



NuMI Technical Components

WBS 1.1.4 *Decay Region and Hadron Absorber system*

Co-Level 3 Manager

Alan Wehmann

Fermilab

Sep 11-13, 2001



Scope of Subproject

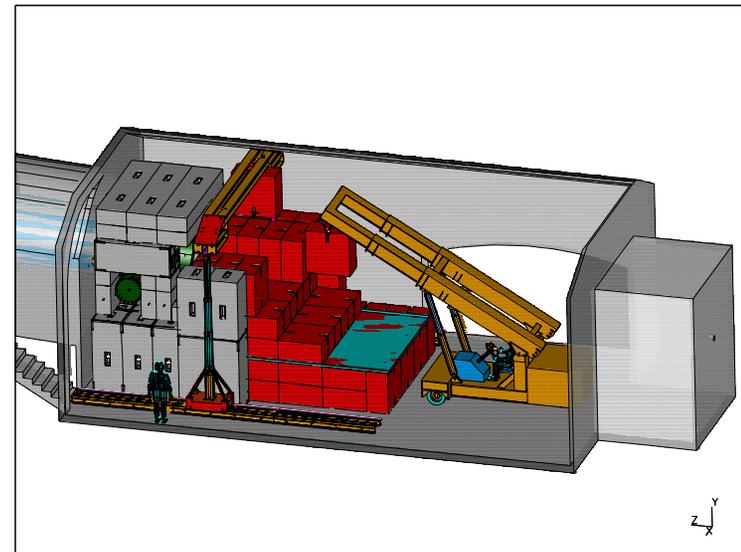
Decay Region

- « Shielding Calculations for Decay Region
- « ES&H review of
 - * Shielding calculations
 - * ASME Vacuum Vessel Shell Calculations
- « End caps (design ⇒ installation)

Other Decay region EDIA, Fabrication, Construction, Installation are in WBS 1.2 (Civil Construction)—including cooling
Added 6/01—100% oversight of QA inspection of Decay Pipe section welds

Absorber Design ⇒ Installation

customer-installed Crane in Cavern





Response to recommendations

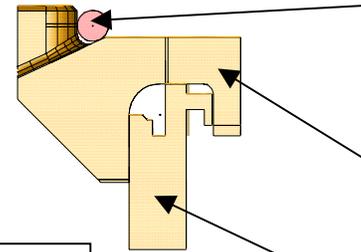
Commit additional engineering resources and develop a conceptual installation plan for the absorber and shielding by July 31, 2001.

Ernie Villegas(ME), Bob Wands(ME), and Ron Williams (drafting) are working on absorber and shielding design and installation. A review was held on June 12 and a conceptual installation plan has been developed since.

Ed Chi (ME) and Ron Williams (drafting) are working on the design of the Decay Pipe End Caps. A review of the Decay Pipe was held on July 9.

Response to recommendations

Lazer forklift
 from Hoist
 Liftruck Mfg.
 Inc.

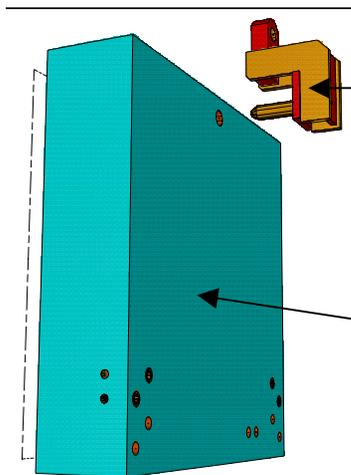


Concrete Block
 Lifting Eye

Concrete Block
 Lifting Hook

Concrete
 Block
 Lifting
 Fixture

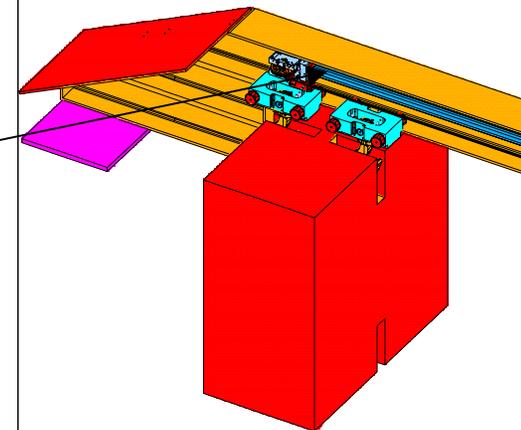
Lift Truck
 Fork Rails



Module Lifting
 Fixture (Hangs
 from Hook
 Carrier)

AI Module
 redesigned

Hook Carriers
 now fully
 designed





Cost Update (May)

changes in cost since last review

WBS- Project	Mar '01 Baseline	May '01 Baseline	Delta	Justifications
1.1.1	953 K\$	2,080 K\$	1,127 K\$	
				Install. Equip EDIA = 100 K\$
				Install. Equip Cost = 220 K\$
				Absorber Core = 300 K\$
				Installation Effort = 380 K\$
Total	953 K\$	2,080 K\$	1,127 K\$	

Shown in May



Cost Update

- Cost refinement (Changes since May)

Subsystem	May '01 Estimate	Current Estimate	change	Justifications
ABS CORE	538 K\$	444 K\$	(94 K\$)	cheaper Al alloy for core modules, simpler core, elimination of rear assembly platform
ABS SHIELD	406 K\$	356 K\$	(50 K\$)	Core steel price adjustment, no delivery charges for Support Services, fewer shims
ABSORBER	915 K\$	717 K\$	(198 K\$)	reduction in cost of rigging/rigging equipment, elimination of Catwalk & rear assembly platform
DECAY	221 K\$	187 K\$	(34 K\$)	vendor quote for Decay Pipe Endcap fabrication, installation costs re-estimated
TOTAL	2,080 K\$	1,704 K\$	(376 K\$)	



Technical Progress since May

- Installation Equipment is now battery operated (instead of diesel power—which presented ventilation problems underground). The installation plan was updated.
- Absorber Core design has been simplified (since 6/12 review). Water joints are now welded.
- Decay Pipe End Cap design is now very mature. Upstream window is full size, carbon steel, welded, 3/16” thick
- FEA has been done for the hook carrier for the Mini-Jack bridge & for several lifting fixtures. The hook carrier will be used for the hooks to lift Duratek blocks, and for the fixture that will lift core modules (Al and Fe). A fixture for lifting concrete shielding blocks with the Lazer forklift has been designed.



Summary

- The engineering design for the Absorber and its installation has advanced a great deal since May. Most engineering design is in the form of Ideas 3D models, from which 2D drawings are easily produced (soon to happen). The installation plan has been greatly simplified by the switch to the battery-powered Lazer forklift.
- Bob Bernstein is now co-manager; he is active in the Mars shielding verification studies and in Decay Pipe issues (e.g. End Cap design, corrosion protection for the cooling pipes).
- The design for the End Caps of the Decay Pipe is done; detail drawings exist.
- I believe that we have a new budget and new schedule whose targets we can achieve.