

LHC RF Meeting

8th December 2006

Participants: Luca Arnaudon, Philippe Baudrenghien, Olivier Brunner, Andy Butterworth, Edmond Ciapala, Trevor Linnecar, Pierre Maesen, John Molendijk, Eric Montesinos, Daniel Valuch, Frode Weierud

1. ACS Couplers and SM18

✚ **Couplers 131 and 134:** Coupler 131 was fitted with a new polarization ceramic and new seals and is under bake-out.

✚ **Couplers 132 and 133:** Conditioning is nearly finished in SA2. We hope to do the changeover next week. The double tubes on the test cavity will be changed at the same time, to avoid risk of vacuum problems in the future due to wear on the flanges. Note that SA2 conditioning may be blocked in January due to site-wide electricity restrictions and in February due to cooling water maintenance.

✚ **Module 4 (*Europa*):** Tuning springs have been fitted and the module is being closed. The cryo test is planned for January.

✚ **Single cavity module LHC21:** During the short cryo stop this week the conditioning electronics was installed and tested. The klystron was powered into a waveguide short-circuit and the necessary set-up and measurements done. Cavity and klystron forward and reflected power readings have been checked and verified against the power meter readings and the vacuum acquisition tested. For the moment we have no saturation limitation and the klystron power will decrease on the pulse flat-top if the klystron is over-driven. Dropping of the output level was observed after a few seconds when constant drive was applied – this may be due to heating of the circulator. A software loop to keep the power constant was tested. Note that power measurements are synchronized to the pulsing; this gives correct power readings and also allows possible use of the tuning loop during pulsing (To be tested)

In the meantime the module has been cooled again. The short can be taken out and the cavity re-connected as soon as the klystron tests are complete (probably early next week).

2. UX45/RUX45 installation (Olivier)

Olivier presented some [pictures](#).

✚ **Warm Magnets via RUX45:** It was confirmed that up to 50 or 60 warm magnets to be transported to Point 3/2 may be lowered into the tunnel via the RUX45 roof. The final number will in fact depend on planning and other available route options.

✚ **Faraday Cage Cabling:** Some coax cables at the inside of the racks are positioned such that they will interfere with the VME crates. They will have to be re-routed inside the rack.

✚ **Water cooling systems:** The final connection and preparation for pressure tests is nearly finished. All flexible pipes are cut and will be installed next week. Static pressure and water circulation tests are still planned before the end of the year. We are waiting on TS-CV.

✚ **ACS reflected power cables:** Additional cables have been installed from the inter-wall zone to the platform. The existing cables (Faraday cages to RUX45) will now be cut at the inside of the shielding wall and these new cables connected.

✚ **Floor platforms in RUX45:** Platforms have been made and fitted to cover the many cables on the floor behind the modules. As well as protecting the cables these make access much easier and safer. This and a general tidying up of the area have made a big improvement.

✚ **ADT Controls racks:** Driver amplifiers and controls equipment is now being installed. Layouts and cabling for diagnostics and LLRF still need to be finalized. The layout of signal distribution system is in progress.

✚ **Vacuum installation:** Installation of vacuum chambers in LSS4 will start in mid-January. The work will start at the outside ends and finish with the Beam 2 module interconnections in February. We need to avoid co-activity with the installation of the WRL lines and heaters, also due to be completed by February/March.

✚ **General Planning:** Given that the cool-down in P4 will start in March, we need to finish all work in RUX45 by then as access will not be possible during first cool down of both sectors. The remaining work concerns final cabling of the ACS modules and ADT kickers. Remaining work in UX45 can then be done afterwards as it is independent of cryo activities.

✚ **Cabling:** TS-EL have recommenced work, as agreed at the recent informal planning meeting. Patch panels, similar to that installed above the APWs will be installed near quadrupoles containing ADT and other RF pick-ups. This will be organized by J-C Perrier and the work will be done by our FSUs.

✚ **Earthing:** Supports are being put in place for the earthing bars from the UX45 equipment area to the tunnel earthing system in the RBs.

✚ **Power testing:** First switch on of the ACS power converters and powering of the klystrons will be discussed with AB-PO next week.

✚ **Network and Fibres:** Network fibres are now installed and the network is being brought up. We can expect a bill of 48 kCHF for fibre installation.

✚ **UX45 Upper Levels Access:** Hardware is being installed and tested. The official document (LHC-P-ES-0004-00-10) describing the system and its operation is in the initial approval phase.

3. ADT (Eric/Wolfgang)

✚ **Amplifiers:** The amplifiers have arrived and the Dubna team will begin tests next week.

4. SR4

✚ **Control Area Enclosure:** Delayed one week, to be put in place by the supplier next week.

5. LLRF (Philippe)

✚ **Modules status:** Philippe presented [a status list](#) of all modules and related work planned for 2006. Excellent progress has been made overall (items in black) but a number of items have been delayed (orange) and a few are critical (red). The latter include the analog demodulator (proto digital part at the design office), the 1-T feedback/transverse damper and the switch and protection module (proto to design office in January). The fact that all modules require drivers and higher level software was noted, priorities should be set according to the installation and test planning.

6. Signal Monitoring (Andy)

✚ **Acquiris modules:** After discussions with FI dept., we have been able to order two 8 GHz modules for the APW before the end of the year.

Next Meeting: Friday 22nd December at 08:45 in the JBA room.

E. Ciapala, 15th December 2006.