



NOvA Project Status

John Cooper & Ron Ray
NOvA Working Group Meeting
November 16, 2005



Where are we on Cost & Schedule?

Status of NOVA Cost & Schedule

11/15/2005

	Initial talks with Bill?	List of Tasks	Durations of Tasks	Relationships among tasks	Assign labor resources	Assign M&S \$ Resources	Add contingency	Provide L3 descriptions	Provide Task Notes
WBS									
Site and Buildings	X	X	X	x	x	x		X	x
Scintillator	X	x							
Fiber	X	x							
Extrusions	X	x							
Extrusion Modules	X								
Electronics	X	x							x
DAQ	X	x							x
Near Assembly	X	X						X	
Far Assembly	X	X	x	x	x			X	



Where are we on Requirements Docs?

Status of NOvA Requirements Documents

11/15/2005

WBS		2-Nov	9-Nov	16-Nov
Site and Buildings				
	Site Work Technical Requirements (Steve Dixon)	doc 152	doc 152	doc 152
	Site Logistics Technical Requirements (Steve Dixon)		doc 156	doc 156
	Building and Detector Enclosure (Steve Dixon)			doc 173
	Outfitting Technical Requirements (Steve Dixon)		doc 158	doc 158
Scintillator				
Fiber				
Extrusions				
Extrusion Modules				
	NOvA Module Requirements (K. Heller, T. Chase, D. Cronin-Hennesy, L.			Word draft
Electronics				
	Front End Electronics Requirements (John Oliver)	doc 147	doc 147	doc 147
	APD Module Requirements (Roger Rusack and Jon Urheim)			doc 170
DAQ				
	NOvA Data Acquisition Requirements	doc 34	doc 34	doc 34
Near Assembly				
	Liquid Scintillator Handling (Jim Musser)	doc 138	doc 138	doc 138
Far Assembly				
	Structural Adhesive (Vic Guarino)	doc 145	doc 145	doc 145
	Block Stability (Vic Guarino)	doc 143	doc 143	doc 143
	Block Raiser [Dave Pushka]	doc 113	doc 113	doc 113
	Assembly Tables (Vic Guarino)	doc 146	doc 146	doc 146
	Glue Machine (Vic Guarino)	doc 144	doc 144	doc 144
	Liquid Scintillator Filling Machine	doc142	doc142	doc142
	Full Scale Prototype (Karen Kephart)	doc 141	doc 141	doc 141



Where are we on RFPs?

Status of NOVA RFPs

11/15/2005

Subject	vendor discussions	draft RFP	req in system	final approved RFP	RFPs sent	# sent to	Date for Responses	# Responses	Evaluation Board
Extrusions (we provide resin)	PET, Sept 15 Extrutech, June Itasca, Sept 6	12-Aug	~ Aug 1	vers 1, Aug vers 2, Oct 7	26-Aug 10-Oct	10 11	23-Sep 16-Nov	3	26-Sep
raw PVC	Prime, Oct 17 Ashland (Georgia-Gulf), Sept 8, Nov 7 Aurora, Clairiant, Aug 23								
mixed scintillator	Bicron, Nov 7 Eljen, Nov 8	17-Oct	21-Oct						
scintillator fluor mix (must mix with mineral oil, perhaps also with more pseudocumene)	Bicron, Nov 7 Eljen, Nov 8 Curtis Labs, Aug 25	20-Oct	21-Oct						
mineral oil	Penreco, Oct 25	6-Oct	21-Oct	10-Nov	11-Nov	10	14-Dec		
pseudocumene	Dixie Chemical, long ago but.... Flint Hills, Nov 10 but	17-Oct	21-Oct						
waveshifters	Curtis Labs, Aug 25	20-Oct	21-Oct						
ISO tanks, mixing	EXSIF, Nov 15								
waveshifting fiber	Kuraray, Oct 31 Bicron, Nov 3 Polhitech, Protvino,	17-Oct	21-Oct						
Status of RFIs									
APDs	Hamamatsu, Aug 9			11-Nov	xxxx				



Status of BOE (new list 11/9)

Status of NOVA Basis of Estimate Documentation

11/15/2005

DRAFT
document to
List of Project Documents in
documents? Office? binder?

WBS

Site and Buildings				
Scintillator				
Fiber				
Extrusions				
	Write-up of RFP results	X		
Extrusion Modules				
Electronics				
DAQ				
Near Assembly				
Far Assembly				



Status of Hazard Analysis

Status of NOvA Hazard Analysis / PSAD

11/15/2005

	First pass to Harry	L2 manager completed HA sheet?	Harry & ES&H meet to review lists	Prelim Hazard Analysis complete
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WBS

Site and Buildings	X	X		
Scintillator				
Fiber				
Extrusions				
Extrusion Modules				
Electronics	X	X		
DAQ	X	X		
Near Assembly	X	x		
Far Assembly	X	x		



Where are we on the CDR?

Status of Conceptual Design Report

11/15/2005

Chapter	Author	outline	1st draft (missing figures, incomplete text)	2nd draft (after TB reading)	Final
i		X			
ii		X			
iii		X			
iv		X			
1	John	X			
2	Gary	X			
3	John	X	X		
4	John	X			
5	John	X			
6		X			
7		X			
8		X			
9		X			
10		X			
11		X			
12	Ron	X	X		
13	Ron	X	X		
14	Ron	X	X		
15	Ron	X	x		
16		X			
17		x			
18		x			
19					
20					
21		X	X		
A1?		X			



Cost Range and Schedule Range

4. Cost Range and Schedule Range

4.1 Cost Range

The Total Estimated Cost of NOvA is in the range \$ ___ M - \$ ___ M. This estimate includes ___ % contingency. The cost estimate is extracted from a resource loaded cost and schedule in Open Plan. The estimate is in AFY dollars based on a five year construction schedule during FY2008 – FY2012. R&D costs in FY2006 are \$ 2.0 M, and \$ ___ M of Preliminary Engineering Design funds are required in FY2007 prior to a project construction start in FY2008. The Total Project cost range is \$ ___ M - \$ ___ M.

4.2 Schedule Range

The cost estimate is based on a five year construction schedule, FY2008 – FY2012. Major procurements for scintillator, PVC extrusions, wavelength shifting fiber, and the Far Detector experimental hall will be placed as soon as the construction funds are allocated. This assumes the R&D funds and PED funds are available as requested in FY2006-2007.

The schedule range presented here has two scenarios with the later scenario finishing the detector at the end of FY2012 and requiring additional funding due to the stretched schedule. Major milestones in the project schedule are in Table 4.1.



More on Cost & Sched chapter

Insert a paragraph of text here describing the schedule table.

Need some more words about linkage of schedule (late) to cost (high)?

Need some words about float in the two schedule scenarios, my present WAG is this has 5 months float in “Early” and 10 months float in “Latest”.

Need to explain any differences between the two schedules,

e.g. “Latest” takes into account a possible continuing resolution at the project start and this is crucial for the long lead time procurements,

e.g. “Early” has a shorter outfitting time assuming tasks proceed in parallel,

e.g. “Latest” assumes the scintillator filling starts later relative to the extrusion module installation in case the structural calculations indicate a higher safety factor if more of the detector is in place before filling (max case is the full extrusion assembly followed serially by filling, but faster filling by a factor of 2).

Need to mention the obvious critical path (?): Site work → building construction → outfitting of building → assembly and filling of detector.



Cost Range and Schedule Range

Milestone	Early Range of Schedule		Latest Range of Schedule	
	Date	delta time (months) to previous milestone	Date	delta time (months) to previous milestone
Title II Experimental Hall design complete on PED funds	September-07		September-07	
Construction Project Start	October-07	1	October-07	1
Construction funds allocated	October-07	-	January-08	3
Ash River site work complete	July-08	9	October-08	9
Far Detector Hall beneficial occupancy, start outfitting	July-09	12	January-10	15
Start Detector installation	December-09	5	November-10	10
Start filling detector with scintillator	January-10	1	August-11	9
First 5 kilotons of Far Detector operational	September-10	8	January-12	5
15 kilotons operational, detector 50% complete	April-11	7	April-12	3
Full 30 kilotons operational	February-12	10	September-12	5
Project Completion (CD-4?)	?		?	

Table 4.1: NOvA Project Milestones for two schedule scenarios.



More on Cost & Sched chapter

4.3 Funding Requirements, including PED request

R&D funding in FY2006 -2007 enables completion of the Integration Prototype Near Detector in mid-2007. The detector can then be used to collect neutrino data while sitting in the existing MINOS Surface Building at Fermilab.

PED funding in FY2007 enables a complete Title II design of the Far Detector Building and site access roads. The Far Detector building is on the critical path in all scenarios and a delay caused by an incomplete design translates directly into a project completion delay. **What else can we use PED funding for?**



Status of other required documents

	<i>Draft Start Date</i>	<i>Draft Completion Date</i>	<i>Target Completion Date</i>	<i>Date Completed</i>	<i>Date Approved</i>	<i>Current Status</i>	<i>Notes</i>
Critical Decision Prerequisites							
CD-0	Justification of mission need document						DOE
	Preconceptual Planning					Continuing	
	Mission Need Independent Project Review (?)						OECM
CD-1	Conceptual Design Report (Detector CDR)			Dec-05			Outline done.
	Acquisition Strategy	Aug-05	Sep-05	Sep-05		Comments back from Procaro	Draft complete. Sent to S. Webster. Missing info. Building? MIE vs. line item?
	Baseline range & Cost Estimates and Resource Loaded Schedule			Dec-05			In progress
	Draft Configuration Management Document	Aug-05	Sep-05	Dec-05		Done	More work needed for final CM document
	Preliminary Project Management Plan (PMP)	Aug-05	Aug-05	Oct-05		Review	Needs input from cost and schedule
	Preliminary Hazard Analysis Report & NEPA	Aug-05		Dec-05			Waiting for input from L2 managers
	Preliminary Project Execution Plan (PEP)	Aug-05	Sep-05	Sep-05			Sent to S. Webster & M. Procaro.
	Preliminary Risk Management Plan						
	Project Data Sheet for design						?
	Verification of mission need (NuSAG?)						NuSAG reports by end of year?
PARS Reporting						determine content of monthly reports	



Other Items

- Interactions with Procaro
 - Mont sent him the accelerated timeline
 - Cooper talked 11/11 on Acquisition Strategy
 - Acquisition Strategy: Who owns site, need something in “interfaces” section
 - » Ron has draft (next slide), any input?
 - In CDR need risk analysis
 - In CDR need one page of Performance Requirements
 - Cooper Email 11/14,15 will read it aloud



Other Items

Ron's Acquisition Strategy text

The land to be used for construction of the far detector hall will be provided and owned by the University of Minnesota and is not part of the NOvA Project. Construction of the far detector hall is part of the project, but the University of Minnesota, who will ultimately be responsible for safety, ES&H and safeguards and security, will own the building. The University of Minnesota is considered a distinct entity from the University of Minnesota HEP group that collaborates on NOvA. This is similar to the execution of the MINOS project where Fermilab did not own the Soudan mine or the MINOS detector cavern. Fermilab, the NOvA Project and the University of Minnesota will be required to work closely with one another to ensure that the project is successfully executed in a safe and efficient way. The responsibilities of the various parties and the mechanisms that govern their interactions will be clearly defined in a series of MOUs. A draft MOU is being prepared using MINOS as a model. In the MINOS model, a Fermilab ES&H committee advised the University of Minnesota on ES&H issues as if the detector were located on the Fermilab site. The input was used by the University in their safety reviews as the responsible party.



Other Items

- 11/10, Cooper asked Marvin
 - To push settling RGU
 - He will get Univ real estate lawyer in room with St. Louis County
 - To get document from Univ saying they will be happy to own the site, obtain the site, negotiate the access, own the building, operate the building, ...
 - He will draft letter for Mulcahy saying they will do all this (regardless of ongoing funding model search)
 - To think about the MOU between the Univ. entity and the Fermilab Project
 - We are thinking a draft late in January may suffice?