

Executive Session
Director's CD-1 Review of the
SLI Utility Upgrade Project

August 6, 2010

Dean A. Hoffer

Agenda for Exec Session

- Charge to Reviewers
- Review Agenda
- DOE O 413.3 Critical Decision Table
- Document Requirements
- Technical Design Review Guidance
- Cost/Schedule/Management Review Guidance
- Reporting Structure
- Reviewer Assignments
- Discussion

Charge

This charge is for the committee to conduct a Director's CD-1 Review of the SLI Modernization FNAL-11-002 Utility Upgrade Project (SLI-UUP) at Fermilab. The review team is to assess the project's efforts at meeting DOE O 413.3A requirements for CD-1 approval. Additionally, constructive comments on presentation content, format, and style are also requested to help the project prepare for the DOE CD-1 Independent Project Review.

Approval of CD-1 by DOE officials is based on a Conceptual Design documented in Conceptual Design Report (CDR) for the project. The project scope with defined options, preliminary cost, and schedule range are to be defined at this point in the project based on the conceptual design. Some additional documents that support the CD-1 determination are a Preliminary Project Execution Plan (PEP), a Preliminary Project Management Plan (PMP) and the Preliminary Hazard Analysis report.

A detailed independent technical design review was conducted by Thomas Jefferson National Accelerator Facility (TJNAF) by reviewing the projects Conceptual Design Report (CDR). The results of this design review are to be made available to this review team. This committee is to evaluate the results of that review to determine if the design review committee acceptably answered the question: Will these designs meet the requirements and specifications, and are the designs sound?

Charge (continued)

The cost, schedule and scope are usually based on an initial set of documentation such as the following: 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 level of detail is to be commensurate with the conceptual design and the phase of the project. The committee is asked to review each of these items, for quality, completeness, and accuracy. 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. Additionally, confirm that the project is prepared for the DOE Independent Project Review (IPR) scheduled for August 24, 2010.

In performance of a general assessment of the project's preparations for CD-1, the committee should respond to the following questions:

1. Have performance requirements been appropriately and sufficiently defined for this stage of the project? Is the conceptual design sound and likely to meet the performance requirements?
2. Has a credible and sufficient alternatives analysis been performed that supports the proposed technical scope, cost, and schedule?
3. Are the cost and schedule estimates credible and realistic for this stage of the project? Is adequate contingency included?

Charge (continued)

4. Is the project being managed (i.e., properly organized, adequately staffed) as needed to begin the Preliminary Design and to support the project through construction to successful completion?
5. Are ES&H aspects being properly addressed given the project's current stage of development? Are Integrated Safety Management Principles being followed?
6. Is project documentation (e.g., Acquisition Strategy, Preliminary Project Execution Plan, Preliminary Hazard Analysis Report, Preliminary Project Management Plan, and Risk Management Plan) complete and ready for CD-1 approval?
7. Is the SLI Utility Upgrade Project appropriately prepared for the DOE Independent Project Review scheduled for August 24, 2010?

Finally, the committee should present findings, comments, and recommendations at a closeout meeting with SLI-UUP's and Fermilab's management. The closeout presentation document is considered the final review report.

Agenda

Friday, August 6, 2010 – Black Hole (WH2NW)

- 8:00 am Executive Session (Committee Only)..... Dean Hoffer
- 8:30 am FNAL Utility Upgrades Project Requirements..... Randy Ortigiesen
- Mission Need
 - Performance Parameters
- 8:45 am FNAL Utility Upgrades Project IntroductionRuss Alber
- Project Overview
 - Alternative Analysis
 - ES&H Considerations
 - Safeguards & Security Considerations
 - User Interface
- 9:15 am **Break**
- 9:30 am FNAL Utility Upgrades Project Scope, Schedule and CostRuss Alber
- Project Management
 - Risk Management
 - Proposed Project Scope
 - Conceptual Design Description
 - Proposed Cost and Schedule
 - Acquisition Plan

Agenda (continued)

10:45 am	Executive Session (Committee Only).....	Dean Hoffer
11:30 am	Lunch	
12:15 pm	Additional Presentations and Discussion requested by the Committee.....	All
12:45 pm	Committee Executive Session – Discussion/Report Writing/Dry Run	Dean Hoffer
3:00 pm	Closeout Presentation.....	All
4:00 pm	Adjourn	

DOE O 413.3 Critical Decision Table

Preconceptual Planning	Conceptual Design	Preliminary Design	Final Design	Construction	Operations
✦ CD-0	✦ CD-1	✦ CD-2	✦ CD-3	✦ CD-4	
Approve Mission Need	Approve Alternative Selection & Cost Range	Approve Performance Baseline	Approve Start of Construction	Approve Start of Operations or Project Completion	

Actions Authorized by Critical Decision (CD) Approval				
CD-0	CD-1	CD-2	CD-3	CD-4
<ul style="list-style-type: none"> Proceed with Conceptual Design Request PED funding Start monthly PARS & Quarterly Project Performance reporting 	<ul style="list-style-type: none"> Allow Expenditure of PED Funds for preliminary design Approval of long-lead procurement if necessary 	<ul style="list-style-type: none"> Establish Performance Baseline Continue design Request construction funding 	<ul style="list-style-type: none"> Approve expenditure of funds for construction 	<ul style="list-style-type: none"> Allow start of operations or project completion

Non-Nuclear Facilities--Prerequisite Activities for CDs				
<ul style="list-style-type: none"> Review of Mission Need Statement (MSN) by Office of Program Analysis & Evaluation (CF-20) for \$100M or greater. Perform Mission Need Independent Project Review (IPR) for Major System (MS) projects (>=\$750K) Perform Pre-conceptual Planning Evaluate Information Technology (IT) projects with Departmental Enterprise Architecture framework 	<ul style="list-style-type: none"> Review of Acquisition Strategy (AS) (OECM review for MS project) Review of Conceptual Design <ul style="list-style-type: none"> Requirements Analysis Risk Analysis Alternative Analysis Value Management determination Assess Requirements Analysis, Risk Analysis, Alternative Analysis, & Value Management. Appoint FPD Establish & charter Integrated Project Team Ensure compliance with One-for-One Replacement requirement for building square footage Ensure Integrated Safety Management Implementation Ensure consideration for High Performance Sustainable Building Assess if QA Program is acceptable 	<ul style="list-style-type: none"> Perform Baseline External Independent Review (EIR) & validation by OECM for \$100M or greater. Perform Independent Cost Review or Independent Cost Estimates for MS project as part of EIR Program IPR for \$20M to less than \$100M Review of Preliminary Design Establish compliant project EVMS for \$20M or more, & OECM certifiable EVMS for project TPC with \$50M or more Conduct Value Engineering (as applicable) Incorporate High Performance Sustainable Building provisions into design Determine if QA Program is acceptable 	<ul style="list-style-type: none"> Perform Executability EIR by OECM for MS projects Perform IPR for Non-MS projects by Program (SC) 	<ul style="list-style-type: none"> Verify Key Performance Parameter or Completion Criteria achieved Perform Readiness Assessment or Operational Readiness Review Revise environmental management system. <p><u>Post CD-4 Closeout</u></p> <ul style="list-style-type: none"> Perform Final Administrative & Financial Closeout Conduct Post Implementation Review for IT projects

Hazard Category 1, 2, and 3 Nuclear Facilities--Additional Prerequisite Activities/Documents for CDs				
	<ul style="list-style-type: none"> Perform Technical IPR Prepare Conceptual Safety Design Report (SDR) Prepare a Preliminary Safety Validation Report (PSVR) 	<ul style="list-style-type: none"> Prepare Preliminary SDR Prepare a PSVR based on updated design 	<ul style="list-style-type: none"> Prepare Preliminary Documented Safety Analysis Report (SAR) Prepare SER 	<ul style="list-style-type: none"> Prepare Documented SAR with Technical Safety Requirements Prepare SER

Prerequisite Documents				
<ul style="list-style-type: none"> MNS Tailoring Strategy 	<ul style="list-style-type: none"> Acquisition Strategy Conceptual Design Report Risk Management Plan Risk Assessment Preliminary PEP Preliminary Hazard Analysis (HA) Preliminary Security Vulnerability Assessment Report (SVAR) Initial Cyber Security Plan for IT projects. QA Program Documentation 	<ul style="list-style-type: none"> Performance Baseline Preliminary Design Updated Risk Assessment Updated PEP Updated HA (Approved at Field Level) Updated Preliminary SVAR NEPA Documentation Updated Initial Cyber Security Plan for IT projects 	<ul style="list-style-type: none"> Final Design Updated CD-2 documents Updated QA Program An Approved Construction Project Safety & Health Plan Updated Cyber Security Plan for IT projects 	<ul style="list-style-type: none"> Checkout, Testing & Commissioning Plan Project Transition/ Closeout Plan Updated QA Program Finalized QA Plan, SVAR, HIA Report, Construction Project Safety & Health Plan, Finalized Cyber Security Plan for IT projects & completed Certification & Accreditation, as required <p><u>Post CD-4 Closeout</u></p> <ul style="list-style-type: none"> Final Project Closeout Report Lessons Learned Report Required Operational Documentation

AS-Acquisition Strategy	MNS-Mission Need Statement	SAR-Safety Analysis Report		
EIR-External Independent Review	MS-Major Systems	SDR-Safety Design Report		
EVMS-Earned Value Mgmt. System	OECM-Office of Engr. & Const. Mgmt.	SER-Safety Evaluation Report		
HA-Hazard Analysis	QA-Quality Assurance	SVAR-Security Vulnerability Assess. Report		
IPR-Independent Project Review	PSVR- Prelim. Safety Validation Report	TPC-Total Project Cost		

Budget Related Documents
<ul style="list-style-type: none"> After CD-0 approval, Exhibit 300 for Projects =>\$20M: Annual submission initiated during the federal budget cycle when funds are requested. Project Data Sheets: Annual submission initiated during the federal budget cycle when TEC funds are requested.

CD-1 Documentation

- Acquisition Strategy
- Preliminary Project Execution Plan (PEP)
- Preliminary Project Management Plan (PMP)
- Assumptions Document
- Conceptual Design Report (CDR)
- Baseline Range and Resource Loaded Schedule
- Configuration Management Plan
- Preliminary Hazard Analysis Report
- Risk Management Plan and Risk Assessment
- Value Management Documentation
- Quality Assurance Program Documentation

Two Parts of a CD-1 Review

- Technical - Independent
Conceptual Design Review
Performed by Thomas Jefferson
National Accelerator Facility
- Cost, Schedule and Project
Management Review

Technical – Conceptual Design Review

- Design Reviews are performed to determine if a product (drawings, analyses, or specifications) is correct and will perform its intended functions and meet requirements.
- The Conceptual Design process requires a mission need as an input. Concepts for meeting the need are explored and alternatives considered to arrive at a set of alternatives that are technically viable, affordable and sustainable.

This review is to confirm that the independent design review was performed, documented, and recommendations appropriately addressed by the project.

Cost/Schedule/Management Review Guidance

Cost

Estimate must be **Complete**

- Scope understood with options
- Tasks defined and specified in a work breakdown structure
- WBS dictionary

Documented at lowest level of WBS and include

- M&S – materials and services
- SWF – salaries, wages, & fringes
- Accompanied by schedule showing appropriate durations
- Adders – overheads and escalation
- Funding profile based on laboratory/DOE/Federal budget/appropriation guidance

Cost/Schedule/Management Review Guidance (Continued)

Cost -continued

Reviewable

- Estimate must “roll-up” from the lowest level to the total and reviewers must be able to drill down from the top to the lowest level

Credible

- Basis of estimate must be specified
 - Catalog prices
 - Similar work, where cost is documented
 - Engineering estimates
 - WAG – wild ass guess

Cost/Schedule/Management Review Guidance (Continued)

Cost –continued

Analysis Method

- Analyze cost estimates by choosing sample of top level WBS elements
Drilling down to successively lower levels of the WBS; while at each step
 - Understanding the **scope** of that element
 - Understanding the **schedule** for that element
 - Understanding the **basis of estimate (BOE)** for **both M&S and effort** for that element
- Check whether the **estimate for your system “rolls-up”** from the lowest level WBS element to the total for your system
- Assess the **“bottoms up” contingency that the WBS level managers would assign** their components.
- Assess the **“top down” contingency analysis assignments by the Project Manager**

Cost/Schedule/Management Review

Guidance (Continued)

Schedule

Is there a detailed schedule, including a critical path, for completing the project? Are milestones appropriate in number and type identified so that the project teams, Fermilab management, and DOE can effectively track and manage progress? Based on past experience, can the proposed schedules be met? Are appropriate schedule contingencies provided? Is there a “resource loaded schedule” and plan for providing the needed resources (M&S and technical support staff and physicists)?

Management

Is an **appropriate / adequate project organizational structure** in place and **staffed** (or are plans in place) to do the job.

Has the **appropriate project management documentation** been prepared? Is it of a quality adequate for this stage of the project? Are **appropriate / adequate management systems** (Cost and Schedule Control System / Earned Value Reporting, Critical Path Management, Risk Management, etc.) in place or planned for use during project execution?

Reviewer Assignments

Executive Summary	<u>Dean Hoffer</u>
1.0 Introduction	<u>Dean Hoffer</u>
2.0 Assessment of Technical Design Review	<u>Jason Budd</u>
2.1 High Voltage (HV)	Mark Kaducak
2.2 Industrial Chilled Water (ICW)	
3.0, Cost, Schedule, ES&H and Project Management	
3.1 Cost	<u>Marc Kaducak</u> Terri Templeton
3.2 Schedule	<u>Terri Templeton</u> Marc Kaducak
3.3 ES&H	<u>Mike Andrews</u>
3.4 Management	<u>Peter Garbincius</u> Mike Dinnon

Note: Underlined names are the primary writer

Reviewer Assignments (continued)

4.0 Charge Questions	
4.1 Have performance requirements been appropriately and sufficiently defined for this stage of the project? Is the conceptual design sound and likely to meet the performance requirements?	<u>Jason Budd</u> All
4.2 Has a credible and sufficient alternatives analysis been performed that supports the proposed technical scope, cost, and schedule?	<u>Jason Budd</u> All
4.3 Are the cost and schedule estimates credible and realistic for this stage of the project? Is adequate contingency included?	<u>Terry Templeton</u> All
4.4 Is the project being managed (i.e., properly organized, adequately staffed) as needed to begin the Preliminary Design and to support the project through construction to successful completion?	<u>Marc Kaducak</u> All
4.5 Are ES&H aspects being properly addressed given the project's current stage of development? Are Integrated Safety Management Principles being followed?	<u>Mike Andrews</u>
4.6 Is project documentation (e.g., Acquisition Strategy, Preliminary Project Execution Plan, Preliminary Hazard Analysis Report, Preliminary Project Management Plan, and Risk Management Plan) complete and ready for CD-1 approval?	<u>Marc Kaducak</u> All
4.7 Is the SLI Utility Upgrade Project appropriately prepared for the DOE Independent Project Review scheduled for August 24, 2010?	<u>Peter Garbincius</u> All

Note: Underlined names are the primary writer

Reporting Structure

- Review findings, comments, and recommendations should be presented in writing at a closeout with the SLI-UUP's and Fermilab's management.
- Section for each “Level 2” WBS plus Cost, Schedule, Management sections.

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.

Examples of Findings, Comments, and Recommendations

Finding

- A plan for the MI upgrades was presented. The major elements of this plan consist of an upgrade of a MI quad power supply, which is nearly complete, and the addition of two more RF stations. The cavities to be installed currently exist as spares so there is no design and prototyping required.

Comment

- The project has decided to build the DCCT in-house. The committee supports this effort since the technology and design of this device is well developed and well known.

Recommendation

- Work with Fermilab management to acquire resources needed to complete the accelerator and beamline modifications.

Reviewer Write-ups

- Write-up template is posted on Director's Review Webpage.

http://www.fnal.gov/directorate/OPMO/Projects/SLIUUP/DirRev/2010/08_06/review.htm

- Write-ups are to be sent to Terry Erickson at terickson@fnal.gov prior to 1:15 PM on Friday, August 6 for the Closeout Dry Run
- The Closeout presentation is the final report.

Discussion

- Questions and Answers