2009-09-15 Tuesday Pbar Notes

Tuesday, September 15, 2009
7:16 AM

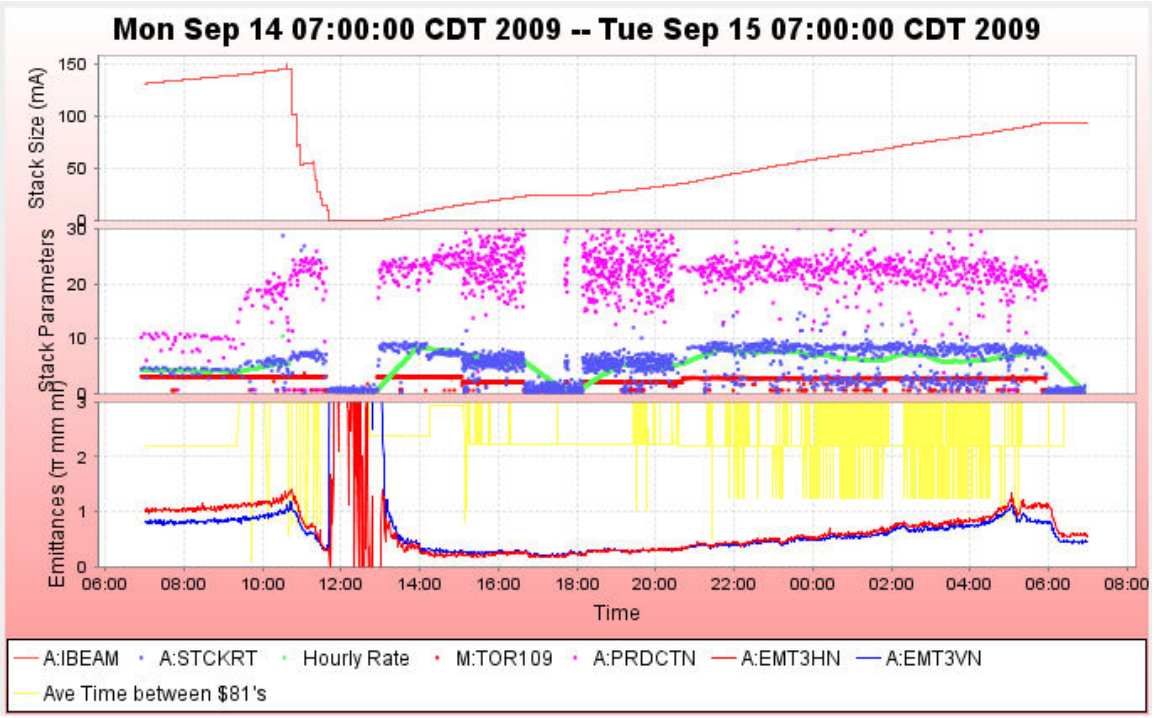
Transfers

Column 4 Number_3_Transfer Time		Column 21 Number_20_A:IBEAMB sampled on $91 (A:BEAM7), E10	Column 22 Number_21_A:IBEAMB sampled on $94 (A:BEAM9), E10	Unstacked (mA)	Column 23 Number_22_R:BEAMS (R:BEAME0[0]) pre xfer E10	Column 24 Number_23_R:BEAM (R:BEAME0[1]) post xfer, E10	Stashed	Acc to RR Eff	Acc to MI Eff	Acc to MI2 Eff	Transfers	Sets	Column 5 Number_4_Acc Horizontal Emittance	Column 6 Number_5_Acc Vertical Emittance	Column 8 Number_7_Acc Longitudinal Emittance
Totals =>				141.84			121.07	85.36%	92.25%	92.08%	10	1	6.969	5.884	1.883
Monday, September 14, 2009	10:44	145.84	9.29	141.84	-0.04	117.03	121.07	85.36%	92.25%	92.08%	10	1	6.969	5.884	1.883

- Transferred from our 145mA stack in eight transfers in one set.
  - Overall efficiency was 85%
  - MI BLT did not work for closure, and switching to MI BPM didn't work either (no front end support).

Stacking

- Access: After transfers we completed an access into the Pbar Rings and took care of some problems both upstairs and downstairs.
  - Fixed the Core Horizontal and Vertical band 1 trombone control.
    - Vertical had a card problem upstairs
    - Horizontal had a tunnel connection problem
  - DRF2 had a bad 36V ps
- Few issues
  - Proton Torpedo and Unstacking Longitudinal Emittance display don't work. Both talk to the scope out at AP0. This appears to be a software issue.
  - Motion control is not working on the downstream 4-8GHz tank.
  - Issues with the ARF4 frequency ramp.
    - Frequency begins its ramp before pbar extraction
    - RF only goes to 1,000V instead of the requested 1,320V.
  - Overthruster still does not work due to BPM issues. Hope this gets better with increased intensity.
- Stacking Numbers
  - At 3 slip-stacked turns our average stack rate was 7e12 with an average production of 22 e-6/p
- Overnight we stacked to 94mA and went into standby when beam was shutoff for the Booster/MI accesses.
- The big news is the Pbar Heat Exchanger is showing signs of getting clogged and is deteriorating.
  - This morning Cryo started their deriming process.
  - Total time for warm-up to cool-down is expected to be about 24 hours.
  - Systems impacted are the Debuncher Stochastic Cooling pickups and the Stacktail notch filter #3.
  - The system impact is we cannot stack during this work.
  - However, we can spin a stack and do transfers when the Recycler is ready to accept Pbars.



Requests

- Today
  - Transfer function measurements for Core Transverse systems.
  - Transfer Pbars when Recycler is ready.
- Tomorrow
  - Hope to start-up stacking by early day shift.
  - Ready for normal stack/transfer iterations

The Numbers

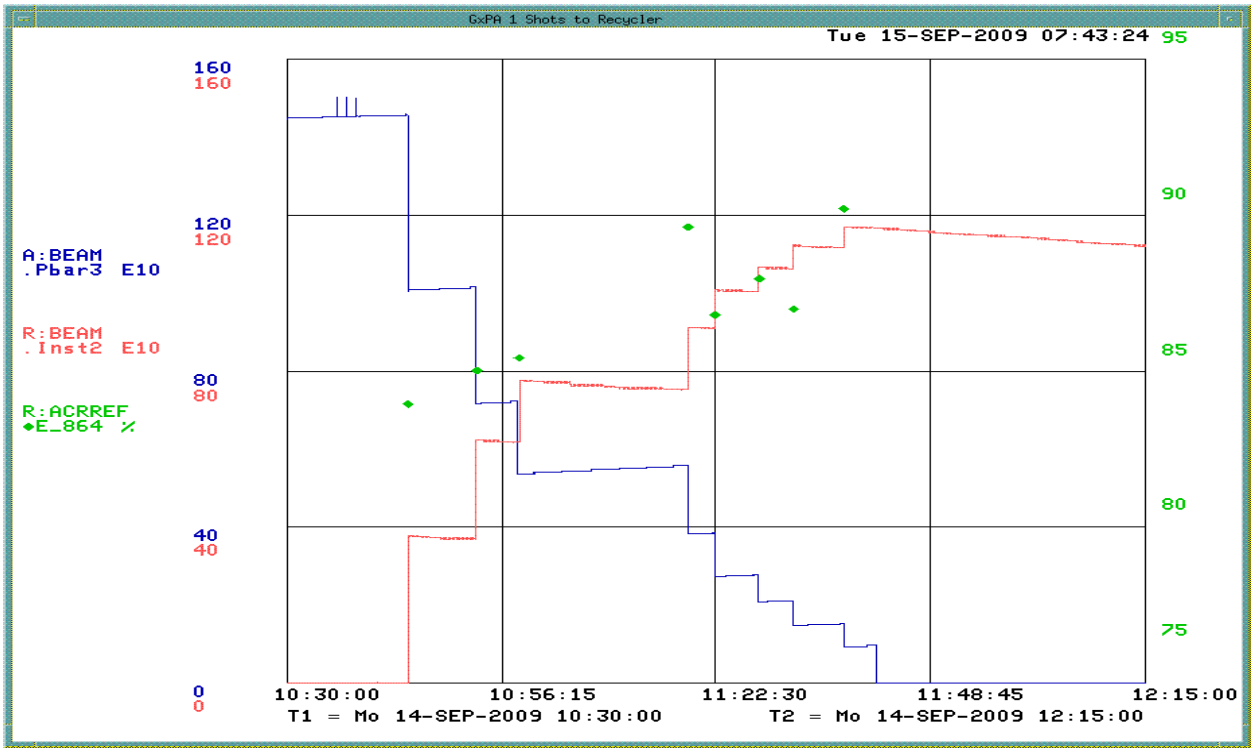
- Paul's Numbers
  - Most in a half hour: 4.00 mA at Mon Sep 14 14:13:56 CDT 2009
  - Best Hour: 31.29 mA on 11-Sep-09
- Al's Numbers
  - Stacking
    - Pbars stacked: 104.35 E10
    - Time stacking: 20.60 Hr
    - Average stacking rate: 05.07 E10/Hr
  - Uptime
    - Number of pulses while in stacking mode: 29764
    - Number of pulses with beam: 21916
    - Fraction of up pulses was: 73.63%
  - The uptime's effect on the stacking numbers
    - Corrected time stacking: 15.17 Hr
    - Possible average stacking rate: 06.88 E10/Hr
    - Could have stacked: 141.72 E10/Hr
  - Recycler Transfers
    - Pbars sent to the Recycler: 141.85 E10
    - Number of transfers : 10
    - Number of transfer sets: 1
    - Average Number of transfer per set: 10.00
    - Time taken to shoot including reverse proton tuneup: 00.03 Hr

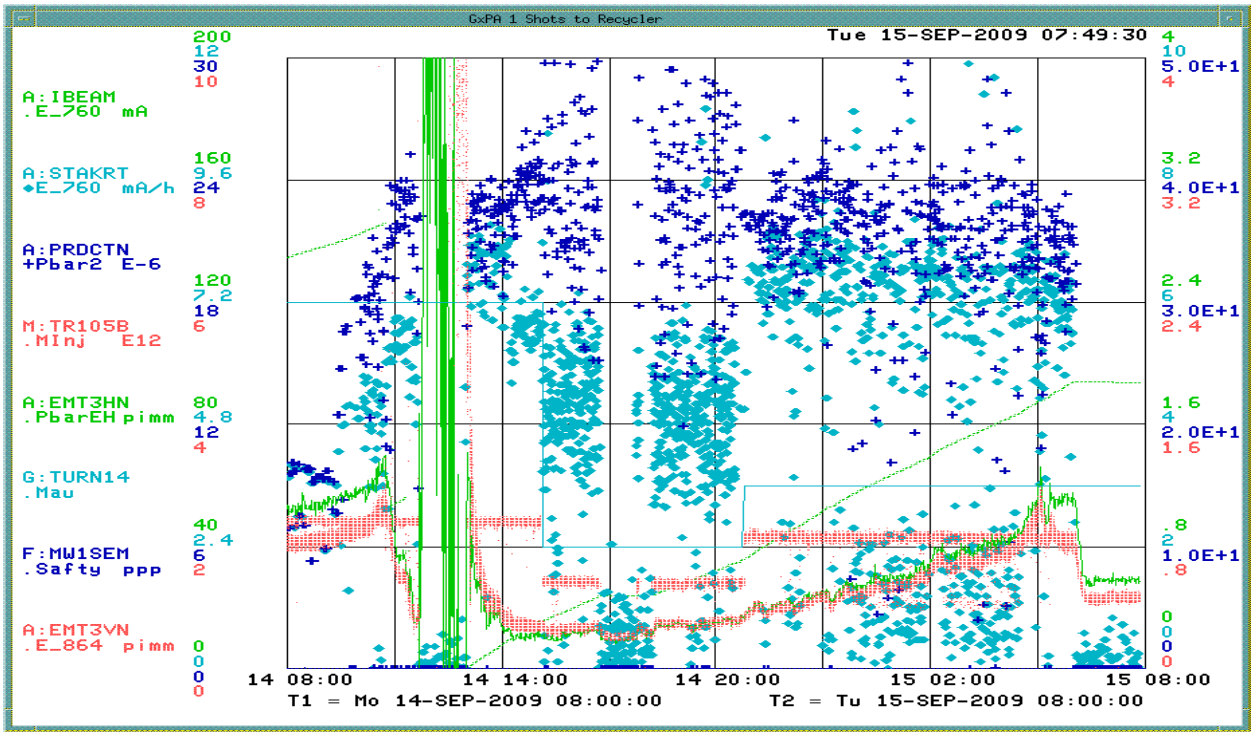
- Time taken to shoot including reverse proton tuneup: 00.03 Hr
- Transfer efficiency: 103.08%

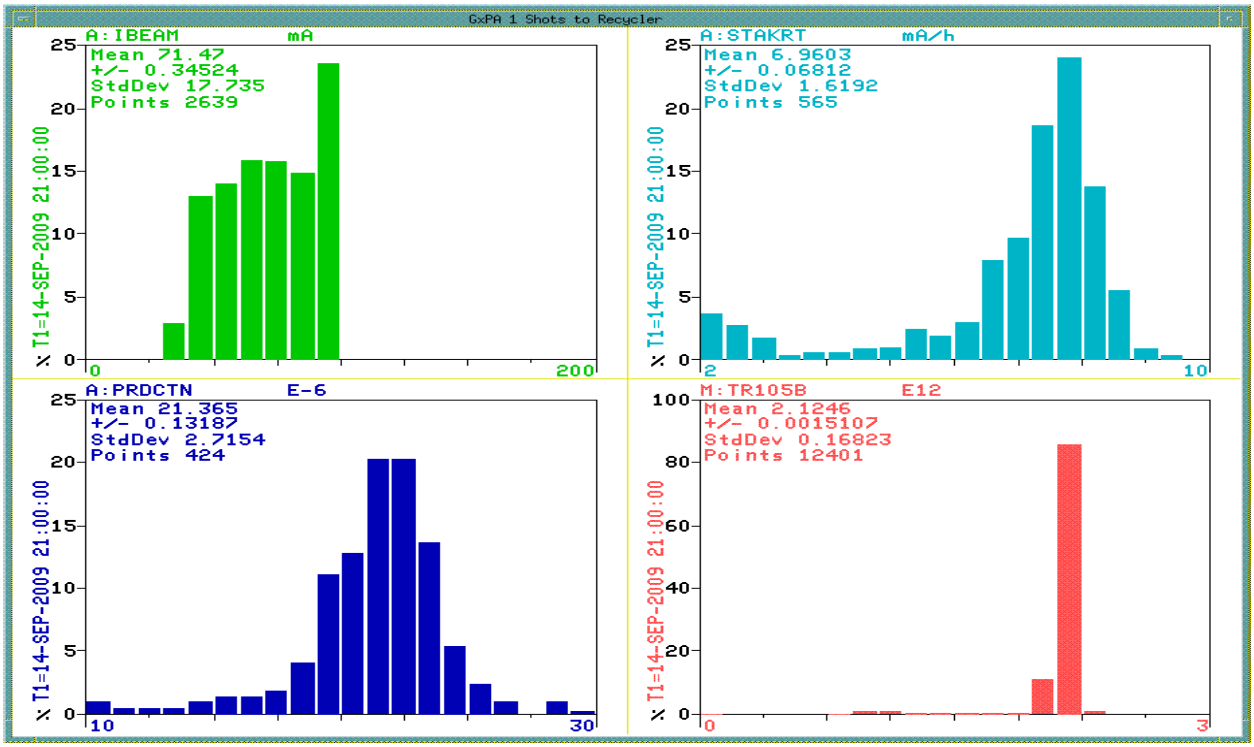
- Other Info
  - Average POT : 2.27 E12
  - Average production: 21.01 pbars/E6 protons

- * Missed one or more A:IBEAM7 events somewhere in the middle of the user selected time span. Calculated time shot using 13 secs per transfer.

Plots






GxPA 1 Shots to Recycler
A:IBEAM mA
Mean 71.47
+/- 0.34524
StdDev 17.735
Points 2639
T1=14-SEP-2009 21:00:00
A:STAKRT mA/h
Mean 6.9603
+/- 0.06812
StdDev 1.6192
Points 565
T1=14-SEP-2009 21:00:00
A:PRDCTN E-6
Mean 21.365
+/- 0.13187
StdDev 2.7154
Points 424
T1=14-SEP-2009 21:00:00
M:TR105B E12
Mean 2.1246
+/- 0.0015107
StdDev 0.16823
Points 12401
T1=14-SEP-2009 21:00:00