Oct 27, 2021 TPC Module QA/QC Discussion

- **Scope of the QA/QC after module arrives at Fermilab**
  - List of tests before module insertion **(Mike/Igor to compile)**
    - Connectivity:
    - Functionality:
  - List of tests after module insertion **(Mike/Igor to compile)**
    - Connectivity:
    - Functionality:
  - List of equipment
    - On-detector electronics – **same as 2x2 operation**
      - Slow control Raspberry-PI boards: full power (detail list)
      - E-PCB/SiPM: partial, no bias for SiPMs
      - Pacman: full power
      - HV feedthrough: spellman-50 was not used in QA/QC in the initial test of Oct 18-22
    - Off-detector electronics – **partially shared with 2x2 operation**
      - DC power supplier for Raspberry-PI and laptop/desktop
      - VGA/DAC/Tinker boxes (module-0)/modules (module-1/2/3)
      - DC power suppliers for E-PCB/VGA/DAC/Tinker
        - Common bias PS uses Tektronix PWS4721 sent from Bern for module-0
        - common bias PS needs to be purchased for operation
      - Tinker readout laptop/desktop
      - Pacman DC power suppliers (for the boards and for cooling fans)
    - Readout and DAQ: networking, readout electronics, DAQ servers and racks **(Linda/Jeremy/Geoff)**
  - Mechanical: lifting fixture, transfer, support stand, ladders (**Andrew design --> FNAL review and approval)**
  - Feedthrough inspection and qualifications – separate effort, needed before cryostat insertion (**Min Jeong)**
- **Coordination QA/QC effort with 2x2 operation (Mike/Ting)**
  - Fitting tasks into overall 2x2 installation schedule
  - Consolidate effort with 2x2 electronics installation
    - Shared on-detector electronics
      - Better to have separate DC PS/control electronics/laptop for flexibility
    - Independ control/DAQ on laptop – needed for module 1/2/3 QA/QC
    - Shared control/DAQ on DAQ servers – same rack building process as for 2x2 operation **(Jeremy)**
- **TPC module QA/QC team**
  - Team: Onsite: **Lane, Andrew, Lee**
  - QA/QC leader: **Mike Mooney**
  - Who is in charge onsite?
- **QA/QC schedule for module-0: in LArTF and complete before holiday shutdown**
  - Module-0 setup in MSB: Oct 18
  - Connectivity/reception test in MSB (Igor/Livio/Lane/Linda/Jeremy)
    - SEDR/ORC and test for slow control completed: Oct 19-22
      Need ORCs in the system and signed off by safety (Mertz and Aparicio)
    - VGA/DAC/Tinker SEDR/ORC: Oct 21 –
    - Test light readout detector connectivity: Oct 25 –
    - Shipping 2 Pacman to LBNL for modification and get them back: Oct 21-29
    - SEDR and ORC for Pacman: Nov 1—
    - Test charge connectivity with Pacman: Nov 8 –
  - Transfer module-0 to LArTF: Nov 15 -
  - TPC module-0 functionality test with DAQ servers and readout electronics
- **QA/QC schedule for module-1:** February 2022 after module-1 delivery
- **Potential work to replace E-PCB and SiPM PCBs or adapter cards to use new electronics on module-0**
- **List of other electronics and readout tasks needing helps – or filling your free time between QA/QC tasks**