

## LHC RF Meeting

30<sup>th</sup> January 2004

**Present:** Luca Arnaudon, Philippe Baudrenghien, Olivier Brunner, Edmond Ciapala, Volker Rödel.

### 1) Power Couplers (Ed on info from Eric)

- **Power Tests in SA2:** Now finished after two weeks running at 475 kW cw, all phases. No problems on either coupler. (One fitted with the niobium ringed polarization ceramic, the other with a steel ring)
- **Coupler production:** Two couplers have been preassembled. After rinsing of parts they will be assembled using polarization ceramics from TS (S. Mathot) and will be conditioned in SA2 starting mid-February
- **Planning:** The aim is to have 16 couplers tested in SA2 by the end of 2004, two couplers being delivered every five weeks.

### 2) SM18

- **Module test:** The helium plant has restarted and module 3 is cold again, ready for the continuation of tests.
- **Module preparation:** Module 1 is almost ready for fitting of couplers and module 2 is being closed.

### 3) Cryogenics

- **Controls and Instrumentation:** A meeting was held on 27<sup>th</sup> January with A. Suraci (AT-ACR). The cryo specialists propose to treat signals from ACS cavity He level gauges and pressure gauges in their PLCs. An interlock 'Cryo Ready' would be returned to the RF system. The actual readings would be available over the network. However, for safety, two out of the four pressure sensors per module would be conditioned and interlocked in the RF control system, actual readings again being supplied over the network to the Cryo system, together with other data such as cavity temperatures.
- **Quench valves:** Release of helium directly into the tunnel has been rejected by TIS.
- **QRL operation:** Constraints on operation of the QRL due to the cavities, with their lower maximum allowed pressure limit than other elements, was brought up at Chamonix. The mode of operation of the ACS RF system needs to be brought up again with the Cryo specialists.  
(Action: Ed, Roberto with L. Serio)

### 4) ACS Power (Olivier)

- **Reception Tests:** The first two series production circulators and loads have been delivered. The first circulator and load has been power tested. Performance is within specs. In the test configuration, with full power to the load, the distance between circulator and klystron plays a role, due to reflection from the klystron. However some thin ferrites in the first section of the load detached themselves during initial tests, but following this the load ran at full power for one week without problems. This will be taken up with the manufacturer on their visit next week. Difficulties with the temperature controller for the circulator magnetization appear to be resolved and it will be used in SM18.
- **Pulse testing:** This will be done initially with a simple pulse generator and modulator set-up, with pulse lengths equal to the batch lengths and revolution period, starting at 400 MHz fixed frequency. More sophisticated tests reflecting the beam conditions will be done later.

### 5) Consequences of RF power Trip in LHC

- [AB Note 2004-008](#) has been published by Joachim. Even with below half nominal beam intensity the voltage induced in an unpowered cavity could not be compensated by a rapid global feedback system and the power extracted from the beam exceeds the RF power system ratings.

#### 6) UX45 Layout and Installation (Volker)

- **ECR for the new layout:** This is ready to go out, as soon as the reference for the SEU radiation report is obtained. Work has in any case now started on the platform on the cryo side of UX45. Floor rails on that side are being removed.
- **Cabling: The deadline for the DiC is end of February.** The new UX45 layout does not make major differences to the DiC itself, but the routing will need to be redone and cable tray requirements re-estimated. Specialists should check and complete data for their systems as soon as possible. **(Action Ed. Luca, Olivier, Philippe, Wolfgang, Andy)**
- **Connectors:** A large number of connector bodies have been recuperated from LEP RF and could be used by TS-EL, who should be informed. **(Action: Olivier)**

#### 7) Faraday Cage in UX45 (Philippe)

- Three European suppliers of Faraday cages have been found. Responsibilities for the integration (CERN or supplier?) need to be defined and this should be taken up with TS. Experience from other groups (AB-BT) might be useful. Safety consideration should be checked with TIS. A preliminary specification will be prepared, in preparation for a market survey. **(Action: Philippe)**

#### 8) LLRF Electronics:

- The tuner front end card is ready for component mounting. The tuner control card will shortly go to the design office, the RF modulator and RF feedback prototypes are working in the Lab and are being given to the design office. Layout of the clock generation module has started and the clock distribution module is being finalized in Cadence. With roughly 10 weeks delay for design and production first tests in SM18 are likely to slip from April to June.

#### 9) Budget & EVM (Volker)

- We should check our expected expenditure for the year. The DPO **MUST** be informed of any important changes with respect to EVM. For the moment this concerns the ACS cavities.
- There is a now small budget allocation for the operation of installations before LHC start up. This could also include any labour costs. Requests, for the years 2004 till 2007 should be sent to Volker.

#### Next Meeting:

**Friday 6th February 2004 at 08:45 in J. B. Adams Room (864-2-B14)**

E. Ciapala, 30<sup>th</sup> January 2004.