NuMI

MINOS

February 28, 2005

TO: Steve Webster
DOE Project Director, NuMI

FROM: Greg Bock
Fermilab NuMI Project Manager

SUBJECT: NuMI Monthly Report

Attached is the January 2005 monthly report for the Fermilab NuMI Project.

Att.

cc: Distribution

Neutrinos at the Main Injector (NuMI) Project

Project No. 98-G-304
Progress Report No. 74
January 1-31, 2005
(G. Bock, D. Bogert - Editors)
(NuMI-1074)

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

On January 21-23 a second beam test was successfully completed. All remaining CD-4 commissioning goals were accomplished during this test. High intensity beam (2.5E12 protons/pulse) was transported to the target, producing neutrinos that were observed by the MINOS near detector.

Milestone L-2-14 (Near Detector Complete and Tested) was achieved on January 20. As of the end of January all 343 of the NuMI project's L3 milestones are complete. Only a very small amount of routine work remains in the target hall involving connection of a chiller. That work is being integrated into the physics-commissioning schedule and will be likely listed as a 'punch list' item at the DOE Office of Science Review of NuMI scheduled for February 17.

Atmospheric neutrino data was routinely collected with the Far Detector.

There were no injuries on the NuMI project this month.

Overall progress across the NuMI project continues to be very good. The project is well over 99% complete and completion continues to be forecast for February. The reader of this report will continue to notice the rapid change in the narrative parts of the monthly report as we finish the project.

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.

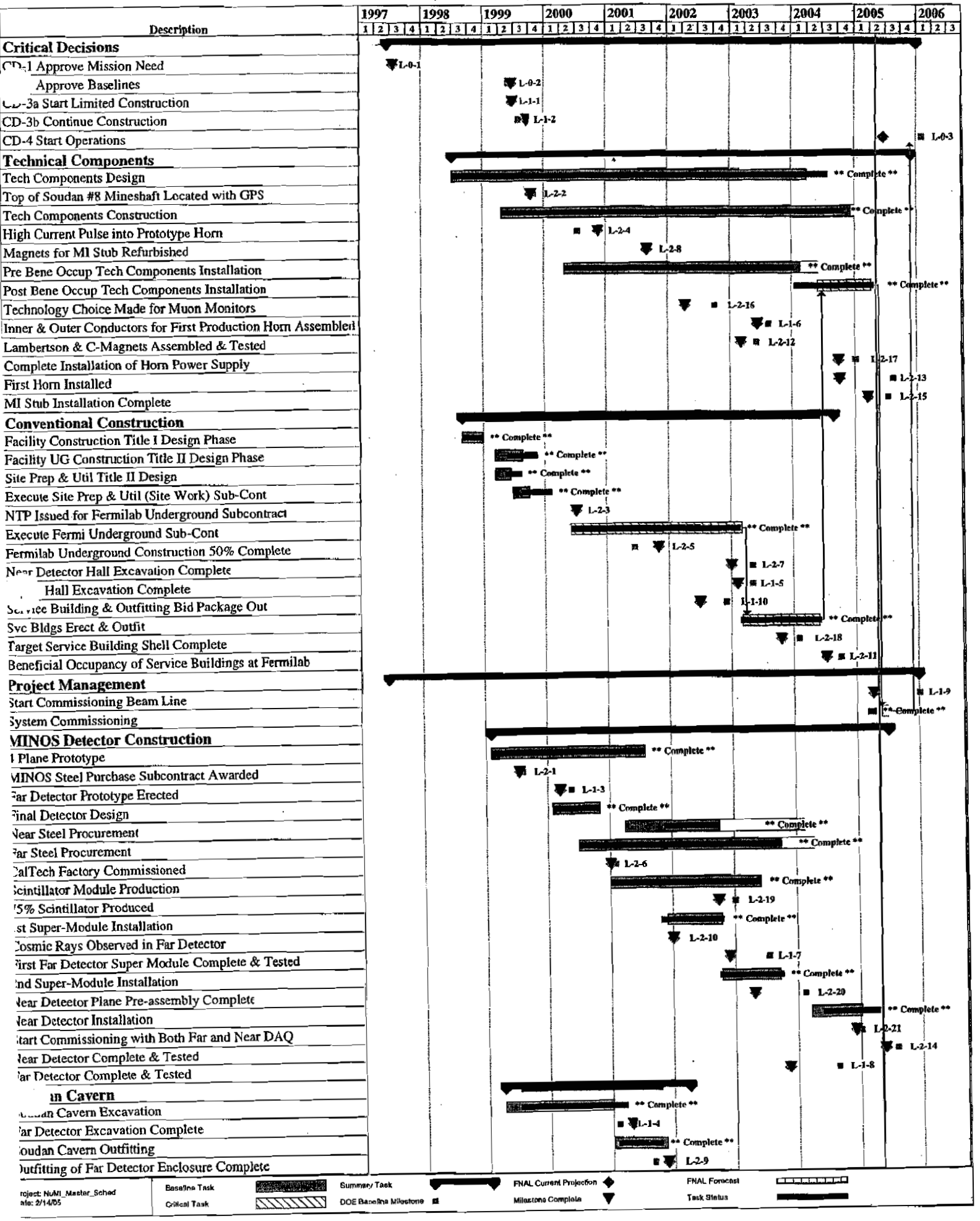
The DOE baseline milestones are shown in the figure as solid squares. These fixed milestones are defined in the DOE Project Execution Plan and the Baseline Change Proposal approved in December 2001. Shown as diamonds on the same line are the project's baseline projected dates for achieving the milestones.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

NuMI Project
(Fiscal Years)



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

2/14/2005

Milestone Description	PEP Milestone #	DOE Milestones (As of 12/2001)	Last Month's Forecast Milestone (12/2004)	Current Month's Forecast Milestone (1/2005)	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	8/2/2004	8/2/2004	28	0	Complete
Complete Installation of Horn Power Supply	L-2-17	9/1/2004	5/28/2004	5/28/2004	96	0	Complete
MI Stub Installation Complete	L-2-15	3/11/2005	11/11/2004	11/11/2004	120	0	Complete
Near Detector Complete & Tested	L-2-14	3/31/2005	1/20/2005	1/20/2005	70	0	Complete
First Horn Installed	L-2-13	4/7/2005	6/1/2004	6/1/2004	310	0	Complete
Start Commissioning	L-1-9	9/1/2005	12/3/2004	12/3/2004	272	0	Complete
CD-4 Start Operations	L-0-3	9/30/2005	2/1/2005	2/17/2005	225	(16)	

IV. FUNDING SUMMARY (K$)

Funding Summary (as of 1/31/2005), amounts in thousands

YEAR	TEC (NuMI Facility) Appropriations	OPC (MINOS, Soudan) Obligations. Actual costs through FY04. 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]	2,109 actual
FY05	745[2,3,4,5]	2,996
TOTALS	**109,162**	**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. FY05 Rescission removed $6.256K. This funding was NOT restored and the TPC of the project was correspondingly reduced.

TEC Funding Appropriated,
Not yet authorized
745[5]

Total TEC funding authorized
108,417

TEC Obligations to date, (Not including requisitions in progress)
108,150 59,524 **OPC Obligations to date**

TEC Funding authorized but not obligated
267

Note [5]: Full FY05 allocation.

V. NARRATIVE HIGHLIGHTS

MANAGEMENT HIGHLIGHTS – G. Bock

No change requests are reported this month. Contingency use remains consistent with projections from the last DOE Office of Science Review in May 2004.

Milestone L-2-14 (Near Detector Complete and Tested) was achieved on January 20.

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

Complete.

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

Overview

A second beam test was successfully completed on January 21-23. All remaining CD-4 goals were accomplished during this test. High intensity beam (2.5E12 protons/pulse) was transported to the target, producing neutrinos that were observed by the MINOS near detector.

Milestone L-3-290 "Shielding Installation Complete" was achieved on 1/31/05. All Level 3 milestones are now complete.

The last major activity is the commissioning of the target chase air-cooling system. The vendor for the chiller has had difficulties meeting the specifications, and has now proposed adding a sub-cooler. Delivery of the chiller is expected in early February. Installation and commissioning is expected to be completed by March 1. The delay in the chiller delivery has not hindered beam-commissioning progress however. The chiller is required for high duty-cycle, high intensity beam operation which is anticipated to begin in March.

Integration and Installation – R. Andrews

Main Injector:

Complete.

MI-65:

During the month of January 2005 focus was on installation of the elements making up the Target Chase Air Cooling System. The ductwork system was completed and outfitted with instrumentation. Electrical service was pulled in and terminated for the fan unit and reheat coils. The supply and return manifolds including modulating valves feeding the heat exchanger were fabricated and installed.

Damper systems and actuators were installed. This included the fabrication and installation of a large damper in the supply air stream located between the shielding of the target chase and the R-block cover. Compressed air was routed to dampers and actuators completing the pneumatic controls system. And, finally, all the piping routed from the RAW room to and through the heat exchanger coils was hydrostatically pressure tested to 300 psi to assure no leaks.

There was also much activity in the horn and target area. Survey and Alignment reviewed the horn positions in the target chase and worked on positioning and repositioning the target in the target module to assure repeatability. The horns and target were drained of their cooling water in an exercise called "radioactive component handling". The exercise demonstrated the need for additional valves in the system. The valves were added and the exercise repeated with success. Additionally, the target module vacuum system was installed and tested.

The concrete buttress element, which supports the "R" block cover over the horns and target, was completed and sealed. The buttress was also prepped with a spacer and gasket that seals the "R" blocks to the buttress when placed. Additionally, a seal was fabricated and installed around the horns' high current strip-line at the points where they feed through the buttress. The "R" blocks will be placed on the buttress in the first week of February.

Construction of the Target Hall Shield Door was completed. The door consists of a fixed section and a moveable section each weighing approximately 250 tons. The fixed section was constructed in place while the moveable section was completed under the target hall crane and moved into position.

Some additional miscellaneous work that occurred in the Target Hall included power distribution to the Work Cell, construction of a safety enclosure for the horn strip-line, hand rails installed on the mezzanine deck, an adjustable damper was installed on the supply air duct for the Target Hall, and an expanded walkway and hand rail adjacent to the Work Cell to aid egress through that area.

MINOS

Absorber

Installation complete.

Muon Alcoves

Installation complete.

Tunnel/Shaft Area

Muon tube gas system was relocated from tunnel shaft area to the Minos Service Building.

Detector

1. One of the two power transformers in the150 KW Power Supply faulted on the primary side. The transformer was replaced with a spare. The power supply has been re-tested.

2. The magnet system is complete, and ready for long-term operation. A "heat run" of the coil power system was completed.

3. Six experimenters have been trained to operate the coil power supply.

Primary Beam (WBS 1.1.1) – S. Childress

Overview

A very successful second NuMI beam extraction and primary transport test was conducted on January 21-23. This time the beam was targeted on the graphite target at average intensity of 2.5E12 protons/pulse, permitting successful beam commissioning of the neutrino beam and providing the first near detector neutrinos.

The last remaining task for full primary beam readiness, which was the final component alignment in the Lower Hobbit and upstream Pre-target regions, has now been successfully completed.

WBS 1.1.1 is now fully complete.

Beam Permit System – R. Ducar

As previously reported, the successful beam tests of early December clearly demonstrated the viability of the installed NuMI Beam Permit System facilities. This assessment was confirmed by experience from additional testing with beam in the latter part of January. The Permit System was quickly reset to a permitting condition early on the first day of studies. After the first flip of the Main Control Room beam switch for NuMI, beam traveled all the way to the target. Again, the BPS proved its worth in checking that all critical systems were performing properly before first beam was transmitted down the NuMI beamline. The "Golden File" was modified only slightly from that of December.

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

I. Magnetic Focusing Horns and their Modules

All work on horns and modules is done.

II. Target, Baffle, Carrier and Module

All work on target, baffle, carrier and target module is done.

The vacuum/helium system for the target was installed and tested locally. The only remaining work is to complete the connection to ACNET so the system can be run remotely.

III. Target Hall Shielding/Cooling

Re-circulating Air Cooling System.

The last remaining item not received is the chiller for the refrigerant for the target hall re-circulating air-cooling system. The vendor has made several modifications in the last month to bring the chiller up to specifications. Delivery of the chiller is projected to take place early in February. Installation and checkout is expected to take about three weeks, so the current projection is that the system will be finished about the end of February. Commissioning and checkout of the beam, up to full intensity of protons per spill, can be done without the chiller and in parallel with its installation. High power running (high intensity at high repetition rate) will require the chiller to be operational.

All other air system equipment (ducts, coils, dampers, filters, re-heater, fan, instrumentation) is installed, with the exception of wiring for some instrumentation. Check-out of the fan system has started, and balancing of air flows and sealing of any air leaks will take place early in February.

Shielding

The last 25 R-blocks, which cover the horns, were installed in January. All shielding is now in place.

The safety fence around the horn stripline has been installed.

IV. Radioactive component handling

In January, the remaining tests for handling of radioactive components were successfully completed. This included draining the water lines to horn and target, remotely moving the survey plugs, and using the special graphite rods to survey the horns and target carrier in the chase.

We are installing a scale on the West wall of the target hall, which will be used by the crane camera system. This is expected to be completed the first week in February.

V. Instrumentation/Electronics

Of the 138 target hall "electronics channels", 104 have now been fully installed and checked out. Based on the rate of progress from the last two months, this work will be completed in February.

VI. Beam tests

Highlights from the January 21-23 beam tests involving the target hall include the following:

(i) The Horns were pulsed at full current during beam running in order to increase the flux of neutrinos in the near detector, and demonstrate the proper spectrum. The horns operated flawlessly on demand.

(ii) Horn pulse timing with respect to the beam was checked, and found to be within tolerance with no adjustment needed.

(iii) Scans of beam across the target were done to assure that beam was properly aligned on the target; this worked well.

(iv) The target was moved by remote control out of the beam, to allow a beam scan of the horns to check for proper alignment. The horizontal alignment scan showed the horn 1 neck to be within alignment tolerance; there was not time to do the vertical scan or more careful scan of the horn cross-hairs.

VII. Administrative/Project Management

Milestone L-3-290 "Shielding Installation Complete (Pre-Hot Handling)" (scheduled for 11/18/04) was achieved on 1/31/05. This is the last WBS 112 milestone.

As demonstrated by the beam tests, the target hall is now fully functional for low power beam. A week or two into February, all work in the target hall proper should have been completed, and regular beam commissioning shifts should begin. However, work on the air system chiller (which will be installed in the RAW utility room) will continue until late in February. Once the chiller is in place, the target hall will be ready for high power (high intensity at high repetition rate) beam.

Power Supply Systems (WBS 1.1.3) – G. Krafczyk

Horn Power Supply (K. Bourkland)

Complete.

Extraction Kicker Power Supply (C. Jensen)

Complete.

Conventional Power Supplies (S. Hays)

Complete.

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

Complete.

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

Hadron Monitors:

Complete.

Muon Monitors:

In January the last muon alcove detector array, which was mounted Oct.-Nov. of last year, was finally cabled, gas systems connected, and the detectors fully commissioned for beam. With this work, the system is now fully complete.

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

Surface measurements, including precision angle measurements to transfer absolute (from astronomical observations) azimuth from Main Injector monuments, continued this month to improve our knowledge of the position of sight risers 2 and 3. The first night of astronomical observations to precisely verify the azimuth between these sight risers was attempted on one of the few clear nights this January, but did not produce useful measurements because of short battery life (for instrument scale and target illumination) in the 5 degree F cold. While the few observations taken were, in fact, good, an error in a calculator program to check them in real time made them appear to be bad, resulting in lost observation time.

Final alignment of proton beam elements downstream of the Hobbit door in the pre-target area had been on hold at the request of the beam design group. This work was allowed to proceed in January, and was three fourths complete by the end of the month. The as found position of the three muon monitors in the absorber hall and muon alcoves was measured.

In the target hall, hidden point fiber carbon rod measurements were done on the target and horns in their actual installed positions (but before they had acquired any significant radiation). The first insertion, in the target pile, of the target into horn 1 was carefully monitored by the alignment group. Target and horn motions were checked for accuracy, and the final alignment of these components was completed and checked.

The survey engineer effort for NuMI in January was 3.7 mw, with 0.8 mw used on surface measurements (GPS, precision distances, and angles) to improve the measurement of sight riser 2 and 3 positions, including transferring absolute azimuth from Main Injector monuments, 0.4 to prepare for astronomical measurement of the azimuth between SR2 and 3 and to carry out one night of observations, 1.1 for QA checks, final alignment, and hidden point fiber carbon rod measurements of the target and horns, 0.4 for as found measurements of the three sets of muon monitor chambers, and 1.6 mw to final align beam components in pre-target.

Beamline Utilities (WBS 1.1.7) –D. Pushka

General

The only WBS 1.1.7 activity is running all systems. This will likely be the final report for this WBS.

Upstream LCW System

System is fully operational. The MI-62 LCW System is operating. The repaired PV-9 pond pump was re-installed and is fully operational.

The task to install a variable speed drive on one of the two PV-9 pond pumps to lower electrical consumption during the cooler periods of the year remains deferred. This activity can wait until other more pressing electrical activities are completed.

Final Horn Raw System

Systems are fully operational. Hot handling tasks were performed in January and documented. One remaining minor task is to install new flow meter floats on the existing flow meters. These tasks will be scheduled as time allows and will not interfere with any CD-4 commissioning or operations.

Upstream RAW System.

System is fully operational. Hot handling tasks were performed in January and documented.

Downstream (Absorber) RAW System.

System has been filled and is fully operational.

Vacuum Decay Pipe Cooling

System has been filled and is fully operational.

Extraction and Primary Beam Vacuum System

System has been filled and is operational and was used satisfactorily during the beam tests. Three ion pumps were replaced in January.

Decay Pipe Vacuum System

System is fully operational. The decay pipe vacuum system has been commissioned and is complete. The decay pipe is at full physics quality vacuum.

Gas Systems

Systems are fully operational.

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

The last major effort under WBS 1.1.8 was completed on January 20, 2005 with the shield door being moved into place at the Southwest corner of the Target Hall underground of MI-65.

CATV installation was also completed with installation of a camera and monitor at MI-65 in the vicinity of the access shaft.

Electrical activities under the supervision of the WBS 1.1.8 Level 3 Manager were again concentrated at MI-65, mostly underground. Though there was some work related to the Interlocks aspect of 1.1.8, most related to installation of the Target Pile Cooling System. The variable frequency drive (VFD) for the 100 HP fan motor was commissioned successfully. Permanent electrical service outlets and lighting were added at the Northeast corner of the Target Hall. A small 3 HP fan and contactor were added for purposes of testing the target chase for air leaks. Temporary lighting, electrical equipment and cordage were removed from the Decay Pipe Passageway. This action eliminated the potential of creating a large amount of radioactivated material.

MINOS DETECTORS (WBS 2.0) – R. Rameika

In January we completed the final checkout of the MINOS magnet. A failed transformer and failed reversing switch were replaced and the magnet was operated successfully. Final tuning of the water system will still be required before we operate the magnet for a long period of time unattended. This tuning will take place over the next several weeks.

On January 20 the detector was operating routinely taking cosmic ray data. We then declared that the L2 milestone L-2-14 had been met. This declaration was made in preparation for the anticipated start of pre-commissioning. The following day, January 22, 2005, the first beam neutrinos were recorded and extracted from the MINOS Near Detector.

Except for costs associated with project close out (WBS 2.6) all aspects of the MINOS Detectors are complete.

January 2005 MINOS Collaboration meeting – D. Ayres

This meeting was held at Fermilab on Thursday through Sunday, January 6-9, 2005. More than 130 physicists, engineers and students from 28 institutions attended. The main meeting plenary sessions were preceded by parallel meetings of the following working groups: Atmospheric neutrino analysis, Calibration, CC analysis, Core software, Far detector non-oscillation analysis, Near detector physics, NC analysis, Nu-e physics analysis, NuMI beam monitoring, OPERA test exposure, Proton intensity and CD-4 commissioning.

The MINOS Institutional Board and Executive Committee both met in conjunction with this meeting. The Institutional Board conducted the annual election of Executive Committee members and approved the changes to the collaboration Bylaws that were agreed to at the previous meeting. Topics discussed by the ExCom included planning for experiment commissioning and operations, the shift allocation plan for 2005, offline software development and manpower issues, planning for the first MINOS physics results and papers, MINOS Authorship and Publications Committee appointments, the need for a MINOS common fund, the Young MINOS Group report and planning for future collaboration meetings.

The most important topics discussed at this meeting were:

Planning for beamline and detector commissioning

The NuMI Project is moving rapidly towards the achievement of its DOE CD-4 milestones, which will mark the beginning of the closeout phase of the Project and the start of physics commissioning of the beam and detectors. CD-4 will be followed by one to three months of neutrino beam tuning, with the goal of high intensity operation and the start of routine data taking at the end of the period. Discussions at the meeting focused on near detector commissioning and the preparation of software to check data quality and detector performance.

Preparations for analysis of neutrino beam data

All physics analysis working groups reported substantial progress since the September MINOS meeting. Most groups have made good use of the Mock Data Challenge event sample. Although the basic simulation, calibration, reconstruction and analysis software is nearly ready for the first neutrino beam data, the underlying software tools still have some deficiencies. Plans were made to provide additional effort to implement full functionality, improve ease of use and provide full documentation of software tools.

MINOS experiment shifts

The MINOS control room will be staffed by two physicists per shift, three shifts per day after physics commissioning begins. Only one or two shifts per day will be staffed during beam tuning and accelerator shutdowns. MINOS shift workers will monitor beam and detector operation, check out the systems needed for physics data taking, assist with hardware and software repairs and upgrades, and update documentation for detector and neutrino beam systems. Communication between the experiment and the main control room will take place through the MINOS Run Coordinator, Rob Plunkett. Rob will represent the experiment at the daily operations meetings and will run the weekly MINOS operations meetings. MINOS control room shifts will require eight to twelve experienced MINOS physicists in long term residence at Fermilab.

Analysis of FarDet cosmic ray muon data

The far detector non-oscillation physics analysis group reported some progress in its work to understand the unexpected dependence of the cosmic-ray-muon charge ratio on zenith angle, azimuth and energy. The anomalies seem to be related to track reconstruction, acceptance effects and/or the magnetic field map used to analyze the data. A number of new results from simulations and from muon data analysis were described and plans for additional studies were discussed. During the meeting the collaboration made plans to organize a coordinated software effort to understand and resolve this problem over the next few months.

MINOS outreach and public relations issues

Judy Jackson of the Fermilab Office of Public Affairs described plans for providing Wisconsin residents with information about the NuMI neutrino beam that will soon be passing beneath their State. She described a question-and-answer document that is being developed to address potential concerns and asked MINOS physicists to review the posted draft. The document is linked to the new OPA MINOS web site http://www.fnal.gov/neutrinos . Judy also described

plans for the upcoming NuMI neutrino beam dedication. Meanwhile at Soudan, the NSF funds that supported last summer's very successful outreach program will not be renewed in 2005. The collaboration discussed the possible establishment of a MINOS common fund, financed by voluntary institutional contributions, to pay for outreach and other important activities that are not supported by grants or group operating budgets.

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 ESH 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 subcontractor's 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 ESH Coordinator chairs a weekly meeting with members of NuMI project management team to discuss work planning issues, ESH/QA review updates and issues, equipment/system testing, 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 continue to meet on a daily basis to discuss the daily schedule, upcoming tasks, related ESH requirements, hazard analysis, ESH training and other ESH 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 to discuss and coordinate the process for completing upcoming equipment reviews by the committee. They also discuss the status of reviews, which are in progress.

The NuMI Project ESH Coordinator continues to meet with Particle Physics Division, Accelerator Division ESH Department and AD Operations Department to discuss transitional issues. The transition issues include Search & Secure, Building and Underground access, Building Management, PPE requirements, and ESH Training

Weekly Installation Meetings continue to occur between NuMI Project ES&H personnel, Floor Managers and L2/L3 Managers. The topics discussed include installation schedule, testing/commission schedules, equipment ESH/QA reviews and general coordination issues.

Installation Safety – M. Andrews

A daily meeting is held between the Installation Coordinator(s), 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 January 2005. NuMI Project Management conducted ES&H Inspections on January 6th, 13th, 20th, and 27th, 2005. Results of an inspection were communicated to the MI-65 and MINOS Floor Managers at the close out meeting held immediately following the inspection.

The Floor Managers continue to hold work planning meetings with all site workers, which include a review of task hazards. T&M subcontractor personnel are holding weekly toolbox meetings. NuMI Project Management continues to monitor these meetings.

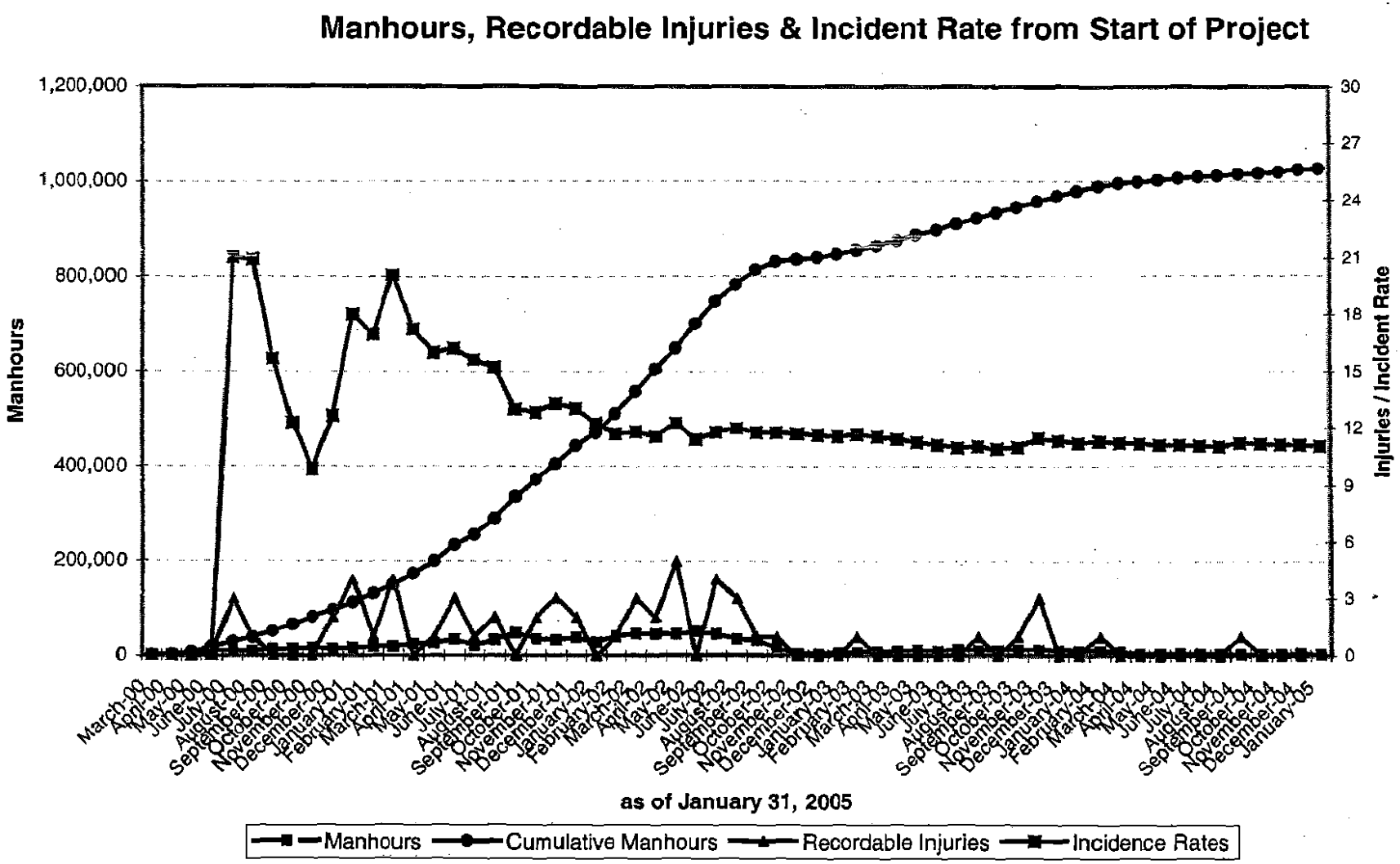
Task Managers continue to develop task related HA's and submitting Hazard Analysis documentation for review and acceptance to the NuMI Field Safety Coordinator for all new tasks. ESH personnel and Floor Managers also met with members of the Fermi support groups to review tasks and explain the requirements to complete those tasks, as they relate to schedule and ESH.

There were no OSHA-recordable injuries during the month of January 2005.

The NuMI Project had completed 138 days without an OSHA-recordable injury or illness.

Project Safety Performance

Safety Performance for the NuMI Construction/Installation Project for 2005 Calendar Year to Date includes a Recordable Incident Rate of 0.0, 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 11.1, a Lost Time Incident Rate of 2.5, and a Lost Workday Incident Rate of 7.0. Figure 2 shows man-hours worked, and recordable injury and incident rates from the start of the NuMI construction subcontracts through January 2005.


Manhours, Recordable Injuries & Incident Rate from Start of Project
Manhours
Injuries / Incident Rate
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
30
27
24
21
18
15
12
9
6
3
0
March-00
April-00
May-00
June-00
July-00
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March-04
April-04
May-04
June-04
July-04
August-04
September-04
October-04
November-04
December-04
January-05
as of January 31, 2005
Manhours
Cumulative Manhours
Recordable Injuries
Incidence Rates

Radiation Safety – N. Grossman

Full approval of the NuMI SAD and NuMI Safety Envelope was completed in November. The Accelerator Readiness Review (ARR) was also completed in November. The ARR Form from FESHM 2010 was signed in December, giving the NuMI Project approval to operate. The ARR report gave recommendations to be completed by project completion. The Project's "to complete before running list" was updated to include items to be completed before the January run and the list was posted on the NuMI/MINOS ES&H QA Documentation page. Those items needing to be completed for the January run were completed in time. The status of the "to complete" list continues to be updated.

VII. LEVEL 3 MILESTONES

The current NuMI/MINOS Level 3 Milestones are shown in Figure 3. Milestones for the period 8/04 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

Milestone L-2-14 (Near Detector Complete and Tested) was achieved on January 20. Only Milestone L-0-4 (Start Operations) remains and is projected as February 17, 2005.

NuMI (WBS 1.1)

The schedule variance reported ($99K) is due to the remaining air handling work in the target hall and will clear late in February and March as that work finishes. This month the cost variance is reported at ($314K) an increase from last month as anticipated. That variance is real and will grow slightly in February when the project will complete. We still expect the total contingency use to be within the forecast presented to the DOE Office of Science review committee in May 2004. 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 slight positive cost variance remains after incorporating the effects of the final settlement of all outstanding contract issues.

NuMI (WBS 1.3)

Cost variance: There is a favorable cost variance reported at $42K.

MINOS (WBS 2)

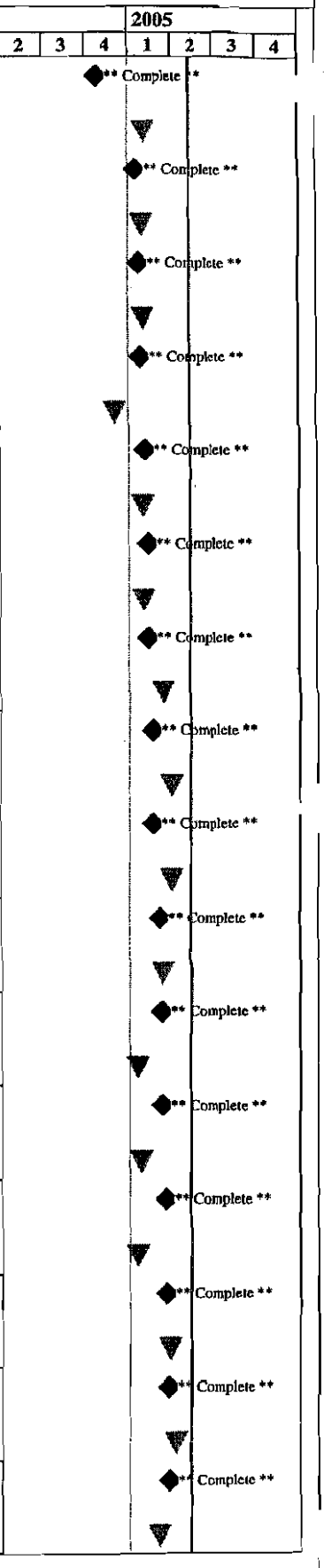
Cost and Schedule variances: Closeouts of WBS 2 elements continue. There are no significant cost or schedule variances. A cost variance arising from a relatively small underestimate of installation effort will be corrected by future Change Request prior to project closeout.

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
(10/2004 - 9/2005)

Mlstn#	WBS Lev 3	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-256	114	Assy of Core on Carrier Complete	7/2/04	10/11/04	0 d
L-3-277	113	Compl Install & Testing of Kicker PS	9/22/04	10/5/04	0 d
L-3-318	113	Power Test of MI60 & MI-62 Power Supplies Complete	9/29/04	10/8/04	0 d
L-3-217	115	Downstream Hadron Monitors Ready for Installation	10/1/04	8/9/04	0 d
L-3-255	115	Muon Monitors Installed	10/11/04	10/6/04	0 d
L-3-270	112	Target & Horn Installation Complete	10/18/04	10/8/04	0 d
L-3-319	113	Start to Pulse & Checkout Horn System	10/18/04	11/19/04	0 d
L-3-279	118	Controls Installation Complete	10/27/04	12/7/04	0 d
L-3-253	118	Pre-Targ Hall & Targ Hall Cable Syst Installation Compl	10/27/04	12/6/04	0 d
L-3-291	111	MI Stub Installation Complete	11/11/04	11/15/04	0 d
L-3-311	111	Install Pre-target Instrumentation Complete	11/15/04	9/23/04	0 d
L-3-258	115	Downstream Hadron Monitor Installed	11/15/04	10/1/04	0 d
L-3-274	113	Power Test of TH Conventional Power Supplies Compl	11/23/04	9/22/04	0 d
L-3-299	111	Extraction & Primary Beam Checked Out	11/24/04	12/1/04	0 d
L-3-325	118	Controls Checkout Complete	11/29/04	12/14/04	0 d
L-3-278	111	Pre-Target Checkout Complete	11/30/04	11/8/04	0 d



FNAL Current Forecast ◇ FNAL Baseline Date ▼ Milestone Complete ◆

NuMI WBS Level 3 Milestones
(10/2004 - 9/2005)

Mlstn#	WBS Lev 3	Name	FNAL Cur Forecast	FNAL Base Date	Float	2	3	4	2005 1	2	3	4
L-3-295	112	Pulse & Checkout Horn System Complete	11/30/04	12/7/04	0 d				** Complete **			
L-3-297	115	Downstream Hadron Monitor Operational	11/30/04	10/20/04	0 d				** Complete **			
L-3-298	117	Vacuum Systems Checked Out	11/30/04	11/29/04	0 d				** Complete **			
L-3-296	115	Muon Monitors Operational	12/30/04	1/6/05	0 d				** Complete **			
L-3-272	117	All Water Systems Checked Out	12/30/04	11/19/04	0 d				** Complete **			
L-3-294	114	Checkout Absorber Complete	1/24/05	12/20/04	0 d					** Complete **		
L-3-290	112	Shielding Installation Complete (Pre-Radioactive Component Handling)	1/31/05	11/18/04	0 d					** Complete *		

FNAL Current Forecast ◇ FNAL Baseline Date ▼ Milestone Complete ◆

Variance Summary Table

(Cumulative to Date as of 1/31/05)

WBS / Description	Budgeted Cost		Actual Cost	Variance	
	Work Scheduled	Work Performed	Work Performed	Schedule	Cost
1.1 Technical Components	29,977	29,878	30,192	(99)	(314)
1.2 Facility Construction	74,652	74,652	74,586	0	67
1.3 Project Management	3,171	3,171	3,129	0	42
1.0 TEC Total	107,801	107,701	107,907	(99)	(206)
2.1 Magnets: Steel & Coils	7,621	7,621	7,595	0	27
2.2 Scintillator Detector Fabrication	19,525	19,525	19,517	0	8
2.3 Electronics, DAQ & Database	9,173	9,173	9,134	0	39
2.4 Far Detector Installation	4,581	4,581	4,577	0	4
2.5 Near Detector Installation	5,361	5,361	5,529	0	(167)
2.6 MINOS Project Management	1,727	1,727	1,787	0	(60)
UK In-Kind Contribution	(4,835)	(4,835)	(4,835)	(0)	0
2.0 MINOS Detector	43,153	43,153	43,303	0	(150)
3.1. NuMI Canceptual 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	59,301	59,301	59,445	0	(144)
TPC Total	167,102	167,002	167,352	(99)	(349)

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
The project is so close to completion that these graphical reports have ceased to convey any useful information and have been removed.

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, Illinois		NuMI TEC	12/31/04 1/31/05

Quantity	Negotiated Cost	Est. Cost Authorized Unpriced Work	Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling
1	109,168	0	0	0	109,168	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				
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Latest Revised 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	0	0	0	0	(0)	4,892	4,892	4,854	0	38	4,892	4,892	0
Indirect Cost	0	0	0	0	(0)	1,094	1,094	1,106	0	(12)	1,094	1,094	0
WBS[3]Totals:	0	0	0	0	(0)	5,986	5,986	5,960	0	26	5,986	5,986	0
1.1.2 Neutrino Beam Devices													
Direct Cost + Escalation	0	62	117	62	(56)	9,520	9,435	9,667	(85)	(232)	9,520	9,520	0
Indirect Cost	0	13	19	13	(7)	2,279	2,264	2,113	(14)	151	2,279	2,279	0
WBS[3]Totals:	0	74	137	74	(62)	11,799	11,699	11,780	(99)	(81)	11,799	11,799	0
1.1.3 Power Supply System													
Direct Cost + Escalation	0	0	0	0	(0)	4,407	4,407	4,442	0	(35)	4,407	4,407	0
Indirect Cost	0	0	0	0	(0)	1,072	1,072	1,044	0	28	1,072	1,072	0
WBS[3]Totals:	0	0	0	0	(0)	5,480	5,480	5,486	0	(7)	5,480	5,480	0
1.1.4 Hadron Decay and Absorber													
Direct Cost + Escalation	0	0	(4)	0	5	1,294	1,294	1,304	(0)	(10)	1,294	1,294	0
Indirect Cost	0	0	(1)	0	1	290	290	279	0	11	290	290	0
WBS[3]Totals:	0	0	(5)	0	6	1,584	1,584	1,583	(0)	1	1,584	1,584	0
1.1.5 Neutrino Beam Monitoring													
Direct Cost + Escalation	0	0	9	0	(9)	455	455	446	0	9	455	455	0
Indirect Cost	0	0	1	0	(1)	26	26	39	0	(14)	26	26	0
WBS[3]Totals:	0	0	9	0	(9)	481	481	486	0	(5)	481	481	0
1.1.6 Alignment Systems													
Direct Cost + Escalation	0	2	0	2	2	192	192	163	0	29	192	192	0
Indirect Cost	0	0	0	0	0	60	60	41	0	18	60	60	0
WBS[3]Totals:	0	2	0	2	2	251	251	205	0	47	251	251	0
1.1.7 Water, Vacuum & Gas Systems													
Direct Cost + Escalation	0	0	8	0	(8)	1,747	1,747	1,819	0	(72)	1,747	1,747	0
Indirect Cost	0	0	1	0	(1)	434	434	391	0	44	434	434	0
WBS[3]Totals:	0	0	9	0	(9)	2,182	2,182	2,210	0	(28)	2,182	2,182	0
1.1.8 Installation and Integration													
Direct Cost + Escalation	4	2	145	(1)	(143)	1,738	1,738	2,048	0	(310)	1,738	1,738	0
Indirect Cost	1	1	23	(0)	(23)	415	415	371	0	44	415	415	0
WBS[3]Totals:	5	3	169	(2)	(165)	2,153	2,153	2,419	0	(266)	2,153	2,153	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:	5	80	319	75	(239)	29,977	29,878	30,192	(99)	(314)	29,977	29,977	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, Illinois		NuMI TEC	12/31/04 1/31/05

Quantity	Negotiated Cost	Est. Cost Authorized Unpriced Work	Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling
1	109,168	0	0	0	109,168	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				
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Latest 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	(1)	0	1	68,572	68,572	68,599	0	(27)	68,572	68,572	0
Indirect Cost	0	0	(0)	0	0	1,596	1,596	1,505	0	91	1,596	1,596	0
WBS[3]Totals:	0	0	(1)	0	1	70,169	70,169	70,104	0	65	70,169	70,169	0
WBS[2]Totals:	0	0	(1)	0	1	74,652	74,652	74,586	0	67	74,652	74,652	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	332	332	331	0	1	332	332	0
Indirect Cost	0	0	0	0	0	106	106	92	0	14	106	106	0
WBS[3]Totals:	0	0	0	0	0	438	438	423	0	15	438	438	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, Illinois		NuMI TEC	12/31/04 1/31/05

Quantity	Negotiated Cost	Est. Cost Authorized Unpriced Work	Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling
1	109,168	0	0	0	109,168	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 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)
1.3.5 FY 02 Project Management													
Direct Cost + Escalotion	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	0	0	0	0	0	45	45	332	0	(287)	45	45	0
Indirect Cost	0	0	0	0	0	14	14	99	0	(84)	14	14	0
WBS[3]Totals:	0	0	0	0	0	59	59	430	0	(371)	59	59	0
1.3.8 FY 05 Project Management													
Direct Cost + Escalation	4	4	0	0	4	16	16	50	0	(34)	23	23	0
Indirect Cost	1	1	0	0	1	5	5	15	0	(10)	7	7	0
WBS[3]Totals:	5	5	0	0	5	21	21	65	0	(45)	31	31	0
WBS[2]Totals:	5	5	0	0	5	3,171	3,171	3,129	0	42	3,181	3,181	0
General and Administrative	0	0	0	0	0	0	0	0	0	0	0	0	0
Undistributed Budget											0	0	0
Sub Total	10	85	318	75	(233)	107,801	107,701	107,907	(99)	(206)	107,811	107,811	0
Contingency											1,358	1,358	0
Total	10	85	318	75	(233)	107,801	107,701	107,907	(99)	(206)	109,168	109,168	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, Illinois		NuMI TEC	12/31/04	1/31/05

(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	32,968	109,168	0	109,168	109,168	0

(8) Contract Start Date	(9) Contract Definitization Date	(10) Last Item Delivery Date	(11) Contract Completion Date	(12) Estimated Completion Date
10/1/97	10/1/97	9/30/03	9/30/03	9/30/03

Item	BCWS Cum to Date	BCWS for Report Period	Budgeted Cost for Work Scheduled (Non-Cumulative)											Undist Budget	Total Budget
			Six Month Forecast						(Enter Specific Periods)						
			+1 FEB05	+2 MAR05	+3 APR05	+4 MAY05	+5 JUN05	+6 JUL05	BAL FY05						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
PM Baseline (Beginning of Period)	107,791	10	5	5	0	0	0	0	0	0	0	0	0	0	107,811
PM Baseline (End of Period)	107,801		5	5	0	0	0	0	0	0	0	0	0	0	107,811
Contingency															1,358
Total															109,168

NuMI F ɜct TEC

($000's Omitted)

Program: NUMITEC	Description: NuMI TEC	Approval: Program Manager
Run Date: 02/04/05	Status Date: 1/31/2005	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
1.1 Technical Components															
1.1.1 Extraction & Primary Beam	BCWS	5,613	10	363	0	0	0	0	0	0	0	0	0	0	5,986
	ACWP	5,892	46	17	4	0	0	0	0	0	0	0	0	0	5,960
1.1.2 Neutrino Beam Devices	BCWS	11,132	104	532	30	0	0	0	0	0	0	0	0	0	11,799
	ACWP	11,012	221	170	240	137	0	0	0	0	0	0	0	0	11,780
1.1.3 Power Supply System	BCWS	5,321	15	143	1	0	0	0	0	0	0	0	0	0	5,480
	ACWP	5,343	77	61	6	0	0	0	0	0	0	0	0	0	5,486
1.1.4 Hadron Decay and Absorber	BCWS	1,360	64	118	43	0	0	0	0	0	0	0	0	0	1,584
	ACWP	1,554	12	4	19	(5)	0	0	0	0	0	0	0	0	1,583
1.1.5 Neutrino Beam Monitoring	BCWS	456	6	0	20	0	0	0	0	0	0	0	0	0	481
	ACWP	473	(1)	4	0	9	0	0	0	0	0	0	0	0	486
1.1.6 Alignment Systems	BCWS	289	6	(44)	0	0	0	0	0	0	0	0	0	0	251
	ACWP	202	0	0	3	0	0	0	0	0	0	0	0	0	205
1.1.7 Water, Vacuum & Gas Systems	BCWS	2,036	31	115	0	0	0	0	0	0	0	0	0	0	2,182
	ACWP	2,111	41	35	14	9	0	0	0	0	0	0	0	0	2,210
1.1.8 Installation and Integration	BCWS	2,227	66	(231)	86	5	0	0	0	0	0	0	0	0	2,153
	ACWP	2,100	35	53	62	169	0	0	0	0	0	0	0	0	2,419
1.1.9 Hadronic Hase (Close-out)	BCWS	62	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	63
WBS[2] Totals:	BCWS	28,495	303	995	179	5	0	0	0	0	0	0	0	0	29,977
	ACWP	28,750	431	344	348	319	0	0	0	0	0	0	0	0	30,192
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	70
	ACWP	70	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	1,438
	ACWP	1,437	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	2,975
	ACWP	2,974	0	0	0	0	0	0	0	0	0	0	0	0	2,974
1.2.4 Facility Construction Phase	BCWS	70,169	0	0	0	0	0	0	0	0	0	0	0	0	70,169
	ACWP	70,104	1	1	0	(1)	0	0	0	0	0	0	0	0	70,104
WBS[2] Totals:	BCWS	74,652	0	0	0	0	0	0	0	0	0	0	0	0	74,652
	ACWP	74,585	1	1	0	(1)	0	0	0	0	0	0	0	0	74,586
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	275
	ACWP	141	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	560
	ACWP	661	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	575
	ACWP	663	0	0	0	0	0	0	0	0	0	0	0	0	663
1.3.4 FY 01 Project Management	BCWS	438	0	0	0	0	0	0	0	0	0	0	0	0	438
	ACWP	423	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: 02/04/05	Status Date: 1/31/2005	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
1.3.5 FY 02 Project Management	BCWS	703	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	324
1.3.6 FY 03 Project Management	BCWS	541	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	421
1.3.7 FY 04 Project Management	BCWS	59	0	0	0	0	0	0	0	0	0	0	0	0	59
	ACWP	430	0	0	0	0	0	0	0	0	0	0	0	0	430
1.3.8 FY 05 Project Management	BCWS	0	5	5	5	5	5	5	0	0	0	0	0	0	31
	ACWP	0	26	21	18	0	0	0	0	0	0	0	0	0	65
WBS[2] Totals:	BCWS	3,151	5	5	5	5	5	5	0	0	0	0	0	0	3,181
	ACWP	3,064	27	21	18	0	0	0	0	0	0	0	0	0	3,129
Grand Totals:	BCWS	106,298	308	1,001	185	10	5	5	0	0	0	0	0	0	107,811
	ACWP	106,399	458	365	366	318	0	0	0	0	0	0	0	0	107,907

NuMI Project C - Labor Only

($000's Omitted)

Program: NUMITEC	Description: NuMI TEC	Approval: Program Manager
Run Date: 02/04/05	Status Date: 1/31/2005	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
1.1 Technical Components															
1.1.1 Extraction & Primary Beam	BCWS	2,416	10	363	0	0	0	0	0	0	0	0	0	0	2,789
	ACWP	3,195	22	9	0	0	0	0	0	0	0	0	0	0	3,226
1.1.2 Neutrino Beam Devices	BCWS	5,671	40	515	21	0	0	0	0	0	0	0	0	0	6,247
	ACWP	5,740	20	27	31	5	0	0	0	0	0	0	0	0	5,824
1.1.3 Power Supply System	BCWS	2,785	15	143	1	0	0	0	0	0	0	0	0	0	2,943
	ACWP	3,286	50	48	2	0	0	0	0	0	0	0	0	0	3,386
1.1.4 Hadron Decay and Absorber	BCWS	585	14	26	22	0	0	0	0	0	0	0	0	0	647
	ACWP	730	2	3	0	0	0	0	0	0	0	0	0	0	735
1.1.5 Neutrino Beam Monitoring	BCWS	78	0	0	0	0	0	0	0	0	0	0	0	0	78
	ACWP	75	0	0	0	0	0	0	0	0	0	0	0	0	75
1.1.6 Alignment Systems	BCWS	236	3	2	0	0	0	0	0	0	0	0	0	0	241
	ACWP	148	0	0	0	0	0	0	0	0	0	0	0	0	148
1.1.7 Water, Vacuum & Gas Systems	BCWS	1,102	31	115	0	0	0	0	0	0	0	0	0	0	1,248
	ACWP	918	7	11	9	0	0	0	0	0	0	0	0	0	945
1.1.8 Installation and Integration	BCWS	958	46	46	34	5	0	0	0	0	0	0	0	0	1,088
	ACWP	447	0	0	1	1	0	0	0	0	0	0	0	0	449
1.1.9 Hadronic Hose (Close-out)	BCWS	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
WBS[2] Totals:	BCWS	13,830	158	1,211	78	5	0	0	0	0	0	0	0	0	15,281
	ACWP	14,539	101	99	43	7	0	0	0	0	0	0	0	0	14,788
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	70
	ACWP	70	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	300
	ACWP	299	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	556
	ACWP	556	0	0	0	0	0	0	0	0	0	0	0	0	556
1.2.4 Facility Construction Phase	BCWS	3,071	0	0	0	0	0	0	0	0	0	0	0	0	3,071
	ACWP	3,389	0	0	0	0	0	0	0	0	0	0	0	0	3,389
WBS[2] Totals:	BCWS	3,998	0	0	0	0	0	0	0	0	0	0	0	0	3,998
	ACWP	4,314	0	0	0	0	0	0	0	0	0	0	0	0	4,314
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	275
	ACWP	125	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	560
	ACWP	595	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	575
	ACWP	616	0	0	0	0	0	0	0	0	0	0	0	0	616
1.3.4 FY 01 Project Management	BCWS	438	0	0	0	0	0	0	0	0	0	0	0	0	438
	ACWP	416	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: 02/04/05	Status Date: 1/31/2005	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
1.3.5 FY 02 Project Management	BCWS	703	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	324
1.3.6 FY 03 Project Management	BCWS	541	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	416
1.3.7 FY 04 Project Management	BCWS	59	0	0	0	0	0	0	0	0	0	0	0	0	59
	ACWP	428	0	0	0	0	0	0	0	0	0	0	0	0	428
1.3.8 FY 05 Project Management	BCWS	0	5	5	5	5	5	5	0	0	0	0	0	0	31
	ACWP	0	26	21	18	0	0	0	0	0	0	0	0	0	65
WBS[2] Totals:	BCWS	3,151	5	5	5	5	5	5	0	0	0	0	0	0	3,181
	ACWP	2,921	26	21	18	0	0	0	0	0	0	0	0	0	2,986
Grand Totals:	BCWS	20,978	163	1,216	83	10	5	5	0	0	0	0	0	0	22,460
	ACWP	21,773	128	119	61	7	0	0	0	0	0	0	0	0	22,088

NuMI Othe ɔject 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	12/31/04 1/31/05

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] WBS[3] Results...	Current Period					Cumulative to Date					At Completion		
	Budgeted Cost		Actual Cost Work Performed	Variance		Budgeted Cost		Actual Cost Work Performed	Variance			Latest Revised Estimate	Variance
Item	Work Scheduled	Work Performed		Schedule	Cost	Work Scheduled	Work Performed		Schedule	Cost	Budgeted		
(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	4,348	0	24	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	4,574	0	27	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	1,373	(0)	14	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	0	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	7,595	0	27	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	12/31/04 1/31/05

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] WBS[3] Results...	Current Period					Cumulative to Date					At Completion		
	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance				
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Latest Revised 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	0	0	0	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	0	0	0	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	0	0	0	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	0	0	0	0	0	4,151	4,151	4,070	(0)	81	4,151	4,151	0
Indirect Cost	0	0	0	0	0	450	450	511	0	(61)	450	450	0
WBS[3]Totals:	0	0	0	0	0	4,601	4,601	4,581	0	20	4,601	4,601	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 Othe oject 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	12/31/04 1/31/05

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] WBS[3] Results...	Current Period					Cumulative to Date					At Completion		
	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)
2.3.3 Data Routing & Trigger Farm													
Direct Cost + Escalation	0	0	0	0	0	1,241	1,241	1,241	(0)	0	1,241	1,241	0
WBS[3]Totals:	0	0	0	0	0	1,241	1,241	1,241	(0)	0	1,241	1,241	0
2.3.4 Data Acquisition & Triggering													
Direct Cost + Escalation	0	0	0	0	0	391	391	391	0	0	391	391	0
WBS[3]Totals:	0	0	0	0	0	391	391	391	0	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	0	0	0	0	495	495	494	0	1	495	495	0
Indirect Cost	0	0	0	0	0	48	48	50	0	(2)	48	48	0
WBS[3]Totals:	0	0	0	0	0	543	543	544	0	(1)	543	543	0
2.3.7 Electronics Management													
Direct Cost + Escalation	0	0	0	0	0	214	214	217	0	(3)	214	214	0
Indirect Cost	0	0	0	0	0	3	3	1	0	2	3	3	0
WBS[3]Totals:	0	0	0	0	0	218	218	218	0	(0)	218	218	0
2.3.8 Slow Control & Monitoring													
Direct Cost + Escalation	0	0	0	0	0	407	407	386	0	21	407	407	0
Indirect Cost	0	0	0	0	0	12	12	14	(0)	(2)	12	12	0
WBS[3]Totals:	0	0	0	0	0	419	419	400	0	19	419	419	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:	0	0	0	0	0	9,173	9,173	9,134	0	39	9,173	9,173	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

MINOS WBS Level 3 Milestones
(10/2004 - 9/2005)

2/7/05

Mlstn #	WBS Lev 3	Name	FNAL Cur Forecast	FNAL Base Date	Float	2004			2005				2006				2007		
						2	3	4	1	2	3	4	1	2	3	4	1	2	3
L-3-343	253	Obtain PORC for Magnet Operation	11/19/04	10/18/04	0d					** Complete **									
L-3-306	250	Near Detector Installation Complete	1/20/05	12/24/04	181d						** Complete **								

FNAL Current Forecast ◇ FNAL Baseline Date ▼ Milestone Complete ◆

MINOS_Jan05_Status

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	12/31/04 1/31/05

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] WBS[3] Results...	Current Period					Cumulative to Date					At Completion		
	Budgeted Cost		Actual Cost Work Performed	Variance		Budgeted Cost		Actual Cost Work Performed	Variance			Latest Revised Estimate	Variance
Item	Work Scheduled	Work Performed		Schedule	Cost	Work Scheduled	Work Performed		Schedule	Cost	Budgeted		
(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	4,577	0	4	4,581	4,581	0
2.5 Near Detector Installation													
2.5.1 NDI Infrastructure													
Direct Cost + Escalation	0	0	1	0	(1)	402	402	384	0	18	402	402	0
Indirect Cost	0	0	0	0	(0)	110	110	76	0	34	110	110	0
WBS[3]Totals:	0	0	1	0	(1)	512	512	460	0	52	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	0	0	21	0	(21)	898	898	1,089	0	(191)	898	898	0
Indirect Cost	0	0	6	0	(6)	254	254	269	0	(16)	254	254	0
WBS[3]Totals:	0	0	28	0	(28)	1,151	1,151	1,358	0	(207)	1,151	1,151	0
2.5.4 NDI Facility Experimental Infrastructure													
Direct Cost + Escalation	0	0	0	0	(0)	200	200	215	0	(15)	200	200	0
Indirect Cost	0	0	0	0	(0)	38	38	38	0	0	38	38	0
WBS[3]Totals:	0	0	0	0	(0)	238	238	253	0	(15)	238	238	0

NuMI Othe oject 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	12/31/04 1/31/05

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] WBS[3] Results...	Current Period					Cumulative to Date					At Completion		
	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Lotest 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)
2.5.5 RBI SB&O Experimental Systems Outfitting													
Direct Cost + Escalation	0	0	0	0	0	2,944	2,944	2,944	0	(0)	2,944	2,944	0
WBS[3]Totals:	0	0	0	0	0	2,944	2,944	2,944	0	(0)	2,944	2,944	0
WBS[2]Totals:	0	0	29	0	(29)	5,361	5,361	5,529	0	(167)	5,361	5,361	0
2.6 MINOS Project Management													
2.6.1 FNL-Project Management													
Direct Cost + Escalation	15	17	25	1	(8)	1,241	1,241	1,321	0	(80)	1,241	1,241	0
Indirect Cost	5	5	7	0	(2)	388	388	368	0	20	388	388	0
WBS[3]Totals:	20	22	32	2	(10)	1,629	1,629	1,689	0	(60)	1,629	1,629	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:	20	22	32	2	(10)	1,727	1,727	1,787	0	(60)	1,727	1,727	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 FES5 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	12/31/04 1/31/05

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] 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)
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

NuMI Othe oject 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	12/31/04 1/31/05

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] WBS[3] Results...	Current Period					Cumulative to Date					At Completion		
	Budgeted Cost		Actual Cost Work Performed	Variance		Budgeted Cost		Actual Cost Work Performed	Variance			Latest Revised Estimate	Variance
Item	Work Scheduled	Work Performed		Schedule	Cost	Work Scheduled	Work Performed		Schedule	Cost	Budgeted		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
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
General and Administrative	0	0	0	0	0	0	0	0	0	0	0	0	0
Undistributed Budget											0	0	0
Sub Total	20	22	61	2	(40)	67,894	67,894	68,038	0	(144)	67,894	67,894	0
Contingency + MINOS Scope Reserve											2,899	2,899	0
Total NuMI Other Proj Costs	20	22	61	2	(40)	67,894	67,894	68,038	0	(144)	70,793	70,793	0
UK In-Kind Contribution	0	0	0	0	0	(4,835)	(4,835)	(4,835)	(0)	0	(4,835)	(4,835)	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	20	22	61	2	(40)	59,301	59,301	59,445	0	(144)	62,200	62,200	0
WBS[2]Totals:													
Direct Cost + Escalation	15	17	47	1	(31)	45,057	45,057	45,267	(0)	(210)	45,057	45,057	0
Indirect Cost	5	5	14	0	(9)	2,931	2,931	2,871	0	60	2,931	2,931	0
Subtotal	20	22	61	2	(40)	47,988	47,988	48,138	0	(150)	47,988	47,988	0
UK In-Kind Contribution	0	0	0	0	0	(4,835)	(4,835)	(4,835)	(0)	0	(4,835)	(4,835)	0
Total MINOS Detector	20	22	61	2	(40)	43,153	43,153	43,303	0	(150)	43,153	43,153	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											2,899	2,899	0
Total US Funds	20	22	61	2	(40)	59,301	59,301	59,445	0	(144)	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, Illinois		NuMI Other Proj Costs	12/31/04	1/31/05

(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	(9) Contract Definitization Date	(10) Last Item Delivery Date	(11) Contract Completion Date	(12) Estimated Completion Date
10/1/97	10/1/97	4/30/04	4/30/04	4/30/04

Item	BCWS Cum to Date	BCWS for Report Period	Budgeted Cost for Work Scheduled (Non-Cumulative)											Undist Budget	Total Budget
			Six Month Forecast						(Enter Specific Periods)						
			+1 FEB05	+2 MAR05	+3 APR05	+4 MAY05	+5 JUN05	+6 JUL05	BAL FY05						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
PM Baseline (Beginning of Period)	67,874	20	0	0	0	0	0	0	0	0	0	0	0	0	67,894
PM Baseline (End of Period)	67,894		0	0	0	0	0	0	0	0	0	0	0	0	67,894
Contingency + MINOS Scope Reserve															2,899
Total NuMI Other Project Costs															70,793
UK In-Kind Contribution															(4,835)
Minnesota Preconstruction Funds															(758)
Minnesota Preconstruciton Funds FY99															(3,000)
Total US Funds															62,200

NuMI Other Proj Costs - US Funds

($000's Omitted)

Program: NUMIOPC	Description: NuMI Other Proj Costs	Approval: Program Manager
Run Date: 02/04/05	Status Date: 1/31/2005	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
2.1 Magnets: Steel & Coils															
2.1.1 Steel Plane Fabrication	BCWS	4,601	0	0	0	0	0	0	0	0	0	0	0	0	4,601
	ACWP	4,601	0	0	(27)	0	0	0	0	0	0	0	0	0	4,574
2.1.2 Steel handling fixtures	BCWS	793	0	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	793
2.1.3 Near Detector Support Structures	BCWS	1	0	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	1
2.1.4 Magnet Coil	BCWS	1,673	0	0	0	0	0	0	0	0	0	0	0	0	1,673
	ACWP	1,672	0	0	0	0	0	0	0	0	0	0	0	0	1,672
2.1.5 Detector Plane Prototypes	BCWS	495	0	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	496
2.1.6 Steel Management	BCWS	57	0	0	0	0	0	0	0	0	0	0	0	0	57
	ACWP	58	0	0	0	0	0	0	0	0	0	0	0	0	58
WBS[2] Totals:	BCWS	7,621	0	0	0	0	0	0	0	0	0	0	0	0	7,621
	ACWP	7,622	0	0	(27)	0	0	0	0	0	0	0	0	0	7,595
2.2 Scintillator Detector Fabrication															
2.2.1 Scintillator Strips	BCWS	2,971	0	0	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	2,972
2.2.2 Fiber	BCWS	3,961	0	0	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	3,961
2.2.3 Scintillator Modules	BCWS	1,982	0	0	0	0	0	0	0	0	0	0	0	0	1,982
	ACWP	1,985	0	(3)	0	0	0	0	0	0	0	0	0	0	1,982
2.2.4 Photodetector Systems	BCWS	1,702	0	0	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	1,702
2.2.5 Mux Boxes & Connectors	BCWS	1,094	0	0	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	1,093
2.2.6 Calibration Systems	BCWS	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
2.2.7 Ass'y & Test Equipment	BCWS	1,721	0	0	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	1,721
2.2.8 Factories	BCWS	3,279	0	0	0	0	0	0	0	0	0	0	0	0	3,279
	ACWP	3,271	0	0	0	0	0	0	0	0	0	0	0	0	3,271
2.2.9 Scintillator Management	BCWS	379	0	0	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	379
WBS[2] Totals:	BCWS	17,089	0	0	0	0	0	0	0	0	0	0	0	0	17,089
	ACWP	17,084	0	(3)	0	0	0	0	0	0	0	0	0	0	17,081
2.3 Electronics, DAQ & Database															
2.3.1 Near Detector Front End	BCWS	4,596	4	1	0	0	0	0	0	0	0	0	0	0	4,601
	ACWP	4,579	1	0	0	0	0	0	0	0	0	0	0	0	4,581
2.3.2 Far Detector Front-end	BCWS	1,197	0	0	0	0	0	0	0	0	0	0	0	0	1,197
	ACWP	1,196	0	0	0	0	0	0	0	0	0	0	0	0	1,196
2.3.5 Database	BCWS	10	0	0	0	0	0	0	0	0	0	0	0	0	10
	ACWP	10	0	0	0	0	0	0	0	0	0	0	0	0	10
2.3.6 Auxilliary Systems	BCWS	252	0	0	0	0	0	0	0	0	0	0	0	0	252
	ACWP	253	0	0	0	0	0	0	0	0	0	0	0	0	253

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		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
2.3.7 Electronics Management	BCWS	218	0	0	0	0	0	0	0	0	0	0	0	0	218
	ACWP	218	0	0	0	0	0	0	0	0	0	0	0	0	218
2.3.8 Slow Control & Monitoring	BCWS	419	0	0	0	0	0	0	0	0	0	0	0	0	419
	ACWP	400	0	0	0	0	0	0	0	0	0	0	0	0	400
2.3.9 HV System	BCWS	77	0	0	0	0	0	0	0	0	0	0	0	0	77
	ACWP	77	0	0	0	0	0	0	0	0	0	0	0	0	77
WBS[2] Totals:	BCWS	6,769	4	1	0	0	0	0	0	0	0	0	0	0	6,774
	ACWP	6,734	1	0	0	0	0	0	0	0	0	0	0	0	6,735
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
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.2 FDI Management	BCWS	584	0	0	0	0	0	0	0	0	0	0	0	0	584
	ACWP	584	0	0	0	0	0	0	0	0	0	0	0	0	584
2.4.3 SDN-FDI Construction Oversight	BCWS	115	0	0	0	0	0	0	0	0	0	0	0	0	115
	ACWP	115	0	0	0	0	0	0	0	0	0	0	0	0	115
2.4.4 FDI Soudan Lab Infrastructure Setup	BCWS	473	0	0	0	0	0	0	0	0	0	0	0	0	473
	ACWP	473	0	0	0	0	0	0	0	0	0	0	0	0	473
2.4.5 SDN-FDI Detector Installation	BCWS	2,960	0	0	0	0	0	0	0	0	0	0	0	0	2,960
	ACWP	2,959	0	0	0	0	0	0	0	0	0	0	0	0	2,959
2.4.6 SDN-FDI DNR Costs	BCWS	382	0	0	0	0	0	0	0	0	0	0	0	0	382
	ACWP	378	0	0	0	0	0	0	0	0	0	0	0	0	378
2.4.7 FDI Alignment & Survey	BCWS	67	0	0	0	0	0	0	0	0	0	0	0	0	67
	ACWP	67	0	0	0	0	0	0	0	0	0	0	0	0	67
WBS[2] Totals:	BCWS	4,581	0	0	0	0	0	0	0	0	0	0	0	0	4,581
	ACWP	4,577	0	0	0	0	0	0	0	0	0	0	0	0	4,577
2.5 Near Detector Installation															
2.5.1 NDI Infrastructure	BCWS	512	0	0	0	0	0	0	0	0	0	0	0	0	512
	ACWP	431	18	10	1	1	0	0	0	0	0	0	0	0	460
2.5.2 NDI Plane Assembly	BCWS	516	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	514
2.5.3 NDI Detector Installation	BCWS	1,087	53	9	2	0	0	0	0	0	0	0	0	0	1,151
	ACWP	1,164	69	53	43	28	0	0	0	0	0	0	0	0	1,358
2.5.4 NDI Facility Experimental Infrastructure	BCWS	238	0	0	0	0	0	0	0	0	0	0	0	0	238
	ACWP	241	2	(2)	11	0	0	0	0	0	0	0	0	0	253
2.5.5 RBI SB&O Experimental Systems Outfitting	BCWS	2,944	0	0	0	0	0	0	0	0	0	0	0	0	2,944
	ACWP	2,944	0	0	0	0	0	0	0	0	0	0	0	0	2,944
WBS[2] Totals:	BCWS	5,297	53	9	2	0	0	0	0	0	0	0	0	0	5,361
	ACWP	5,295	89	60	55	29	0	0	0	0	0	0	0	0	5,529
2.6 MINOS Project Management															
2.6.1 FNL-Project Management	BCWS	1,545	20	21	22	20	0	0	0	0	0	0	0	0	1,629
	ACWP	1,559	36	33	28	32	0	0	0	0	0	0	0	0	1,689
2.6.2 ANL-Project Management	BCWS	98	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	98
WBS[2] Totals:	BCWS	1,643	20	21	22	20	0	0	0	0	0	0	0	0	1,727
	ACWP	1,657	36	33	28	32	0	0	0	0	0	0	0	0	1,787

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		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	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	489
	ACWP	487	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	346
	ACWP	346	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	798
	ACWP	796	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	235
	ACWP	234	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	65
	ACWP	65	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	1,934
	ACWP	1,928	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	988	0	0	0	0	0	0	0	0	0	0	0	0	988
	ACWP	988	0	0	0	0	0	0	0	0	0	0	0	0	988
3.2.2 FNL-MINOS Steel R&D	BCWS	644	0	0	0	0	0	0	0	0	0	0	0	0	644
	ACWP	644	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	136
	ACWP	136	0	0	0	0	0	0	0	0	0	0	0	0	136
WBS[2] Totals:	BCWS	1,768	0	0	0	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	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	758
	ACWP	758	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	6,597
	ACWP	6,597	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	7,171
	ACWP	7,171	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	14,527
	ACWP	14,527	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	1,531	0	0	0	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	1,531
3.4.2 UMN-Breiturg Township Building Rental	BCWS	75	0	0	0	0	0	0	0	0	0	0	0	0	75
	ACWP	75	0	0	0	0	0	0	0	0	0	0	0	0	75
3.4.3 UMN-E Peterson Salary	BCWS	71	0	0	0	0	0	0	0	0	0	0	0	0	71
	ACWP	71	0	0	0	0	0	0	0	0	0	0	0	0	71
WBS[2] Totals:	BCWS	1,677	0	0	0	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	1,677
Grand Totals:	BCWS	62,906	78	32	24	20	0	0	0	0	0	0	0	0	63,059
	ACWP	62,868	127	90	56	61	0	0	0	0	0	0	0	0	63,203

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DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	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	130
	ACWP	171	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	437
	ACWP	560	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	36
	ACWP	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	564
	ACWP	839	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	355
	ACWP	375	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
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	1
WBS[2] Totals:	BCWS	1,522	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	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	111
	ACWP	344	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	8
	ACWP	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	11
	ACWP	284	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
	ACWP	37	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	3
	ACWP	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	9
	ACWP	139	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
	ACWP	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
	ACWP	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	144
	ACWP	805	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	444	0	0	0	0	0	0	0	0	0	0	0	0	444
	ACWP	831	0	0	0	0	0	0	0	0	0	0	0	0	831
2.3.2 Far Detector Front-end	BCWS	112	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	176
2.3.6 Auxilliary Systems	BCWS	148	0	0	0	0	0	0	0	0	0	0	0	0	148
	ACWP	172	0	0	0	0	0	0	0	0	0	0	0	0	172

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DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
2.3.7 Electronics Management	BCWS	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
2.3.8 Slow Control & Monitoring	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	6	0	0	0	0	0	0	0	0	0	0	0	0	6
2.3.9 HV System	BCWS	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
WBS[2] Totals:	BCWS	705	0	0	0	0	0	0	0	0	0	0	0	0	705
	ACWP	1,185	0	0	0	0	0	0	0	0	0	0	0	0	1,185
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
	ACWP	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	89
	ACWP	47	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
	ACWP	7	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
	ACWP	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	89
	ACWP	54	0	0	0	0	0	0	0	0	0	0	0	0	54
2.5 Near Detector Installation															
2.5.1 NDI Infrastructure	BCWS	389	0	0	0	0	0	0	0	0	0	0	0	0	389
	ACWP	145	0	0	0	0	0	0	0	0	0	0	0	0	145
2.5.2 NDI Plane Assembly	BCWS	501	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	468
2.5.3 NDI Detector Installation	BCWS	951	45	2	1	0	0	0	0	0	0	0	0	0	999
	ACWP	786	59	56	43	27	0	0	0	0	0	0	0	0	971
2.5.4 NDI Facility Experimental Infrastructure	BCWS	37	0	0	0	0	0	0	0	0	0	0	0	0	37
	ACWP	58	0	0	0	0	0	0	0	0	0	0	0	0	58
2.5.5 RBI SB&O Experimental Systems Outfitting	BCWS	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
WBS[2] Totals:	BCWS	1,878	45	2	1	0	0	0	0	0	0	0	0	0	1,926
	ACWP	1,456	59	56	43	28	0	0	0	0	0	0	0	0	1,642
2.6 MINOS Project Management															
2.6.1 FNL-Project Management	BCWS	1,496	20	21	22	20	0	0	0	0	0	0	0	0	1,580
	ACWP	1,410	36	33	28	32	0	0	0	0	0	0	0	0	1,540
2.6.2 ANL-Project Management	BCWS	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
WBS[2] Totals:	BCWS	1,496	20	21	22	20	0	0	0	0	0	0	0	0	1,580
	ACWP	1,410	36	33	28	32	0	0	0	0	0	0	0	0	1,540
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	99
	ACWP	99	0	0	0	0	0	0	0	0	0	0	0	0	99

NuMI Other Project Costs - US Funds - Labor Only

($000's Omitted)

Program: NUMIOPC	Description: NuMI Other Proj Costs	Approval: Program Manager
Run Date: 02/04/05	Status Date: 1/31/2005	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT04	NOV04	DEC04	JAN05	FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05	TOTAL
3.1.2 FNL-BD-NuMI FESS CDR	BCWS	112	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	112
3.1.3 FNL-NuMI Beam Design	BCWS	530	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	529
3.1.4 FNL-BD-NuMI Project Management	BCWS	132	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	132
3.1.5 FNL-Soudan Lab Design	BCWS	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
WBS[2] Totals:	BCWS	872	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	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	7
	ACWP	6	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	46
	ACWP	46	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	9
	ACWP	9	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	62
	ACWP	62	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
	ACWP	1	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
	ACWP	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
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Totals:	BCWS	6,768	65	23	24	20	0	0	0	0	0	0	0	0	6,899
	ACWP	7,791	95	89	72	60	0	0	0	0	0	0	0	0	8,107

NuMI Projec Obligations

WBS #	DESCRIPTION	Total Budget Dec-04	PTD Cost	PO Encumbrances	Requisitian Encumbrances	PTD Obligations	Remaining Obligation Authority
			Amounts as of January 31, 2004				
1.1.1	Extraction & Primary Beam	5,986	5,960	49	41	6,050	(64)
1.1.2	Neutrino Beam Devices	11,799	11,780	150	0	11,930	(131)
1.1.3	Power Supply System	5,480	5,486	9	0	5,495	(15)
1.1.4	Hadron Decay & Absorber	1,584	1,583	9	0	1,593	(8)
1.1.5	Neutrino Beam Monitoring	481	486	2	0	487	(6)
1.1.6	Alignment Systems	251	205	0	34	238	13
1.1.7	Water, Vacuum & Gas Systems	2,182	2,210	0	0	2,210	(28)
1.1.8	Installation & Integration	2,153	2,419	22	0	2,440	(288)
1.1.9	Hadronic Hose	62	63	0	0	63	(1)
1.1	**Technical Components**	29,977	30,192	240	75	30,507	(529)
1.2.1	Facility Physics Design Phase	70	70	0	0	70	(0)
1.2.2	Facility Construction Title I Design Phase	1,438	1,437	0	0	1,437	1
1.2.3	Facility Construction Title II Design Phase	2,975	2,974	0	0	2,974	1
1.2.4	Facility Construction Phase	70,169	70,104	1	0	70,105	64
1.2	**Facility Construction**	74,652	74,586	1	0	74,586	66
1.3.1	FY98 Project Management	275	141	0	0	141	133
1.3.2	FY99 Project Management	560	661	0	0	661	(102)
1.3.3	FY00 Project Management	575	663	0	0	663	(88)
1.3.4	FY01 Project Management	438	423	0	0	423	15
1.3.5	FY02 Project Management	703	324	0	0	324	378
1.3.6	FY03 Project Management	541	421	0	0	421	120
1.3.7	FY04 Project Management	59	430	0	0	430	(371)
1.3.8	FY05 Project Management	31	65	3	0	68	(37)
1.3.9	Unallocated Budget	606	0	0	0	0	606
1.3	**Project Management**	3,787	3,129	3	0	3,132	655
1	**NuMI TEC (Total Estimated Cost)**	108,417	107,907	244	75	108,225	192
2.1.1	MINOS-Steel Plane Fabrication	4,574	4,574	0	0	4,574	0
2.1.2	MINOS-Steel Handling Fixtures	793	793	0	0	793	0
2.1.3	MINOS Near Detector Support Structures	1	1	0	0	1	0
2.1.4	MINOS Magnet Coil	1,672	1,672	0	0	1,672	0
2.1.5	MINOS Detector Plane Prototypes	496	496	0	0	496	0
2.1.6	MINOS Steel Management	58	58	0	0	58	0
2.1	**MINOS-Magnets: Steel & Coils**	7,595	7,595	0	0	7,595	0

NuMI Project Obligations

$000's Omitted

WBS #	DESCRIPTION	Total Budget Dec-04	Amounts as of January 31, 2004: PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
2.2.1	MINOS Scintillator Strips	2,972	2,972	0	0	2,972	0
2.2.2	MINOS Fiber	3,961	3,961	0	0	3,961	0
2.2.3	MINOS Scintillator Modules	1,982	1,982	0	0	1,982	0
2.2.4	MINOS Photodetector Systems	1,702	1,702	0	0	1,702	0
2.2.5	MINOS Mux Boxes & Connectors	1,093	1,093	0	0	1,093	0
2.2.6	MINOS Calibration Systems	0	0	0	0	0	0
2.2.7	MINOS Ass'y & Test Equipment	1,721	1,721	0	0	1,721	0
2.2.8	MINOS Factories	3,271	3,271	0	0	3,271	0
2.2.9	MINOS Scintillator Management	379	379	0	0	379	0
2.2	**MINOS-Scintillator Detector Fabrication**	**17,081**	**17,081**	**0**	**0**	**17,081**	**0**
2.3.1	MINOS Near Detector Front-end	4,585	4,581	4	0	4,585	0
2.3.2	MINOS Far Detector Front-end	1,196	1,196	0	0	1,196	0
2.3.3	MINOS Data Routing & Trigger Farm	0	0	0	0	0	0
2.3.4	MINOS Data Acquisition & Triggering	0	0	0	0	0	0
2.3.5	MINOS Database	10	10	0	0	10	0
2.3.6	MINOS Auxiliary Systems	253	253	0	0	253	0
2.3.7	MINOS Electronics Management	218	218	0	0	218	0
2.3.8	MINOS Slow Control & Monitoring	427	400	27	0	427	0
2.3.9	MINOS HV System	77	77	0	0	77	0
2.3	**MINOS-Electronics: DAQ & Database**	**6,767**	**6,735**	**31**	**0**	**6,767**	**0**
2.4.1	MINOS FDI Completed Design Tasks	0	0	0	0	0	0
2.4.2	MINOS FDI Minecrew Management	584	584	0	0	584	0
2.4.3	MINOS FDI MINOS Construction Oversight	115	115	0	0	115	0
2.4.4	MINOS FDI Soudan Lab Infrastructure Setup	473	473	0	0	473	0
2.4.5	MINOS FDI Detector Installation	2,959	2,959	0	0	2,959	0
2.4.6	MINOS FDI DNR Costs	378	378	0	0	378	0
2.4.7	MINOS FDI Alignment & Survey	67	67	0	0	67	0
2.4	**MINOS Far Detector Installation (FDI)**	**4,577**	**4,577**	**0**	**0**	**4,577**	**0**
2.5.1	MINOS NDI Infrastructure	473	460	12	0	473	0
2.5.2	MINOS NDI Plane Assembly	514	514	0	0	514	0
2.5.3	MINOS NDI Detector Installation	1,393	1,358	35	0	1,393	0
2.5.4	MINOS NDI Facility Experimental Infrastructure	253	253	0	0	253	0
2.5.5	MINOS NDI SB&O Experimental Systems Outfitting	2,944	2,944	0	0	2,944	0
2.5	**MINOS Near Detector Installation (NDI)**	**5,576**	**5,529**	**47**	**0**	**5,576**	**0**
2.6.1	MINOS FNL Project Management	1,689	1,689	0	0	1,689	0

NuMI Proje Obligations

WBS #	DESCRIPTION	Total Budget Dec-04	Amounts as of January 31, 2004				Remaining Obligation Authority
			PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	
2.6.2	MINOS ANL Project Management	98	98	0	0	98	0
2.6	MINOS Project Management	1,787	1,787	0	0	1,787	0
2	MINOS Detector	43,381	43,303	78	0	43,381	0
3.1.1	NuMI CDR	487	487	0	0	487	0
3.1.2	NuMI FESS CDR	346	346	0	0	346	0
3.1.3	Beam Design	796	796	0	0	796	0
3.1.4	Project Management	234	234	0	0	234	0
3.1.5	Soudan Lab Design	65	65	0	0	65	0
3.1	NuMI Conceptual Design	1,928	1,928	0	0	1,928	0
3.2.1	MINOS Scintillator R&D	988	988	0	0	988	0
3.2.2	MINOS Steel R&D	644	644	0	0	644	0
3.2.3	Neutrino Oscillation R&D	136	136	0	0	136	0
3.2	MINOS Detector R&D	1,768	1,768	0	0	1,768	0
3.3	MINOS Cavern	10,769	10,769	0	0	10,769	0
3.4.1	Mine Crew Support/Soudan Gen'l Operations	1,531	1,531	0	0	1,531	0
3.4.2	Breitung Township Building Rental	75	75	0	0	75	0
3.4.3	E Peterson Salory	71	71	0	0	71	0
3.4	Soudan/MINOS Operating	1,677	1,677	0	0	1,677	0
3	Project Support	16,142	16,142	0	0	16,142	0
	Total Other Project Costs (OPC's)	59,524	59,445	78	0	59,524	0
	NuMI TPC (Total Project Cost)	167,941	167,352	322	75	167,749	192