LHC RF Meeting 16th August 2007

Participants: Luca Arnaudon, Andy Butterworth, Thomas Bohl, Olivier Brunner, Edmond Ciapala, Trevor Linnecar, Pierre Maesen, Eric Montesinos, John Molendijk.

1. P4 RF Installation/Commissioning

General P4 planning: Cool-down of sector 4-5 will be delayed by a further 4 weeks due to a leak in the region of another DFB. Note that the warm-up in December to change the inner triplet defines the end-point of our tests..

(Post meeting - From ICC meeting Friday 17th Aug. The inner triplet will now be replaced straight away. In view of the recent problems priority is being put on leak detection and consolidation. AT-ACR has stated that putting liquid in the cavities would mean two weeks lost from these activities. Hence there will be no module cool-down in September in sector 3-4. We will however continue preparations and full testing of all equipment as far as possible, in order to be ready for any change in plans.)

. Module cool down: A brief meeting was held at P4 with U. Wagner. The status of items on the draft checklist for module cool down was reviewed. The general cryo approach is now to do first cool down with minimum software, taking the time to check carefully at each stage. We will closely supervise module cool down with cryo.

Klystron Modifications: The eight klystrons on the sector 4-5 side have all had boilers changed and have been put back in place. RF cables on four have been left disconnected for measurement by Philippe. Four klystrons on the other side are in the transport zone awaiting the arrival of modified boilers. We can start to power klystrons again next week.

. LLRF Modules in Faraday cages: We now have a complete set of series production modules to allow operation for cavity conditioning. One (or two) cavities will be installed and cabled completely to ensure that everything is correct, before installing for the other cavities. We are missing SMA/SMC patch cables for timing, clock and RF interconnections, but expect to have these in three to four weeks. The overall control software can be prepared and tested as soon as these first cavities are installed and connected.

Derogation for ACS operating pressures (Ed): No news yet from SC. We have informed the persons concerned that we require the modules to be cold BEFORE any powering tests are started on the magnets and this has been accepted.

2. ADT (Wolfgang)

Amplifier completion: The Dubna team has now finished the final assembly and test of the amplifiers. This includes installing the resistors. We should check the spares situation, especially for tetrodes.

3. APW (Thomas)

Feedthroughs: We will soon receive prototypes of the new feedthroughs.

4. SM18: (Pierre)

6 kW cryoplant status: Helium has been available since last week. However there will shortly be another 3-week stop to change all the oil in the system, to see if normal performance can be obtained (Now at < 50 % of cooling capacity).

In the meantime Module 4 and Soleil tests have been quickly and successfully completed. See below.

Module 4 (Europa) level tests: These have been completed, together with cryo. We now have confidence in level gauge readings, those done with AT-ACR's measurement systems agree with those using our own electronics. The difference in levels in the individual cavities is attributed to restriction in flow between adjacent modules (18D inside bellows for 30D tubing), resulting in higher level in the cavity at the inlet side, with decreasing level in cavities further away from the inlet. Overfilling leads to passage of liquid through the interconnecting tubes on the gas collectors on the top of the tanks, with pressure increase at the top where the readings are taken, making difficulties for the regulation process. We understand that this can be managed by appropriate control of the tank heaters, at least for the static losses. Cryo will incorporate this into their proposed software.

Module 4 Tuning check: Three out of four cavities have had tuning compensating springs fitted. These were measured and the frequency ranges confirmed as being within the correct limits

5. LLRF (John)

Modules - Series production and test: The testing of series production modules has gone very well so far, i.e. tuner control, tuner front end, conditioning DDS etc. A pre-series if 10 VME Trigger Units (VTUs) has also been received and successfully tested. All parts for the feedback modules have been given to TS-DEM. They will provide an updated status of production for all modules.

Patch Cables: Orders for the necessary cables and connectors have been sent out. However there is a delay of 3-weeks for supply of the cable.

6. AoB:

\$pares: LTC have requested a report on the spares situation for LHC equipment. We believe we have sufficient spares for the ACS modules (1 module and one single cavity). Klystrons have been requested. ADT systems should be looked at (Eric). For LLRF we should be covered by the spares already allowed in the series production.

Next Meeting: Thursday 23rd August at 08:45 in the JBA room.

E. Ciapala, 20th August 2007.