

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

**Subsystem:** Master Schedule and Overview  
**WBS:** All  
**Date Submitted:** 5/16/01  
**Submitted By:** Harry Weerts, Bill Freeman

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	M1-Solenoid Delivered to Fermilab	5/12/97	5/12/97	0 w
X	M2-Central Preshower Module Fabrication Complete	12/16/97	12/16/97	0 w
X	M2-Central Preshower Installed on Solenoid	5/21/98	5/21/98	0 w
X	M1-Solenoid Installed and Tested	9/30/98	9/30/98	0 w
X	M3-Level Ø-South Installed	5/8/00	2/9/00	12.6 w
X	M2-Muon End Toroids Installed on Platform	8/4/00	11/15/00	-14.2 w
X	M1-Begin Shield Wall Removal/Ready to Roll-in	11/7/00	11/22/00	-2.2 w
X	M1-Detector Rolled-in and Hooked Up	2/27/01	2/2/01	3.4 w

Note: The full set of reportable milestones are collected and sorted by date at the end of this report. Also, a separate monthly report for the solenoid project will no longer be included, since that project is now formally complete. The reportable milestones associated with the solenoid project are now included in the above list.

## Areas of Concern

### Technical

See individual subsystem reports

### Schedule

See individual subsystem reports

### Resources

None

### Cost

None

## Change Requests

None

## Progress Summary

The detector was ready for collisions on March 1, 2001 and Run II officially started on that date. Mechanically the detector is complete and access periods were used to connect all the detectors. A fraction of all detectors was read out by the end of March. No collisions occurred during this month.

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

**Subsystem:** Silicon Tracker  
**WBS:** 1.1.1  
**Date Submitted:** 4/30/01  
**Submitted By:** Marcel Demarteau, Ron Lipton

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	H Half-Wedge Fabrication 20% Complete	10/15/99	10/15/99	0 w
X	3 Chip Ladder Fabrication 80% Complete	10/26/99	10/20/99	0.6 w
X	9 Chip Ladder Fabrication 20% Complete	11/4/99	11/3/99	0.2 w
X	F Wedge Assemblies 20% Complete	1/24/00	1/19/00	0.4 w
X	6 Chip Ladder Fabrication 20% Complete	1/31/00	1/3/00	3.86 w
X	H Half-Wedge Fabrication 80% Complete	3/29/00	2/23/00	5 w
X	6 Chip Ladder Fabrication 80% Complete	7/12/00	3/14/00	16.8 w
X	Low Mass Cables Available For Silicon South	7/17/00	NA	0 w
X	9 Chip Ladder Fabrication 80% Complete	7/31/00	3/27/00	17.4 w
X	F Wedge Assemblies 80% Complete	7/31/00	4/26/00	13.2 w
X	Low Mass Cables Available for Silicon North	9/4/00	NA	0 w
X	M2-First Silicon Tracker Barrel/Disk Module Complete	9/14/00	1/24/00	33 w
X	South H-Disks Ready to Move to DAB	10/13/00	7/3/00	14.4 w
X	South Half-Cylinder Complete and Ready to Move to DAB	10/25/00	8/1/00	12.2 w
X	M3-All Silicon Tracker Barrels/Disks Complete	11/22/00	8/25/00	12.6 w
X	North Half-Cylinder Complete and Ready to Move to DAB	12/12/00	9/18/00	12 w
X	M1-Central Silicon Complete	12/12/00	9/18/00	12 w
X	M2-Silicon Tracker Installed in Solenoid/Fiber Tracker	2/12/01	9/25/00	19 w

## Areas of Concern

### Technical

None

### Schedule

None

### Resources

None

### Cost

None

## Change Requests

None

## Progress Summary

The detector is installed and is being cabled and commissioned. Twenty percent of the detector has been tuned on. The remainder will be cabled and tested during the May shutdown. First data was taken and signals were seen.

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

**Subsystem:** Fiber Tracker and VLPCs  
**WBS:** 1.1.2  
**Date Submitted:** 5/15/01  
**Submitted By:** Alan Bross

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
	<i>Detector</i>			
X	M2 - Assembly Design Complete	3/5/99	3/5/99	0 w
X	M2-First Cylinder Complete	9/2/99	9/2/99	0 w
X	M3-Fiber Tracker Ribbon Fabrication 50% Complete	11/5/99	11/12/99	-0.9 w
X	M2-Fiber Tracker Assembly Begun	2/1/00	12/6/99	6.2 w
X	M3-Fiber Tracker Cylinders 8, 7, 6, and 5 Complete	3/2/00	1/28/00	5 w
X	M3-Fiber Tracker Ribbon Fabrication Complete	5/10/00	3/6/00	9.5 w
X	M3-Fiber Tracker Ribbon Mounting Complete	5/13/00	4/20/00	3.3 w
X	M2-Fiber Tracker Assembly Complete	5/26/00	5/4/00	3.3 w
X	Waveguide Production 50% Complete	7/24/00	1/29/00	24.6 w
X	M3-Waveguide Production Complete	11/7/00	6/5/00	22 w
	<i>VLPCs</i>			
X	M2-VLPC Production 50% Complete	8/31/97	8/31/97	0 w
X	M3-VLPC Cryo System Operational	8/18/00	6/12/00	9.6 w
X	M3-VLPC Cassette Assembly 50% Complete	9/13/00	4/12/00	21.5 w
X	M3-VLPC Cassette Assembly Complete	3/20/01	8/22/00	28.6 w

## Areas of Concern

### Technical

None

### Schedule

None

### Resources

None

### Cost

None

## Change Requests

None

## Progress Summary

VLPC cassette fabrication was completed (100 cassettes done). Testing and characterization of some cassettes, including spares, continued.

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

**Subsystem:** Forward Preshower  
**WBS:** 1.1.4  
**Date Submitted:** 4/24/01  
**Submitted By:** Abid Patwa

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	M2-Forward Preshower Module Fabrication Begun	11/4/98	11/4/98	0 w
X	M3-1st Forward Preshower Detector Complete	2/24/00	1/12/00	6.2 w
X	Module Fabrication and Testing Complete	4/1/00	12/10/99	14 w
X	M3-2nd Forward Preshower Detector Complete	4/3/00	3/8/00	3.6 w

## Areas of Concern

### Technical

In order to properly integrate all FPS waveguides with the existing cables and services between the EC-CC inter-cryostat gap, slight modifications in the existing cable routing plan have resulted. Potential areas with nominal clearances have been identified and are continually being re-evaluated during Tevatron downtimes to understand the most efficient routing path.

### Schedule

The installation and hook-up of any cable on the end-cryostat head requires complex interleaving and cannot be done partially. Therefore, the FPS group is working closely with other subdetectors and DØ personnel to schedule the installation during the scheduled two-week accelerator shutdown in May.

### Resources

None

### Cost

None

## Change Requests

None

## Progress Summary

- Waveguide production including the full level of channel-to-channel quality control continued at Notre Dame and Indiana University, with all cables that will occupy the FPS shower layers 1 and 2 completed. Cable production for the forward MIP-detecting layers (3 and 4) continued and is approximately 70% complete. Production of all cables is expected by the end of April.

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

**Subsystem:** Tracking Electronics  
**WBS:** 1.1.5  
**Date Submitted:** 5/10/01  
**Submitted By:** Marvin Johnson, Fred Borcharding

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	First Readout Crate Installed & Working	11/16/99	12/2/99	-2 w
X	10 Digital Boards Available	7/28/00	3/22/00	18 w
X	Ten 8-chip Analog Boards Available	8/8/00	4/19/00	15.4 w
X	Multichip Modules Received	1/27/01	2/23/00	46.6 w
	Mixer Boards Ready	7/25/01	6/22/00	54.8 w

## Areas of Concern

### Technical

AFE8 boards are not completely qualified. Have not as yet found a vendor who can reliably mount the large BGA chips on the double-wide daughter boards for the DFE boards.

### Schedule

None

### Resources

None

### Cost

None

## Change Requests

None

## Progress Summary

- Silicon electronics installation and checkout continued in March. Over half of the system is installed and working. All modules are here and tested so installation should finish in April.
- The Gerber files for the production AFE8 boards were submitted to the vendor. Lab3 tests of the AFE8 board showed photo peaks in the analog spectra.
- The DFEA daughter boards were received.

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

**Subsystem:** Calorimeter Electronics  
**WBS:** 1.2.1  
**Date Submitted:** 3/30/01  
**Submitted By:** Mike Tuts

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	SCA Testing Complete	11/23/99	12/15/99	-2.8 w
X	Shaper Hybrid 50% Complete	2/22/00	5/9/00	-11.05 w
X	M2-Calorimeter Preamp System Test Complete	7/13/00	3/31/00	14.4 w
X	Daughterboard Vendor Production Complete	12/7/00	6/16/00	24 w
X	M3-Calorimeter CC,ECN Preamp Installation Complete	1/15/01	3/31/00	39.4 w
X	Timing System Installed	4/2/01	8/18/00	30.8 w
X	BLS Motherboard Assembly Complete	4/16/01	8/7/00	34.6 w
X	M2-Calorimeter BLS Assembly Complete	4/16/01	9/26/00	27.6 w

## Areas of Concern

### Technical

None

### Schedule

The BLS motherboard assembly vendor is producing boards at a significantly reduced rate compared to the contract (now ~25 per wk). We expect completion in two weeks. The calorimeter BLS assembly milestone will be complete shortly thereafter. The last remaining item is the trigger pickoff cards for the BLS motherboards. The CC is expected to be completed in two weeks, and the EC summers are in process and will be completed in early May.

### Resources

None

### Cost

None

## Change Requests

None

## Progress Summary

Commissioning is continuing. Minor repairs are being made.

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

**Subsystem:** Intercryostat Detector  
**WBS:** 1.2.2  
**Date Submitted:** 5/15/01  
**Submitted By:** Andy White, Lee Sawyer

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	M3-ICD Tile Modules/Boxes Ready	4/19/00	1/18/00	13.2 w
X	M2-ICD Modules Arrive at Fermilab	4/24/00	1/25/00	12.8 w
X	M3-InterCryostat Detectors Installed	5/5/00	2/1/00	13.6 w
	Drawers Ready	5/30/01	12/14/99	72.2 w

## Areas of Concern

### Technical

Working on the proper order of cabling the ICD, Luminosity Monitor, and Forward Preshower on the end calorimeter faces, a complicated problem.

### Schedule

Goal to have all ICD tiles calibrated (relative MIP calibration) prior to two-week shutdown to permit re-installation.

### Resources

None

### Cost

None

## Change Requests

None

## Progress Summary

- Electronics pORC review request submitted
- ICD blocks/crates moved to final location.
- Final setup of cosmic ray test stand for ICD tile calibration.

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

**Subsystem:** Muon Central  
**WBS:** 1.3.2  
**Date Submitted:** 5/2/01  
**Submitted By:** Tom Diehl

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
	CFA Commissioning Complete	6/29/01	7/10/00	49.3 w
	PDT Commissioning Complete	8/30/01	6/9/00	61.8 w

## Areas of Concern

### Technical

A specification flaw in the scintillation counter front-end cards (SFEs and SRCs, WBS 1.3.5.3) has been uncovered. While each group of sixteen front-ends read out by a third of an SFE has adjustable gate and width, all groups must fall within the same ~84 ns window. Unfortunately, the spread in signal-arrival-time is between 35 and 90 ns within a single crate. Including the effects of time resolution, the counters cannot at present be read-out. The ADC measurement is even further compromised in the sense that the gate available for good measurements is considerably smaller than the time gate. Solutions include adding significant cable extensions to the A- $\phi$  counters, with correspondent decrease in performance, and/or modification of the electronics.

### Schedule

None

### Resources

During March the number of physicists working on commissioning remained at 5.9 FTE's. Of the three subsystems, only the Cosmic Cap has sufficient manpower. A single student is commissioning the A- $\phi$  system. He will leave the experiment in early June. The PDT system is understaffed by two experienced physicists.

### Cost

None

## Change Requests

None

## Progress Summary

- The PDT gas trailer arrived near the end of the month.
- The PDT system continues to require significant commissioning. At the end of the month, 34 out of 94 PDTs could be readout.

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

**Subsystem:** Muon Forward Trigger Detectors  
**WBS:** 1.3.3  
**Date Submitted:** 4/24/01  
**Submitted By:** Dmitri Denisov

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	M2-Muon Forward Trigger Counter Assembly 10% Complete	10/12/98	10/12/98	0 w
X	All Pixel Octants Assembled	2/23/00	4/4/00	-5.8 w
X	All Muon Forward Trigger Detector Planes Installed	1/12/01	8/25/00	18.6 w

## Areas of Concern

### Technical

None

### Schedule

None

### Resources

None

### Cost

None

## Change Requests

None

## Progress Summary

- Read-out of all front-end VME crates has been achieved.
- Online Examine program is finalized, linked, and working on the Online cluster.
- The high-voltage system is fully commissioned and ready for operation.
- Read-out of counters on cosmic-rays demonstrates that all 4608 counters are working according to specifications.
- The system is ready for operation with the beam.

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

**Subsystem:** Muon Forward Tracker  
**WBS:** 1.3.4  
**Date Submitted:** 4/24/01  
**Submitted By:** Dmitri Denisov

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	M2-Muon Forward Tracker MDT Assembly 10% Complete	1/29/99	1/29/99	0 w
X	Arrival Of C-Layer MDT Modules At FNAL	11/3/99	10/22/99	1.7 w
X	M2-All Muon Forward Tracker MDT Modules At Fermilab	3/30/00	3/10/00	2.8 w
X	B-Layer Octants Assembled	8/24/00	4/18/00	18 w
X	All MDT Octants Assembled	8/24/00	7/14/00	5.8 w
X	Muon Forward Tracker B-Layer Planes Installed	12/22/00	6/15/00	26.2 w
X	All MDT Planes Installed	12/22/00	8/4/00	19.2 w

## Areas of Concern

### Technical

None

### Schedule

None

### Resources

None

### Cost

None

## Change Requests

None

## Progress Summary

- Read-out of all 24 front-end VME crates has been achieved.
- MDT tubes are filled with test gas and demonstrate leaks below 3%, well within specifications.
- The high-voltage system required some modifications that are now 75% complete; temporary high-voltage power supplies are being used for the rest of the system.
- Cosmic-ray spectra demonstrate that all MDT octants are working according to specification; the number of dead channels is about 0.2% out of 50,000 wires total.
- The system is ready to collect data with beam.

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

**Subsystem:** Muon Electronics  
**WBS:** 1.3.5  
**Date Submitted:** 3/20/01  
**Submitted By:** Bill Freeman

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	MDT ADB Fabrication Complete	12/2/99	12/2/99	0 w
X	MDC Fabrication Complete	1/31/00	12/13/99	5 w
X	M2-Muon Electronics Preproduction Installation Complete	1/31/00	12/13/99	5 w
X	FEB, CB Production Complete	4/10/00	1/3/00	14 w
X	SFE, SRC Fabrication Complete	9/21/00	2/3/00	32.5 w
X	MRC, MFC Production Complete	10/18/00	3/27/00	28.8 w

## Areas of Concern

### Technical

None

### Schedule

None

### Resources

None

### Cost

None

## Change Requests

None

## Progress Summary

The muon electronics project is complete.

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

**Subsystem:** Trigger  
**WBS:** 1.4.1-1.4.5  
**Date Submitted:** 5/10/01  
**Submitted By:** Gerald C. Blazey

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	SLICs Received	12/10/99	11/10/99	4 w
X	M3-Establish Single Crate Internal Data Movement	2/17/00	1/6/00	6 w
X	Preproduction MTCxx, MTFB, and MTCM Complete	10/19/00	1/24/00	38 w
X	M3-Muon Level 1 Trigger Preproduction Testing Complete	11/8/00	4/18/00	28.6 w
X	MBTs Received	1/31/01	3/16/00	44 w
	M3- Cal Readout Available to L2	5/15/01	2/11/00	63.6 w
	Production MTCxx, MTFB, and MTCM Complete	6/29/01	6/27/00	50.8 w
	M3-L3 Operational (One Full Chain)	7/5/01	6/1/00	55 w
	Global Installation Complete	7/17/01	7/12/00	51 w
	L2 Cal Installation Complete	7/17/01	8/21/00	45.4 w
	L2 Muon Installation Complete	7/17/01	7/26/00	49 w
	Alpha Cards Received	7/31/01	5/15/00	61 w
	L2 CTT Installation Complete	8/14/01	8/9/00	51 w
	M3-Trigger Level 2 Commissioned	9/26/01	9/21/00	51 w

## Areas of Concern

### Technical

The performance of the Level 1 Central Track Trigger (CTT) is under evaluation in light of new performance results from the AFE8 prototypes. We are having difficulty mounting BGAs on Level 1 CTT digital boards.

### Schedule

Due to the departure of key personnel at Brown, progress on the Vertex board has been delayed. The lateness of the AFE8s will delay commissioning of the Level 1 CTT trigger. Level 3 hardware components continue to be delayed and we are developing staged upgrades.

### Resources

Additional technical help is required for the CTT Level 1 digital components.

### Cost

None

## Change Requests

None

## Progress Summary

### *Framework*

Framework construction was completed.

### *Luminosity Monitor*

The luminosity monitor was brought into operation.

### *Level 1*

Installation continued for much of the central calorimeter Level 1 trigger. The production phase proceeded for the muon Level 1 trigger components, and at DØ sufficient hardware was installed to provide partial triggering in the central region. The CTT Level 1 trigger digital hardware production and testing continued.

# **DØ Upgrade Monthly Progress Report**

for the month of March, 2001

## *Level 2*

Debugging of the Level 2 alphas continued, and there was progress towards production of twelve additional units. Nine boards have been brought up to specifications. The Level 2 CIC and SFO cards were released for production. Significant progress was made on the Level 2 global, SLIC, and CTT software.

## *Level 3*

Good progress was made on the SIB1, or one-half of the VRC, which represents the first hardware component of the Level 3/DAQ system. DAQ and filtering support of the commissioning effort has been successful.

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

**Subsystem:** Online  
**WBS:** 1.5.1  
**Date Submitted:** 4/24/01  
**Submitted By:** Stuart Fuess

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	Steady DAQ Running	3/17/00	3/31/00	-2 w

## Areas of Concern

### Technical

None

### Schedule

None

### Personnel

None

### Cost

None

## Change Requests

None

## Progress Summary

- Continuous operation was maintained.
- Transitioned Online applications to final running versions.
- Installed Online NT domain controllers and file server.
- Continued updates of Web-based documentation.
- Continued improvements to electronic logbook product.

# **DØ Upgrade Monthly Progress Report**

for the month of March, 2001

## **March '01 Financial Summary**

The month of March, fiscal year 2001, closed with new obligations for the DØ Upgrade Project totaling \$1,405K on equipment M&S funds. The Project's actual ledger obligations are larger due to the restoration of \$1,285K to university collaborators who participated in FY00 forward funding contributions. While a month-to-month Project spending plan is not anticipated, in order to meet completion deadlines, the majority of FY01 equipment funds has been obligated in the first half of the fiscal year. As a result of additional budget transfers, the Project's FY01 M&S budget allocation is now \$3,247K.

The M&S Upgrade Project balance is currently \$744K, excluding contingency. Contributions to the Upgrade currently total \$1,435K. As of the end of December, DØ Upgrade Spokespersons have negotiated additional non-DoE contributions of approximately \$274K. Because the Project managers routinely reevaluate funding needs, the Estimate-To-Complete (ETC) continues to be synonymous with the Project's M&S balance. The overall cost of the Project has increased. The contingency, which is held by the Directorate, further increases the total Project cost. Additional contingency requests are expected in calendar year 2001.

The Project currently has commitments with universities and other institutions in the DØ Collaboration, via active Memoranda of Understanding (MoU), totaling \$5,760K. These funds represent an obligation on the part of the DØ Upgrade Project and are regularly costed each month via invoices received from these institutions as work is completed. In addition, several institutions have made significant contributions to the DØ Upgrade. A list of the institutions involved, as well as a more detailed breakdown of the commitments and costs, follows.

# DØ Upgrade Monthly Progress Report

for the month of March, 2001

## FY01 Financial Report as of 3/31/01

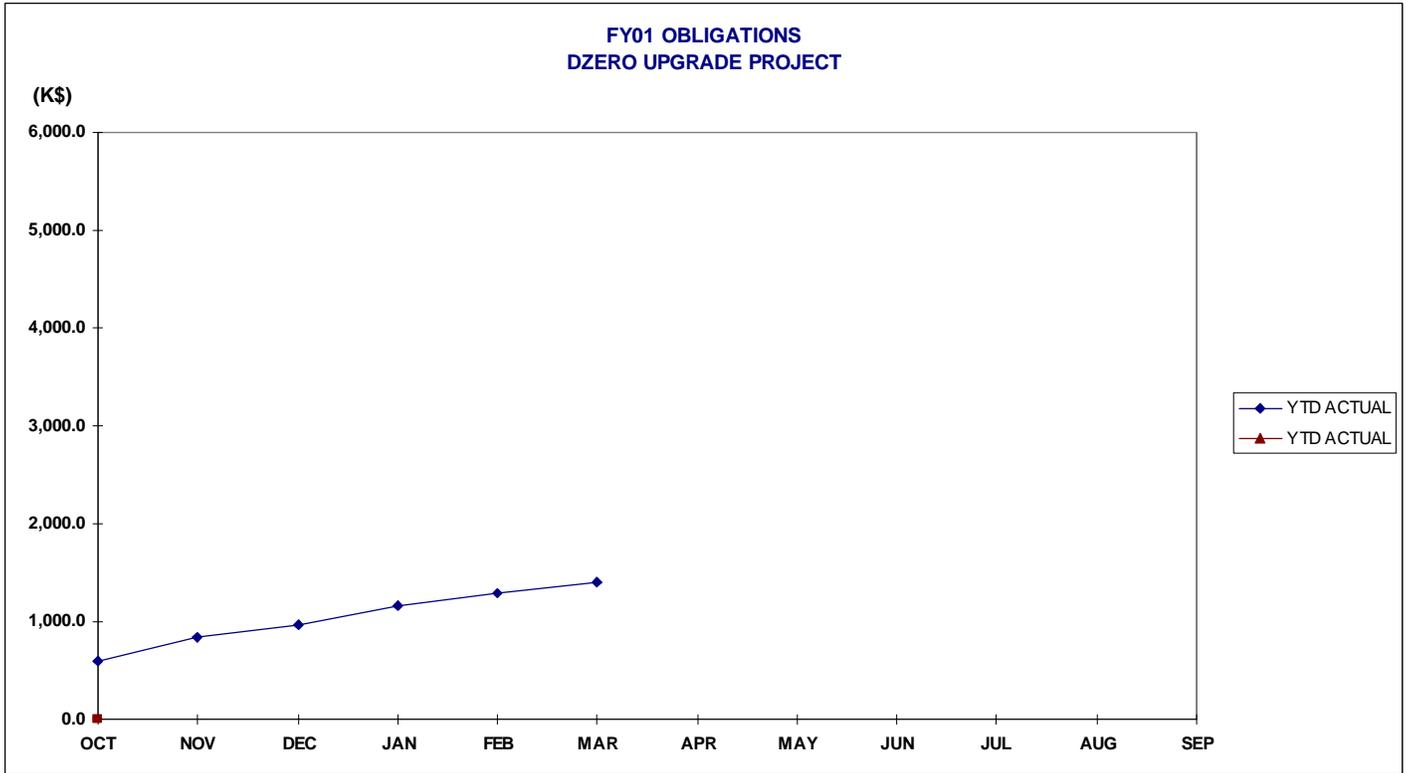
	<u>COST</u>	<u>PRIOR YR</u>	<u>FY 01</u>	<u>NON-DoE</u>	<u>PROJECT</u>
	<u>ESTIMATE</u>	<u>OBLIG</u>	<u>YTD OBLIG</u>	<u>CONTRIB</u>	<u>BALANCE</u>
1 TOTAL DZERO UPGRADE PROJECT	42,358.7	38,774.3	1,405.1	1,435.1	744.2
1.1 TRACKING DETECTORS	20,682.1	19,795.1	640.8	13.1	233.0
1.1.1 SILICON TRACKER	8,256.2	7,924.0	291.8	13.1	27.3
1.1.2 FIBER TRACKER	7,851.4	7,697.6	112.0	0.0	41.8
1.1.3 CENTRAL PRESHOWER DETECTOR	228.7	228.7	0.5	0.0	-0.5
1.1.4 FORWARD PRESHOWER DETECTOR	514.9	514.9	0.1	0.0	-0.1
1.1.5 TRACKING ELECTRONICS	3,830.8	3,429.8	236.5	0.0	164.4
1.2 CALORIMETER	4,711.6	4,489.2	2.2	210.0	10.2
1.2.1 FRONT-END ELECTRONICS	4,402.6	4,180.2	2.2	210.0	10.2
1.2.2 INTERCRYOSTAT DETECTOR	309.0	309.0	0.0	0.0	0.0
1.3 MUON DETECTORS	9,495.8	8,568.2	223.2	665.3	39.1
1.3.1 COSMIC RAY SCINTILLATOR	1,223.2	963.2	0.0	260.0	0.0
1.3.2 CENTRAL TRIGGER DETECTORS	954.7	793.2	15.7	145.8	-0.1
1.3.3 FORWARD TRIGGER DETECTOR	2,133.3	1,766.8	80.0	259.5	27.0
1.3.4 FORWARD TRACKING DETECTOR	1,410.8	1,297.2	96.0	0.0	17.5
1.3.5 FRONT-END ELECTRONICS	3,773.9	3,747.8	31.4	0.0	-5.3
1.4 TRIGGER	6,641.2	5,276.9	397.0	546.7	420.6
1.4.1 FRAMEWORK	1,859.4	1,859.4	0.0	0.0	0.0
1.4.2 LEVEL 0	136.4	130.6	2.3	0.0	3.5
1.4.3 LEVEL 1	1,588.2	1,356.0	142.7	0.0	89.5
1.4.4 LEVEL 2	2,005.8	1,104.5	227.0	546.7	127.6
1.4.5 LEVEL 3	1,051.5	826.5	25.0	0.0	200.0
1.5 ONLINE EQUIPMENT	828.0	644.9	141.8	0.0	41.3
1.5.1 ON-LINE EQUIPMENT	828.0	644.9	141.8	0.0	41.3

**DEFINITION OF TERMS:**

Funds: DØ Upgrade = M&S Equipment Funds; Solenoid = AIP Plant Funds.  
 Cost Estimate: Total Project and Sub-Project estimates without contingency.  
 Prior Year Obligations: Obligations for fiscal years '92 through '00 as applicable.  
 FY 01 Year-to-Date Obligations: Obligations for fiscal year '01.  
 Project Balance: Cost Estimate - (Prior Year Obligations + Fiscal 01 YTD Obligations)

# DØ Upgrade Monthly Progress Report

for the month of March, 2001



	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
<b>YTD ACTUAL</b>	597.4	831.3	971.5	1,166.0	1,286.5	1,405.1						
<b>YTD PLAN</b>												

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## Active MOUs as of 3/31/01

<u>INSTITUTION</u>	<u>EQUIPMENT</u>	<u>R&amp;D</u>	<u>TOTAL COSTED</u>
Boston University	298,200	5,200	273,619
Brown University	820,076	131,000	215,083
California State University, Fresno	26,160		21,533
Institute for High Energy Physics (IHEP)	270,433		168,313
Kansas State University	208,800	135,808	228,673
Louisiana Tech University	98,856		64,295
Michigan State University	384,238	176,000	174,059
Northern Illinois University	148,000	28,000	166,000
Petersburg Nuclear Physics Institute	4,000		0
SUNY at Stony Brook	1,273,567	20,000	751,763
University of Arizona	826,017	44,600	742,362
University of IL, Chicago	129,103	24,100	93,142
University of Kansas, Center for Research, Inc.	16,000		15,931
University of Maryland	178,900		178,900
University of Notre Dame	68,000	122,500	131,634
University of Oklahoma	43,000		38,433
University of Texas, Arlington	162,886		139,200
<u>University of Washington</u>	<u>110,005</u>	<u>6,200</u>	<u>82,650</u>
Total Fermilab Funds:	<u>\$5,066,241</u>	<u>\$693,408</u>	
Total Costed:	3,131,153	354,438	<u>\$3,485,591</u>
Total Open Commitments:	<u>\$1,935,088</u>	<u>\$338,970</u>	273,619

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## Reportable Milestones Summary

<u>Done</u>	<u>Reportable Milestones</u>	<u>Project</u>	<u>Date</u>	<u>Baseline</u>	<u>Var.</u>
X	M1-Solenoid Delivered to Fermilab	Solenoid	5/12/97	5/12/97	0 w
X	M2-VLPC Production 50% Complete	VLPCs	8/31/97	8/31/97	0 w
X	M2-Central Preshower Module Fabrication Complete	Central Preshower	12/16/97	12/16/97	0 w
X	M2-Central Preshower Installed on Solenoid	Central Preshower	5/21/98	5/21/98	0 w
X	M1-Solenoid Installed and Tested	Solenoid	9/30/98	9/30/98	0 w
X	M2-Muon Forward Trigger Counter Assembly 10% Complete	Muon Forward Trigger	10/12/98	10/12/98	0 w
X	M2-Forward Preshower Module Fabrication Begun	Forward Preshower	11/4/98	11/4/98	0 w
X	M2-Muon Forward Tracker MDT Assembly 10% Complete	Muon Forward Tracker	1/29/99	1/29/99	0 w
X	M2 - Assembly Design Complete	Fiber Tracker	3/5/99	3/5/99	0 w
X	M2-First Cylinder Complete	Fiber Tracker	9/2/99	9/2/99	0 w
X	H Half-Wedge Fabrication 20% Complete	Silicon Tracker	10/15/99	10/15/99	0 w
X	3 Chip Ladder Fabrication 80% Complete	Silicon Tracker	10/26/99	10/20/99	0.6 w
X	Arrival Of C-Layer MDT Modules At FNAL	Muon Forward Tracker	11/3/99	10/22/99	1.7 w
X	9 Chip Ladder Fabrication 20% Complete	Silicon Tracker	11/4/99	11/3/99	0.2 w
X	M3-Fiber Tracker Ribbon Fabrication 50% Complete	Fiber Tracker	11/5/99	11/12/99	-0.9 w
X	First Readout Crate Installed & Working	Silicon Electronics	11/16/99	12/2/99	-2 w
X	SCA Testing Complete	Calorimeter Electronics	11/23/99	12/15/99	-2.8 w
X	MDT ADB Fabrication Complete	Muon Electronics	12/2/99	12/2/99	0 w
X	SLICs Received	Trigger	12/10/99	11/10/99	4 w
X	F Wedge Assemblies 20% Complete	Silicon Tracker	1/24/00	1/19/00	0.4 w
X	6 Chip Ladder Fabrication 20% Complete	Silicon Tracker	1/31/00	1/3/00	3.9 w
X	MDC Fabrication Complete	Muon Electronics	1/31/00	12/13/99	5 w
X	M2-Muon Electronics Preproduction Installation Complete	Muon Electronics	1/31/00	12/13/99	5 w
X	M2-Fiber Tracker Assembly Begun	Fiber Tracker	2/1/00	12/6/99	6.2 w
X	M3-Establish Single Crate Internal Data Movement	Trigger	2/17/00	1/6/00	6 w
X	Shaper Hybrid 50% Complete	Calorimeter Electronics	2/22/00	5/9/00	-11 w
X	All Pixel Octants Assembled	Muon Forward Trigger	2/23/00	4/4/00	-5.8 w
X	M3-1st Forward Preshower Detector Complete	Forward Preshower	2/24/00	1/12/00	6.2 w
X	M3-Fiber Tracker Cylinders 8, 7, 6, and 5 Complete	Fiber Tracker	3/2/00	1/28/00	5 w
X	Steady DAQ Running	Online	3/17/00	3/31/00	-2 w
X	H Half-Wedge Fabrication 80% Complete	Silicon Tracker	3/29/00	2/23/00	5 w
X	M2-All Muon Forward Tracker MDT Modules At Fermilab	Muon Forward Tracker	3/30/00	3/10/00	2.8 w
X	Module Fabrication and Testing Complete	Forward Preshower	4/1/00	12/10/99	14 w
X	M3-2nd Forward Preshower Detector Complete	Forward Preshower	4/3/00	3/8/00	3.6 w
X	FEB, CB Production Complete	Muon Electronics	4/10/00	1/3/00	14 w
X	M3-ICD Tile Modules/Boxes Ready	Intercryostat Detector	4/19/00	1/18/00	13.2 w
X	M2-ICD Modules Arrive at Fermilab	Intercryostat Detector	4/24/00	1/25/00	12.8 w
X	M3-InterCryostat Detectors Installed	Intercryostat Detector	5/5/00	2/1/00	13.6 w
X	M3-Level Ø-South Installed	Luminosity Monitor	5/8/00	2/9/00	12.6 w
X	M3-Fiber Tracker Ribbon Fabrication Complete	Fiber Tracker	5/10/00	3/6/00	9.5 w
X	M3-Fiber Tracker Ribbon Mounting Complete	Fiber Tracker	5/13/00	4/20/00	3.3 w
X	M2-Fiber Tracker Assembly Complete	Fiber Tracker	5/26/00	5/4/00	3.3 w
X	6 Chip Ladder Fabrication 80% Complete	Silicon Tracker	7/12/00	3/14/00	16.8 w
X	M2-Calorimeter Preamp System Test Complete	Calorimeter Electronics	7/13/00	3/31/00	14.4 w
X	Low Mass Cables Available For Silicon South	Silicon Tracker	7/17/00	NA	0 w
X	Waveguide Production 50% Complete	Fiber Tracker	7/24/00	1/29/00	24.6 w
X	10 Digital Boards Available	Fiber Electronics	7/28/00	3/22/00	18 w
X	9 Chip Ladder Fabrication 80% Complete	Silicon Tracker	7/31/00	3/27/00	17.4 w
X	F Wedge Assemblies 80% Complete	Silicon Tracker	7/31/00	4/26/00	13.2 w
X	M2-Muon End Toroids Installed on Platform	Master	8/4/00	11/15/00	-14.2 w
X	Ten 8-chip Analog Boards Available	Fiber Electronics	8/8/00	4/19/00	15.4 w
X	M3-VLPC Cryo System Operational	VLPCs	8/18/00	6/12/00	9.6 w
X	B-Layer Octants Assembled	Muon Forward Tracker	8/24/00	4/18/00	18 w

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X	All MDT Octants Assembled	Muon Forward Tracker	8/24/00	7/14/00	5.8 w
X	Low Mass Cables Available for Silicon North	Silicon Tracker	9/4/00	NA	0 w
X	M3-VLPC Cassette Assembly 50% Complete	VLPCs	9/13/00	4/12/00	21.5 w
X	M2-First Silicon Tracker Barrel/Disk Module Complete	Silicon Tracker	9/14/00	1/24/00	33 w
X	SFE, SRC Fabrication Complete	Muon Electronics	9/21/00	2/3/00	32.5 w
X	South H-Disks Ready to Move to DAB	Silicon Tracker	10/13/00	7/3/00	14.4 w
X	MRC, MFC Production Complete	Muon Electronics	10/18/00	3/27/00	28.8 w
X	Preproduction MTCxx, MTFB, and MTCM Complete	Trigger	10/19/00	1/24/00	38 w
X	South Half-Cylinder Complete and Ready to Move to DAB	Silicon Tracker	10/25/00	8/1/00	12.2 w
X	M1-Begin Shield Wall Removal/Ready to Roll-in	Master	11/7/00	11/22/00	-2.2 w
X	M3-Waveguide Production Complete	Fiber Tracker	11/7/00	6/5/00	22 w
X	M3-Muon Level 1 Trigger Preproduction Testing Complete	Trigger	11/8/00	4/18/00	28.6 w
X	M3-All Silicon Tracker Barrels/Disks Complete	Silicon Tracker	11/22/00	8/25/00	12.6 w
X	Daughterboard Vendor Production Complete	Calorimeter Electronics	12/7/00	6/16/00	24 w
X	North Half-Cylinder Complete and Ready to Move to DAB	Silicon Tracker	12/12/00	9/18/00	12 w
X	M1-Central Silicon Complete	Silicon Tracker	12/12/00	9/18/00	12 w
X	Muon Forward Tracker B-Layer Planes Installed	Muon Forward Tracker	12/22/00	6/15/00	26.2 w
X	All MDT Planes Installed	Muon Forward Tracker	12/22/00	8/4/00	19.2 w
X	All Muon Forward Trigger Detector Planes Installed	Muon Forward Trigger	1/12/01	8/25/00	18.6 w
X	M3-Calorimeter CC,ECN Preamp Installation Complete	Calorimeter Electronics	1/15/01	3/31/00	39.4 w
X	Multichip Modules Received	Fiber Electronics	1/27/01	2/23/00	46.6 w
X	MBTs Received	Trigger	1/31/01	3/16/00	44 w
X	M2-Silicon Tracker Installed in Solenoid/Fiber Tracker	Silicon Tracker	2/12/01	9/25/00	19 w
X	M1-Detector Rolled-in and Hooked Up	Master	2/27/01	2/2/01	3.4 w
X	M3-VLPC Cassette Assembly Complete	VLPCs	3/20/01	8/22/00	28.6 w
X	Timing System Installed	Calorimeter Electronics	4/2/01	8/18/00	30.8 w
X	BLS Motherboard Assembly Complete	Calorimeter Electronics	4/16/01	8/7/00	34.6 w
X	M2-Calorimeter BLS Assembly Complete	Calorimeter Electronics	4/16/01	9/26/00	27.6 w
	M3- Cal Readout Available to L2	Trigger	5/15/01	2/11/00	63.6 w
	Drawers Ready	Intercryostat Detector	5/30/01	12/14/99	72.2 w
	CFA Commissioning Complete	Muon Central	6/29/01	7/10/00	49.3 w
	Production MTCxx, MTFB, and MTCM Complete	Trigger	6/29/01	6/27/00	50.8 w
	M3-L3 Operational (One Full Chain)	Trigger	7/5/01	6/1/00	55 w
	Global Installation Complete	Trigger	7/17/01	7/12/00	51 w
	L2 Cal Installation Complete	Trigger	7/17/01	8/21/00	45.4 w
	L2 Muon Installation Complete	Trigger	7/17/01	7/26/00	49 w
	Mixer Boards Ready	Fiber Electronics	7/25/01	6/22/00	54.8 w
	Alpha Cards Received	Trigger	7/31/01	5/15/00	61 w
	L2 CTT Installation Complete	Trigger	8/14/01	8/9/00	51 w
	PDT Commissioning Complete	Muon Central	8/30/01	6/9/00	61.8 w
	M3-Trigger Level 2 Commissioned	Trigger	9/26/01	9/21/00	51 w