# LHC RF Meeting 17<sup>th</sup> February 2006

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

## 1. UX45/RUX45 Installation (Olivier)

Olivier presented the <u>latest version (Feb 2006) of the UX45 and RUX45 planning</u>, prepared with H. Gaillard. (TS-IC)

**Summary:** Sector 3-4 is to be pressure tested this week-end. Part of sector 4-5 will be tested. The shielding wall can be closed at the end of March, allowing cables from RUX45 to the UX45 racks and Faraday cages to be pulled. The cryo line for the ACS modules on the roof of RUX will be installed at the end of July. The modules should now be installed in August. Connection to the cryo line needs to be done by September, for QRL tests. Part of the RUX 45 roof will be in place by the end of June. Alignment of all equipment in RUX45 is planned for mid-September. Templates for drilling of holes for supports have been made for all tunnel equipment. Initial equipment tests can start in November, with power tests in December. The testing and controls upgrade of the ACS power converters in SR4 needs to be organized with AB-PO.

## 2. ACS Modules and SM18 (Pierre)

**4** Module 2: Low power tests have given correct results for Q and frequencies on all four cavities. Power has also been applied to cavity D in the bunker. A field of 6.9 MV/m was obtained very quickly. This is very good news. It confirms that the change of sector valve, and letting the module up to atmospheric pressure with nitrogen, have had no adverse effects. Also the calibration of the antennas is correct and any concerns about of some form of damage after the module's insulation vacuum incident have been removed.

**4** Module 3: New domes have been mounted. Springs have been fitted to cavities C and D; the compensation was based on warm measurements. The module is now being closed, and prepared for bunker tests (Low power only, this module has already been fully conditioned)

**4** Module 5: The small leak on cavity C is confirmed. After consulting bakeout data we do not believe that there has been overheating. One of the couplers finishing conditioning in SA2 will need to be fitted

**Module 4:** The module 5 coupler refit will slightly delay module 4, the slot for low level tests will now be in September.

**Bellows test:** We are now at 400,000 cycles in the cycling test of the prototype. We should aim to fit the modified bellows before transporting the modules to UX45. If there is insufficient time to test a second prototype we will obtain and fit a series of the type presently under test.

# 3. ACS Couplers (Eric)

**Couplers 126 and 127:** SA2 conditioning is finished. We are waiting on return of the vacuum expert before changing couplers on the test cavity.

## 4. ADT Equipment (Eric)

**Power supplies:** Seven have been checked in B867. A number of minor faults (internal control circuit wiring) have been found and corrected. Power tests have been completed on all seven.

**Kickers:** The first kicker tank has been opened (end plates removed) and the electrodes checked and measured for any distortion by passing a small trolley inside along the electrode. with the

help of the survey group. The electrodes are within tolerance to a measurable 0.2 mm. The test will be repeated on the next assembled kicker, but not on the rest of the series.

**Amplifiers:** These modified resistors have been fitted to an amplifier and successfully tested to full power. (Good news!)

## 5. APW Equipment (Eric/Thomas)

**PU 01 Bakeout:** Following leaks in four feedthroughs in the first monitor after bakeout, it has been agreed with the vacuum group that the feedthroughs and the area around them will not be heated higher than 200 °C. This will be protected during bakeout by a temperature sensor and interlock. All feedthroughs will however be pre-baked to 225 °C and re-tested before fitting.

#### 6. Controls and Software (Andy/Luca)

**Function generators with AB-PO:** The interface hardware has been tested by John. Quentin King (AB-PO) will develop the special software. He has asked us to provide a specification, including descriptions of the data and which of the functions should be re-triggerable.

**ACS tests and hardware:** The lab system and software for ACS tests have started and are going well. ADT material is about 50 % produced. The aim is to install equipment in UX45 from the end of May, when cryo, infrastructure and cabling activities are ended.

**Connection to other systems:** Control signals and data readback of other equipment, such as cryo and power converters will be over the network, but equipment protection interlocking is always done by hardware connections.

#### 7. Low level RF and feedback (Wolfgang)

**Work program:** The work load for LLRF and feedback systems has now been set out. Some more help will be available later in the year when LEIR work is completed.

#### 8. AoB

**Interconnecting cables (Luca):** A list of short cables for interconnection of equipment and chassis has been made for ACS and ADT controls. This allows connectors to be ordered well in advance, avoiding risks of shortages later on.

**4 RF cables (Daniel):** The same could be done for RF cables. Standard cable lengths can be ordered from outside, others can be made up from cable left over from the RF cables purchased from Andrew, with the purchase of the necessary connectors.

**Level 4 safety course.** This will be needed to access LHC once helium is present. There are two parts – Helium risks and Electricity. Done 'on-line' and available from the <u>Safety Information</u> <u>Registration</u> web page.

Next Meeting: Friday 24<sup>th</sup> February at 08:45 in the JBA room.

E. Ciapala, 22<sup>nd</sup> February 2006.