

June 26, 2023 DUNE 2x2 Installation Meeting

- Attendees:

Quinn Vuong, Tom Markiewicz, MinJeong, Sam Fogarty, Alan Hahn, Howard, Steve H, Jonny, Linda, Gordon, Gary, Sai, Mike Z, Trevor, Hiro, Jen, Carrie, Geoff and Ting

- Status and progress reports – all

- Cooling water system – Mike and Steve

Steve to send Jonny the slides. Jonny to ask ESH to see whether the water we will use will be classified as raw Tritium water

No need to pressure test existing water pipes as this is classified as category-D line

We will need some cover to protect the Minerva rack during water pipe installation. Afterward, there is no need to worry.

There is no entry for existing water line in the 3d model Gary has. We will skip the process of putting new water line in CAD file too

Current DUNE 2x2 Installation Tasks

(June-26-2023 update)

- 2x2-Minerva commissioning: PMT replacement for ECAL tube 4-3-5 (MS #8) – Howard
 - Module set #8: lifter at downstream end: 2 on platform lifter, 2 observers on back and front safety check
 - Steve H and Howard to start at 9am tomorrow
 - MS1 had cable problem but went away. But this raises the need of anchor point/line to reach MS1 with ladder
 - **We will continue discussion on the fall protection in dedicated meetings**
- AC electrical upgrade: Leyden contract signed → **starting now**
 - 2x2 team to supply:
 - low-noise transformer (ready), EPP transformer (Dave F),
 - **transformer stands (MinJeong to follow up with Matt)**, breakers (Dave F),
 - **cryostat ground cables are in SU-CT enclose (see picture next page for the detail – all ready)**
- ODH fans and ducting: bidding package → contract award
 - **Will do ODH analysis review in parallel with contract bidding**
 - **MinJeong to ask Adam status**
- Internal piping and pump installation: ACPS connection → cleanup → ready for detector insertion
 - **Mike Z, Trevor, and Alan to get together to find minimal setup for the bump test**
 - **decided not to do this as Alan H commented that we can reverse the polarity of PS to change the motor direction ←done this in 35t days**
 - **Linda, Mike and MinJeong to coordinate access to cryostat next week → HA and ladder**
 - **Inspection of electrical termination ← Linda to inspect next week (July 5th)**
 - **Mike to dry-fit level probe**
- Purity monitor installation
 - **Fiber connection fabrication at village – Has three short one ready for internal connection so we are ready for purity monitor insertion**
 - **Faraday Cage enclosure fabrication: Alan decided to do same orientation as SBND for flashlamp positioning inside the cage**
 - **Placement of flashlamp TBC: may want to get away from TPC electronics**
- Finishing cryostat access platform gates and step installation:
 - **June 29 material shipment → Assembly by Butler group → install**
- LAr filter vessel installation – Mike Z
 - **Filter regeneration in LArTF last week → filter vessel transfer to underground and placement → connection to cryostat and fill manifold**
 - **Trevor fixed the RTD electronics problem. We will restart the effort tomorrow**
- Gas analyzer: **re-assemble panel, install new analyzer**, and add new pipelines to Ar gas collection points – Mike Z
 - **Mike is to check with Kourosh on his progress.**
- Condenser installation and connection
 - **CryoMech: finished pressure and leak tests; returning to FNAL – arrived this morning. Mike to talk with Steve H on deliver them to MSB**
 - **Condenser boil-off and liquid drain lines: fabrication → leak and pressure tests.**
 - **(Nick is off this week. Will back on this when he comes back)**

- Cryostat venting and safety relief piping: procurement and fabrication → assembly and installation
 - Still waiting for flex hoses. off-shelf component procurement to be completed.
- Cryo and ODH controls – rack and panels assembly in NOvA NDOS → installation underground
 - Looking for 2nd 24V PS for ODH panel by review recommendation → no progress yet
- Water cooling for cryocoolers and compress air for valve actuators – Mike Z to report today on water system
 - Input water pipelines in CAD model? NO.
- Cryostat TPC insertion, service feedthrough pressure test and CSS safety review
 - Rigging team for transfer and insertion – MinJeong to report plan in July 10 meeting?
 - ND/PPD cryo techs for indium seal, feedthrough pressure and leak testing, engineering notes for CSS review – topic for July 17 meeting
- Cable support baseline plan
 - MPOD cables routing and support detail from VGA rack to TPC top – Matt, Gary and MinJeong
 - 32 cables in 4 bundles – Cable length to fit longest routing distance: **How long can it be without worrying about voltage drop?**
 - longest routing (xx'): from top VGA rack to PACMAB: going down straight to floor, then east
 - There is a request to reconfigure VGA rack which needs more space to have network swathes accessible
 - **Either a taller rack or replace AC switch box with PDU to generate more room → Linda is working on it**
 - Panduit PVC cable trays runs from VGA rack to cryostat flange for DC power cable, cat6 for networking, microCoax for VGA, and others
 - Purity monitor uses corrugated Panduit tubing with open slit.
- Network installation – Geoff/Steve/Linda working on installation plan with “quiet power”
 - Good progress in fiber installation: need more fibers to the surface – fibers exist but need termination done by network group
 - Geoff is getting an installation timeline from networking group
 - Need to specify and order new UPS: twist lock input for 120V/30A switch box. UPS to match (which goes directly to AC outlet?)
 - Detailing rack build documentation in progress: RPS, AC Switch 30, UPS, PDU
 - EPP power to be available for the rack: 120V/20A, 120V/30A
 - One set of 120V/20A, 120V/30A from “quiet power” is available now – **Steve confirmed there is a 30A twist lock outlet**
 - Verifying power and physical sizes of network switches – VGA rack and surrounding area is very busy
- DAQ servers:
 - 2 server racks are in MSB – Thanks Geoff!
 - RPS/Switch box installation first in NDOS/MSB → transfer rack underground → mount DAQ servers
 - Detailing rack build documentation: RPS, ND switch box, PDUs
 - AC update to provide additional “quiet AC” outlets for 120V/20A, 120V/30A, 208V/30A-3phase
 - Initial build with Surge-X SX-1120-RT PDUs which need 120V/20A which is available now – Steve H took pictures
- Racks and electrical infrastructure for underground operation
 - Impedance monitor – is it part of the AC contract? Do we need it before TPC electronics cabling?
 - Starting ordering Z-mon calibration boards
 - Plan and preparation for TPC electronics racks: west catwalk cleanup (old cable tray), grounding strips, grounding monitoring...
 - Purity monitor electronics rack, flash lamp, fiber routing, grounding
 - Cryo PLC rack and ODH control panel
 - ACPS control LabView and PLC inhibit/fault communication (docDB 21958 of 35ton experience)
- Topics for next meetings: July 10 is next time to meet

- TPC transfer and insertion procedure and signoff – MinJeong
- Cryostat and TPC service feedthrough CSS review preparation – Mike Z
- TPC electronics rack installation and ORC plan – Linda
- Grounding strip and grounding monitoring Z-mon installation – Linda
- VGA and ADC cable routing and support – Linda/Matt
- Final cryo control implementation: cryocoolers, pump, filter, gas analyzer etc. – Trevor
- Venting pipe installation and test – Mike
- Filling equipment and procedure: LAr procurement, procedures, safety, and monitoring (ODH1)