Appendix C 15-03-003 Dome Drive Power Consumption 2-17-2010

15-03 Dome Drive

File C:\PowerSight\Dome-HPU.log
Test began at 2/17/10 13:47:24
Test ended at 2/17/10 14:32:43

Measurement	Value	Units
Voltage, A Phase, Ave:	271.5	volts
Voltage, A Phase, Max:	273.9	volts
Voltage, A Phase, Min:	268.7	volts
Voltage, B Phase, Ave:	272.6	volts
Voltage, B Phase, Max:	275.0	volts
Voltage, B Phase, Min:	270.4	volts
Voltage, C Phase, Ave:	270.3	volts
Voltage, C Phase, Max:	272.8	volts
Voltage, C Phase, Min:	268.2	volts
Current, A Phase, Ave:	28.6	amps
Current, A Phase, Max:	52.8	amps
Current, A Phase, Min:	0.7	amps
Current, B Phase, Ave:	28.3	amps
Current, B Phase, Max:	52.8	amps
Current, B Phase, Min:	0.0	amps
Current, C Phase, Ave:	27.6	amps
Current, C Phase, Max:	51.4	amps
Current, C Phase, Min:	0.7	amps
Current, Neutral, Ave:	0.0	amps
Current, Neutral, Max:	0.0	amps
Current, Neutral, Min:	0.0	amps
True Power, A Phase, Ave:	5429.2	Watts
True Power, A Phase, Max:	10726.4	Watts
True Power, A Phase, Min:	20.1	Watts
True Power, B Phase, Ave:	5303.1	Watts
True Power, B Phase, Max:	10592.0	Watts
True Power, B Phase, Min:	0.0	Watts
True Power, C Phase, Ave:	5227.9	Watts
True Power, C Phase, Max:	10393.6	Watts
True Power, C Phase, Min:	143.2	Watts
Total True Power:	15960.2	Watts
VA Power, A Phase, Ave:	7726.5	VA
VA Power, A Phase, Max:	14291.2	VA
VA Power, A Phase, Min:	180.9	VA
VA Power, B Phase, Ave:	7701.4	VA
VA Power, B Phase, Max:	14342.4	VA
VA Power, B Phase, Min:	0.0	VA
VA Power, C Phase, Ave:	7442.3	VA
VA Power, C Phase, Max:	13830.4	VA
VA Power, C Phase, Min:	177.1	VA
Total VA Power:	22870.2	VA
Power Factor, A Phase, Ave:	0.55	

E=Electromotive force

Voltage averages=
phase A=271.5V
phase B=272.6V
phase C=270.3V

I=Intensity of current

Current Maximum's=
phase A=52.8A
phase B=52.8A
phase C=51.4A

Power (watts) =
Volts x Amps x PF
phase A = 271.5V x 52.3A
PA = 14,335.2 Watts
phase B = 272.6V x 52.8A
PB = 14,393.28 Watts
phase C = 270.3V x 51.4A
PC = 13893.42 Watts
Power factor = PF
PFA = 0.75
PFB = 0.75
PFC = 0.71
Total Power = ((PA x PFA) + (PB x PFB) + (PC x PFC) =
Total Power = 31410.68 Watts

Power Factor, A Phase, Max:	0.75	
Power Factor, A Phase, Min:	0.11	
Power Factor, B Phase, Ave:	0.75	
Power Factor, B Phase, Max:	1.00	
Power Factor, B Phase, Min:	0.29	
Power Factor, C Phase, Ave:	0.71	
Power Factor, C Phase, Max:	0.81	
Power Factor, C Phase, Min:	0.32	
Total Power Factor:	0.70	
Frequency, Ave:	60.0	Hz
Frequency, Max:	60.1	Hz
Frequency, Min:	59.9	Hz
THD, Voltage, A Phase:	2.0	%
THD, Voltage, B Phase:	2.0	%
THD, Voltage, C Phase:	2.0	%
THD, Current, A Phase:	7.8	%
THD, Current, B Phase:	1.8	%
THD, Current, C Phase:	7.8	%
THD, Current, Neutral:	0.0	%
Energy, A Phase:	4.782	KWH
Energy, B Phase:	4.674	KWH
Energy, C Phase:	4.589	KWH
Energy, Total Elapsed:	14.046	KWH
Peak Demand:	31718.4	Watts @ 2/17/10 13:57:29
Peak Ave VA:	42464.0	VA @ 2/17/10 13:57:29

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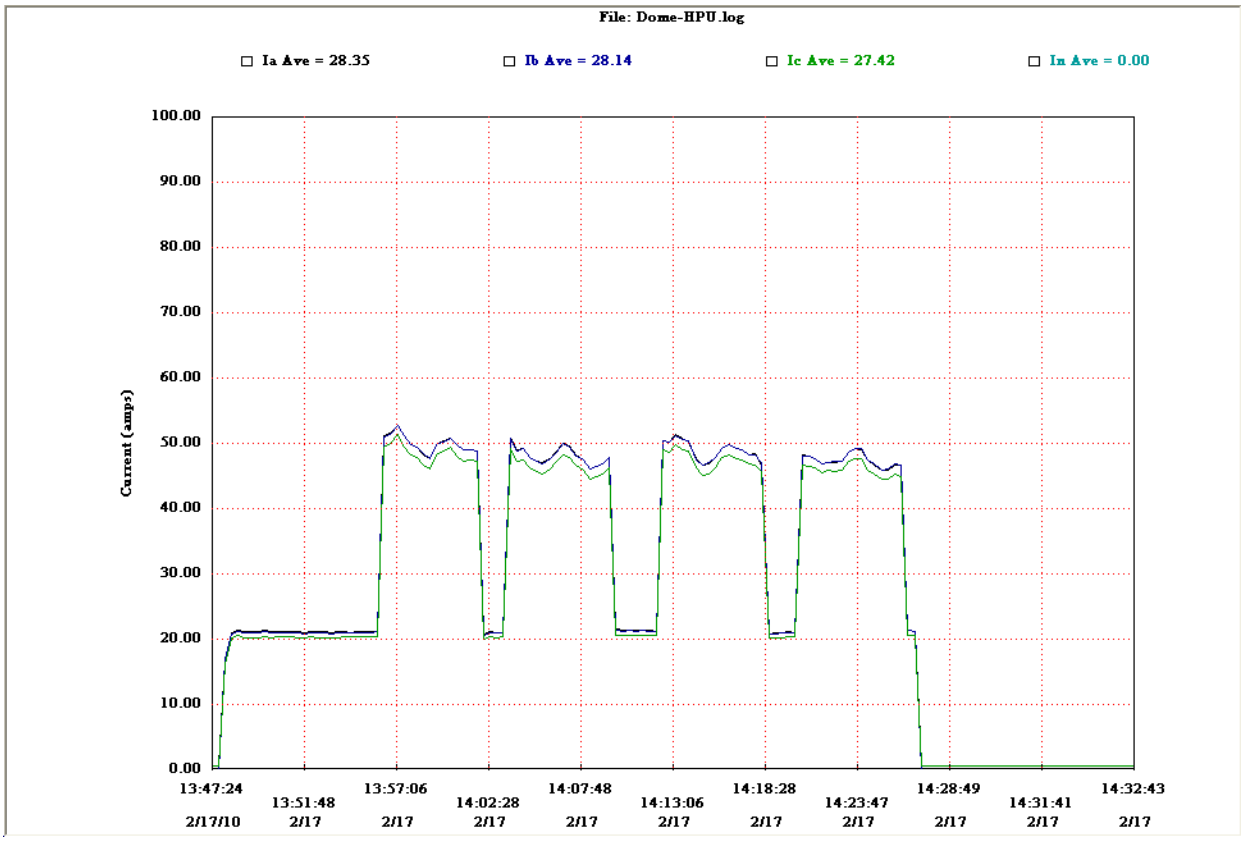
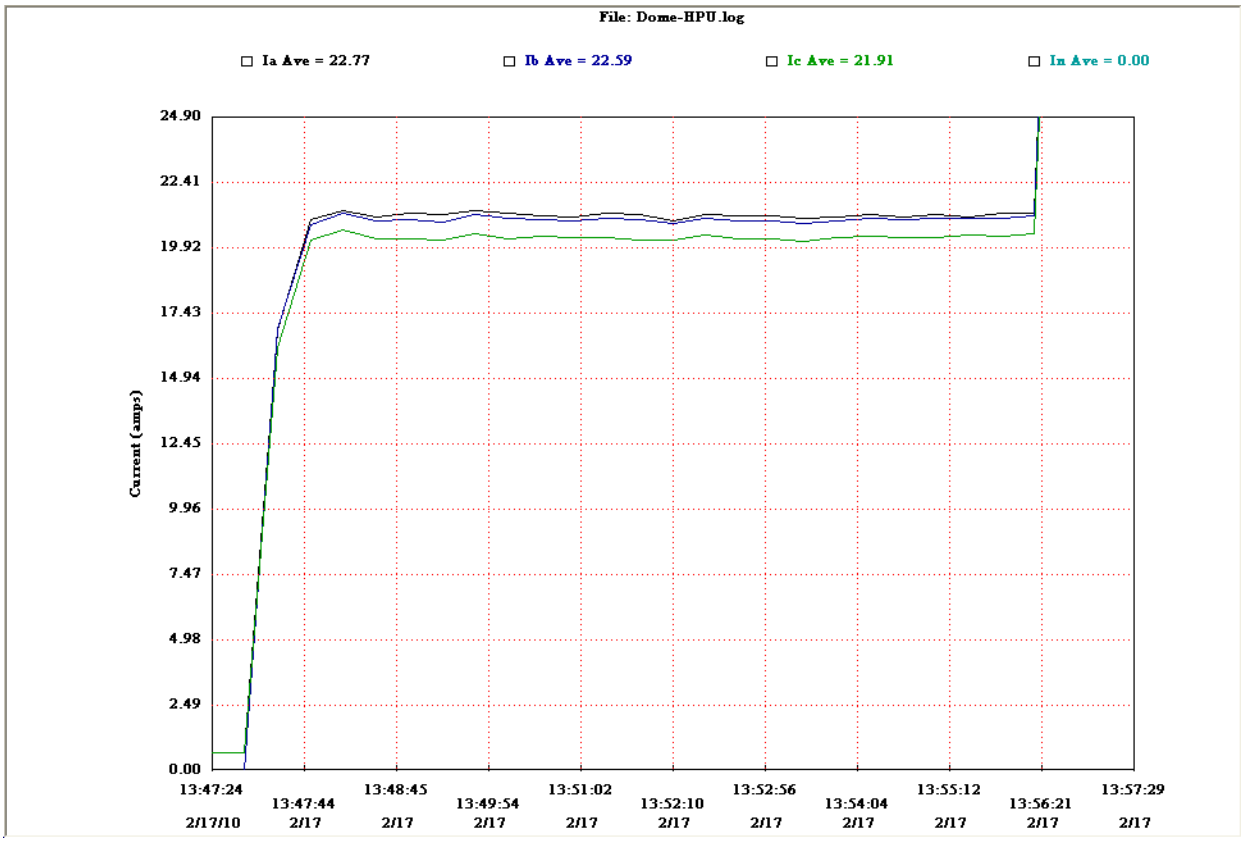
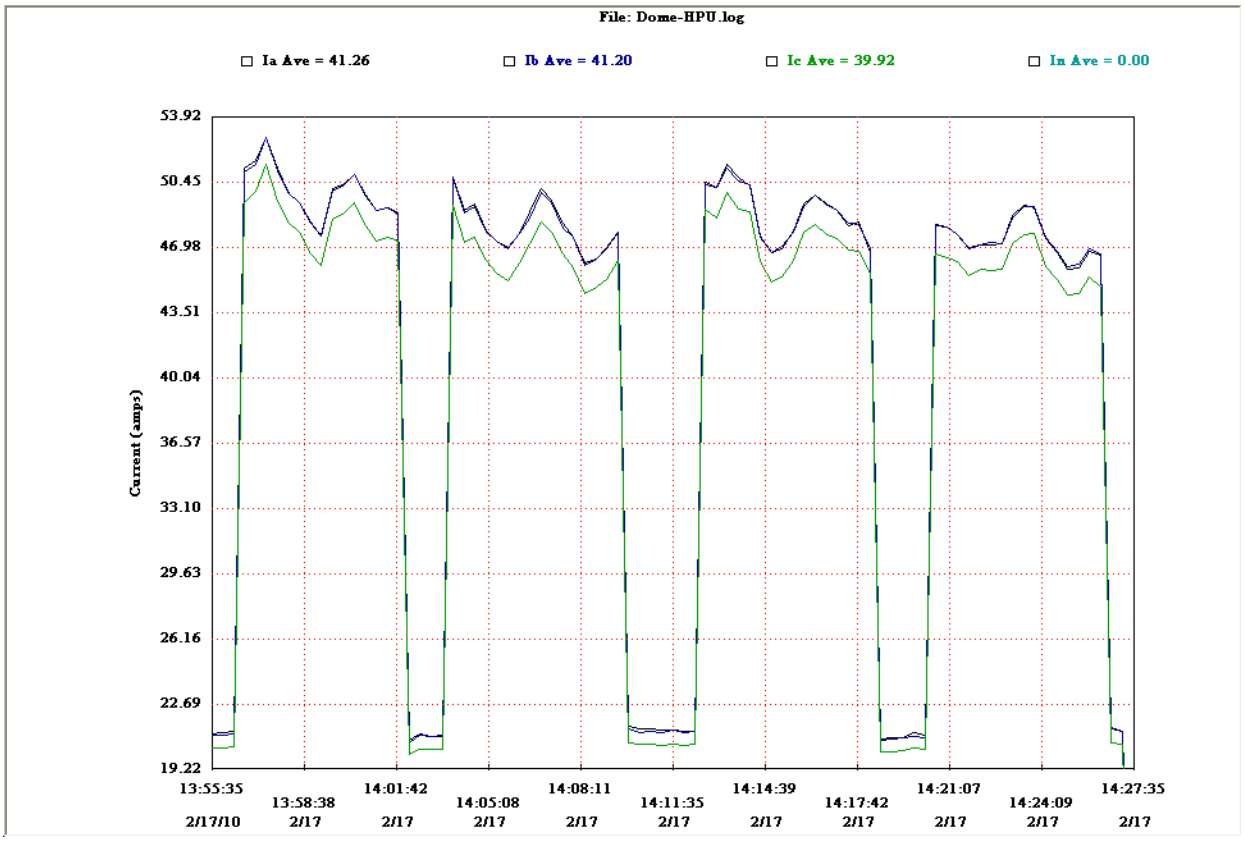
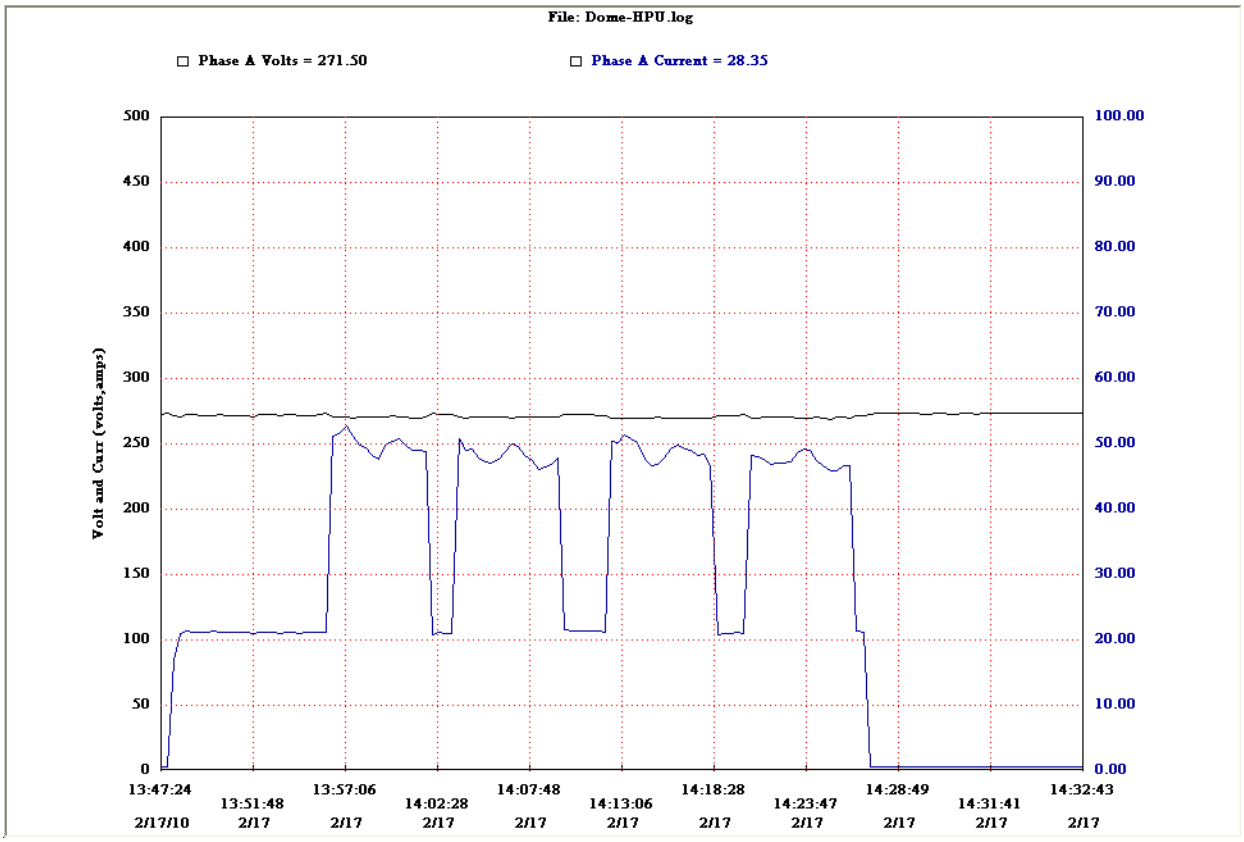
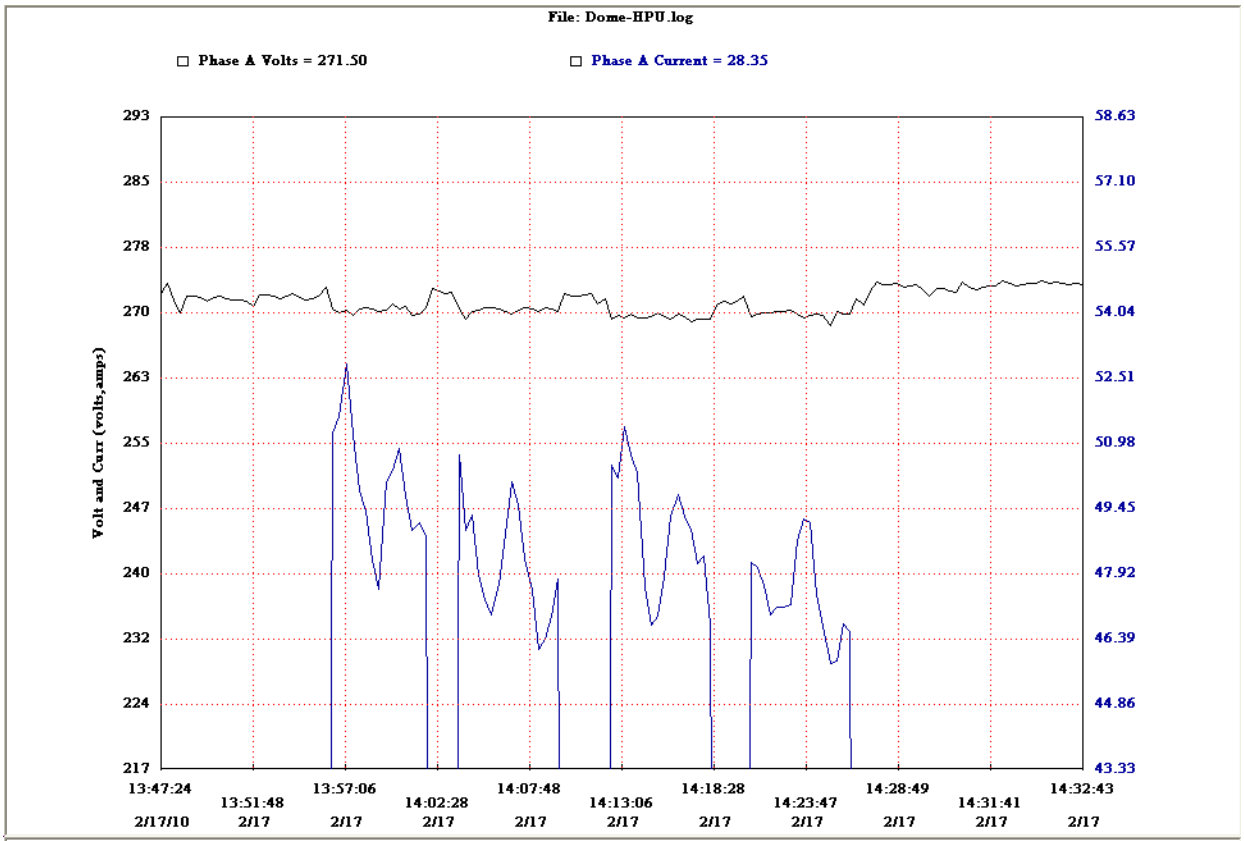
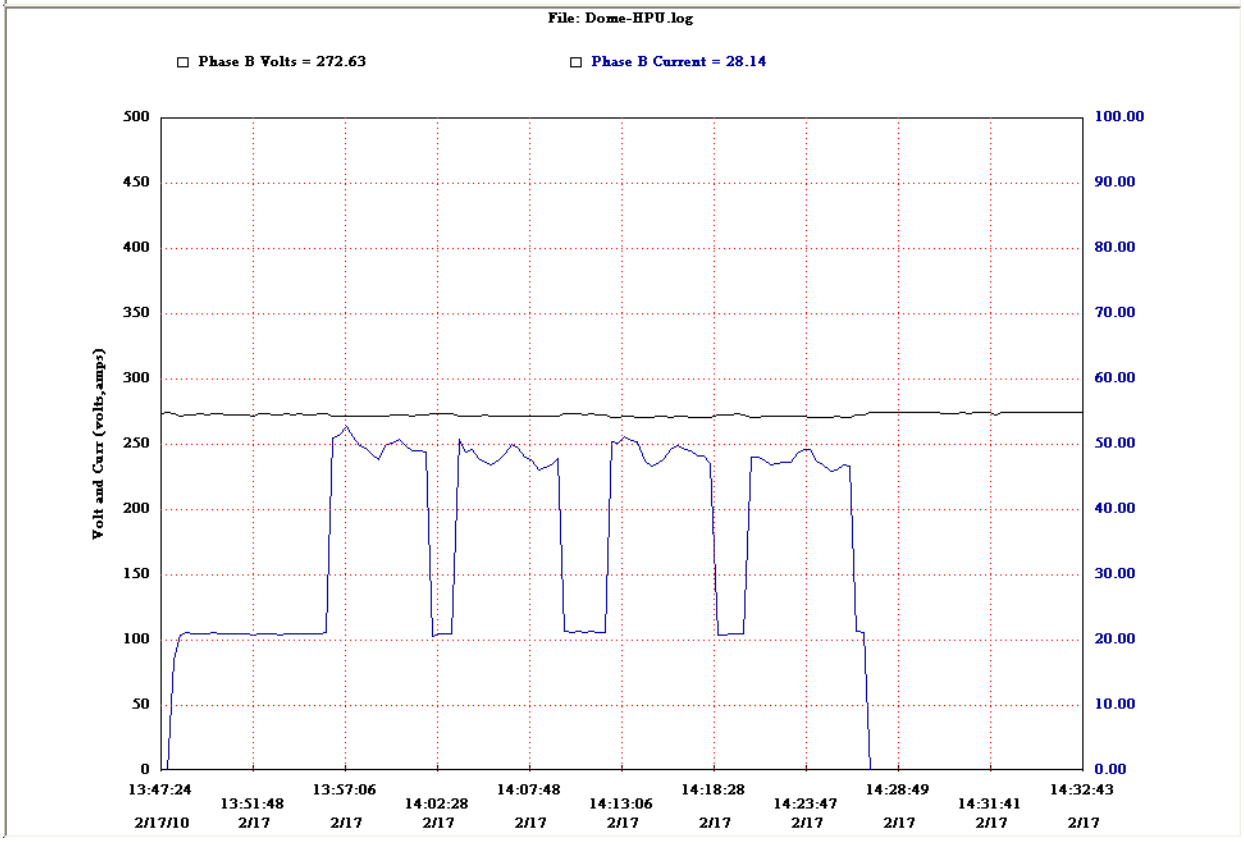

File: Dome-HPU.log
Ia Ave = 28.35
Ib Ave = 28.14
Ic Ave = 27.42
In Ave = 0.00
Current (amps)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

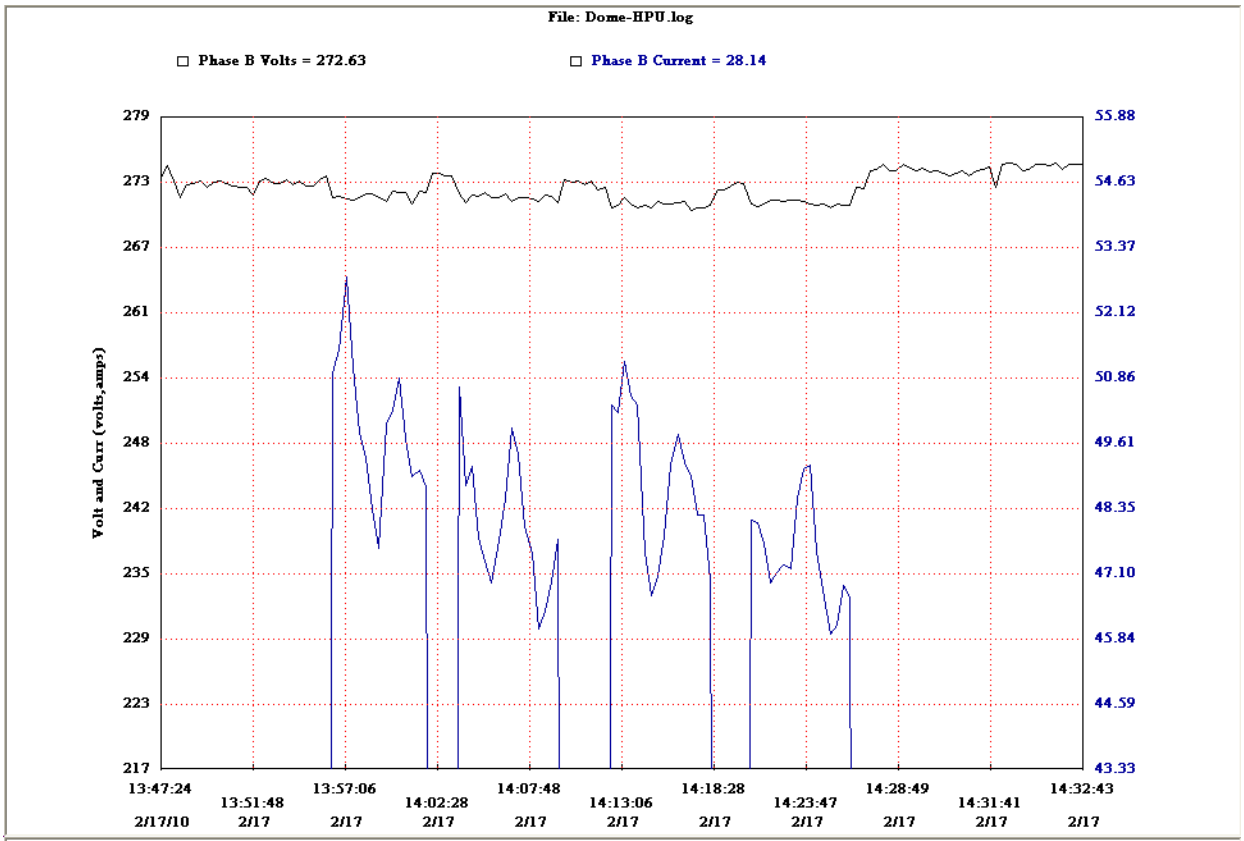

File: Dome-HPU.log
Ia Ave = 22.77
Ib Ave = 22.59
Ic Ave = 21.91
In Ave = 0.00
Current (amps)
24.90
22.41
19.92
17.43
14.94
12.45
9.96
7.47
4.98
2.49
0.00
13:47:24 2/17/10
13:47:44 2/17
13:48:45 2/17
13:49:54 2/17
13:51:02 2/17
13:52:10 2/17
13:52:56 2/17
13:54:04 2/17
13:55:12 2/17
13:56:21 2/17
13:57:29 2/17

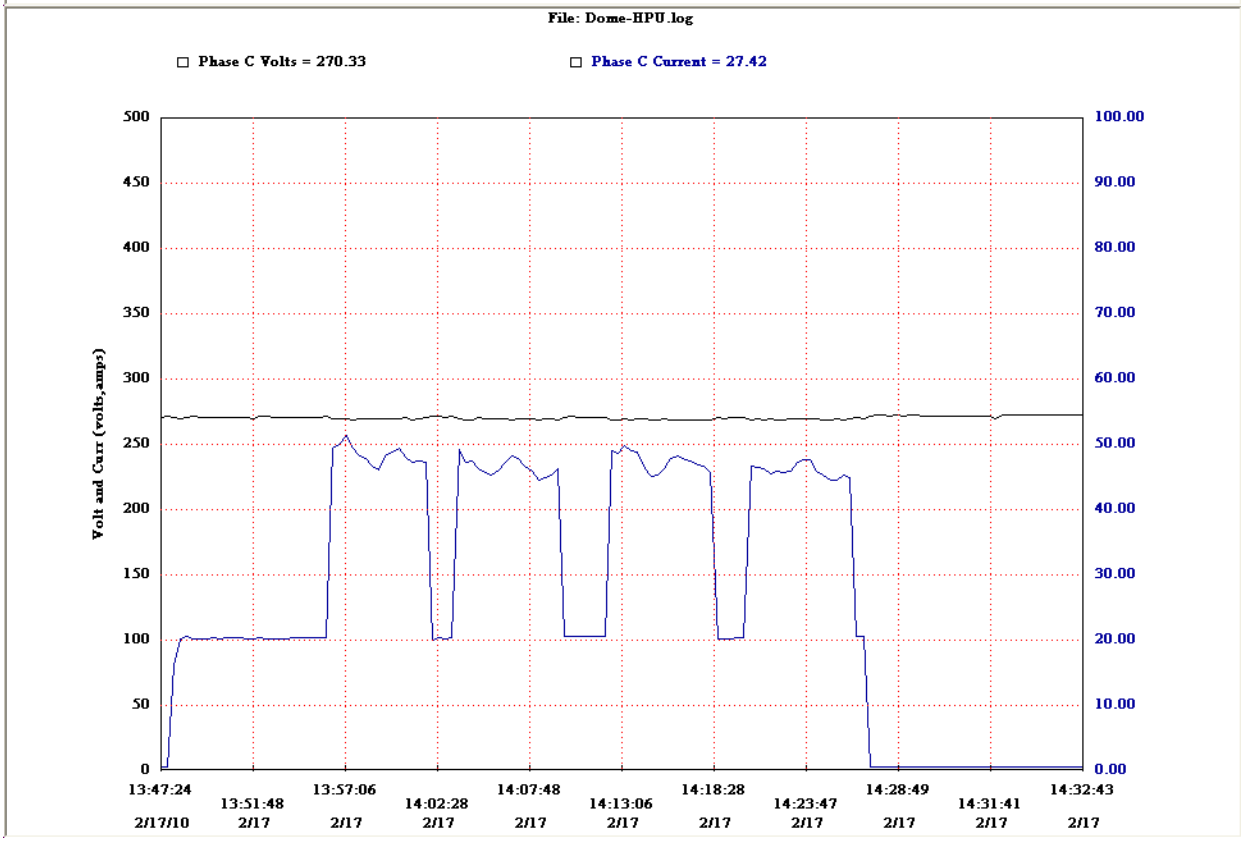

File: Dome-HPU.log
Ia Ave = 41.26
Ib Ave = 41.20
Ic Ave = 39.92
In Ave = 0.00
Current (amps)
53.92
50.45
46.98
43.51
40.04
36.57
33.10
29.63
26.16
22.69
19.22
13:55:35 2/17/10
13:58:38 2/17
14:01:42 2/17
14:05:08 2/17
14:08:11 2/17
14:11:35 2/17
14:14:39 2/17
14:17:42 2/17
14:21:07 2/17
14:24:09 2/17
14:27:35 2/17

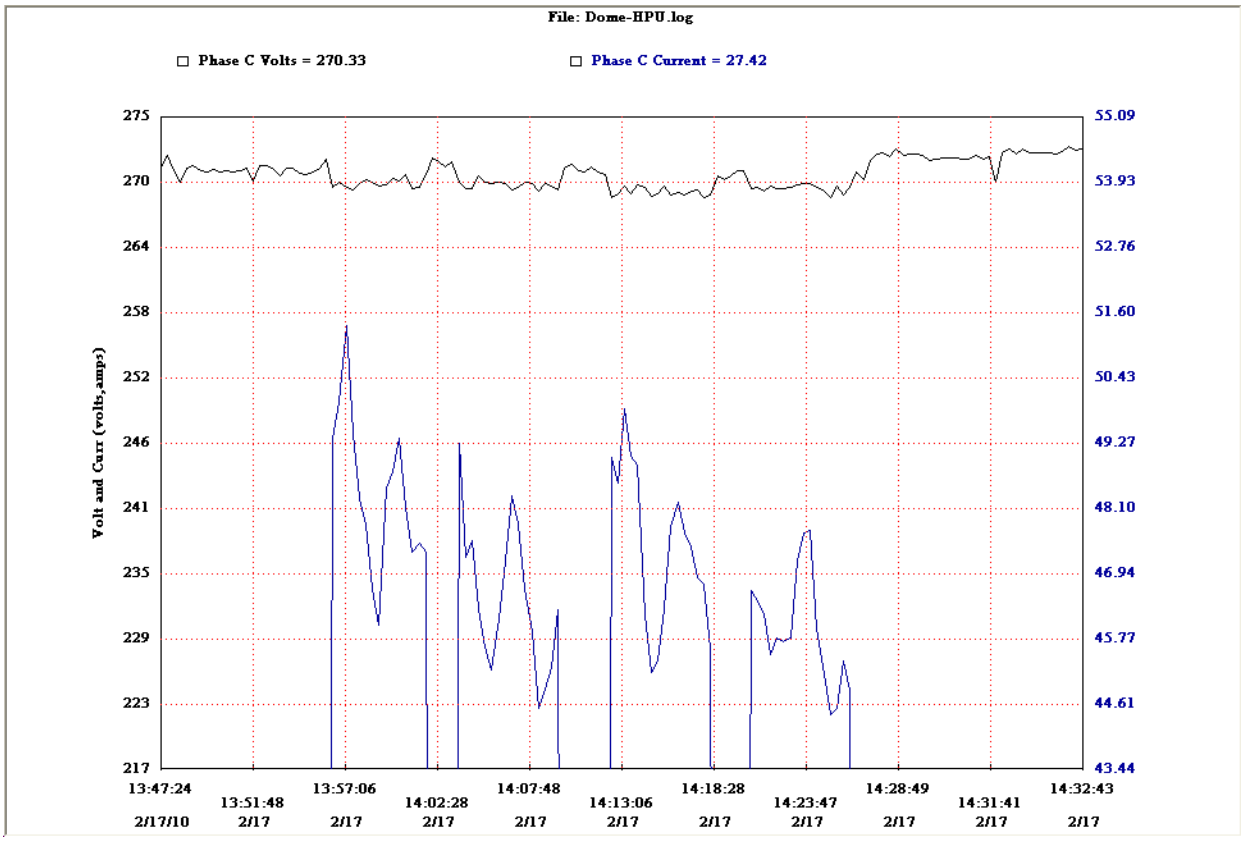

File: Dome-HPU.log
Phase A Volts = 271.50
Phase A Current = 28.35
Volt and Curr (volts,amps)
500
450
400
350
300
250
200
150
100
50
0
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

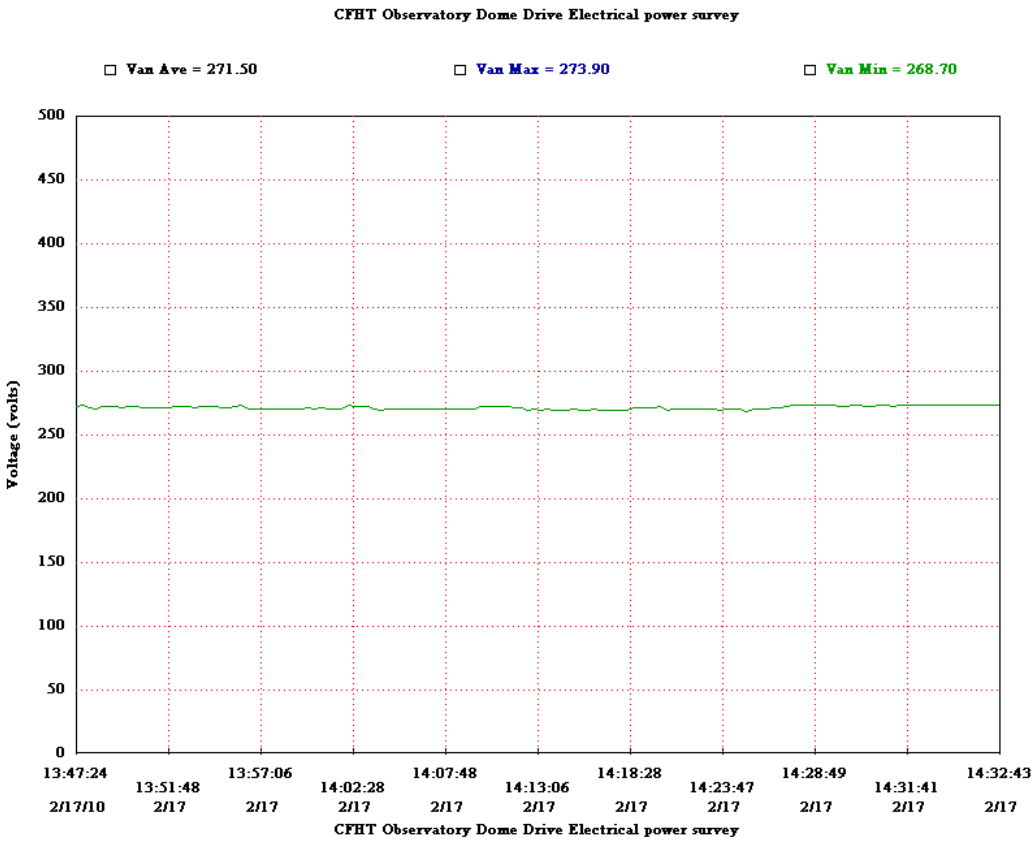

File: Dome-HPU.log
Phase A Volts = 271.50
Phase A Current = 28.35
Volt and Curr (volts,amps)
293
285
278
270
263
255
247
240
232
224
217
58.63
57.10
55.57
54.04
52.51
50.98
49.45
47.92
46.39
44.86
43.33
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

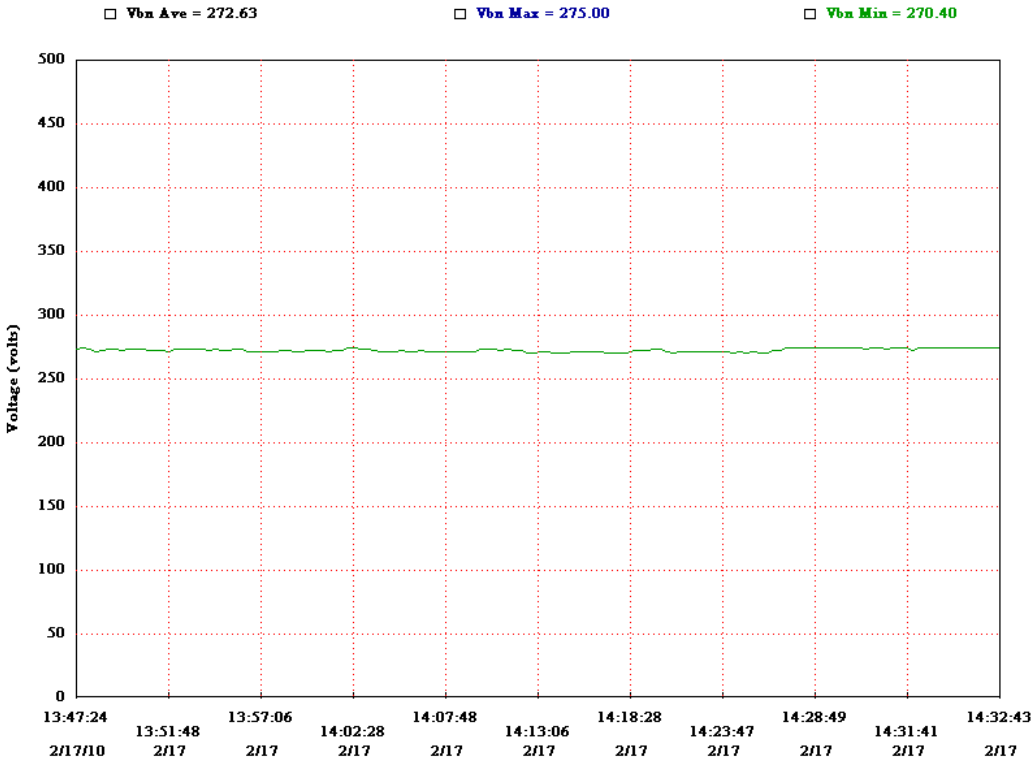

File: Dome-HPU.log
Phase B Volts = 272.63
Phase B Current = 28.14
Volt and Curr (volts,amps)
500
450
400
350
300
250
200
150
100
50
0
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

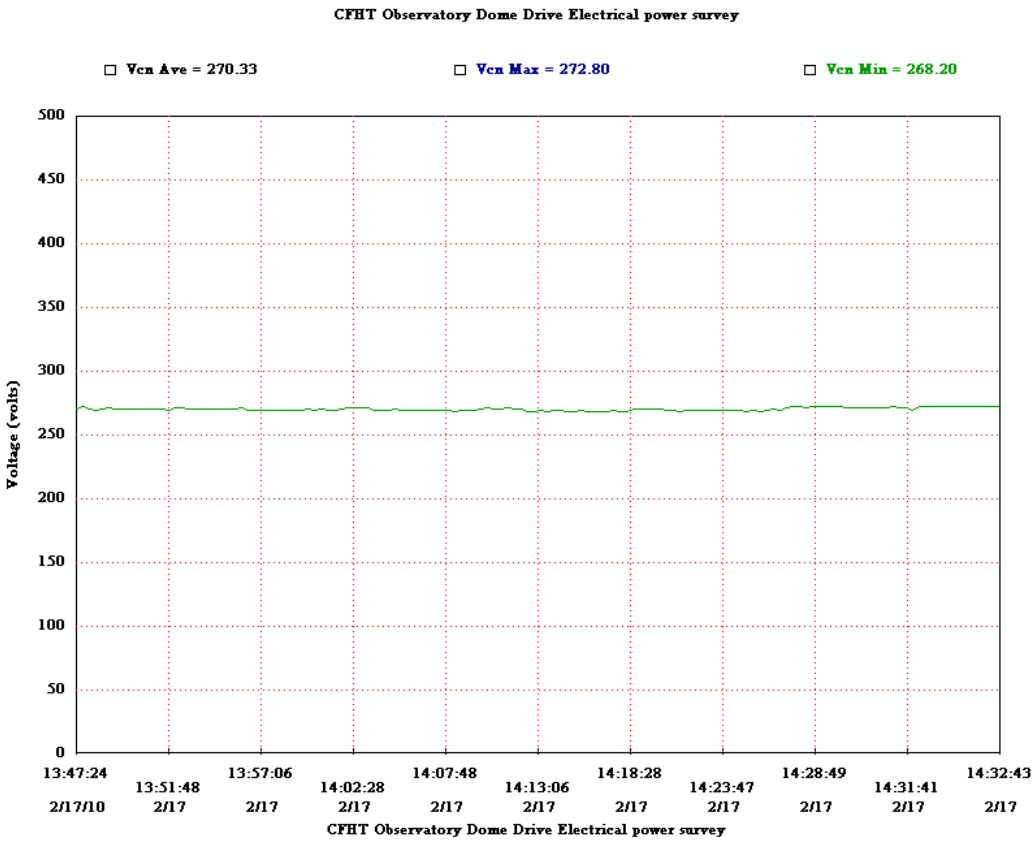

File: Dome-HPU.log
Phase B Volts = 272.63
Phase B Current = 28.14
Volt and Curr (volts,amps)
279
273
267
261
254
248
242
235
229
223
217
55.88
54.63
53.37
52.12
50.86
49.61
48.35
47.10
45.84
44.59
43.33
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

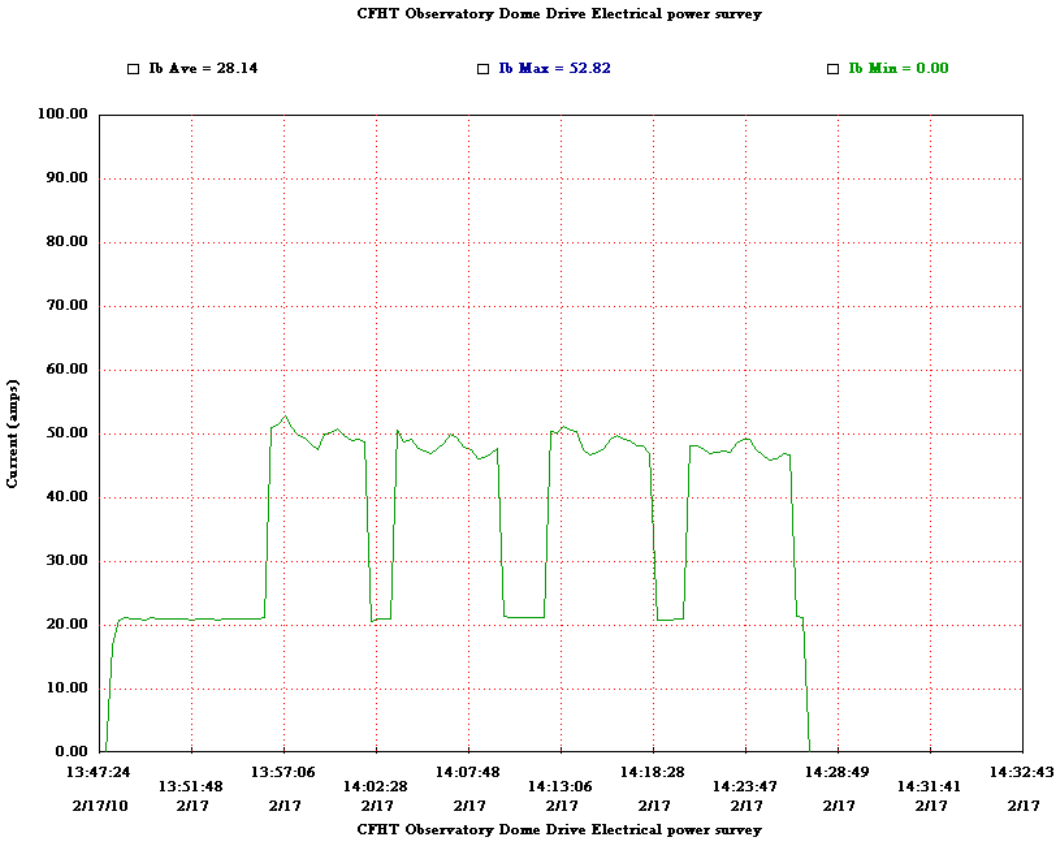

File: Dome-HPU.log
Phase C Volts = 270.33
Phase C Current = 27.42
Volt and Curr (volts,amps)
500
450
400
350
300
250
200
150
100
50
0
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

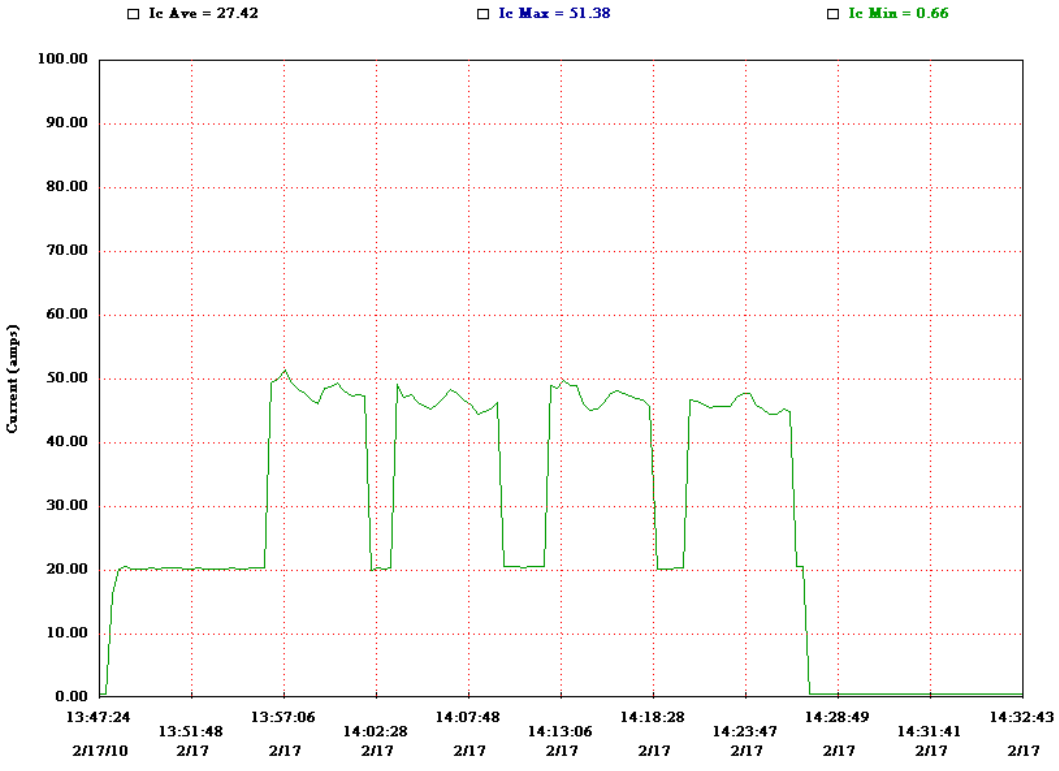

File: Dome-HPU.log
Phase C Volts = 270.33
Phase C Current = 27.42
Volt and Curr (volts,amps)
275
270
264
258
252
246
241
235
229
223
217
55.09
53.93
52.76
51.60
50.43
49.27
48.10
46.94
45.77
44.61
43.44
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

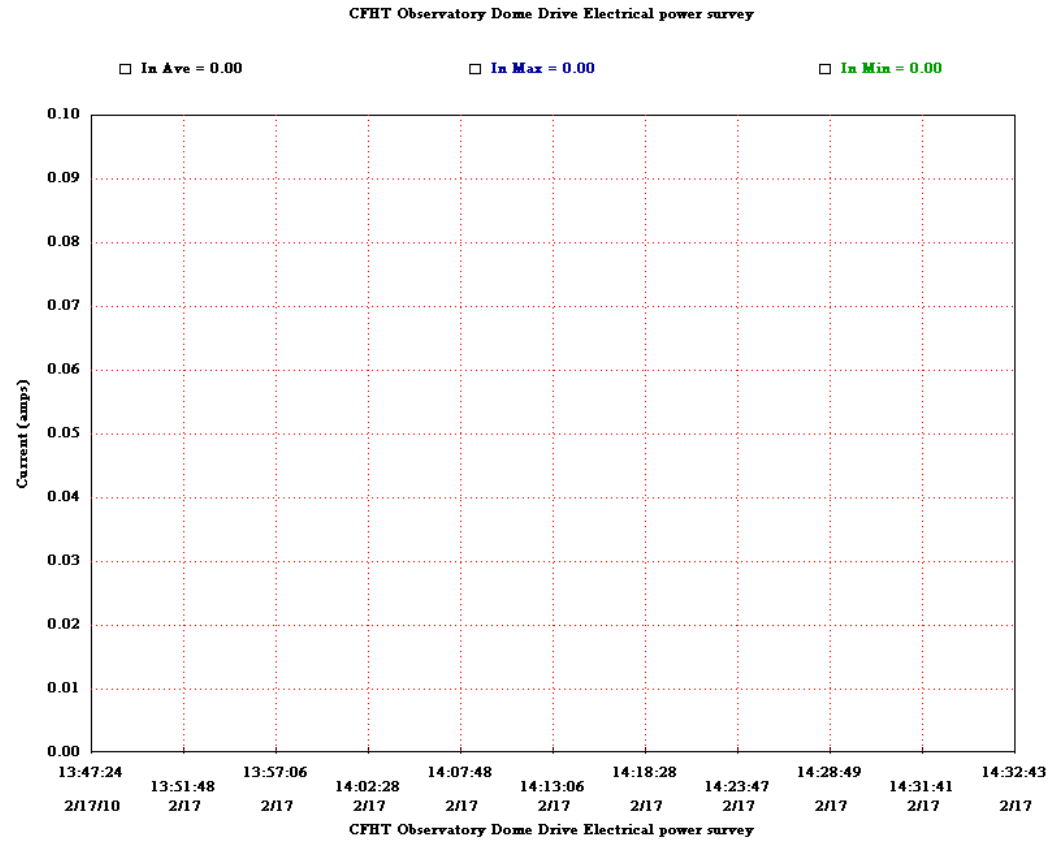

CFHT Observatory Dome Drive Electrical power survey
Van Ave = 271.50
Van Max = 273.90
Van Min = 268.70
Voltage (volts)
500
450
400
350
300
250
200
150
100
50
0
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

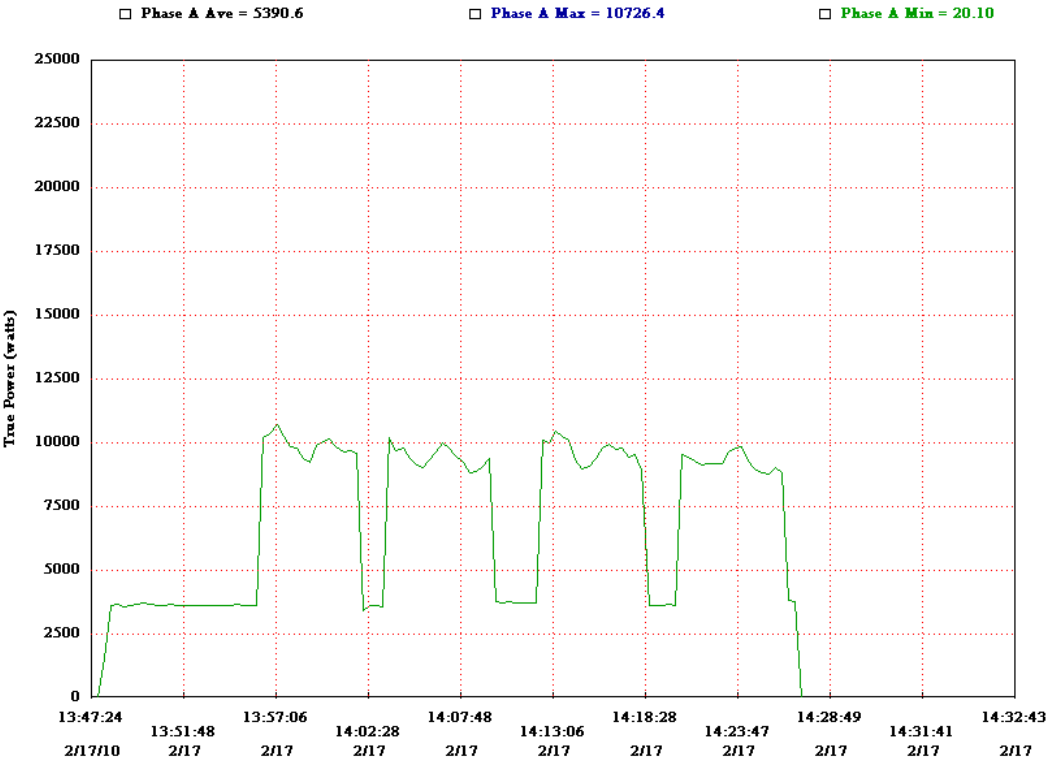

CFHT Observatory Dome Drive Electrical power survey
Vbn Ave = 272.63
Vbn Max = 275.00
Vbn Min = 270.40
Voltage (volts)
500
450
400
350
300
250
200
150
100
50
0
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

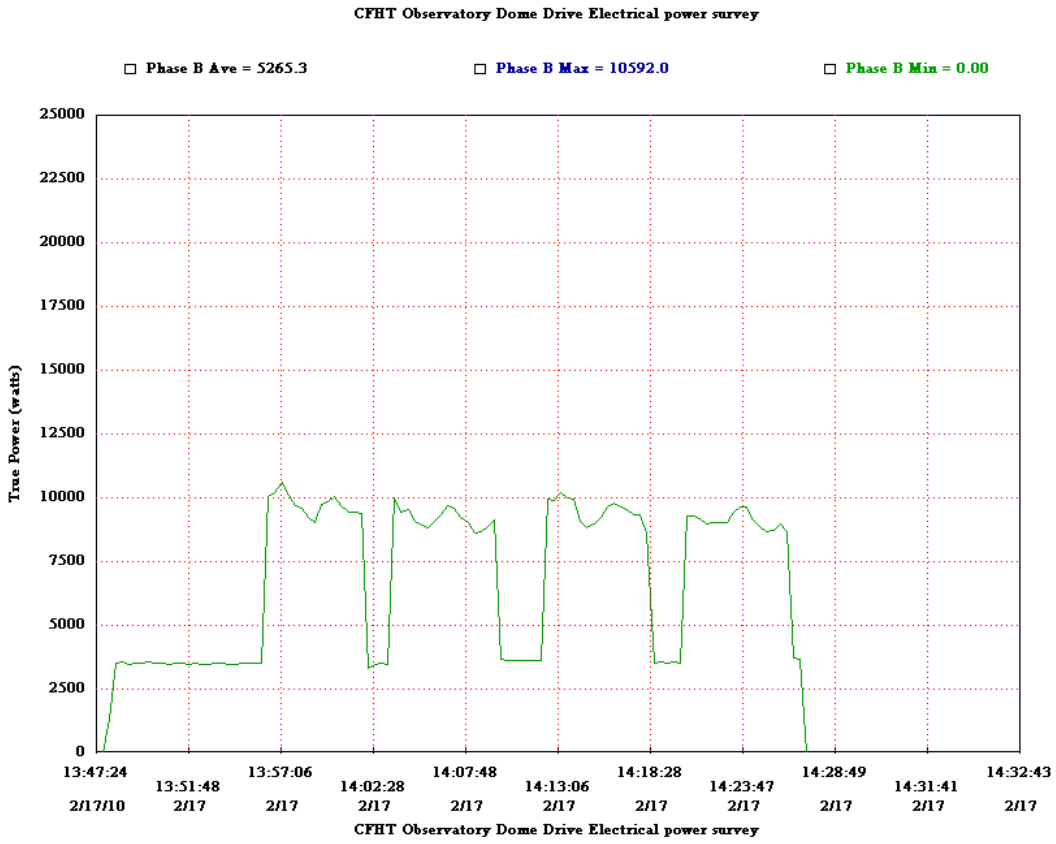

CFHT Observatory Dome Drive Electrical power survey
Vcn Ave = 270.33
Vcn Max = 272.80
Vcn Min = 268.20
Voltage (volts)
500
450
400
350
300
250
200
150
100
50
0
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17
CFHT Observatory Dome Drive Electrical power survey
Ia Ave = 28.35
Ia Max = 52.83
Ia Min = 0.66
Current (amps)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

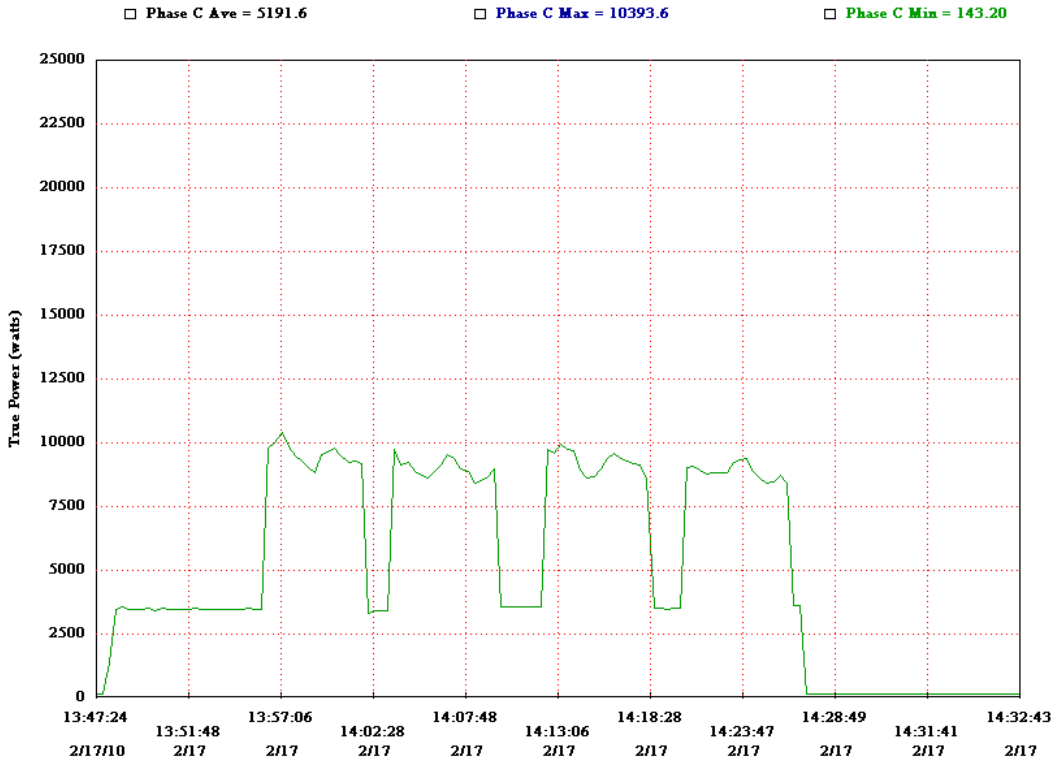

CFHT Observatory Dome Drive Electrical power survey
Ib Ave = 28.14
Ib Max = 52.82
Ib Min = 0.00
Current (amps)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

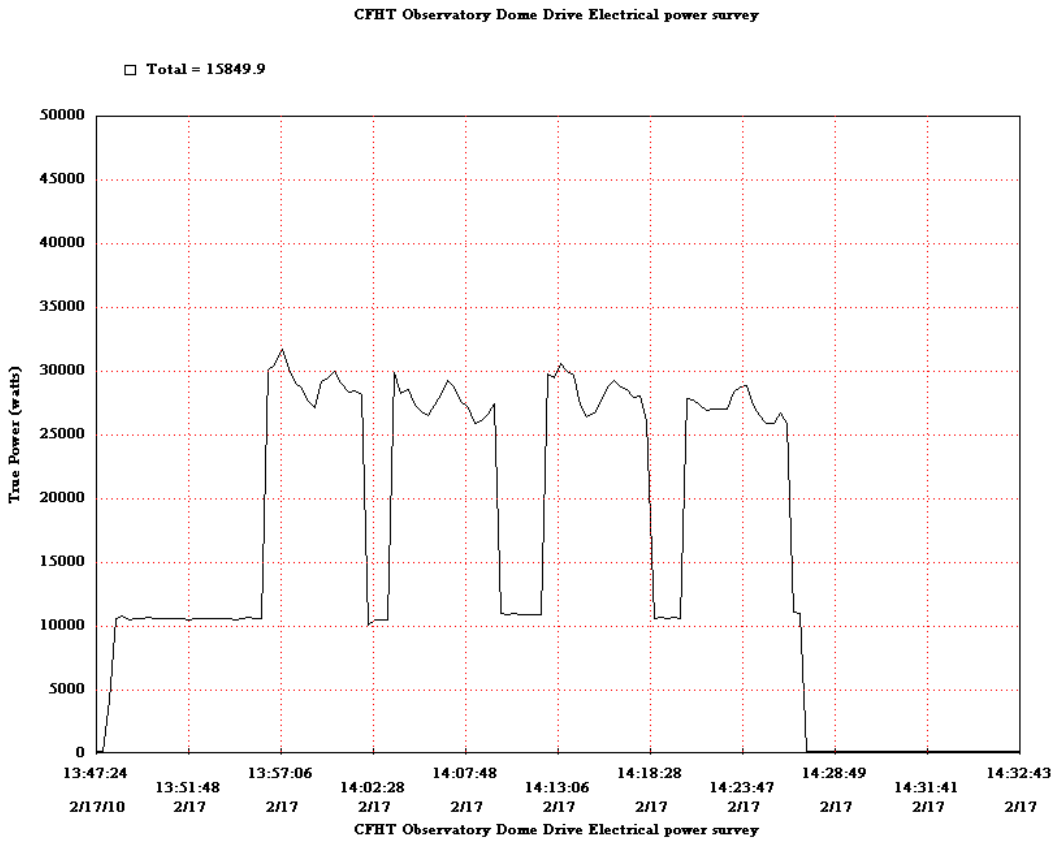

CFHT Observatory Dome Drive Electrical power survey
Ic Ave = 27.42
Ic Max = 51.38
Ic Min = 0.66
Current (amps)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

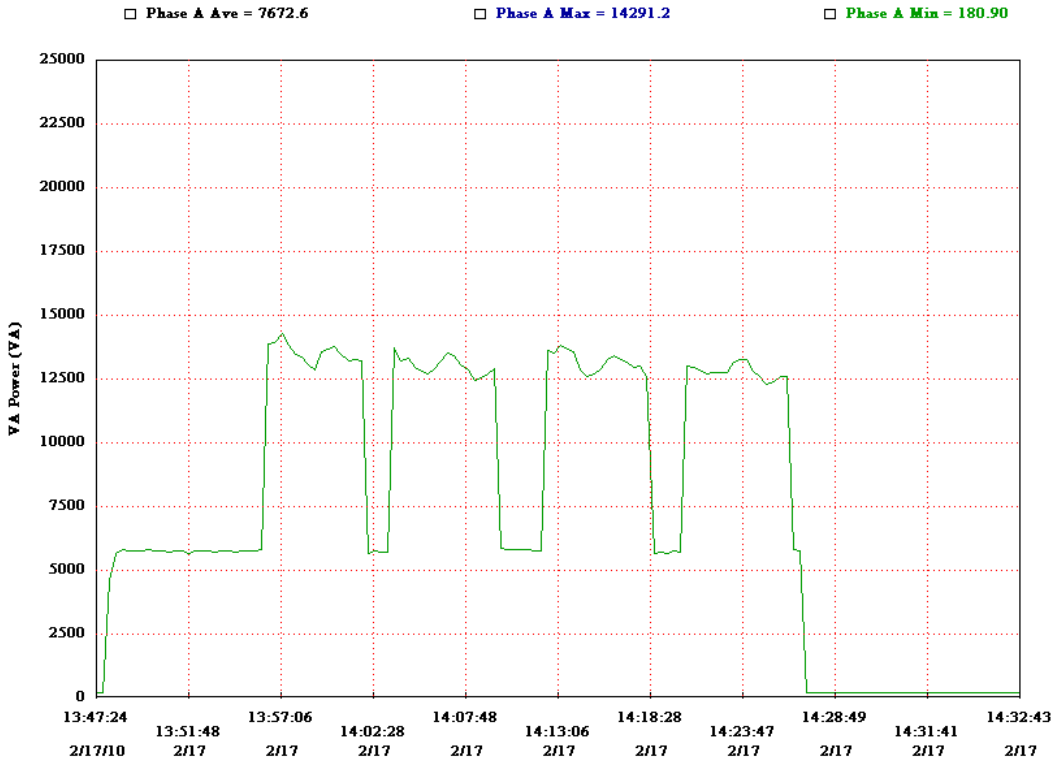

CFHT Observatory Dome Drive Electrical power survey
In Ave = 0.00
In Max = 0.00
In Min = 0.00
Current (amps)
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

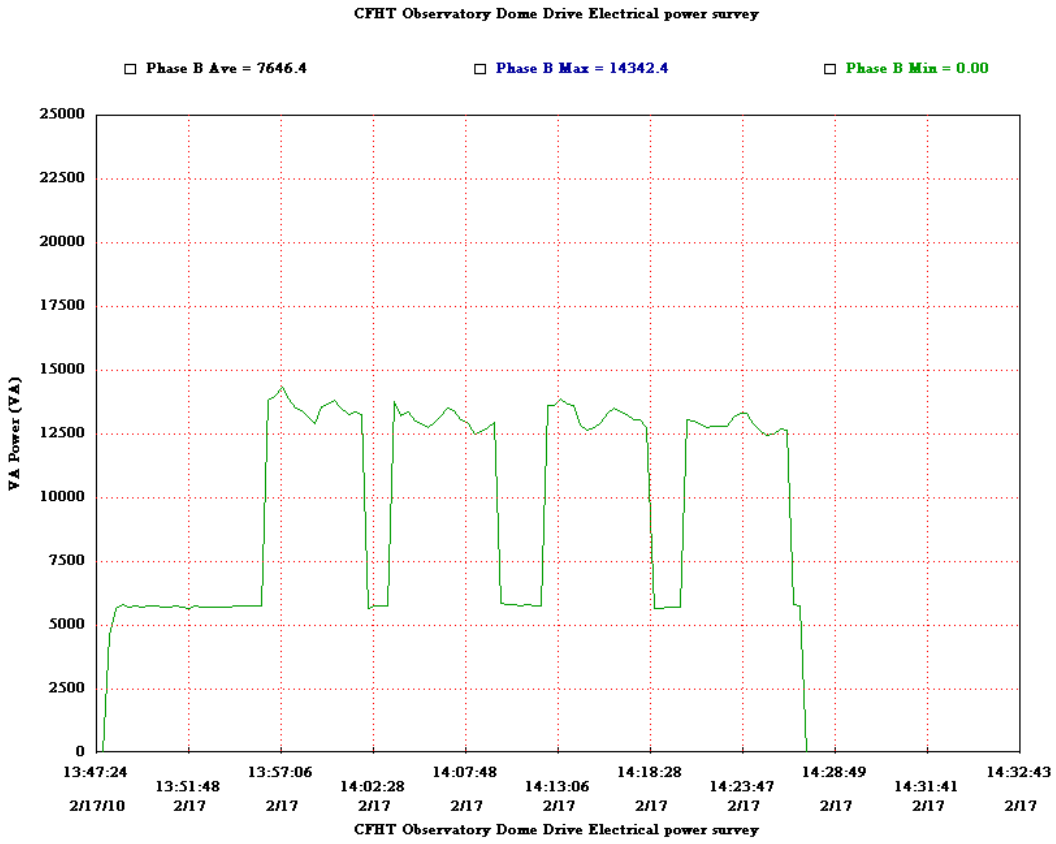

CFHT Observatory Dome Drive Electrical power survey
Phase A Ave = 5390.6
Phase A Max = 10726.4
Phase A Min = 20.10
True Power (watts)
25000
22500
20000
17500
15000
12500
10000
7500
5000
2500
0
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

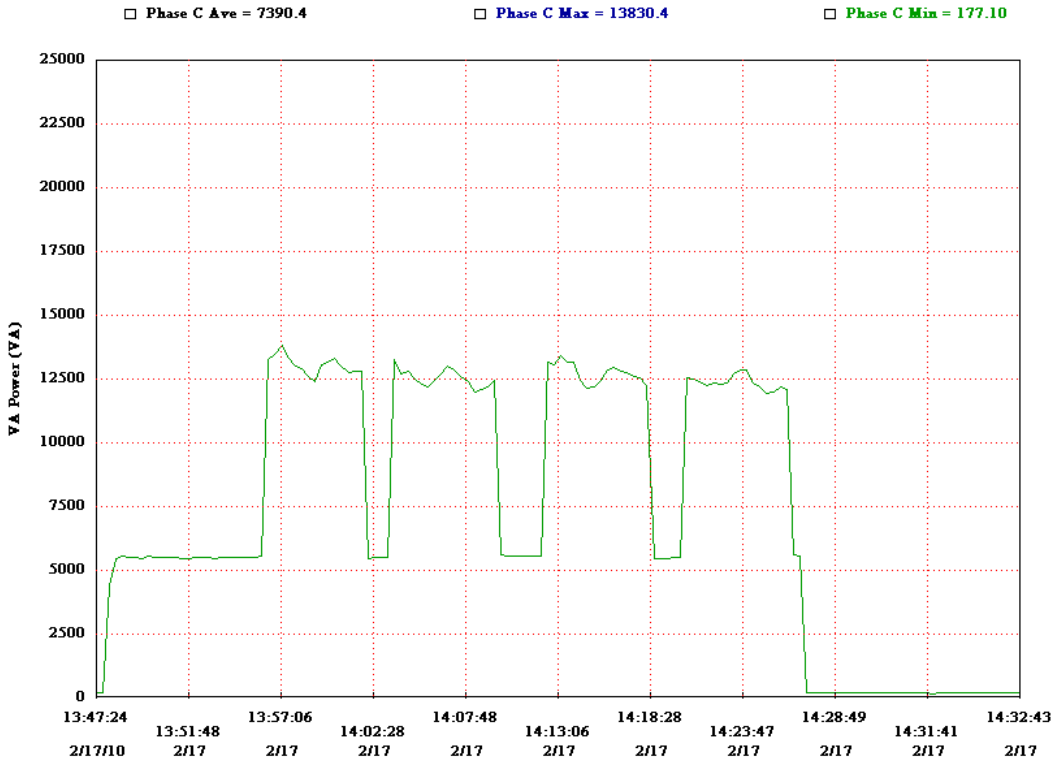

CFHT Observatory Dome Drive Electrical power survey
Phase B Ave = 5265.3
Phase B Max = 10592.0
Phase B Min = 0.00
True Power (watts)
25000
22500
20000
17500
15000
12500
10000
7500
5000
2500
0
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

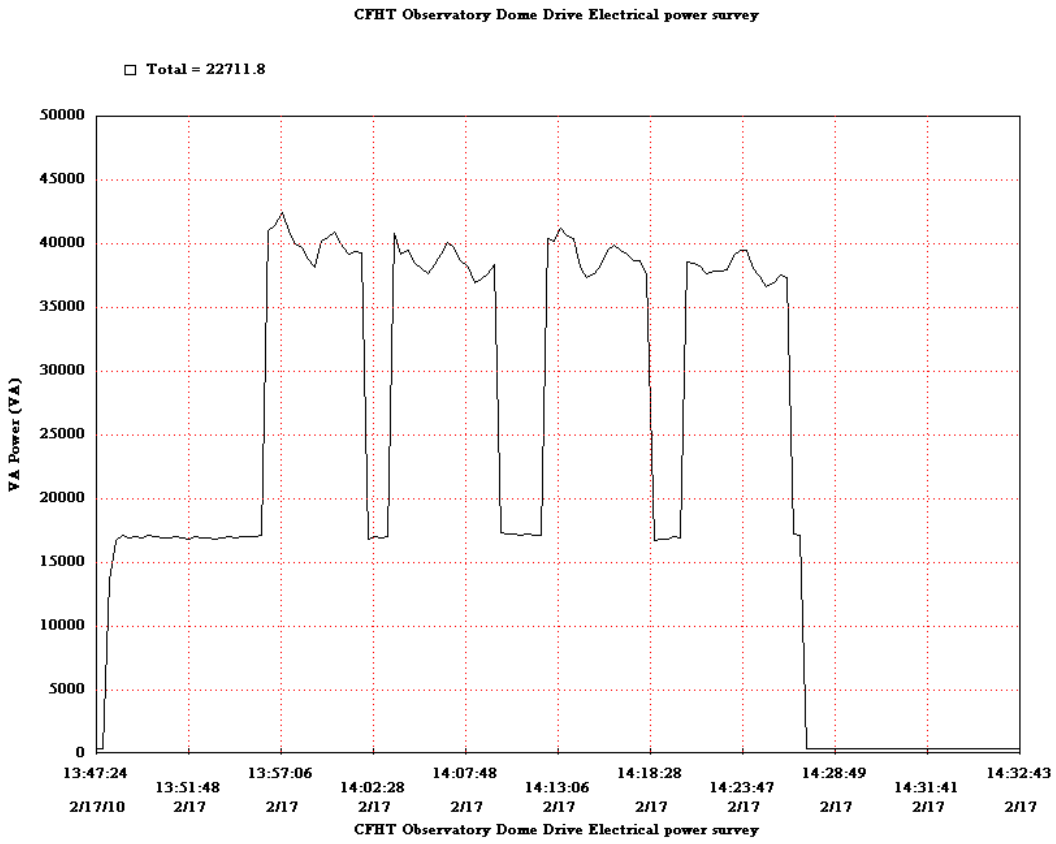

CFHT Observatory Dome Drive Electrical power survey
Phase C Ave = 5191.6
Phase C Max = 10393.6
Phase C Min = 143.20
True Power (watts)
25000
22500
20000
17500
15000
12500
10000
7500
5000
2500
0
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

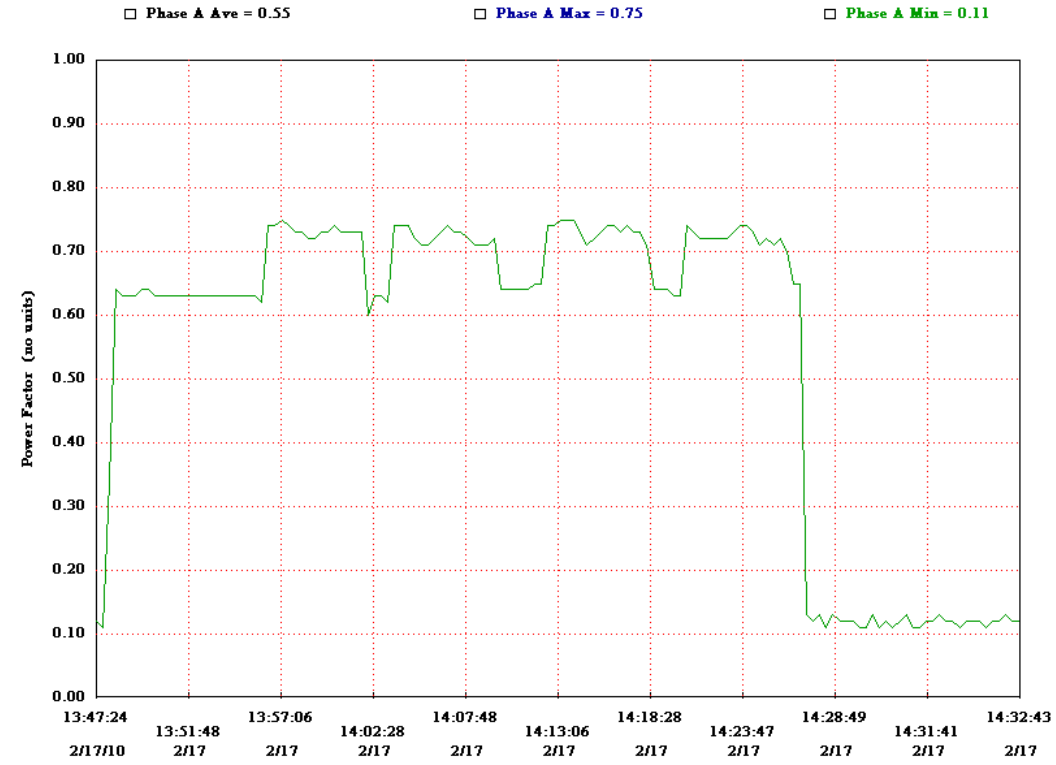

CFHT Observatory Dome Drive Electrical power survey
Total = 15849.9
True Power (watts)
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17
CFHT Observatory Dome Drive Electrical power survey

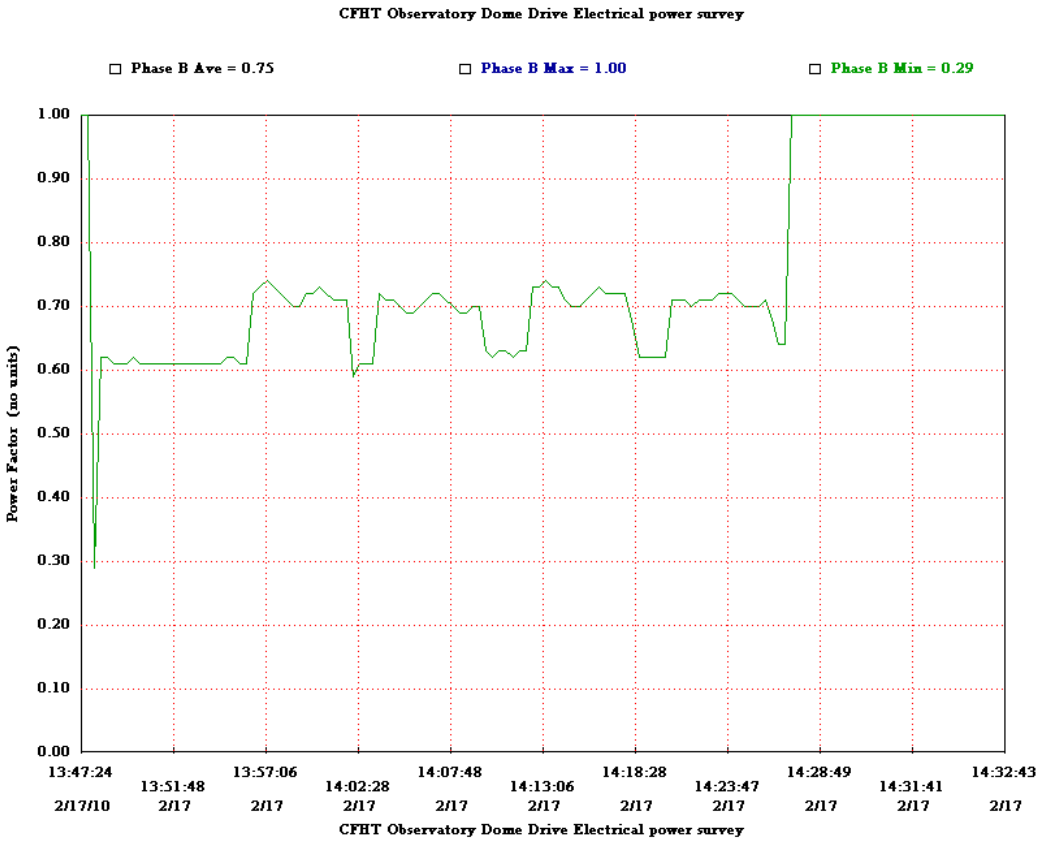

Phase A Ave = 7672.6
Phase A Max = 14291.2
Phase A Min = 180.90
VA Power (VA)
25000
22500
20000
17500
15000
12500
10000
7500
5000
2500
0
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

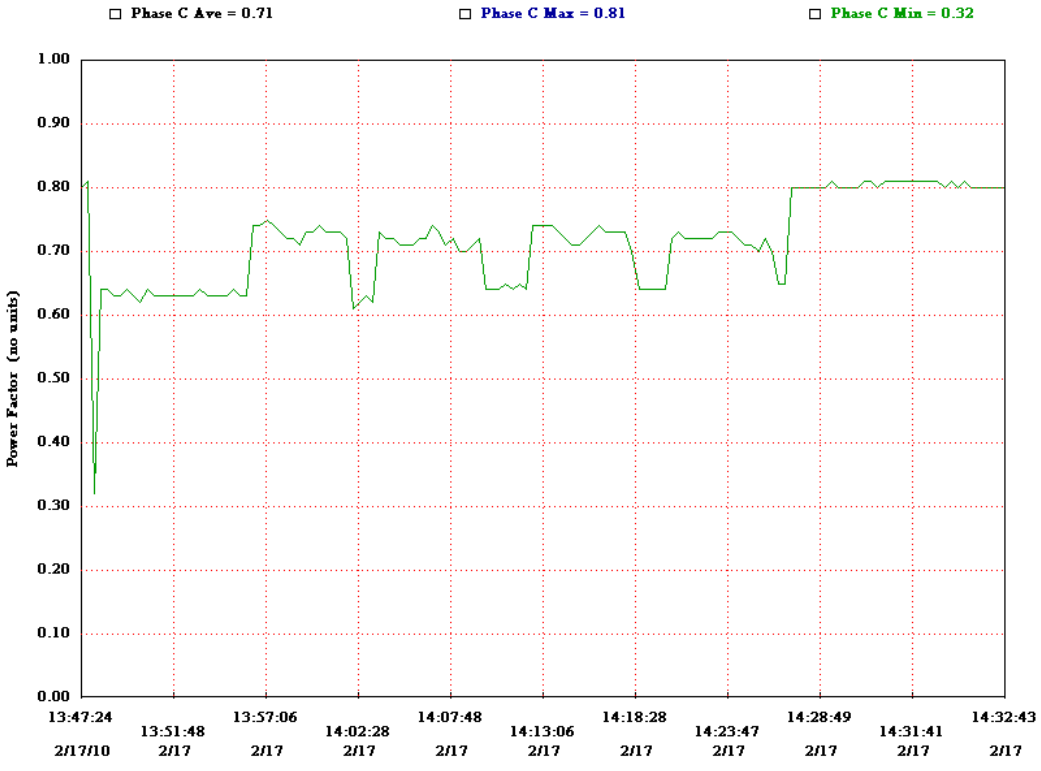

CFHT Observatory Dome Drive Electrical power survey
Phase B Ave = 7646.4
Phase B Max = 14342.4
Phase B Min = 0.00
VA Power (VA)
25000
22500
20000
17500
15000
12500
10000
7500
5000
2500
0
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

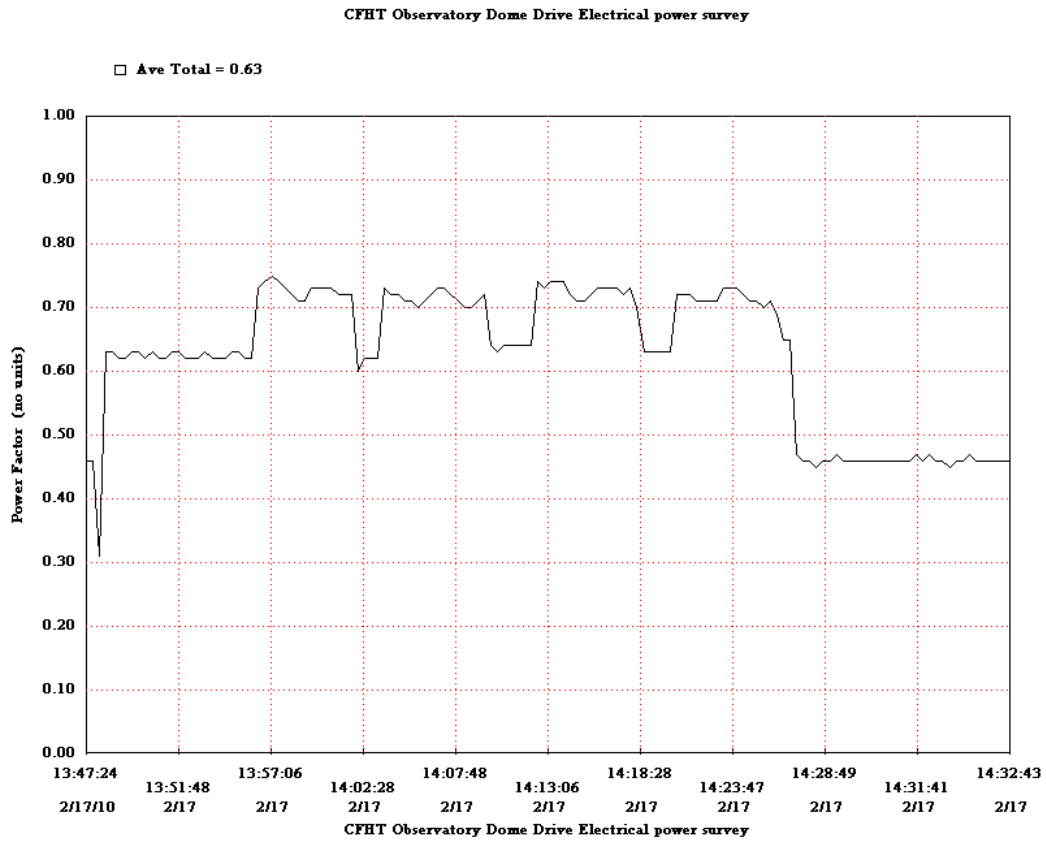

CFHT Observatory Dome Drive Electrical power survey
Phase C Ave = 7390.4
Phase C Max = 13830.4
Phase C Min = 177.10
VA Power (VA)
25000
22500
20000
17500
15000
12500
10000
7500
5000
2500
0
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17

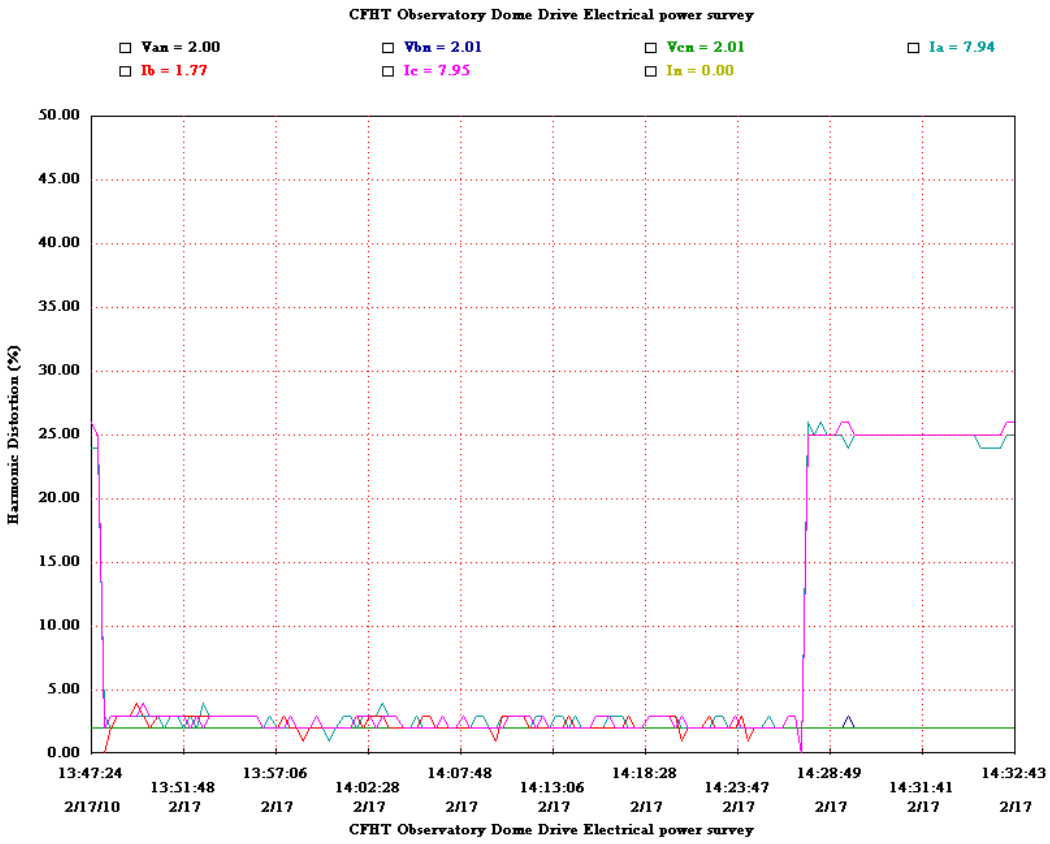

CFHT Observatory Dome Drive Electrical power survey
Total = 22711.8
VA Power (VA)
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17
CFHT Observatory Dome Drive Electrical power survey


Phase A Ave = 0.55
Phase A Max = 0.75
Phase A Min = 0.11
Power Factor (no units)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17


CFHT Observatory Dome Drive Electrical power survey
Phase B Ave = 0.75
Phase B Max = 1.00
Phase B Min = 0.29
Power Factor (no units)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17


CFHT Observatory Dome Drive Electrical power survey
Phase C Ave = 0.71
Phase C Max = 0.81
Phase C Min = 0.32
Power Factor (no units)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17


CFHT Observatory Dome Drive Electrical power survey
Ave Total = 0.63
Power Factor (no units)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17
CFHT Observatory Dome Drive Electrical power survey
Ave Freq = 59.99
Max Freq = 60.10
Min Freq = 59.90
Frequency (Hz)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17


CFHT Observatory Dome Drive Electrical power survey
Van = 2.00
Vbn = 2.01
Vcn = 2.01
Ia = 7.94
Ib = 1.77
Ic = 7.95
In = 0.00
Harmonic Distortion (%)
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17
CFHT Observatory Dome Drive Electrical power survey
Phase A = 4.78
Phase B = 4.67
Phase C = 4.59
Total = 14.05
Energy (kilowatt hours)
25.00
22.50
20.00
17.50
15.00
12.50
10.00
7.50
5.00
2.50
0.00
13:47:24 2/17/10
13:51:48 2/17
13:57:06 2/17
14:02:28 2/17
14:07:48 2/17
14:13:06 2/17
14:18:28 2/17
14:23:47 2/17
14:28:49 2/17
14:31:41 2/17
14:32:43 2/17