LHC RF Meeting 28th May 2003

Present:

Luca Arnaudon, Philippe Baudrenghien, Thomas Bohl, Olivier Brunner, Andy Butterworth, Elena Chapochnikova, Edmond Ciapala, Wolfgang Höfle, Trevor Linnecar, Roberto Losito, Joachim Tückmantel, Volker Rödel, Daniel Valuch.

1) Actions and matters arising from previous meetings:

i) Vacuum Layout: A meeting was held with Miguel Jimenez on 27th May.

• *Fast sector valves & protection:* Fast valves will not be installed. Reaction time is limited in any case by the detection delay in the gauges. Slow valves close by over 50% in 500mS, adequate for protection of RF equipment from accidents in the nearest 'delicate' vacuum components. An accident very close to an SC cavity would most likely require removal of the module and rinsing of the cavity. Effects would probably be limited to a single cavity. Throughout LEP operation, there was one single vacuum incident that needed the removal of a module and cavity rinsing.

• *Radiation protection:* Modified ex-LEP sector valves could installed at the outer limits of the RF zone, to act as stoppers for cavity conditioning (1 per ring per side = 4)

• *Pick-ups:* Tests on SPS pick-up have shown that the lowest vacuum attainable, after bake-out at 150°, is around 1E-7 (H. Preis). VA group wants to achieve 1E-9 all round LHC. Tests will be done on a prototype LHC pick-up and its ferrite. Ferrite with potentially better vacuum behaviour is being tested for SPS kickers. The improvement that would be gained by use of the pumping port on the pick-up should be studied.

• *Need for pumping around ADT kickers:* Normally should not be needed but tests will be done as soon as the first kicker is delivered from Dubna.

• Miguel will prepare a summary of the meeting. A layout will be produced in about one month's time. The layout will also specify the cones and transitions between the elements.

ii) HOMC connections:

A final proposal on ACS HOM coupler power dissipation and monitoring is still in preparation (Action: Ed, Joachim, Philippe)

iii) Waveguide Mounting (Olivier) Alignment reference points for waveguide assembly in UX45 will be defined, together with SU.

2) Round table

i) ADT (Wolfgang)

• The test area infrastructure will be shared with ACN power testing (Eric). The power converter will be an SPS damper spare.

• Offers have been received for the 200 W driver amplifiers

• Market survey for power converters is being carried out. This is being done together with PO group (LEIR supplies)

ii) SM18 Controls (Luca)

• Field bus and network have been installed and tested; klystron and HV equipment I/O tests are in progress

iii) Low Level RF (Philippe)

• Electronics for ACS conditioning in the machine has been decided (Philippe, Eric, Roberto)

• The first PCB card (demodulator) for the LL RF has been tested

• Klystron 4 has been measured. The spurious resonance, around 4 MHz from the fundamental, is at slightly different frequencies from one klystron to another. We would like

to use a standard fixed notch filter to compensate the resonance. This relates to the tuning of the second cavity and will be discussed with the klystron manufacturer.

- Daniel has started development of splitters and couplers with \pm -80MHz bandwidth around 400 MHz.

iv) SM18 (Roberto & Olivier)

• The waveguide system has been installed

• Cooling water. We are the only user in SM18. The water pressure will be reduced from the present 13 bar to 6 bar. Additionally safety valves will be installed near the RF area. Safety rules impose two valves (illogically in this case), used alternately - one in service, the other available for maintenance.

• Power supply and HV installation are nearly finished.

v) ACN cavities (Roberto)

• All cavities will be delivered by the end of summer. Cavities 1 and 2 have finished cleaning treatment and have been tested.

vi) Infrastructure (Volker)

- The P4 integration studies are late. Other sites have taken priority.
- Radiation studies related to PO equipment were presented at TCC

vii) EVM (Volker)

• We have to transfer money to budget code 95540 (IES = infrastructure

and exploitation). This concerns spares. About 40 WUs will be modified, putting some or all of the PV on this code. (Action: Volker)

viii) LHC design report (Trevor)

• A 3-part report reflecting the present design will be written. An outline for the RF system has been prepared and the various specialists will be asked to provide input.

ix) LHC Status review (Trevor)

• A 2/2.5 day workshop will take place at CERN at the end of October. We will have 5 subjects: Cavities & couplers, ACS power, Dampers, Beam Control & Servos, Layout & Integration.

Next Meeting:

4th June at 09:00 in 864-1-C01

E. Ciapala, 3rd June 2003