# LHC RF Meeting 21<sup>st</sup> April 2006

Participants: Luca Arnaudon, Thomas Bohl, Olivier Brunner, Andy Butterworth, Edmond Ciapala, Wolfgang Höfle, Pierre Maesen, Eric Montesinos, Elena Shaposhnikova, Joachim Tückmantel.

#### 1. Couplers (Eric)

**SA2 conditioning:** Conditioning of couplers MC128/129 in SA2 is going quickly and now at full power of 325 kW with 2ms pulsing. Conditioning is expected to be complete before the stop in SA2 at the beginning of the second week in May for water cooling system work.

**Polarization coupler vacuum seals:** A new batch has been delivered but again the quality is suspect. We are now studying this with S. Sgobba of the central workshop.

#### 2. ACS Modules and SM18 (Pierre)

**Module 5:** The module has been cooled down for two weeks, measurements have been done and conditioning of cavity A is well under way. 8.1 MV/m has been reached and 250 kW applied to the coupler.

**Cryo connections:** Verification of recently furnished plans by Pierre for connections from the rigid cryo extension on the tunnel roof on the sector 3-4 side (QRLXH) to the modules has revealed that inputs and outputs have been inverted for both modules. On the 4-5 side (QRLXF) the connections are correct. The construction of these rigid lines is already finished and the only reasonable option now is to change the flexibles from the QRL extension to the modules accordingly. This unfortunate situation would have been avoided had the plans been cross-checked with us before starting the production.

New flexibles will be designed and ordered for sector 3-4. Additionally, the supply return flexibles will have to cross each other, this is areas where integration is already extremely difficult. Nevertheless M. Farthalla, in a meeting early this week, has proposed a routing which should not interfere with cable trays, waveguides or power coupler. He will supply plans of the flexibles and drawings of the installation in critical parts of the tunnel. At the same time we have re-verified the exact positions of all the 8 helium lines against the integration drawings and our <u>own lists derived from the vacuum layout</u>. These were fully in agreement. The vertical and radial positions of the connections put in have also been verified.

There was also some discussion with the QRL specialists on the roof blocks in RUX45, those furthest from the IP need to be in place to fix the QRL extensions. The QRL extensions, due to their size and form, must taken to Point 4 and put inside the tunnel before any roof blocks are put in place.

**Tuner bellows:** The second prototype bellows is well into its cycling tests. Eight of these bellows will be delivered next week to be fitted to the eight new sets of supports. Dismantling of tuners on modules 1 and 3 has already started.

### 3. ADT (Eric)

**Kicker bakeout:** Bake-out of 14 kickers has already been completed, careful attention was paid to the temperature around the region of the feedthroughs. A capacitance measurement may be done to check for any serious problems after the bakeout process.

**4 Amplifiers:** Six more resistors have been received from the supplier and will be installed in amplifiers when time permits.

**RF connectors:** Faulty connectors, with missing central pins, have been returned to Andrew. Note that we require some additional 600 3/8 inch connectors to make up short internal rack RF cables. These were not specified in the cable contract.

## 4. APW (Eric/Thomas)

**Feedthroughs:** The monitors will be assembled with the present feedthroughs, with bake-out limited to 200 ° in that region.

**Assembly:** The SPS monitor has been installed Six LHC monitors now have to be assembled. The survey group will help with the positioning of the target on the PU body.

# 5. Controls & electronics: (Luca)

**4** ACS system - Lab tests: The tests on a full chain in the Lab have been completed successfully, including diagnostics. However it has been found that use of FESA classes to interface this large interlock structure is cumbersome. We will probably make a direct interface in the front end to the LASER alarm server. We are now looking at implementation of the logging system. All data will be systematically logged to the measurement data base, without filtering. Archiving to the logging data base will be done on frequent basis with filtering e.g. log on change outside pre-determined limits, specified individually for each parameter.

**4 ACS Tuner drives:** The series production equipment should be tested in SM18 as soon as possible. This is especially important for the coupler drives which have not yet been tested on real couplers.

**4 APW temperature measurement:** Cabling for this is planned and in the DiC.

### 6. Low Level RF

**RF switch and protection modules:** The design is in progress.

**DDS Conditioning module:** (John, Donat) The design has now been given to the design office to manufacture the first prototype.

### 7. UX45 installation progress (Olivier)

**General situation:** Olivier presented the <u>latest planning- April 4th 2006</u>. A difference with respect to the previous one is vacuum installation in sector 3-4 now taking place at the beginning of August, one month later.

Activity in UX45 has slowed down, especially cabling activities. The next job should be to put scaffolding between the shielding walls to allow cable trays to be put in place. The time needed for subsequent testing of cables is an additional concern, as this will be done by a separate team and may take up to 3 weeks not allowed in the original planning. We cannot delay the installation of the first part of the waveguides in RUX45, i.e. those furthest away from the IR, for contractual reasons with the company. The installation of cryo line extension also depends on these waveguides being in place. The straight waveguides near the centre will be put in place later when the area between the walls is cleared of all provisional structures for cabling.

**BPAWT:** These PUs for transverse diagnostics, needed only for higher intensities, are presently estimated to be one month late for installation.

**Fitting of connectors:** Connectors will be fitted to cables before the equipment is in place. We have to be sure that cable lengths are correct...

**4 Mounting of kickers:** It will not be possible at this stage to do precise measurements of the floor height in RUX45. This means that for the damper kickers, special shims will need to be prepared and fitted as necessary to bring the kickers to the height where the trim on the supports can be used. For the cavities the jack mechanisms of the supports have sufficient range. The alignment tolerance for the dampers is better than 1 mm.

# 8. AoB

**Hardware commissioning:** An informal review was held recently by R. Saban (See <u>minutes</u> and <u>small presentation on RF</u>). Our plans for the three main phases, pre-test, power tests and the full tests with cryo and access systems operational were presented. We will probably need to elaborate and document some details in the near future, for example the access system procedures to be followed for UX45.

**LSS review:** We were unfortunately not present at the planning meeting, but we understand that there are no major changes concerning RF for LSS4, with the exception of the BPAWT mentioned above. This will be checked with TS-IC.

Next Meeting: Friday 28<sup>th</sup> April at 08:45 in the JBA room.

E. Ciapala, 25<sup>th</sup> April 2006.