LHC RF Meeting
6th February 2004

Present: Luca Arnaudon, Philippe Baudrenghien, Olivier Brunner, Edmond Ciapala, Wolfgang Hofle, Trevor Linnecar, Roberto Losito, Volker Rödel, Joachim Tuckmantel, Daniel Valuch.

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

- **Coupler production:** One of the second polarization rings from TS for the next two couplers was defective. However one can be taken from the cavity tests in SA2. Assembly awaits completion of the refurbishing on the laminar flow chamber in B252, due by end of week 7.
- **Planning:** The aim remains to have 16 couplers tested in SA2 by the end of 2004.

2) **SM18** (Roberto)

- **Module test:** The tests resumed this week on module 3. Cavities A and C quickly reached 300 kW (1 hour each) with the cavity detuned. Cavity B is at 160 kW cw. The frequencies on all cavities remain exactly as measured before the first power tests last year.
- **Startup difficulties:** A number of problems were encountered, relating both to the hardware interventions needed in the brief shutdown and to the new software interfaces installed at the end of the year. The following points are made:
  - **A systematic test** of all equipment, interlocks and controls is mandatory, even after a short stop and this must be organized before the real tests start. A checklist, based on that used in the LEP machine will be compiled. **(Action: Olivier)**.
  - **A Log Book** should be kept for general operation, *in addition* to the log books for the individual tests.

3) **Cryogenics**

- **Quench valves:** The valve itself is accepted by TIS. Generally release of helium directly into a zone is only acceptable if the oxygen content does not become less than 16 %. Whether or not this would be the case for cavities in RUX 45 remains to be analyzed. A meeting with TIS and Cryo specialists will take place in week 9.
- **QRL operation:** Use of another return line from the cavities, instead of the header D with its risk of unpredictable rises in pressure, was brought up at Chamonix. A meeting will be organized with the QRL responsibles in week 10. **(Action: Trevor)**
- **QRL and Cavity installation:** Since it will take one month to warm up the QRL in order to install the cavities they should be installed before the QRL is tested, i.e. before the start of 2006. Our planning would allow this. As a reminder, machine installation will be completed by end December 2006, allowing 30 weeks of hardware commissioning.

4) **UX45 Layout and Installation (Volker)**

- **Drawings for the new layout:** These are now completed and are in CDD. There is a one month approval delay. There has been no objection so far.
- **ECR for the new layout:** Still waiting on the reference for the SEU radiation report. It can be sent out with the title alone. **(Action: Volker)**
- **Cables in UX 45 floor rails:** Civil engineering starts in July 2004. We have to decide which of the old Aleph rails are to be used for RF cables. Rails on the cryo side of UX45 are being removed.
- **Equipment identification:** Before cable lists can be compiled all equipment needs to be properly named, as well as all racks and patch panels, and their locations defined. An equipment naming proposal, based on the standard system, with some examples, was circulated to everyone by J-C Perrier last October for approval. This list now needs to be filled out completely, to include all equipment and patch panels. **(Action J-C Perrier)**

- **Equipment Layout Drawings:** Following the above, updated versions of the new layout drawings should be produced, showing the position and identification of all the underground equipment and patch panels. **(Action J-C Perrier and S. Girod)**

5) Vacuum Integration: Pick ups, Kickers and Dust traps:

A meeting on integration, to look at the request to put BPMW pick-ups next to the damper and questions relating to transitions and bellows, is being organized with VAC and BDI (C. Boccard) today.

Results of the meeting:

For the dust-traps nd ECR will be required. The vacuum integration will start with the dampers and the BPMW. The persons in charge are C. Rathjen and G. Schneider from AT-VAC. P. Guillemin from ST-MME is working with BDI group on the drawings.

6) ACS Power (Olivier)

- **Loads**: Both recently delivered loads have given problems. For the first, in which thin ferrites in the first section of the load detached themselves during initial tests, the manufacturer has stated that this is due to insufficient glue having been used on these particular ferrites. The second load has some blocked cooling channels. The solution proposed by the manufacturer is to remove some 'non-critical' ferrites to allow better flow.
- **Temperature Control Units (TCU)**: These are sometimes wrongly set and an improved procedure for calculation the compensation from the input parameters is being looked at by Daniel and Olivier.
- **Pulse testing**: Daniel has started work on equipment for pulse testing on the klystrons and RF power equipment.
- **Flexwell Cables**: Flexwell cables have been found and will be used in the klystron chassis to connect the driver and klystron; these being better shielded than the supplied cable.
- **Silicone oil:** This will be used in HV bunker equipment, instead of mineral oil, to avoid special fire safety equipment and precautions (TIS). However cables other than silicone will have to be used inside the tanks. Tests will be done on transformers to ensure that no long term damage occurs. The question of effects on other components e.g. capacitors and electronic parts, was raised. Special handling of the oil is also needed. These issues are being studied together with BT and outside experience will also be looked at.

7) ADT

- **Kicker tanks:** The test chamber is now ready for testing.
- **Ug1 Ug2 supplies:** The manufacturer was visited on 27th January. All issues are practically settled, but on/off control still needs to be defined.
- **Driver Amplifier.** The contractor was visited on the 28th January. A problem with the output transformer prevented demonstration tests. Some non-conformity issues (e.g. LF response) are being addressed. Prototype delivery is delayed by one month. There are still some controls issues to resolve. There will be another visit on 10th February.
- **Anode supplies:** A list of technical and commercial questions was sent to the lowest bidder, with answers to be given by the end of next week. It may be necessary to visit the company.
- **Dubna:** Material has been shipped. There is no other news from Dubna, but the next visits will be planned soon. Supply of material for the power amplifiers through CERN orders is still a bottleneck.
- **Rhenium coating of ceramic supports:** Status on tests and approval has not yet been received from the vacuum group. J.-F. Malo and H. Preis have sent their measurement results to Miguel.
- **Test stand and controls.** The test stand now becomes a priority. P. Maesen has ordered some material for controls.

8) Faraday Cage in UX45 (Philippe)

- A market survey will be carried out for supply of these. Philippe will prepare a Technical Specification. The amount of installation work to be asked of the contractor has to be decided. Probably after discussions with possible suppliers. J-C Perrier would be able to follow up the installation work.

9) EVM:

- **ACS HV cables:** The question as to whether increased cost, due to the new layout, should already be put in EVM will be taken up with the DPO. **(Action: Volker)**
- **Ions for LHC:** While ions are part of the LHC project proper, an extra work unit should be added, showing the manpower needed to develop additional low intensity electronics.
- **ADT:** The ADT EVM has been updated. The finish dates of workunits have been adjusted to reflect the current progress. The delay is due to lack of manpower and the delays with the collaboration with JINR. There is a risk that we would require more CERN resources if progress in JINR continues to be slow. Handling of PV changes in individual work units is also to be clarified.

10) AoB

- **Budget allocations for operation**: This estimate, both for test installations and for the machine from 2007 onwards, has been passed to the DPO.
- **Planning for all the various machines:** This will be the subject of the next AB-RF Scientific Staff meeting. Everyone is encouraged to attend. **(Action: All)**

Next Meeting:

Friday 13th February 2004 at 08:45 in J. B. Adams Room (864-2-B14)

E. Ciapala, 8th February 2004.