

Accelerator complex status

End week 37 (Sunday 18th September 2016)

TI (Chris Wetton)

Summary for the last week:

<https://wikis.cern.ch/display/TIOP/2016/09/15/TI+summary+week+37%2C+2016>

Linacs (Jean-Baptiste Lallement)

Linac2:

On Tuesday afternoon, the LEBT beam stopper FESA class crashed and triggered the source interlock (one hour stop)

During the technical stop on Wednesday-Thursday the source cathode and electrodes were replaced. We will see in the coming days how the new cathode behaves.

We had a 15 min stop on Saturday morning due to electrical perturbations.

Linac3:

Good performances over the week. The ovens were refilled during the technical stop. The RFQ tripped on Saturday noon during the electrical perturbations. It was restarted by PSB operators on Sunday morning.

LEIR (Sergio Pasinelli)

A light week for LEIR (Technical Stop).

- Measurements on the polarities of the combined sextupoles / skew sextupoles were done. All polarities are good.
- Refill of the Linac 3 source was done Wednesday.
- Recovery after the technical stop was short. Beam was back around 17h.
- Recurrent faults are present on ECooler solenoid ER.ECN20 and the cavity ER.CRF41.
- Linac 3 MD (TWTA) is foreseen from Monday to Wednesday.

Booster (Jean-Francois Comblin)

The main event of the last week was the technical stop. 2 important interventions took place:

- 2 wire scanners have been replaced and 1 moved. 2 of them still have problems. The specialists are investigating.
- To try to fix the synchronization jitter on Ring 1, a shield was placed on a phase pick-up, to reduce the perturbation of the magnetic field of the bumper slow which is next to it. Thanks to the work of A.Newborough, this gives very good results. Another shield for ring 4 is already available.

- The beam was expected to be back at 4PM, and was finally ready at 9PM. Several piquets and specialists needed to come. Isolde had to wait 5 hours to have the protons back, and the PS a few hours as it was ready before.

Other than that, the usual business!

PS (Heiko Damerau)

Besides the technical stop the PS had an average week with about 93% percent of user beam availability.

During the night from Monday to Tuesday in total 5 main 10 MHz accelerating cavities tripped together, four of them as part of the large tuning group. The RF specialist first fixed a problem with the cooling water circuit by cleaning it from pieces of the plastic joints. At the same time he identified an issue with a relay which bridges an interlock during few seconds when starting the coarse tuning power supply of the tuning group concerned. It took about 5 hours of downtime before a sufficient number of cavities was operational again and beams were put back.

A couple of trips of POPS caused about another 2 hours of downtime in total.

The recovery of beams after the technical stop on Thursday took longer than expected, but the PS had no major problems. The first beam to be accelerated were ions at around 19h00, followed by protons once the PSB was ready. By around 20h00 a single-bunch LHC-type proton beam was available again for the SPS, followed by LHC 25 ns BCMS (~21h15), TOF (~21h45), AD (23h00) and EAST (Friday 1h20) beams. A number of issues with various RF cavities (C10-46, C20-92, C40-78 tuning and the cavity gap of C40-78 stuck open, C205) were observed, with most of them resolved by the experts on Friday.

Since then, smooth beam production again over the weekend with a 1h30 recovery from a power glitch on Saturday.

SPS (Hannes Bartosik)

The week started with a 24h dedicated COLDEX run with LHC 25 ns beams. Thanks to the good beam availability, data with different beam intensities ranging from 0.7×10^{11} p/b to 1.5×10^{11} p/b could be recorded.

Tuesday was devoted to taking reference measurements of closed orbit, tunes and chromaticity with various cycles including single bunch coasts in view of the technical stop on Wednesday and Thursday, during which the broken support jack of the QF506 quadrupole was repaired and about 200 so-called soft-clamps were installed to electrically bypass the insulating flanges around the horizontal beam position monitors. The aim of this installation is to test the feasibility of permanently short-circuiting these flanges during a future shielding campaign for impedance reduction.

The recovery from the technical stop on Thursday evening took about 2.5 hours due to various issues in both SPS (problems restarting the mains, faulty MKD, ...) and PS. No major change of the machine behaviour due to the soft clamps could be observed in measurements performed at the restart, neither on LHC cycles nor on the SFTPRO cycle. However, as expected, the vertical closed orbit was modified due to the realignment of the QF506 and so TT20 had to be re-steered before the full intensity beam could be delivered to the North Area experiments at around midnight.

The rest of the week was rather calm. On Friday the RF expert readjusted the rephasing on all LHC beams following a modification during the technical stop, and the operations crew prepared the special low intensity / low emittance Indiv beam for the upcoming ALFA/TOTEM run of the LHC. The fixed target beam was running smoothly throughout the rest of the week with only minor interruptions. The only exception was the electrical glitch on Saturday morning, which resulted in about 1.5h downtime.