

Minutes and Actions of Site Qualification Task Force

Phone Conference – 18th of November 2004

Present: (J.-C. Clemens), G. Darbo, P. Gerlach, (G. Gilchriese), F. Huegging, (V. Kostioukhine), L. Rossi, E. Vigeolas.
Excused: M. Garcia-Sciveres, D. Giugni.

Organization of Module Distribution for Stave Loading to Sites.

We decided that for the time being a set of modules must be available one week in advance at loading sites before the need for assembly. At the Pixel Week of December we will discuss a more long term planning. Probably in the future will be more convenient to have a large buffer of modules at loading sites. This requires that sites be prepared to store modules in appropriate way. Before the Pixel Week it is foreseen to load a stave per site at most. A set of modules for 3 staves (for CPPM /Genova/Wuppertal) will be requested to the Module Assembly TF after the end of the phone conference. *The module assembly TF must organize itself to have the list of modules to be used/shipped at the phone conference next Monday.*

In the future, the Module Assembly TF should generate the module ranking and propose the list modules to be used for each stave.

CPPM: News from Stave S4031 and Plans for next Stave.

Stave S4031, that developed malfunctioning on 3 modules after burn-in, has been sent to Bonn for MCC replacement. Fabian informed that one MCC has been replaced on one of the 3 modules but the behavior does not change. This is an indication that are the FE chips to behave erroneously. Jean-Claude reported that the major guilty is believed to be the power supply scheme. More investigations are going on. The task force pushes CPPM site to use a power supply scheme as used in the other labs, which never record modules being killed by power supply. A module costs more than a power supply!

No new stave will be loaded until more understanding of the problems. We request, nevertheless, a set of modules for CPPM (to be sent from Genova/Bonn). Module list must be agreed by the Module TF and must be sent as soon as possible.

Genova: Results from S4028 and Plans for Next Stave.

Vadim reported on the measurements and tests made on the Robot to understand the source of the errors in module positioning of last loaded stave. They are:

1. In X a shift of $\sim 60\mu\text{m}$ was due to an error in the position value used in the robot.
2. In Z there is a difference of $\sim 60\mu\text{m}$ depending on the approaching direction to a given position. In future the movement of the robot to go to a given module position will be always made by moving from the same side.

3. In Z there is a non linearity of $\sim 50 \mu\text{m}$. This will be corrected in the robot loading position table.
4. There is a shift in Z given by tilt angle that must be corrected for. This correction was made in the past, but several modifications to the robot head have been made since then and it was never calibrated afterward. The corrections will be added in the previous table.

Ten dummy sensors have been placed on a stave that will be surveyed tomorrow to check if all the corrections have been successful to reach the wanted precision. If everything turns to be fine a new stave will be loaded next week. *Modules for a full stave must be assigned to Genova by the Module TF.*

A new chiller from Lauda (mod. RP855) with more cooling power have been given for evaluation. There is hope that this new chiller will permit to reach -30°C on a not powered stave. A test will be performed next days.

Claudia prepared a few transparencies describing the upgrades of the stave test setup:

http://www.ge.infn.it/ATLAS/SQTF/Minutes/Minutes_04-11-18_aux/S4028.ppt.

The RECV test on the stave S4028 did not show any damage occurring in the loading. The test setup has been upgraded by the use of a SURF (other two SURF boards showed malfunctioning and have been sent back to LBL for repair). With the new system 4 modules can perform a LOAD full test in 3 hours.

Wuppertal: Survey Results on S4020 and Plans for Next Stave.

Peter presented a table with a cross-survey made by them and by an external firm (3Dmess) on bare stave S4020 before being loaded in Wuppertal. The results are in the excel: http://www.ge.infn.it/ATLAS/SQTF/Minutes/Minutes_04-11-18_aux/S4020_MeasMess3d.xls and show substantial agreement between the two.

The same stave loaded with 4 modules has been surveyed in Marseille by Eric:

http://www.ge.infn.it/ATLAS/SQTF/Minutes/Minutes_04-11-18_aux/SurveyStave4020_AtCPPM.xls

and results between the measurements in Wuppertal and CPPM have been compared by Vadim:

http://www.ge.infn.it/ATLAS/SQTF/Minutes/Minutes_04-11-18_aux/S4020_comparison.xls

The comparison shows that the survey gives the same results in Z ($\sim 15 \mu\text{m}$) while the difference in X has a linear trend reaching $90 \mu\text{m}$ for the fourth module. The discrepancy in X can be probably accounted for variation in stave bow, because the stave has been measured on different cradle in Wuppertal and CPPM. Respect to absolute coordinates the X and Z measurements, in both sites, are substantially in the required tolerances ($\pm 50 \mu\text{m}$).

Peter also showed pictures of the optical survey in Wuppertal (using the microscope on the robot bench):

<http://www.atlas.uni-wuppertal.de/systest/LoadingMachine/>

The pictures show how the ruby balls are surveyed and the thin wire tensioned parallel to the stave Z-axis used to check the Z-axis alignment. The SQTF think that the Wuppertal site is qualified to start FE-I3 loading and to make the first pre-production stave. *A set of modules for such stave must be sent to Wuppertal from Bonn. The Module TF must be informed and must agree of the module set selected.*

LBL: update from production and test setup

Gil presented the status of the sector production and test setup:

http://www.ge.infn.it/ATLAS/SQTF/Minutes/Minutes_04-11-18_aux/TaskForceNov182004.ppt

The updated list of sectors loaded at LBL:

- S9005 – FE-I2 modules.
Used for qualification and extensively tested (system test).
- 9000 – FE-I3 bad modules.
Used for final tune-up of assembly process. Assembly completed. Survey completed: OK. Preliminary (room temperature) electrical test done: OK. Thermal imaging, thermal cycling and burn-in to be done. Back in system test for now.
- 9006 – 1st pre-production unit.
Assembly and survey completed on September 24: OK. Thermal test: OK. Room temperature test of modules completed: OK. Remaining testing started.
- 9007 - 2nd pre-production unit.
Assembly and survey completed September 30: OK. Thermal test: OK. Electrical test: OK. Cable repaired (flaw in test box broke wire). Testing completed: OK
- 9008 – 1st initial-production unit.
Three modules loaded as of Nov. 17. Loading of others in progress.
- 9009 – 2nd initial-production unit.
Assembly and survey completed on October 19: OK. Not yet tested.

Test system operational now but have had problems with stability of “digital” test. This was solved by changing the electrical connection of the circulating pump (grounding problem?). Why this was a problem is not yet understood but they are investigating.

They have resumed mounting modules on sector 9008.

In the last few weeks, they have nearly qualified the second module-mounting apparatus. This will be ready to go next week. LBL will then have a peak capacity to mount 15-20 modules per week.

Finally a plot of the production rate compare to the planned one has been shown. Lacking of bare modules reproduced a less then expected sector loading rate.

A.o.B.

Danilo asked photos showing the residuals of parylene deposition on staves. Photos are available at:

http://www.ge.infn.it/ATLAS/SQTF/Minutes/Minutes_04-11-18_aux/

Next phone conference: Thursday 25th of November 2004 at 17:30.