

2008-01-17 Morning Pbar Summary

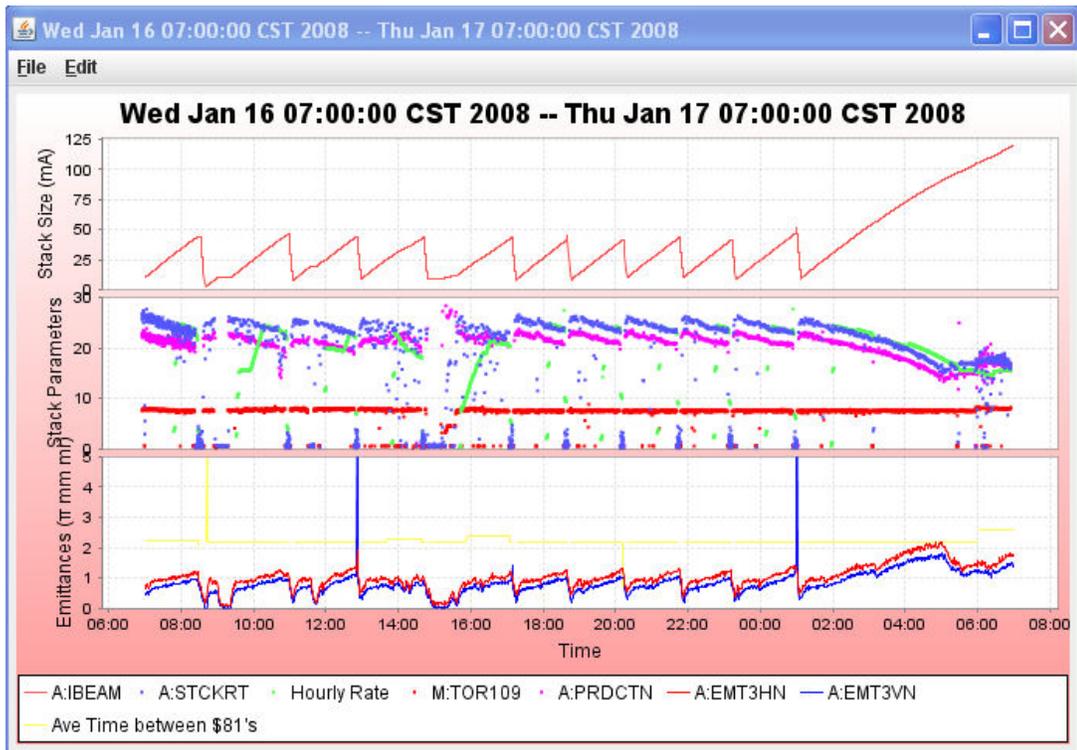
Wednesday, January 16, 2008
2:05 PM

- Stacking Summary:
 - Completed normal iterations of stack and transfer for the day and evening shift with pretty good uptime.
 - Our last set of transfers to the Recycler was around 1am.
 - We have stacked since then, building up a large stack.
 - Experts setup the "Flusher" early this morning in order to avoid core instabilities. The flusher automates a process that we would do manually when we ran into instability problems with large stacks. It moves the stabilizing RF back and forth across near the core, with the theory that it helps clear trapped ions. We hope to get more experience using the flusher with the hopes of making it an operational system in the near future.
 - **Average Protons on Target 6.46 e12** Best: 8.77 e12 on 07/24/2007
 - Protons on target are still down.
 - We noticed yesterday morning's tuning efforts as beam on target was brought up from about 7.1e12 to over 7.3e12 at 11 turns.
 - On the evening shift stacking beam on the \$23s was reduced to 10 turns, and beam on target dropped to about 7e12 and remained their through most of the owl shift.
 - When NuMI turned off at around 6am, we switched to stacking only \$29s and beam on target went up to around 7.5e12, but slowly started to fall off.
 - It is interesting that the slip stacking efficiency was around 85% for stacking on \$23s and went up to about 95% on stacking \$29s. Also the vertical position at the start of the P1 line had moved when we went to the \$29s. It also seems to be drifting. Horizontal did not change.
 - VP701 moved from 1.67 to 1.6mm
 - **Most in an hour: 24.19 mA** at Wed Jan 16 06:25:18 CST 2008, just slightly down from our best: 24.69 mA on 09-Jan-08
 - The peak stacking number was from late on the owl shift Wednesday.
 - The reduced beam on target overnight and then large stack did not allow us to repeat this performance during today's owl shift.
 - We did stack a total of 459.81mA over 24 hours.
 - **Average Production 16.87 e-6/proton** Best: 23.53 e-6/proton on 11/11/2007
 - Production was between 20-23 on most stacking cycles and got down to about 13 once the stack got up to 90mA over the owl shift.
- Transfer Summary
 - We sent 350.37e10 to the Recycler in 31 transfers over 10 sets.
 - After 24 hours of running with the new settings for the AP3 line quads, we saw no improvement in transfer efficiency, and possibly a slight increase in MI emittances, which is opposite of what we are trying to do. As a result, we put the changes back and will examine this a little closer.
 - Transfer efficiency was above 95% for all but one set of transfers, where we took four transfers instead of three.
 - Transfer efficiency numbers are hard to report for two reasons:
 - On Acc to MI: I:BEAMS frequently reads zero.
 - Shot 6902 was also missing A:IBEAM1
 - On Acc to RR: The numbers get artificially higher as the stash size increases. At low stash sizes, we see about 95%, but when we get to large stash sizes, we see over 100%. The overall average for the last 24 hours was 98%.
- Studies Requests
 - Experts are ready to complete Debuncher cooling measurements.
 - The impact will be four hours in stacking mode with little or no stacking.
 - This set of measurements will be for the Debuncher momentum cooling.

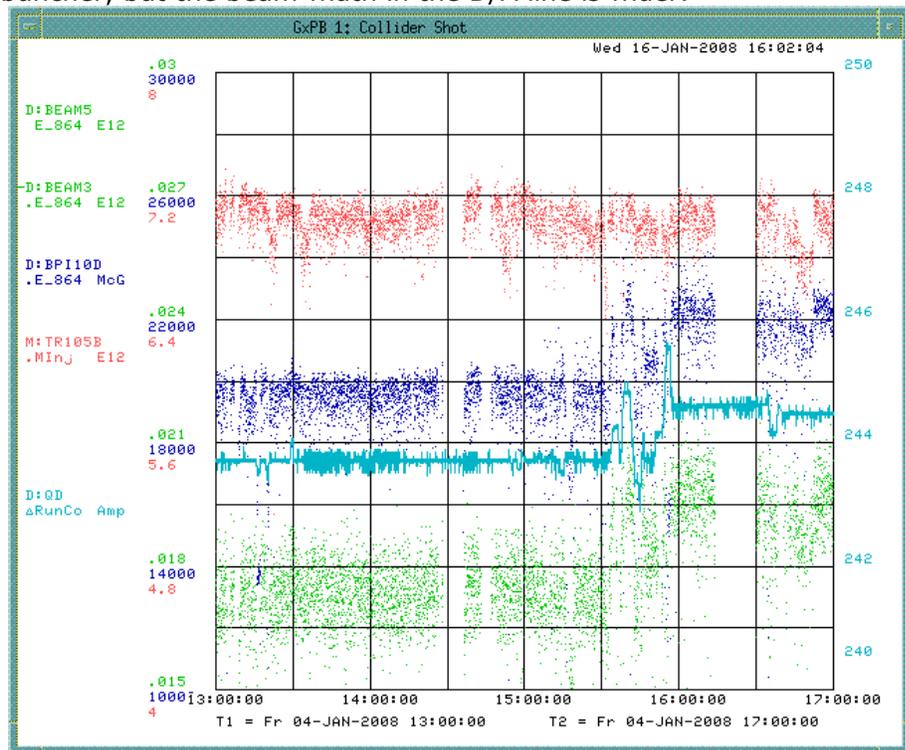
- There will be another set of equivalent measurements for the transverse systems, but more sequencer code needs to be written to optimize this process before we can do those studies.
- For those who want to know more about this study, I plan on showing a slide or two at the Friday meeting to provide more details.
- AI's Numbers:
 - Stacking
 - Pbars stacked: 459.81 E10
 - Time stacking: 22.54 Hr
 - Average stacking rate: 20.40 E10/Hr
 - Uptime
 - Number of pulses while in stacking mode: 36349
 - Number of pulses with beam: 32965
 - Fraction of up pulses was: 90.69%
 - The uptime's effect on the stacking numbers
 - Corrected time stacking: 20.44 Hr
 - Possible average stacking rate: 22.49 E10/Hr
 - Recycler Transfers
 - **Pbars sent to the Recycler: 350.37 E10**
 - **Number of transfers : 31**
 - **Number of transfer sets: 10**
 - Average Number of transfer per set: 3.10
 - Time taken to shoot: 01.45 Hr
 - Time per set of transfers: 08.71 min
 - Transfer efficiency: 98.4%
 - Other Info
 - Average POT : 6.95 E12
 - Average production: 20.06 pbars/E6 protons

Transfer	Stack Initial	Stack Final	Unstacked	Stash Initial	Stash Final	Stashed	%	Transfers	Sets
6903	44.19	2.79	41.4	110.62	146.44	35.82	0.865217	4	1
6904	45.79	7.99	37.8	145.46	181.64	36.18	0.957143	3	2
6905	43.79	9.19	34.6	180.47	213.93	33.46	0.967052	3	3
6906	42.99	8.99	34	212.19	245.88	33.69	0.990882	3	4
6907	42.59	8.39	34.2	243.31	278.06	34.75	1.016082	3	5
6908	40.59	8.39	32.2	274.73	307.59	32.86	1.020497	3	6
6909	40.99	9.99	31	303.25	334.8	31.55	1.017742	3	7
6910	42.99	10.59	32.4	329.52	362.2	32.68	1.008642	3	8
6911	40.59	8.59	32	354.68	386.97	32.29	1.009063	3	9
6912	46.19	9.93	36.26	375.52	412.63	37.11	1.023442	3	10
sum	430.7	84.84	345.86	2529.75	2870.14	340.39	0.984184	31	

- Stacking Summary
- Transfers Summary
- Studies Requests.
- Performance Plots

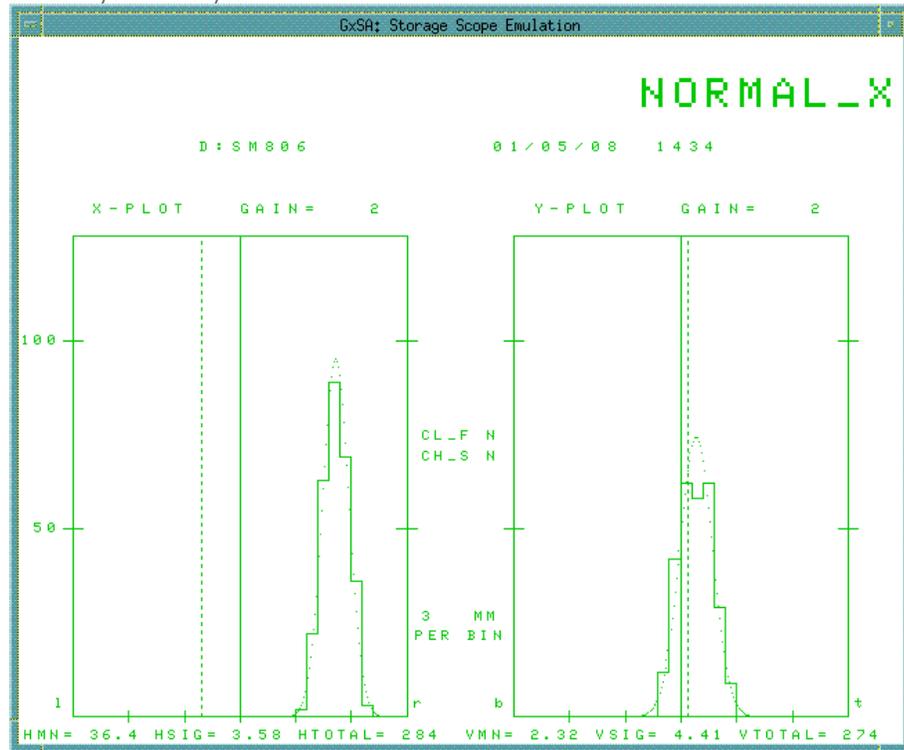


- Other Notes:
 - Debuncher tune changes 1-4-08 13:00 to 17:00: See increase in beam circulating in the Debuncher, but the beam width in the D/A line is wider.

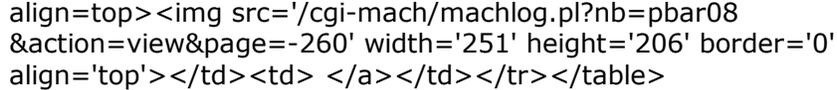
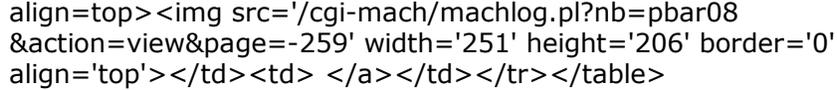


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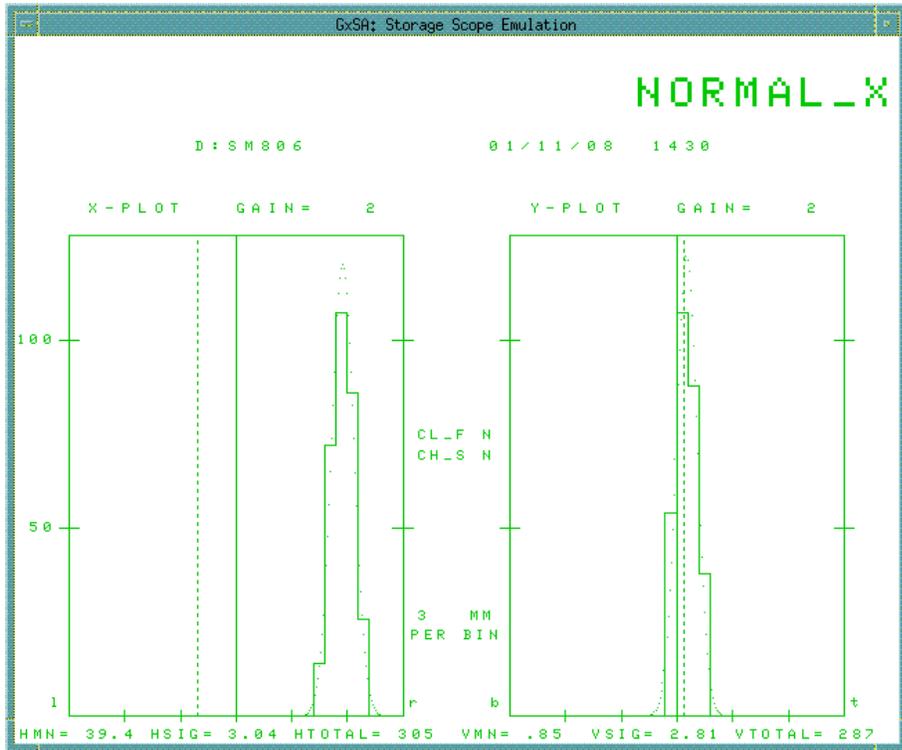
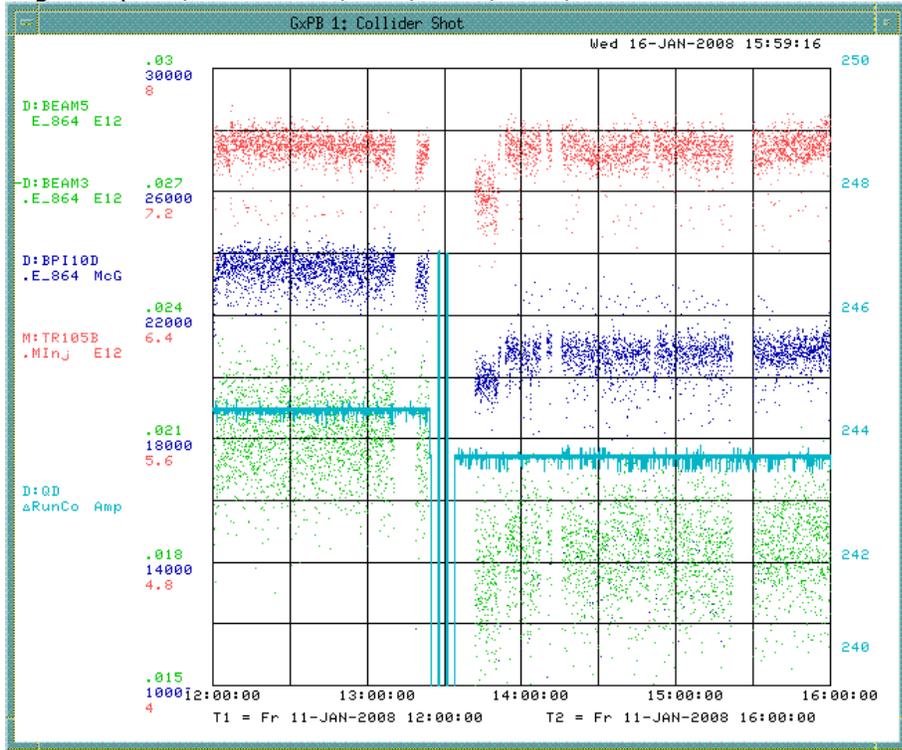
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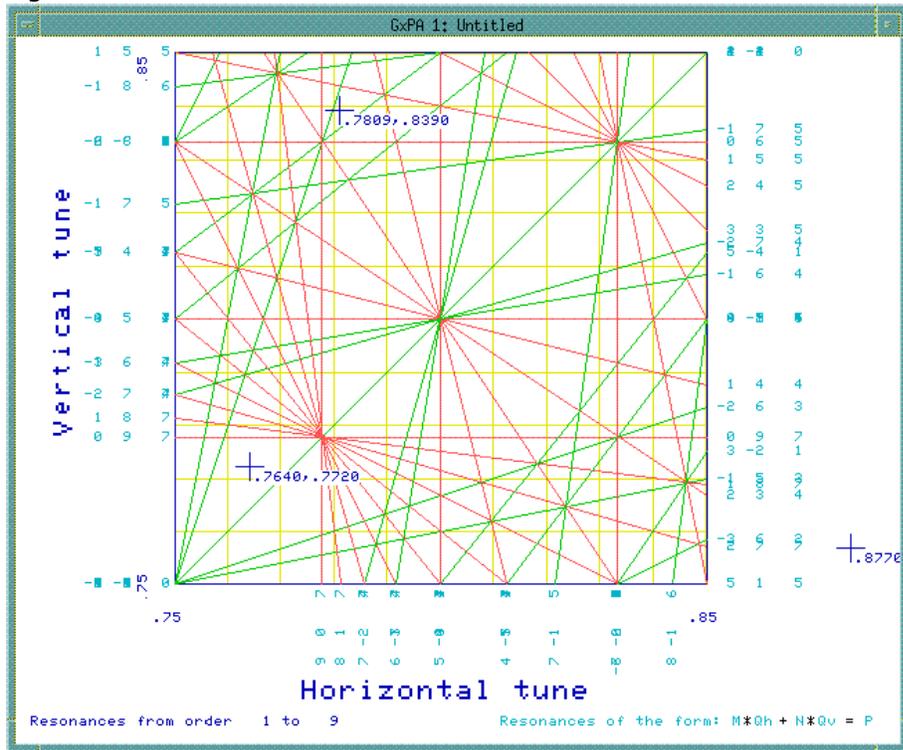
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- SEM profile 1-5-08
- Debuncher tunes put back 1-11-08 12:00 to 16:00 (image 259)
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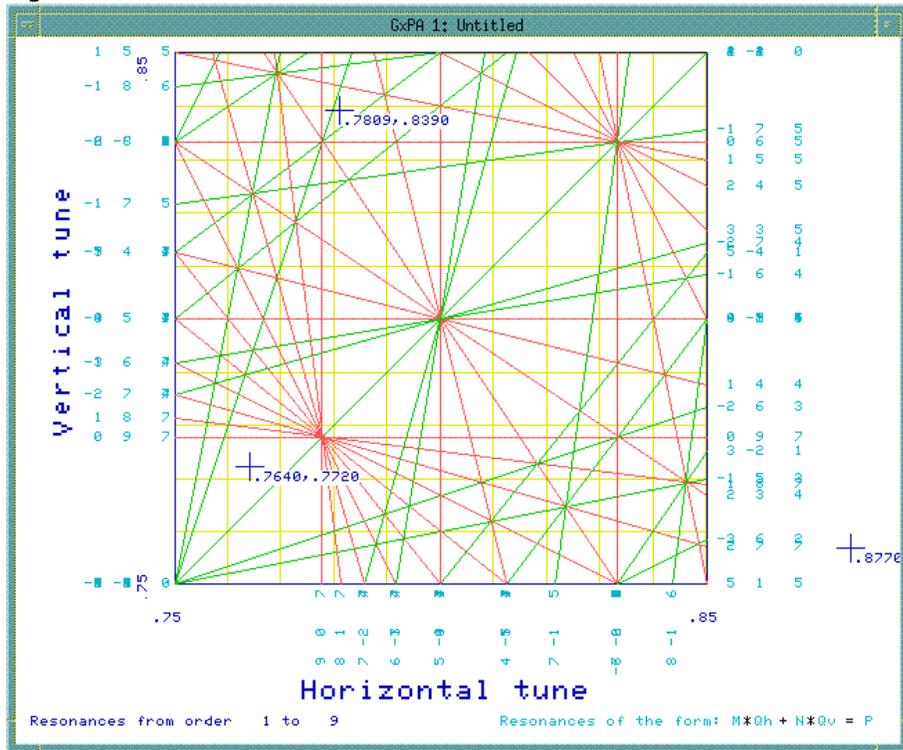
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- o Tune Diagram

Tune Diagram



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- Mystery?
 - A:IB ground current spikes from Midnight to 2am on 1-14-07
- AP3 optics change
 - Put it back.
- Emittance Blowup
 - Saturday, 1-12-07:
 - A:R2DDS1 was changed by 100Hz.
 - Emittance problems
 - Flusher