LHC RF Meeting 22nd May 2008

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

1. Point 4 planning

- **Sector 3-4** is 1 week late, estimate is week 23 for filling of the cavities.
- Sector 4-5 has a dipole circuit short, additional delay is likely. A bottleneck with He supply could also affect the schedule.
- Access: biometrics now enabled at Point 4. Now need LHC HWC access rights to access UX45. Any interventions need to be notified by EDH. A procedure for material coming out of tunnel has been proposed by D. Forkel-Wirth at the ICC of 21/05/08 (<u>slides</u>).

2. Low Level RF progress

- **4 Tuner Control:** V3 of the tuner DSP code is being tested, will be installed in UX45 when lab testing is finished, hopefully before conditioning starts. An inconvenience is that the DSP code cannot be loaded via the backplane JTAG due to some missing signal lines which are required by the DSP devices. Maria Elena will investigate the possibility of loading the DSP code over the VME.
- Coupler & tuner motor control: After firmware modifications in the motor control chassis FPGA (John) and Phytec controller (David) and in the VME DSP card (Maria Elena), the I2C interface is now working reliably, and the coupler and tuner position measurements are available to the DSP.
 - At least one coupler has a position error which Eric suspects to be due to a deformed limit switch mount. The limit switch is a safety protection device and should not be used as a position sensor. The new firmware should be available for installation in UX45 in the next week
- Crate Management Module: The PCBs have been received, but not yet cabled. John has checked the mechanical assembly, the only doubt is that some LEMO connectors are protruding rather a lot from the front panel. He will start electrical checks at the end of next week when the cabled prototype arrives.

4 Beam phase measurement:

- **Front-end cards:** Out of the series of 20 faulty cards, 10 have been repaired, of which 5 are running and 5 not yet tested. Only 2 so far have not been repairable. The number of working cards should be sufficient for LHC startup, and the new series can be launched afterwards. The components will be ordered straight away.
- Pickup front-end crates: These are in preparation by FSU.

Installation:

- **Cavity controllers:** Tuner modules have been installed in all cavities. In sector 3-4 everything is installed apart from 1-turn feedback. In sector 4-5 everything is installed which is necessary for conditioning.
- Fibre optic distribution: All clock signals are now installed, including those for APW.

3. ADT Low Level

- **DSPU cards**: The series of 4 cards should be received by the end of next week.
- **4 RF front end cards:** The series should be received by the end of next week.

4. Function Generators

All FGC crates are now installed and tested by PO. The channel assignments of the functions is defined, and a first version of the LSA parameter definition for settings generation and trimming has also been defined.

- Voltage function: With blowup in LHC, the voltage function would be more or less linear from 8MV at injection to 16MV at top energy. For commissioning we could run with a constant 16MV throughout the cycle (Elena).
- Tests with functions will be performed in the Beam Control system in the lab next week, and in UX45 with cavity voltage setpoints in 4 weeks or so.

5. Beam Control test progress

- The synchro module has been connected to the DSP loops module, and phase measurement data has been seen to arrive in the DSP. However Jose is investigating some phase jumps. The loops module FPGA is no longer overheating after a problem was corrected in the configuration.
- Noise measurements have been made on the VCXO module, with very good results (about 10dB better than in the ppbar system).
- The next step is to put the VCXO in the system, and close the synchro loop. This is envisaged for next week, and will be followed by tests with the beam phase & beam position modules.
- The dual frequency program is still missing, but this is not as urgent since we can test all the loops with constant frequency. The dual frequency program uses the same HW module as the conditioning DDS, with Joao redeveloping the firmware.

6. SM18

- **4** There are problems with the demineralised water system which are currently being investigated.
- There will be a long cryo shutdown in July, and it is foreseen to put the spare module into the bunker afterwards. The LHC test setup in SM18 will therefore not be available before September at the earliest.

7. AOB

Piquet service for LHC: Philippe asked how will we organise this. Can we take inspiration from LEP experience? Can we organise some overall training and documentation to enable a piquet to intervene in all areas of the system? We need to have some idea of how we organise this in 2009 before the end of the commissioning period.

A. Butterworth, 22nd May 2008