Order of 2x2 Component Installation

March 1, 2021

- Ideal order: from downstream to upstream
  - Bookend and rail support at downstream end
  - 8 Minerva module sets
  - Cryostat access platform
  - Cryostat with 4 TPC modules
  - Bookend and rail support at upstream of cryostat
  - 3 Minerva module sets
- Issues
  - Cryostat vessel only available this summer. Certification possibly takes 2 months
  - Only 1 TPC module available this summer. Other 3 by end of 2021
  - Rigging crew schedule, and availability of Minerva students/postdocs
  - 2x2@LArTF
- Likely order of installation
  - Bookend and rail support at downstream end
  - 8 Minerva module sets
  - Cryostat access platform
  - Bookend and rail support at upstream of cryostat
  - 3 Minerva module sets
  - Cryostat and 1 TPC modules
  - Remove cryostat lid and attach it with 3 more TPC modules @MSB or MINOS hall
- Other possibilities
  - Bookend and rail support at downstream end
  - 8 Minerva module sets
  - Bookend and rail support at upstream of cryostat
  - 3 Minerva module sets
  - Cryostat access platform
  - Cryostat and 1 TPC this summer, then 3 more TPCs later
    - cryostat+4TPCs after LArTF test
- Installation tooling concept
  - Pick-points of vessel and top lid
  - Tooling for transferring cryostat: MSB→ shaft → tunnel → MINOS hall
    - Need to find a cart similar to the steel cart to transfer vessel in the tunnel
    - Dimension of the steel cart? Possible to modify at all?
    - Other cart available in the Lab?
  - Is it possible to transfer vessel over top of the Minerva modules?
  - Installation issues for access platform with two group Minerva modules in place?
  - What size limit we want to put on the cleanroom tent planned by PPD?
- Next steps:
  - Run process in CAD to move vessel over Minerva top and go-around clean tent
  - Run exercise in MINOS hall with steel cart and strongback to the west as much as we feel comfortable. We then set limit of cleanroom tent with the exercise.