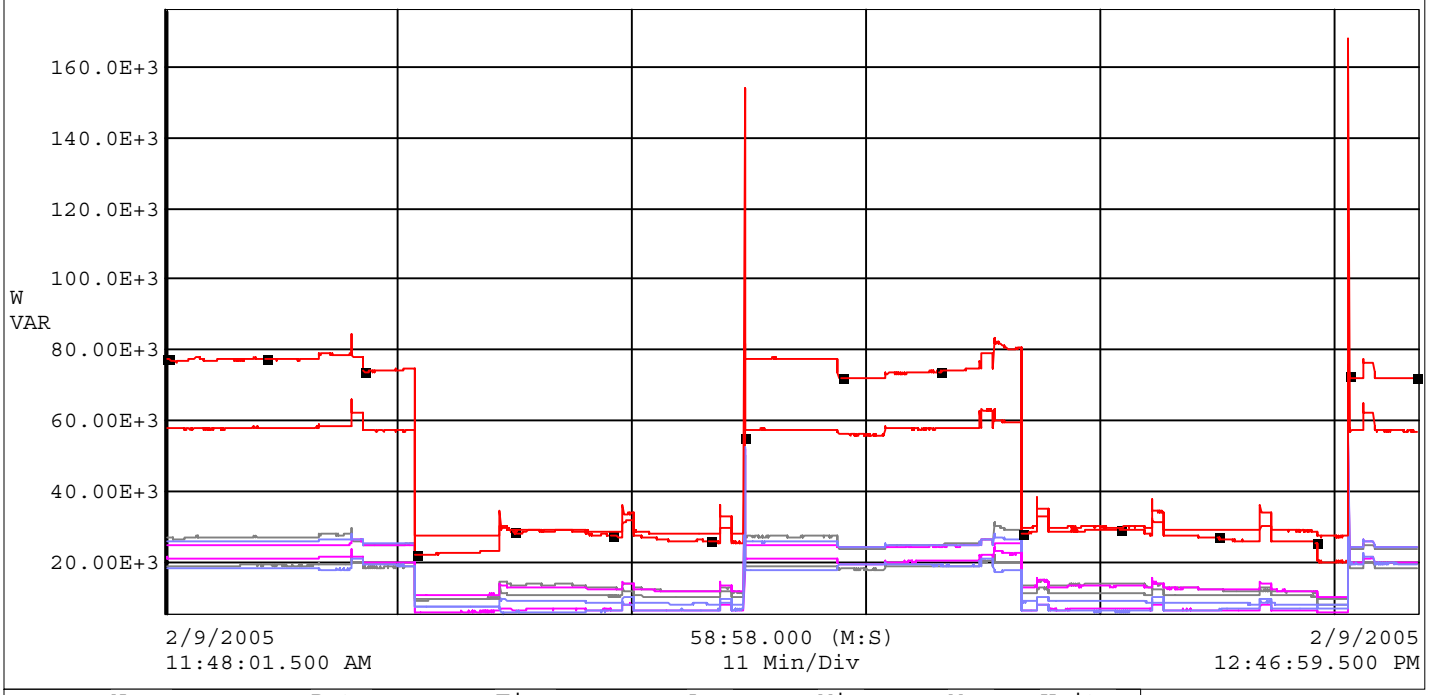
2/9/2005 - 11:48:01.000 AM
Val
113.9 — Arms Line1
111.8 — Arms Line2
106.9 — Arms Line3



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	2/9/2005	11:48:01.500 AM	0.907	0.800	1.000	%
Aunb(IEEE)	2/9/2005	11:48:01.500 AM	12.60	0.400	28.40	%

2/9/2005 - 11:48:01.000 AM
Val
0.900 ── Vunb(IEEE)
3.600 ── Aunb(IEEE)

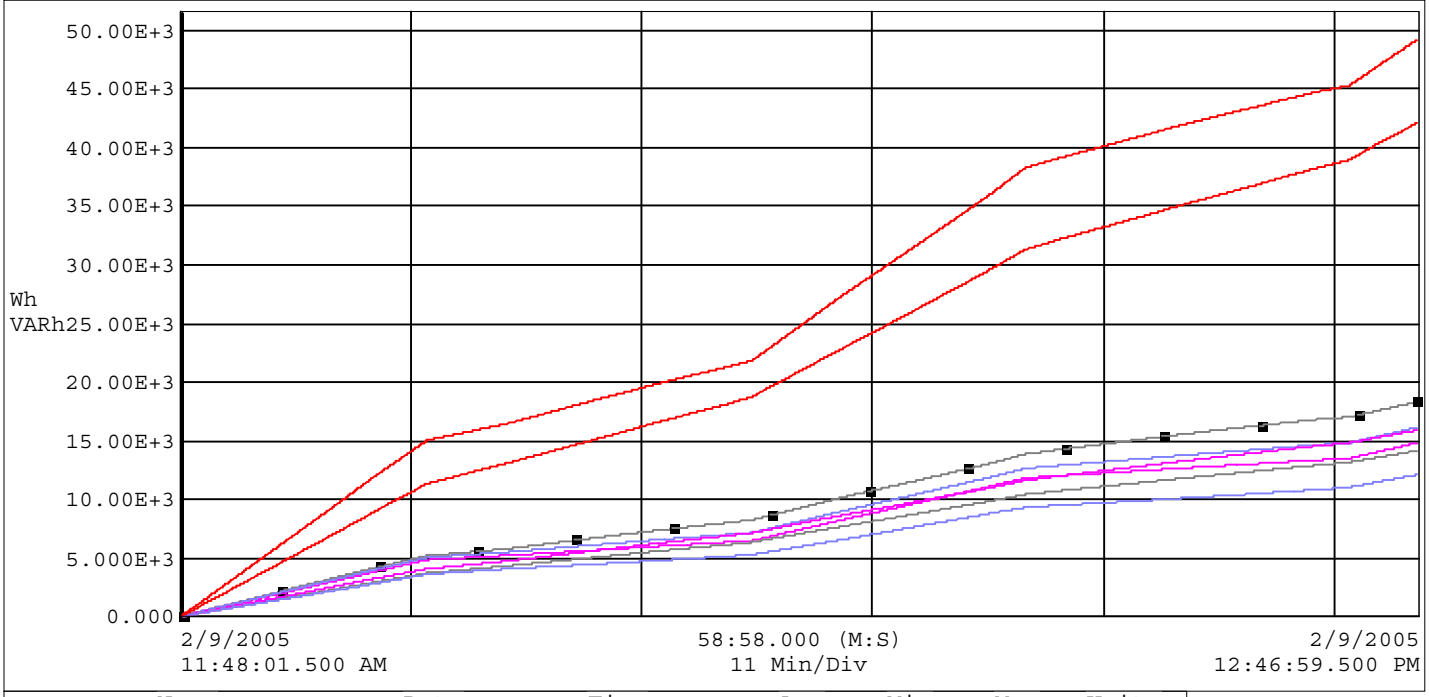
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	2/9/2005	11:48:01.500 AM	18.54E+3	7.653E+3	30.81E+3	W
W Line2	2/9/2005	11:48:01.500 AM	15.00E+3	5.611E+3	26.77E+3	W
W Line3	2/9/2005	11:48:01.500 AM	16.33E+3	6.556E+3	28.01E+3	W
W Sum of Phases	2/9/2005	11:48:01.500 AM	49.88E+3	19.85E+3	84.00E+3	W
VAR Line1	2/9/2005	11:48:01.500 AM	14.33E+3	9.149E+3	54.08E+3	VAR
VAR Line2	2/9/2005	11:48:01.500 AM	16.10E+3	9.840E+3	55.10E+3	VAR
VAR Line3	2/9/2005	11:48:01.500 AM	12.25E+3	5.308E+3	58.31E+3	VAR
VAR Sum of Phases	2/9/2005	11:48:01.500 AM	42.68E+3	26.90E+3	167.5E+3	VAR

2/9/2005 - 11:48:01.000 AM
Val
26.88E+3 — W Line1
24.63E+3 — W Line2
25.62E+3 — W Line3
77.13E+3 — W Sum of Phases
18.74E+3 — VAR Line1
21.04E+3 — VAR Line2
17.98E+3 — VAR Line3
57.76E+3 — VAR Sum of Phases

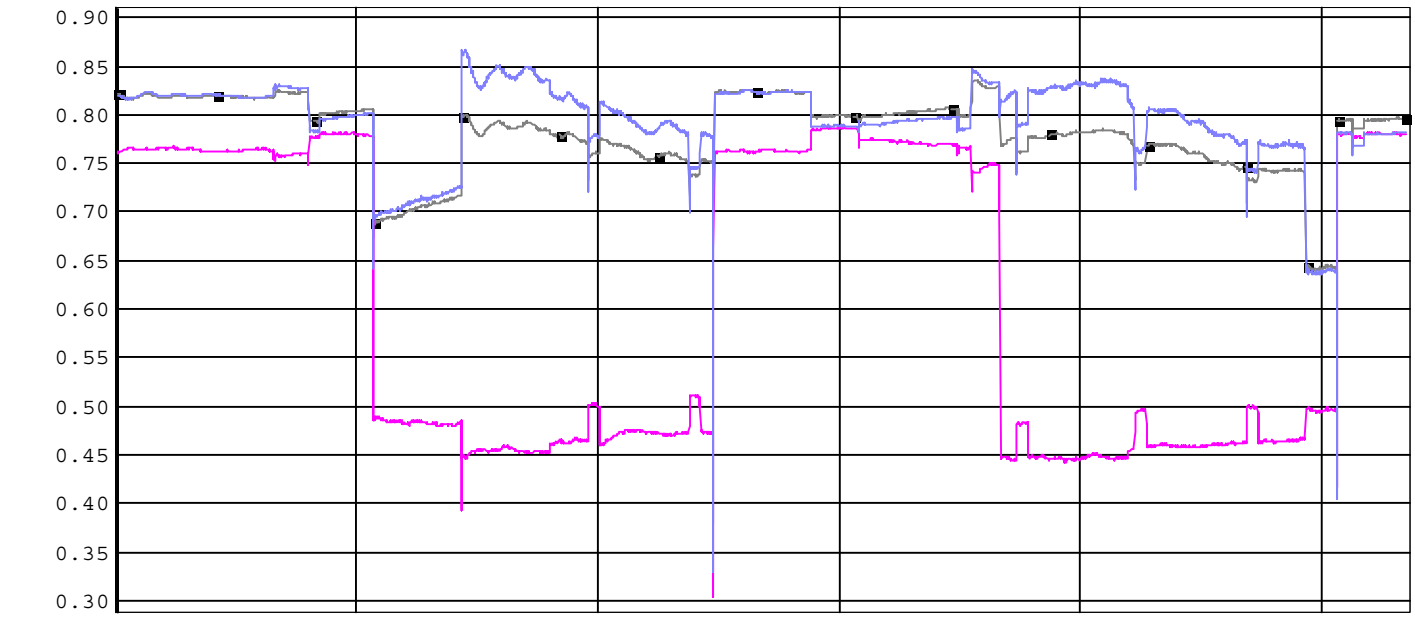
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	2/9/2005	11:48:01.500 AM	9.722E+3	7.233	18.23E+3	Wh
W-hours Line2	2/9/2005	11:48:01.500 AM	8.050E+3	6.751	14.75E+3	Wh
W-hours Line3	2/9/2005	11:48:01.500 AM	8.707E+3	7.350	16.06E+3	Wh
W-hours Sum of Phases	2/9/2005	11:48:01.500 AM	26.48E+3	20.95	49.03E+3	Wh
VAR-hours Line1	2/9/2005	11:48:01.500 AM	7.349E+3	5.160	14.09E+3	VARh
VAR-hours Line2	2/9/2005	11:48:01.500 AM	8.230E+3	5.797	15.83E+3	VARh
VAR-hours Line3	2/9/2005	11:48:01.500 AM	6.394E+3	5.145	12.04E+3	VARh
VAR-hours Sum of Phases	2/9/2005	11:48:01.500 AM	21.97E+3	16.65	41.96E+3	VARh

2/9/2005 - 11:48:01.000 AM
Val
7.233 — W-hours Line1
6.751 — W-hours Line2
7.350 — W-hours Line3
20.95 — W-hours Sum of Phases
5.160 — VAR-hours Line1
5.797 — VAR-hours Line2
5.145 — VAR-hours Line3
16.65 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	2/9/2005	11:48:01.500 AM	0.779	0.377	0.834	
PF Line2	2/9/2005	11:48:01.500 AM	0.609	0.302	0.786	
PF Line3	2/9/2005	11:48:01.500 AM	0.793	0.328	0.866	

2/9/2005 - 11:48:01.000 AM
Val
0.820 — PF Line1
0.760 — PF Line2
0.819 — PF Line3

Trend Summary Report

Database: X:\Ugum WTP\020905-Ugum MCC Main.dvb

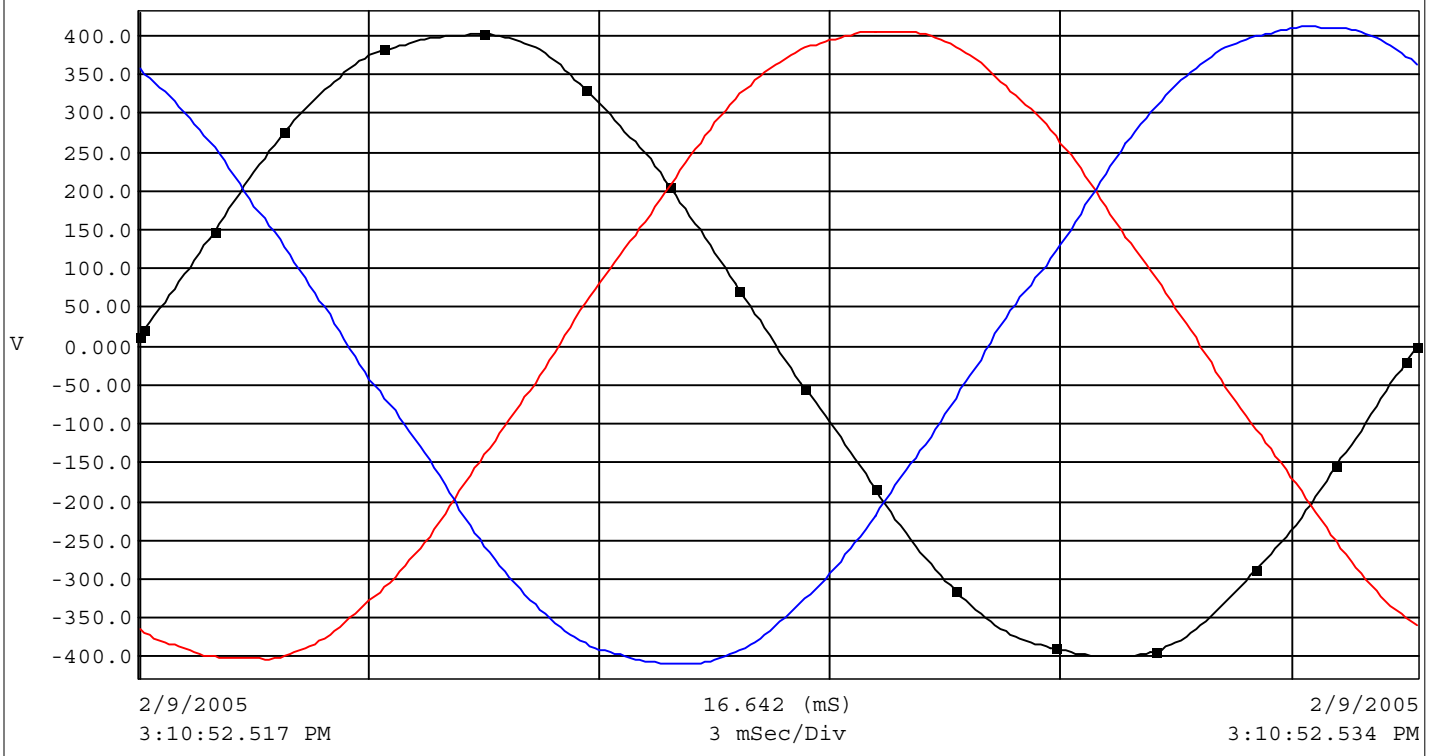
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Ugum WTP MCC Main Breaker ,

Comments
Ugum Water Treatment Plant Motor Control Center Main, 1000A, 460 Volt

Ugum Water TP
Filtered Water Pump 2

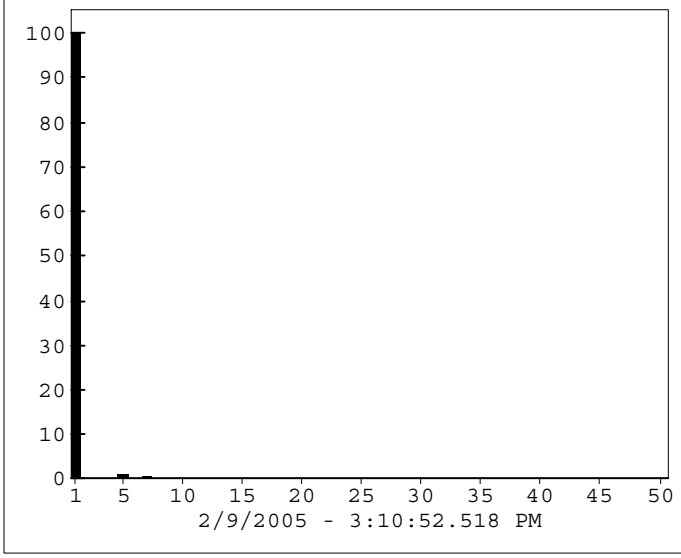
Recording Start Date	2/9/2005 - 3:10:52 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 60.09 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	2/9/2005	3:10:52.517 PM	16.642	287.3	V
Waveform V2	2/9/2005	3:10:52.517 PM	16.642	289.1	V
Waveform V3	2/9/2005	3:10:52.517 PM	16.642	293.1	V

Waveform V1
287.28 Vrms, 1.39 %THD



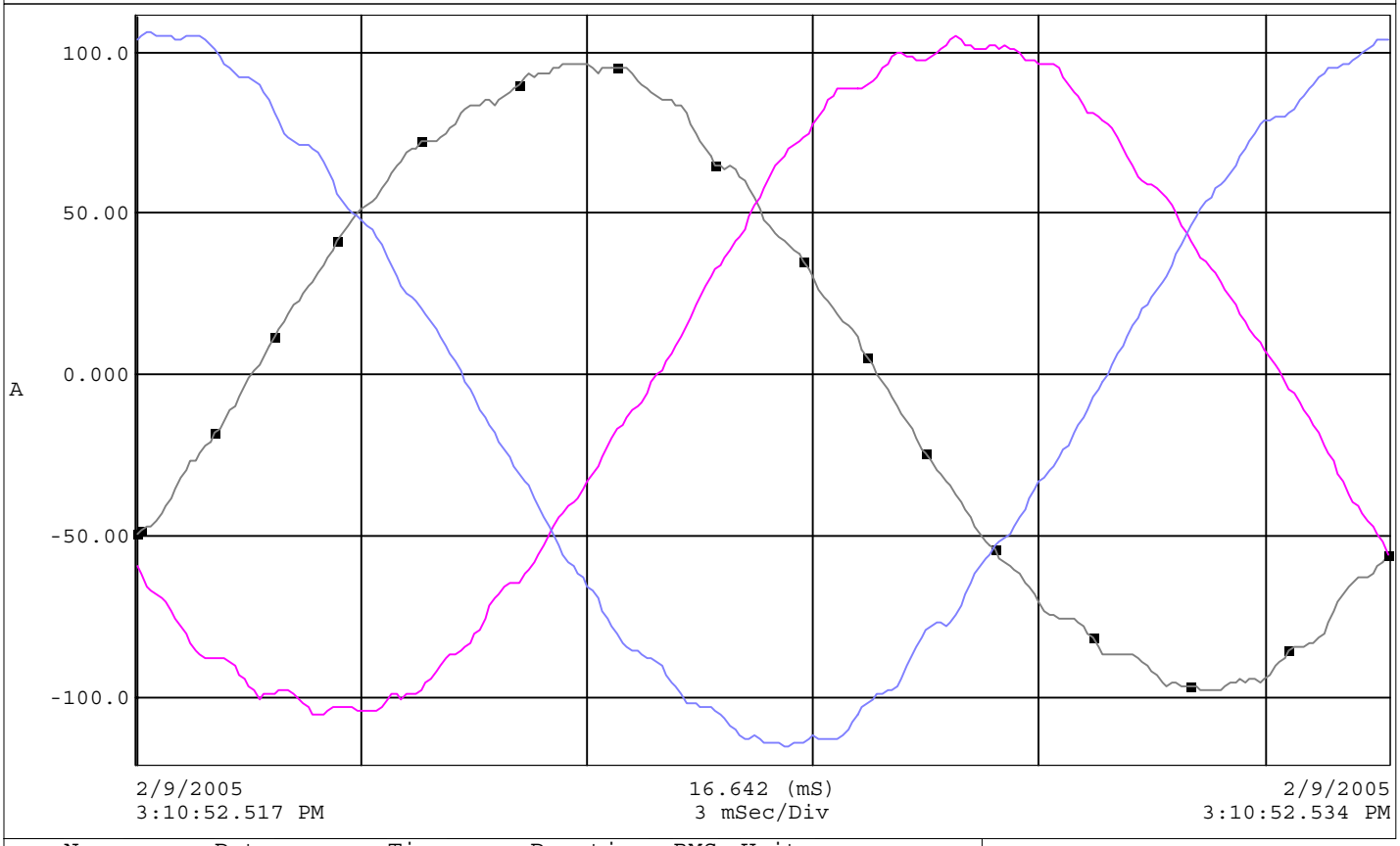
2/9/2005 - 3:10:52.000 PM

Val	
9.800	Waveform V1
-365.6	Waveform V2
355.7	Waveform V3

Waveform V1

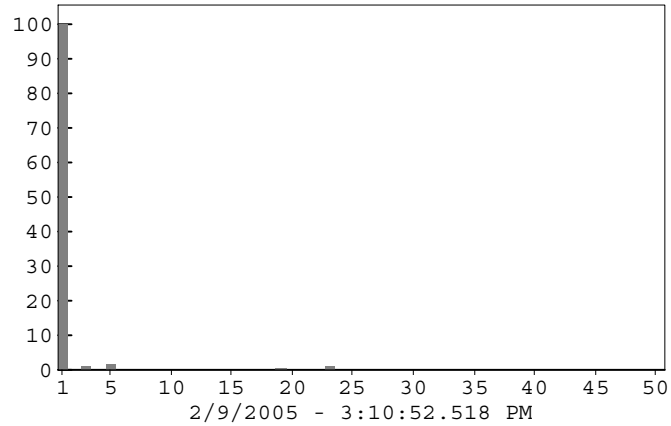
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.3	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.1	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 60.09 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	2/9/2005	3:10:52.517 PM	16.642	67.70	A
Waveform I2	2/9/2005	3:10:52.517 PM	16.642	73.64	A
Waveform I3	2/9/2005	3:10:52.517 PM	16.642	76.41	A

Waveform I1
67.70 Arms, 2.95 %THD



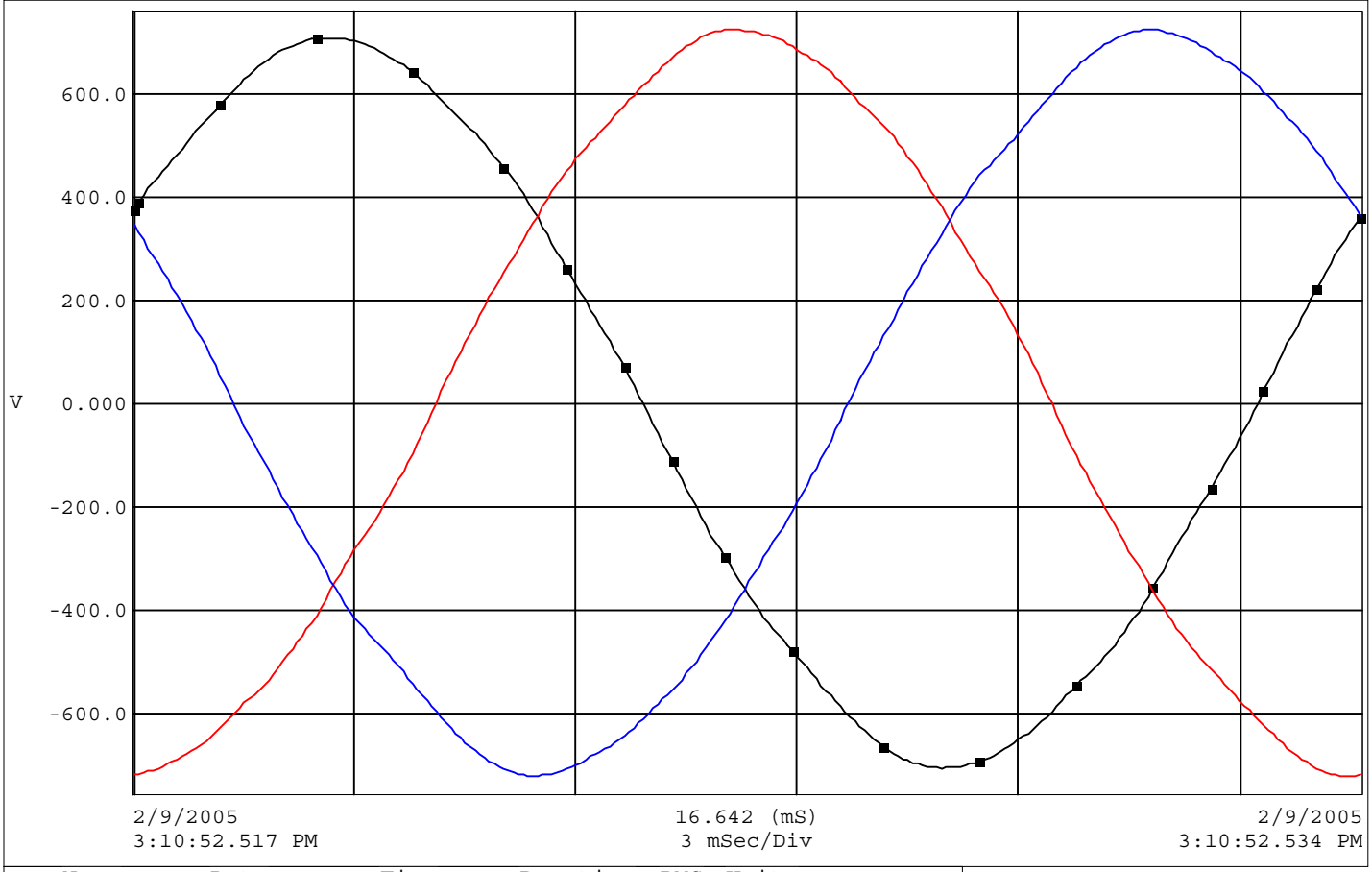
2/9/2005 - 3:10:52.000 PM

Val	
-49.70	Waveform I1
-59.70	Waveform I2
103.3	Waveform I3

Waveform I1

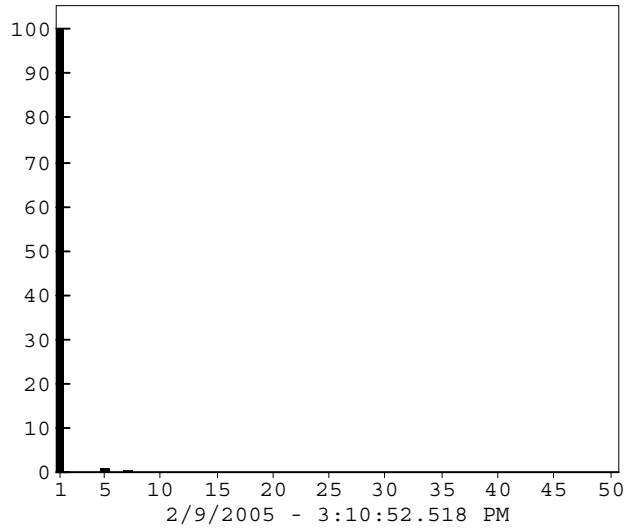
	(%)		(%)		(%)
H01	100.0	H18	0.4	H35	0.1
H02	0.2	H19	0.8	H36	0.1
H03	1.4	H20	0.1	H37	0.1
H04	0.1	H21	0.1	H38	0.0
H05	1.8	H22	0.5	H39	0.1
H06	0.1	H23	1.1	H40	0.1
H07	0.2	H24	0.3	H41	0.0
H08	0.0	H25	0.5	H42	0.1
H09	0.2	H26	0.2	H43	0.0
H10	0.1	H27	0.2	H44	0.1
H11	0.3	H28	0.2	H45	0.1
H12	0.2	H29	0.1	H46	0.1
H13	0.4	H30	0.1	H47	0.1
H14	0.1	H31	0.1	H48	0.1
H15	0.1	H32	0.1	H49	0.1
H16	0.2	H33	0.0	H50	0.1
H17	0.3	H34	0.1		

Waveform - Voltage (U)
Frequency: 60.09 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	2/9/2005	3:10:52.517 PM	16.642	496.3	V
Waveform U2	2/9/2005	3:10:52.517 PM	16.642	506.5	V
Waveform U3	2/9/2005	3:10:52.517 PM	16.642	503.3	V

Waveform U1
496.33 Vrms, 1.27 %THD



2/9/2005 - 3:10:52.000 PM

Val	
375.4	Waveform U1
-721.4	Waveform U2
345.9	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.0	H22	0.0	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.1	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 2/9/2005
Start Time: 3:10:52 PM
Duration: 0:0.000 (M:S)
W: 52.86E+3 W
VAR: 34.41E+3 W
VA: 63.16E+3 W
Power Factor: 2.511
Displacement Power Factor: 2.516
TAN: 1.948
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Ugum WTP\020905-Filtered Water Pump 2 Photo.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Filterted Water Pump 2 Run Photo ,

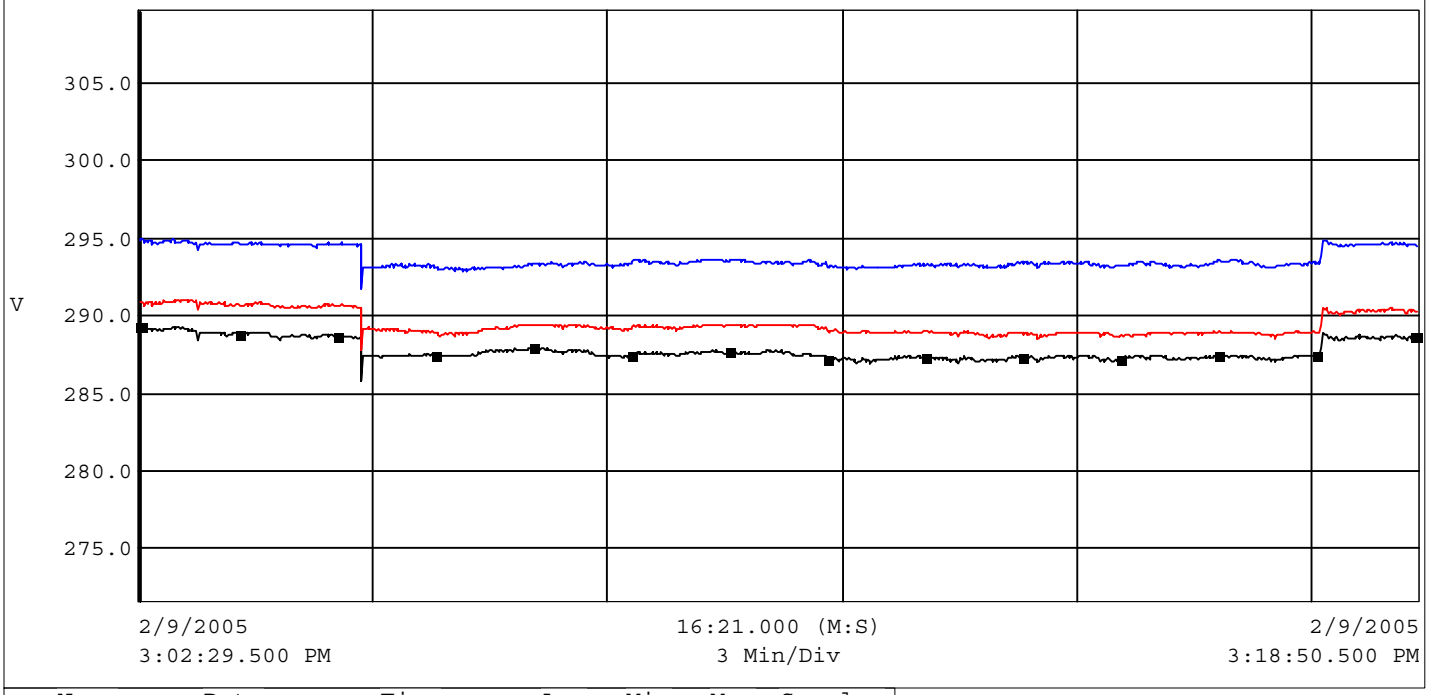
Comments

Ugum Water Plant, 50 HP, 460 Volt, Motor in Operation, recorded at motor starter overload relay Filtered Water Pump No. 1 Starter being used instead of the Pump 2 starter.

Ugum Water TP
Filtered Water Pump 2

Recording Start Date	2/9/2005 - 3:02:29 PM
Recording Duration	16:21 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

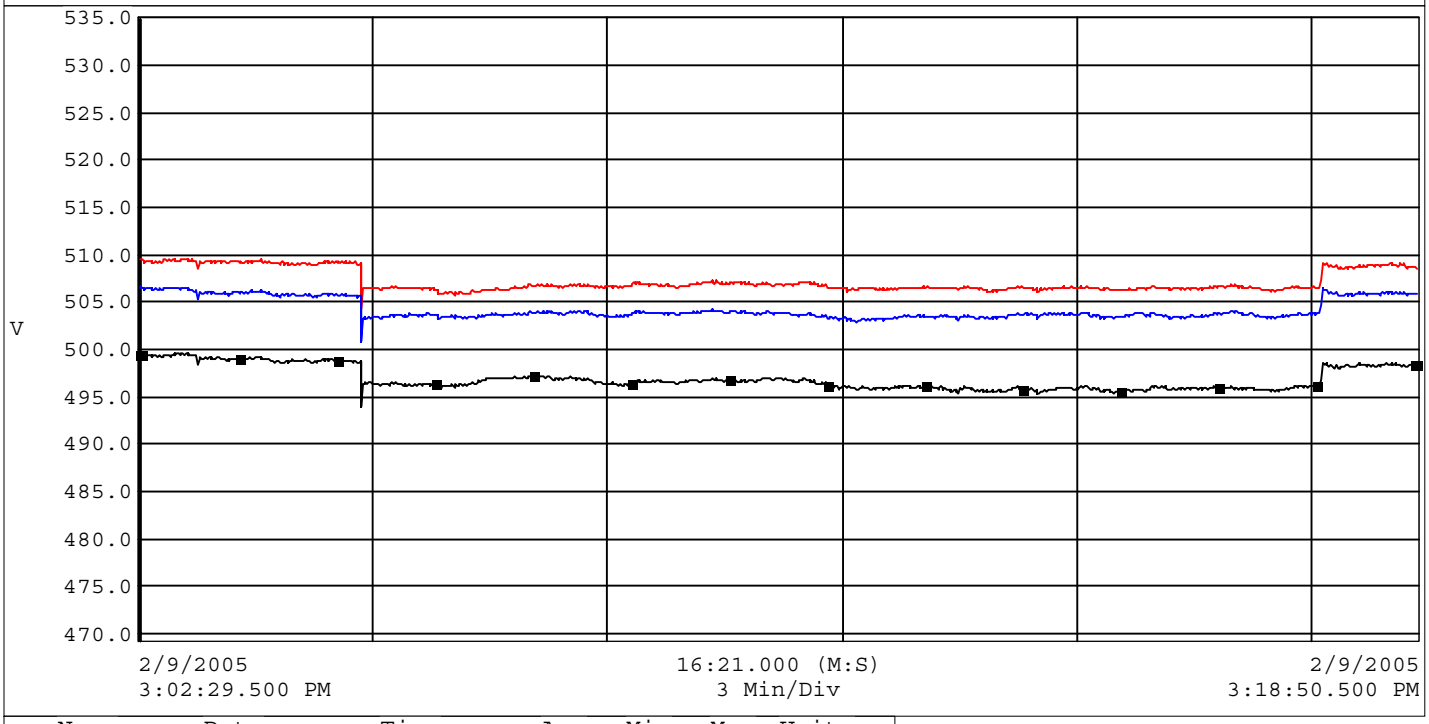
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	2/9/2005	3:02:29.500 PM	287.7	285.8	289.2	982
Vrms Line2	2/9/2005	3:02:29.500 PM	289.4	287.7	291.0	982
Vrms Line3	2/9/2005	3:02:29.500 PM	293.6	291.7	294.9	982

2/9/2005 - 3:02:29.000 PM
Val
289.2 — Vrms Line1
290.8 — Vrms Line2
294.8 — Vrms Line3

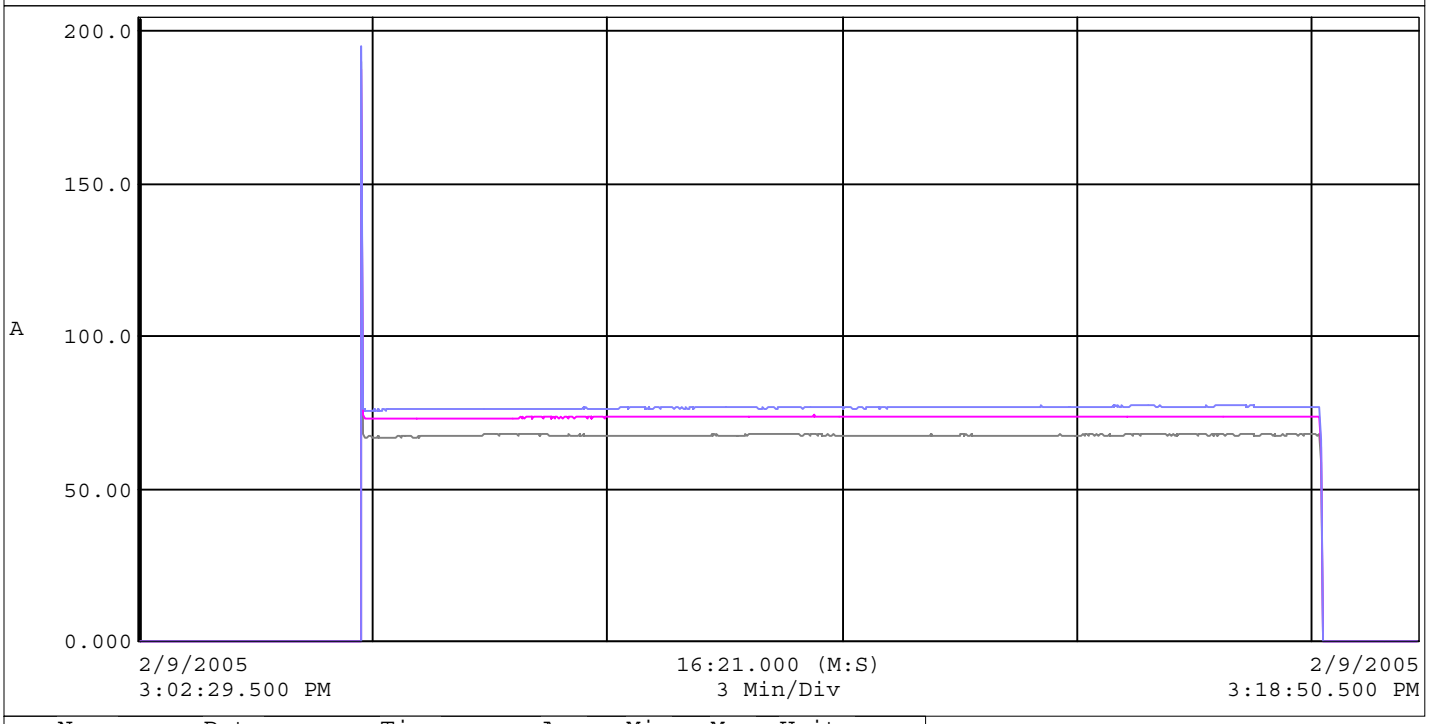
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	2/9/2005	3:02:29.500 PM	496.8	493.8	499.6	V
Urms Line2	2/9/2005	3:02:29.500 PM	507.1	504.1	509.5	V
Urms Line3	2/9/2005	3:02:29.500 PM	504.1	500.8	506.6	V

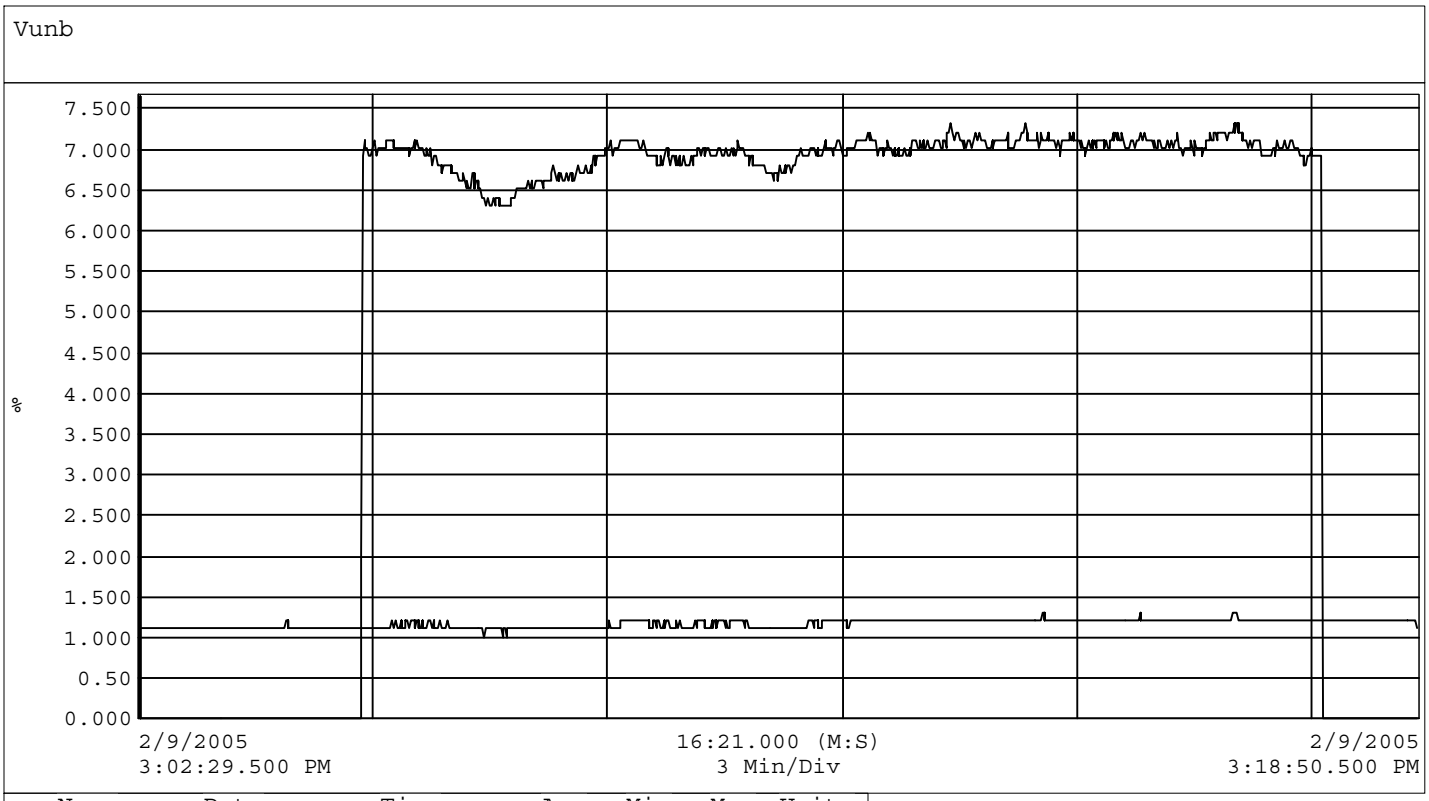
2/9/2005 - 3:02:29.000 PM
Val
499.4 — Urms Line1
509.4 — Urms Line2
506.5 — Urms Line3

Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	2/9/2005	3:02:29.500 PM	50.73	0.000	189.7	A
Arms Line2	2/9/2005	3:02:29.500 PM	55.24	0.000	187.3	A
Arms Line3	2/9/2005	3:02:29.500 PM	57.53	0.000	194.3	A

2/9/2005 - 3:02:29.000 PM
Val
0.000 Arms Line1
0.000 Arms Line2
0.000 Arms Line3

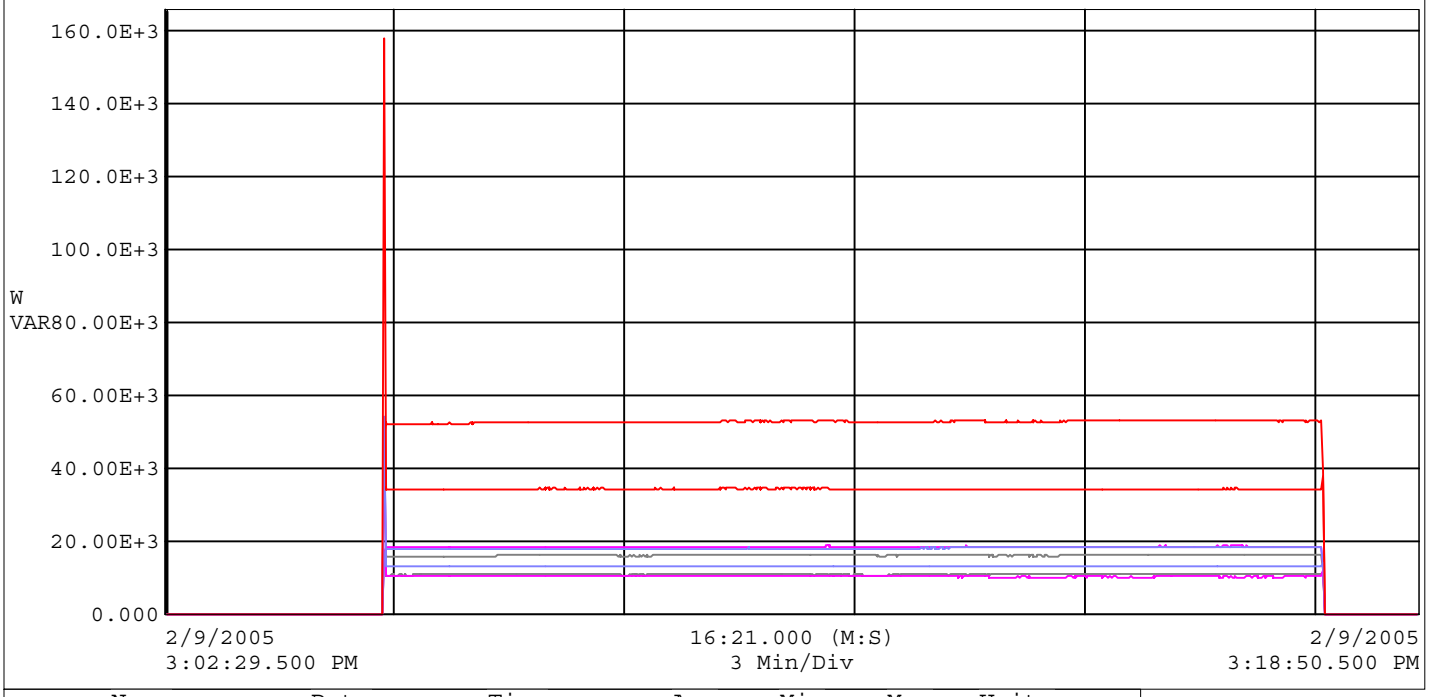


Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	2/9/2005	3:02:29.500 PM	1.156	1.000	1.300	%
Aunb(IEEE)	2/9/2005	3:02:29.500 PM	5.208	0.000	7.300	%

2/9/2005 - 3:02:29.000 PM
Val
1.100 ── Vunb(IEEE)
0.000 ── Aunb(IEEE)

Appendix 1K - Electrical

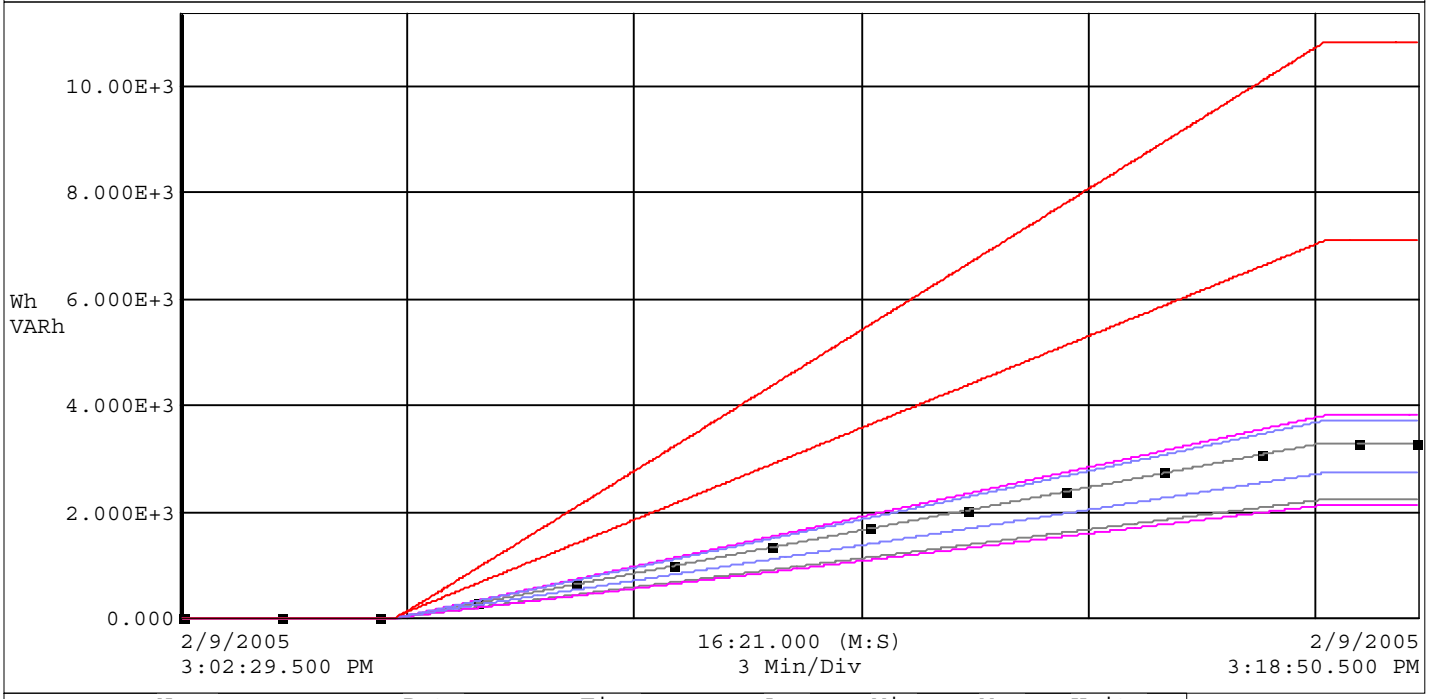
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	2/9/2005	3:02:29.500 PM	12.06E+3	0.000	16.17E+3	W
W Line2	2/9/2005	3:02:29.500 PM	13.92E+3	0.000	18.67E+3	W
W Line3	2/9/2005	3:02:29.500 PM	13.58E+3	0.000	18.28E+3	W
W Sum of Phases	2/9/2005	3:02:29.500 PM	39.56E+3	0.000	53.04E+3	W
VAR Line1	2/9/2005	3:02:29.500 PM	8.165E+3	0.000	52.05E+3	VAR
VAR Line2	2/9/2005	3:02:29.500 PM	7.780E+3	0.000	51.20E+3	VAR
VAR Line3	2/9/2005	3:02:29.500 PM	9.987E+3	0.000	54.26E+3	VAR
VAR Sum of Phases	2/9/2005	3:02:29.500 PM	25.93E+3	0.000	157.5E+3	VAR

2/9/2005 - 3:02:29.000 PM
Val
0.000 — W Line1
0.000 — W Line2
0.000 — W Line3
0.000 — W Sum of Phases
0.000 — VAR Line1
0.000 — VAR Line2
0.000 — VAR Line3
0.000 — VAR Sum of Phases

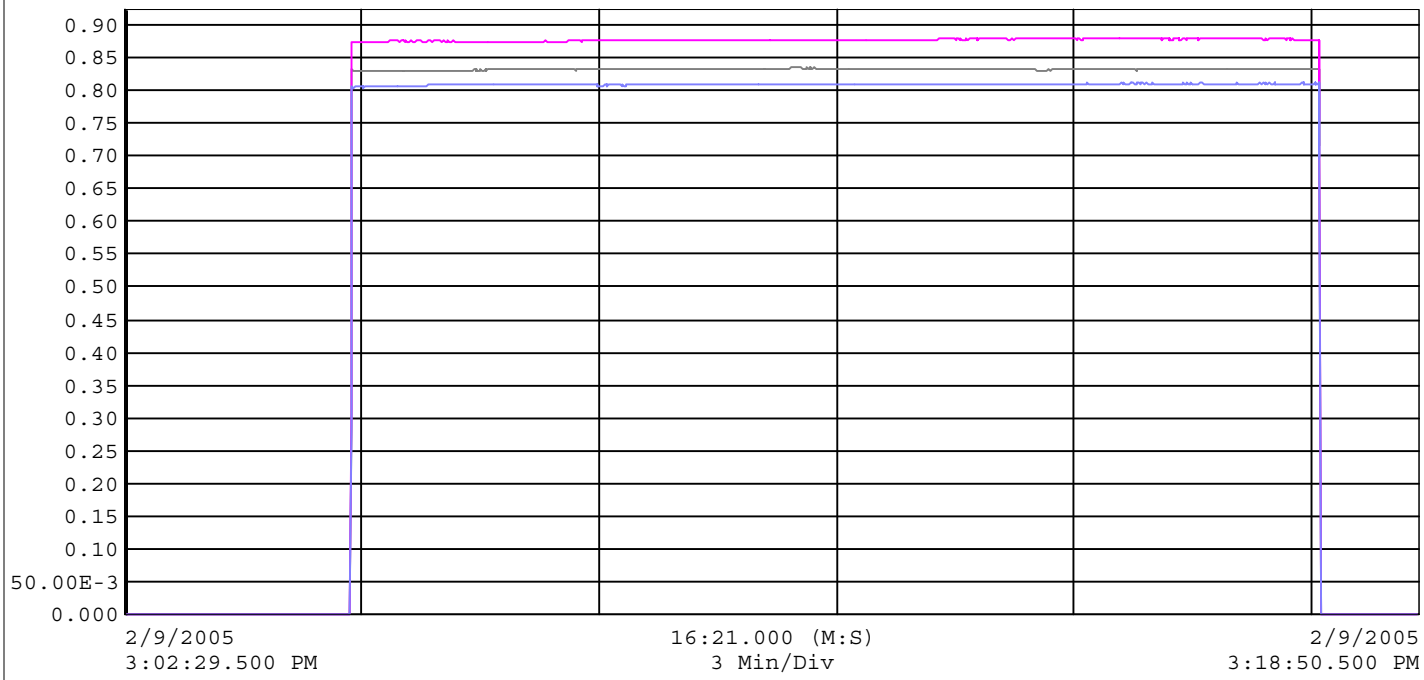
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	2/9/2005	3:02:29.500 PM	1.481E+3	0.000	3.290E+3	Wh
W-hours Line2	2/9/2005	3:02:29.500 PM	1.709E+3	0.000	3.798E+3	Wh
W-hours Line3	2/9/2005	3:02:29.500 PM	1.665E+3	0.000	3.705E+3	Wh
W-hours Sum of Phases	2/9/2005	3:02:29.500 PM	4.855E+3	0.000	10.79E+3	Wh
VAR-hours Line1	2/9/2005	3:02:29.500 PM	1.008E+3	0.000	2.227E+3	VARh
VAR-hours Line2	2/9/2005	3:02:29.500 PM	962.0	0.000	2.122E+3	VARh
VAR-hours Line3	2/9/2005	3:02:29.500 PM	1.230E+3	0.000	2.724E+3	VARh
VAR-hours Sum of Phases	2/9/2005	3:02:29.500 PM	3.200E+3	0.000	7.074E+3	VARh

2/9/2005 - 3:02:29.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.000 — VAR-hours Line1
0.000 — VAR-hours Line2
0.000 — VAR-hours Line3
0.000 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	2/9/2005	3:02:29.500 PM	0.623	0.000	0.832	
PF Line2	2/9/2005	3:02:29.500 PM	0.656	0.000	0.877	
PF Line3	2/9/2005	3:02:29.500 PM	0.606	0.000	0.809	

2/9/2005 - 3:02:29.000 PM
Val
0.000 PF Line1
0.000 PF Line2
0.000 PF Line3

Trend Summary Report

Database: X:\Ugum WTP\020905-Filtered Water Pump 2.dvb

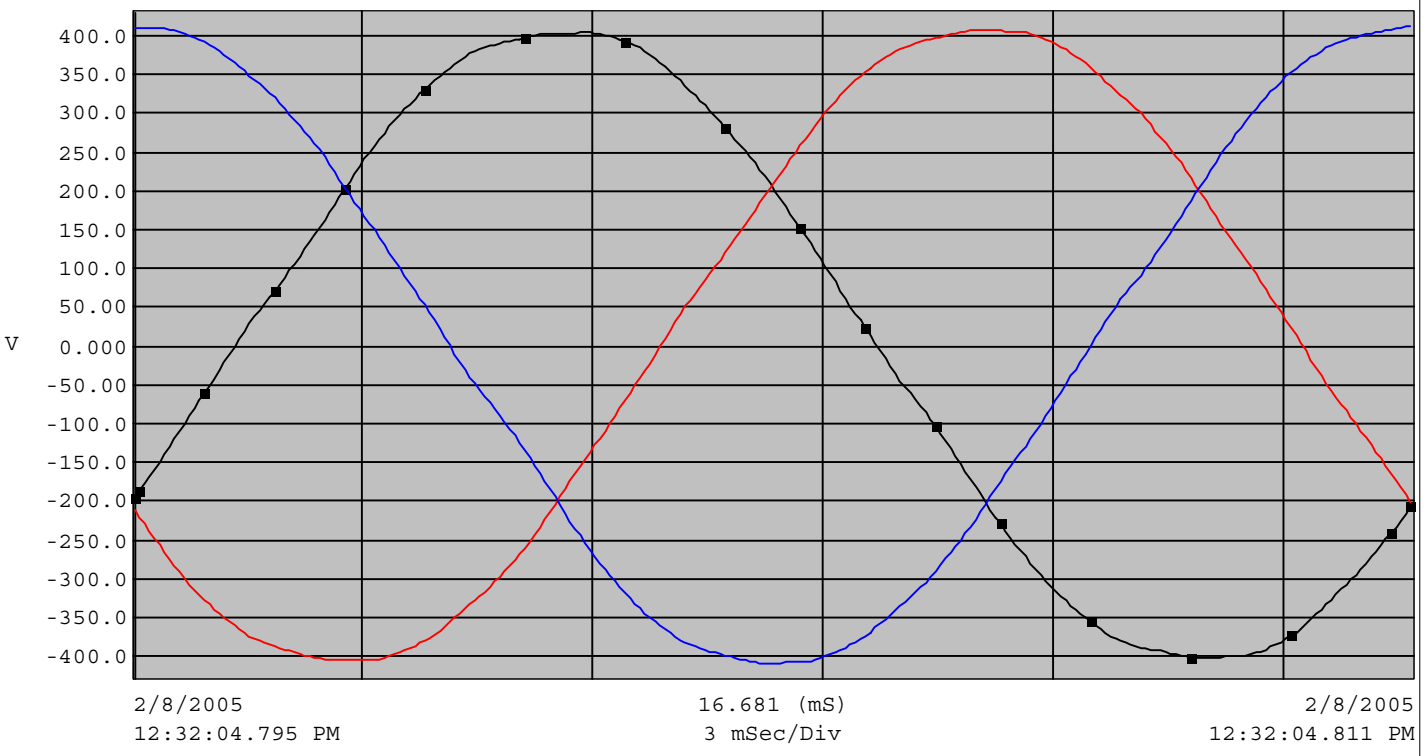
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Filtered Water Pump No. 2 ,

Comments
Ugum WTP, recorded at Motor starter overload center, 50 HP Motor, 460 Volt

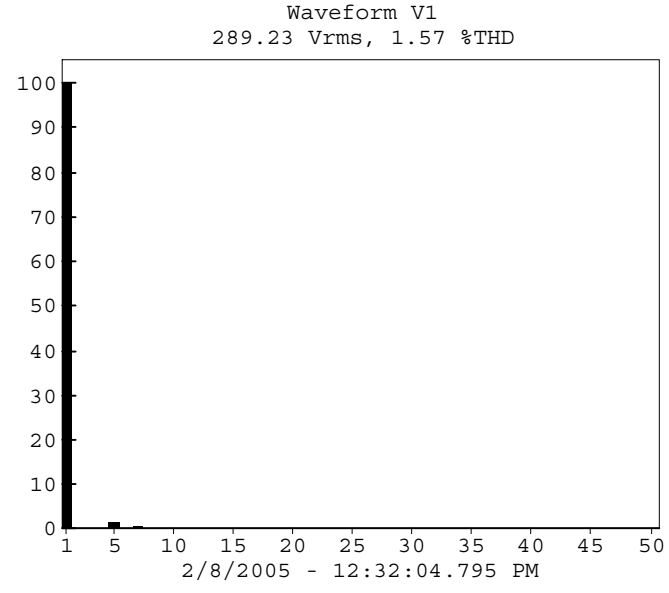
020805 - Ugum Main Photo 1

Recording Start Date	2/8/2005 - 12:32:04 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	2/8/2005	12:32:04.795 PM	16.681	289.2	V
Waveform V2	2/8/2005	12:32:04.795 PM	16.681	291.1	V
Waveform V3	2/8/2005	12:32:04.795 PM	16.681	293.5	V

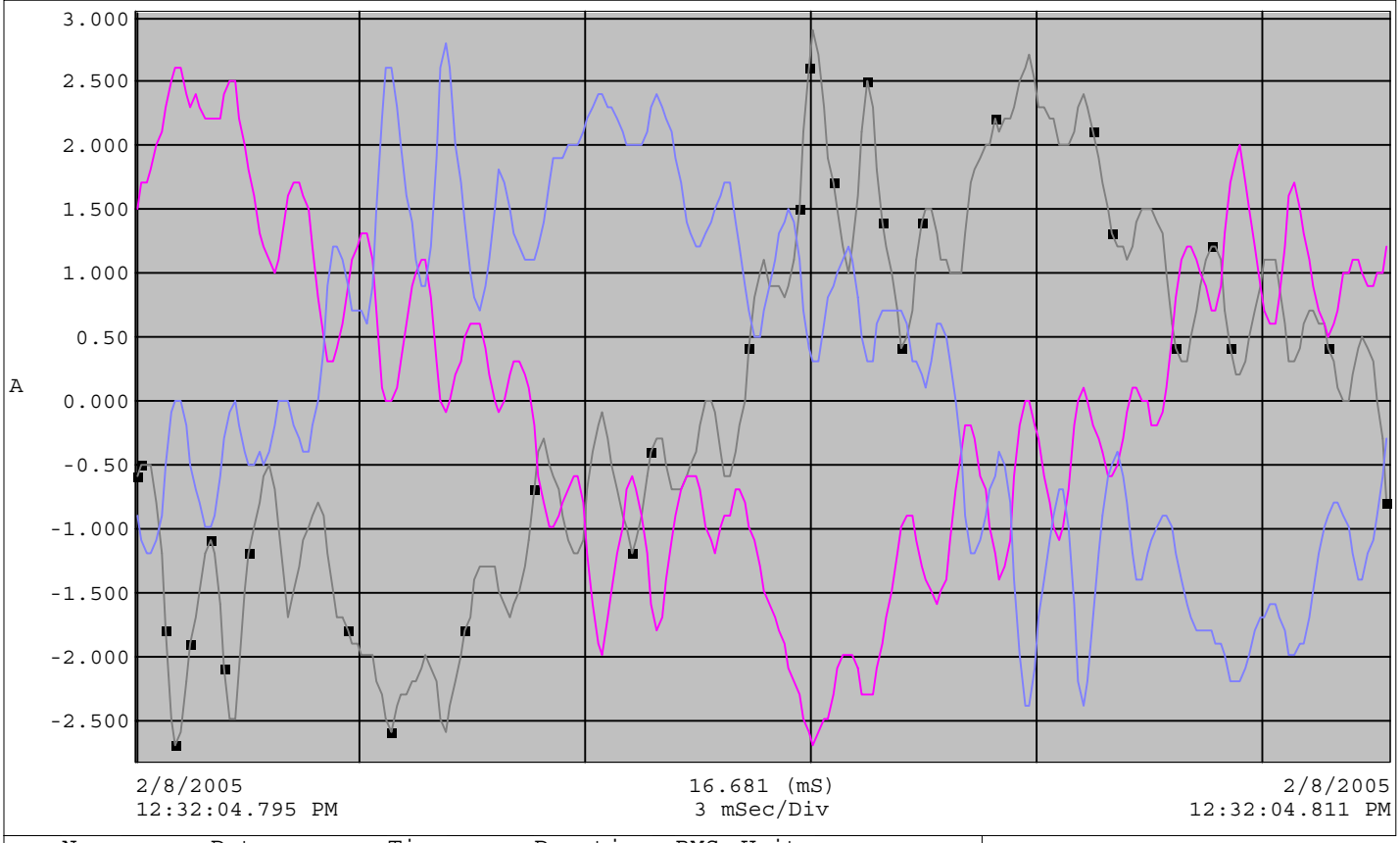


2/8/2005 - 12:32:04.016 PM
Val
X.XX — Waveform V1
X.XX — Waveform V2
X.XX — Waveform V3

Waveform V1

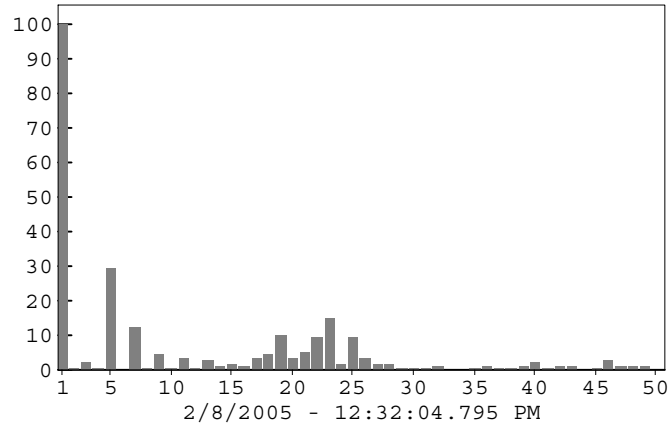
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.7	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Waveform - Current
Frequency: 59.95 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	2/8/2005	12:32:04.795 PM	16.681	1.450	A
Waveform I2	2/8/2005	12:32:04.795 PM	16.681	1.297	A
Waveform I3	2/8/2005	12:32:04.795 PM	16.681	1.372	A

Waveform I1
1.45 Arms, 42.13 %THD

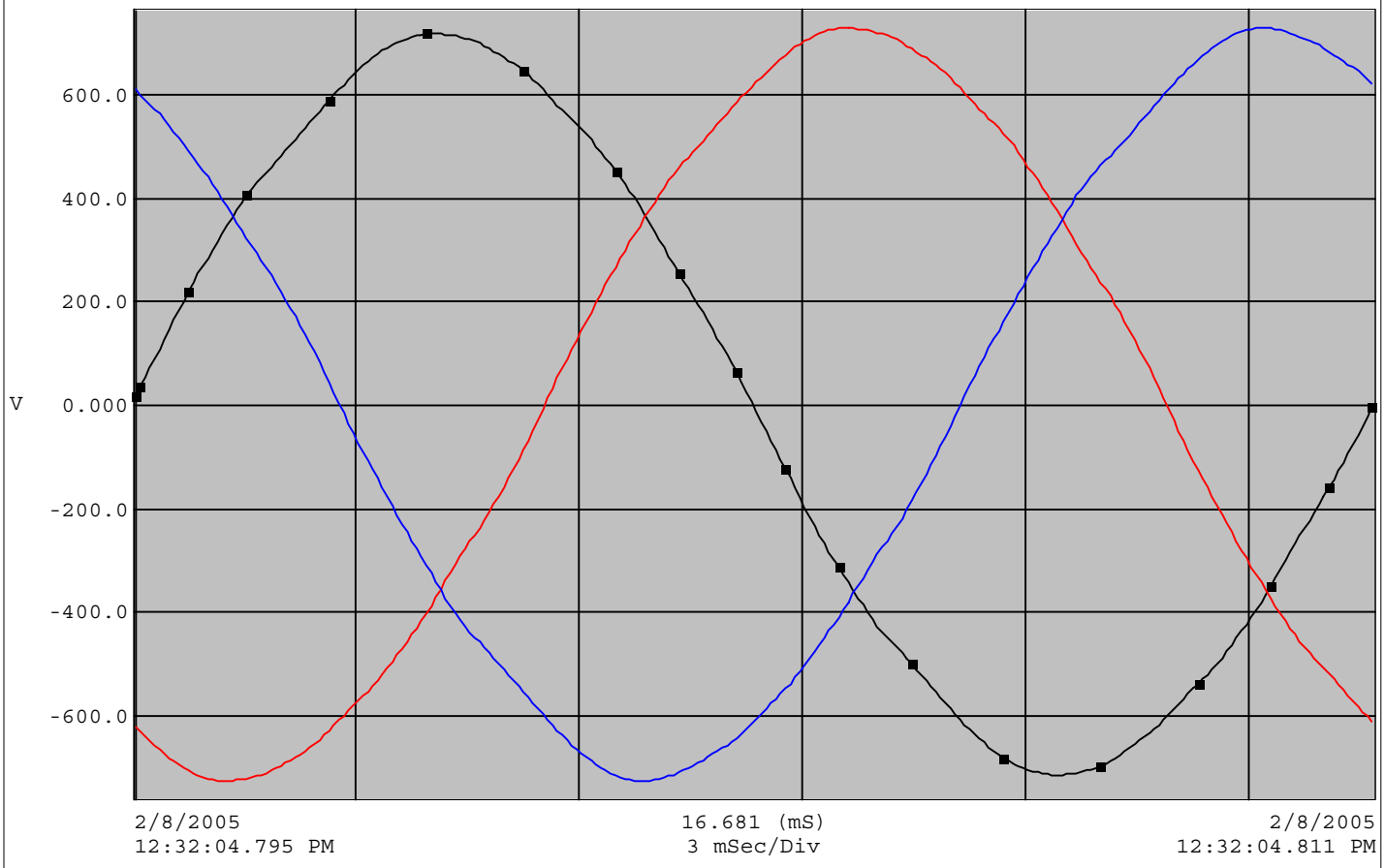


2/8/2005 - 12:32:04.016 PM
Val
X.XX — Waveform I1
X.XX — Waveform I2
X.XX — Waveform I3

Waveform I1

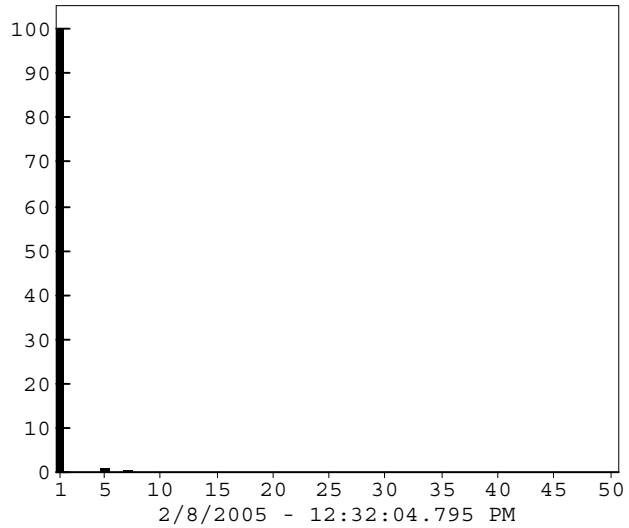
	(%)		(%)		(%)
H01	100.0	H18	5.0	H35	0.6
H02	1.0	H19	10.5	H36	1.1
H03	2.5	H20	3.4	H37	0.8
H04	0.8	H21	5.1	H38	0.7
H05	29.8	H22	9.8	H39	1.3
H06	0.3	H23	15.3	H40	2.4
H07	12.3	H24	2.0	H41	1.0
H08	0.6	H25	9.6	H42	1.4
H09	4.6	H26	3.8	H43	1.4
H10	0.9	H27	1.8	H44	0.4
H11	3.8	H28	1.8	H45	1.0
H12	0.6	H29	0.7	H46	3.3
H13	3.2	H30	1.0	H47	1.5
H14	1.4	H31	0.9	H48	1.6
H15	1.9	H32	1.3	H49	1.3
H16	1.4	H33	0.4	H50	0.6
H17	3.7	H34	0.5		

Waveform - Voltage (U)
Frequency: 59.95 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	2/8/2005	12:32:04.795 PM	16.681	500.6	V
Waveform U2	2/8/2005	12:32:04.795 PM	16.681	508.2	V
Waveform U3	2/8/2005	12:32:04.795 PM	16.681	504.9	V

Waveform U1
500.62 Vrms, 1.45 %THD



2/8/2005 - 12:32:04.016 PM
Val
X.XX — Waveform U1
X.XX — Waveform U2
X.XX — Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.1	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.1	H39	0.0
H06	0.0	H23	0.1	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.1	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.1	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 2/8/2005
Start Time: 12:32:04 PM
Duration: 0:0.000 (M:S)
W: -265.6 W
VAR: 340.4 W
VA: 431.7 W
Power Factor: -0.615
Displacement Power Factor: -0.661
TAN: -1.136
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Ugum WTP\020805-Ugum Main Photo 1.dvb

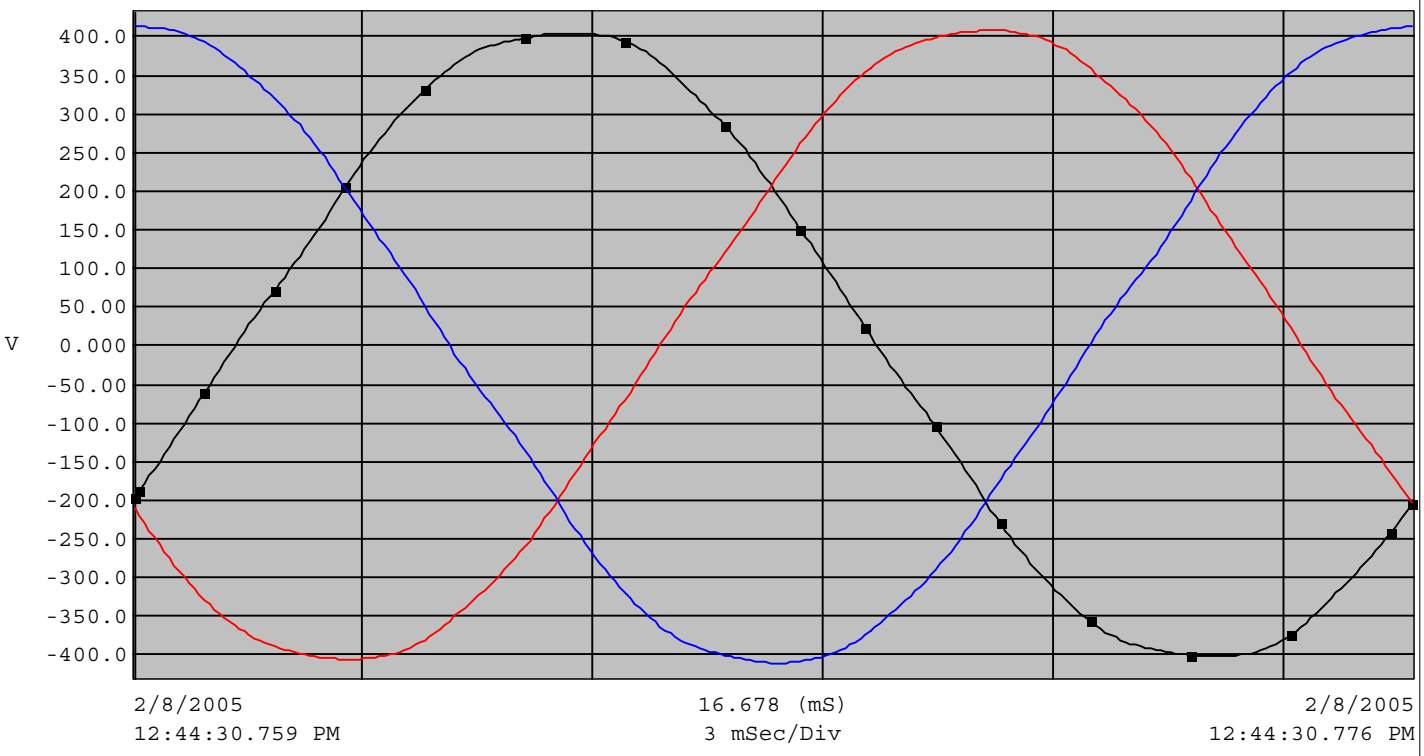
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Ugum WTP Main ATS ,

Comments
Recorded at ATS Normal Main, 1000A, 3 Phase, 480 volts

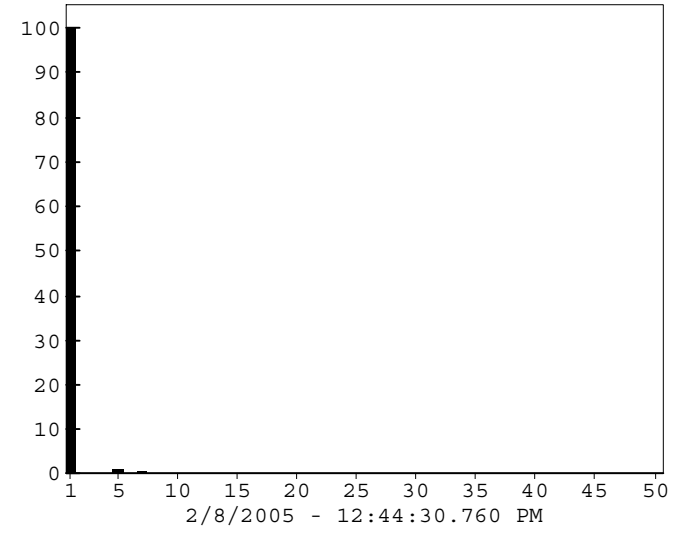
020805 - Ugum Main Photo 2

Recording Start Date	2/8/2005 - 12:44:30 PM
Recording Duration	0 (s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

Waveform - Voltage (V)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform V1	2/8/2005	12:44:30.759 PM	16.678	290.0	V
Waveform V2	2/8/2005	12:44:30.759 PM	16.678	291.6	V
Waveform V3	2/8/2005	12:44:30.759 PM	16.678	294.7	V



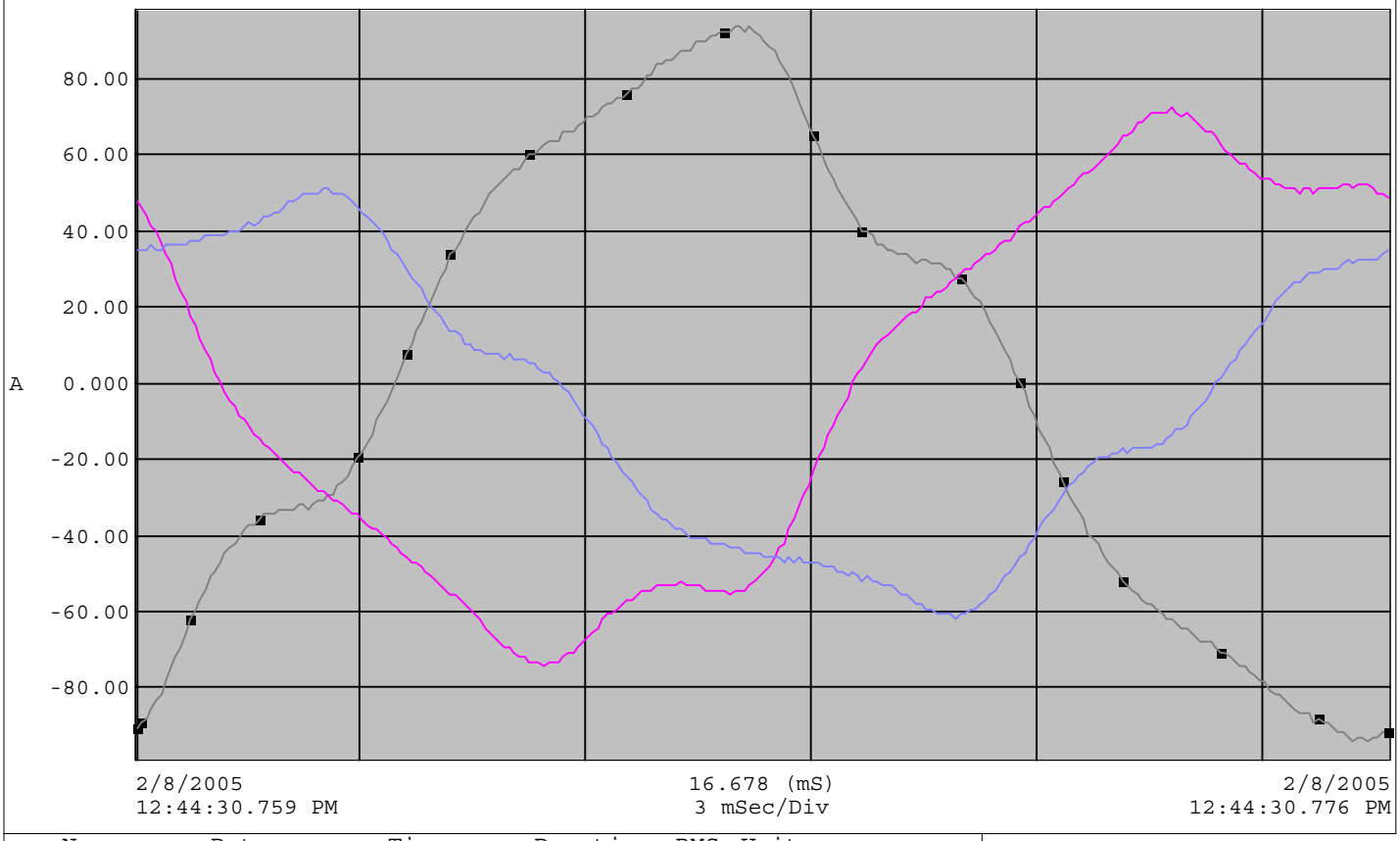
2/8/2005 - 12:44:30.000 PM

Val	
-199.2	Waveform V1
-212.7	Waveform V2
411.7	Waveform V3

Waveform V1

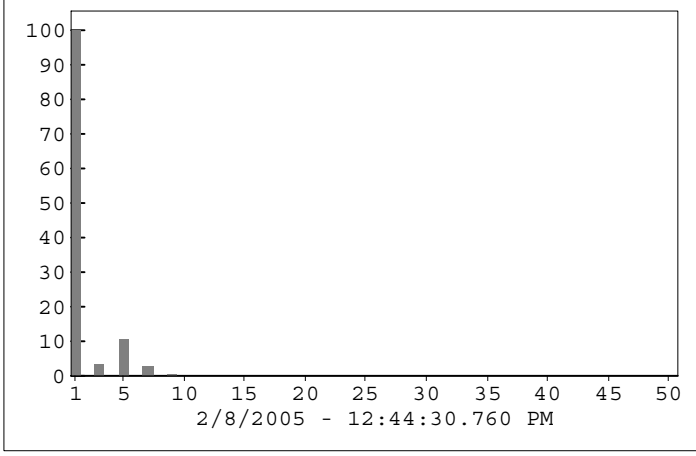
	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.2	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.3	H22	0.0	H39	0.0
H06	0.0	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.0	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.0	H27	0.0	H44	0.0
H11	0.2	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Waveform - Current
Frequency: 59.96 Hz
CurrentRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform I1	2/8/2005	12:44:30.759 PM	16.678	60.66	A
Waveform I2	2/8/2005	12:44:30.759 PM	16.678	48.31	A
Waveform I3	2/8/2005	12:44:30.759 PM	16.678	36.53	A

Waveform I1
60.66 Arms, 11.76 %THD



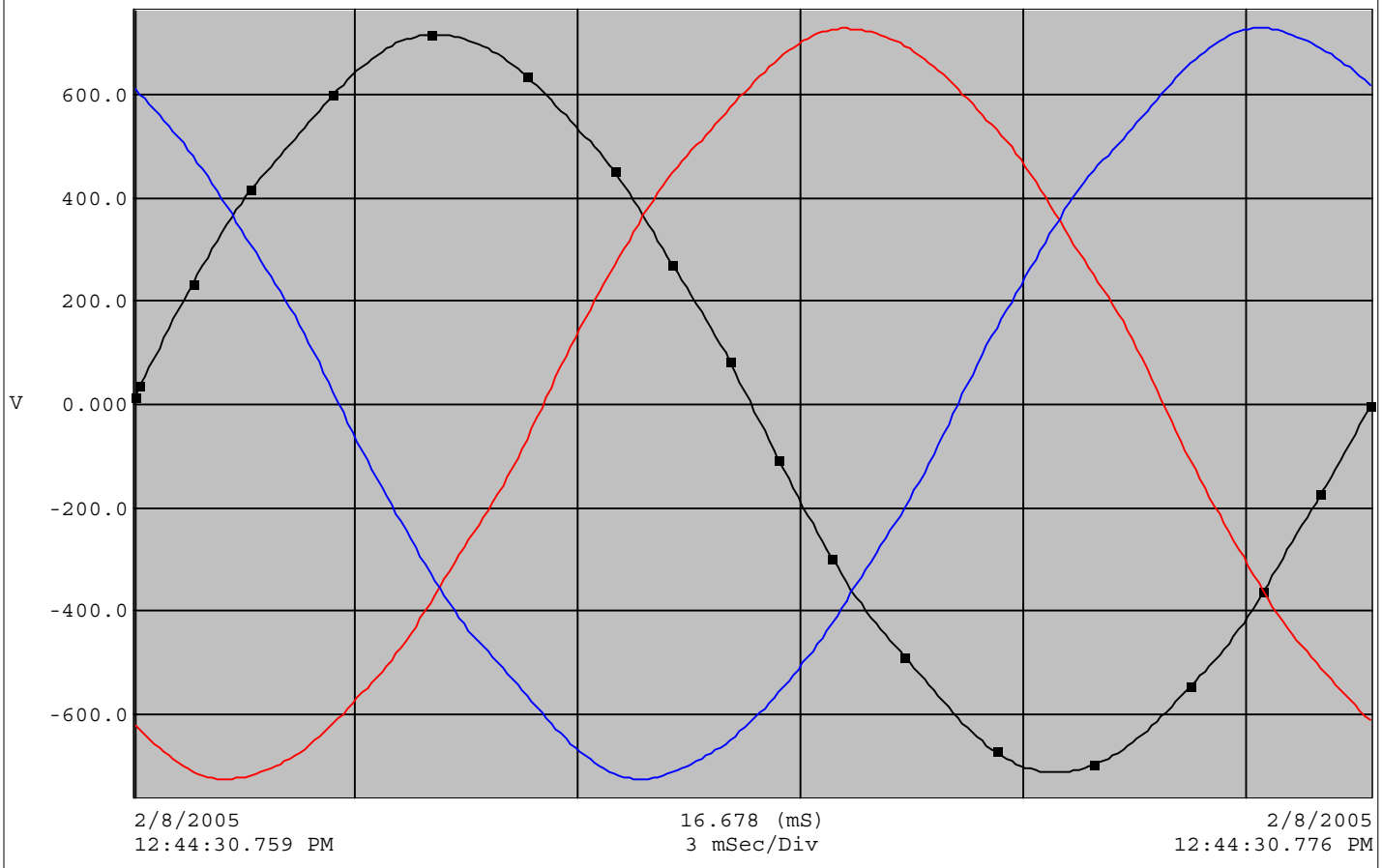
2/8/2005 - 12:44:30.000 PM

Val	
-90.80	Waveform I1
47.30	Waveform I2
34.80	Waveform I3

Waveform I1

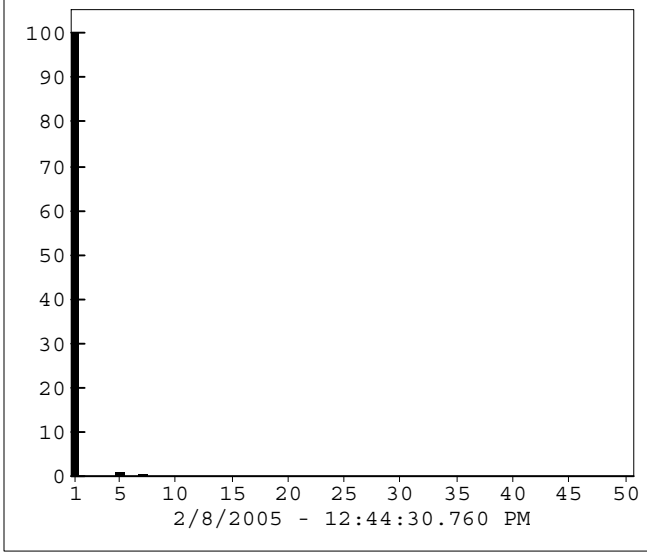
	(%)		(%)		(%)
H01	100.0	H18	0.1	H35	0.1
H02	0.2	H19	0.1	H36	0.1
H03	3.7	H20	0.0	H37	0.0
H04	0.2	H21	0.1	H38	0.1
H05	10.7	H22	0.1	H39	0.0
H06	0.1	H23	0.1	H40	0.0
H07	3.1	H24	0.1	H41	0.1
H08	0.1	H25	0.0	H42	0.0
H09	0.8	H26	0.1	H43	0.0
H10	0.0	H27	0.0	H44	0.1
H11	0.5	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.1
H13	0.4	H30	0.1	H47	0.0
H14	0.0	H31	0.1	H48	0.0
H15	0.1	H32	0.1	H49	0.0
H16	0.1	H33	0.1	H50	0.1
H17	0.1	H34	0.0		

Waveform - Voltage (U)
Frequency: 59.96 Hz
VoltageRatio: 1.000



Name	Date	Time	Duration	RMS	Units
Waveform U1	2/8/2005	12:44:30.759 PM	16.678	501.4	V
Waveform U2	2/8/2005	12:44:30.759 PM	16.678	509.7	V
Waveform U3	2/8/2005	12:44:30.759 PM	16.678	506.8	V

Waveform U1
501.38 Vrms, 1.40 %THD



2/8/2005 - 12:44:30.000 PM

	Val	
—	13.50	Waveform U1
—	-624.5	Waveform U2
—	611.0	Waveform U3

Waveform U1

	(%)		(%)		(%)
H01	100.0	H18	0.0	H35	0.0
H02	0.0	H19	0.0	H36	0.0
H03	0.1	H20	0.0	H37	0.0
H04	0.0	H21	0.0	H38	0.0
H05	1.2	H22	0.0	H39	0.0
H06	0.1	H23	0.0	H40	0.0
H07	0.6	H24	0.0	H41	0.0
H08	0.1	H25	0.0	H42	0.0
H09	0.3	H26	0.0	H43	0.0
H10	0.1	H27	0.0	H44	0.0
H11	0.3	H28	0.0	H45	0.0
H12	0.0	H29	0.0	H46	0.0
H13	0.2	H30	0.0	H47	0.0
H14	0.0	H31	0.0	H48	0.0
H15	0.0	H32	0.0	H49	0.0
H16	0.0	H33	0.0	H50	0.0
H17	0.0	H34	0.0		

Photo:

Name
Power Line1
Power Line2
Power Line3
Power Sum of Phases

```
Start Date: 2/8/2005
Start Time: 12:44:30 PM
Duration: 0:0.000 (M:S)
W: 13.34E+3 W
VAR: 11.54E+3 W
VA: 17.64E+3 W
Power Factor: 0.756
Displacement Power Factor: 0.762
TAN: 0.849
VoltageRatio: 1.000
CurrentRatio: 1.000
```

Photo Report

Database: X:\Ugum WTP\020805-Ugum Main Photo 2.dvb

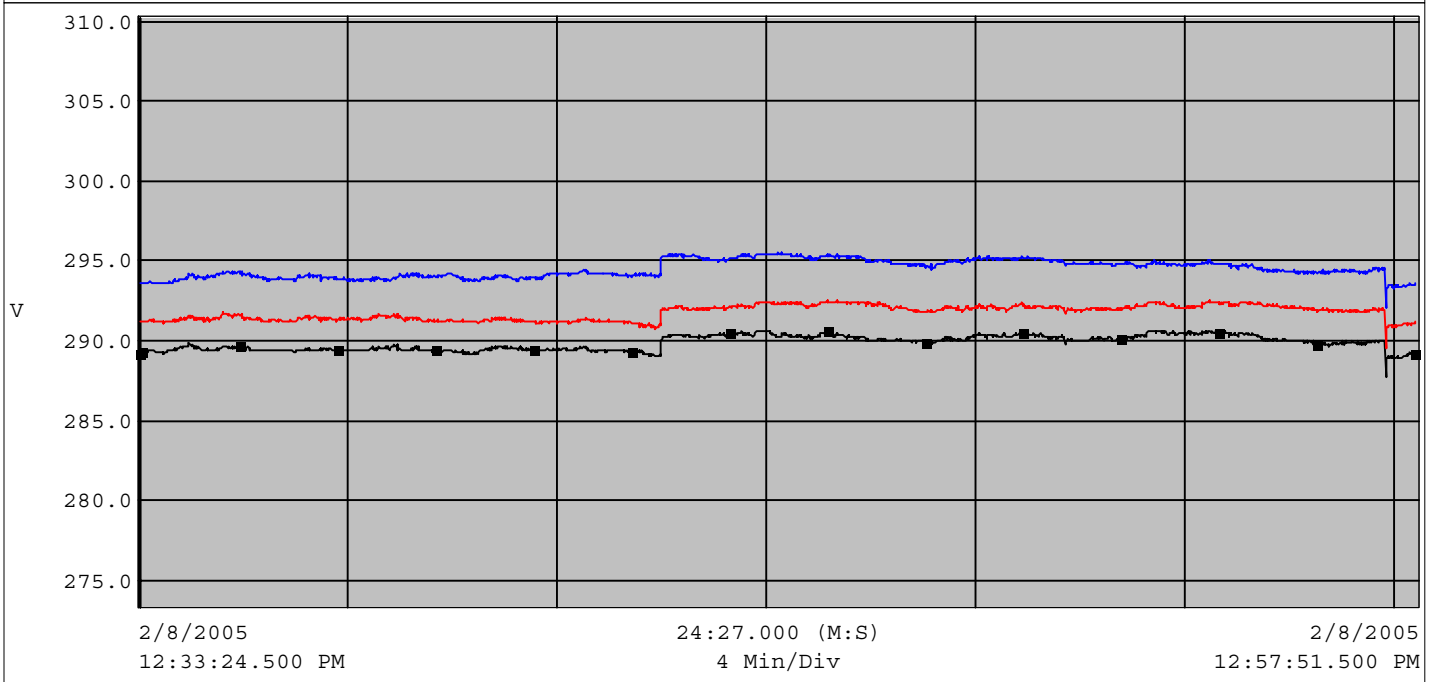
Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Ugum WTP Main ATS ,

Comments
Recorded at ATS Normal Main, 1000A, 480 volts, 3 phase

020805 - Ugum Main

Recording Start Date	2/8/2005 - 12:33:24 PM
Recording Duration	24:27 (m:s)
Instrument ID	Model: 3945 - 1 1:200382 2.4

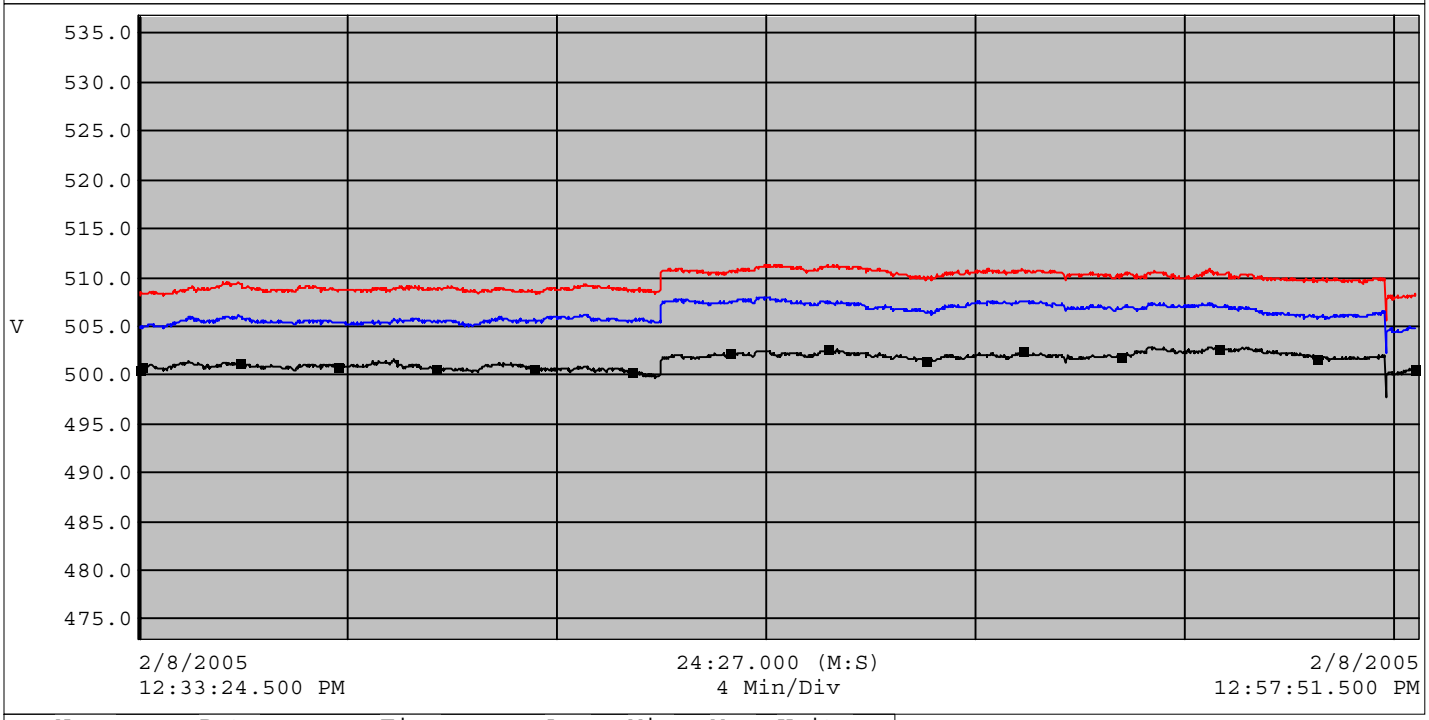
Vrms



Name	Date	Time	Avg	Min	Max	Samples
Vrms Line1	2/8/2005	12:33:24.500 PM	289.8	287.6	290.6	1468
Vrms Line2	2/8/2005	12:33:24.500 PM	291.7	289.5	292.5	1468
Vrms Line3	2/8/2005	12:33:24.500 PM	294.4	292.0	295.5	1468

2/8/2005 - 12:33:24.000 PM
Val
289.1 — Vrms Line1
291.1 — Vrms Line2
293.5 — Vrms Line3

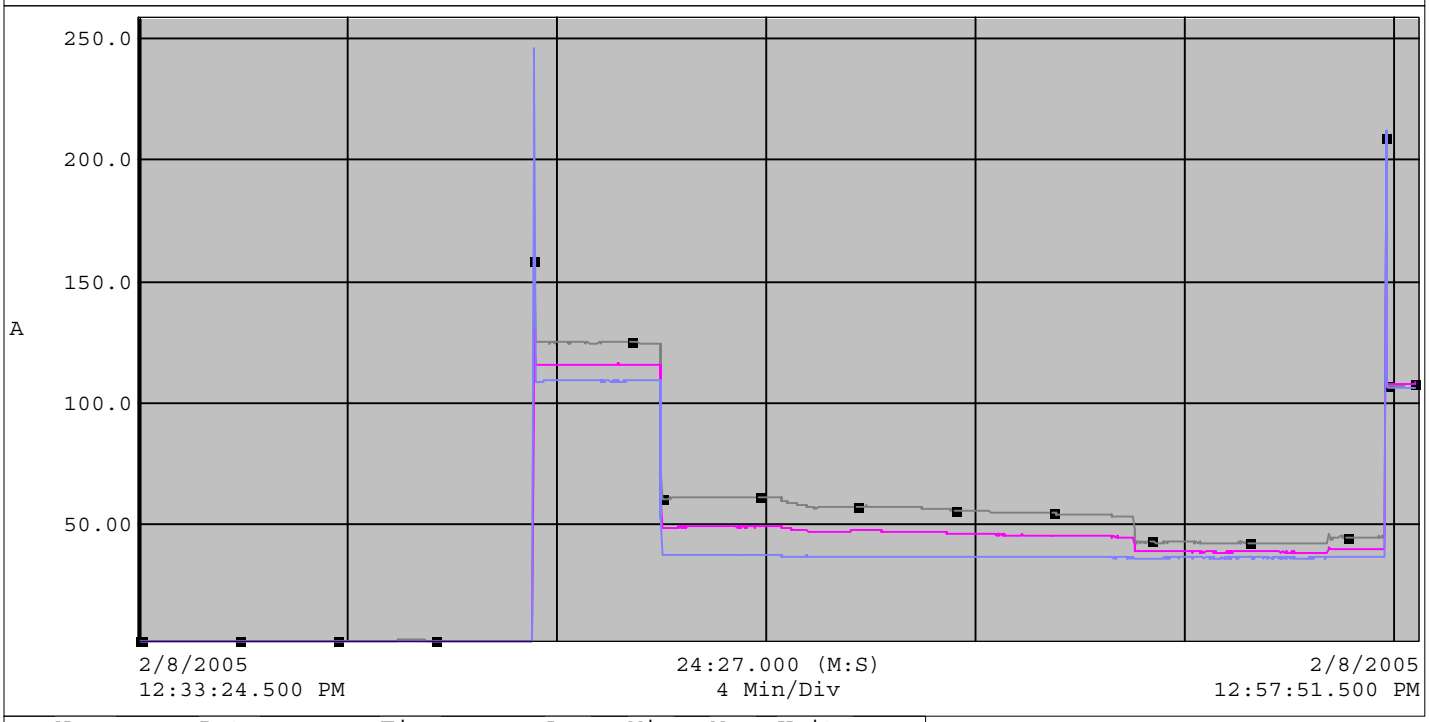
Urms
VoltageRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Urms Line1	2/8/2005	12:33:24.500 PM	501.4	497.7	502.8	V
Urms Line2	2/8/2005	12:33:24.500 PM	509.6	505.4	511.2	V
Urms Line3	2/8/2005	12:33:24.500 PM	506.2	502.1	507.9	V

2/8/2005 - 12:33:24.000 PM
Val
500.4 — Urms Line1
508.1 — Urms Line2
504.7 — Urms Line3

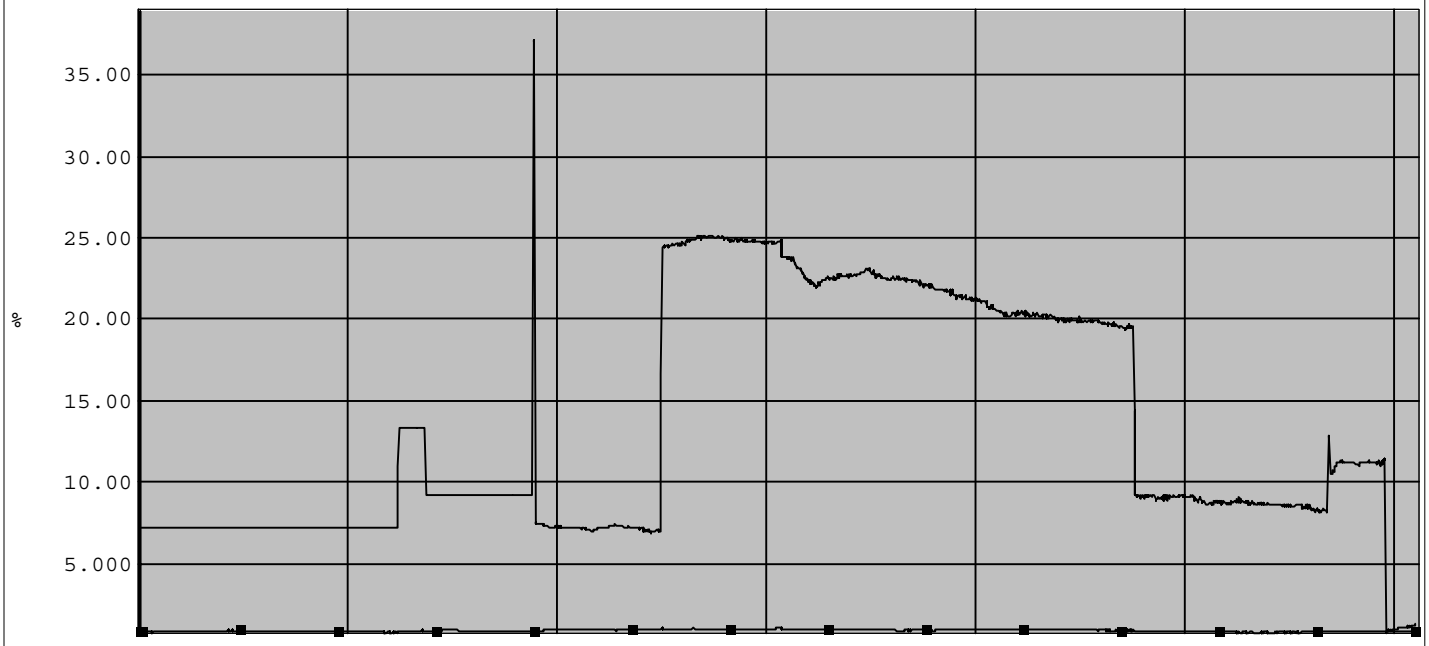
Arms
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
Arms Line1	2/8/2005	12:33:24.500 PM	45.00	1.500	209.0	A
Arms Line2	2/8/2005	12:33:24.500 PM	39.42	1.300	209.7	A
Arms Line3	2/8/2005	12:33:24.500 PM	34.52	1.400	246.2	A

2/8/2005 - 12:33:24.000 PM
Val
1.500 — Arms Line1
1.300 — Arms Line2
1.400 — Arms Line3

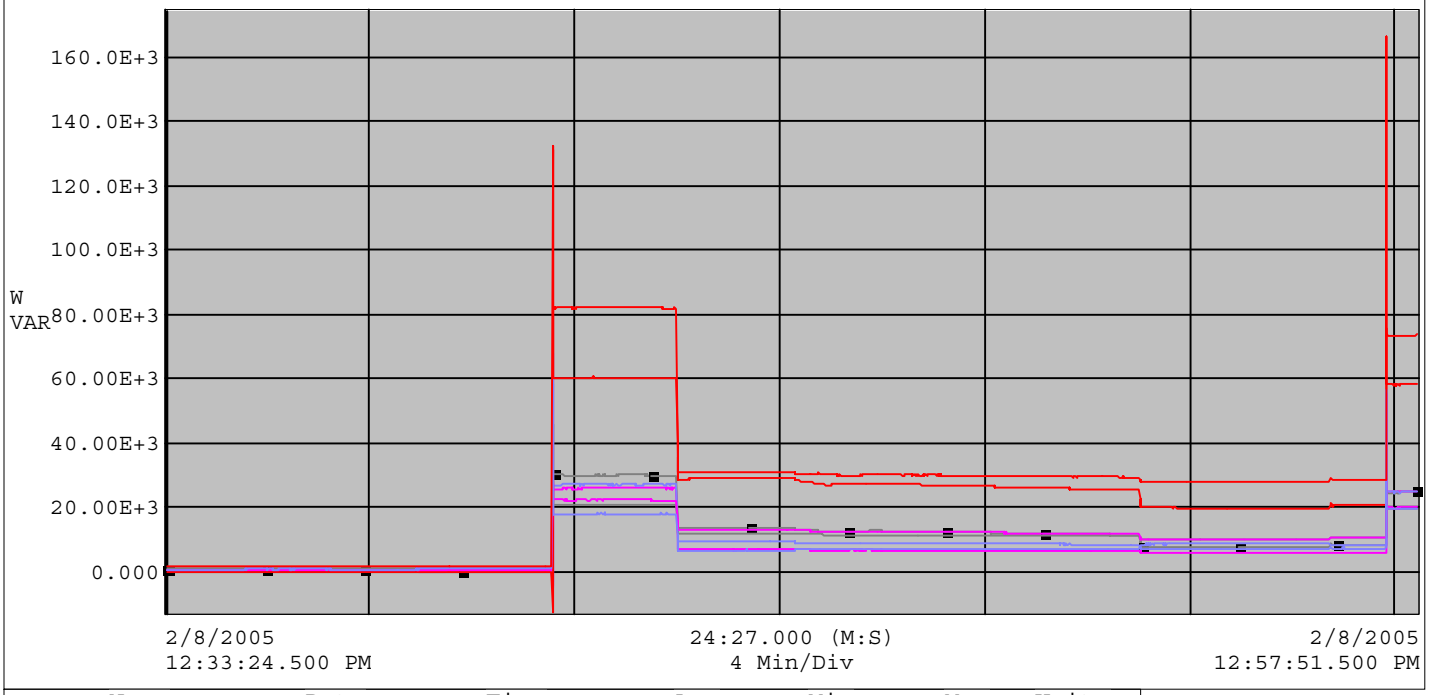
Vunb



Name	Date	Time	Avg	Min	Max	Units
Vunb(IEEE)	2/8/2005	12:33:24.500 PM	0.843	0.700	1.000	%
Aunb(IEEE)	2/8/2005	12:33:24.500 PM	13.30	0.700	37.10	%

2/8/2005 - 12:33:24.000 PM
Val
0.800 ── Vunb(IEEE)
7.100 ── Aunb(IEEE)

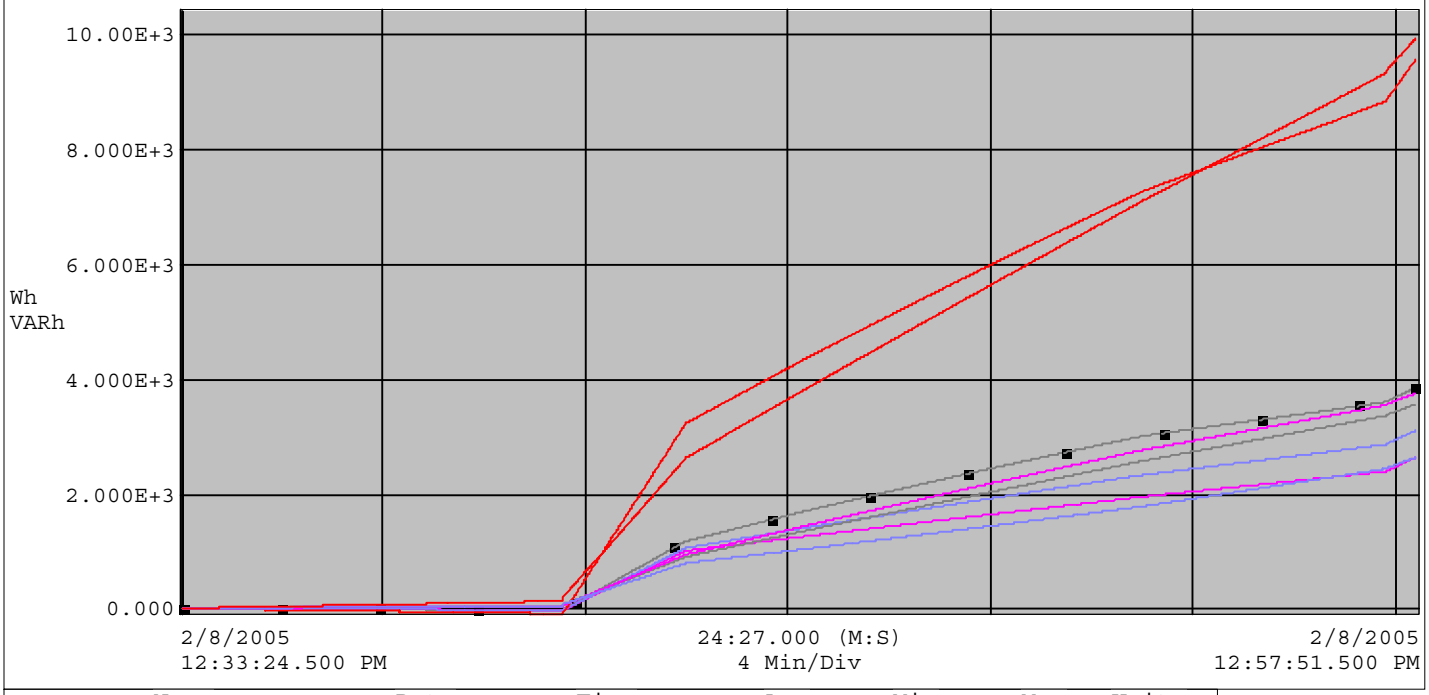
Power
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W Line1	2/8/2005	12:33:24.500 PM	9.410E+3	-4.464E+3	29.74E+3	W
W Line2	2/8/2005	12:33:24.500 PM	6.444E+3	-5.255E+3	25.61E+3	W
W Line3	2/8/2005	12:33:24.500 PM	7.592E+3	-3.347E+3	26.76E+3	W
W Sum of Phases	2/8/2005	12:33:24.500 PM	23.45E+3	-13.07E+3	82.01E+3	W
VAR Line1	2/8/2005	12:33:24.500 PM	8.715E+3	339.0	54.65E+3	VAR
VAR Line2	2/8/2005	12:33:24.500 PM	9.179E+3	299.9	55.19E+3	VAR
VAR Line3	2/8/2005	12:33:24.500 PM	6.446E+3	326.4	67.36E+3	VAR
VAR Sum of Phases	2/8/2005	12:33:24.500 PM	24.34E+3	966.2	166.3E+3	VAR

2/8/2005 - 12:33:24.000 PM
Val
-263.3 — W Line1
-247.0 — W Line2
-252.2 — W Line3
-763.9 — W Sum of Phases
340.6 — VAR Line1
301.6 — VAR Line2
326.4 — VAR Line3
971.3 — VAR Sum of Phases

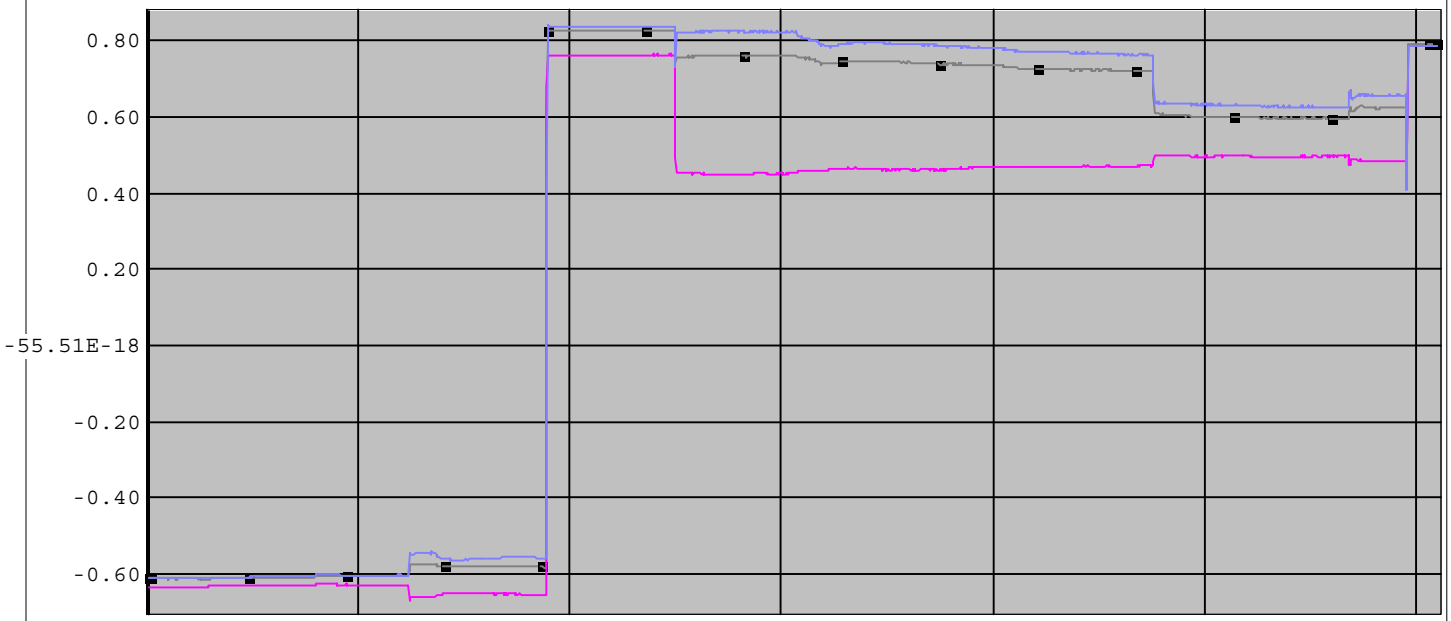
W-hours
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
W-hours Line1	2/8/2005	12:33:24.500 PM	1.574E+3	-34.78	3.837E+3	Wh
W-hours Line2	2/8/2005	12:33:24.500 PM	1.077E+3	-33.28	2.627E+3	Wh
W-hours Line3	2/8/2005	12:33:24.500 PM	1.256E+3	-31.84	3.096E+3	Wh
W-hours Sum of Phases	2/8/2005	12:33:24.500 PM	3.907E+3	-99.79	9.560E+3	Wh
VAR-hours Line1	2/8/2005	12:33:24.500 PM	1.366E+3	0.108	3.554E+3	VARh
VAR-hours Line2	2/8/2005	12:33:24.500 PM	1.453E+3	0.114	3.743E+3	VARh
VAR-hours Line3	2/8/2005	12:33:24.500 PM	995.2	80.23E-3	2.629E+3	VARh
VAR-hours Sum of Phases	2/8/2005	12:33:24.500 PM	3.814E+3	0.303	9.925E+3	VARh

2/8/2005 - 12:33:24.000 PM
Val
0.000 — W-hours Line1
0.000 — W-hours Line2
0.000 — W-hours Line3
0.000 — W-hours Sum of Phases
0.108 — VAR-hours Line1
0.114 — VAR-hours Line2
80.23E-3 — VAR-hours Line3
0.303 — VAR-hours Sum of Phases

PF
VoltageRatio: 1.000
CurrentRatio: 1.000



Name	Date	Time	Avg	Min	Max	Units
PF Line1	2/8/2005	12:33:24.500 PM	0.307	-0.616	0.824	
PF Line2	2/8/2005	12:33:24.500 PM	0.163	-0.674	0.783	
PF Line3	2/8/2005	12:33:24.500 PM	0.335	-0.614	0.837	

2/8/2005 - 12:33:24.000 PM
Val
-0.613 PF Line1
-0.635 PF Line2
-0.612 PF Line3

Trend Summary Report

Database: X:\Ugum WTP\020805-Ugum Main.dvb

Operator	Test Site
Morikawa & Associates, LLC Lyman Morikawa, PE ,	Ugum Water Treatment Plant ,

Comments
Recorded at the Main Auto Transfer Switch, 1000A, 277/480 volts, 3 phase, 3 wire, Normal Line