

LHC RF Meeting

2nd June 2006

Participants: Luca Arnaudon, Thomas Bohl, Olivier Brunner, Andy Butterworth, Edmond Ciapala, Wolfgang Höfle, Trevor Linnecar, John Molendijk, Eric Montesinos, Pierre Maesen, Joachim Tückmantel, Daniel Valuch, Frode Weierud.

1. Couplers (Eric)

✚ **Polarization coupler vacuum seals:** Tests with a steel ring, in place of the niobium surfaced ceramic, have shown similar leak rates. A new set of seals will arrive shortly. We will check if the (very small) leak rates we measure during tests are acceptable (and whether our test is excessively severe) with VA group specialists. Since we already have conditioned couplers for the fifth module the pressure to produce remaining couplers is less urgent, however we do need a definite result ASAP.

2. ACS Modules and SM18 (Pierre/Eric)

✚ **Module 5:** After a full warm-up and re-pumping cycle cavity B went quickly to nearly 9 MV/m. The cavity had previously been giving significant vacuum activity below 8 MV/m. The positive effect of the 10-hour warming up and pumping was clearly demonstrated. All cavities and couplers of module 5 have now been conditioned to 8 MV/m and 300 kW. In spite of time being lost due to the power cuts of week 20, we have managed to complete the module tests on schedule, thanks to the recent smooth running of HV, controls, cryo and the conditioning program. Measurements and coupler heat runs will be done during the remaining bunker time.

✚ **General status:** The completion of module 5 now means that we have completed conditioning of the four modules to be installed in the machine. This very important milestone will be marked appropriately in the near future. Only module 1 remains to be checked in the bunker, at low power after fitting compensating springs (on all 4 cavities).

The remaining mechanical work is progressing well. New bellows have already been fitted to six cavities. The remaining bellows have been ordered and the preparation of the mechanical parts has started.

3. APW (Eric/Thomas)

✚ **Series production:** APWs 2, 3 and 4 have been assembled and measured. Bake-out will be done in two weeks.

4. ADT (Wolfgang/Eric)

✚ **B867 tests:** These will re-commence soon with tests on running two amplifiers together and operating the power supply at high power.

✚ **Resistors:** The manufacturer has two different prototypes which have successfully been tested at full continuous power and also with 10 to 20 ms pulsing at four times this level.

5. ACS Power:

✚ **Arc Detectors:** Series production of these is almost finished. All waveguides have been prepared in advance for fitting of the arc detectors.

6. UX45 installation progress (Olivier)

Olivier showed a number of recent pictures:

✚ **UX45 cavern:** A [general view of the cavern](#) towards the platform shows all the waveguides on top of the platform fixed in place. A view of the [ADT and ACS racks](#) shows recent progress on cabling.

✚ **RUX 45 roof blocks:** The two large blocks, [left of IP4 shown](#), have been slid into place after being put on top of RUX45. Holes for ventilator units are already made.

✚ **RUX45 waveguides:** Four waveguides on the [left hand side](#) of RUX45 and all eight waveguides on the [right hand side](#) of RUX45 have been passed through the tunnel and shielding walls. The supports have been aligned to give the correct waveguide positions at the cavities. The waveguides pass through correctly with enough margin and there is adequate space where there are cable trays. The [complex installation for the outer modules on the right](#) has been put in place successfully. This and the remaining waveguides traversing the walls for the left side will be put in place next week.

✚ **Klystron cooling system:** Horizontal bars will be installed to provide extra support for the cooling pipes onto which are fitted the flexible connections to the klystrons. The by-pass connection pieces (to allow disconnection of the klystron circuits without disrupting the supply to other equipment) are in UX45, ready to be fitted next week.

✚ **ADT Water cooling:** The installation is nearly finished

✚ **HOM cables:** These are passed via the RUX45 floor passages, rather than via the waveguide holes.

✚ **Cabling:** The RB46 cabling is nearly complete for RB46 and RB44 will be done mid-June. The UX45 trenches will be cabled immediately after.

✚ **Connectors:** A quantity of 380 3/8 inch connectors has been received following the recent urgent order. The original connectors will nevertheless continue to be mounted where removing or disconnecting afterwards is considered unlikely. For all other cables we will use the later type. A further quantity of these will be needed. The quantities will be calculated and an order made.

(Action: Wolfgang, Daniel, Philippe)

✚ **Earthing:** A considerable saving in cost could be made by not having the copper sheeting ground plane in certain areas, such as the area enclosed by the ACS and ADT racks, since floor panels would not be needed.

(To be followed up.)


7. Low Level RF & Controls (John et al.)

✚ **Current measurement cards in VME crates:** Each VME crate will have an internal card monitoring the current of the 6 power supplies. It is based on small DCCT for each channel. The outputs will be read by an ADC on the multifunction (Slot 0) card (which also interfaces slow timing to the VME P2 backplane). During operation these will be continuously monitored via the control system.

✚ **Tuner control modules:** The series of 25 has been received from the design office. So far 10 have had successful FPGA program download and they all appear to function correctly, including DSP booting and DSP interface. A large part of the components were procured directly by the design office, with no major problems.

✚ **Quad DDS / Conditioning module:** An error in supplying power to the FPGA (1.5 V instead of 1.2 V was discovered just in time, before fabrication of the prototype.

✚ **Setpoint Module:** Development work is ongoing. A system for synchronisation with the revolution frequency is being worked out at the same time. It is needed mainly for diagnostics purposes.

 **VME crates:** 10 P2 backplanes have been received from the design office. The order for the series VME P1 and short P2 backplanes has gone out. A DR has been launched for the crate mechanics.

8. AoB

Budget & spending: For the middle of the year we should briefly review expenditure on the different projects and check against the EVM and 2006 expenditure estimates.

Next Meeting: Friday 9th June at 08:45 in the JBA room.

E. Ciapala, 7th June 2006.