LHC RF Meeting

24th January 2008

Participants: Frode Weierud, Daniel Valuch, Wolfgang Hofle, John Molendijk, Thomas Bohl, Philippe Baudrenghien, Trevor Linnecar, Edmond Ciapala, Andy Butterworth, Vittorio Rossi, Joachim Tuckmantel, Eric Montesinos, Luca Arnaudon, Olivier Brunner, Maria Elena Angoletta

1. Status of UX45 equipment:

- **Conditioning progress:** Conditioning ran for a short time until an 18kV interlock on Friday. A CCC access panel problem again led to the 18kV being down. After restarting on Monday, cryo was lost due to a compressor problem. Conditioning was restarted on Wednesday evening on C5, 6, 7, 8 beam 1, with C5 and C8 conditioning overnight.
  - C6 has a problem with the power level from the DDS.
  - C5 was tripping on HOM fundamental power (narrow band B). The HOM signal levels will be measured and the interlock levels adjusted if necessary.
  - The priority is to condition C8 since this cavity will be used for LL tests. It is up to around 200kW, 1.6MV and degassing. It could be ready for LL tests next week. However we could move the feedback hardware to another cavity if necessary, or install a second set of modules.

- **Cryo stability:** The dipoles have been run up to 9600A with some quenches. A small increase of pressure in the cavities up to about 1.4 bar was seen as expected. They will provoke quenches at higher currents today.

- **SW problems:** An error in a new release of the middleware by CO caused problems on Friday, but these were rapidly resolved. The FESA software for the Switch/Protect modules was found not to be working, and this was traced to a bug left over from the driver problems of last week.

- **Coupler position readback:** After a VME crate reboot, the coupler position appears to go to zero. Checking this after the meeting, it is confirmed that the coupler does not move, but the indication is reset to zero. This will be corrected in the FESA software. An indication of the coupler position needs to be integrated into the conditioning application.

- **Low-level tests:** Philippe would like to measure the tuner step response. Setup of the feedback and polar loop will take about one week.

- **Sector 34 equipment:** 7 out of 8 heater characteristics have been measured on the klystrons. They could be ready for RF by the middle of next week. Switch/protect modules and DDSs will be needed in Faraday cage A. The DDSs need modification to add the VME serial number, and calibration of levels. This could be done by next week.

2. UX45 planning:

The modules will be cold until at least week 6, so in the worst case there could be only 2 weeks left for RF commissioning.

3. Radiation monitoring:

Since we will often be running with vacuum valves closed, we should install proper radiation monitors near the valves, logged by RP. It would be useful to have an online reading of radiation levels in our control system.

4. LLRF progress:

- **Setpoint and RF Modulator:** The series have been received and being tested in the lab. They are installed for testing on one cavity in UX45. It will be possible to obtain a few more modules for other cavities (about 1 week to test 7 more sets if no hardware modification is necessary).
- **LL loops interface:** There have been a number of problems with this design:
  - PCB problems last summer

- Delivery of faulty FPGAs in the autumn
- EMI problems with the digital and analogue power planes have now been fixed
- Problems with the performance of connectors for the 1Gb SerDes links: Philippe suggests to use the Category 7 connectors which are currently on order from Farnell for the prototypes.

- **RF signal multiplexer:** This is now cabled. Please use it for measurements rather than disconnecting it. The switch chassis still needs the network connection to be installed.
- **Fibre optic links:** Discussions are ongoing with Luit de Jonge. More news in 2 weeks.

5. ADT:

- **DC power tests** are continuing. 1 amplifier is tripping, with a doubt over its PIM switching too fast.
- **Damaged cable:** One 3/8 Flexwell tetrode voltage cable was found to be broken; measurements show it is 25m too short. An access will be needed in the RF zone to check this. There are no spare cables, but it is possible to rearrange the cabling to use one of the HV divider cables.
- **Controls in SR4, UX45 and 867:** LabVIEW GUI pages have been made by Luca and David.
- **ADT analogue acquisitions:** Cabling is underway in UX45. The cabling tools were found to be worn out after the ACS campaign, and Daniel has been obliged to order new ones.
- **LL electronics:** All crates have been received for 1W and splitting pre-drivers. These need to be tested, but there is currently no FSU available to do this. We should try to make 1 more FSU available for series testing.
- **ADT LL:** The design is almost completed and the HW implementation will be finished this week for sending to the design office next week. Firmware development continues. 2 modules are available for firmware testing.

Next meeting: Thursday 31st January at 08:45 in the JB Adams room 864 2 B-14.

A. Butterworth, 28th January 2008