

# The MINERvA Operations Report

## All Experimenters Meeting

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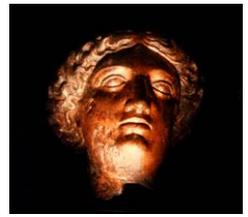
# V95 FEB Firmware Upgrade



- We have installed V95 FEB firmware in the detector.
  - Increases the number of hits a TriP chip can store from 8 to 20.
    - Without it we will suffer some significant increase in dead time due to buffer fills.
    - The dead time is analysis dependent. The deadtime increases faster than linearity with POT/spill.
  - V95 was used in test beam and was extensively tested.
- We downloaded the updated version of the CROC-E firmware that went with v95. This version was tested in the test beam. The update went well.
  - The DAQ ran well for 4 days with no problem.



# V95 FEB Firmware Update



- Next, downloaded FEB firmware v95 in the FEBs in the detector. The download went well, although it takes somewhat longer, 3-4 hours, to get the DAQ running after a power outage.
  - Required new configuration file & offline unpacking changes. Both tested at the test beam.
  - Running PED & LI continuously. The DAQ has been running well.
  - The data is bad. We call this problem the V95 ADC Problem.
  - For Crate 0, only 1 or 2 gates out of 1000 have the V95 ADC Problem.
  - For Crate 1, most gates have at least 1 FEB with the V95 ADC Problem.



# V95 ADC Problem



- A FEB reads out 64 pixels, # of pixels in multichannel PMT.
  - A FEB can be broken down into 2 sets of hardware of which each reads out 32 pixels.
  - If one of the 32 pixels of a set has the V95 ADC problem, all 32 pixels have the V95 ADC Problem.
    - Since each PMT pixel is readout out by a hi, med, and low channel, we can determine whether the ADC value for a pixel makes sense.
    - For all of the 32 pixels, the data does not makes sense and does not correspond to the input ADC charge.
    - Most of the time a FEB data is OK.
- If we restrict the readout to only 1 crate:
  - For crate 0, we get a bad gate with about the same frequency as with 2 crates, ~ 1 in every 1000 gate.
  - For crate 1, the problem is gone.
  - The test beam, which did not have this problem, had 1 crate.



# V95 ADC Problem



- A FEB does not know which crate it is on nor does it know the number of readout crates. In addition, crate 1, with the worst problem, is fine since it does not have the problem if crate 1 is readout alone.
- The difference between crate 0 & 1 has left the “experts” completely stumped.
  - A suggestion was made as what the problem was (which does not explain the difference between crate 0 & 1), and the proposed solution did not help.
- If we do not solve this problem within 1 – 1 ½ weeks before beam starts, we will go back to V91.
  - We are changing the test beam DAQ to a 2 crate system so that we can hopefully replicate the problem there.



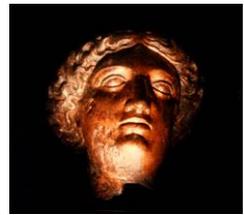
# Other Necessary Tasks



- With the large effort and time we have put in on V95 ADC problem, other tasks have not been done. The following are the needed to be done:
  - During our testing of V95 a chain has failed, probably from a bad FEB. In addition on the same chain, the HV for a PMT is bad. It could be the same FEB. This will require removing 2 roof panels.
    - To remove 2 roof panel & test the fixes, we need a working DAQ
    - Although the other work on the detector is not absolutely necessary, this would be a good time to do it, ~ 2 - 3 days of work with v91
  - Get the veto HV working again. The code was on a computer which was removed from the Hall & replaced with the present DAQ computer.
  - Get a clone of logger, the online monitoring machine.
    - This computer exists & needs to be brought into the hall and tested
    - We do not need v91 to test this.
  - Clean the FEB power supplies
    - DAQ can run while the power supplies are being cleaned.



# Important to do



- Have the DAQ setup the 2 light injection (LI) boxes.
  - Right now 2 old DAQ computers setup the LI boxes.
  - The issue is a computer needs 2 serial ports to setup both LI boxes.
- The spare DAQ computer in the Hall needs a 2d serial port.
- V96 FEB & CROCE firmware, which increases the live time.
  - However, we need to solve the V95 problem before we can go to V96.
  - Getting ready to install v96 will require a lot of testing.
- Thanks
  - Geoff Savage, Donatella Torretta – Neutrino Division.
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