



12 GeV Upgrade VARIANCE ANALYSIS REPORT

WBS: 1.4.2.7.1 - Construction Hall B Magnet Torus New Vendor
Control Account Manager: L. Elouadrhiri
For Period Ending: Aug 13

12 GeV 1.4.2.7.1	SCHEDULE FLAG				COST FLAG			
	(A)	(B)	(B-A)	(B/A)	(C)	(D)	(C-D)	(C/D)
	Planned Value	Earned Value	Schedule Variance	Schedule Perform Index	Earned Value	Actual Cost	Cost Variance	Cost Perform Index
	BCWS	BCWP	SV	SPI	BCWP	ACWP	CV	CPI
Month of Aug-13	222	21	-201	0.09	21	118	-96	0.18
Cumulative	3264	1795	-1469	0.55	1795	3803	-2009	0.47

Yellow Flag: Index <.9 / >1.1 OR Variance > \$25K
Red Flag: Index <.8 / >1.2 AND Variance > \$50K

1. Cause (Address Variances Individually)

SV: The July 2013 and earlier variance reports described the sources of SV. The current status is that the Baseline schedule would have the 5th production coil now built at FNAL and the cryostating of cold masses in cryostat factory at JLab over half way through. These two areas contribute about equally to the SV and account for over 90% of it. The actual status is that FNAL has only recently finished design and procurement of needed tooling to prepare cold masses and has just wound a practice coil. The cryostat factory has had weld tables and turning fixtures set up, and has made a series of small assembly and welding tests to validate planned construction techniques, but has not started manipulation of a practice coil.

CV: This is due to all the FEA work that was not in the plan, addition of several designers and engineers to the team to establish a consistent design basis, analysis of fault modes for the torus and working out of design solutions that avoid the potential faults, as well as the additional work that FNAL needed to do to clean the conductor, design the tooling and fabricate it.

2. Proposed Solutions (Corrective Actions)

SV: In order to recover some of the schedule variance more engineering manpower has been put on the project to perform several tasks in parallel. A cryostat factory team has been put in place to design the tooling and fixtures as well as write the assembly procedures. A team of several FTEs has been assembled at JLab to complete the design and start the manufacturing drawings for the coil cold mass and the cryostat components. FNAL has built all the needed tooling and has wound the practice coil and is preparing to epoxy impregnate it.

CV: This CV is unrecoverable.

Estimated Resolution By (Date): SV: Sep 2013 CV: N/A

3. Impact on Project Cost/ Schedules:

The schedule for the torus is presently not well defined in the current baseline and is based on an abbreviated examination of the effort needed to build coil cryostats coupled with the FNAL planned schedule. Future effort on this work package is being re-planned with sufficient detail. For the immediate term the CV and SV will increase since the analysis must proceed and the various factory setups must be completed.

Schedule Variance Projection

Sep	Oct	Nov	Dec	Jan	Feb
-\$1469	-1469	-1700	-2000	-2300	-2600

Cost Variance Projection

	CVcum (K)	Sep	Oct	Nov	Dec	Jan	Feb
Recoverable	\$						
Unrecoverable	-\$-2009	-2900	-3400	-3700	-4000	-4200	-4300
Error	\$						

4. Comments:

In addition to the manpower needed for the TORUS design, the procurement of the fixtures, the cryostat components starts this July and August. Then this will be flowed up by the setup of the cryostat Factory. This scope was not captured in the baseline schedule.

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