

LHC RF Meeting

3 December 2003, 9h00 to 10h00

Present: L. Arnaudon O. Brunner, W. Hofle, T. Linnecar, R. Losito, V. Rodel, J. Tuckmantel, D. Valuch.

Absent/Excused: L. Arnaudon, : Ph. Baudrenghien Th. Bohl, A. Butterworth, E. Chapochnikova, E. Ciapala, E. Montesinos.

Vacuum and radiation single event upsets:

Report from a meeting with M. Jimenez AT/VAC: (Trevor):

The vacuum pressures assumed in the ACS (warm and cold side) are correct ($1\text{E-}10$ mbar). However in the external beam lines 1 and 2 the vacuum should be taken as $5\text{E-}10$ mbar under normal conditions instead of the $4\text{E-}12$ previously assumed.

In the case of a vacuum problem, e.g. breaking a window on the ACN or ADT, the pressure will be much higher for some time. After a bake-out of 1 week the pressure is estimated to be $5\text{E-}9$ and this will descend to $5\text{E-}10$ after about 5- 6 weeks of operation. Alternatively one could bake-out for 2-3 weeks until the pressure reaches $5\text{E-}10$ and then put beam in.

The RF group should insist that BI equipment is installed downstream of the RF equipment.

The question also remains as to what happens at 450 GeV where the molecular cross section is lower but the pressure may be high due, for example, to beam-scrubbing.

As a result the calculations to estimate single event upsets should be repeated:

- 1) with $5\text{E-}10$ in Beam1 and Beam2 @ 7 TeV
- 2) with $5\text{E-}9$ everywhere @ 7 TeV
- 3) with $5\text{E-}9$ everywhere @ 450 GeV

(Action: Andy)

The radiation causing single event upsets is attenuated by a factor ~ 10 by the second shielding wall (on the klystron side of UX45). There is little to be gained by installing equipment further away from the beam e.g. in the ACS or ADT racks. The second shielding wall could be made thicker if necessary.

Following the results of the new calculations using the agreed data, an optimised strategy to minimize radiation problems can be developed.

RUX45, RB44, RB46 Integration : ACS He valves to be integrated. (They are much heavier than expected – should they remain on the module with extra support or move off the module to the wall for example?)

UX45 Integration:

Sylvain modified the layout in UX45 by shifting the klystron away from the second shielding wall. The waveguides are longer by 1277 mm (a standard straight piece). This gives space for possible low level racks and also more space for cooling lines and ventilation ducts. The waveguide platform will be longer.

We stop doing integration work, including the platform, for the moment while waiting for simulation results of the radiation in UX45.

ADT power: Check and up-date of mains power with Pablo.

Action: Wolfgang.

US45 Integration: No news.

ACS status (SM18):

It is feared that the power coupler on cavity A has only been tested to lower power than the 275 kW as reported last week, the field now measured in the cavity being more consistent with this lower power value. Transmission of the waveguide system will be checked, the measuring couplers will be re-calibrated and the field calibration will be verified to determine where the discrepancy lies. This should be done by Thursday this week.

Action: Olivier, Roberto, Eric.

Helium will be available until the end of this week and then available again as of 21st Jan 2004.

The control software in SM18 is a preliminary version derived from that in B112. This should be replaced in the near future by a version with an improved GUI and protection against simultaneous multiple use.

Action: Andy

ACN cavities: The last 2 cavities have been manufactured and accepted. They will be delivered to CERN by the end of 2003.

SR4: The Faraday cage has to be ready for July 2005. The design should start now.

Action: Thomas, Philippe.

Next meeting: **Wednesday, 10 December 2003, at 9:00 h, in 864-1-C01.**

Reported by T. Linnecar, V. Rodel.