

## 2008-10-16 Thursday Morning Notes

Wednesday, October 15, 2008  
1:01 PM

### Stacking

- The numbers
  - Best stacking hour: 24.07 mA at Wed Oct 15 21:41:26 CDT 2008
  - Production: 17.08 e-6/proton
- Wait for downtime to put the
- We now have readbacks for our air line pressures in the D10 and D30 vacuum sectors  
<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=438&anchor=153731&hilite=15:37:31->
- A transport humidity sensor near IB1 spiked up for the third time since the shutdown.
  - This may not be real since we don't have an indication of significant LCW makeup.
  - IB1 was the source of a significant LCW leak on copper fittings over the shutdown.
  - We also have a digital leak detection at IB1 that has not yet dried up enough to clear since the shutdown.
  - If we get access opportunity, we'll probably check the area for leaks, but it is not important enough to turn off today.

### Transfers

- We continue iterations of stack to 30mA and transfer.
- ARF1-3a has a lumpy looking output. Experts will investigate.
- We transferred 483mA in 44 transfers over 19 sets.
  - Accumulator to MI efficiency was 97.7%
  - Accumulator to RR efficiency was 95.3%

	Totals =>	7:00:00 AM			483.91			461.28	95.32%	472.88	470.95	97.72%	97.32%	44	19
9605	Thursday, October 16, 2008	6:35:54 AM	37.74	17.66	21.20	65.43	85.34	19.93	94.03%	20.73	20.50	97.80%	96.72%	2	1
9603	Thursday, October 16, 2008	5:26:04 AM	33.32	11.67	24.09	42.76	65.54	22.80	94.64%	23.20	22.94	96.29%	95.21%	3	1
9602	Thursday, October 16, 2008	4:27:49 AM	50.28	11.97	40.45	4.92	42.89	38.10	94.20%	39.26	39.21	97.05%	96.93%	3	1
9601	Thursday, October 16, 2008	2:34:19 AM	33.54	11.53	24.43	80.24	103.44	23.29	95.33%	23.60	23.51	96.58%	96.24%	3	1
9600	Thursday, October 16, 2008	1:28:56 AM	95.49	11.57	86.97	-0.16	80.65	81.79	94.05%	85.24	85.03	98.01%	97.77%	5	1
9599	Wednesday, October 15, 2008	8:37:44 PM	33.07	14.34	19.95	349.17	368.09	19.12	95.81%	19.59	19.47	98.20%	97.59%	2	1
9598	Wednesday, October 15, 2008	7:48:23 PM	32.79	14.29	19.74	331.70	350.30	18.80	95.25%	19.48	19.04	98.67%	96.42%	2	1
9597	Wednesday, October 15, 2008	6:59:13 PM	31.95	13.85	19.28	314.43	332.58	18.41	95.47%	18.71	18.66	97.07%	96.81%	2	1
9596	Wednesday, October 15, 2008	6:14:57 PM	33.86	15.10	19.94	296.11	315.14	19.15	96.01%	19.45	19.75	97.53%	99.06%	2	1
9595	Wednesday, October 15, 2008	5:21:10 PM	33.50	14.33	20.38	277.43	296.80	19.40	95.21%	19.77	19.97	97.02%	97.99%	2	1
9594	Wednesday, October 15, 2008	4:26:23 PM	34.60	13.59	22.15	256.94	277.95	21.08	95.17%	21.50	21.66	97.07%	97.76%	2	1
9593	Wednesday, October 15, 2008	3:17:22 PM	32.67	12.89	20.86	237.50	257.52	20.05	96.12%	20.46	20.41	98.09%	97.82%	2	1
9592	Wednesday, October 15, 2008	1:40:23 PM	31.39	12.52	20.03	218.83	238.03	19.31	96.41%	19.68	19.49	98.24%	97.32%	2	1
9591	Wednesday, October 15, 2008	12:44:16 PM	30.54	11.01	20.75	199.16	219.20	20.07	96.74%	20.44	20.30	98.51%	97.84%	2	1
9590	Wednesday, October 15, 2008	11:44:37 AM	35.40	12.49	23.72	176.60	199.50	22.93	96.67%	23.40	23.23	98.64%	97.93%	2	1
9589	Wednesday, October 15, 2008	10:25:08 AM	31.31	10.61	21.22	156.51	177.04	20.60	97.05%	20.89	20.86	98.45%	98.31%	2	1
9588	Wednesday, October 15, 2008	9:21:51 AM	30.92	11.19	20.87	136.68	156.77	20.14	96.47%	20.43	20.36	97.89%	97.52%	2	1
9587	Wednesday, October 15, 2008	8:27:15 AM	29.74	12.41	18.21	119.39	136.85	17.52	96.22%	17.86	17.67	98.08%	97.05%	2	1
9586	Wednesday, October 15, 2008	7:41:55 AM	32.14	13.62	19.68	100.81	119.49	18.79	95.50%	19.19	18.99	97.54%	96.02%	2	1

Studies

## Requests

### Cryo Request

- Cryo wants to tighten a slipping belt on the Pbar Dry Engine today. They promise that it will be transparent to operations.

### Thursday Requests:

#### 1. Static Stacktail Measurements.

- Conditions:
  - This study should be started directly before a set of transfers to Recycler. We want a 30mA stack.
  - Prior to the start of this study, we would like five supercycles of stacking without SY120 or Studies events in the TLG. This will allow setup the stacktail in a known condition for the study.
- The Study:
  - A Numi-only TLG is loaded
  - The studier is Dave Vander Meulen
  - The estimated study time is 20 minutes.
- After the study is complete, we can transfer to the Recycler.
- Leave > 10mA of beam behind for the next study.

#### 2. Stacktail Transfer Function Measurements:

- Conditions:
  - This study will start with 10mA leftover after a set of transfers.
- The Study
  - The studiers are Steve Werkema and Ralph Pasquinelli.
  - The estimated study time is 4 hours.
  - If beam is lost during any of the measurements, we need to be able to stack for short periods of time to replace the beam for the next set of measurements.

### Friday Requests:

#### 1. Core Cooling Measurements

- Beam conditions:
    - ~45mA of beam in the Accumulator.
  - Background
    - This is a repeat of the core cooling study completed 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->).
    - The measurements taken on that day were before the core vertical equalizer was installed.
    - This study repeats the measurement now that the equalizer is installed.
  - 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.
    - **Details of this study are still being worked out**, so more information will be available tomorrow. If we can coordinate with the target hall work, a likely scenario would be.
      - Start this study Friday during the early morning cool down for the JASMIN access
      - Complete the study
      - Transfer to Recycler
      - All of this would have to be done before blocks are pulled, so we will coordinate with Tony before finalizing this study request.
2. **Pbar Rings Access**
1. We will likely be asking for Pbar Rings access time in parallel with the target hall access period. The motivation for the access would be stochastic cooling work related to the core vertical equalizer.

## The Numbers

- Paul's Numbers
  - Most in an hour: 24.07 mA at Wed Oct 15 21:41:26 CDT 2008
  - Best: 27.01 mA on 03-Jun-08
  - Average Production 17.08 e-6/proton Best: 25.41 e-6/proton on 01/30/2008
  - Average Protons on Target 7.22 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: 495.66 E10
    - Time stacking: 23.46 Hr
    - Average stacking rate: 21.13 E10/Hr
  - Uptime
    - Number of pulses while in stacking mode: 35247
    - Number of pulses with beam: 32726
    - Fraction of up pulses was: 92.85%
  - The uptime's effect on the stacking numbers
    - Corrected time stacking: 21.78 Hr
    - Possible average stacking rate: 22.76 E10/Hr
    - Could have stacked: 533.84 E10/Hr
  - Recycler Transfers
    - Pbars sent to the Recycler: 492.21 E10
    - Number of transfers : 45
    - Number of transfer sets: 19
    - Average Number of transfer per set: 2.37
    - Time taken to shoot including reverse proton tuneup: 00.23 Hr
    - Transfer efficiency: 92.01%

- Transfer efficiency: 92.01%
- Other Info
  - Average POT : 7.78 E12
  - Average production: 19.47 pbars/E6 protons
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## **JASMIN sample extraction plan:**

From Tony:

Here is our plan to remove subject samples:

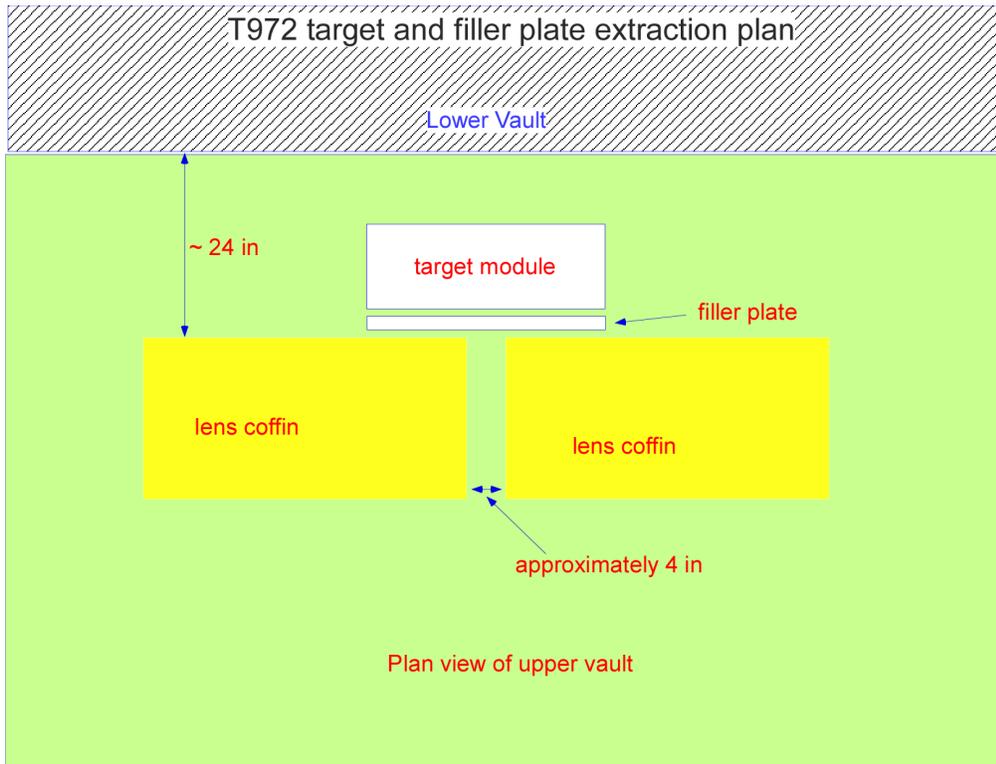
1. Beam off at 0400 (exact time is TBD).
2. Three hours later, begin block removal.
3. Set up two lens coffins as shown in attached gif file. Exact placement is to be determined considering safe crane operation parameters.

### **After 4 hours of cooldown time:**

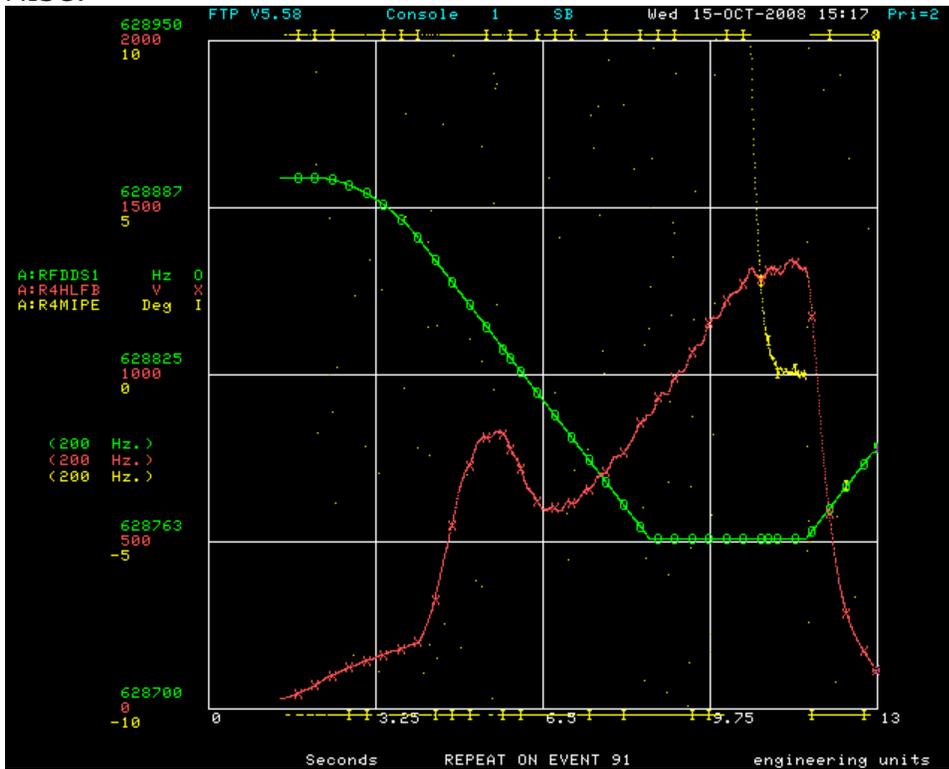
4. Per target replacement procedure, remove two 1/2" filler plates.
5. Per target replacement procedure, remove thick filler plate and position as shown in attached sketch. The filler plate will remain on the crane hook and rest on the floor at the position shown.
6. Working through the 4 inch slot between coffins, remove samples from each of the 5 holders. Samples are to be given to G. Lauten, RCT, and T972 collaborators for repackaging.
7. Place T972 thick filler plate in storage rack for long term storage.
8. Per target replacement procedure, remove the target module and position as shown in the attached sketch. The target module will remain on the crane hook.
9. Working through the 4 inch slot between coffins, lift target sample holder off of target assembly. Samples are to be given to G. Lauten, RCT, and T972 collaborators for repackaging.
- 9a. Photograph target. We plan to get photos of the exterior cover and of the bottom plate to look for evidence of deterioration. Remote camera (for example, camera on a stick) operation will be used.
10. Return target module to target vault in the high gradient position. Use spotter and crane operator to replace the module and prevent damage to target assembly.
11. Install the original (not the T972) thick filler plate.
12. Install two 1/2" thick filler plates.
13. Remove 3 cardboard T972 extraction tubes from the lower vault.
14. Install two pull ropes through the remaining T972 extraction tubes and attach to gold foil sample packs already in place in the target vault.
15. Remove horizontal run of duct attenuation experiment from lower vault. Samples are to be given to G. Lauten, RCT, and T972 collaborators for repackaging.
16. Check out target motion controls.
17. Return upper vault shielding blocks.
18. Make up interlocks and return to stacking.

It will be important to have 2 RCTs and G. Lauten available Friday morning. We need to put the target station back together while sample repacking is being done in order to minimize stacking down time.

All target removal and replacement work procedure steps are governed by the nominal target replacement procedure.



MISC:



Pasted from <<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=-7583&button=yes>>

ARF1-3a has an ugly looking waveform.

