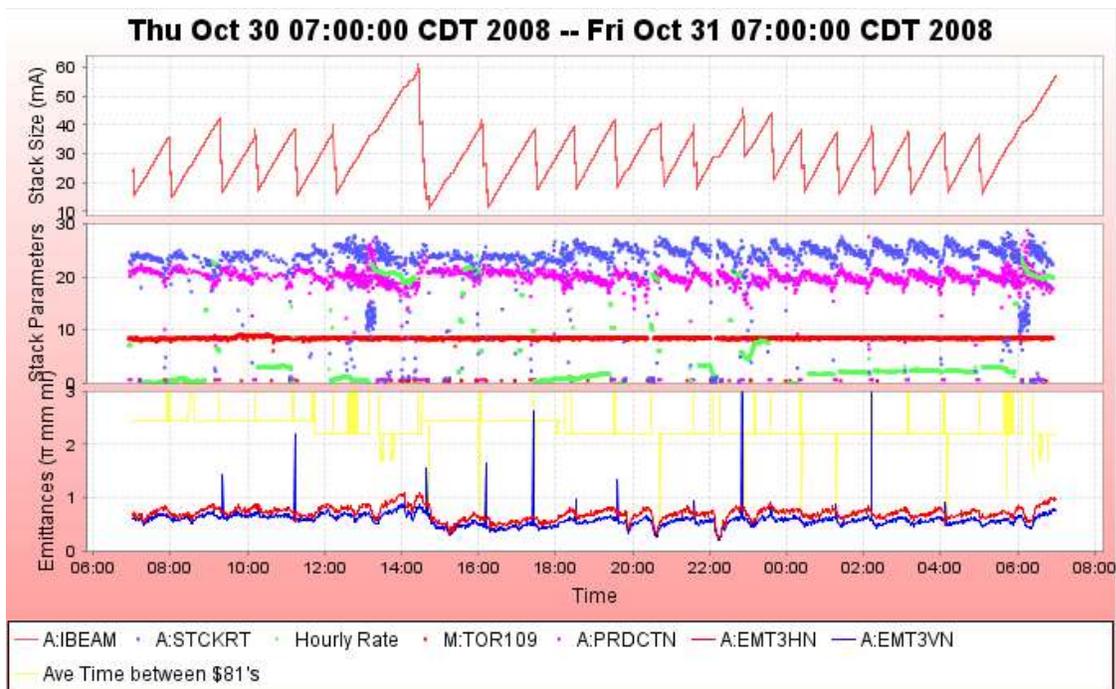


2008-10-31 Halloween Friday Pbar Notes

Thursday, October 30, 2008
8:24 PM

Stacking

- Put in the calculated core vertical gain and attenuation settings, which seemed to help.
- D:LNV
 - External interlocks trip on transformer flow, twice.
 - We recently had a problem that the interlock card reference voltage developed some ripple which caused unwarranted trips to occur.
 - A jumper in overnight and we will check out the alarm card this morning.
- Performance
 - Most in an hour: 23.75 mA at Fri Oct 31 06:03:56 CDT 2008
 - Average Production 18.71 e-6/proton
 - Pbars stacked: 529.01 E10 in 23.74 Hr
 - Average stacking rate: 22.28 E10/Hr



Transfers

- Unstacked 486mA in 44 transfers over 20 sets.
 - Average Accumulator or MI efficiency was 97%
 - Average Accumulator to Recycler efficiency was 94.6%.
 - Still down a bit, so we will look into this.
- The evening shift had some problems with the core going coherent during transfers, resulting in not much being unstacked.

Column 1 Number_0 _Pbar Transfer Shot #	Column 4 Number_3_Transfer Time	Column 21 Number_2 0_A:BEA MB sampled on \$91 (A:BEAM7 , E10	Column 22 Number_2 1_A:BEA MB sampled on \$94 (A:BEAM9 , E10	Unstacked (mA)	Column 23 Number_2 2_R:BEAM S (R:BEAME 0[0]) pre xfer E10	Column 24 Number_2 3_R:BEAM (R:BEAME 0[1]) post xfer, E10	Stashed	Acc to RR Eff	Acc to MI Eff	Acc to MI2 Eff	Transf ers	Sets	
Totals =>				486.23			460.09	94.62%	91.61%	96.94%	44	20	
9838	Friday, October 31, 2008	4:06	36.15	15.54	21.75	330.78	351.29	20.68	95.06%	95.97%	97.66%	2	1
9837	Friday, October 31, 2008	3:10	37.04	15.90	22.29	310.50	331.61	21.32	95.65%	98.73%	96.59%	2	1
9836	Friday, October 31, 2008	2:14	36.74	15.67	22.22	290.33	311.40	21.12	95.08%	98.06%	98.31%	2	1
9835	Friday, October 31, 2008	1:18	36.71	15.70	22.18	270.00	291.12	21.19	95.54%	98.12%	98.12%	2	1
9834	Friday, October 31, 2008	0:23	37.01	15.74	22.37	249.34	270.59	21.36	95.52%	98.25%	96.96%	2	1
9833	Thursday, October 30, 2008	23:36	37.83	16.26	22.72	228.18	249.85	21.77	95.82%	97.63%	99.42%	2	1
9832	Thursday, October 30, 2008	22:53	43.57	20.53	24.22	205.87	228.66	22.84	94.31%	97.61%	96.68%	2	1
9831	Thursday, October 30, 2008	21:35	42.80	29.35	14.70	192.47	206.08	13.78	93.71%	95.69%	96.18%	2	1
9830	Thursday, October 30, 2008	20:44	37.70	17.39	21.52	172.71	192.97	20.35	94.58%	96.96%	96.88%	2	1
9829	Thursday, October 30, 2008	19:32	40.52	18.39	23.28	150.80	173.01	22.21	95.40%	97.08%	96.85%	2	1
9828	Thursday, October 30, 2008	18:28	41.31	18.03	24.43	128.07	151.14	23.09	94.53%	96.95%	97.45%	2	1
9827	Thursday, October 30, 2008	17:28	38.93	17.34	22.66	106.84	128.31	21.52	94.97%	96.61%	96.22%	2	1
9826	Thursday, October 30, 2008	16:07	38.21	17.28	22.08	85.95	106.97	20.99	95.08%	97.46%	96.14%	2	1
9825	Thursday, October 30, 2008	14:28	39.95	11.17	31.14	56.63	86.16	29.58	94.97%	97.26%	97.80%	3	1
9824	Thursday, October 30, 2008	12:14	59.11	10.80	53.25	8.18	56.78	49.00	92.01%	82.84%	95.56%	5	1
9823	Thursday, October 30, 2008	11:13	37.16	15.38	22.83	299.80	321.37	21.65	94.83%	97.89%	97.52%	2	1
9822	Thursday, October 30, 2008	10:12	38.03	15.25	23.91	277.73	300.52	22.89	95.73%	52.51%	95.99%	2	1
9821	Thursday, October 30, 2008	9:17	35.83	16.92	20.14	259.53	278.44	19.02	94.41%	96.12%	96.77%	2	1
9820	Thursday, October 30, 2008	7:58	41.78	16.36	26.54	235.56	260.20	24.76	93.27%	86.72%	95.53%	2	1
9819	Thursday, October 30, 2008	6:59	35.42	14.57	22.01	215.32	236.17	20.98	95.33%	67.78%	97.82%	2	1

Studies

Requests

1. Core Transverse Cooling Measurements

- Prerequisites:
 - Valeri will need to calculate the optimal delay and attenuation settings based on the latest transfer function measurements AND...
 - The newly calculated delay and attenuation values must be in place and considered successful before this study can be started.
- Beam conditions:
 - ~45mA of beam in the Accumulator.
- Background
 - This is a repeat of the core cooling study completed first on the evening of Friday, October 3rd (See <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=423&anchor=202716&hilite=20:27:16->), and then again on the morning of Friday, October 17th (<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=441&load=>).
 - The October 3rd set of measurements were taken before the Core Vertical Equalizer was installed.
 - The October 17th set of measurements were taken after the Core Vertical Equalizer was installed. Initial indications are that maybe the cooling is worse with the new vertical equalizer.
 - Transfer function measurements made on October 13th (<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=433&anchor=135730&hilite=13:57:30->) determined that the trombone for each band needed

to go longer by one wavelength; however, band 2 did not have enough range. This means the measurements taken on October 17th were not with a completely optimized system.

- Adding additional cable delay requires a tunnel access, which was completed on Wednesday, October 22nd (<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=451&scroll=false&load=>).
 - After the October 22nd access was completed, a new set of Core Vertical transfer function measurements were made (<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=452&anchor=193038&hilite=19:30:38->). An additional set of TFMs were made after this. Valeri calculated ideal Core Vertical trombone and attenuator settings based on these measurements. It was determined that there was not enough gain in the Core Vertical band 2 and 3 systems to fully implement the change. The systems can be modified to accommodate the change, but another tunnel access is required.
 - On Friday, October 24th, an attempt to put in the new trombone settings and put in the correct ratio of band 1, 2 and 3 gains was made (<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=455&scroll=false&load=>). Since there was not enough room in bands 2 and 3, experts tried lowering band 1 in order to get the correct ratio. The results showed that the emittances were worse. A tunnel access is still required to get the desired gain from Core Vertical bands 2 and 3.
 - On Wednesday, October 29th, an access was made to make the desired attenuation changes to the Core Vertical systems (<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=463&anchor=152731&hilite=15:27:31->).
 - On Thursday, October 30 (<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=466&scroll=false&load=>) yet another set of transfer function measurements were made. Valeri will recalculate another set of optimal gain and delay settings based on this data. We will then need to roll those settings in.
 - On Thursday, October 30th, changes made to cooling (<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=466&scroll=false&load=>)
 - This study repeats core vertical cooling measurements made on October 3rd and 17th, with the new equalizer in place, with the appropriate cable delays and pad removal to properly tune the trombones and attenuators.
 - The study
 - The studier is Jim Morgan
 - The estimated time is 2+ hours.
 - The study involves blowing the beam up and cooling it back down for each core vertical cooling band.
2. **Measure Notch Filters**
 - Requires 15 minutes when not stacking.
 - Do not yet have the details on this study.
 3. **Test using the same MI51 position for transfers & normal Stacking/NuMI operation**
 - The goal is to eliminate the routine orbit adjustment near MI-52 that occurs on transfers to the Recycler.
 - The positions are only 1mm different between transfers and normal stacking.
 - This should not make a difference in efficiency.
 - Initial tests were completed, and appear to have been a success.
 - Currently researching what modifications the sequencer it would take to accommodate the change in the near future.
 4. **Replace Flow Switch at AP50**
 - a. Pete Seifrid will do this work.
 - b. Takes DRF1 and Core 4-8GHz Momentum systems down
 - c. 15 minutes to 30 minutes of non-stacking downtime needed to complete the job.
 - d. Electronic Worlist entry 9142 (http://www-bd.fnal.gov/cgi-worklist/worklist_form.pl?id=9142)
 - e. Pete would like to get this done fairly soon.
 5. **Troubleshoot DRF1-1 module**

5. **Troubleshoot DRF1-1 module**

- a. DRF1-1 has a very noisy output. It needs to be determined if this is a readback problem or a real problem.
- b. Pat Sheahan is looking at this.

The Numbers

- Paul's Numbers
 - Most in an hour: 23.75 mA at Fri Oct 31 06:03:56 CDT 2008
 - Best: 37.52 mA on 25-Oct-08
 - Average Production 18.71 e-6/proton Best: 25.41 e-6/proton on 01/30/2008
 - Average Protons on Target 7.27 e12 Best: 8.77 e12 on 07/24/2007
 - Largest Stack .00 mA Best: 313.58 mA on 02/18/2008
- Al's Numbers
 - Stacking
 - Pbars stacked: 529.01 E10
 - Time stacking: 23.74 Hr
 - Average stacking rate: 22.28 E10/Hr
 - Uptime
 - Number of pulses while in stacking mode: 36339
 - Number of pulses with beam: 35183
 - Fraction of up pulses was: 96.82%
 - The uptime's effect on the stacking numbers
 - Corrected time stacking: 22.98 Hr
 - Possible average stacking rate: 23.02 E10/Hr
 - Could have stacked: 546.40 E10/Hr
 - Recycler Transfers
 - Pbars sent to the Recycler: 495.50 E10
 - Number of transfers : 45
 - Number of transfer sets: 20
 - Average Number of transfer per set: 2.25
 - Time taken to shoot including reverse proton tuneup: 00.26 Hr
 - Transfer efficiency: 95.40%

 - Other Info
 - Average POT : 7.77 E12
 - Average production: 19.34 pbars/E6 protons

Other

21:31: D:LNV trip on external interlock - transformer water flow....twice.

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PB S53 DIGITAL STATUS
S53 DIGITAL STATUS                               *Pgm_Tools* AGG CONTRL
parm *SA* X-A/D X=TIME      Y=R:BEAMS ,I:BEAMS ,A:IBEAMB,I:VTRP28 *RESET
*save ---- Eng-U I= 0      I= 141.1 , 0      , 28.7136, 0      *ON
      r_E0 AUTO F= 5      F= 171.1 , 30      , -1.29 , 4      *OFF
.global .linac.. booster ...mi... ..tev... ..sy... ..p-bar.. .misc... collider

D:LNV      Collectn Lens PS Volts -See Alarm Log-

Interlocks Complete      Open      0 *****CAUTION***** READ      0 *On
Safety System            On        1 In case of ground fault, THIS      0 *Off < *
P.S. Over Current        OK      1 P.S Over Current or Load MESSAGE 0 *Reset< T
Ground Fault             No      1 Over Current                      0 .....
Load Over Current        OK      1 do not turn on power sup          0 .....
Capacitor Over Voltage   OK      1 ply. Put image of lens           READ      0 Local .
Bias Current              OK      1 and pulsed magnet scope          THIS      0 Alarm is
-40 Volt P.S.            OK      1 trace in MCR eLog and            MESSAGE 0 ALARMING
-15 Volt P.S.            OK      1 contact TARGET STATION           0 Speech is
+15 Volt P.S.            OK      1 PERSONNEL (T. Leveling           0 BYPASSED
+75 Volt P.S.            OK      1 Obie, or J. Morgan.              READ      0 Edit
P.S. Temperature         Normal  1                                     THIS      0
Ext Interlock D:LNST1    Trouble 0 OK to reset and turn on          MESSAGE 0
Door Interlocks          OK      1 in the event of cap over          0
Local/Remote Control     Remote  1 voltage.                          0
On/Off                   Off      0                                     0

Messages

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Pasted from <<http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2008&action=view&page=-6475&button=yes>>

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PB S53 DIGITAL STATUS
S53 DIGITAL STATUS                               *Pgm_Tools* AGG CONTRL
parm *SA* X-A/D X=TIME      Y=R:BEAMS ,I:BEAMS ,A:IBEAMB,I:VTRP28 *RESET
*save ---- Eng-U I= 0      I= 141.1 , 0      , 28.7136, 0      *ON
      r_E0 AUTO F= 5      F= 171.1 , 30      , -1.29 , 4      *OFF
.global .linac.. booster ...mi... ..tev... ..sy... ..p-bar.. .misc... collider

D:LNST1     Collectn Lens Intrlocks -See Alarm Log-

Col Lens Wtr Ret Flow Hi OK      1 Lens res.tank level Hi      OK      1 .....
Col Lens Wtr Ret Flow Lo OK      1 Lens res.tank level Lo      OK      1 .....
Col Lens Wtr Sup Flow Hi OK      1 Lens watr pmp wtr TC Hi      OK      1 .....
Col Lens Wtr Sup Flow Lo OK      1 Lens watr pmp wtr TC Lo      OK      1 .....
Col Lens Wtr Ret Temp Hi OK      1 Xfwr Matr Return Temp Hi      OK      1 .....
Col Lens Wtr Ret Temp Lo OK      1 Xfwr Matr Return Temp Lo      OK      1 .....
Col Lens Wtr Sup Temp Hi OK      1 Collect Lens Voltage Hi      OK      1 Alarm is
Col Lens Wtr Sup Temp Lo OK      1 bit-24 .....                0 ACTIVE-OK
Col Lens Xfwr TC-B Hi OK      1 CL Wtr Pump Inlt Pres Hi      OK      1 Speech is
Col Lens Xfwr TC-B Lo OK      1 CL Wtr Pump Inlt Pres Lo      OK      1 BYPASSED
Xfwr Matr Supply Temp Hi OK      1 Col Lens Wtr Ret Cndt Hi      OK      1 Edit
Xfwr Matr Supply Temp Lo OK      1 Col Lens Wtr Ret Cndt Lo      OK      1
Collection Lens TC-B Hi OK      1 Col Lens Wtr Ret Pres Hi      OK      1
Collection Lens TC-B Lo OK      1 Col Lens Wtr Ret Pres Lo      OK      1
Collection Lens TC-A Hi OK      1 Col Lens Wtr Sup Pres Hi      OK      1
Collection Lens TC-A Lo OK      1 Col Lens Wtr Sup Pres Lo      OK      1

Messages
No control PDB IBM_NOPROP

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Pasted from <<http://www-bd.fnal.gov/cgi-mcr/elog.pl?nb=2008&action=view&page=-6476&button=yes>>
Did not get D:LNST2