

Design Review:

ProtoDUNE Dual Phase Review

24–25 April 2017

Charge

The Committee is requested to review the ProtoDUNE-DP Time Projection Chamber technical design, including the CRP, drift cage, cathode, high voltage, frontend electronics, photon system, DAQ and slow control and determine if it is at a satisfactory level for NP02 ProtoDUNE operation at the CERN Neutrino Platform in 2018.

In particular, the review team is asked to address the following questions:

1. Does the TPC design meet the requirements for ProtoDUNE-DP? Are the requirements/justifications sufficiently complete and clear?
2. Does the documentation of the technical design provide sufficiently comprehensive analysis and justification for the design adopted and a good pathway to DUNE?
3. Are the TPC risks for ProtoDUNE-DP captured and is there a plan for managing and mitigating these risks?
4. Does the ProtoDUNE-DP design lead to a reasonable production schedule, including QA/QC, transport, installation and commissioning that will enable operation before LS2?
5. Are the drawings sufficiently complete to initiate production? Are potential vendors identified? Is the installation plan sufficiently far advanced to assure that the detector can be installed as designed? Is the design for the installation tooling adequate?
6. Are all internal interfaces between detector components (CRP, Drift Cage, Cathode, HV, photon system, slow control, frontend electronics, DAQ, trigger and online farm) and cryostat documented, clearly identified and complete?
7. Is the TPC 3D model, top level assembly drawings, detail/part drawings and the material and process specifications documented and sufficiently complete to demonstrate that the design can be constructed and installed?
8. Is the grounding and shielding of the TPC understood and adequate?
9. Is the HV system design comprehensive? Are appropriate safety concerns incorporated into the design? Are the design radii, surface finish, cleanliness and QC standards of the components adequate to support operation at the design HV?
10. Are operation conditions (loads, movement and temperature) listed, understood and comprehensive?
11. Is the TPC quality assurance, quality control and test plan adequate? Have applicable lessons-learned from previous LArTPC devices been documented and implemented into the QA plan?

The committee should present its findings, comments, and recommendations in a closeout meeting with DUNE management on April 25. The committee should provide a final written report by May 5.