August 16, 2018

Memorandum

To: David Brian MacFarlane, Chair, Long Baseline Neutrino Committee (LBNC)
Hugh Montgomery, incoming Chair, Long Baseline Neutrino Committee (LBNC)
Regina Rameika, Chair, Neutrino Cost Group (NCG)

From: Nigel S. Lockyer, Director of Fermilab

Subject: Charge to the Long-Baseline Neutrino Committee and Neutrino Cost Group

---

The Long Baseline Neutrino Committee (LBNC) and the Neutrino Cost Group (NCG) are part of the international project governance and oversight structure for the international Deep Underground Neutrino Experiment (DUNE), hosted by Fermilab. The LBNC and NCG are review committees charged by and reporting to the Fermilab Director. Importantly, this reporting should make recommendations concerning the Technical Design Reports for DUNE to the Director. Both groups will provide updates to the DUNE Resources Review Board (RRB). The LBNC reviews DUNE from a technical perspective, and the NCG reviews costs and schedule associated with DUNE construction.

Background on DUNE, LBNF, and PIP-II

The DUNE experiment is an international collaboration that will build, operate, analyze data, and publish scientific results from the world's largest and most technologically-advanced liquid argon neutrino detector at the "far site" in South Dakota, as well as a detector at the "near site" at Fermilab. DUNE is governed as an international collaboration. The DUNE collaboration elects two co-spokespeople as leaders. The DUNE RRB is managed by the Fermilab Directorate and is comprised of the international funding agencies that sponsor DUNE. The RRB provides monitoring and oversight of DUNE, with the assistance of the LBNC and the NCG.

The Long-Baseline Neutrino Facility (LBNF) is the infrastructure for the project, providing the facility for the DUNE experiment. LBNF includes excavation of the caverns at the far site in South Dakota, the cryogenics systems, and the neutrino beamline coming from Fermilab. The Proton Improvement Plan-II (PIP-II) is the upgrade to Fermilab's accelerator complex, which will deliver the powerful neutrino beam to DUNE. LBNF and PIP-II are governed as US DOE Order 413.3b projects with international partners. The review process for LBNF and PIP-II is conducted through Director's reviews and the usual DOE Order 413.3b process. The International Neutrino Council (INC), chaired by DOE Office of High Energy Physics, brings together the partners for LBNF and PIP-II. The LBNC, NCG, and RRB Chairs may, on occasion, be requested to provide updates to the INC.

Scope of the LBNC

The purpose of the LBNC is to review the scientific, technical, and managerial plans and decisions of the DUNE experiment, and to provide reports and recommendations to the Fermilab Director; the reports are made available to the RRB. This includes:

- Evaluating the scope of the DUNE experiment relating to scientific objectives and the technical capabilities including the computing to meet them.
- Identifying the key technical risks in the DUNE project and evaluating the effectiveness of plans to mitigate these risks.
- Assessing the validity and appropriateness of the proposed technical design and construction readiness of the DUNE experiment, through review of the Interim Design Report and the Technical Design Reports (TDRs).
- Providing oversight and commentary on interface and performance issues with LBNF, which could impact DUNE.
- Monitoring progress of DUNE against the technical design and construction plan provided in the approved Technical Design Reports.
- The LBNC scope does not include review of LBNF or PIP-II beyond relevant interfaces impacting DUNE, as these projects are reviewed through the U.S. project management process.

Scope of the NCG

The purpose of the NCG is to review the cost, schedule, and associated risks for the DUNE experiment, and to provide reports and recommendations to the Fermilab Director and the RRB. This includes:

- Evaluating the reliability, completeness and appropriateness of the cost estimate for the DUNE experiment including computing.
- Assessing the feasibility of the schedule for DUNE and the availability of the manpower necessary to execute the project.
- Evaluating the project management structure and the risk analysis for DUNE, along with the LBNC, including proposed levels of cost realism and schedule contingency to address identified risk mitigation strategies.
- Monitoring progress of DUNE against the cost and schedule associated with the Technical Design Reports.

The NCG will establish a common methodology which can be used to value international contributions to DUNE.

Operations

The Chairs of the LBNC and NCG are appointed by, and report to, the Fermilab Director. The Chair of the LBNC also serves as an ex officio member of the Fermilab Physics Advisory Committee.

The LBNC and NCG Chairs ensure coordination and collaboration between the two groups.
The membership of the LBNC and NCG is determined by the Fermilab Director.

The LBNC and NCG meet with the management of DUNE as needed to monitor progress.

The LBNC and NCG may provide guidance to the DUNE experiment on the submission of the Interim Design Report and TDRs, including the submission of any confidential cost information.

In the execution of the TDR and cost and schedule reviews, the LBNC and NCG may utilize sub-committees in which members of the LBNC and/or NCG are supplemented by external membership. The external membership, proposed by the Chairs, will be reviewed in advance with the Fermilab Director.

Following a review of the TDRs, the LBNC and NCG each will submit reports to the Fermilab Director summarizing each group's respective reviews and providing a recommendation of whether to endorse the TDRs for DUNE.

The LBNC and NCG reports are made available to the DUNE RRB.

The LBNC and NCG may form subgroups to review other items relating to DUNE upon the request of the Fermilab Director.

In regular meetings, the LBNC and NCG will provide ongoing monitoring of DUNE performance against the approved TDRs and cost and schedule data.

Signed: _____ Date: 8/16/2018

Nigel S. Lockyer
Director of Fermilab