

ND CDR Plans

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Fermilab
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Mission and Timeline

- Multiple missions:
 - Final CDR in preparation for consortia and ND TDR
 - TDR ND Exec Summary (and preliminary ND CDR?) in support of the FD TDR
 - A living document in support of the ND design group work
- Timeline (in the order above):
 - 2020?
 - Spring 2019
 - now → Spring

Support of FD TDR

Shown by Stefan this morning:

Technical Design Report

Main Editors: Tim Bolton and Sam Zeller

Technical Design Report

Main Editors: T

Connected stand-alone volumes ...

- I. Executive Summary (~200 pages)
- II. Physics (~200 pages)
- III. Single Phase Module (~400 pages)
- IV. Dual Phase Module (~400 pages)
- V. Technical Coordination (~200 pages)
- VI. Computing Executive Summary (~50 pages)
- VII. Near Detector Executive Summary (~50 pages)

- **September:** Consortium/working group editors appointed
- **October:** Outlines due including outline of protoDUNE strategy
- **November:** First drafts due including first pass at requirements table. Editors' initial review complete by November 15
- **December:** Second drafts due. Must include initial cost, risk, schedule, and interface tables, plus any iteration of protoDUNE strategy and requirements.
- **January:** Review of second drafts.
- **February:** Outcome of independent reviews of second drafts back to consortia/working groups
- **March:** Final drafts due
- **April:** Review of final documents complete
- **April 15:** Submit final document to LBNC



Working draft: as a guiding document

- We don't know what we want to build
- We don't even know all the questions
- The CDR draft will be an evolving document informed by tight integration with NDDG work
- Expect the evolving draft to be useful to the NDDG process
 - Help integration and strategy issues come to light
 - Help track questions and bring up new ones
 - Documenting progress and studies
- A good starting point will be the ND concept design working group report and the “feeder” reports from the subgroups.

Spring 2019 draft

- There is little time.
- As heavy as we can make it on this timescale.
- Must make a good case of the physics benefit of the ND complex.
- Will be largely based on LAr oscillation physics studies
 - With and without PRISM
- Performance metrics from the GArTPC *et. al*
 - perhaps a few better developed channels analyzed (minimal cheating?) for inclusion in the studies
- Technical description of facility and all systems as we know them at the time.

Lunch conversation CDR Outline

- Executive Summary
- Overview
- Facility
 - Hall
 - LAr Detector
 - Muon spectrometer?
 - HPTPC Detector
 - Magnet, TPC, ECAL
 - Muon system
 - 3DST
 - How integrated
 - System integration
 - Detector assembly concept
 - Detector motion concept (PRISM)

CDR Outline

- Oscillation Physics Mission
 - Flux constraints / measurements
 - Detector systematics
 - Cross-section systematics / model tuning
 - Beam monitoring
- Non-oscillation physics
 - neutrino nucleus & nucleon cross-sections
 - exotica
 - *Could be slim in a first draft*
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It takes a village to raise a CDR

- We will need help/text/plots from experts.
- Assume we will need a team working similar to what is happening for the FD TDR.
- Please don't run when you see us coming.