

## End Week 9 (March 5<sup>th</sup> 2012) – Status of Accelerators

### TI (P. Sollander)

A couple of electrical perturbations this week, but with limited impact. The SPS was stopped by one as the RF tripped.

Emergency stop at point5 last Friday. Unclear if it was a malfunctioning button again or if somebody accidentally triggered it.

### Linacs (A. Lombardi)

#### Linac 2:

Good week for linac2.

Only one thing to mention: few trips of the frank james amplifier, which caused the RF to go down. All trips were recovered by remote reset but the RF people are monitoring the problem.

### PS Booster (B. Mikulec)

Beam setup continued in the PSB this week.

Beams considered operational: LHCINDIV, SFTPRO and LHC50DB.

Beams set up this week: LHCPROBE, CNGS and LHC25DB (to be finalized). Work has also started on the ISOLDE beams.

Main points to mention for the operation of this week:

- The Linac2 beam current has been increased last Tuesday, but is still lower compared to last year (~150 mA in BI line). Maybe it just needs several high-intensity users in the supercycle?
- After the winter break the controls system still needs to get up to speed. We noted many issues this week that slowed down the beam setup progress, but the CO team is actively trying to improve the situation. Last Tuesday we had to roll back to an old FEC for the injection equipment as the renovated FEC posed many problems. In general, working sets and knobs are sensibly slower than last year, which will be quantified on Monday.
- Hardware trips that required piquet intervention: BI2.DIS (exchange of thyatron), BE.BSW15L4 (>2h downtime), ejection kickers, BR1.XSK6L1 and BT.BHZ10.
- We received on an intermittent basis wrong status information of the beam stopper BI.STP. This cut the beam as the external condition turned bad; nothing was visible in the safety chain, but the TIM viewer only refreshes every ~5s. Such a situation happened already last year, when the cause could not really be determined. The specialist (D. Chapuis) supposedly solved the problem now through recabling.
- A few synchronization problems could be solved by our RF specialist A. Findlay, who identified a wrong MRP information due to wrong gain setting of the ring pickups.

- The energy equalization of the 4 rings at extraction has been performed to prepare the energy matching with the PS (to be done on Monday).

### **PS (R. Steerenberg)**

The start up with beam of the PS is progressing slowly, but surely.

Many more or less important issues hamper a more quickly and efficient progress.

Nevertheless the low intensity SFTPRO beam, the multiple bunches LHCINDIV beam and the LHC 50 ns beam were provided to the SPS.

The setting up of the CNGS beam also progresses well. We will attempt to program the working point with the PFW's only and thus no longer use the low energy quadrupoles. This is a operational test to see if this way of programming the working point is viable for LIU in the future.

Last week a problem with the induced voltage feed-forward for the PFW's took much time to solve, but a solution was finally found on Friday.

The beam was also regularly cut during the week as the TT2 security chains tripped often. The cause of these trips lies in the new radiation monitor that is installed in a part of the AD hall. It is not a radiation alarm that causes the trips, but a malfunctioning of the monitor. RP is asked to solve this issues.

The POPS degraded modes are now fully tested and the piquet team is trained to switch between the different modes. This will allow continuing beam operation when some parts of POPS are not operational and thus result in less switches to the motor-generator set in case of break down.

Following last week's issue on coordination of renovation activities, Rende had a constructive meeting with Marc van den Eynden, during which some ideas for improvements, especially in view of LS1 renovations, were discussed. These ideas should be worked out further for implementation.

### **SPS (Y. Papaphilippou)**

The quadrupole alignment took place on Monday, displacing 6 out of 8 quadrupoles. Two horizontal movements corresponded to consecutive focusing quads (20010, 20210), and a local magnet error was suspected. On Tuesday, it was verified with both SFTPRO and LHCINDIV beams (already present and well optimized along with the LHC PROBE), that for correcting the high-energy orbit, a kick, equivalent to an additional 4cm length in a dipole in the cell between the two quads, was needed. As this is a quite large value, it was preferred to proceed with the two focusing quads displacements, than shim a dipole. The final alignment took place on Thursday, along with the DSO tests and the vacuum intervention for installing several coated vacuum chambers. The vacuum pressure dropped to acceptable levels on Friday morning and the beam was re-injected. It was verified that the applied alignment reduced the horizontal and vertical rms orbit at the flat top to 2.5 and 1.7mm for LHCINDIV and 1.7 and 1.2mm for the fixed target beam.

During the orbit measurement campaign, it was observed that the behaviour of the orbit during the ramp was strongly depending on the B-dot. It was suspected and then verified in a part of the

machine that a large amount of vacuum chambers are not correctly grounded and the isolation material in vacuum pumps is missing. This has to be verified and fixed during LS1.

During the whole week, a large amount of trips of the mains was observed. Most of these faults were reset without problems, but, in most cases, the origin of the problem is not yet clear. EPC and CO colleagues are still investigating.

The LHC multi-bunch beam was tried during the weekend but there is still work to be done for RF optimization and the transverse dumper settings.

### **LHC (M. Pojer)**

Machine is getting ready for operation

- All sectors cold
- Powering tests nearly finished
- DSO tests done.

Machine will be handed over for operation from Wednesday onwards

Check-out meetings will take place from today evening at 17:00