



NOvA Project Status

March 6, 2007

John Cooper

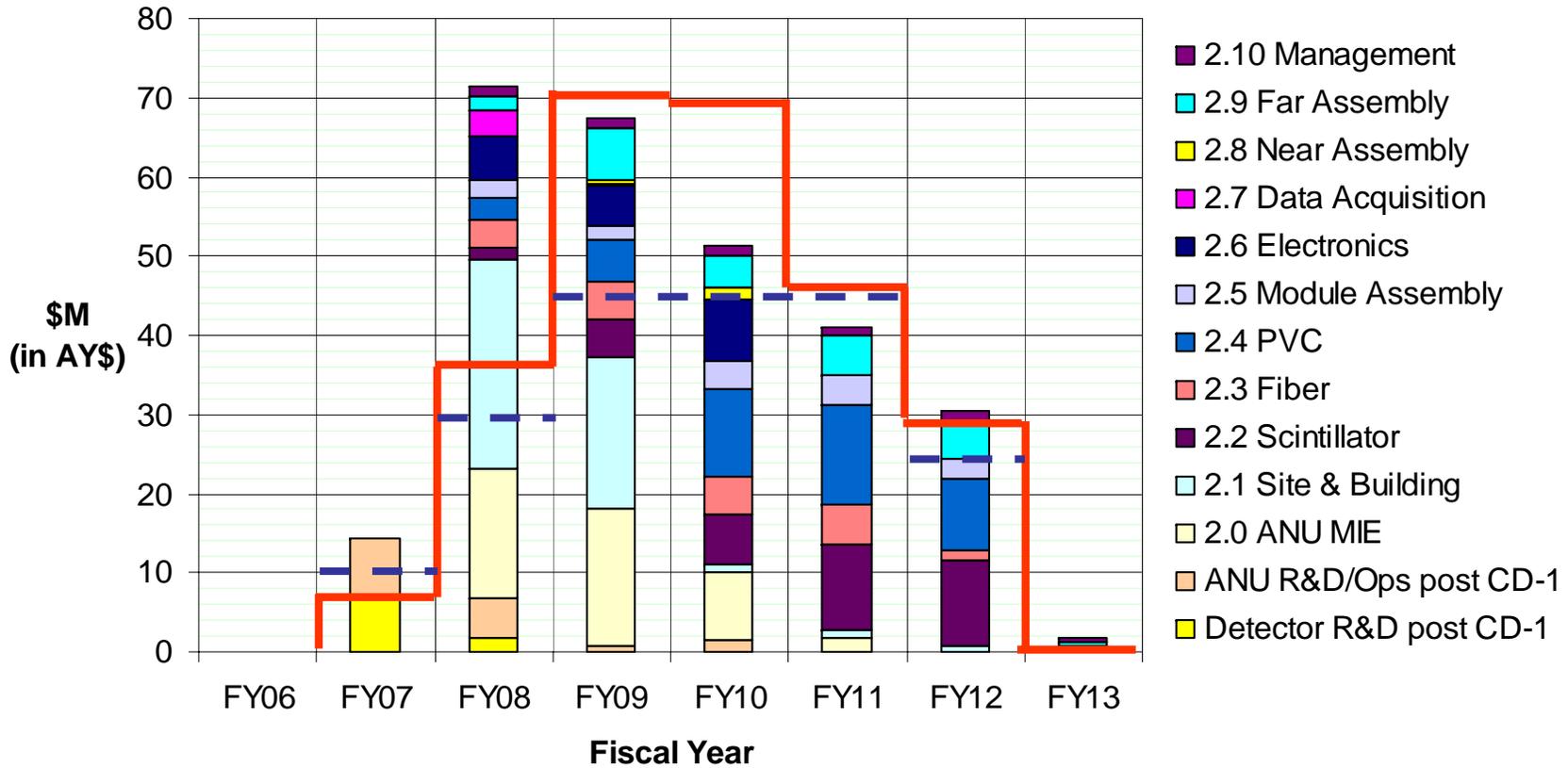
Ron Ray

Nancy Grossman



Feb 8: New Funding Profile from Mike

- **FY07–12: 10.3, 36.5, 70, 69, 46, 28.2 M\$ = 260 M\$ TPC** — **New profile**
- And our combined estimate (277 M\$ total) looks like: — **Old 200 M\$ profile**
 - 218.8 M\$ for 20 kt detector based on August, 2006 roll-up
 - 58.6 M\$ for Accelerator and NuMI Upgrades based on January, 2007 work

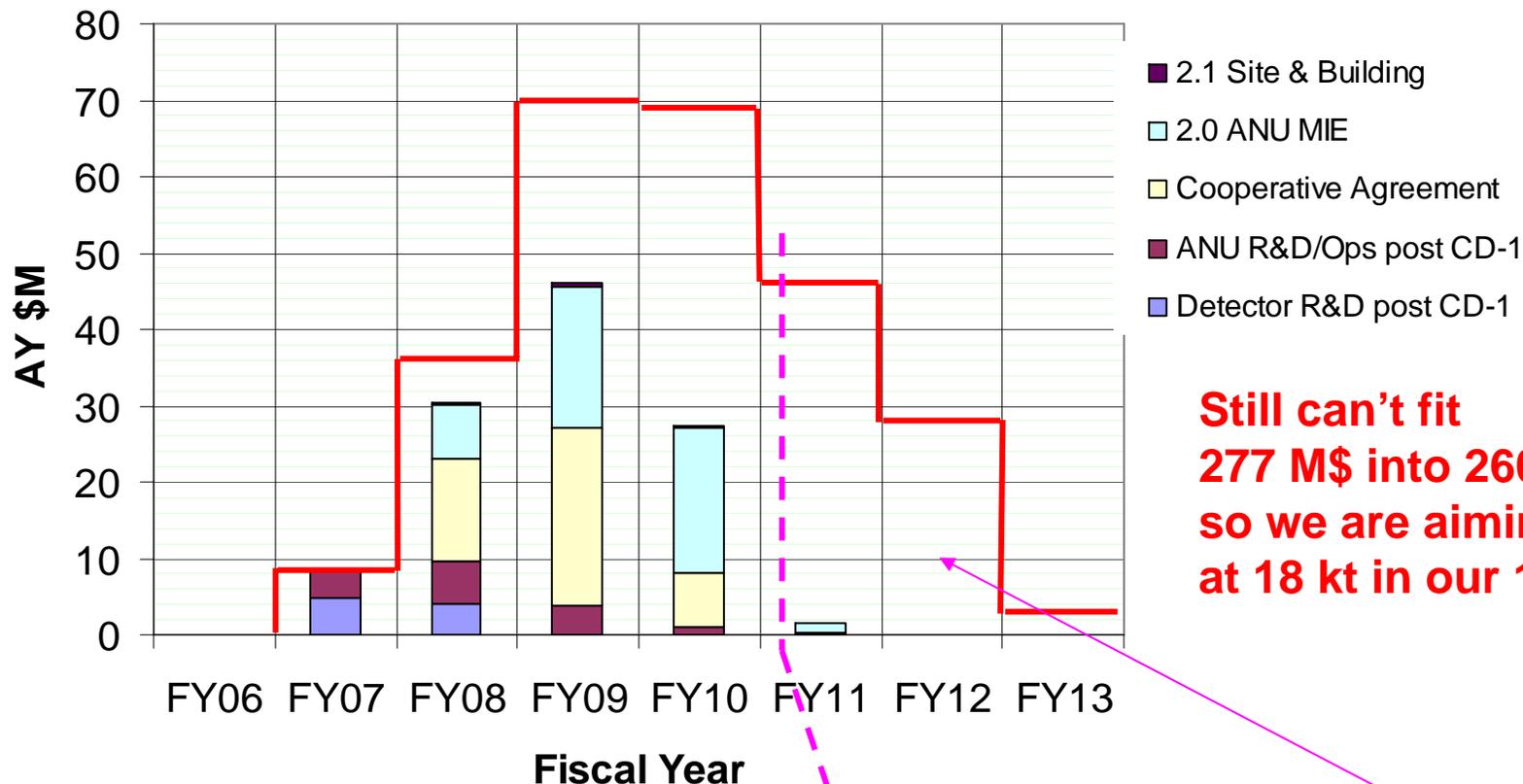


Clearly, major work to move items downstream one year.



Feb 15 Project version trying to match profile

- **FY07–12: 8.2, 36.05, 70, 69, 46, 28.2, 2.5 M\$ = 260 M\$ TPC**
 - Note now estimating R&D total after April 1 as 8.2 M\$, put remainder in FY13
 - And our combined estimate for ANU, Detector R&D, Cooperative Agreement looks like:



**Still can't fit
277 M\$ into 260 M\$,
so we are aiming
at 18 kt in our 1st roll-up**

ANU constraints in FY07 – 08 implies ~ 6 month delay

Building takes 3 yrs (preliminary, B.O. Jan 2011, ~ 1 year delay) , now short Assembly time



Building Problem from Steve Dixon

Listed below is a profile that identifies when we would issue the po for each package. Of course, the first choice would be to issue one big construction package for the concrete, building shell, mechanical, electrical and conveying systems, but that did not seem likely. The profile is a preliminary sequence of the construction activities.

	Obligations (PO issued)			
	Cost	FY08	FY09	FY10
Engineering	5.00	3.00	1.00	1.00
Site Prep	9.00	9.00		
Utilities	1.19	1.19		
Concrete	20.57		20.57	
Building Shell	3.30		3.30	
Mechanical	3.30		1.00	2.30
Electrical	2.66		0.50	2.16
Conveying Systems	0.63			0.63
		13.19	26.37	6.09

- Logical concrete package doesn't fit in FY08 funding
 - But still thinking about partial concrete work in late FY08



Feb 15: preliminary OPC / TEC profile estimate to Mike & Pepin

2/15/07

J. Cooper

Preliminary NOVA OPC / TEC funding profile estimate

FY08 start on Coop Agreement + funding profile implies ~ 1 year detector delay

Funding profile on Accel & NuMI Upgrades implies ~ 6 mo delay

	2/8 DOE TPC Profile	2/14 attempt at OPC profile	2/14 attempt at TEC
FY06	-	-	-
FY07	8.229	8.229	-
FY08	36.050	23.016	13.034
FY09	70.000	27.166	42.834
FY10	69.000	8.104	60.897
FY11	46.000	0.300	45.700
FY12	28.200	-	28.200
FY13	2.521	-	2.521
sum	260.000	66.814	193.186



Changes driven by Funding

- We still need to integrate ANU & Detector
 - ANU slip of ~ 6 months doesn't match Detector slip of ~ 1 year
 - Also doesn't match the laboratory shutdown schedule
- On the Detector side we are:
 - Aiming at 18 kt as stated above
 - Reducing the building size from 25 kt to 20 kt
 - Reducing the Integration Prototype Near Detector (IPND) from 6 blocks of 31 planes to 4 blocks
 - Adequate for observing some neutrino events for simulation packages
 - Buy APDs for IPND on construction funds to get cheaper prices
 - Move these APDs to final Near Detector when it exists.
 - Implies delay unless part of CD-3a and early buy in FY08
 - Reducing the final Near Detector construction from 6 blocks (+ Muon Catcher) to 3 blocks AND assuming 3 of the 4 IPND blocks will be re-used in the final Near Detector
 - So, effectively build 1.17 detectors not 2, one purchase of APDs



Status of updating CD-1 documents

- We (Alan Wehmann) are assembling a webpage for Pepin for ESAAB
 - Acquisition Strategy
 - PPEP
 - Pepin has integrated all comments, planned to get these to Mike yesterday
 - Steve Tkaczyk requested a security paragraph in PPEP
 - NOvA Conceptual Design Report
 - Detector CDR from CD-1 Review
 - CDR for Accelerator & NuMI Upgrades is done (Nancy / Elaine)
 - Preface explains that this separate document is part of the NOvA CDR
 - Preliminary Hazard Analysis
 - Detector HA from CD-1 review
 - Accelerator and NuMI Upgrades HA is done (Mike Andrews / Elaine), preface
 - Risk Management Plan (Steve Tkaczyk requested this)
 - Risk Registry and current list of risks
 - Have 11 for Detector, 3 for ANU in place
 - 9 of these reviewed by the NOvA Risk Management Board last Thursday.



Status of Cooperative Agreement

- DNFA (Determination of Non-Competitive Financial Assistance)
 - drafted by Mike
 - Included Joanna's comments
 - Went to Chicago Office for review
 - financial, legal
 - They provided their review last Friday, March 2
- Yesterday Mike / Pepin requested a 5 year CA funding profile
 - building design, building construction, building operations
- Mike talked with Marvin Marshak yesterday (?)
- Marvin is meeting with U of Minnesota administration on March 12
 - Topic is CA status and environmental actions by U of M
- DNFA will be used to support a CD-1 Decision



Date for CD-1 Sign-off ?

- ESAAB formation time?
- ESAAB needs a week to look at documents
- Maybe late March ?



CD-2 Worklist, Cooperative Agreement

NOVA Work List for CD-2 <i>(red means new since last version)</i>				Original Estimated Finish Date	Current Estimate of Finish Date	Actual Finish Date	comments
Cooperative Agreement							
			U of M proposal draft	30-Sep-06	6-Oct-06	30-Oct-06	
			U of M final draft	15-Oct-06	17-Nov-06	20-Nov-06	
			U of M submits proposal	31-Oct-06	1-Dec-06	1-Dec-06	RGU not stipulated
			Recipient Selected = Site Selection	1-Nov-06	28-Feb-07		DNFA written. 2 weeks CH review.
			Determination of Noncompetitive Financial Award signed		15-Mar-07		
			Letter sent to U of M to initiate negotiations	16-Mar-07			
			Negotiations concluded	15-Jan-07	1-Sep-07		FY07 CR takes this off Critical Path
							(not needed for CD-2 review)
							(but do need for CD-2 sign-off)



CD-2 Worklist, NEPA and EA

NOVA Work List for CD-2 <small>(red means new since last version)</small>				Original Estimated Finish Date	Current Estimate of Finish Date	Actual Finish Date	comments
NEPA							
	Scoping Meeting			22-Jun-06		22-Jun-06	
	Environmental Impacts Analysis Plan and 5 point timeline			29-Jun-06		20-Jul-06	
	NEPA timeline in Envir. Impacts Analysis Plan						
	Determine EA (vs EIS or Categorical Exclusion)			22-Jun-07		22-Jun-06	Siebach to Livengood
	Notify Illinois, Wisconsin, Minnesota of EA intent			15-Jul-06		1-Aug-06	letters from Livengood
	1st draft EA completed			1-Nov-06	4-Jan-07	6-Jan-07	DOE review asks for revision
	2nd draft EA completed				13-Mar-07		still depends on EAW / RGU
	final EA ready			1-Dec-06	16-Mar-07		
	end State / Public Comment period			1-Jan-07	17-Apr-07		not required for CD-2 REVIEW
	FONSI drafted			1-Apr-07	1-May-07		not required for CD-2 REVIEW
	FONSI issued			1-Jun-07	15-Jul-07		not required for CD-2 REVIEW
							but do need for CD-2/3a sign-off
	Minnesota Part						
	RGU (Responsible Government Unit) in place			15-Jan-07	1-Apr-07		Assumes CA notification sent March 15
	Minnesota EAW for Ash River ready for EA			2-Jan-07		21-Dec-06	
	Send EAW to EQB				1-Apr-07		Need for EA, CD-2 review
	start 30 day comment period on EAW			15-Jan-07	1-May-07		not needed for CD-2 review
	RGU response to comments			1-Mar-07	1-Jun-07		not needed for CD-2 review
	start 30 day judicial appeal period			1-Apr-07	1-Jun-07		not needed for CD-2 review
	RGU notice of decision published in the EQB Monitor			21-Apr-07	15-Jul-07		not needed for CD-2 review
							but do need for CD-2 sign-off?
	Wetland Permit Processing by USACE			1-Apr-07	1-Oct-07		Need for construction, not for CD-2 review
	Fermilab NOVA Part						
	First Draft of Ch 3 - Proposed Actions			1-Nov-06	20-Dec-06	21-Dec-06	
	Water Task Force report			21-Sep-06	15-Dec-06	19-Dec-06	now thought to be a Technical Reference
	Second draft: revised Ch 3, 4, 5			8-Mar-07	14-Mar-07		~2 days, then to Griffing
	Ch 6: highest impact credible accidents			14-Mar-07			following scintillator spills at all sites



CD-2 Worklist, ANU

NOvA Work List for CD-2 <small>(red means new since last version)</small>			Original Estimated Finish Date	Current Estimate of Finish Date	Actual Finish Date	comments
Accelerator & NuMI Upgrades						
Morph Campaign into Project						
		GPP moved off project	17-Jan-07		24-Jan-07	justification letter done and agreed to
		R&D + Ops / MIE split done	17-Jan-07		30-Jan-07	may be minor changes before CD-2
		ON/Off project split done	17-Jan-07		30-Jan-07	may be minor changes before CD-2
		CDR done	31-Jan-07		31-Jan-07	will stand alone next to NOvA CDR
		CD-1 Cost and Schedule RANGE complete	31-Jan-07		31-Jan-07	
		Hazard Analysis done	31-Jan-07		7-Feb-07	
Move to Open Plan						
			16-Mar-07			
Move to NOvA Docdb						
			15-Mar-07			CD est ~1 month to write scripts for this
Scope of TDR Defined (on/off project and IL/EL designs to cost defined)						
			31-Jan-07		31-Jan-07	
Draft Update NOvA TDR "Overview" sections to include ANU						
			1-Mar-07		19-Feb-07	
Final Update NOvA TDR "Overview" sections to include ANU						
			30-Mar-07			
draft TDR ANU chapter done						
			15-Mar-07			this one is likely > 100 pages
"final" version back to Project Office control						
			30-Mar-07			
Risk assessment done						
			13-Apr-07			
BOEs done						
			15-Mar-07			



CD-2 Worklist, Site and Building

NOVA Work List for CD-2 <i>(red means new since last version)</i>				Original Estimated Finish Date	Current Estimate of Finish Date	Actual Finish Date	comments
Site and Building							
Ash River Site							
		EAW update, draft from SEH	1-Nov-06	1-Dec-06	4-Dec-06	received SEH consultant draft, will iterate	
		final EAW	2-Jan-07		21-Dec-06		
		Wetland Permit Application prepared	1-Dec-06	1-Apr-07		Needed for CD-3a ? Need RGU to submit	
		Site Prep 100% design package ready	1-Dec-06	1-Mar-07			
Other Sites							
		EAW	1-Jul-07	30-Sep-07		no longer matters with unsolicited proposal	
Building							
		Independent Cost & Schedule Review	15-Sep-06	1-Sep-06	14-Sep-06		
		Decide overburden construction method	15-Oct-06		31-Oct-06	related to overburden thickness	
		Final conceptual design ready for 30% design effort	15-Oct-06		31-Oct-06		
		30% Drawings	15-Dec-06	15-May-07		Stopped work Jan 30. Cost up \$5M.	
TDR							
		Second draft based on Project Office first draft of Oct 17	9-Nov-06		7-Nov-06		
		latest draft			10-Jan-07	need to revise for new building scope	
		"final" version back to Project Office control	9-Mar-07				
		Cost & Schedule R&D part done	30-Mar-07				
		Cost & Schedule Construction part done	19-Mar-07				
		Risk assessment done	15-Apr-07		1-Mar-07		
		BOEs done	15-May-07				



CD-2 Worklist, Liquid Scintillator

NOVA Work List for CD-2 <i>(red means new since last version)</i>		Original Estimated Finish Date	Current Estimate of Finish Date	Actual Finish Date	comments
Liquid Scintillator					
	Tests of commercial Tintometer	21-Jul-06		16-Aug-06	tagged, sent on to Indiana for tests, 7/17
	Fermilab blending model description & cost	15-Aug-06	15-Nov-06	29-Nov-06	have "Fermilab response" to blending RFI
	issue RFI for off-site blending	1-Aug-06	31-Oct-06	10-Nov-06	following 11/3 consultant advice on bid list
	RFI responses for off-site blending	1-Sep-06	30-Nov-06	30-Nov-06	8 responses, meeting tomorrow to sort it out
	Decide on TDR and C&S blending model	14-Dec-06		7-Dec-06	TDR will have toll blending in Chicago area with Fermilab on-site blending as a backup.
	evaluate waveshifter concentration	15-Aug-06		16-Aug-06	light output vs. concentration
	evaluate pseudocumene concentration	15-Aug-06		1-Apr-06	CDR info good, additional meas in progress
	decide waveshifter/pseudocumene to match fiber diameter	9-Aug-06	13-Oct-06	26-Oct-06	No scintillator change, only fiber & PVC
	<i>Consultant measurement of aerosol flamability</i>	15-Jan-07		1-Feb-07	<i>Can't ignite over wide range of droplet sizes with 10J spark</i>
	TDR				
	Second draft based on Project Office first draft of Oct 17	9-Nov-06		23-Jan-07	
	latest draft			1-Feb-07	
	"final" version back to Project Office control	9-Mar-07			
	Cost & Schedule R&D part done	30-Mar-07			
	Cost & Schedule Construction part done	19-Mar-07			
	Risk assessment done	15-Apr-07			
	BOEs done	15-May-07			



CD-2 Worklist, Fiber

NOvA Work List for CD-2 <i>(red means new since last version)</i>				Original Estimated Finish Date	Current Estimate of Finish Date	Actual Finish Date	comments
Wavelength Shifting Fiber							
		Updated Kuraray quote		1-Jun-06	1-Jul-06	6-Jul-06	
		evaluate fiber diameter		1-Aug-06	13-Oct-06		
		attenuation length of 0.7 mm fiber		15-Sep-06	30-Oct-06	24-Oct-06	OK, 17% acceptance loss, 1-2% atten. loss
		attenuation length of 0.6 mm fiber		30-Sep-06	30-Oct-06	24-Oct-06	not OK, 34% accept loss, 10% atten. Loss
		decide fiber diameter		9-Aug-06	30-Oct-06	26-Oct-06	0.7 mm with thicker cladding
		decide K27 waveshifter concentration (range is 150 - 500 ppm)		9-Feb-07	1-Apr-07		confused by data, 250 ppm looks low
		Need Procurement (?) help to avoid 5-8% duty on import		1-Oct-07			Bob Cibic estimates 9-12 months effort. Does this impact CD-3a?
		TDR					
		Second draft based on Project Office first draft of Oct 17		9-Nov-06		7-Feb-07	
		latest draft					no update
		"final" version back to Project Office control		9-Mar-07			
		Cost & Schedule R&D part done		30-Mar-07			
		Cost & Schedule Construction part done		19-Mar-07			
		Risk assessment done		15-Apr-07			
		BOEs done		15-May-07			



CD-2 Worklist, PVC extrusions

NOVA Work List for CD-2

(red means new since last version)

	Original Estimated Finish Date	Current Estimate of Finish Date	Actual Finish Date	comments
PVC Extrusions				
Horizontal Extrusion die				
Choose die proof resin (NOVA-2 with rutile TiO2)	5-May-06		5-Jun-06	
Proof 16 cell die at die manufacturer	26-Jun-06	31-Jul-06	24-Jul-06	done at Extrutech, not at die manufacturer
Tune 16 cell die at extruder	14-Jul-06	18-Aug-06	25-Jul-06	got samples but NOVA-2 resin clogged die
Rework die after initial tests	21-Aug-06		18-Sep-06	rework continues through March 07
2nd test with new rutile PVC resins and reworked die	1-Sep-06	18-Sep-06	18-Sep-06	
Rutile TiO2 extrusions				
Issue RFP for 70,000 lb test resin + full detector option	5-Jun-06		23-Jun-06	but will have to do best & final, NOVA-2 clog
RFP responses for resin	5-Jun-06	21-Jul-06	21-Jul-06	able to update cost estimate with this info
Start modifications of rutile resin	1-Oct-06		16-Oct-06	Runs in Oct, Nov, Jan
End modifications of rutile resin	8-Oct-06		21-Nov-06	N-24 selected as baseline resin
Measure mechanical properties of rutile mixture in 16 cells	30-Sep-06	31-Dec-06	1-Jan-07	strength, creep, ... needed for structure FEA
Issue RFP for 70,000 lb rutile resin, BEST and FINAL	1-Sep-06	26-Dec-06	11-Jan-07	N-24
Order the 70,000 lb for 3500 m production		26-Dec-06	30-Jan-07	
Start production, 3500 m of 16 cell horizontal material in rutile	4-Aug-06	13-Mar-07		14 day effort
Measure variations in rutile 16 cell material (width, thickness,...)	27-Mar-07			need info for structure details
Anatase TiO2 extrusions				
Order first anatase versions of rutile resins	25-Sep-06	15-Sep-06	18-Sep-06	got N-20 and N-23
First test of anatase TiO2	7-Sep-06	25-Sep-06	3-Oct-06	light output measurements show 15% gain
Start modifications of anatase resin		21-Nov-06	21-Nov-06	Runs in Nov, Jan, Feb
End modifications of anatase resin			14-Feb-07	15%, 17%, and 18% versions all work
Measure mechanical properties of anatase mixture in 16 cells	30-Sep-06	31-Dec-06	1-Jan-07	strength, creep, ... needed for structure FEA
Order 30,000 lb resin for 1500 m of 16 cell material in anatase	15-Aug-06	1-Apr-07		
Start production 1500 m of 16 cell horizontal material in anatase	15-Apr-07			
Vertical Extrusion die (50% thicker walls & webs)				
Issue P.O. to modify existing die for vertical extrusions	1-Sep-06		24-Aug-06	Will be a 1 month window with no die.
Die returns after modification for vertical extrusions	15-Jan-06	1-Jun-07		die not available during May
Production extrusion of thicker vertical material	15-Jun-07			
Decide on TDR baseline resin: rutile or anatase				
	15-Oct-06	30-Oct-06	26-Oct-06	Anatase, but detailed mix still unresolved
Final 16 vs 32 cell decision				
Devcon adhesive tests of 32 cell from two 16 cell objects	21-Aug-06		21-Aug-06	ANL ES&H: Devcon-60 volatiles OK, Jan 24
RF welding test to make a 32 cell from two 16 cell objects	1-Nov-06		27-Oct-06	got first sample, abandoned this path Nov 9
TDR				
Second draft based on Project Office first draft of Oct 17	9-Nov-06		12-Jan-07	
latest draft				no update
"final" version back to Project Office control	9-Mar-07			
Cost & Schedule R&D part done	30-Mar-07			
Cost & Schedule Construction part done	19-Mar-07			
Risk assessment done	15-Apr-07			
BOEs done	15-May-07			



CD-2 Worklist, PVC Modules

NOVA Work List for CD-2 <i>(red means new since last version)</i>		Original Estimated Finish Date	Current Estimate of Finish Date	Actual Finish Date	comments
PVC Modules					
	evaluate 0.7 mm fiber fragility in Module Assembly	15-Sep-06		18-Sep-06	quantitative evaluation says OK on 10/24/06
	evaluate 0.6 mm fiber fragility in Module Assembly	22-Sep-06		5-Oct-06	~ OK, but worries remain
	test black PVC for conductivity	15-Sep-06		5-Dec-06	Not conductive enough. Insert a wire?
	<i>final grounding scheme decided</i>	9-Feb-07	15-Mar-07		<i>Aeorsol study indicates grounding unnecessary?</i>
	final endplate design	31-Aug-06	15-Oct-06	18-Oct-06	
	final manifold design	31-Aug-06	15-Oct-06	18-Oct-06	
	adhesive choice	30-Sep-06	15-Dec-06	15-Dec-06	DP-190 next to scintillator plus Plastic Welder for strength
	adhesive vs. RF welding	1-Dec-06	1-Apr-07	20-Nov-06	adhesive in TDR
	factory stringing machine	1-Oct-06	1-Nov-06	14-Nov-06	internal review approved design
	factory flycutting machine	1-Oct-06		15-Jul-06	MINOS flycutter tested successfully
	factory gluing machine	1-Nov-06	15-Dec-06	15-Dec-06	pneumatic, so easy
	Time & Motion studies with 16 cell, 12 ft(early) & 53 ft(later) objects	15-Dec-06	15-Feb-07	9-Feb-07	73% based on T&M, still need 53 ft handling
	Building selected for Factory #1 at Fermilab	22-Dec-06			need for TDR, want to say WideBand Lab
	Cost information in hand for loading dock conversion	5-Jan-07		5-Jan-07	need for Cost & Schedule
	<i>Cost information in hand for pallet lifting fixture</i>	1-Apr-07			
	Laboratory agrees with factory building selection	19-Jan-07			need for TDR
	TDR				
	Second draft based on Project Office first draft of Oct 17	9-Nov-06		13-Dec-06	
	latest draft				no update
	"final" version back to Project Office control	9-Mar-07			
	Cost & Schedule R&D part done	30-Mar-07			
	Cost & Schedule Construction part done	19-Mar-07			
	Risk assessment done	15-Apr-07			
	BOEs done	15-May-07			



CD-2 Worklist, Electronics & DAQ

NOVA Work List for CD-2 <small>(red means new since last version)</small>		Original Estimated Finish Date	Current Estimate of Finish Date	Actual Finish Date	comments
Electronics					
	Receive 1st 10 APDs from Hamamatsu	1-Oct-06	5-Jan-07	6-Jan-07	as expected, some dead pixels, but performance of working pixels OK
	Receive 2nd 10 APDs from Hamamatsu	1-Mar-07			
	Get updated "target price" of APDs from Hamamatsu	1-Nov-06	15-Mar-07		follows test of 2nd 10 delivery in March
	completed studies of front end ASIC	10-Aug-06		28-Aug-06	Fermilab tests done, packaging for user tests
	Start testing of Front End Board prototype 2	1-Dec-07	1-Jan-07	9-Feb-07	1 under test, 4 more in assembly
	Front End Board prototype 2 testing complete	6-Oct-06	15-Mar-07		March goal for minimally functioning board
	Cooling scheme choice for TDR: water or R-134a	1-Oct-06	1-Nov-06	26-Oct-06	Water, but Value Eng continues on R-134a.
	Outside review of cooling design	1-Nov-06		17-Nov-07	But will iterate for revised design
	TDR				
	Second draft based on Project Office first draft of Oct 17	9-Nov-06		6-Nov-06	
	latest draft			28-Feb-07	on version 16
	"final" version back to Project Office control	9-Mar-07			
	Cost & Schedule R&D part done	30-Mar-07			
	Cost & Schedule Construction part done	19-Mar-07			
	Risk assessment done	15-Apr-07			
	BOEs done	15-May-07			
Data Acquisition					
	prototype Data Concentrator boards ready to test	1-Jan-07		1-Feb-07	first board of 5
	prototype Data Concentrator tests complete	15-Dec-06	1-Apr-07		CPU working by late Feb, firmware in April
	TDR				
	Second draft based on Project Office first draft of Oct 17	9-Nov-06		6-Nov-07	
	latest draft			26-Jan-07	on version 16
	"final" version back to Project Office control	9-Mar-07			
	Cost & Schedule R&D part done	30-Mar-07			
	Cost & Schedule Construction part done	19-Mar-07			
	Risk assessment done	15-Apr-07			
	BOEs done	15-May-07			



CD-2 Worklist, Near Detector

NOvA Work List for CD-2 <i>(red means new since last version)</i>		Original Estimated Finish Date	Current Estimate of Finish Date	Actual Finish Date	comments
Near Assembly					
	Initial design of mechanical structure	19-Sep-06		19-Sep-06	have initial write-up, now revising
	Initial design of mechanical systems	19-Sep-06		19-Sep-06	have initial write-up, now revising
	Near design at TDR level	1-Nov-06		22-Nov-06	have 2nd draft of TDR chapter 15
	Cost information in hand for excavation schemes and rotation schemes	22-Dec-06		18-Dec-06	(still missing a NOvA fixture cost estimate)
	Lab support of decision on excavation in the tunnel	19-Jan-07			need for TDR
	TDR				
	Second draft based on Project Office first draft of Oct 17	9-Nov-06		9-Nov-06	
	latest draft			6-Feb-07	waiting for tunnel decision
	"final" version back to Project Office control	9-Mar-07			
	Cost & Schedule R&D part done	30-Mar-07			
	Cost & Schedule Construction part done	19-Mar-07			
	Risk assessment done	15-Apr-07			
	BOEs done	15-May-07			



CD-2 Worklist, Far Detector Assembly

NOVA Work List for CD-2 <i>(red means new since last version)</i>				Original Estimated Finish Date	Current Estimate of Finish Date	Actual Finish Date	comments
Far Assembly							
	Validation of plane adhesive choice			16-May-06		11-Jul-06	3M-2216 initial choice <i>revised to Devcon-60 on Feb 12</i>
	Tests of 3 plane assemblies with 3M2216 and 16-cell extrusions			22-Sep-06	6-Oct-06	19-Oct-06	Held at 80 psi
	Tests of 3 plane assemblies with Devcon Plastic Welder and 16-cell extrusions			22-Sep-06	2-Jan-07		in progress, 11 plane test
	RF welding, plane to plane, 4 plane test at Ashland			31-Oct-06	1-Dec-06	27-Oct-06	have first sample
	RF welding, 3 plane assembly to compare					9-Nov-06	RF welding eliminated, Emabond withdraws
	settle baseline installation procedures			27-Jul-06	5-Oct-06	5-Oct-06	have initial write-up, now revising
	Validation of structural design			17-Aug-06	7-Nov-06		ongoing internal review in progress
	Initial design of access system for top of detector			30-Sep-06	19-Oct-06	31-Oct-06	linked to building design. Concrete ==> rolling platforms, now the baseline.
	Initial design of light tightening scheme			3-Oct-06	31-Jan-07	9-Feb-07	<i>Paint identified.</i>
	Initial design of scintillator filling scheme			26-Sep-06		26-Sep-06	linked to building design. Concrete ==> rolling platforms, now the baseline.
	final scintillator overflow tank design			5-Dec-06		5-Dec-06	task moved from modules to assembly
	Block Raiser design review			5-Dec-06	12-Dec-06	12-Dec-06	Block Pivoter selected, must iterate forks & baseplate, requires more PVC FEA.
	Designs of mechanical systems & tooling			8-Jan-07	15-Mar-07		<i>working goal for structure and pivoter</i>
	TDR						
	Second draft based on Project Office first draft of Oct 17			9-Nov-06		9-Nov-06	
	latest draft					2-Feb-07	116 pages
	"final" version back to Project Office control			23-Mar-07			<i>note date later than others</i>
	Cost & Schedule R&D part done			30-Mar-07			
	Cost & Schedule Construction part done			19-Mar-07			
	Risk assessment done			15-Apr-07			
	BOEs done			15-May-07			



CD-2 Worklist, Project Management

NOvA Work List for CD-2 <small>(red means new since last version)</small>		Original Estimated Finish Date	Current Estimate of Finish Date	Actual Finish Date	comments
Project Management					
final Project Execution Plan		1-Aug-06	31-Jan-07	8-Feb-07	last proj part, Cost by L2
draft of PMP including the Cooperative Agreement		2-Jan-07	31-Jan-07	16-Feb-07	includes org charts for CA
final Project Management Plan		12-Jan-07			
final Configuration Management Document		12-Jan-07			
final Risk Management Plan		12-Jan-07		26-Dec-07	
Risk Registry done		13-Dec-06		13-Dec-06	have Excel version, examining WelcomRisk
draft Procurement Plan (partial)		1-Aug-06		29-Aug-06	request from Lutha
		21-Jan-07		20-Dec-06	1/18 DOE response that it is OK, add ANU?
draft Performance Management System Document (EVMS)		21-Jul-06		23-Aug-06	NOvA-doc-1084 (lab-wide plan)
final Performance Management System Document (EVMS)		19-Jan-07			
QA Plan - update CD-1 QA appendix into standalone plan		31-Jan-07	31-Jan-07	22-Feb-07	may need another iteration?
draft PSAD		1-Apr-06	19-Jan-07		had at CD-1 but not shown, update after EA
Security Vulnerability Assessment Report		18-Sep-06		18-Sep-06	Steve Webster: just for nuclear facilities.
Cyber Security Plan				16-Oct-06	Steve Webster: not needed if not IT project
draft doc on High Performance Sustainable Bldg considerations		13-Sep-06		13-Sep-06	FESS Sustainable Design Review Procedure
final doc on High Performance Sustainable Bldg considerations					LEED checklist by project team @ CD-3
Begin monthly reports		1-May-06		27-Jun-06	May 2006 report finished June 27,2006
1st draft Technical Design Report (blanks identified)		1-Oct-06	6-Oct-06	17-Oct-06	
2nd draft Technical Design Report, Chapters other than L2 work					
Ch 1 Executive Summary		20-Jan-07	6-Apr-07		John
Ch 2 Using the NuMI Beam		9-Nov-06	9-Mar-07		Mark + Nancy
Ch 3 Updated Science Case		9-Nov-06	9-Mar-07		Mark + Gary
Ch 4 Scientific Design Criteria		9-Nov-06	9-Mar-07		Mark + Gary
Ch 5 Overview of NOvA Design		9-Nov-06	9-Mar-07		John + Nancy
Ch 6 Performance of NOvA Design		9-Nov-06	9-Mar-07		Mark + Gary + Peter
Ch 7 WBS structure		9-Nov-06	6-Apr-07		Ron
Ch 18 Cost, Schedule, Scope		20-Jan-07	6-Apr-07		John
Appendix A: Guide to Other NOvA Documents		20-Jan-07	9-Mar-07		Ron
final Technical Design Report		15-Dec-06	13-Apr-07		final updates, final edit by Project Office
update R&D portion of C&S		30-Sep-06	11-Dec-06	15-Dec-06	needs modifications, needs ANU
final R&D portion of C&S		15-Feb-07	30-Mar-07		now statusing through 10/1/06
draft construction 20 kt Cost & Schedule matching 2005 funding profile		10-Aug-06		15-Aug-06	"match" is approximate
2nd draft construction 18 kt C & S following technical decisions & 2006profile		1-Nov-06	16-Apr-07		
3rd draft construction 18 kt C&S, adjust to profile		5-Dec-06	30-Apr-07		
final Cost & Schedule		15-Dec-06	14-May-07		this would include full BOE & notes



What is required for CD-3b?

- Recall this colors our request list for 3a
- Steve Tkaczyk to Mike/Pepin
 - No hard & fast rule
 - Near 100% design
 - 50% not acceptable, should be close to 100%
 - Risk is part of the equation
 - Are remaining risks acceptable
 - This is the same for 3a: must present risk vs. benefit for 3a, must understand remaining potential for changes that would impact cost and other items.



Action Item list: clarify CDiv labor costs

- R&D Cost Range for Detector comes from analysis below

Possible Detector R&D cost savings	
Jan 07 AY \$M	Description
0.75	If we can buy APDs as part of construction order in FY08 and use Near APDs for IPND
1.10	The DAQ system for the IPND is meant to be the final system This requires \$1.9M of labor where only \$0.8M is available at Fermilab We could replace the missing labor by reduced scope or by scientific labor at zero cost
1.80	We are considering building a smaller IPND after evaluating physics goals for the device Total IPND cost is ~ \$ 5 M once DAQ costs are removed This is for a 125 ton device. Minimum device needed might be as low as ~80 tons
3.65	Total possible savings
Possible Detector R&D cost increases	
Jan 07 AY \$M	Description
0.20	We may need a second extruder die for vertical extrusions
0.90	This R&D estimate has no contingency on the \$ 9 M remaining to be done Based on 5% real cost growth from March to Dec, 2006, another 10% may be needed with ~ 18 months of R&D to go,
1.10	Total possible increased costs

Seemed high for 3.5 FTEs !

Revised analysis: Total is for 8.8 FTE-years
Includes DAQ hardware effort (which I apparently ignored)
DAQ software is short 3.1 FTE-years = 1.5 FTE * 2
So, revised savings if scientific labor is ~ \$ 400 K - \$ 600 K, not \$1,100 K



Other Action Items

- **Tunnel Excavation**
 - Heard from 2 consultants
 - No other progress.

- **Use of a building at Fermilab for “Factory 1”**
 - No progress



New Action Item needed

- NOvA will track costs after April 1
 - R&D and Operating after CD-1 is part of TPC
 - We have to track against the TPC
- Need laboratory decision on where the funding resides by then.
 - Prefer that we start April 1 with funds in PPD
 - Other divisions effort report & use PPD task codes



New Action Item needed

- Are we going to use WelcomHome as the product allowing reviewers to see schedule and cost details?
 - Probably not since seems its fatal flaws will not be fixed on our time scale?
- Are we going to use WelcomRisk to as our risk registry?
 - Is it supported only as well as WelcomHome?