



NOvA Project Status

April 17, 2007

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Status of CD-1

- ESAAB scheduled for May 1.
- Acquisition Strategy signed by Orbach on April 12.
- DNFA signed by Orbach on April 13



EA Status

- Got “final” draft to Sally Arnold on April 3
- Sally hopes to get comments back to NOvA on April 18
- Update on progress regarding U of Minnesota’s 3 stipulations before going to Regents
 - 1. VP O’Brien spoke to the St Louis County administrator on Monday, 4/9
 - He asked that the University work with his direct report, the head of planning for St Louis county, Barbara Hayden, who is on vacation until Monday, April 16.
 - 2. Minnesota elected to go to a 3rd party review instead of asking S E H for a letter of reliance
 - 3. Recall U of Minn needs some official action on CA by ~ May 1.
- I asked Steve Dixon to get S E H to update the EAW before May 1.
 - Methyl Methacrylate is new and should be appropriately covered
 - Needs Steve’s latest building drawings
 - Asked them to look at my geology summary for any errors.
 - S E H suggests adding the EA as an appendix to the EAW would not be a good idea



Method of Doing Business?

- Task 425 is in place
- We started using new task codes April 1
 - So we will not try to slide our cutover date by the additional month to ESAAB
- Clarified with Connee Trimby
 - Scientists at zero cost everywhere.
 - Engineering physicists must track costs.
- Where will the funding reside?
 - No division?
 - Still implies Directorate must move funds from Divisions to Task 425
- What is the total funding available to NOvA for 2nd half FY07?
 - Have March numbers to determine amounts spent before 4/1
 - But since there were no official Oct 1 numbers, this gets very murky.
See next slide



Method of Doing Business?

- Note M&S **Obligations through 3/31**
 - Costs will follow on task 480 if obligations were on 480
- SWF is actuals through 3/31, not obligations
 - Note scientific effort cost removed everywhere
- Need AD, PPD, Directorate help to get any further here
 - Goal: Fill out the right hand columns !

NOVA Project R&D - March 2007 (\$\$ in Thousands)	"Understanding" at start of FY07		YTD Obligations thru 31-Mar-2007		Difference		Allocation for 2nd half of FY07	
	Direct/ SWF	Fully Burdened	Direct/ SWF	Fully Burdened	Direct/ SWF	Fully Burdened	Direct/ SWF	Fully Burdened
Personnel Costs (cost of Scientific effort removed)								
PPD	1,357.0	2,165.6	548.8	847.4	808.2	1,318.2		
AD + TD	2,011.0	5,300.0	469.7	812.7				
CD	641.0	1,161.4	228.4	395.2	412.6	766.2		
Total Personnel costs	4,009.0	8,627.0	1,246.9	2,055.3	1,220.8	2,084.4	0.0	0.0
Materials & Services								
PPD	4,505.0	5,549.1	1,378.3	1,719.2	3,126.7	3,829.9		
PPD - project 480 RIPs not in process			273.0	273.0	(273.0)	(273.0)		
AD	557.0	646.1	142.9	169.4				
Total M&S costs	5,062.0	6,195.2	1,794.2	2,161.6	2,853.7	3,556.9	0.0	0.0
Grand Total	9,071.0	14,822.2	3,041.1	4,216.9	4,074.5	5,641.3	0.0	0.0

From ANU cost & schedule as of April 16, but available resources still under discussion

From N. Grossman e-mail March 23, assumes 1,200k initial budget minus 600k to GPP minus 43k to off-project



TPC must include all costs of the CDR

- Reconstructing the totals
 - Have ANU part
 - Trying to remember the Detector part done 12 – 18 months ago
 - Mostly done by scientists, so costs will be low
- How do we keep track of this one?
 - Insert a task in the C&S with the estimated cost so it gets included?



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	13-Apr-07	DNFA signed.
			Determination of Noncompetitive Financial Award signed		15-Mar-07	13-Apr-07	DNFA signed.
			Letter sent to U of M to initiate negotiations	16-Mar-07			need letter for Regents action by ~ May 1
			Negotiations concluded	15-Jan-07	1-Jul-07		want to fund \$1M starting July 1
							(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		3-Apr-07	3-Apr-07	still depends on EAW / RGU
	final EA ready	1-Dec-06	14-Jun-07		
	end State / Public Comment period	1-Jan-07	1-May-07		not required for CD-2 REVIEW
	FONSI drafted	1-Apr-07	1-Jul-07		not required for CD-2 REVIEW
	FONSI issued	1-Jun-07	1-Aug-07		not required for CD-2 REVIEW
					but do need for CD-3a sign-off
	Minnesota Part				
	Minnesota EAW for Ash River ready for EA	2-Jan-07		21-Dec-06	
	U of Minn to check with St.Louis County that OK with UM as RGU				UM talked to St.L Cnty Administrator 4/9
	U of Minn to get letter of reliance from S E H				Talking to St.L Cnty Head of Planning 4/16
	Alternate to letter of reliance is third party hire to review EAW	1-May-07			decided to go with 3rd party review
	Some official CA notification in place before consulting Bd of Regents	1-May-07			Expected by May 1
	First meeting of Bd of Regents on RGU question, no decision	11-May-07	11-May-07		will not propose to Regents without this
	RGU (Responsible Government Unit) in place (2nd Regents mtg)	15-Jan-07	11-Jun-07		
	Send EAW to EQB	1-Apr-07	14-Jun-07		Assumes CA notification sent before this
	EQB Monitor publish date	26-Mar-07	2-Jul-07		EQB submission deadline is June 25 for July 2 publication , need this action for CD-2 review
	End 30 day comment period on EAW	15-Jan-07	1-Aug-07		EQB follows preset deadlines for pub.
	RGU response to comments	1-Mar-07	8-Aug-07		not needed for CD-2 review
	End 30 day judicial appeal period	1-Apr-07	7-Sep-07		not needed for CD-2 review
	RGU notice of decision published in the EQB Monitor	21-Apr-07	17-Sep-07		not needed for CD-2 review
					Do not need for CD-2 sign-off.
					Would need for -3a.
	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	18-Mar-07	
	Ch 6: highest impact credible accidents	14-Mar-07	21-Mar-07	26-Mar-07	



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	complete
	ON/Off project split done	17-Jan-07		30-Jan-07	complete
	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		23-Mar-07	minor glitches, mostly went fine
Move to NOvA Docdb					
		15-Mar-07		18-Mar-07	~ 280 documents moved over
Technical					
	Beamline design near final			15-Apr-07	
	Kicker designs completed enough to define ceramic beam tubes needed			30-Mar-07	
	Determine preliminary cooling needs for ANU			20-Feb-07	
	Determine best dates for the shutdowns (Accelerator Upgrades & NuMI)	4-May-07			This may be hard to meet, but a good goal.
Scope of TDR Defined (on/off project and IL/EL designs to cost defined)					
		31-Jan-07		31-Jan-07	
TDR					
	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	30-Apr-07		
	draft TDR ANU chapter done	15-Mar-07		21-Mar-07	~75 pages (needs overview sections)
	"final" version back to Project Office control	30-Mar-07	30-Apr-07		Final version by L3's completed 4/13
Cost & Schedule R&D part done (all but resource leveling)					
		30-Mar-07		13-Apr-07	done except resource leveling and reviewing
Cost & Schedule Construction part done (all but resource leveling)					
		16-Apr-07		13-Apr-07	done except resource leveling and reviewing
Cost & Schedule Resource Leveling Done					
		4-May-07			This may be hard to meet, but a good goal.
Risk assessment done					
		13-Apr-07	30-Apr-07		
BOEs done					
		15-Mar-07	20-Apr-07		all but a few done



CD-2 Worklist, Site and Building

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
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	
		updated EAW	1-May-07			new building, methyl methacrylate, geology
		Wetland Permit Application prepared	1-Dec-06	7-Apr-07		Needed for CD-3a ? Need RGU to submit Steve checking status, S E H says 1st wk April
		Site Prep 100% design package ready	1-Dec-06	1-May-07		done for 25 kt, needs final building size
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	
		Second pass, updated conceptual design ready	16-Apr-07			just enough to get to estimators
		Second pass, Two Outside Independent Cost & Schedule Reviews	31-May-07	NOTE late date		One=Sept06 firm, 2nd will be a Minn. Firm
		30% Drawings	15-Dec-06	15-May-07		Stopped A&E work Jan 30. Now 1st pass will be in house
TDR						
		Second draft based on Project Office first draft of Oct 17	9-Nov-06		7-Nov-06	
		"final" version back to Project Office control	9-Mar-07		6-Mar-07	34 pgs, need update to final building design
		Cost & Schedule R&D part done	30-Mar-07		8-Mar-07	
		Cost & Schedule Construction part done	16-Apr-07			first pass to Bill
		Risk assessment done	15-Apr-07		1-Mar-07	
		BOEs done	15-May-07			started these



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
	Consultant measurement of aerosol flamability	15-Jan-07		1-Feb-07	Can't ignite over wide range of droplet sizes with 10J spark
	Consultant measurement of flash point	15-May-07			requested by Steve Dixon
	TDR				
	Second draft based on Project Office first draft of Oct 17	9-Nov-06		23-Jan-07	
	"final" version back to Project Office control	9-Mar-07		23-Mar-07	28 pages, needs some work, Ron editing
	Cost & Schedule R&D part done	30-Mar-07			still close, Bill and Stuart iterating
	Cost & Schedule Construction part done	16-Apr-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			Advertised in FedBizOpps. Dealing with questions.
TDR					
Second draft based on Project Office first draft of Oct 17		9-Nov-06		7-Feb-07	
latest draft				2-Apr-07	Current draft requires measurements from additional R&D fiber to be delivered May 1
"final" version back to Project Office control		9-Mar-07			Carl iterating draft after discussion with John/Ron on April 12
Cost & Schedule R&D part done		30-Mar-07		12-Apr-07	done
Cost & Schedule Construction part done		16-Apr-07			
Risk assessment done		15-Apr-07			
BOEs done		15-May-07			



CD-2 Worklist, PVC extrusions

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
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	13-Mar-07	14 day effort truncated since 2nd vendor resin failed
	Measure variations in rutile 16 cell material (width, thickness,...)	27-Mar-07			started, 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				28-Sep-06	Plan is 16+16 = 32, only adhesive in question
	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	
	"final" version back to Project Office control	9-Mar-07		15-Apr-07	siill missing some parts, but mostly there
Cost & Schedule R&D part done		30-Mar-07		12-Apr-07	done
Cost & Schedule Construction part done		16-Apr-07			
Risk assessment done		15-Apr-07			
BOEs done		15-May-07			



CD-2 Worklist, PVC Modules

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
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?
	final grounding scheme decided	9-Feb-07	15-Mar-07		Aeorsol study indicates grounding unnecessary?
	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
	Cost information in hand for pallet lifting fixture	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	
	"final" version back to Project Office control	9-Mar-07		18-Mar-07	Ken, 71 pages, needs more on Fermilab factory
	Cost & Schedule R&D part done	30-Mar-07			Needs more work, not as close as others Ken gone, talking to Dan C-H
	Cost & Schedule Construction part done	16-Apr-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	30-Mar-07	3-Apr-07	got the next 10, testing in process all pixels work, but dark currents higher
	Get updated "target price" of APDs from Hamamatsu	1-Nov-06	1-May-07		follows test of 2nd 10 delivery
	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	3-Apr-07	performance met design goals when used with sufficiently quiet power supply
	Cooling scheme choice for TDR: water or R-134a	1-Oct-06	1-Nov-06	26-Oct-06	water
	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	
	"final" version back to Project Office control	9-Mar-07		27-Mar-07	now more complete, 29 vs. initial 24 pgs only a couple loose ends, nearly done
	Cost & Schedule R&D part done	30-Mar-07			
	Cost & Schedule Construction part done	16-Apr-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		still testing, memory problem
TDR					
	Second draft based on Project Office first draft of Oct 17	9-Nov-06		6-Nov-07	
	"final" version back to Project Office control	9-Mar-07		27-Mar-07	More complete, also 29 pages.
	Cost & Schedule R&D part done	30-Mar-07		13-Apr-07	done
	Cost & Schedule Construction part done	16-Apr-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		20-Mar-07	condition is that we must get out of 1/2 of tunnel without compromising 100% containment
	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	28-Apr-07		<i>coping with Montgomery challenge to write up a full scheme to get out of the way. Counter scheme being studied with more excavation and containment in floor excavation. Review 4/27.</i>
	Cost & Schedule R&D part done	30-Mar-07		15-Mar-07	done
	Cost & Schedule Construction part done	16-Apr-07			
	Risk assessment done	15-Apr-07			
	BOEs done	15-May-07			



CD-2 Worklist, Far Detector Assembly

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
Far Assembly					
	Validation of plane adhesive choice	16-May-06		11-Jul-06	3M-2216 initial choice revised to Devcon-60 on Feb 12
	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	Paint identified.
	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		working goal for structure and pivoter
	TDR				
	Second draft based on Project Office first draft of Oct 17	9-Nov-06		9-Nov-06	
	"final" version back to Project Office control	23-Mar-07		23-Mar-07	137 pages, still missing some sections/figs
	Cost & Schedule R&D part done	30-Mar-07		15-Mar-07	done
	Cost & Schedule Construction part done	16-Apr-07			
	Risk assessment done	15-Apr-07			
	BOEs done	15-May-07			

CD-2 Worklist, Project Management



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
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			Elaine looking at ANU relative to plan
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
final Procurement Plan	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	Nancy: iteration with 414.1c - estimates 4/20
draft PSAD	1-Apr-06	1-May-07		had draft at CD-1, Keith has started update
Security Vulnerability Assessment Report	18-Sep-06		18-Sep-06	Needed only for nuclear facilities. We have it anyway.
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	19-Mar-07	Mark, 5 pages
Ch 3 Updated Science Case	9-Nov-06	9-Mar-07	13-Apr-07	Gary, 11 pages, 4 small sections to go
Ch 4 Scientific Design Criteria	9-Nov-06	9-Mar-07	11-Apr-07	Mark, 6 pages
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		Shanahan part in hand, need multicell test
Ch 7 WBS structure	9-Nov-06	6-Apr-07		Ron has R&D done except ANU, construction to do
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	2-Apr-07	Ron, 4 pgs
final Technical Design Report	15-Dec-06	14-May-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		hope to close all of it by 4/20
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 & 2006 profile	1-Nov-06	16-Apr-07		working on models so can focus on one for L2s, trying to advance building construction in 08/09. HOPE TO FINISH MODEL 4/19
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



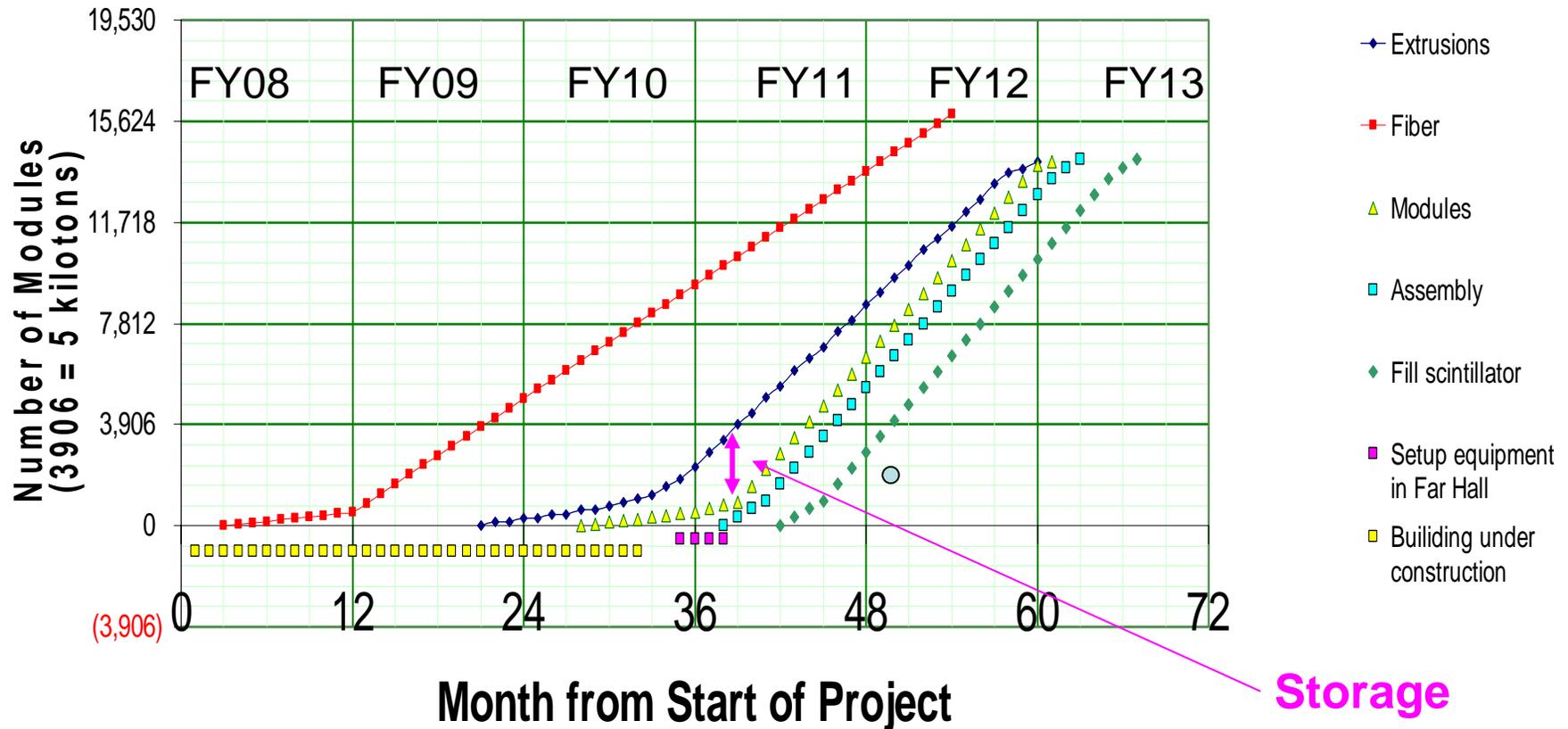
April 4 Construction C&S MODEL

Assumptions

- ANU MIE, moved 1.5 M\$ from 08 to 09 – causes more delay?
- Building is critical path
 - Generated ~ 8M\$ extra in 08, trying to advance building by 6 months over Steve's first guess at beneficial occupancy
- Fiber starts in 08, but gently since trying to save \$ for building
- PVC idle in 08 because of the building problem
 - Does dies & tests in 09
 - Production in 2010 and beyond but starts at slow rate to avoid a storage problem, Interleaves H, V production on one extruder @ 600 lb/hr,
 - Full production begins when Steve says we have beneficial occupancy
- Module assembly starts once both H & V modules exist
 - Set up factories in 09, start production in FY10 but slowly to avoid storage problem
 - Full rate begins when Dave has one block up
 - Rate is ~ 620 modules per month, 28 per day (not 24 as planned) still one shift then?
- APDs start with small purchase in FY08 for IPND
 - Rest + boards+DAQ wait for FY09, 10,11
- Assembly must wait for critical path building
 - Then does 1.67 blocks per month not 1.0 (this is just Bill's latest assembly plan)
- Scintillator
 - Filling follows assembly but only by 5 blocks (not Dave's current plan?)
 - Must buy scintillator one full year earlier or run into trouble on funding profile in late years -- Implies some storage costs, implies some risk



April 4 Construction C&S MODEL



Buy fiber for 20 kt (scintillator waveshifter, APDs also?)

Decide on 20 kt for project ~ early FY12?

- Change Far milestone to 1st superblock done? = ~ start of FY12

Near coupling now tied to lab schedule, maybe not Far milestone?



CD-3a list

- **Detector**

- CA

- Final design of building
 - Build access road, grub site, excavate hole,
 - Probably also utilities and some concrete work

- MIE

- Fiber, scintillator waveshifter, APDs

- **ANU** (assumes -3b by May 1, 2008)

- Start refurbishing permanent magnet quads (no design work needed)
 - Order Mirror Magnet parts (so work can start when resources are available)
 - Items we think we need to start in early FY08 based on float and risk:
 - Procure parts for the RR 53 MHz RF System (design nearly done now)
 - Start to order various parts of the kicker systems (pulsers, magnets, flourinert cooling systems, cable etc.) - parts for which the design will not change
 - Would be nice to do, but probably don't have to do early FY08:
 - Order parts for NuMI primary beamline Power Supply upgrades, start work
 - Award PO for Replacement Hadron Monitor