NOvA Project Overview

John Cooper
Project Manager

NOvA Project History

- CD-0 approved on November 28, 2005
  - For “EvA” = Electron Neutrino Appearance Detector, not explicitly NOvA
- CD-1 approved on May 11, 2007
  - Following direction from OMB, NOvA now includes the Accelerator and NuMI Upgrade as well as Detectors
- CD-2 approved on September 15, 2008
- CD-3a approved on October 24, 2008
  - $ 24 M start on specific items
- CD-3b approved on October 29, 2009
  - Full construction start, TPC is $278 M

- CD-4 scheduled for November 2014

NOvA Scope

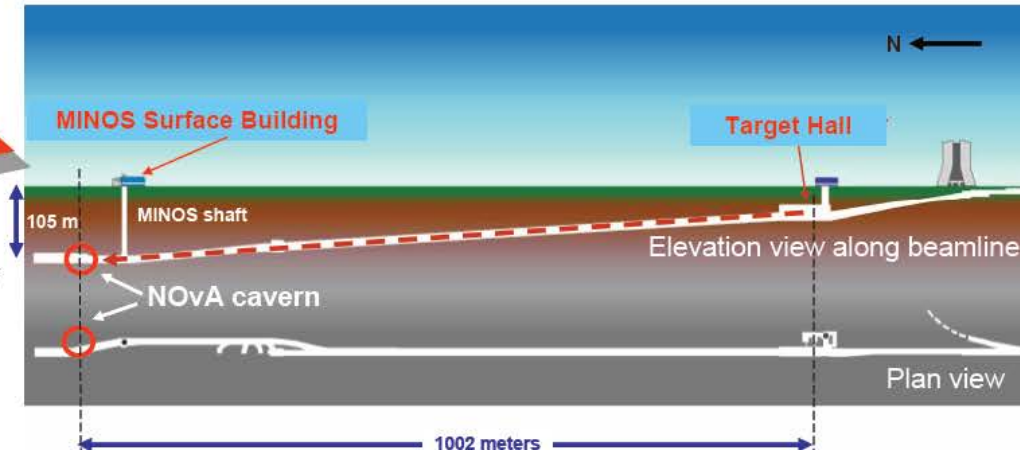
Key Performance Parameters (KPP)	NOvA Threshold KPP	NOvA Objective KPP
Proton Beam Power	Capable of 700 kW to NUMI Target	
Near Detector Mass	0.2 kt	
Long Baseline Distance	810 km	
Detector Angle Off-Axis	14.6 mr	
Far Detector Mass	14 kt	18 kt

» Above from December 22, 2010 revised PEP

- Proton Beam Power is "capable" of 700 kilowatts, not commissioned
  - We reconfigure the existing Fermilab accelerator complex to increase the proton intensity (beam power) by a factor of two. **DONE**
- Two Detectors
  - **Near Detector** at Fermilab to measure the electron neutrino content of the muon neutrino beam just after production,
  - **Far Detector** at Ash River, Minnesota near the Canadian border to look for extra electron neutrinos appearing after a 810 kilometer trip north
    - This requires a new building at Ash River done via a Cooperative Agreement between DOE and the University of Minnesota **DONE**
    - Far Detector mass can be as large as 18 kilotons if we can afford it within the TPC and CD-4 date. We can't afford it.
- **Only the Near and Far Detectors remain to be completed.**

Accelerator & NuMI Upgrades

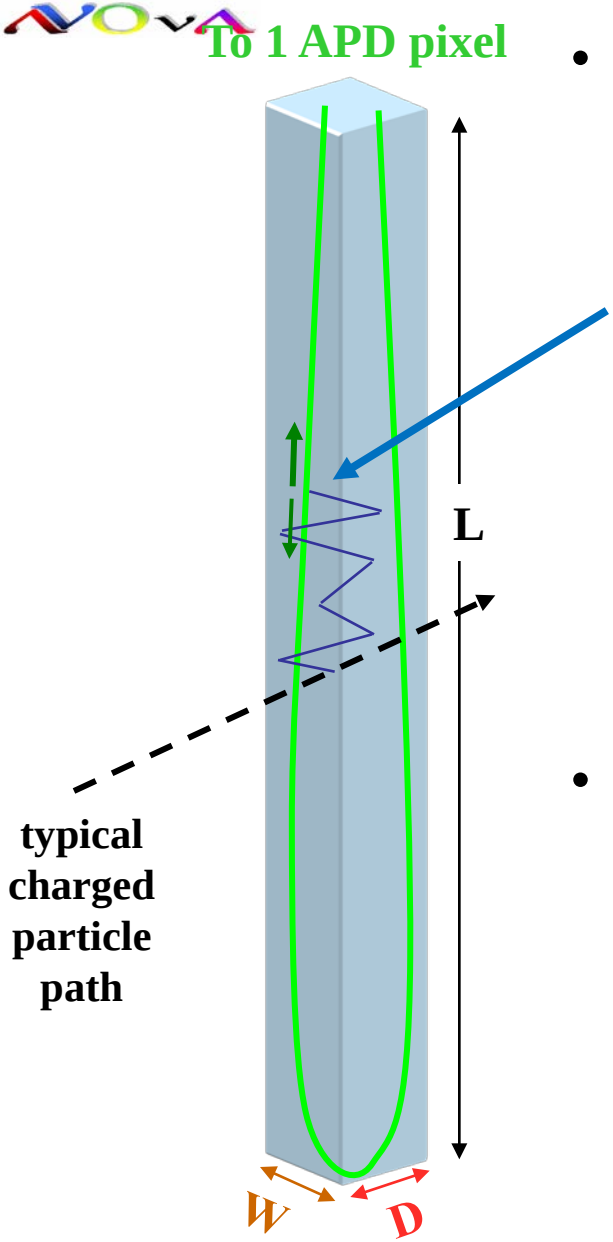
- **NOvA adds items to an extensive existing accelerator infrastructure**
  - Fermilab is the lead institution here
- **Existing Main Injector & Recycler**
  - Dotted yellow circle in picture
  - Previous ~ $250 M project completed in 1999 for the Tevatron Collider (the other circle in the picture)
  - NOvA:
    - Cycle time reduced by using the Recycler as proton storage ring and by using more RF stations in the Main Injector
    - Faster cycling gives more protons/second
- **Existing NuMI Beamline**
  - Dotted red arrow in picture
  - Previous ~ $175 M project completed in 2004
    - This includes an underground tunnel at Fermilab with space for Near Detectors 300 feet below the surface
  - NOvA:
    - New target, move focusing horn, …
- **NOvA Result:**
  - Increase beam power from 400 to 700 kW
  - More protons to make more neutrinos



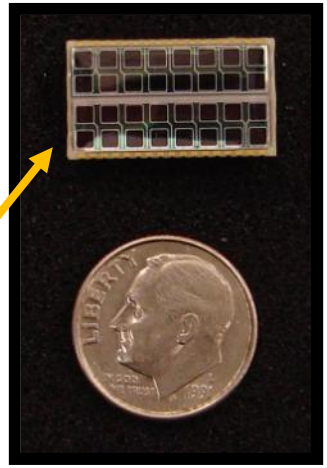
NOvA building

- Building at Ash River, Minnesota for a 18 kt Far Detector
- Completed in April 2012.

NOvA Basic Detector Element

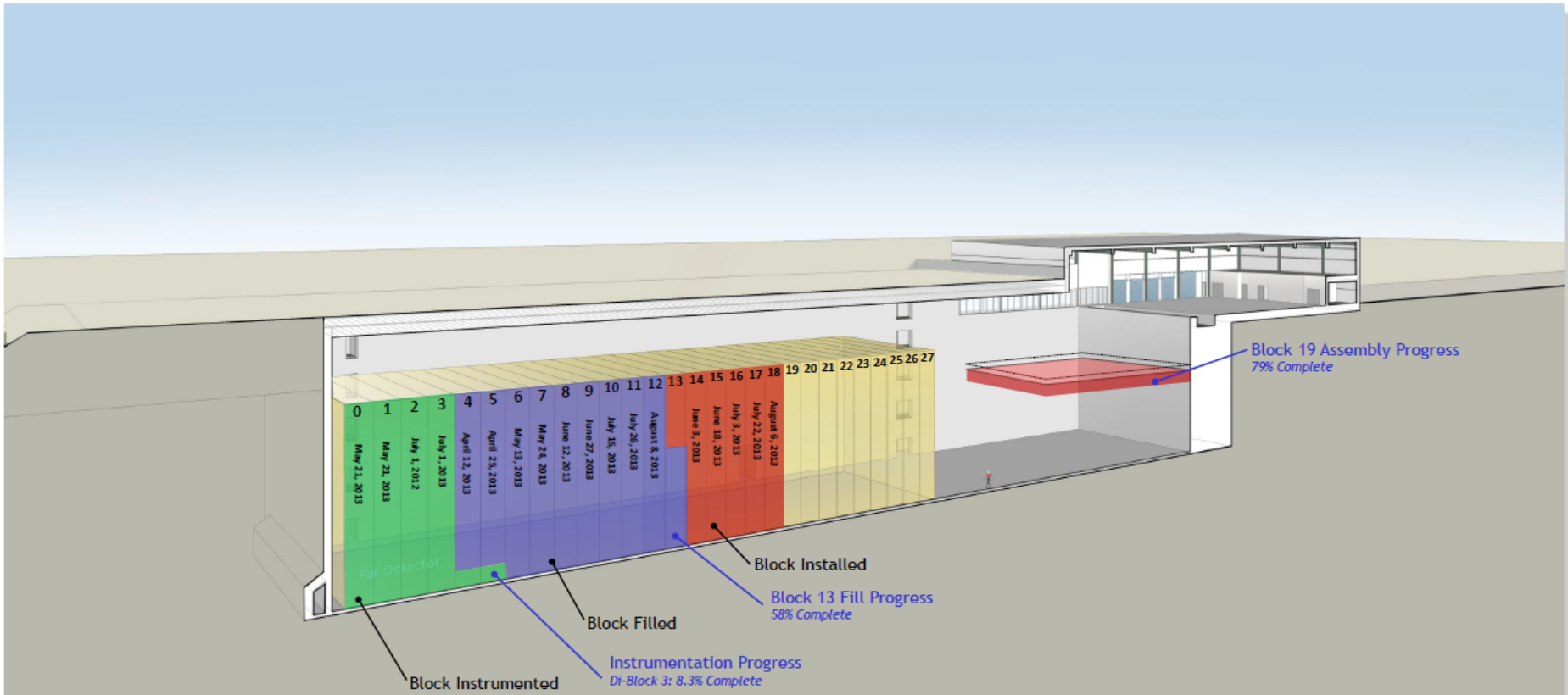


- Liquid scintillator in a highly reflective PVC plastic cell
  - Passage of charged particle through scintillator creates light
  - Light bounces off reflective PVC walls until captured in a thin wavelength-shifting fiber
    - Typically light hits fiber within 50 cm of particle path, ~ 8 reflections
  - The fiber is U-shaped and both ends terminate in one pixel of a 32-pixel avalanche photodiode (APD)
- Simple construction, just repeat 357,120 times
  - In groups of 32 cells, repeated 10,752 times



NOvA Far Detector Assembly Progress

Status Date: 19AUG13



14 kilotons = 28 NOvA Blocks

19 blocks of PVC modules are assembled and installed in place

13.58 blocks are filled with liquid scintillator

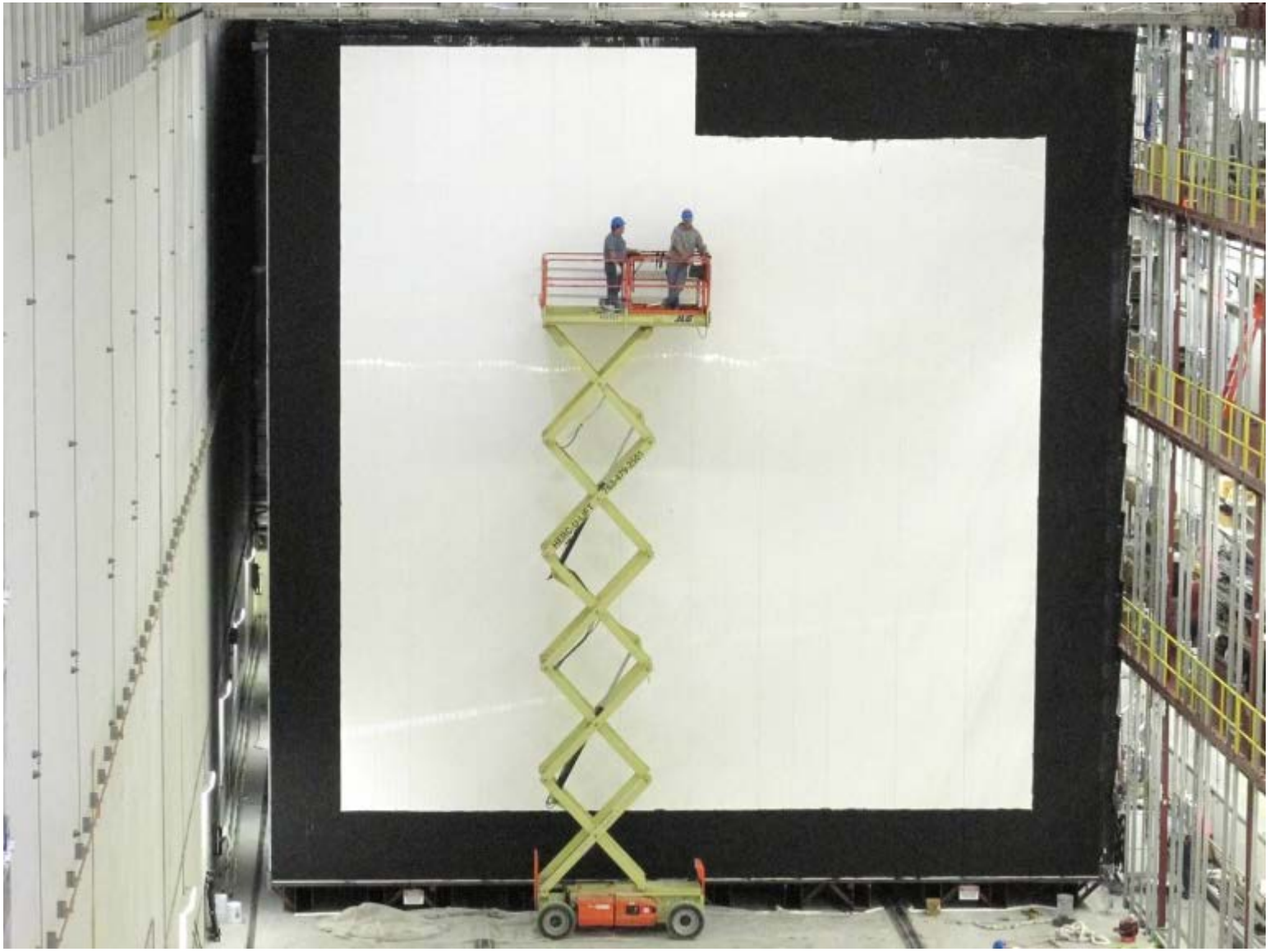
4.17 blocks are outfitted with electronics

Installation of PVC modules at Ash River

- Each PVC module (32 cells, 50 ft long) weighs ~ 1000 pounds
- 384 modules are assembled & glued together on the Pivoter, then moved down the Hall and stood up on one edge.

One more picture showing the size of this device

5 stories high, same 50 ft wide



Beyond the plastic, add the "hair" to the detector.

7 di-blocks (14 blocks) in the picture
(7 crossing water lines).

This is ½ of the detector,
50 ft wide and about 100 ft long.

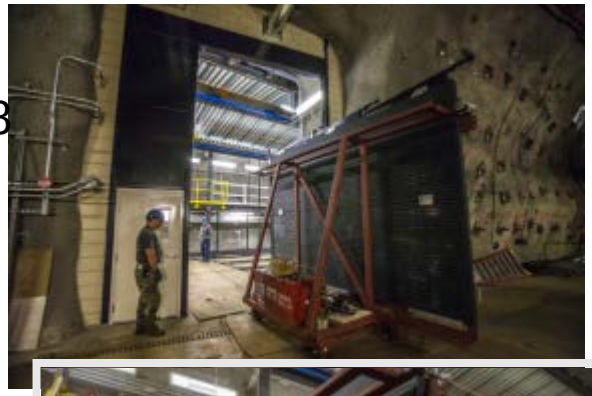
It is 12 modules wide and 448 layers deep.

- Filling at di-block #6 (plastic wrap is on #5),
  Front End Boards at di-block #4 (gold boxes), Avalanche Photodiodes at di-block #2
  - Also Installation of cables, power supplies, cooling water lines, dry air lines, Data Concentrator Modules, Front End Boards (FEBs) for every PVC module, heat sinks, Thermo-electric coolers(TECs), TEC controllers, Timing Distribution Units, . .

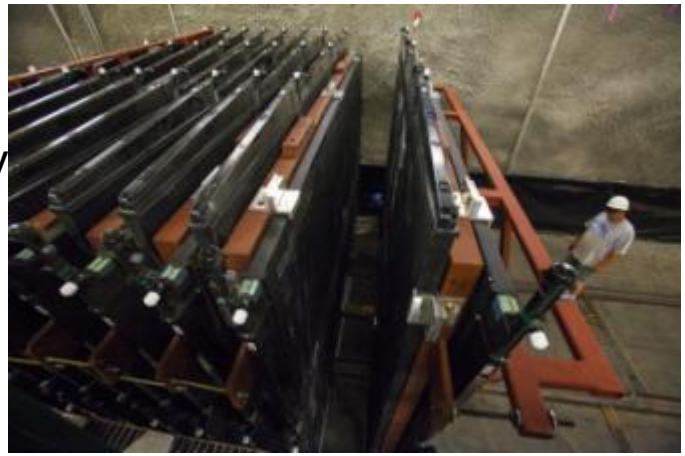
Near Detector Progress

- The muon catcher is installed
  - 1 mini-block (4 layers no steel) at North end went first, then 10 planes with steel

Layer #8 transfer into hall



#8 nearly in place



#8 transfer onto rails

All 10 in place on Aug 1 (also note electronics mounted on sides of catwalk)

#8 winch into place

Near Detector Progress

- Next installation is Blocks which are 3 PVC modules high by 3 modules wide (muon catcher was 2 x 3)
  - 8 blocks form the full Near Detector.
  - Each Block has 24 layers. The 1st block was completed on August 12.

Review Website for NOvA information

NOvA (E929)

NuMI Off-Axis ν_e Appearance Experiment

FRA EVMS Self Surveillance Review, August 19, 20, 2013

NOvA Documents
- *Document Database*
- *TDR*
- *CDR*
- *Proposal*

Reference
- *P5 report*
- *NuSAG report*
- *CD-0*
- *CD-1*
- *CD-2*
- *CD-3a*
- *CD-3a Mod 1*
- *CD-3a Mod 2*
- *CD-3b*
- *OPSS web page*

EVMS

- Earned Value Management System
  - NOvA Project Implemetation of FRA EVMS
  - Certification of FRA EVMS by DOE-OECM

Project Organization

- Project Organization Chart from PMP
- Responsibility Assignment Matrix with Dollars - June Excel Format
- Project Execution Plan (PEP)
- Project Management Plan (PMP)
- Work Authorization Documents by Control Account
- Link to Project Home Page (and CAM Notebooks, Work Authorizations)

link goes to next page

Planning/Scheduling/Budgeting- Open Plan Extracts

- WBS Dictionary
- Zip file of WBS L2 Gantt Charts
- Milestone Gannt chart - Performance Measurement Baseline (PDF)
- Zip file of June Turnaround Report
- OP Predecessor/Successor Constraints Sheet
- Critcal Path Gantt Chart
- OP Counts Info for EVMS--Work Packages
- "No Pegpoint" Tasks
- Cost Baseline- Cost Plan by Fiscal Year
- Basis of Estimate 2013 Documents
- Risk Management Plan
  - Risk Registry
  - Risk Registry Contingency Analysis
- Charge Code Mapping to WBS

Analysis Management and Reports

- Variance Thresholds
- Monthly Reports, Cost Performance Reports, Basline Change Control Logs, Contingency Analyses & CPR by CTC
- Variance Reports (June, May, April)
- EAC/ETC Committee & PM Analysis
- Corrective Action Log

Links to CAM Notebooks

NOvA Experiment ✦ NOvA At Work ✦ NuMI at Work ✦ MINOS Experiment ✦
Fermilab at Work ✦ FNAL PhoneBook ✦ Help for link/certificate problems ✦

NOvA Project Office Home Page

General

- NOvA Organization Chart
  - ANU Org Chart
- NOvA ES&H/QA Information
- ANU Subproject
- CAM Notebooks

NOvA Change Requests

- Configuration Management Program
  - Configuration Item Data List (CIDL)
- Change Request Procedures
  - Change Request Form
- Change Request Status Reports

NOvA Review Schedule

- Review of NOvA Near Detector Cavern Construction Impacts, November 7, 2011
- APD Review, October 24, 2011
- DOE Review, August 9, 2011
- DOE Review, August 31-Sept. 1, 2010
- Director's Review, August 4-5, 2010
- DOE Mini-Review, January 28, 2010
- DOE CD3b Review July 21-23, 2009
- Director's CD3b Review June 16-18, 2009
- EIR CD2 Review, June, 2008
- DOE Mini-Review April 30, 2008
- Director's Mini-Review April 17, 2008
- Department of Energy CD2/3a October 22-25, 2007
- EIR CD2 Review November 26-30, 2007

Collaborator Effort Reporting

- Scientific Effort Reporting Form
- Instructions

NOvA Experiment ✦ NOvA At Work ✦ NuMI at Work ✦ MINOS Experiment ✦
Fermilab at Work ✦ FNAL PhoneBook ✦ Help for link/certificate problems ✦

NOvA Control Account Manager Page

Common Control Account Documents

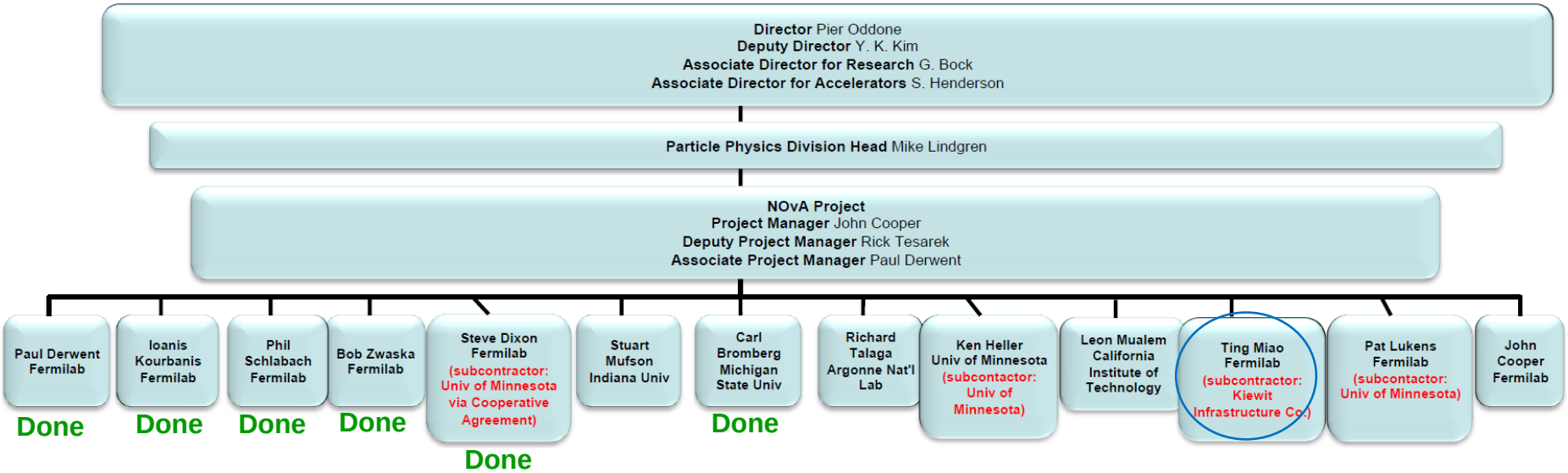
NOVA Organizational Chart	Cost Performance Reports	Dollarized Responsibility Assignment Matrix
Current Milestone Chart	WBS Dictionary	Current Detailed Schedule
Milestones	Project labor detail - hours only	Thresholds

Control Accounts by CAM Name

Paul Derwent	WAD		Ioanis Kourbanis	WAD		Phil Schlabach	WAD
1.0.1	3297		1.0.2	3298		1.0.3	3302
1.0.5	3304		2.0.2.1	3315		2.0.3.1	3317
2.0.1.1	3312		2.0.2.2	3316		2.0.3.2	3318
2.0.1.2	3313					2.0.3.3	3319
2.0.1.3	3314					2.0.3.4	3320
2.0.4	3321						
Bob Zwaska	WAD					Steve Dixon	WAD
1.0.4	3303					1.1	3305
						2.1.1	3322
						2.1.2	3323

more

Organization



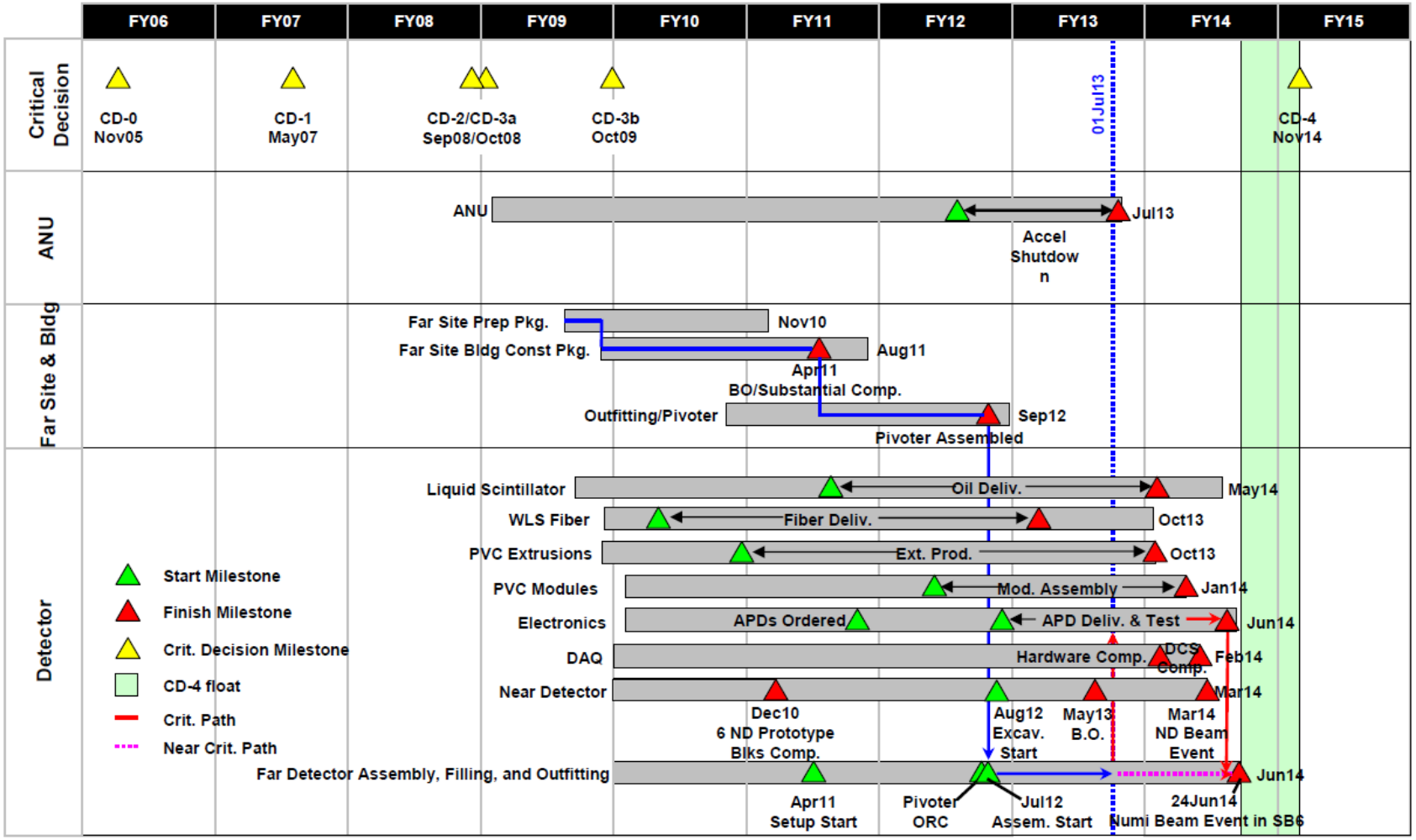
- 6 CAMs are done (you talk to Paul Derwent, Assoc. Proj. Man. anyway)
- Note subcontractors > 5 M$ are identified as requested.
- One new CAM since the last review
  - See Change Request #477

Planning and Scheduling Process

- **The following statements come from our Certification Review in May 2009. They are still true.**
- **NOvA uses Open Plan**
  - the schedule has ~ 5,000 tasks and milestones
- **Scheduling Guidelines given to CAMs:**
  - Instructed by the Project Manager to provide best estimates for the duration of every task
  - There should be no hidden contingency in the schedule
  - Tasks with schedule uncertainty should have estimated cost contingency designed to speed up the work commensurate with the risk
    - We do have ~250 documented risks and a Risk Registry
- See **NOvA Key Assumptions** document (NOVA-doc-2954) for more details
  - This also has cost assumptions:
    - estimating instructions, labor cost assumptions, materials & services cost assumptions, escalation assumptions, cost guidance from DOE (funding profile), indirect cost assumptions at universities
  - Other key technical assumptions:
    - expectations from other Fermilab efforts assumed as pre-requisites to NOvA, risk of PVC structure,…
  - Other scheduling guidelines:
    - critical path guidance, assumed CD dates, assumptions about the Fermilab operating schedule since NOvA installation must fit within periodic shutdowns

Schedule Critical Path

- The Review Website has a Critical Path plot from Open Plan (now down to only 1 page)
- Here is a higher level overview "schedule on a page"
  - The Detector portion has many parts moving in parallel, has "buffers" between parts



Work Authorization

- **The following statements come from our Certification Review in May 2009. They are still true.**
- Project Office authorizes work through Work Authorization Documents
  - Approved by Scheduler, Financial Officer, CAM, Project Manager
  - See the links in the CAM notebooks on our review webpage
- WAD must be in place before a control account, any of its subsidiary chargeable task codes can be opened
  - Suzanne Saxer (Field Financial Officer) is responsible for checking the prerequisites
  - NOvA has 72 control accounts and 201 chargeable task codes
    - Actual costs are accumulated at this chargeable task code level & rolled up to the control accounts.
- Labor at Fermilab is effort reported to open Fermilab chargeable task codes
  - Monthly Effort reports from all divisions available to CAMs for checking the data
- Moving funds outside of Fermilab to other institutions also requires Purchase Order and
  - Memorandum of Understanding (MOU)
    - Over-arching document describing expected contributions and responsibilities of institutions
    - Signed by Fermilab and the Institution's management
  - Statement of Work (SOW)
    - One for each FY detailing amounts expected to be funded by Fermilab
    - Signed by Fermilab, Institution's management, <u>and the CAM(s)</u>

Reports

- You have access to our monthly reports through June 2013
  - 2 types, one for DOE as they requested, a separate one for FRA EVMS

July 31, 2013
NOVA-doc-9530

June, 2013
NOvA Monthly Report

Project Overview

The NOvA Project had a Schedule Performance Index of 0.981 and a Cost Performance Index of 0.953 in June. The table below summarizes status:

	June 2013 Status	Change from May
BAC	$ 262.5 M	$ 0.0 M
EAC	$ 273.0 M	+ $ 0.1 M
% Complete (% of BAC)	88.9%	
% Obligated (% of EAC)	99.0%	
Remaining Contingency	$ 5.1 M	- $ 0.2 M
Total contingency (% on remaining work)	21%	
Total contingency (% on remaining Obligations)	159%	
Float to CD-4	108 working days	0 days

The float to CD-4 in the detector is still dictated by the APD installation tasks. The Caltech production predecessor to the installation task is still ramping up to the final projected rate and we may recover float.

Progress is summarized below in major areas of the Project, and a final section has a table of quantitative financial details and performance for each area.

Accelerator and NuMI Upgrades (ANU)

- Accelerator shutdown progress:
  - Vacuum established in all areas. The only remaining tasks are the final leak check in the RR30 and MI30 straight section and final alignment checks in the same region.
- Status of critical path items:
  - Kickers: Complete.
  - RF cavities: Complete.
- Overview of the ANU shutdown work
  - More than 300 Fermilab employees were involved.
  - Pulled more than 1 million feet of cable.
  - Removed more than 100 magnets, stochastic cooling, transfer lines & diagnostics.
  - Installed more than 150 magnets & 4 RF cavities.
  - Reworked 1500 feet of transfer lines between accelerators.
  - Opened and recovered more than 20% of the Recycler vacuum to 10^{-10} level.
  - Installed a new NuMI Target, a new NuMI Horn, in a new configuration.
  - Upgraded utilities everywhere to handle more beam power.

Page 1 of 4

23 July 2013
NOVA-doc-9530

NOvA FRA EVMS Report
For June 2013

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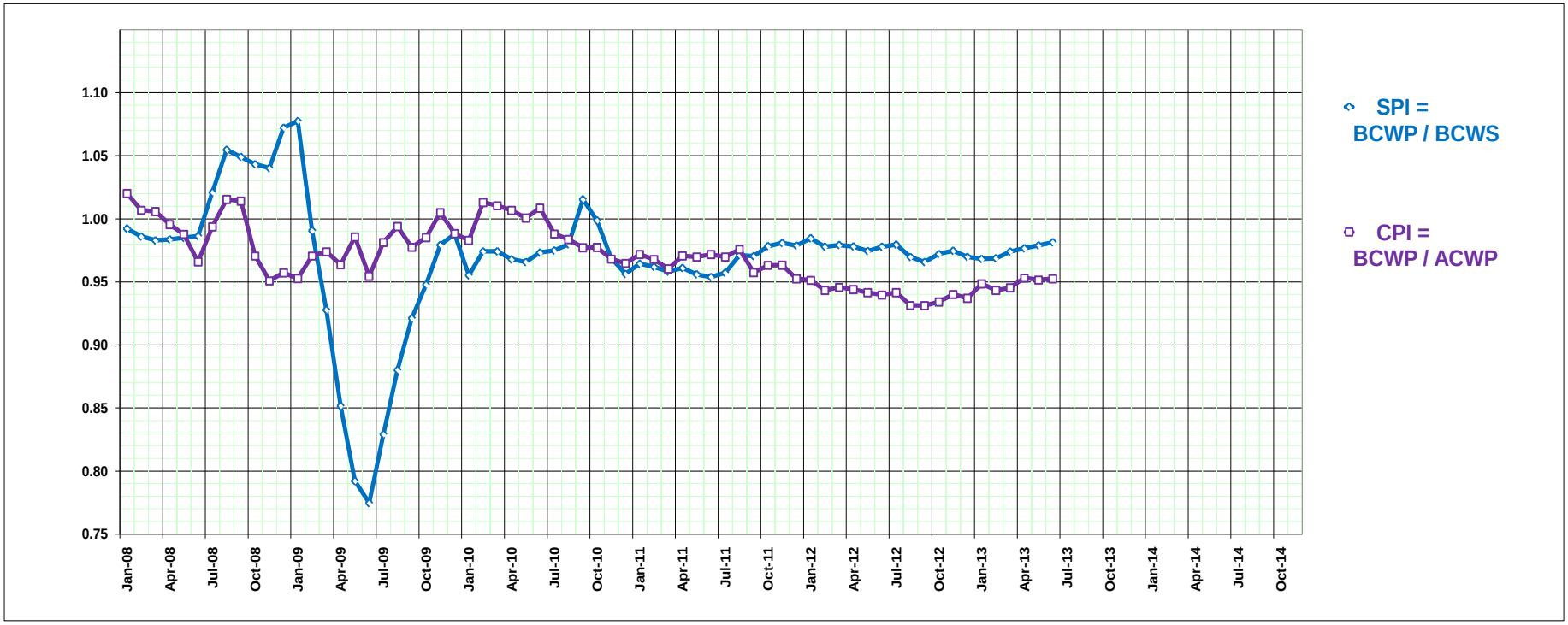
NOvA Project Management Group

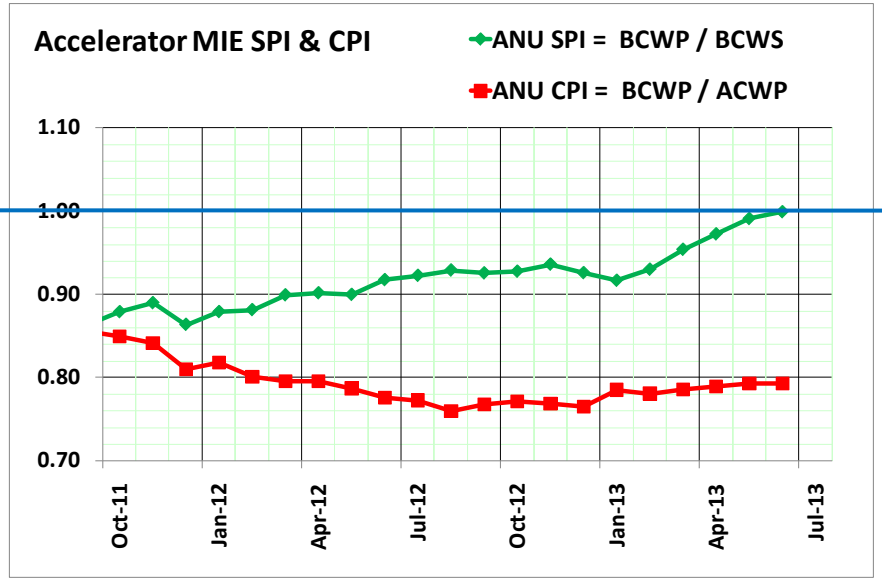
- A NOvA PMG meets on the 3rd Tuesday of every month
- This is another reporting / oversight path for EVMS data
- The PMG is attended by
  - DOE Germantown
  - DOE Fermilab Site Office
  - Fermilab Directorate
    - Budget Office represented as well
  - Representatives of Fermilab Divisions & Sections
    - Fermilab Procurement specialist for NOvA attends
- Agenda includes talks on
  - EVMS
  - Detector Technical Status
  - 1 or more other talks by managers on EVMS & technical progress of specific parts of the project
- Next slides are essentially the July 16 talk
  which covered EVMS data just completed for June 2012.

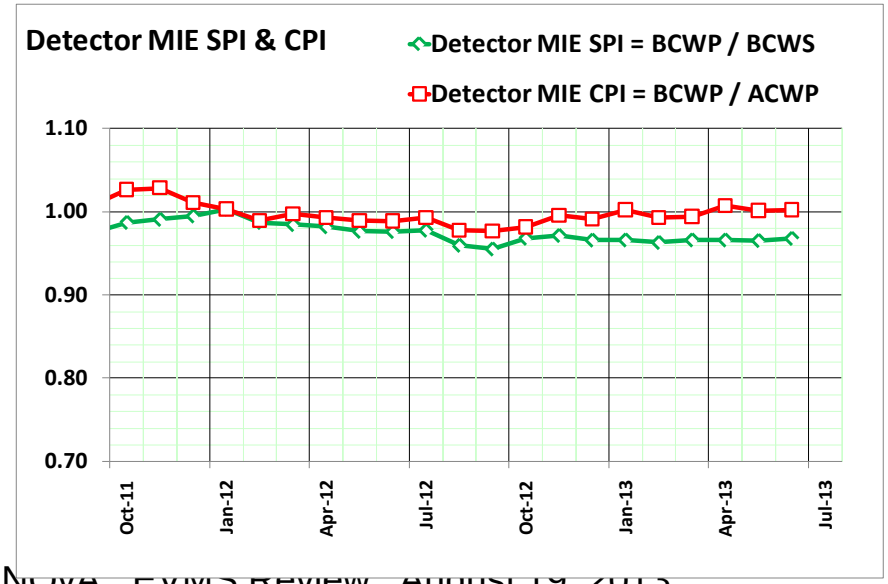
EVMS Reporting Overview

- Data now available through June 2013
  - SPI = **0.981**, compare to 0.979 in May, 0.977 in April, 0.974 in Mar
  - CPI = **0.953,** compare to 0.951 in May, 0.953 in April, 0.945 in Mar



SPI & CPI for Active Work



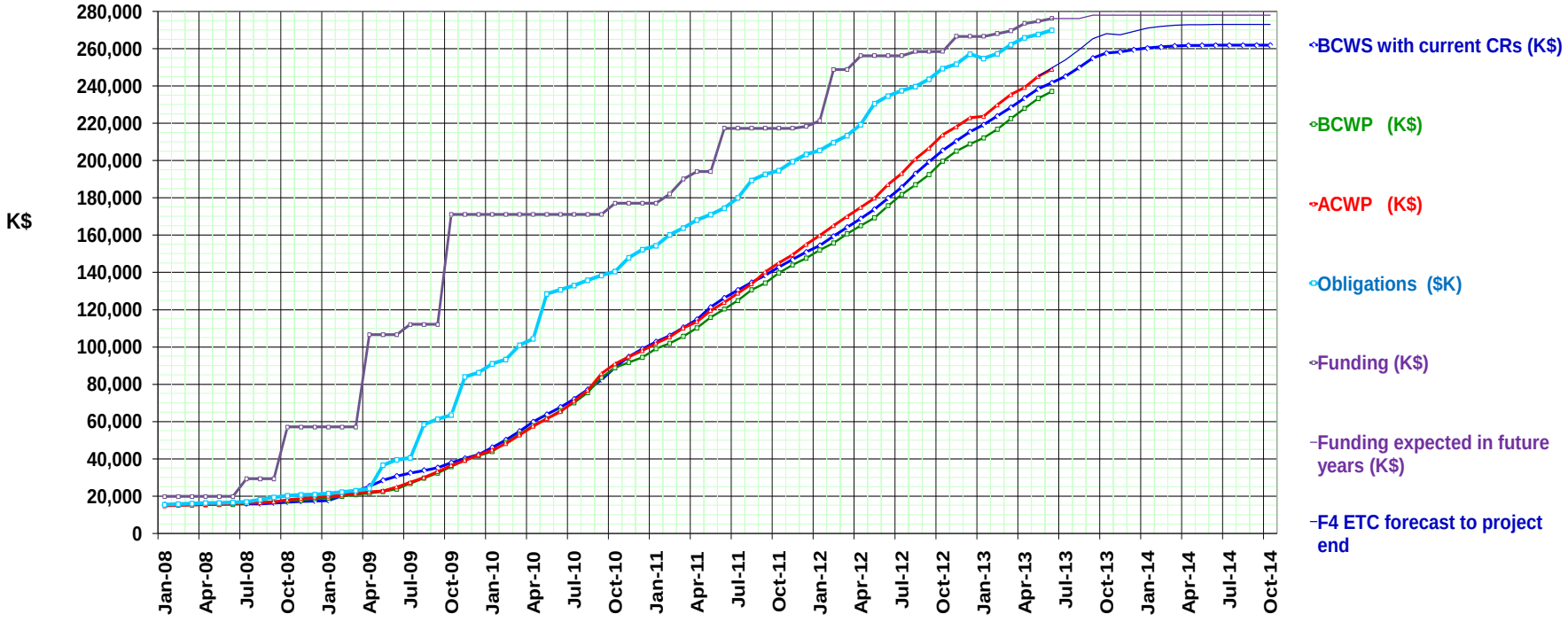


- ANU CPI had a long slide down to 0.76 last Aug 2012, then flat at 0.78 in Jan-June 2013 after:
  - Installed Sept 2012 Change Request doubling the labor estimate on unstarted tasks
  - Moved 3rd RF cavity off-project in Jan 2013
- Meanwhile the SPI trends up, goes flat in Aug – Jan, finally now hitting 1.0 as this part of the project is completed.

- Detector still relatively constant near 1.0 for both indices
  - SPI=0.97, CPI=1.00 in **June**

EVMS Reporting Overview

- Basic data in BCWS, BCWP, ACWP, **Funding** & **Obligations** through Jun 2013
  - BCWS = Budgeted cost of work Scheduled
  - BCWP = Budgeted cost of work Performed
  - ACWP = Actual cost of work Performed
- Project is 90.3 % complete (BCWP/BAC = 237.1 M$ / 262.5 M$)
  - BAC = Budget at Completion (using EAC = 273.0, get 87%)
- Project is 99.0 % obligated, (Obligations/BAC = 269.8 / 273.0 EAC)
  - EAC = Estimate at Completion



CPR1 June 2013

COST PERFORMANCE REPORT
FORMAT 1 - WORK BREAKDOWN STRUCTURE

CONTRACTOR	CONTRACT	PRO	
NAME	NAME	NAME	FROM 01-June-2013
Fermi National Accelerator Laboratory		NOvA project	TO 30-June-2013

PERFORMANCE DATA

CTC-FndSrc	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
CTC[2]			ACTUAL					ACTUAL					
Results...	BUDGETED COST		COST	VARIANCE		BUDGETED COST		COST	VARIANCE			LATEST	
	WORK	WORK	WORK			WORK	WORK	WORK				REVISED	
ITEM	SCHEDULED	PERFORMED	PERFORMED	SCHEDULE	COST	SCHEDULED	PERFORMED	PERFORMED	SCHEDULE	COST	BUDGETED	ESTIMATE	VARIANCE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
DA DOE-ACEL MIE													
2.0 ANU Construction													
Fully Burdened AY$k	(34)	254	290	288	(37)	35,149	35,128	44,304	(21)	(9,176)	35,159	42,805	(7,646)
CTC-FndSrcTotals:	(34)	254	290	288	(37)	35,149	35,128	44,304	(21)	(9,176)	35,159	42,805	(7,646)
DC DOE-CA													
2.1 Site and Building													
Fully Burdened AY$k	0	0	0	0	0	35,060	35,060	34,872	0	188	35,060	34,872	188
CTC-FndSrcTotals:	0	0	0	0	0	35,060	35,060	34,872	0	188	35,060	34,872	188
DD DOE-ACEL R&D													
1.0 ANU R&D													
Fully Burdened AY$k	0	0	0	0	0	7,025	7,025	6,615	0	410	7,025	6,615	410
CTC-FndSrcTotals:	0	0	0	0	0	7,025	7,025	6,615	0	410	7,025	6,615	410
DE DOE-DET MIE													
2.1 Site and Building													
Fully Burdened AY$k	0	0	(0)	0	0	7,131	7,131	6,164	0	967	7,131	6,164	967
2.10 NOvA Project Management													
Fully Burdened AY$k	144	144	156	0	(11)	10,490	10,490	9,383	0	1,107	11,298	10,199	1,100
2.2 Liquid Scintillator													
Fully Burdened AY$k	638	822	855	184	(33)	14,381	14,472	14,551	91	(79)	21,160	21,424	(264)
2.3 WLS Fiber													
Fully Burdened AY$k	0	3	9	3	(6)	13,039	13,032	13,338	(8)	(306)	13,039	13,346	(306)
2.4 PVC Extrusions													
Fully Burdened AY$k	331	656	606	326	50	30,719	28,877	29,452	(1,842)	(574)	33,206	33,816	(611)
2.5 PVC Modules													
Fully Burdened AY$k	616	778	583	162	195	19,052	18,917	15,540	(136)	3,376	23,347	19,968	3,379
2.6 Electronics													
Fully Burdened AY$k	328	244	284	(85)	(40)	9,800	9,484	9,515	(315)	(31)	12,136	12,200	(64)
2.7 DAQ													
Fully Burdened AY$k	2	12	41	10	(28)	4,272	3,741	4,706	(531)	(964)	4,450	5,347	(897)
2.8 Near Detector Assembly													
Fully Burdened AY$k	146	260	454	114	(194)	12,027	11,791	12,890	(236)	(1,099)	12,353	13,481	(1,127)
2.9 Far Detector Assembly													
Fully Burdened AY$k	1,088	620	446	(468)	175	19,000	17,503	19,573	(1,497)	(2,070)	22,577	24,719	(2,142)
CTC-FndSrcTotals:	3,295	3,540	3,434	246	106	139,911	135,437	135,112	(4,474)	326	160,697	160,663	34

Preliminary analysis: all variances correct

CPR1 June 2013 continued

COST PERFORMANCE
FORMAT 1 - WORK BREAKDOV

CONTRACTOR	CONTRACT		
NAME	NAME	NAME	FROM 01-June-2013
Fermi National Accelerator Laboratory		NOvA project	TO 30-June-2013

PERFORMANCE DATA

CTC-FndSrc	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
CTC[2] Results...	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)
DO DOE- OPS													
1.0 ANU R&D													
Fully Burdened AY$k	(1)	(1)	4	0	(5)	1,817	1,817	1,414	0	403	1,817	1,414	403
2.7 DAQ													
Fully Burdened AY$k	19	19	(2)	0	21	126	126	0	0	125	190	65	125
CTC-FndSrcTotals:	18	18	2	0	16	1,942	1,942	1,414	0	528	2,006	1,479	527
DR DOE-POST CD-1 DET R&D													
1.1 Site and Building R&D													
Fully Burdened AY$k	0	0	0	0	0	2,275	2,275	1,627	0	647	2,275	1,627	647
1.2 Liquid Scintillator R&D													
Fully Burdened AY$k	0	0	0	0	0	297	297	389	0	(92)	297	389	(92)
1.3 WLS Fiber R&D													
Fully Burdened AY$k	0	0	0	0	0	341	341	375	0	(34)	341	375	(34)
1.4 PVC Extrusion R&D													
Fully Burdened AY$k	0	0	0	0	0	1,369	1,369	2,083	0	(714)	1,369	2,083	(714)
1.5 PVC Module R&D													
Fully Burdened AY$k	0	0	0	0	0	2,260	2,260	2,421	0	(160)	2,260	2,421	(160)
1.6 Electronics R&D													
Fully Burdened AY$k	0	0	0	0	0	2,028	2,028	2,600	0	(572)	2,028	2,600	(572)
1.7 DAQ R&D													
Fully Burdened AY$k	0	0	0	0	0	1,635	1,635	2,822	0	(1,186)	1,635	2,822	(1,186)
1.8 Detector Assembly R&D													
Fully Burdened AY$k	0	0	0	0	0	3,123	3,123	4,931	0	(1,808)	3,123	4,931	(1,808)
1.9 Project Management R&D													
Fully Burdened AY$k	0	0	0	0	0	383	383	559	0	(176)	383	559	(176)
CTC-FndSrcTotals:	0	0	0	0	0	13,711	13,711	17,806	0	(4,095)	13,711	17,806	(4,095)
DY DOE CD-0 TO CD-1 R&D													
1.9 Project Management R&D													
Fully Burdened AY$k	0	0	0	0	0	8,801	8,801	8,801	0	0	8,801	8,801	0
CTC-FndSrcTotals:	0	0	0	0	0	8,801	8,801	8,801	0	0	8,801	8,801	0
Undist. Budget											0	0	0
Sub Total	3,278	3,812	3,726	534	86	241,599	237,104	248,923	(4,494)	(11,819)	262,459	273,041	(10,582)
Management Resrv.											0		
Total	3,278	3,812	3,726	534	86	241,599	237,104	248,923	(4,494)	(11,819)	262,459		

EAC changed by + 116 K$ from May

Change Requests in June

- 7 CRs in June, total of ($8.3) K$

CR Number	CR Title	NOVA-doc-	Level of Change	Date Approved	Final Cost Impact	Final Schedule Impact
654	Replan FY13/FY14 Mineral Oil and Pseudocumene Production, Delivery and QA/QC Tasks	9371	L4 (NOVA PM)	7/2/2013	$488.00	none
652	Replan Schedule for PVC Resin Procurement - Supplement 1	9357	L4 (NOVA PM)	7/1/2013	$0.00	none
649	Add Tasks and Budget to Extend Rental of Mineral Oil Storage Tank and Pseudocumene ISO tanks	9358	L4 (NOVA PM)	7/1/2013	$43,373.00	none
647	Further Extension of Occupancy of Additional Factory Space for Module and Parts Storage	9351	L4 (NOVA PM)	6/28/2013	$11,865.00	none
646	CR646 Fermilab FY13 Mid-Year Labor Burden and Indirect Rate adjustment	9340	L4 (NOVA PM)	6/28/2013	($123,261.07)	none
644	Additional ANL Labor Support for Near Detector Assembly	9312	L4 (NOVA PM)	6/24/2013	$18,898.00	none
643	Add Tasks and Budget for Near Detector Electronics Installation Support	9275	L4 (NOVA PM)	6/20/2013	$40,342.00	none

ETC actions

- There were 2 ETC changes in June, total of 28 K$
- Possible ETCs found, being watched, not enough info yet for a CR
  - Total is 168 K$

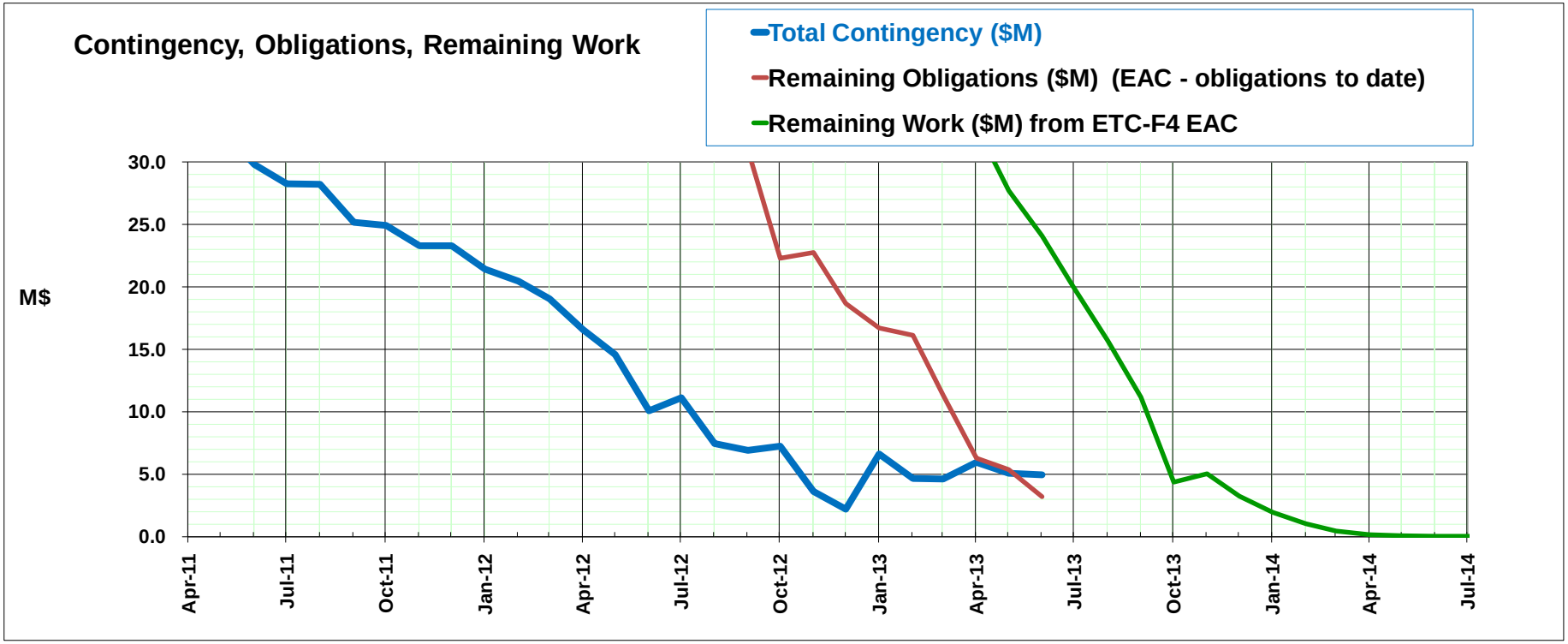
Unincorporated Findings	Corrective Action	Estimated Cost (AY$)	Project Manager input to Estimated Cost (AY$)	Comments
Tank lease at Riverdale needs to be extended from 1 Oct 2013 through March 2014 (5 months).	Extend contract, CR649 extended to Nov 1	$171,000	$68,000	Riverdale storage tank contract funding ends in FY 2013 @ $34.2K/month. Extended for one additional month in CR 649. This depends on the fill rate at Ash River: 7th tanker added to increase fill rate and finish storage in Dec 31. May add 8th tanker.
ISO Tanker contract needs to be extended from 1 Aug 2013 through February 2014 (7 months).	Extend contract, CR649 extedended to Nov 1	$53,900	$15,400	Triple-G ISO pseudocumene tank contract ends in July 2013 @ $7.7K/month. Extended for one additional month in CR 649. This depends on the fill rate at Ash River: 7th tanker added to increase fill rate by 20% and finish storage by Dec 31. May add 8th
IU Chemistry technician contract needs to be extended from 1 Oct 2013 through Feb 2014 (5 months).	Extend contract	$23,313	$18,650	SOW with IU only covers through FY 2013. This is the QC person that verifies the tank blends at Wolf Lake. He should only be needed for half the time. This depends on the fill rate at Ash River: 7th tanker added to increase fill rate by 20% and finish blending by Jan. May
We may need more resin to produce the 21,504 extrusions needed for a complete Far Detector	The project is now investigating how much is needed and the cost.	?	$123,000	Dependent on the final number of extrusions plus spares required. Factory's good modules, Extrutech's good extrusions, & WBS 2.9 definition of "good" all contribute. Zero $ is possible with a top end being $200,000. Risk # 532 captures this. Best estimate as of July 1 reflects Extrutech waste in June & June cutting up of 50 extrusions at Minneapolis for Near Detector.
Additional money needed for LV power supply, rack protection system, DCS (slow controls) and labor	Waiting for more information from Leon	$8,000	$8,000	CR640 did have some of the changes, but they will probably be somewhat different, it included buying racks, but not the rack protection. We are using reclaimed racks instead, which will nearly offset the rack protection costs. It seems like the environmental and rack monitoring was not in
Need to get an estimate on how much the DCM cabling for the Near Detector Underground will cost.	Waiting for more information from Leon	?	?	We need to hold off on this CR until we have more information. As of right now its difficult to decipher from NDOS documentation how much it would cost us. U Va is working on this.
Need to get a contract for transporting oil from Wolf Lake to Near Detector	Need a change request, but we don't yet know when we will need this transport	$7,000	$7,000	$5/mi for a Bulk Transport certified driver and power unit. This would cover multiple trips between Wolf Lake and Fermilab. Reduced from $13,000 because we will not transport from Fermilab to Ash River.
The material and labor for the north bookend at the Far Detector	Waiting for more information	$80,000	$60,000	We now have a better estimate and a very rough conceptual design. The engineer estimates $50-60k. We've added $20k to that rough estimate. Max of 123 K$ is the cost of the fancy south bookend. Excess pallet box beams too short, but may use 3rd lifting fixture
The material and labor for topping off modules with scintillator oil	Waiting for more information	?	?	with scintillator oil. There will be some labor and M&S costs associated with it. This is something that won't happen til the very end of the outfitting so there isn't an estimate at this time. Topping off blocks usually involves less than 500 gallons + 4 person-shifts in the first top-off phase, 2nd top-off would be less. And we may decide
Project Controls staff being partially on Nova	None	($75,000)	($125,000)	Since this is a LOE task we can't create a change request to add this to the contingency. Larger savings than estimated in April since two people have already migrated to other projects / jobs.
FESS chargeback rate to be adjusted in July	Manual entry coming in July status.		($6,697)	July 11 email from Suzanne
	Total Unincorporated Costs	**$268,213**	**$168,353**	

AY$ by Level 2 with MIE/OPC split

	WBS	Items	NOvA Costs to Date ($M) as of 30-June-2013	NOvA 's Cost Estimate AY $M (for July 1, 2013 to project end)									
				Estimated Cost (with indirects)			Mgmt Reserve Estimate			Contingency %			Total
				M&S	Labor[1]	Total	M&S	Labor[1]	Total	M&S	Labor[1]	Total	Cost
TEC	2.0	Accelerator & NuMI Upgrades	$ 44.3	$ (1.5)	$ 0.0	$ (1.5)	$ -	$ -	$ -	0%	0%	0%	$ 42.8
	2.1	Far Detector Site and Building	$ 6.2	$ -	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	$ 6.2
	2.2	Liquid Scintillator	$ 14.6	$ 6.8	$ 0.1	$ 6.9	$ -	$ -	$ -	0%	0%	0%	$ 21.4
	2.3	Wave-Length-Shifting Fiber	$ 13.3	$ 0.0	$ 0.0	$ 0.0	$ -	$ -	$ -	0%	0%	0%	$ 13.3
	2.4	PVC Extrusions	$ 29.5	$ 4.2	$ 0.2	$ 4.4	$ -	$ -	$ -	0%	0%	0%	$ 33.8
	2.5	PVC Modules	$ 15.5	$ 1.5	$ 2.9	$ 4.4	$ -	$ -	$ -	0%	0%	0%	$ 20.0
	2.6	Electronics Production	$ 9.5	$ 1.9	$ 0.8	$ 2.7	$ -	$ -	$ -	0%	0%	0%	$ 12.2
	2.7	Data Acquisition System	$ 4.7	$ 0.4	$ 0.2	$ 0.6	$ -	$ -	$ -	0%	0%	0%	$ 5.3
	2.8	Near Detector Assembly	$ 12.9	$ 0.1	$ 0.5	$ 0.6	$ -	$ -	$ -	0%	0%	0%	$ 13.5
	2.9	Far Detector Assembly	$ 19.6	$ 1.7	$ 3.4	$ 5.1	$ -	$ -	$ -	0%	0%	0%	$ 24.7
	2.10	Project Management	$ 9.4	$ 0.1	$ 0.7	$ 0.8	$ -	$ -	$ -	0%	0%	0%	$ 10.2
		Subtotal Construction	**$ 179.4**	**$ 15.0**	**$ 9.0**	**$ 24.0**	**$ -**	**$ -**	**$ -**	**0%**	**0%**	**0%**	**$ 203.5**
OPC		**R&D - Accelerator**	$ 6.6	$ -	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	$ 6.6
		R&D - Detector	$ 26.6	$ -	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	$ 26.6
		Cooperative Agreement	$ 34.9	$ -	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	$ 34.9
		Operating - Accelerator	$ 1.4	$ -	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	$ 1.4
		Operating - Detector	$ 0.0	$ -	$ 0.1	$ 0.1	$ -	$ -	$ -	0%	0%	0%	$ 0.1
		Total OPC:	**$ 69.5**	**$ -**	**$ 0.1**	**$ 0.1**	**$ -**	**$ -**	**$ -**	**0%**	**0%**	**0%**	**$ 69.6**
		Contingency											**$ 5.0**
		TPC:	**$ 248.923**	**$ 15.0**	**$ 9.1**	**$ 24.101**	**$ -**	**$ -**	**$ 4.976**	**0%**	**0%**	**20.6%**	**$ 278.000**

- **We are claiming 5.1 M$ Contingency**
  - **$5.0 M + 0.3 M (complete re-purposing) + 0.0 M false variance – 0.2 ETC**
  - **This is 21 % of remaining work** (5.1 / 24.1)
  - **This is 159% of remaining Obligations** (5.1 / 3.2)
    - 273.041 (EAC) - 269.834 obligated = 3.207 M$ yet to obligate

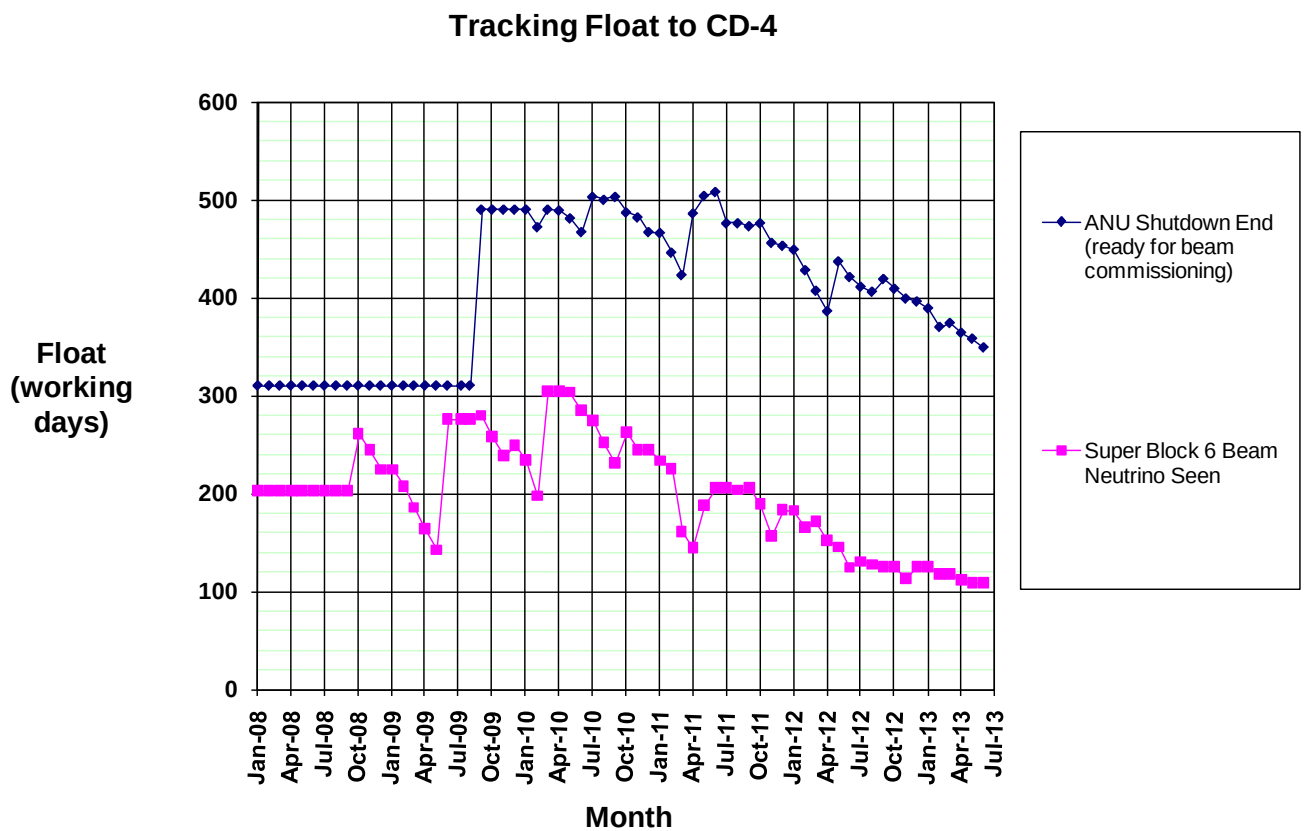
Contingency History



- Remaining Obligations are nearly complete (~ $ 3 M to go)
- Remaining Work is on final approach at ~$4 - 5M / month through Sept 2013
  - Get positive boost in November from Special Process Spares
- No net contingency used since ~ November 2012

Schedule Contingency: Float to CD-4

- **ANU lost 9 days of float in June -- Now at 349 days**
  - This no longer matters since ANU is complete.
- **The Detector lost zero days of float in June -- Still at 108 days**
  - This is still driven by APD delivery & testing of APDs for the 28th block.
  - There are now 12 days of float between scintillator filling of last di-block and start of APD installation last di-block, so APDs are still driving the schedule by themselves



Schedule Contingency Summary

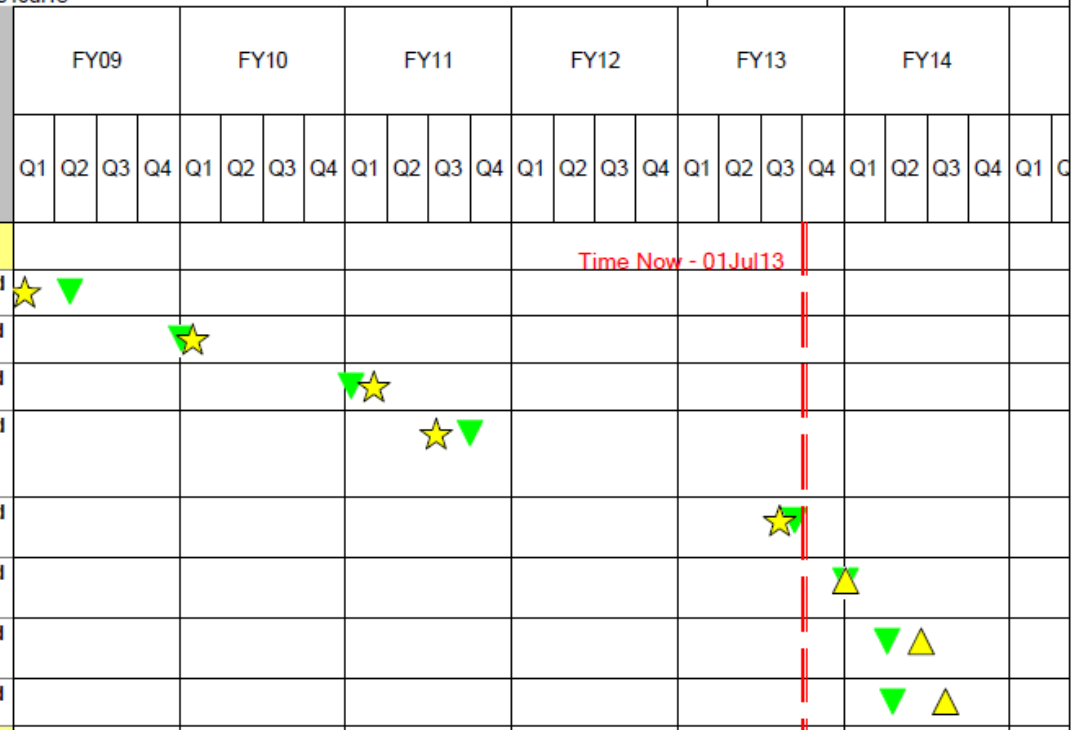
- As of June 30, we have 108 working days float to CD-4
- As of June 30, we have 17 months to CD-4 = 354 working days
  - CD-4 is end of November, 2014
- Schedule Contingency is 108 / (354–108) days = 44%.
- Will reassess next month
  after APD noise effect is known,
  after APD assembly is ramped up,
  and after the 7th tanker effect is known.

Milestones held by DOE - OHEP

Nova_Project
Milestone Gantt Chart
Nova_Milestones_L1_L2 = [BOOL.T] and ESDATE >= {10/1/08}
June 2013 Status
TimeNow: 01Jul13

Baseline Date ▼
Completed Milestone ☆
Current Forecast Date △

Activity Desc.	Baseline Date	Forecast / Actual Date	Baseline Variance
L.1 -- DOE - OHEP Associate Director Milestone			
CD-3a	02Feb09	24Oct08	63d
CD-3b	01Oct09	29Oct09	-21d
IPND ready to take data	11Oct10	30Nov10	-35d
Beneficial occupancy (Substantial completion) - far detector building construction	30Jun11	13Apr11	54d
Beneficial occupancy of near detector cavern	14Jun13	10May13	23d
NuMI neutrino event observed in Superblock 1	01Oct13	03Oct13	-3d
Near detector completed and ready to operate	02Jan14	19Mar14	-54d
14 kt installation completed	16Jan14	08May14	-79d



NuMI neutrino event in first blocks depends on beam & active kilotons, may need to move?

Will re-assess **Near Detector completed** milestone in the Fall.

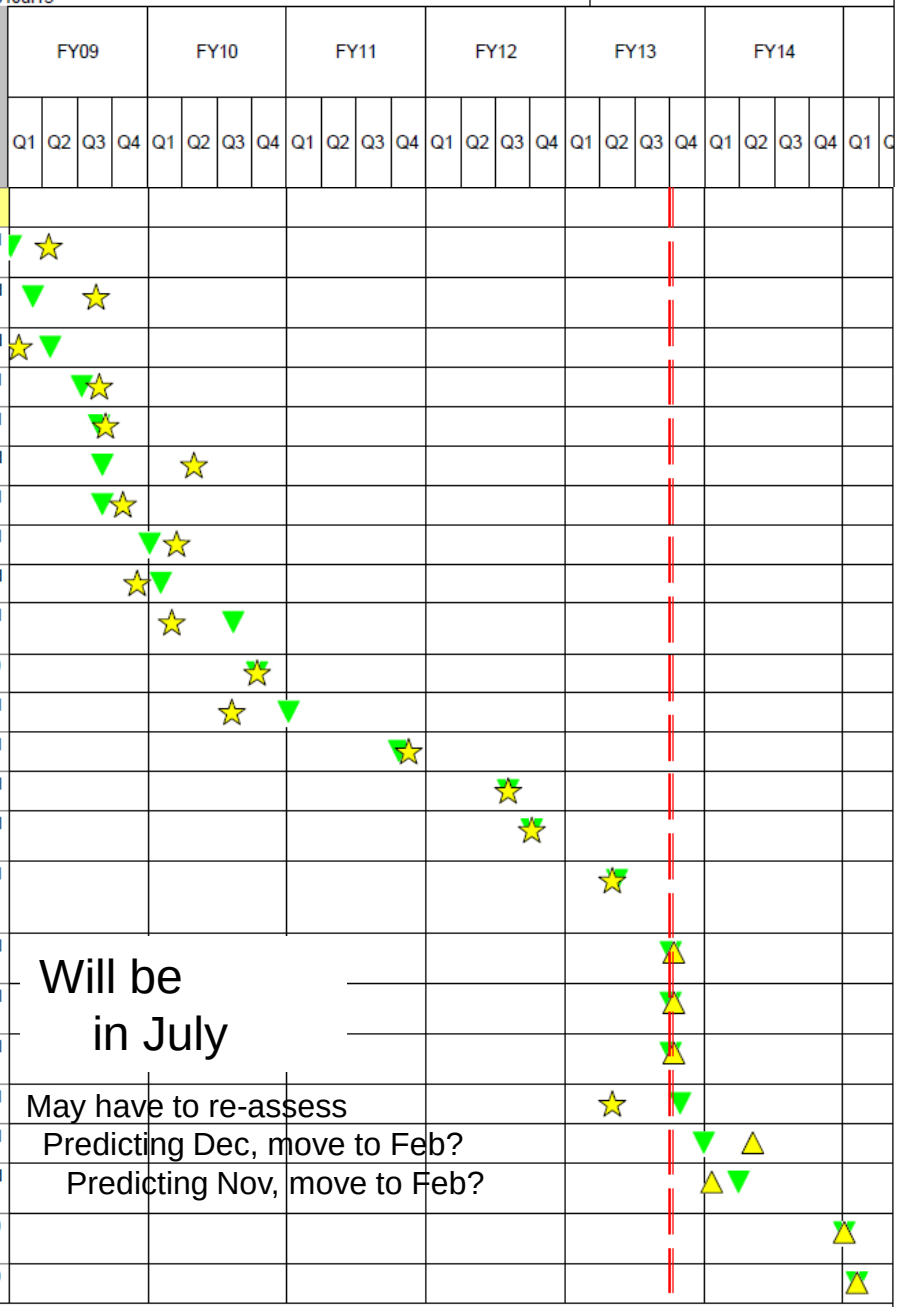
Will re-assess **14 kt installation completed** milestone in the Fall.

DOE – Fed Project Director milestones

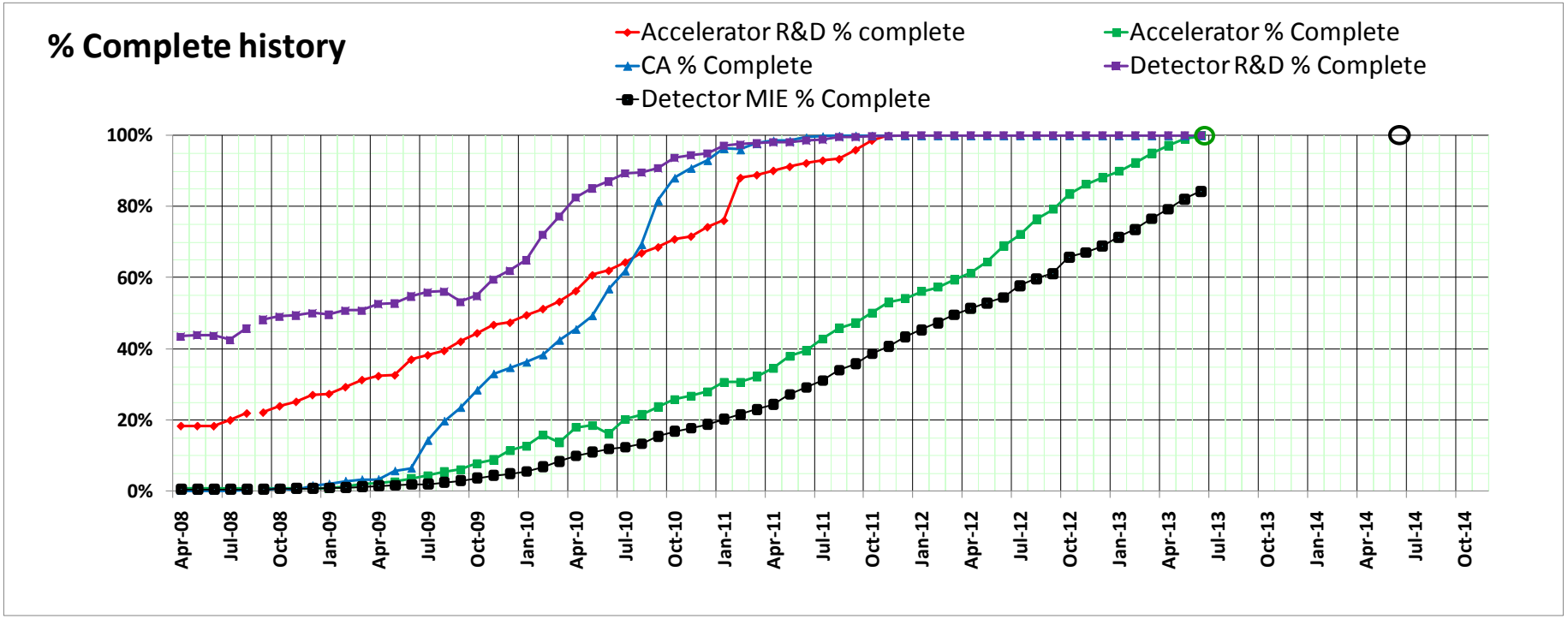
Nova_Project
Milestone Gantt Chart
Nova_Milestones_L1_L2 = [BOOL.T] and ESDATE >= {10/1/08}
June 2013 Status
TimeNow: 01Jul13

Baseline Date
Completed Milestone
Current Forecast Date

Activity Desc.	Baseline Date	Forecast / Actual Date	Baseline Variance
L.2 -- DOE- NOVA Project Director Milestone			
DOE OECM - FRA EVMS Readiness Assessment	01Oct08	09Jan09	-67d
DOE OECM - FRA EVMS Certification Review	01Dec08	15May09	-114d
DOE OHEP CD-3a Mini-review	15Jan09	24Oct08	52d
Site preparation purchase order released	06Apr09	22May09	-34d
Waveshifter PO issued	22May09	08Jun09	-10d
DOE OECM - FRA EVMS Certified	01Jun09	28Jan10	-164d
DOE OHEP CD-3b Review	01Jun09	23Jul09	-37d
Extrusion PO issued	01Oct09	11Dec09	-49d
WLS fiber PO issued	02Nov09	01Sep09	42d
Decision point for buying additional waveshifter powders	11May10	01Dec09	109d
IPND blocks (4 of 6) completed	12Jul10	09Jul10	0
Mineral oil PO issued	01Oct10	07May10	101d
APDs PO issued	18Jul11	15Aug11	-21d
Block pivoter completed	30Apr12	30Apr12	-1d
Decision point for buying additional WLS fiber	03Jul12	03Jul12	-1d
Decision point for buying additional extrusions, modules, mineral oil, pseudocumene	13Feb13	31Jan13	8d
MI Ring Modifications Ready for Beam Transport	01Jul13	10Jul13	-6d
RR Modifications Ready for Beam Transport	01Jul13	10Jul13	-6d
Ready to Commission Upgrades with Medium Energy Neutrino Beam	01Jul13	10Jul13	-6d
Decision point for buying additional APDs	29Jul13	31Jan13	124d
Far detector modules for 14 kt shipped	27Sep13	06Feb14	-87d
Far Detector extrusions for 14kt completed	30Dec13	21Oct13	45d
DOE Independent Project Review for CD-4 Completed (Lehman Review)	02Oct14	02Oct14	0
CD-4 ESAAB Meeting Completed	03Nov14	03Nov14	0



% Complete history for the **5** Main parts of the Project



- **Detector at 84%, to be complete by ~ June 2014**
- **ANU at 99.9%**
- **Building / Cooperative Agreement done**
- **Detector R&D done**
- **ANU R&D done**

Other EVMS items of interest

- Change Control thresholds
- Sample Change Requests
- Variance Thresholds and status
  - At Level 2
  - At Cost Accounts
  - Sample VAR illustrating signature path

Change Control

- Thresholds from the PEP and PMP

	Performance Baseline Deviation		Routine Project Changes	
	Secretarial Acquisition Executive (Level 0-A) Deputy Secretary	Acquisition Executive (Level 0-B) SC-1	Associate Director OHEP or Program Manager (Level 1)	Federal Project Director (Level 2)
Technical Scope	A change in scope that affects the ability to meet a KPP and the ability to satisfy the mission need.	A change in scope that affects the ability to meet a KPP and the ability to satisfy the mission need.	Any change in the KPPs as referenced in PEP section 3.2.	Any significant change to the technical scope (as described in PEP sect. 5) that affect ES&H requirements or meeting Project Closeout definitions in PEP Table 7.2.
Schedule	> 6 month (cumulative) delay in the CD-4 project completion date.	Up to a 6 month (cumulative) delay in the CD-4 project completion date.	Any change to a level 1 milestone > 3 months.	Any change to a level 2 milestone > 1 month or a level 1 milestone < 3 months.
Cost	Increase in excess of $25M or 25% (cumulative) of the CD-2 Total Project Cost baseline.	Any increase in the CD-2 Total Project Cost baseline.	Any change in Total Estimated Cost or Total Project Cost.	Any cumulative use of contingency of > $1M.[2]

*Changes must be recommended at all applicable lower levels prior to being forwarded to the next higher level for consideration.

Fermilab Associate Director (Level 3)	NOvA Project Manager (Level 4)	Subproject Manager (Level 5)
Major technical changes that are significant departures from the technical baseline. Changes that affect ES&H or impact PoT projections by more than 10%. Out-of-scope changes to upgrade physics capabilities.	Related technical changes to multiple subprojects that do not diminish performance	Minor technical changes to a single subproject that does not diminish performance
Any change that results in the delay of a Level 3 Director's milestone.	Any change that results in the delay of a Level 4 milestone by more than one month.	Any change that results in the delay of a Level 5 milestone by more than one month
Increase in the cost of a single item by more than $250k. Increase in the Project base cost exceeding $500k during the previous 12 months.	Increase in the cost of a single item by more than $100k.	Increase in the cost of a single item by more than $25k.

Change Request example

- Sample with signatures now by email in advance of implementation.

NOvA Project Office — CHANGE REQUEST RECORD

Level of Change: 3.4 (NOVA PM) | Date Initiated: 4/7/2013 | CR No.: 636
Status: Approved by PM | Date Approved: 4/24/2013 | DOE Impact: ☐
Awaiting: | Date Baseline Update Completed: 4/24/2013 | Risk Impact: ☐

PRELIMINARY APPROVAL — PM GO-AHEAD
Schedule Impact: Adjust ND modules for later completion of 2nd half | Cost Impact: $9,153.00 from/to MR or Contingency: Management Reserve | DATE: 4/24/2013

FINAL APPROVAL
**********See attached e-mail for approval signature date************
CONTROL ACCOUNT MANAGER (+ L2 MGR IF DIFFERENT) DATE
**********See attached e-mail for approval signature date**********
PROJECT MANAGER DATE
FINANCIAL OFFICER DATE
SCHEDULER DATE
ASSOCIATE DIRECTOR FOR RESEARCH (IF REQ'D) DATE
DOE FEDERAL PROJECT DIRECTOR (IF REQ'D) DATE

CONTROL ACCOUNT #	COST IMPACT
~~CA 2.5.3~~	~~$9,445.00~~

from/to MR or Contingency: Management Reserve | Final Cost Impact: $9,445.00 from Project Financial Officer
Final Schedule Impact: Adjust ND modules for later completion of 2nd from Project Scheduler

SUBMITTED INFORMATION
CR Title: Replan Near Detector Module Production and Shipping Schedule
Change Type: ☐ Technical ☑ Cost ☑ Schedule ☐ Other ☑ Administrative
Initiator Name: Ken Heller | Control Account Manager: Ken Heller
Initiator Email: heller@physics.umn.edu
Affected WBS #'s: 2.5.3.3.3.14-2.5.3.3.3.21, 2.5.3.3.3.25-2.5.3.3.3.28, 2.5.3.3.3.32-2.5.3.3.3.39

NOvA Project Office — CHANGE REQUEST RECORD

Change Description: Replan production and delivery schedule for near detector modules to match revised near detector construction priorities and accommodate delay in muon-catcher module specifications. Includes the deferral of the start of module production for the last four near detector blocks to 01Oct13.

Adjust dates for:
1) Module assembly tasks - 2.5.3.3.3.14-2.5.3.3.3.21
2) Module shipping tasks - 2.5.3.3.3.25-2.5.3.3.3.28
3) Module sanding tasks - 2.5.3.3.3.32-2.5.3.3.3.39

small preliminary cost impact due only to escalation effects; no resource assignment changes

No ash impact
No overall schedule impact

CR file found in: 9047

BUDGET INFORMATION
MS Cost Before Change: See Nova-Doc-9047 (No change)
MS Cost After Change: See Nova-Doc-9047 (No change)
Labor Resource Type: (one resource per line) | Hours Before Change: | Hours After Change:
See Nova-Doc-9047 (No change) | See Nova-Doc-9047 (No change) | See Nova-Doc-9047 (No change)

SCHEDULE INFORMATION
BEFORE CHANGE
Duration Before Change: See Nova-Doc-9047 days | Start Date: See Nova-Doc-9047 | End Date: See Nova-Doc-9047
AFTER CHANGE
Duration After Change: See Nova-Doc-9047 days | Start Date: See Nova-Doc-9047 | End Date: See Nova-Doc-9047

Harry P Ferguson III

From: Suzanne L Saxer
Sent: Wednesday, April 24, 2013 11:14 AM
To: Katherine Rogers; William S Freeman
Cc: Harry P Ferguson III; John W Cooper; Richard J Tesarek; Gregory J Bock; Stephen Webster; Pepin Carolan; Halley A Brown; Kenneth J Heller; Suzanne L Saxer
Subject: RE: CR636 Initial Processing Completed in Cobra - NEED APPROVALS

Approved.

Suzanne Saxer

Harry P Ferguson III

From: heller@physics.umn.edu
Sent: Wednesday, April 24, 2013 3:17 PM
To: Katherine Rogers
Cc: William S Freeman; Suzanne L Saxer; Harry P Ferguson III; John W Cooper; Richard J Tesarek; Gregory J Bock; Stephen Webster; Pepin Carolan; Halley A Brown; Kenneth J Heller
Subject: Re: CR636 Initial Processing Completed in Cobra - NEED APPROVALS
Importance: High

Approved.
ken

> The final cost impact will be an INCREASE in the amount of $9,449
>
> CR636
>
> Control Account
>
> 2.5.3
>
> TOTAL

Harry P Ferguson III

From: John W Cooper
Sent: Wednesday, April 24, 2013 11:53 AM
To: Katherine Rogers; William S Freeman; Suzanne L Saxer
Cc: Harry P Ferguson III; Richard J Tesarek; Gregory J Bock; Stephen Webster; Pepin Carolan; Halley A Brown; Kenneth J Heller; John W Cooper
Subject: RE: CR636 Initial Processing Completed in Cobra - NEED APPROVALS

Approved,
John

From: Katherine Rogers
Sent: Wednesday, April 24, 2013 11:11 AM
To: William S Freeman; Suzanne L Saxer
Cc: Harry P Ferguson III; John W Cooper; Richard J Tesarek; Gregory J Bock; Stephen Webster; Pepin Carolan; Halley A Brown; Kenneth J Heller
Subject: CR636 Initial Processing Completed in Cobra - NEED APPROVALS
Importance: High

The final cost impact will be an INCREASE in the amount of $9,449

CR636	
Control Account	Amount
2.5.3	9,449
TOTAL	9,449

Suzanne, John, Greg, Steve, & Ken – please indicate your approvals via REPLY ALL to this email.

Thanks!

Kate Rogers
Financial Analyst - NOvA
(630) 840-8638

-----Original Message-----
From: William S Freeman
Sent: Tuesday, April 23, 2013 3:18 PM
To: Suzanne L Saxer
Cc: Harry P Ferguson III; John W Cooper; Richard J Tesarek; Gregory J Bock; Stephen Webster; Pepin Carolan; Katherine Rogers; Halley A Brown; Kenneth J Heller
Subject: CR636 Initial Processing in Open Plan Completed - CR636 Baseline Available for Cobra Processing

Hi, Suzanne, et al:

See the attachments-

Harry P Ferguson III

From: Gregory J Bock
Sent: Wednesday, April 24, 2013 12:47 PM
To: Katherine Rogers
Cc: William S Freeman; Suzanne L Saxer; Harry P Ferguson III; John W Cooper; Richard J Tesarek; Stephen Webster; Pepin Carolan; Halley A Brown; Kenneth J Heller
Subject: Re: CR636 Initial Processing Completed in Cobra - NEED APPROVALS
Importance: High

approved
On Apr 24, 2013, at 11:10 AM, Katherine Rogers wrote:

Harry P Ferguson III

From: Carolan, Pepin [Pepin.Carolan@ch.doe.gov]
Sent: Wednesday, April 24, 2013 11:19 PM
To: Kenneth J Heller; Katherine Rogers
Cc: William S Freeman; Suzanne L Saxer; Harry P Ferguson III; John W Cooper; Richard J Tesarek; Gregory J Bock; Stephen Webster; Halley A Brown
Subject: Re: CR636 Initial Processing Completed in Cobra - NEED APPROVALS

Approved.
Pepin

----- Original Message -----
From: heller@physics.umn.edu [mailto:heller@physics.umn.edu]
Sent: Wednesday, April 24, 2013 03:16 PM
To: Katherine Rogers <krogers@fnal.gov>
Cc: William S Freeman <wfree@fnal.gov>; Suzanne L Saxer <pasek@fnal.gov>; Harry P Ferguson III <ferguson@fnal.gov>; John W Cooper <jcooper@fnal.gov>; Richard J Tesarek <tesarek@fnal.gov>; Gregory J Bock <bock@fnal.gov>; Webster, Stephen; Carolan, Pepin; Halley A Brown <hbrown12@fnal.gov>; Kenneth J Heller <heller@physics.umn.edu>
Subject: Re: CR636 Initial Processing Completed in Cobra - NEED APPROVALS

Approved.
ken

> The final cost impact will be an INCREASE in the amount of $9,449
>
> CR636
>
> Control Account
>
> Amount
>
> 2.5.3
>
> 9,449
>
> TOTAL
>
> 9,449
>
> Suzanne, John, Greg, Steve, & Ken - please indicate your approvals via
> REPLY ALL to this email.
>
> Thanks!
>
> Kate Rogers
>

Variance thresholds & January 2012 status

- At Level 2 (we report this in our FRA Monthly Report)

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Report Period: Jun-13	Current Period							Cumulative						
WBS Level 2	BCWS (AY$)	BCWP (AY$)	ACWP (AY$)	SV (AY$)	SV (%)	CV (AY$)	CV (%)	BCWS (AY$)	BCWP (AY$)	ACWP (AY$)	SV (AY$)	SV (%)	CV (AY$)	CV (%)
R&D														
1.0 ANU R&D	(848)	(848)	3,924	0	0%	(4,772)	563%	8,841,474	8,841,474	8,028,678	0	0%	812,796	9%
1.1 Site and Building R&D	0	0	0	0	0%	0	0%	2,274,519	2,274,519	1,627,049	0	0%	647,470	28%
1.2 Liquid Scintillator R&D	0	0	0	0	0%	0	0%	297,031	297,031	389,205	0	0%	(92,174)	-31%
1.3 WLS Fiber R&D	0	0	0	0	0%	0	0%	340,909	340,909	374,822	0	0%	(33,913)	-10%
1.4 PVC Extrusion R&D	0	0	0	0	0%	0	0%	1,368,848	1,368,848	2,082,559	0	0%	(713,711)	-52%
1.5 PVC Module R&D	0	0	0	0	0%	0	0%	2,260,343	2,260,343	2,420,701	0	0%	(160,358)	-7%
1.6 Electronics R&D	0	0	0	0	0%	0	0%	2,027,555	2,027,555	2,599,633	0	0%	(572,079)	-28%
1.7 DAQ R&D	0	0	0	0	0%	0	0%	1,635,495	1,635,495	2,821,845	0	0%	(1,186,350)	-73%
1.8 Detector Assembly R&D	0	0	0	0	0%	0	0%	3,122,854	3,122,854	4,931,254	0	0%	(1,808,400)	-58%
1.9 Project Mgmt R&D	0	0	0	0	0%	0	0%	9,184,127	9,184,127	9,359,785	0	0%	(175,658)	-2%
Construction														
2.0 ANU Construction	(34,459)	253,717	290,384	288,175	-836%	(36,667)	-14%	35,148,639	35,127,890	44,303,670	(20,750)	-0%	(9,175,780)	-26%
2.1 Site and Building	0	0	(84)	0	0%	84	-100%	42,190,674	42,190,674	41,035,858	0	0%	1,154,815	3%
2.10 NOvA Project Mgmt	144,442	144,442	155,518	0	0%	(11,075)	-8%	10,490,095	10,490,095	9,382,650	0	0%	1,107,446	11%
2.2 Liquid Scintillator	638,229	821,768	855,042	183,539	29%	(33,274)	-4%	14,380,995	14,471,752	14,551,169	90,757	1%	(79,416)	-1%
2.3 WLS Fiber	0	3,055	9,083	3,055	100%	(6,027)	-197%	13,039,386	13,031,523	13,337,580	(7,863)	-0%	(306,056)	-2%
2.4 PVC Extrusions	330,574	656,329	606,395	325,755	99%	49,935	8%	30,719,085	28,877,283	29,451,751	(1,841,802)	-6%	(574,468)	-2%
2.5 PVC Modules	616,385	778,302	583,219	161,917	26%	195,084	25%	19,052,404	18,916,566	15,540,381	(135,838)	-1%	3,376,185	18%
2.6 Electronics	328,442	243,845	284,180	(84,597)	-26%	(40,336)	-17%	9,799,555	9,484,447	9,515,283	(315,107)	-3%	(30,836)	-0%
2.7 DAQ	21,046	30,817	38,230	9,771	46%	(7,413)	-24%	4,398,144	3,867,024	4,706,036	(531,120)	-12%	(839,012)	-22%
2.8 Near Detector Assembly	145,759	260,016	454,471	114,256	78%	(194,455)	-75%	12,026,609	11,790,527	12,889,969	(236,083)	-2%	(1,099,442)	-9%
2.9 Far Detector Assembly	1,088,311	620,357	445,502	(467,954)	-43%	174,855	28%	18,999,778	17,503,131	19,573,159	(1,496,647)	-8%	(2,070,027)	-12%
R&D SubTotal (WBS 1.0-1.9)	(848)	(848)	3,924	0	0%	(4,772)	563%	31,353,155	31,353,155	34,635,532	0	0%	(3,282,377)	-10%
Const. SubTotal (WBS 2.0-2.10)	3,278,730	3,812,649	3,721,938	533,919	16%	90,710	2%	210,245,364	205,750,913	214,287,506	(4,494,452)	-2%	(8,536,593)	-4%
Project Total	3,277,882	3,811,801	3,725,863	533,919	16%	85,938	2%	241,598,519	237,104,067	248,923,037	(4,494,452)	-2%	(11,818,970)	-5%

Done

Non-costed Scientific hours

Report Period: Jun-13	Current Period - SCI Hrs							Cumulative - Since 01Oct09						
WBS Level 2	BCWS (Hrs)	BCWP (Hrs)	ACWP (Hrs)	SV (Hrs)	SV (%)	CV (Hrs)	CV (%)	BCWS (Hrs)	BCWP (Hrs)	ACWP (Hrs)	SV (Hrs)	SV (%)	CV (Hrs)	CV (%)
R&D														
1.0 ANU R&D	0	0	300	0	0%	(300)	-100%	4,985	5,520	8,231	535	11%	(2,711)	-49%
1.1 Site and Building R&D	0	0	0	0	0%	0	0%	0	0	0	0	0%	0	0%
1.2 Liquid Scintillator R&D	0	0	0	0	0%	0	0%	0	0	0	0	0%	0	0%
1.3 WLS Fiber R&D	0	0	0	0	0%	0	0%	0	29	60	29	100%	(31)	-107%
1.4 PVC Extrusion R&D	0	0	0	0	0%	0	0%	0	179	132	179	100%	47	26%
1.5 PVC Module R&D	0	0	0	0	0%	0	0%	1,224	1,638	3,155	414	34%	(1,517)	-93%
1.6 Electronics R&D	0	0	0	0	0%	0	0%	224	322	5,766	98	44%	(5,444)	-1,691%
1.7 DAQ R&D	0	0	0	0	0%	0	0%	3,668	4,979	1,711	1,311	36%	3,268	66%
1.8 Detector Assembly R&D	0	0	0	0	0%	0	0%	944	1,594	724	650	69%	870	55%
1.9 Project Management R&D	0	0	0	0	0%	0	0%	0	0	0	0	0%	0	0%
Construction														
2.0 ANU Construction	9	9	84	0	0%	(75)	-796%	10,238	10,456	15,389	218	2%	(4,933)	-47%
2.1 Site and Building Construction	0	0	0	0	0%	0	0%	0	0	0	0	0%	0	0%
2.10 NOvA Project Management	0	0	139	0	0%	(139)	-100%	0	0	5,542	0	0%	(5,542)	-100%
2.2 Liquid Scintillator	0	0	89	0	0%	(89)	-100%	1,828	1,828	3,451	0	0%	(1,623)	-89%
2.3 WLS Fiber	0	0	0	0	0%	0	0%	845	817	943	(28)	-3%	(126)	-15%
2.4 PVC Extrusions	32	32	0	0	0%	32	100%	2,926	2,995	2,340	69	2%	655	22%
2.5 PVC Modules	66	84	400	18	27%	(316)	-378%	11,164	11,065	15,088	(99)	-1%	(4,023)	-36%
2.6 Electronics	54	68	8	14	27%	60	88%	3,902	3,638	6,936	(264)	-7%	(3,298)	-91%
2.7 DAQ	6	6	113	0	0%	(107)	-1,670%	12,040	9,248	12,852	(2,792)	-23%	(3,604)	-39%
2.8 Near Detector Assembly	89	32	0	(57)	-64%	32	100%	589	596	1,828	7	1%	(1,232)	-207%
2.9 Far Detector Assembly	87	64	264	(23)	-26%	(200)	-313%	18,009	16,743	7,772	(1,266)	-7%	8,971	54%
R&D SubTotal (WBS 1.0-1.9)	0	0	300	0	N/A	(300)	N/A	11,045	14,261	19,779	3,216	29%	(5,518)	-39%
Const. SubTotal (WBS 2.0-2.10)	343	296	1,097	(47)	-14%	(801)	-271%	61,541	57,386	72,141	(4,155)	-7%	(14,755)	-26%
Project Total	343	296	1,397	(47)	-14%	(1,101)	-372%	72,586	71,647	91,920	(939)	-1%	(20,273)	-28%

Done

Variance thresholds & June 2013 status

- At the Control Account level.

Report Period: Jun-13	Current Period									Cumulative									
Control Account	BCWS (AY$)	BCWP (AY$)	ACWP (AY$)	SV (AY$)	SV (%)	CV (AY$)	CV (%)	SPI	CPI	BCWS (AY$)	BCWP (AY$)	ACWP (AY$)	SV (AY$)	SV (%)	CV (AY$)	CV (%)	SPI	CPI	BAC (AY$)
R&D																			
1.0.0 ANU CDR COSTS	0	0	0	0	0%	0	0%	1.00	1.00	0	0	18,630	0	0%	(18,630)	-100%	1.00	0.00	0
1.0.1 RR Upgrades	(848)	(848)	3,807	0	0%	(4,655)	549%	1.00	-0.22	5,530,969	5,530,969	5,108,287	0	0%	422,683	8%	1.00	1.08	5,530,969
1.0.2 MI Upgrades	0	0	113	0	0%	(113)	-100%	1.00	0.00	709,295	709,295	829,071	0	0%	(119,776)	-17%	1.00	0.86	709,295
1.0.3 NUMI Upgrades	0	0	5	0	0%	(5)	-100%	1.00	0.00	2,173,320	2,173,320	1,802,844	0	0%	370,476	17%	1.00	1.21	2,173,320
1.0.4 ANU Beam Physics	0	0	0	0	0%	0	0%	1.00	1.00	83,192	83,192	11,155	0	0%	72,037	87%	1.00	7.46	83,192
1.0.5 ANU Project Management	0	0	0	0	0%	0	0%	1.00	1.00	344,698	344,698	258,691	0	0%	86,007	25%	1.00	1.33	344,698
1.1 Site and Building R&D	0	0	0	0	0%	0	0%	1.00	1.00	2,274,519	2,274,519	1,627,049	0	0%	647,470	28%	1.00	1.40	2,274,519
1.2 Liquid Scintillator R&D	0	0	0	0	0%	0	0%	1.00	1.00	297,031	297,031	389,205	0	0%	(92,174)	-31%	1.00	0.76	297,031
1.3 WLS Fiber R&D	0	0	0	0	0%	0	0%	1.00	1.00	340,909	340,909	374,822	0	0%	(33,913)	-10%	1.00	0.91	340,909
1.4 PVC Extrusion R&D	0	0	0	0	0%	0	0%	1.00	1.00	1,368,848	1,368,848	2,082,559	0	0%	(713,711)	-52%	1.00	0.66	1,368,848
1.5 PVC Module R&D	0	0	0	0	0%	0	0%	1.00	1.00	2,260,343	2,260,343	2,420,701	0	0%	(160,358)	-7%	1.00	0.93	2,260,343
1.6 Electronics R&D	0	0	0	0	0%	0	0%	1.00	1.00	2,027,555	2,027,555	2,599,633	0	0%	(572,079)	-28%	1.00	0.78	2,027,555
1.7 DAQ R&D	0	0	0	0	0%	0	0%	1.00	1.00	1,635,495	1,635,495	2,821,845	0	0%	(1,186,350)	-73%	1.00	0.58	1,635,495
1.8 Detector Assembly R&D	0	0	0	0	0%	0	0%	1.00	1.00	3,122,854	3,122,854	4,931,254	0	0%	(1,808,400)	-58%	1.00	0.63	3,122,854
1.9 Project Management R&D	0	0	0	0	0%	0	0%	1.00	1.00	9,184,127	9,184,127	9,359,785	0	0%	(175,658)	-2%	1.00	0.98	9,184,127
Construction																			
2.0.1.1 Recycler Ring Modifications	(18,608)	253,000	269,959	271,608	-1,460%	(16,959)	-7%	-13.60	0.94	11,534,718	11,513,969	16,503,150	(20,750)	-0%	(4,989,181)	-43%	1.00	0.70	11,534,720
2.0.1.2 Recycler Kicker System	(5,898)	10,669	(9,634)	16,567	-281%	20,302	190%	-1.81	-1.11	9,731,291	9,731,291	10,719,104	0	0%	(987,813)	-10%	1.00	0.91	9,731,294
2.0.1.3 Recycler Instrumentation	0	0	1,234	0	0%	(1,234)	-100%	1.00	0.00	1,539,476	1,539,476	3,309,949	0	0%	(1,770,473)	-115%	1.00	0.47	1,539,476
2.0.2.1 MI Modifications	(454)	(454)	(2,141)	0	0%	1,687	-372%	1.00	0.21	983,727	983,727	1,252,596	0	0%	(268,869)	-27%	1.00	0.79	983,727
2.0.2.2 MI RF Cavities	(906)	(906)	(1,308)	0	0%	402	-44%	1.00	0.69	1,567,934	1,567,934	2,086,972	0	0%	(519,038)	-33%	1.00	0.75	1,567,934
2.0.3.1 NuMI Primary Proton Beam	(1,457)	(1,457)	(1,607)	0	0%	150	-10%	1.00	0.91	1,700,344	1,700,344	1,972,418	0	0%	(272,074)	-16%	1.00	0.86	1,700,344
2.0.3.2 NuMI Target Hall Technical Components	(2,089)	(2,089)	(2,014)	0	0%	(76)	4%	1.00	1.04	1,345,583	1,345,583	1,725,751	0	0%	(380,169)	-28%	1.00	0.78	1,345,583
2.0.3.3 NuMI Target Hall Infrastructure	(3,164)	(3,164)	(2,427)	0	0%	(737)	23%	1.00	1.30	1,947,473	1,947,473	1,722,538	0	0%	224,935	12%	1.00	1.13	1,947,473
2.0.3.4 NuMI Decay Pipe-Hadron Absorber-Utilities	(4,046)	(4,046)	7,486	0	0%	(11,532)	285%	1.00	-0.54	1,623,528	1,623,528	2,758,950	0	0%	(1,135,421)	-70%	1.00	0.59	1,623,528
2.0.4 Project Management - ANU - Construction	2,164	2,164	30,836	0	0%	(28,672)	-1,325%	1.00	0.07	3,174,565	3,174,565	2,252,242	0	0%	922,323	29%	1.00	1.41	3,185,053
2.1.1 Site Preparation Package	0	0	0	0	0%	0	0%	1.00	1.00	14,255,512	14,255,512	13,448,156	0	0%	807,357	6%	1.00	1.06	14,255,512
2.1.2 Far Detector Building	0	0	0	0	0%	0	0%	1.00	1.00	22,875,787	22,875,787	22,447,983	0	0%	427,804	2%	1.00	1.02	22,875,787
2.1.4 Management - Site and Building - Construction	0	0	0	0	0%	0	0%	1.00	1.00	556,370	556,370	534,210	0	0%	22,160	4%	1.00	1.04	556,370
2.1.5 Far Detector Building Outfitting	0	0	(84)	0	0%	84	-100%	1.00	0.00	3,887,423	3,887,423	3,982,935	0	0%	(95,512)	-2%	1.00	0.98	3,887,423
2.1.6 Transition Support Tasks	0	0	0	0	0%	0	0%	1.00	1.00	192,234	192,234	196,559	0	0%	(4,325)	-2%	1.00	0.98	192,234
2.1.7 Block Pivotar Assembly	0	0	0	0	0%	0	0%	1.00	1.00	423,348	423,348	426,016	0	0%	(2,668)	-1%	1.00	0.99	423,348
2.10 NOvA Project Management	144,442	144,442	155,518	0	0%	(11,075)	-8%	1.00	0.93	10,490,095	10,490,095	9,382,650	0	0%	1,107,446	11%	1.00	1.12	11,298,232
2.2.1 Mineral Oil	440,873	431,926	459,504	(8,947)	-2%	(27,578)	-6%	0.98	0.94	7,122,729	7,498,757	7,730,641	376,028	5%	(231,884)	-3%	1.05	0.97	11,855,232
2.2.2 Pseudocumene	58,582	108,451	109,132	49,869	85%	(681)	-1%	1.85	0.99	847,359	997,561	957,242	150,202	18%	40,319	4%	1.18	1.04	1,505,129
2.2.3 Waveshifters and Stadis 425	0	0	0	0	0%	0	0%	1.00	1.00	3,426,938	3,426,938	3,437,991	0	0%	(11,053)	-0%	1.00	1.00	3,426,938
2.2.4 Blending	76,249	166,623	154,888	90,374	119%	11,735	7%	2.19	1.08	2,011,615	1,773,151	1,746,922	(238,464)	-12%	26,229	1%	0.88	1.02	2,777,669
2.2.5 Transport - Liquid Scintillator	60,099	112,341	131,517	52,242	87%	(19,176)	-17%	1.87	0.85	854,701	657,693	628,163	(197,009)	-23%	29,530	4%	0.77	1.05	1,469,592
2.2.6 Management - Liquid Scintillator - Construction	2,426	2,426	0	0	0%	2,426	100%	1.00	N/A	117,653	117,653	50,209	0	0%	67,444	57%	1.00	2.34	125,333
2.3.1 Procurement - WLS Fiber	0	0	0	0	0%	0	0%	1.00	1.00	84,374	84,374	83,367	0	0%	1,008	1%	1.00	1.01	84,374
2.3.2 Production - WLS Fiber	0	3,055	4,683	3,055	100%	(1,627)	-53%	N/A	0.65	12,821,723	12,815,463	13,136,761	(6,259)	-0%	(321,297)	-3%	1.00	0.98	12,821,723
2.3.3 Management - WLS Fiber - Construction	0	0	4,400	0	0%	(4,400)	-100%	1.00	0.00	37,646	37,646	20,898	0	0%	16,748	44%	1.00	1.80	37,646
2.3.4 Additional WLS Fiber-related Tasks	0	0	0	0	0%	0	0%	1.00	1.00	95,643	94,040	96,555	(1,603)	-2%	(2,515)	-3%	0.98	0.97	95,643
2.4.1 Procurement - PVC Extrusions	0	0	0	0	0%	0	0%	1.00	1.00	178,037	178,037	385,900	0	0%	(207,863)	-117%	1.00	0.46	178,037
2.4.2 Extrusion Pre-Production	0	0	0	0	0%	0	0%	1.00	1.00	1,342,931	1,342,931	1,340,162	0	0%	2,770	0%	1.00	1.00	1,342,931
2.4.3 Extrusion Production	281,439	608,605	598,964	327,167	116%	9,642	2%	2.16	1.02	25,983,531	24,146,135	25,031,850	(1,837,396)	-7%	(885,715)	-4%	0.93	0.96	28,307,045
2.4.4 Production Quality Assurance and Extrusion Evaluation	20,831	20,831	24,774	0	0%	(3,943)	-19%	1.00	0.84	1,138,784	1,138,784	1,085,730	0	0%	53,054	5%	1.00	1.05	1,229,046
2.4.5 Shipping & Handling - PVC Extrusions	16,472	15,060	(25,463)	(1,412)	-9%	40,524	269%	0.91	-0.59	1,330,376	1,325,970	1,029,502	(4,406)	-0%	296,469	22%	1.00	1.29	1,361,835
2.4.6 Management - PVC Extrusions - Construction	11,833	11,833	8,121	0	0%	3,712	31%	1.00	1.46	745,425	745,425	578,608	0	0%	166,817	22%	1.00	1.29	786,737
2.5.1 End Seals	0	0	39,246	0	0%	(39,246)	-100%	1.00	0.00	2,160,429	2,010,210	1,946,469	(150,218)	-7%	63,741	3%	0.93	1.03	2,160,429
2.5.2 Optical Connector Production	0	0	0	0	0%	0	0%	1.00	1.00	123,516	123,516	24,387	0	0%	99,129	80%	1.00	5.06	123,516
2.5.3 Module Production	580,899	742,816	537,103	161,917	28%	205,714	28%	1.28	1.38	15,073,676	15,088,056	12,232,152	14,381	0%	2,855,905	19%	1.00	1.23	19,034,413
2.5.4 Management - PVC Modules - Construction	35,486	35,486	6,870	0	0%	28,616	81%	1.00	5.17	1,694,784	1,694,784	1,337,373	0	0%	357,410	21%	1.00	1.27	2,028,201
2.6.1 APD Module Production	262,964	122,225	115,968	(140,739)	-54%	6,257	5%	0.46	1.05	4,214,633	4,205,493	4,020,893	(9,139)	-0%	184,600	4%	1.00	1.05	7,133,936
2.6.2 Readout - FEB	9,153	9,264	124,296	111	1%	(115,032)	-1,242%	1.01	0.07	2,823,970	2,658,135	2,424,127	(165,834)	-6%	234,008	9%	0.94	1.10	2,902,595
2.6.3 Readout Infrastructure	56,052	112,083	41,847	56,031	100%	70,236	63%	2.00	2.68	2,691,884	2,551,750	3,014,476	(140,134)	-5%	(462,726)	-18%	0.95	0.85	2,857,305
2.6.4 Management - Electronics - Construction	273	273	2,069	0	0%	(1,796)	-659%	1.00	0.13	69,068	69,068	55,787	0	0%	13,281	19%	1.00	1.24	-757,493
2.7.1 DAQ Software	1,453	3,017	4,352	1,564	108%	(1,334)	-44%	2.08	0.69	769,023	658,653	843,052	(110,370)	-14%	(184,398)	-28%	0.86	0.78	774,561
2.7.10 DAQ - Ops	18,586	18,586	(2,400)	0	0%	20,986	113%	1.00	-7.74	125,697	125,697	239	0	0%	125,459	100%	1.00	526.88	189,543
2.7.2 DAQ Hardware	(148)	8,060	12,635	8,207	-5,560%	(4,575)	-57%	-54.60	0.64	2,303,346	2,020,095	2,405,988	(283,251)	-12%	(385,893)	-19%	0.88	0.84	2,457,851
2.7.3 Integration - DAQ	1,217	1,217	7,654	0	0%	(6,437)	-529%	1.00	0.16	535,625	419,017	673,464	(116,608)	-22%	(254,447)	-61%	0.78	0.62	553,239
2.7.4 Detector Control System	(62)	(62)	15,990	0	0%	(16,053)	25,692%	1.00	0.00	637,320	616,428	774,285	(20,892)	-3%	(157,857)	-26%	0.97	0.80	637,320
2.7.5 Management - DAQ - Construction	0	0	0	0	0%	0	0%	1.00	1.00	27,133	27,133	9,009	0	0%	18,123	67%	1.00	3.01	27,133
2.8.1 Near Detector Site Preparation	44,906	1,233	103,220	(43,672)	-97%	(101,986)	-8,269%	0.03	0.01	10,496,384	10,491,011	10,680,506	(5,373)	-0%	(189,496)	-2%	1.00	0.98	10,496,384
2.8.2 Mechanical Construction and Installation - ND Assembly	0	0	(3)	0	0%	3	-100%	1.00	0.00	386,488	386,488	837,865	0	0%	(451,377)	-117%	1.00	0.46	386,488
2.8.3 Liquid Scintillator Filling Equipment - ND Assembly	7,339	37,397	12,358	30,058	410%	25,039	67%	5.10	3.03	73,846	46,303	20,750	(27,542)	-37%	25,553	55%	0.63	2.23	73,846
2.8.4 Installation Coordination - Near Detector Assembly	9,631	0	79	(9,631)	-100%	(79)	-100%	0.00	0.00	9,631	0	79	(9,631)	-100%	(79)	-100%	0.00	0.00	46,585
2.8.5 Management - Near Detector Assembly - Construction	4,318	4,318	19,184	0	0%	(14,866)	-344%	1.00	0.23	164,346	164,346	266,162	0	0%	(101,816)	-62%	1.00	0.62	146,379
2.8.6 Underground Near Detector Design	1,451	11,604	41,931	10,153	700%	(30,327)	-261%	8.00	0.28	313,631	303,728	582,994	(9,903)	-3%	(279,267)	-92%	0.97	0.52	318,778
2.8.7 Underground Near Detector Assembly	63,417	121,227	193,594	57,810	91%	(72,367)	-60%	1.91	0.63	399,622	288,764	409,622	(110,858)	-28%	(120,858)	-42%	0.72	0.70	646,750
2.8.8 Underground Near Detector Installation	14,697	84,236	84,107	69,539	473%	128	0%	5.73	1.00	182,661	109,887	91,990	(72,774)	-40%	17,896	16%	0.60	1.19	238,244
2.9.1 Mechanical Systems - Far Detector Assembly	5,433	5,782	(99)	350	6%	5,882	102%	1.06	-58.20	4,367,193	4,367,193	7,557,860	0	0%	(3,190,667)	-73%	1.00	0.58	4,399,513
2.9.2 Detector Infrastructure - Far Detector Assembly	7,398	60,575	1,822	53,178	719%	58,753	97%	8.19	33.24	1,033,885	764,770	822,931	(269,115)	-26%	(58,161)	-8%	0.74	0.93	1,044,730
2.9.3 Scintillator Filling Equipment - Far Detector Assembly	0	0	(1,591)	0	0%	1,591	-100%	1.00	0.00	777,534	777,534	761,974	0	0%	15,560	2%	1.00	1.02	777,534
2.9.4 Block Assembly and Installation - Far Detector Assembly	1,011,541	491,570	385,565	(519,971)	-51%	106,005	22%	0.49	1.27	10,144,142	8,925,085	7,584,056	(1,219,057)	-12%	1,341,029	15%	0.88	1.18	13,242,707
2.9.5 Management - Far Detector Assembly - Construction	32,718	30,462	27,378	(2,256)	-7%	3,084	10%	0.93	1.11	1,933,292	1,923,799	2,012,855	(9,492)	-0%	(89,055)	-5%	1.00	0.96	2,268,665
2.9.6 Other University of Minnesota FD Assembly-Related Activities	31,222	31,967	32,427	746	2%	(459)	-1%	1.02	0.99	743,732	744,749	833,482	1,017	0%	(88,733)	-12%	1.00	0.89	843,641
R&D SubTotal (WBS 1.0-1.9)	(848)	(848)	3,924	0	0%	(4,772)	563%	1.00	-0.22	31,353,155	31,353,155	34,635,532	0	0%	(3,282,377)	-10%	1.00	0.91	31,353,155
Const. SubTotal (WBS 2.0-2.10)	3,278,730	3,812,649	3,721,938	533,919	16%	90,710	2%	1.16	1.02	210,245,364	205,750,912	214,287,506	(4,494,452)	-2%	(8,536,593)	-4%	0.98	0.96	231,105,741
Project Total	3,277,882	3,811,801	3,725,863	533,919	16%	85,938	2%	1.16	1.02	241,598,519	237,104,067	248,923,037	(4,494,452)	-2%	(11,818,970)	-5%	0.98	0.95	262,458,895

Blue means Closed

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DOE gets this for PARS, along with every Variance report

Variance Analyses

- NOTE: signatures are electronic
  - See CAM notebooks
  - For the Project Manager WBS, Greg Bock approves by email before it is final to DOE

From: Gregory J Bock
Sent: Tuesday, July 23, 2013 6:40 PM
To: John W Cooper
Cc: Halley A Brown; John W Cooper
Subject: Re: Please approve NOvA Proj Man VARs for June 2013

Approved

Sent from my iPhone

On Jul 23, 2013, at 6:19 PM, "John W Cooper" <jcooper@fnal.gov> wrote:

<VAR-Jun13_for_2.10_NOvA_Project_Management.pdf>
<VAR-HRs_Jun13_for_2.10_NOvA_Project_Management.pdf>

NOVA Document 3443-v112
[NOvA DocDB Home]

CAM Notebook for 2.10
(Document Status: Approved)

Document #: NOVA-doc-3443-v112
Document type: CAM notebook
Submitted by: Elaine McChaskey
Updated by: John W. Cooper
Document Created: 30 Oct 2008, 10:35
Contents Revised: 23 Jul 2013, 18:17
DB Info Revised: 23 Jul 2013, 18:17
Last Signed: 23 Jul 2013, 18:18

Update Document
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Add Files
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Abstract:
This document contains files or links to other files in NOVA-docdb that pertain to this control account.

Files in Document:
- June HR Variance Analysis Report PFD (VAR-HRs_Jun13_for_2.10_NOvA_Project_Management.xls, 34.5 kB)
- June Variance Analysis Report PFD (VAR-Jun13_for_2.10_NOvA_Project_Management.xls, 35.0 kB)

Get all files as tar.gz, zip.

Topics:
- Project Management

Authors:
- John W. Cooper

Keywords:
control_account

Notes and Changes:
final VARs for June 2013 added

Related Documents:
- NOVA-doc-9340: CR646- Fermilab FY13 Mid-Year Labor Burden and Indirect Rate adjustment
- NOVA-doc-8592: CR610 - Add Budget and Modify Budget Spreads for FY14 Project Management Labor and M&S Under WBS 2.10
- NOVA-doc-8264: CR594 - FY13 PROVISIONAL FNALBURDEN RATE UPDATE
- NOVA-doc-8211: CR586 - Contingency Recovery
- NOVA-doc-8006: CR574 - Adjust L2 Milestone Date for Decision Point on Procurement of Additional APDs
- NOVA-doc-7630: CR533 FY12 FNAL Burden Rate change published June-2012
- NOVA-doc-7146: CR472 - Update L3 Milestone Date for Start of Accelerator Shutdown
- NOVA-doc-6231: CR360 - Labor Budget Adjustments for FY12-FY14 Project Management Activities
- NOVA-doc-5688: CR281 - Add Certain Review and Approval Milestones Prior to CD-4 Approval
- NOVA-doc-5611: CR266 for FNAL & ANL wage freeze and revised FY11 FNAL burden rates.
- NOVA-doc-5379: CR234 for NOvA FY11 rates
- NOVA-doc-5052: CR185 - Nova Project Management Effort and Budget Adjustments for FY11-FY14
- NOVA-doc-4329: CR109 - Update Cobra Rates to FY10 Fermilab and FESS Chargeback Rates
- NOVA-doc-4240: CR100 - ANU Replan
- NOVA-doc-4234: CR097 - Factory Machines Engineering Review
- NOVA-doc-4171: CR087 - Add L1 & L2 Scientists to Project Budgets
- NOVA-doc-3956: CR075 - Update to FNAL OH Rates, FESS Chargeback Rates, UMN Rates
- NOVA-doc-3644: CR062 - HU Engineering Labor Subsidy Change
- NOVA-doc-3075: CR027 - Move FY08 Management Labor from R&D to MIE
- NOVA-doc-3030: CR024 - FY08 Subproject Management Tasks Changes
- NOVA-doc-2984: CR014 - OP Errata - WBS 2.10 - Add Admin Asst
- NOVA-doc-253: NOvA WBS Dictionary
- NOVA-doc-2573: WBS Level 3 Managers
- NOVA-doc-3447: NOvA Dollarized RAM
- NOVA-doc-2638: Nova WBS Level 2 Milestone Gantt Charts By Control Account - Mar09
- NOVA-doc-2844: Monthly Schedule Snapshots with Progress Information - June 2013
- NOVA-doc-3372: Monthly Contract Performance Reports (Approved - 22 Jul 2013)
- NOVA-doc-2823: Work Authorization Document for Control Account 2.10 (Approved - 10 Jul 2013)
- NOVA-doc-6344: CR372 - Date Adjustments to Selected L2 and L3 ANU Milestones
- NOVA-doc-6667: CR413 - Delay L2 Milestone Date - "Decision point for buying additional APDs"
- NOVA-doc-6771: CR422 - FY12 updates to OH rates, including the addition of the new TSCS indirect burden

Signoffs:
- John W. Cooper — Remove Signature

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