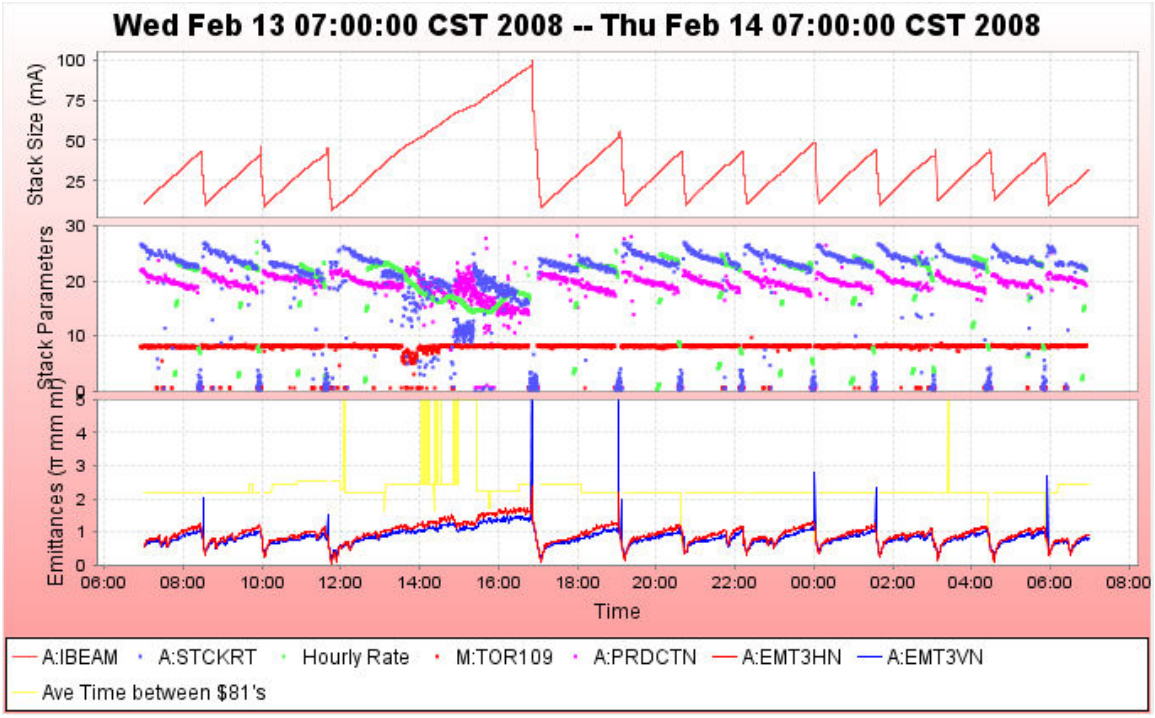
2008-02-15 Thursday Pbar Morning Notes

Wednesday, February 13, 2008
8:21 AM

Stacking

- Stacking Numbers
  - Protons on target averaged about 7.6e12 for most of the last 24 hours, with a slight increase at the end of the owl shift.
  - Stacked 475mA over the last 24 hours.
  - Best stacking hour 24.21 mA with an average production of 17.51 e-6/proton.
  - It is a little surprising that we are still able to stack this good being down one DRF1 station.
- DRF1
  - DRF1-3 has a dead PA in the tunnel.
  - DRF1 fanback drops from 5.5MV to 4.5MV without this station.
- D:V1HV03 helix voltage output periodically spikes into and out of alarm.
- D:IP401 tripped. Also tripped February 9th, 5th.
- Looked at decreased target efficiency when studies events are put in the TLG.
  - http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=74&scroll=false&load=
  - AP2 line BPM positions seem to be correlated with changes in the AP1 orbit.
  - Currently, the HV102I power supply is a possible suspect.
  - When we only have stacking pulses in the timeline, our orbit correction program (Oscillation Overthruster) is able to compensate for the orbit drift.
  - However, when we have non-stacking events in the TLG, our orbit correction program does not measure for three pulses following the non-stacking event, and make a correction on the fifth pulse after that. This may be a long enough gap for the AP1 orbit wandering to have an impact.
  - This is more noticeable when multiple non-stacking events are in the TLG.
  - The plan is to look carefully into this more today, including comparing the model to what we see with beam. If HV102 is drifting, we should be able see that in the model.



Transfers

- Unstacked 453.30 E10 in 37 transfers over 12 sets.
  - Accumulator to MI efficiency ??.?? (due to DCE05 problems)
  - Accumulator to Recycler efficiency 90%, down about 1-2% from normal.
  - The overall efficiency was brought down a little by transfer 7160 that was only 75% efficient. This was done from a 96mA stack and done over 5 transfers.
  - There was also an 8GeV beamline optics change that we will have to sort out.
- Starting on transfer 7159, the Pbar SuperTable and MiniTables did not compute automatically due to apparent problems with DCE05. Thanks to Vaia to computing them manually.

Column 1 Number_0_Pbar	Column 4 Number_3_Transfer Time		Column 21 Number_20_A:IBEAM B sampled	Column 22 Number_21_A:IB	Unstacked (mA)	Column 23 Number_22_R:BE	Column 24 Number_23_R:BE	Stashed	Acc to RR Eff	Column 27 Number_26_MI	Column 28 Number_27_MI Before	Acc to MI Eff	Acc to MI2 Eff	Transfers	Sets
		7:00:00 AM			488.999			439.20	89.82%	467.471	465.244	95.60%	95.14%	40	13
7169	Thursday, February 14, 2008	7:31:52 AM	43.388	9.988	33.400	327.939	357.423	29.48	88.28%	31.985	32.453	95.76%	97.16%	3	1
7168	Thursday, February 14, 2008	5:52:36 AM	42.588	10.188	32.400	301.214	330.007	28.79	88.87%	31.215	30.487	96.34%	94.10%	3	1
7167	Thursday, February 14, 2008	4:28:52 AM	42.387	12.988	29.399	275.256	302.321	27.07	92.06%	28.985	28.020	98.59%	95.31%	3	1
7166	Thursday, February 14, 2008	3:05:59 AM	40.388	12.988	27.400	250.628	276.297	25.67	93.68%	26.752	26.978	97.64%	98.46%	2	1
7165	Thursday, February 14, 2008	1:34:17 AM	43.988	10.188	33.800	220.791	251.535	30.74	90.96%	32.688	32.439	96.71%	95.97%	3	1
7164	Thursday, February 14, 2008	12:01:29 AM	48.588	10.788	37.800	187.188	221.573	34.39	90.97%	36.150	36.564	95.63%	96.73%	3	1
7163	Wednesday, February 13, 2008	10:12:22 PM	43.188	10.388	32.800	157.908	187.916	30.01	91.49%	31.274	30.755	95.35%	93.77%	3	1
7162	Wednesday, February 13, 2008	8:38:56 PM	42.988	10.388	32.600	128.559	158.418	29.86	91.59%	31.207	31.897	95.73%	97.84%	3	1
7161	Wednesday, February 13, 2008	7:06:16 PM	51.588	9.388	42.200	89.951	129.054	39.10	92.66%	40.679	41.018	96.40%	97.20%	3	1
7160	Wednesday, February 13, 2008	4:52:10 PM	96.188	8.388	87.800	15.263	90.408	75.15	85.59%	81.024	80.046	92.28%	91.17%	5	1
7159	Wednesday, February 13, 2008	11:40:24 AM	41.788	7.388	34.400	362.002	393.113	31.11	90.44%	33.211	32.511	96.54%	94.51%	3	1
7158	Wednesday, February 13, 2008	9:57:58 AM	41.388	9.188	32.200	335.261	363.681	28.42	88.26%	30.797	30.319	95.64%	94.16%	3	1
7157	Wednesday, February 13, 2008	8:27:51 AM	43.188	10.388	32.800	307.143	336.559	29.42	89.68%	31.504	31.757	96.05%	96.82%	3	1

Studies

- Debuncher Gain Ramps
  - http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=71&anchor=144455&hilite=14:44:55-
  - Collected more date for offline analysis.

- P1 optics change
  - Changes were made to I:Q703.
  - This powers a long string of quads.
  - We will look closely today to see if this had any impact on transfer efficiencies.

Requests

- Rapid transfers during stacking.

Other Notes

- Paul's Numbers
  - Most in an hour: 24.21 mA at Wed Feb 13 20:11:58 CST 2008
  - Best: 25.19 mA on 30-Jan-08
  - Average Production 17.51 e-6/proton Best: 25.41 e-6/proton on 01/30/2008
  - Average Protons on Target 7.04 e12 Best: 8.77 e12 on 07/24/2007
  - Largest Stack 96.35 mA Best: 271.01 mA on 11/14/2007

- Al's Numbers
  - Stacking
    - Pbars stacked: 474.65 E10
    - Time stacking: 22.49 Hr
    - Average stacking rate: 21.11 E10/Hr

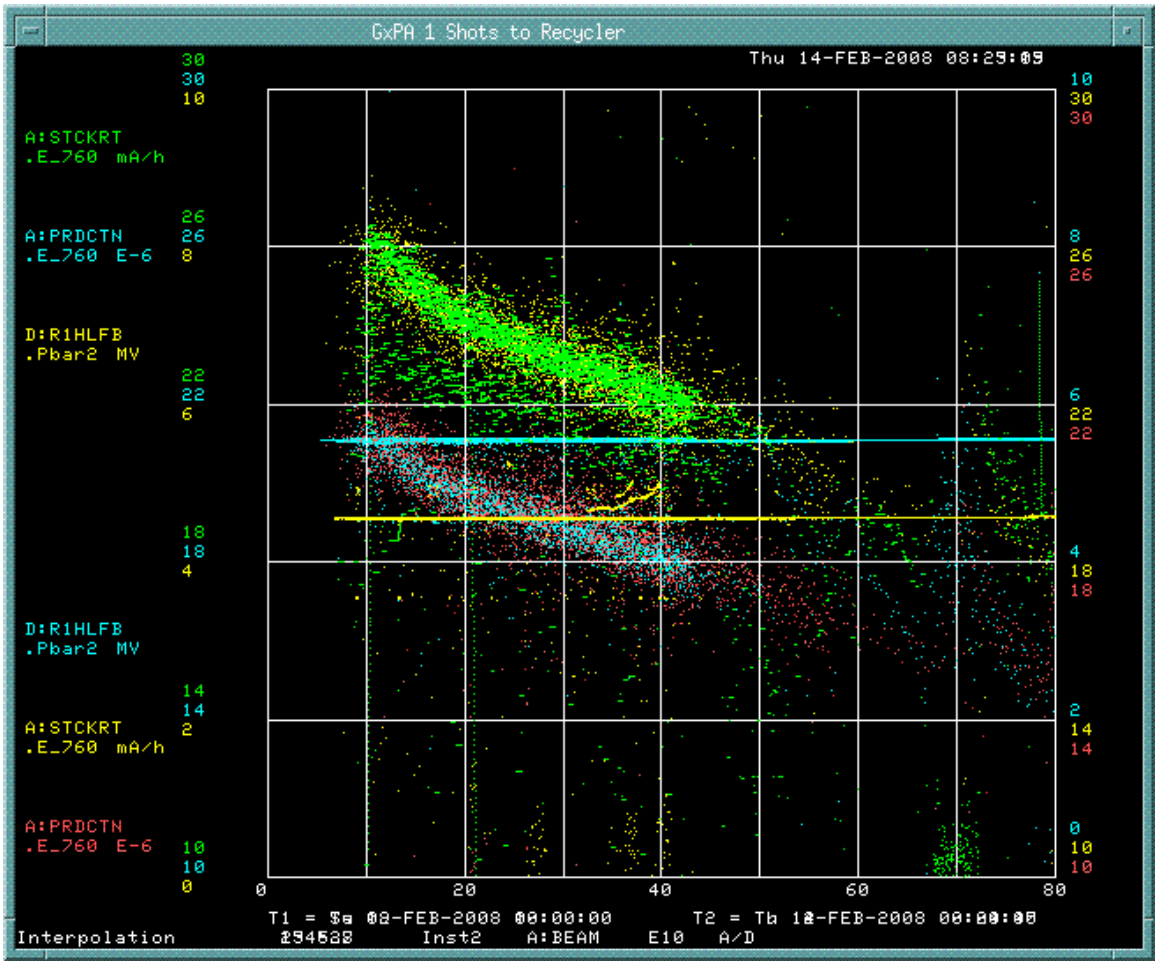
- Uptime
  - Number of pulses while in stacking mode: 35161
  - Number of pulses with beam: 33733
  - Fraction of up pulses was: 95.94%

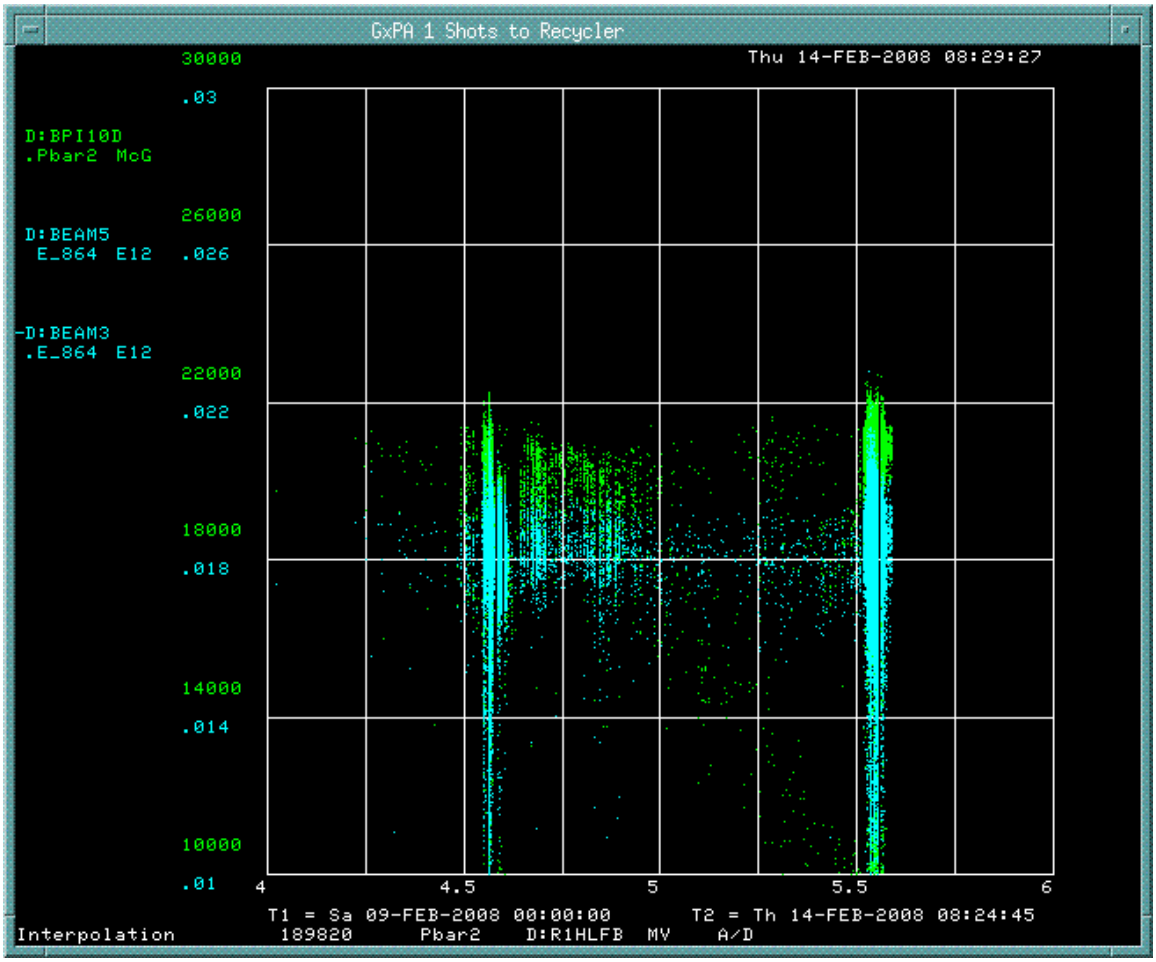
- The uptime's effect on the stacking numbers
  - Corrected time stacking: 21.58 Hr
  - Possible average stacking rate: 22.00 E10/Hr
  - Could have stacked: 494.75 E10/Hr

- Recycler Transfers
  - Pbars sent to the Recycler: 453.30 E10
  - Number of transfers : 37
  - Number of transfer sets: 12
  - Average Number of transfer per set: 3.08
  - Time taken to shoot: 01.51 Hr
  - Time per set of transfers: 07.55 min
  - Transfer efficiency: 91.08%

- Other Info
  - Average POT : 7.52 E12
  - Average production: 18.71 pbars/E6 protons

- Other Numbers
  - 108




GxPA 1 Shots to Recycler
Thu 14-FEB-2008 08:29:27
D:BPI10D
.Pbar2 McG
D:BEAM5
E_864 E12
-D:BEAM3
.E_864 E12
30000
.03
26000
.026
22000
.022
18000
.018
14000
.014
10000
.01
4
4.5
5
5.5
6
T1 = Sa 09-FEB-2008 00:00:00
T2 = Th 14-FEB-2008 08:24:45
Interpolation
189820
Pbar2
D:R1HLFB
MV
A/D