# 12 GeV Upgrade
# VARIANCE ANALYSIS REPORT

**WBS 1.5.1: Construction – Hall D Solenoid**
**Control Account Manager: Eugene Chudakov**
**For Period Ending: Aug 13**

| 12 GeV 1.5.1 | SCHEDULE FLAG | | | | | COST FLAG | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (A) | (B) | (B-A) | (B/A) | (C) | (D) | (C-D) | (C/D) |
| Values are in $K Dollars (other than SPI & CPI) | 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 | 0 | 0 | 0 | No PV | 0 | 27 | -27 | 0.00 |
| Cumulative | 1810 | 1804 | -5 | 1.00 | 1804 | 3079 | -1274 | 0.59 |

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

**1. Cause (Address Variances Individually)**

**CV** The variance prior to this month was described in detail in the November 2012 and earlier reports, notably August 2010. In August, the CV is -$27K. The baseline scope has been practically completed. The ETC ReBaseline analysis identified additional activities needed to accomplish the magnet testing. Working on these activities partly led to the May-August CV. The most intense work on the solenoid commissioning was carried out in April. The magnet was cooled to superconducting state and operated at full current. On May 1, the magnet unexpectedly quenched. The issue was addressed at the IPR review in May. The recovery work requires considerable resources not accounted for in the baseline. The May-August spending and entire CV is due to the re-commissioning work needed to ready the magnet for another cooldown and the mapping, which was not accomplished as planned due to the May 1 quench, None of this was foreseen in the Baseline or ReBaseline plan and therefore the entire cost will add to the negative CV

**2. Proposed Solutions (Corrective Actions)**

**CV**: The cryo-box was delivered on Oct 5. In order to speed up the tests, 2-shift work was organized, bringing an additional CV. There is no solution for the added expense per se, because attaching the cryobox has proved to be quite time-consuming and must be completed or the magnet cannot be cooled down and tested.

Estimated Resolution By (Date): The present CV results from more work being required than estimated and thus has no resolution. The second round of testing was completed in August, which finishes the baseline schedule. A few tasks remain such as the leak fixes: they have been captured in the ReBaseline. Additional work on the quench analysis has not been foreseen in the ReBaseline schedule. This work will continue thru September..

**3. Impact on Project Cost/ Schedules**
We anticipate additional cost of about $60k at completion, in order to support the magnet between the tests and the beam operations in October 2014, as well as for finishing the documentation on the tests and on operations. This amount is included in the ReBaseline CR for 2013. The unrecoverable CV = -$1274K

| | | Cost Variance Projection | | | | | |
|---|---|---|---|---|---|---|---|
| | **CVcum (K)** | **Sep** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** |
| **Recoverable** | **$** | | | | | | |
| **Unrecoverable** | **-$1274** | **-$1290** | **-$1300** | **-$1310** | **-$1310** | | |
| **Error** | **$** | | | | | | |

**4. Comments**

| **Control Account Manager:** | **Project Manager:** |
|---|---|
| E. Chudakov | G. R. Young<br>D. Miner for C. Rode |