



Closeout and Final Report

Director's CD-3b Cost and Schedule Mini-Review of NOvA

July 14, 2009

Issued July 14, 2009

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1.0 Introduction

A Director's CD-3b Cost & Schedule Mini-Review of the NOvA Project was held on July 14, 2009. The charge focused on the evaluation of the Cost & Schedule that was not reviewed during the Director's CD-3b Review conduction on June 16-18, 2009. The assessment of the Review Committee is documented in the body of this closeout presentation. The committee assessment included areas of improvement for presentation material for the DOE CD-3b Review scheduled for July 21-23, 2009.

The closeout presentation is generally organized by Findings, Comments and Recommendations. Findings are statements of fact that summarize noteworthy information presented during the review. The Comments are judgment statements about the facts presented during the review and are based on reviewers' experience and expertise. The comments are to be evaluated by the project team and actions taken as deemed appropriate. Recommendations are statements of actions that should be addressed by the project team. Most recommendations should be addressed as part of the preparations for the July 21-23 DOE CD-3b Review.

Reference materials for this review are contained in the Appendices. The Charge for this review is shown in Appendix A. The review was conducted per the agenda shown in Appendix B. The Reviewer's assignments are noted in Appendix C, and their contact information is listed in Appendix D.

2.0 Cost and Schedule

Findings

- Contingency vs. risk –45% contingency is reasonable on remaining work.
- ~ 33,000 hours of scientific effort still needs to be assigned to an organization.
- Limited knowledge base for kicker engineering, no backup.
- Not all elements of the re-planning are reflected in the current cost/schedule baseline. The other elements are included in the revised EAC.

Comments

- ETC/EAC/Change Request process appears to be appropriate.
- Specific approach to project cost, schedule, and management is appropriate.

Recommendations

1. Add slides showing
 - Overall float in CD-4 milestone(before and after re-plan)
 - Milestone analysis (one page – high level)
 - Critical Path and analysis (see BNL example of high level schedule)
2. Show % of R&D remaining. Discuss the risks associated with not getting R&D accomplished.
3. Present Staffing Plan that needs to include the following:
 - Explicitly show personnel requirements and how the project will be staffed. Internal staff, external contractors and help from other labs.
 - Show staffing plan, by month over next year, by category of labor, requirements vs. availability.
 - Address ANU staffing plan explicitly
 - Address project controls staffing
 - Show gaps, and what is the plan to address this staffing shortfall?
 - Show that NOvA and Fermilab have the people to manage the procurements, QA, etc. for the late FY09-10 bump in spending, both at Fermilab and at universities.
4. Contact other Labs on availability of kicker engineering
 - State who is responsible for getting these people - NOvA or AD
5. Develop and present a specific corrective action plan for improving schedule performance.
 - Show the BCWS monthly plan for next year.
 - Show the components: labor (do you have the labor), contracts, other institutions

- Show the plan how NOvA will obligate and cost \$ 85 M in FY10. Use graphs or tables.
6. Consider the following recommendations for improving the presentations:
- Calculate % contingency on remaining work included in BAC and EAC
 - State NOvA uses same contingency rules applied (and approved) as at CD-2
 - Show sample of the highest risk items
 - Have detailed risk register, prepare to discuss in breakouts.
 - Have April and May financial tables available, if not complete monthly reports
 - Present how you determine when you convert your ETC changes into the baseline
 - Clean up for project overview presentation
 - Check obligation profile table page 43 for accuracy
 - Page 45 - are these costs or obligations for both prior and future years)
 - P 44 NOvA obligations 36 - remaining costs M&S 114, Labor 54, total contingency 75
 - P 42 what isn't being obligated in FY09 => about \$ 35 M what's the plan
 - Add WBS numbers to slide titles
 - Add slide on changes of personnel over last year
 - Show level 2 managers on slide 8
 - Verify all links from website.

Issued July 14, 2009

Appendices

Charge

Agenda

Report Outline and Reviewer Writing Assignments

Reviewers' Contact Information

Appendix A
Charge

**Director's CD-3b Cost and Schedule Mini-Review of NOvA
July 14, 2009**

This charge is for the Committee to conduct a Director's CD-3b mini-Review of the NOvA Project. The purpose of this review is to evaluate the project's readiness for approval of Critical Decision 3b (Approval to Start Full Construction) and that the project is prepared for the DOE Independent Project Review for CD-3b scheduled for July 21-23, 2009.

On September 25, 2008, DOE approved CD-3a (Approve Limited Construction). With CD-3a, DOE approved long lead procurements and a limited set of other construction activities. A limited number of items beyond the CD-3a list have been approved by DOE for procurement in support of the 2009 recovery Act (RA). CD-3b will be an approval of the remaining items of construction necessary prior to CD-4.

The NOvA project will fabricate and install upgrades to the Fermilab proton source and NuMI facility to enhance the neutrino beam intensity, and will build two neutrino detectors to use this beam. (a smaller "near detector" on the Fermilab site and a larger "far detector" 810 kilometers away in Northern Minnesota).

The NOvA Project Acquisition Strategy calls for Northern Minnesota site preparation work, access road upgrade and far detector enclosure construction to be completed by the University of Minnesota under a financial assistance agreement. These construction costs are captured as part of the Other Project Costs and therefore part of the Total Project Costs. The project management team and the university are work together to ensure proper integration of the university's efforts into the overall project. CD-3a approval covered site preparation and access road construction, and a subsequent DOE approval was provided to start construction of the far detector enclosure building in support of the Recovery Act.

The first part of this review occurred on June 16-18, 2009 and focused on the technical scope of this project. The NOvA project presented the status of their final design work. The review Committee validated the progress on final design and assessed their plans to complete the remaining design work. This assessment included confirming that appropriate resources are available to complete the final design as planned. The final report for this part of the Director's Review may be found at

http://www.fnal.gov/directorate/OPMO/Projects/NOvA/DirRev/2009/06_16/FINAL-ReportDRCD3bNOVA06-16-09.pdf

In your review, please evaluate whether the project is prepared to enter the construction phase beyond the CD-3a and Recovery Act approved activities. NOvA's cost and schedule had not been updated by the time of the first part of the Director's Review, but need to be reviewed prior to DOE's Independent Project Review. The second part or mini-Review of the cost and schedule will occur on July 14, 2009. This cost and

schedule mini-Review should specifically address only items number 2 and 3 below. Items 1,4 and 5 were fully addressed during the first part of the review.

1. Final Design: Is the design sufficiently mature so that the project can initiate procurement and construction? For those elements of the design that are still not finalized, has the project convincingly shown that there are no major issues that need to be addressed and that they are on a clear path to a final design?
2. Baseline Cost and Schedule: Is the approach in updating the cost and schedule appear to be sound and defensible? When the updates are completed should the following two questions be able to be answered by the DOE IPR (Are the current project cost and schedule projections consistent with the approved baseline cost and schedule? Is the contingency remaining adequate for the risks?)?
3. Management: Evaluate the management structure as to its adequacy to deliver the proposed final design within specifications, budget, and schedule. Has the project responded satisfactorily to the recommendations from the previous independent project review?
4. Construction: Has there been adequate progress on the construction activities approved under CD-3a? Have Fermilab and the project done the necessary preparations to execute the remaining construction activities?
5. Documentation: Is the documentation required by DOE Order 413.3A for CD-3b complete? Has the CD-2 documentation been updated to reflect any changes resulting from the final design?

Finally, the committee should present findings, comments, and conclusions at a closeout meeting with NOvA's and Fermilab's management and provide a written report soon after the review.

Appendix B
Agenda

**Director's CD-3b Cost & Schedule Mini-Review
of the NOvA Project at Fermilab
July 14, 2009
Black Hole (WH2NW)**

AGENDA

Tuesday, July 14, 2009

| | | |
|----------|--|--------------|
| 8:00 am | Executive Session | Dean Hoffer |
| 8:15 am | Project Overview | John Cooper |
| 9:00 am | ETC Procedure..... | Bill Freeman |
| 9:20 am | Changes by Level 2 WBS..... | Bill Freeman |
| 10:00 am | Break | |
| 10:15 am | Q&A with NOvA Project Office | |
| 11:15 am | Executive Session | Dean Hoffer |
| 12:00 pm | Lunch | |
| 1:00 pm | Working Session and Report Writing | |
| 3:00 pm | Full Committee Executive Session Dry Run | Dean Hoffer |
| 4:00 pm | Closeout Presentations | Dean Hoffer |
| 4:30 pm | Adjourn | |

Appendix C

Report Outline and Reviewer Writing Assignments

**Director's CD-3b Cost and Schedule Mini-Review of the NOvA Project
July 14, 2009**

| | |
|---|---|
| Executive Summary | <u>Dean Hoffer</u> |
| 1.0 Introduction | <u>Dean Hoffer</u> |
| 2.0 Cost | <u>Bill Boroski</u> Rich Stanek |
| 3.0 Schedule | <u>Cathy Lavelle</u> Fran Clark Mike Lindgren |
| 4.0 Charge Questions | |
| 4.1 Baseline Cost and Schedule: Is the approach in updating the cost and schedule appear to be sound and defensible? When the updates are completed should the following two questions be able to be answered by the DOE IPR (Are the current project cost and schedule projections consistent with the approved baseline cost and schedule? Is the contingency remaining adequate for the risks?)? | <u>Fran Clark</u> Cathy Lavelle |
| 4.2 Management: Evaluate the management structure as to its adequacy to deliver the proposed final design within specifications, budget, and schedule. Has the project responded satisfactorily to the recommendations from the previous independent project review? | <u>Rick Stanek</u> Mike Lindgren |

- Note underlined names are the primary writer.

Appendix D
Reviewers' Contact Information

Reviewer Contact Information
Director's Cost & Schedule Review of NOvA
7/14/2009 - 7/14/2009

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|---|--|
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