14-May-2013

Director's Cost and Schedule Assessment of the LHC CMS Detector Upgrade Project May 15-16, 2013

Charge

The Committee is to conduct a Director's Cost and Schedule Assessment of the LHC Compact Muon Solenoid (CMS) Detector Upgrade Project. This assessment it to look at the current state of the project schedule and cost development as they prepare for a Director's Critical Decision 1 (CD-1) Readiness Review The main focus of the committee is to give feedback to the project on what is necessary to get from the current state to the required CD-1 state. The LHC CMS Detector Upgrade Project received CD-0 on September 18, 2012. The Project anticipates receiving DOE Critical Decision 1 (CD-1) "Approve Alternative Selection & Cost Range" late summer of 2013.

The LHC CMS Detector Upgrade Project is the design and construction of upgrades to the Hadron Calorimeter, the Silicon Pixel detector, and the Level 1 Trigger subsystems of the CMS detector at CERN. The LHC, running at 8 TeV center of mass energy, has nearly reached its design luminosity. It is expected that with planned upgrades, it will exceed the original design by a factor of at least two. CMS was not designed to run efficiently at the luminosity now projected for the next several years. With these upgrades, the detailed study of the properties of the new boson and the search for new physics that should be associated with it can take full advantage of the excellent performance of the LHC and resolve many of the open questions in electroweak physics.

The project will present a Cost Range or a methodology for developing the Cost Range. The committee is to assess and determine if it is appropriate based on the following factors: the scope of work; the maturity of the design; the Basis of Estimate (BOE); and the risks associated with the scope of work. The team will also look at the WBS – Work Breakdown Structure, WBS Dictionary, BOE – Basis of Estimate documentation, risk and contingency analyses, RLS – Resource Loaded Schedule, and time phased funding and cost profiles. The committee is asked to review each of these items, for quality, completeness, and accuracy and to address the following questions to assess the Project's progress:

1. At what state is the Project's resource loaded schedule and what is needed to reach a quality CD-1 level?
2. Is the cost and schedule range, or the methodology of how they will develop that range, realistic and justified by the supporting documentation (including BOEs)? Has all the work been appropriately identified, estimated and scheduled?
3. Has the Project implemented a Risk Management Process by identifying risks, performing a risk assessment and started developing mitigation plans at an appropriate level for the CD-1 stage, if not , what is needed to get there?
4. Is the scope of work clearly defined between what is funded by DOE or NSF, and is this reflected in the cost, schedule and risk assessment presented to the committee?
5. What is the state of readiness of the LHC CMS Detector Upgrade Project cost and schedule development for a Director's CD-1 Readiness Review?

Finally, the committee should document their comments, recommendations, and answers to the above questions in a written report that will be provided Fermilab's management and the LHC CMS Detector Upgrade Project.