

Technical Update

David Warner

Photon Detector Consortium Meeting

December 12, 2023

Outline

- New FD2 L2 manager!
- Recent review results
- Status/plans for upcoming CERN validation tests
 - CERN Cold Box Testing
 - ProtoDUNEs
- Upcoming Events

Peter Shanahan appointed L2 manager for FD2 PDS

Excerpt from announcement email from Jolie Macier (FDC Project Manager)

Dear colleagues,

I am pleased to announce that Peter Shanahan is now officially the CAM/L2 for the FD2 Photon Detector System.

...

Please support Peter in his new role.

Best regards & have a great weekend,
Jolie

FD1 DAPHNE Components Order PRR

- Draft report received 4 Dec. 23 (Review passed)

FD1 PDS DAPHNE Components PRR Report

I. Introduction

A Procurement Readiness Review for DAPHNE Components was held on November 9th, 2023. The review focused on our readiness for proceeding with the procurement of long lead-time components for the DAPHNE boards. Information about the review can be found at the following links:

- One recommendation:
“Following successful completion of K-26 [KRIA] validation tests, the consortium should proceed with the purchase of a sufficient quantity for full production. Same for AFE and other components.”
- **DAPHNE KRIA testing underway at FNAL, CERN. Expect to place orders for components Q2 FY24. See presentation today for details!**

CD2-3 Review (Far Detector Readout)

Closeout Report on the DOE/SC CD-2/3 Review

SC2 - Far Detector Readout

Fermi National Accelerator Laboratory

September 12-15, 2023

Hong Ma - BNL, Monica Tecchio - Michigan, Tom Shutt - SLAC

- Held at Fermilab 12-15 Sep. 2023.
- Outcome: We (FDC) passed!
 - Recommendations:
“The project is ready to proceed to CD - 2 / 3”

CD2-3 Review

- **ACTION NEEDED: Improve P6 schedule**
 - P6 schedule is being edited to reduce/explain float and include lessons learned in cold box testing.
 - FD1 PDS schedule includes minor re-writes (splitting cold electronics from SiPM fabrication).
 - FD2 PDS schedule under extensive revision to better reflect PDS production/installation plans. Expected to be complete January 2024.

Upcoming Production Readiness Reviews

- DUNE Production Readiness Reviews need to be completed in advance of initiating component **procurement** for the far detector.
 - Site visits will follow PRRs to evaluate pre-production activities.
- FD1 PDS Rail and Cable, DAPHNE components and FD1 PDS SiPMs completed PRRs, and have begun procurement activities.
- Production Readiness Reviews for all remaining sub-systems need to be completed in 2024 to remain on schedule.
- Review and production schedule will be re-visited once FD1-FD2 installation plan finalized.

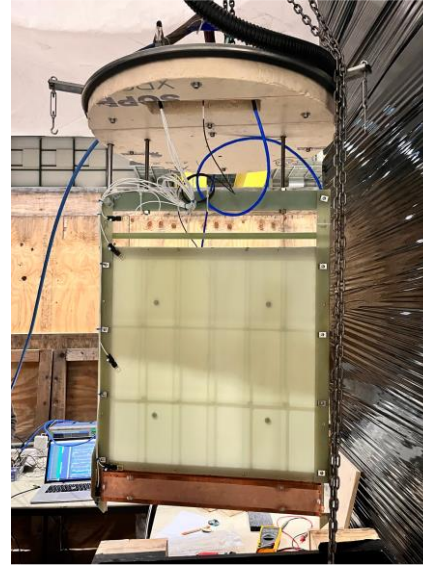
Remaining PRR Schedule

| Review | P6 Date |
|-----------------------------|-------------|
| FD1 Remaining Component PRR | June 2024 |
| FD2 SiPM PRR | March 2024 |
| FD2 module & CE | May 2024 |
| FD2 Warm Electronics | July 2024 |
| FD2 Remaining Items | August 2024 |

Note: We will re-schedule reviews to reduce FD1-FD2 overlap once detector installation order is finalized

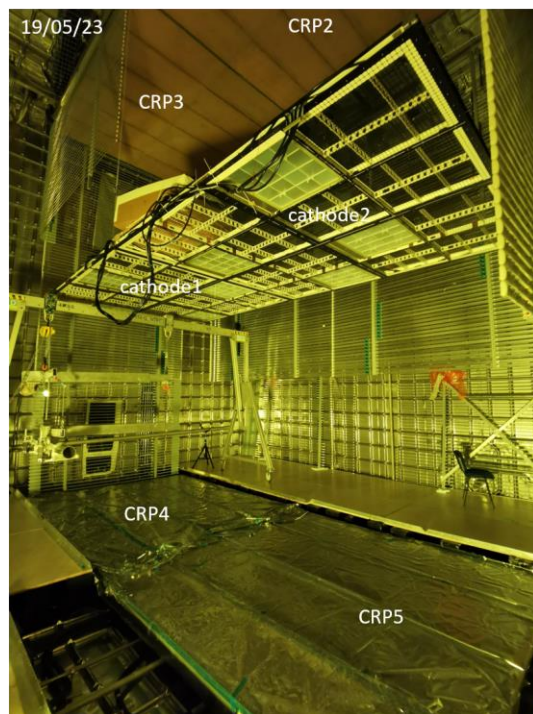
Cold Box Testing(FD1 and FD2)

- FD1 ProtoDUNE 2 (NP-04):
 - 10 FD1 PDS pre-PRR modules in fabrication.
 - Frames fabricated at UNICAMP, received at CSU.
 - Production SiPMs at CSU.
 - Awaiting cold amplifiers and signal readout boards (expected week of Dec. 18 2023).
 - Installation delayed until in March 2024 (Awaiting APAs from Daresbury).
 - Running March/April 2024.
- FD2 ProtoDUNE (NP-02):
 - “Module 1” installation underway now.
 - Represents final pre-PRR design validation.
 - Operation late January 2024.
- Please contact PDS consortium leadership if you are interested in participating in module 1 operations.



ProtoDUNE Status (FD1 and FD2)

- FD1 ProtoDUNE 2 (NP-04)
 - Installation complete.
 - TCO close was scheduled to be complete the week of Dec. 4 2023 (no confirmation yet).
- FD2 ProtoDUNE (NP-02)
 - Installation (nearly) complete (awaiting TCO closure for bottom PDS membrane module installation).
 - Bids for TCO closure opened, under evaluation (January 2024?)
- ProtoDUNE operations in 2024:
 - LAr bids received at CERN, in evaluation process.
 - NP-02 first (?) Q2 FY2024.
 - NP-04 second (?) Q4 FY 2024.
- We will be reaching out to consortium members soon for personnel needed to operate the ProtoDUNEs.



Upcoming Events Calendar

- Reviews:
 - See slide 8 for PRR review summary
- Technical:
 - Cold box runs
 - FD1 PDS March-April 2024
 - FD2 PDS (Module 1 run) December 2023 – January 2024
 - ProtoDUNEs
 - FD2 TCO close – January/February 2024 ???
 - Cooldown/operation – ???
 - FD1 TCO close – December 2023
 - Cooldown/operation – ???