

# **Executive Session**

## **Director's CD-1 Review of CMS Detector Upgrade Project July 16-18, 2013**

**Ken Stanfield**

# Agenda for Exec Session

- Charge
- Typical CD-1 Documents
- Review Agenda
- Subcommittee Assignments
- Reviewer Writing Assignments
- Reporting Structure
- Discussion

# Charge (excerpts)

The Committee is to conduct a Director's CD-1 Review of the LHC Compact Muon Solenoid (CMS) Detector Upgrade Project to assess if the project meets the Critical Decision 1 (CD-1) "Approve Alternative Selection & Cost Range" CD-1 requirements as specified in DOE O 413.3B. The LHC CMS Detector Upgrade Project received CD-0 on September 18, 2012. The Project is scheduled for a DOE Critical Decision 1 (CD-1) Review on August 26-27, 2013.

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The Committees main focus is the review of the Project's CD-1 readiness and will focus on the project's cost, schedule, management, risks, and ESH&Q. The project will present a Cost Range that 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. Furthermore, the committee is asked to review and assess the quality of and comment on the additional formal project management documentation required for CD-1 approval.

# Charge (Continued)

A Director's Independent Conceptual Design was conducted on May 14-16, 2013, found that the designs are well advanced and should provide a good basis for establishing the cost and schedule range and are a good foundation for proceeding to DOE CD-1. There were a few recommendations resulting from this review. Additionally, a Director's Cost and Schedule Assessment was performed on May 15-16, 2013. The assessment focused on the state of the Project's cost estimate, schedule, and risk development as they prepared for a CD-1 review. The assessment resulted in several recommendations. The Committee is to assess the Project's progress on addressing the recommendations from these prior Reviews and Assessments.

In performance of a general assessment of progress, current status, and the identification of potential issues, the committee is asked to address the questions in Attachment 1 to assess the Project's progress. Finally, the committee should present findings, comments, recommendations, and answers to the charge questions at a closeout meeting with LHC CMS Detector Upgrade Project and Fermilab's management. A written report will be provided within two weeks after the review.

*Attachment A charge questions will be discussed in reviewer assignments*

# Typical CD-1 Documents

- Acquisition Strategy
- Preliminary Project Execution Plan
- Risk Management Plan
- Risk Register
- Comply with the One-for-One Building Space Replacement (only for projects with civil facility scope)
- Document High Performance & Sustainable Building and Sustainable Environmental Stewardship (only for projects with civil facility scope)
- Conceptual Design Report
- Completion of Conceptual Design Review conducted by team external to project was Conducted
- Prepare Preliminary Hazard Analysis Report (PHAR)
- Develop and implement Integrated Safety Management Plan
- Established Quality Assurance Program (QAP)
- Identify general Safeguards and Security requirements for the recommended alternative (may be included in PEP)

# Typical CD-1 Documents (continued)

- Complete National Environmental Policy Act (NEPA) Strategy by issuing a determination (i.e., EIS, EA)
- Cost and Schedule Range (this includes a schedule and supporting BOEs with supporting documents)
- Assumptions Document
- WBS Dictionary
- Milestone Dictionary
- Configuration Plan
- Lifecycle Costs with Alternative Assessment
- Preliminary Project Management Plan
- Procurement Management Plan
- Memos of Understanding (MOUs) / Statement of Work (SOWs) – may be drafts at this stage
- Science & Technical Requirements and Specifications
- Status/Progress on prior review recommendations

# Agenda

**Tuesday, July 16**

**EXECUTIVE SESSION – Comitium (WH-2SE)**

8:00 – 8:50 AM 50 Executive Session

**PLENARY SESSION – One West (WH-1W)**

8:50 – 9:00	AM	10	Welcome	Jack Anderson
9:00 – 9:30	AM	30	Project Overview & Conceptual Design	Joel Butler
9:30 – 10:00	AM	30	Project Cost & Schedule	Erik Gottschalk
10:00 – 10:40	AM	40	WBS 401.03 FPIX	Will Johns

**10:40 – 10:55 AM 15 BREAK – Outside of Comitium (WH-2SE)**

10:55 – 11:35	AM	40	WBS 401.02 HCAL	Jeremy Mans
11:35 – 12:15	AM	40	WBS 401.04 Trigger	Wesley Smith

**12:15 – 1:15 PM 60 LUNCH – Tables Available WH2 Crossover**

1:15 – 3:00 PM 105

- Session 1: WBS 401.01 Project Management – Comitium (WH-2SE)
- Session 2: WBS 401.02 HCAL – One North (WH-1N)
- Session 3: WBS 401.03 FPIX – Black Hole (WH-2NW)
- Session 4: WBS 401.04 Trigger – Snake Pit (WH-2NE)

**3:00 – 3:15 AM 15 BREAK – Outside of Comitium (WH-2SE)**

# Agenda continued

## **PARALLEL BREAKOUT SESSIONS**

3:15 – 5:00 PM 105

Session 1: WBS 401.01 Project Management – Comitium (WH-2SE)

Session 2: WBS 401.02 HCAL – One North (WH-1N)

Session 3: WBS 401.03 FPIX – Black Hole (WH-2NW)

Session 4: WBS 401.04 Trigger – Snake Pit (WH-2NE)

5:00 – 6:30 PM Executive Session – Comitium (WH-2SE)

## **Wednesday, July 17**

## **PARALLEL BREAKOUT SESSIONS - continued**

8:00 – 9:45 AM 105

Session 1: WBS 401.01 Project Management – Comitium (WH-2SE)

Session 2: WBS 401.02 HCAL – One North (WH-1N)

Session 3: WBS 401.03 FPIX – Black Hole (WH-2NW)

Session 4: WBS 401.04 Trigger – Snake Pit (WH-2NE)

**9:45 – 10:00 AM 15 BREAK – Outside of Comitium (WH2SE)**

## **PARALLEL BREAKOUT SESSIONS - continued**

10:00 – 11:30 AM 90

Session 1: WBS 401.01 Project Management – Comitium (WH-2SE)

Session 2: WBS 401.02 HCAL – One North (WH-1N)

Session 3: WBS 401.03 FPIX – Black Hole (WH-2NW)

Session 4: WBS 401.04 Trigger – Snake Pit (WH-2NE)

# Agenda continued

<b>11:30 – 12:30</b>	<b>PM</b>		<b>LUNCH – Tables Available WH2 Crossover</b>
12:30– 1:30	PM	60	Response to reviewer questions from Day One and questions from the morning breakout sessions – Comitium (WH-2SE)
1:30 – 3:15	PM		Subcommittee Executive Session/Report writing – <b>in Breakout Rooms</b>
<b>3:15 – 3:30</b>	<b>PM</b>	<b>15</b>	<b>BREAK – Comitium (WH-2SE)</b>
3:30 – 5:00	PM		Executive Session/Report writing - Comitium (WH2SE)

## Thursday, July 18

8:00 –1:00	PM		Full Committee Executive Session Dry Run – Comitium (WH-2SE) with Working Lunch for Committee <b>(Break available at 10:15 outside of Comitium)</b>
1:00	PM		Closeout Presentations – One West (WH-1W)
2:00	PM		Adjourn

# Agenda continued

## Breakout Session Details

**Tuesday, July 16, 2013**

1:15 - 3:00pm Parallel Breakout Sessions:

Session 1: WBS 401.01 Project Management - Comitium (WH-2SE)

B01-1: Project Organization 30' Speaker: Dr. Erik Gottschalk (Fermilab)

B01-2: External Project Relationships 30' Speaker: Dr. Joel Butler (Fermilab)

B01-3: Cost and Schedule Methodology 45' Speaker: Dr. Erik Gottschalk (Fermilab)

Session 2: WBS 401.02 HCAL - One North (WH-1N)

B02-1: Introduction (HCAL) 10' Speaker: Jeremiah Mans (UMN)

B02-2: HCAL Upgrade and Answers to CDR Questions 30' Speaker: Frank Chlebana (Fermilab)

B02-3: HF Frontend Overview 35' Speaker: Prof. Ulrich Heintz (Brown University)

B02-4: HF QIE10 and HBHE QIE11 20' Speaker: Dr. Juliana Whitmore (Fermilab)

Session 3: WBS 401.03 FPIX - Black Hole (WH-2NW)

B03-1: Introduction to FPIX Cost and Schedule 35' Speakers: Will Johns (Vanderbilt University), Harry Cheung (Fermilab)

B03-2: International CMS Pixel Schedule 35' Speaker: Dr. Simon Kwan (Fermilab)

B03-3: Sensor and bump-bonding 25' Speaker: Leonard Spiegel (FNAL)

Session 4: WBS 401.04 Trigger - Snake Pit (WH-2NE)

B04-01 Overview of Trigger Project Cost & Schedule 20' Speaker: Wesley Smith (University of Wisconsin)

B04-02 Trigger Management 25' Speaker: Sergo Jindariani (FNAL)

B04-03 Endcap Muon Trigger Overview 20' Speaker: Ivan Furic (U. Florida - Gainesville)

# Reviewer Subcommittee Breakout Assignments

Breakout Sessions	Reviewers
1. Project Management – <b>Comitium (WH-2SE)</b>	Ed Temple Marc Kaducak Mike Dinnon Bob O’Sullivan* David Leeb* John Anderson* Kathy Zappia*
1. HCAL (WBS 401.04) - <b>One North (WH-1N)</b>	Dmitri Denisov
1. FPIX (WBS 401.02) - <b>Black Hole (WH-2NW)</b>	Dave Christian
1. Trigger (WBS 401.03) – <b>Snake Pit (WH-2NE)</b>	Eric James

\*Cost/Schedule and ESH&Q Reviewers will rotate between breakouts

# Reviewer Writing Assignments

Executive Summary	<u>Ken Stanfield</u>
<u>1.0 Introduction</u>	
2.0 Technical	Dmitri Denisov*
2.1 Hadron Calorimeter - HCAL	<u>Dmitri Denisov</u>
2.2 Silicon Pixel Detector - FPIX	<u>Dave Christian</u>
2.3 Level 1 Trigger	<u>Eric James</u>
3.0 Cost and Schedule	<u>Bob O'Sullivan*</u>
3.1 Cost	David Leeb
3.2 Schedule	
4.0 ESH&Q	<u>John Anderson*</u> Kathy Zappia
5.0 Management	<u>Ed Temple*</u> Marc Kaducak Mike Dinnon
6.0 Charge Questions	
6.1 Has the Project developed a quality resource loaded schedule that includes the entire project's scope of work and is it achievable?	<u>Bob O'Sullivan</u> All

Note: \* Indicates Subcommittee Lead and integrator of write-ups  
Underlined names are the primary writer.

# Reviewer Writing Assignments (continued)

<p>6.2 Are the estimated cost and proposed schedule ranges realistic, consistent with the technical and budgetary objectives, and justified by the supporting documentation? Has all the work been appropriately identified, estimated and scheduled, including the work associated with performing the preliminary design, final design and value engineering activities?</p>	<p><u>Bob O'Sullivan</u> All</p>
<p>6.3 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?</p>	<p><u>Mike Dinnon</u> All</p>
<p>6.4 Is the Project Team adequately staffed and does it possess adequate experience to successfully carry out the Project?</p>	<p><u>Ed Temple</u></p>
<p>6.5 Is the current staffing level adequate to complete the work to achieve CD-2? If not, has the appropriate staffing level been identified in the schedule and has a staffing plan been developed to acquire the future staffing needs?</p>	<p><u>Ed Temple</u> All</p>
<p>6.6 Are ESH&amp;Q aspects being properly addressed given the project's current stage of development?</p>	<p><u>John Anderson</u> <u>Kathy Zappia</u></p>

Note: \* Indicates Subcommittee Lead and integrator of write-ups  
Underlined names are the primary writer.

# Reviewer Writing Assignments (continued)

6.7 Are the draft Key Performance Parameters (KPPs) achievable based on the design, cost range and schedule range presented?	<u>Dmitri Denisov</u> All
6.8 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?	<u>Dmitri Denisov</u> Bob O'Sullivan
6.9 Has the relationship been clearly defined between the LHC CMS Detector Upgrade Project and International CMS at CERN?	<u>Ed Temple</u> All
6.10 Has the project acceptably addressed the relative recommendations from the Director's Independent Conceptual Design conducted on May 14-16, 2013 and the Director's Cost and the Schedule Assessment performed on May 15-16, 2013?	<u>Dmitri Denisov</u> <u>Bob O'Sullivan</u>
6.11 Is the documentation required by DOE O 413.3B and Fermilab's Project Management System in order and is the Project ready for a DOE CD-1 review scheduled for August 26-27, 2013?	<u>Ken Stanfield</u> All

Note: \* Indicates Subcommittee Lead and integrator of write-ups  
Underlined names are the primary writer.

# Reporting Structure

- Results of the review are to be documented as findings, comments, and recommendations.
- The answers to the charge questions are to include feedback from each subcommittee.
- Any additional actions required to be completed by the project team to acceptably address the review charge are to be documented as Recommendations.
- Findings, Comments , Recommendations and answers to the questions are to be presented in writing at a closeout with CMS Detector Upgrade and Fermilab's management.

# Findings, Comments, and Recommendations

- Findings
  - Findings are statements of fact that summarize noteworthy information presented during the review.
- Comments
  - Comments are judgment statements about the facts presented during the review. The reviewers' comments are based on their experiences and expertise.
  - The comments are to be evaluated by the project team and actions taken as deemed appropriate.
- Recommendations
  - Recommendations are statements of actions that should be addressed by the project team.
  - A response to the recommendation is expected and that the actions taken would be reported on during future reviews.

# Reviewer Write-ups

- Write-up Closeout Template is posted on Director's Review Webpage.  
[http://www.fnal.gov/directorate/OPMO/Projects/USCMS/DirRev/20130716/Closeout\\_Presentation\\_Template\\_CMS\\_DI\\_CD-1\\_Review.docx](http://www.fnal.gov/directorate/OPMO/Projects/USCMS/DirRev/20130716/Closeout_Presentation_Template_CMS_DI_CD-1_Review.docx)
- Write-ups (including answers to charge questions) are to be sent to Mary Tolian at [mtolian@fnal.gov](mailto:mtolian@fnal.gov) prior to 7:00 AM on Thursday, Jul 18 for the Closeout Dry Run starting at 8:00 AM in the Comitium
- A final report will be issued within 2 weeks after the closeout.

# Discussion

- Questions and Answers