Neutrinos at the Main Injector (NuMI) Project

Project No. 98-G-304
Progress Report No. 65
April 1-30, 2004
(G. Bock, A.L. Read - Editors)
(NuMI-1029)

I. PROJECT DESCRIPTION

The NuMI Project provides for the construction of an intense, variable energy, beam of neutrinos using the Fermilab Main Injector, as well as large underground neutrino detectors located at Fermilab and Soudan, Minnesota. The purpose of the project is to enable a new generation of long baseline neutrino experiments that can decisively detect and accurately measure neutrino oscillations. Detection of such oscillations would firmly establish a non-zero value of neutrino mass. The neutrino beam will be of sufficient energy that experiments capable of identifying muon neutrino to tau neutrino oscillations are feasible. The scope of the NuMI Project includes the excavation of large underground laboratories to house the neutrino beam system and the MINOS detectors.

II. OVERVIEW OF PROJECT STATUS – G. Bock

In April, we officially began Near Detector installation in the MINOS underground experimental hall. All electronics racks were also delivered underground and the DAQ computers and software were installed.

Installation of technical components in the target hall and pre-target areas is proceeding on schedule. As a result of the performance failure of the electric forklift reported last month, we have developed and are following a work-around plan for absorber block installation that uses a winch-cart system to move blocks from the bottom of the MINOS shaft to the absorber area.

Plans for commissioning the NuMI beam and MINOS detector were discussed and detailed at a commissioning workshop on April 15.

Overall the project is now nearly 98% complete.

There were no injuries on the NuMI project this month.

The MINOS Far Detector took atmospheric neutrino data.

More detailed information on the project's progress and status this month follows in the rest of this report.

III. MASTER SCHEDULE AND FUNDING SUMMARY

The NuMI DOE Project Master Schedule is shown in Figure 1.

The DOE baseline milestones are shown in the figure as solid squares. These fixed milestones are defined in the DOE Project Execution Plan and the Baseline Change Proposal approved in December 2001. Shown as diamonds on the same line are the project's baseline projected dates for achieving the milestones. Actual dates of achieving milestones are shown as inverted black triangles.

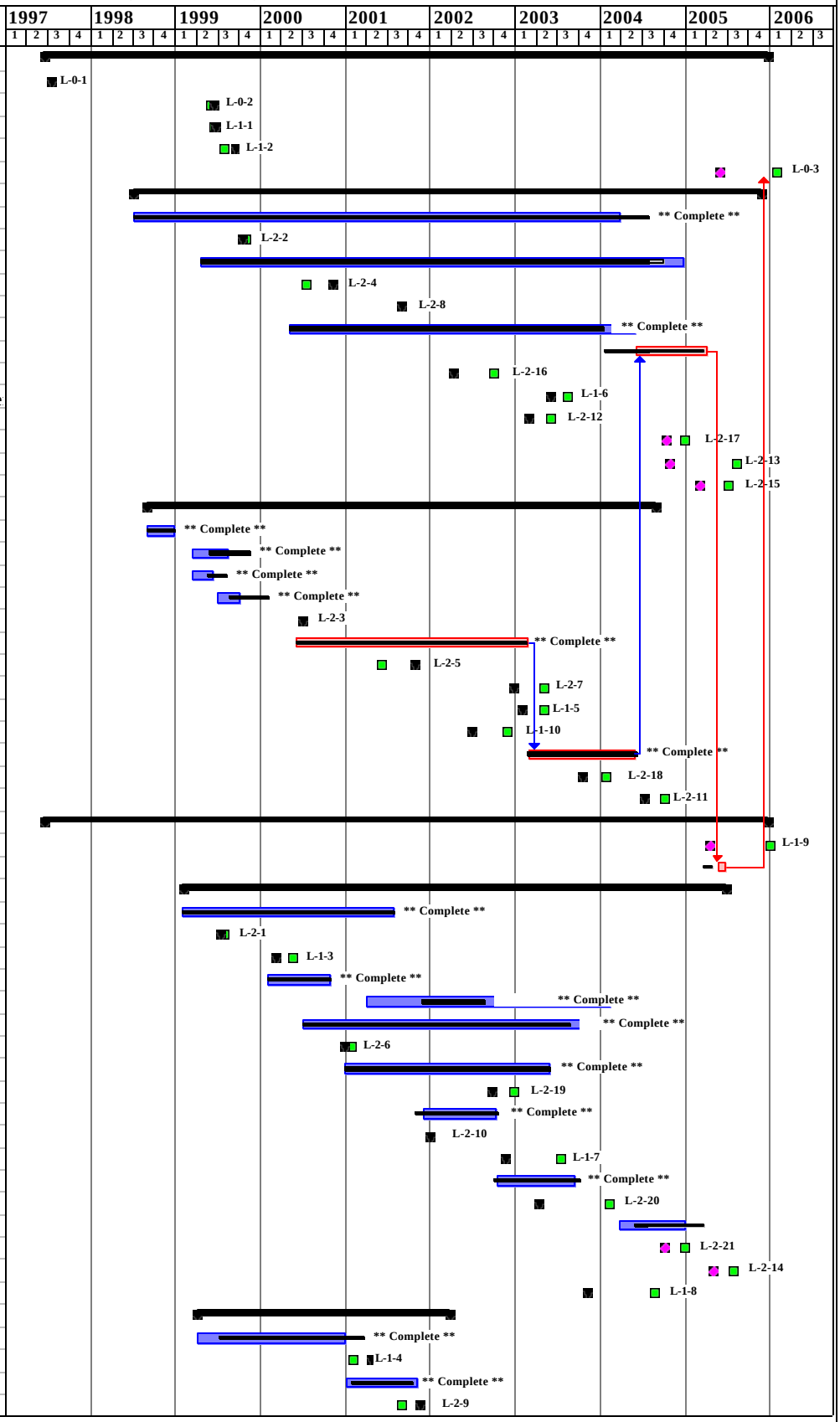
Our actual progress is indicated by black 'thermometer' lines within the horizontal (baseline schedule) bars.

A Table titled "DOE Milestones vs. Current Forecast" follows immediately after the Project Master Schedule. That table lists all the approved Level 0-1-2 DOE milestone dates along with the project's current (and previous month's) forecast for achieving them. The list is sorted by DOE Milestone date. Milestones with forecast dates that have changed significantly in the last month are discussed in Section VIII of this report.

As always the TEC and OPC profiles are presented in the Funding Summary.

5/26/04

NuMI Project
(Fiscal Years)



Project: NuMI_Master_Sched
Date: 5/26/04

Baseline Task
Critical Task
Summary Task
DOE Baseline Milestone
FNAL Current Projection
Milestone Complete
FNAL Forecast
Task Status

DOE Milestone vs Current Forecast
(Sorted by DOE Milestone Date)

6/21/2004

Milestone Description	PEP Milestone #	DOE Milestones (As of 12/2001)	Last Month's Forecast Milestone (3/2004)	Current Month's Forecast Milestone (4/2004)	DOE Milestone Variance (Cal Days)	Monthly Variance (Cal Days)	Notes
CD-1 Approve Mission Need	L-0-1	3/17/1997	3/17/1997	3/17/1997	0	0	Complete
CD-3a Start Limited Construction	L-1-1	2/15/1999	2/23/1999	2/23/1999	(8)	0	Complete
CD-2 Approve Baselines	L-0-2	2/17/1999	2/17/1999	2/17/1999	0	0	Complete
CD-3b Continue Construction	L-1-2	3/31/1999	5/21/1999	5/21/1999	(51)	0	Complete
MINOS Steel Purchase Subcontract Awarded	L-2-1	4/1/1999	3/15/1999	3/15/1999	17	0	Complete
Top of Soudan #8 Mineshaft Located with GPS	L-2-2	6/28/1999	6/16/1999	6/16/1999	12	0	Complete
Far Detector Prototype Erected	L-1-3	1/17/2000	11/10/1999	11/10/1999	68	0	Complete
NTP Issued for Fermilab Underground Subcontract	L-2-3	3/6/2000	3/6/2000	3/6/2000	0	0	Complete
High Current Pulse into Prototype Horn	L-2-4	3/14/2000	7/14/2000	7/14/2000	(122)	0	Complete
CalTech Factory Commissioned	L-2-6	9/29/2000	9/1/2000	9/1/2000	28	0	Complete
Far Detector Excavation Complete	L-1-4	10/2/2000	12/22/2000	12/22/2000	(81)	0	Complete
Fermilab Underground Construction 50% Complete	L-2-5	2/6/2001	6/29/2001	6/29/2001	(143)	0	Complete
Magnets for MI Stub Refurbished	L-2-8	4/30/2001	4/30/2001	4/30/2001	0	0	Complete
Outfitting of Far Detector Enclosure Complete	L-2-9	4/30/2001	7/19/2001	7/19/2001	(80)	0	Complete
Cosmic Rays Observed in Far Detector	L-2-10	3/22/2002	8/31/2001	8/31/2001	203	0	Complete
Technology Choice Made for Muon Monitors	L-2-16	5/30/2002	12/10/2001	12/10/2001	171	0	Complete
Service Building & Outfitting Bid Package Out	L-1-10	7/30/2002	2/25/2002	2/25/2002	155	0	Complete
75% Scintillator Produced	L-2-19	8/30/2002	5/24/2002	5/24/2002	98	0	Complete
Near Detector Hall Excavation Complete	L-2-7	12/30/2002	8/30/2002	8/30/2002	122	0	Complete
Target Hall Excavation Complete	L-1-5	12/30/2002	10/4/2002	10/4/2002	87	0	Complete
Lambertson & C-Magnets Assembled & Tested	L-2-12	2/1/2003	10/31/2002	10/31/2002	93	0	Complete
First Far Detector Super Mod Complete & Tested	L-1-7	3/15/2003	7/24/2002	7/24/2002	234	0	Complete
Inner & Outer Conductors for First Production Horn Assembled	L-1-6	4/14/2003	2/5/2003	2/5/2003	68	0	Complete
Target Service Building Shell Complete	L-2-18	9/30/2003	6/17/2003	6/17/2003	105	0	Complete
Near Plane Pre-assembly Complete	L-2-20	10/10/2003	12/17/2002	12/17/2002	297	0	Complete
Far Detector Complete & Tested	L-1-8	4/25/2004	7/9/2003	7/9/2003	291	0	Complete
Beneficial Occupancy of Service Buildings at Fermilab	L-2-11	5/31/2004	3/10/2004	3/10/2004	82	0	Complete
Start Commissioning with Both Near and Far DAQ	L-2-21	8/30/2004	6/9/2004	6/9/2004	82	0	
Complete Installation of Horn Power Supply	L-2-17	9/1/2004	6/11/2004	6/11/2004	82	0	
MI Stub Installation Complete	L-2-15	3/11/2005	10/7/2004	11/1/2004	130	(25)	
Near Detector Complete & Tested	L-2-14	3/31/2005	12/27/2004	12/27/2004	94	0	
First Horn Installed	L-2-13	4/7/2005	6/24/2004	6/25/2004	286	(1)	
Start Commissioning	L-1-9	9/1/2005	12/22/2004	12/22/2004	253	0	
CD-4 Start Operations	L-0-3	9/30/2005	2/1/2005	2/1/2005	241	0	End of Commissioning

IV. FUNDING SUMMARY (K$)

Funding Summary (as of 4/30/2004), amounts in thousands

YEAR	TEC (NuMI Facility) Appropriations	OPC (MINOS, Soudan) Obligations
		Actual costs through FY03. Plan from Baseline Change Proposal
Prior FY's	0	1,417 actual
FY98	5,500	2,348 actual
FY99	14,300	4,114 actual
FY00	22,000	11,324 actual
FY01	22,949[1]	13,598 actual
FY02	11,400	17,227 actual
FY03	19,842[1,2,3]	7,067 actual
FY04	12,426[2,4]	4,605 balance
		Future Funding Plan
FY05	825[2,3,4]	500
TOTALS	**109,242**	**62,200**

Note [1]: FY01 Rescission removed $51K from plant line and $26K from OPC. We planned the restoration of these funds in FY03.

Note [2]: FY03, FY04, and FYY05 plant line funds as recommended for inclusion in the Baseline Change Proposal by the September DOE Review and approved in December 2001. This is the $33.042M in additional funding in the rebaseline proposal from Project Management.

Note [3]: FY03 Rescission removed $251K from plant line. We show the restoration of these funds in FY05.

Note [4]: FY04 Rescission removed $73.750K from plant line. We show the restoration of these funds in FY05.

TEC Funding Appropriated, Not yet authorized
6,426

Total TEC funding authorized
101,991

TEC Obligations to date, (Not including requisitions in progress)
99,705 58,349 **OPC Obligations to date**

TEC Funding authorized but not obligated
2,286

V. NARRATIVE HIGHLIGHTS

MANAGEMENT HIGHLIGHTS – G. Bock

No significant change requests were processed this month.

On April 28, Dixon Bogert was appointed WBS1.1.4 Co-Level 3 Manager along with Cat James in order to concentrate on the absorber installation effort. Dixon replaces Bob Bernstein who is leading the Fermilab Survey and Alignment Group. Dixon retains his deputy project manager position as well.

The Project continues to report its progress against its own plan, which has a more aggressive schedule than that required by DOE milestones. The Project Support staff has developed a chart that provides the DOE NuMI Project Manager with a progress report against the DOE milestones.

Procurement Highlights – R. Huite

NuMI Tunnels and Halls (T&H) -- (NuMI Closeout Team)

The NuMI T&H Closeout Team consists of W. D. Wightman & Company (T. Wightman – Lead Negotiator), R. Helmuth (Claims professional); and Montgomery Watson Harza (J. Kovacich – Technical Support). Fermilab support continues to be provided by C. Laughton – BD/NuMI, R. Huite – BSS/Procurement and G. Leonard, BSS/Legal. The NuMI T&H Closeout Team continues to evaluate Disputes Review Board (DRB) issues, S. A. Healy potential change orders/claims, Fermilab's Counter Claim, and other issues. Additional outside consultants/professionals are retained as the NuMI Closeout Team may require. The closeout team continues to responsible for the timely and effective closeout of the S. A. Healy contract.

On September 29, 2003, the Fermilab Director authorized Mr. W. D. Wightman to negotiate on behalf of Universities Research Association, Inc. with S. A. Healy representative(s) for the settlement of their claims engendered by their work under the NuMI T&H Contract. Mr. Wightman is authorized to represent URA in all matters relating to the settlement of these claims involving the Disputes Review Board, outside consultants and other interested parties.

BSS/Procurement continues to provide oversight of the subcontract terms and conditions, and tracking of invoice/payment; ensuring compliance with the Fermilab Procurement Policy and Procedures manual continues to be provided by the NuMI Procurement Administrator.

Six disputes have been presented to the Disputes Review Board and recommendations have been received on all six of the issues.

On December 1, 2003, Fermilab requested that the DRB panel members resign from their positions immediately. On December 18, 2003, S. A. Healy was encouraged to join with Fermilab to reconstitute a new DRB panel and move forward in a joint effort to reconcile the outstanding matters between the parties. On January 7, 2004, Fermilab sent a letter to S. A.

Healy with Fermilab's nomination of a replacement DRB Member. S. A. Healy has not advised of their acceptance or rejection of Fermilab's nominee.

On March 31, 2004, SAH filed a Demand for Arbitration on two issues that SAH has identified as "counts" in its Demand. The first count of the Demand requests the American Arbitration Associations (AAA) issue an order directing URA to rescind its termination of its DRB panel member. The second count seeks an order barring URA from interfering with continued deliberation and issuance of a recommendation concerning SAH's "Decay Tunnel Bad Ground Claim" by the DRB members. On April 28, 2004, a letter sent to AAA constituted the comments of URA. In that letter, URA agreed to the submission of the first count to arbitration but objects to the exercise of jurisdiction of the AAA to hear the second count.

The S. A. Healy's subcontract No. 527522 totals $34,629,667 through Supplemental Agreement No. 16. The total amount invoiced from S. A. Healy to date is $34,480,116 through and including Invoice No. 68 Rev. 1. Payment has been made in the amount of $31,621,265.36 and $2,858,850.64 retained.

There are a total of 60 pending open claims/change orders. Of this number, 4 have been denied and 19 are pending execution of Supplemental Agreement No. 17. The parties have exchanged all outstanding claims except for about eight that S. A. Healy has "reserved their rights" for later presentation.

NuMI Service Buildings and Outfitting

The subcontract was awarded to Ragnar Benson, Inc. (RBI), of Park Ridge, Illinois in the amount of $17,880,000 million. The NuMI SB&O Construction Manager for this subcontract is Elaine McCluskey. The Business Services Section/Senior Procurement Administrator is R. Cibic.

The RBI's subcontract No. 546631 totals $20,570,556.92 through Supplemental Agreement No. 14 (an increase of $149,947.78). The total amount invoiced from RBI to date is $20,558,451.36 through and including Invoice No. 9697, dated 08-Apr-2004, in the amount of $290,533.18. Payment has been made in the amount of $19,735,789.29 and $827,713.07 retained. The amount retained was reduced from six (6) percent to four (4) percent based on the subcontract Incentive Program for fieldwork completed satisfactorily.

On June 19, 2003, RBI submitted their formal claim for the victaulic pipe run up the Decay Pipe Walkway pursuant to Exhibit D of the subcontract. Fermilab is in the process of reviewing and developing its strategy.

Beneficial Occupancy for the Target site occurred on October 20, 2003, one item out of 179 punch list items remains outstanding.

Beneficial occupancy for the MINOS site occurred on March 10, 2004, three items out of 194 punch list items remain outstanding.

NuMI Technical Components

The Procurement Coordinator continues to be available to assist the NuMI Project relating to NuMI Technical components issues.

NuMI FACILITY AT FERMILAB
TECHNICAL COMPONENTS (WBS 1.1) – B. Baller, N. Grossman

Overview

Installation of technical components in the target hall continues on or ahead of schedule. The start of absorber installation was delayed due to a failure of the electric forklift during testing. The forklift was returned to the manufacturer. We have developed an alternate installation plan utilizing an existing winch and plan to start installation in May. All milestones that were due in April were achieved in previous months.

We held a commissioning workshop on April 15 to refine the beam commissioning steps required to reach the CD-4 and physics goals. Workshop participants included representatives from Accelerator Division management, Operations, NuMI project staff and the External Beams department. We agreed on the overall scheme of commissioning on a separate NuMI cycle and the steps needed to achieve CD-4.

Integration and Installation – R. Andrews

General Remarks

The Accelerator Complex performed very well during the month of April, so there were no unscheduled shutdowns. During this month, we continued to attend the daily Integration Meetings conducted by the AD Operations Dept. to make our needs known, and to make sure we are informed of any scheduling changes that will allow us a short access.

The MI-65 installation continues and remains on schedule.

The installation of the detector for MINOS has now worked through the start up phase, and the procedures have been further refined to allow installation to proceed at the pace of 5 plates/day, and the ability to interleave Absorber block installation (this will begin in May.)

Main Injector

There were no scheduled shutdowns or short accesses during the month of April.

MI-65

Installation activities in April were focused in the Target Hall, although there were notable efforts in the underground support rooms and the lower Carrier and Pre-target enclosures.

In the Target Hall, construction of the Work Cell continued. Both east and west walls were completed, top rails were installed, and a majority of the north steel wall was placed. Assembly of the Work Cell will continue in May. Additional "R" blocks were placed on the Target Pile to form a 60-foot by 19-foot work area. The work area is to accommodate assembly of the horn power transmission stripline and provide temporary storage for the horn and target "T" blocks.

A test was performed to assure an R block could be pulled from any position atop the target pile when operating the crane from a remote position. Because the Target Pile sits at a 3.348 degree angle to the crane rails and the world, each R block shield placed over the Target Pile is captured and requires special rigging to be extracted. The test was completed to establish typical spacing between the blocks and rigging configuration required to remove a block from the R block cover.

Nine Corrector magnets with stands and adjusters were installed in the Lower Carrier and Pre-Target enclosures. In addition all magnets, including quads, dipoles and correctors were outfitted with klixons, LCW, and power cables. LCW is now circulating through the Carrier and Pre-Target magnets. Installation of the interlock systems continued through the Carrier and Pre-Target enclosures and into the Emergency Passageway.

In the Support Rooms, the power supplies were outfitted with AC power and controls. In addition, the horn power supply/capacitor bank was equipped with thermo expansion rollers. In the RAW Room, the RAW skids for the horns, target, and decay pipe were placed in their final location and the manifold piping completed.

MINOS

General work activity in the MINOS SB includes warranty work done by RBI subcontractors on chiller water circulating pumps, fan bearing, controls work on the ventilation system and the fire protection system.

The installation of all piping and electrical work associated with LCW skids and the vacuum skid at the absorber were completed in April. Additionally near the absorber, the installation, cable tray and electrical work on the 6 relay racks for controls and Muon detector electronics was completed.

Assembly of the absorber has not yet started because the large electric fork truck has not returned from repair. A winch scheme is being implemented as an alternative to using the fork truck to move absorber parts between the shaft and the absorber. Work on absorber assembly will begin in the first part of May.

Activities using the crane for moving equipment through the shaft is being done using subcontractor Taft (with one ironworker at the top and one ironworker at the bottom). Since the move to using Taft for shaft activity, the operation has worked very smoothly.

Sump pump #2 has been re-installed and re-removed during April. It is believed that the first pump had a defective motor. Pinched wires near the pump and not the pump itself caused the second problem.

Water mitigation is an ongoing activity in the tunnel. Many improvements have been made. The main area yet to be addressed is at the base of the shaft; parts are in process to improve drainage in the shaft area.

Pipe fitters have completed piping and connection of the LCW skid in the MINOS Hall, and have moved on to the target area. The T&M electricians have completed the installation of all branch circuits that feed AC power to electronics and DAQ relay racks.

All electronics rack has been delivered to the MINOS Hall. Check out of the racks in ongoing.

The installation of detector planes in is full force. Planes 281 to 221 have been installed. Readout cabling and DAQ checkout continues.

Primary Beam (WBS 1.1.1) – S. Childress

Overview

Priority efforts for the primary beam system have included installation of corrector magnets in the Pre-target tunnel, initial tunnel testing of EPB dipole fringe field shields (to control fringe fields from NuMI magnets near the Recycler Ring), completion of component fabrication for the kicker load assemblies, beam instrumentation efforts, and beam control applications.

Magnets and Stands

Initial power on testing in the Main Injector tunnel of the effectiveness of EPB dipole fringe field shields have been conducted, with good results. Shields were installed for the steel bodies of two of the six dipoles in the HV101 magnet string, in near proximity to the Recycler ring. The two dipoles chosen, HV101-1 and HV101-6, allow testing with a complete range of tunnel positioning constraints for the full magnet string. Power feeds are currently run only to these two magnets.

Technical Division is currently fabricating a shield for the downstream end of HV101-6, along with components fabrication for the remaining dipole shields.

Corrector magnet installation has been completed in the Pre-target tunnel area. Also, Pre-target tunnel magnet power feeds have been completed, and LCW water connections have been made to all magnets in this region. A complete initial alignment of all pre-target magnets is now in progress.

Component fabrication is in progress for external cooling shields for the six 3Q quads that run at the highest currents.

Kicker Magnet System – C. Jensen

Work continues with high priority on finishing the load resistor assemblies for the magnets. All components for these have been fabricated, and final assembly is underway, with completion expected during May.

MI-60 service building cooling line installation is in progress, to be followed by electrical hook-up work in the same area. Installation at MI-60 of the complete kicker assembly is in progress, to enable full system operation testing (power supply, magnets, resistor loads, cooling), starting in early June. The magnets with resistor load assemblies will then be installed in the Main Injector tunnel during the '04 shutdown scheduled to start in late August.

Beam Instrumentation – D. Harris

Beam Loss Monitors

Gianni Tassotto has visited the vendor who supplied the faulty sealed loss monitors, and design modifications have been agreed to, that should address the HV breakdown problems. A modified BLM has been built, tested by the vendor, and is being shipped to Fermilab for testing during the first week of May. It is expected that production of the remaining 30 BLM units needed for NuMI will be resumed shortly, with completion in June.

Profile Monitors

The first complete SEM profile monitor was delivered to Fermilab from Texas on April 16, along with one foil paddle for 'extreme condition' testing. Alignment referencing and final preparation work will be done at the Proton Assembly Building, with efforts coordinated by Cary Kendziora.

Production efforts continue in Austin for the other profile monitors. Foils for the 0.5 mm pitch targeting monitors have now been etched and cleaned. Assembly of the 1 mm foils is approximately 50% completed.

Analysis of data with the prototype monitor in the MiniBooNE beam test show that a 59 micron beam centroid resolution was achieved with the 1 mm pitch foils and a beam sigma of about 3 mm.

Backup Multiwires: (FNAL units)

Vacuum cans have been delivered for the 6 multi-wires being built, and delivered to the PAB shop for checkout. Almost all component parts are in hand to enable assembly during May.

Toroids

Beam toroid fabrication is complete, and stand design is near completion.

BPMs

Drawings were completed for the alignment fiducialization plates for the BPM's, and two plates were built. Most component parts for the electronics are now in hand. Filter matching is in progress for the two read-outs of each detector. The design of the calibration board was completed this month.

Main Injector Instrumentation

A. Godley (U. South Carolina) has worked out the specs for the batch-by-batch intensity monitor for the Main Injector. An existing resistive wall monitor in the Main Injector will provide the beam signals.

Beam Control Applications – P. Lucas

Efforts are proceeding well, working with W. Kissel of the Accelerator Division Operations Dept., to establish the appropriate NuMI beam control applications pages for beam commissioning and operation. These include power supply control, system utilities, instrumentation readout, and AUTOTUNE beam control. A. Wehmann is coordinating system group data base entry efforts for NuMI devices.

Beam Permit System – R. Ducar

New Beam Permit System hardware continues to successfully support MiniBooNE operations. As more Controls hardware comes on-line, testing of the new Beam Permit System is expected to commence shortly. Special attention will be given to monitoring P150 line loss monitors.

Neutrino Beam Devices (WBS 1.1.2) – J. Hylen, D. Ayres, K. Anderson, A. Stefanik

I. Magnetic Focusing Horns

Horn 1 and Horn 2. The survey crew referenced the tooling balls to the horns. Some minor work on re-installation of instrumentation lines remains. We expect to move the first horn down into the target hall at the end of May.

Horn integration. The electrical standoffs in the horn hangers were rebuilt and have passed hi-pot testing. The water lines between the horn drain water tank and the horn hanger were installed. We plan to do the test of sucking water from the tank with the RAW skid soon after the horn is lowered into the target hall.

II. Target

The upstream beryllium vacuum window was installed on the target. Wiring was run from the target Budal pin-outs to the target cradle.

We plan to re-use the vacuum pump and related equipment from the prototype target test for the final target vacuum/helium system, but integration work remains to be done on this system.

III. Modules

Horn 1 Module. Horn 1 module is ready for installation, which is planned for May.

Horn 2 Module. Horn 2 module is ready for installation.

Target/Baffle Module. Limit switches and LVDT position read-back were installed. Tests of remote mounting of the target/baffle carrier on the module showed that a better lead-in for the target motion drive shaft is needed; the modification is fairly minor and will be completed early in June. While the motor drive positioning system has been run, precise calibration of module motion remains to be done. Installation is planned for July.

Remote Clamp/Stripline block. The remote clamp / stripline blocks for both horn 1 and horn 2 are ready for installation in the target hall.

IV. Target Carrier and Baffle

The carrier with target and baffle in place was mounted on the module, and alignment work has begun. A significant amount of integration work remains, including connection of water and instrumentation lines. Assembly and testing of the carrier will continue through May and probably extend into June.

The milestone date for L-3-309 "Assembly of Target Baffle on Module Complete" is 7/5/04, which we are on track to achieve.

V. Target Hall Shielding/Cooling

Air Cooling System. The RFQs for chiller, coil and blower are out for quotations. Installation is planned for August.

Concrete Covers. 78% of the "R"-block concrete shielding blocks were delivered. Production of the remainder was supposed to be completed in March; the vendor is thus late. However, the rest are not needed until September.

VI. Radioactive component handling

Work cell. Work cell parts are in hand and installation in the target hall is underway (see below).

Cameras. Much progress was made on the camera system for remote handling of radio-activated components. The system for module handling includes four lasers, eight cameras, four-channel multiplex video with wireless transmission, and six remote pan/tilt/zoom focus modules. About half of the equipment has now been ordered.

Lifting/Transportation fixtures. The modification of a shielding block basket so that it can also transport T-blocks has been done. A lifting fixture for remote handling of blue shielding blocks needs to be built before hot-handling practice begins in the target hall.

VII. Instrumentation/Electronics

Specifications for nearly all the instrumentation cabling are complete. The ionization chamber mount/feed-through for the horn cross-hair system is under construction in Brazil. The front-end cards for target hall instrumentation are under construction by ANL.

VIII. Installation

The installation of target pile shielding is almost as far done as it can be until after horn module installation. The top-cover R-blocks over the down-stream half of the target hall were installed, as well as an R-block stack that acts as a T-block storage rack in the target hall.

The work cell sidewalls and most of the back wall are now installed. The next tasks are the alignment of the module-support rails at the top of the work cell, and the installation of the remote lift table. The work cell is required to mount horns on modules in the target hall before they can be placed in the target pile chase. Installation of the powered front door for the work cell is not on the critical path, and will be done after horn installation.

The remainder of the rails with V-blocks that set the position of the removable T-block shielding were installed in April.

Other remaining installation items are: horn module carriages, removable shielding steel T-blocks and concrete R-block covers, pre-target shielding block wall, target module, horn modules, re-circulating air system, camera system, target vacuum/helium system, cross-hair ionization chambers, and instrumentation cabling.

The date for milestone L-3-254 "Complete Placement of Horn 1 into Target Station" is 7/19/04. The date for milestone L-3-314 "Complete Placement of Horn 2 Assembly into Target Station" is 8/9/04. Both the progress with target hall shielding installation and the component/module integration are on track to achieve these on schedule. The other remaining milestones are L-3-270 "Target & Horn Installation Complete" (10/8/04), L-3-290 "Shielding Installation Complete (Pre-Radioactive Component Handling)" (11/18/04) and L-3-295 "Pulse & Checkout Horn System Complete" (12/7/04).

IX. Administrative/Project Management

Milestones for the next six months are called out in the above text. The item currently on the critical path is work cell installation, which is on schedule. The major components (horns, target/baffle carrier, modules) are on track to be ready by the scheduled installation-early dates.

Physicist, engineering, drafting, technician, installation team, and survey resources are at reasonable levels.

Power Supply Systems (WBS 1.1.3) – G. Krafczyk

Overview - G. Krafczyk

Stripline construction got under way in earnest this month. Parts for the walkway stripline are underground and welding/assembly has started. Installation of the kicker PFN also started and will continue for the next couple of months, with load tests planned before the magnets are installed in September.

Horn Power Supply - K. Bourkland

Additional work was carried out to connect electronic controls to capacitor bank. 95% of connections have been completed with approximately 75% verified for proper operation. We are still waiting for activation of the Camac system in THSR in order to complete this task. We are anticipating activation of Camac controls to coincide with a future shutdown to minimize the risk of affecting accelerator operations.

All 120 v. power was established to control electronics, PEI supplies and capacitor bank. Installation of 480 Vac power to PEIs and completion of 900 mcm grounding remains but is on the electricians' work schedule.

Transmission Lines - D. Tinsley

Jim Kilmer is working on penetration stripline air blower assembly.

Both module striplines have been assembled. Steel connection clamps have been received at MI-8. The first chase stripline has been assembled. The second chase stripline has been welded, and is ready for assembly.

We have received the walkway main support columns and C-channels at MI-8.

Extraction Kicker Power Supply - C. Jensen

The PFN was moved to MI_60S for installation. Thyratron tests continued at the end of the month.

Conventional Power Supplies - S. Hays

The filter racks for LAM60 and LAM61 were moved to MI-60. They will be connected during May and will then be ready for testing. Ramping of the 20kw PEI supply on the magnet continued through the month. Connecting of the 13.8kv to the HV108 supply at MI-62 was completed and the control wire is being connected. Work continued on the HV118 loop at MI-65, the supplies are being upgraded to the latest controls issue and are ready for the power cable to be connected.

Decay Region & Hadron Absorber (WBS 1.1.4) – D. Bogert, C. James

In March we reported the failure of the large forklift truck to transport test loads up the hill to the absorber as specified. During April, information was received from the large electric forklift truck manufacturer concerning proposed remediation required for the forklift truck to function to specification. The manufacturer proposed two alterations: 1) An increase of the electric motor power capacity by 15%, and 2) An approximately factor of two reduction in the drive gear ratio. The revised motor was quoted with a four-week delivery, but the alternate gear drive ratio was quoted with a twelve-week delivery. From the project schedule perspective, a twelve-week deferral of the absorber assembly is undesirable, even unacceptable. Therefore, an alternate plan has been developed, although the eventual delivery of a forklift truck by the manufacturer to our original specifications is still expected. The alternate plan involves the following major changes in approach. 1) For the transport of heavy (order 10 ton) blocks up the absorber access slope, the

winch previously used to deliver magnets up the pre-target/carrier tunnel slopes will be employed. Both the weight of the blocks and the slope angle is less than already encountered for magnet installation. The length of the travel is, however, marginally longer. An appropriately longer cable may be wound on this winch's cable drum; the longer cable has been ordered and installed on the drum. The winch has been moved to the top of the absorber access grade and will be mounted there in May. The round trip time for the winch cable is one hour; this effectively limits the system to a total of about 5 blocks transported uphill per day (less than half the number planned using the fork lift truck), but the project can afford the stretch out of this work if it is started before mid-May. A smaller electric forklift truck has been rented by the riggers to drag the blocks from the top of the slope into the absorber hall. Within the absorber hall the blocks will be positioned using the hydraulic gantry system entirely, although if the large forklift truck is returned after four weeks with the larger motor (only), it may (also/alternately) be used for positioning of the blocks within the absorber pile.

The plans for delivery of the gantry tracks and hydraulic gantry to the absorber hall are complete and will commence the first week of May.

Fabrication of all other parts for the absorber pile continued on schedule; some floor spacers were found to have been incorrectly sized and will be revised in time for assembly to start in May.

A test of the decay pipe for vacuum tight performance was delayed from the last week of April to the first weekend of May for the convenience of the MINOS collaboration scientists who needed the weekend time for checkout of electronics prior to the scheduled return to England of the collaborators. The decay pipe vacuum pump out system was ready for the test on time.

Neutrino Beam Monitoring (WBS 1.1.5) – D. Harris, S. Kopp

Hadron Monitor assembly continued during the month of April in Austin. The support structures for the hadron monitor were delivered to Fermilab, and the long aluminum I-beams are being stored underground in the absorber hall. The construction of the calibration setup for the hadron monitor was completed during the month of April.

Design on the high voltage filter boxes continued, where a shorter circuit board is being considered to allow more clearance between the detector and the drip ceiling in alcove 1. A shorter circuit board would add concerns about ground loops.

Thanks to the commissioning workshop for NuMI, we have made a more detailed plan for commissioning the monitors themselves, and also commissioning the NuMI beamline for physics. This in turn has forced us to begin specifying the software needs for the monitoring system.

Survey, Alignment & Geodesy (WBS 1.1.6) – W. Smart

Survey for the NuMI target pile installation continued with measurements of the installed positions of some steel shielding blocks, and installation alignment of T-block Rails, Carriage Pads and the work cell. Survey was also provided for horn and carriage assembly and referencing in MI-8.

"Rough" alignment of beam components, including trim magnets, continued in the carrier and pre-target tunnels. Alignment preparations for absorber installation were done in the absorber hall. The survey engineer effort for NuMI in April was 3.1 mw, with 0.6 mw for alignment preparations for MINOS near detector installation; 1.0 mw for target pile installation support; 1.0 for horn and target module referencing and assembly support; 0.8 mw used for the alignment of beam components in the carrier and pre-target areas; and 0.3 mw for preparation for absorber alignment. In addition, the survey engineer spent 1.3 mw on the MINOS task "near detector plane 231-281 installation QA".

Beamline Utilities (WBS 1.1.7) –D. Pushka

General

Activities presently underway for WBS 1.1.7 include: Running the MI-62 system with water, installing piping for the horn 1, horn 2, target and upstream decay pipe cooling systems, and starting the initial pump down of the decay pipe vacuum.

Instrumentation has been installed in MI-62 and is reading into the ACNET front end and is now on an ACNET parameter page.

Additionally, code has been written for the PLCs in the Target Hall Mechanical Support Room (THSR) and in the absorber access tunnel (AAT). Meanwhile, writing the PLC code for the PLC to be in MINOS has also been started.

Upstream LCW System

The system is being operated. Half of the magnets are valved in. Conductivity is good enough to allow powered testing of the magnets. The remaining magnets will be valved in on the first opportunity (requires a Main Injector access).

As reported last month, a recent addition to the scope of this system is the pond water pumps for PV-9, which will provide pond water to the heat exchanger in MI-62. The existing pond water pumps are not suitable (designed with too much head and too little flow) for the NuMI loads and require replacement with pumps that offer a larger flow but smaller head.

The RFQ for new PV-9 pond water pumps was issued in February and then re-issued in March. In April, quotes were received, evaluated, and none were found to be completely satisfactory. Discussions with the vendors are underway.

A CR to add the scope of PV-9 replacement pond water pumps to 1.1.7 has not yet been initiated.

Final Horn Raw System

The horn skids were placed in the MI-65 below ground mechanical support room on April 1st.

Drawings for the piping in the target hall have been completed and a piping contractor is pricing the work.

Piping in the RAW room to connect these skids is over 80% complete.

Upstream RAW System.

The target skid was placed in the MI-65 below ground mechanical support room in on April 1st.

Piping installation for the target skid in the RAW room is 50% complete.

Drawings for the piping in the target hall have been completed and a piping contractor is pricing the work.

Downstream (Absorber) RAW System.

Piping for the absorber RAW and absorber intermediate systems was installed under a fixed price contract. This work is complete.

Field wiring for the absorber RAW and absorber intermediate systems has been installed. Motors have not been bumped to check phase rotation.

Vacuum Decay Pipe Cooling

The work to tie between the existing copper lines and to the skid has been completed.

Field wiring for the decay pipe cooling systems has been installed. Motors have not been bumped to check phase rotation.

Extraction and Primary Beam Vacuum System

Layout drawings of the vacuum system for the pre-target area (complete with the material take-off lists) has been completed by Vic Madjanski and Gary Trotter (both of PPD/MD) with guidance from Mayling Wong (PPD/MD) and Jim Klen. A revision to these completed drawings was completed to note the instrumentation names on the drawing.

The long lead-time ion vacuum pumps have been ordered and all 56 have been received. Vacuum valves have been received and tested. Nearly all items have been received except for the metal EVAC seals. Parts were stored at MI-60 but have been moved to PAB. Technicians from PAB, led by Ron Davis, are taking the responsibility of installing this NuMI primary beam vacuum system.

Remaining vacuum work in the portion of the NuMI beamline in the Main Injector will require a shutdown to proceed. This work will likely be done during the summer shutdown.

Decay Pipe Vacuum System

The vacuum pump-out line has been installed between the downstream decay pipe end and the vacuum pump.

Field wiring for the decay pipe vacuum pump has been installed. Motors have been bumped to check phase rotation.

The Hazard Analysis (HA) for the initial decay pipe evacuation has been written and sent to Mike Andrews for review, and has been revised, re-submitted, etc. The HA is complete.

Equipment (filters, desiccant) for letting the vacuum vessel back up to atmosphere after the initial pump down test is completed have been specified and purchased.

The system has been tested and the initial pump down started. As of the end of April, the decay pipe had not reached full vacuum. The next monthly report (May) is expected to report on a successful pump down of the decay pipe.

Gas Systems

T&M work to run gas lines in the Main Injector tunnel and in MI-62 has been completed. Running the same lines into the target hall mechanical support areas remains to be completed.

Controls, Interlocks and Cable Installation (WBS 1.1.8) – R. Ducar

April activities were concentrated at MI-65 with some work being accomplished at MI-62 and MINOS Service Buildings. There was no work in the Main Injector enclosure. A one day access was cancelled.

FIRUS connections were reinstated at the PV-9 Pond Pump Vault near MI-62. One of the pre-existing pond water pumps was reconnected to afford circulation of pond water to the NuMI LCW System heat exchanger. Though the flow had to be reduced to keep motor current within nominal operating range, the flow is sufficient to allow continuous running of the NuMI LCW System.

Controls installation is nearly complete at the MI-65 Electronics Room and the underground Power Supply Support Room. Some misallocation of fiber paths has delayed the initial commissioning of links. Telephone installation at MI-65 and below is now essentially complete. Fluorescent fixtures and conduit were relocated in the Target Hall to avoid interference with planned target pile cooling ductwork. The 500 MCM conductors for the V118 B2 dipole string are now installed and terminated. Conductors for all other magnetic elements in the Lower Hobbit and Pre-Target areas are now terminated and connected. These conductors also include those for trim elements and klixons. The bulk power supply for trim elements was connected to 480 VAC power. Work is underway for installation of interlock conduit, hardware and wiring.

Underground of the MINOS Service Building, six Absorber Access Tunnel (AAT) equipment racks were installed and powered near the Absorber Hall. Some cable tray was also installed there for connection to the existing cable tray system. Telephone installation at MINOS and below is now complete. An interlock junction box was installed in the service building for inter-

connection of communication duct and shaft cables. Junction boxes for water system PLC controls were also installed. Sump pump #2 was reinstalled at MINOS, only to fail after approximately fourteen hours of use. Failed insulation on one of the motor's power leads appeared to be the problem this time.

Spreadsheets are being developed within the Controls Requirements document to facilitate assignment of analog monitor signals to specific MADC channels.

Milestones for 1.1.8 continue to be reviewed with a resulting assessment that completion dates are reasonable.

CIVIL CONSTRUCTION AT FERMILAB (WBS 1.2) – D. Bogert

Overview

On April 2, 2004 Ragnar Benson completed their project milestone #10, "Project Complete." Ragnar Benson was completely demobilized from the site on that date. At the end of April, all punch list items at the Target Area were complete, and only three items remained on the MINOS Area punch list.

Some warranty work was executed at both the Target and MINOS Areas during April. In all instances the response of Ragnar Benson and their subcontractors to warranty issues has been timely. At MINOS the most significant warranty items concerned sump pump #2 and some issues with the desiccant units. The sump pump #2 issue remained open at the end of April.

The project and the Construction Manager are completing a few "clean up" details. One area is the development of a plan to provide a "permanent" installation for the emergency diesel pump. Discussions with the FESS operations managers and their support staff to provide timely service and regular inspections of critical items continued.

Progress is being made to resolve the (very) few remaining contractual issues on the Ragnar Benson contract. Discussions have been businesslike and progress toward resolution is continuing.

The claims and contract closeout issues for the S. A. Healy contract again are discussed at length in the procurement portion of this monthly report. Additional discussions held during April between Fermilab and S. A. Healy did not lead to a global resolution of the outstanding issues.

Surface Buildings and Outfitting – E. McCluskey

At the Target Site, punchlist work was completed. Warranty items were addressed, including cranes and CHW pumps.

At the MINOS Site: Site work was completed. Punchlist items were completed, with only three items left outstanding at the end of April. Warranty work occurred on sump pump #2 and the desiccants.

The final major milestone, MS10 Project Complete, was completed as scheduled on April 2, 2004.

The CMO was disbanded except for the Construction Manager, who continues to receive support as required through FESS/Engineering and other Fermilab staff for closeout items.

Supplemental Agreement 14 was issued in April for $149,747.78, to bring the subcontract value to $20,570,556.91. Time was increased for MS9 and MS10 by one calendar day to account for electrical work on one of the ECs in the SA14.

The construction manager worked with RBI's project manager to come to resolution on the four outstanding claims on the project. An offer was made to settle two of the four, with requested response in early May. The construction manager is projecting Final Acceptance of the project and closeout during May.

MINOS DETECTORS (WBS 2.0) – R. Rameika

Overview

In April we completed the post-beneficial occupancy tasks needed to get ready for the start of detector installation, which officially began on April 12. All electronics racks were also delivered underground and the DAQ computers and software were installed.

Some examples of statistics for the production status at the end of the month are given below. (Production items that have been listed as 100% complete in prior months are not shown here.)

WBS	Near Detector Production Items	%Complete
2.5	Electronics Rack assembly	99%
2.5	Planes installed	23%
2.5	Planes commissioned (readout with DAQ)	3%

Electronics and Data Acquisition (WBS 2.3) – G. Pearce, P. Shanahan

Overview

The electronics production checkout in WBS 2.3.1 (Front End and Readout) and WBS 2.3.6 (Clock System) is complete, and only installation and commissioning remain. Activities related to these systems will only be reported as the installation tasks and milestones are completed.

The Data Acquisition (DAQ) system hardware for the Near Detector has been completely installed, and commissioned to the level of acquiring data independently from each of the 8 readout crates. Commissioning of simultaneous readout from multiple crates is underway. Further commissioning of the system will scale with electronics installation and commissioning.

Work on the Detector Control System (DCS) is focused on installation and commissioning of the Near Detector Rack Protection System (RPS). All RPS sensors have been installed. A power

supply refit is being applied to each RPS controller to eliminate noise being picked up by the Front End Electronics. All remaining DCS components have been procured, and will be installed in the Near Detector starting in May.

Data Acquisition Systems (WBS 2.3.4) – G. Pearce

Installation of the DAQ on the Near Detector began on April 14 and is now well under way. All three DAQ 'PC' racks were assembled above ground immediately prior to installation underground. These have been installed in their final position in the Near Detector hall where all network, serial and PVIC cabling was laid and the software installation and configuration completed. All eight VME ("Master") crates have been installed along the detector, outfitted with RIO processors and PVIC network cards and connected to the PC system; these have been configured as four PVIC branches of two crates each. Readout and data flow from each of the eight crates has been independently established using stand-alone DAQ test procedures and with the electronics-calibration mode (using at least one Minder module on each crate). Commissioning of simultaneous readout from all eight crates is currently under way. Readout of detector data will be assessed shortly when PMTs and dynode triggering are available from the detector. Scaling of the system will be checked as more electronics is installed.

Near Detector Installation (WBS 2.5) – C. James, J. Thron

This month marked the beginning of installing the detector planes underground in the MINOS hall, and by the end of the month 66 planes had been installed. This is the spectrometer section of the detector and so one plane out of every 5 is instrumented. An installation rate of 5 planes per day has proven to be quite comfortable, allowing the physicists shift crew to come in during the late afternoon to cable up the plane and check for light leaks. All the readout and DAQ racks were moved from the New Muon Lab and installed underground. Work on the inter-rack cabling and its labeling made good progress. With the LAN work finished early in the month, the DAQ experts were then able to start commissioning their system: networking the various readout computers, seeing test signals from the front-end electronics, and starting to communicate with the Light Injection system. The check out of the front-end electronics was begun.

As the planes were installed, each was surveyed using the Vulcan system, as was done at the far detector. For the first few planes the Fermilab surveyors also measure them, but later only came in once per week to check for sagging effects. The AD control system electronics was delivered and connected. The electricians finished wiring the AC outlets and the pipefitters worked on the LCW systems.

Preparation and documentation work continued in order to be granted Operational Readiness Clearance that would allow unattended operation of the electronics.

VI. ES&H HIGHLIGHTS – M. Andrews

Management Overview – M. Andrews

Mike Andrews, the NuMI Project ESH Coordinator and John Cassidy, NuMI Project Field Safety Coordinator continued to provide ES&H support for the Installation Phase of the NuMI

Project. Their primary efforts are to provide ES&H support to the floor managers and task managers for all installation activities. They also provide oversight of the implementation of the Time and Materials and Fixed Price subcontractors' safety programs, which includes concurring with the subcontractor on where improvements are needed and the priority for those improvements. Additional efforts include attending pre-shift safety meetings at MI-65 and MINOS to verify continuing improvement, hazard analysis review and participating in daily and weekly ES&H Inspections with the site Floor Manager and representatives from the DOE Fermi Area Office.

The NuMI Project ES&H Coordinator chairs a weekly meeting with members of the NuMI project management team to discuss work planning issues, ES&H/QA review updates and issues, hazard analysis issues, training issues, facility safety issues, and general ES&H program issues.

ES&H support personnel and NuMI/MINOS floor managers for the installation phase of the project meet on a daily basis to discuss the daily schedule, upcoming tasks, related ES&H requirements, hazard analysis, ES&H training and other ES&H issues. They also review and plan for upcoming tasks in the schedule.

NuMI Beam Safety Issues – M. Andrews

The NuMI Project ESH Coordinator (Mike Andrews) and the NuMI ES&H/QA Committee Chair (Keith Schuh) meet on a weekly basis to discuss and coordinate the process for completing upcoming equipment reviews by the committee. They also discuss the status of reviews that are in progress.

The committee has completed reviews on Engineering Notes for the NuMI Stripline Spreader Bar, the NuMI Target Hall T-Block Transporting Lifting Fixture, and the MINOS Electronics Rack Spreader Bar Lifting Fixture.

Weekly Installation Meetings continue to occur between NuMI Project ES&H personnel, Floor Managers and L2/L3 Managers. The topics discussed include installation procedures, hazard analyses, equipment ES&H/QA reviews and upcoming schedule issues.

The NuMI Project ES&H Coordinator and the Deputy for Installation have scheduled and completed multiple site tours of the MI-65 and MINOS sites, which were attended by numerous Accelerator and Particle Physics Division Department Heads. These tours were initiated to orient these individuals with regard to both above and below ground facilities.

Installation Safety – M. Andrews

A daily meeting is held between the MI-65 and MINOS Floor Managers, the NuMI Project ES&H Coordinator, and the Field Safety Coordinator to discuss installation activities for the day, upcoming activities, hazards analyses, installation procedures and ES&H/QA review status.

NuMI Project Management, FNAL ES&H Section, and DOE Area Office performed multiple ES&H reviews and audits during the month of April 2004. NuMI Project Management conducted ES&H Inspections on March 1st, 8th, 15th, 22nd, and 29th, 2004. Results of an

inspection were communicated to the MI-65 and MINOS Floor Managers at the close out meeting held immediately following the inspection.

MI-65 and MINOS Floor Managers are holding daily work planning meetings with all site workers, which includes a review of task hazards. T&M subcontractor personnel are holding weekly toolbox meetings. NuMI Project Management is monitoring these meetings on a regular basis.

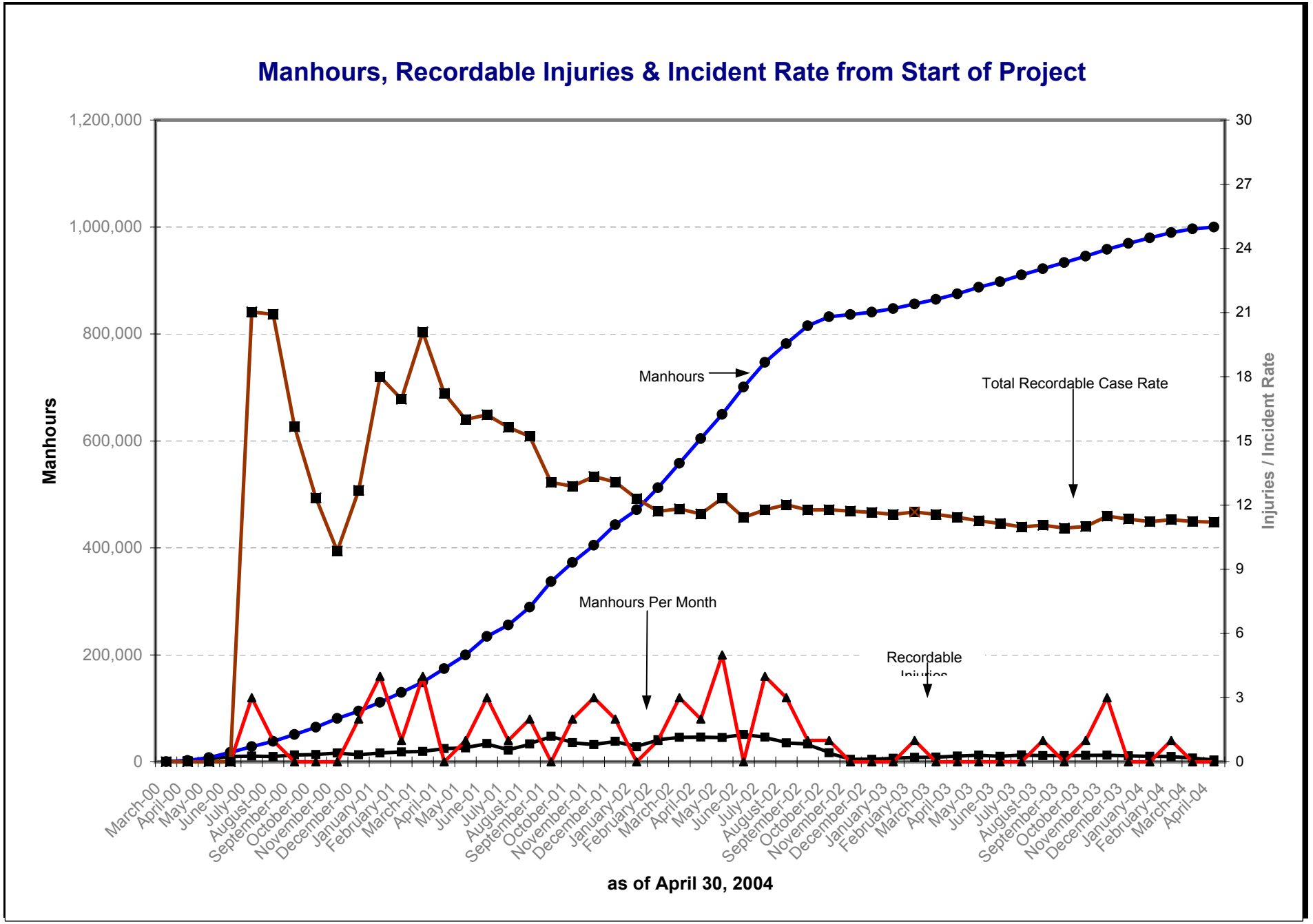
Task Managers are developing task related HAs and submitting Hazard Analysis documentation for review and acceptance to the NuMI Field Safety Coordinator for all new tasks. ES&H personnel and Floor Managers also met with members of the Fermi support groups to review tasks and explain the requirements to complete those tasks, as they relate to schedule and ESH.

There were no OSHA-recordable injuries during the month of April 2004. The NuMI Project has completed 70 days without an OSHA-recordable injury or illness.

Project Safety Performance

Safety Performance for the NuMI Construction/Installation Project for 2004 Calendar Year to Date includes a Recordable Incident Rate of 6.6**,** a Lost Time Incident Rate of 0.0, and a Lost Workday Incident Rate of 0.0. The Project to Date Safety Performance includes a Recordable Incident Rate of 11.2, a Lost Time Incident Rate of 2.6, and a Lost Workday Incident Rate of 7.2. Figure 2 shows man-hours worked, and recordable injury and incident rates from the start of the NuMI construction subcontracts through April 2004.

NuMI TUNNEL and HALLS PROJECT
CONTRACTOR'S INJURY DATA



MINOS Safety – D. Boehnlein

The RPS units in the MINOS racks have undergone a safety review for a minor modification. The modification is to provide power for the unit from an external low voltage power supply, bypassing the internal power supply, which was found to produce RF noise. The review found no safety concerns with the modification and the RPS units are now being modified.

Job Hazard Analyses have been prepared for shift physicist underground activities. These include detector plane cabling work, work on or inside electronics racks, and work with the high voltage system or distribution. All physicists working underground are required to read these and sign a sheet indicating that they have done so.

The MINOS group plans to operate the high voltage distribution system, the light injection system, and the data acquisition system in unattended mode in the near future. A request for a partial operational readiness clearance for these subsystems is being prepared. When complete, it will be submitted to the safety committee.

Radiation Safety – N. Grossman

The NuMI air and groundwater calculations have been completed, reviewed and incorporated into the NuMI Shielding Assessment. Comments from AD ES&H and the Fermilab ES&H Section on the NuMI Shielding Assessment were also addressed. The Shielding Assessment is now complete and awaiting the sign-off of the transverse and longitudinal spreadsheets. It will then be ready to go to the AD Shielding Review Committee.

A second draft NuMI SAD, incorporating the updated work people had done on various sections, is in progress. Monthly NuMI SA/SAD meetings continue with FNAL and DOE personnel. Weekly meetings/discussions with AD ES&H and the Fermilab ES&H section continue to occur to address questions/comments as they arise.

VII. LEVEL 3 MILESTONES

The current NuMI/MINOS Level 3 Milestones are shown in Figure 3. Milestones for the period 2/04 to 9/05 are shown. The triangles are the fixed Fermilab milestones. Note that we show L3 milestones along with the new "L-3-n" identifiers. Actual dates of achieving milestones are shown as black diamonds. Currently projected dates for achieving milestones are shown as hollow diamonds. Projected milestone dates which differ from the fixed Fermilab milestone dates by more than two weeks are flagged as **<Late>** or **<Early>**.

VIII. VARIANCE ANALYSIS – G. Bock

Variances are reported in the cost and schedule reports against the NuMI Project's plan, which is considerably more aggressive than that required by the DOE milestones. In all cases the project remains comfortably ahead of schedule with respect to the DOE milestones and within baseline cost.

We include the Variance Summary Table. Cost and schedule variances against the project's plan are extracted from the Cost Tables in Section IX and shown here at Level 2.

DOE MILESTONES

Planning for installation and commissioning continues to be a focus for the final stages of the NuMI project. The forecast date for DOE Milestone L-2-15 (MI Stub installation complete has been extended 25 days to November 1, 2004 in keeping with the current accelerator shutdown schedule. There were no significant changes in the forecast dates for any of the remaining DOE milestones. The forecast dates for all remaining DOE milestones continue to include comfortable amounts of float.

NuMI (WBS 1.1)

The schedule variance is large and positive reflecting the continuing good progress on this effort. A new effort reporting system in the Accelerator Division has inadvertently resulted in a large false negative cost variance of about $450K this month. The error was noticed too late to correct in time for this report, but will be fixed over the next month. Thus, a negative cost variance reported of ($940K) is reported for this month. After correcting for the accounting error and the spares costs top be transferred later the true variance is negative and is about $220K. Some positive variances developing elsewhere within WBS 1.1 may offset the remaining negative variances in the Technical Components. Project management is paying careful attention to this, but remains pleased at the overall cost performance here.

NuMI (WBS 1.2)

Schedule variance: The work is complete. There is no schedule variance.

Cost variance: A negative variance arises principally from an accrual against potential future claim settlements from work on the tunneling project.

NuMI (WBS 1.3)

Cost variance: There is a favorable cost variance reported at $434K.

MINOS (WBS 2)

Cost and Schedule variances: Closeouts of WBS 2 elements continue. As expected, no major negative or positive variances resulted from the Near Detector Installation re-planning activity completed this month.

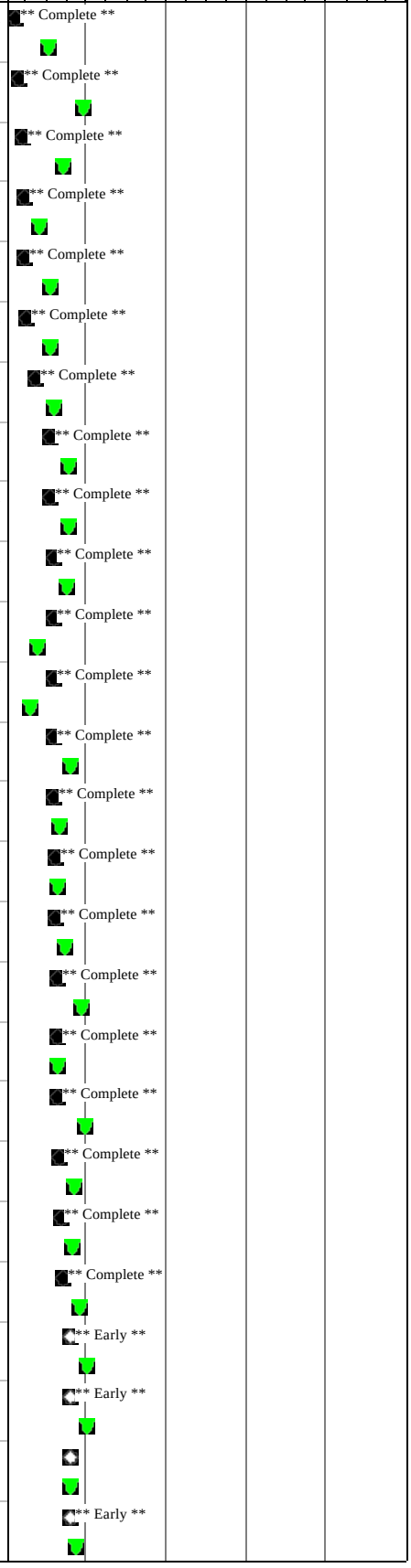
MINOS Cavern and Project Support (WBS 3)

The MINOS Cavern outfitting is complete. There are no significant variances in WBS 3.

NuMI WBS Level 3 Milestones
(1/2004 - 9/2005)

5/26/04

Mlstn#	WBS Lev	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-335	111	Complete Beam Permit System Input Parameters	9/22/03	2/20/04	0 d
L-3-215	111	Lambertson Magnet Installation Complete	10/10/03	7/23/04	0 d
L-3-219	111	Extraction Devices Ready for Installation	10/23/03	4/30/04	0 d
L-3-329	111	MI & Stub Magnets Installed & Ready for Low Power Testing	11/3/03	1/15/04	0 d
L-3-216	112	Assembly of Horn 2 Module Complete	11/4/03	2/26/04	0 d
L-3-210	114	Start of U.S. VacuumEndcap Installation	11/10/03	2/27/04	0 d
L-3-213	115	Muon Monitors Ready for Installation	12/23/03	3/19/04	0 d
L-3-308	112	Assy of Horn 2 & Module Complete	2/27/04	5/20/04	0 d
L-3-195	113	Kicker Power Supply Construction Complete	2/27/04	5/20/04	0 d
L-3-234	118	Fiber Optic Cable Installation Complete	3/10/04	5/12/04	0 d
L-3-218	120	B.O. of MINOS Shaft, Absorber, MINOS Tunnel & MINOS Hall	3/10/04	12/26/03	0 d
L-3-211	120	MINOS Service Bldg Complete	3/10/04	11/26/03	0 d
L-3-238	114	All Hadron Absorber Core Material Delivered	3/11/04	5/31/04	0 d
L-3-235	112	Assy of Target/Baffle Module Complete	3/19/04	4/8/04	0 d
L-3-212	112	Assy of Horn 1 & Module Complete	3/22/04	3/29/04	0 d
L-3-315	112	Targ Pile Carriage Pads on Concrete Install Compl	3/26/04	5/3/04	0 d
L-3-214	118	FIRUS Cable System Installation Complete	3/29/04	7/14/04	0 d
L-3-310	112	Install Bottom Shielding Complete	3/31/04	4/2/04	0 d
L-3-236	116	Network in Target Hall	3/31/04	8/6/04	0 d
L-3-231	117	All Water System Skids Installed in Enclosures	4/5/04	6/14/04	0 d
L-3-330	111	Low Power Test of MI Magnets Started	4/15/04	6/7/04	0 d
L-3-250	113	Power Supply Refurbishing Complete	4/26/04	7/9/04	0 d
L-3-239	114	Test of VacuumIntegrity Complete	5/27/04	8/13/04	95 d
L-3-217	115	Downstream Hadron Monitors Ready for Installation	5/27/04	8/9/04	144 d
L-3-320	113	Receipt of Major Transmission Line Materials & Parts	5/28/04	6/1/04	111 d
L-3-230	111	Kicker Ready to Install	5/28/04	6/29/04	80 d

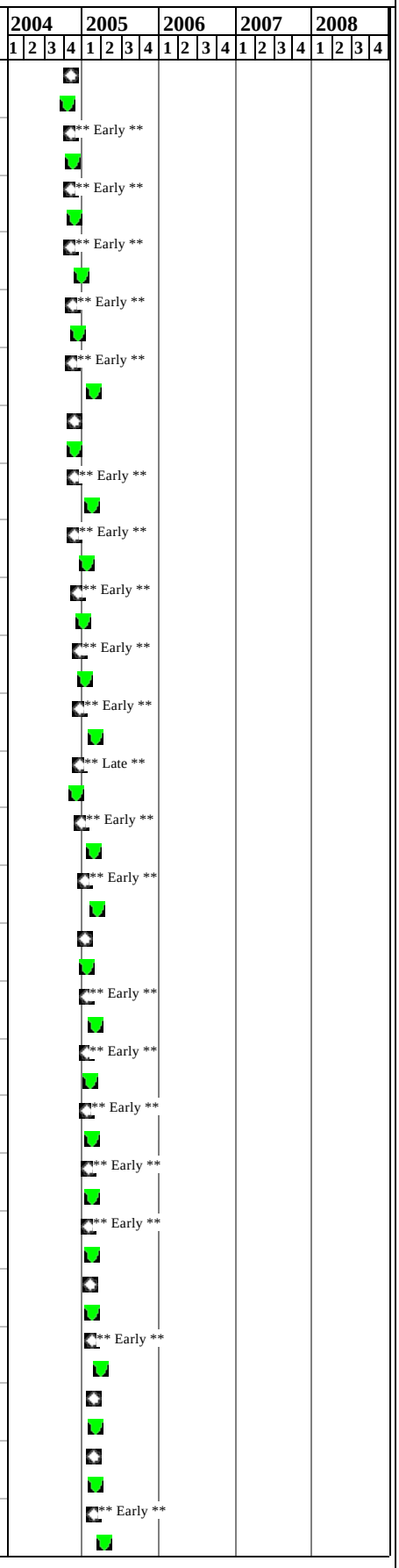


FNAL Current Forecast FNAL Baseline Date Milestone Complete

NuMI WBS Level 3 Milestones
(1/2004 - 9/2005)

5/26/04

Mlstn#	WBS Lev	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-199	113	Compl Install of Horn Power Supply in PS Room	6/11/04	6/1/04	101 d
L-3-326	118	Personnel Safety Interlock Syst Enginering & Des Compl	6/15/04	6/29/04	147 d
L-3-252	111	Instrumentation Ready for Installation (except Multiwires)	6/15/04	7/5/04	82 d
L-3-321	117	All Water System Skid Instrumentation Connected	6/15/04	8/6/04	170 d
L-3-254	112	Compl Placement of Horn 1 into Target Station	6/25/04	7/19/04	55 d
L-3-258	115	Downstream Hadron Monitor Installed	6/25/04	10/1/04	155 d
L-3-309	112	Assy of Target Baffle on Module Complete	6/30/04	7/5/04	59 d
L-3-232	114	Start Absorber Outer Shielding Installation	7/1/04	9/23/04	114 d
L-3-251	111	Primary Beam Instrumentation Construction Compl	7/1/04	8/27/04	101 d
L-3-314	112	Compl Placement of Horn 2 Assy into Target Station	7/16/04	8/9/04	55 d
L-3-276	113	Complete Assy/Installation of Stripline	7/20/04	8/19/04	101 d
L-3-256	114	Assy of Core on Carrier Complete	7/29/04	10/11/04	92 d
L-3-271	111	Target Interface Baffle/Window Ready for Install	7/30/04	7/12/04	47 d
L-3-255	115	Muon Monitors Installed	8/3/04	10/6/04	129 d
L-3-297	115	Downstream Hadron Monitor Operational	8/17/04	10/20/04	129 d
L-3-259	118	Personnel Safety Interlock System Installation Complete	8/18/04	8/27/04	102 d
L-3-270	112	Target & Horn Installation Complete	8/25/04	10/8/04	108 d
L-3-324	118	NuMI Stub Cables Installed	8/27/04	9/13/04	30 d
L-3-257	118	MI60 Cable Syst Install Compl (Excl Trim Elements)	8/30/04	9/20/04	43 d
L-3-293	118	MI-62 Cable System Installation Complete	9/7/04	9/24/04	38 d
L-3-311	111	Install Pre-target Instrumentation Complete	9/8/04	9/23/04	104 d
L-3-274	113	Power Test of TH Conventional Power Supplies Compl	9/13/04	9/22/04	19 d
L-3-278	111	Pre-Target Checkout Complete	9/22/04	11/8/04	104 d
L-3-277	113	Compl Install & Testing of Kicker PS	9/29/04	10/8/04	22 d
L-3-318	113	Power Test of MI60 & MI-62 Power Supplies Complete	9/29/04	10/8/04	22 d
L-3-272	117	All Water Systems Checked Out	10/5/04	11/19/04	92 d

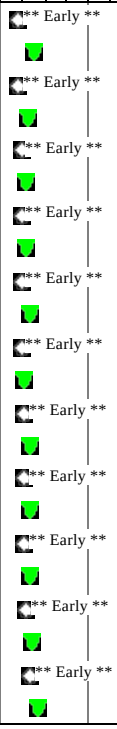


FNAL Current Forecast ◘ FNAL Baseline Date ■ Milestone Complete ●

NuMI WBS Level 3 Milestones
(1/2004 - 9/2005)

5/26/04

Mlstn#	WBS Lev	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-294	114	Checkout Absorber Complete	10/15/04	12/20/04	87 d
L-3-298	117	VacuumSystems Checked Out	10/20/04	11/29/04	81 d
L-3-290	112	Shielding Installation Complete (Pre-Radioactive Component Handling)	10/28/04	11/18/04	42 d
L-3-319	113	Start to Pulse & Checkout Horn System	10/29/04	11/19/04	42 d
L-3-253	118	Pre-Targ Hall & Targ Hall Cable Syst Installation Compl	10/29/04	12/6/04	77 d
L-3-291	111	MI Stub Installation Complete	11/1/04	11/15/04	63 d
L-3-279	118	Controls Installation Complete	11/10/04	12/7/04	49 d
L-3-295	112	Pulse & Checkout Horn System Complete	11/12/04	12/7/04	42 d
L-3-299	111	Extraction & Primary Beam Checked Out	11/15/04	12/1/04	66 d
L-3-325	118	Controls Checkout Complete	11/17/04	12/14/04	64 d
L-3-296	115	Muon Monitors Operational	12/10/04	1/6/05	49 d

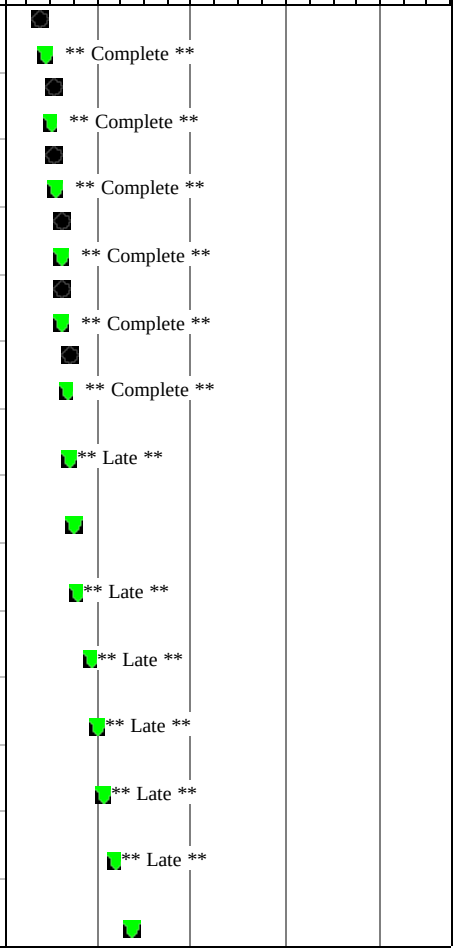


FNAL Current Forecast FNAL Baseline Date Milestone Complete

MINOS WBS Level 3 Milestones
(1/2004 - 9/2005)

5/26/04

Mlstn #	WBS Lev 3	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-303	251	80% of ND Rack Assy Complete	1/5/04	1/30/04	0d
L-3-336	251	Checkout of Readout Equipment	2/20/04	2/15/04	0d
L-3-302	250	Near Detector Infrastructure Installation Started	2/27/04	3/8/04	0d
L-3-304	253	Begin Spectrometer Plane Installation	3/31/04	3/31/04	0d
L-3-341	253	Plane 281 Installed	3/31/04	3/31/04	0d
L-3-301	231	Begin Near FE Electronics Installation	4/26/04	4/19/04	0d
L-3-305	253	25% Detector Installed	5/14/04	4/29/04	99d
L-3-340	251	PORC for Electronics Operation Obtained	5/19/04	5/12/04	208d
L-3-337	253	Spectrometer Installation Complete	6/14/04	5/27/04	99d
L-3-338	253	50% of Calorimeter Planes Installed	8/3/04	7/19/04	99d
L-3-342	253	Calortimeter Readout Installed	8/31/04	8/16/04	146d
L-3-339	253	100% Detector Planes Installed	9/22/04	9/7/04	131d
L-3-343	253	Obtain PORC for Magnet Operation	11/2/04	10/18/04	99d
L-3-306	250	Near Detector Installation Complete	12/27/04	12/24/04	66d



FNAL Current Forecast FNAL Baseline Date Milestone Complete

Variance Summary Table

(Cumulative to Date as of 4/30/04)

WBS / Description	Budgeted Cost		Actual Cost	Variance	
	Work Scheduled	Work Performed	Work Performed	Schedule	Cost
1.1 Technical Components	24,099	25,119	26,058	1,020	(940)
1.2 Facility Construction	68,893	68,893	69,673	0	(780)
1.3 Project Management	3,405	3,404	2,970	(0)	434
1.0 TEC Total	**96,397**	**97,416**	**98,702**	**1,019**	**(1,286)**
2.1 Magnets: Steel & Coils	7,621	7,621	7,621	0	0
2.2 Scintillator Detector Fabrication	19,525	19,525	19,517	0	8
2.3 Electronics, DAQ & Database	9,027	8,997	8,969	(29)	28
2.4 Far Detector Installation	4,581	4,581	4,576	0	4
2.5 Near Detector Installation	4,423	4,288	4,492	(135)	(204)
2.6 MINOS Project Management	1,625	1,625	1,635	(0)	(10)
UK In-Kind Contribution	(4,822)	(4,804)	(4,802)	18	(2)
2.0 MINOS Detector	**41,979**	**41,833**	**42,009**	**(147)**	**(176)**
3.1. NuMI Conceptual Design	1,934	1,934	1,928	0	6
3.2 MINOS Detector R&D	1,768	1,768	1,768	(0)	0
3.3 MINOS Cavern	14,527	14,527	14,527	0	0
3.4 Soudan/MINOS Operating	1,677	1,677	1,677	0	(0)
Minnesota Preconstruction Funds	(758)	(758)	(758)	0	0
Minnesota Contruction Funds FY99	(3,000)	(3,000)	(3,000)	0	0
3.0 NuMI Project Support	**16,148**	**16,148**	**16,142**	**0**	**6**
OPC Total	**58,127**	**57,980**	**58,151**	**(147)**	**(170)**
TPC Total	**154,524**	**155,396**	**156,853**	**873**	**(1,456)**

IX. COST REPORTS

Cost and earned value reports for the NuMI Project are presented in two sets, one for WBS 1.0 Total Estimated Cost (TEC), and a second for Other Project Costs (OPC) that includes both the MINOS Detector (WBS 2.0) and Project Support (WBS 3.0). Information for all segments of the project is summarized at WBS Level 3 except in the case of the OPC CURVE Reports that are at WBS Level 2 instead. The actual cost of work performed (ACWP) is comprised of the following: 1) costs collected and reported by the Fermilab financial system, 2) costs collected and reported to NuMI Project Management by the University of Minnesota in their monthly progress report for WBS 3.3 MINOS Cavern, and 3) an estimate of the value of work performed by the United Kingdom (UK) collaborating institutions towards their in-kind contribution. Since the UK collaborating institutions are not required to report their actual costs to NuMI Project Management, we are assuming that actual current period costs and cumulative costs are equal to current period earned value and cumulative earned value, respectively. Each set of cost and earned value reports includes the following:

CPR Format 1A
This is a modified version of the traditional CPR Format 1 report that shows indirect cost for each WBS Level 3 rather than as a single line item for the entire project. As a result it is possible to review the status of both burdened and unburdened costs for each major system or cost component. In addition, the report for the OPC includes a summary section at the end, with WBS Level 2 totals for the MINOS Detector and Project Support segments of the project.

CPR Format 3
This is the traditional format for reporting changes to the project baseline that were approved and implemented in the current reporting period, as well as their impact on the time phased project baseline.

CURVE Reports
These graphically depict cumulative Budgeted Cost of Work Scheduled (BCWS), Budgeted Cost of Work Performed (BCWP), and Actual Cost of Work Performed (ACWP), at WBS Level 3 and WBS Level 2 for the TEC and OPC, respectively. The OPC reports reflect all project costs, including the UK In-Kind Contribution, and also funding contributed ($3.758M) by the University of Minnesota. All amounts shown are fully burdened.

Plan v Act Reports
These reports compare burdened planned costs (BCWS) with burdened actual costs (ACWP) on a cumulative basis through the end of the prior fiscal year, and by month for the current fiscal year. There are two versions of this report, one for total cost, and a second for labor costs only. Both OPC versions exclude the value of UK In-Kind Contributions and thus represent US Funds only.

NuMI Project Obligations
This report reflects burdened obligations to date, including requisitions in progress, for the entire project, as recorded in the Fermilab financial system. Consequently, it does not include any assumed obligations with respect to work performed by the UK collaborating institutions. Nor does it reflect actual amounts obligated by the University of Minnesota under the grant for WBS

3.3 MINOS Cavern; instead, obligations shown for WBS 3.3 represent the cumulative amount of the Financial Plan transfers to the University of Minnesota from the Fermilab budget.

NuMI Project TEC

($000's Omitted)

Cost Performance Report - Work Breakdown Structure														
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:				
Location:	Batavia							NuMI TEC		3/31/04	4/30/04			
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling			
1	109,242		0		0	0	109,242	0		0	0			
WBS[2]	Current Period					Cumulative to Date					At Completion			
WBS[3] Results...	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest Revised		
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Estimate	Variance	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
1.1 Technical Components														
1.1.1 Extraction & Primary Beam														
Direct Cost + Escalation	89	72	206	(17)	(134)	4,008	4,016	4,398	8	(382)	4,345	4,345	0	
Indirect Cost	15	12	40	(3)	(28)	883	890	1,037	7	(147)	942	942	0	
WBS[3]Totals:	104	84	246	(20)	(162)	4,890	4,905	5,435	15	(529)	5,287	5,287	0	
1.1.2 Neutrino Beam Devices														
Direct Cost + Escalation	229	101	313	(128)	(211)	7,765	7,931	8,498	166	(567)	8,639	8,639	0	
Indirect Cost	49	21	76	(28)	(55)	1,806	1,844	1,921	38	(77)	1,998	1,998	0	
WBS[3]Totals:	278	122	389	(156)	(266)	9,571	9,775	10,419	204	(644)	10,638	10,638	0	
1.1.3 Power Supply System														
Direct Cost + Escalation	60	43	187	(16)	(144)	3,744	3,758	4,016	14	(259)	4,045	4,045	0	
Indirect Cost	11	9	50	(2)	(40)	894	900	951	6	(51)	970	970	0	
WBS[3]Totals:	71	53	237	(19)	(185)	4,638	4,658	4,967	19	(310)	5,015	5,015	0	
1.1.4 Hadron Decay and Absorber														
Direct Cost + Escalation	17	0	46	(17)	(46)	669	754	715	85	39	1,166	1,166	0	
Indirect Cost	4	0	9	(4)	(9)	171	187	179	16	8	268	268	0	
WBS[3]Totals:	21	0	55	(21)	(55)	840	941	894	101	47	1,434	1,434	0	
1.1.5 Neutrino Beam Monitoring														
Direct Cost + Escalation	1	1	14	(0)	(13)	393	395	395	3	1	455	455	0	
Indirect Cost	0	0	0	(0)	0	25	25	37	0	(12)	26	26	0	
WBS[3]Totals:	1	1	14	(0)	(13)	418	420	431	3	(11)	481	481	0	
1.1.6 Alignment Systems														
Direct Cost + Escalation	2	2	0	0	2	211	216	159	5	58	237	237	0	
Indirect Cost	1	1	0	0	1	61	62	40	1	22	67	67	0	
WBS[3]Totals:	3	3	0	0	3	272	278	199	6	79	305	305	0	
1.1.7 Water, Vacuum & Gas Systems														
Direct Cost + Escalation	103	146	119	43	27	1,432	1,616	1,550	184	66	2,059	2,059	0	
Indirect Cost	20	38	27	18	11	316	372	343	56	30	475	475	0	
WBS[3]Totals:	122	184	146	61	38	1,748	1,988	1,893	240	96	2,535	2,535	0	
1.1.8 Installation and Integration														
Direct Cost + Escalation	139	89	53	(51)	36	1,351	1,705	1,477	354	228	2,348	2,348	0	
Indirect Cost	28	18	9	(10)	9	309	387	282	78	106	516	516	0	
WBS[3]Totals:	167	107	62	(61)	45	1,660	2,092	1,758	432	334	2,865	2,865	0	
1.1.9 Hadronic Hose (Close-out)														
Direct Cost + Escalation	0	0	0	0	0	53	53	54	0	(0)	53	53	0	
Indirect Cost	0	0	0	0	0	9	9	9	0	(0)	9	9	0	
WBS[3]Totals:	0	0	0	0	0	62	62	63	0	(1)	62	62	0	
WBS[2]Totals:	768	553	1,148	(215)	(595)	24,099	25,119	26,058	1,020	(940)	28,621	28,621	0	

NuMI Project TEC

($000's Omitted)

Cost Performance Report - Work Breakdown Structure														
Contractor: Fermi National Accelerator Laboratory					Contract Type/No:			Project Name/No:		Report Period:				
Location: Batavia								NuMI TEC		3/31/04	4/30/04			
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling			
1	109,242		0		0	0	109,242	0		0	0			
WBS[2] WBS[3] Results...	Current Period					Cumulative to Date					At Completion			
	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest		
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
1.2 Facility Construction														
1.2.1 Facility Physics Design Phase														
Direct Cost + Escalation	0	0	0	0	0	49	49	52	0	(3)	49	49	0	
Indirect Cost	0	0	0	0	0	21	21	19	0	2	21	21	0	
WBS[3]Totals:	0	0	0	0	0	70	70	70	0	(0)	70	70	0	
1.2.2 Facility Construction Title I Design Phase														
Direct Cost + Escalation	0	0	0	0	0	1,254	1,254	1,288	0	(34)	1,254	1,254	0	
Indirect Cost	0	0	0	0	0	184	184	149	0	35	184	184	0	
WBS[3]Totals:	0	0	0	0	0	1,438	1,438	1,437	0	1	1,438	1,438	0	
1.2.3 Facility Construction Title II Design Phase														
Direct Cost + Escalation	0	0	0	0	0	2,620	2,620	2,807	0	(187)	2,620	2,620	0	
Indirect Cost	0	0	0	0	0	355	355	167	0	188	355	355	0	
WBS[3]Totals:	0	0	0	0	0	2,975	2,975	2,974	0	1	2,975	2,975	0	
1.2.4 Facility Construction Phase														
Direct Cost + Escalation	0	0	200	0	(200)	62,813	62,813	63,687	0	(874)	62,813	62,813	0	
Indirect Cost	0	0	14	0	(14)	1,596	1,596	1,505	0	91	1,596	1,596	0	
WBS[3]Totals:	0	0	214	0	(214)	64,410	64,410	65,192	0	(782)	64,410	64,410	0	
WBS[2]Totals:	0	0	214	0	(214)	68,893	68,893	69,673	0	(780)	68,893	68,893	0	
1.3 Project Management														
1.3.1 FY 98 Project Management														
Direct Cost + Escalation	0	0	0	0	0	208	208	104	0	104	208	208	0	
Indirect Cost	0	0	0	0	0	66	66	37	0	29	66	66	0	
WBS[3]Totals:	0	0	0	0	0	275	275	141	0	133	275	275	0	
1.3.2 FY 99 Project Management														
Direct Cost + Escalation	0	0	0	0	0	425	425	512	0	(88)	425	425	0	
Indirect Cost	0	0	0	0	0	135	135	149	0	(14)	135	135	0	
WBS[3]Totals:	0	0	0	0	0	560	560	661	0	(102)	560	560	0	
1.3.3 FY 00 Project Management														
Direct Cost + Escalation	0	0	0	0	0	436	436	521	0	(85)	436	436	0	
Indirect Cost	0	0	0	0	0	139	139	142	0	(3)	139	139	0	
WBS[3]Totals:	0	0	0	0	0	575	575	663	0	(88)	575	575	0	
1.3.4 FY 01 Project Management														
Direct Cost + Escalation	0	0	0	0	0	522	522	331	0	191	522	522	0	
Indirect Cost	0	0	0	0	0	166	166	92	0	74	166	166	0	
WBS[3]Totals:	0	0	0	0	0	688	688	423	0	265	688	688	0	

NuMI Project TEC

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor: Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:				
Location: Batavia							NuMI TEC		3/31/04	4/30/04			
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work	Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling			
1	109,242		0	0	0	109,242	0		0	0			
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3] Results...	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.3.5 FY 02 Project Management													
Direct Cost + Escalation	0	0	0	0	0	533	533	253	0	281	533	533	0
Indirect Cost	0	0	0	0	0	170	170	72	0	98	170	170	0
WBS[3]Totals:	0	0	0	0	0	703	703	324	0	378	703	703	0
1.3.6 FY 03 Project Management													
Direct Cost + Escalation	0	0	0	0	0	411	411	324	0	87	411	411	0
Indirect Cost	0	0	0	0	0	131	131	98	0	33	131	131	0
WBS[3]Totals:	0	0	0	0	0	541	541	421	0	120	541	541	0
1.3.7 FY 04 Project Management													
Direct Cost + Escalation	7	7	41	(0)	(35)	48	48	258	(0)	(211)	82	82	0
Indirect Cost	2	2	13	(0)	(10)	15	15	78	(0)	(63)	26	26	0
WBS[3]Totals:	9	9	54	(0)	(45)	63	63	336	(0)	(273)	108	108	0
1.3.8 FY 05 Project Management													
Direct Cost + Escalation	0	0	0	0	0	0	0	0	0	0	99	99	0
Indirect Cost	0	0	0	0	0	0	0	0	0	0	31	31	0
WBS[3]Totals:	0	0	0	0	0	0	0	0	0	0	130	130	0
WBS[2]Totals:	9	9	54	(0)	(45)	3,405	3,404	2,970	(0)	434	3,580	3,580	0
General and Administrative	0	0	0	0	0	0	0	0	0	0	0	0	0
Undistributed Budget											0	0	0
Sub Total	777	562	1,416	(215)	(854)	96,397	97,416	98,702	1,019	(1,286)	101,094	101,094	0
Contingency											8,148	8,148	0
Total	777	562	1,416	(215)	(854)	96,397	97,416	98,702	1,019	(1,286)	109,242	109,242	0

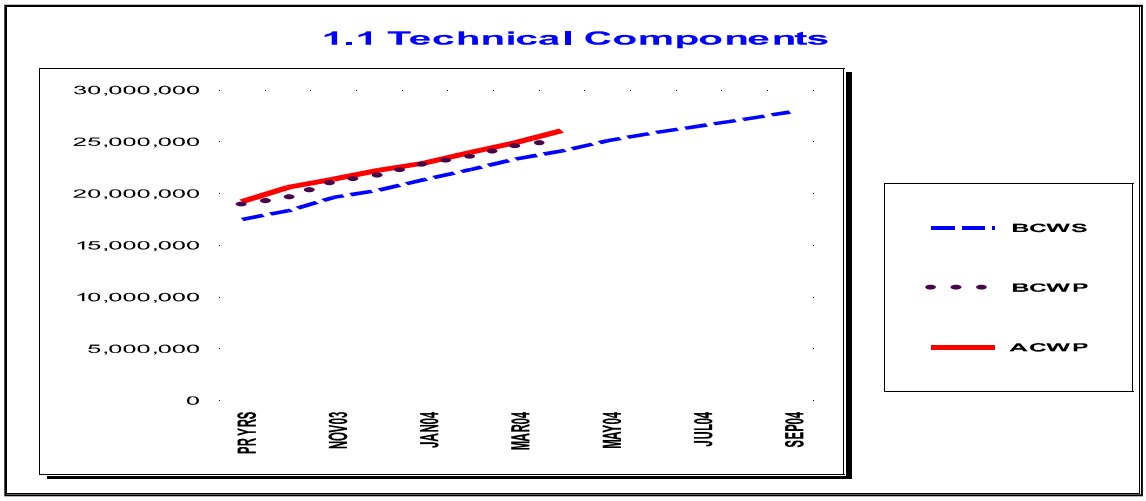
NuMI Project TEC

($000's Omitted)

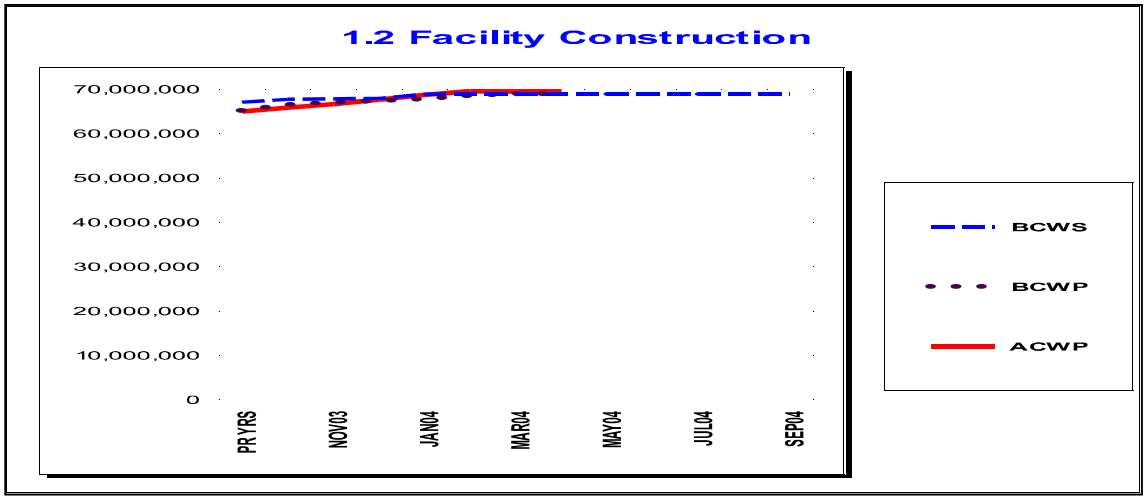
Cost Performance Report - Baseline																
Contractor:	Fermi National Accelerator Laboratory			Contract Type/No:		Project Name/No:				Report Period:						
Location:	Batavia					NuMI TEC				3/31/04				4/30/04		
(1) Original Contract Target Cost		(2) Negotiated Contract Changes		(3) Current Target Cost		(4) Est. Cost Authorized Authorized Unpriced Work				(5) Contract Budget Base (3) + (4)				(6) Total Allocated Budget		(7) Difference (5) - (6)
76,200		33,042		109,242		0				109,242				109,242		(0)
(8)Contract Start Date 10/1/97		(9)Contract Definitization Date 10/1/97				(10)Last Item Delivery Date 9/30/03				(11)Contract Completion Date 9/30/03				(12)Estimated Completion Date 9/30/03		
Item	BCWS Cum to Date	BCWS for Report Period	Budgeted Cost for Work Scheduled (Non-Cumulative) Six Month Forecast +1 MAY04	+2 JUN04	+3 JUL04	+4 AUG04	+5 SEP04	+6 OCT04	(Enter Specific Periods) FY 05					Undist Budget	Total Budget
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
PM Baseline (Beginning of Period)	95,620	777	985	768	666	682	704	316	580	0	0	0	0	0	101,097
280 WBS 1.1 Adjustments															(3)
PM Baseline (End of Period)	96,397		985	768	666	682	701	316	580	0	0	0	0	0	101,094
Contingency															8,148
Total															109,242

NuMI Project TEC

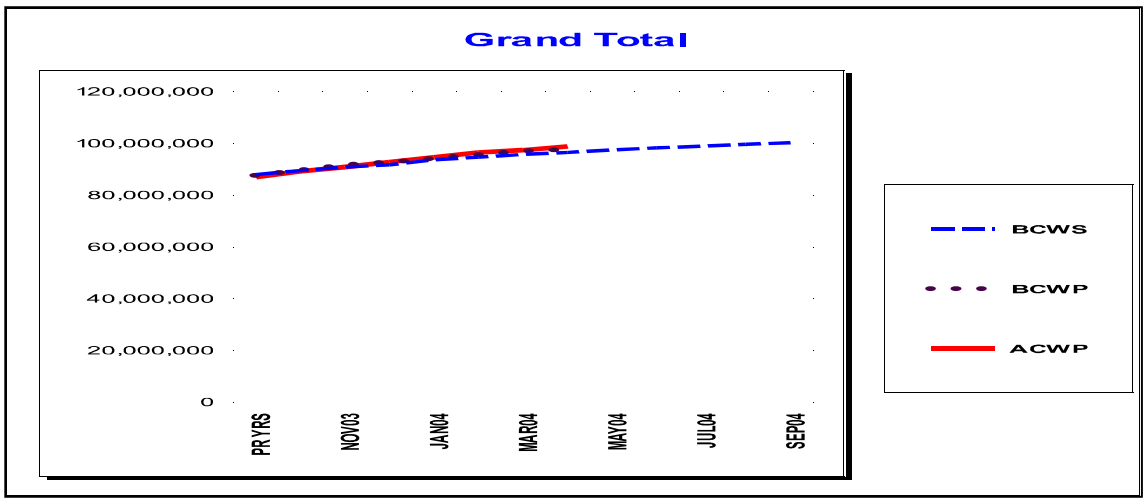
($000's Omitted)



	PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04
BCWS	17,490	18,312	19,607	20,314	21,346	22,292	23,331	24,099	25,076	25,834	26,491	27,164	27,856
BCWP	18,928	19,557	21,104	21,742	22,829	23,544	24,566	25,119					
ACWP	19,209	20,585	21,375	22,239	22,939	23,961	24,910	26,058					



	PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04
BCWS	67,035	67,697	67,793	67,911	68,834	68,891	68,893	68,893	68,893	68,893	68,893	68,893	68,893
BCWP	65,113	66,425	66,938	67,289	67,720	68,445	68,893	68,893					
ACWP	64,975	65,826	66,635	67,653	68,726	69,537	69,460	69,673					



	PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04
BCWS	87,866	89,360	90,760	91,593	93,558	94,569	95,620	96,397	97,382	98,150	98,816	99,498	100,199
BCWP	87,383	89,375	91,420	92,487	93,929	95,396	96,854	97,416					
ACWP	86,818	89,096	90,763	92,679	94,493	96,371	97,286	98,702					

NuMI Project TEC

($000's Omitted)

Program:	Description:	Approval:
NUMITEC	NuMI TEC	Program Manager
Run Date: 05/11/04	Status Date: 4/30/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
1.1 Technical Components																
1.1.1 Extraction & Primary Beam	BCWS	3,823	136	339	127	109	143	109	104	182	52	60	25	52	24	5,287
	ACWP	3,769	558	145	340	78	183	115	246	0	0	0	0	0	0	5,435
1.1.2 Neutrino Beam Devices	BCWS	7,041	242	493	216	361	347	592	278	180	85	103	312	182	205	10,638
	ACWP	7,790	292	300	371	391	495	392	389	0	0	0	0	0	0	10,419
1.1.3 Power Supply System	BCWS	3,915	85	69	78	276	68	77	71	91	102	63	63	51	7	5,015
	ACWP	3,991	189	67	63	66	141	214	237	0	0	0	0	0	0	4,967
1.1.4 Hadron Decay and Absorber	BCWS	561	93	17	12	95	27	12	21	120	82	13	58	97	225	1,434
	ACWP	689	31	17	14	16	35	37	55	0	0	0	0	0	0	894
1.1.5 Neutrino Beam Monitoring	BCWS	285	15	13	95	5	3	2	1	1	3	3	16	14	26	481
	ACWP	283	31	22	15	10	26	32	14	0	0	0	0	0	0	431
1.1.6 Alignment Systems	BCWS	255	1	1	3	3	3	3	3	3	3	3	6	5	13	305
	ACWP	190	0	0	0	0	6	4	0	0	0	0	0	0	0	199
1.1.7 Water, Vacuum & Gas Systems	BCWS	802	190	215	102	109	112	96	122	220	263	190	26	40	49	2,535
	ACWP	1,371	63	90	23	42	72	86	146	0	0	0	0	0	0	1,893
1.1.8 Installation and Integration	BCWS	745	60	149	73	75	243	148	167	180	168	222	167	250	217	2,865
	ACWP	1,063	212	149	38	97	66	70	62	0	0	0	0	0	0	1,758
1.1.9 Hadronic Hose (Close-out)	BCWS	62	0	0	0	0	0	0	0	0	0	0	0	0	0	62
	ACWP	63	0	0	0	0	0	0	0	0	0	0	0	0	0	63
WBS[2] Totals:	BCWS	17,490	822	1,295	706	1,033	946	1,039	768	977	759	657	673	692	765	28,621
	ACWP	19,209	1,375	790	864	700	1,023	949	1,148	0	0	0	0	0	0	26,058
1.2 Facility Construction																
1.2.1 Facility Physics Design Phase	BCWS	70	0	0	0	0	0	0	0	0	0	0	0	0	0	70
	ACWP	70	0	0	0	0	0	0	0	0	0	0	0	0	0	70
1.2.2 Facility Construction Title I Design Phase	BCWS	1,438	0	0	0	0	0	0	0	0	0	0	0	0	0	1,438
	ACWP	1,437	0	0	0	0	0	0	0	0	0	0	0	0	0	1,437
1.2.3 Facility Construction Title II Design Phase	BCWS	2,975	0	0	0	0	0	0	0	0	0	0	0	0	0	2,975
	ACWP	2,974	0	0	0	0	0	0	0	0	0	0	0	0	0	2,974
1.2.4 Facility Construction Phase	BCWS	62,551	663	96	117	923	57	2	0	0	0	0	0	0	0	64,410
	ACWP	60,493	851	809	1,018	1,073	811	(78)	214	0	0	0	0	0	0	65,192
WBS[2] Totals:	BCWS	67,035	663	96	117	923	57	2	0	0	0	0	0	0	0	68,893
	ACWP	64,975	851	809	1,018	1,073	811	(78)	214	0	0	0	0	0	0	69,673
1.3 Project Management																
1.3.1 FY 98 Project Management	BCWS	275	0	0	0	0	0	0	0	0	0	0	0	0	0	275
	ACWP	141	0	0	0	0	0	0	0	0	0	0	0	0	0	141
1.3.2 FY 99 Project Management	BCWS	560	0	0	0	0	0	0	0	0	0	0	0	0	0	560
	ACWP	661	0	0	0	0	0	0	0	0	0	0	0	0	0	661
1.3.3 FY 00 Project Management	BCWS	575	0	0	0	0	0	0	0	0	0	0	0	0	0	575
	ACWP	663	0	0	0	0	0	0	0	0	0	0	0	0	0	663
1.3.4 FY 01 Project Management	BCWS	688	0	0	0	0	0	0	0	0	0	0	0	0	0	688
	ACWP	423	0	0	0	0	0	0	0	0	0	0	0	0	0	423

NuMI Project TEC

($000's Omitted)

Program:	Description:	Approval:
NUMITEC	NuMI TEC	Program Manager
Run Date: 05/11/04	Status Date: 4/30/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
1.3.5 FY 02 Project Management	BCWS	703	0	0	0	0	0	0	0	0	0	0	0	0	0	703
	ACWP	324	0	0	0	0	0	0	0	0	0	0	0	0	0	324
1.3.6 FY 03 Project Management	BCWS	541	0	0	0	0	0	0	0	0	0	0	0	0	0	541
	ACWP	421	0	0	0	0	0	0	0	0	0	0	0	0	0	421
1.3.7 FY 04 Project Management	BCWS	0	10	8	10	9	8	10	9	9	9	9	9	9	0	108
	ACWP	0	52	67	34	40	44	44	54	0	0	0	0	0	0	336
1.3.8 FY 05 Project Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	130	130
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	3,341	10	8	10	9	8	10	9	9	9	9	9	9	130	3,580
	ACWP	2,634	52	67	34	40	44	44	54	0	0	0	0	0	0	2,970
Grand Totals:	BCWS	87,866	1,495	1,399	833	1,965	1,011	1,051	777	985	768	666	682	701	896	101,094
	ACWP	86,818	2,278	1,667	1,916	1,814	1,878	915	1,416	0	0	0	0	0	0	98,702

NuMI Project TEC - Labor Only

($000's Omitted)

Program:	Description:	Approval:
NUMITEC	NuMI TEC	Program Manager
Run Date: 05/11/04	Status Date: 4/30/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
1.1 Technical Components																
1.1.1 Extraction & Primary Beam	BCWS	1,846	38	95	32	30	27	26	26	34	25	37	5	18	24	2,263
	ACWP	2,388	135	106	80	61	74	81	122	0	0	0	0	0	0	3,047
1.1.2 Neutrino Beam Devices	BCWS	3,798	69	112	115	139	108	246	90	96	68	46	48	35	115	5,086
	ACWP	4,630	118	174	104	79	182	164	236	0	0	0	0	0	0	5,687
1.1.3 Power Supply System	BCWS	2,071	20	12	10	209	8	10	13	31	48	40	63	33	7	2,576
	ACWP	2,622	21	19	32	26	88	137	178	0	0	0	0	0	0	3,123
1.1.4 Hadron Decay and Absorber	BCWS	448	9	17	12	7	8	10	10	24	8	3	14	16	62	647
	ACWP	555	11	7	10	13	27	17	16	0	0	0	0	0	0	657
1.1.5 Neutrino Beam Monitoring	BCWS	78	0	0	0	0	0	0	0	0	0	0	0	0	0	78
	ACWP	74	0	0	0	0	0	1	0	0	0	0	0	0	0	75
1.1.6 Alignment Systems	BCWS	207	1	1	3	3	2	3	3	3	3	3	3	3	5	241
	ACWP	140	0	0	0	0	1	4	0	0	0	0	0	0	0	145
1.1.7 Water, Vacuum & Gas Systems	BCWS	410	18	173	16	8	25	3	25	114	128	122	23	37	49	1,151
	ACWP	634	20	34	4	21	55	42	70	0	0	0	0	0	0	880
1.1.8 Installation and Integration	BCWS	497	29	31	34	32	29	37	42	39	44	44	46	54	131	1,088
	ACWP	383	12	17	5	13	1	4	7	0	0	0	0	0	0	443
1.1.9 Hadronic Hose (Close-out)	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	9,354	184	442	222	427	208	335	209	341	323	295	201	196	392	13,129
	ACWP	11,426	319	358	236	212	429	449	629	0	0	0	0	0	0	14,058
1.2 Facility Construction																
1.2.1 Facility Physics Design Phase	BCWS	70	0	0	0	0	0	0	0	0	0	0	0	0	0	70
	ACWP	70	0	0	0	0	0	0	0	0	0	0	0	0	0	70
1.2.2 Facility Construction Title I Design Phase	BCWS	300	0	0	0	0	0	0	0	0	0	0	0	0	0	300
	ACWP	299	0	0	0	0	0	0	0	0	0	0	0	0	0	299
1.2.3 Facility Construction Title II Design Phase	BCWS	556	0	0	0	0	0	0	0	0	0	0	0	0	0	556
	ACWP	556	0	0	0	0	0	0	0	0	0	0	0	0	0	556
1.2.4 Facility Construction Phase	BCWS	2,827	52	45	52	49	45	2	0	0	0	0	0	0	0	3,071
	ACWP	2,853	76	91	77	74	90	80	53	0	0	0	0	0	0	3,394
WBS[2] Totals:	BCWS	3,754	52	45	52	49	45	2	0	0	0	0	0	0	0	3,998
	ACWP	3,778	76	91	77	74	90	80	53	0	0	0	0	0	0	4,319
1.3 Project Management																
1.3.1 FY 98 Project Management	BCWS	275	0	0	0	0	0	0	0	0	0	0	0	0	0	275
	ACWP	125	0	0	0	0	0	0	0	0	0	0	0	0	0	125
1.3.2 FY 99 Project Management	BCWS	560	0	0	0	0	0	0	0	0	0	0	0	0	0	560
	ACWP	595	0	0	0	0	0	0	0	0	0	0	0	0	0	595
1.3.3 FY 00 Project Management	BCWS	575	0	0	0	0	0	0	0	0	0	0	0	0	0	575
	ACWP	616	0	0	0	0	0	0	0	0	0	0	0	0	0	616
1.3.4 FY 01 Project Management	BCWS	688	0	0	0	0	0	0	0	0	0	0	0	0	0	688
	ACWP	416	0	0	0	0	0	0	0	0	0	0	0	0	0	416

NuMI Project TEC - Labor Only

($000's Omitted)

Program:	Description:	Approval:
NUMITEC	NuMI TEC	Program Manager
Run Date: 05/11/04	Status Date: 4/30/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
1.3.5 FY 02 Project Management	BCWS	703	0	0	0	0	0	0	0	0	0	0	0	0	0	703
	ACWP	324	0	0	0	0	0	0	0	0	0	0	0	0	0	324
1.3.6 FY 03 Project Management	BCWS	541	0	0	0	0	0	0	0	0	0	0	0	0	0	541
	ACWP	416	0	0	0	0	0	0	0	0	0	0	0	0	0	416
1.3.7 FY 04 Project Management	BCWS	0	10	8	10	9	8	10	9	9	9	9	9	9	0	108
	ACWP	0	52	67	34	39	44	44	54	0	0	0	0	0	0	334
1.3.8 FY 05 Project Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	130	130
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	3,341	10	8	10	9	8	10	9	9	9	9	9	9	130	3,580
	ACWP	2,493	52	67	34	39	44	44	54	0	0	0	0	0	0	2,827
Grand Totals:	BCWS	16,449	245	495	283	486	261	346	218	350	332	304	210	205	522	20,707
	ACWP	17,697	447	516	347	325	563	573	736	0	0	0	0	0	0	21,204

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		3/31/04	4/30/04		
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance				
Results...	Work	Work	Work			Work	Work	Work				Latest Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.1 Magnets: Steel & Coils													
2.1.1 Steel Plane Fabrication													
Direct Cost + Escalation	0	0	0	0	0	4,372	4,372	4,375	0	(3)	4,372	4,372	0
Indirect Cost	0	0	0	0	0	229	229	226	0	3	229	229	0
WBS[3]Totals:	0	0	0	0	0	4,601	4,601	4,601	0	0	4,601	4,601	0
2.1.2 Steel handling fixtures													
Direct Cost + Escalation	0	0	0	0	0	637	637	637	(0)	0	637	637	0
Indirect Cost	0	0	0	0	0	156	156	157	0	(0)	156	156	0
WBS[3]Totals:	0	0	0	0	0	793	793	793	0	(0)	793	793	0
2.1.3 Near Detector Support Structures													
Direct Cost + Escalation	0	0	0	0	0	(2)	(2)	1	0	(4)	(2)	(2)	0
Indirect Cost	0	0	0	0	0	4	4	0	0	4	4	4	0
WBS[3]Totals:	0	0	0	0	0	1	1	1	0	0	1	1	0
2.1.4 Magnet Coil													
Direct Cost + Escalation	0	0	0	0	0	1,386	1,386	1,372	(0)	15	1,386	1,386	0
Indirect Cost	0	0	0	0	0	286	286	300	0	(14)	286	286	0
WBS[3]Totals:	0	0	0	0	0	1,673	1,673	1,672	0	1	1,673	1,673	0
2.1.5 Detector Plane Prototypes													
Direct Cost + Escalation	0	0	0	0	0	390	390	394	0	(4)	390	390	0
Indirect Cost	0	0	0	0	0	106	106	102	(0)	4	106	106	0
WBS[3]Totals:	0	0	0	0	0	495	495	496	(0)	(0)	495	495	0
2.1.6 Steel Management													
Direct Cost + Escalation	0	0	0	0	0	53	53	53	0	(0)	53	53	0
Indirect Cost	0	0	0	0	0	4	4	5	(0)	(0)	4	4	0
WBS[3]Totals:	0	0	0	0	0	57	57	58	(0)	(0)	57	57	0
WBS[2]Totals:	0	0	0	0	0	7,621	7,621	7,621	0	0	7,621	7,621	0
2.2 Scintillator Detector Fabrication													
2.2.1 Scintillator Strips													
Direct Cost + Escalation	0	0	0	0	0	2,890	2,890	2,867	0	22	2,890	2,890	0
Indirect Cost	0	0	0	0	0	266	266	289	(0)	(23)	266	266	0
WBS[3]Totals:	0	0	0	0	0	3,156	3,156	3,156	0	(0)	3,156	3,156	0
2.2.2 Fiber													
Direct Cost + Escalation	0	0	0	0	0	4,236	4,236	4,270	0	(34)	4,236	4,236	0
Indirect Cost	0	0	0	0	0	60	60	26	(0)	34	60	60	0
WBS[3]Totals:	0	0	0	0	0	4,296	4,296	4,296	(0)	(0)	4,296	4,296	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		3/31/04	4/30/04		
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Results...	Work	Work	Work			Work	Work	Work				Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.2.3 Scintillator Modules													
Direct Cost + Escalation	0	0	0	0	0	1,899	1,899	1,893	0	6	1,899	1,899	0
Indirect Cost	0	0	0	0	0	83	83	89	0	(6)	83	83	0
WBS[3]Totals:	0	0	0	0	0	1,982	1,982	1,982	0	0	1,982	1,982	0
2.2.4 Photodetector Systems													
Direct Cost + Escalation	0	0	0	0	0	2,156	2,156	2,170	0	(14)	2,156	2,156	0
Indirect Cost	0	0	0	0	0	23	23	9	0	14	23	23	0
WBS[3]Totals:	0	0	0	0	0	2,179	2,179	2,179	0	(0)	2,179	2,179	0
2.2.5 Mux Boxes & Connectors													
Direct Cost + Escalation	0	0	0	0	0	1,394	1,394	1,397	(0)	(4)	1,394	1,394	0
Indirect Cost	0	0	0	0	0	27	27	23	(0)	4	27	27	0
WBS[3]Totals:	0	0	0	0	0	1,421	1,421	1,421	(0)	0	1,421	1,421	0
2.2.6 Calibration Systems													
Direct Cost + Escalation	0	0	0	0	0	1,102	1,102	1,103	0	(0)	1,102	1,102	0
Indirect Cost	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[3]Totals:	0	0	0	0	0	1,103	1,103	1,103	0	0	1,103	1,103	0
2.2.7 Ass'y & Test Equipment													
Direct Cost + Escalation	0	0	0	0	0	1,677	1,677	1,677	(0)	(0)	1,677	1,677	0
Indirect Cost	0	0	0	0	0	53	53	53	(0)	(0)	53	53	0
WBS[3]Totals:	0	0	0	0	0	1,731	1,731	1,731	(0)	(0)	1,731	1,731	0
2.2.8 Factories													
Direct Cost + Escalation	0	0	(8)	0	8	3,232	3,232	3,266	0	(35)	3,232	3,232	0
Indirect Cost	0	0	0	0	0	47	47	4	0	43	47	47	0
WBS[3]Totals:	0	0	(8)	0	8	3,279	3,279	3,271	0	8	3,279	3,279	0
2.2.9 Scintillator Management													
Direct Cost + Escalation	0	0	0	0	0	371	371	375	(0)	(4)	371	371	0
Indirect Cost	0	0	0	0	0	9	9	5	0	4	9	9	0
WBS[3]Totals:	0	0	0	0	0	379	379	379	(0)	(0)	379	379	0
WBS[2]Totals:	0	0	(8)	0	8	19,525	19,525	19,517	0	8	19,525	19,525	0
2.3 Electronics, DAQ & Database													
2.3.1 Near Detector Front End													
Direct Cost + Escalation	4	0	22	(4)	(22)	4,111	4,107	3,978	(4)	129	4,138	4,138	0
Indirect Cost	0	0	4	(0)	(4)	446	446	495	(0)	(49)	446	446	0
WBS[3]Totals:	4	0	26	(4)	(26)	4,557	4,553	4,473	(4)	80	4,585	4,585	0
2.3.2 Far Detector Front-end													
Direct Cost + Escalation	0	0	0	0	0	1,590	1,590	1,593	0	(2)	1,590	1,590	0
Indirect Cost	0	0	0	0	0	82	82	79	0	3	82	82	0
WBS[3]Totals:	0	0	0	0	0	1,673	1,673	1,672	0	1	1,673	1,673	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		3/31/04		4/30/04	
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Results...	Work	Work	Work			Work	Work	Work				Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.3.3 Data Routing & Trigger Farm													
Direct Cost + Escalation	3	2	0	(1)	2	1,229	1,212	1,210	(17)	2	1,241	1,241	0
WBS[3]Totals:	3	2	0	(1)	2	1,229	1,212	1,210	(17)	2	1,241	1,241	0
2.3.4 Data Acquisition & Triggering													
Direct Cost + Escalation	0	0	0	0	0	391	389	389	(1)	0	391	391	0
WBS[3]Totals:	0	0	0	0	0	391	389	389	(1)	0	391	391	0
2.3.5 Database													
Direct Cost + Escalation	0	0	0	0	0	10	10	10	0	(0)	10	10	0
Indirect Cost	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[3]Totals:	0	0	0	0	0	10	10	10	0	(0)	10	10	0
2.3.6 Auxilliary Systems													
Direct Cost + Escalation	0	2	0	1	2	459	454	492	(5)	(38)	460	460	0
Indirect Cost	0	0	0	0	0	37	35	49	(2)	(14)	37	37	0
WBS[3]Totals:	0	2	0	2	2	496	489	541	(7)	(52)	497	497	0
2.3.7 Electronics Management													
Direct Cost + Escalation	0	0	0	0	0	143	143	217	0	(74)	143	143	0
Indirect Cost	0	0	0	0	0	2	2	1	0	1	2	2	0
WBS[3]Totals:	0	0	0	0	0	146	146	218	0	(72)	146	146	0
2.3.8 Slow Control & Monitoring													
Direct Cost + Escalation	0	0	5	0	(5)	437	437	367	0	70	437	437	0
Indirect Cost	0	0	0	0	(0)	12	12	13	(0)	(0)	12	12	0
WBS[3]Totals:	0	0	5	0	(5)	449	449	380	0	69	449	449	0
2.3.9 HV System													
Direct Cost + Escalation	0	0	0	0	0	67	67	66	(0)	0	67	67	0
Indirect Cost	0	0	0	0	0	10	10	11	0	(0)	10	10	0
WBS[3]Totals:	0	0	0	0	0	77	77	77	(0)	0	77	77	0
WBS[2]Totals:	7	4	32	(3)	(28)	9,027	8,997	8,969	(29)	28	9,069	9,069	0
2.4 Far Detector Installation													
2.4.1 FDI Completed Design Tasks													
Direct Cost + Escalation	0	0	0	0	0	0	0	0	0	0	0	0	0
Indirect Cost	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[3]Totals:	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.2 FDI Management													
Direct Cost + Escalation	0	0	0	0	0	541	541	550	0	(9)	541	541	0
Indirect Cost	0	0	0	0	0	43	43	34	(0)	9	43	43	0
WBS[3]Totals:	0	0	0	0	0	584	584	584	0	(0)	584	584	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory			Contract Type/No:			Project Name/No:		Report Period:				
Location:	Batavia						NuMI Other Proj Costs		3/31/04	4/30/04			
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work	Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling			
1	62,200		0	0	0	62,200	0		0	0			
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance				
Results...	Work	Work	Work			Work	Work	Work				Latest Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.4.3 SDN-FDI Construction Oversight													
Direct Cost + Escalation	0	0	0	0	0	115	115	115	0	0	115	115	0
WBS[3]Totals:	0	0	0	0	0	115	115	115	0	0	115	115	0
2.4.4 FDI Soudan Lab Infrastructure Setup													
Direct Cost + Escalation	0	0	0	0	0	470	470	469	0	1	470	470	0
Indirect Cost	0	0	0	0	0	3	3	4	0	(0)	3	3	0
WBS[3]Totals:	0	0	0	0	0	473	473	473	0	0	473	473	0
2.4.5 SDN-FDI Detector Installation													
Direct Cost + Escalation	0	0	0	0	0	2,960	2,960	2,953	0	7	2,960	2,960	0
Indirect Cost	0	0	0	0	0	0	0	6	0	(6)	0	0	0
WBS[3]Totals:	0	0	0	0	0	2,960	2,960	2,959	0	0	2,960	2,960	0
2.4.6 SDN-FDI DNR Costs													
Direct Cost + Escalation	0	0	0	0	0	382	382	378	0	4	382	382	0
Indirect Cost	0	0	0	0	0	0	0	1	0	(1)	0	0	0
WBS[3]Totals:	0	0	0	0	0	382	382	378	0	3	382	382	0
2.4.7 FDI Alignment & Survey													
Direct Cost + Escalation	0	0	0	0	0	58	58	58	0	(1)	58	58	0
Indirect Cost	0	0	0	0	0	10	10	9	0	0	10	10	0
WBS[3]Totals:	0	0	0	0	0	67	67	67	0	(0)	67	67	0
WBS[2]Totals:	0	0	0	0	0	4,581	4,581	4,576	0	4	4,581	4,581	0
2.5 Near Detector Installation													
2.5.1 NDI Infrastructure													
Direct Cost + Escalation	47	22	74	(25)	(52)	341	310	316	(31)	(6)	402	402	0
Indirect Cost	15	7	12	(8)	(5)	91	81	66	(10)	15	110	110	0
WBS[3]Totals:	62	28	86	(33)	(58)	431	391	382	(40)	9	512	512	0
2.5.2 NDI Plane Assembly													
Direct Cost + Escalation	0	0	0	0	0	393	393	403	0	(10)	393	393	0
Indirect Cost	0	0	0	0	0	123	123	111	(0)	12	123	123	0
WBS[3]Totals:	0	0	0	0	0	516	516	514	0	2	516	516	0
2.5.3 NDI Detector Installation													
Direct Cost + Escalation	143	76	86	(67)	(10)	335	268	344	(67)	(76)	778	778	0
Indirect Cost	43	24	26	(19)	(2)	76	55	82	(21)	(27)	200	200	0
WBS[3]Totals:	186	100	112	(86)	(12)	412	324	426	(88)	(102)	977	977	0
2.5.4 NDI Facility Experimental Infrastructure													
Direct Cost + Escalation	6	3	41	(3)	(38)	130	125	191	(5)	(67)	133	133	0
Indirect Cost	2	1	8	(1)	(7)	25	24	35	(2)	(12)	26	26	0
WBS[3]Totals:	8	4	49	(4)	(45)	155	148	226	(7)	(78)	160	160	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		3/31/04	4/30/04		
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance				
Results...	Work	Work	Work			Work	Work	Work				Latest Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.5.5 RBI SB&O Experimental Systems Outfitting													
Direct Cost + Escalation	0	0	0	0	0	2,909	2,909	2,944	0	(35)	2,909	2,909	0
WBS[3]Totals:	0	0	0	0	0	2,909	2,909	2,944	0	(35)	2,909	2,909	0
WBS[2]Totals:	255	132	247	(123)	(115)	4,423	4,288	4,492	(135)	(204)	5,074	5,074	0
2.6 MINOS Project Management													
2.6.1 FNL-Project Management													
Direct Cost + Escalation	3	3	4	(0)	(1)	1,163	1,163	1,204	(0)	(41)	1,188	1,188	0
Indirect Cost	1	1	1	(0)	(0)	364	364	333	(0)	31	372	372	0
WBS[3]Totals:	4	4	5	(0)	(1)	1,527	1,527	1,537	(0)	(10)	1,560	1,560	0
2.6.2 ANL-Project Management													
Direct Cost + Escalation	0	0	0	0	0	96	96	96	0	(0)	96	96	0
Indirect Cost	0	0	0	0	0	1	1	1	0	0	1	1	0
WBS[3]Totals:	0	0	0	0	0	98	98	98	0	(0)	98	98	0
WBS[2]Totals:	4	4	5	(0)	(1)	1,625	1,625	1,635	(0)	(10)	1,658	1,658	0
3.1 NuMI Conceptual Design													
3.1.1 FNL-BD-NuMI CDR													
Direct Cost + Escalation	0	0	0	0	0	407	407	407	0	0	407	407	0
Indirect Cost	0	0	0	0	0	82	82	80	0	2	82	82	0
WBS[3]Totals:	0	0	0	0	0	489	489	487	0	2	489	489	0
3.1.2 FNL-BD-NuMI FESS CDR													
Direct Cost + Escalation	0	0	0	0	0	282	282	282	0	0	282	282	0
Indirect Cost	0	0	0	0	0	64	64	64	0	0	64	64	0
WBS[3]Totals:	0	0	0	0	0	346	346	346	0	0	346	346	0
3.1.3 FNL-NuMI Beam Design													
Direct Cost + Escalation	0	0	0	0	0	612	612	612	0	(0)	612	612	0
Indirect Cost	0	0	0	0	0	186	186	184	0	3	186	186	0
WBS[3]Totals:	0	0	0	0	0	798	798	796	0	3	798	798	0
3.1.4 FNL-BD-NuMI Project Management													
Direct Cost + Escalation	0	0	0	0	0	184	184	184	0	(0)	184	184	0
Indirect Cost	0	0	0	0	0	51	51	50	0	1	51	51	0
WBS[3]Totals:	0	0	0	0	0	235	235	234	0	1	235	235	0
3.1.5 FNL-Soudan Lab Design													
Direct Cost + Escalation	0	0	0	0	0	55	55	56	0	(1)	55	55	0
Indirect Cost	0	0	0	0	0	10	10	9	0	1	10	10	0
WBS[3]Totals:	0	0	0	0	0	65	65	65	0	0	65	65	0
WBS[2]Totals:	0	0	0	0	0	1,934	1,934	1,928	0	6	1,934	1,934	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor: Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:				
Location: Batavia							NuMI Other Proj Costs		3/31/04	4/30/04			
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work	Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling			
1	62,200		0	0	0	62,200	0		0	0			
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance				
Results...	Work	Work	Work			Work	Work	Work				Latest Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
3.2 MINOS Detector R&D													
3.2.1 FNL-MINOS Scintillator R&D													
Direct Cost + Escalation	0	0	0	0	0	872	872	870	0	2	872	872	0
Indirect Cost	0	0	0	0	0	115	115	118	0	(2)	115	115	0
WBS[3]Totals:	0	0	0	0	0	988	988	988	0	0	988	988	0
3.2.2 FNL-MINOS Steel R&D													
Direct Cost + Escalation	0	0	0	0	0	549	549	550	0	(1)	549	549	0
Indirect Cost	0	0	0	0	0	95	95	94	0	1	95	95	0
WBS[3]Totals:	0	0	0	0	0	644	644	644	0	(0)	644	644	0
3.2.3 FNL-RD-Neutrino Oscillation R&D													
Direct Cost + Escalation	0	0	0	0	0	116	116	116	0	0	116	116	0
Indirect Cost	0	0	0	0	0	20	20	20	(0)	0	20	20	0
WBS[3]Totals:	0	0	0	0	0	136	136	136	(0)	0	136	136	0
WBS[2]Totals:	0	0	0	0	0	1,768	1,768	1,768	(0)	0	1,768	1,768	0
3.3 MINOS Cavern													
3.3.0 Preconstruction Work													
Direct Cost + Escalation	0	0	0	0	0	758	758	758	0	0	758	758	0
WBS[3]Totals:	0	0	0	0	0	758	758	758	0	0	758	758	0
3.3.1 Cavern Construction													
Direct Cost + Escalation	0	0	0	0	0	6,597	6,597	6,597	0	0	6,597	6,597	0
WBS[3]Totals:	0	0	0	0	0	6,597	6,597	6,597	0	0	6,597	6,597	0
3.3.2 Cavern Outfitting													
Direct Cost + Escalation	0	0	0	0	0	7,171	7,171	7,171	0	0	7,171	7,171	0
WBS[3]Totals:	0	0	0	0	0	7,171	7,171	7,171	0	0	7,171	7,171	0
WBS[2]Totals:	0	0	0	0	0	14,527	14,527	14,527	0	0	14,527	14,527	0
3.4 Soudan/MINOS Operating													
3.4.1 UMN-Mine Crew Support/Soudan Gen'l Operations													
Direct Cost + Escalation	0	0	0	0	0	1,523	1,523	1,503	0	20	1,523	1,523	0
Indirect Cost	0	0	0	0	0	8	8	27	0	(20)	8	8	0
WBS[3]Totals:	0	0	0	0	0	1,531	1,531	1,531	0	(0)	1,531	1,531	0
3.4.2 UMN-Breitung Township Building Rental													
Direct Cost + Escalation	0	0	0	0	0	75	75	75	0	(0)	75	75	0
WBS[3]Totals:	0	0	0	0	0	75	75	75	0	(0)	75	75	0
3.4.3 UMN-E Peterson Salary													
Direct Cost + Escalation	0	0	0	0	0	71	71	71	0	0	71	71	0
WBS[3]Totals:	0	0	0	0	0	71	71	71	0	0	71	71	0
WBS[2]Totals:	0	0	0	0	0	1,677	1,677	1,677	0	(0)	1,677	1,677	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		3/31/04	4/30/04		
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Results...	Work	Work	Work			Work	Work	Work				Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
General and Administrative	0	0	0	0	0	0	0	0	0	0	0	0	0
Undistributed Budget											0	0	0
Sub Total	266	140	275	(126)	(135)	66,707	66,542	66,710	(165)	(168)	67,434	67,434	0
Contingency + MINOS Scope Reserve											3,796	3,796	0
Total NuMI Other Proj Costs	266	140	275	(126)	(135)	66,707	66,542	66,710	(165)	(168)	71,230	71,230	0
UK In-Kind Contribution	(3)	(2)	0	0	(2)	(4,822)	(4,804)	(4,802)	18	(2)	(5,272)	(5,272)	0
Minnesota Preconstruction Funds	0	0	0	0	0	(758)	(758)	(758)	0	0	(758)	(758)	0
Minnesota Construction Funds FY99	0	0	0	0	0	(3,000)	(3,000)	(3,000)	0	0	(3,000)	(3,000)	0
Total US Funds	263	138	275	(126)	(137)	58,127	57,980	58,151	(147)	(170)	62,200	62,200	0
WBS[2]Totals:													
Direct Cost + Escalation	205	107	223	(98)	(116)	44,121	43,990	44,193	(131)	(203)	44,694	44,694	0
Indirect Cost	61	33	52	(28)	(19)	2,681	2,647	2,617	(34)	30	2,834	2,834	0
Subtotal	266	140	275	(126)	(135)	46,801	46,637	46,810	(165)	(174)	47,528	47,528	0
UK In-Kind Contribution	(3)	(2)	0	0	(2)	(4,822)	(4,804)	(4,802)	18	(2)	(5,272)	(5,272)	0
Total MINOS Detector	263	138	275	(126)	(137)	41,979	41,833	42,009	(147)	(176)	42,257	42,257	0
Direct Cost + Escalation	0	0	0	0	0	19,273	19,273	19,253	0	20	19,273	19,273	0
Indirect Cost	0	0	0	0	0	633	633	646	0	(14)	633	633	0
Subtotal	0	0	0	0	0	19,906	19,906	19,900	0	6	19,906	19,906	0
Minnesota Preconstruction Funds	0	0	0	0	0	(758)	(758)	(758)	0	0	(758)	(758)	0
Minnesota Construction Funds FY99	0	0	0	0	0	(3,000)	(3,000)	(3,000)	0	0	(3,000)	(3,000)	0
Total Project Support	0	0	0	0	0	16,148	16,148	16,142	0	6	16,148	16,148	0
Contingency + MINOS Scope Reserve											3,796	3,796	0
Total US Funds	263	138	275	(126)	(137)	58,127	57,980	58,151	(147)	(170)	62,200	62,200	0

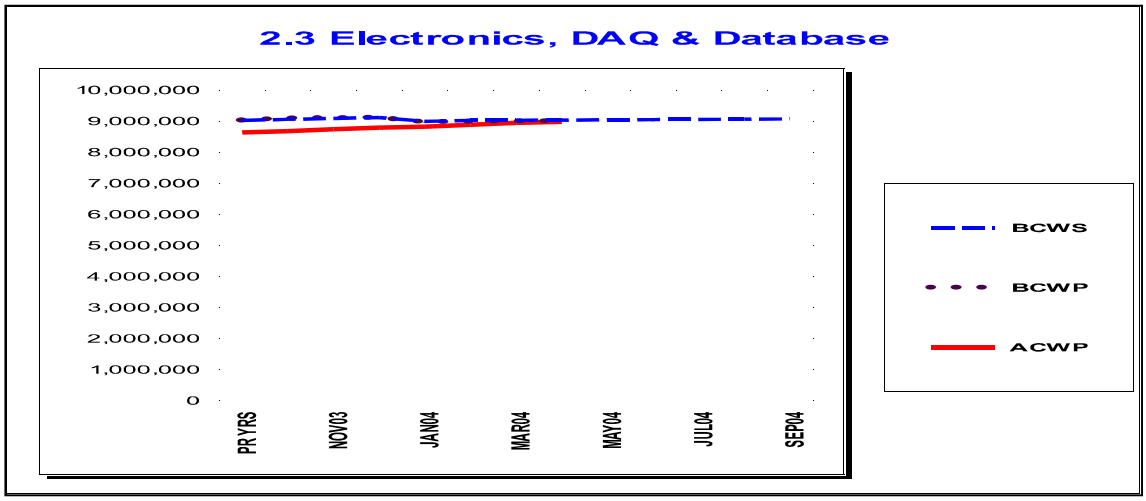
NuMI Other Project Costs

($000's Omitted)

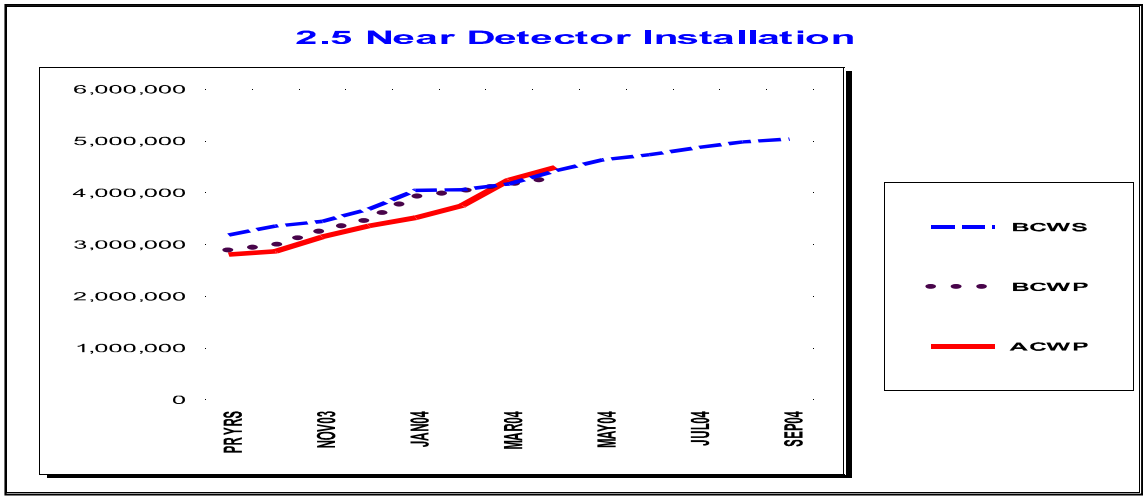
Cost Performance Report - Baseline																
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:				Report Period:				
Location:	Batavia							NuMI Other Proj Costs				3/31/04		4/30/04		
(1) Original Contract Target Cost		(2) Negotiated Contract Changes		(3) Current Target Cost		(4) Est. Cost Authorized Authorized Unpriced Work		(5) Contract Budget Base (3) + (4)				(6) Total Allocated Budget		(7) Difference (5) - (6)		
62,200		0		62,200		0		62,200				62,200		0		
(8)Contract Start Date 10/1/97		(9)Contract Definitization Date 10/1/97				(10)Last Item Delivery Date 4/30/04			(11)Contract Completion Date 4/30/04			(12)Estimated Completion Date 4/30/04				
Item	BCWS Cum to Date	BCWS for Report Period	Budgeted Cost for Work Scheduled (Non-Cumulative) Six Month Forecast +1 MAY04	+2 JUN04	+3 JUL04	+4 AUG04	+5 SEP04	+6 OCT04	(Enter Specific Periods) FY 05					Undist Budget	Total Budget
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
PM Baseline (Beginning of Period)	66,441	266	221	109	146	126	65	36	23	0	0	0	0	0	67,434
PM Baseline (End of Period)	66,707		221	109	146	126	65	36	23	0	0	0	0	0	67,434
Contingency + MINOS Scope Reserve															3,796
Total NuMI Other Project Costs															71,230
UK In-Kind Contribution															(5,272)
Minnesota Preconstruction Funds															(758)
Minnesota Preconstruction Funds FY99															(3,000)
Total US Funds															62,200

NuMI Other Project Costs

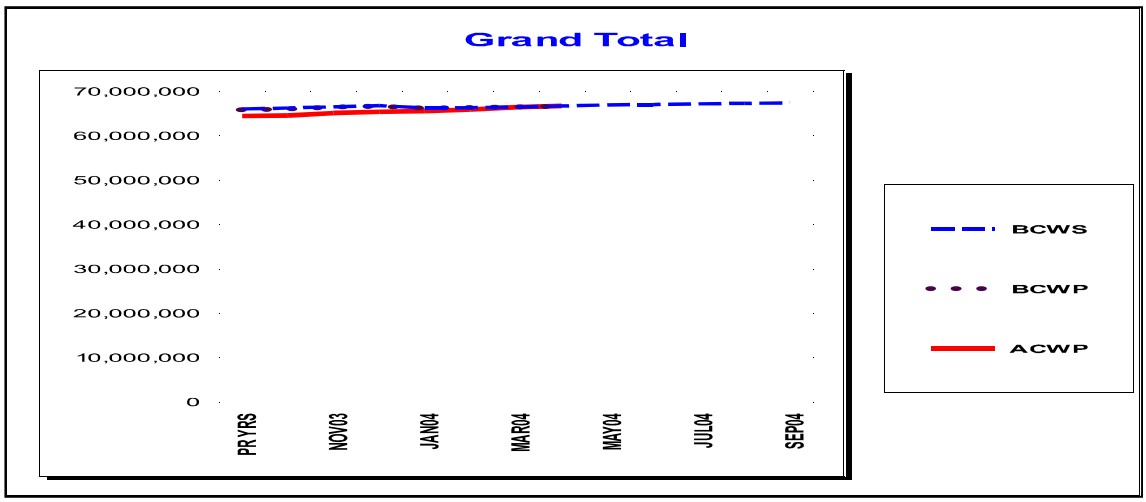
($000's Omitted)



	PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04
BCWS	9,017	9,052	9,079	9,111	8,987	9,014	9,019	9,027	9,034	9,042	9,049	9,057	9,063
BCWP	9,018	9,086	9,095	9,104	8,958	8,979	8,993	8,997					
ACWP	8,628	8,669	8,734	8,781	8,815	8,875	8,937	8,969					



	PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04
BCWS	3,182	3,354	3,445	3,680	4,045	4,057	4,168	4,423	4,633	4,731	4,866	4,980	5,035
BCWP	2,886	2,983	3,262	3,473	3,920	4,030	4,156	4,288					
ACWP	2,805	2,868	3,146	3,357	3,514	3,750	4,245	4,492					



	PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04
BCWS	66,033	66,242	66,505	66,760	66,278	66,322	66,441	66,707	66,928	67,038	67,183	67,309	67,374
BCWP	65,744	65,908	66,338	66,547	66,121	66,259	66,402	66,542					
ACWP	64,452	64,566	65,116	65,378	65,572	65,874	66,435	66,710					

NuMI Other Project Costs

($000's Omitted)

Program: NUMIOPC	Description: NuMI Other Proj Costs	Approval: Program Manager
Run Date: 05/12/04	Status Date: 4/30/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
2.1 Magnets: Steel & Coils																
2.1.1 Steel Plane Fabrication	BCWS	4,628	1	(27)	0	0	0	0	0	0	0	0	0	0	0	4,601
	ACWP	4,601	0	0	0	(0)	0	0	0	0	0	0	0	0	0	4,601
2.1.2 Steel handling fixtures	BCWS	773	0	20	0	0	0	0	0	0	0	0	0	0	0	793
	ACWP	793	0	0	0	0	0	0	0	0	0	0	0	0	0	793
2.1.3 Near Detector Support Structures	BCWS	5	0	(3)	0	0	0	0	0	0	0	0	0	0	0	1
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2.1.4 Magnet Coil	BCWS	1,562	0	111	0	0	0	0	0	0	0	0	0	0	0	1,673
	ACWP	1,673	0	0	0	(1)	0	0	0	0	0	0	0	0	0	1,672
2.1.5 Detector Plane Prototypes	BCWS	501	0	(5)	0	0	0	0	0	0	0	0	0	0	0	495
	ACWP	496	0	0	0	0	0	0	0	0	0	0	0	0	0	496
2.1.6 Steel Management	BCWS	71	0	(14)	0	0	0	0	0	0	0	0	0	0	0	57
	ACWP	57	0	0	0	0	0	0	0	0	0	0	0	0	0	58
WBS[2] Totals:	BCWS	7,539	1	81	0	0	0	0	0	0	0	0	0	0	0	7,621
	ACWP	7,622	0	0	0	(1)	0	0	0	0	0	0	0	0	0	7,621
2.2 Scintillator Detector Fabrication																
2.2.1 Scintillator Strips	BCWS	2,998	0	0	(26)	0	0	0	0	0	0	0	0	0	0	2,971
	ACWP	2,972	0	0	0	0	0	0	0	0	0	0	0	0	0	2,972
2.2.2 Fiber	BCWS	4,039	0	0	(78)	0	0	0	0	0	0	0	0	0	0	3,961
	ACWP	3,961	0	0	0	0	0	0	0	0	0	0	0	0	0	3,961
2.2.3 Scintillator Modules	BCWS	2,008	0	0	(26)	0	0	0	0	0	0	0	0	0	0	1,982
	ACWP	1,982	0	0	0	0	0	0	0	0	0	0	0	0	0	1,982
2.2.4 Photodetector Systems	BCWS	1,720	0	0	(19)	0	0	0	0	0	0	0	0	0	0	1,702
	ACWP	1,702	0	0	0	0	0	0	0	0	0	0	0	0	0	1,702
2.2.5 Mux Boxes & Connectors	BCWS	1,063	0	0	30	0	0	0	0	0	0	0	0	0	0	1,094
	ACWP	1,093	0	0	0	0	0	0	0	0	0	0	0	0	0	1,093
2.2.6 Calibration Systems	BCWS	3	0	0	(3)	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.7 Ass'y & Test Equipment	BCWS	1,729	0	0	(8)	0	0	0	0	0	0	0	0	0	0	1,721
	ACWP	1,721	0	0	0	0	0	0	0	0	0	0	0	0	0	1,721
2.2.8 Factories	BCWS	3,188	0	0	91	0	0	0	0	0	0	0	0	0	0	3,279
	ACWP	3,279	0	0	0	0	0	0	(8)	0	0	0	0	0	0	3,271
2.2.9 Scintillator Management	BCWS	355	0	0	24	0	0	0	0	0	0	0	0	0	0	379
	ACWP	379	0	0	0	0	0	0	0	0	0	0	0	0	0	379
WBS[2] Totals:	BCWS	17,104	0	0	(15)	0	0	0	0	0	0	0	0	0	0	17,089
	ACWP	17,089	0	0	0	0	0	0	(8)	0	0	0	0	0	0	17,081
2.3 Electronics, DAQ & Database																
2.3.1 Near Detector Front End	BCWS	4,545	30	24	28	(100)	24	1	4	4	5	5	5	5	5	4,585
	ACWP	4,175	40	31	47	35	58	62	26	0	0	0	0	0	0	4,473
2.3.2 Far Detector Front-end	BCWS	1,184	0	0	0	12	0	0	0	0	0	0	0	0	0	1,197
	ACWP	1,197	0	0	0	(1)	0	0	0	0	0	0	0	0	0	1,196
2.3.5 Database	BCWS	48	0	0	0	(38)	0	0	0	0	0	0	0	0	0	10
	ACWP	10	0	0	0	0	0	0	0	0	0	0	0	0	0	10
2.3.6 Auxilliary Systems	BCWS	202	0	0	0	0	0	0	0	0	0	0	0	0	0	206
	ACWP	247	1	0	0	0	0	0	0	0	0	0	0	0	0	250

NuMI Other Project Costs

($000's Omitted)

Program: NUMIOPC	Description: NuMI Other Proj Costs	Approval: Program Manager
Run Date: 05/12/04	Status Date: 4/30/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
2.3.7 Electronics Management	BCWS	146	0	0	0	0	0	0	0	0	0	0	0	0	0	146
	ACWP	184	0	34	0	0	0	0	0	0	0	0	0	0	0	218
2.3.8 Slow Control & Monitoring	BCWS	445	0	0	0	5	0	0	0	0	0	0	0	0	0	449
	ACWP	373	0	0	0	(1)	2	0	5	0	0	0	0	0	0	380
2.3.9 HV System	BCWS	82	1	0	0	(6)	0	0	0	0	0	0	0	0	0	77
	ACWP	77	0	0	0	0	0	0	0	0	0	0	0	0	0	77
WBS[2] Totals:	BCWS	6,652	31	25	29	(126)	25	2	5	5	5	5	5	5	5	6,670
	ACWP	6,263	41	65	47	34	60	62	32	0	0	0	0	0	0	6,604
2.4 Far Detector Installation																
2.4.1 FDI Completed Design Tasks	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.2 FDI Management	BCWS	661	0	0	0	(77)	0	0	0	0	0	0	0	0	0	584
	ACWP	577	5	2	0	0	0	0	0	0	0	0	0	0	0	584
2.4.3 SDN-FDI Construction Oversight	BCWS	58	0	0	0	57	0	0	0	0	0	0	0	0	0	115
	ACWP	115	0	0	0	0	0	0	0	0	0	0	0	0	0	115
2.4.4 FDI Soudan Lab Infrastructure Setup	BCWS	509	0	0	0	(36)	0	0	0	0	0	0	0	0	0	473
	ACWP	473	0	0	0	0	0	0	0	0	0	0	0	0	0	473
2.4.5 SDN-FDI Detector Installation	BCWS	3,084	0	0	0	(124)	0	0	0	0	0	0	0	0	0	2,960
	ACWP	2,759	0	200	0	0	0	0	0	0	0	0	0	0	0	2,959
2.4.6 SDN-FDI DNR Costs	BCWS	708	0	0	0	(326)	0	0	0	0	0	0	0	0	0	382
	ACWP	378	0	0	0	0	0	0	0	0	0	0	0	0	0	378
2.4.7 FDI Alignment & Survey	BCWS	57	0	0	0	10	0	0	0	0	0	0	0	0	0	67
	ACWP	67	0	0	0	0	0	0	0	0	0	0	0	0	0	67
WBS[2] Totals:	BCWS	5,077	0	0	0	(496)	0	0	0	0	0	0	0	0	0	4,581
	ACWP	4,369	5	202	0	0	0	0	0	0	0	0	0	0	0	4,576
2.5 Near Detector Installation																
2.5.1 NDI Infrastructure	BCWS	253	6	24	6	2	5	74	62	35	3	26	17	0	0	512
	ACWP	170	20	14	13	2	16	61	86	0	0	0	0	0	0	382
2.5.2 NDI Plane Assembly	BCWS	516	0	0	0	0	0	0	0	0	0	0	0	0	0	516
	ACWP	514	0	0	0	(0)	0	0	0	0	0	0	0	0	0	514
2.5.3 NDI Detector Installation	BCWS	6	2	2	177	3	7	28	186	171	95	109	97	55	39	977
	ACWP	39	0	113	14	38	39	71	112	0	0	0	0	0	0	426
2.5.4 NDI Facility Experimental Infrastructure	BCWS	66	59	14	0	0	0	10	8	5	0	0	0	0	0	160
	ACWP	124	9	16	8	6	6	8	49	0	0	0	0	0	0	226
2.5.5 RBI SB&O Experimental Systems Outfitting	BCWS	2,341	106	51	52	359	0	0	0	0	0	0	0	0	0	2,909
	ACWP	1,957	33	135	177	111	176	355	0	0	0	0	0	0	0	2,944
WBS[2] Totals:	BCWS	3,182	172	91	235	364	12	111	255	210	98	134	115	55	39	5,074
	ACWP	2,805	63	278	211	157	237	495	247	0	0	0	0	0	0	4,492
2.6 MINOS Project Management																
2.6.1 FNL-Project Management	BCWS	1,448	0	61	4	4	3	4	4	4	4	4	4	4	15	1,560
	ACWP	1,505	5	4	4	4	5	5	5	0	0	0	0	0	0	1,537
2.6.2 ANL-Project Management	BCWS	98	0	0	0	0	0	0	0	0	0	0	0	0	0	98
	ACWP	98	0	0	0	0	0	0	0	0	0	0	0	0	0	98
WBS[2] Totals:	BCWS	1,546	0	61	4	4	3	4	4	4	4	4	4	4	15	1,658
	ACWP	1,603	5	4	4	4	5	5	5	0	0	0	0	0	0	1,635

NuMI Other Project Costs

($000's Omitted)

Program: NUMIOPC	Description: NuMI Other Proj Costs	Approval: Program Manager
Run Date: 05/12/04	Status Date: 4/30/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
3.1 NuMI Conceptual Design																
3.1.1 FNL-BD-NuMI CDR	BCWS	489	0	0	0	0	0	0	0	0	0	0	0	0	0	489
	ACWP	487	0	0	0	0	0	0	0	0	0	0	0	0	0	487
3.1.2 FNL-BD-NuMI FESS CDR	BCWS	346	0	0	0	0	0	0	0	0	0	0	0	0	0	346
	ACWP	346	0	0	0	0	0	0	0	0	0	0	0	0	0	346
3.1.3 FNL-NuMI Beam Design	BCWS	798	0	0	0	0	0	0	0	0	0	0	0	0	0	798
	ACWP	796	0	0	0	0	0	0	0	0	0	0	0	0	0	796
3.1.4 FNL-BD-NuMI Project Management	BCWS	235	0	0	0	0	0	0	0	0	0	0	0	0	0	235
	ACWP	234	0	0	0	0	0	0	0	0	0	0	0	0	0	234
3.1.5 FNL-Soudan Lab Design	BCWS	65	0	0	0	0	0	0	0	0	0	0	0	0	0	65
	ACWP	65	0	0	0	0	0	0	0	0	0	0	0	0	0	65
WBS[2] Totals:	BCWS	1,934	0	0	0	0	0	0	0	0	0	0	0	0	0	1,934
	ACWP	1,928	0	0	0	0	0	0	0	0	0	0	0	0	0	1,928
3.2 MINOS Detector R&D																
3.2.1 FNL-MINOS Scintillator R&D	BCWS	995	0	0	0	(8)	0	0	0	0	0	0	0	0	0	988
	ACWP	988	0	0	0	0	0	0	0	0	0	0	0	0	0	988
3.2.2 FNL-MINOS Steel R&D	BCWS	649	0	0	0	(4)	0	0	0	0	0	0	0	0	0	644
	ACWP	644	0	0	0	0	0	0	0	0	0	0	0	0	0	644
3.2.3 FNL-RD-Neutrino Oscillation R&D	BCWS	136	0	0	0	0	0	0	0	0	0	0	0	0	0	136
	ACWP	136	0	0	0	0	0	0	0	0	0	0	0	0	0	136
WBS[2] Totals:	BCWS	1,780	0	0	0	(12)	0	0	0	0	0	0	0	0	0	1,768
	ACWP	1,768	0	0	0	0	0	0	0	0	0	0	0	0	0	1,768
3.3 MINOS Cavern																
3.3.0 Preconstruction Work	BCWS	758	0	0	0	0	0	0	0	0	0	0	0	0	0	758
	ACWP	758	0	0	0	0	0	0	0	0	0	0	0	0	0	758
3.3.1 Cavern Construction	BCWS	6,597	0	0	0	0	0	0	0	0	0	0	0	0	0	6,597
	ACWP	6,597	0	0	0	0	0	0	0	0	0	0	0	0	0	6,597
3.3.2 Cavern Outfitting	BCWS	7,171	0	0	0	0	0	0	0	0	0	0	0	0	0	7,171
	ACWP	7,171	0	0	0	0	0	0	0	0	0	0	0	0	0	7,171
WBS[2] Totals:	BCWS	14,527	0	0	0	0	0	0	0	0	0	0	0	0	0	14,527
	ACWP	14,527	0	0	0	0	0	0	0	0	0	0	0	0	0	14,527
3.4 Soudan/MINOS Operating																
3.4.1 UMN-Mine Crew Support/Soudan Gen'l Operations	BCWS	1,709	0	0	0	(178)	0	0	0	0	0	0	0	0	0	1,531
	ACWP	1,531	0	0	0	0	0	0	0	0	0	0	0	0	0	1,531
3.4.2 UMN-Breitung Township Building Rental	BCWS	114	0	0	0	(39)	0	0	0	0	0	0	0	0	0	75
	ACWP	75	0	0	0	0	0	0	0	0	0	0	0	0	0	75
3.4.3 UMN-E Peterson Salary	BCWS	73	0	0	0	(2)	0	0	0	0	0	0	0	0	0	71
	ACWP	71	0	0	0	0	0	0	0	0	0	0	0	0	0	71
WBS[2] Totals:	BCWS	1,896	0	0	0	(219)	0	0	0	0	0	0	0	0	0	1,677
	ACWP	1,677	0	0	0	0	0	0	0	0	0	0	0	0	0	1,677
Grand Totals:	BCWS	61,236	203	258	252	(485)	41	117	263	219	107	143	123	63	59	62,599
	ACWP	59,651	114	550	262	193	302	561	275	0	0	0	0	0	0	61,909

NuMI Other Project Costs

($000's Omitted)

Program:	Description:	Approval:
NUMIOPC	NuMI Other Proj Costs	Program Manager
Run Date: 05/12/04	Status Date: 4/30/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
2.1 Magnets: Steel & Coils																
2.1.1 Steel Plane Fabrication	BCWS	130	0	0	0	0	0	0	0	0	0	0	0	0	0	130
	ACWP	171	0	0	0	0	0	0	0	0	0	0	0	0	0	171
2.1.2 Steel handling fixtures	BCWS	437	0	0	0	0	0	0	0	0	0	0	0	0	0	437
	ACWP	560	0	0	0	0	0	0	0	0	0	0	0	0	0	560
2.1.3 Near Detector Support Structures	BCWS	36	0	0	0	0	0	0	0	0	0	0	0	0	0	36
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1.4 Magnet Coil	BCWS	564	0	0	0	0	0	0	0	0	0	0	0	0	0	564
	ACWP	839	0	0	0	0	0	0	0	0	0	0	0	0	0	839
2.1.5 Detector Plane Prototypes	BCWS	355	0	0	0	0	0	0	0	0	0	0	0	0	0	355
	ACWP	375	0	0	0	0	0	0	0	0	0	0	0	0	0	375
2.1.6 Steel Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
WBS[2] Totals:	BCWS	1,521	0	0	0	0	0	0	0	0	0	0	0	0	0	1,522
	ACWP	1,946	0	0	0	0	0	0	0	0	0	0	0	0	0	1,946
2.2 Scintillator Detector Fabrication																
2.2.1 Scintillator Strips	BCWS	111	0	0	0	0	0	0	0	0	0	0	0	0	0	111
	ACWP	344	0	0	0	0	0	0	0	0	0	0	0	0	0	344
2.2.2 Fiber	BCWS	8	0	0	0	0	0	0	0	0	0	0	0	0	0	8
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.3 Scintillator Modules	BCWS	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11
	ACWP	284	0	0	0	0	0	0	0	0	0	0	0	0	0	284
2.2.5 Mux Boxes & Connectors	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	37	0	0	0	0	0	0	0	0	0	0	0	0	0	37
2.2.6 Calibration Systems	BCWS	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.7 Ass'y & Test Equipment	BCWS	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9
	ACWP	139	0	0	0	0	0	0	0	0	0	0	0	0	0	139
2.2.8 Factories	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.9 Scintillator Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	144	0	0	0	0	0	0	0	0	0	0	0	0	0	144
	ACWP	805	0	0	0	0	0	0	0	0	0	0	0	0	0	805
2.3 Electronics, DAQ & Database																
2.3.1 Near Detector Front End	BCWS	356	15	13	15	15	13	1	0	0	0	0	0	0	0	428
	ACWP	652	15	13	11	7	20	28	16	0	0	0	0	0	0	762
2.3.2 Far Detector Front-end	BCWS	112	0	0	0	0	0	0	0	0	0	0	0	0	0	112
	ACWP	176	0	0	0	0	0	0	0	0	0	0	0	0	0	176
2.3.6 Auxilliary Systems	BCWS	97	0	0	0	0	0	0	0	0	0	0	0	0	0	102
	ACWP	166	1	0	0	0	0	0	0	0	0	0	0	0	0	168
2.3.7 Electronics Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.3.8 Slow Control & Monitoring	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NuMI Other Project Costs

($000's Omitted)

Program: NUMIOPC	Description: NuMI Other Proj Costs	Approval: Program Manager
Run Date: 05/12/04	Status Date: 4/30/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
2.3.9 HV System	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	566	16	14	16	15	14	1	0	0	0	0	0	0	0	643
	ACWP	993	16	14	11	7	20	28	16	0	0	0	0	0	0	1,106
2.4 Far Detector Installation																
2.4.1 FDI Completed Design Tasks	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.2 FDI Management	BCWS	89	0	0	0	0	0	0	0	0	0	0	0	0	0	89
	ACWP	47	0	0	0	0	0	0	0	0	0	0	0	0	0	47
2.4.4 FDI Soudan Lab Infrastructure Setup	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7
2.4.7 FDI Alignment & Survey	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	89	0	0	0	0	0	0	0	0	0	0	0	0	0	89
	ACWP	54	0	0	0	0	0	0	0	0	0	0	0	0	0	54
2.5 Near Detector Installation																
2.5.1 NDI Infrastructure	BCWS	158	1	17	4	1	3	63	62	35	3	26	17	0	0	389
	ACWP	101	17	12	7	(2)	4	0	2	0	0	0	0	0	0	141
2.5.2 NDI Plane Assembly	BCWS	501	0	0	0	0	0	0	0	0	0	0	0	0	0	501
	ACWP	468	0	0	0	(0)	0	0	0	0	0	0	0	0	0	468
2.5.3 NDI Detector Installation	BCWS	3	0	0	0	0	3	17	176	162	86	99	88	46	22	703
	ACWP	11	0	10	8	15	34	59	108	0	0	0	0	0	0	244
2.5.4 NDI Facility Experimental Infrastructure	BCWS	15	0	0	0	0	0	10	8	5	0	0	0	0	0	37
	ACWP	17	0	1	5	6	4	8	17	0	0	0	0	0	0	57
2.5.5 RBI SB&O Experimental Systems Outfitting	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	677	1	17	4	1	6	90	246	201	89	125	105	46	22	1,630
	ACWP	596	17	22	20	18	43	66	127	0	0	0	0	0	0	911
2.6 MINOS Project Management																
2.6.1 FNL-Project Management	BCWS	1,398	0	61	4	4	3	4	4	4	4	4	4	4	15	1,511
	ACWP	1,356	5	4	4	4	5	5	5	0	0	0	0	0	0	1,388
2.6.2 ANL-Project Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	1,398	0	61	4	4	3	4	4	4	4	4	4	4	15	1,511
	ACWP	1,356	5	4	4	4	5	5	5	0	0	0	0	0	0	1,388
3.1 NuMI Conceptual Design																
3.1.1 FNL-BD-NuMI CDR	BCWS	99	0	0	0	0	0	0	0	0	0	0	0	0	0	99
	ACWP	99	0	0	0	0	0	0	0	0	0	0	0	0	0	99
3.1.2 FNL-BD-NuMI FESS CDR	BCWS	112	0	0	0	0	0	0	0	0	0	0	0	0	0	112
	ACWP	112	0	0	0	0	0	0	0	0	0	0	0	0	0	112
3.1.3 FNL-NuMI Beam Design	BCWS	530	0	0	0	0	0	0	0	0	0	0	0	0	0	530
	ACWP	529	0	0	0	0	0	0	0	0	0	0	0	0	0	529
3.1.4 FNL-BD-NuMI Project Management	BCWS	132	0	0	0	0	0	0	0	0	0	0	0	0	0	132
	ACWP	132	0	0	0	0	0	0	0	0	0	0	0	0	0	132

NuMI Other Project Costs

($000's Omitted)

Program: NUMIOPC	Description: NuMI Other Proj Costs	Approval: Program Manager
Run Date: 05/12/04	Status Date: 4/30/2004	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
3.1.5 FNL-Soudan Lab Design	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	872	0	0	0	0	0	0	0	0	0	0	0	0	0	872
	ACWP	872	0	0	0	0	0	0	0	0	0	0	0	0	0	872
3.2 MINOS Detector R&D																
3.2.1 FNL-MINOS Scintillator R&D	BCWS	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7
	ACWP	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
3.2.2 FNL-MINOS Steel R&D	BCWS	46	0	0	0	0	0	0	0	0	0	0	0	0	0	46
	ACWP	46	0	0	0	0	0	0	0	0	0	0	0	0	0	46
3.2.3 FNL-RD-Neutrino Oscillation R&D	BCWS	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9
	ACWP	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9
WBS[2] Totals:	BCWS	62	0	0	0	0	0	0	0	0	0	0	0	0	0	62
	ACWP	62	0	0	0	0	0	0	0	0	0	0	0	0	0	62
3.4 Soudan/MINOS Operating																
3.4.1 UMN-Mine Crew Support/Soudan Gen'l Operations	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3.4.2 UMN-Breitung Township Building Rental	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Totals:	BCWS	5,330	17	91	24	20	23	95	250	205	93	129	109	49	38	6,472
	ACWP	6,686	38	40	36	30	68	99	148	0	0	0	0	0	0	7,144

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Total Budget Mar-04	Amounts as of April 30, 2004 PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
YAA	1.1.1.1		EPB/Physics Design Phase	139	139			139	(0)
YAB	1.1.1.2		EPB/Title I & II Design Phase	851	1,028			1,028	(177)
YAC	1.1.1.3.1		EPB/Title III	221	254	2		256	(35)
YAD	1.1.1.3.2.1		EPB/Fabrication	1,508	1,565	210		1,775	(267)
YAE	1.1.1.3.2.2		EPB/Assembly	1,007	517	8		524	483
YAG	1.1.1.3.2.3		EPB/Lambertston Construction	402	417	51		468	(66)
YAH	1.1.1.3.2.4		EPB/Refurbish & Repair B2 Magnets	18	124			124	(106)
YAK	1.1.1.3.2.5		EPB/Refurbish & Repair 3Q120 Magnets	96	104	11		115	(19)
YAL	1.1.1.3.2.6		EPB/Fabricate Add'l Trim Magnets	89	342			342	(254)
YAM	1.1.1.3.2.7		EPB/Refurbish 5.5 - 2.87 - 60 Trim Dipoles	79	20			20	58
YAF	1.1.1.3.3		EPB/Installation	609	877	30	13	920	(311)
	1.1.1.3.4		EPB/Precommissioning	8	0			0	8
YAI	1.1.1.4		EPB/Beamline Tests	63	44			44	19
YAJ	1.1.1.5		EPB/Controls Software & Permit	198	2			2	196
YBA	1.1.2.1		NBD/Physics Design Phase	611	780			780	(170)
YBB	1.1.2.2		NBD/Title I & II Design Phase	4,125	4,847	11		4,857	(732)
YBC	1.1.2.3.1		NBD/Title III	211	193			193	18
YBD	1.1.2.3.2		NBD/Construction	3,957	3,437	62	121	3,620	337
	1.1.2.3.3		NBD/Installation	1,679	1,162	145		1,307	372
	1.1.2.3.4		NBD/Precommissioning	54	0			0	54
YCB	1.1.3.2		PSS/Title I & II Design Phase	1,521	1,673			1,673	(153)
YCC	1.1.3.3.1		PSS/Title III	205	133	1		134	71
YCD	1.1.3.3.2		PSS/Construction & Fabrication	2,667	2,822	53		2,875	(208)
YCE	1.1.3.3.3		PSS/Installation	602	338	46		384	218
	1.1.3.3.4		PSS/Precommissioning	20	0			0	20
YDA	1.1.4.1		HDA/Physics Design Phase	60	60			60	0
YDB	1.1.4.2		HDA/Title I & II Design Phase	527	518			518	9
YDC	1.1.4.3.1		HDA/Title III	59	51			51	8
	1.1.4.3.2.1		HDA/Misc Construction Materials	11	3	7		10	1
YDE	1.1.4.3.2.2		HDA/Absorber Construction	221	161	(0)		161	60
YDF	1.1.4.3.2.3		HDA/Vacuum Window Construction	31	31			31	1
	1.1.4.3.2.4		HDA/Installation	526	70	163	1	234	292
YEA	1.1.5.1		NBM/Physics Design Phase	86	80			80	6
YEB	1.1.5.2		NBM/Title I & II Design Phase	306	266	33		299	7
YEF	1.1.5.4		NBM/Downstream Hadron Monitors	89	85	11		96	(7)

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Total Budget Mar-04	Amounts as of April 30, 2004 PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
YFA	1.1.6.1		ALS/Physics Design Phase	67	89			89	(22)
YFB	1.1.6.2		ALS/Title I & II Design Phase	11	9			9	2
YFC	1.1.6.3.1		ALS/Prepare Alignment Documentation	3	2			2	1
YFE	1.1.6.3.3		ALS/Title III	85	84	0		84	1
YFF	1.1.6.3.4		ALS/Installation	142	16			16	126
YGA	1.1.7.1		WVG/Physics Design Phase	24	1			1	23
YGB	1.1.7.2		WVG/Title I & II Design Phase	449	555			555	(106)
YGC	1.1.7.3.1		WVG/Title III	257	92			92	165
YGD	1.1.7.3.2		WVG/Construction	981	1,199	3		1,202	(221)
	1.1.7.3.3		WVG/Installation	823	44	43	20	108	715
YHA	1.1.8.1		INST/Physics Design Phase	20	50			50	(30)
YHB	1.1.8.2		INST/Title I & II Design Phase	207	150			150	57
YHC	1.1.8.3.1		INST/Title III	848	246			246	602
YHD	1.1.8.3.2		INST/Controls, Cables & Safety Systems Construction	349	247	9	1	256	93
YHE	1.1.8.3.3		INST/Controls, Cables & Safety Systems Installation	1,050	903	53		956	94
YHF	1.1.8.3.4		INST/Miscellaneous Installation Activities	145	150	6		156	(11)
	1.1.8.3.5		INST/Precommission Controls, Cables & Safety Systems	8	0			0	8
	1.1.8.4		INST/Moveable Shield Wall for the Target Hall	237	13			13	224
YJA	1.1.9		Hadronic Hose (Close-out)	62	63			63	(1)
YIA	1.2.1		Facility Const Physics Design Phase	70	70			70	(0)
YIB	1.2.2		Facility Const Title I Design Phase	1,438	1,437			1,437	1
YIC	1.2.3		Facility Const Title II Design Phase	2,975	2,974			2,974	1
YID	1.2.4.2		Facility Const Title III Services	6,174	6,726	4		6,730	(556)
YIE	1.2.4.3		Site Preparation & Utilities	1,098	1,094			1,094	4
YIF	1.2.4.4		Underground Work	34,788	35,492	19	90	35,601	(813)
YIG	1.2.4.5		Service Buildings & Outfitting	17,799	17,764	0		17,764	35
YII	1.2.4.7		FNL Procurements for Conventional Construction	482	421	1		422	60
YIL	1.2.4.8.1		Facility Const ESH&H	853	785			785	68
YIM	1.2.4.8.2		Facility Const FESS Non-Engineering	591	325			325	266
YIN	1.2.4.8.3		Facility Const UG Advisory Panel	1,205	1,226			1,226	(21)
YIO	1.2.4.8.4		Facility Const Miscellaneous	263	306	23		329	(66)
YIP	1.2.4.8.5		Facility Const Prebid Document Update	1,155	1,051			1,051	104
YKA	1.3.1		FY 98 Project Management	275	141			141	133
YKB	1.3.2		FY 99 Project Management	560	661			661	(102)
YKC	1.3.3		FY00 Project Management	575	663			663	(88)
YKD	1.3.4		FY01 Project Management	688	423			423	265

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Total Budget Mar-04	Amounts as of April 30, 2004 PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
YKE	1.3.5		FY02 Project Management	703	324			324	378
YKF	1.3.6		FY03 Project Management	541	421			421	120
	1.3.7		FY04 Project Management	108	336			336	(228)
	1.3.8		FY05 Project Management	130	0			0	130
YKZ	1.3.9		Unallocated Budget	894	0			0	894
YQF	2.1.1.1.1	FNL	EDI&A Far Detector Final Design	70	70			70	0
YQG	2.1.1.1.2	FNL	EDI&A Near Detector Final Design	41	41			41	0
YQA	2.1.1.1.99	FNL	EDI&A Steel Plane Fabrication	0	0			0	0
YQH	2.1.1.1.3.1	FNL	EDI&A Oversight	67	67			67	0
YQI	2.1.1.1.3.2	UMN	EDI&A Oversight	36	36	0		36	0
YQB	2.1.1.2	FNL	4 Plane Proto Far & Near	79	79			79	0
YQC	2.1.1.3	FNL	Module 1 Steel	1,740	1,740			1,740	0
YQD	2.1.1.4	FNL	Module 2 Steel	1,722	1,722			1,722	0
YQE	2.1.1.6	FNL	Near Steel	845	845			845	0
YQM	2.1.2.1	FNL	EDI&A Steel Handling Fixtures	424	424			424	0
YQN	2.1.2.2	FNL	Far Detector Fixtures	177	177			177	0
YQO	2.1.2.3	FNL	Near Detector Fixtures	192	192			192	0
YQS	2.1.3.1	FNL	EDI&A Near Detector Support Structures	1	1			1	0
	2.1.3.2	FNL	Purchase Near Detector Support Structures	0	0			0	0
	2.1.3.3	FNL	Purchase Near Bookend	0	0			0	0
YQY	2.1.4.1	FNL	EDI&A Magnet Coil	527	527			527	0
YQZ	2.1.4.2	FNL	Coil Materials - Far Detector	329	329			329	0
YRA	2.1.4.3	FNL	Coil Materials - Near Detector	76	76			76	0
YRB	2.1.4.4	FNL	Cooling System - Far Detector	5	5			5	0
YRI	2.1.4.5	FNL	Coil Fixtures - Near Detector	32	32			32	0
YRC	2.1.4.6.1	FNL	Instrumentation/Monitoring-Far Detector	142	142			142	0
YRH	2.1.4.6.2	UMN	Instrumentation/Monitoring-Far Detector	63	62	1		63	0
YRD	2.1.4.6.99	FNL	Instrumentation/Monitoring-Far Detector	0	0			0	0
YRE	2.1.4.7	FNL	Instrumentation/Monitoring-Near Detector	33	33			33	0
YRF	2.1.4.8	FNL	Manufacture Near Coil Parts	302	302			302	0
YRG	2.1.4.9	FNL	Far Coil Prototype	165	165			165	0
YRM	2.1.5.1	FNL	EDI&A Detector Plane Prototypes	35	35			35	0
YRN	2.1.5.2	FNL	Far 4 Plane Proto	197	197			197	0
YRO	2.1.5.3	FNL	Far 4 Plane Training School	10	10			10	0
YRP	2.1.5.4	FNL	Materials Handling Prototype	115	115			115	0
YRQ	2.1.5.5	FNL	Near 4 Plane Prototype	138	138			138	0

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Total Budget Mar-04	Amounts as of April 30, 2004 PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
	2.1.5.6	FNL	Near 4 Plane Training School	0	0			0	0
YRW	2.1.6.1	FNL	Steel Mgmt Travel	58	58			58	0
YSA	2.2.1.1.1	FNL	EDI&A Scintillator Strips	375	375			375	0
YSB	2.2.1.1.2	ANL	EDI&A Scintillator Strips	188	188			188	0
YSC	2.2.1.1.3	UMN	EDI&A Scintillator Strips	16	16			16	0
YSD	2.2.1.1.4	CALT	EDI&A Scintillator Strips	60	60			60	0
YSL	2.2.1.1.6	TUF	EDI&A Scintillator Strips	7	7			7	0
YSP	2.2.1.2.1	ANL	Scintillator Strip Extruding	0	0			0	0
YTB	2.2.1.2.3	FNL	Scintillator Strip Extruding	2,325	2,325			2,325	0
YSE	2.2.2.1.2	IU	EDI&A Fiber	91	91			91	0
YSF	2.2.2.1.3	UMN	EDI&A Fiber	32	32			32	0
YSG	2.2.2.1.5	FNL	EDI&A Fiber	99	99			99	0
YSH	2.2.2.1.6	CALT	EDI&A Fiber	86	86			86	0
YSQ	2.2.2.2.1	CALT	Fiber M&S	1,272	1,272			1,272	0
YUK	2.2.2.2.2	TAMU	Fiber M&S	123	123			123	0
YST	2.2.2.2.4	IU	Fiber M&S	2,157	2,157			2,157	0
YUN	2.2.2.2.5	JMU	Fiber M&S	103	103			103	0
YSJ	2.2.3.1.1	UMN	EDI&A Module Design & Prototyping	302	302			302	0
YSI	2.2.3.1.2	ANL	EDI&A Module Design & Prototyping	46	46			46	0
YSK	2.2.3.1.3	FNL	EDI&A Module Design & Prototyping	153	153			153	0
	2.2.3.1.4	IU	EDI&A Module Design & Prototyping	0	0			0	0
YSM	2.2.3.1.5	CALT	EDI&A Module Design & Prototyping	9	9			9	0
YSN	2.2.3.1.6	TUF	EDI&A Module Design & Prototyping	4	4			4	0
YUO	2.2.3.2	UMN	Scintillator Module Parts - Near Detector	54	54			54	0
YSW	2.2.3.3.1	FNL	Scintillator Module Parts - Far Detector	1,080	1,080			1,080	0
YTF	2.2.3.3.2	TUF	Scintillator Module Parts - Far Detector	74	74			74	0
YUS	2.2.3.4	FNL	Scintillator Module Parts	261	261			261	0
YSO	2.2.4.1.2	TXA	EDI&A Photodetector Systems	124	124			124	0
YSX	2.2.4.2.1	TXA	Photodetectors	1,355	1,355			1,355	0
YUL	2.2.4.2.3	ATH	Photodetectors	23	23			23	0
YSY	2.2.4.3.1	TXA	PMT Bases and Mounting for SM1	200	200			200	0
YUP	2.2.4.3.2	UCL	PMT Bases and Mounting for SM2	0	0			0	0
YSU	2.2.5.1.2	IU	EDI&A Mux Boxes & Connectors	89	89			89	0
YSV	2.2.5.1.4	FNL	EDI&A Mux Boxes & Connectors	46	46			46	0
YSZ	2.2.5.1.5	IU	QC LED Computer System	31	31			31	0
YSR	2.2.5.2.1	IU	Connectors	159	159			159	0

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Total Budget Mar-04	Amounts as of April 30, 2004 PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
YUM	2.2.5.2.3	FNL	Connectors	10	10			10	0
YWJ	2.2.5.2.4	FNL	Connectors - Rework	30	30			30	0
YSS	2.2.5.3.1	IU	Mux Boxes	447	447			447	0
YUQ	2.2.5.3.2	TUF	Mux Boxes	225	225			225	0
YUG	2.2.5.3.4	TXA	Mux Boxes	56	56			56	0
YTA	2.2.6.1.1	FNL	EDI&A Calibration Systems	0	0			0	0
	2.2.6.3.1	FNL	Light Injection System - Near Detector	0	0			0	0
YTK	2.2.7.1.1	ANL	EDI&A Ass'y & Test Equipment	243	243			243	0
YTJ	2.2.7.1.2	FNL	EDI&A Ass'y & Test Equipment	35	35			35	0
YTN	2.2.7.1.3	UMN	EDI&A Ass'y & Test Equipment	47	47			47	0
YTM	2.2.7.2.1.1	ANL	Prototype Factory Equip Purch/Fabr	255	255			255	0
YTO	2.2.7.2.1.2	UMN	Prototype Factory Equip Purch/Fabr	22	22			22	0
YTL	2.2.7.2.1.3	FNL	Prototype Factory Equip Purch/Fabr	152	152			152	0
YTP	2.2.7.2.2.1	ANL	Factory 1 Equip Purch/Fabr	217	217			217	0
YTI	2.2.7.2.2.2	CALT	Factory 1 Equip Purch/Fabr	103	103			103	0
YTQ	2.2.7.2.2.3	FNL	Factory 1 Equip Purch/Fabr	25	25			25	0
YTC	2.2.7.2.2.4	UMN	Factory 1 Equip Purch/Fabr	57	57			57	0
YTG	2.2.7.2.3.1	ANL	Factory 2 Equip Purch/Fabr	307	307			307	0
	2.2.7.2.3.2	FNL	Factory 2 Equip Purch/Fabr	0	0			0	0
YTD	2.2.7.2.3.3	UMN	Factory 2 Equip Purch/Fabr	165	165			165	0
YUT	2.2.7.2.4.1	ANL	Equip for Soudan Purch/Fabr	31	31			31	0
	2.2.7.2.4.2	FNL	Equip for Soudan Purch/Fabr	0	0			0	0
YUH	2.2.7.2.4.3	UMN	Equip for Soudan Purch/Fabr	0	0			0	0
	2.2.7.2.5.1	FNL	Near Detector Site Equip Purch/Fabr	0	0			0	0
YTE	2.2.7.2.6.1	ANL	Other Equipment	61	61			61	0
YUI	2.2.7.2.6.3	UMN	Other Equipment	0	0			0	0
YTT	2.2.8.1	ANL	EDI&A Factories	28	28			28	0
YTR	2.2.8.2	CALT	Factories Ass'y Line Outfitting 1	164	164			164	0
YTS	2.2.8.3	UMN	Factories Ass'y Line Outfitting 2	172	172			172	0
YTU	2.2.8.4.1	CALT	Module Production	1,243	1,243			1,243	0
YUU	2.2.8.4.2	UMN	Module Production	1,164	1,164			1,164	0
YUV	2.2.8.4.3	ANL	Near Detector Production	500	500			500	0
YTW	2.2.9.1.1	FNL	Scintillator Mgmt Salaries	3	3			3	0
YTV	2.2.9.1.2	ANL	Scintillator Mgmt Salaries	101	101			101	0
YTX	2.2.9.1.3	UMN	Scintillator Mgmt Salaries	60	60			60	0
YUJ	2.2.9.2.1	FNL	Scintillator Mgmt Travel	0	0			0	0

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Total Budget Mar-04	Amounts as of April 30, 2004 PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
YTH	2.2.9.2.2	ANL	Scintillator Mgmt Travel	27	27			27	0
YTZ	2.2.9.2.3	CALT	Scintillator Mgmt Travel	149	149			149	0
YTY	2.2.9.2.4	UMN	Scintillator Mgmt Travel (Paid by FNL)	39	39			39	0
YUA	2.3.1.1.1	ANL	EDI&A Near Detector Front End	897	897			897	0
YUB	2.3.1.1.2	FNL	EDI&A Near Detector Front End	568	568			568	0
YWF	2.3.1.1.3	IIT	EDI&A Near Detector Front End	96	96			96	0
YUW	2.3.1.2.1	ANL	Parts Order and Assembly NDFE	517	500	17		517	0
YUD	2.3.1.2.2	FNL	Parts Order and Assembly NDFE	2,156	2,154	2		2,156	0
YWG	2.3.1.3.1	ANL	Production Checkout NDFE	125	125			125	0
YWH	2.3.1.3.2	FNL	Production Checkout NDFE	137	132	4		137	0
YWI	2.3.1.4	ANL	Installation NDFE	0	0			0	0
YUC	2.3.2.1.2	HVD	EDIA Far Detector Front End	351	351			351	0
YUE	2.3.2.1.3	FNL	EDIA Far Detector Front End	121	121			121	0
YUX	2.3.2.2.2	HVD	Parts Order and Assembly FDFE	399	399			399	0
YUF	2.3.2.2.3	FNL	Parts Order and Assembly FDFE	296	296			296	0
YUY	2.3.2.3.1	HVD	Production Checkout FDFE	29	29			29	0
	2.3.2.3.2	FNL	Production Checkout FDFE	0	0			0	0
	2.3.2.4.1	ANL	Installation FDFE	0	0			0	0
YVM	2.3.5.1	UMN	EDIA Database	0	0			0	0
YVN	2.3.5.2	UMN	Database Purchase & Programming	10	10			10	0
YUZ	2.3.6.2.2	FNL	Clock Distribution System	226	226			226	0
YVT	2.3.6.4	IIT	Auxiliary Systems	24	24			24	0
YVV	2.3.7.1	ANL	Electronics Mgmt Travel	47	47			47	0
YVA	2.3.7.2	ANL	NDFE Electronics Level 3 Manager	171	171			171	0
YVX	2.3.8.2.1	FNL	Procurement and Assembly	40	39	1		40	0
YVY	2.3.8.2.2	UMN	Procurement and Assembly	424	341	84		424	0
YVZ	2.3.9.3	TAMU	HV System	4	4			4	0
YWD	2.3.9.4	FNL	HV System	73	73			73	0
	2.4.1.1	SDN	FDI Completed Design Tasks	0	0			0	0
YWB	2.4.1.1.2	FNL	EDI&A FDI Infrastucture	0	0			0	0
	2.4.1.2	FNL	FDI Soudan Completed Design Tasks	0	0			0	0
YVB	2.4.2.1	SDN	FDI Minecrew Management	300	300			300	0
YVK	2.4.2.2	FNL	FDI Minecrew Management	234	234	0		234	0
YVU	2.4.2.4	TAMU	FDI Minecrew Management	49	49			49	0
YVC	2.4.3	SDN	FDI MINOS Construction Oversight	115	115			115	0
YVD	2.4.4.1	SDN	FDI Soudan Lab Infrastructure Setup	451	451			451	0

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Total Budget Mar-04	Amounts as of April 30, 2004 PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
YWC	2.4.4.2	FNL	FDI Soudan Lab Infrastructure Setup	22	22			22	0
YVE	2.4.5	SDN	FDI Labor Costs	2,959	2,959			2,959	0
YVF	2.4.6	SDN	FDI DNR Costs	378	378			378	0
YVG	2.4.7.1	SDN	FDI Purchases & Setup	0	0			0	0
YVI	2.4.7.2	FNL	FDI Alignment & Survey	67	67			67	0
YXA	2.5.1.1	FNL	NDI Infrastrucure EDI&A	47	47			47	0
YVL	2.5.1.2.1	FNL	NDI Install Support Structure	0	0			0	0
YVO	2.5.1.2.2	FNL	NDI Install Racks	293	281	11		293	0
	2.5.1.2.3	FNL	NDI NHI Install LCW System	48	40	8		48	0
YVP	2.5.1.2.6	FNL	NDI Install Coil Power Supply	1	1			1	0
	2.5.1.2.7	PITT	NDI NHI Rack Component Fabrication	13	13			13	0
YWE	2.5.2.1.2	IIT	NDI Plane Assembly EDI&A	10	10			10	0
YVJ	2.5.2.2	FNL	NDI New Muon Assembly Area Setup	161	161			161	0
YVW	2.5.2.3	FNL	NDI Assembly of Detector Planes-One Shift	342	342			342	0
	2.5.3.1	FNL	NDI Detector Installation EDI&A	39	39			39	0
	2.5.3.2	FNL	NDI Hall Tech Area Setup	216	216			216	0
	2.5.3.3	FNL	NDI Spectrometer Plane Installation	185	121		63	185	0
	2.5.3.4	FNL	NDI Calorimeter Plane Installation	0	0			0	0
YVR	2.5.3.5	FNL	NDI Detector Electronics Installation	42	42			42	0
YVS	2.5.3.6	FNL	NDI Magnet Coil Installation	8	8			8	0
	2.5.4		NDI Facility Experimental Infrastructure	296	226	69		296	0
YWL	2.5.5	RBI	NDI SB&O Experimental Systems Outfitting	2,944	2,944			2,944	0
YYA	2.6.1	FNL	Project Management	1,537	1,537			1,537	0
YYB	2.6.2	ANL	Project Management	98	98			98	0
YZA	3.1.1	FNL	BD-NuMI CDR	487	487			487	0
YZB	3.1.2	FNL	BD-NuMI FESS CDR	346	346			346	0
YZC	3.1.3.1	FNL	BD-NuMI Beam (FNAL)	555	555			555	0
YZD	3.1.3.2	FNL	BD-NuMI Beam E&D (IHEP)	241	241			241	0
YZE	3.1.4	FNL	BD-NuMI Project Management	234	234			234	0
YZV	3.1.5	FNL	NuMI-Soudan Lab CDR	65	65			65	0
YZF	3.2.1	FNL	MINOS Scintillator R&D	988	988			988	0
YZG	3.2.2	FNL	MINOS Steel R&D	644	644			644	0
YZH	3.2.3	FNL	RD-Neutrino Oscillation R&D	136	136			136	0
	3.3	SDN-CONST	MINOS Cavern	10,769	0	10,769		10,769	0
YZU	3.4.1	SDN-OPER	NuMI-Mine Crew Support/Soudan Gen'l Operations	1,531	1,531			1,531	0
YZX	3.4.2	SDN-OPER	NuMI-Breitung Township Building Rental	75	75			75	0

NuMI Project Obligations

$000's Omitted

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YZW	3.4.3	SDN-OPER	NuMI-E Peterson Salary	71	71			71	0
			Totals	**160,403**	**146,084**	**11,970**	**309**	**158,363**	**2,040**