

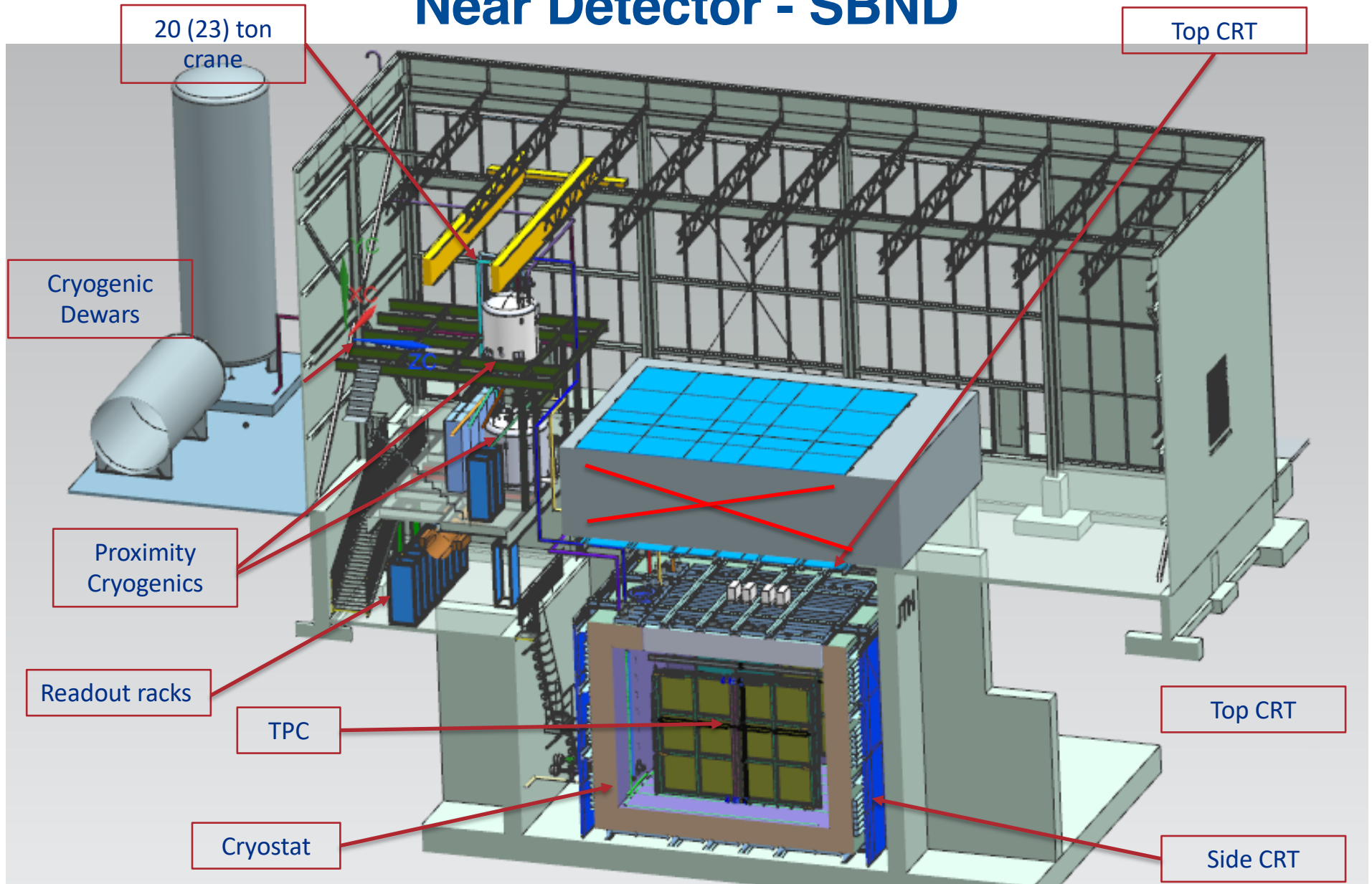
SBN(D) Program Status

Peter Wilson – SBN Program Coordinator

Oversight Board

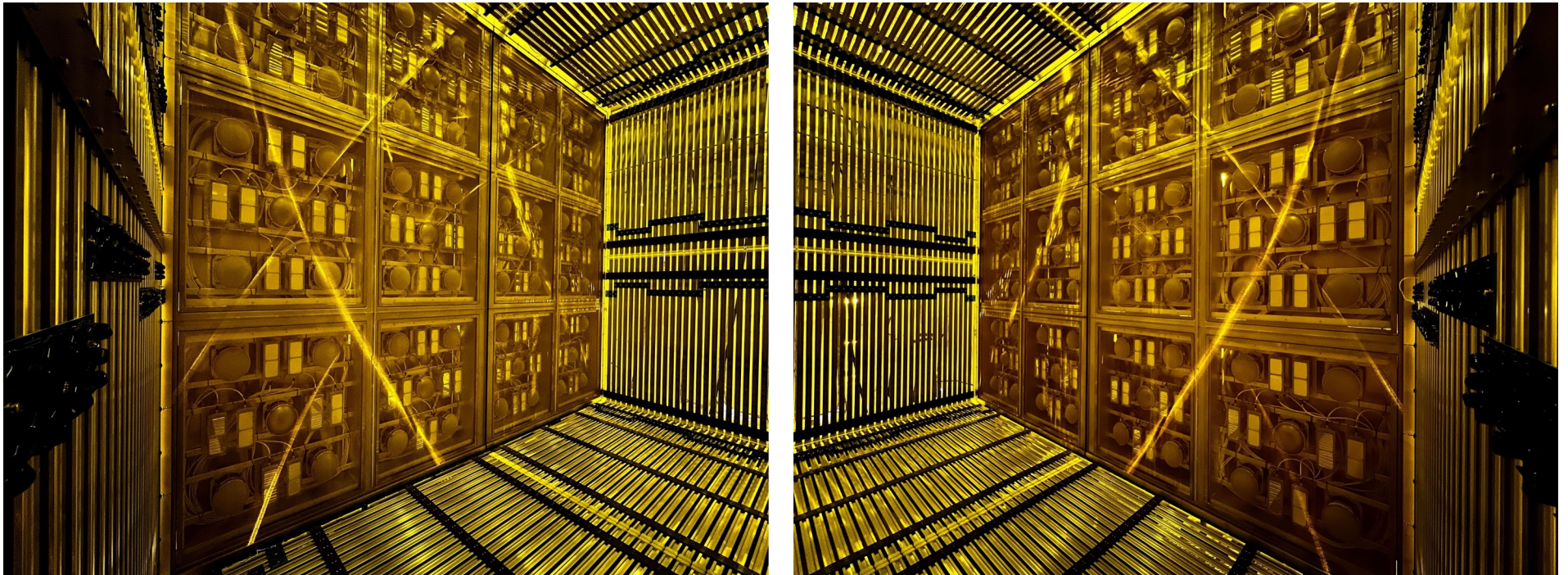
9 Dec 2022

Near Detector - SBND



Light Systems and Detector Assembly

- Installation of all PDS boxes completed last week!
 - All X-ARAPUCAs and PMTs were re-tested just prior to installation. Several issues found in the testing of the PMTs (resistance failure on some PMTs, shorter cables on some PMTs, etc.) were addressed.

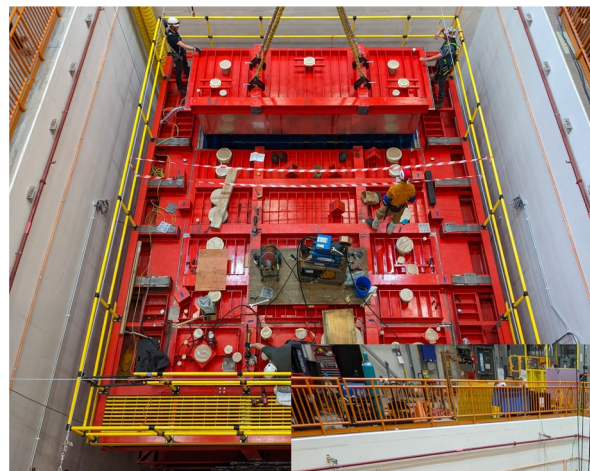


SBND TPC with Photon Detection System installed

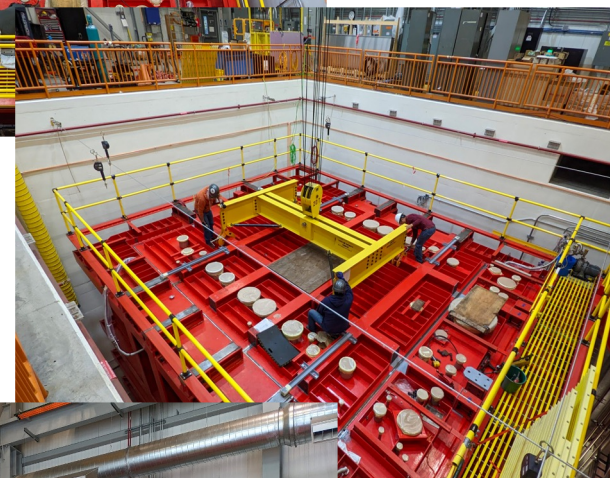
SBND Cryostat

Roberto Acciarri -
October

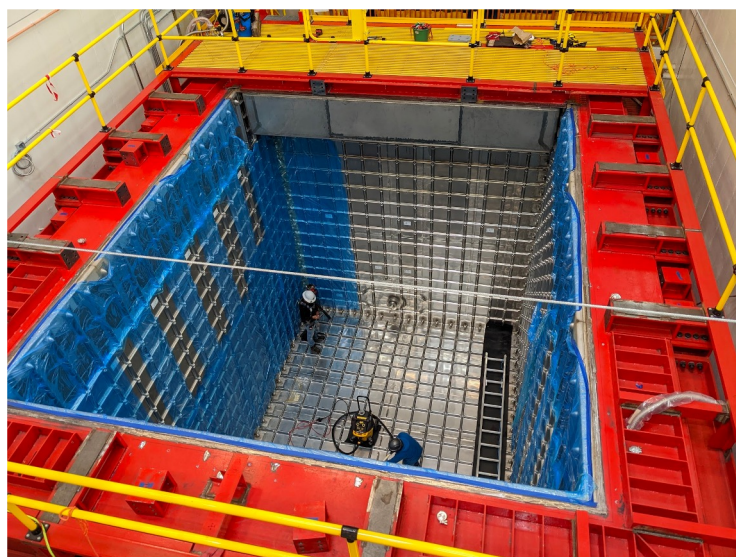
- Top cap assembly completed
 - all I-beam junctions fitted
 - Welding completed and tested
 - Detector top cap moved to loading dock for temporary storage (6-8 weeks)
 - WBS 2.09 completed
 - CERN + FNAL techs, FNAL welder
- Decking installed on cryogenics top cap



Final top cap piece installed



Detector Lifting Fixture in Place



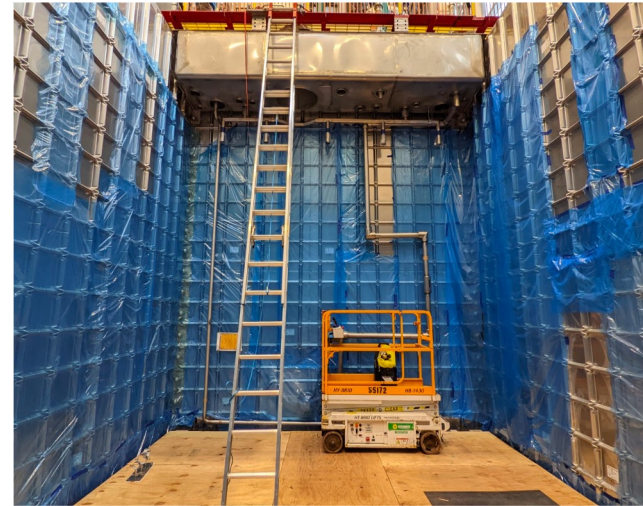
Ready for internal cryogenics with decking in place



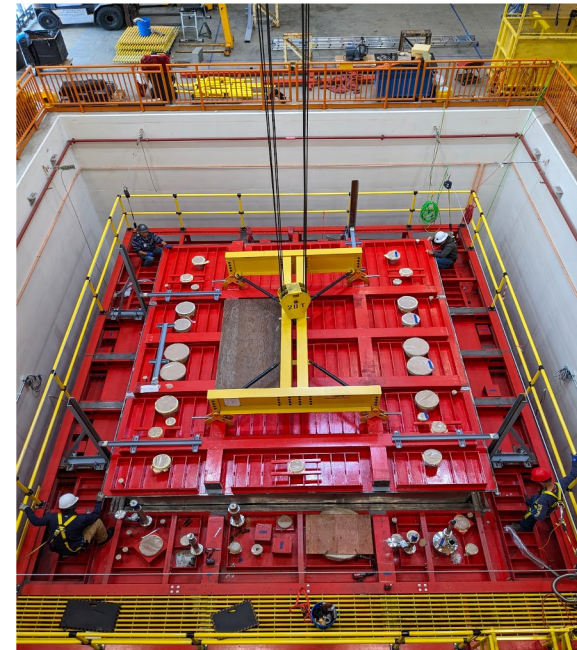
Detector Top Cap on loading dock

Cryogenics

- Internal cryogenics installation completed - 11/8
- Detector top cap rigged back onto the cryostat to make space for the detector
 - Tested installation guides
- Started detector feedthrough pressure tests at PAB
- Cryogenics installation work ramping up:
 - LAr Filter mode moved from SBN-FD and installed
 - Ready to move filter regeneration system
 - Vent piping installation progressing



Internal cryo piping on the North Wall



Detector top cap rigging



LAr filter leaving
SBN FD



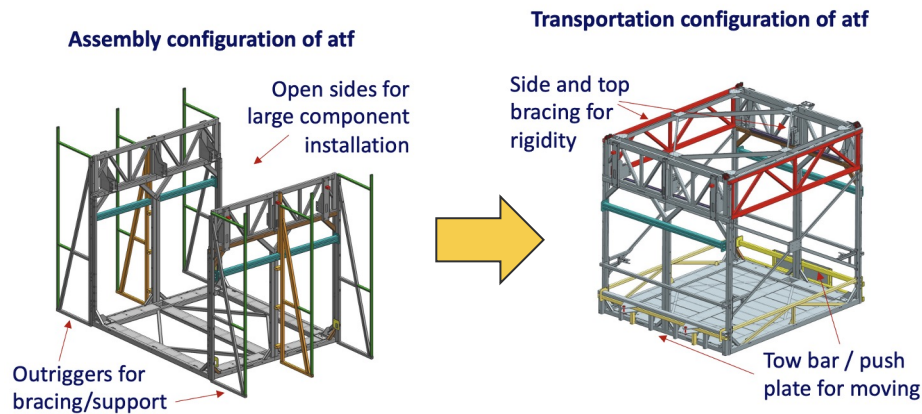
LAr filter in place at SBN ND

Assembly & Installation – detector move preparation

- All detector work and QA/QC completed by mid-Nov.
 - all sub-systems signed off a “ready-to-move” checklist
- atf re-configuration into transport mode is completed
 - Includes tow bar and push plate
- Attached chains & straps for securing to trailer
- Wrapped atf in opaque plastic
 - several sensors included inside the plastic to monitor light exposure, temperature, inclination, acceleration; monitor via Bluetooth
- Plan for detector grounding during the move



atf wrapped in black plastic



sensor for acceleration, inclination & temperature

Final Detector Move Preparations

- Completed three trial runs driving two routes in September and October
 - Selected route via Ring road: lower tilts angles, shorter, less traffic
 - Refined attachments to trailer
- 2nd Transport Review held on Nov 10:
 - Review committee satisfied with all move preparations; no recommendations
 - Sign-off from Critical Transport panel per FESHM 10210
- Mobile Crane PO placed on Nov 8
- Mitigation of obstacles on the route completed (ISD)
 - tree pruning & road patchwork complete – Roads and Grounds
 - T&M electrician contract to temporarily moved overhead wires & streetlight on Nov 28
 - gravel patches, removal of signposts, block parkings etc. scheduled for Nov 28/Dec 1
- Planned move date ~~Tuesday, November 29~~ Thursday, December 1
 - Date moved due to forecast high winds on Tuesday and Wednesday

Step 1: Out of DAB

Nicola McConkey
SBND Collab Meet



5/12/22

SBND Detector Move | Nicola McConkey

Step 2: Up the ramp

Nicola McConkey
SBND Collab Meet



5/12/22

SBND Detector Move | Nicola McConkey

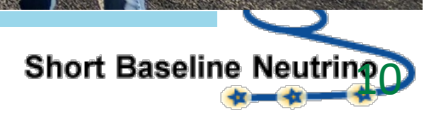
Step 3: Detector rigging

Nicola McConkey
SBND Collab Meet



5/12/22

SBND Detector Move | Nicola McConkey



Step 4: Onto the trailer

Nicola McConkey
SBND Collab Meet



Step 5: On the road!

Nicola McConkey
SBND Collab Meet



- ❑ Roughly 3 miles
 - Driver and transport team did an amazing job
- ❑ Route prep:
 - Trees cut, roads smoothed, power lines lifted



5/12/22

SBND Detector Move | Nicola McConkey



...and a lovely welcoming committee!

- No plots yet, but acceleration, tilt and roll data was monitored en route, and was no cause for concern
 - Detector didn't slip at all en-route
- Light sensors showed a pretty constant baseline all day
 - Lower than the light levels it was exposed to in the clean tent configuration at DAB



Step 7: The Final Push

Nicola McConkey
SBND Collab Meet



5/12/22

SBND Detector Move | Nicola McConkey

Closing the Door (on this chapter!)

Nicola McConkey
SBND Collab Meet



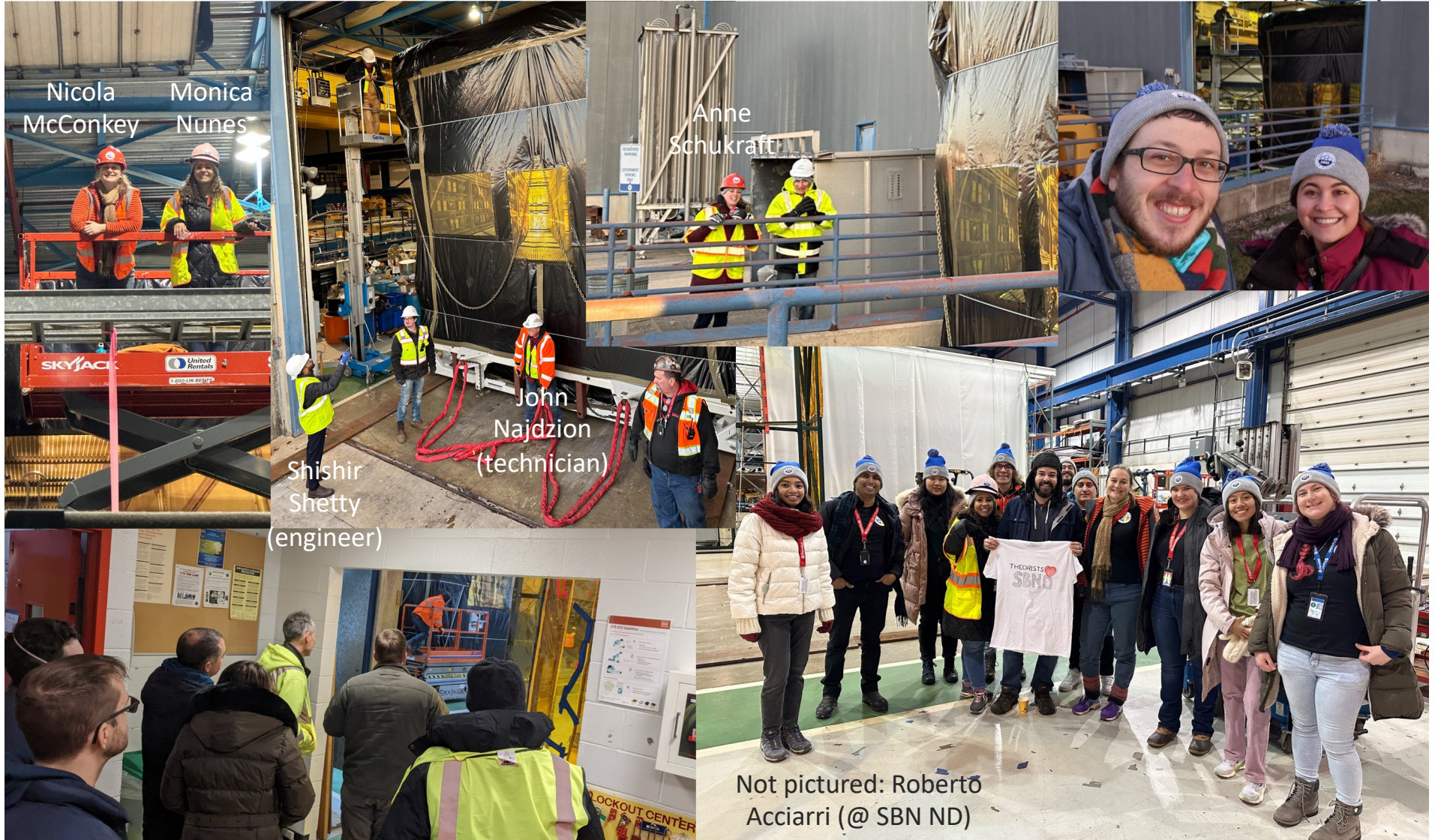
5/12/22

SBND Detector Move | Nicola McConkey



Thanks to & from the whole move team!

Nicola McConkey
SBND Collab Meet



5/12/22

SBND Detector Move | Nicola McConkey

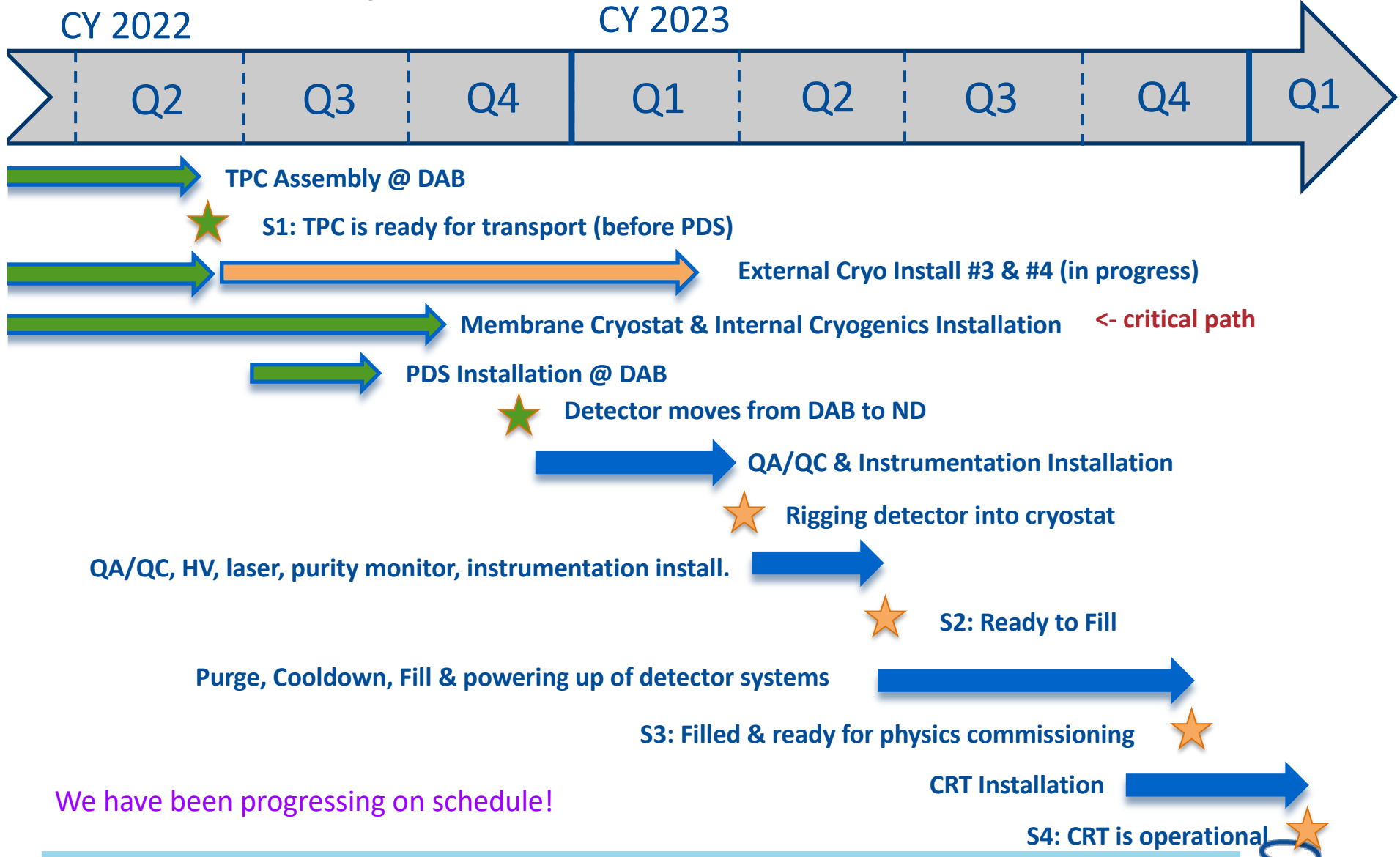


Milestone update - S2 Detector ready to fill with LAr

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		✓	29-Jul-2022
Membrane Cryostat Completed	R. Acciarri	28-Sep-2021		✓	26-Aug-2022
Cryostat top plug is ready to attach to atf	M. Nessi	25-Nov-2020		✓	26-Sep-2022
TPC Transport to ND building complete	R. Acciarri	15-Jul-2021	5-Jan-2023	*	
Plug welded to cryostat	R. Acciarri	29-Oct-2021	18-May-2023		
Cryogenic operation approved	F. Schwartz	18-Nov-2021	18-May-2023		
S2: SBND detector is ready to fill with liquid Argon	A. Schukraft	25-Nov-2021	20-Jun-2023		

S2 forecast is within 1 week of the schedule we made in March 2022.

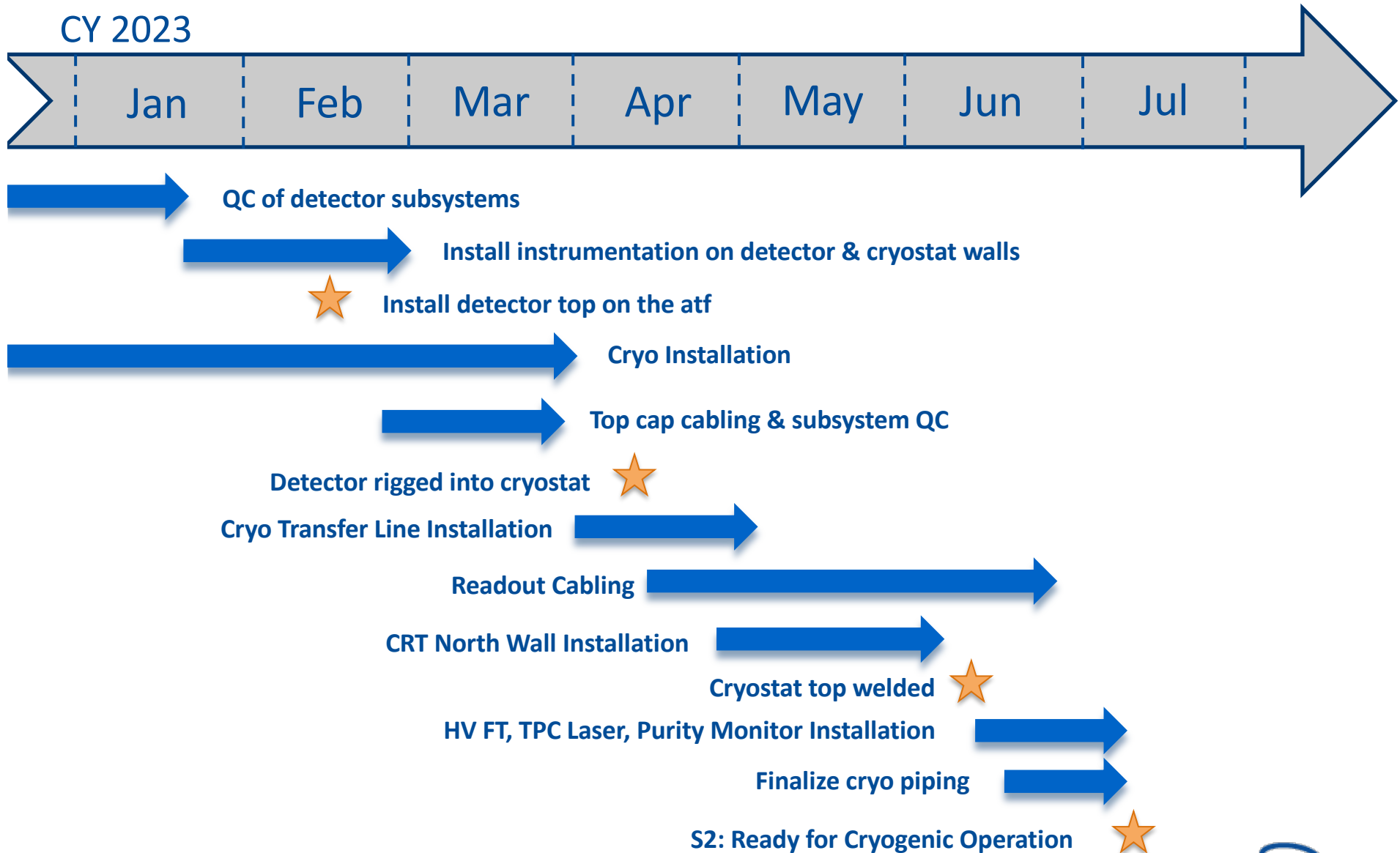
Timeline to completion (as presented at the May 2022 Mini-Review)



We have been progressing on schedule!

Closer look at the near future

CY 2023



Directors Review and Planning beyond S2

- The next Directors Review will be held Feb 28 - Mar 2, 2023
- The focus of the review will shift from Installation to Commissioning & Transition to Operations
- In preparation, we will add detail to our Cryogenics & Detector Commissioning plans and our timeline estimates for getting from S2 (ready for cryogenics operation) to S4 (ready for physics data)
- Michelle Stancari (SBND Commissioning Coordinator) and Lauren Yates (Deputy C.C.) organized a series eight detector commissioning planning meetings Sept-Nov with excellent engagement from the collaboration. Followed up with a session at the SBND collaboration meeting in Edinburgh that just completed.

Backup

COVID 19: Fermilab Status

- With decreased COVID rates in the region of Fermilab, mask requirement was dropped on Aug 26 along with in-person meeting limit of 50 people
- Limited food service continues in the cafeteria – staffing challenges limit offerings
- Village gym open
- Users Center reopened
- Lab-wide BBQ/Picnic on August 31st!