

WA104 Technical Working Group meeting

<https://indico.fnal.gov/event/22029/>

At FNAL: A. Aparicio, M. Aslin, L. Bagby, B. Behera, M. Betancourt, M. Bonesini, A. Chatterjee, A. Fava, D. Gibin, C. Hilgenberg, C. McGivern, A. Menegolli, C. Montanari, GL. Petrillo, G.L. Raselli, M. Rossella, G. Savage, A. Soha, D. Torretta, Y.-T. Tsai, P. Wilson, A. Zhang

Remote: A. Braggiotti, S. Centro, M. Convery, M. Diwan, C. James, W. Ketchum, U. Kose, S. Palestini, A. Scaramelli, S. Tufanli, B. Wilson, M. Worchester

1) C. Montanari _ News and updates & general discussion

Yesterday there was the first delivery of very high-quality LAr (certified to < 0.3 ppm O₂, ~ 0.3 ppm N₂ and H₂O). During the filling the quality was checked with the system installed in the building and it turned out to be even better.

Leaks and tightness of the warm vessel is still under investigations. Some progresses were made but there are still leaks on the side penetrations and on the boots connecting the warm box with the chimneys. The good news is that there are no major leaks are on the bottom of the warm box, which would have been a major issue, so we are approaching a condition satisfactory for operations.

Starting from Monday CERN people will be on site to start pre-commissioning of the cryo plant, to be followed by call for the final delivery of liquid argon. Beginning of cool-down is expected in 1 month from now.

PMT cables are still stuck at the custom. Optical fibers have been installed. Installation of the HV is still pending. Cabling of TTLink and wire bias will happen next week.

- A. Fava reports that all 8 DAQ servers have been installed by G. Savage in the racks in the West mezzanine, and they are waiting to be configured. The remaining servers are stuck at custom. One trunk (24 units) of production DAQ fibers have been installed by Y.-T. Tsai on a temporary path, and it was used to test the readout of 4 TPC crates together with 1 PMT board. Synchronization still needs to be checks but preliminary results are encouraging. This allowed to identify the proper mapping of the connection of these fibers, that will be a fundamental input for their installation, that is still pending the installation of the cable trays by the networking team that will be back at work this Friday.

- Upon G.L. Raselli request, it is confirmed that the PMT DAQ servers will be the closest to the bridge across the detector top, since the optical fibers for the PMT readout are the shortest.

- Upon A. Fava request, it is decided that the black-out needed for enabling AC distribution to the East mezzanine is scheduled for tomorrow or Friday. C. James will follow up with D. Featherston. Tomorrow there will be a meeting of the technical board for the preparatory activities by all working groups in view of the cool-down. This includes the preparation of a control room space in ROC-West, that will be a topic for next meeting.

- B. Wilson points out that a person responsible for organizing shifts still needs to be identified.

2) G.L. Raselli _ PMT and optical fiber cabling

<https://indico.fnal.gov/event/22029/contribution/2/material/slides/0.pdf>

In September 90 (+9 spare) HV cables and 90 (+9 spare) signal cables were installed, which covers ¼ of the total.

The remaining cables still need to be delivered from CERN.

The problem of the cable length excess behind the crates on the mezzanine needs to be solved. One possibility is to mount cable trays on the wall.

- Upon M. Bonesini request, M. Diwan comment that the degradation of the signal is a factor 2 in the rise time that does not translate into a similar degradation in the resolution. For the time being, cutting the cables is to be discouraged, as it will be expensive and will delay the commissioning. Improvements are possible in the future, by replacing all signal cables.

All 36 optical fibers that connect the chimneys with optical feedthrough with the optical splitter. Also, the metal protections have been installed and corrugated fiber runners have been deployed to protect the fibers themselves.

In the week in which the vacuum was broken inside the cryostat, one optical feedthrough that was showing issues was replaced. This has been tested in the past week and is now properly working.

Assembly and documentation of the PMT/trigger racks is continuing, and tests with the PMT VST are being performed.

- C. Montanari requests that a way to monitor the status of the PMT operation is defined, to inform cryo people for their commissioning activities such not to damage the PMTs.

- C. James clarifies that during the day in which there will be the blackout for activating the AC distribution, operation of the VST will not be possible.

3) M. Betancourt _ CRT activities

<https://indico.fnal.gov/event/22029/contribution/3/material/slides/0.pdf>

Following the failure of the sump pumps and the consequent flooding a few weeks ago, the readout boards of the bottom CRT modules were inspected. No sign of water inside the box was found on the West side, while boards showed signs of corrosion on the East side.

A plan for further investigations has been defined and is presented. Spare boards are available for replacements, although interventions on the central modules would be very complicated.

Installation and commissioning of the North CRT wall is ongoing, mainly focusing on documentation to get approvals for operation. Test of the DAQ for this wall is expected to happen before filling.

Several activities are also ongoing at the test stand at Wideband, including the cutting and polishing of the modules needed for the side CRT south wall.

Partial side CRT installation is pending delivery of part to complete the Unistrut structure that is preliminary to the installation of the modules. This is likely to happen after the filling.

- C. Montanari asks that a work planning is prepared, and the activities are started before the filling even if just partially, in order to identify possible issues and facilitate the discussion of the schedule.

- M. Betancourt points out that the additional issue with the bottom CRT could create a clash with the installation of the side CRT.

- C. James also points out that the overall schedule is further complicated by the need for additional infrastructure work before the installation of the top CRT modules, including fire protection, light and ventilation systems.
- U. Kose stresses the importance of completing the understanding and solving the issues of the bottom CRT modules more than installing the side panels.

- C. McGivern reports on 2 short power outages to happen soon. As of now they are scheduled for Oct 23rd at 6:30 for 30 minutes and 3 days later for additional 30 minutes.