

Shutdown Summary Note:

LINAC Shutdown Summary

Finished Work

- ✓ Cleaned L.E. LINAC Modulators & Rectifiers (LRF1-LRF5)
- ✓ Replace water fittings in Klystron Modulator De-Q'ing circuit
- ✓ Replaced Collimator between L.E. LINAC Tanks 1 & 2
- ✓ L.E. LINAC Water Maintenance
- ✓ Modified Chopper & Moved Quad for future MuCool operations
- ✓ Completed McCool Alignment
- ✓ Annual Pre-Acc Safety Trip Test
- ✓ Cleaned Filters on 8 Ion Pump PS's
- ✓ 45°/90° Magnet PS Maintenance
- ✓ New I-Anode Bulk Supply On-Line
- ✓ BPM Digitizers Installed (Database work proceeding)

This Week

- Finished H.E. LINAC P.M.
- NTF Patient Treatment (M,W,&Th)
- LLRF Characterization on LRF3
- TODAY – Turn off L.E. LINAC
- Weekend – Power Outage

Next Week

- MONDAY – Turn on complete LINAC for 400 MeV Beam
- NTF Patient Treatment (Tu,Th,&F)

LLRF Characterization Studies						
LRF	1	2	3	4	5	7
Driver			✓	✓	✓	✓
9° Line				✓	✓	✓
7835				✓		

Booster

Booster Shutdown Work - Week 8

- 400 MeV Line Under Vacuum
- Injection Girder Under Vacuum
- Power Supplies all connected

- MI-8 Septa Cables all pulled (24 RG220)
- Alignment Completed

- Sump discharge reroute continuing
- RF repair and maintenance continues

Schedule – Next Week

- MI-8 Dump
 - Septa & Kicker PS connections and testing
 - Safety systems checks
- Continue Cable pulls for MI-8 dump devices
- ORBMP connections - Testing
- 400 MeV Power Supply Testing
- Sump work should finish
- RF repairs will continue
- Change Toroid in MI-8 line (break Vacuum !)
- **Power Outages – vacuum issues!**

Schedule

- Startup Planning Meetings
(Thursday 13:00 hours – Penthouse)

In two weeks – Change Door Cores

In two weeks – Search and Secure

Try and run ORBMP over wkend – if vacuum is OK

Bob Mau

Monday Morning KRSS -> MS cancelled. Testing of the power poles. One pole needs to be replaced.

CUB Outage Schedule

April 21, 2006

Friday, April 21st, 2006

- LINAC Shutdown For Outage
- Computer Room Is Already Running On Temporary Chiller

Saturday, April 22nd, 2006

- 0600 CUB Water Turned Off
- 0700 Feeder 42 (CUB Power Turned Off)
- 0700 Feeder 40 Linac & XGallery Off (9hrs)
- Computer Room Chiller Off, Computers?
- 0701 CUB Generator On, Light & Sump power for Booster Tower West.
- Directional Boring Starts, Update at 1400.
- 1600 Feeder 40 work complete, Feeder On
- 1630 Computer Room Chiller Restarted
- 1630 Starting Up Computers

Sunday, April 23rd, 2006

- 0900 Feeder 42 Cable Hi-pot
- 1200 Feeder 42 (CUB Power Turned On)
- 1300 CUB Water Back Up & Ready
- Computer Room Can Be Moved Off The Temporary Chiller To CUB.

Additional Information

- There is a possibility that CUB may come up on Saturday Evening if things go really well.
- There is a possibility that CUB may not be back Monday if a Feeder 42 cable is hit.
- There is NO Master Substation Outage on Monday, April 24th @ 0700 as previously planned.

Updated 4/19/06	MONDAY 4-17-2006	TUESDAY 4-18-2006	Wed 4-19-2006	THURSDAY 4-20-2006	FRIDAY 4-21-2006	SATURDAY 4-22-2006	Sunday 4-23-2006
Owls 0000 to 0800							
DAYS 0800 to 1600	NTF-PT 0815-1600 Feeder 23 harmonic filter work	0900 start testing CUB water pumps	NTF-PT Feeder 23 tevatron pulsed power maintenance (affects no lights or power outlets)	NTF PT		0600 CUB water turned off - 0700-1600 FDR 40 Linac/Xgallery MICR/Computer Room PWR Shrs -0700FDR 42 CUB Outage? Means no air conditioning -700 west gall off on generators for lights& sumps	0900 start high potting feeder 42 cables (unless done earlier) -noon possible for cub pwr to be back (unless turned on earlier on earlier) -1300 cub water back on. (Unless turned on earlier)
EVENINGS 1600 to 2400			Master Sub on Kautz Rd substation Tex Rd closure 1 bldg at a time A1,A2,A3,F4,F3			1630 computer chillers on to get computers up	-FDR 42 CUB Outage?

Updated 4/19/06	MONDAY 4-24-2006	TUESDAY 4-25-2006	Wed 4-26-2006	THURSDAY 4-27-2006	FRIDAY 4-28-2006	SATURDAY 4-29-2006	Sunday 4-30-2006
Owls 0000 to 0800							
DAYS	← NTF-PT		Tev Rd closure 1 bldg at a time A1,A2,A3,F4,F3	NTF PT	NTF PT		
0800 to 1600	0700-0730 Master sub power outage Cancelled Date to be scheduled later Start linac back up after pwr outage -after Master sub outages power down E0,E1,E2, E3 for 6 hrs -Possible Tev water start up AO house pwr outage 4 hrs AM	Java/Oac shutdown 8 hrs 0815-1600 Feeder 48 tev RF cancelled Outage will be on Kautz rd till approx Friday switch back will cause 30-40 minutes power outage)	0815-1600 Feeder 38 central Helium liquefier (CHL) power outage 1056x82 0800Wed to 1600 Thursday LE2 compressor at CHL off for 32 hrs	CDF/D0 on feeder 45 cancelled Feeder 47/49 tie switch outage, (3 hrs) FCC on generators Affects Industrial complex(actualy Ib1-2 transformer) LE2 transformer off at CHL til 1600 0800 Thursday til 0800 Friday ML11 @ms1 xformer in meson off 24 hrs to ad oil		0600-0800 Booster tie switch All booster down 0815-1130 Booster east gallery towers tunnel 1300-1600 Booster west gallery, tower and tunnel Power outage	
EVES 1600 to 2400							

Schedule can be found at <http://www.bdfnl.gov/operations/schedules.html>

Power pole #13 scheduled to be changed in three days. The following Monday, May 1st, we could switch substations back. E0 was put on a generator. Original plan was to go back when MSS back. So E0 will be on generator another week.

Mechanical is doing a vacuum bake next week.

D0 house power outage will still happen.

The Tuesday Feeder 48 outage cancelled.
The Thursday CDF/D0 to Feeder 45 is cancelled.

Updated 4/18/06	MONDAY 5-1-2006	TUESDAY 5-2-2006	WEDNESDAY 5-3-2006	THURSDAY 5-4-2006	FRIDAY 5-5-2006	SATURDAY 5-6-2006	Sunday 5-7-2006
Owls 0000 to 0800							
DAYS	NTF-PT		NTF-PT	NTF PT			
0800 to 1600	0700-0730 Kautz Road sub power outage Moves to master sub (Main injector, cryo feeder46b Mi12a,12b,13) Start linac back up after pwr outage	Is the Pond temperature 65 degrees yet?	Kautz RD substation on Master sub			0700- 1600 Power outages for Mp9,MW9, MSB,MDW,MD E,SITE 40(LOW Rad Waste) MCR0	
EVES 1600 to 2400							

Schedule can be found at <http://www.bdfnl.gov/operations/schedules.html>

Edison is doing line maintenance. We need to turn off KRSS. Would like to move KRSS

to MS by May 2nd.

May 2006 updated 3/13/06 (Draft)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
May 1 NTF 0700-0730 Kautz Rd sub outage move to Master sub	2 Start Killing zebra musseks (-5 to +15 days)	3 NTF	4 NTF NTF Kautz Rd Sub on Master sub	5	6 MP9, MW9, MSB, MDW, MDE, SITE 40(LOW RAD WASTE), MICRO	7 -
8 NTF Feeder 46 a down 5 days A0 will be on generators all week MEANS A0 PWR OUTAGE	9 Fix cable connection at C0 on feeder 46a	10 NTF TEV rd closures 1 bldg at A0 all week	11 NTF A0 oil switch replacement 46a down	12 Power up feeder 46a A0 off generators MEANS ANOTHER A0 PWR OUTAGE	13 Feeder 45 (Tgy conventional PWR) outage 10 hrs	14
15 NTF KR HARMONIC FILTER	16 KR HARMONIC FILTER	17 NTF MDE	18 NTF MDW 5, 6, 10, 14 Kautz Rd Sub on Master sub	19	20 Feeder 44 WILSON HALL (10 HRS)	21 -
22 NTF MS1 0700-0730 Kautz Rd Sub Pwr outage to return to normal possible May 15	23 MS2/MS3	24 NTF MI and Booster start up MS4	25 NTF Tev Cold	26 Pbar PS start up	27	28
29 (lab holiday)	30	31 NTF	June 1 NTF Booster MI Pbar start up	2	3	4 END OF Shutdown

Wants to start talking about startup.

ES&H

ES&H

■ Safety System Upgrades

- Booster** 60% Complete
 - Booster Dump Move Configuration Changes**
 - MP01 and VBC1 Critical device control removed
 - LG1 area work next
 - Completing Documentation to submit for Approval to Operate**

- Main Injector** 40% Complete
 - Lower Level Controlled Access Displays Replaced**
 - MI-60 area complete. 7 Buildings left.
 - Main Injector Coasting Beam System changes**
 - Lam10 Critical Device Interface Installation
 - Stairwell cleaning continues**
 - MI-60 through MI-30 complete working toward MI-20.

- Safety System Upgrades
 - P-Bar Source 100% Complete
 - Safety System Power Supply & Junction Box Replacements
 - Interlock New BSC700 Beam Stop
 - Tevatron 95% Complete
 - Moving location of both Tevatron Coasting Beam Gate Valves
 - F-Sector Radiation Monitor Card Replacement
 - MT6 Section 1 & 2 70% Complete
 - Enclosure Interlock System Upgrade
 - Safety System Testing 0% Complete
 - All areas need to be re-tested before startup
 - Booster testing is expected ~ May 1st

ES&H

- Radiation Exposure
 - ~7.4 R total dose for the first 7 weeks of the shutdown.
- No shutdown related injuries or incidents report.
- Continue to focus on getting shutdown work done safely.

Main Injector

MI Shutdown report

D. Capista 4/21/06

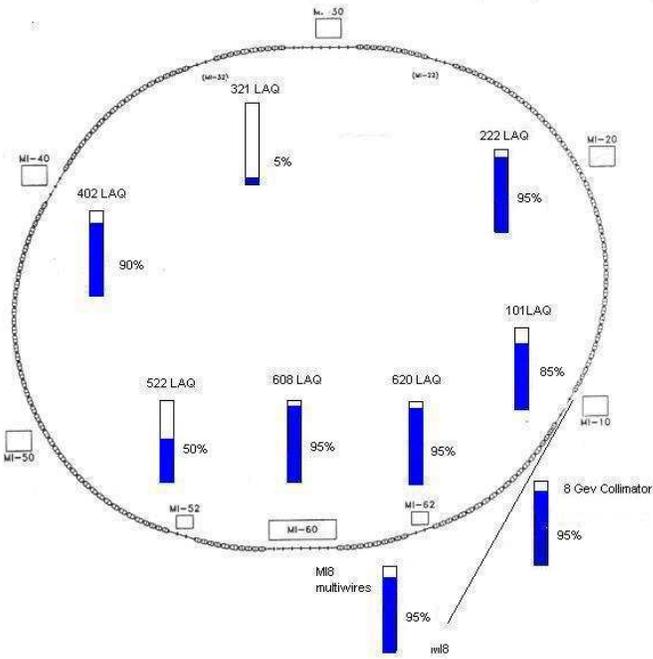
- Continued vacuum repairs in the MI8 line.
- Continued vacuum repairs at 608, 620.
- Continued vacuum repairs at the large aperture quad at 101.
- Completed the Lambertson bake at 402.
- Continued installation of large aperture quad at 521,522.
- Completed testing of the new MI10 kicker loads.
- Installed Barrier cavity at 604



Quad moved from 521 to 522.



Injection kicker and new loads.

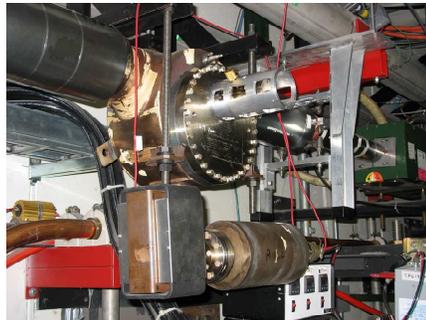


321 large aperture quad requires no bake and not delivered from TD yet

Recycler

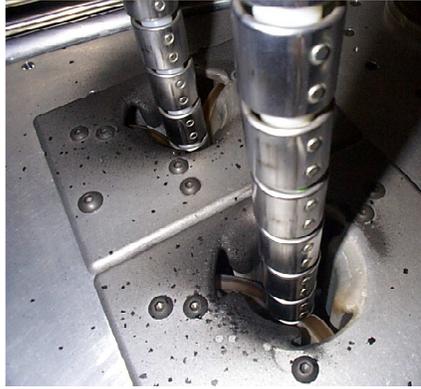
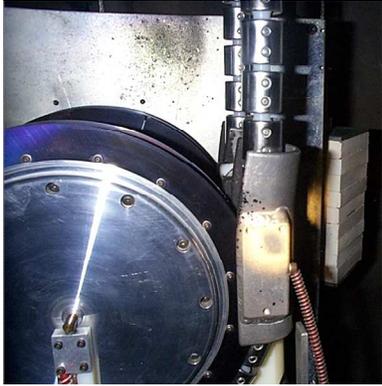
Recycler Shut Down Status

- Flying Wire Installation
 - Both wires have been installed
 - Horizontal Wire only has $\frac{1}{2}$ the upgrade plan for it.
 - Vertical
 - Leak Check complete
 - The beam tube is leak tight down to $8e-11$ Torr L/sec
 - Bake to start Monday



Pelletron Mechanical work

- The tension of the chain was checked by accurately measuring the weight of the counterweight blocks
 - The recommended load (as per NEC) is 150-200 lbs. total for our system. The weight of the chains was measured to be about 140 lbs.
 - 4 blocks were removed (5 are left on the system), bringing the weight to 182 lbs. This was most likely the cause of all of our chain slipping problems at MI-31.



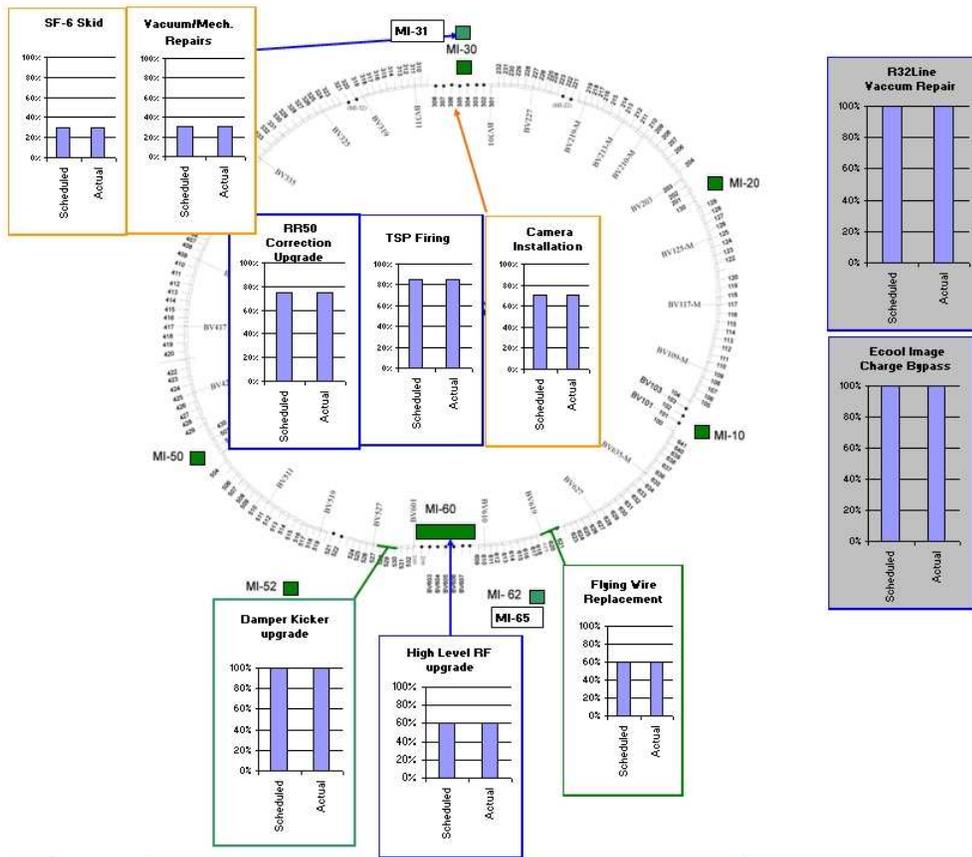
Particulate matter. Load on chain was not correct

Pelletron Work

- New SF6 Skid -Repairs underway
 - Arrived Wednesday
 - Old system has been disconnected and taken out of MI-31
 - Piping work is underway
- Repair of the following Vacuum Components
 - IPA03 -power supply- Done
 - TPS S05
- Replacement of shaft Bearings- -Repairs underway
- Repair Collector Current read back- Done
- Repair Pulser switch -Repairs underway
- Upgrade Fault protection system -Repairs underway
- Misc Maintenance

Critical items

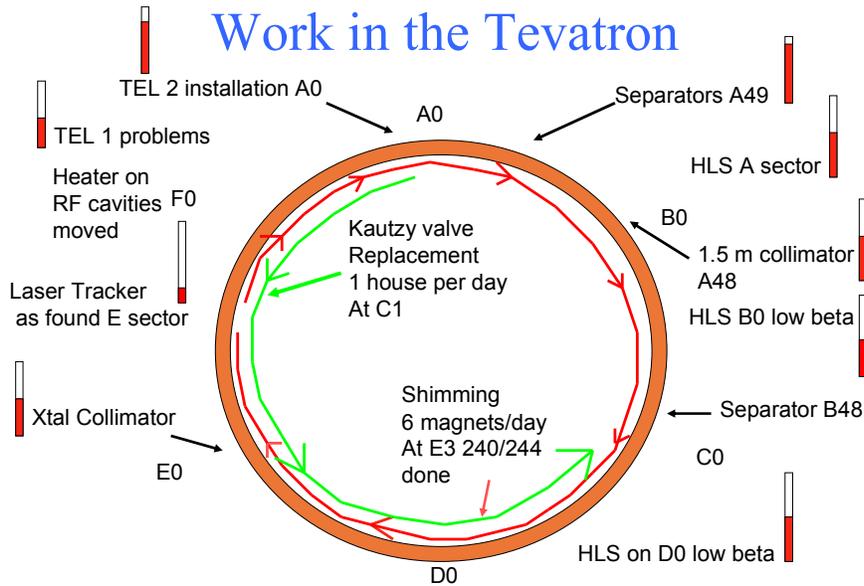
- SF₆ skid replacement (2-3 weeks)
- Shafts replacement (1.5 week)
- Gun modulator repair and testing (2-3 weeks)
- Venting up gun acceleration tube (1 day) but...
 - Need to limit work under nitrogen purge to 1-2 hours to avoid having to bake
 - Need careful preparation of everyone involved
 - In the event that the tube stays open more than the 1-2 hours limit (unexpected issues like obvious problems in the gun area), we would have to bake → 1 week



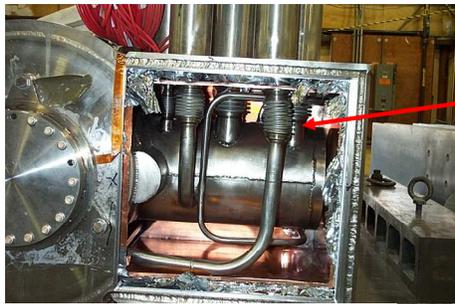
Pelletron scheduled to come up the week of the 15th.

Tevatron

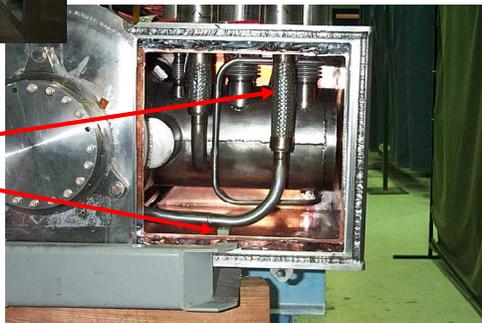
Work in the Tevatron



TEL 1 repair



Before bellows that failed



After flexible tubing and G-10 block

Items finished

- Smart bolt shimming will finish today
- Heater on RF cavities moved
- Vacuum work at F4, E2, B4 finished
- D1 ready for sign off
- Separators at A49 and B48

Jobs not yet started

- Re align low beta quads at B0 week of May 1
- TEL 1 installation next Monday 4-24
- HOPs cable pull
- A3 conning tower replacement, TD will try to do conning towers in A3 if people are available decision next week

Jobs not schedule but done

- Vacuum work A3
- A38 quad replacement
- A39 quad roll
- warm up nad vacuum work at D1
- D16 quad roll
- F4 dipole and spool replacement
- TEL 1 removal, repair and replacement
- Kautzy valve replacement entire ring
- Flying wire replacement at E17 and E11
- replace quad stand at B43 and B44
- replace low beta quad stand at B12
- move roughing pump at F13
- un roll 48 magnets around ring
- measure rolls 13 magnets around ring

NuMI - Shutdown – Week 8

Horn 2 Repair Completed – Successful ALARA Plan

Horn 2 Back in the Chase and T Blocks Installed

Horn 2 Water Testing Begins Today

R Blocks Over Chase are Off to Allow Target and Horn 1 Inspections

Target Chase Chiller Testing Continues at Vendor

Still Expecting Return of Chiller by End of Next Week

Target Hall Air Dehumidification

Desiccant Units Have Arrived at MI-65

Job Planning with Prism (Ductwork) Completed – Start Tuesday

Scaffolding Erected Below Site Riser 3(aka EAV 1.5)

Electrical Work Continues to Progress

Beamline Drain Cleaning Now Considered Substantially Complete

Target Profile Monitor Surveyed In After Some Stand Work

OTR Drive Problem Fixed. Will Install Next Week.

Installation of New Drip Ceiling in Pre-Target Continues

MiniBooNE

Spring Shutdown 2006

MiniBooNE

- Horn
 - Supply trips off; experts investigating; will continue testing.
- RAW System:
 - Week of April 24.
 - May slide depending on horn testing.
 - Require rad tech coverage.
- Alignment
 - Week of May 1.

SY120

Still have TH jobs

CDF

Detectors on outside of quads. Should allow to characterize losses on short time scales.

D0

Summary of Eighth Week Activities

- Layer 0
 - Complete junction card mounting, cable routing, and associated testing
 - Preliminary test results generally encouraging
 - Capacitance between Layer 0 and beampipe measured as anticipated
 - Almost all channels (individually) downloaded and readout
 - » Noise looks relatively good (so far) on most modules
 - » A troublesome module has re-appeared (previously caused trouble at SiDet)
 - Weld stubs on EC beampipes
- Level 1 Calorimeter Trigger
 - Complete connecting BLS cables to patch panels and test pulsing BLS cables
 - Begin installation of LVDS cables
 - Continue firmware debugging/development/verification
- Level 1 Central Track Trigger
 - Complete DFEA2 LVDS output verification
 - Begin connecting/verifying outputs to L1CalTrk and L1Muon
- Central Fiber Tracker Readout Upgrade
 - AFEII boards released for production

Flange welded onto South EC beampipe



Layer 0 Installation Milestones

ID	TASK NAME	Actual	Current Forecast	Pre-Shutdown Forecast	Milestone Dates
2	Beginning of RunIIb Tevatron Shutdown	2/23/06		2/27/06	2/27/06
28	Detector Open, Ready for Access	3/1/06		3/2/06	3/07/06
34	RunIIa Be Beam Pipe Disconnected	3/3/06		3/7/06	3/9/06
47	H Disks Removed	3/15/06		3/17/06	3/23/06
56	RunIIa Be Beam Pipe Removed	3/21/06		3/27/06	3/31/06
75	Layer 0 Tooling and Mounts Ready	4/5/06		4/10/06	4/17/06
79	Layer 0 Installed (including junction card mounts)	4/7/06		4/12/06	4/19/06
91	RunIIb Be Pipe Connected, Layer 0 Cabled		4/25/06	4/26/06	5/03/06
94	Inner H Disks Re-Installed		5/1/06	5/2/06	5/9/06
99	Silicon Cold and Ready for Technical Commissioning		5/4/06	5/5/06	5/12/06
103	Complete Technical Commissioning of Silicon		5/10/06	5/11/06	5/18/06
118	Detector Closed for Tevatron Resumption		5/31/06	6/02/06	6/4/06

Alignment

Alignment Schedule for April 21 2006

Tevatron

- Scheduled As found two sectors.

Main Injector

- Scheduled Wide Aperture Quad

Recycler

- Scheduled Cooling Kicker Tank
- Scheduled Damper Kicker
- Scheduled Alignment suspect magnets

Alignment Schedule for April 21 2006

8Gev

- Scheduled To Complete Pipe and New Toroid

P-Bar

- Schedule Girder Check
- Scheduled ceramic beam tube alignment

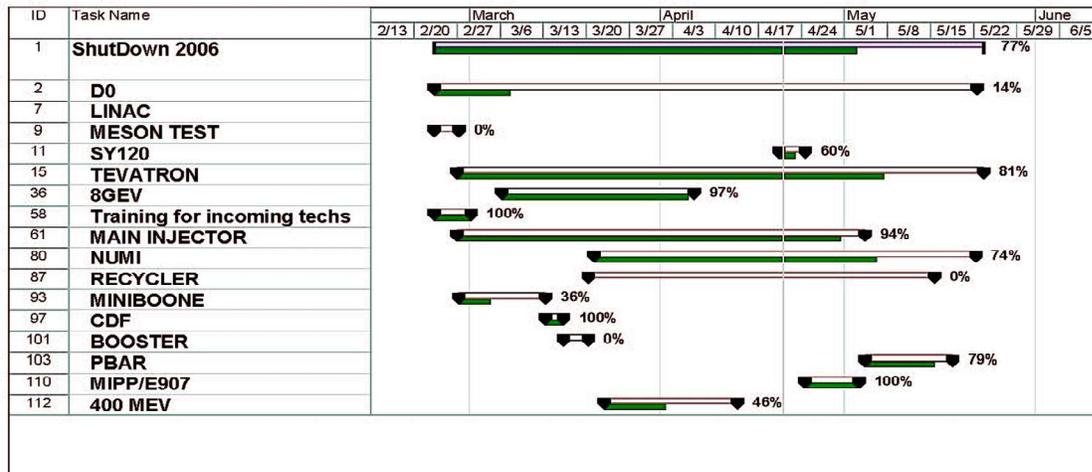
Alignment Schedule for April 21 2006

- ❑ MiniBooNE
 - Scheduled May 1
- ❑ Numi
 - **Schedule Re-Survey Multiwire and OTR.**
- ❑ Booster
 - Not Scheduled
- ❑ 400Mev
 - Not Scheduled

Alignment Schedule for April 21 2006

- ❑ Add On's
 - **DO** Make Level-Run vertical measurement of select Collision Hall monuments West Wall
 - **Main Injector** Align barrier cavity at MI604 location.

Progress as of April 21 2006



Cryo

AD/Cryogenics Dept
 Shutdown 2006 Status Report
 4/21/2006 (Makara/Olesen)

Cryo Operations:

- Tevatron at LN2 temperature and LN2 usage is stable with vendor deliveries running only 2-3 truckloads per day due to the Tevatron being 1/4 at room temperature. Helium losses

are steady at 15 kscf/day (1/2 of normal during Tev operations), some of the loss being replenished with A0 GHe Recovery from the test caves.

- A1, A3, and D1 are at room temperature and isolated with LOTO. D1 has been certified by MSD and hipotted successfully thus Cryo will restore bldg soon.
B4, E2 and F4 are also at room temperature, have been reconnected by Cryo, and are under helium flow though Division Head permission has been granted for cooldown. B4 and E2 cooldown will be initiated after this weekend's ACNET outage and Monday's E-sector power outage. F4 cooldown will wait until TEL-1 is re-installed.
A3 has been completed by MSD, though spool piece conning towers may still be retrofitted (5 out of 8 leak) by Tech Division during this shutdown. Cryo has completed epoxy of helium leaks on Tevatron power leads, though they still needs a snoop leak test.
- Pbar D60 Debuncher vacuum work has been completed by Pbar Dept, thus Cryo personnel will restore helium/nitrogen connections and cool down tanks to LN2 temperature after Division sign-off.
- ACNET application programs relating to FRIG operations continue to be tested on Linux consoles.
- Nitrogen Reliquefier startup is delayed due to concern of "old" electrical cables being used for cross-connect between MSS and KRSS, especially due to high startup currents of 3000 hp TSI compressor. IR Booster compressor (400 hp) is running and purifying the plant.
- MCR monitoring cryo operations.

CHL Maintenance:

- General facility maintenance is in progress, including testing of relief valves per FESHM.
- CHL Helium Compr "A" cooling tower installation has been completed with only some minor work is left, such as fencing; system testing will be commencing.
- CHL Helium Compr "D" is being overhauled.
- Helium Coldbox-2 controls upgrade is in progress.
- Mobile Helium Purifier is being derimed at room temperature and piping modified.

FRIG Maintenance:

- Various FRIG bldg vacuum maintenance and instrumentation repairs (e.g. lost charge on VPTs) are in progress, as well as support work on houses at room temperature and other equipment as things fail even during the shutdown period.
- Various Mycom compressor maintenance: leak hunting and general repairs, F0#3 motor starter replacement in progress.
- Wet expanders overhauls have been completed for A1 through F4; one D-Zero Dry Expander was also completed with modifications. AP30 and CDF remain to be done.
- Kautzky relief valves have been replaced from C1 through F4 (16/24). Pace is at one house per day though running into problems with galling nuts on clamp's T-bolts and bad compression fittings. More Clamp T-bolts are on order.
 - We have been finding some leaking quick-disconnect fittings on conning towers. We have none in stock and thus order is being placed to get spares.

Mechanical

Some issues with OTRs not ready for install

Drop dead date is May 10th. If not ready, will be installed in Shutdown

'07

EE Support

EE Support

On schedule

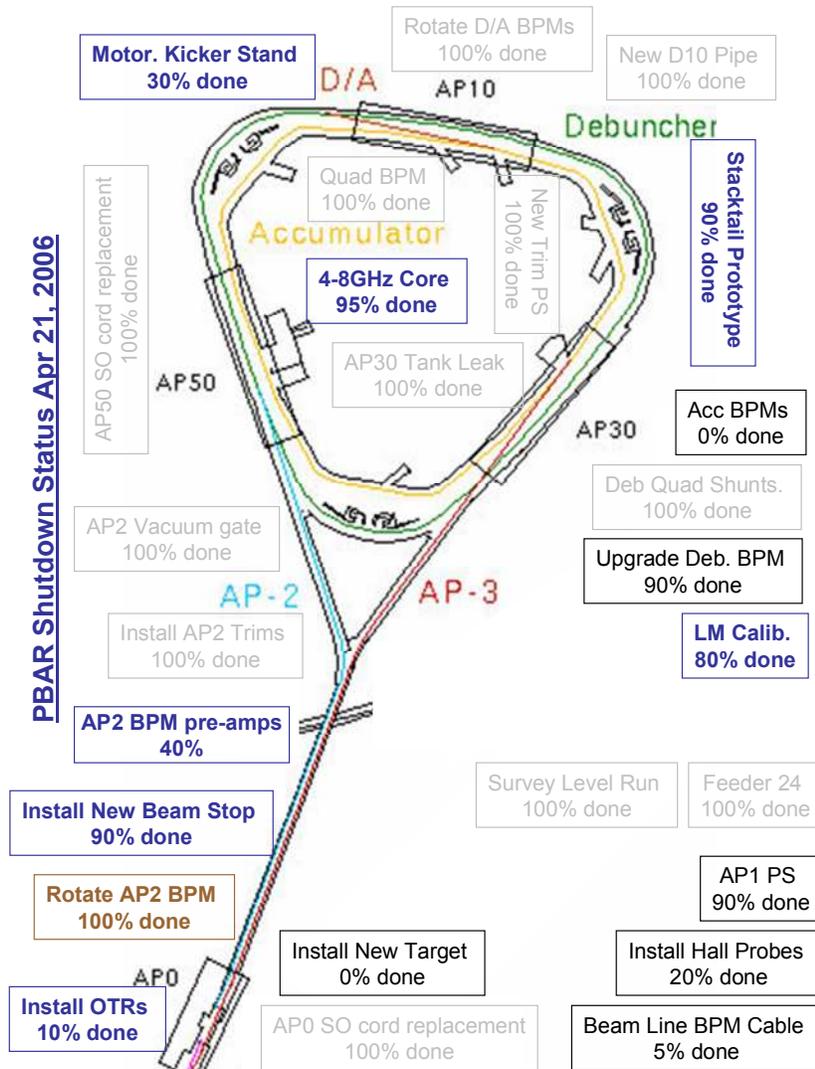
RF

No Report

I

Good shape

Pbar



Lens fill in Ap0

Controls

No controls system tomorrow.

No networking tomorrow

MISC

**Proclamation issued by Governor Rod Blagojevich declaring
April 21, 2006 "Particle Accelerator Day" in Illinois**

WHEREAS particle accelerators are the scientific tools for discovery of the fundamental nature of the universe;
WHEREAS advances in the technology of particle accelerators produce significant benefits not only to basic science but to health care, medical research, manufacturing, materials science, and to the economy of the State of Illinois and the nation;
WHEREAS Northern Illinois, the home of Fermi National Accelerator Laboratory and Argonne National Laboratory and of Illinois research universities, is a world leader in advanced accelerator research and development;
WHEREAS particle accelerators at Fermi National Accelerator Laboratory and Argonne National Laboratory provide unparalleled scientific research opportunities for thousands of scientists and students from throughout the state of Illinois, the nation and the world;
WHEREAS Argonne National Laboratory and Fermi National Accelerator Laboratory have signed a Memorandum of Understanding combining their scientific and technical capabilities for accelerator research and development to accomplish unique scientific goals and to strengthen the world leadership of the State of Illinois in accelerator physics;
THEREFORE, I, Governor Rod Blagojevich, proclaim April 21st Particle Accelerator Day in Illinois and encourage all citizens to recognize the contributions of particle accelerators to scientific discovery and to the economic strength of Illinois and the nation.

FESS

Power outage tomorrow will be running controls wires.

Chemical treatment on May 8th and will start flushing three days later, and flushing will take ~16 days. This is tentative.

Tuesday tentatively doing a Casey's pond test to simulate feeder failure to see if villiage sees.

Cedrick wants to do pump testing.