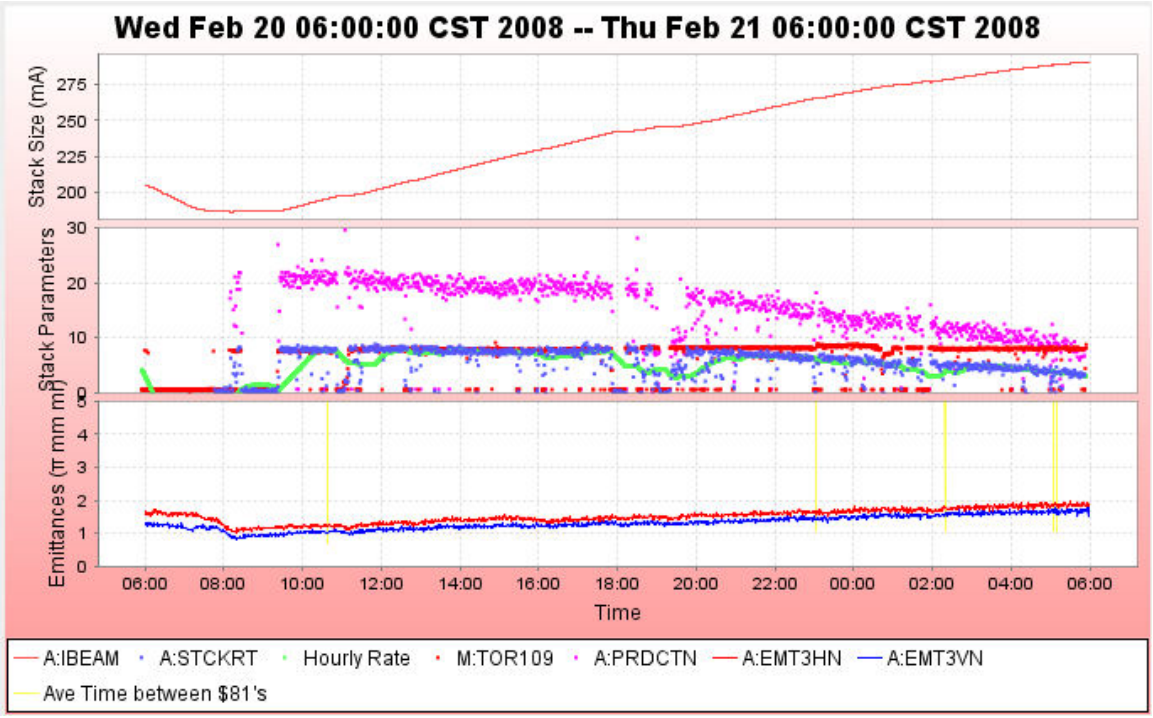
2008-02-21 Thursday Morning Pbar Notes

Thursday, February 21, 2008
6:21 AM

Stacking

- Beam on target was about 7.5e12 at 11 turns when running NuMI+Stacking. When NuMI turned off at 6am, 11 turns beam on target went up to 8e12. There was also a small, but measurable difference in the vertical position coming out of the Main Injector when we switched to the $29s.
- After recovering from our unstacking instability early Wednesday morning, we spent the day optimizing the Pbar Source for large stack operations.
    - Lowered the ARF1 fanback voltage. This leaves a little more beam on the injeciton orbit, but allows us to be more gentile with the stacktail.
    - Ran a newer version of the stacktail monitor that is compatible with the Flusher.
    - Optimized Accumulator tunes.
    - Optimized flusher configuration
        - Found optimal ARF2 stabilizing RF frequency sweep and rate.
        - Tuned on ARF2 stabilizing RF amplitude. We found that raising the ARF2 output to 100V or more was better for emittances.
    - Left detailed instructions with the operators (http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=84&scroll=false&load=) how to handle the stack overnight.
- Our best stacking hour was 7.46mA, and our average production was 15.47 e-6/proton.
    - Both numbers down due to stacking with large stack size.
- The evening shift had some difficulties with P1 line BPM positions. An AP1 rad trip resulted from the tuning efforts. In the end the trip limit of the I:VT701 trim had to be changed in order for run without pulling the permit.
- Overnight we achieved a record stack size.
    - The old record was 271.01mA set on November 14, 2007
    - We broke the 300mA barrier this morning!



Transfers

- No transfers in the last 24 hours.

Studies

- No studies in the last 24 hours.

Requests and Plan for Today

- Continue to tune on large stack size stacking.
- Continue to develop stacking during transfers aggregate. We will not actually do transfers with this aggregate until we are back to normal iterations of stacking and transferring.
- Lithium Lens Current/AP2 Line optics studies. This study requires turning off the AP2 portion of the overthruster and is mostly parasitic. The study should take less than two hours and have no more than a 5% hit on stacking.
- During our first set of transfers (hopefully this evening), we will have a Pbar expert in to help with the transfers.

Other Notes

- Paul's Numbers
  - Most in an hour: 7.46 mA at Wed Feb 20 12:38:01 CST 2008
  - Best: 25.19 mA on 30-Jan-08
  - Average Production 15.47 e-6/proton Best: 25.41 e-6/proton on 01/30/2008
  - Average Protons on Target 7.23 e12 Best: 8.77 e12 on 07/24/2007
  - Largest Stack 290.81 mA Best: 271.01 mA on 11/14/2007
- Al's Numbers
  - Stacking
    - Pbars stacked: 104.81 E10
    - Time stacking: 21.06 Hr
    - Average stacking rate: 04.98 E10/Hr
  - Uptime
    - Number of pulses while in stacking mode: 11907

- Number of pulses with beam: 9840
- Fraction of up pulses was: 82.64%

- The uptime's effect on the stacking numbers
  - Corrected time stacking: 17.41 Hr
  - Possible average stacking rate: 06.02 E10/Hr
  - Could have stacked: 126.82 E10/Hr

- Recycler Transfers
  - Pbars sent to the Recycler: 00.00 E10
  - Number of transfers : 0
  - Number of transfer sets: 0
  - Average Number of transfer per set: 0.00
  - Time taken to shoot: 00.00 Hr
  - Time per set of transfers: 00.00 min
  - Transfer efficiency: ☐%

  - Other Info
  - Average POT : 7.38 E12
  - Average production: 14.42 pbars/E6 protons

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