

Status & Plans

Eric James

FD Technical Board Meeting

March 19, 2020

State of the World - I

- Lots of activities are shutting down
- CERN is mostly shut-down (ProtoDUNE detectors have been placed into a safe operating mode requiring minimal intervention)
- FNAL is not yet completely shut down but moving in that direction (ICEBERG will likely not be re-filled in the near future)
- Ash River is nominally still open but running with minimal staff and no visitors allowed (may be able to continue to make some progress with ProtoDUNE-II trial assembly activities)
- Other Lab and University facilities are shut-down or in the process of shutting down (e.g. PSL was shut down yesterday)
- Bottom Line: It is not reasonable to expect that any substantial progress on R&D or prototyping activities will be made over the next few months

State of the World - II

- Need to assess how we can be most productive during this period
- A lot of people are stuck at home with less on their plates (although some university professors are facing the challenge of needing to create new online content for their courses)
- Hope to be able to continue with critical path excavation work at SURF – most detector-related activities can tolerate a few months of delay at this point
- Current thought process is to push forward with the major reviews planned over the next few months (even if they need to be conducted with almost everyone participating remotely)

Targeted Events

- RRB Meeting on April 2-3
- LBNF/DUNE Director's Review on April 28 – May 1
- DOE IPR on July 14-17
- Note that Collaboration Meeting at SURF on May 18-22 has been cancelled (weekly collaboration calls are a likely substitute)

RRB Meeting

- Planning for upcoming RRB meeting is ballistic (no need for additional consortia input over next two weeks)
- However, DOE IPR on July 14-17 will require more detailed understanding of consortia cost estimates and responsibility matrices
- We should also anticipate additional NCG review of consortia cost estimates on that timescale
- Need to finalize high-level activities for international detector deliverables in P6 schedule and resource load them to create the annual M&S and labor profiles requested by NGC
- Need to finalize MOU appendices detailing institutional responsibilities within consortia
- Some scoping decisions will be required (more on this later)

LBNF/DUNE Director's Review

- Project (P6) schedule has already been frozen for this review (end of February)
- All materials need to be posted by April 14 (~four weeks)
- Primary consortia deliverable is updated interface documents uploaded into EDMS
- Last of three cold electronics preliminary design reviews being held remotely over next two weeks

Interface Documents

- Currently targeting four sets of interface documents:
- Consortia-to-consortia: Kyle and Terri have been coordinating the updates to these documents and will provide a progress report in this meeting (need to meet April 14 deadline)
- Consortia-to-installation: Jim has been coordinating updates and will be contacting consortia leadership teams in near future (need to meet April 14 deadline)
- Consortia-to-DSS: Jack has drafted an initial document, which can be accessed at <https://edms.cern.ch/document/2339392> (would like to converge on an updated version by April 14)
- Consortia-to-facilities: Not expecting these to be ready for posting by April 14 (information being requested from Terri on rack space and power requirements feeds into these documents)

DOE IPR

- Project (P6) schedule for this review will be frozen at the end of May (~10 weeks)
- All materials need to be posted by June 30 (~14 weeks)
- Targeting full set of resource-loaded international detector activities in P6 schedule by end of May
- Targeting complete sets (all four types) of signed interface documents in EDMS
- Targeting completion of HV system, Photon Detector, APA Shipping Box, and DSS reviews on this time scale (will most likely need to be done remotely – see Steve’s talk)
- Targeting progress on scope decisions through CALCI workshop and upcoming DAQ milestones (the later may need to be re-visited)

Schedule

- Current P6 schedule (frozen at the end of February) includes international detector activities for HV system and APAs as well as first passes at the activities for ProtoDUNE-II and DAQ
- As a next step, international activities for Photon Detection will be added (currently exist in sandbox)
- Gina and Eric will work with DAQ and CALCI to finalize and resource load high-level international activity schedules over next month or so
- Goal would be to produce materials required for NCG review by early May so that they can provide feedback on the time scale of the July IPR

Interface Documents

- Additional goals for July IPR:
- Finalization of consortia-to-dss and consortia-to-facilities documents
- Appropriate sign-offs for all EDMS interface documents

Technical Reviews

- Planned Cold Electronics review at BNL on March 10-11 cancelled due to coronavirus concerns
- Quickly re-configured as a remote review and re-started this past Tuesday (more details in Steve's talk)
- Using this review as a test case for how to best format future remote reviews (HV system, Photon Detection, APA shipping box, and DSS)
- The production and independent review of structural analysis notes is an important component of these upcoming reviews and drives their scheduling

Structural Analysis Notes

System	Note Ready	Note Review Complete	Review Target
HV System	End of March	Early May	Mid-May
APA Frame & Shipping Box	Mid April	Late May	Early June
Photon Detection	TBD	TBD	Late June
DSS	Late May	Early July	Mid-July

Requirements

- Status of requirements with release of TDR:
- High-level requirements (28 for SP Far Detector) held by the DUNE Executive Board
- Lower-level requirements held by the consortia (APA-6, HV-2, CE-8, PDS-16, DAQ-8, CALCI-17, and Installation-6)
- All of these are now captured in EDMS ([EDMS-0000195183](#)) and DOORS (LBNF/DUNE Project Tool)
- Each consortia should go back and consider whether there are enough documented requirements associated with their system to facilitate upcoming reviews (need to have final requirements under formal change control at time of final design review)
- More in Steve's presentation

QA/QC Plans - I

- QA/QC requirements for preliminary design reviews: **Draft manufacturing, quality assurance, testing, and procurement plans**
- For the Preliminary Design Reviews, the Consortia need to describe their plans for QA/QC inspection and testing. Formal QC Plan Checklist templates and procedures do not need to be completed at this time. The Consortia should describe what components require inspection and testing, the inspections and tests that are going to be performed, location of testing (fabrication facility, SURF above or below ground), and technical justifications for inspections and tests
- For the previously held APA and cold electronics reviews, it was felt that the consortia did a good job describing their QC plans in talks. However, we want to move towards having written documents
- Jim/Kevin have promised to produce a template document based on what was shown at APA preliminary design review within a few weeks

QA/QC Plans - II

- QA/QC requirements for final design reviews: **Production site manufacturing plans for all production sites, final quality assurance plan and quality control plan, and test equipment design**
- For Final Design Reviews, the Consortia shall have translated the description of the QA/QC inspection and test requirements into procedures, travelers, test forms, and the QC Plan Checklist. The presentation should include examples of the production documentation, procedures, and the QC Plan Checklist
- QA/QC requirements for production readiness reviews: **Validation of a “module-0” is expected which should demonstrate the practical use of the Final QC plan (i.e., travellers, test plans and reports, QC Plan Checklist, software verification and validation documents, supplier documentation, etc.)**
- For Production Readiness Reviews, the Consortia will show at each Fabrication facility how they have implemented the QC Plan including procedures, travelers, test plans, and QC Plan Checklist for module-0

CALCI Scope Workshop

- Workshop is meant to play an important role in clarifying the baseline scope of far detector calibration and cryogenic instrumentation systems (needed for July IPR)
- Clearly, will not be able to hold at CERN in early May as originally planned
- Currently re-configuring as remote workshop that will take place over several weeks
- Charge has been posted to DUNE DocDB 17985
- Large review committee encompassing representation from across the collaboration will provide feedback

CALCI Scope Workshop – Draft Agenda

Monday, May 4:

08:30 – 09:30: Review Committee Executive Session

09:30 – 10:45: Baseline Ionization Laser System

10:45 – 11:30: Expanded Ionization Laser System

Tuesday, May 5:

08:30 – 09:30: Committee discussion and preparation of questions on Ionization Laser System

09:30 – 10:15: Laser Beam Location Systems

10:15 – 11:00: Photo-Electron Laser System

Wednesday, May 6:

08:30 – 09:15: Committee discussion and preparation of questions on Laser Beam Location and Photo-Electron Laser system

09:15 – 10:00: Pulsed Neutron Source

10:00 – 10:45: Radioactive Source

10:45 – 11:30: Committee discussion and preparation of questions on Pulsed Neutron and Radioactive sources.

CALCI Scope Workshop – Draft Agenda

Monday, May 11:

08:30 – 09:30: Consortia responses to questions regarding proposed calibration systems

09:30 – 10:30: Purity Monitors

10:30 – 11:30: Temperature Sensors

Tuesday, May 12:

08:30 – 09:15: Committee discussion and preparation of questions on Purity Monitors and Temperature Sensors

09:15 – 10:00: Cameras

10:00 – 10:45: Level Meters, Pressure Sensors, and Gas Analyzers

10:45 – 11:30: Committee discussion and preparation of questions on Cameras, Level Meters, Pressure Sensors, and Gas Analyzers

Thursday, May 14:

08:30 – 09:30: Consortia responses to questions regarding proposed cryogenic instrumentation systems

09:30 – 11:00: Committee initial discussion regarding outcomes and report writing

CALCI Scope Workshop – Draft Agenda

Monday, May 18:

08:30 – 10:00: Committee follow-up discussion regarding outcomes and report writing

Thursday, May 21:

08:30 – 10:00: Committee review of close-out materials

10:00 - 11:00: Close-out report

Summary

- We probably need to accept that there will be a several month delay in technical activities
- The current operational periods for the ProtoDUNE detectors will likely be extended and push back the schedule for ProtoDUNE-II
- We can use the next several months to focus on getting through the critical upcoming reviews that will allow the project to move forward
- We should try as much as possible to use the next few months for finalizing project documentation so that we can return our full focus to technical activities once we make it out of this period