

LHC RF Meeting 22nd October 2004

Present: Luca Arnaudon, Philippe Baudrenghien, Olivier Brunner, Edmond Ciapala, Pierre Maesen, Jean-Claude Perrier, FrodeWeierud.

1. ACS Modules and SM18

- **Module 1 progress (Pierre)** Conditioning has continued, but there have been a number of other activities and some interruptions. Cavity B has now reached the 5.5-6 MV/m already reached by all the others. For the coming week the aim is to condition to higher levels and monitor the progress. A problem with the RF drive chain caused some time loss; the RF switch drive circuitry has now been improved.

- **Klystron Modulator tests (Olivier)** The 100 Hz modulation of the klystron current was eliminated by reducing the value of the resistor in series with the tetrode, thereby reducing the time constant of the filter formed by the resistors and the cable capacitance. The next step is to replace the tetrode itself by a resistor; this would also reduce 50 Hz ripple from its heater supply. The issues related to running without a modulator were also discussed (See below)

- **352MHz Klystron cooling: (Olivier)** Circulation of water through both 352MHz and 400 MHz klystrons and their loads at the same time has been successfully tested.

- **Power Measurements:** Differences in forward and reflected power measured when the cavity is detuned to one side or the other could be explained by power reflected back from the circulator to the cavity (Philippe). The circulator output parameters should be checked and re-measured if necessary.

(Action: Olivier)

2. ACS Coupler Progress (Ed for Eric)

- **Coupler 113** has been successfully assembled and is leak-tight. A different second polarization ceramic (with a smoother surface) and specially selected sealing rings from the recent batch were used. Couplers 113 and 114 have been fitted to the test cavity and conditioning will start this week-end in SA2.

- **Vacuum gaskets:** The problem of the out-of-tolerance sealing gaskets for the second ceramic has been discussed with the supplier. A batch of in-spec gaskets should be delivered next week.

3. ADT Progress (Frode)

- **Anode converters:** There is no news from FI about the financial procedure to be followed (amendment to contract to be approved by FC?). Start of production will proceed after a final design review to be held with the manufacturer on the 8th of November

4. Faraday cages for UX45 (Jean-Claude)

- **Cage design:** This is well advanced. A diagram was presented. There will be a false floor to allow passage of cables between racks. There will be shared grounded grid on the tunnel floor. Cables from one cage to the other will be passed through a shielded duct to reduce the number of connections via patch panels. The height and exact dimensions of this passage have to be decided (it must be sufficiently large to allow cable installation). The patch panels themselves will be in modified panels of the walls of the cages. The patch panels can now be designed, by extracting information now contained in the cabling lists (see below).

(Action: Jean-Claude)

- **Ventilation:** A unit on the top of the cage at the rear (klystron side) will pass air down a duct inside the cage to near floor level. Warm air will be extracted via the roof just above the racks.

- **Installation:** Installation, by the manufacturer, will be in December 2005. Manufacturers' estimates are 15 days for the construction, but additional time (making a total of 1 month) should be allowed due to the location, the limited surrounding space and other ongoing activities.

- **Specification document:** A draft has to be completed in 2 weeks. The part related to installation will be done by Jean-Claude. It will be presented at this meeting.

(Action: Philippe, Jean-Claude, Volker)

5. Coaxial cables (Philippe)

- **Cabling lists** for APW, ACS and ADT are now in a well defined state. Some details remain – e.g. HOM load cables on the tunnel roof. A question was raised concerning use of 3/8 inch flexwell cables or CK50 for certain cables. (Philippe). The invitation to tender was based on the use of 3/8 inch flexwell throughout. The quoted cable cost is in fact about half that of CK50 from stores. However there may be places where we would prefer CK50. Cost of connector and mounting for 3/8 inch flexwell should be checked. The cable list should now be checked thoroughly for required cable type (TC or otherwise) as well as for any errors or omissions. **(Action: All concerned)**

- **Faraday cage patch panels** can now also be defined (see Faraday Cages above)

6. ACS Power (Olivier)

- **Operation with divider instead of tetrode modulator:** More reliable operation and better ripple performance (see Section 1 above) could be obtained without the tetrode. A manual adjustment of roughly $\pm 10\%$ in cathode current could be allowed to give the best operating point for each klystron. In view of the advantages argument such as increased klystron lifetime, power economy, flexibility may not be so strong. Klystron current could be reduced by decreasing HT. Klystron lifetime is only really extended if the heater current is reduced as well.
- Putting the divider in the HT box is not possible; there is too little space.
- We should take the results of the SM18 tests into consideration in coming to the decision.

Next Meeting: Friday 29th October at 08:45 in the JBA Room 864-2-B14

E. Ciapala, 25th October 2004