# LHC RF Meeting
11th June 2004

**Present:** Luca Arnaudon, Andy Butterworth, Olivier Brunner, Edmond Ciapala, Pierre Maesen, Trevor Linnecar, Roberto Losito, Volker Rödel, Joachim Tückmantel, Daniel Valuch.

**1) Couplers and Conditioning** (Eric)

- **Experience in SA2** Eric presented the experience on conditioning of couplers 107 and 108, which was interrupted first for 10 days to attempt to repair the klystron then again for 3 to install the LHC klystron. See SLIDES showing maximum field and vacuum each day throughout the whole period from 12th March to 1st June and the maximum field for each one minute interval over the effective running time. Before the first stop power had reached over 200 kW, following the trend seen on previous couplers. Running with the repaired klystron was extremely irregular and difficult. The high peak shown represents a short period of pulsed operation. On restarting with the new klystron the power was increased in steps to this level with no difficulty and conditioning proceeded normally up to 325 kW continuous, for all reflected phases. The new klystron and its control system have performed well. One difficulty has however been encountered: the circulator needs adjustment of the magnetizing current when the output coupler reflected phase is changed at high power, otherwise the Wattcher LO interlock (reflected power into the klystron) is triggered. This may be due to the lack of automatic temperature compensation; this should be verified by fitting the standard Temperature Control Unit (TCU) in SA2. **(Action: Olivier, Luca)**
- **Water Supply:** We are still waiting on results of tests on water quality and hardness in SA2. The concern is that the present water quality might lead to calcification of the cooling pipes and channels of the new klystron. We now understand that TS-CV responsibility has been passed from B. Occelli to R. Mollay, with whom all this must be followed up. **(Action: Olivier or Eric)**
- **Couplers 109 and 110:** These have been mounted and are already at 125 kW pulsed. It is expected to take another three weeks to complete the conditioning.

**2) SM18 Planning** (Pierre)

- **Cycling:** Module 2 cycling is nearly completed. Final cool down and measurement will be done next week. The measurements so far indicate good results.
- **Planning:** Pierre presented the latest SM18 planning. Bunker modifications have been completed, Module 2 cycling is nearly finished and Module 3 will go back in the bunker at the end of June. During the warm-up of Module 2 the new cryostat PLC interface can be tested passively. Improvements have been made to klystron and HV controls and additional software is being tested. The longer term program was discussed on Friday 4th June at an extended SM18 planning meeting and this has been integrated into the planning. Module 3 will need the usual installation and cool-down time plus time for conditioning of one cavity and coupler, making it available for LLRF tests from mid-July. An optimistic planning for the coupler work sees Module 1 in the bunker towards the end of August. While this leaves an interval of 4 to 5 weeks for LLRF tests on Module 3 it may not be possible to make optimum use of the time due to the absence of several specialists during the holiday period. The situation will as usual be followed closely in the SM18 Friday p.m. planning meetings. Looking further ahead the planned three weeks of LLRF tests on the following module (Module 2) would push its completion into the start of 2005. Nevertheless the overall planning sees the completion of all modules by third quarter 2005, allowing full time LLRF and system tests from then on. On the other hand, it must be remembered that the whole planning is based on the most optimistic estimations throughout.
- **Log Book & Planning Information:** It was agreed that the SM18 log book must be kept up to date with all events concerning operation of the installations, e.g. cryo, equipment problems, start & completion of procedures, tests etc. The up-to-date short and long term planning will also be posted on the Web. **(Action Pierre, Ed)**
- **Radiation Outside bunkers:** Additional shielding may have to be put outside the conditioning bunker as magnet tests will finally be done close to that area. Tests on actual radiation levels will be done first, when Module 3 is re-installed and powered. The continuous moving of equipment

and transport of magnets in the areas in front of the bunker and beside the storage area is becoming a concern.

**3) ACS Modules**

- **He Quench Valve Modifications and Integration:** (Roberto). The modifications to the SC module quench valve outlet lines (and their dimensions) will be agreed with L. Serio next week. Drawings will need to be made so that the mechanical work can proceed. At the same time the UX45 integration of the lines back to the QUI must be done. The safety release duct to the UX45 roof must also be done. This will need 1 to 2 days of drawing work from S. Girod.

**(Action Roberto, Ed & Pierre with S. Girod)**

**4) SR4 Control Area** (Volker)

- **Layout:** Following two meetings last week agreement has been reached and final proposal has been made (See SR4 Layout Drawing). The layout basically follows a previous proposal, all racks aligned in the same direction (to use existing floor supports only) in four rows with some open space for tables and monitors. Additional space (giving e.g. more space between facing beam control racks) has now been gained by making the wall of the building part of the enclosure.
- **Construction:** 'Pavatex' wood based panels are preferred for the walls, rather than metal grilling. There will (initially at least) be no roof but the walls should be sufficiently strong, or other provision made, so that one could be added. Space should be kept free outside for a ventilation unit, if needed.

➨ This layout was now agreed and frozen. Work can now proceed on the layout of the equipment in the racks, permitting compilation of cabling lists, together with J-C. Perrier.

**5) B867 Test Stand** (Eric)

- TS-CV agree to take full responsibility for the cooling system but consider that the main pump needs to be larger and consequently situated outside the building. The reduced noise levels would probably be in the interest of other users. Any RF group contribution to the costs should be discussed.

**Next Meeting:** Friday 18th June 2004 at 08:45 in the JB Adams Room 864-2-B14.

E. Ciapala, 15th June 2004.