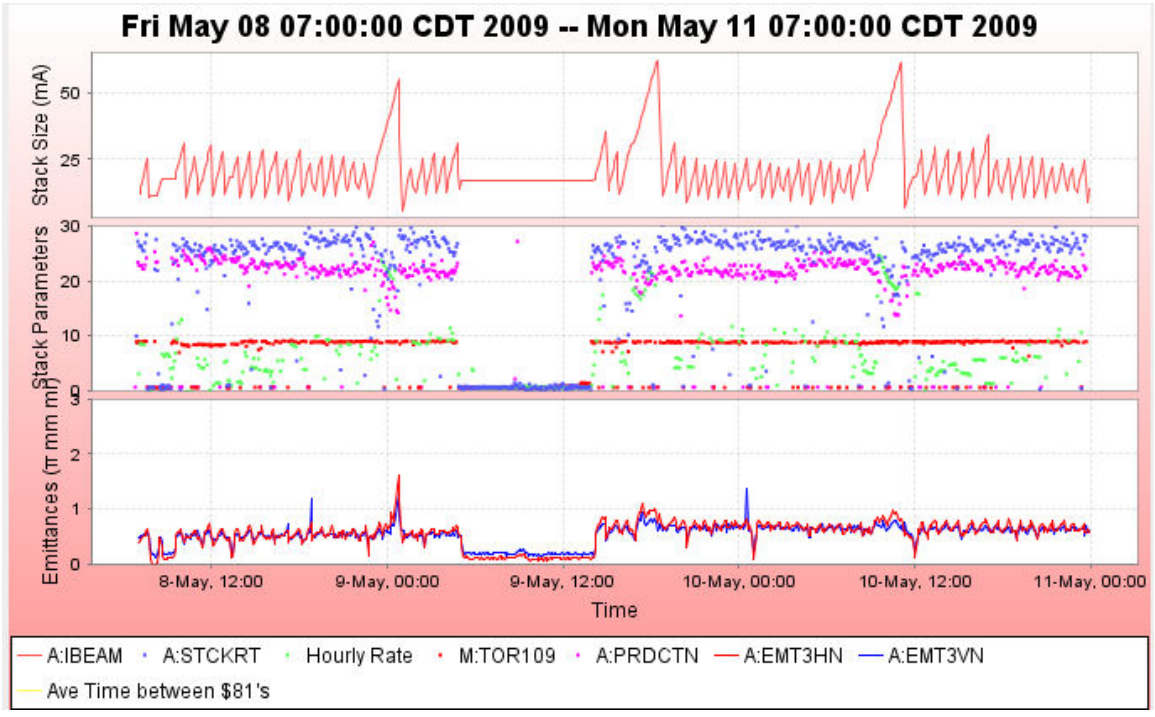
2009-05-11 Monday Pbar Notes

Monday, May 11, 2009
7:05 AM

Stacking

- Stacked 1445mA (average 481mA)
  - <stacking rate> = 25.5mA/hr
  - <production> = 26e-6/p
  - <beam on target> = 8.19e12
- HV102 water leak
- Debuncher momentum band 3 TWTs tripped
  - diode amplifier card showing fault on the B side for D:P3TW03
  - Replaced with a spare card
  - Reset
- D:ISEPV ground fault trip/vacuum
  - Tripped a few times over the weekend.
  - We will look at this more closely.
- D:IKIK scope hung
  - Required a scope power cycle.
  - To assist with this problem. DVM has a an aggregate called "Trouble with INJFLX"
- D:LNV external interlocks trip.
  - There was not clear indication as to the cause of the trip
  - Reset ok remotely.
- Motion control
  - Ops report a bit sluggish.
  - We will look at this today
- LCW Makeup
- D:EKIK module #1 timing a bit better after Obie made a supply adjustment.
- Target Rotation Readback started misbehaving around 1600 on Sunday
  - Experts are looking at this.



Transfers

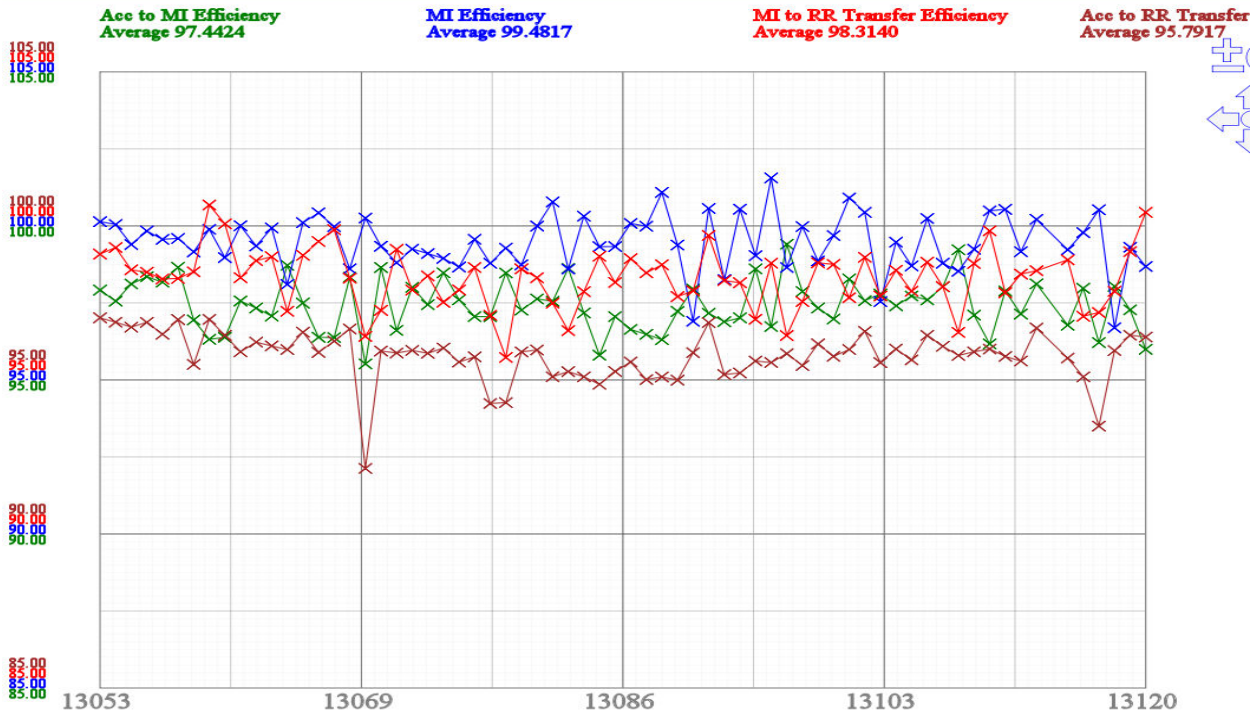
- Unstacked 1441e10 in 144 transfers over 67 sets.

- Accumulator to Recycler efficiency is 95.4%
- Efficiency from only the two transfer sets was 95.9%
- We are down ~0.5%,
  - We should force a beam line tune-up.
  - Core emittances are up by about 1pi - not sure why?
  - Parasitic transfer function measurements.

Column 1 Number_0_Pbar Transfer Shot #	Column 4 Number_3_Transfer Time		Column 21 Number_20_A:IBEAMB sampled on $91 (A:BEAM7), E10	Column 22 Number_21_A:IBEAMB sampled on $94 (A:BEAM9), E10	Unstacked (mA)	Column 23 Number_22_R:BEAMS (R:BEAME0[0]) pre xfer E10	Column 24 Number_23_R:BEAM (R:BEAME0[1]) post xfer, E10	Stashed	Acc to RR Eff	Acc to MI Eff	Acc to MI2 Eff	Transfers	Sets	Column 5 Number_4_Acc Horizontal Emittance	Column 6 Number_5_Acc Yertical Emittance	Column 8 Number_7_Acc Longitudinal Emittance
	Totals =>				1441.61			1375.18	95.39%	97.28%	96.93%	144	67	5.8357	5.278	1.8813
13120	Monday, May 11, 2009	6:45	26.92	9.84	18.42	108.10	125.80	17.74	96.32%	96.32%	95.11%	2	1	5.767	5.443	1.907
13119	Monday, May 11, 2009	5:13	26.35	9.05	18.59	90.39	108.27	17.90	96.32%	97.44%	96.94%	2	1	5.889	5.282	1.871
13118	Monday, May 11, 2009	4:20	24.92	8.89	17.40	73.82	90.48	16.69	95.96%	97.82%	95.20%	2	1	6.063	5.428	1.893
13117	Monday, May 11, 2009	1:22	73.52	8.31	70.05	9.20	73.95	64.94	92.70%	96.13%	96.56%	5	1	8.004	6.521	1.961
13116	Monday, May 11, 2009	0:42	25.56	9.22	17.56	365.55	382.08	16.69	95.03%	97.91%	97.73%	2	1	6.278	5.977	1.888
13115	Monday, May 11, 2009	23:36	27.83	9.62	19.39	348.33	366.74	18.52	95.51%	96.80%	96.39%	2	1	6.291	5.678	1.869
13113	Sunday, May 10, 2009	22:53	24.67	6.48	19.35	331.27	349.88	18.73	96.80%	97.91%	98.21%	2	1	4.829	4.631	1.785
13112	Sunday, May 10, 2009	22:13	25.26	8.70	17.76	315.41	332.28	16.99	95.65%	97.29%	96.57%	2	1	6.098	5.541	1.873
13111	Sunday, May 10, 2009	21:28	26.64	9.07	18.74	298.47	316.32	17.93	95.68%	97.89%	98.41%	2	1	5.879	5.388	1.87
13110	Sunday, May 10, 2009	20:47	25.11	8.39	17.90	282.26	299.33	17.17	95.93%	96.36%	96.88%	2	1	6.039	5.607	1.866
13109	Sunday, May 10, 2009	20:04	25.72	8.69	18.24	265.49	282.94	17.53	96.06%	97.00%	96.45%	2	1	6.038	5.55	1.887
13108	Sunday, May 10, 2009	19:18	27.89	9.38	19.70	247.36	266.17	18.86	95.74%	99.03%	98.04%	2	1	6.27	5.638	1.864
13107	Sunday, May 10, 2009	18:31	27.46	9.31	19.34	229.49	247.93	18.55	95.92%	97.99%	97.26%	2	1	6.101	5.649	1.858
13106	Sunday, May 10, 2009	17:44	27.99	10.01	19.26	211.49	229.96	18.57	96.43%	97.78%	98.03%	2	1	6.076	5.447	1.885
13105	Sunday, May 10, 2009	17:00	28.36	9.61	20.00	192.72	211.81	19.12	95.62%	97.60%	96.70%	2	1	5.949	5.315	1.87
13104	Sunday, May 10, 2009	15:59	33.87	10.94	24.20	170.03	193.10	23.20	95.90%	97.44%	97.22%	2	1	6.22	5.318	1.839
13103	Sunday, May 10, 2009	15:09	28.96	10.08	20.17	151.22	170.38	19.23	95.34%	97.64%	95.72%	2	1	5.908	5.67	1.892
13102	Sunday, May 10, 2009	14:17	28.92	9.08	21.11	131.12	151.46	20.37	96.51%	97.65%	98.18%	2	1	5.118	4.524	1.837
13101	Sunday, May 10, 2009	13:27	29.47	9.95	20.84	111.39	131.27	19.99	95.92%	98.21%	98.94%	2	1	6.22	5.465	1.877
13100	Sunday, May 10, 2009	12:32	30.25	10.45	21.04	91.50	111.57	20.12	95.61%	96.85%	96.50%	2	1	6.569	5.724	1.907
13099	Sunday, May 10, 2009	11:08	28.88	10.32	19.75	72.79	91.68	18.96	96.03%	97.28%	96.51%	2	1	6.267	5.75	1.908
13098	Sunday, May 10, 2009	8:37	62.44	6.29	59.10	16.84	72.91	56.23	95.14%	97.68%	97.58%	4	1	6.367	5.395	1.868
13097	Sunday, May 10, 2009	7:38	29.74	11.33	19.71	351.29	370.03	18.90	95.86%	99.15%	97.65%	2	1	5.752	5.627	1.924
13096	Sunday, May 10, 2009	6:58	24.16	8.66	16.83	336.97	352.91	16.09	95.58%	96.68%	97.96%	2	1	5.686	5.626	1.886
13095	Sunday, May 10, 2009	6:15	24.61	9.16	16.77	322.11	337.97	16.03	95.60%	98.66%	97.26%	2	1	6.193	5.88	1.893
13094	Sunday, May 10, 2009	5:34	24.35	8.16	17.33	306.73	323.10	16.51	95.24%	97.07%	97.72%	2	1	5.366	5.518	1.869
13093	Sunday, May 10, 2009	4:51	24.37	8.67	17.01	291.47	307.55	16.17	95.06%	96.87%	95.77%	2	1	5.92	5.612	1.895
13092	Sunday, May 10, 2009	4:05	24.89	7.95	18.18	274.66	292.17	17.63	96.95%	97.26%	97.82%	2	1	5.028	4.78	1.869
13091	Sunday, May 10, 2009	3:24	24.73	8.74	17.24	258.95	275.40	16.52	95.82%	97.82%	95.04%	2	1	5.845	5.606	1.878
13090	Sunday, May 10, 2009	2:48	23.61	8.75	16.15	244.15	259.45	15.35	95.03%	97.36%	96.87%	2	1	6.245	5.562	1.912

13089	Sunday, May 10, 2009	2:06	25.49	9.47	17.33	228.16	244.60	16.45	94.92%	96.18%	97.15%	2	1	6.53	5.651	1.897
13088	Sunday, May 10, 2009	1:29	24.29	8.84	16.72	212.70	228.52	15.88	94.94%	96.35%	96.57%	2	1	6.533	5.864	1.885
13087	Sunday, May 10, 2009	0:32	26.33	9.46	18.18	195.63	212.95	17.37	95.52%	96.99%	96.99%	2	1	6.308	5.604	1.894
13086	Sunday, May 10, 2009	23:49	26.21	9.08	18.42	178.47	195.94	17.54	95.22%	96.97%	96.19%	2	1	6.24	5.481	1.88
13085	Saturday, May 09, 2009	23:08	25.42	9.07	17.64	162.05	178.73	16.72	94.77%	95.88%	95.02%	2	1	6.123	5.552	1.887
13084	Saturday, May 09, 2009	22:26	25.21	9.15	17.34	145.79	162.26	16.47	95.02%	97.16%	97.48%	2	1	6.653	5.865	1.893
13083	Saturday, May 09, 2009	21:44	25.00	8.38	17.91	128.93	145.98	17.05	95.21%	98.61%	97.31%	2	1	5.829	5.19	1.867
13082	Saturday, May 09, 2009	21:06	24.33	8.89	16.74	113.16	129.03	15.91	95.04%	97.47%	98.16%	2	1	6.067	5.682	1.895
13081	Saturday, May 09, 2009	20:19	25.90	9.32	17.86	96.22	113.30	17.12	95.83%	97.26%	97.11%	2	1	6.363	5.762	1.893
13080	Saturday, May 09, 2009	19:39	26.68	8.31	19.69	77.53	96.37	18.89	95.91%	97.25%	96.57%	2	1	6.045	5.697	1.857
13079	Saturday, May 09, 2009	18:33	32.55	11.79	22.03	56.90	77.64	20.77	94.28%	98.33%	97.65%	2	1	7.14	5.893	1.913
13078	Saturday, May 09, 2009	15:44	63.43	9.66	58.89	1.94	56.96	55.20	93.74%	96.51%	95.90%	5	1	7.444	6.255	1.96
13077	Saturday, May 09, 2009	14:55	29.56	10.95	19.92	168.11	187.09	19.03	95.53%	97.03%	96.38%	2	1	6.415	5.732	1.903
13076	Saturday, May 09, 2009	4:47	35.60	10.90	24.99	144.64	168.39	23.83	95.33%	97.42%	96.22%	2	1	5.992	5.545	1.811
13075	Saturday, May 09, 2009	3:51	31.77	11.76	21.25	126.17	146.50	20.37	95.86%	98.22%	97.02%	2	1	5.641	4.899	1.892
13074	Saturday, May 09, 2009	3:10	26.31	9.99	17.63	109.49	126.39	16.90	95.81%	97.54%	96.89%	2	1	5.297	4.473	1.898
13073	Saturday, May 09, 2009	2:26	27.28	10.15	18.42	92.04	109.66	17.67	95.95%	98.28%	97.67%	2	1	5.469	4.864	1.897
13072	Saturday, May 09, 2009	1:43	25.77	9.62	17.49	75.35	92.10	16.76	95.79%	96.56%	95.77%	2	1	4.999	4.673	1.926
13071	Saturday, May 09, 2009	0:49	25.17	9.01	17.40	58.78	75.45	16.68	95.84%	98.75%	98.51%	2	1	5.067	4.632	1.89
13070	Saturday, May 09, 2009	22:33	56.08	5.61	53.21	11.10	58.88	48.05	90.31%	94.79%	95.18%	4	1	7.331	6.54	1.834
13069	Friday, May 08, 2009	21:48	26.64	8.71	19.11	365.03	383.32	18.47	96.63%	98.47%	97.41%	2	1	4.971	4.431	1.833
13068	Friday, May 08, 2009	21:02	27.43	9.94	18.86	348.26	366.28	18.15	96.28%	96.47%	96.27%	2	1	5.2	4.423	1.903
13067	Friday, May 08, 2009	20:18	27.19	9.10	19.00	331.18	349.30	18.20	95.81%	96.45%	96.87%	2	1	4.99	4.536	1.878
13066	Friday, May 08, 2009	19:33	27.97	9.81	19.41	313.55	332.16	18.75	96.57%	97.79%	97.68%	2	1	5.016	4.478	1.861
13065	Friday, May 08, 2009	18:48	27.63	9.94	19.00	296.44	314.49	18.22	95.89%	98.61%	97.04%	2	1	5.481	4.97	1.871
13064	Friday, May 08, 2009	18:02	26.81	9.03	18.80	279.32	297.22	18.04	95.96%	96.95%	96.90%	2	1	4.743	4.554	1.835
13063	Friday, May 08, 2009	17:11	29.09	9.95	20.27	260.51	279.89	19.51	96.24%	97.08%	96.70%	2	1	5.025	4.625	1.867
13062	Friday, May 08, 2009	16:27	27.13	9.57	18.86	243.09	261.15	18.07	95.84%	97.33%	97.49%	2	1	5.088	4.586	1.871
13061	Friday, May 08, 2009	15:34	28.83	10.25	19.89	224.45	243.51	19.16	96.32%	96.45%	95.63%	2	1	4.949	4.369	1.898
13060	Friday, May 08, 2009	14:39	30.24	10.20	21.25	204.77	225.29	20.58	96.88%	96.40%	96.19%	2	1	4.86	4.535	1.886
13059	Friday, May 08, 2009	13:49	28.96	9.82	20.43	185.75	205.18	19.50	95.46%	96.93%	96.39%	2	1	6.298	5.401	1.866
13058	Friday, May 08, 2009	12:48	27.59	9.66	19.03	167.65	186.03	18.43	96.86%	98.32%	98.16%	2	1	4.83	4.322	1.867
13057	Friday, May 08, 2009	11:56	28.82	10.32	19.72	148.99	167.98	19.03	96.49%	98.07%	97.77%	2	1	5.39	4.85	1.89
13056	Friday, May 08, 2009	10:57	30.50	9.51	22.13	127.85	149.23	21.42	96.78%	98.51%	98.10%	2	1	5.026	4.549	1.873
13055	Friday, May 08, 2009	10:10	28.49	10.19	19.57	109.20	128.09	18.93	96.72%	98.23%	97.71%	2	1	5.092	4.688	1.904
13054	Friday, May 08, 2009	7:38	31.19	10.61	21.91	88.07	109.30	21.24	96.92%	97.51%	97.48%	2	1	4.871	4.645	1.878
13053	Friday, May 08, 2009	6:56	26.45	9.53	18.22	70.85	88.51	17.66	96.92%	97.70%	97.85%	2	1	4.897	4.66	1.896

Column 4 Number_3_Transfer Time	Column 21 Number_20_A:IBEAMB sampled on $91 (A:BEAM7), E10	Column 22 Number_21_A:IBEAMB sampled on $94 (A:BEAM9), E10	Unstacked (mA)	Column 23 Number_22_R:BEAMS (R:BEAME0[0]) pre xfer E10	Column 24 Number_23_R:BEAM (R:BEAME0[1]) post xfer, E10	Stashed	Acc to RR Eff	Acc to MI Eff	Acc to MI2 Eff	Transfers	Sets	Column 5 Number_4_Acc Horizontal Emittance	Column 6 Number_5_Acc Vertical Emittance	Column 8 Number_7_Acc Longitudinal Emittance
Totals =>			1200.37			1150.77	95.87%	97.48%	97.04%	144	63	5.7356	5.2209	1.8798



Studies

- None

Requests

- None

The Numbers

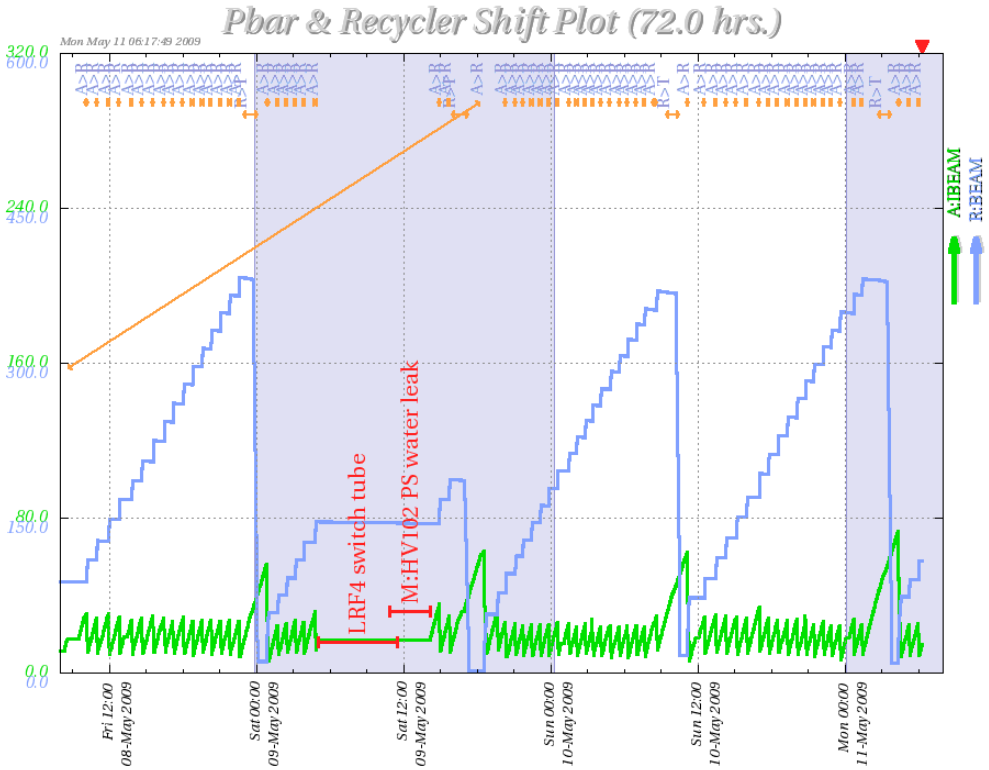
- Paul's Numbers
  - Most in a half hour: 13.36 mA at Mon May 11 01:55:49 CDT 2009
  - Best Hour: 28.56 mA on 20-Dec-08
  - Average Production 18.89 e-6/proton Best: 25.41 e-6/proton on 01/30/2008
  - Average Protons on Target 7.85 e12 Best: 8.77 e12 on 07/24/2007
- Al's Numbers
  - Stacking
    - Pbars stacked: 1444.76 E10
    - Time stacking: 63.45 Hr
    - Average stacking rate: 22.77 E10/Hr
  - Uptime
    - Number of pulses while in stacking mode: 96433
    - Number of pulses with beam: 87499
    - Fraction of up pulses was: 90.74%
  - The uptime's effect on the stacking numbers
    - Corrected time stacking: 57.57 Hr
    - Possible average stacking rate: 25.09 E10/Hr
    - Could have stacked: 1592.28 E10/Hr
  - Recycler Transfers
    - Pbars sent to the Recycler: 1441.61 E10
    - Number of transfers : 144
    - Number of transfer sets: 67
    - Average Number of transfer per set: 2.15

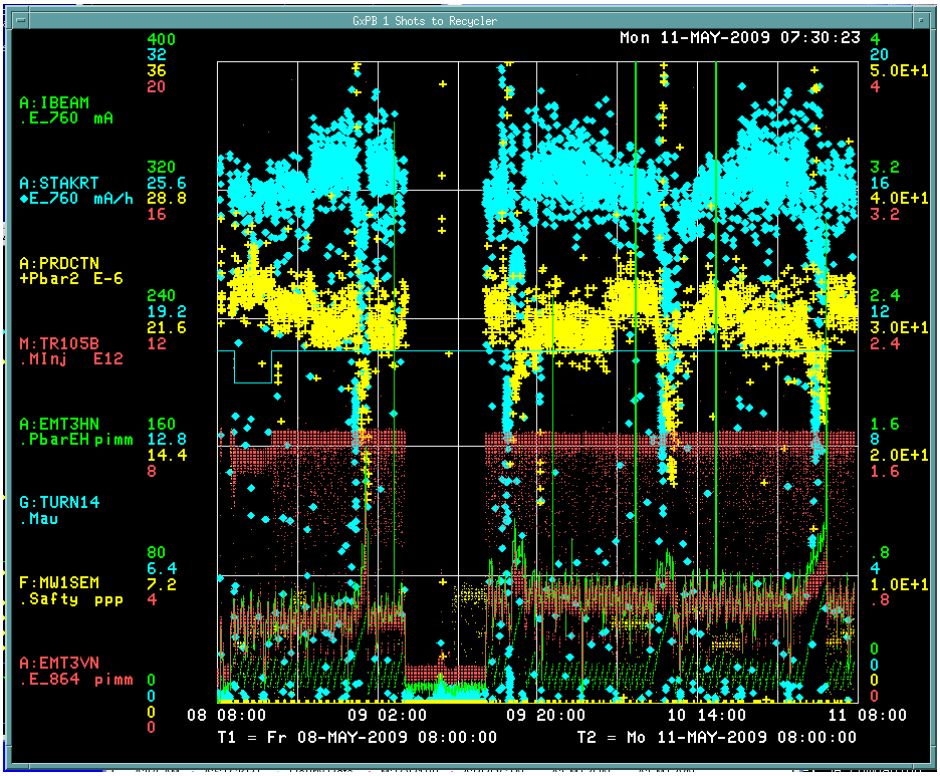
- Time taken to shoot including reverse proton tuneup: 00.82 Hr
- Transfer efficiency: 95.35%

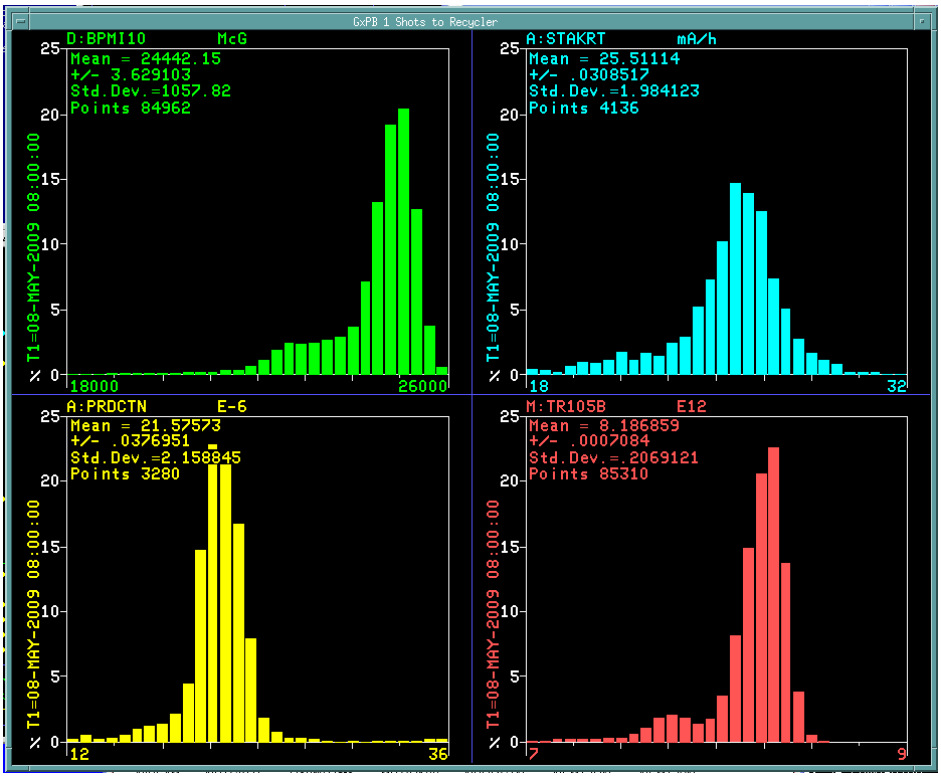
- Other Info
  - Average POT : 8.14 E12
  - Average production: 20.27 pbars/E6 protons

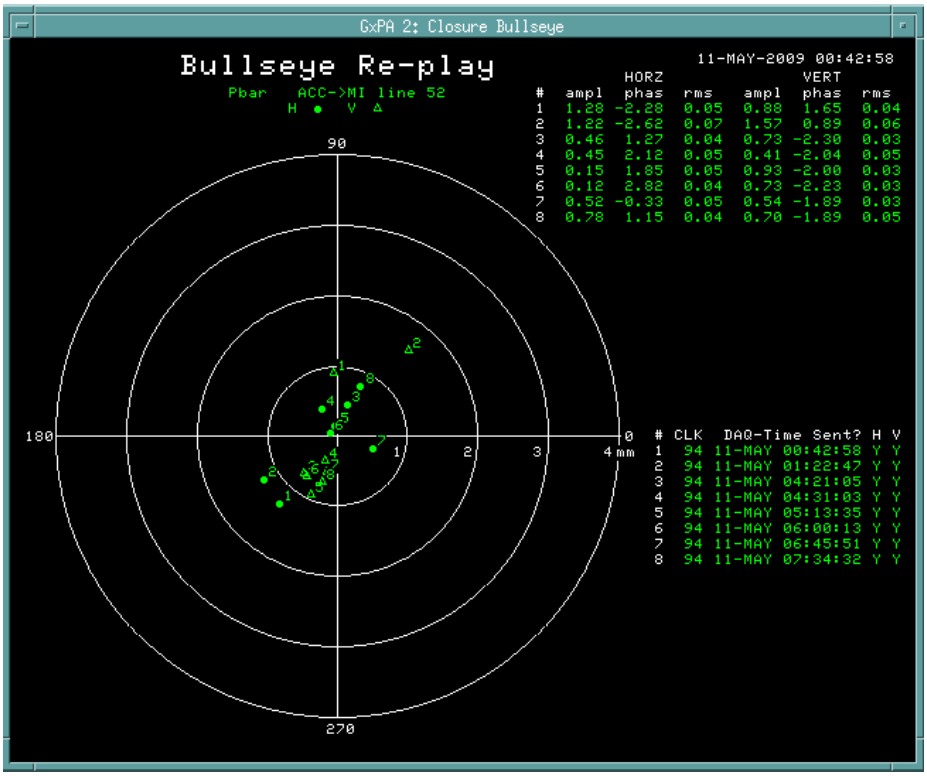
- * Missed one or more A:IBEAM7 events somewhere in the middle of the user selected time span. Calculated time shot using 13 secs per transfer.

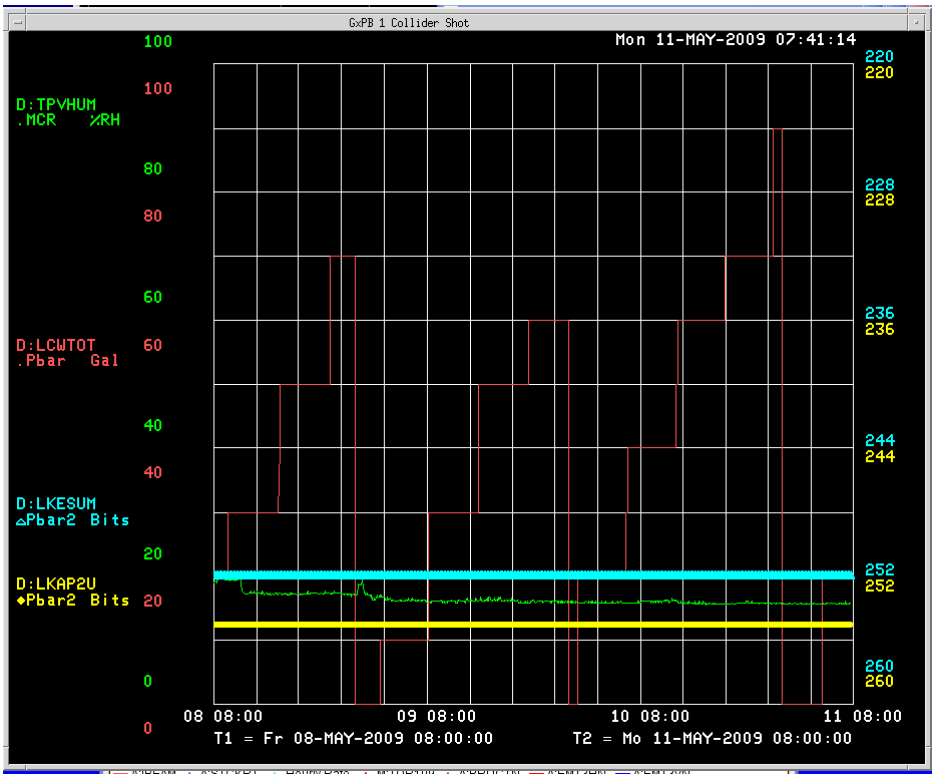
Misc

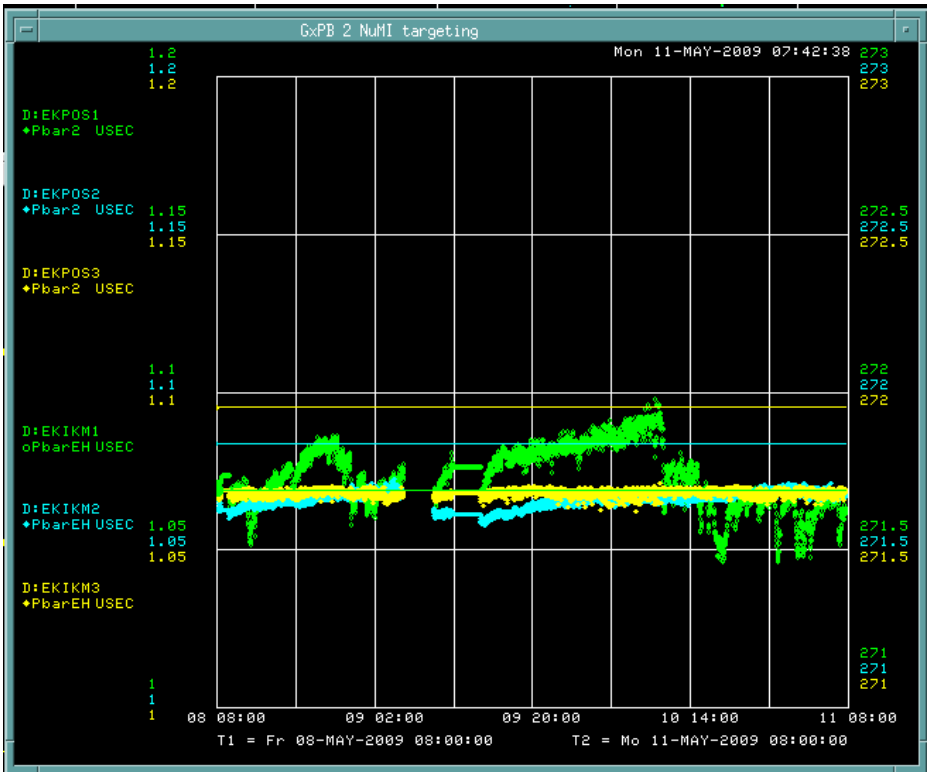


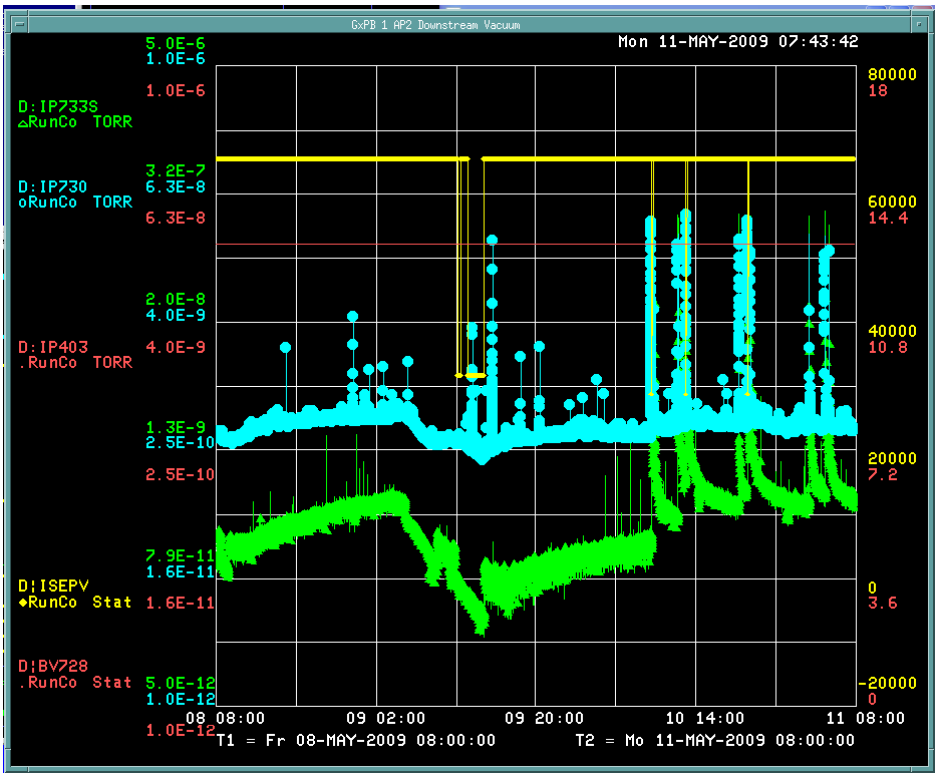

GxPB 1 Shots to Recycler
Mon 11-MAY-2009 07:30:23
A:IBEAM
.E_760 mA
A:STAKRT
♦E_760 mA/h
A:PRDCTN
+Pbar2 E-6
M:TR105B
.MInj E12
A:EMT3HN
.PbarEH pimm
G:TURN14
.Mau
F:MW1SEM
.Safty ppp
A:EMT3VN
.E_864 pimm
08 08:00
09 02:00
09 20:00
10 14:00
11 08:00
T1 = Fr 08-MAY-2009 08:00:00
T2 = Mo 11-MAY-2009 08:00:00

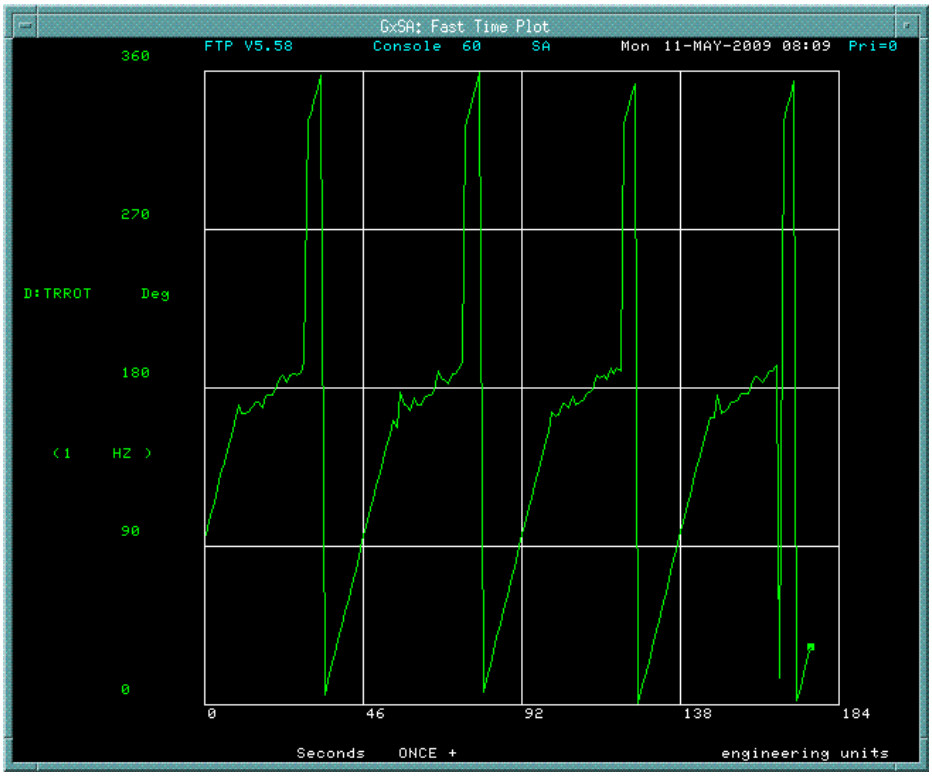

GxPB 1 Shots to Recycler
D:BPMI10 McG
Mean = 24442.15
+/- 3.629103
Std.Dev.=1057.82
Points 84962
A:STAKRT mA/h
Mean = 25.51114
+/- .0308517
Std.Dev.=1.984123
Points 4136
A:PRDCTN E-6
Mean = 21.57573
+/- .0376951
Std.Dev.=2.158845
Points 3280
M:TR105B E12
Mean = 8.186859
+/- .0007084
Std.Dev.=.2069121
Points 85310
T1=08-MAY-2009 08:00:00


GxPA 2: Closure Bullseye
Bullseye Re-play
11-MAY-2009 00:42:58
Pbar ACC->MI line 52
H ● V Δ
HORZ VERT
ampl phas rms ampl phas rms
1 1.28 -2.28 0.05 0.88 1.65 0.04
2 1.22 -2.62 0.07 1.57 0.89 0.06
3 0.46 1.27 0.04 0.73 -2.30 0.03
4 0.45 2.12 0.05 0.41 -2.04 0.05
5 0.15 1.85 0.05 0.93 -2.00 0.03
6 0.12 2.82 0.04 0.73 -2.23 0.03
7 0.52 -0.33 0.05 0.54 -1.89 0.03
8 0.78 1.15 0.04 0.70 -1.89 0.05
90
180
0
270
1
2
3
4 mm
CLK DAQ-Time Sent? H V
1 94 11-MAY 00:42:58 Y Y
2 94 11-MAY 01:22:47 Y Y
3 94 11-MAY 04:21:05 Y Y
4 94 11-MAY 04:31:03 Y Y
5 94 11-MAY 05:13:35 Y Y
6 94 11-MAY 06:00:13 Y Y
7 94 11-MAY 06:45:51 Y Y
8 94 11-MAY 07:34:32 Y Y


GxPB 1 Collider Shot
Mon 11-MAY-2009 07:41:14
D:TPVHUM
.MCR %RH
D:LCWTOT
.Pbar Gal
D:LKESUM
ΔPbar2 Bits
D:LKAP2U
♦Pbar2 Bits
100
80
60
40
20
0
220
228
236
244
252
260
08 08:00
09 08:00
10 08:00
11 08:00
T1 = Fr 08-MAY-2009 08:00:00
T2 = Mo 11-MAY-2009 08:00:00


GxPB 2 NuMI targeting
Mon 11-MAY-2009 07:42:38
D:EKPOS1
♦Pbar2 USEC
D:EKPOS2
♦Pbar2 USEC
D:EKPOS3
♦Pbar2 USEC
D:EKIKM1
oPbarEH USEC
D:EKIKM2
♦PbarEH USEC
D:EKIKM3
♦PbarEH USEC
08 08:00
09 02:00
09 20:00
10 14:00
11 08:00
T1 = Fr 08-MAY-2009 08:00:00
T2 = Mo 11-MAY-2009 08:00:00


GxPB 1 AP2 Downstream Vacuum
Mon 11-MAY-2009 07:43:42
D:IP733S
▲RunCo TORR
D:IP730
oRunCo TORR
D:IP403
.RunCo TORR
D:ISEPV
♦RunCo Stat
D:BV728
.RunCo Stat
08 08:00
09 02:00
09 20:00
10 14:00
11 08:00
T1 = Fr 08-MAY-2009 08:00:00
T2 = Mo 11-MAY-2009 08:00:00



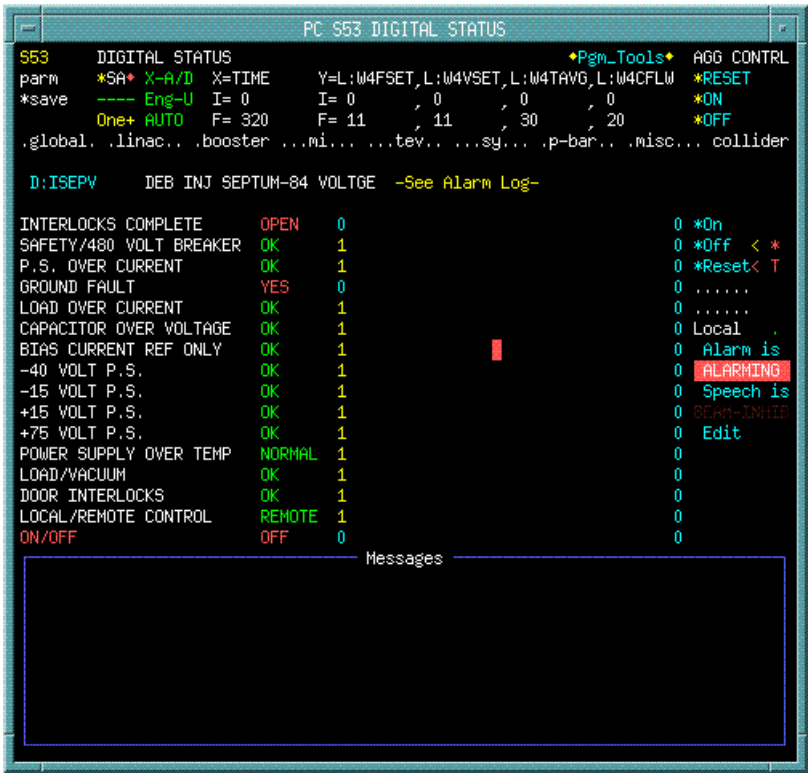
Logbooks

- MCR
  - Saturday, May 9, 10:57:52-
    Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2009&action=view&page=349&frame=2&anchor=&hilite=>
  - **M:HV102**

  - Saturday, May 9, 11:26- M:HV102 tripped off on incomplete interlocks. Ops locally assessed the situation and discovered the interlocks tripped on SCR failure. LCW was found leaking from the supply. The water has a dark brown color and smells sweet. Obie and Bernie were contacted. Obie is at least 30

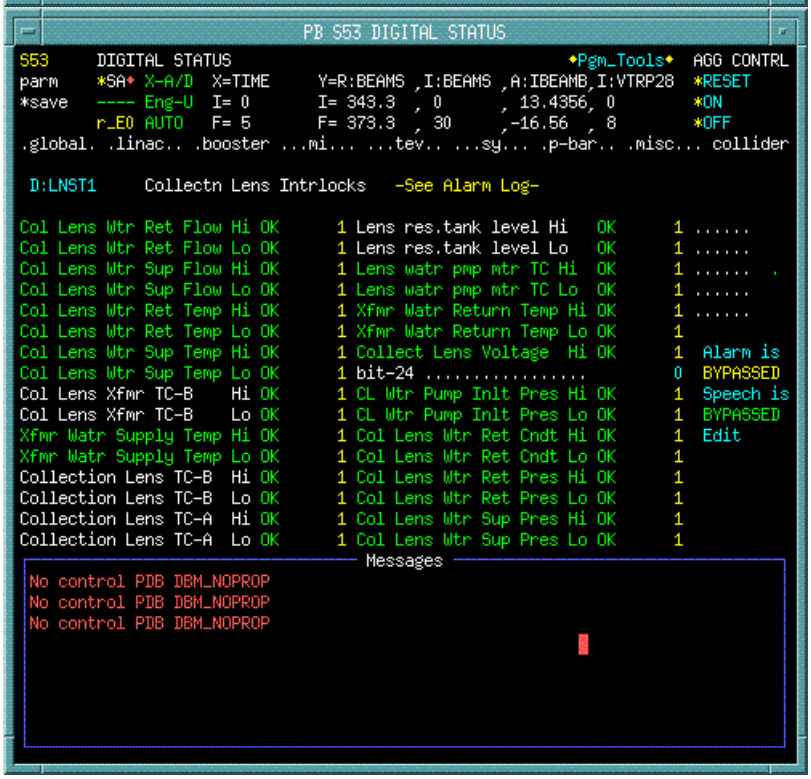
minutes away and Bernie is 1.5 hours away.

- Saturday, May 9, 12:26-Obie reports M:HV102 has a serious internal water leak. They will have to move around some of the other supplies at F23 to get inside and assess the leak
- Saturday, May 9, 13:07-Obie reports they have found a hose that needs replaced, but that it will take some time as its not easy to get at.
- Saturday, May 9, 14:13-We are back to stacking
- **D:P3TW03 and D:P3TW04**
- Sunday, May 10, 12:23:39- Debuncher TWTs D:P3TW03 and D:P3TW04 have been off since just before shot setup. Ops locally found a diode amplifier card showing fault on the B side for D:P3TW03. The fault migrated when swapping the card with another in the TWT protection monitor. Ops contacted Wes Mueller in order to find a replacement card. He suggested we page Pete Seifrid to help find a card
  Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2009&action=view&page=351&frame=2&anchor=&hilite=>
- Sunday, May 10, 14:09- DVM was in his office. He assisted us with cabinet locks and combinations at AP30 which allowed us to find the right spare DA card and replace it. Everything is OK now. Bad card is on Pete's desk
- **D:ISEPV**
- Sunday, May 10, 12:48- d:isepv tripped twice on a ground fault indication.
  Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2009&action=view&page=351&frame=2&anchor=&hilite=>



- **D:IKIK Scope**
- Sunday, May 10, 14:57-Pbar kicker timing program for D:IKIK was not responding. Tried a DAE reboot, then an OS reboot. A local power cycle of D:IKIK scope seems to have worked.
  Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2009&action=view&page=351&frame=2&anchor=&hilite=>

- **D:LNV**
- Monday, May 11, 00:08-D:LNV tripped off and won't reset. No bad status shows up on D:LNST1. Ops are en route to reset locally.
  Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2009&action=view&page=352&frame=2&anchor=&hilite=>



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- Monday, May 11, 00:20-Reset. Beam returns.
  Pasted from <http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2009&action=view&page=352&frame=2&anchor=&hilite=>
- **Motor Control:**
- While running through the 'Center Core H & V Pickups', it was difficult to knob A:MS1HH1 and A:MS1VV1. They appeared to be in a good spot. No changes were made.
  Pasted from <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar09&action=view&page=last&frame=2&anchor=&hilite=&load=>