Minutes of ATLAS Level-1 Calorimeter Trigger Phone Conference – 19th October 2006

Birmingham:	**Dave Charlton, Chris Curtis*, Gilles Mahout*, Richard Staley, Pete Watkins**
Heidelberg:	**Eike-Erik Kluge, Paul Hanke, Kambiz Mahboubi*, Karlheinz Meier, Frederik Rühr*, Hans-Christian Schultz-Coulon, Rainer Stamen***
Mainz:	**Uli Schäfer**
QMUL:	**Eric Eisenhandler, Murrough Landon***
RAL:	**Bruce Barnett*, Ian Brawn, Norman Gee, Tony Gillman, Weiming Qian*, Dave Sankey**

* *at CERN*

1. Birmingham

- Four RPPPs (Type 4) have been completed and are ready to ship to CERN.
- One crate (4) of Type 5RPPPs and one crate (16) of Type 1 RPPPs are already installed in USA15.
- The Wiener crate used for the CPM full-crate tests has had its PSU wiring restored to the original flexible cable.
- Six pre-production CPMs will be shipped to CERN for use in USA15.
- For the CPM production, it should be possible to test five modules per day in Birmingham using a ROD.

2. Heidelberg

- Kambiz and Rainer are currently at CERN to continue the PPM test programme.
- Two fully-equipped PPr crates will be taken to CERN during the week of the Joint Meeting (w/b 6th November) by Paul and Klaus.
- The combined FDR/PRR for the PPM was held in Heidelberg on 12th October, and an interim summary of the outcome was distributed by Tony on 16th October. There were several recommendations, largely relating to completing further module tests. Paul had prepared a draft Production/Test plan, which was discussed at the review. It was decided that the reviewers would like further time to assess its content, but the general feeling was that efforts should be made to streamline the production schedule if at all possible. A full report of the FDR/PRR will be issued as soon as possible.
- All the necessary paperwork has been prepared for PPM production to begin once the test programme is complete.
- Although all 640 AnIn daughter-cards have been manufactured, they have not yet been tested.

3. Mainz

- Planning has been continuing for the full-scale testing of the production JEMs.
- A solution to the problems with the boundary-scan tests system has now been found, the JEP crate and its CPU are available, and the system should be ready for use within a few days.
- Delivery of the 45 production JEM motherboards will be delayed from Rohde & Schwarz by six weeks, due to an excessive number of orders currently being processed. It seems impossible to accelerate this schedule any further, and delivery is not now expected until 23rd November.

  The Input Modules and the G-link daughter-cards for the JEMs should be delivered somewhat before this date.

  Weekly progress reports have been requested from Rohde & Schwarz to try to avoid any further delays.

4. RAL

- The first batch of four (rather than the promised five) production CPMs was delayed until 17th October, and only one passed its JTAG tests. Two modules exhibited bad solder joints on the same FPGA, and one module had been fitted with an incorrect DC-DC converter.

  The two CPMs with bad FPGA solder joints will need to be re-worked, although it is believed that only one ball is faulty. It is possible that poor temperature profiling is the cause of the problem, but this has to be verified.

  It is unclear why the AOI process failed to detect the fitting of the incorrect DC-DC converter part.

  Attempts to discuss these problems with the manufacturer have so far proved very difficult, but it is hoped that a fact-finding visit to the company can be arranged very soon. The original schedule had been for delivery of five modules per day, but although this is clearly not being realised no updated schedule has so far been made available.

- As there is no JTAG chain associated with the LVDS deserialisers, Bruce asked if it would be possible to check the connectivity of these devices manually, using LSMs.

- The first CPM that has been successfully JTAG-tested will be sent to Birmingham for full system testing.

- All of the layout changes to the CMM, following its PRR, have now been completed. The missing parity bit (observed during the CMM-CTP tests in USA15 in July) has been solved.

- The quotation awaited for manufacture of two CMMs will be revised to be for four modules.

- Although the RTM has not yet been tested, this module contains only tracking so there can be no possible impact on the CMM production schedule.

- All of the necessary schematics and layout changes for the ROD should be complete this week.

  The 125MHz crystal oscillator used for the Rocket I/O and the Switch FPGA has proven to be too fast, so it will be replaced with a 100MHz part. Unfortunately, there is a minimum order quantity of 100 pieces, so a shared order with other users will be explored.

  The schematics for the PCI interface have been checked; tests of the physical hardware will now be made.

  Bruce asked if the schematics had been reviewed; they will be made available on the web very soon.

- It has been decided to retain the smaller devices for the Input FPGAs. All of these devices will be ordered immediately, as they currently have a 12-20 week delivery lead-time.

- A quotation is awaited for the manufacture of four pre-production RODs.

- All final changes have been incorporated into the VMM design files, and a quotation for full production is awaited.

- Front-panels for the pre-production VMMs and TCM-CPs are expected this week.

- All design changes to the TCM-64 should be complete by the end of October, with full production expected to begin by early-November.

- A quotation has been requested for production of the remaining PPr RGTMs (142 modules); unfortunately, it appears that the assembly company is at present unable to locate the components which they had procured.

- Weiming has already checked the clock signal quality on the pre-production TTCdecs, but final tests of broadcast operation and verification of correct addressing have still to be carried out. It must be verified that the TTCdec transmits address lines correctly to the TTCrx chip; a check on a few specific addresses could confirm this.

- There is a growing urgency to authorise full production of the TTCdecs, as the current plan is to carry out the manufacture in Asia, where a lead-time of six weeks is predicted. However, it should

be possible to source the production more locally to achieve a faster turnaround, although probably at a higher price. Viraj should explore what other routes exist.

5. Stockholm

(Sam had e-mailed a short report, as he was unable to attend the phone conference.)

- Virtually all fabrication is complete for the hardware to be installed in the remaining crates. Two water-cooled crates have now been modified and prepared for installation and cabling according to the scheme agreed upon two weeks ago at CERN. One backplane is fully assembled with all hardware; another is within a day of completion.
- The new 50mm^2 *Silistrom* cable is expected in the coming days. When it arrives, it will be possible to have one water-cooled crate ready to ship within a day or two, and the second a day or two after that. A power-supply "door" will also be prepared and outfitted with a cable loom. Plans are being prepared to retrofit this door and cables to the crate already at CERN during the week of the Joint Meeting (w/b 6th November).
- The design of the LVDS cable strain relief system, designed by Paul in Heidelberg for the PPr system, has been modified to adapt to the different geometry of the CP/JEP crates. The prototype 4-slot block now being fabricated in the RAL workshops will be evaluated in the Wiener CP/JEP crate in Birmingham. If satisfactory, a further |35 blocks will be manufacture commercially, and fitted to the CP/JEP crates at CERN before their installation in USA15.

6. CERN

- All of the remaining short analogue cables, associated with the RPPP crates, have now been measured and delivered to *Cegelec* for connectors to be fitted.
- Installation of the upper RPPP crate cables should be completed this week.
- All of the spare cables have been pre-cut to the proposed lengths and are ready to send to *Cegelec*. 664 cables, from a total of 776, have been assembled by *Cegelec*, of which 520 have been installed in their final position. Full details of the status of all of the analogue cabling can be found on the following Wiki page:

  https://uimon.cern.ch/twiki/bin/view/Atlas/L1CaloInstallationSchedule

- Tests of CANbus and DCS operation are being carried out this week in USA15, by trying to transfer CPM and PPM data to a PC. Problems are seen with both TCM-64 modules which are restricting operation of the full CANbus system. It is important that this is resolved as soon as possible, and that the software to allow PVSS operation is got running.
- All of the Receiver crates will be added to the CAN branch.
- Installation of the fibre plant – including labelling – will take place next week.
- The PPM testing programme has been slightly delayed because of conflicts with other work in USA15, but it is hoped that it will be completed by the end of this week.

Next Phone Conference – Thursday 2nd November 2006 at 11:00 *(10:00 in UK)*

Tony Gillman