LHC RF Meeting

2nd August 2007

Participants: Andy Butterworth, Edmond Ciapala, Wolfgang Höfle, Pierre Maesen, Joachim Tückmantel, Daniel Valuch.

1. P4 RF Installation/Commissioning

- **General P4 planning:** Cool-down of sector 4-5 is still halted due a suspected leak in the DFBAH. This region is now at 300 K, while the remainder of the sector is at 150 K. The best estimates for cool-down of the sector 3-4 modules is week 31 (3rd September) to be followed by low power measurements the RF conditioning and tests, starting 2 weeks later. (Mid September)

- **Vacuum in LSS4 (Pierre)** Vacuum is still good in the RF and neighbouring sectors. For the moment we check with the vacuum specialists or read the values on the vacuum instruments in the klystron gallery racks, as we do not have access to the vacuum supervision program. We have asked them to provide a passive status page for RF in P4.

- **Derogation for ACS operating pressures (Ed):** A latest version of the document with some requested additional failure scenarios has been sent to B. Delille (SC). The risks of running with D-Line overpressure have been looked at again. While the mass flow resulting from 20 bar pressure in the D-line from multiple magnet quenches can be handled by the safety valves on the modules when the modules are cold, this is NOT THE CASE when they are warm. In this situation we are 100 % reliant on the non-return (check) valve in the D-Line connection. While SC do not know of any case where such a valve has ever failed we must ensure, at least during early commissioning, that the modules are cold BEFORE any powering tests are started on the magnets. **(Action: Ed)**

2. ADT (Wolfgang)

- **Transfer function measurement:** Transfer function measurement tests on the kicker using the HOM port have been done in B867. We would like to measure all kickers in UX45 with this method. The coupling connection with the amplifier can be adjusted to improve the response at 20 MHz. We would also like to see if, using the transfer function data, it would be possible to match the LLRF system response, in order to have a common overall transfer function for all systems.

3. SM18:

- **6 kW cryoplant status**: Cool-down was started for module 4, but has had to be stopped due to a heat exchanger leak. There is no news on plans to improve the 6 kW plant, a complete oil change has been mentioned.

- **Module 4 (Europa) level tests:** Cryo have started to install equipment for the test but going ahead depends on the cryoplant. If tests are to be done during week 32 Maurice Prax will be in charge on our side.

4. LLRF

- **Series production and test of modules for cavity controller (Ed):** The DDS-Conditioning modules have all been tested by the FSU team, following John's procedure. Only two modules have been left for later repair with John on his return. Testing of 10 VTU is nearly finished.

- **Patch Cables:** Orders for the necessary cables and connectors have been sent out. The aim is to have all the material delivered in time and to have the cables made before the RF tests in September.

- **Phase/Position measurement module [FBT] (Daniel):** The module is now fully working. The noise level, including that generated in the input processing, is good and corresponds to the 3 lowest bits of the 16 bit range used. The 1 G bit link will be tested for reliability over a long running period. It has proved necessary to fit a heat sink on the large FPGA. We believe that the large amount of external memory leading to many fast changing output lines is a factor, compared to other applications.

- **1-T feedback/Damper module (Wolfgang):** Two prototypes now exist. The present clock speed is 40 MHz (20 MHz bandwidth). We will try to bring the clocking to twice that value to get the

full specified bandwidth. A problem with boot-up still persists. We will assemble two more prototypes, so that debugging, 1-T feedback and damper feedback tests can all continue in parallel.

5. MTF:

- **Hardware Commissioning MTF:** Blanca Perea Solano, from R. Saban's Hardware Commissioning team, has agreed to have the new structure for RF (see LHC RF meeting 7th June) implemented in the HWC MTF. It will be done by the end of next week.
- **Equipment MTF for ACS modules:** Pierre has managed to introduce the modules and the equipment needed for cryo, so they can configure their software. This required connecting the layout database slots into the MTF. A problem is that different MTFs do not use the same database and there is no automatic connection between them. The slow response does not make the system any easier to work with.
- **Equipment tests:** We are now accumulating large amounts of test and other data. Much of this data needs to be put in EDMS and made visible in the HWC MTF.

Next Meeting: Thursday 9th August at 08:45 in the JBA room.

E. Ciapala, 2nd August 2007.