

SBN Program Status

Peter Wilson – SBN Program Coordinator

Oversight Board

10 June 2022

COVID 19: Fermilab Status

- With increased COVID rates in the region of Fermilab, mask requirement reinstated on May 28 along with in person meeting limit of 50 people
 - Masking and social distancing requirements
 - Masking is required indoors, require Level 2 Medical mask, **no** cloth masks
 - Surgical masks qualify
 - N95 or KN95 masks are recommended but not required
 - Surgical masks and KN95 available from stockroom also supplies at SBN work sites
 - Require COVID vaccine OR negative COVID test in last 72 hours
 - Status must be uploaded prior to arrival on site
- Limited food service continues in the cafeteria.
- Village gym reopened

ICARUS Overburden Installation

- Three layers of concrete blocks:
 - Layer 1: 40" tall x 39' long new blocks - span the pit and support upper layers
 - Layer 2&3: 36" tall each - concrete shield blocks recovered from old enclosures
- Layer 1 fabrication and install:
 - ✓ April 27 - Complete
- Layer 2 & 3 installation
 - ✓ April 18 - May 13: layer 2
 - ✓ May 16 – June 7: layer 3
- I-3b milestone complete

End of April: Layer 2 started



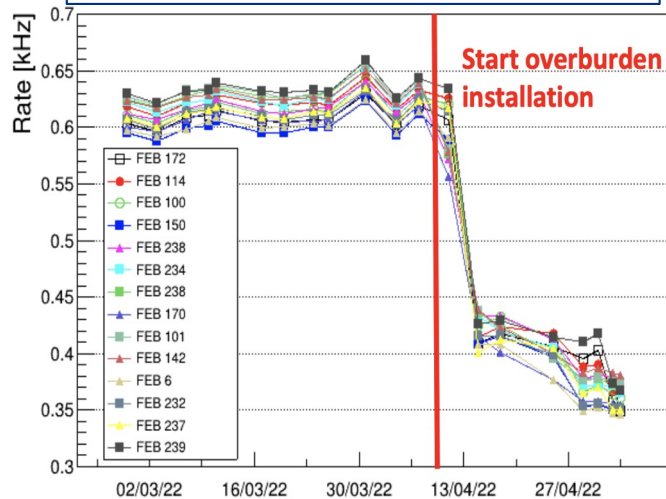
May 20: Layer 2 98%, Layer 3 20%



June 7: Last Layer 3 Block



Rates in Top CRT Horizontal Modules



ICARUS Milestones to I-3b ready for physics data – shielding in place

Intermediate Milestone	Owner	Old Baseline Date	New Baseline Date	Forecast Date		Actual Date
Overburden installed	C. James	28-Feb-2020	09-Dec-2021		✓	12-June-2022
I3b: ICARUS detectors are ready for physics data – Shielding in place	P. Wilson	28-Feb-2020	09-Dec-2021		✓	12-June-2022

Installation of all ICARUS systems complete

Transfer of responsibility from SBN project to operations complete

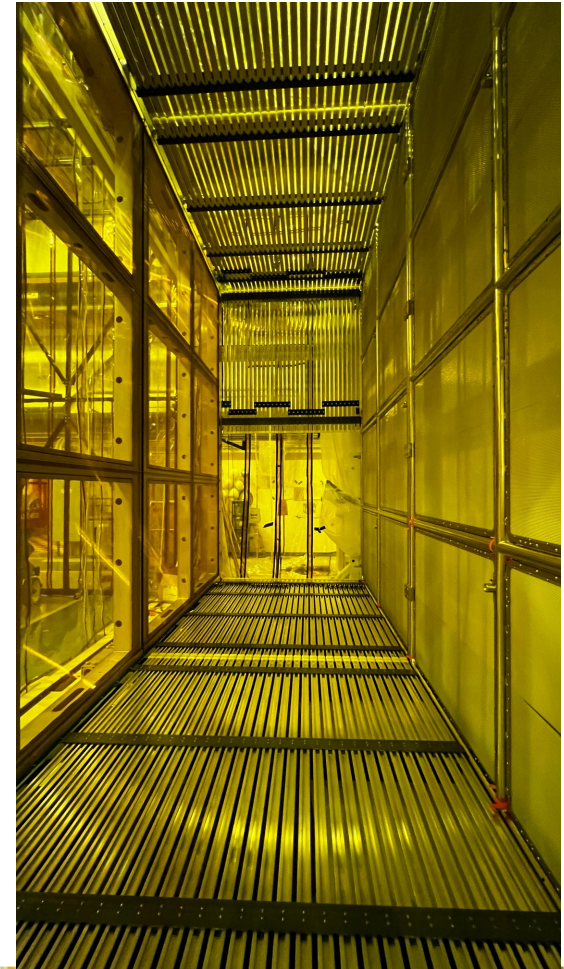
Ongoing work such as cryogenics and HVAC improvements under operations

SBND Director's Mini-Review – May 23

- Covered progress since annual review in October 2021 with 3 charge questions:
 1. Taking into consideration the challenges posed by COVID, has the Near Detector been making satisfactory progress – particularly on activities on the critical path - since the last review and is the associated cost performance reasonable? **Yes**
 2. Has the program responded satisfactorily to the [ten] recommendations from the previous October 2021 review? **Most of the recommendations were addressed satisfactorily and explained in this review. [w/ Specific comments on 4 that were not completely addressed]**
 3. Are there any additional significant concerns that should be brought to laboratory management's attention? **No**
- One recommendation: follow up to cryogenics recommendation from last October concerning use of Safety PLCs
- Expect to have our next annual review in late October or November

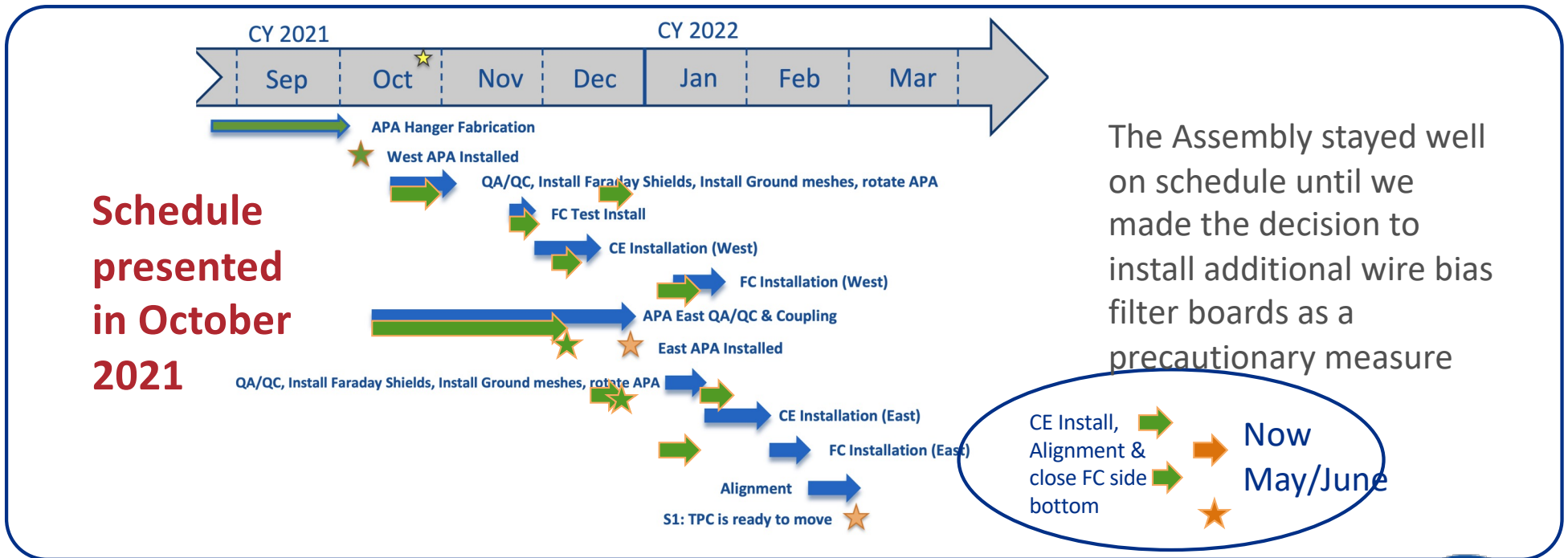
SBND Assembly Progress

- Top and upper-side field cage modules successfully installed
 - Both east and west sides
 - Mechanically and electrical connections complete and tested
- Cold electronics installation completed!
 - 1st APA in November 2021
 - 2nd APA completed May 2022
- Both these tasks are led by collaborating institutions (Yale and BNL) working with support of the onsite Fermilab team of collaborators and techs
- High Voltage Feedthrough progress:
 - Baseline HVFT (US) in production, estimated arrival June 2022
 - Spare HVFT (UK) arrived onsite at Fermilab
 - “Mock” HV port fabricated for alignment testing at DAB
 - Electrical testing of the whole HV chain in preparation at PAB during the summer

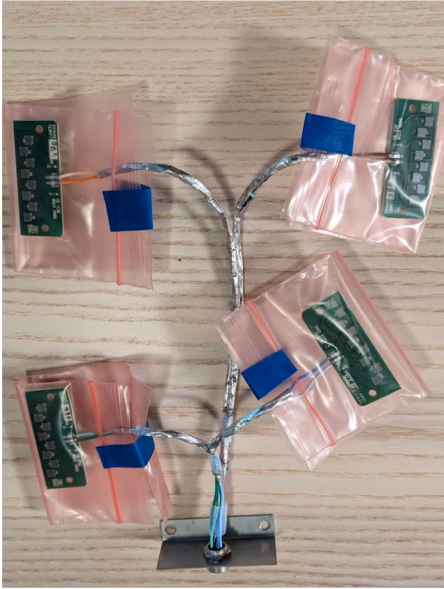


SBND Assembly Progress

- Detector alignment measurements completed May 17th
- Calibration fibers installed this week
- Final task to complete S1
 - Install lower side Field Cage modules: next week
- Still at DAB but beyond S2:
 - PDS Installation & Detector preparation for move

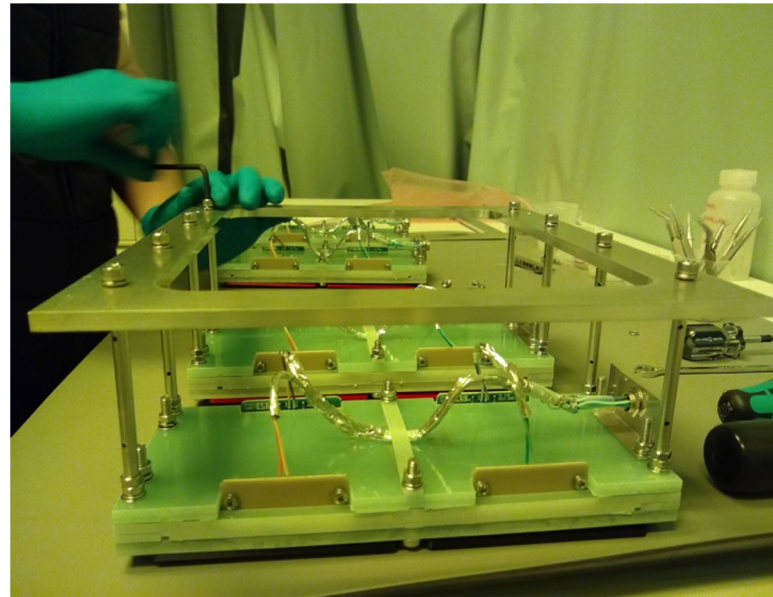
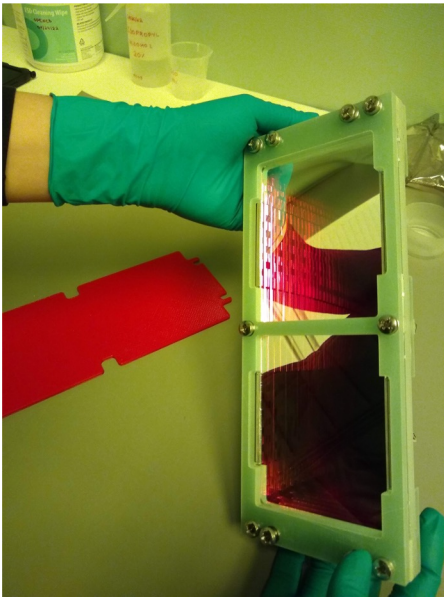


SBND Assembly Progress

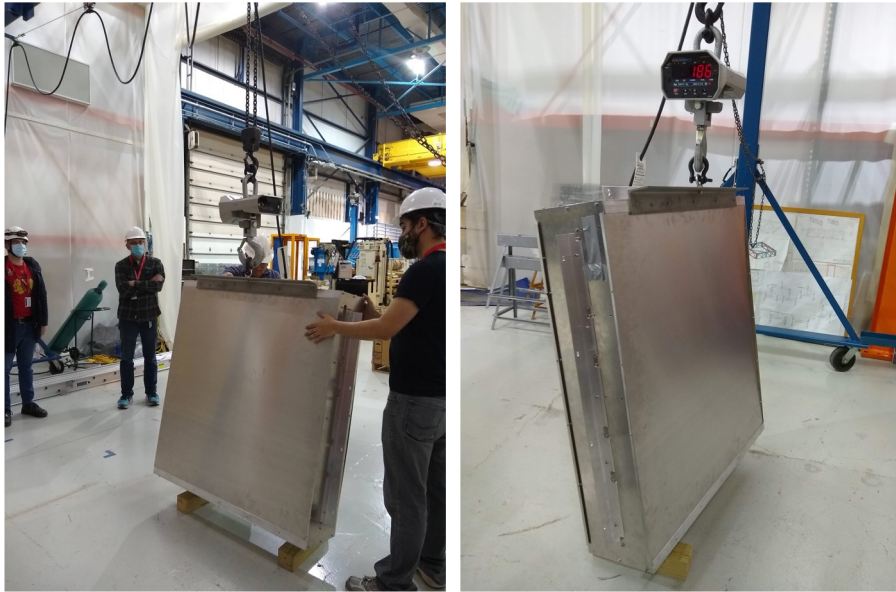


X-ARAPUCA final assembly at FNAL completed

- 192 X-ARAPUCA modules (+ spares) completed in a joint effort by Unicamp (Brazil) and FNAL Collaborators
- SiPM boards fabricated by UMichigan, tested @PAB
- Cabling of SiPM boards performed by ND Electrical Technician team,
- X-ARAPUCA mounting on PDS box procedure was tested and finalized



SBND Assembly Progress



PDS Final Installation Preparations

- Completed lifting bar design, received engineering approval, machined and performed a successful load test using a mock PDS box
- Design of PDS installation trolley system completed, installation on the atf is planned in June
- Successfully test fitted PDS box on the APA frames

PDS Calibration System

- Fiber routing from diffusers (installed last summer) on cathode to feedthroughs finalized.
- Fiber installation completed this week

Milestone Dates - S1

Intermediate Milestone	Owner	Baseline Date	Forecast Date		Actual Date
First set of APAs shipped to Fermilab	K. Mavrokoridis	24-Sept 2018		✓	4-Mar-2019
PO for COTS ADCs placed	H. Chen	10-Oct-2018		✓	30-Oct-2018
All TPC Components at Fermilab	K. Mavrokoridis	1-Mar-2019		✓	27-Mar-2019
Complete atf assembly at DAB	J. Zennamo	1-May-2019		✓	27-Nov-2019
50% of motherboards delivered to Fermilab	H. Chen	15-May-2019		✓	22-May-2019
APAs and CPAs installed in atf	N. McConkey/ R. Acciarri	25-Nov-2020		✓	7-Dec-2021
Field cage assembly complete	N. McConkey/ R. Acciarri	23-Dec-2020		✓	18-Jan-2022
Cold electronics installed and tested	H. Chen	12-Feb-2021	New	✓	12-May-2022
S1: TPC ready to move to SBN ND	A. Schukraft	19-Feb-2021	15-Jun-2022		

On track to complete S1 this month.

SBND Electrical/Installation

Electrical

- AC power and conduit installation for cryogenics controls complete
- AC power for ground floor detector DAQ racks to contract complete

CRT Temporary Install (CRT##)

- South panels operational
- North panels installed and made operational
- Both systems integrated into DAQ
- Commissioning of DAQ/Trigger systems with beam muons in progress



CRT ## panels being lowered into pit

Membrane Cryostat Installation – Phase II

- Phase II officially started Tuesday May 3rd
 - Primary Task: install 2 layers of rigid foam insulation (40cm each) on walls and floor with secondary membrane barrier in between
 - Involves three major types of adhesive and hundreds of different custom components
 - Start date driven by tuning of glue mixing machine to specific mastic in Spain
 - Also install instrumentation (RTDs) in the insulation space by CERN
- SBND Installation coord. (Roberto Acciarri) working closely w/Gabadi supervisor
 - Starting in March: detailing necessary preparations (work plans/HAs etc) via email/Zoom
 - During few days prior to work start: in person inspection of materials and tools, final detailed review of work plans
 - Daily/hourly interactions to stay on plan and address unforeseen issues
- Team: 6 from CERN contractor - Gabadi, 2 from CERN (rotating), 3-4 from Fermilab
 - Strong support from FESS with daily+ deliveries of stored materials from the warehouse

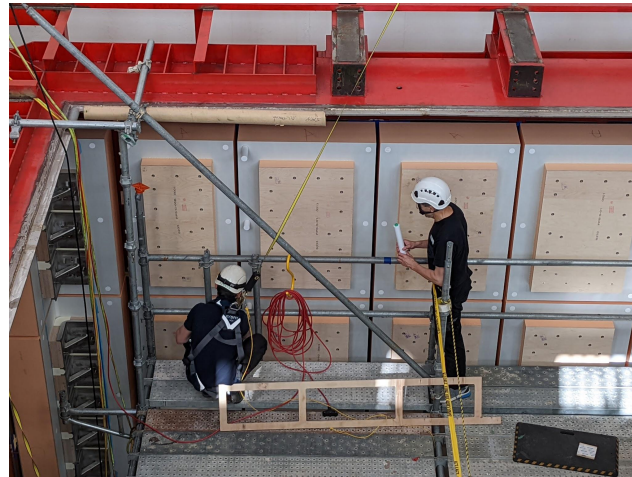
Technical Progress: Cryostat Installation Phase II - Insulation



17 5/23/2022 R. Acciarri | Installation

From Roberto Acciarri's Mini-Review Talk

Technical Progress: Cryostat Installation Phase II - Insulation



From Roberto Acciarri's Mini-Review Talk

Membrane Cryostat Installation – Phase II completing

- Team leaving Tuesday June 14
- Nearly all planned work completing:
 - 1st (outer) layer insulation – 100%
 - Secondary membrane ~90%, expect 100% by Monday
 - Primary insulation panels started – expect about 25% by Monday



Membrane Cryostat Installation – Final Phases

- Planning for final cryostat installation phase III in final stage
 - Gabadi team to return in early July for 6-7 weeks, exact dates and team size to be determined later today
 - Two tasks:
 - Complete installation of primary (inner) insulation layer (~10 days)
 - Installation of primary (stainless steel) membrane (~5-6 weeks)
- At end of Phase III, CERN and FNAL personnel will complete leak test of primary membrane (Phase IV)

After the membrane: Cryostat top caps

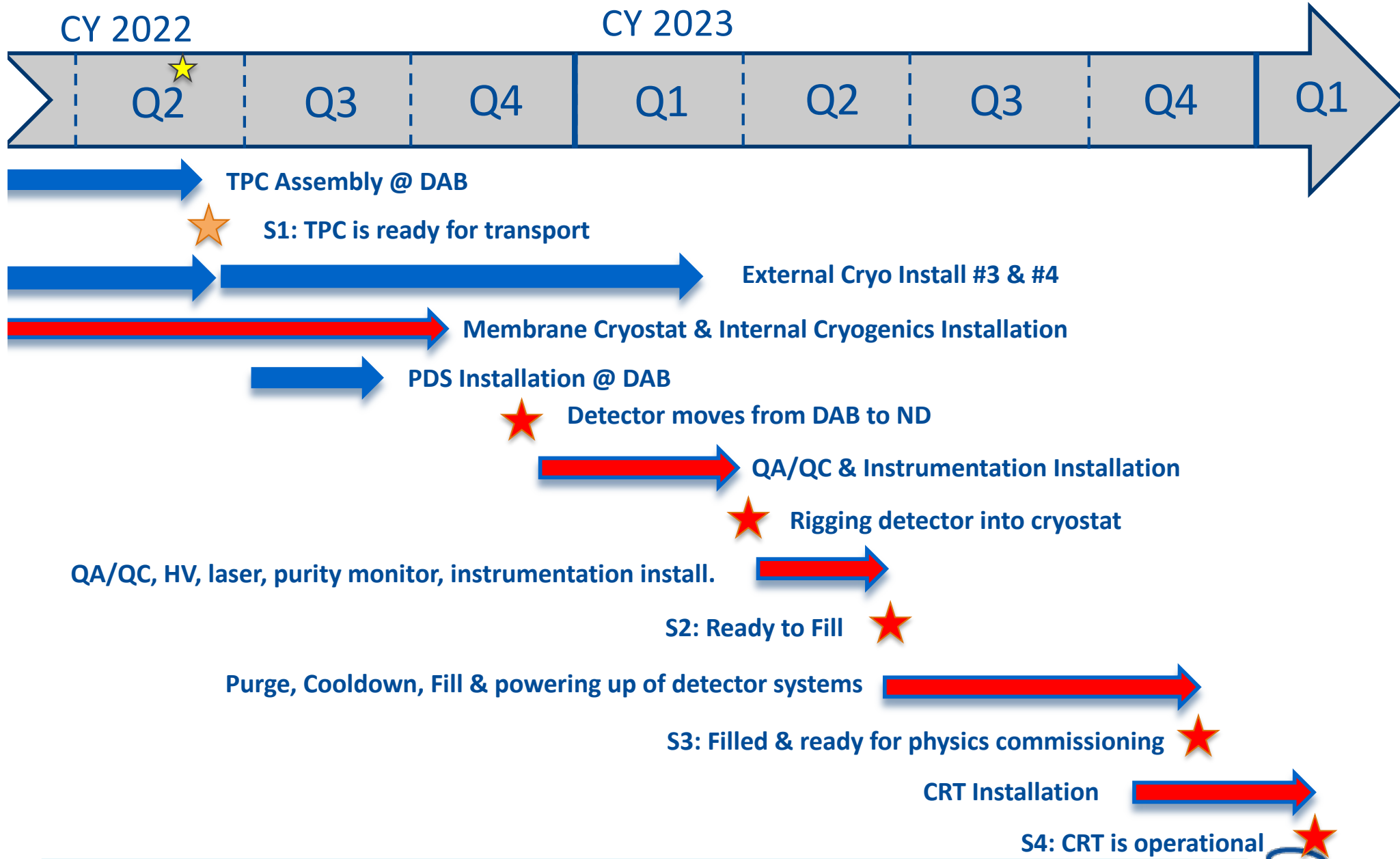
- Cryostat top cap delivered to Fermilab on June 3
 - Three pieces of detector cap
 - One piece cryogenics cap
 - Currently in MINOS surface building
 - In June/July:
 - Weld protection rings onto penetration pipes to reduce chance of breakdown to sharp edges
- Installation of cryogenics top cap then internal cryogenics immediately following membrane installation at end of summer



Milestone Dates - S2

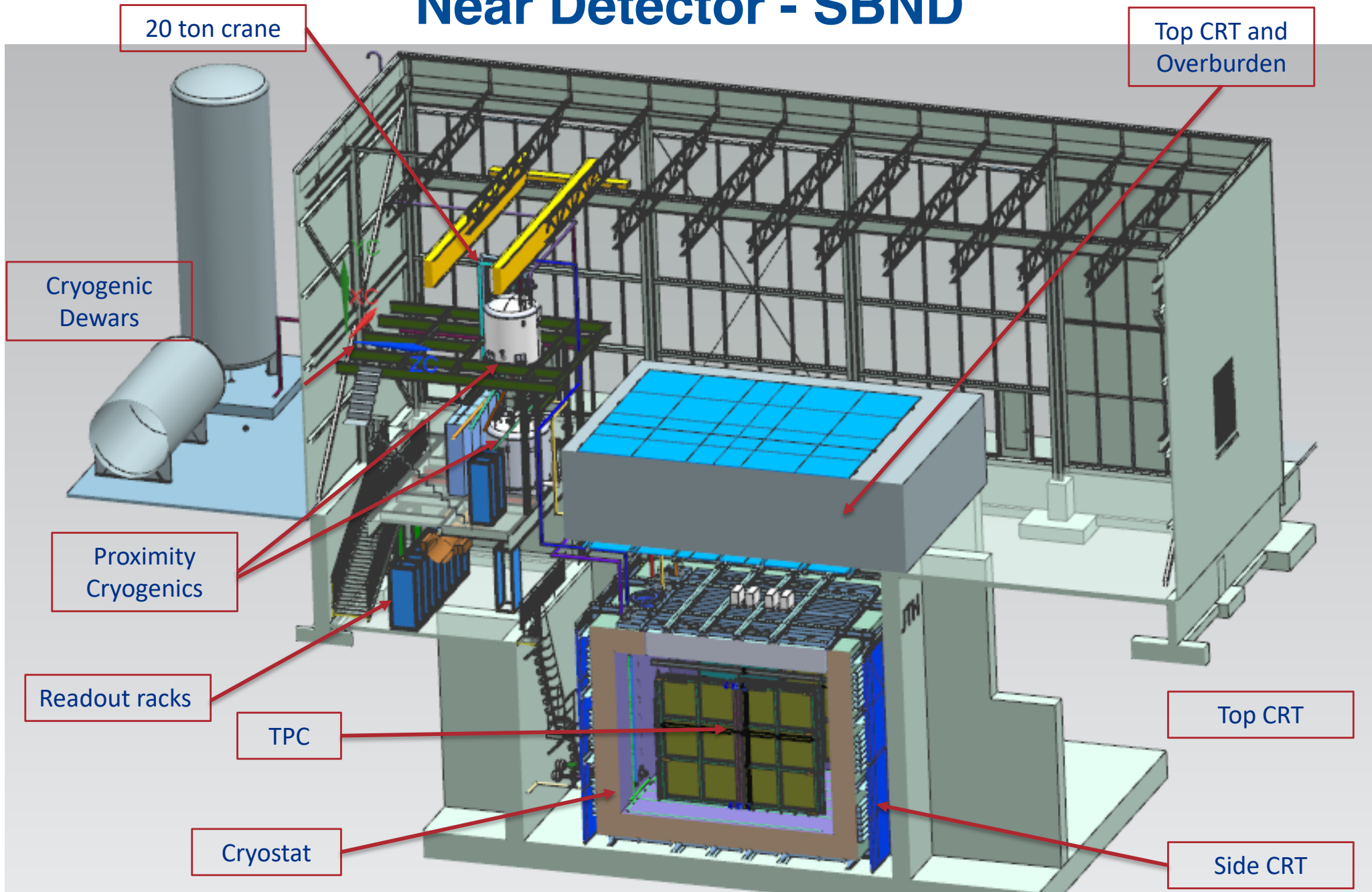
Intermediate Milestone	Owner	Baseline Date	Forecast Date		Actual Date
GTT Design Study Begins	M. Nessi	1-Feb-2019		✓	26-Apr-2019
Delivery of warm box steel	M. Nessi	15-Jun-2019		✓	16-Sep-2019
Warm vessel installation complete	M. Nessi	15-Jul-2019		✓	15-Nov-2019
Cryostat material arrives at Fermilab	M. Nessi	15-Jan-2021		✓	30-Apr-2021
LN2 and LAr Dewar Systems Complete	M. Dinnon	23-Dec-2020		✓	31-Aug-2021
Membrane Cryostat Installation started	M. Nessi	16-Aug-2021		✓	6-Dec-2021
Protego valve installed	M. Dinnon/ D. Montanari	30-Apr-2021		✓	11-Mar-2022
External cryogenics install #3 (Common) complete	M. Dinnon	27-Aug-2021	1-Jun-2022		
Membrane Cryostat Completed	R. Acciarri	28-Sep-2021	9-Sep-2022		
Cryostat top plug is ready to attach to atf	M. Nessi	25-Nov-2020	16-Nov-2022		
TPC Transport to ND building complete	R. Acciarri	15-Jul-2021	18-Jan-2023		
Plug welded to cryostat	R. Acciarri	29-Oct-2021	5-Jun-2023		
Cryogenic operation approved	F. Schwartz	18-Nov-2021	5-Jun-2023		
S2: SBND detector is ready to fill with liquid Argon	A. Schukraft	25-Nov-2021	26-Jun-2023		

Critical Path to S4



Backup

Near Detector - SBND



COVID 19 Travel Guidance and Housing

- Requirements for Users and Business travelers can be found at: [Fermilab COVID Travel Requirements](#)
- These provide rules for both domestic and international travel.
- Please note that these rules are updated as state and/or DOE rules are updated
 - People arriving via international air travel are still required to take a COVID test after 5 days regardless of vaccination status
 - Before negative COVID test result: housing quarantine and no close proximity work
 - Medical office will provide test, stop in to make an appointment after getting your badge!
 - Housing quarantine individually or in group from the same institution travelling together
- On site housing is limited by COVID occupancy restrictions and housing set aside for quarantine for international travelers
 - Contact housing early about availability (housing@fnal.gov)

On-Site Access / Users process

- On-site Access process changed in 2021 (Not COVID related)
 - Use link below which includes FAQ and tutorial videos
 - Start early: it can take 4-6 weeks to complete
 - Particularly for foreign nationals
 - Must complete even if you have off-site computing access
 - Some pointers:
 - *Select “Yes” to the question “Do you need to come on-site to work at Fermilab?”*
 - *Affiliation: the experiment you primarily work on and/or the experiment you are coming to the lab to work on (so that training gets set up properly)*
 - *Point of Contact: your IB representative or an experiment Co-Spokesperson;*
 - *Dates: the start date should be no less than 4 weeks away otherwise we cannot guarantee all steps will be completed in time; if you aren’t certain use earliest possible date*

If you are planning to come to Fermilab make your request early. If your dates change, they can easily update after approval.

Follow instructions here:

<https://get-connected.fnal.gov/accessandbadging/access/>



On-Site Access / Users process (cont)

- On-site Access process changed in 2021 (Not COVID related)

- Process not complete until you receive an *Informal Invitation* letter with a QR code via email from the Fermilab Service Desk

- Subject: “RITMxxxxxx – Informal Invitation”
- These sometimes end up in a junk folder
- Reminder: forward to pjw@fnal.gov and johnsone@fnal.gov for Essential List

- You will need a badging appointment to access the site and get a new badge. Remember to bring:

- Real ID (e.g. passport or qualifying Drivers License)
- Informal Invitation Letter with QR Code on paper or phone

New: Please bring your old ID badge to your badging appointment. There is a shortage of blank badges due worldwide chip shortage.

Follow instructions here:

<https://get-connected.fnal.gov/accessandbadging/access/>

Informal Invitation Letter

From: Fermilab Service Desk fermi@servicenowservices.com
Subject: RITM1268673 - Informal Invitation
Date: December 6, 2021 at 11:38 AM
To: mstancar@fnal.gov, pjw@fnal.gov

FD

Hi _____,

Your access request RITM1268673 has been approved. Please find attached information for access to Fermilab.

- Please bring this QR code with you in order to enter the Fermilab site at Batavia, IL.
- This QR code will expire after two days.
- Please ensure that you schedule your [badging appointment](#) ASAP, if you haven't done so already.
- QR code scanning is limited to Fermilab's network and will not work properly offsite.



- You will also be required to show your REAL ID at the guard gate and for your badging appointment.
- Acceptable government documents are listed at [Documents required for on-site access | Global Services \(fnal.gov\)](#).
- For badging appointment questions, please email accesscontrol@fnal.gov.

Best regards,

Fermilab Users Office

usersoffice@fnal.gov

<https://get-connected.fnal.gov/>



Ref:MSG10941319

1.pdf