

Minutes and Actions of Site Qualification Task Force (SQTF)

Phone Conference – 13th of April 2006

Present: A. Andrezza, J.C. Clemens, M. Cristinziani, G. Darbo, K. Einsweiler, C. Gemme, M. Garcia Sciveres, D. Giugni, C. Glitza, V. Kostyukhin, G. Lenzen, W. Ockenfels, A. Rozanov, E. Vigeolas.

Agenda

1. Availability and production plan of bare staves for Loading (repaired/new)
2. Status of stave loading (GE/CPPM/WUP)
3. Availability of modules for loading (L1/L2/BL) and distribution to loading sites
4. Pipe insertion and MCC repair (Danilo/Markus)
5. Loaded stave ranking and readiness for integration.
6. Bi-stave activities and plans for next week.
7. Proposal to add a new a field in the PDB to take care of status of stave repair
8. New XPS results on contamination of pipes in the Genova chillers

1. Availability and production plan of bare staves for Loading.

The total number of repaired staves, qualified for production is 34, while 2 are still under qualification. Of those qualified, 24 are already loaded (CPPM = 11, Genova = 10, Wuppertal = 3), 2 are available for loading in Genova, 5 are on the way back from Comelec (after parylene coating), while other 5 without parylene will be shipped to Comelec from Genova next Tuesday (18/4). Of the first set of 5 from Comelec, 3 will be used in CPPM, while other 2 will be shipped to Wuppertal the 18/4. The second group of 5 will be coated the 24/4, and would be probably available for loading one week later (2/5). There are no more pipes available for stave repair, so repair is stopped until new pipes arrive. New pipes should be back from EB next Tuesday (18/4) and will be coated at Comelec the 26/4. So, presumably stave repair will be resumed by 2/5.

New staves. 4÷6 new staves will be shipped next week to Comelec from IVW. Also Dummy_4 and Stave_5 (preproduction from IVW) will go to Comelec next week (they arte now at CERN). Staves from IVW will be surveyed (at CERN) after parylene coating and then shipped to Genova for Joule Test. Giovanni suggested to do both survey and Joule Test in Genova for speedup, but Danilo commented that decision to do survey at CERN was already taken and everything is setup. In conclusion a total of 5 repaired staves plus up to a maximum of 8 from IVW could be available for loading the first week of May. Distribution will have to be decided next.

Status of the repair is summarised at:

<http://www.ge.infn.it/ATLAS/SQTF/StaveRepair/Production/RepairSummary.xls>

2. Status of stave loading

Genova:

All but 2 loaded staves are in CERN. S4104, that has a module drawing high current, and S4118, that is still under qualification, are still in Genova. The first one will be debugged next week by removing power wire-bonds for the faulty FE; it may be decided to then replace the module or use it with a missing FE. S4118 will be shipped to CERN next week.

Marseille:

- All staves, but S4117, are at CERN. Stave S4117 is under test. It will not be shipped to CERN next week.

Wuppertal:

- Stave S4107 is loaded, will start electrical test next week..

Status of loaded staves is summarised at:

<http://www.ge.infn.it/ATLAS/SQTF/StaveProduction/SummaryAll.xls>

3. Availability of modules for loading (L1/L2/BL) and distribution to loading sites.

The situation of available modules for L1/L2 detector layers is becoming critical for Genova and soon for Marseilles too. According to information distributed to the module task force there are in Genova 44 L1/L2 modules. They will be basically over by the end of next week when two new staves plus the one loaded this week will be loaded. Marseilles has a larger inventory of 68 modules ranked for L1/L2. In total there are 220 L1/L2 modules and 160 not ranked yet (almost all from German assembly sites: 133).

In the last module task force it was decided to ship:

- ~20 modules from Bonn to Wuppertal (that would be all Wuppertal needs)
- ~20 modules each to CPPM and Genova from Dortmund
- 10 modules from Siegen to Genova.

See Attilio's minutes:

<http://atlas-pixel.mi.infn.it/ModuleTaskForce/060410/Minutes.html>

The number of modules decided for distribution would not last very long and considering the large number of modules put aside for B-layer (446 using the ranking cut of 71), we have to decide how to select more L1/L2 modules from this pool. We had a rather long discussion on the module selection criteria from the pool of 446 modules. There was basically two opinions one shared by Giovanni and Claudia and the other by Kevin and Maurice. The firsts propose to choose from all of them a number of AMS/IZM modules that reflects the production ratios between AMS/IZM or assembly ratios between Genova/German Sites. The seconds proposed to reduce the rating cut to a value low enough to select the ones with lower penalties. In the first case the number of AMS modules (or modules assembled by Genova, being the same thing) going into the B-layer would be of the order of 40÷45%, while in the second case would be much lower, of the order of 20÷25 or less.

Reasons from Giovanni and Claudia were that ranking below 71 correspond to 0.1÷0.2 % of dead pixel and really doesn't matter to go beyond these values, whereas a more

uniform spread between AMS/Genova and IZM/German would reduce the risk of today unknown weakness that could be discovered in the years to come during the running of detector in the experiment. Kevin and Maurice said that the AMS modules are more fragile in handling due to the bump technology and there is a risk of increasing the number of disconnected or merged pixel during all the handling that occur in the loading on staves and integration in the detector. Indeed it is observed that AMS modules having chips with regions of disconnected bumps sometime increases the number of disconnect pixel after loading, but it is also true that none of the AMS “B-layer” modules have regions of disconnected pixels. It was decided to look more in detail at the loaded modules having quasi-B-layer quality and compare the dead pixel before and after load.

A summary of the modules is available at:

http://www.ge.infn.it/ATLAS/SQTF/Minutes/Minutes_06-04-13_aux/Ranking.xls

4. Pipe insertion and MCC Repair

Markus updated us on pipe insertion activities. Out of the 6 staves from the second batch sent to Bonn for test, after pipe insertion at CERN, 2 were tested and sent back for integration to CERN, 2 only tested and the last 2 are pending test.

There were some worries that the staves suffered some damage, having an increase in the number of bad pixel. After some discussion and online check made by Claudia during the phone conference we have been convinced that staves are fine, and discrepancies were due to the data analysis. From the group of last 2, not tested yet, one was discovered to have 7 MCC still encapsulated (S4041) and the other one has 2 modules with some damage in the wire-bonds. Both will go under repair next days in Bonn.

Danilo said that 4 staves will be pipe inserted by Friday next week (21/4).

Summary of pipe inserted stave is at:

<http://pi.physik.uni-bonn.de/~cristinz/Atlas/Pixel/InsertedStaves.xls>

Summary of MCC repaired staves is at:

<http://pi.physik.uni-bonn.de/~cristinz/Atlas/Pixel/StavesBonn.xls>.

5. Loaded stave ranking and readiness for integration

Giovanni reported that according to the list of ranked staves:

<http://www.ge.infn.it/ATLAS/SQTF/StaveProduction/LoadedStaveRanking.xls>

there are still a few staves with old pipes that need to be revisited to decide their assign to L1 or L2. There are one from Marseilles (S4067) and 4 from Wuppertal (S4043, S4100, S4055 and S4043). Jean Claude replied that the S4067 need STAVE test and this will be done after pipe insertion. Kendall was not present to comment/update on Wuppertal staves.

6. Bi-stave activities and plans for next week

Danilo reported that several failures happened in the type_0 cables of already cabled bi-staves. It looks like that these cables from Taiwan production are weaker than the old ones made in Bonn. Markus and Walter said that the cables must be handled with extreme care and must not be touched near the connector. Kevin and other commented that no warning and instruction were given to the persons in shift who had to do the cabling. It also seems that the encapsulation of the wires soldered to the PCB is not

always protecting enough. Decision was to suspend cabling for next week and have expert from Bonn at CERN to decide further actions. Andreas Eyring will go to CERN next Tuesday, while the shift of Alessandro Rovani for next week is cancelled.

7. Proposal to add a new a field in the PDB to take care of status of stave repair

To take care of stave repair status, like MCC repair, pipe insertion, etc. Attilio proposes to add a string field in the PDB. This string includes key words and values separated by semicolons. The proposal is illustrated in detail:

http://www.ge.infn.it/ATLAS/SQTF/Minutes/Minutes_06-04-13_aux/email_attilio.rtf.

8. New XPS results on contamination of pipes in the Genova chillers

The cleanliness test made at CERN on the pipes used in the chillers of the loading sites gave the presence of traces of Cl in one of the two Genova chillers (Stave Test and Joule Test). CERN results are available at:

http://www.ge.infn.it/ATLAS/SQTF/Minutes/Minutes_06-04-13_aux/XPS_CERN_Analysis.pdf

Unfortunately the association of the pipe to the chiller was unsure. In Genova we decided to repeat such test. We took a clean pipe, we sectioned in 7 pieces, ~1.5 cm long. The first 4 were used for the Joule test chiller and the second 3 for the stave test chiller. In both cases a sample was kept as reference without putting in contact with fluids. 4 others were used in the circuit with C8F18 (FC-77) of the two chillers: one for each chiller was then cleaned with 2-propanol as in the standard cleaning procedure used in Genova. In the Joule test chiller Cl was found at level of instrumental noise (0.1 ± 0.1 %) in the sample not cleaned with 2-propanol. For the stave test chiller the level of Cl was $0.05+0.05\%$. In both chillers we found presence of F (0.2 % for Joule test and 0.6 % for the stave test) in the samples not rinsed. In the first case the sample was in contact with the FC-77 for 10 hours, while in the second for 10 days. According to the results the Cl doesn't seem to be an issue for corrosion, while the presence of F, probably due to the dissociation of C8F18 might be. Reports from the analysis are available for Joule Test chiller at:

http://www.ge.infn.it/ATLAS/SQTF/Minutes/Minutes_06-04-13_aux/XPS_pipes_JouleTest.pdf

and for Stave Test chiller at:

http://www.ge.infn.it/ATLAS/SQTF/Minutes/Minutes_06-04-13_aux/XPS_pipes_StaveTest.pdf

Next SQTF phone conference will be held on Tuesday 27st of April 2006 at 16:30.