

# ProtoDUNE II PDS Updates

## PDS Operations

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## Summary

- ▶ The BEAM time is officially finished
- ▶ All channels from APA 1 are now connected to a single board and will be monitored in self-trigger mode.
- ▶ We have taken IV Curves for all 4 APAs.
- ▶ and LED calibration RUNS for APAs 2, 3, and 4. We have problems getting the appropriate configuration for APA 1.
- ▶ We have received two new DAPHNE V3 boards. Those are ready to be tested @CERN
- ▶ NP02 TCO Closure is finished
- ▶ We are preparing for NP02 Commissioning: Training, final assembly, and testing of the membrane PD modules and installation.
- ▶ We are slowly improving the WAFFLES development on many different fronts.

# NP04

2024

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 3

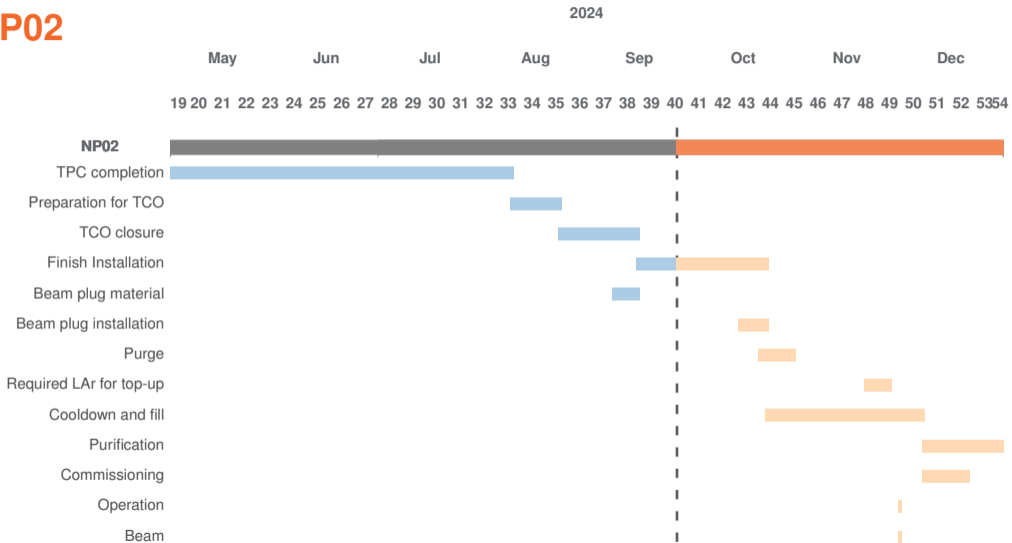


TODAY

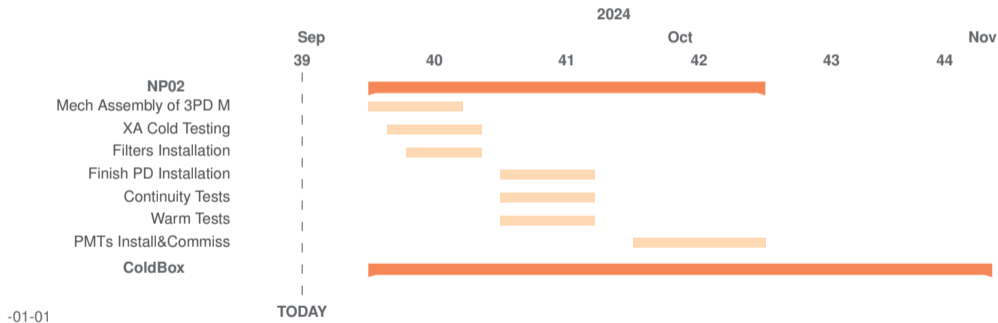
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# NP02



# NP02 PDS Activities



# NP04 & NP02 Logistics: Commissioning & Decommissioning

## Constraints

- ▶ All three facilities require simultaneous support.
- ▶ Each FELIX board can receive 12 links, all of them using the same data mode.
- ▶ DAPHNE v2 boards will be compatible with both 4.x and 5.x DAQ systems, whereas v3 will only be supported by 5.x.
- ▶ The integration of a functional DAPHNE controller with the OKS system is tentatively set for three months.
- ▶ NP02 purging will start by the third week of October.
- ▶ Closure of the VD Cold Box is planned around the last week of October.
- ▶ Beam time concludes around September 18th.

# NP04 & NP02 Logistics: Commissioning & Decommissioning

## Available Hardware

### NP04

7 DAPHNEs  
2 FELIX

### NP02

No equipment

### Cold Box

1 FELIX

## Additional Equipment

- ▶ 2 spare DAPHNE v2 boards:  
One at CERN, one in Milan  
Both will be modified for SoF
- ▶ 2 DAPHNE v3 boards:  
Expected at CERN by the end of September
- ▶ 2 DAPHNE V3 boards with mezzanine  
Expected at CERN by the end of the year

# NP04 & NP02 Logistics: Commissioning & Decommissioning

## Proposed Plan for Operations

### NP02

2 V2 DAPHNEs,  
+1 for SoF  
+1 Membrane Modules  
+1 FELIX Board

### Cold Box

2 V2 DAPHNEs,  
+1 for SoF  
+ Membrane Modules  
+1 FELIX Board

### NP04

4 V2 DAPHNEs, 1 FELIX

### Additional Equipment

- ▶ 1 spare DAPHNE v2 boards:  
To be installed at the DAQ barracks
- ▶ 2 DAPHNE v3 boards:  
To develop integration with the OKS system
- ▶ 2 DAPHNE V3 boards with mezzanine  
To be installed at NP02 once tested in  
standalone mode



## Operational Plans Overview

- ▶ **Milano V2 Board Modification (DONE!):** Send one V2 board to Milano ASAP for SoF readout modifications, then ship back to CERN.
- ▶ **NP04 Operations :**
  - ▶ Post-beam time, APA 1 in self-trigger mode for R&D and monitoring. (DONE!)
  - ▶ Prepare configuration to use five boards during warm-up and decommissioning. (DONE!)
  - ▶ On Friday, we will start taking the runs for self-trigger studies and analog chain optimization.
- ▶ **NP02 Commissioning:**
  - ▶ Monitor with two boards, one for membranes and one for the cathode.
  - ▶ Operate in self-trigger mode using a single FELIX server.
  - ▶ Limit cathode module operations above LAr temperature.

## Additional Operational Details

### ▶ **DAQ Barracks:**

- ▶ One V2 DAPHNE can be detached from the NP04 runs for OKS development. (Controller 13)
- ▶ We have two V3 Boards to start testing the timing interface, general configuration, data senders, and integrations with the OKS DAQ system.

### ▶ **Concurrent Operations:**

- ▶ Bring another V2 board for SoF compatibility for the Cold Box.
- ▶ Plan for the VD Cold Box includes installation of eight modules (four membrane modules + two cathode modules).
- ▶ Urgency in material delivery to CERN for the timely start on tests.

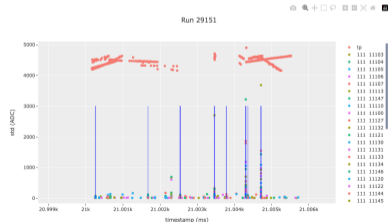
# R&D Gateway Firmware and Software

New version of the Firmware for DAPHNE V3 is being tested at PAB (FERMILAB)

## TPs, TAs, TC, and T Activities

I'm making great progress reading TPs from the TPC in WAFFLES. The setup is still tricky to use because it requires the DAQ environment.

- ▶ Anna is advancing with the energy scan analysis.
- ▶ Henrique a preliminary integration of his framework in WAFFLES
- ▶ Shuaixiang is almost ready to start his analysis in WAFFLES



## The PDS repos

### WAFFLES

Waveform Analysis Framework for Light Emission Studies

<https://github.com/DUNE/waffles>

### Daphne Interface

Set of tools to communicate and program DAPHNE [https://github.com/marroyav/daphne\\_interface.git](https://github.com/marroyav/daphne_interface.git)

### PDS Error Page for Shifters

A collection of errors and handling tools.

<https://twiki.cern.ch/twiki/bin/view/CENF/PDSErrors>

### daphnmodules

Booting, Configuration, and integration with DAQd <https://github.com/DUNE-DAQ/daphnmodules>

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