LHC RF Meeting
29th October 2004

Present: Olivier Brunner, Edmond Ciapala, Wolfgang Höfle, Trevor Linnecar, Eric Montesinos, Joachim Tückmantel, Daniel Valuch, FrodeWeierud.

1. ACS Modules and SM18

- **Module 1 progress (Ed/Eric)** Conditioning has continued. Running has gone reasonably well, with just a few minor difficulties easily overcome. Conditioning of all couplers on the module to full power has been completed; this with various combinations of frequency sweeping, modulation and pulsing to replicate conditions we expect during running. With similar techniques the fields in cavities B and D have been taken to nearly 8 MV/m. The module will remain in the bunker for one more week (at least?) to bring up the field in all cavities to as near as possible to 8 MV/m and to do any other tests needed.
- **Power Measurements:** Tests should be done to study the differences in forward and reflected power measured when the cavity is detuned from resonance to one side or the other. The effects of adjusting the circulator will be measured, to see to what extent it might be due to circulator output port matching.
- **352 MHz: (Olivier)** Work will go on next week in testing the power system. The date for installation of the Soleil module in the second bunker is however not yet defined (waiting for modified HOMs which will then have to be fitted). LHC has priority.

2. ACS Coupler Progress (Eric)

- **Couplers 114 and 115:** These are now in SA2 and conditioning is going well; we are now at 200 kW cw, where there is some vacuum activity. (Note that coupler 113 has in fact been left aside for the moment, having been replaced during the recent leak difficulties)
- **Vacuum gaskets:** (for second ceramic) A new batch of gaskets was received this week. The dimensions are correct. Two have been tested in the Lab with a ceramic. A very small leak was observed with He under pressure but this may not be a concern.

3. ACS Power Progress (Olivier)

- **Production:** Klystron 11 was tested this week. We now have about one half of all the klystrons reception tested and all production loads and circulators. We have still to receive Klystron 9 after its repair (cooling channels) and the ex-SM18 prototype load which had water leaks.
- **Hall 112 Controls**: Use of the control system in Hall 112; The PC is off the network for security reasons, this may have been due to the Web pages we use for outside CERN access.

4. ADT Progress (Wolfgang)

- **Amplifiers:** Reinier Louwerse and Wolfgang will visit Dubna to test an amplifier.
- **Capacitors:** Capacitors of 2 uF are needed for decoupling. For the moment we can only obtain capacitors of 5.8 uF. These are too large to fit inside the amplifier unit. If we use these they would have to be installed separately in the tunnel. The manufacturer of the capacitors may however be able to supply 2 uF capacitors.
- **Kickers production:** Good news is that the series production has started in Russia and that completion is planned for the end of this year. The test kicker using CERN supplied 316L steel had developed a leak, but could be repaired.
- **Kicker layout:** The layout of the kickers on the present diagrams is wrong (configuration of left-hand and right-hand assemblies) and will have to be changed. The naming in the database will also need to be corrected. These corrections should be done and given to Sylvain Girod and Samy Chemli as soon as possible.

(Action: Wolfgang/Ed)

- **Kicker supports:** These have been redesigned by Dubna to allow greater adjustment range in height and allow enough space for the amplifier underneath (see LHC RF Meeting 17th September)

- **Kicker final assembly:** A suitable area (not in B867) will be needed. We are looking with ATB group (Hansuli Preis).
- **Anode converters:** A final design review is to be held with the manufacturer on the 8th of November. Following this procurement of components can start. There is a delay of roughly four months, but we should have a converter for B867 by end of March 2005.
- **B867 Test Stand:** Progress has been slow due to a large number of other activities. We still have to follow up water and electricity as described in LHC RF meeting 1st October.

(Action: Eric)

5. UX45 Installation planning (Olivier)

- **General:** See the General UX 45 Planning. Civil engineering starts this month with the tunnel walls. TS-CV are now removing not needed existing equipment and material. The shielding wall, with missing part for subsequent QRL installation, platforms and HV bunkers are due for completion by the middle of March. Cabling will be done in several phases, still to be defined. Frequent meetings are being held with TS-IC-CI. Olivier will present the details of the planning at a future meeting.

6. Coaxial cables (Wolfgang)

All PU signals will be 7/8 inch flexwell. For ADT drive signals 3/8 flexwell is preferred. The 32 ADT HOM power cables need to have good shielding. There are 16 long cables for ADT from UX 45 to the surface. Initial information on installation costs however indicate very high installation costs for flexwell cables. For many signals CK50, now double shielded, is practically as good as flexwell – SPS experience has indicated that good mounting of the connector is probably the most important factor in avoiding RF leakage. Since the information on costing is far from certain and other arrangements than contracting with standard tariff based on length are possible, it was decided that the cable lists should be looked at and a proposal based on technical requirements be made first. This applies to ADT and ACS low level. (The present lists need to be checked both for cable types and connector types!)

(Action: Wolfgang, Trevor, Philippe)

7. Klystron ripple (Daniel)

Some more measurements have been done in SM18 (Standard configuration with modulator) The ripple signals on the cathode and the mod. anode have been compared. To do this the large amount of high frequency noise components were processed out of the acquisition data. The origin of this HF noise is not clear. After processing the cathode components are shown to be mainly 600 Hz and 50 Hz harmonics. The mod anode is dominated by 50 Hz and 100 Hz. The individual contribution of each source to the total peak-to-peak ripple is roughly 50 %. When put into the model for the klystron the measured total ripple corresponds to 6 kW ripple in RF power. One aim of the study is to see if, in the case of a fixed divider configuration, the cathode noise could be compensated.

8. SR4

Equipment racks are now in place. An extra beam may be needed on the floor for the ADT anode supplies, depending on their final design.

Next Meeting: Friday 5th November at 08:45 in the JBA Room 864-2-B14.

E. Ciapala, 29th October 2004