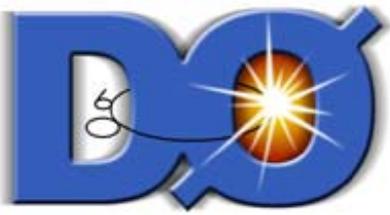




# Shutdown Update

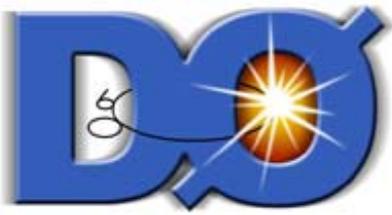
George Ginther  
University of Rochester

20 April 2006



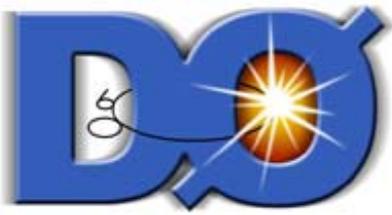
# Packaged Layer 0





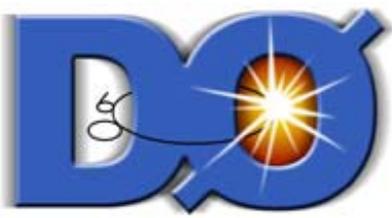
# Layer 0 Leaving Si Det





# Layer 0 on its way to beam height



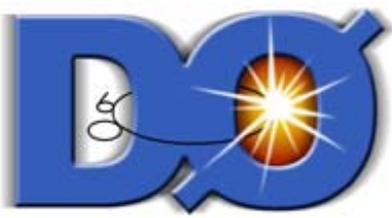


# Inserting Layer 0 into North EC Beampipe

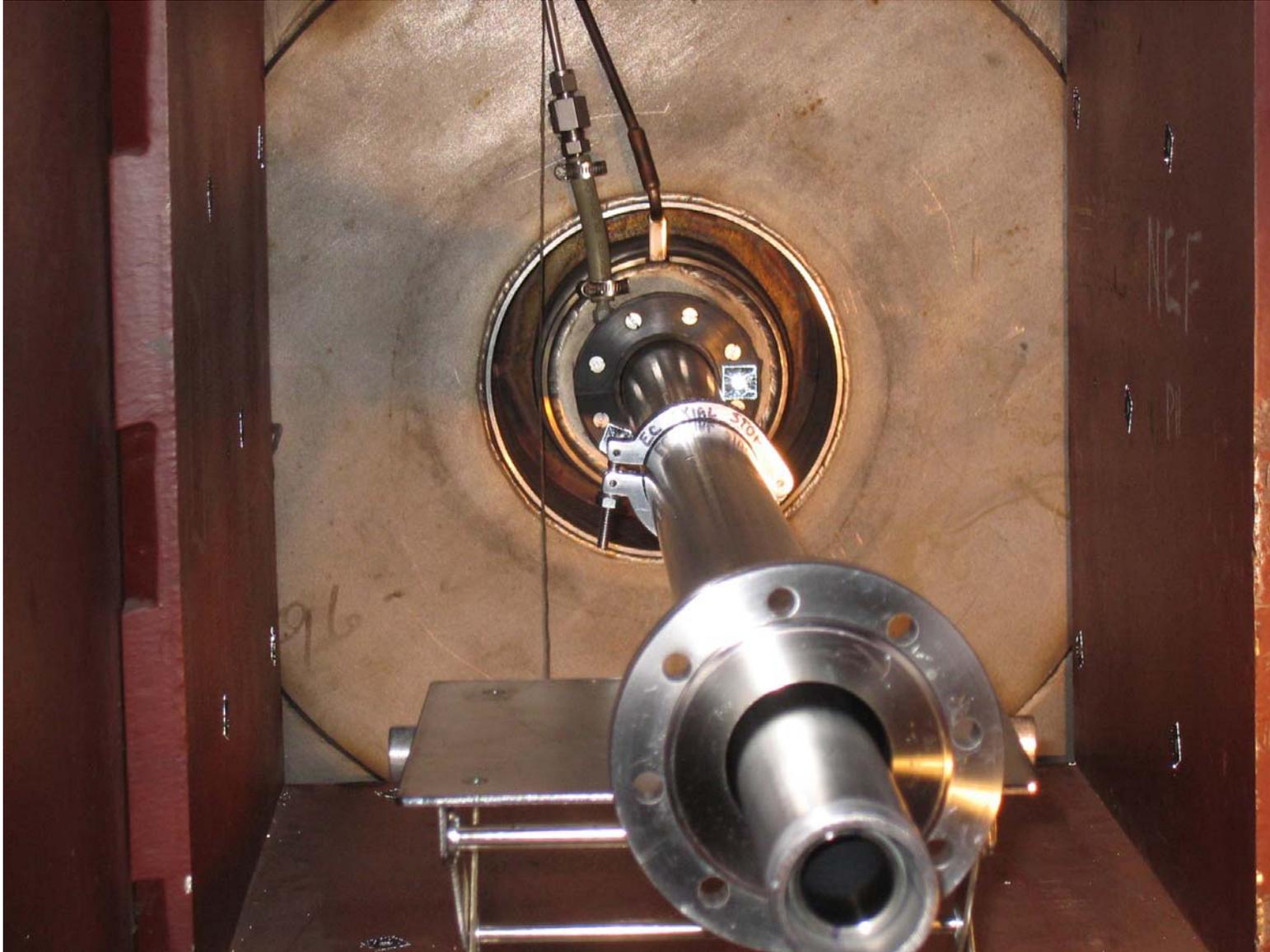


20 April 2006

G. Ginthe



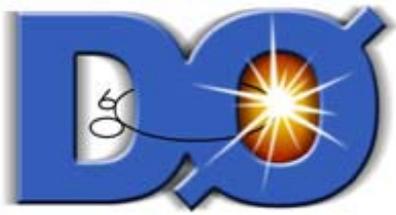
# Run IIb beampipe inside NEC beampipe



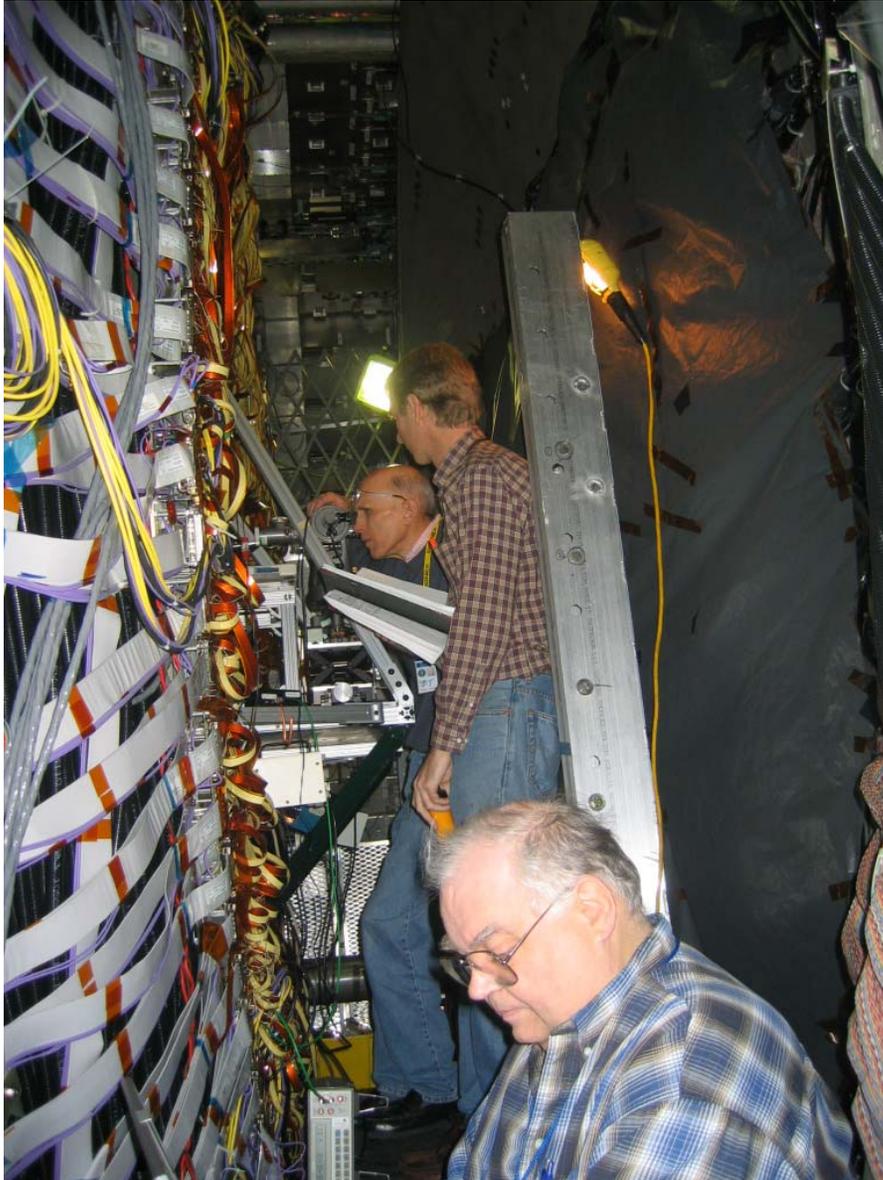


## Week 5

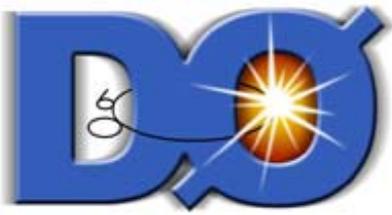
- Layer 0
  - Transport North Inner H disk to Si Det for mount repair
  - Begin testing HV distribution for Layer 0 channels
  - Mount tables, rails, and optical equipment in gaps in preparation for installing Layer 0 mounts on SMT support structure
  - Install south Layer 0 mount on SMT support structure
- Level 1 Calorimeter Trigger
  - Continue connecting BLS cables to patch panels and testing
  - Continue verifying L1Cal Trigger installation
- Level 1 Central Track Trigger
  - Begin verification of cabling
- Detector Maintenance
  - Begin reassembling individual luminosity monitor counters
  - Continue calorimeter individual channel recovery
  - Upgrades of L1 Muon power supplies in progress
  - Continue muon PDT mods to accommodate latency shift



# Aligning South Layer 0 Mount

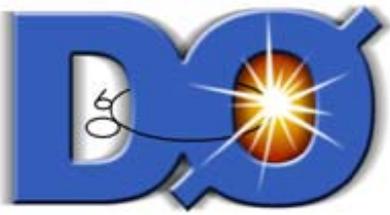


inther

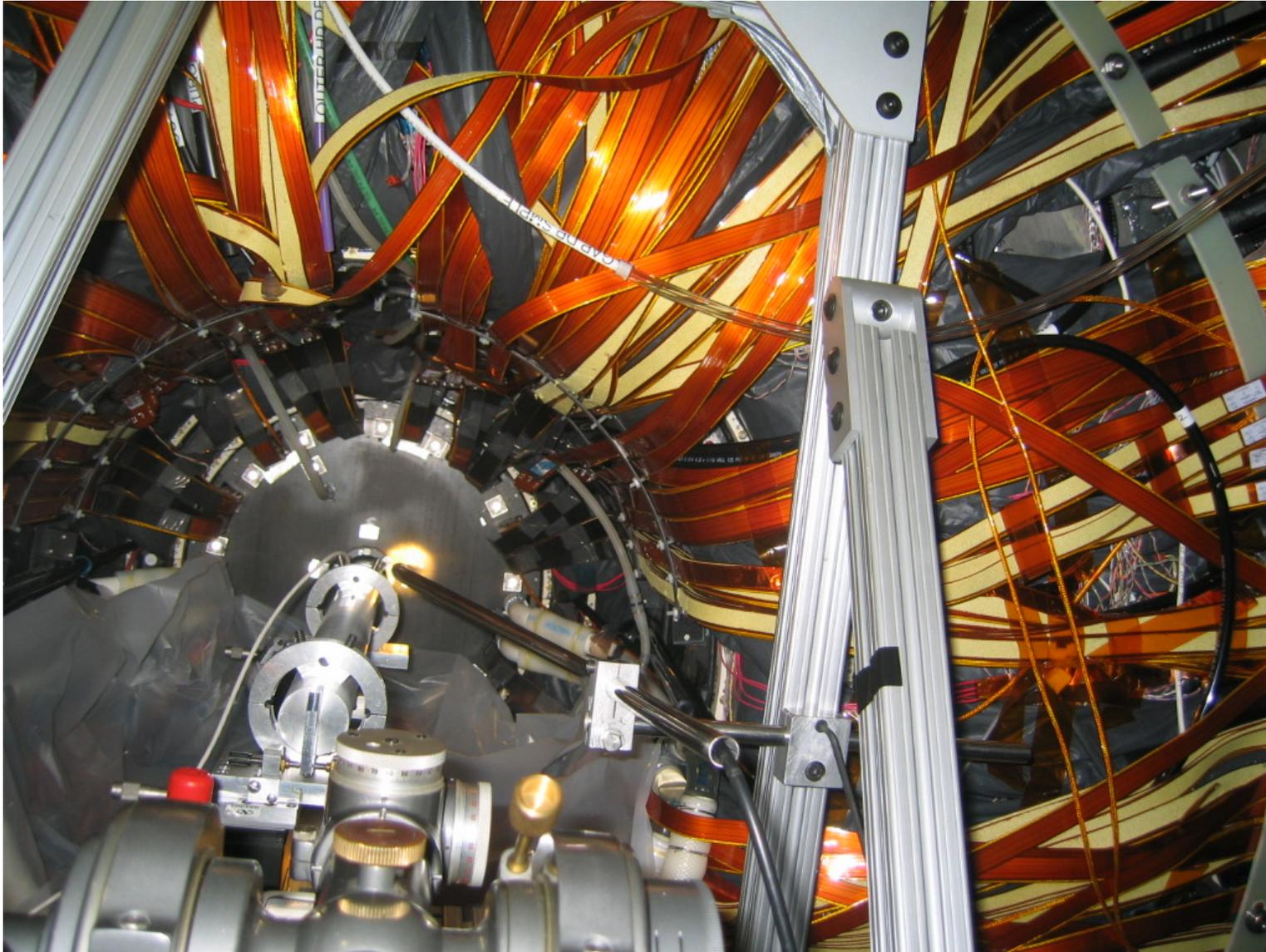


# South Layer 0 Mount





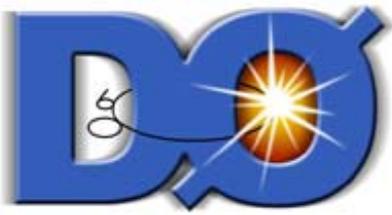
# South Layer 0 Mount





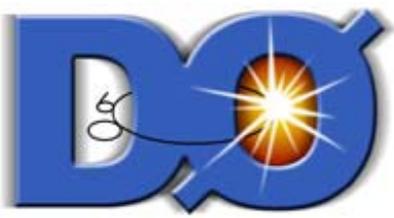
## Week 6

- Layer 0
  - Installed north Layer 0 mount on SMT support structure
  - Prepared for inserting Layer 0 in SMT
    - Configure and align tables/rails and stages
    - Install long tool and guide through SMT while monitoring transverse position
  - Inserted Layer 0 into SMT and mounted on SMT support structure
- Level 1 Calorimeter Trigger
  - ORC Review
  - Continued connecting BLS cables to patch panels and testing
  - Continued verifying L1Cal Trigger installation
- Level 1 Central Track Trigger
  - Continued verification of LVDS cabling
- Detector Maintenance
  - Recovery from power outages for power distribution maintenance
    - VLPC cryostats develop leaks during power outage
    - Readback for L1CTM crate 0x14 +3.3V supply fails
    - CAL preamp power supply 11 primary fails to recover
    - Two online cluster nodes suffered hardware failures

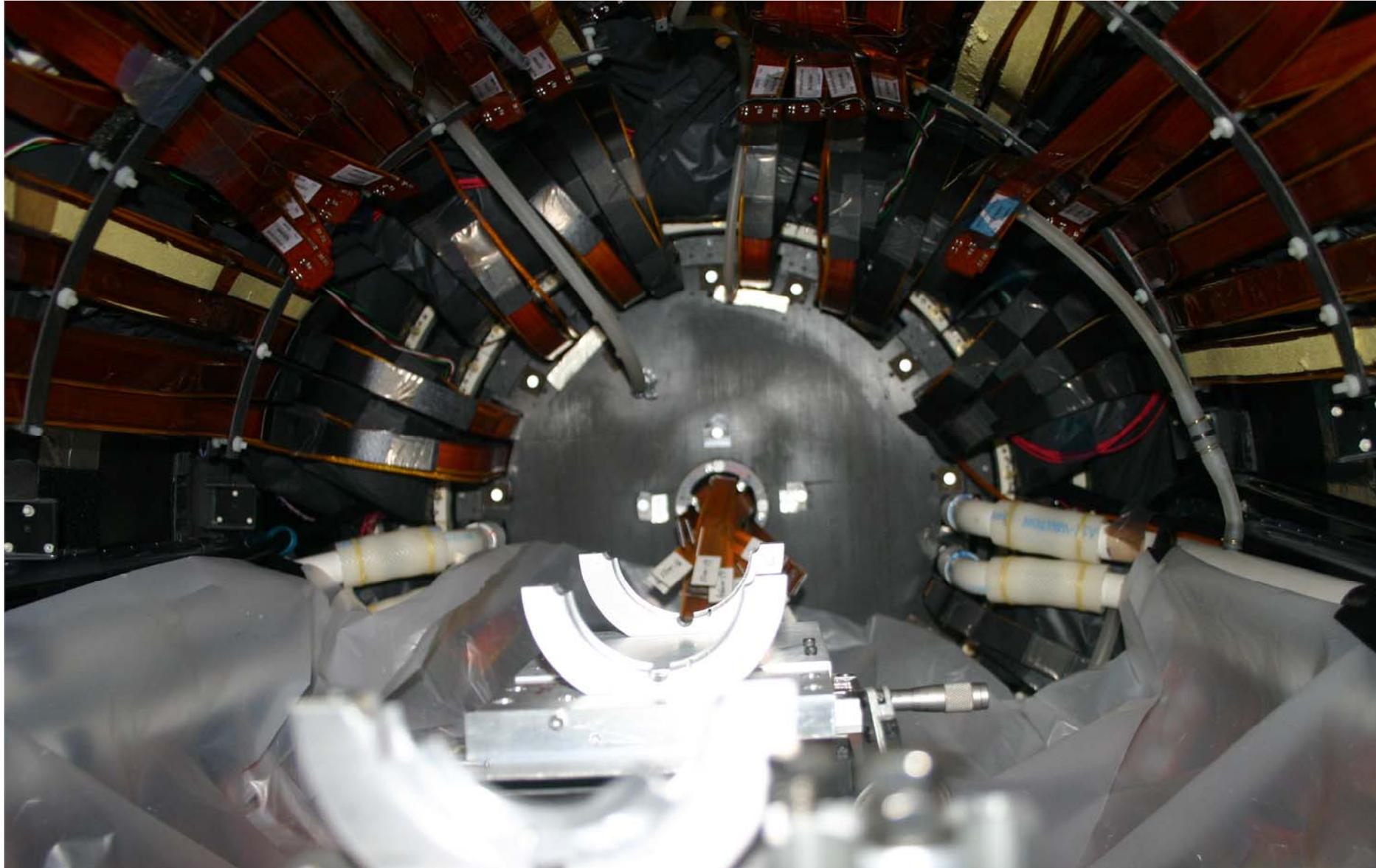


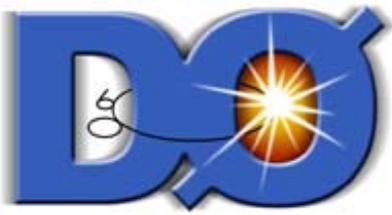
# Inserting Layer 0 into SMT



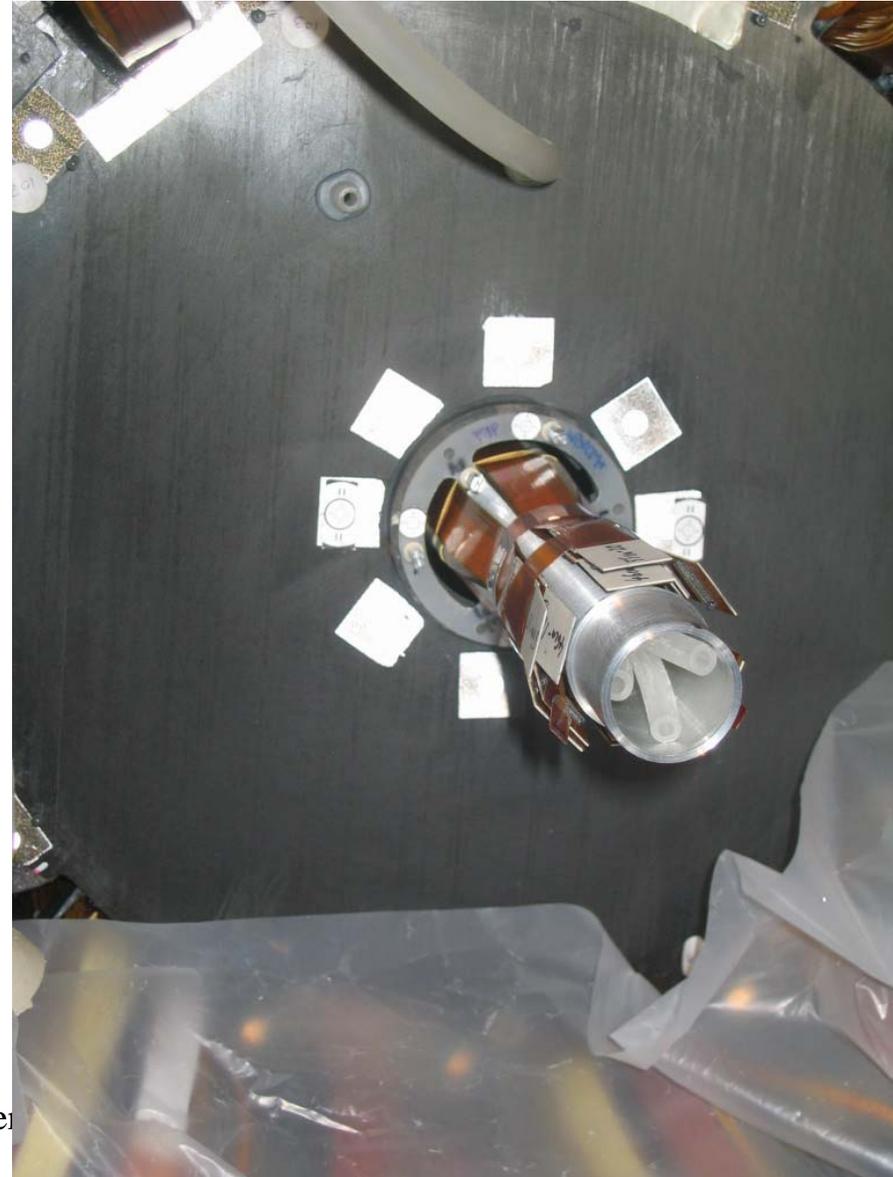


# Layer 0 Installed





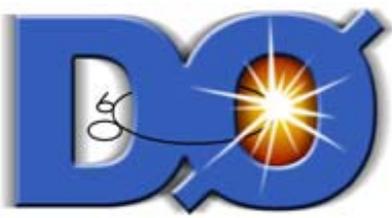
# Layer 0 Installation





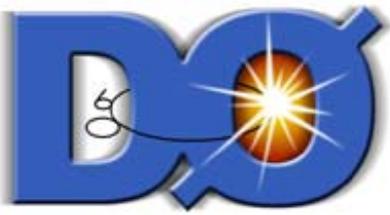
## Week 7

- Layer 0
  - Complete installation of junction card mounts
  - Push Run IIb beampipe through Layer 0 support structure
  - Connect cooling for Layer 0
  - Begin installing junction cards/routing cables/testing connections
- Level 1 Calorimeter Trigger
  - Continue connecting BLS cables to patch panels and test pulsing BLS cables
  - Continue firmware debugging/development/verification
- Level 1 Central Track Trigger
  - Continue DF EA2 output verification



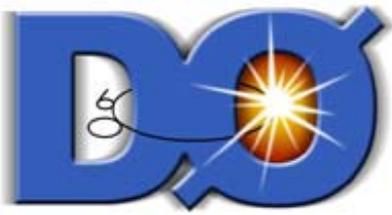
# Preparing north end for RunIIb beampipe installation



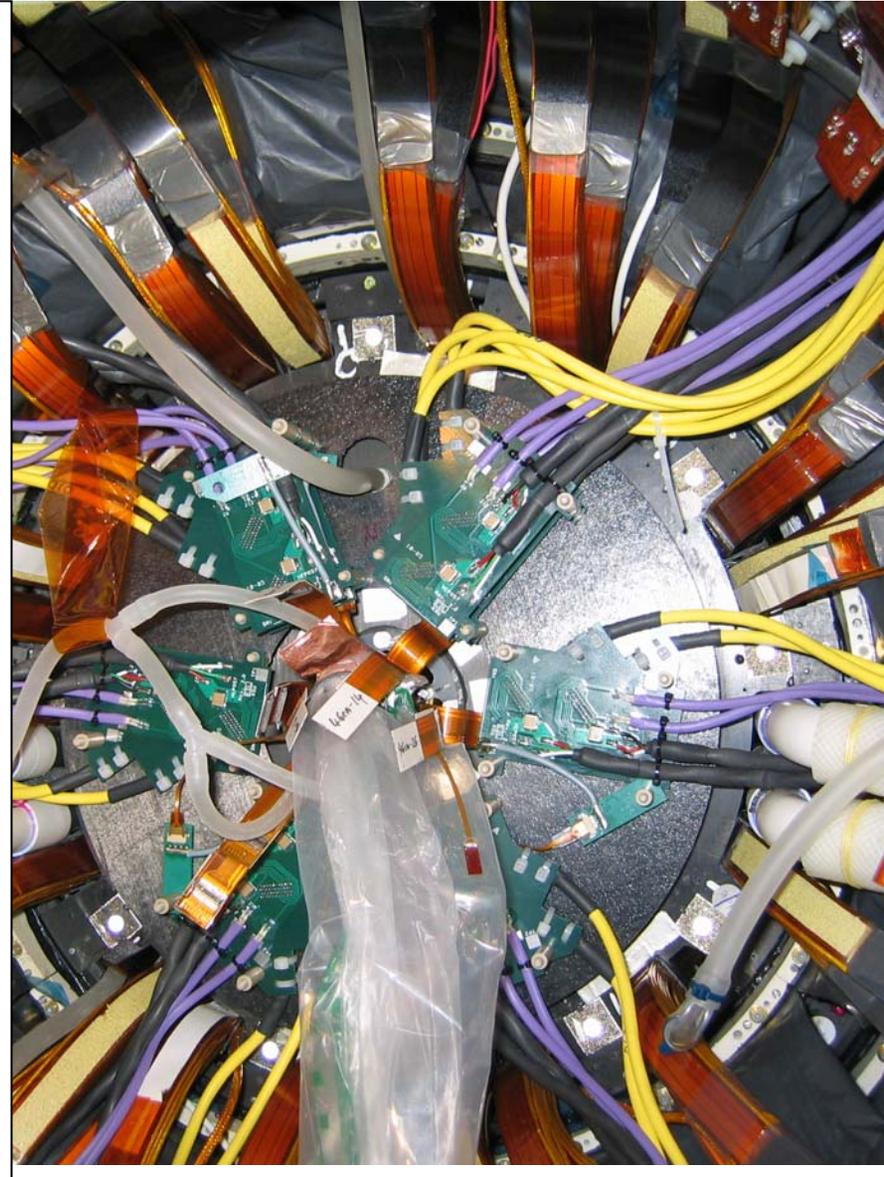
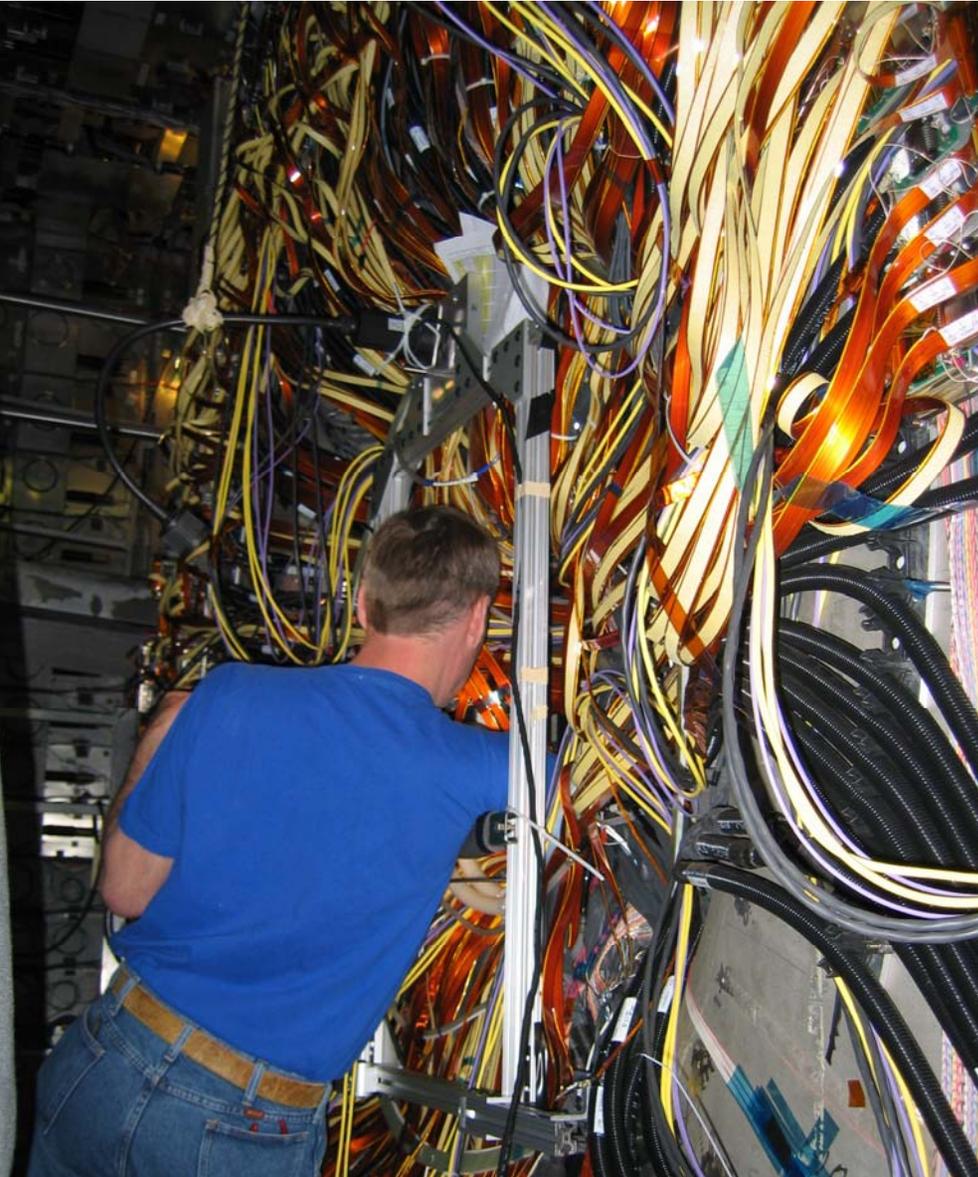


# Run IIb Beampipe Installed





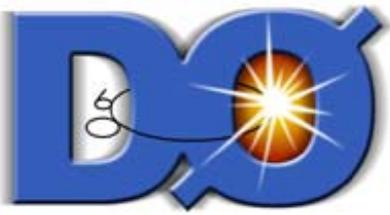
# Junction card installation in progress on the north end





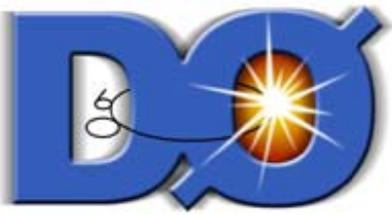
## Week 8

- 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 downloaded and readout
        - » Noise looks relatively good (so far) on most modules
        - » Two troublesome modules (one may be clock and the other is an module that caused trouble at SiDet)
    - Complete evaluation of Layer 0 readout performance
    - Weld stubs on EC beampipes
    - Connect spool pieces and begin leak checking process
- 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



# South EC gap





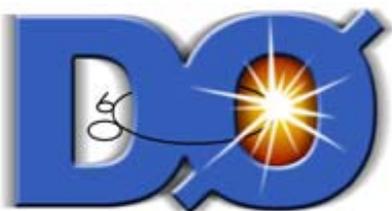
# South EC Beampipe with flange





# 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		4/24/06	4/26/06	5/03/06
94	Inner H Disks Re-Installed		4/28/06	5/2/06	5/9/06
99	Silicon Cold and Ready for Technical Commissioning		5/3/06	5/5/06	5/12/06
103	Complete Technical Commissioning of Silicon		5/9/06	5/11/06	5/18/06
118	Detector Closed for Tevatron Resumption		5/31/06	6/02/06	6/4/06



# L1 Cal and L1 CTT Installations

ID	TASK NAME	Actual	Current Forecast	Pre-Shutdown Forecast
2	Beginning of RunIIb Tevatron Shutdown	2/23/06		2/27/06
	<b>Level 1 Calorimeter Trigger Upgrade</b>			
158	Retire Run Ila L1 Cal Trigger Electronics	3/6/06		3/6/06
172	Complete Clean-out of L1 Cal Trigger Racks	3/9/06		3/29/06
180	L1 Cal Trigger Racks Ready for Trigger Installation	3/20/06		4/13/06
189	L1 Cal Trigger Ready for Technical Commissioning		5/5/06	5/10/06
	<b>Level 1 Central Track Trigger Upgrade</b>			
206	DFAA Crates Extracted	3/13/06		3/13/06
213	DFAA2 Installation Complete		4/25/06	4/4/06
217	L1 CTT Technical Commissioning Complete		5/17/06	5/17/06

Switched order of some installation and verification operations to optimize access

8	16-Apr	BLS cable installation complete	CTT timing scan Verify STSX outputs CTT ORC approved Dress inner twisted pair cables Verify N inner layer junction card connections	AFEII boards released for production CTT LVDS outputs verified Install 3N and 4S outer junction cards Verify junction card connections	Complete junction card installation Verify outer layer junction card connections	Begin connecting DFEA2 to L1CalTrk and L1Muon Weld EC beampipe stubs	L1CTT installation complete Gore LVDS cable delivery Connect spool pieces and leak check Be to spool joints	Clued and CAB unavailable
9	23-Apr	Clued0 and CAB unavailable	0700-0730 Site-wide power outage leak check Be to spool joints	Install inner H disks	Cable inner H disks Install luminosity monitors	Cable inner H disks Reconnect H disk cooling lines	L1Muon central triggers available Verify H disk connections	
10	30-Apr		Install beampipe supports Make EC Be beampipe joints	Muon PDT mods complete Install Tedlar membrane	Cool silicon	SMT checkout	SMT checkout	
11	7-May		SMT checkout	SMT checkout Remove gap hardware Close ECs, EFs	L1Cal Upgrade Ready for Technical Commissioning Install SNEGs	Leak check Install heat tape on SNEGs	Activate SNEGs Open EFs Install BLMs	
12	14-May		Activate SNEGs	Survey EC	L1CTT Technical Commissioning Complete contingency	contingency	contingency	
13	21-May	Begin detector verification	AFEII bare board production complete Detector checkout Resume captain coverage on evening shifts	Test new latency? detector checkout	Test new latency? detector checkout	Test new latency? Close CF and EF	Remove SNEG heaters Install veto counters Close clamshells Survey Detector Centerbeam	
14	28-May		lab holiday	Survey Detector CenterBeam Search and secure collision hall Test magnet power supplies	StickMic Survey Supervised Access Ends?			



# Some Potential Challenges

- Personnel Developments
  - Resignations
  - Illnesses/other personal issues
- Layer 0 related
  - Status of vacuum in Tevatron C4 section
  - Clearance for support stages on rails
  - Routing cables from junction cards to adapter cards
  - Repairing north inner H disk mounts
  - Re-installing inner H disks
- Level 1 Calorimeter related
  - BLS cable handling and routing
  - LVDS cables
    - AMP cables on hand
    - Gore cables expected 21 April

Slide presented  
at 23 March PMG



# Additional Potential Challenges

- Personnel developments
  - John Anderson moves on
  - Yuri Orlov transfers from PPD to TD
    - Scheduling of Yuri's transfer was arranged to minimize impact on Layer 0 installation.
    - Thanks to all involved
- Complete verification of Layer 0 readout
- H disk cabling and readout re-certification
- Complete verification of SMT operation (including Layer 0) after cooldown
- Leak checking 8 Tevatron beampipe joints
- Clock instabilities



## Summary

- Shutdown involves substantial parallel efforts to install Run IIb upgrades of the DZero detector and make a smooth transition to commissioning and operations
- Need to complete the shutdown activities in a safe and timely manner
  - 41 weekdays days into 69 weekday shutdown (60%)
  - Most activities progressing well
  - No major upgrade related surprises (yet)
  - Many collaborators are making important contributions
  - Lab is providing significant support for these activities
  - Second shift support and activities have been very valuable in maintaining schedule
- ~Six weeks remaining until end of shutdown