The MINERνA Operations Report
All Experimenters Meeting

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MINERvA Shifts

- Running weekday day shifts
  - All FEBs & PMTs operating
- We have trouble running the DAQ due to errors in the hardware. This week will be devoted to addressing this problem
- We will be running shifts during target scans & the target in and horns on beam pulses.

DAQ Problems

- The system operated well after the CROC-E replacement on Jun 12-13
  - CROC-E replacement automates the readout by putting the CROCs in charge of the readout of the FEBs
- After installation we had a small number TXRX errors
  - Clock not stable over the FEB loop
    - “Command received but not sent”
    - CROC channel → FEB → … → FEB → CROC channel
  - 2 ways of fixing a channel with this problem
    - Replace the CROC-E
    - Change the length of the CAT.5 readout cable for channels with this problem

DAQ Problems

- On July 19 while trying to address a CROC-E with TXRX errors, we were unable to talk to our 2 VME crates.
  - We could eventually talk to the crates
    - We do not know what caused this problem on July 19
      - We have occasionally not be able to talk to a crate
    - We have now getting a large number of TXRX errors in a variety of channels & this is the biggest issue we have.
    - We are unable to download a configuration on Crate 1. It fails on a FEB and it's a different one each time.

DAQ Problems

- Boris Baldin & Cristian Gingu (PPD EED, 14th floor) have developed new firmware to be downloaded into the CROC-Es
  - Addresses the TXRX errors we are having by the firmware decide whether to use either the leading or following edge of the clock.
  - In addition, it addresses a future update which increases the number hits read out during a spill.

DAQ Problems

- A wire will be soldered on the CROC-E boards.
  - During the original testing Boris & Cristian would write and read back random data. They read back what they put in, so the CROC-Es data bus seemed fine. The CROC-Es were released for installation.
  - In later tests, they read back downloaded firmware in the CROC-Es & the readback showed a few bits were switched. The switching of the bits was repeatable. The random data test did not pick this up. Soldering wire improves termination on the internal data bus & fixed this problem.

DAQ Problems

- The 14th floor test stand for testing the CROC-Es does not exactly reflect the detector in the MINOS hall.
  - 14th floor setup includes FEBs, but grounding, noise, readout cables length … all different from the MINERvA detector.
  - Using information we give them, they determine fixes and test them on the 14th floor test stand.
  - The 14th floor test stand not exactly see the same problems we see on the MINERvA detector
- The real test is on the MINERvA Detector

DAQ Problems

- Boris & Cristian have modified & tested the 7 spare CROC-E boards.
  - Today, we pulled out all 7 CROC-E boards in Crate 1 and put in the 7 modified boards.
    - Crate 1 is the crate we were really having almost all problems.
  - We will run the DAQ on the MINERvA Detector to determine how well the fix worked.
- The 7 CROC-E boards pulled out today will be modified and ready for installation in Crate 0 on tomorrow.
  - Need overnight to test modified boards.
  - Installation of these boards depends on Crate 1 tests.

New DAQ Computers

- The plan is for 2 new computers for DAQ rack and 2 new computers for VETO rack
- 2 new computers are in DAQ rack with the approved ORC
- Its not clear when we will switch to the new computers given the problems we are having with the CROC-Es.
- When we stop using the old computers in the VETO rack for DAQ, we will install 2 new computers in the VETO rack.
  - We cannot run the DAQ during the installation of these computer so it would be done during a down time