

# LHC RF Meeting

## 30<sup>th</sup> June 2006

**Participants:** Luca Arnaudon, Thomas Bohl, Olivier Brunner, Edmond Ciapala, Wolfgang Höfle, Trevor Linnecar, Joachim Tückmantel, Daniel Valuch.

### 1. ACS Modules and SM18 (Ed)

✚ **Module 5** – HOM tests have been done. The module has been warmed up. Vacuum group are doing measurements and removing the stopper.

✚ **Module 1** – Will go in the bunker towards the end of next week.

✚ **Module alignment** – The SU team, (with J-P. Quesnel) visited SM18 last week. The proposed system for fitting the alignment targets on the modules was agreed on (two bars with targets at each end fitted transversely on cavities A and D). They will re-check the target pieces which we are using, as these were obtained some time ago. A measurement test will be done next week or the week after in SM18. They request that we fit the alignment bars permanently on all modules. We will make four additional bars to cover this. (We already have two spares)

### 2. 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.

### 3. ADT

✚ **B867 tests:** Preparation for power tests is continuing.

✚ **Vacuum flanges for kickers: (Olivier)** M. Jimenez has confirmed that the required type of flanges will be used. He has asked us to check that there is no interference between the flanges and any part of the kicker assemblies. **(Action: Wolfgang/Eric)**

### 4. UX45 installation progress (Olivier)

✚ **Bunker completion:** All cables into the bunkers are pulled now. Equipment will be installed from the end of July. We wait till the last moment before asking ST-CV to do final sealing of the cable passages in the bunker walls.

✚ **HV junction box:** (In UX45). The cables from the surface and to the bunkers are being cut and connections prepared. Space will be very tight for installing the tanks.

✚ **Other cabling:** We have requested two supplementary controls able to the surface. This is for the Beam Interlock system, to connect ACS frequency drift diagnostics and ADT electronics interlocks coming from SR4 to the BIC in IR4. (Machine Protection WG requests)

✚ **Cable testing:** Cable testing in the racks is progressing as planned. Control/instrumentation cables from the wall units to cryo and RF controls were successfully tested last week by Maurice Prax.

✚ **QRL eXtensions:** The rigid lines are in place and welding to the QRL is in progress. Some of the flexibles for the cavities are already connected to the extensions and hanging free for the moment...

✚ **WRL connection and equipment:** This was checked with cryo specialists in UX45. The positioning of the heating units in RUX45 will be checked and included in the integration layouts.

✚ **RUX45 floor preparation:** The SU teams have started to mark the start points of the equipment. (i.e. name and a line crossing the floor). We will then drill holes for supports, starting from the end of July. Floor painting will be done at the beginning of August. The whole RF zone will be painted, all the way up to the end of the ACN cavities. The SU team will re-mark the equipment positions after painting.

✚ **RUX45 cables:** Cables to be connected to the modules will be cut to length then temporarily supported to allow space to prepare the floor and insert the modules. Access will be difficult for the B1 (outer) modules.

✚ **ACS HOM cables:** In order to avoid passing a large number of cables through the RUX45 floor 'manholes', the HOM cables have been taken directly through the waveguide holes. There are 32 cables in each of 4 waveguide holes. At the moment these pass on top of the waveguides. We may move these underneath the waveguides to avoid heating of the cables and of the waveguides (up to 60 °?). Additional cooling units could be put in place to blow additional air into the tunnel around the waveguides. To be studied in case of need later. (Olivier)

✚ **Faraday cages:** All cables to the Faraday cages are pulled. Protection will be put over the cables from the trenches where they are bent onto the patch panel. (This is still clear of the transport zone). The cables between the two cages still have to be done. The earth bars and straps are being put in place at the bottom of the racks.

✚ **Ventilation systems:** The ventilation units are now in place on top of the klystron platform (Both sides, left - RB44 and right - RB46). The ducts down to the klystron level are being put in place now. The work should finish end of July. The RUX45 tunnel roof units will be put in place next.

✚ **Water cooling:** The distribution system for ADT is ready to be put in place. We still have to follow up procurement of the klystron circuits by-pass valves with (TS-CV and FI-PI)

✚ **Earthing:** This will be discussed on 25<sup>th</sup> July, in UX45, with J. Gomez (TS-EL)

✚ **Crash Barriers in RUX45:** The necessary material is available and safely stored. We will install these barriers after the equipment is in place, to be sure of the best positioning.

## 5. Round table

✚ **Circulator TCU (Olivier)** The prototype has been successfully checked with a klystron and circulator in H112. Successful operation was confirmed for various RF reflected phases and powers.

✚ **Electricity distribution and availability (Luca):** Following last week's discussion on preparation for equipment commissioning and RF power tests, Luca explained that Excel files have been made for SR4 and UX4, listing all the electrical distribution points, with the dates for putting them into service. TS-EL will enable each on connection of our equipment.

✚ **Test of SR4 ACS power converters (Luca):** The prototype of the new control electronics was successfully tested some time ago on the SM18 power converter. Each converter interface will be tested when installed in SR4, in September. Software tests have already been done using a simulator and a control application has been developed. (The control interface is over the network, interlocks etc. are hard wired)

✚ **ADT Controls Equipment (Luca)** The series equipment has been delivered. Test of one complete system was successful. All material is industry standard, operating to 70 °C.

✚ **Power Interlocks for ADT (Daniel)** The final version chassis for the power interlock crate is being prepared and will then be tested in B867. It contains the power interlock control (PIC) and signal conditioning electronics for HV monitoring.

✚ **VME crate and power supply procurement (Luca, Ed)** Price Enquiries (DOs) for VME crate mechanics have been completed and sent out by FI. Results of price enquiries for 4 types of low voltage power supplies have been received and we are analysing the offers. One type has been ordered.

✚ **ACS pre-driver crates (Daniel)** 16 have been manufactured and eight are under soak test in B864.

✚ **Coax multiplexers : (Daniel)** A production prototype crate, with remote control, has been tested.

**Next Meeting:** Friday 7<sup>th</sup> July at 08:45 in the JBA room.

E. Ciapala, 3<sup>rd</sup> July 2006.