

Minutes of ATLAS Level-1 Calorimeter Trigger Phone Conference – 11th January 2007

Birmingham: Dave Charlton*, Stephen Hillier*, Gilles Mahout, Simon Pyatt, Xen Serghi, Richard Staley, Peter Watkins
Heidelberg: Paul Hanke, Eike-Erik Kluge, Rainer Stamen
Mainz: Markus Bendel, Andrea Neusiedl, Uli Schäfer
QMUL: Eric Eisenhandler, Murrough Landon*
RAL: Bruce Barnett*, Ian Brawn, Norman Gee, Tony Gillman, Weiming Qian*
Stockholm: Sten Hellman, Sam Silverstein

* at CERN

1. Birmingham

- A further six production CPMs, one of which had had a small BGA re-worked, have been delivered to Birmingham and tested. Five of the six modules work correctly, but one has a minor problem relating to loading the CANbus microcontroller, which should be easy to fix.
- In summary, 31 production CPMs are now fully-tested and working in Birmingham, which together with the ten pre-production CPMs makes a total of 41 fully-working modules available for installation in USA15.
- Viraj had visited the CPM assembly company with a colleague in recent days, and discovered that their re-working of the 15 modules that had failed their JTAG tests had been only partially successful. About half of the modules (those having had re-work on large BGAs) failed JTAG re-testing, which the company suspects may be due to PCB pads/traces having suffered damage during the re-heating process. Tests to confirm this will be carried out this week, but it may well be necessary to produce a new batch of PCBs.

Three CPMs did pass JTAG re-testing at the company, so will be sent to Birmingham for system tests.

There are four more boards at the company awaiting some components to be delivered.

- There are several mechanical parts being manufactured in the Birmingham workshops and at an engineering company near RAL, which are needed for the LVDS cable strain relief system and for the extended power lugs on the first CP/JEP crate. All of these pieces should be available before the end of this week, and will be shipped/couriered to CERN for fitting to the crate early next week. If everything fits together correctly, parts for the remaining five CP/JEP crates will be manufactured ready for the next cabling week starting on 29th January.

Sam advised caution when selecting the correct diameter crimp tags for the 50mm² *Silistrom* cable. This area figure is smaller than the actual cable diameter would imply, because of the packing fraction, and it is important that the tag is a very tight fit when crimped.

- All of the six types of RPPP modules are now at CERN and/or installed in USA15. Some spare modules are still in Birmingham, and one Type I module with a suspected internal short has been returned to the PCB manufacturer for inspection and possible replacement.

2. Heidelberg

- The PPM motherboard production is proceeding extremely well. 160 PCBs were delivered to the assembly company (*Ludtke*) before Christmas, and the surface-mount device (SMD) attachment is now almost complete.

The first batch of 40 boards with complete SMD attachment have been transferred to the electro-mechanical section at *Ludtke* to have the manually-fitted components added (connectors, *etc*).

- The manual modifications that were made just before Christmas to the 160 LCDs in order to correct the “draining vias” problem were unfortunately not completely successful, and it was decided to be

completely safe and re-manufacture all of the PCBs. The new boards will be ready for assembly at *Ludtke* starting on ~20 January.

- The 160 CAN controller daughter-cards have all been assembled at *Ludtke* and are at KIP awaiting testing once the PPM motherboards arrive.
- The Auxiliary Backplanes have been delivered to KIP from the UK PCB manufacturer, assembled with connectors and mounted on to some of the PPr crates.
- Paul and Klaus will travel to CERN on 16 January, taking with them four fully-prepared PPr crates. These will be installed in USA15 during the week, and new Auxiliary Backplanes will be fitted to the two previously installed PPr crates. There should be six final crates installed in USA15 by the end of next week (19 January). To complete the installation, the final two crates will probably be delivered to CERN filled with tested production PPMs.
- It would be very helpful if a good source could be found of plastic “blockers” to blank off the unused rows of pins on the J3 LVDS connectors in some PPr crate slots. This could make the LVDS cable installation easier.

3. *Mainz*

- Assembly of all of the production JEM motherboards is scheduled for 19 January.
- The JEM Input Modules, which were assembled before Christmas, were observed to have been inadequately cleaned, so were returned to *Rohde & Schwarz* for re-cleaning. This work is scheduled for completion a few days before the JEM motherboards will be ready.

Sufficient Input Modules already exist to populate all 32 JEMs to be installed in USA15. Therefore the few Input Modules that were found to have hard faults will be put on one side for now and repaired later.

- Testing of all boards will begin towards the end of January. All necessary hardware and software is ready, together with the Test-Rig in Bruno’s lab.
- If all goes well with the test programme, it is hoped that 16+ production JEMs (enough for at least one full crate) could be taken to CERN for installation in USA15 before the end of February. The remaining modules would become available soon after.
- Uli noted that one of the high-numbered slots in the Mainz CP/JEP crate (an early air-cooled variant) has an apparently misaligned ground pin in the bottom power connector, which he worries could damage production JEMs when being tested. Sam believes that he understands how this can happen, and how to rectify it, and does not believe that it will occur on later crate backplanes.

4. *RAL*

- Ian reported that he has checked his modified ROD firmware, and replay operation now works correctly in simulation. However, the tests that Bruce has been making using the modified code on a real ROD in USA15 still show some problems.
- A total of seven pre-production S-link RTMs have been ordered.
- Pre-production of the TCM-64x modules should be started as soon as possible. There is still a possible VME design fault, which was observed when operating one of the two prototype modules with a ROD in USA15, but not verified when the Adam checked the TCM at RAL. Further tests with a ROD will take place in Birmingham in the next few days.

Note that only two prototype TCM-64x modules exist.

- There is an urgent need to have more TCM-CP/JEPs, in particular to accommodate commissioning work in USA15. Unfortunately, a few minor faults have been identified with the four pre-production modules, which it has been decided to rectify before authorising full production of the remaining nine modules.

5. *Stockholm*

- The fifth water-cooled CP/JEP crate/PSU is ready to be shipped to CERN. The sixth and final crate for installation in USA15 is almost complete, and should also be ready for shipment within a few days.
- The next priority is to prepare the air-cooled CP/JEP crate/PSU for the CERN Test-Rig. The PSU for this is currently at CERN, having been repaired.

6. *CERN*

- There is apparently a new access system about to be enforced (early February?) for the ATLAS underground areas. No details are yet available.
- The Romanian technician has begun LVDS cable preparation work in Bat. 3150, and has already labelled and bundled about 50-60 LVDS cables in the first day or so. The work seems to be going well so far, and at this rate all of the cable bundles may be completed within the month that he is with us.
- Weiming tested the batch of 50 TTCdecs before Christmas, and only one was found to be faulty.
- Of the two crate PSUs that had been returned some time ago to Paul Harwood for repair of damaged D-sub connectors, one has been returned from *Wiener* and Paul will check the status of the other.

Next Phone Conference – Thursday 25th January 2007 at 11:00 (10:00 in UK)

Tony Gillman