



DOE/SC CD-1 Review
of the
**Long Baseline Neutrino Facility/Deep
Underground Neutrino Experiment
(LBNF/DUNE) Project**

Fermi National Accelerator Laboratory

July 14-16, 2015

Stephen W. Meador

Committee Chair

Office of Science, U.S. Department of Energy

<http://www.science.doe.gov/opa/>



- **Closeout report (prepared in PowerPoint)**
 - Presented Thursday, July 16
 - Instructions—slide 12
 - Template—slide 14
- **Final report draft (prepared in MS Word)**
 - Due Monday, July 20 to Casey
(casey.clark@science.doe.gov)
 - Instructions—slide 13



DOE EXECUTIVE SESSION AGENDA

Tuesday, July 14, 2015—Fermilab Wilson Hall, Comitium (WH2SE)

- 8:00 a.m. DOE Executive Session.....S. Meador
- 8:15 a.m. Program Perspective.....B. Wisniewski
- 8:30 a.m. Federal Project Director Perspective..... P. Carolan
- 8:45 a.m. Questions
- 8:50 a.m. Adjourn

Project and review information is available at:

<http://www.fnal.gov/directorate/OPMO/Projects/LBNF-DUNE/DOERev/20150714/review.html>

https://web.fnal.gov/project/LBNF/ReviewsAndAssessments/LBNF_DUNE%20DOE%20CD-1%20Refresh%20Review/SitePages/Home.aspx

Password: review

Username: nurev2pass



Review Committee Participants

Stephen W. Meador, DOE/SC, Chairperson

SC1

Beamline

- * Andrew Hutton, TJNAF
- Lia Merminga, TRIUMF
- Mike Syphers, MSU

SC2

Detectors

- * Marty Breidenbach, SLAC
- Cristiano Galbiati, Princeton
- Harry Nelson, UCSB
- Blair Ratcliff, SLAC
- Roger Rusack, U of Minnesota

SC3

Cryogenic

- * Fabio Casagrande, MSU
- Matt Howell, ORNL

SC4

Conventional Facilities

- * Brad Bull, MSU
- Chris Laughton
- Jack Stellern, ORNL

SC5

Environment, Safety and Health

- * Ian Evans, SLAC
- Tony Iannacchione, U of Pittsburgh

SC6

Cost and Schedule

- * Mark Reichenadter, SLAC
- Tony Mennona, BNL
- Barbara Thibadeau, ORNL

SC7

Project Management

- * Jim Krupnick, retired LBNL
- Kurt Fisher, DOE/SC
- Howard Gordon, BNL
- Dan Green, Fermilab Emeritus
- Lynn McKnight, TJNAF

Observers

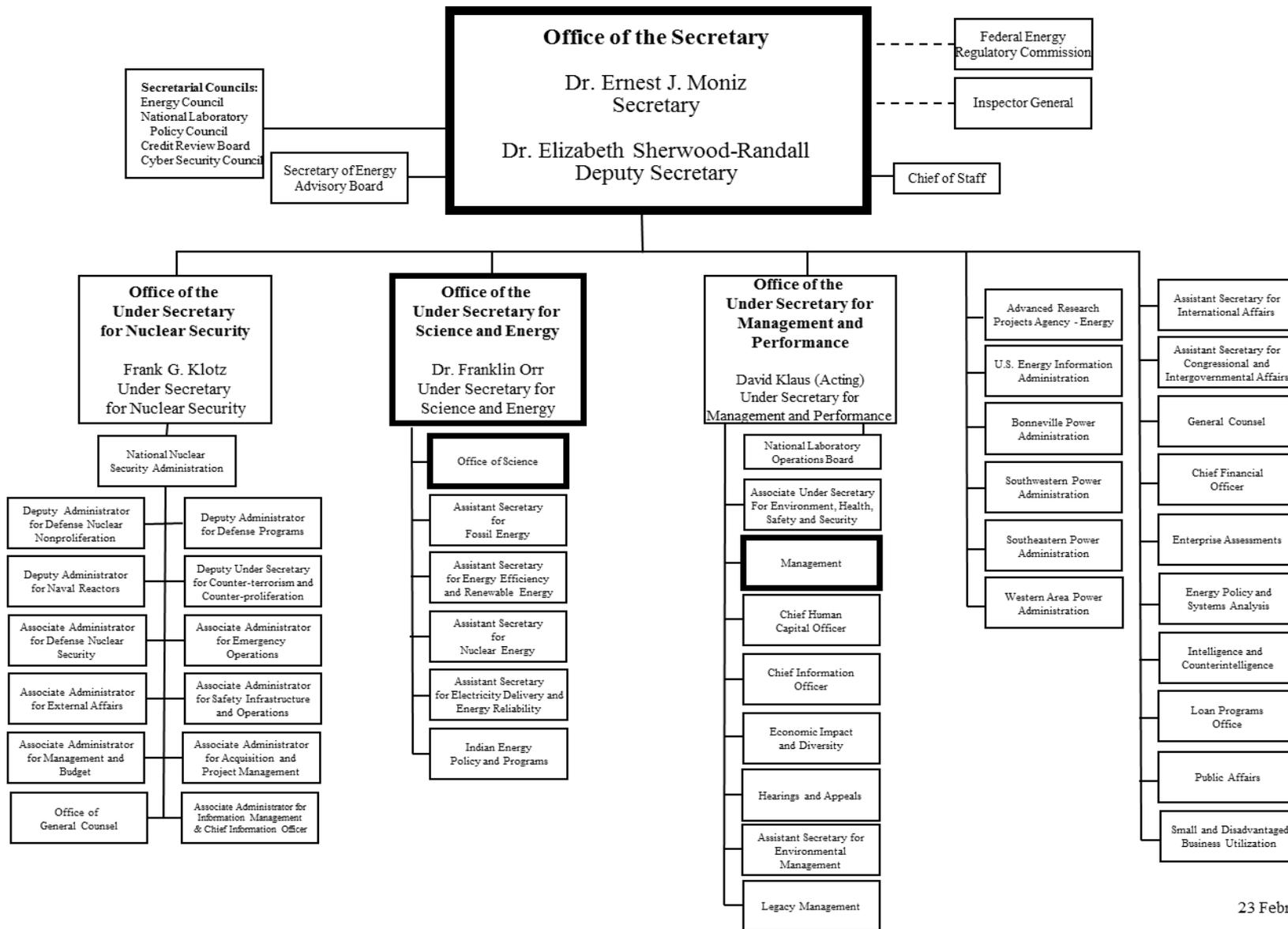
- | | |
|-------------------------|---------------------------|
| Jim Siegrist, DOE/SC | Pepin Carolan, DOE/FSO |
| Mike Procaro, DOE/SC | Mike Weis, DOE/FSO |
| Bill Wisniewski, DOE/SC | Adam Bihary, DOE/FSO |
| Ted Lavine, DOE/SC | Eli Rosenberg, Iowa State |
| John Kogut, DOE/SC | |

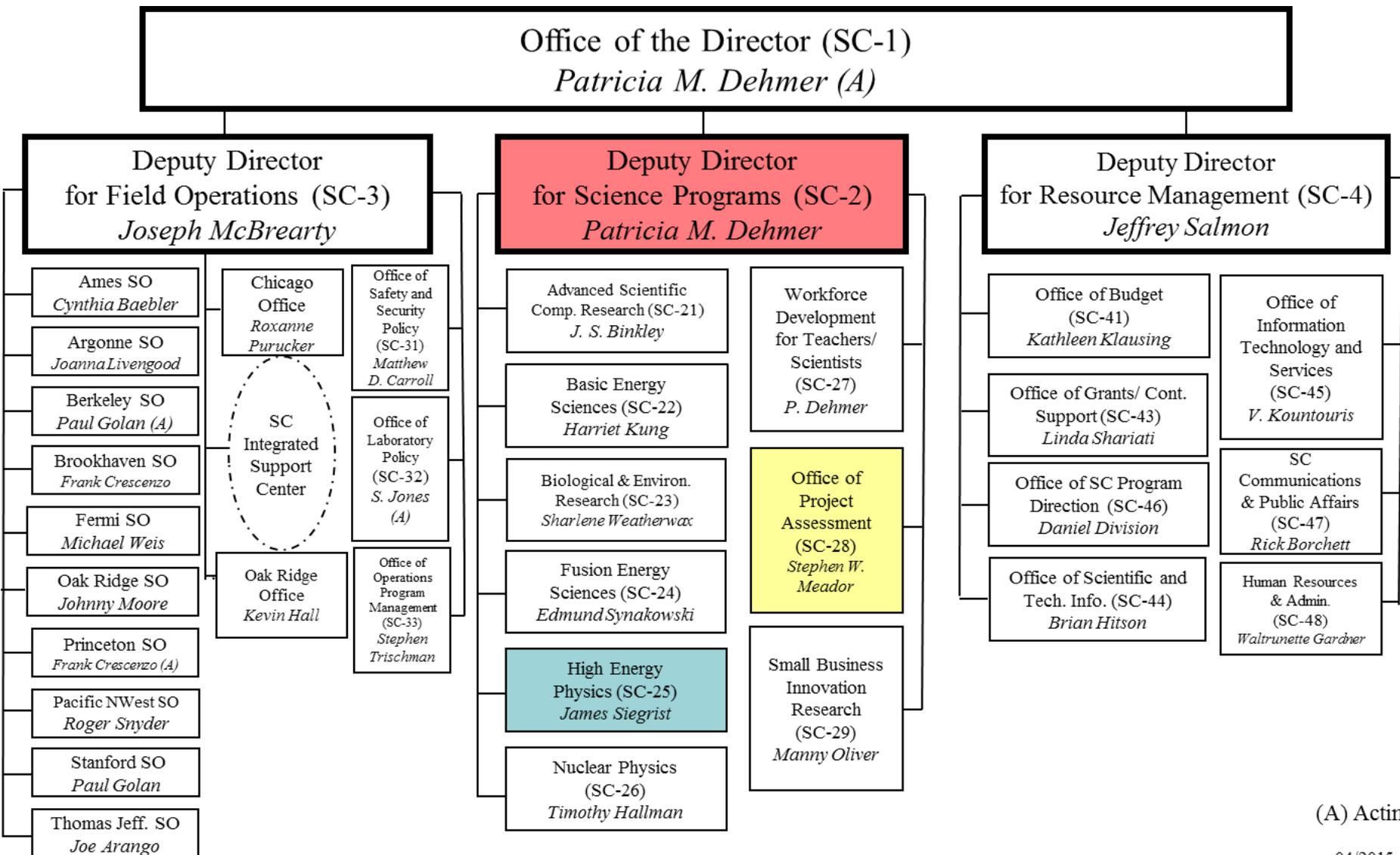
LEGEND

- SC Subcommittee
- * Chairperson

Count: 24 (excluding observers)

** Long Baseline Neutrino Facility (LBNF)/Deep Underground Neutrino Experiment (DUNE), and Sanford Underground Research Facility (SURF)





(A) Acting



1. Does the conceptual design provide increased research capabilities envisioned in the mission need? Does the conceptual design report adequately encompass the entire scope of the project, facilities and detectors? Does the conceptual design satisfy the performance requirements recently recommended by the Particle Physics Project Prioritization Panel?
2. Do the conceptual design report and supporting documentation provide a reasonable basis for the stated cost range and project duration? In establishing the cost range for the DOE scope, has the project clearly identified all scope for which the DOE will be responsible? Is the cost and schedule for the non-DOE scope, to be provided as in-kind deliverables, in the LBNF/DUNE project consistent with historical CERN Core Costing rules?
3. Are ES&H aspects being properly addressed and are future plans sufficient given the project's current stage of development?
4. Is the project organized to successfully deliver all scope – DOE and in-kind? Are interfaces between the facility and the detector clearly delineated and appropriately managed? Does the proposed project team and staffing plan possess appropriate management experience, technical expertise, and laboratory support to produce a credible preliminary design leading to the technical, cost and schedule baseline required for CD-2?
5. Have all prerequisite requirements for CD-1 approval been satisfied? Is the project ready for CD-1 approval?



Tuesday, July 14, 2015—Fermilab Wilson Hall, Comitium (WH2SE)

- 8:00 am DOE Executive Session—**Comitium (WH2SE)**S. Meador
- 9:00 am Welcome/Plenary Sessions—**One West (WH1W)**
LBNF/DUNE Overview N. Lockyer
- 9:40 am DUNE Collaboration Strategy and RequirementsM. Thomson
- 10:10 am Break
- 10:30 am LBNF Project Overview, Cost and Schedule..... E. McCluskey
- 11:10 am LBNF Near Site Facilities..... V. Papadimitriou
- 11:35 am LBNF Far Site Facilities M. Headley
- 12:00 pm Lunch—**WH2XO**
- 1:00 pm DUNE Project Overview, Cost and Schedule—**One West (WH1W)** E. James
- 1:40 pm LBNF/DUNE International Management CK Jung
- 2:10 pm SummaryJ. Lykken
- 2:30 pm Parallel Subcommittee Breakout Sessions
 - DUNE Detectors Black Hole (WH2NW)
 - LBNF Beamline Snake Pit (WH2NE)
 - LBNF Conventional Curia II (WH2SW)
 - LBNF Cryogenic Theory (WH3NW)
 - LBNF/DUNE Project Management Comitium (WH2SE)
 - ESH&Q, and Cost/Schedule
- 4:45 pm Break—**Outside of Comitium**
- 5:00 pm DOE Full Committee Executive Session
- 6:30 pm Adjourn



Wednesday, July 15, 2015

- 8:00 am Parallel Subcommittee Breakout Sessions
- 9:30 am Break
- 9:45 am Parallel Subcommittee Breakout Sessions Cont.
- 12:00 pm Lunch—**WH2XO**
- 1:00 pm Parallel Subcommittee Breakout Sessions Cont.
- 1:45 pm Break
- 2:00 pm Subcommittee Working Session
- 4:00 pm DOE Full Committee Executive Session

Thursday, July 16, 2015

- 8:00 am Subcommittee Executive Sessions
- 10:00 am DOE Full Committee Executive Session Dry Run—**Comitium**
- 12:00 pm Working Lunch—**WH2XO**
- 1:00 pm Closeout Presentation
- 2:00 pm Adjourn



Executive Summary/Summary (2-page) Report.....Fisher*

1. IntroductionWisniewski*

2. Technical Systems Evaluation (Charge Questions 1, 5)

 2.1 Beamline..... Hutton*/SC-1

 2.1.1 Findings

 2.1.2 Comments

 2.1.3 Recommendations

 2.2 Detectors Breidenbach*/SC-2

 2.3 CryogenicCasagrande*/SC-3

3. Conventional Facilities (Charge Questions 1, 5)..... Bull*/SC-4

4. Environment, Safety and Health (Charge Questions 3, 5)..... Evans*/SC-5

5. Cost and Schedule (Charge Questions 2, 5) Reichanadter*/SC-6

6. Project Management (Charge Questions 4, 5) Krupnick*/SC-7

*Lead



Closeout Presentation and Final Report Procedures



(Use PowerPoint / No Smaller than 18 pt Font)

2.1 Use Section Number/Title corresponding to writing assignment list.

List Review Subcommittee Members

List Assigned Charge Questions and Review Committee Answers

2.1.1 Findings – What the project told us

- In bullet form, include your account of factual technical, cost, schedule, and management. Information provided/presented by the Project

2.1.2 Comments – What we think about what the project told us

- In bullet form, include your assessment of project status (observations, concerns, feedback, suggestions, etc.) based on the findings. This section carries more emphasis than the Findings, but does not require an action as do the Recommendations. Do not number your comments.

2.1.3 Recommendations – What we think the project needs to do

- 1. Beginning with an action verb, provide a brief, concise, and clear statement with a due date.**

For Critical Decision reviews, include a specific recommendation addressing how the Committee judged the readiness for the CD, *i.e.*:

- **The project is ready to proceed to CD-2; *or***
- **The project is ready to proceed to CD-2, after addressing the following recommendations**



Format: Final Report

(Use MS Word / 12pt Font)

2.1 Use Section Number/Title corresponding to writing assignment list.

2.1.1 Findings – What the project told us

Include a brief narrative description of technical, cost, schedule, management information provided by the project. Each subcommittee will emphasize their area of responsibility.

Cost and schedule subcommittee should provide attachments for approved project cost breakdown and schedule. Management subcommittee should provide attachment for approved project organization and names of personnel.

2.1.2 Comments – What we think about what the project told us

Descriptive material assessing the findings and making observations and conclusions based on the findings. **The committee's answer to the charge questions should be contained within the text of the Comments Section.** Do not number your comments.

2.1.3 Recommendations – What we think the project needs to do

1. Beginning with an action verb, provide a brief, concise, and clear statement with a due date.
- 2.

Please Note: Recommendations are approved by the full committee and presented at the review closeout briefing. Recommendations SHOULD NOT be changed or altered from the closeout report to the Final Report.



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 5. Have all prerequisite requirements for CD-1 approval been satisfied? Is the project ready for CD-1 approval?
- **Findings**
 - **Comments**
 - **Recommendations**



3. Are ES&H aspects being properly addressed and are future plans sufficient given the project's current stage of development?
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- **Findings**
- **Comments**
- **Recommendations**



2. Do the conceptual design report and supporting documentation provide a reasonable basis for the stated cost range and project duration? In establishing the cost range for the DOE scope, has the project clearly identified all scope for which the DOE will be responsible? Is the cost and schedule for the non-DOE scope, to be provided as in-kind deliverables, in the LBNF/DUNE project consistent with historical CERN Core Costing rules?

 5. Have all prerequisite requirements for CD-1 approval been satisfied? Is the project ready for CD-1 approval?
- **Findings**
 - **Comments**
 - **Recommendations**



5. Cost and Schedule

M. Reichanadter, SLAC / Subcommittee 6

PROJECT STATUS		
Project Type	MIE / Line Item / Cooperative Agreement	
CD-1	Planned:	Actual:
CD-2	Planned:	Actual:
CD-3	Planned:	Actual:
CD-4	Planned:	Actual:
TPC Percent Complete	Planned: _____%	Actual: _____%
TPC Cost to Date		
TPC Committed to Date		
TPC		
TEC		
Contingency Cost (w/Mgmt Reserve)	\$	
Contingency Schedule on CD-4b	_____ months	_____ %
CPI Cumulative		
SPI Cumulative		



4. Is the project organized to successfully deliver all scope – DOE and in-kind? Are interfaces between the facility and the detector clearly delineated and appropriately managed? Does the proposed project team and staffing plan possess appropriate management experience, technical expertise, and laboratory support to produce a credible preliminary design leading to the technical, cost and schedule baseline required for CD-2?
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- **Findings**
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