

LHC RF Meeting

7th July 2006

Participants: Luca Arnaudon, Thomas Bohl, Olivier Brunner, Edmond Ciapala, Trevor Linnecar, John Molendijk, Eric Montesinos, Elena Shaposhnikova, Joachim Tückmantel.

1. ACS Couplers (Eric)

✚ **Assembly and tests: Coupler MC130** will be re-rinsed and assembled next week. It will be fitted on the test cavity, together with MC125 (ex module 5 cavity A), for conditioning in SA2. Couplers 123 and 128 which will be removed from the cavity and put aside, ready for mounting in module 4.

✚ **Polarization ceramic seals:** Tests with seals having no triangular knife edge were unsuccessful. We will improve the surface finish on the niobium rings of the ceramics to see if an improvement can be gained.

2. ACS Modules and SM18 (Pierre)

✚ **Module 5** – Has been taken out of the bunker.

✚ **Module 1** – Now in the bunker and cooling down. First checks on the frequency compensations (applied to all four cavities) will be done soon.

✚ **Module alignment** – The SU team, (with J-P.Quesnel) will return to SM18 next week. A module will be put on its three main supports and the alignment system verified. The alignment tolerance is required to be better than 1 mm.

✚ **Installation:** The current SM18 planning ([Week 27](#)) aims to for transport of all four modules to RUX45 during the middle two weeks of August. This relies on floor cleaning, marking and painting all being done as planned in early August.

3. ADT (Eric)

✚ **Resistors:** New resistors have been tested to 15 kV and fitted in two amplifiers. Stainless steel water connections are now used. Tests will be done next week.

✚ **Dubna:** Will be visited next week, to give acceptance for the first series production amplifier.

✚ **Vacuum flanges for kickers:** We have checked that there is no interference between the flanges and any part of the kicker assemblies.

4. APW (Thomas)

✚ **Bakeout and test:** So far four out of six APWs have shown a leaking feedthrough after bakeout. In all four cases the feedthrough was replaced and the second bakeout was successful. We are in contact with the supplier of the feedthroughs on obtaining an improved version.

✚ **Temperature measurement:** We will not include a Pt100 temperature sensor on the ferrites.

5. Controls (Luca)

✚ **Ethernet cabling:** Will be installed starting next week at P4, to be completed in one month's time.

✚ **Remaining cables:** These are mainly for the inter-chassis connections. A large number have already been pre-cut and fitted with connectors.

✚ **Fibre optics:** Tubes are being installed. The fibres list is fully defined. See version [July 2006](#)

✚ **ACS Power Converter tests:** Tests of the finalized new interface for these ex-LEP converters will be done in SM18 during week 30, with PO group.

6. LLRF (John)

✚ **VME Trigger Unit:** The firmware to allow the VTU to be used for frequency measurement has been tested successfully. However, it brings the FPGA code near to maximum size. A higher capacity Xilinx will be used for series production. The device is pin compatible with the one it replaces and no PC modifications are needed. A V3 prototype will nevertheless be made to check other minor modifications before series production is ordered.

✚ **Setpoint Module:** Design is completed and it will be given to the design office.

✚ **Clock Generator:** The V2 proto is being assembled.

✚ **Tuner RF:** V2 is now being assembled (Philippe)

✚ **Switch and Protection:** With the design office.

✚ **DDS/Conditioning module:** The first proto is being assembled and we should receive it early next week. Software, i.e. drivers and front end are in preparation. We hope to do tests on the hardware and software in the autumn; the timing will depend on hardware status and SM18 work.

✚ **VME crates:** ‘Non-standard’ power supplies for 70 crates are being ordered. Replies for the DR and price enquiry launched for crate mechanics are due in for week 29.

7. LSS Planning (Pierre)

✚ An LSS planning meeting was held last week. There are some delays at P8. The current “LSS Planning” is now in EDMS as document **753875**. (In work, access not allowed at the time of writing.)

8. UX45 installation status

✚ **Bunker completion:** All cables into the bunkers are pulled now and the cables are being checked.

✚ **HV junction box:** (In US45). Work is ongoing on the cables from the surface and to the bunkers and the connections. The single tank for all HV connections will soon be taken to US45.

✚ **Ventilation units:** The ventilation units for the Faraday cages are now in place on top of the bunker, with ducts going to the cages. Ventilation ducts on the waveguide platform are also in place.

✚ **Compensated cables:** 16 cables for the klystron forward power directional couplers are being put in place. These pass through the four centre shielding wall waveguide floor trenches then to the Faraday cages.

9. AoB

✚ **FGCs:** The software specifications for the function generators are being finalized with Q. King (AM-PO). For frequency control, the functions for aperture sweeping for chromaticity measurement will be preloaded as additional separate functions and triggered by machine timing. ‘Real time’ feedback for frequency correction, e.g. from orbit measurements is to be done over the network, by sending UDP (Datagram) packets. These could either be sent to the function generator (Some additional software for PO group) or directly to the RF crate containing the DDS. The latter has already just been proposed to PO group but we may need to agree whether this is the best approach.

✚ **MTF for hardware commissioning:** We have been contacted on information to be tracked in an MTF (Measurement and test Folder) for hardware commissioning of the RF systems.

NOTE: An MTF is expected to be provided in EDMS for every piece of equipment installed in the tunnel, containing specs, calibration data, test results etc. We will shortly review what information can be provided in MTF. Example: for the ACS modules: assembly history, cavity tuning history, conditioning history, probably also a scanned copy of the module ‘follower’ logbook.

Next Meeting: Friday 14th July at 08:45 in the JBA room.

E. Ciapala, 10th July 2006.