Minutes of ATLAS Level-1 Calorimeter Trigger Phone Conference – 16 Feb. 2006

Birmingham: Gilles Mahout, Pete Watkins
Heidelberg: Florian Föhlisch, Paul Hanke, Eike Kluge, Kambiz Mahboubi, Klaus Schmidt, Hans-Christian Schultz-Coulon
Mainz: Uli Schäfer
Queen Mary: Eric Eisenhandler (at RAL; chair and minutes), Murrough Landon (at CERN)
RAL: Bruce Barnett, Ian Brawn, Tony Gillman (at CERN)
Stockholm: Attila Hidvégi, Sam Silverstein

Birmingham
Gilles reported that he has been checking the last two CPMs from the pre-production batch of 10 (recall that there were first two, then 10 made). One of them had some unsoldered pins on the flash RAM, now fixed, and it still has a problem with a CP-chip PLL. The other one is ok.

Gilles has been testing with 11 CPMs in one crate (i.e. 220 LVDS input cables!). The inputs seem fine, with good timing windows. A bit-error test showed no errors in five minutes. He plans to add three more CPMs to make up a full crate; this requires three more LSMs. There was some discussion of how to get them from RAL and Mainz; one LSM at Birmingham would also be available if it were repaired.

Further tests required are CP-chip inputs (which include backplane fan-in/fan-out), and CMM signal outputs (which will require a second CMM at Birmingham). But so far the results are extremely encouraging.

Total power consumption has not yet been measured; Kambiz suggested that it might be pattern-dependent.

Heidelberg
Paul reported that MCM production is going well. All substrates have now been made, and tested for bond quality. A batch of about 2k MCMs with lids installed is soon to arrive for final testing.

Six AnIn-card PCBs have been made. One was hand-assembled and tested without problems. Crosstalk is less than 0.4%. As this seems fine, production of 640 cards will be ordered and they will then be assembled.

The LCD-card PCB is ready to be made, as soon as the JEM channel mapping has been checked (next week) at RAL.

The CAN controller board is also in good shape, but a decision on which type of transceiver to use should be confirmed.

Layout of the main PPM PCB continues steadily. The overall goal is to be able to do a full-crate test in May, as stated at the IDR in December.

Mainz
Uli is working on the design of the Control Module daughter-card for the JEM, modified so that the FPGA configuration can be loaded from VME via JTAG. A hand-modified card will be tried at RAL next week, and the card will be sent off for production.

The JEM motherboard is at the manufacturer for pre-production and is due back in early March.

Queen Mary
See CERN report.

RAL
Ian reported on tests of the two CMM pre-production modules. There have been some VME interface problems, mainly due to LabView bugs and firmware problems. More annoyingly, two

temperature-sensing diodes have been found to be unconnected due to an error in the schematics. This will have to be fixed; it is not clear how such an error got through the quality-assurance checks.

Tests by Bruce on updated ROD firmware from Ian continue. Bruce has provided additional information about flow control problems at the S-link interface. Testing of new firmware that addresses related design issues is next.

The TCM mini-backplane discussion concerning PPM requirements has essentially concluded, but some design details should be finally confirmed when Viraj and Norman are back next week; this is essential for both TCM and PPM to progress. CAN termination must also be confirmed.

Tony mentioned Weiming's measurements on new Nexans cable for the TileCal, done at RAL the previous week. The impedance is ok (about 78 ohms), propagation speed is very fast (about 4.4 ns/m if we know the length correctly), and differential skew on a sampling of pairs is fine. However, an unexpected discovery was that the individual pair shields are shorted together. This is also the case on Nexans cable at CERN, we now realise. However, since the cable passes all tests, and in any case the shields are grouped in fours on the connectors (except for long TileCal cables), this does not seem serious.

Stockholm

Attila will release new jet firmware, with updated FCAL mapping and reduced latency.

Sam reported that a second iteration of the backplane PCB, with the holes correctly positioned, has failed. The cause was an unexplained change in material by the firm that took the impedance out of specification. The firm will now try again with the original material and track widths that gave the correct impedance. Several weeks have been lost, and this is now quite late.

Sam is working on his CMM firmware using simulation. Another test will take place at RAL at the end of February.

Report from CERN

Murrough gave a summary of the TileCal low-voltage power supply problems that have suspended their installation programme. He said the problem is now believed to be due to power-supply firmware, and might be fixed within a couple of weeks.

Tony reported on a visit to Cegelec, the firm installing analogue connectors on-site. Test results for the cables done so far are very good (cross-talk 0.1–0.2%), but the work is going slowly, with only 24 ends done so far. This will be sped up.

Work in USA15 this week has concentrated on the A-side cables for the e.m. endcap, which run under the floor. They are now all in place to be measured and cut. It was found better to mount the support 'stocks' down at floor level, lower than planned, and standoffs of ~5 cm will be made to minimise cable bending. The team is about to start on the A-side hadronic endcap cables.

TileCal Patch Panels are all at CERN, but the connector screwlocks that were due to be delivered to RAL this week have not yet arrived.

Steve is looking at label issues.