**Minutes and Action List of July 8 2018 ArgonCube2x2 Instalaltion Meeting**

* Attendance: Jim,John,Gary,Sai, Ming Jeong and Ting
* Jim, Gary and Ming's presentation on Minerva module placement and AgonCube2x2 layout -- Slides linked in the indico page
  + Minerva module attaches to strong back with clips (4 on top and 4 on bottom)
  + Locations of those clips define the placement of module on the strong back and also the limitation of minimum height of modules to the floor
  + After a module moves into position, axial bolts are used to attach new module to the previous installed modules
    - Those bolts are also serving as "alignment pins" to ensure the module in vertical by controlling gaps between modules
      * First module needs survey's help for alignment
      * Like to get as-build survey from Virgil to understand the procedure better
    - it is also possible to generate gaps between 4-module groups for electronics installation convenience (if needed)
  + Gary's 3d layout has argonCube2x2 closer to the curved edge of MINOS open shaft -- need to move it to be closer to the flat edge and away from utility pipes
    - In the shaft model, it is useful to add utility boxes which located way below the top surface (probably at middle height of the shaft )
      * Some of the utility boxes extends out more than the ones on the top surface
      * NOvA days we notice them as surprises
  + Initial placement of argonCube2x2 at downstream end of MINOS hall
    - center along beam line
    - ~24" above floor
    - 24" is likely the highest we want to go with 2x2 if we want to do TPC module extraction and insertion
      * ﻿The crane height in MINOS is about 275.7" (7m) from the 3d model and from as-build measurement
      * The crane is taller than the 22'  we got from MINOS TDR (good news!)
    - To be conservative, we might still want to lower the 2x2 to be even more to leave more working room
      * The TPC design is not really completed yet and potentially there is more height requirement for HV feedthrough or other utilities pipes on top of TPC module flange
      * It is easy to find block with 18" height so we do not need to design additional support frame
  + There is a scheme to modify the strong back in order to place the Minerva module closer to floor
    - Still needs 2" above floor to disengage strong back frame after installation
    - Overall, the minimum height of 4"-5" is needed between Minerva module and floor
    - Want have more detail next time (we run out of time to discuss the last slide in detail)
* Action list:
  + Gary to map out  space needed to install temporary support rails in upstream area of MINOS hall for recycled Minerva modules
  + Gary to refine Minerva modules layout for the argonCube2x2 configuration:
    - Upstream: 12 tracker Minerva modules
    - Downstream:  10 tracker modules + 10 ECal modules + 4 HCal modules
  + Min Jeong and Sai to define gaps needed between 2x2 and Minerva module and also desired cryogenic equipment location if available
  + John and Jim to compile MINERVA installation procedures and JHAs for safety review etc
  + We will contact neutrino division safety officer Angela Aparicio for guidance on safety review process
  + Next meeting is July 22,2019