

# SBN Program Status

Peter Wilson – SBN Program Coordinator

Oversight Board

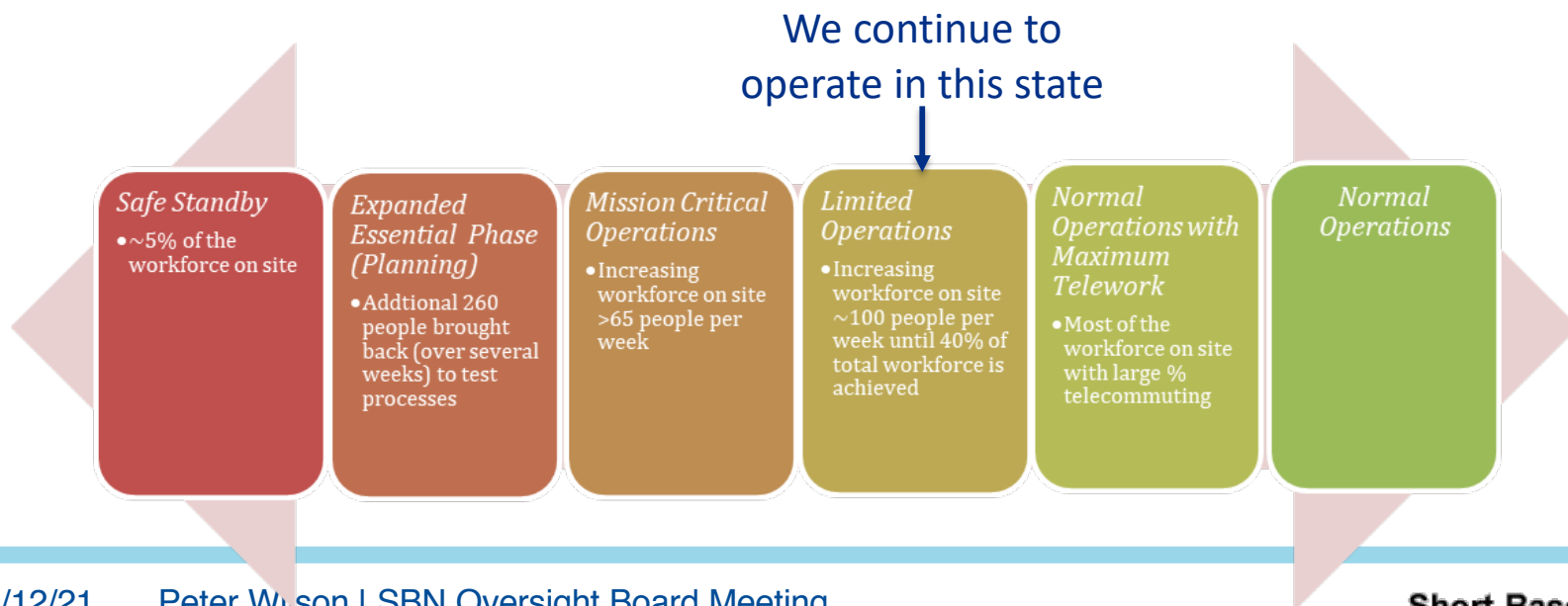
12 March 2021

# Outline

- Fermilab COVID 19 Work Status
- SBND technical progress

# COVID 19: Fermilab Status

- Work continues on-site with the same access restrictions and safety protocols of the past ~6 months
  - Access limited to essential personnel list and day access passes
  - Standard masking and social distancing requirements
    - Any work at close proximity (<6ft) requires extra PPE, written Hazard Analysis and approval by Neutrino Division Head
- For planning we are assuming that access restrictions and work rules will remain in place at least through the summer of 2021



# COVID 19 Site Access

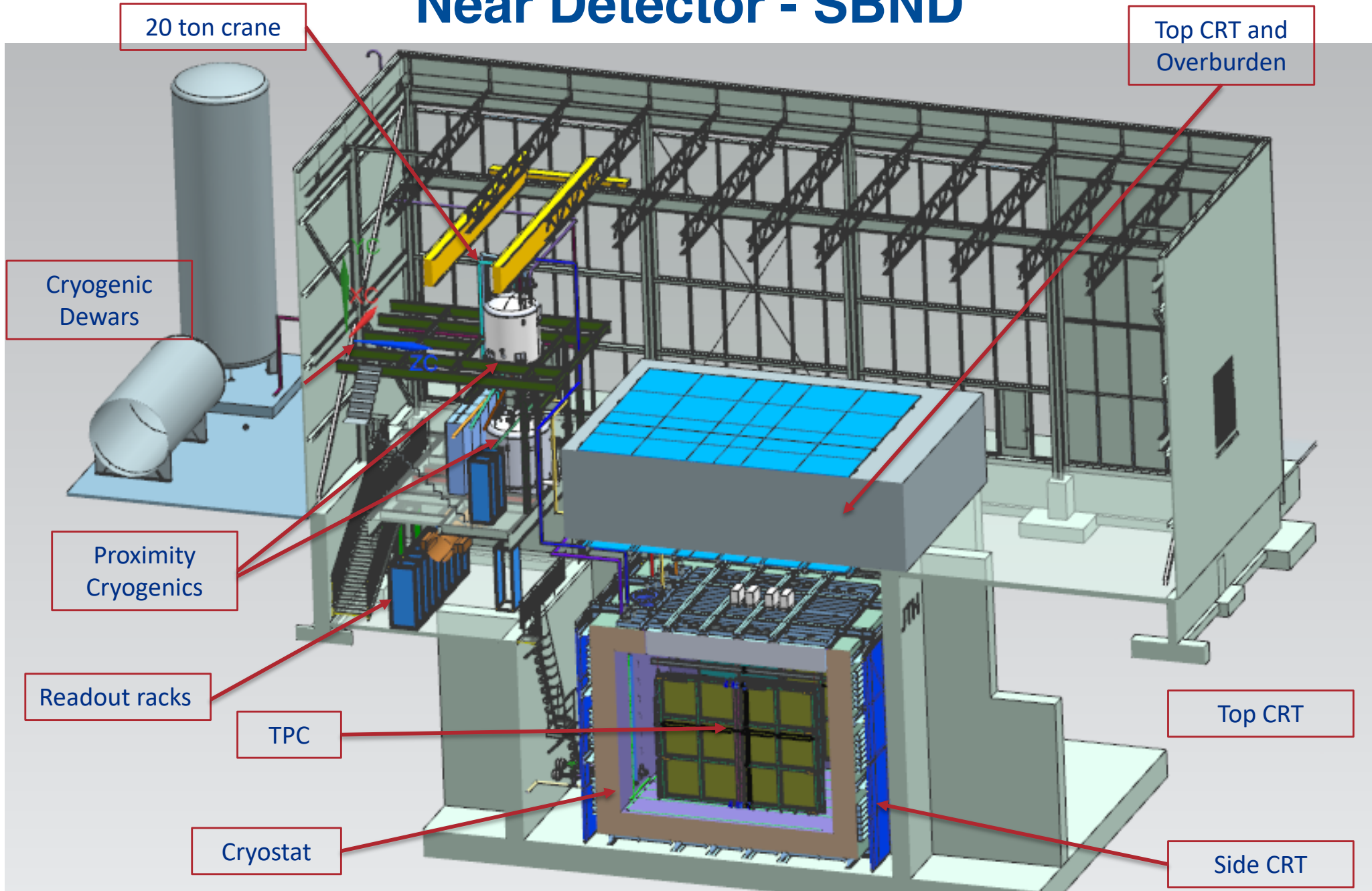
- To access the Fermilab site: must be on either the *Essential Personnel* list or *Daily Access List*\*
  - Peter Wilson ([pjw@fnal.gov](mailto:pjw@fnal.gov)) coordinates the *Essential Personnel* list for the Neutrino Division
    - Additions take several weeks to plan – contact me early and ask questions!
  - Sam Zeller ([gzeller@fnal.gov](mailto:gzeller@fnal.gov)) coordinates the *Daily Access* requests for the Neutrino Division
    - Please make requests one week in advance, if at all possible
    - Emergency requests can be no later than noon of the previous business day
  - Priorities are set based on input from spokespeople (or deputies), commissioning, run/technical coordinators and/or relevant Fermilab experiment representatives
- Access is granted to work in a specific facility not anywhere on-site
  - Do NOT go to the High-Rise unless specifically approved

\*Additional exist lists for limited access to the Daycare Center and Village Housing for people not on the Essential Personnel list

# Travel Guidance

- Requirements for Users and Business travels can be found at: [Fermilab COVID Travel Requirements](#)
  - [Visitor Access/COVID Protection Requirements](#)
  - [Travel Requirements for Travel During COVID](#) (more employee oriented)
- These provide rules for both domestic and international travel.
- The primary restrictions are associated with airline travel, for example
  - Close-proximity work prohibited for 10 days after travel unless a COVID test administered 5 days after travel at which point a negative test will allow close proximity work
  - The Fermilab Medical Office can administer COVID test
- Please note that these rules are updated regularly as state and/or DOE rule are updated
  - Most recently updated on January 19

# Near Detector - SBND



# Light Systems (WBS 2.04)

## PMT System

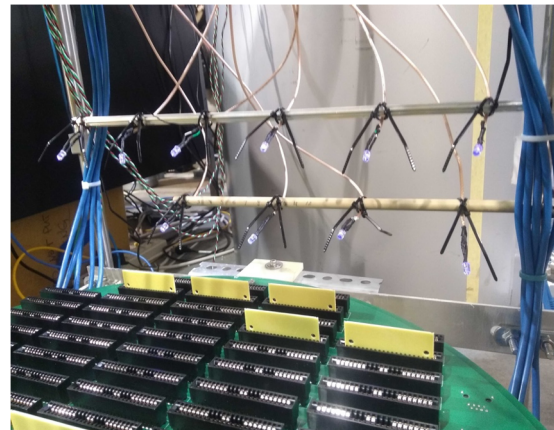
- All PMTs were mounted in the photon detector system boxes at LANL and delivered to Fermilab last week
- One of the counting rooms at DZero was identified as temporary PMT system storage space.
  - Planning to use this space also for post-shipment QA/QC, etc.



*PDS boxes stored at DZero*

## X-TDB cold testing in Stella

- Testing (noise debugging, etc.) continues with an improved light injection system
  - 20 boards were tested with new light injection system in the cold



*STELLA new light injection system*



*PDS Box ready to move after delivery*

from Vishvas Pandey

# DAQ and Electrical Installation (WBS 2.07)

- EPICS CSS Control and Monitoring GUI for Cathode Drift HV Power Supply (Heinzinger)
  - Interface fully implemented, functional, tested
  - Ready for reception tests of production SBND power drift power supply
- Preparing PMT electronics rack on SBN-ND mezzanine for installation
  - Expect deliver of PMT readout electronics and power supplies in March from LANL
  - Configuring servers and installing server readout electronics for PMT DAQ
- Integrating White Rabbit Timing System into DAQ readout
- Power supplies
  - Completed comprehensive load and function testing of Wire Bias and Field Cage power supplies
  - Developing system to load test TPC Cold Electronics power supplies
  - Preparing rack on SBND-ND mezzanine to house WB+FC+CE power supplies
  - Worked out WB and FC HV distribution to flanges
- Planning in progress for detector top cable trays for all systems



*Interface for HV power supply*



*DUNE HV power supply at PAB*

from Bill Badgett



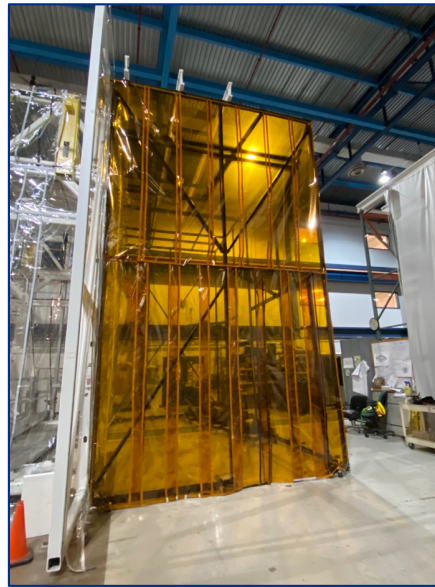
# TPC Assembly (WBS 2.08)

from Nicola McConkey &  
Roberto Acciarri

- Final preparations of the assembly facility are in progress
- Hinge system for upper wall of assembly and transport frame complete
- Inner clean tent installation is complete
- Installation of outer clean tent (UV protecting) in progress
- Mounting of blowers for air filtration in progress
- Expect all to be ready by early April



*Inner clean tent*



*Outer clean tent*

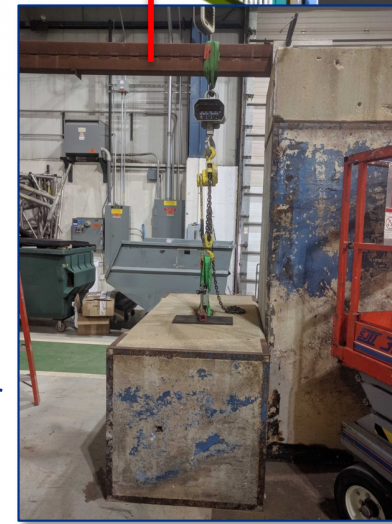
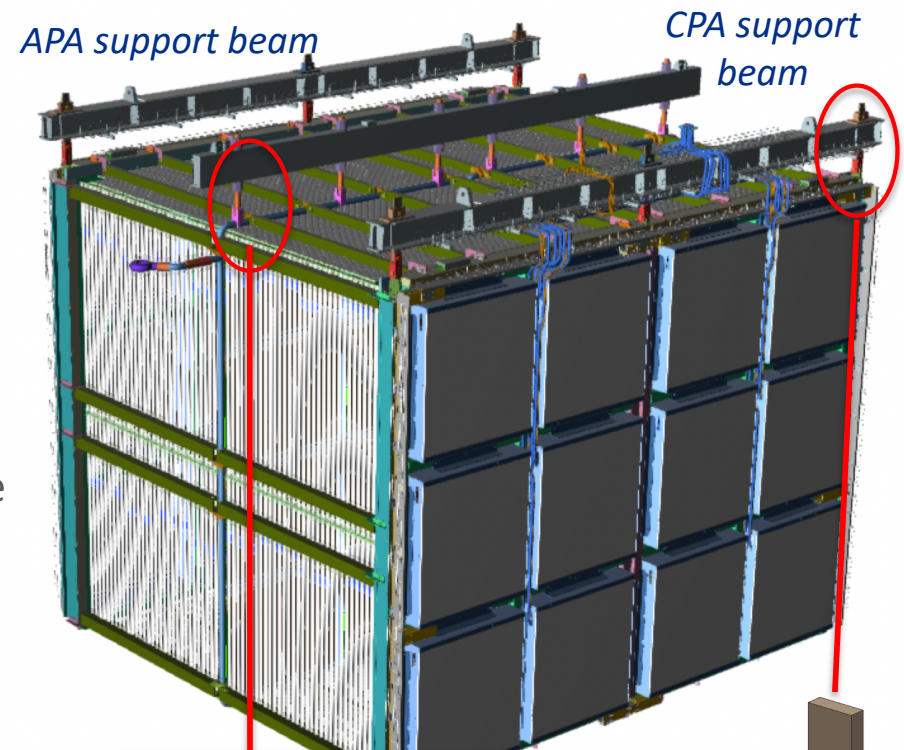


*Hinge Test*

# TPC Assembly (WBS 2.08)

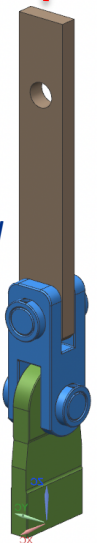
- Final components being prepared to install first APA
  - Realigned APA pair and bolts torqued
  - APA cover boards installed, temporary protective covers being prepared
  - Design of APA hanger rods is complete: Fermilab machine shop preparing to fabricate
  - Expect installation of the first APA to start in April
- G-10 hanger brackets for CPA are being remanufactured, 1<sup>st</sup> is ready for a load test
  - Fiber orientation on original parts was incorrect – factor of about 2.5 weaker
- Mounting hardware for cold electronics ordered
  - Expect delivery complete in April

from Nicola McConkey &  
Roberto Acciarri



CPA hanger  
H-bracket  
load test

APA  
hanger rod



## Installation (2.08)

- Cryostat stairs, decking, guardrails & false floor awaiting installation
  - Requires some limited close proximity work to weld decking supports to the warm vessel
  - Safety plan has been submitted for approval
  - Expect to complete in April



## Cryostat (2.09)

- First two (of three) shipments of membrane cryostat materials delivered from S. Korea to Fermilab
  - All materials stored in the Fermilab warehouse until installation
  - Waiting for schedule of final shipment
- CERN is negotiating contract for installation of membrane
  - Tentatively scheduled to start in July
- CERN shipment of ICARUS Top CRT modules, due at Fermilab within a few days, includes for SBND:
  - Protego valve, to be installed during membrane cryostat installation
  - warm valves and corresponding electronics equipment for cryogenics



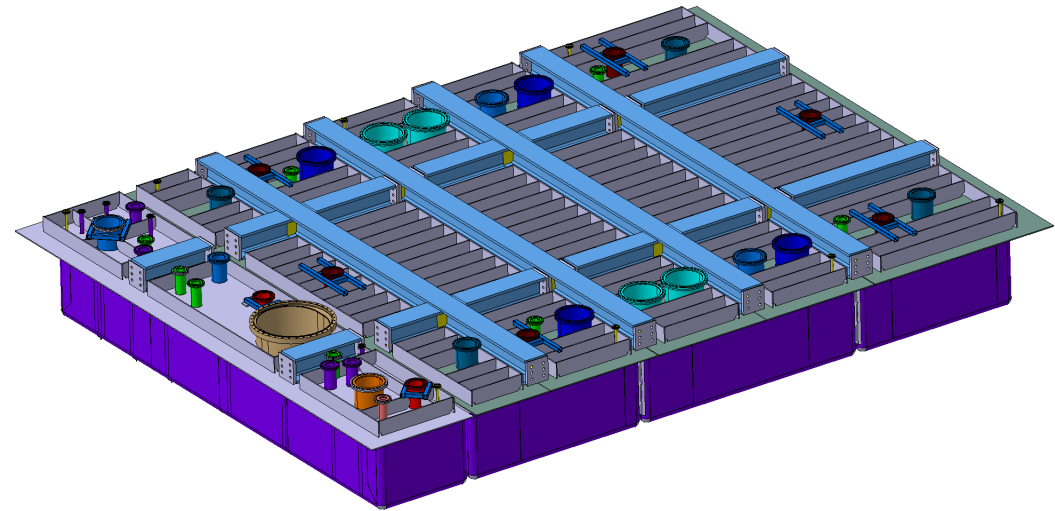
# Cryostat (2.09)

- Leak checking of welds on warm vessel completed
  - Required making some custom fixtures
  - Arranging for touchup welding in a few areas - should be complete in April



## Cryostat Top Cap (2.09)

- Fabrication of the top cap has completed at CERN
- Actual weight of pieces is consistent but slightly lower than calculations
  - Good news for planning the detector installation
- Schedule for delivery to Fermilab under discussion
  - Need in time for installation but want to avoid congestion on the loading dock at SBN ND building



*Weighing a detector top cap piece*

# Cryogenics (4.03)

- Piping assemblies for the LAr and LN2 dewar systems are being fabricated
  - Installation (outdoors) start by April
- Internal cryogenics piping specification completed and bid received
  - In procurement at CERN
- Vacuum jacketed transfer line specification completed
  - Quotes in progress
- Other designs progressing: vent pipe sizing and layout, warm piping specifications
- Installation of cryogenics controls hardware started
  - Uses distributed model planned for DUNE

*Piping assemblies on the bench*



*Cryo Controls cabinets*

from Frederick Schwartz,  
Mike Dinnon, Trevor Nichols