

**Minutes of the 30th meeting of the SPS Upgrade Study Team
on 29 September 2009**

Present: S. Calatroni, P. Chiggiato, K. Cornelis, P. Costa Pinto, G. Rumolo, E. Shaposhnikova, M. Taborelli

Excused: G. Arduini, F. Caspers, R. Garoby, F. Zimmermann

• **Microwave measurements - S. Federmann and B. Salvant**

Promising results (clear phase modulation signal in the uncoated magnet and no signal in the coated) were obtained during MD week 38 by the “microwave measurement” team. They need to be confirmed under different beam conditions during the next MD in week 41. E. Mahner and B. Salvant will do this in the absence of S. Federmann and F. Caspers (CAS).

• **Pressure measurements during MD week 38 - M. Taborelli**

Only 25 ns LHC beam was available for measurements. Maximum beam intensity was limited by the ZS (3 batches at nominal intensity maximum). 4 batches were in the ring only for a very limited period.

At the beginning of the MD (15:40), both without and with beam (1 batch), pressure in the coated magnets was higher than in all other (uncoated) MBBs. Note that a large variation (more than a factor 10) in maximum pressure exists between the uncoated SPS MBB magnets. At 18:30 pressure in the coated and uncoated (reference) magnets was the same. As in the previous MD pressure in the uncoated magnets with 2 batches went up in comparison with the coated but did not return to the lower level for subsequent operation with 1 batch. At the end of the MD, with 3 batches, pressure in the coated magnets was less than in the uncoated (reference). Pressure measurements showed conditioning for both the coated and uncoated magnets. No large difference in pressure rise in comparison with the 1st MD.

Things to do:

(1) During technical stop in week 41

- install C coated RF shields between the coated magnets;
- insert calibrated gauges between the coated and uncoated magnets, exchange controllers;
- inspect MBB for possible installation of solenoid (needs authorization, 15 A power supply and cable from BA5 to 51407 exist, cable 51407-51440 - to be installed)

(2) The effect of fast conditioning at low B-field observed with ECM in the MD week 33

(3) Magnetic field outside MBB - 3D measurements or simulations (with the help of J. Bauche)

• **Electron cloud measurements in Cesr-TA during the July - August run - G. Rumolo, S. Calatroni**

Modifications were made to the ring to allow the installation of the C-coated chamber (15W) and reference Al chamber (15E), both 1.43 m long. The 15W chamber was coated at CERN with a-C with initial SEY of 0.95. Due to their different positions in the ring, the amount of direct synchrotron radiation seen by the two chambers is different for electron and positron beam by approximately a factor 2 (it is higher for 15W with positron beam). Inner and outer collectors

allow primary photoelectrons to be measured. The presence of secondary electrons is not really confirmed (measurements and simulations). Carbon coated chamber systematically showed smaller photo-emission yield (up to factor 6).

However during the scrubbing run at maximum beam intensities pressure in the 15W chamber became twice higher than in 15E (with strong conditioning effect). Analysis of the witness sample which was sent back to CERN suggests possible contamination by silicon tape used during installation and acceptance test (bake-out to 150 deg). Measured SEY was 1.5 to be compared with 1.1 for the CERN sample. Silicon was not completely removed even after additional bake-out at 200 deg.

The effect of the dogleg (small additional dipole) and solenoid field (increase of measured e-current) was opposite to what was expected. As expected larger bunch spacing had less effect on C-coated chamber.

- **Next SPS MD in week 41**

Our MD is scheduled for Monday 5 October (20:00-5:00). We will start with 25 ns spaced beam and then will have 50 ns and 75 ns spaced bunches. Main expectations are from microwave transmission measurements which should confirm the good results from the previous MD in week 38.

- **Anti e-cloud coating AEC'09 Workshop**

The programme of the workshop can be found at
<http://indico.cern.ch/conferenceDisplay.py?confId=62873>

We are still missing a few confirmations, otherwise the programme is in a very good shape (thanks to Frank for all invitations sent).

- The next meeting will be on **27th October 2009** at 15:30.

Preliminary agenda:

Results from the SPS MD week 41:

- ECM, pressure (20') - M. Taborelli/C. Yin Vallgren

- mw measurements (20') - E. Mahner/F. Caspers

Summary of AEC'09 Workshop (20') - F. Zimmermann

Planning of MD week 45 (10') - E Metral, E. Shaposhnikova

Elena Shaposhnikova, 30.09.2009