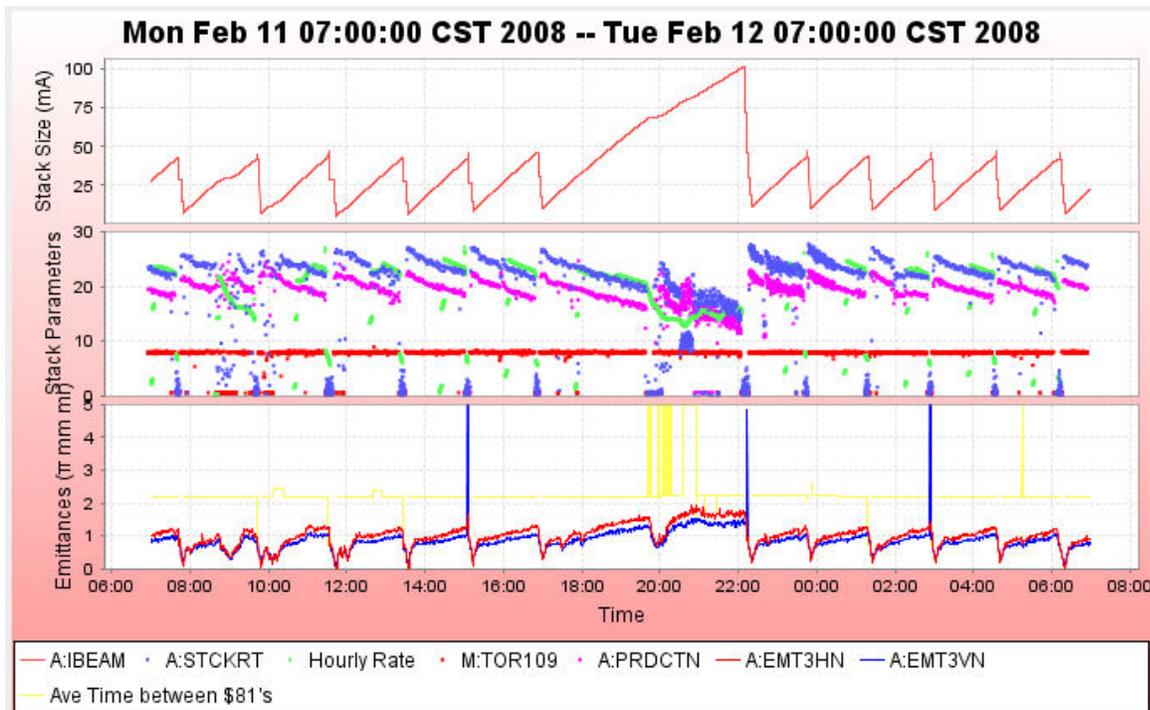


2008-02-12 Tuesday Morning Pbar Notes

Tuesday, February 12, 2008
7:00 AM

Stacking

- Beam on target averaged about $7.4e12$ at 11 turns.
- Best stacking hour was 24.36mA
 - We are down about 1 mA/hr from best running.
- Made a target move yesterday. D:TGTCHK was back up to 119%.
- Tried running with Stacktail gain ramping enabled overnight.
 - <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=66&scroll=false&load=>
 - Core emittances were a little higher.
 - Turned off Stacktail gain ramping this morning.
- DRF1
 - DRF1-3 tripped off hard.
 - Ops ran the run without a DRF1 station aggregate.
 - Without this station the DRF1 fanback voltage dropped from about 5.5MV to 4.5MV.
 - Circulating beam intensity in the Debuncher dropped about 7.7%.
 - DRF1-6 and 1-4 are starting to spark. We will look at these today to nip any problems in the bud before they get worse.
 - Wes Mueller was notified this morning and will take a look.



Transfers

- Unstacked 471mA in 38 transfers over 12 sets.
 - Average Accumulator to MI efficiency was 95.6%.
 - Average Accumulator to Recycler efficiency was 88.9%.
- Efficiencies were down a few percent

- End of the owl shift RR experts may have made some gains.

Column 1 Number_O_Pbar	Column 2 Number_1_Recy	Column 4 Number_3_Transfer Time	Column 21 Number_2 O_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	
		2/12/2008	7:00:00 AM		471.398			419.30	88.95%	450.560	449.273	95.58%	95.31%	38	12	
7142	4618	Tuesday, February 12, 2008	6:14:40 AM	41.788	7.188	34.600	211.601	244.461	32.86	94.97%	33.739	33.530	97.51%	96.91%	3	1
7141	4617	Tuesday, February 12, 2008	4:35:19 AM	43.988	9.788	34.200	181.195	212.380	31.19	91.18%	32.879	31.960	96.14%	93.45%	3	1
7140	4616	Tuesday, February 12, 2008	2:56:08 AM	42.188	9.188	33.000	151.419	181.775	30.36	91.99%	31.832	32.230	96.46%	97.67%	3	1
7139	4615	Tuesday, February 12, 2008	1:19:20 AM	43.988	9.388	34.600	120.553	151.951	31.40	90.75%	33.082	33.556	95.61%	96.98%	3	1
7138	4614	Monday, February 11, 2008	11:45:59 PM	43.388	10.388	33.000	90.833	120.942	30.11	91.24%	31.738	31.072	96.18%	94.16%	3	1
7137	4613	Monday, February 11, 2008	10:10:33 PM	101.388	11.587	89.801	16.467	91.924	75.46	84.03%	84.667	84.216	94.28%	93.78%	5	1
7136	4611	Monday, February 11, 2008	4:54:06 PM	46.388	10.588	35.800	350.167	381.631	31.46	87.89%	34.179	34.132	95.47%	95.34%	3	1
7135	4610	Monday, February 11, 2008	3:07:04 PM	42.387	8.188	34.199	321.970	352.257	30.29	88.56%	32.344	32.503	94.58%	95.04%	3	1
7134	4609	Monday, February 11, 2008	1:25:50 PM	42.387	6.988	35.399	292.665	323.366	30.70	86.73%	34.101	34.366	96.33%	97.08%	3	1
7133	4608	Monday, February 11, 2008	11:32:45 AM	43.388	5.788	37.600	261.402	293.825	32.42	86.23%	35.844	36.053	95.33%	95.89%	3	1
7132	4607	Monday, February 11, 2008	9:43:54 AM	41.388	7.388	34.000	231.025	262.346	31.32	92.12%	32.721	31.994	96.24%	94.10%	3	1
7131	4606	Monday, February 11, 2008	7:42:53 AM	42.787	7.588	35.199	200.680	232.416	31.74	90.16%	33.434	33.661	94.99%	95.63%	3	1

Studies

- Debuncher Gain Ramping
 - <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=68&scroll=false&load=>
 - We were not able to make noticeable improvements by changing the gain ramps.
 - The next step is building of addition diagnostics. Experts think they will be ready in a couple days.

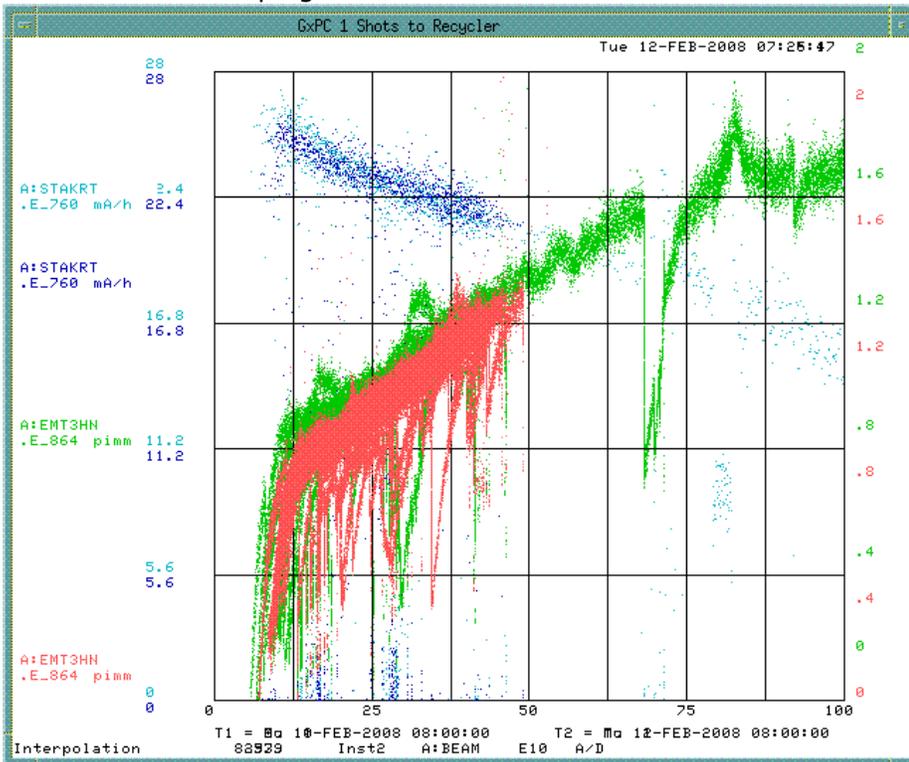
Requests

- None
- Late addition:
 - DVM is ready to try a one shot rapid transfer to the Recycler during stacking.
 - Request would be to do a normal set of transfers, then as soon as Recycler can be ready for another transfer, then do it using the new one shot rapid transfers aggregate.
 - A minimum of Dave Vander Meulen, Jim Morgan and Cons Gattuso would need to be present.
 - Request is to do this sometime Wednesday morning.

Other Notes

- Paul's Numbers
 - Most in an hour: 24.36 mA at Mon Feb 11 14:34:46 CST 2008
 - Best: 25.19 mA on 30-Jan-08
 - Average Production 15.61 e-6/proton Best: 25.41 e-6/proton on 01/30/2008
 - Average Protons on Target 7.16 e12 Best: 8.77 e12 on 07/24/2007
 - Largest Stack 101.38 mA Best: 271.01 mA on 11/14/2007
- Al's Numbers 7am to 7am....I get DSE connection errors from this application anytime my wireless is connected. This is evil.
 - Stacking
 - Pbars stacked: 463.69 E10
 - Time stacking: 22.35 Hr
 - Average stacking rate: 20.75 E10/Hr
 - Uptime
 - Number of pulses while in stacking mode: 35985

- Number of pulses with beam: 33943
 - Fraction of up pulses was: 94.33%
 - The uptime's effect on the stacking numbers
 - Corrected time stacking: 21.08 Hr
 - Possible average stacking rate: 21.99 E10/Hr
 - Could have stacked: 491.59 E10/Hr
 - Recycler Transfers
 - Pbars sent to the Recycler: 468.77 E10
 - Number of transfers : 38
 - Number of transfer sets: 12
 - Average Number of transfer per set: 3.17
 - Time taken to shoot: 01.65 Hr
 - Time per set of transfers: 08.25 min
 - Transfer efficiency: 90.10%
 - Other Info
 - Average POT : 7.36 E12
 - Average production: 18.56 pbars/E6 protons
- Stacktail Gain Ramping bad for emittances?



Pasted from <<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=-900&button=yes&invert=yes>>

- Numbers - future is a web interface.
 - Get kerberos principal
 - Telnet Outland
 - ssh coisa
 - cd /usr/local/pplot
 - sh runRecord.sh MMDDYYHHMMSS MMDDYYHHMMSS
- Gain Ramping
 - Current Results from Pbar Elog.
 "16:15:34- my belief is that gain ramps for a 2.2 second cycle will not affect any improvements. We should do a study with a longer cycle time to see if they have any effect and ramping makes an improvement. When the beam is

really cold,(taking longer than 2 seconds) then the intermods from the TWTs will heat the beam. This was observed when we were doing transfer function studies with the bypass notch filter. There we had stored beam and reducing power made the momentum spread noticeably smaller. - RJP"

- 2004 Results.

Paul Derwent first implemented momentum gain ramps in 2004. He had measurements of cooling rate and asymptotic width at different gain settings. He fit functions to these measurements, then made some simple ramps (e.g., linear with time) and put them in a mathematica notebook to predict the change in the width at 2 seconds. The decrease in width at 2.2 seconds is also about 0.8 MeV measured. The improvement is in decreasing the gain so that the asymptotic width (dominated by intermod -- less TWT power) goes down.

measurements with different gain

<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar04&action=view&page=182>

gain ramping measurement

<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar04&action=view&page=201&load=>

From the measurements with different gain (March 04) I have individual bands as I change the gain and intensity. I have another set of measurements from Jan 05 where I changed gain and intensity. I had suggested to Steve before embarking on these measurements that having a quantifiable figure of merit (e.g., 95% width) and way to measure it would be a good idea before changing ramps around.