LHC RF Meeting
26th March 2004

Present: Luca Arnaudon, Andy Butterworth, Olivier Brunner, Edmond Ciapala, Wolfgang Hofle, Trevor Linnecar, Roberto Losito, Pierre Maesen, Joachim Tuckmantel.

1) ACS Couplers and SA2

- **Conditioning** of the first two couplers for Module 1 has stopped due to a problem with the klystron. 300 kW had been reached with 200 us/10 ms pulsing.
- **SA2 Klystron:** A leak has developed in the collector. The klystron has been dismantled and cleaned. The exact location of the leak is difficult to find. This will be pursued next week with vacuum specialists. A repair with varnish is not expected to stand up to normal operation. Brazing carries some risk as access is difficult. While there was some concern that the pulsed mode of operation at low HV may have been a factor in the failure, the visible signs of erosion may point to a water contamination problem. The water quality will be analyzed.

(Action: Olivier with TS and Vacuum Group)

This klystron is an EEV model converted from 352 MHz to 400 MHz and only one klystron was modified; hence we must in any case to look for other solutions, both short and long term:

- **Other options for coupler conditioning:**
  - Installing an LHC 400 MHz klystron in SA2. The power would be limited to 300 kW, but this may be sufficient for coupler conditioning now that the kovar ring solution for the ceramic has been validated. It would also be a very valuable long-term operational test of an LHC klystron. However, installation would mean modifications to the HV system and to the control system. While the HV modifications are not major, proper control system modifications will require construction of new electronics and re-cabling. An estimate will be prepared for the time required and the cost. **(Action: Luca)**
  - Moving the test cavity to Hall 112: This is seen more as a temporary solution if the klystron cannot be repaired, since we cannot guarantee that both klystron reception and conditioning can be fitted in over the long term. For the long term the installation of a second klystron in Hall112 may also be a possibility; availability of space and adequate water supply would need to be checked. **(Action: Olivier)**

2) SM18

- **Fast cycling** of Module 1 has started.
- **Space and access to bunkers:** Exact details of any SM18 reorganization which might affect moving of modules from the assembly area to the bunker need to be clarified. **(Action: Roberto)**

3) Planning – Installation and Commissioning

- **AB MB Meeting** Trevor has presented the implications of the new proposed revised planning schedule for the RF group at last Monday's AB Management Board meeting (22nd March 2004), the aim of which was to understand all the implications and to define in detail the resources that will be required by AB Department. While we would expect to have equipment available for installation by suitable dates, the feasibility of the compressed installation schedule is a concern. Our requirement to run with SC cavities at 4.5 K for longer than shown on the new planning schedule was clearly stated.
- **Planning meeting:** A meeting was held with installation planning and commissioning responsibles S. Weisz and R. Saban on 23rd March to discuss the RF system. Some main points made and questions that arose:
  - Start CE, services, installation. etc. in UX45 at the end of QRL installation.
  - The QRL end of connection gives the absolute last limit for ACS cavity installation and connection to QRL.
  - A large part of cabling and infrastructure has to be complete in RUX45 before RF equipment can be installed
  - Can UX45 QRL installation be finished earlier, allowing CE work to start sooner in RUX45?

- Can some UX45 installation start before QRL finished – e.g. HV bunkers?
- What is the BI installation schedule and will there RF commissioning compatibility issues?
- A continuous 28 week period with helium is needed to commission the ACS system.
- Can we have cavities cold with magnets warm?
- Do we need cavities be connected for pressure tests, or can they be connected afterwards?

! It has since been established with Cryo specialist that we **can** run the cavities cold with the magnets warm

- **Preliminary planning:** Olivier has circulated a rough installation planning. With this there is also an Excel list of all the activities needed for the planning. This will be used as input to S. Weisz. Everyone must check this list (See in pdf or excel) for items that are not included and also indicate any known pre-requirements or other constraints on the activities listed.

(Action: All)

The original planning by J. Montes should also be checked for relevant information.

(Action: Olivier)

4) Equipment Naming

- Following the agreement on official installation naming for all RF equipment a decision needs to be taken now on the names to used for everyday operation and in the applications for control, alarms, logging, diagnostics etc. For the moment there are three basic ideas, shown for the cavities and added to the naming list presented last week by Volker.

See file with proposals in pdf or excel:

1) Use the installation names exactly as they are.
2) Name according to equipment type, consecutively in clockwise direction, beam 1 or 2 not taken into account
3) Naming according to the beam, numbering in the direction of the beam (clockwise beam 1, anticlockwise beam 2. This is the system adopted by BT for equipment (kickers) in the MKD. While this may seem more cumbersome separating the equipment by beam probably has operational advantages.

! Everyone is invited to provide input. **(Action: All)**

5) ADT

- **Drive amplifier:** The prototype received this week has suffered transport damage. Unfortunately the goods reception had signed OK and the damage was only discovered on arrival in B864. The manufacturer has requested that power is not switched on, in case ferrites are damaged. The cardboard + styrofoam packaging used is anyway inadequate for equipment of this weight, type and value. Follow-up is needed with the manufacturer.

(Action: Wolfgang)

- **Feedthroughs:** Modified feedthroughs are still arcing. Some re-design may be needed. This is being followed up by J-F Malo.

6) AoB:

- **PVSS:** I. Laugier (AT-VA controls responsible) gave a demonstration this week of their PVSS system for vacuum equipment. The system has been built up over a number of years and relies on a Russian collaboration to produce software. It relies on a Microsoft OPC server, maintained by IT division. Development of a PVSS application for RF following that of AT-CR will be studied with H. Milcent (AB-CO) in week 14.

- **Responsibilities in SM18:** With Roberto's change of group Ed will be in charge of SM18 from July. Pierre will be responsible for the SC modules. Eric remains responsible for couplers and conditioning.

Next Meeting: Friday 2nd April 2004 at 08:45 in the JB Adams Room 864-2-B14

E. Ciapala, 29th March 2004.