End Week 38 (September 20th) – Status of Accelerators

Summary

ISOLDE	Very good – REX delivered beam one day early. “I’ve never seen REX working so well”.
LINACS	OK
AD	Apart from injectors’ problems, excellent week with excellent beam intensity and stability !!! Happy users!
PSB	Basically a very quiet week with only 2 important events to report. One was a fire on the roof of the MPS building – see PS below.
PS	The PS had a quiet week during the 1st part (mostly MD time) and a more difficult second part with two long beam stops.
SPS	Busy week – technical stop, MD, back into physics with a couple of stops and a collection of glithces.
TI	Some problems – see below
LEIR & Ions	Good progress in SPS.

SPS (Django Manglunki)

On **Monday** during the PS MD, the SPS was in access. Out of the three magnets which were leaking water, two could be fixed (). The in situ repair of the third one () failed, but the leak is stable and can wait until the advanced technical stop in week 41.

At 17:15 a fire was detected in BA1. There was no real fire but a power supply in MKD control which had not switched off when the water had been turned off.

The first proton MD (RF, LHC beam) started at 19:00, after the MKP was repaired, and went well.

The following MD (collimators) was lost as the collimators could not be moved. The last hours were devoted to trying the ion coastable cycle at 120GeV/c (proton eq momentum). The hardware compensations were performed but no beam was injected.

The last two proton MD's (LHC sequencing & electron cloud studies) went OK but had to finish earlier (5:00 instead of 7:00) because of MKE4 temperature.

The ion MD started at 10:00 instead of 7:00 because of an extraction septum problem in LEIR.

In the end it was quite successful: after PS-SPS energy matching, tunes and chromaticities adjustments and lots of work in the Faraday cage, 4 batches could be injected, accelerated up to 177 GeV/u, and rephased.

Recover from MD on **Thursday** morning with a higher intensity on SFT was eventful: LSA problems (mode could not be changed until CO expert intervention), CNGS horn in local control, TT40 TED unmovable, faulty MKE4, spurious water interlock on TBSM & TBSJ, RBAC preventing access to interlock masks, TRX8 tripped...

The beam was back at 10:00, and practically tuned towards to the north area at 14:00, when MKD tripped. It was fixed 3 hours later.

On **Friday** morning the injection phase had to be modified from the Faraday cage for SFT and CNGS beams; the origin of the drift is unknown.

On **Friday** afternoon there was no beam from the PS between 14:15 and

19:45 because of a fire on the roof of a building in Meyrin; during that time the RF experts worked on the ion cycle in the SPS, with a short supercycle (CNGS+LHCION1) . At the time of restarting a BIC interlock from BA3 stopped the SFT beam. Fortunately Thomas Bohl was still in the Faraday cage and quickly identified the problem, coming from a beam quality monitor interlock which had been worked on during the afternoon beam stop.

On **Sunday** morning (7:38), a glitch on the mains caused the trip of all TRXs (except TRX6 !?), and also of the PS'MPS. The TRX were up within 10' but the PS was still down. The OP crew was unable to stop the SPS's MPS to save energy as the CIS application requested a specialist confirmation, which was eventually provided by Yves Gaillard who was on site for the PS's MPS. He had to reboot the old HP computer in BA3.

During both week-end nights, the CPS spill for CNGS suffered from an occasional bad structure, causing losses in the SPS and no extraction to the target; this was traced by the CPS crew to come from a bad synchro between the pedestal and staircase parts of the extrsaction fast bumpers (BFA9-21).

PS (Yannis Papaphilippou)

The PS had a quiet week during the 1st part (mostly MD time) and a more difficult second part with two long beam stops.

- On Monday morning, a 30min access was scheduled in order for the RF specialist to work on a 40 and an 80MHz cavity. It was apparent that for the second cavity (80-08), a longer intervention (~4h) was necessary as an amplifier was broken. This cavity was necessary for the subsequent ion MD's and an intervention was scheduled for noon (beam stopped at 11 in the PS for cool-down). After repairing the amplifier, the mechanical tuner was found blocked and was exchanged. The beam was finally back after ~6h. Another intervention of ~2h is needed for optimisation of the tuner position.

- On Friday afternoon, all beams were cut in the PS complex due to a fire incident in the roof of the MPS building. It was triggered following water-tightness works on a plastic cover of the roof in a room just next to the rotating machine (blg. 355). The workers on the roof put out the fire using the powder extinguishers at hand but which are not adequate for electrical equipment. The powder passed through the hole created by the fire and filled the room below. An oscilloscope and a spare power supply were damaged by the falling melted material of the cover. The powder had to be cleaned rapidly as it is extremely corrosive, especially combined with humidity. An expert gave us the green light for switching on the power convertors around 18:30. The ones connected with the PS (for two dipole correctors and octupoles) were tested and found ok. All beams were back after ~5.5h. The hole in the roof cover was covered by a canvas sheet and secured with heavy stones and a dehumidifier was installed in the room. Due to the rainy weather forecast of the weekend, the PS and TI-OP crew checked the roof and room at every shift.

- On Sunday morning and after an electrical network glitch, the MPS went down without a possibility of reset. The piquet PO was called and subsequently called an expert. The problem was found in the hydraulic resistance for the velocity regulation of the rotating machine. It was restarted and the beam came back after ~4h.

ISOLDE E.Piselli

GPS

Tuesday: Stable beam setup and radioactive beam to users (REX) in the evening (1 day earlier than scheduled! RECORD for REX!)

Wednesday: Beam to users without any problem…yield measurement done in the afternoon.

Thursday: Beam to users without any problem except from 13.00 to 15.00 when we have refilled REXTrap and REXEbis with LN2 and LHe. During this time HRS has used the central beamline with stable beam to ISOLTRAP.

Friday: Beam to users without any problem except from 14.00 to 20.00 when no protons due to fire in PS MPS building. At 20.20, according to users request I came in to change isotope and scale REX. It went very smoothly. Beam back to users at 22.00.

Saturday & Sunday: Beam to users without any problem.

HRS

Thursday: Stable from 13.00 to 15.00 beam to ISOLTRAP.

REX: Working very well all the time…nothing to mention.

Booster (Jocelyn Tan)

Basically a very quiet week with only 2 important events to report.

Monday : 1PM : The beam was cut for 3h45mn for an access into the PS

Thursday: 0:40AM : The acquisition of the magnet BT2.DVT10 went down to zero. Nothing was shown on Laser. Remote and local resets by the operator did not improve the situtation. The PIPO who was called changed a board in the power spply. Total down=time : 1h15mn.

Friday: Following a kind of beam loading observed the day before, which affected the user AD on ring 3, the RF specialists have worked on the C04/C16 cavities (phase+voltage) and improved the mean radial position.

2:25PM : After the workers' intervention for turning off a fire on top of the PS MPS building, the Linac power converter room was also covered with white powder. The linac bending LT.BHZ30 and 40 have been switched off. The cleaning team has first started to work on LT.BHZ20 and 30 as those were indispensable for proton operation. Finally, the beam was back at 7:50PM. Total down=time : 5h25mn.

Week end : Quiet. Only an electrical glitch on Sunday morning which affected a couple of cavities :BR1.C02 and BR4.C02 tripped. They went on remotely after 3mn.

Technical Infrastructure (Peter Sollander)

A couple of events last week:

• Sunday 13/9: Water leak in SM18, TI operator called by firemen (no alarms in CCC). Problem on water cooled bus bars on test bench. The TI operator on shift managed to find a piquet from TE who could close the valves. No damages on equipment apparently, but we will see there is a need for better monitoring.

• Thursday 17/9: He release in UX45 (~700m3) through faulty(?) release valve. Two interventions by fire brigade and gas piquets.

• Friday 18/9: Fire on the roof of the MPS building. Rende has the details.

• Sunday 20/9: Electrical perturbation, 4 hour stop of PS and SPS. Major event in preparation.

AD (Tommy Eriksson)

Mo: starting up for ACE; beam delivered at 21h due to PS being down 11-17 and some archiving problems + a disconnected MWPC. Intensities somewhat low.

Tu: tuning of ej. line => good intensity. Record AD intensity for 2009 : 4.9 E7 at 3.5 GeV/c, 4.3 E7 in ej.line.

We: PS beam available 24:00 – Thu 09:00 despite planned supercycle (ps md) having no AD cycle. Users somewhat miffed…

Th: FL called to fix power supply, 45' down.

Fri: 14:15 – 19:45: PS fire

Sun: 8:00 – 12:00: PS MPS.

+ a few short PS stops.

Apart from that, excellent week with excellent beam intensity and stability !!! Happy users!

LHC

S12: start commissioning of nQPS – current in quads (phase 1), dipoles starting on Wednesday. Phase 1 almost finished, good progress in mopping up numerous problems.

S23: phase 1 – starts this weekend

S34: 100 K

S45: 1.9 K

S56: nQPS partially installed. Phase 1 finished as far as possible. Triplet not yet available. Similarly LR5. Other misc problems.

S67: 90 K

S78: nQPS fully installed. Phase 1 almost complete. RB, RQF/QD ELQA today, phase 2 next week with a bit of luck.

S81: 4 K