



Department of Energy

Washington, DC 20585

OCT 9 2015

MEMORANDUM FOR STEPHEN MEADOR
DIRECTOR
OFFICE OF PROJECT ASSESSMENT

FROM: JAMES SIEGRIST *js*
ASSOCIATE DIRECTOR OF SCIENCE
FOR HIGH ENERGY PHYSICS

SUBJECT: REQUEST TO CONDUCT AN INDEPENDENT PROJECT REVIEW OF
THE LBNF/DUNE PROJECT

I request that your Office organize and conduct an Office of Science Independent Project Review (IPR), on December 2–4, 2015, of the Long Baseline Neutrino Facility /Deep Underground Neutrino Experiment (LBNF / DUNE) Project. This IPR is to be held at the Sanford Underground Research Facility (SURF) in Lead, South Dakota, which is the location of the project's Far Site. The primary purpose of this review is to evaluate the Project's readiness for approval of Critical Decision CD-3A, *Approve Initial Far Site Construction*.

LBNF/DUNE is a major international project consisting of two multinational efforts:

- Construction of LBNF by DOE with minority participation by international partners;
- Fabrication of DUNE, with international leadership and minority participation by DOE HEP.

DOE's participation in both efforts is being managed jointly as a single line-item construction project under DOE Order 413.

LBNF will construct a high intensity neutrino beam and related facilities at Fermilab. LBNF will excavate and fit out caverns, including components of the cryogenic system, for the DUNE detector at the Far Site. DUNE will use the high-intensity neutrino beam and large-volume precision detector to make accurate measurements of the properties of the oscillated neutrinos. This large detector system will also be used to search for proton decay and for neutrinos from supernova bursts.

The LBNF CD-3A scope includes the early civil construction on the surface, in the shafts, and underground at SURF, limited to core infrastructure needed to prepare the far site for detector assembly and installation. These early construction activities will enable critical path detector-pit excavation to start sufficiently before detector fabrication begins, so the underground facility can be ready to accept cryogenic equipment and detector components when they are available for installation.

In your review, the committee is requested to evaluate the LBNF readiness to execute Far Site initial construction procurement. The committee should address the following specific items:



1. Is the Far Site Conventional Facilities (CF) design technically sound and sufficiently mature to support proceeding with procurement and initiation of initial civil construction activities? Does the design flow down from the requirements? Have technical risks been appropriately addressed? Has the interface definition between CF and the cryostat/cryogenic systems and CF and the detector, as well as the logistics of excavation, construction, and technical systems installation, been sufficiently developed?
2. Is the CD-3A scope identified by the project necessary and sufficient to enable installation of the cryostat, cryogenic infrastructure, support systems and detector?
3. Are the cost and the schedule for initial far site construction activities credible, with adequate contingencies? Does the project have a credible plan to track performance associated with these activities? Are risks identified and managed appropriately?
4. Are ES&H aspects being properly addressed and are future plans sufficient given the project's current stage of development?
5. Is the project being effectively managed? Is it properly organized and staffed to successfully execute project plans, especially as they relate to the initiation of Far Site construction activities?
6. Has the project responded appropriately to recommendations from the last DOE review, in particular, in relation to the Far Site CF?
7. Is the project ready to seek approval of CD-3A to initiate Far Site construction?

William Wisniewski will work with you, as necessary, to plan and carry out this review. We appreciate your assistance in this matter. As you know, these reviews play an important role in our program. I look forward to receiving your Committee's report within 60 days of the review.

cc: Patricia Dehmer, SC-2
James Siegrist, SC-25
Michael Procario, SC-25
Theodore Lavine, SC-25
William Wisniewski, SC-25
Michael Weis, FSO
Pepin Carolan, FSO
Adam Bihary, FSO
Nigel Lockyer, FNAL
Christopher Mossey, FNAL
Joseph Lykken, FNAL
Elaine McCluskey, FNAL
Michael Headley, FNAL