

## **End Week 19 (May 15th 2011) – Status of Accelerators**

### **LINAC (Richard Scrivens)**

At Linac2, all the work in the technical stop was completed on schedule. On the restart, a PLC module in the RF failed two times, which was tracked to noise on the interlock cables, which only appeared when the RF amplitude in tank 3 was far below nominal (which is the case during the restart procedure).

On Wednesday more testing showed that the noise it was due to sparking in the tank3 modulator cable. Several measures have reduced the propensity to spark at low RF levels, but the situation still needs more investigation.

Otherwise, operation is normal.

### **Booster (Bettina Mikulec)**

Very busy week for the Booster.

The technical stop activities were carried out successfully, and many special MD user beam requests had to be fulfilled during the two MD blocks while delivering in parallel the operational beams to the CPS experiments.

After the technical stop we suffered a lot from problems with the extraction kickers. The hardware and software experts intervened, and we hope that the problems are solved by now.

On Thursday an improved splitting procedure (more adiabatic) was implemented by S. Hancock for the 50 ns SB LHC beam.

Sunday early morning the PS complained about a bad bunch shape of the beam on ring 3 for CNGS. The operators didn't succeed to improve the situation and had to call the LL-RF piquet. A. Blas mainly increased the gain of the C04 phase loop together with several fine tunings and adding a delay on a cavity return input signal for the second harmonic corrector unit.

Additional remark: We have continuing problems with the wire scanners: certain combinations of insertion speeds and rings/planes give wrong emittance values, the ring 3 hor. wire shows frequently a status 'hot wire', and certain ring 4 filters do not work correctly, meaning that depending on the beam it is very difficult to obtain meaningful measurements.

### **PS (Simone Gilardoni)**

Main points of the week:

a) Technical stop. The technical stop went pretty smooth, started with some problems due to the IT network, making the operation of the access system not available for about 30 minutes.

The recovery in the evening was not so straightforward. First, a bumper of the extraction 16 did not want to restart. The problem could be identified by the EPC piquet on an auxiliary power converter in the bumper power supply. Then the bunch splitting on the CNGS cycle did not work at all. The RF piquet had to intervene to re-establish the correct distribution of the timings during the bunch

splitting. The CNGS was then re-optimised to minimise the losses both in the PS as in the SPS with a net improvement of the spill.

b) The F61.SMH01 problem mentioned last was solved. In agreement

with V. Mertens, the team of J. Borburgh (ABT) accepted to intervene on the equipment to adjust the gap in the correct position. The intervention was successful and normal operation of all the lines could be re-established. During the intervention, a collective dose of about 200 uSv was taken: the ABT colleagues intervened without any ALARA committee and RP reminded already that they should have been contacted to discuss the intervention.

The responsibility for this equipment should be definitely identified, since TE/MCS has a spare of the device, and apparently the motorisation was done by BE/BI. R. Steerenberg is following this issue. I would like to thank the ABT group, since they accepted to intervene in such a rush and without any particular knowledge nor official responsibility of the device.

c) The improvement of the LHC-type beam bunch splittings done

last week was propagated to all the operational users, except the LHC25. This will be done this week. Unfortunately, the current LKTIM status in the control system required the presence of the CO expert during the re-programming of the RF trees of the non-resident cycles.

The week went pretty smooth. All the operational beams were delivered regularly as the MD beams.

The LHC50ns double batch, with intensity beyond than nominal, was regularly taken for the MDs. I am not quoting any transverse emittance since I would prefer to discuss it before with the BI expert on Monday, since the measurements taken during the weekend indicate a large difference between the ring and TT2. Still, different BWSs can give very different values and different from the

TT2 measurements, up to a factor of 2. BI and OP are following the issue.

Following a request for MTE, BI installed a sort xx' reconstruction in the orbit expert application. Thanks to this, we could try different working points to study the island oscillation. The analysis is ongoing. Also the tests to use the SEH31 continued but we still not have a definitive conclusion. It seems that we are missing strength in the kickers to jump the septum. The study is more difficult due to the fact that the pickups are not correctly synchronised on the same turn: from cycle-to-cycle some pickups, not always the same, jump by one turn making difficult to observe the kick of the kickers as the one of the septum.

## SPS (Karel Cornelis)

Busy week for the SPS. On Tuesday we had a technical stop, preceded and followed by a 24h. MD on Monday and Wednesday. During the technical stop QD535 was exchanged and the quadrupole had to be re-aligned according to beam based measurements (0.55mm downward).

The MD's were very successful. Nominal 25nsec beam could be accelerated with 2.7 to 2.9 micrometer transverse emittances and a 50nsec beam with 1.4 10E11 protons per bunch and 1,7micrometer emittance. The continuous use of LHC beams in the SPS has obviously done a good scrubbing and has made life easier for ambitious LHC beams.

There is a problem with the switch between TI2 and TT66 and it had to be put in local mode in order to make it work for LHC filling.

The weekend has been very productive for CNGS. The integrated number of protons on target has reached  $1.6 \cdot 10^{19}$ . On Saturday evening there was an AUG problem in BA7. The AUG is now bypassed and access in BA7 is forbidden until it is repaired.

## **LHC**

Technical stop Monday to Thursday – rocky recovery with long stop to cryogenics (26 hours – warm compressor PLC crash), AUG T12... Successful Van der Meer scan program Sunday.

<http://lhc-commissioning.web.cern.ch/lhc-commissioning/>

## **TI (Peter Sollander)**

Please follow link below for full breakdown of week. (Busy Week)

<http://wikis/display/TIOP/2011/05/10/TI+summary+week+19%2C+2011>