

25 July 2018

LBNC Meeting: Aug 1-3, 2018
CHARGE

The LBNC is asked provide candid assessments of the scientific, technical, and managerial preparations and decisions for the Fermilab Long Baseline Neutrino Facility (LBNF), the long baseline Deep Underground Neutrino Experiment (DUNE), and some specific aspects of the Short Baseline Neutrino program. The LBNC referee groups are asked to focus on specific areas of these activities.

A major focus of the August meeting will be on the DUNE Interim Design Report (IDR). The earlier May meeting provided an overview of, and introduction to, the IDR and the committee now has had a chance to read the document. The main purpose of the August meeting is to address any remaining questions with regard to the IDR and to complete a thorough review in order to be able to provide feedback and guidance for the TDR.

Since the IDR is primarily seen as a critical first step towards a full Technical Design Proposal, useful advice on the IDR could include any of the following:

1. Are the technical requirements for system clearly stated?
2. Do the technical requirements connect well to the physics requirements of DUNE?
3. Is the system accurately and clearly described, keeping in mind the criteria that a science agency specialist should understand the introductory section and a professional member of the HEP community should be able to follow the body of the text?
4. Has the system been demonstrated to meet its technical requirements, and if not, what are the deficiencies?
5. Is the level of detail appropriate? Are any key elements missing? Are any components described in too much detail for this phase of the experiment?
6. Are project related activities—management structure, facilities, interfaces, safety, quality assurance, integration/installation, and high level schedule—described well enough in the TP to show that the complete delineation of these activities needed for the TDR is on-track?
7. Is there a clear decision pathway laid out to address options and unknowns between now and the TDR? Are decision criteria understood and can the required information or process realistically be executed on the proposed timeline?
8. Are risks to the subsystem project identified and are mitigation strategies plausible? **This is will be a central question in advising the Neutrino Cost Group on uncertainties in cost and schedule and how corresponding mitigation strategies are incorporated into costs estimates and schedule vulnerabilities.**
9. Are there aspects of the subsystem design that will not be informed by previous experience or prototypes and therefore present risks to the project design and/or execution?

Other important topics at the meeting include an update on progress with LBNF and issues related to the interfaces between LBNF and DUNE, an update on protoDUNE progress and

future plans, the final recommendation from the Collaboration on the Near Detector strategy, and any further progress by the calibration task force.

Referee Groups:

In addition to Q&A sessions from reading the IDR, there are a number of specific follow-up topics which we would like to hear about at this meeting:

1. DUNE-SP
 - Update the status of the CE options being pursued for the TDR.
 - Describe the plans for the protoDUNE Testbeam measurements and plans beyond the testbeam.
2. DUNE-DP
 - Update on design and testing for protoDUNE-DP CRPs
 - Update on schedule and planning for protoDUNE-DP
3. DUNE Physics, Simulation & Reconstruction
 - Describe the strategy and state of interactions with detector consortia with regard to physics studies in support of the requirements process being undertaken by the EB.
4. DUNE Computing
 - Outline the state of readiness for ProtoDUNE data collection? What are the plans to use ProtoDUNE data to influence the computing model?
5. LBNF/DUNE Cryogenics
 - Provide an update on commissioning plan for protoDUNE cryostats and cryogenic systems and opportunities for validating CFD models
6. LBNF Management, Schedule & Planning
 - Provide an overview of LBNF progress and planning, with particular attention to aspects of the project that could impact the DUNE project and schedule
 - Provide an update on risks, with particular attention to those risks that could impact the DUNE project and schedule
7. LBNF/DUNE Interfaces
 - Discuss protoDUNE lessons-learned implications for definition and control of interfaces for DUNE interfaces and project office management;
 - Discuss status of internal and LBNF-DUNE interfaces at the time of the TP and plans for maturing these definitions and plans by the time of the TDR.
8. DUNE Management, Schedule & Planning
 - Update on implementation of new management structure, including new Executive Board;
 - Review plans for, and scope of, the international project office;
 - Report on steps taken to identify physics drivers for requirements and plans for managing these across the experiment;
 - Report on developments within the calibration task force and next steps;

- Report on progress and status of the ND conceptual design development.
9. DUNE Near Detector
- Describe the physics studies guiding the Near Detector design decisions and the ND technology decision process.