

## Minutes of ATLAS Level-1 Calorimeter Trigger Phone Conference – 1<sup>st</sup> June 2006

**Birmingham:** Steve Hillier\*\*, Gilles Mahout, Richard Staley, Peter Watkins

**Heidelberg:** Björn Gosdzik\*\*, Paul Hanke, Kambiz Mahboubi\*\*, Karlheinz Meier, Frederik Rühr

**Mainz:** Uli Schäfer

**QMUL:** Eric Eisenhandler\*, Murrough Landon

**RAL:** Bruce Barnett\*\*, Tony Gillman, Weiming Qian\*\*,

**Stockholm:** Christian Bohm, Attila Hidvégi, Sam Silverstein

\*at RAL

\*\*at CERN

### 1. Birmingham

- The 14 CPMs in the CP crate have been cabled (fibred?) to a ROD (*ex*-Lab 12 at RAL), and using a “light” data pattern (to prevent exceeding the crate PSU limit) twelve of the 14 ROD links operate stably. The remaining two links need further study.
- When the production CP crate arrives from Stockholm next week, the system will be fully re-configured to accommodate 14 CPMs and two pre-production CMMs. It is expected that it will take ~one week to re-cable everything, and a few days to perform the final full-crate test.
- Before the end of June it is hoped to carry out the full-crate JEM test in Birmingham, using seven CPMs and eight JEMs (of differing vintages) in the same crate, with a one-slot safety gap between them.
- The majority of the TCPPs have arrived in Birmingham to have their screwlocks replaced. This work will start next week, and may take at least two weeks to complete. Simon is confident that the technique and tooling developed in Birmingham will ensure a robust solution to the problem.

*It was noted that all of the screwlocks at the rear of the TCPPs (on the 50-way sockets) must be replaced by the longer types, which are currently still at CERN. They should be sent to Birmingham as soon as possible for this work to be completed.*

- Most of the RPPPs are now available in Birmingham.

### 2. Heidelberg

- Ralf has collected the final batch of MCMs for test at KIP. All devices will be glob-topped and have lids attached by the end of June. The rejected (unencapsulated) devices will then be sorted into two groups: irreparable and possibly-reparable. The latter group will be studied further to discover whether some can be satisfactorily repaired.
- Assembly of the AnIn daughter-cards is under way, after a delay caused by non-availability of the 2.5V reference diodes. Delivery of the entire production batch of 640 assembled modules is due at the end of next week, and testing will then be carried out at KIP.
- The final PPM motherboard PCB layout has undergone extremely thorough checks, especially in the more delicate areas, and all of the necessary Design Rule Checks have been carried out. The PCB design has already been sent for manufacture, and the 20 boards (with a minimum of 18 guaranteed) are scheduled for delivery within three weeks. In addition, 20 LCD cards are also being manufactured.
- The first PPM motherboard will be assembled by hand at KIP and then tested when loaded with all of its daughter-cards.
- The Multiplexer-Receiver module to test the LCD card outputs is being assembled by hand at KIP.

- The prototype LVDS cable strain relief system will be mounted on to a PPr crate this week, so that the complete crate assembly can be shipped to CERN.

### 3. *Mainz*

- Four pre-production JEM motherboards and 16 Input Modules have been received from Rohde & Schwarz.
- Boundary scans have been performed on the Input Modules, but only twelve have passed successfully. One was found to have connectivity problems identified with its replaced connector, but the other three modules have unknown faults and will be returned to Rohde & Schwarz for re-working.
- The four JEM motherboards have all powered up correctly, and they are now being fitted with their strengthening bars and front-panel handles. The TripleEase handles still cannot be used satisfactorily on JEMs in the Mainz prototype crate for unknown mechanical reasons, although they appear to work correctly in the Stockholm prototype crate. The JEMs cannot yet be boundary-scanned, as dedicated firmware is still required.
- Once the pre-production JEMs have been tested and are fully-working they will be sent to Birmingham for the full-crate test to be carried out, hopefully before the end of June. This set-up will consist of a mixture of seven pre-production CPMs, four pre-production JEMs, one JEM 1.2 and three old JEMs. (One of the 16 available JEM crate slots must remain unpopulated to separate the CPMs from the JEMs in the same crate.)

### 4. *RAL*

- RODs: One module is in Birmingham and the other is ready to go to CERN after the Birmingham tests if required.
- CMMs: The modifications to replace the 100K resistor packs on the TTCrx sub-address and data lines with 4K7 values have been done and the modules are also ready to be shipped to Birmingham.  
A slot has been reserved in the Drawing Office to carry out the minor schematics and layout changes, after which a further 2 modules will be ordered.
- CMM-RTM: Four pre-production modules are expected to be delivered to RAL on June 13<sup>th</sup>.
- TCM-VME64x: Two modules are almost fully tested, with only the CANbus checks remaining to be done. *Adam reported that these tests were finally completed after the meeting.*
- TCM-CP/JE: All faults/mistakes/improvements found on the VME version have been fed back into this design and the schematics will be ready towards the end of this week, with the completed design sent out for manufacture around June 12<sup>th</sup> and the finished boards ready by the end of June.
- VMM: Manufacture of the production modules was authorised after correction of minor problems.
- ALC-VME64: Four partially-assembled boards, requiring only TTC fan-out, are due imminently.
- RGTM-O: The four pre-production modules were received on May 31<sup>st</sup>. Kambiz or Bruce should define their destination.
- TTCdec: An order to manufacture 50 cards has been placed. They are due for delivery on June 15<sup>th</sup>.
- GIO cards: Five or seven back-end cards and three PECL front-end cards will be ordered once a final decision on numbers has been reached.
- TTC Aux Backplane: An order was placed on May 31<sup>st</sup> to manufacture four boards, with initially only two for assembly. The completed boards are expected around June 22<sup>nd</sup>. *The query from Kambiz about the CANbus pins had been checked before the order was placed.*

### 5. *Stockholm*

- The first CP/JEP crate has been fully-assembled and shipped to Birmingham for the CPM full-crate test. It should arrive in Birmingham at the beginning of next week. Everything finally went together well, although there was an inevitable learning curve. It should be possible to assemble subsequent crates rather faster.
- The LVDS cable strain relief system around the CMM RTMs caused some bent, and then broken, connector pins in the CMM-0 slot, which should be repaired in Birmingham before using the crate. Sam warned that the RTM guides do not fully ensure mechanical alignment of the module into the connector.
- Erni will be starting assembly of the remaining ten Backplanes in Germany next week, and this work is expected to last only about one week. The crates remaining in Stockholm should each only take about one week to be assembled, so the first water-cooled crate for installation in USA15 could be shipped to CERN by the end of June. There was some discussion about which flavour the third assembled crate should be, and the proposal at present is that it should be a Test crate (*i.e.* with air-cooled PSU), for use in the trigger rack in Bat 3150.
- Sam will ship six of the seven water-cooled PSUs to CERN in the single wooden crate in which they were originally delivered. He will retain the seventh PSU in Stockholm for tests.

## 6. CERN

- Kambiz has drafted a report on the analysis of the LAr calorimeter calibration data taken in the multi-step runs during the week beginning 22<sup>nd</sup> May. This will be made public as soon as the LAr calorimeter group have cross-checked the results with their own data.
- Murrough reported on the current analogue cabling status. On Friday 2<sup>nd</sup> June it is hoped to collect all of the cut cables from Cegelec for laying and measuring on the TCPP→Rx C-side routing next week. If still unavailable, there are other possible sources for some of these cables. For parts of this cable-laying work the installation team needs to number four, but next week there should be at least that number of people available at CERN.
- Weiming noted that although the ROD Switch firmware was working there remains a constraint that needs to be overcome to improve usability.
- The PSU in the upper ROD crate in USA15 has failed, and must be swapped with a spare module. Pail Harwood has been informed. Four water-cooling hoses have been successfully installed on the two ROD crates (the only crates with water-cooled PSUs yet available in USA15).

**Next Phone Conference – Thursday 15<sup>th</sup> June 2006 at 12:00 (11:00 in UK)**

***Tony Gillman***