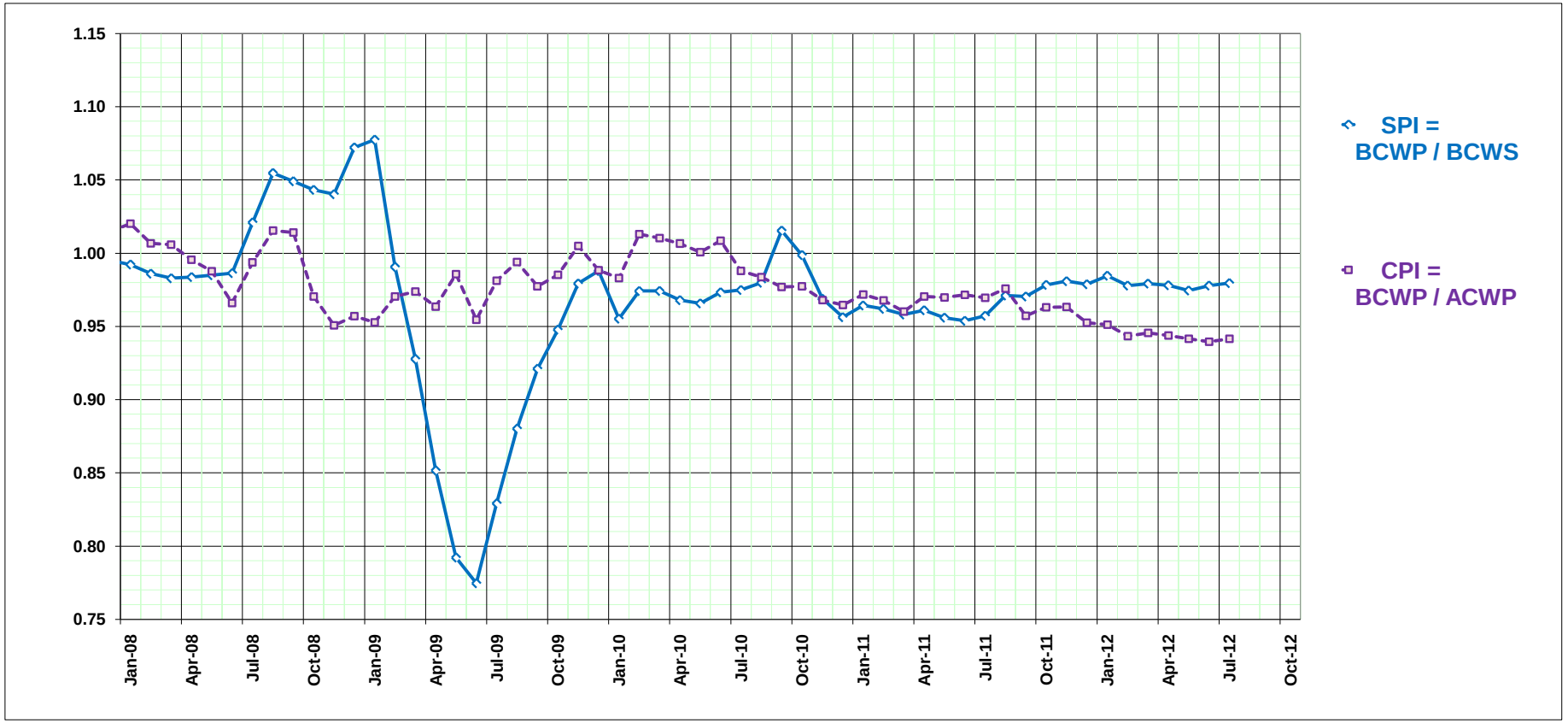
Project Status

John Cooper
Project Manager

EVMS Reporting Overview

- Data now available through July 2012
  - SPI = **0.980**, compare to 0.978 in June, 0.975 in May, 0.978 in Apr
  - CPI = **0.941,** compare to 0.940 in June, 0.942 in May, 0.944 in Apr
  - CPI ticked up a bit



CPR1 July 2012

COST PERFORMANCE REPORT
FORMAT 1 - WORK BREAKDOWN STRUCTURE

CONTRACTOR	CONTRACT	PROGRAM	REPORT PERIOD
NAME	NAME	NAME	FROM 01-July-2012
Fermi National Accelerator Laboratory		NOvA project	TO 31-July-2012

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$k	1,317	1,350	1,868	33	(518)	27,362	25,248	32,693	(2,114)	(7,445)	34,982	40,909	(5,927)
CTC-FndSrcTotals:	1,317	1,350	1,868	33	(518)	27,362	25,248	32,693	(2,114)	(7,445)	34,982	40,909	(5,927)
DC DOE-CA													
2.1 Site and Building													
Fully Burdened AY$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$k	0	0	1	0	(1)	7,025	7,025	6,615	0	410	7,025	6,615	410
CTC-FndSrcTotals:	0	0	1	0	(1)	7,025	7,025	6,615	0	410	7,025	6,615	410
DE DOE-DET MIE													
2.1 Site and Building													
Fully Burdened AY$k	8	6	1	(3)	5	7,062	7,058	6,052	(5)	1,006	7,131	6,125	1,006
2.10 Project Management - Nova Project - Construction													
Fully Burdened AY$k	201	201	201	0	1	8,447	8,447	7,333	0	1,114	11,699	10,594	1,105
2.2 Liquid Scintillator													
Fully Burdened AY$k	58	295	279	237	16	9,254	9,787	9,910	533	(123)	21,985	22,114	(128)
2.3 WLS Fiber													
Fully Burdened AY$k	352	400	375	47	25	10,846	11,619	11,925	773	(306)	12,838	13,129	(291)
2.4 PVC Extrusions													
Fully Burdened AY$k	1,079	895	925	(184)	(31)	18,440	18,709	19,058	269	(349)	29,974	30,204	(230)
2.5 PVC Modules													
Fully Burdened AY$k	569	609	259	40	350	11,868	11,779	9,717	(89)	2,062	19,803	17,754	2,049
2.6 Electronics													
Fully Burdened AY$k	41	106	387	65	(282)	7,331	5,736	5,726	(1,595)	10	12,313	12,366	(52)
2.7 DAQ													
Fully Burdened AY$k	148	52	113	(96)	(61)	3,781	2,943	3,778	(838)	(835)	4,488	5,292	(803)
2.8 Near Detector Assembly													
Fully Burdened AY$k	862	905	1,006	42	(101)	3,643	3,571	4,438	(72)	(868)	11,133	12,038	(905)
2.9 Far Detector Assembly													
Fully Burdened AY$k	783	680	271	(103)	409	10,280	9,283	11,607	(996)	(2,323)	22,640	25,311	(2,671)
CTC-FndSrcTotals:	4,101	4,147	3,816	46	331	90,951	88,931	89,543	(2,020)	(612)	154,005	154,927	(922)

Less negative !

Positive !

CPR1 July 2012 continued

COST PERFORMANCE REPORT

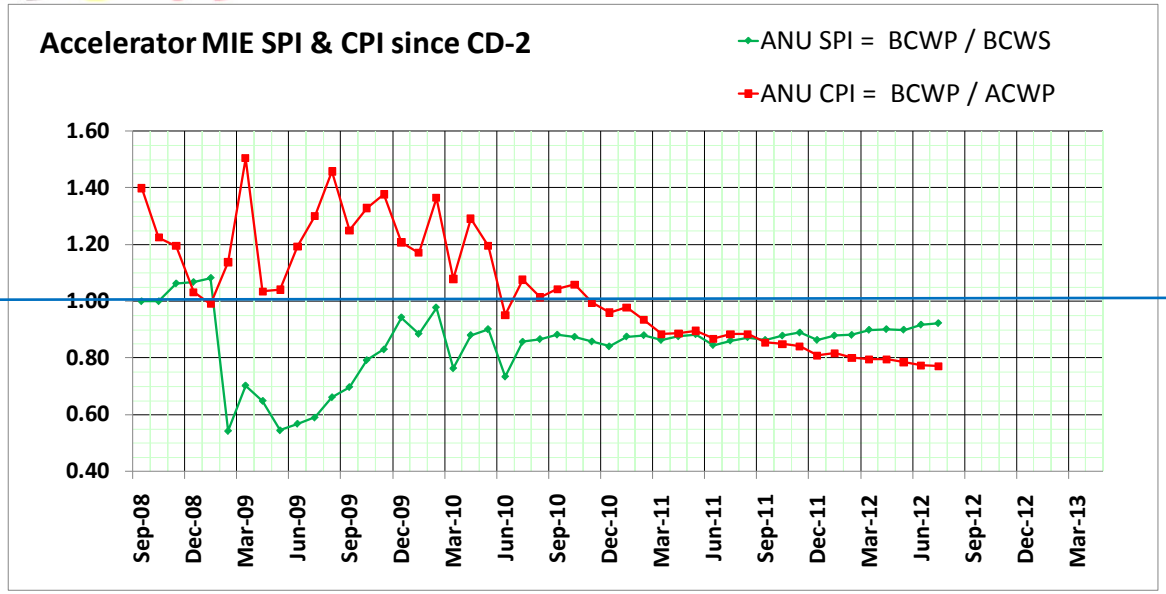
CONTRACTOR											REPORT PERIOD		
NAME											FROM 01-July-2012		
Fermi National Accelerator Laboratory											TO 31-July-2012		
PERFORMANCE DATA													
CTC-FndSrc	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
CTC[2]			ACTUAL					ACTUAL					
Results...	BUDGETED COST		COST	VARIANCE		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)
DO DOE-ACEL OPS													
1.0 ANU R&D													
Fully Burdened AY$k	308	413	216	106	197	1,268	1,607	1,162	339	445	1,816	1,372	444
CTC-FndSrcTotals:	308	413	216	106	197	1,268	1,607	1,162	339	445	1,816	1,372	444
DR DOE-POST CD-1 DET R&D													
1.1 Site and Building R&D													
Fully Burdened AY$k	0	0	0	0	0	3,630	3,630	3,168	0	462	3,630	3,168	462
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$k	0	0	(2)	0	2	1,369	1,369	2,083	0	(714)	1,369	2,083	(714)
1.5 PVC Module R&D													
Fully Burdened AY$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	(2)	0	2	15,067	15,067	19,347	0	(4,281)	15,067	19,347	(4,281)
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	5,726	5,910	5,898	184	11	185,533	181,738	193,033	(3,795)	(11,295)	256,755	266,843	(10,088)
Management Resrv.											21,245		
Total	5,726	5,910	5,898	184	11	185,533	181,738	193,033	(3,795)	(11,295)	278,000		

ANU even less negative with OPS $)

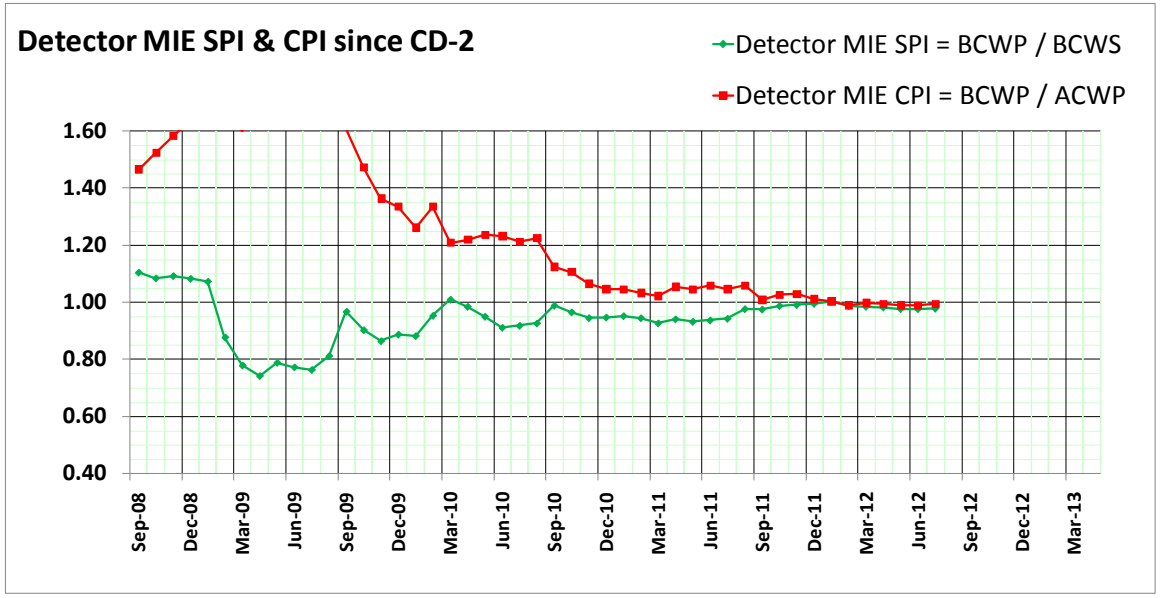
~ 47% ANU, 53% Det MIE

~62% ANU, 38% Det R&D

SPI & CPI for Active Work



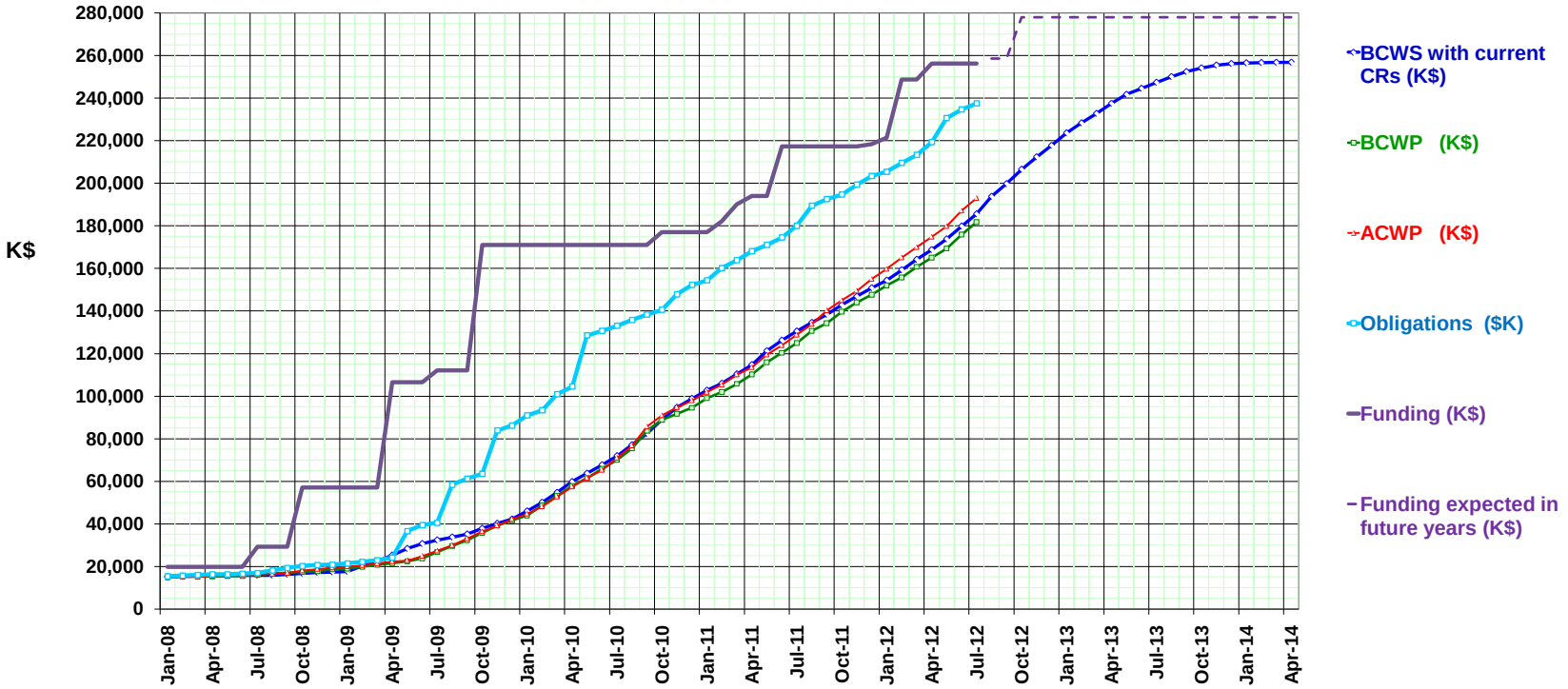
- ANU long slide down to CPI = 0.8 and below,
- Meanwhile the SPI trends up



- Detector still relatively constant CPI = 1.0, SPI = 1.0

EVMS Reporting Overview

- Basic data in BCWS, BCWP, ACWP, **Funding** & **Obligations** through July 2012
  - BCWS = Budgeted cost of work Scheduled
  - BCWP = Budgeted cost of work Performed
  - ACWP = Actual cost of work Performed
- Project is 70.8 % complete (BCWP/BAC = 181.7 M$ / 256.8 M$)
  - BAC = Budget at Completion (using EAC, get 68.1%)
- Project is 92.4 % obligated (Obligations/BAC = 237.4 / 256.8)
  - EAC = Estimate at Completion (using EAC, get 89.0%)



AY$ by Level 2 with MIE/OPC split

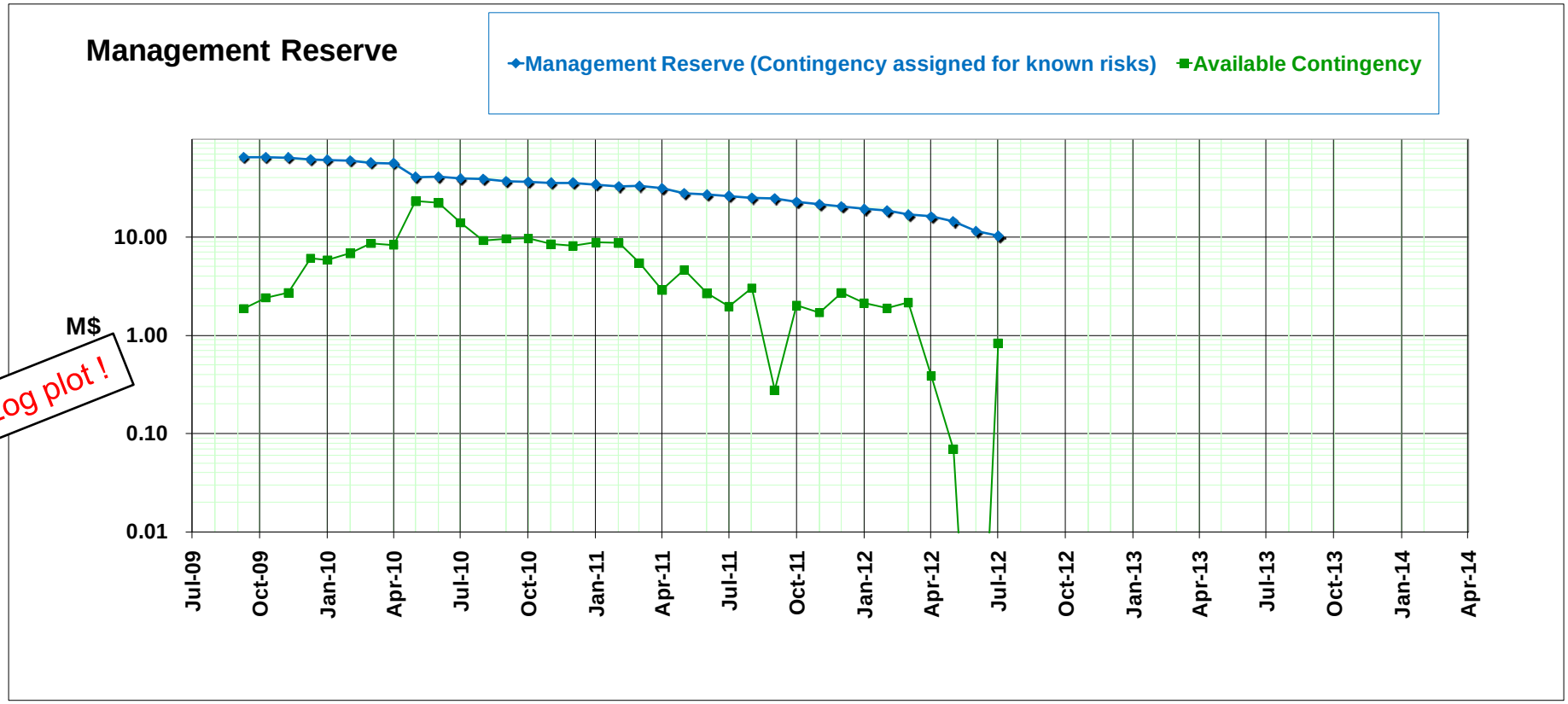
	WBS	Items	NOvA Costs to Date ($M) as of 31-July-2012	NOvA 's Cost Estimate AY $M (for August 1, 2012 to project end) Estimated Cost (with indirects) M&S	Labor[1]	Total	Mgmt Reserve Estimate M&S	Labor[1]	Total	Contingency % M&S	Labor[1]	Total	Total Cost
TEC	2.0	Accelerator & NuMI Upgrades	$ 32.7	$ 0.8	$ 7.4	$ 8.2	$ 0.3	$ 1.4	$ 1.7	40%	19%	21%	$ 42.6
	2.1	Far Detector Site and Building	$ 6.1	$ 0.1	$ 0.0	$ 0.1	$ -	$ 0.0	$ 0.0	0%	48%	1%	$ 6.1
	2.2	Liquid Scintillator	$ 9.9	$ 12.0	$ 0.2	$ 12.2	$ 1.9	$ 0.1	$ 2.0	16%	42%	16%	$ 24.1
	2.3	Wave-Length-Shifting Fiber	$ 11.9	$ 1.1	$ 0.1	$ 1.2	$ 0.0	$ 0.0	$ 0.0	0%	10%	1%	$ 13.1
	2.4	PVC Extrusions	$ 19.1	$ 10.7	$ 0.4	$ 11.1	$ 0.6	$ 0.1	$ 0.7	6%	19%	6%	$ 30.9
	2.5	PVC Modules	$ 9.7	$ 2.9	$ 5.1	$ 8.0	$ 0.2	$ 0.8	$ 1.0	8%	15%	12%	$ 18.7
	2.6	Electronics Production	$ 5.7	$ 5.7	$ 0.9	$ 6.6	$ 0.4	$ 0.3	$ 0.6	7%	28%	10%	$ 13.0
	2.7	Data Acquisition System	$ 3.8	$ 0.7	$ 0.8	$ 1.5	$ 0.2	$ 0.2	$ 0.4	24%	27%	26%	$ 5.7
	2.8	Near Detector Assembly	$ 4.4	$ 7.2	$ 0.4	$ 7.6	$ 0.0	$ 0.1	$ 0.2	0%	35%	2%	$ 12.2
	2.9	Far Detector Assembly	$ 11.6	$ 6.0	$ 7.7	$ 13.7	$ 1.2	$ 2.5	$ 3.7	19%	33%	27%	$ 29.0
	2.10	Project Management	$ 7.3	$ 0.1	$ 3.1	$ 3.3	$ 0.0	$ -	$ 0.0	23%	0%	1%	$ 10.6
		Subtotal Construction	**$ 122.2**	**$ 47.4**	**$ 26.2**	**$ 73.6**	**$ 4.8**	**$ 5.4**	**$ 10.3**	**10%**	**21%**	**14%**	**$ 206.1**
OPC		**R&D - Accelerator**	$ 6.6	$ -	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	$ 6.6
		R&D - Detector	$ 28.1	$ -	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	$ 28.1
		Cooperative Agreement	$ 34.9	$ -	$ -	$ -	$ -	$ -	$ -	0%	0%	0%	$ 34.9
		Operating	$ 1.2	$ 0.0	$ 0.2	$ 0.2	$ 0.0	$ 0.0	$ 0.0	38%	12%	17%	$ 1.4
		Total OPC:	**$ 70.8**	**$ 0.0**	**$ 0.2**	**$ 0.2**	**$ 0.0**	**$ 0.0**	**$ 0.0**	**38%**	**12%**	**17%**	**$ 71.0**
		Available Contingency							**$ 0.832**				**$ 0.8**
		TPC:	**$ 193.0**	**$ 47.5**	**$ 26.3**	**$ 73.8**	**$ 4.9**	**$ 5.5**	**$ 11.2**	**10%**	**21%**	**15%**	**$ 278.000**

Contingency is up from 10.0 M$ in June (eliminated Block #29)

Contingency Status, July 2012

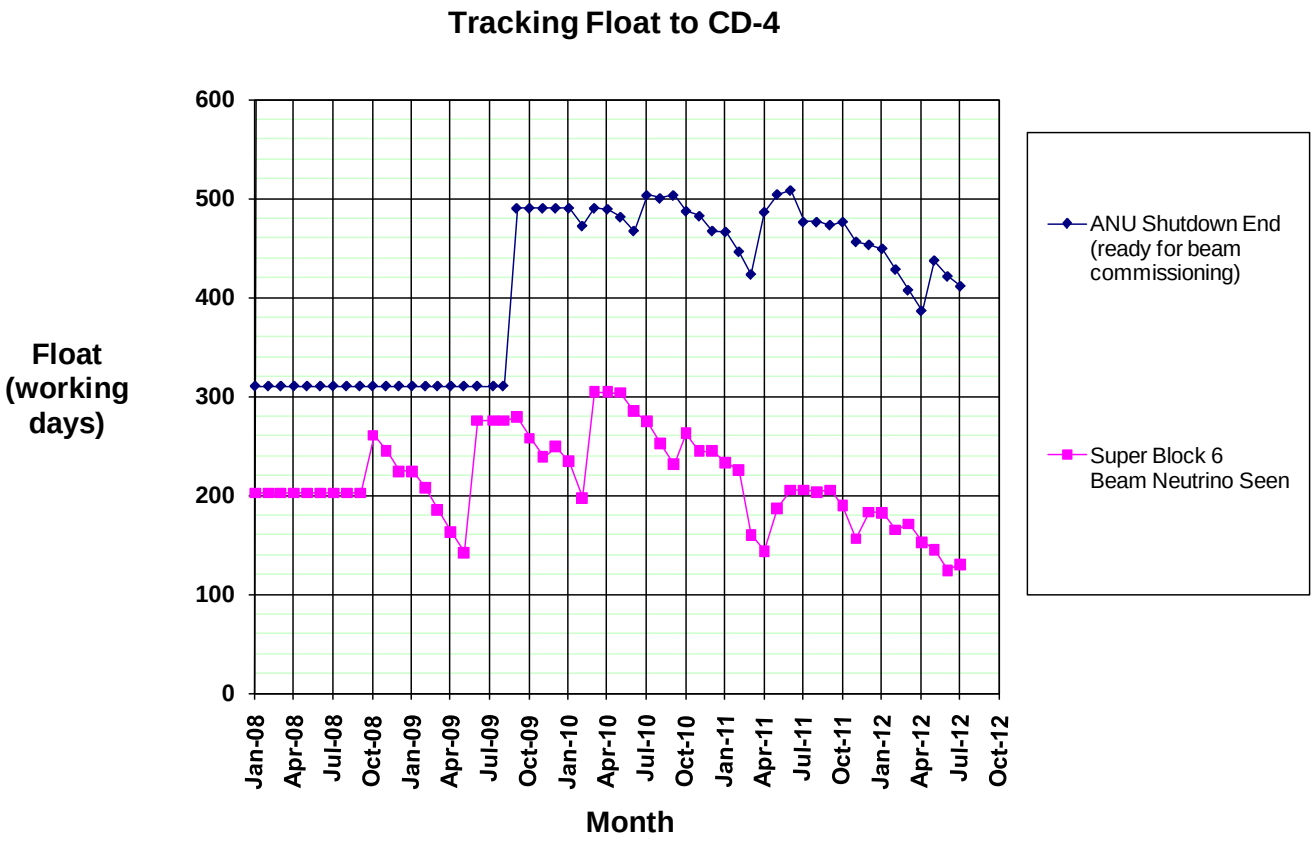
- Total Contingency is 11.1 M$ (Jun = 10.1, May= 14.6, Apr=16.6)
  - 15.1 % Contingency on remaining work (Estimated Cost is 73.8 M$)
  - 37.7 % on remaining Obligations (Obligations ahead of Costs)

- **Available Contingency = $ 0.832 M$ (Jun = (1.414), May = 0.069, Apr = 0.387)**
- Assigned Contingency (Management Reserve) is assigned according to our estimate of remaining risks ---- Project Manager in the process of evaluating the risks



Milestones: What about CD-4 ?

- **ANU lost 10 days of float in July -- Now at 411 days**
  - Will rework schedule: currently has kicker install followed by extraction line cable pulls and BPM installation, will reverse. Kicker and RF schedules still drive the float.
- **The Detector gained 6 days of float in July -- Now at 130 days**
  - Ash River assembly slipped 21, but dropping block #29 made up for delay.

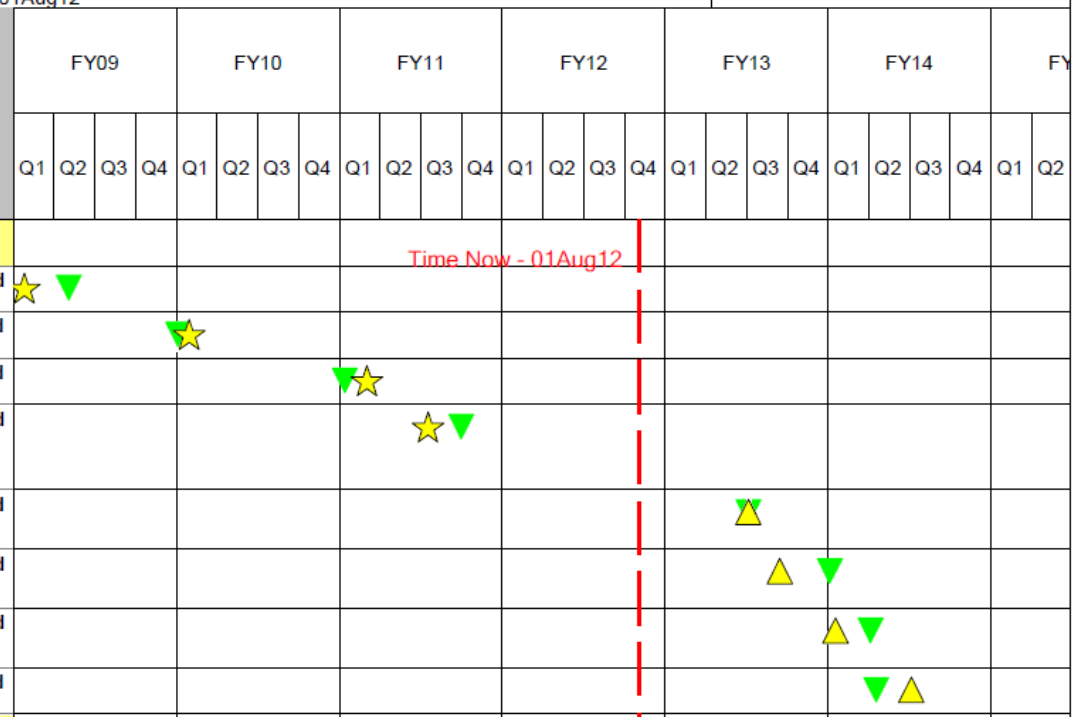


Milestones held by DOE - OHEP

Nova_Project
Milestone Gantt Chart
Nova_Milestones_L1_L2 = [BOOL.T] and ESDATE >= {10/1/08}
July 2012 Status
TimeNow: 01Aug12

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	01Apr13	04Apr13	-4d
NuMI neutrino event observed in Superblock 1	01Oct13	10Jun13	78d
Near detector completed and ready to operate	02Jan14	14Oct13	51d
14 kt installation completed	16Jan14	02Apr14	-53d



In a long two year gap with no L1 milestones, next is April 2013
No CRs in May, June, July

DOE Milestones – Fed Project Director

Nova_Project
Milestone Gantt Chart
Nova_Milestones_L1_L2 = [BOOL.T] and ESDATE >= {10/1/08}
May 2012 Status
TimeNow: 01Jun12

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 APDs	01Nov12	24Jul13	-180d
Decision point for buying additional extrusions, modules, mineral oil, pseudocumene	13Feb13	17Sep13	-151d
Far Detector extrusions for 14kt completed	14May13	08Aug13	-60d
MI Ring Modifications Ready for Beam Transport	01Jul13	10Apr13	56d
RR Modifications Ready for Beam Transport	01Jul13	10Apr13	56d
Ready to Commission Upgrades with Medium Energy Neutrino Beam	01Jul13	10Apr13	56d

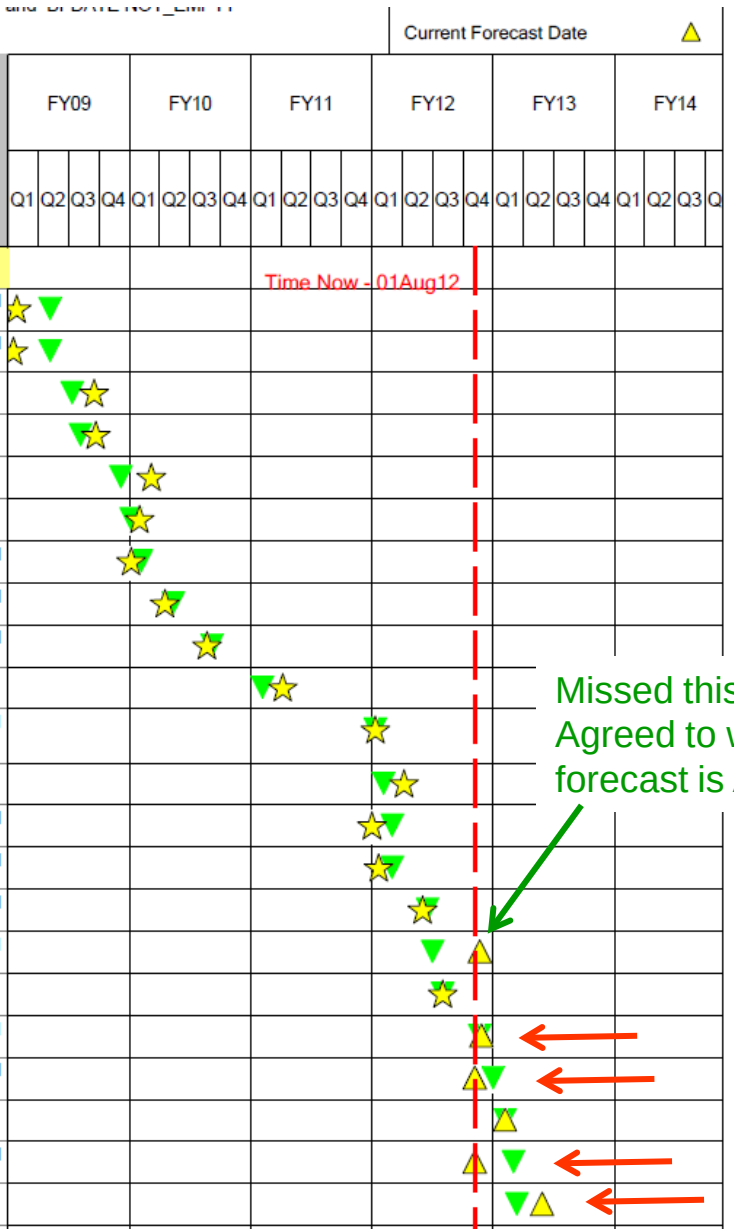
Will buy some, amount not known

Milestones held by Directorate

July 2012 Status
TimeNow: 01Aug12

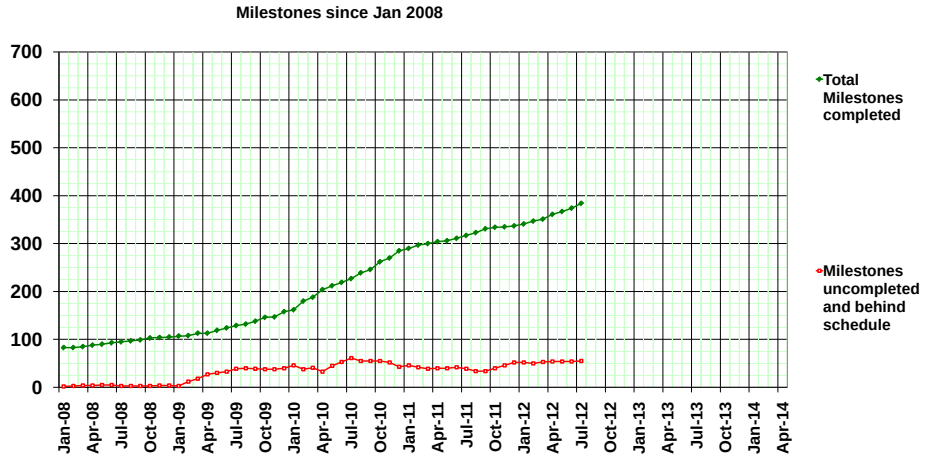
Current Forecast Date △

Activity ID	Activity Desc.	Baseline Date	Forecast or Actual Date	Baseline Variance
L.3 -- Fermilab Associate Director Milestone				
2.10.9.5	CD-3a Funds Available	02Feb09	24Oct08	63d
2.10.9.7	FY09 Funds Available	02Feb09	14Oct08	71d
2.10.10.3	2009 Shutdown Begun	06Apr09	15Jun09	-50d
2.10.9.24	Director's CD-3b Review	01May09	18Jun09	-34d
2.0.1.2.8.1	Gap Clearing/RR Inj Kicker Magnet Design Complete	01Sep09	01Dec09	-63d
2.10.9.6	CD-3b Funds Available	01Oct09	29Oct09	-21d
2.10.9.8	FY10 Funds Available	02Nov09	01Oct09	21d
2.3.2.1.6	WLS fiber production begins	09Feb10	12Jan10	18d
1.5.7.3.9	IPND block 4 module production completed	04Jun10	17May10	12d
2.10.9.9	FY11 Funds Available	01Nov10	03Jan11	-41d
2.1.2.5.23	Final acceptance/project completion - far detector building construction	10Oct11	10Oct11	-1d
2.10.9.10	FY12 Funds Available	01Nov11	03Jan12	-40d
2.0.3.3.4.1	NuMI Shielding Blocks & Carriage Complete	28Nov11	28Sep11	40d
2.0.3.3.4.3	NuMI Stripline Assembly Complete	28Nov11	19Oct11	25d
2.5.3.3.2.45.44	Far detector module assembly started	16Mar12	29Feb12	11d
2.7.2.1.2.8	Production data concentrators received	30Mar12	20Aug12	-100d
2.10.10.5	Accelerator Shutdown Begun	30Apr12	30Apr12	0
2.0.3.2.4.3	NuMI ME Target/Carrier/Baffle Assembly Complete	20Aug12	22Aug12	-2d
2.0.2.2.5.4	MI RF Cavities (2) Installation & Testing Complete	28Sep12	02Aug12	39d
2.10.9.11	FY13 Funds Available	01Nov12	01Nov12	0
2.0.4.3.13	ANU Shielding Assessment Updates Complete	30Nov12	01Aug12	84d
2.0.1.2.8.5	RR All Kicker Systems Ready for Beam	10Dec12	20Feb13	-47d



Analysis of all milestones

- **384 of 696 now complete**
  - 10 completed in July
- **Behind on 55**



Cumulative Tally as of 01Aug12
For Milestone Dates >= 12Apr07

Count of Milestone Description		
Computed Status	Milestone Level	Total
Complete	L.0	2
	L.1	7
	L.2	25
	L.3	19
	L.4	41
	L.5	290
Complete Total		384
Planned	L.0	1
	L.1	4
	L.2	9
	L.3	9
	L.4	41
	L.5	248
Planned Total		312
Grand Total		696

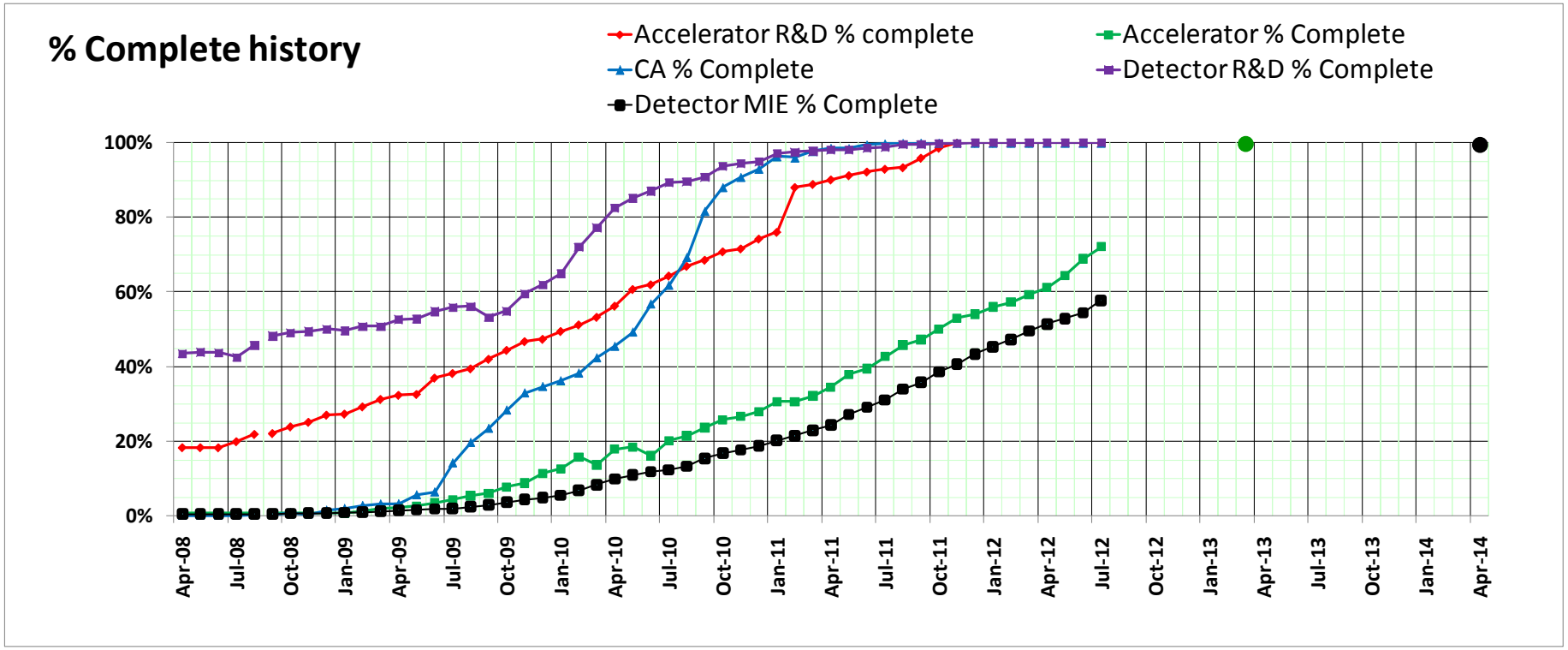
Slipping/Missed Milestones as of 01Aug12

Count of Milestone Description		
Computed Status	Milestone Level	Total
Planned	L.3	1
	L.4	5
	L.5	49
Planned Total		55

Milestones Completed in July 2012

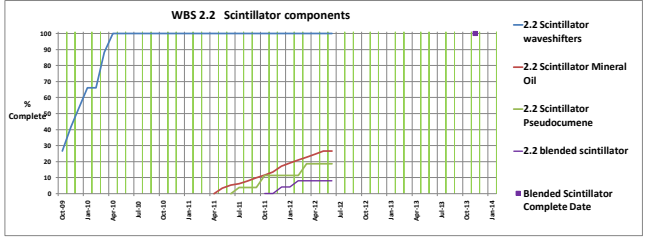
Count of Milestone Description		
Computed Status	Milestone Level	Total
Complete	L.2	1
	L.4	4
	L.5	5
Complete Total		10

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

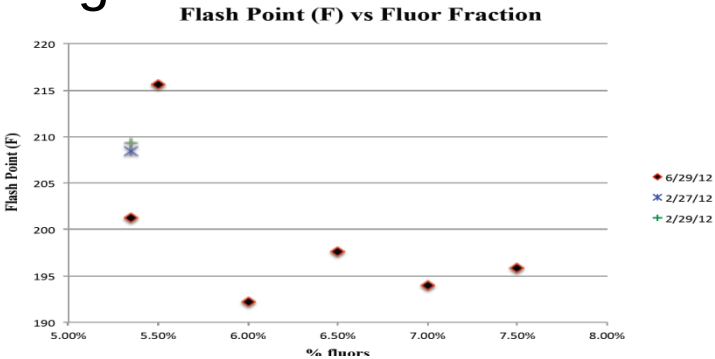


- Building & Detector R&D & ANU R&D are all done
- ANU at 72%, to be complete by ~ Mar 2013, slope has turned up
- Detector at 58%, to be complete by ~ April 2014

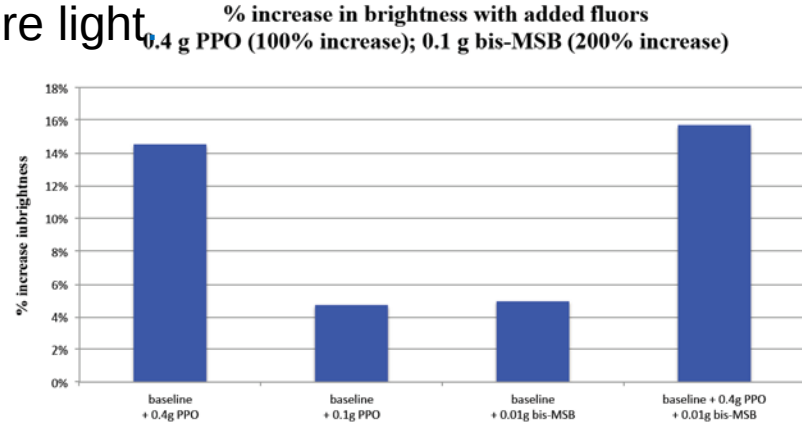
WBS 2.2 Scintillator



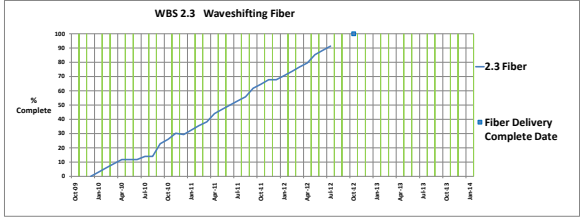
- No change since May
  - Our two scintillator storage tanks at Wolf Lake are full, 227,000 gallons
  - We have 2 pseudocumene tankers set aside at Lockport, IL as a buffer
  - We have a full mineral oil buffer tank (584,000 gallons) in Riverdale IL.
  - Waiting for shipments to Ash River before we can proceed
- Investigation since May IPR on adding more light
  - Tried samples with 5.5 - 7.5% pseudocumene
    - All had flash points below 200 deg F
    - Building Fire Prot. design does not allow this
    - This would also cause tankers to be transporting a hazardous liquid.
    - Gave up on more pseudocumene for more light



  - Tried adding PPO only
    - If we use all the PPO we own
    - We can add ~25% more everywhere
    - And get ~ 3% more light
    - We will do this, but it isn't enough to run APDs warm



WBS 2.3 Fiber



- We need 12,183 km of wavelength shifting fiber
- We have 11,130 km of fiber or 91% of the total needed.
  - Still on schedule to complete as planned.

- We have been looking at the waste rate in the Minneapolis module factory to see if we need to buy more fiber than in the current purchase order.
  - Crude Estimate:
  - Module factory used 5% of the fiber in startup, producing almost no good modules
  - Module factory continues wasting about 2.5% fiber on modules that don't pass specs
  - So we might need 7.5% more
  - Except we ordered 4% more than needed, so
  - So we might need 3.5 % more
  - Except we have downsized the detector since the Fiber Purchase Order from 30 blocks of 31 layers to 28 blocks of 32 layers. (930 → 896 layers)
  - This is a 3.8% gain in available fiber
  - So we need very little
  - Now checking a detailed calculation that we need 30 km for Far Detector + 187 km for the new 3 x 3 Near Detector

WBS 2.4 PVC Extrusions

- We have 10,101 good extrusions in hand of the 22,272 required
- **So we have 45% of the total needed.**
- Ran out of space to store extrusions in Minneapolis
  - Extrutech will store in Manitowoc until Minneapolis can ship to Ash River
    - Holds 46 stacks, will be full at end of September
  - Now contracting for space in Manitowoc for another 16 stacks
    - This holds us until mid-November
- June 1, 2012 contracted from 6 x 24 operations to 5 x 24 operations at Extrutech to slow down production a bit.
- PVC scrap rate fluctuates from 0 - 8% week by week,
  and is still consistent with our 6% plan

WBS 2.5 PVC Modules

- Module assembly at Minnesota has been divided into two parts:
  - 2–to–1 assembly of 2 extrusions into one module + cut to length
  - Final assembly with fiber, endcap, manifold, & all seals + pressure test

- **4,369 2-to-1s are done out of 11,136 needed. We have 39%.**
  - Have now assembled all the extrusions delivered to the factory.

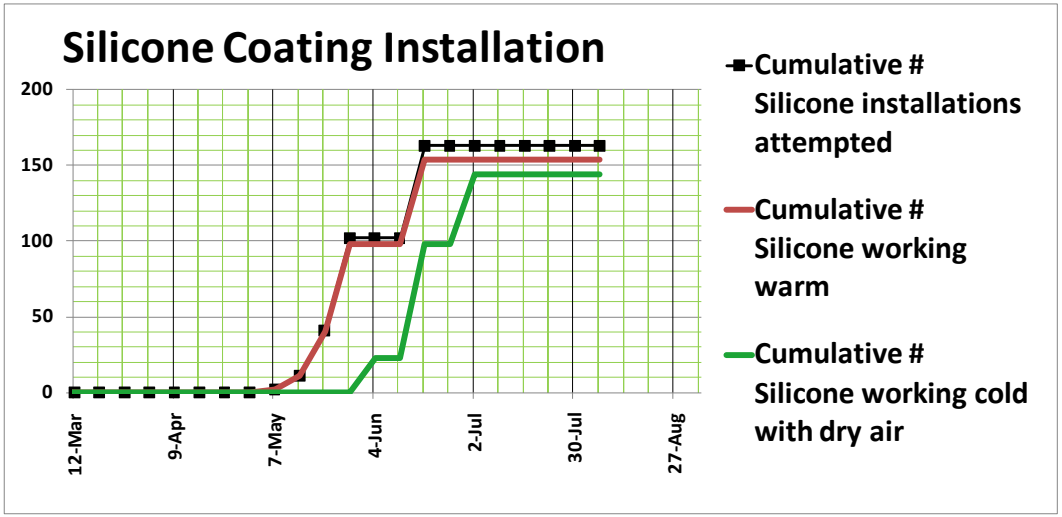
- **1,681 good final assembly modules are done out of 11,136 needed (15%) – enough for 4.4 blocks**
- **Scrap rate over the last 4 weeks is 2.1% (goal is 2%)**
  - Includes calling modules with visual fiber damage in only one of 32 cells **GOOD**.

PVC Modules: Scenes from the Minneapolis Factory

- 150,000 sq ft warehouse. 70 – 200 students.

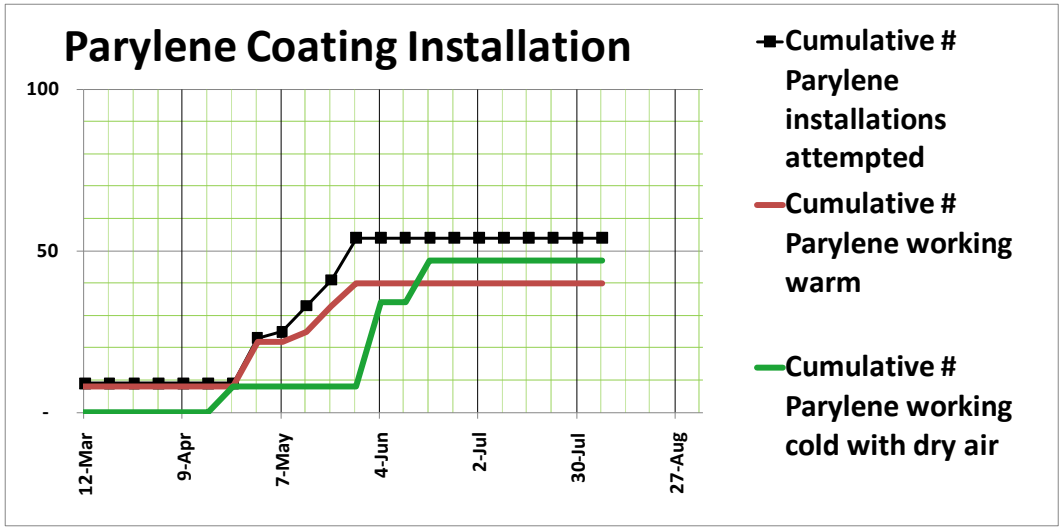
WBS 2.6 APD installation status

- We have installed 163 new APDs with Silicone coating



No change from 14 Aug IPR Review

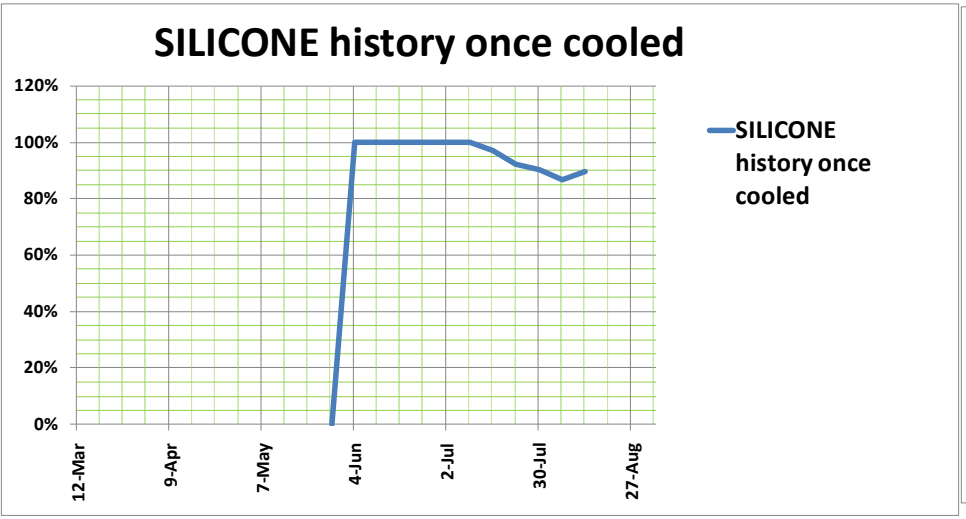
- We have installed 54 APDs with Parylene coating

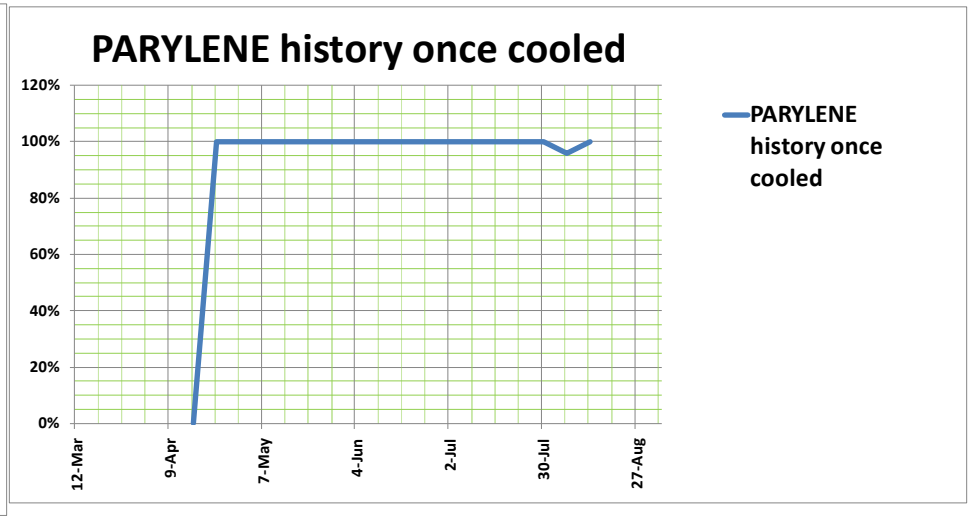


No change from 14 Aug IPR Review

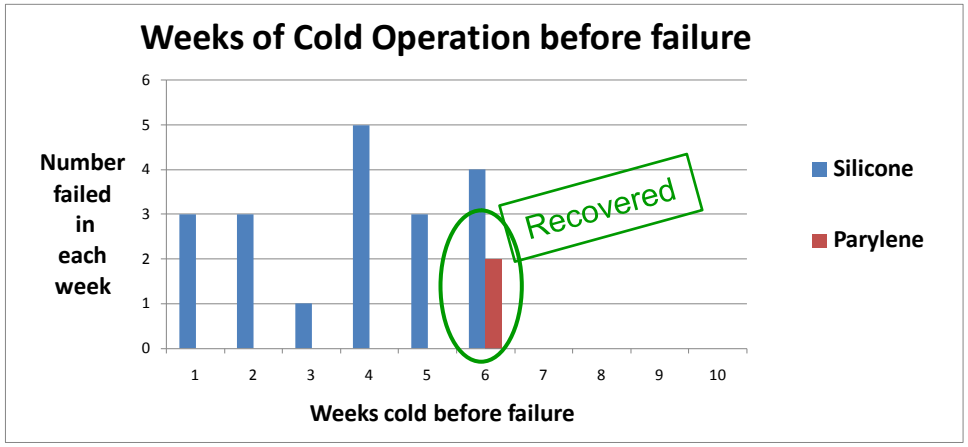
Installing ~ 40 more Parylene this week

Graphic version of Performance





- Several coincident glitches (dry air, DAQ) on Aug 1 led to 6 failures
- 5 of 6 recovered during week of Aug 6



No good data since 14 August.

Noise in DAQ, large numbers of APDs get declared bad then good on next scan.

Not yet resolved.

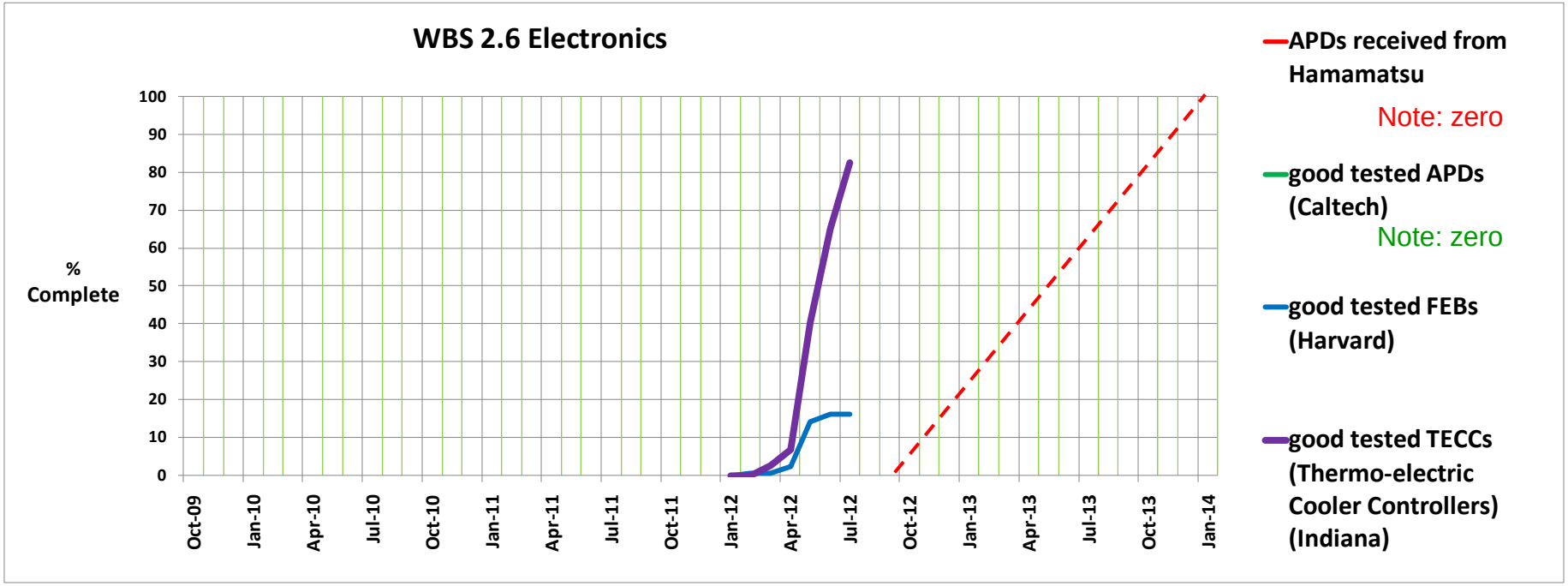
More on APDs

- We have asked Hamamatsu to begin deliveries of APDs with passivation but no other coating
  - They will start in about a month at a rate of 150 – 200 per week
  - We will get these coated with Parylene.
  - Hamamatsu cost is $335 apiece. (Was 330 uncoated, 372 coated)
- We can change to Silicone coating at any time and Hamamatsu would begin such deliveries about a month after our request.

- A Lehman recommendation was to test installation of 100 APDs on final module optical connectors
  - Have 32 such “snouts + optical connectors” at Fermilab
  - Will test to ~100 in batches of 32 once Hamamatsu delivers
  - Requires cooling water, dry air, FEBs, DCMS, full DAQ readout

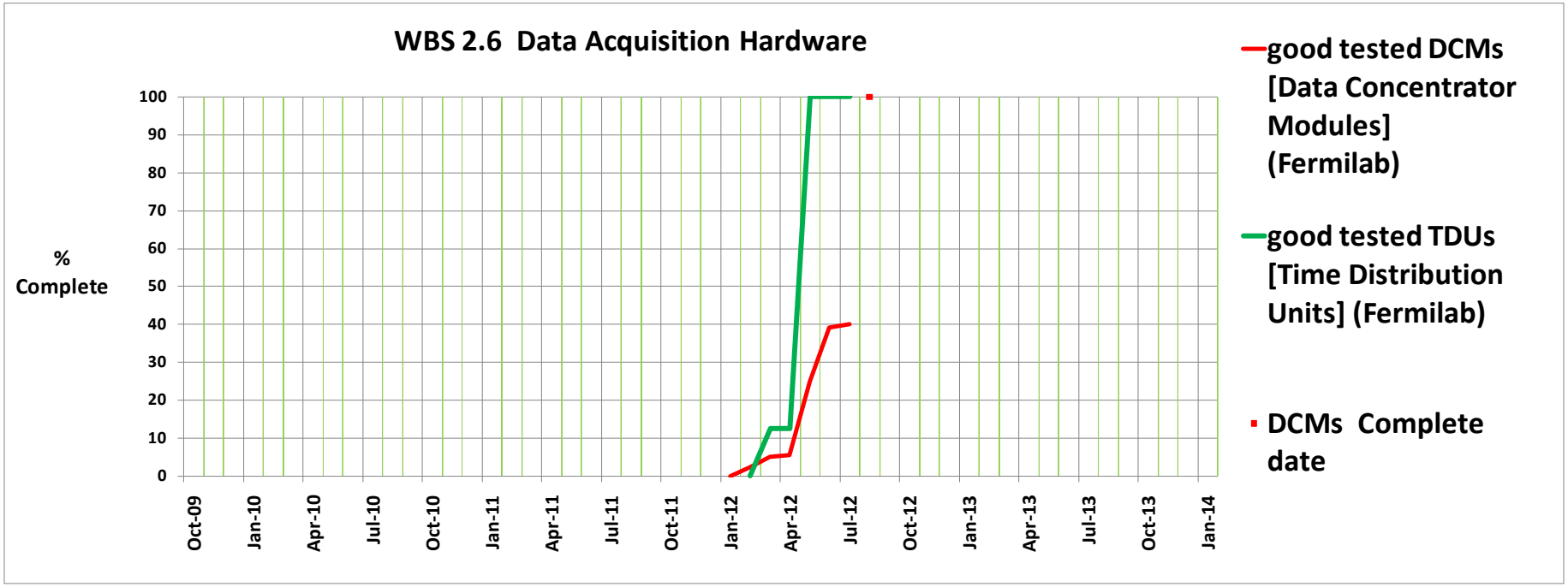
WBS 2.6 Electronics

- Front End Boards (FEBs) (Harvard) , need 11,136
  - 4171 delivered,
  - 1813 pass all tests (in progress) to date (14% of total required)
  - Testing was stopped in July waiting for vendor to resume deliveries.
- Thermo-electric Cooler Controllers (Indiana), need 11,136
  - 9183 pass all tests to date (83%)



WBS 2.7 Data Acquisition

- Data Concentrator Modules (DCMs), need ~ 200
  - Now have 80 final boards completely tested
  - Vendor resumed deliveries on the final group of 200 in late July
- Timing Distribution Units (TDUs), need ~32
  - Now have 14 final Master boards completely tested
  - Now have 46 final Slave boards completely tested



Ash River Assembly

Lifting Fixture

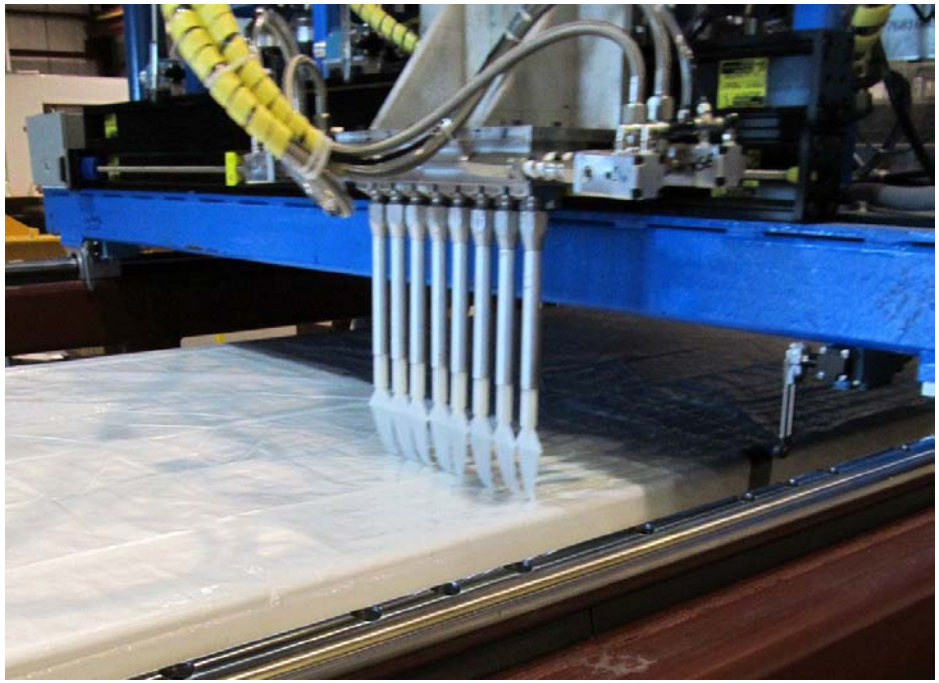
PVC Modules

Adhesive Dispenser

Alignment Poles

- Assembly area, viewed from the south

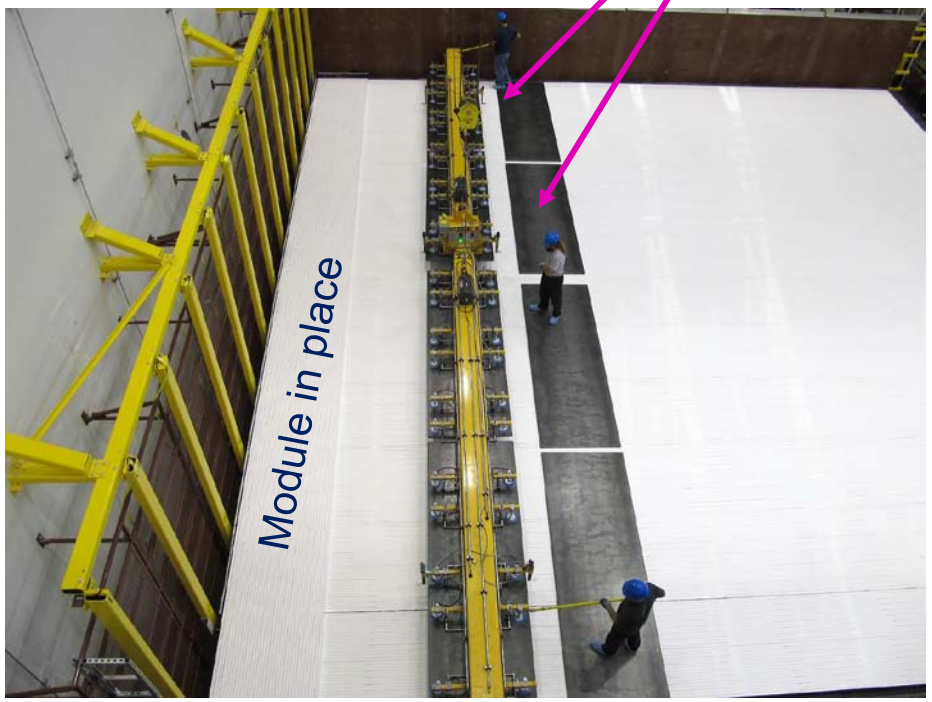
Adhesive Dispenser



- PVC Module is rotated within the dispenser
- Adhesive dispensing
  - 8 simultaneous beads, 4 passes per module

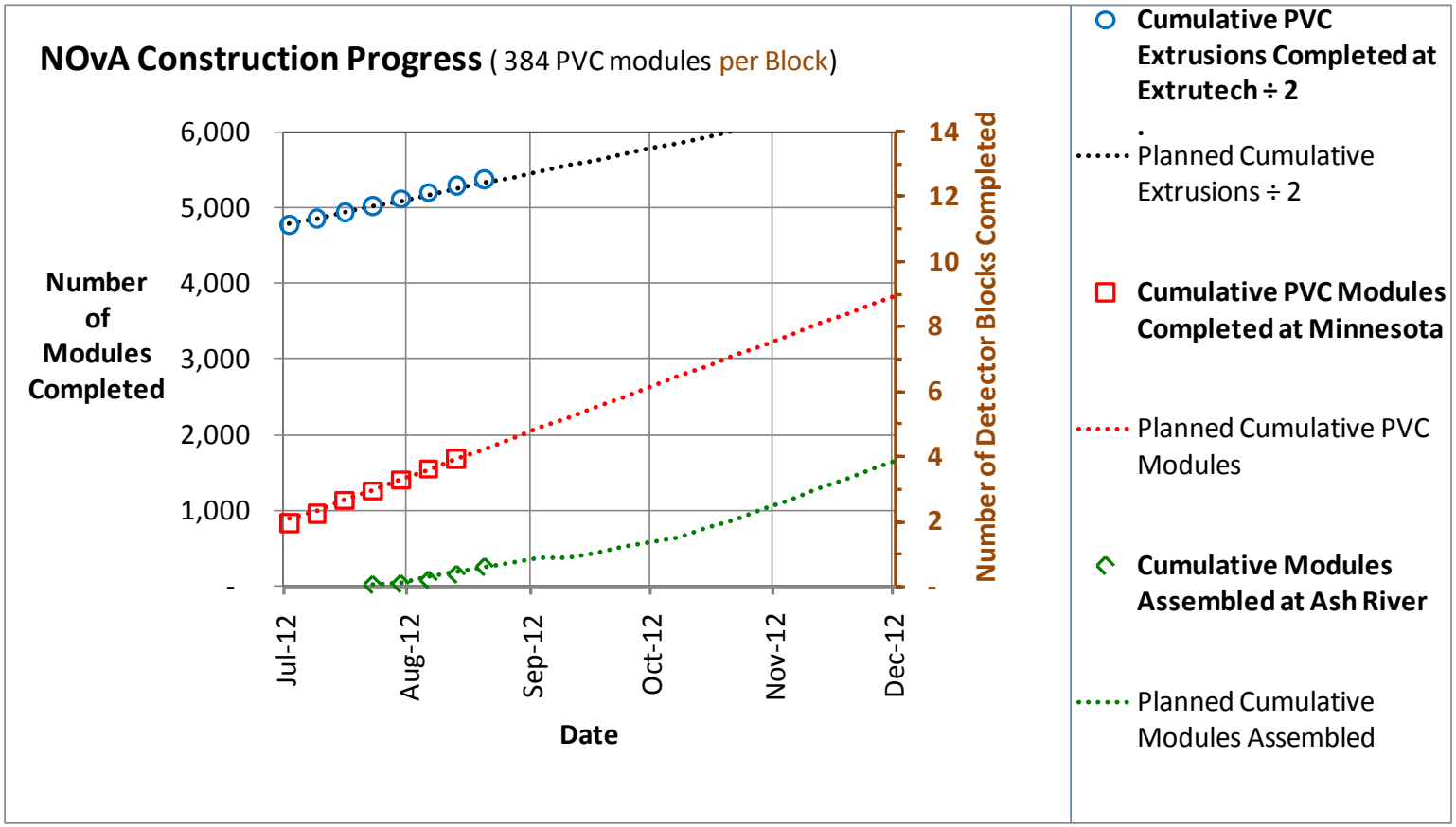
Assembly has begun !!!

- First vertical layer placed on 26 July.
- First horizontal layer glued on 1 Aug.
  - Switched to a stronger adhesive -- New adhesive arrived on 31 July.
  - Also roughing up each layer for better adhesion.
- 21 layers completed 23 Aug.
  - No module failures (leak test, fiber inspection) were created by the roughing process.

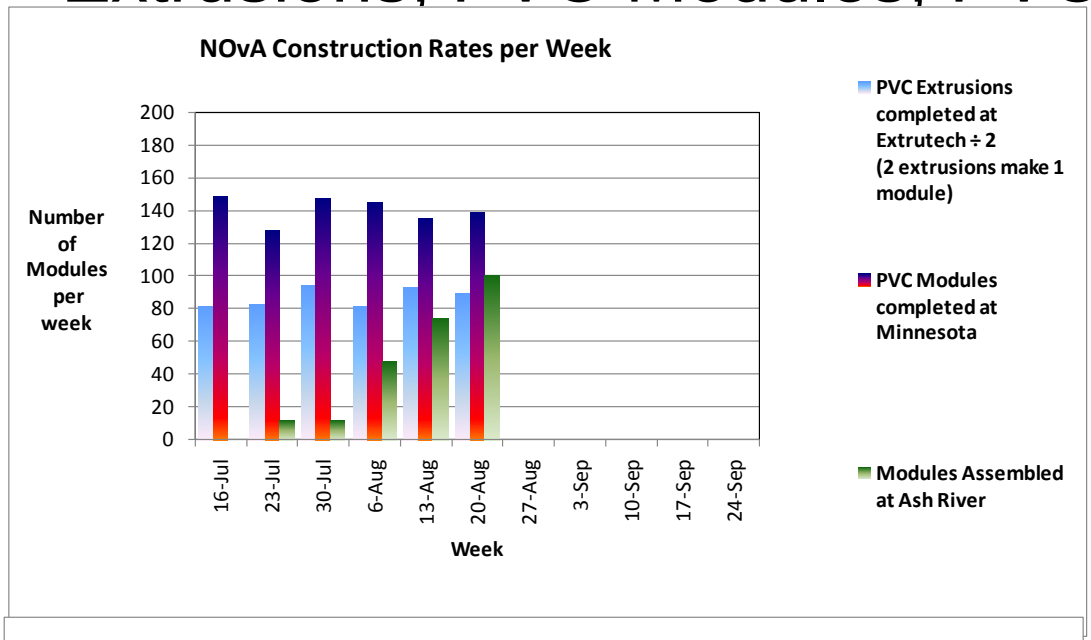


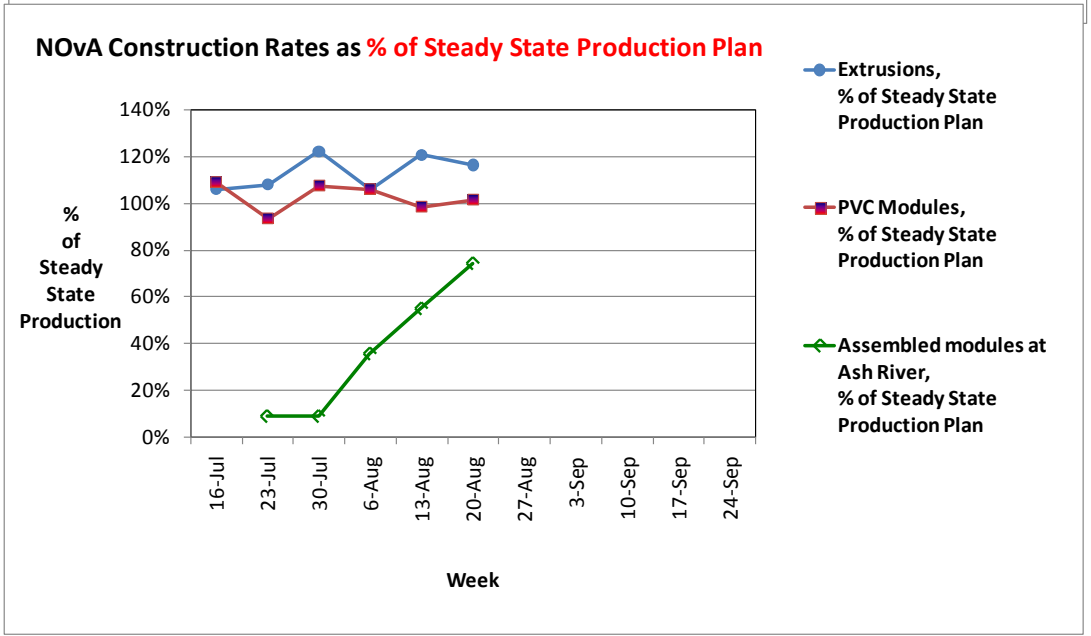
Cumulative Production

- Extrusions well ahead, throttling back, lack of storage space
- PVC Module factory has made 4 detector blocks of modules
- Ash River assembly into detector blocks started, ramping up
- New weekly plots for DOE



Weekly Production Rates: Extrusions, PVC Modules, PVC Blocks





WBS 2.8 NOvA Near Cavern

- Mobilization and Site Preparation is complete.
  - Power, Cables moved from E to W wall during June.
- Removed shotcrete at tunnel entrance on Aug 14.
  - Excavation by Hoe Ram will start deeper on Sept 3.
- Install ramp for Roadheader, Sept 4 – 11.
- Roadheader excavation in full production ~ Sept 12.

August

14 August IPR Recommendations

- (Do we have a final report?)

- Test installation of ~100 APDs in a dedicated setup in order to validate the production parts, or find early signs of failure
  - In progress, have 32 parts for setup, APDs in late September
- Initiate weekly update on the major activities on the project to the program office. This should include the metrics/progress on the project
  - Graphs on slides 28 & 29
  - Plus a statement on Days Worked at Ash River without a Lost Time Accident or Reportable Incident
    - Currently 338 days (NO accidents or incidents so far)
- Schedule a mini-review for November 20, 2012.
  - OK with NOvA