

2011-03-21 Monday Morning Notes

Monday, March 21, 2011
5:00 AM

Stacking and Transfers

- Stacked 25.8mA/hr with a production of 20.77 pbars/Mp with 8.36Tp on target.
 - Numbers down a bit due to large stack sizes on Sunday
- Unstacked 1425E10 in 151 transfers over 45 sets with an overall efficiency of 93.7%.
 - Take away the transfers >35mA and we get 95.8%
 - Step function increase in transfer efficiency when MI experts tuned up Friday afternoon.
 - RR Scrapbook is dropping data on some of the transfers

Interesting Happenings

- Dump Reservoir tank
 - Weekend Fills
 - 3/18 - 0945
 - 3/18 - 1955
 - 3/19 - 0330
 - 3/19 - 0915
 - 3/19 - 1520
 - 3/19 - 2035
 - 3/20 - 0210
 - 3/20 - 0740
 - About 0.75 gallons/fill
 - <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar11&action=view&page=57&anchor=07:44:50>
 - Made-up Water 12 times in tree days. About 0.75 gallons/fill
- AP-1 line losses
 - At approximately 00:42, we see a change in the loss pattern at the end of the AP1 line on M:LM107A and M:LM107B. This time corresponds to the early part of an HEP shot setup, where timelines are starting to get shuffled around. The losses don't recover after the short setup is complete. A look at BPMs, power supply and trim readings, overthruster trim settings from P1 to AP1 show no obvious changes. Vacuum in the AP1 line looks ok. Vladimir was looking at the orbit. Beam quality changes out of the MI could also be responsible. Now beam has went away due to a 400 MeV chopper failure, so we will how things look when beam returns. It should be noted that the AP1 loss monitor inputs on P67 has only recently (since the shutdown that ended one week ago) been monitored. In the past this has been masked.
Pasted from <<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar11&action=view&page=57&frame=2&anchor=&hilite=&load=>>>
 - To add to the confusion, losses got even worse after \$21s were added to the TLG.
 - HV100, HV102 and V105 ramp compensation tuned for 2.2sec and not 2.4 seconds.
Pasted from <<http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2011&action=view&page=211&frame=2&anchor=&hilite=>>>
 - The immediate gain was operators runing through the MI tune-up.
 - It appears that ops tuning included mis-tuning transition, scraping that beam which reduced our losses.
 - MI experts will look at slip stacking to see if that can be tuned up and remove the transition mistiming to make beam better for both MI and Pbar.
 - Secondary gain was re-tuning the compensation ramps for the supplies.
- Lightning glitch took out the Core 4-8GHz momentum light link. A Pbar Rings access was in order (<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar11&action=view&page=58>)

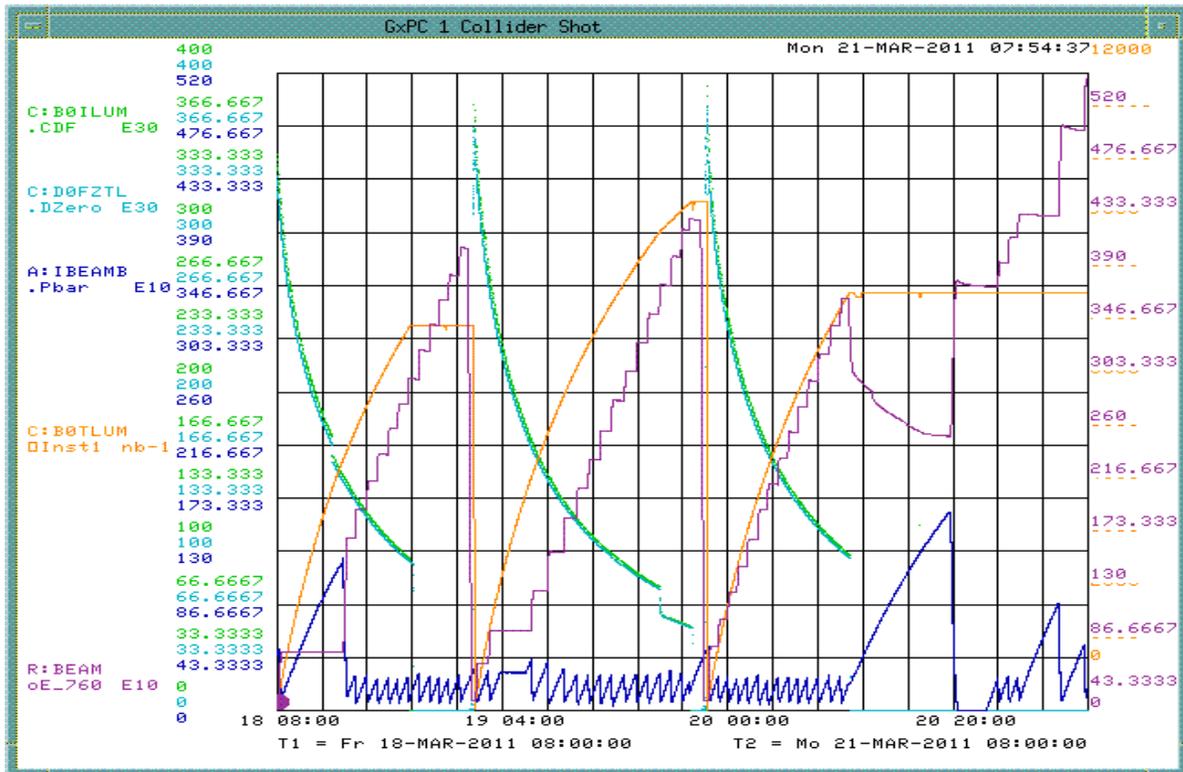
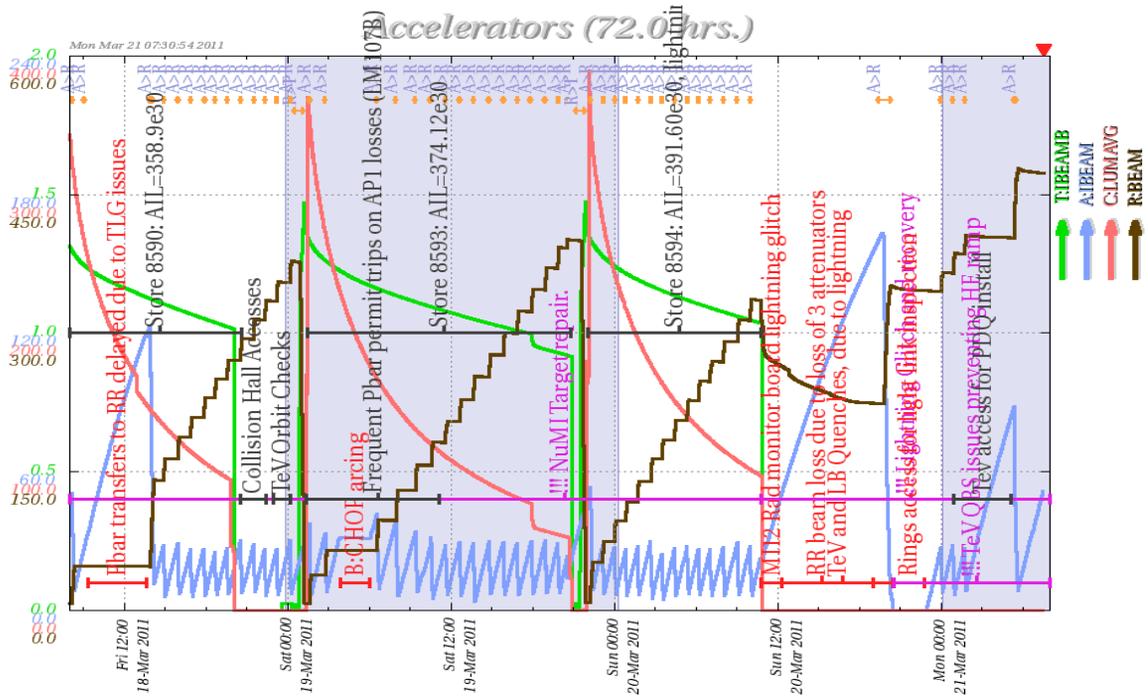
[&scroll=false&load=](#)):

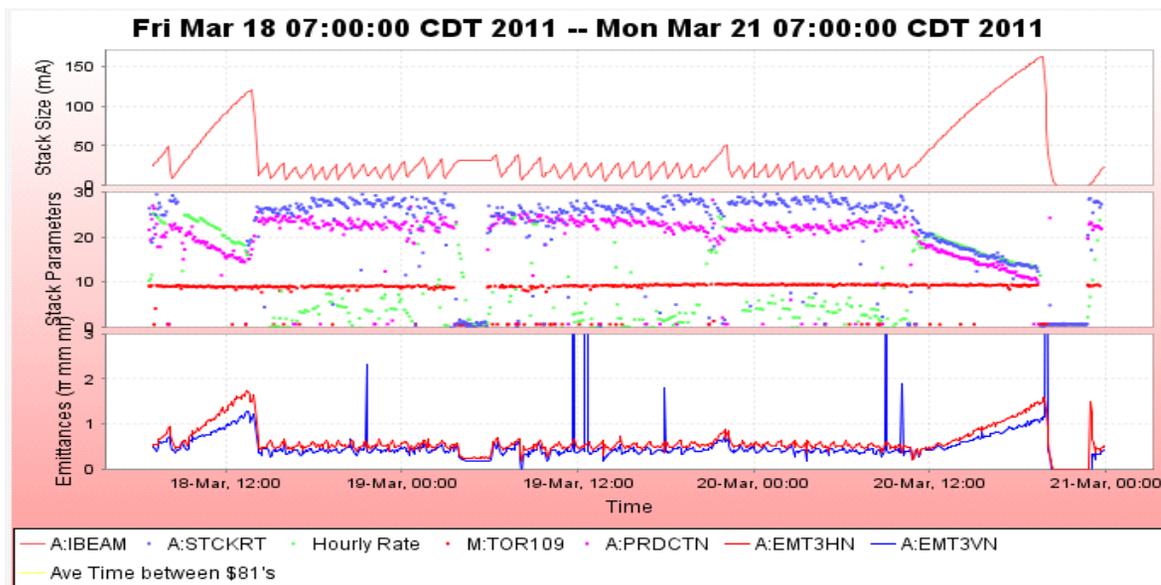
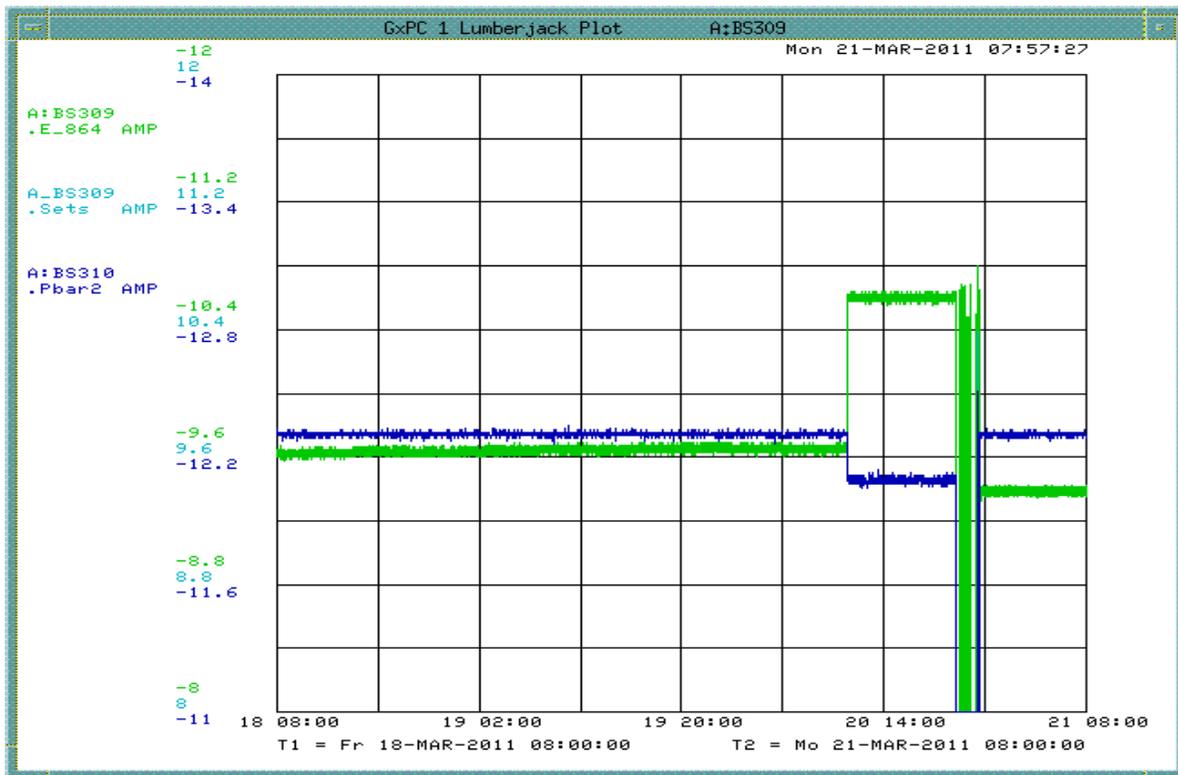
- **Core 4-8GHz Momentum:** Keith and Pete installed a new laser receiver at the 50 pit for the Core 4-8 Momentum system. I installed a 12V power supply upstairs in the A50 PLC rack and connected the diode current readback to CH8 of the PLC analog card. The data base name now points to the new location.
Pasted from <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar11&action=view&page=58&frame=2&anchor=&hilite=&load=>
 - 3 of the last 4 light link failures have happened on lightning strikes.
 - It turns out the power for both the transmitter (A20 stub) and receiver (A50 stub) were sourced from the A20 stub. Power was routed from A20, next to the light link, to A50. It is believed that this left us vulnerable to lightning strikes near the center of the ring. We moved the power supply for A50 to the AP50 service building to help eliminate this vulnerability.
- **A:BS309:** The DAC input voltage at shunt **A:BS309**, was correct at 4.16V for a request of 10.4A. A portable 5V/60A PS was connected across the shunt, and the shunt ran fine at 10.4A, except its MADC was 0.2A high. A new 289L isolation amp for the MADC was installed, but the offset of 0.2A was still present, so the MADC readback was readjusted. The original problem of unstable output current of the shunt, was not noticed. A bigger 30V/30A PS was needed to fully checkout the shunt, with its external dropping resistor installed. The bigger PS was hooked up, and the shunt ran fine. To be on the safe side, the 289L isolation amp for the DAC was replaced, and the reversing switch was bypassed. Time will tell if this fixed the unstable output current of shunt A:BS309. (B. Wisner, B. Drendel, D. Peterson, K. Gollwitzer)
Pasted from <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar11&action=view&page=58&frame=2&anchor=&hilite=&load=>
 - Initial indications are the readback is more stable.
- **Inspection:** Found a small LCW leak on the "big nut" on the LCW header of A1B3. 1 drip every 30 seconds (http://www-ad.fnal.gov/cgi-worklist/worklist_form.pl?id=13197).

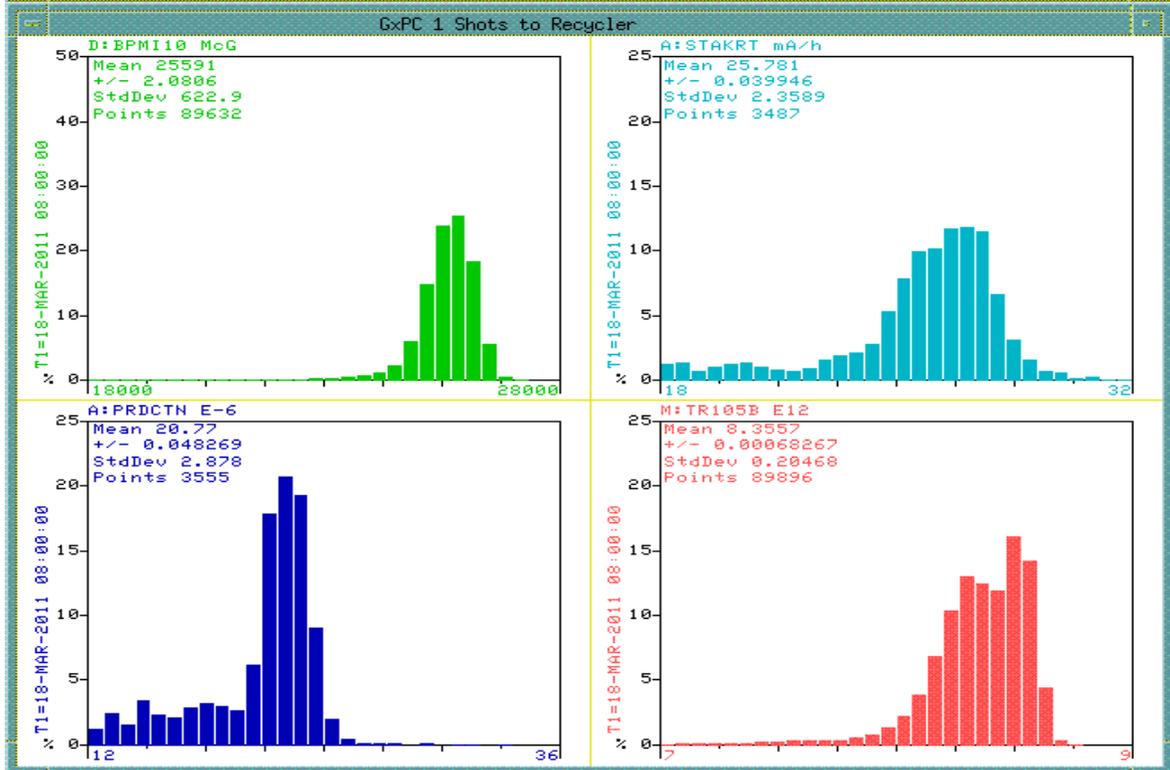
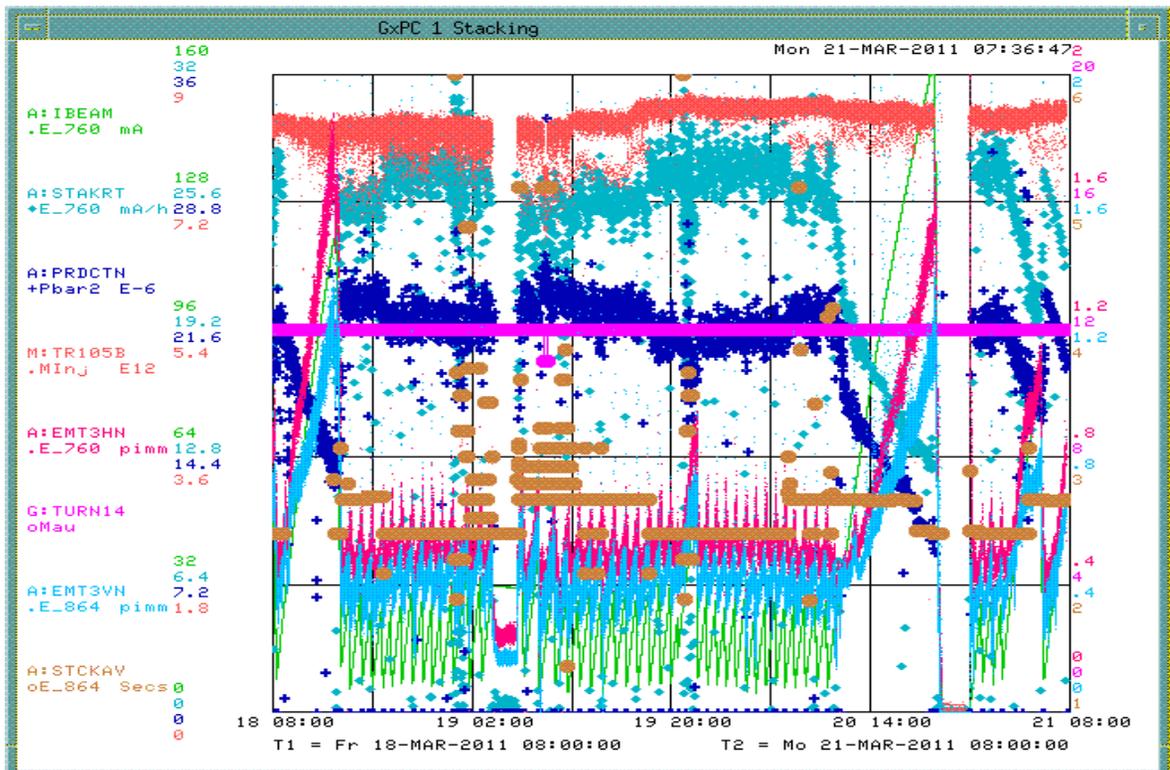
Numbers

- Stacking
 - Pbars stacked: 1535.19 E10
 - Time stacking: 67.34 Hr
 - Average stacking rate: 22.80 E10/Hr
- Uptime
 - Number of pulses while in stacking mode: 95941
 - Number of pulses with beam: 90559
 - Fraction of up pulses was: 94.39%
- The uptime's effect on the stacking numbers
 - Corrected time stacking: 63.56 Hr
 - Possible average stacking rate: 24.15 E10/Hr
 - Could have stacked: 1626.43 E10/Hr
- Recycler Transfers
 - Pbars sent to the Recycler: 1509.51 E10
 - Number of transfers : 160
 - Number of transfer sets: 49
 - Average Number of transfer per set: 3.27
 - Time taken to shoot including reverse proton tuneup: 00.56 Hr
 - Transfer efficiency: 92.99%
- Other Info
 - Average POT : 8.35 E12
 - Average production: 20.30 pbars/E6 protons

Plots



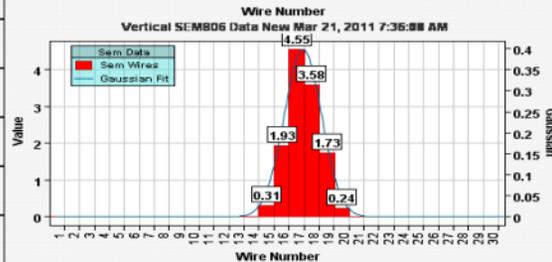
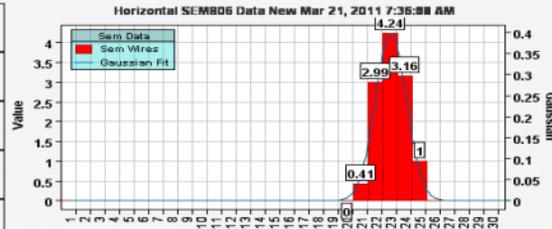




Horizontal Area New	11.8	Intensity
Horizontal Area Calc	209.24	Intensity
Horizontal Sigma New	2.98	mm
Horizontal Sigma Calc	2.81	mm
Horizontal Mean	24.34	mm
Vertical Area New	12.33	Intensity
Vertical Area Calc	213.31	Intensity
Vertical Sigma New	3.15	mm
Vertical Sigma Calc	2.96	mm
Vertical Mean	7.27	mm

View Lumberjack Data Pause Old Hardware

Get Logged Sem Data Animate Animation Delay 1000 milliseconds



Start Time Make End Time Now Stop Time

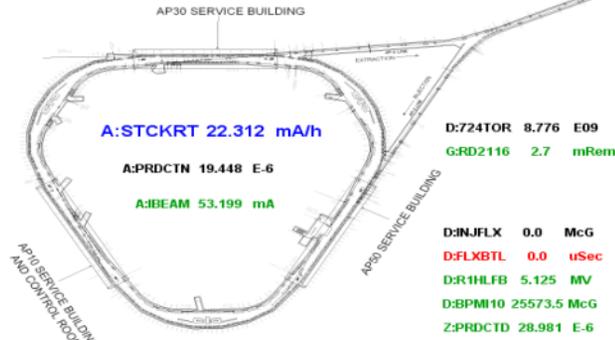
03/21/2011 07:29:09 03/21/2011 07:34:09

Pbar Source Accumulator, Debuncher, AP1, AP2, & AP3 Beamline Views

A:IBMINJ 14.841 e07 A:FRWIDTH 14.759 Hz A:EMT3HN 0.845 pimm
 A:LFTOVR 1.303 % A:CENFRQ 628898. Hz A:EMT3VN 0.632 plimm
 A:STMEDS 10.984 MeV A:R2DDS1 628897. Hz A:XFRNXT 75.0 mA
 A:R1HLFB 27.644 KV

Program Running: Yes V:APSMOD: Pbars To Recycler

MI EFF 0.0
 M:TR105B 8.493 E12
 G:TURN14 12.0 Turns
 E:14SUM3 0.0 E12

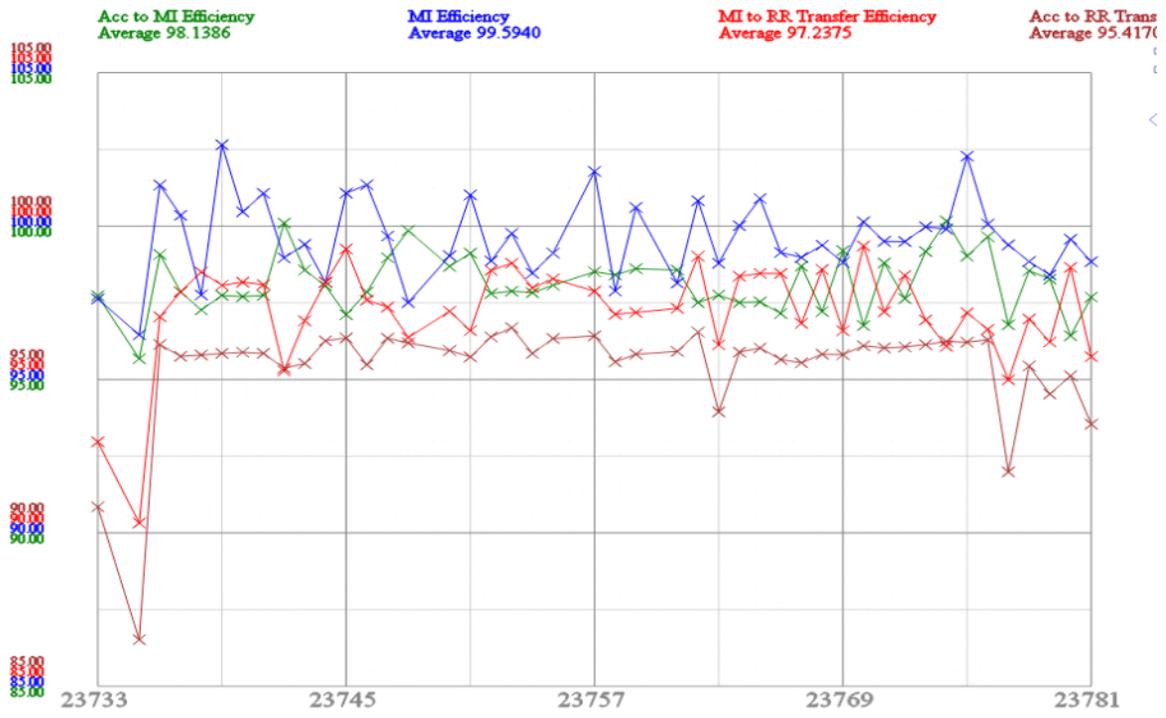


Pbar Beamlines BPM House Status

P1
 P2
 AP1
 AP2 F27
 AP2 AP50

0x80 Event Detected
 A:STCKAV 2.67 Socs

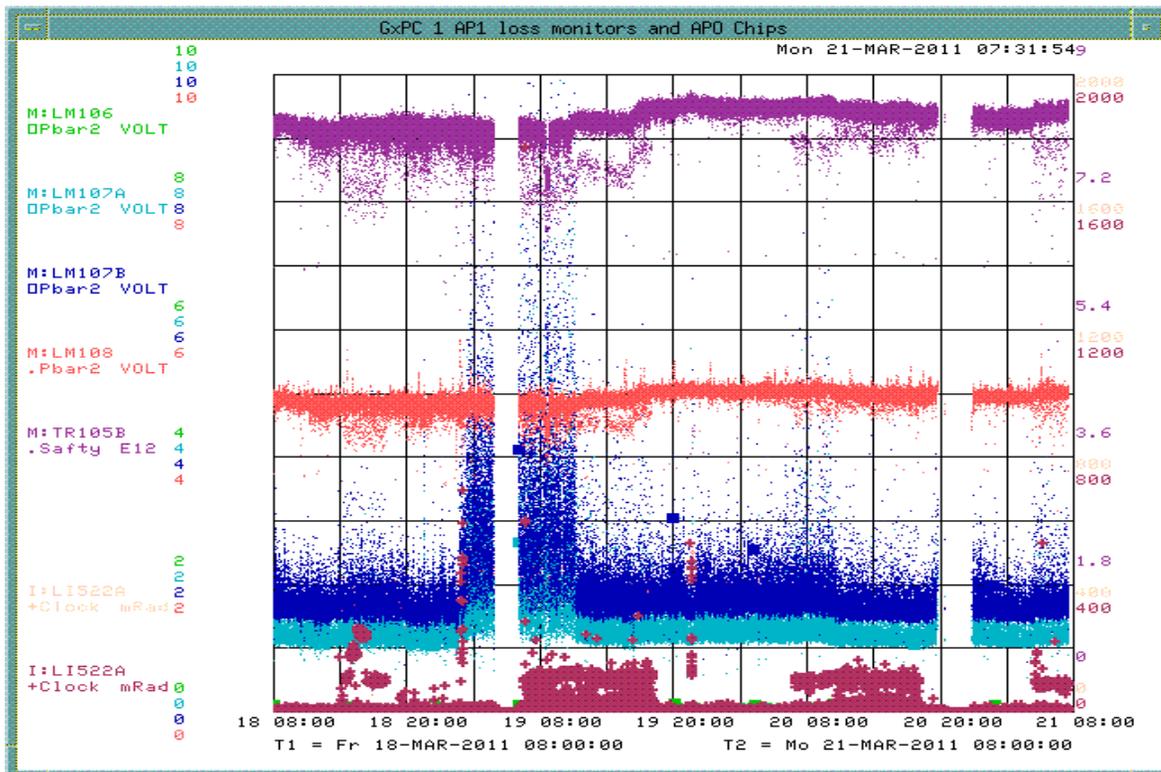
Overthruuster Status



Column 1 Number _0_Pbar Transfer Shot #	Column 4 Number_3 Transfer Time	Column 21 Number _20_A-I BEAMB sampled on #91 (A-BEA M7), E10	Column 22 Number _21_A-I BEAMB sampled on #94 (A-BEA M9), E10	Unstacked (mA)	Column 23 Number _22_R: BEAMS (R-BEA ME0[0]) pre fer E10	Column 24 Number _23_R: BEAM (R-BEA ME0[1]) post fer, E10	Stashed	Acc to RR Eff	Acc to MI Eff	Acc to MI2 Eff	Acc to MI * Acc to MI2 Efficiency	Trans fers	Sets	Column 5 Number _4_Acc Horizont al Emittanc e	Column 6 Number _5_Acc Vertical Emittanc e	Column 8 Number _7_Acc Longitu dinal Emittanc e	
Totals =>				1425.15			1335.71	93.72%	97.65%	96.80%	94.53%	151	45	5.4573	4.067	1.9274	
Daily Average =>				475.05			445.24					50	15				
23781	Monday, March 21, 2011	5:21	8:31	85.46	403.08	478.20	79.01	92.45%	97.15%	96.12%	93.39%	6	1	6.864	4.735	1.818	
23780	Monday, March 21, 2011	1:44	27.03	8.10	21.54	385.65	405.57	20.42	94.78%	96.49%	96.03%	92.65%	3	1	5.137	3.749	2.006
23779	Monday, March 21, 2011	0:52	28.53	6.69	23.54	365.06	386.82	22.19	94.27%	98.10%	96.69%	94.85%	3	1	4.783	3.601	1.947
23778	Sunday, March 20, 2011	23:59	27.30	7.69	22.05	345.39	365.97	21.00	95.26%	97.79%	97.01%	94.86%	3	1	5.049	3.628	1.988
23777	Sunday, March 20, 2011	19:48	161.66	4.76	156.48	223.83	352.01	139.44	89.11%	95.71%	94.67%	90.62%	12	1	6.931	4.631	1.848
23776	Sunday, March 20, 2011	9:58	27.84	6.06	24.25	313.80	336.71	23.37	96.37%	99.74%	99.34%	99.08%	3	1	5.019	3.805	1.953
23775	Sunday, March 20, 2011	9:02	29.41	6.66	25.35	290.67	314.66	24.40	96.23%	99.08%	100.30%	99.37%	3	1	5.186	3.789	1.88
23774	Sunday, March 20, 2011	7:59	27.55	6.44	23.76	269.00	291.45	22.86	96.21%	100.00%	99.41%	99.41%	3	1	5.177	3.828	1.952
23773	Sunday, March 20, 2011	7:02	26.69	6.21	23.15	247.80	269.64	22.23	96.03%	99.06%	98.83%	97.90%	3	1	5.128	3.818	1.938
23772	Sunday, March 20, 2011	6:10	26.32	6.23	22.30	227.23	248.32	21.44	96.12%	97.38%	97.16%	94.61%	3	1	5.502	4.059	1.961
23771	Sunday, March 20, 2011	5:21	27.70	6.75	23.19	205.69	227.62	22.30	96.18%	98.50%	98.41%	96.94%	3	1	5.18	3.9	1.943
23770	Sunday, March 20, 2011	4:26	27.27	6.58	22.89	184.39	206.08	21.97	95.99%	97.25%	96.94%	94.27%	3	1	5.265	3.983	1.945
23769	Sunday, March 20, 2011	3:29	24.60	4.67	21.85	164.02	184.72	20.92	95.77%	99.07%	98.02%	97.11%	3	1	4.654	3.492	1.934
23768	Sunday, March 20, 2011	2:40	30.01	4.92	26.57	139.15	164.32	25.45	95.77%	97.46%	96.73%	94.27%	3	1	4.691	3.428	1.847
23767	Sunday, March 20, 2011	1:43	27.75	6.58	23.33	117.35	139.39	22.27	95.47%	98.41%	97.36%	95.81%	3	1	5.418	3.966	1.936
23766	Sunday, March 20, 2011	0:50	26.33	6.51	22.08	96.61	117.53	21.13	95.69%	97.23%	96.91%	94.22%	3	1	5.4	3.995	1.922
23765	Sunday, March 20, 2011	0:01	27.90	6.65	23.45	74.48	96.80	22.52	96.03%	97.70%	98.27%	96.01%	3	1	5.367	3.999	1.932
23764	Saturday, March 19, 2011	23:09	28.42	6.82	23.82	52.03	74.66	22.85	95.95%	97.86%	97.96%	95.87%	3	1	5.309	4.037	1.953
23763	Saturday, March 19, 2011	22:16	53.46	8.47	48.07	8.28	52.37	44.88	93.37%	97.82%	96.48%	94.38%	4	1	7.149	5.314	1.886
23762	Saturday, March 19, 2011	20:33	23.50	13.63	9.87	392.02	401.55	9.53	96.55%	97.51%	98.31%	95.86%	1	1	5.035	3.984	1.985
23761	Saturday, March 19, 2011	19:51	29.25	7.12	24.36	370.18	393.06	23.36	95.90%	98.72%	97.26%	96.01%	3	1	5.511	4.114	1.985
23759	Saturday, March 19, 2011	17:55	30.23	6.72	26.19	323.34	347.93	25.07	95.72%	98.38%	98.78%	97.18%	3	1	5.197	3.97	1.934
23758	Saturday, March 19, 2011	16:51	29.60	6.48	25.78	299.88	324.15	24.66	95.64%	98.42%	96.98%	95.45%	3	1	5.212	3.996	1.936
23757	Saturday, March 19, 2011	15:50	29.59	6.64	25.63	276.39	300.59	24.69	96.33%	98.44%	100.06%	98.49%	3	1	5.34	3.997	1.943
23755	Saturday, March 19, 2011	13:39	29.52	4.02	26.62	228.15	253.39	25.62	96.25%	98.49%	97.67%	96.20%	3	1	4.343	3.193	1.875
23754	Saturday, March 19, 2011	12:38	29.67	6.20	25.75	204.39	228.59	24.63	95.62%	98.09%	96.50%	94.65%	3	1	4.974	3.753	1.936
23753	Saturday, March 19, 2011	11:36	28.13	6.41	24.36	181.69	204.81	23.51	96.53%	97.89%	98.01%	95.94%	3	1	5.07	3.694	1.951
23752	Saturday, March 19, 2011	10:33	29.06	4.94	26.15	157.09	182.03	25.25	96.55%	98.08%	96.94%	95.08%	3	1	4.726	3.407	1.875
23751	Saturday, March 19, 2011	9:24	34.61	7.50	29.57	129.61	157.45	28.29	95.68%	99.20%	99.80%	99.00%	3	1	5.372	4.118	1.907
23750	Saturday, March 19, 2011	7:59	39.50	6.40	34.61	97.41	130.00	33.10	95.65%	98.69%	97.41%	96.14%	3	1	5.06	3.949	1.868
23748	Saturday, March 19, 2011	2:45	33.49	7.95	27.98	38.57	65.08	26.86	95.98%	99.26%	97.15%	96.43%	3	1	5.623	4.423	1.938
23747	Saturday, March 19, 2011	1:37	37.57	6.56	32.47	7.83	38.80	31.25	96.23%	98.59%	98.26%	96.87%	3	1	4.923	3.781	1.837
23746	Saturday, March 19, 2011	0:10	30.09	7.08	25.19	354.71	378.24	24.06	95.53%	97.73%	98.53%	96.29%	3	1	5.246	4.126	1.948
23745	Friday, March 18, 2011	23:11	26.57	6.36	22.39	334.69	355.89	21.62	96.56%	97.83%	98.20%	96.07%	3	1	5.223	4.061	1.965
23744	Friday, March 18, 2011	22:19	26.77	6.43	22.58	314.47	335.67	21.71	96.15%	98.07%	96.58%	94.71%	3	1	5.257	3.779	1.968
23743	Friday, March 18, 2011	21:30	28.48	7.31	23.39	293.48	315.33	22.35	95.53%	98.59%	97.49%	96.12%	3	1	5.881	4.439	1.988
23742	Friday, March 18, 2011	20:33	30.73	7.37	25.54	270.40	294.32	24.36	95.39%	99.82%	98.44%	98.26%	3	1	5.542	4.057	1.945
23741	Friday, March 18, 2011	19:33	27.11	7.06	22.29	250.09	271.08	21.40	95.98%	97.96%	99.32%	97.30%	3	1	5.562	3.885	1.985
23740	Friday, March 18, 2011	18:41	25.60	6.28	21.55	230.28	250.63	20.69	96.01%	97.73%	98.70%	96.46%	3	1	5.185	4.002	1.977
23739	Friday, March 18, 2011	17:50	26.72	6.13	23.26	208.82	230.74	22.30	95.90%	97.87%	100.34%	98.21%	3	1	4.919	3.884	1.948
23738	Friday, March 18, 2011	16:52	26.39	5.79	23.21	187.24	209.23	22.28	95.98%	97.81%	95.52%	93.43%	3	1	4.931	3.719	1.949
23737	Friday, March 18, 2011	15:57	29.32	6.81	25.20	163.74	187.58	24.14	95.82%	98.15%	98.52%	96.69%	3	1	5.3	4.05	1.961
23736	Friday, March 18, 2011	14:53	28.38	5.94	24.81	140.56	164.12	23.87	96.23%	98.90%	99.99%	98.89%	3	1	5.042	3.741	1.925
23735	Friday, March 18, 2011	13:54	123.16	11.47	117.31	47.49	141.73	99.18	84.54%	94.93%	91.18%	86.56%	7	1	10.717	7.717	1.701
23733	Friday, March 18, 2011	8:11	51.06	8.28	45.97	7.48	48.00	41.28	89.79%	97.81%	94.36%	92.30%	4	1	7.169	5.419	1.914

Column 1 Number _0_Pbar Transfer Shot #	Column 4 Number_3 Transfer Time	Column 21 Number _20_A-I BEAMB sampled on #91 (A-BEA M7), E10	Column 22 Number _21_A-I BEAMB sampled on #94 (A-BEA M9), E10	Unstacked (mA)	Column 23 Number _22_R: BEAMS (R-BEA ME0[0]) pre fer E10	Column 24 Number _23_R: BEAM (R-BEA ME0[1]) post fer, E10	Stashed	Acc to RR Eff	Acc to MI Eff	Acc to MI2 Eff	Acc to MI * Acc to MI2 Efficiency	Trans fers	Sets	Column 5 Number _4_Acc Horizont al Emittanc e	Column 6 Number _5_Acc Vertical Emittanc e	Column 8 Number _7_Acc Longitu dinal Emittanc e
Totals =>				939.38			900.66	95.88%	98.32%	98.00%	96.35%	151	39	5.1748	3.8825	1.9418
Daily Average =>				313.13			300.22					50	13			

Transfers from <35mA



AP1 losses start at the beginning of shot setup. MI tuning got us back.

