

## Status of the machine studies

MSWG meeting, 23/10/09

### 1) Status (at the end of week 42) of the PS vacuum for the ion MDs of week 43 (E. Metral, from G. Vandoni)

- The sublimation pumps were already ON at the beginning of week 42.
- The sublimation pumps did the job we expected almost everywhere in the machine where the vacuum is in the mid  $1\text{E-}9$ .
- However, there is 1 local pressure bump close to the FWS64 (Fast Wire Scanner), which was recently changed. There the vacuum is in the high  $1\text{E-}8$ . The problem is that at this high pressure it is not possible to put ON all the sublimation pumps together because it creates a bump in pressure and then an interlock stops everything. The vacuum people made a manual intervention to control the pumps individually but it is believed that we will not succeed to reach the mid  $1\text{E-}9$  for the next MD. However, the vacuum people are doing their best and we will take the beam in the PS on Monday and see what happens to the beam.

### 2) SPS ion commissioning (4 batches of 1 bunch) (T. Bohl)

- Dedicated MD on Tuesday 20/10 (08:00 - 16:00).
- Beam only at 11:00 (due to injector problems), but OK afterwards. Beam intensity was also OK.
- Check of re-phasing with dedicated cycle: some problems encountered. First trial of controlled longitudinal emittance blow-up: encouraging results.

### 3) LHC50ns Single Batch Transfer from the PSB to PS (A. Findlay)

- 1/10/09.
- Simple hardware and setting up problems, nothing unusual.
- The MD was successful, with the objective of transferring the three  $H=2$  rings with LHC50 intensity in a single batch to the PS, splitting on the flat bottom and acceleration to top energy achieved. This beam is now available for MDs if required.
- Next steps: The various intensities for the LHC75 and LHC50 Single Batch beams will now have to be made in the PSB, then a check with the PS done.
- New requirements: Making various intensities versions of these 2 beams.

### 4) Tests with the SPS scraper BSHV.51659 (E. Metral)

- 12/10/09 on LHCFAST2 with Eric Veyrunes (who is writing a new application). We put some references on the ELogBook.
- We could move it and we saw the effect on BCT + losses in 5. Furthermore, we checked that we could scrape on the 2 LHCFAST2 cycles present on the supercycles and not on the other cycles. However, the observations for the moment can only be done with beam. There is no info saying that the scraping indeed took place.
- Several problems found (control etc.).
- We will have a meeting in 2 weeks with Roberto Losito to discuss these observations + mechanical issues + upgrade with graphite (copper at the moment) which could be installed if we have few days of access (may be at the end of the year or beginning of 2010).

### 5) MTE in the SPS (E. Metral)

- 14-15/10/09 on CNGS2 => We optimised the tunes etc. at low energy and we succeeded to extract  $\sim 2200\text{E}10$  p/b (i.e.  $\sim \frac{1}{2}$  of the CNGS1) with reasonable/similar losses. Since then, this beam was sent to physics from time to time.
- Dispersion measurements were done and the results are being analysed (ElenaB). The core seems to be well matched, but islands revealed a big mismatch.
- Transverse emittance measurements revealed that the vertical emittance is similar to the one measured in the PS and that the horizontal one, which is about 2 times bigger, is mainly due to the islands (and not the core).
- On 21/10/09, some statistics were taken for RP (SimoneG).