

Minutes of ATLAS Level-1 Calorimeter Trigger Phone Conference – 13th July 2006

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Heidelberg: Björn Gosdzik*, Paul Hanke, Eike-Erik Kluge, Kambiz Mahboubi, Karlheinz Meier

Mainz: Uli Schäfer

QMUL: Eric Eisenhandler**, Murrough Landon*

RAL: Bruce Barnett*, Ian Brawn, Norman Gee***, Tony Gillman*, Damien Prieur***, Weiming Qian*, Dave Sankey

Stockholm: Attila Hidvégi, Sam Silverstein

*at CERN **at Stockholm ***at Birmingham

1. Birmingham

- The modified wiring to the production CP/JEP crate power bus-bars appears to have solved the current/voltage surge effect, and the PSU is now completely stable at full load (14 CPMs, etc)
- The full-crate tests have been run continuously for five hours with no parity errors in the CPMs or the CMMs. 5V supply currents of 200A are seen with data occupancy levels of ~10%, increasing to 227A with data occupancy levels of ~30%.
- It would be good to achieve continuous runs of 24 hours, but overnight operation of the full-crate system is not completely safe as there is currently no working DCS system. Also, there is a known CANbus bug with the Wiener crates where the crate resets after a few hours. A firmware upgrade is needed, which should preferably be carried out at CERN.
- Following the successful conclusion of these full-crate tests, approval was given for full production of the CPMs, starting with a batch of 16 modules to provide a second complete crate.
- The problem of the TTC phase jumping following a broadcast STOP has been resolved. Richard and Gilles discovered that, following a broadcast STOP, the DSS generating the L1A does not stop immediately but sends a long (2 μ s) pulse, which is invalid and confuses the A/B channel encoding. This produces a short loss of TTC lock, non-recoverable by the CMM, and causes several CPMs to lose lock on their LVDS links.
- The prototype CP/JEP crate was sent from Birmingham to CERN today for the CMM-CTP interface tests.
- Norman and Damien delivered the ROS to Birmingham today, and it is starting to be configured.
- We should decide soon which RPPPs are needed at CERN, and by when.

2. Heidelberg

- The remaining MCMs are currently being tested by a student. Ralf is looking into the repair of faulty devices.
- The reduction in yield following lid attachment is due to wear on the interposer card connector, after ~2,000 insertion cycles. A new interposer card is being produced.
- The overall MCM yield remains at about the figure given by Paul at the July Joint Meeting at RAL.
- The first pre-production PPM assembled in Heidelberg, initially with four MCMs (16 channels), is progressing well. 16 FADC spectra have been read out *via* VME, and the LVDS output signal eye patterns look very good. The twelve remaining MCMs must still be mounted to complete the module.
- Sufficient CANbus modules have been ordered for the full-crate tests.

- Assembly of the remaining 19 pre-production PPMs will take place as soon as tests of the first Heidelberg-assembled module are complete.
- A new TCM-VME64x and a TTCex module are urgently needed in Heidelberg to complete the PPM testing.

3. *Mainz*

- The next stages of the JEM full-crate tests will take place at Birmingham next week. Two new JEMs are being prepared for these tests, providing a total of eight modules. Together with seven CPMs, this will produce a total of 15 modules in a single crate to emulate a “full” crate of JEMs (allowing for a one-slot CPM-JEM gap). Attila is preparing the necessary firmware to detect parity errors in the FIO data.
- Approval to proceed to full JEM production will be sought from the reviewers as soon as the full-crate tests are satisfactorily completed.

4. *RAL*

- A further two pre-production CMMs will be ordered once suitable quotations have been received.
- The addition of pull-down resistors on the TTC buffer outputs has solved a loss-of-lock problem in the CMMs. (The ROD may require a similar fix.)
- The I2C-related problem in the CMMs was caused by System-ACE.
- The FIFO-full problem in the CMMs was traced to a state machine timing bug.
- The VME interface and I2C bugs in the ROD have been corrected, but not yet tested.
- The problem of the TTC status bit not being seen by VME was traced to faulty address lines on a BGA, requiring re-work at the assembly company.
- The latest batch of two RODs also need pull-down resistors added to the TTC buffers.

5. *Stockholm*

- Eight Processor Backplanes finally arrived from Erni in Germany, after having been “lost” by the courier company for several days. Although the first water-cooled CP/JEP crate will be sent to CERN as soon as possible, Sam recommended that the prototype CP/JEP crate be used for the CMM-CTP interface tests.
- Two more AMP connector-pin field repair kits should be ordered from AMP as soon as possible – one for Stockholm and one for CERN.

6. *CERN*

- 64 final TCPP-TileCal Rx cables have been installed in USA15.
- Two original Nexans connectors were discovered to have been assembled badly, and have had to be re-made and re-tested.
- Discussion must be started very soon about the best procedure for installing the LVDS cables. There could be a serious conflict with installed analogue cables blocking subsequent access to the upper cable trays. It may be necessary to carry out the LVDS cable installation in September, before installing the RPPP analogue cables. All eight PPr crates and all six CP/JEP crates, together with the associated cable strain relief mechanics, would probably be needed to be installed before this work starts.
- Paul requested that blanking panels be fitted to all racks before installing production crates, in order to keep them dust-free.

- The interface tests between the CMM and the CTP will take place at CERN (USA15) in the week beginning 24th July. Careful checks will be made for correct data capture, timing and trigger latency,, as well as a measurement of any potential difference between rack grounds in USA15 level-1 and level-2.
- There will be a meeting with the RoIB group at CERN at 11:00 on Friday 14th July.
- The ROD tests are continuing at CERN. Flow-control is one particular feature that is being studied at present.
- The three new 6U VME crates have been modified, and one will be installed in USA15 next week.
- Weiming will contact Paul Harwood to find out the status of the faulty PSU from the Birmingham CP/JEP crate.

Next Phone Conference – Thursday 27th July 2006 at 12:00 (11:00 in UK)

Tony Gillman