

# 2011-03-14 Monday Morning Notes

Sunday, March 13, 2011  
8:30 AM

## On-call

- Sunday: Stan
- Monday/Tuesday: Al
- Wednesday/Thursday: Tony
- Friday: DVM

## Turn-on Efforts

- Friday day shift waited in standby for the upstream machines
- MOS89 was switched in at 13:48
- AP1 power supplies were on shortly after this.
- M:HV100 internal +24V power supply issue was not allowing the C465 card to provide digital status. Fixed
- A:BS309 failed, so we made a controlled access for repairs.
  - Over the weekend, we had more problems with A:BS309.
    - Double-check the DAQ
    - Worst case scenario would have us access for a 30 minute repair.
- Stacking established on the evening shift.
- Came up quite poor. Found the AP2 BPMs not responding and had ops send out the python configuration script.
- A:BS309 also made step function change that impacted the orbit, so adjustment was made to fix this.
- Overnight Saturday, D:IKIK stopped working
  - Replaced the "Antiproton Pulse Power Supply Power Module" in D:ISEPV with a spare from AP10. After returning to stacking, the waveforms looked good.  
Pasted from <<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar11&action=view&page=52&frame=2&anchor=&hilite=&load=>>
  - Bernie and Dave checked D:ISEPV and the "Over Temp" trip was the only problem we could find. We reset the supply and pulses looked good. Upon closer inspection we found the fan pack on top of the pulse supply was not plugged in. This may have been the cause of the previous unit's failure and this supply's over temp trip.  
Pasted from <<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar11&action=view&page=52&frame=2&anchor=&hilite=&load=>>
- Beam Dump water temperature issues
  - The beam dump water system was tripping off on supply water temperature HI this morning. Yesterday, while wrapping up the circuit #1 water leak repair, we adjusted the chill water regulation valve to increase the supply water temperature. The idea was to try to reduce the thermal transient when beam on target is interrupted for extended periods. The supply temperature is running close to 35 C while stacking which was the trip limit. The supply water trip limit has been raised to 42 C. The return temperature limit was also adjusted from 60 C to 65 C.  
The higher regulation temperature is only effective while there is beam on target. On two occasions since the regulation valve adjustment, the supply temperature has dropped to about 22 C. It appears that the CW regulation valve does not seal tightly in the closed position  
Pasted from <<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar11&action=view&page=52&frame=2&anchor=&hilite=&load=>>
- Saturday evening:
  - Ops contacted me because the shunt we replaced yesterday A:BS309 made a step function change in output of about 1A. We verified that no settings went out to the shunt. Plotting the other shunts from the C054 (crate 38, slot 4), none of them showed any changes at this time. This suggests that maybe the shunt we put in yesterday is also going bad. The shunt did go in with a 0.2A offset when it was installed, so it is not out of the question that it may be going bad.

- Looking at the Accumulator orbit, it looked much worse than yesterday. Yesterday when I looked there was about a 2mm horizontal oscillation. But since we had just turned on, I was going to hold off on trying to correct that until things ran for a while. This morning, after the shunt changed, the horizontal oscillation was over 4mm. As a first step, I did a quick correction with A:BS309, which was able to get to the previous output and get the orbit back to where it was last night (still not really good). We now have almost a 0.8A difference between reading and setting on the shunt. If the shunt gets worse, we can try to find an orbit solution with other shunts. The worst case scenario is another access to replace the shunt again. We'll have to watch it over the weekend.

Pasted from <<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar11&action=view&page=52&frame=2&anchor=&hilite=&load=>>

- Sunday Days

- A:SPTW29 tripped off multiple times whilst loading protons into TeV during shot setup. After protons were loaded, ops were able to get the TWT to stay on by adding 1.5 dB and then resetting and turning on the TWT.

Pasted from <<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar11&action=view&page=52&frame=2&anchor=&hilite=&load=>>

- ARF1 tripped off once again on a driver and a PA fault

Pasted from <<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar11&action=view&page=52&frame=2&anchor=&hilite=&load=>>

The lens power supply tripped off on conductivity LO yesterday. I asked OPS to reset and continue to run. The 1 sec data logger caught the event (see following plot). I think this is the first trip of this type since the new conductivity meter was installed on October 5, 2009 (



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Pasted from <<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar11&action=view&page=last&frame=2&anchor=&hilite=&load=>>

- Monday Morning

The beam dump water system is on circuit #1 which so far has a relatively small water leak. The water level dropped about 2.5 inches since Friday morning. Added about 3 inches (~1.5 gallons) of water to the reservoir tank this morning using the new remote fill system.

Pasted from <<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar11&action=view&page=last&frame=2&anchor=&hilite=&load=>>

- TR105B not fast time plotting. Pbar Font End reboot?

## Stacking and Transfers

- Stacked 24.5mA/hr with an average production of 21.2 pbars/Mp with 7.8 Tp on target
  - Overnight with normal sized stacks we stacked 25.8mA/hr with a production of 22.0 with 7.90 Tp on target.
- Unstacked 1088E10 (363E10/day) in 114 transfers (38/day) in 36 sets (12day) with an overall efficiency of 81%
  - Transfer 23633 lost a transfer
    - R:KPS2A had a prefire during transfers and lost not only the transfer, but 98.5e10 of Pbars.

Pasted from <<http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2011&action=view&page=194&frame=2&anchor=&hilite=>>

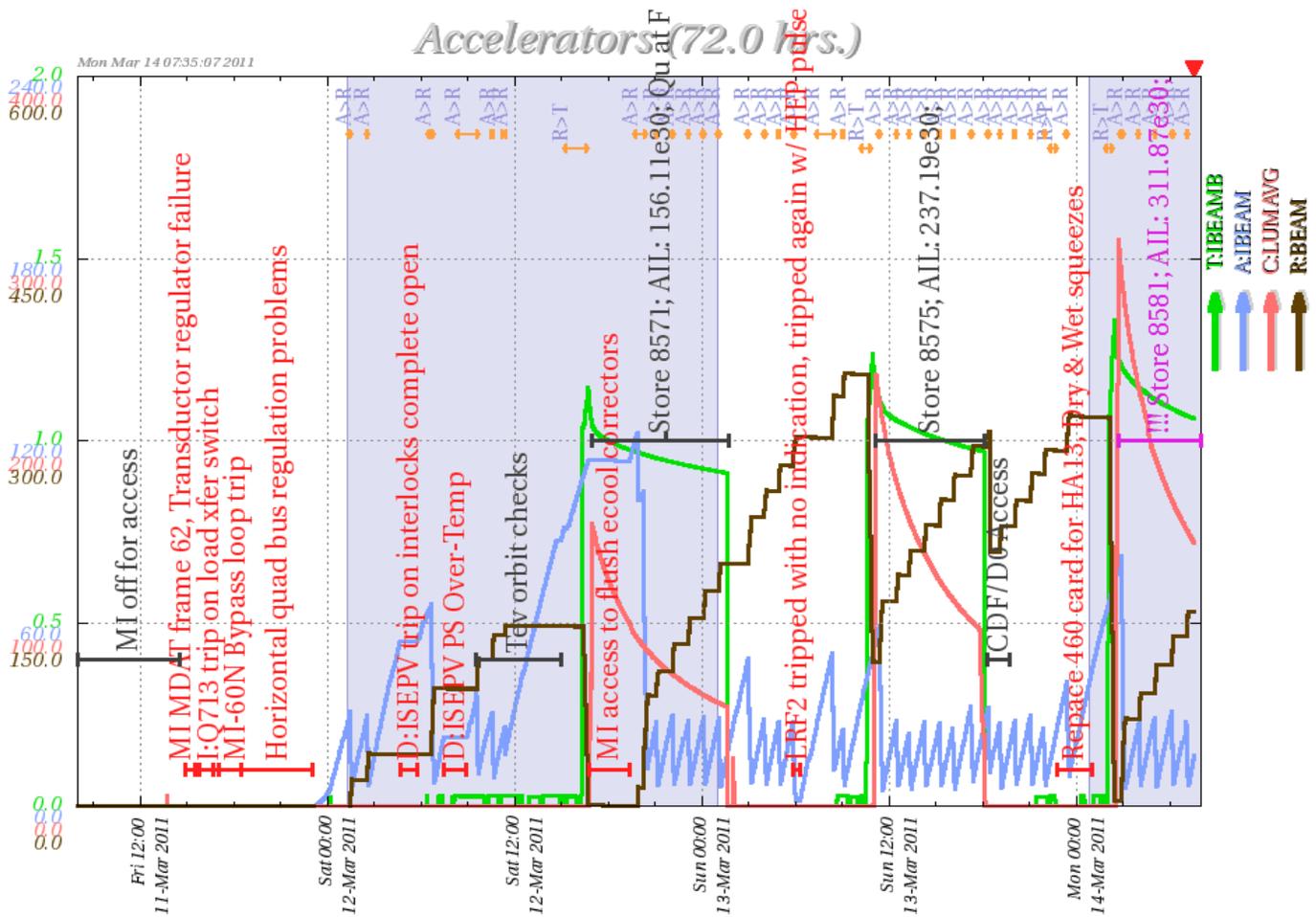
- Take out transfers over 35mA and the efficiency still only 93%
- Made a fudge factor adjustment this morning.

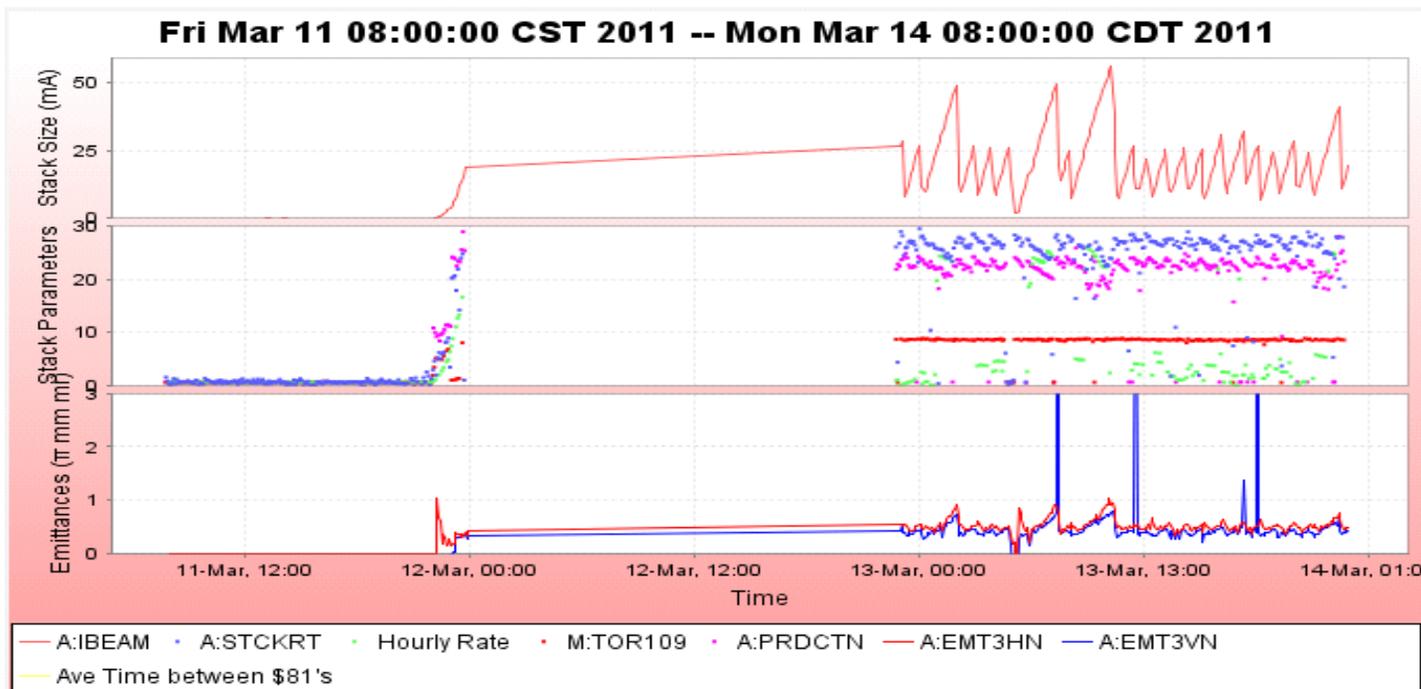
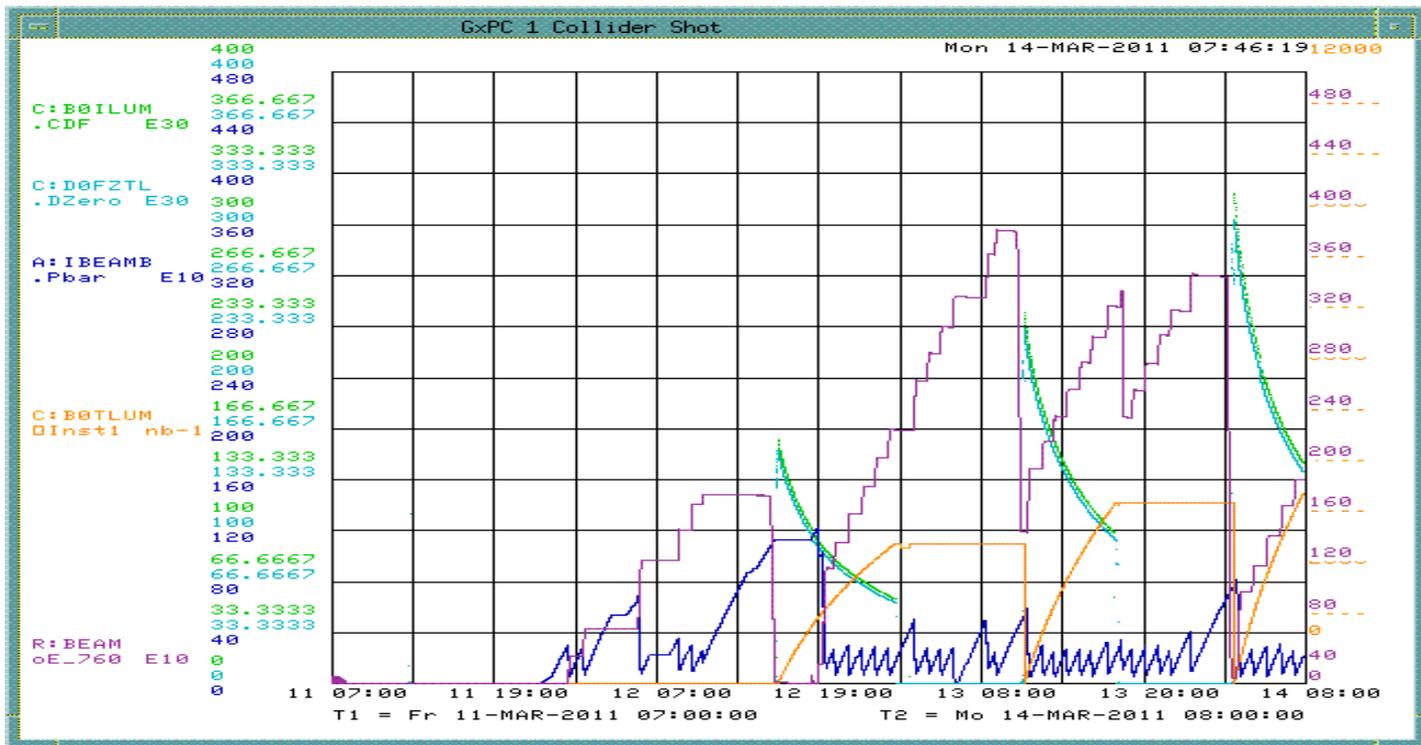
## Numbers

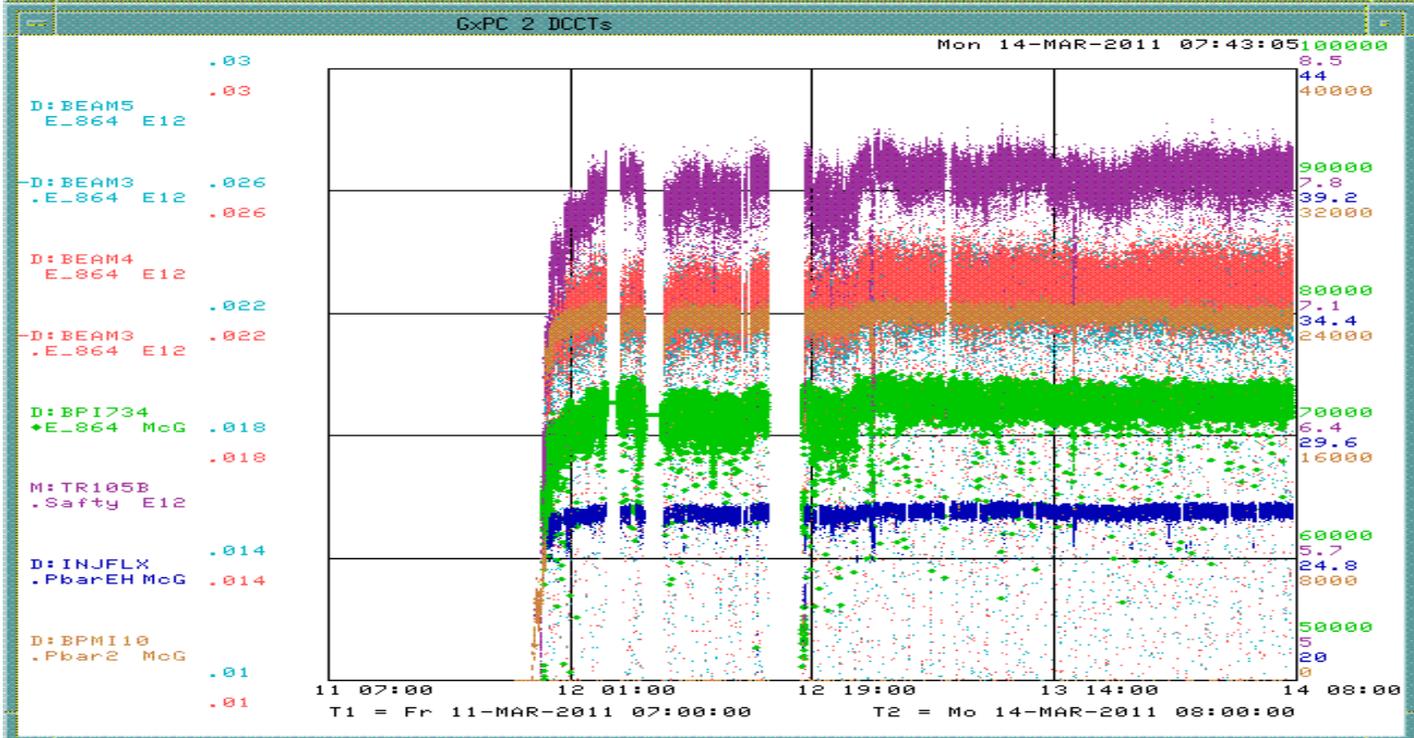
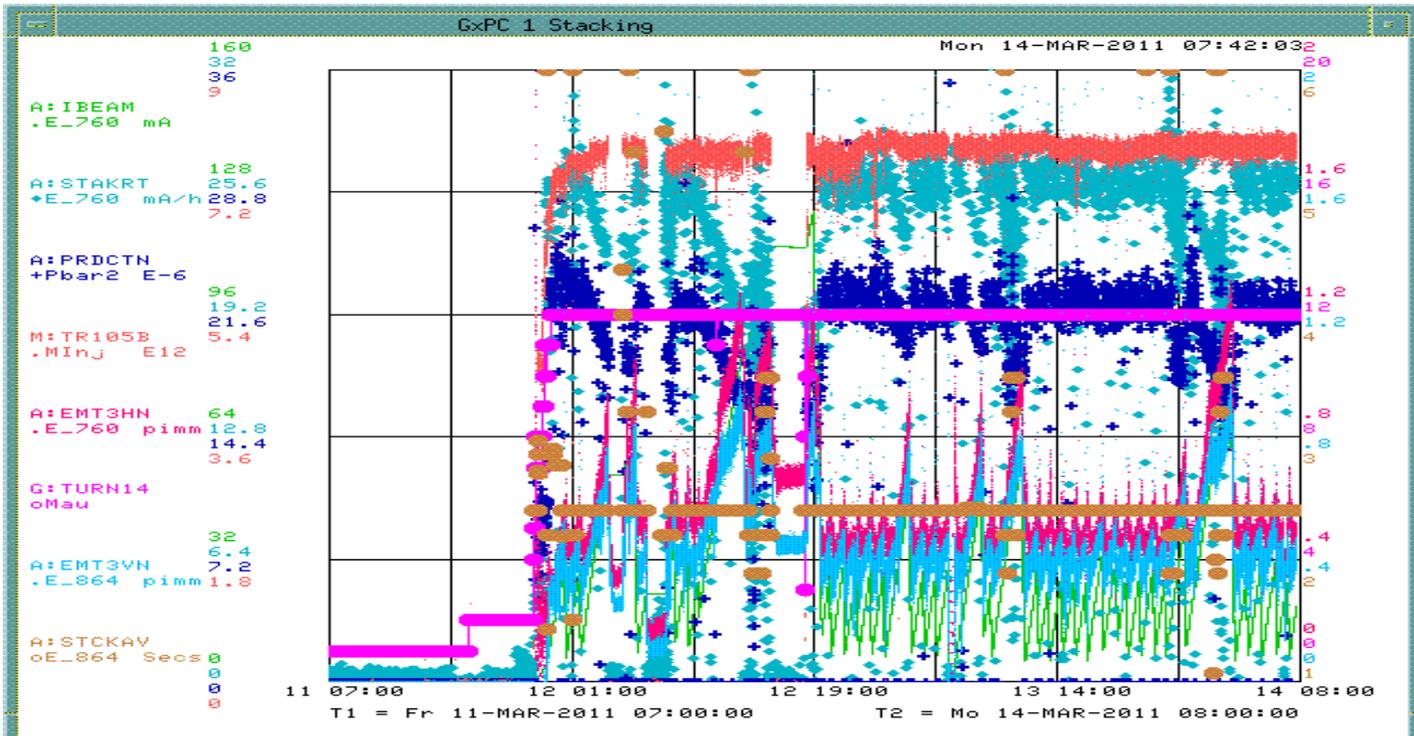
- Stacking
  - Pbars stacked: 1132.00 E10
  - Time stacking: 53.06 Hr
  - Average stacking rate: 21.33 E10/Hr
- Uptime
  - Number of pulses while in stacking mode: 77385
  - Number of pulses with beam: 70647

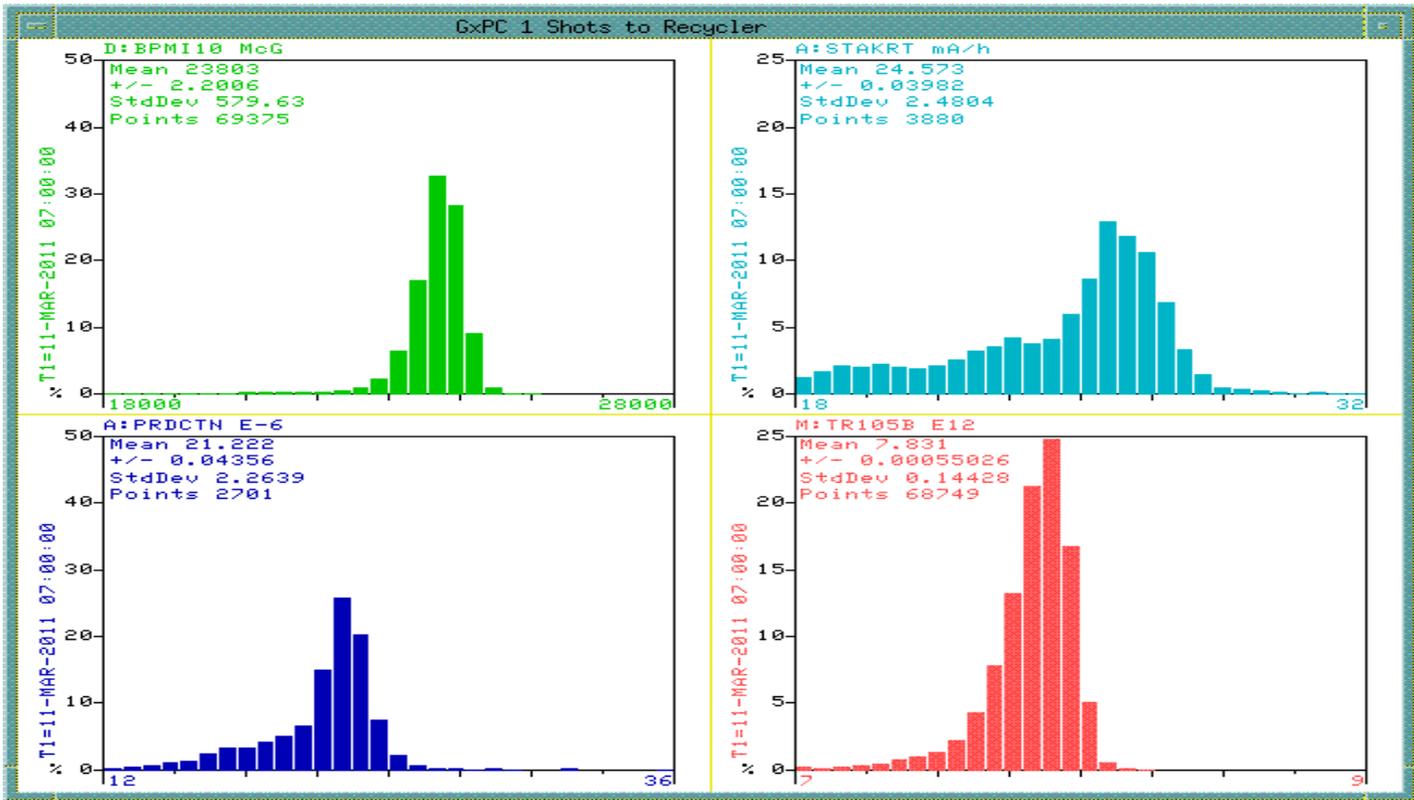
- Fraction of up pulses was: 91.29%
- The uptime's effect on the stacking numbers
  - Corrected time stacking: 48.44 Hr
  - Possible average stacking rate: 23.37 E10/Hr
  - Could have stacked: 1239.97 E10/Hr
- Recycler Transfers
  - Pbars sent to the Recycler: 1107.03 E10
  - Number of transfers : 116
  - Number of transfer sets: 38
  - Average Number of transfer per set: 3.05
  - Time taken to shoot including reverse proton tuneup: 00.41 Hr
  - Transfer efficiency: 98.05%
- Other Info
  - Average POT : 7.77 E12
  - Average production: 20.63 pbars/E6 protons

## Plots

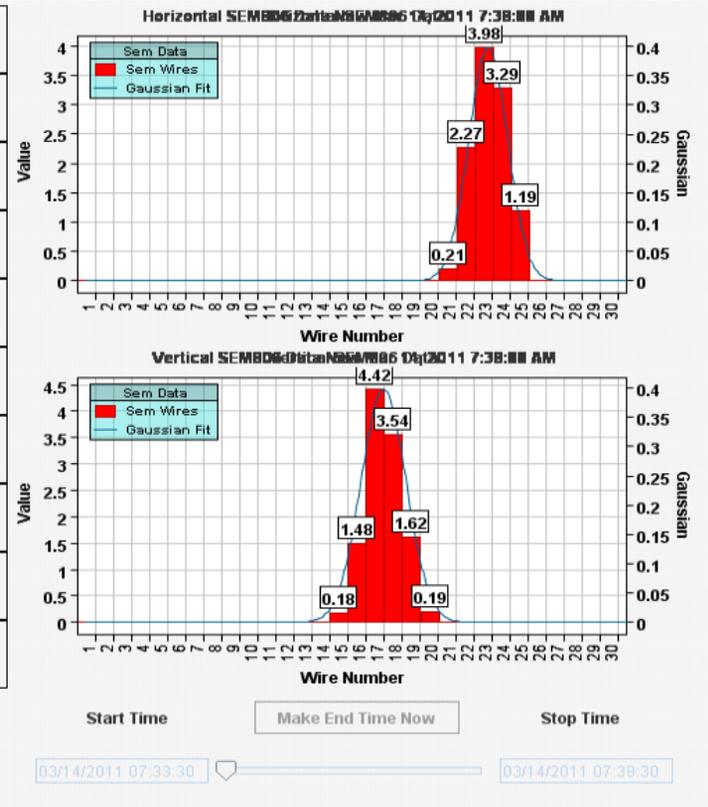


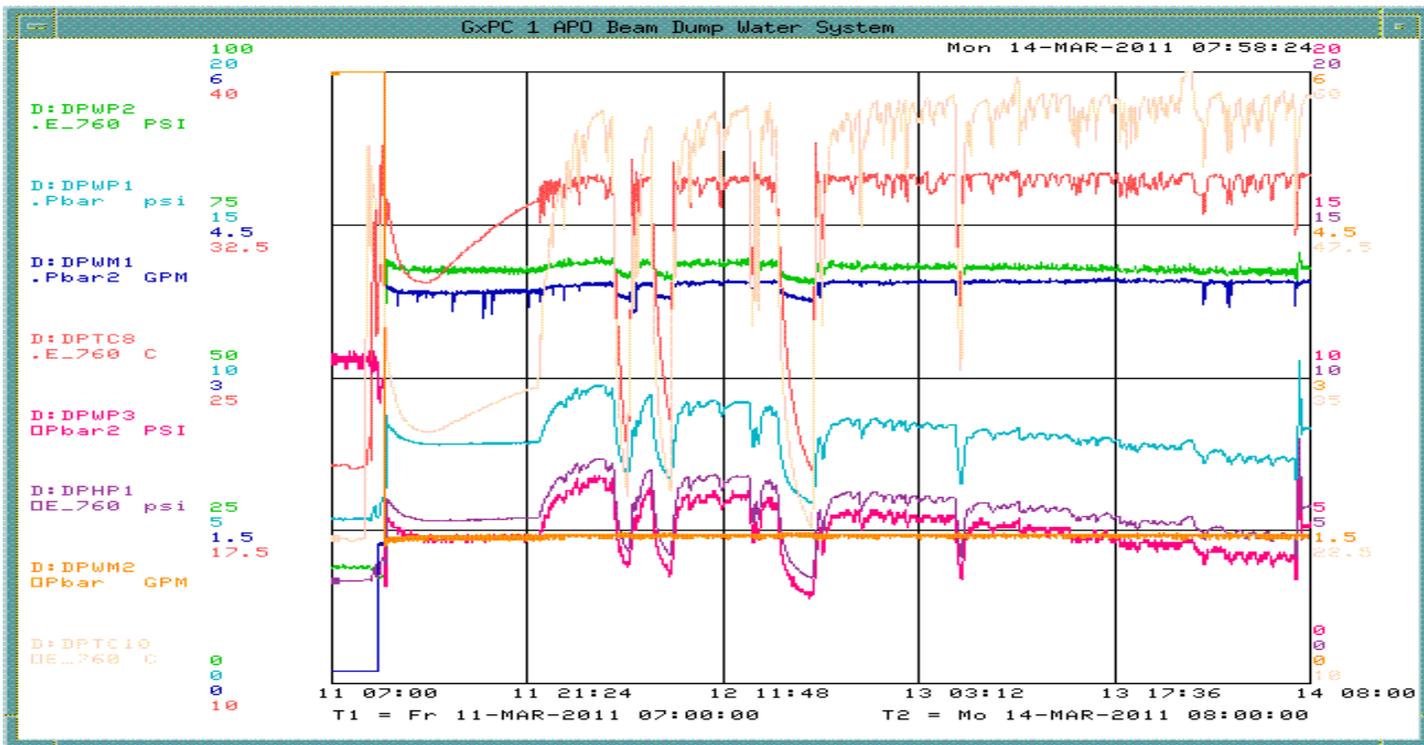




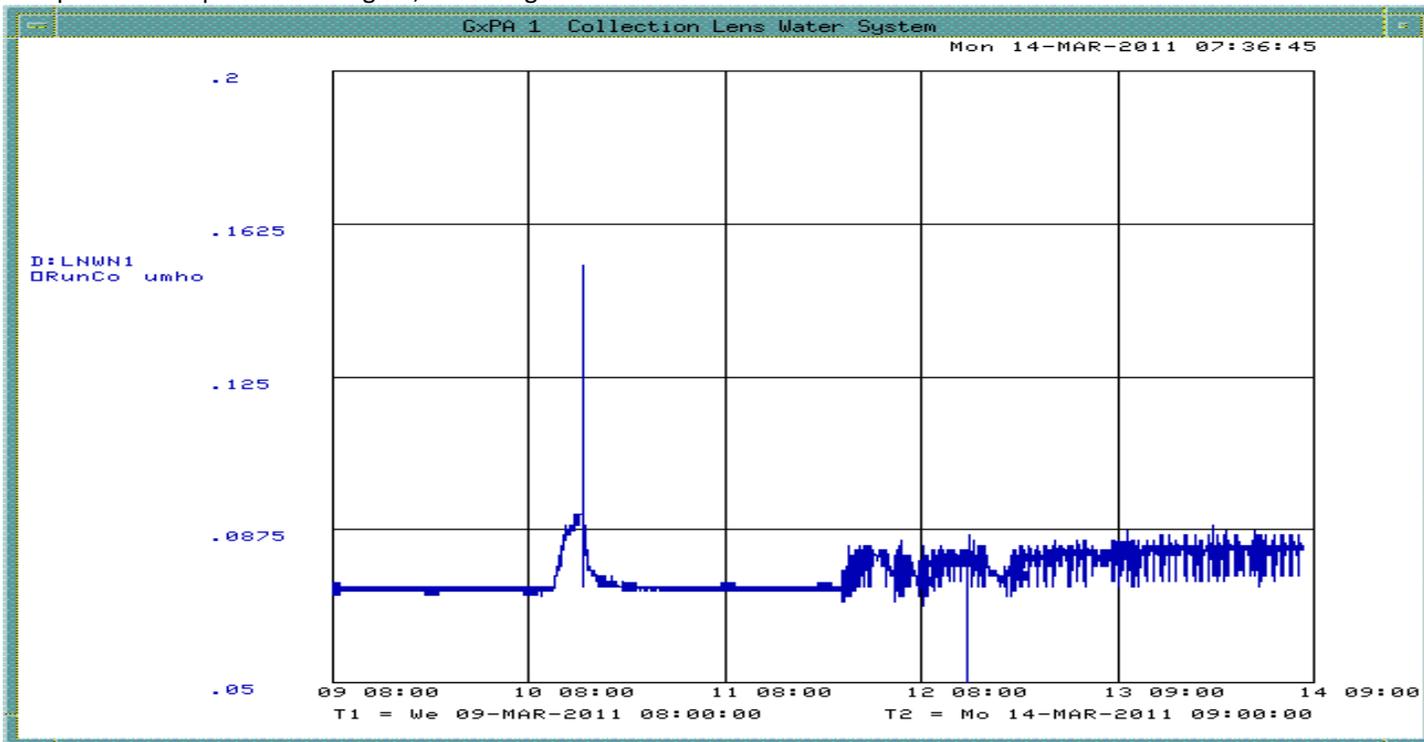


Horizontal Area New	<b>10.94</b>	Intensity
Horizontal Area Calc	<b>193.94</b>	Intensity
Horizontal Sigma New	<b>2.92</b>	mm
Horizontal Sigma Calc	<b>2.75</b>	mm
Horizontal Mean	<b>24.82</b>	mm
Vertical Area New	<b>11.44</b>	Intensity
Vertical Area Calc	<b>197.87</b>	Intensity
Vertical Sigma New	<b>2.98</b>	mm
Vertical Sigma Calc	<b>2.8</b>	mm
Vertical Mean	<b>7.44</b>	mm

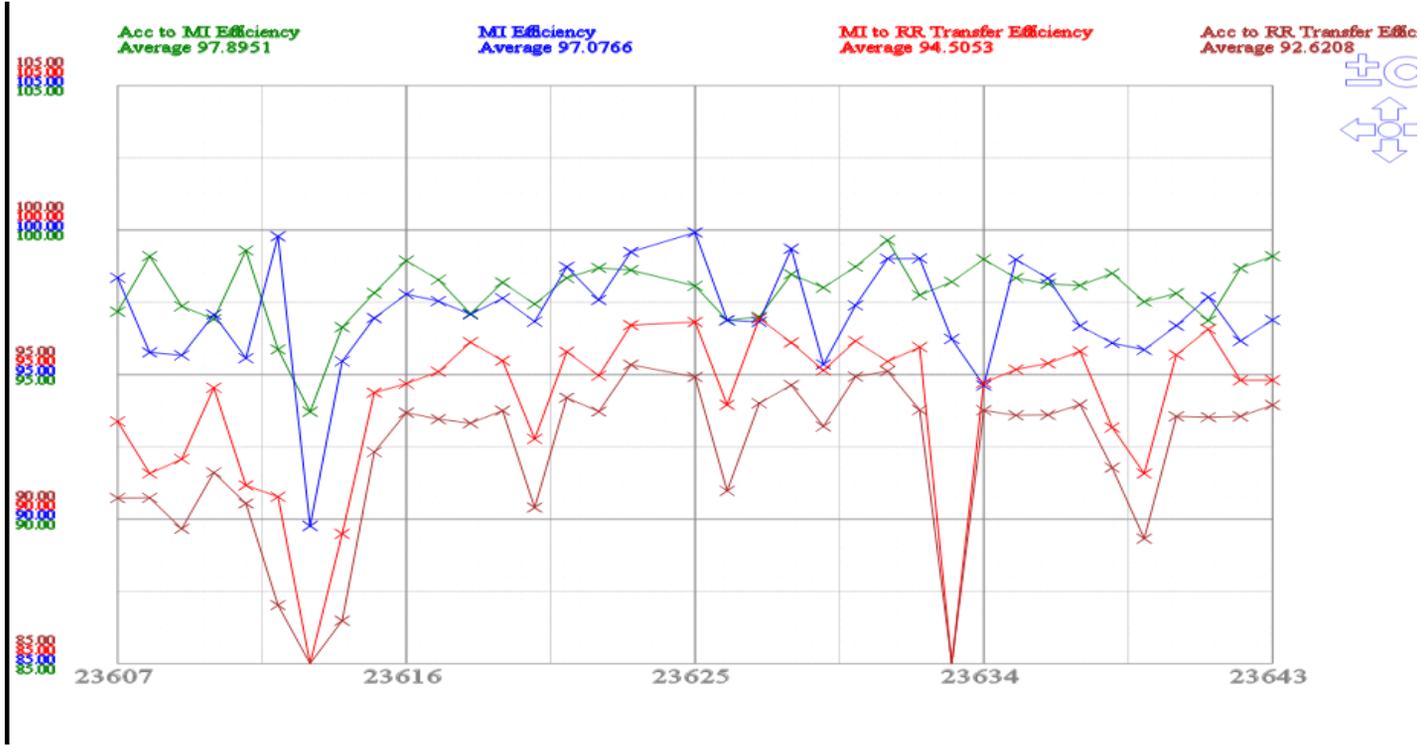




Dump water skid pressure falling off, indicating a small leak?







Li Lens power supply tripped on conductivity LO. Reset

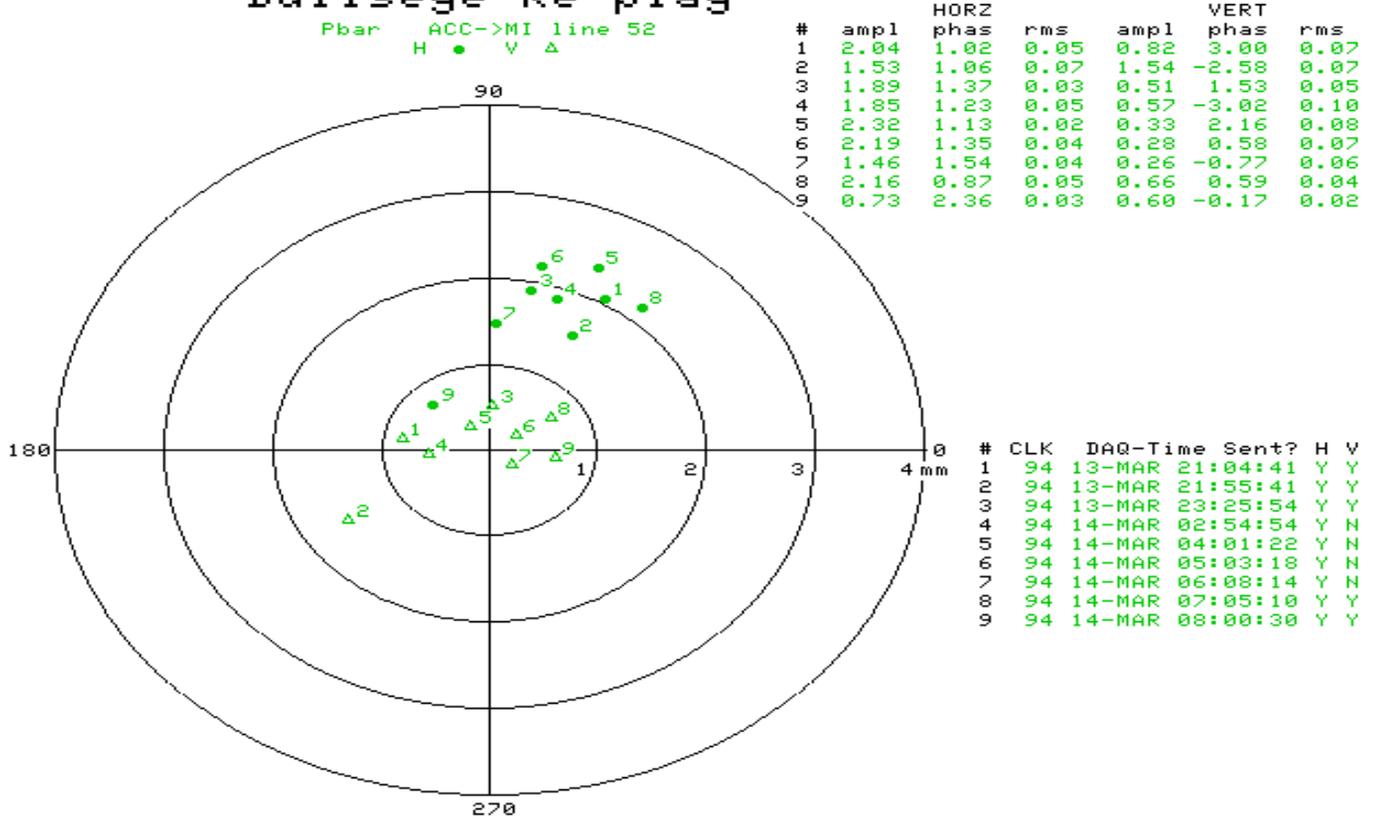
Column 1 Number _0_Pbar Transfer Shot #	Column 4 Number_3 _Transfer Time	Column 21 Number _20_A:J BEAMB sampled on \$91 (A:BEA M7), E10	Column 22 Number _21_A:J BEAMB sampled on \$94 (A:BEA M9), E10	Unstacked (mA)	Column 23 Number _22_R: BEAMS (R:BEA ME0[0]) pre fer, E10	Column 24 Number _23_R: BEAM (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	
<b>Totals =&gt;</b>				<b>1087.88</b>			<b>879.66</b>	<b>80.86%</b>	<b>97.73%</b>	<b>94.25%</b>	<b>92.11%</b>	<b>114</b>	<b>36</b>	<b>5.3347</b>	<b>3.9948</b>	<b>1.9036</b>	
<b>Daily Average =&gt;</b>				<b>362.63</b>			<b>293.22</b>					<b>38</b>	<b>12</b>				
23643	Monday, March 14, 2011	7:04	25.86	6.35	21.97	139.79	160.10	20.57	93.61%	98.99%	95.79%	94.82%	3	1	4.948	3.807	1.945
23642	Monday, March 14, 2011	6:08	31.25	7.23	26.32	115.79	140.08	24.57	93.38%	98.56%	95.12%	93.75%	3	1	5.183	3.939	1.964
23641	Monday, March 14, 2011	5:03	29.57	6.22	25.48	92.62	116.08	23.73	93.14%	97.19%	94.00%	91.36%	3	1	4.914	3.763	1.937
23640	Monday, March 14, 2011	4:01	27.10	6.63	22.83	71.77	92.80	21.28	93.18%	97.95%	94.60%	92.65%	3	1	5.05	3.889	1.963
23639	Monday, March 14, 2011	2:54	89.47	5.55	81.25	4.24	72.30	70.70	87.01%	97.28%	92.19%	89.68%	6	1	7.111	5.154	1.826
23638	Sunday, March 13, 2011	23:25	41.04	9.46	33.99	291.79	321.89	30.97	91.13%	98.40%	94.70%	93.19%	3	1	6.351	4.655	1.902
23637	Sunday, March 13, 2011	21:55	26.22	6.74	22.04	273.17	293.47	20.71	93.97%	97.86%	94.92%	92.89%	3	1	4.801	3.652	1.979
23636	Sunday, March 13, 2011	21:04	29.96	7.27	25.52	250.77	274.07	23.79	93.23%	98.10%	96.28%	94.45%	3	1	4.881	3.663	1.932
23635	Sunday, March 13, 2011	20:04	28.05	6.81	23.40	230.01	251.57	21.87	93.45%	98.34%	96.64%	95.04%	3	1	4.783	3.645	1.954
23634	Sunday, March 13, 2011	19:07	27.53	6.07	23.91	208.69	230.62	22.31	93.30%	98.83%	93.37%	92.29%	3	1	4.724	3.55	1.956
23633	Sunday, March 13, 2011	18:22	32.32	10.88	22.83	295.53	210.04	-85.22	-373.37%	98.36%	94.80%	93.25%	2	1	4.711	3.45	1.869
23632	Sunday, March 13, 2011	17:15	32.91	8.08	27.64	271.43	296.80	25.87	93.60%	98.03%	96.75%	94.85%	3	1	4.894	3.868	1.939
23631	Sunday, March 13, 2011	16:06	25.84	5.24	22.20	251.72	272.38	21.03	94.75%	99.36%	98.28%	97.65%	3	1	4.535	3.333	1.946
23630	Sunday, March 13, 2011	15:14	27.51	6.64	23.32	230.65	252.35	22.07	94.67%	98.59%	95.61%	94.26%	3	1	4.761	3.644	1.955
23629	Sunday, March 13, 2011	14:16	27.68	6.64	23.56	209.69	231.27	21.88	92.87%	97.84%	93.45%	91.43%	3	1	4.932	3.469	1.952
23628	Sunday, March 13, 2011	13:19	24.63	5.29	21.50	189.96	210.14	20.43	95.01%	98.73%	97.15%	95.91%	3	1	4.375	3.334	1.958
23627	Sunday, March 13, 2011	12:29	28.02	6.42	24.09	168.11	190.37	22.59	93.74%	97.10%	93.51%	90.80%	3	1	5.001	3.821	1.947
23626	Sunday, March 13, 2011	11:23	59.37	5.24	58.59	118.67	168.95	52.35	89.35%	97.28%	93.19%	90.65%	5	1	6.119	4.454	1.849
23625	Sunday, March 13, 2011	9:01	25.30	6.49	21.32	336.53	356.14	20.20	94.77%	98.63%	97.36%	96.03%	3	1	4.623	3.788	1.965
23623	Sunday, March 13, 2011	5:52	27.88	1.62	26.34	279.63	304.19	24.98	94.87%	98.28%	96.92%	95.25%	3	1	2.493	1.398	1.84
23622	Sunday, March 13, 2011	4:55	27.73	6.94	23.61	258.91	280.46	21.99	93.12%	98.39%	96.23%	94.68%	3	1	4.827	3.661	1.969
23621	Sunday, March 13, 2011	4:00	28.78	7.31	24.31	237.27	259.60	22.78	93.71%	98.21%	96.59%	94.87%	3	1	4.98	3.709	1.963
23620	Sunday, March 13, 2011	3:00	48.99	7.43	45.65	198.90	238.16	40.51	88.74%	97.35%	93.42%	90.94%	4	1	6.667	4.826	1.88
23619	Sunday, March 13, 2011	0:05	28.83	6.53	24.84	176.71	199.51	23.14	93.14%	98.15%	95.57%	93.80%	3	1	4.597	3.581	1.917
23618	Saturday, March 12, 2011	23:07	29.29	7.08	24.71	154.47	177.14	22.99	93.05%	97.46%	94.43%	92.04%	3	1	4.989	3.81	1.921
23617	Saturday, March 12, 2011	22:08	28.13	6.99	23.62	133.07	154.79	21.99	93.10%	98.02%	95.97%	94.07%	3	1	4.905	3.666	1.937
23616	Saturday, March 12, 2011	21:07	30.02	7.09	25.31	110.52	133.54	23.60	93.25%	98.93%	96.75%	95.71%	3	1	4.933	3.844	1.947
23615	Saturday, March 12, 2011	20:05	27.56	6.74	23.30	90.48	111.15	21.34	91.57%	97.82%	94.01%	91.96%	3	1	4.825	3.343	1.943
23614	Saturday, March 12, 2011	19:15	109.61	12.27	95.60	14.77	91.97	81.11	84.84%	96.55%	91.79%	88.63%	6	1	7.094	5.14	1.71
23613	Saturday, March 12, 2011	18:54	123.04	100.62	22.43	0.07	16.13	16.06	71.62%	93.71%	84.12%	78.83%	1	1	10.96	8.457	1.181
23612	Saturday, March 12, 2011	10:22	26.15	16.75	9.40	140.63	148.81	8.18	87.02%	95.87%	95.66%	91.71%	1	1	5.409	4.13	1.935
23611	Saturday, March 12, 2011	9:33	30.86	9.44	23.77	120.43	141.07	21.39	89.98%	98.95%	94.80%	93.81%	3	1	5.826	4.281	1.96
23610	Saturday, March 12, 2011	8:34	35.91	10.42	27.49	96.37	121.04	25.09	91.27%	97.17%	94.41%	91.74%	3	1	6.358	4.507	1.958
23609	Saturday, March 12, 2011	5:39	66.80	7.36	63.63	42.93	97.23	56.00	88.01%	97.00%	92.42%	89.65%	5	1	7.162	6.378	1.874
23608	Saturday, March 12, 2011	1:33	29.92	6.86	24.87	21.59	43.36	22.39	90.05%	99.24%	94.66%	93.94%	3	1	4.562	3.591	1.955
23607	Saturday, March 12, 2011	0:27	31.15	6.16	27.25	-0.14	21.98	24.41	89.59%	97.24%	95.25%	92.63%	3	1	4.765	3.612	1.902

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	
<b>Totals =&gt;</b>				<b>636.43</b>			<b>592.09</b>	<b>93.03%</b>	<b>98.21%</b>	<b>95.53%</b>	<b>93.82%</b>	<b>114</b>	<b>27</b>	<b>4.7969</b>	<b>3.6219</b>	<b>1.9437</b>	
<b>Daily Average =&gt;</b>				<b>212.14</b>			<b>197.36</b>					<b>38</b>	<b>9</b>				
23643	Monday, March 14, 2011	7:04	25.86	6.35	21.97	139.79	160.10	20.57	93.61%	98.99%	95.79%	94.82%	3	1	4.948	3.807	1.945
23642	Monday, March 14, 2011	6:08	31.25	7.23	26.32	115.79	140.08	24.57	93.38%	98.56%	95.12%	93.75%	3	1	5.183	3.939	1.964
23641	Monday, March 14, 2011	5:03	29.57	6.22	25.48	92.62	116.08	23.73	93.14%	97.19%	94.00%	91.36%	3	1	4.914	3.763	1.937
23640	Monday, March 14, 2011	4:01	27.10	6.63	22.83	71.77	92.80	21.28	93.18%	97.95%	94.60%	92.65%	3	1	5.05	3.889	1.963
													<b>6</b>				
													<b>3</b>				
23637	Sunday, March 13, 2011	21:55	26.22	6.74	22.04	273.17	293.47	20.71	93.97%	97.86%	94.92%	92.85%	3	1	4.801	3.652	1.979
23636	Sunday, March 13, 2011	21:04	29.96	7.27	25.52	250.77	274.07	23.79	93.23%	98.10%	96.28%	94.45%	3	1	4.881	3.663	1.932
23635	Sunday, March 13, 2011	20:04	28.05	6.81	23.40	230.01	251.57	21.87	93.45%	98.34%	96.64%	95.04%	3	1	4.783	3.645	1.954
23634	Sunday, March 13, 2011	19:07	27.53	6.07	23.91	208.69	230.62	22.31	93.30%	98.83%	93.37%	92.25%	3	1	4.724	3.55	1.956
													<b>2</b>				
23632	Sunday, March 13, 2011	17:15	32.91	8.08	27.64	271.43	296.80	25.87	93.60%	98.03%	96.75%	94.85%	3	1	4.894	3.868	1.939
23631	Sunday, March 13, 2011	16:06	25.84	5.24	22.20	251.72	272.38	21.03	94.75%	99.36%	98.28%	97.65%	3	1	4.535	3.333	1.946
23630	Sunday, March 13, 2011	15:14	27.51	6.64	23.32	230.65	252.35	22.07	94.67%	98.59%	95.61%	94.26%	3	1	4.761	3.644	1.955
23629	Sunday, March 13, 2011	14:16	27.68	6.64	23.56	209.69	231.27	21.88	92.87%	97.84%	93.45%	91.43%	3	1	4.932	3.469	1.952
23628	Sunday, March 13, 2011	13:19	24.63	5.29	21.50	189.96	210.14	20.43	95.01%	98.73%	97.15%	95.91%	3	1	4.375	3.334	1.958
23627	Sunday, March 13, 2011	12:29	28.02	6.42	24.09	168.11	190.37	22.59	93.74%	97.10%	93.51%	90.80%	3	1	5.001	3.821	1.947
													<b>5</b>				
23625	Sunday, March 13, 2011	9:01	25.30	6.49	21.32	336.53	356.14	20.20	94.77%	98.63%	97.36%	96.03%	3	1	4.623	3.788	1.965
23623	Sunday, March 13, 2011	5:52	27.88	1.62	26.34	279.63	304.19	24.98	94.87%	98.28%	96.92%	95.25%	3	1	2.493	1.398	1.84
23622	Sunday, March 13, 2011	4:55	27.73	6.94	23.61	258.91	280.46	21.99	93.12%	98.39%	96.23%	94.68%	3	1	4.827	3.661	1.969
23621	Sunday, March 13, 2011	4:00	28.78	7.31	24.31	237.27	259.60	22.78	93.71%	98.21%	96.59%	94.87%	3	1	4.98	3.709	1.963
													<b>4</b>				
23619	Sunday, March 13, 2011	0:05	28.83	6.53	24.84	176.71	199.51	23.14	93.14%	98.15%	95.57%	93.80%	3	1	4.597	3.581	1.917
23618	Saturday, March 12, 2011	23:07	29.29	7.08	24.71	154.47	177.14	22.99	93.05%	97.46%	94.43%	92.04%	3	1	4.989	3.81	1.921
23617	Saturday, March 12, 2011	22:08	28.13	6.99	23.62	133.07	154.79	21.99	93.10%	98.02%	95.97%	94.07%	3	1	4.905	3.666	1.937
23616	Saturday, March 12, 2011	21:07	30.02	7.09	25.31	110.52	133.54	23.60	93.25%	98.93%	96.75%	95.71%	3	1	4.933	3.844	1.947
23615	Saturday, March 12, 2011	20:05	27.56	6.74	23.30	90.48	111.15	21.34	91.57%	97.82%	94.01%	91.96%	3	1	4.825	3.343	1.943
													<b>6</b>				
													<b>1</b>				
23612	Saturday, March 12, 2011	10:22	26.15	16.75	9.40	140.63	148.81	8.18	87.02%	95.87%	95.66%	91.71%	1	1	5.409	4.13	1.935
23611	Saturday, March 12, 2011	9:33	30.86	9.44	23.77	120.43	141.07	21.39	89.98%	98.95%	94.80%	93.81%	3	1	5.826	4.281	1.96
													<b>3</b>				
													<b>5</b>				
23608	Saturday, March 12, 2011	1:33	29.92	6.86	24.87	21.59	43.36	22.39	90.05%	99.24%	94.66%	93.94%	3	1	4.562	3.591	1.955
23607	Saturday, March 12, 2011	0:27	31.15	6.16	27.25	-0.14	21.98	24.41	89.59%	97.24%	95.25%	92.63%	3	1	4.765	3.612	1.902

# Bullseye Re-play

Pbar ACC->MI line 52  
 H • V Δ

13-MAR-2011 21:04:41



TBT shows need for horizontal fudge adjustment