

End Week 33 (August 16th) – Status of Accelerators

Summary

Overall – good performance.

ISOLDE	A few minor problems and one that caused technical intervention – HRS target. Apart from that the experimental run on GPS (IS476) has been smoothly running since Tuesday.
LINACS	OK – LINAC2 down for 11 minutes in the week.
AD	Continues well.
PSB	Misc problems but otherwise good – a lot of beam being delivered.
PS	Technical stop followed by MD. Friday magnet problem – fixed but no beam to EAST until Sunday.
SPS	Technical stop Monday followed by long MD. Ions injected successfully. Good performance established by weekend.
TI	Quiet week – no major events reported.
LEIR & Ions	Looking good

LEIR & Ions (Django Manglunki)

This week LEIR restarted only on Tuesday because of the technical stop.

It took the whole morning to fix the various elements which would not turn on (injection bumpers, electron cooling high voltage supplies), but since then the machine behave in a very stable manner, no major breakdowns to report.

Tuesday evening, after a short training session the machine was left under the supervision of the SPS operations team for the first time.

On Wednesday morning the energy matching between LEIR and the PS was finalised, the magnetic field had to be increased for both machines.

Also on Wednesday, the PS RF team has started to use the NOMINAL beam from LEIR.

Since there was an intervention in the PS from 15:30, LEIR has been turned off for the week-end at 16:30 by the SPS team.

Next week during the day both EARLY and NOMINAL beams will be requested simultaneously, respectively by the SPS and PS RF teams.

ISOLDE (Magnus Eriksson)

GPS

Tuesday:

Alarm at ICR because of a faulty power supply in rack YY06 - PS operator resets.

Saturday:

Vacuum in CA0.VS (main beamline) found in E-3mbar -range (normally E-6mbar), probably a false positive (workignset reporting wrong, faulty pressure reader?) Users take beam like before, to be checked with vacuum expert Monday.

HRS**Thursday:**

* A faulty gauge(G3) in RFQ section changed by Vacuum group, RFQ pumps OK!

* Target change fails after robot gripper fails to close, after intervention it is decided to postpone/plan further intervention until Friday.

Friday:

RP + 3 people from EN-STI and one BE/OP go on with robot intervention (08:30 - 12.00).

Robot and target is manually separated, target moved manually to storage shelf.

Moving table plate, rollers and magnet on frontend replaced.

Robot program adjusted with new parameter for vertical position of the target push/pull position, this changes height with around 2mm and now target change can be done without problems. Tested numerous times.

The cause for the robot problem is a probable movement of the different reference interfaces. i.e fatigue, ground movement (1-2mm) over the last 7 years.

SPS (Elias Metral)

After the injection stop on Monday, the first three days of the week were devoted to the third Long Injector MD, which went quite well. As it was the first week with ions in the SPS, it was first checked that the parallel LHCION cycle could be added at the end of the supercycle (composed of SFTLONG + 4 CNGS) without any change. To do so, four interlocks (SIS MAL1001M_CUR_INTOL, MBIV1003M_CUR_INTOL, QID1011M_CUR_INTOL and QIF1012M_CUR_INTOL) had to be masked. The reason was that the SIS iMin and iMax on LHCION cycle were the same as for the other LHC proton beams (i.e. corresponding to 26 GeV/c instead of 17 GeV/c). This issue was finally solved on Friday by adding another beam (LHCION) in the SIS interlocks (for the TT10 currents surveillance), where iMin was put to 400 A and iMAX to 650 A.

On Tuesday, during the UA9 studies, there was still a problem with some BLMs, as some negative signals in BLM524 were observed (as it was already observed in previous studies) when the collimator was moved. This issue, which is quite important for loss maps studies, is now followed up by B. Dehning.

On Wednesday, a vacuum problem was observed in BA80. The vacuum valves in the North Area (VVSA 240102, VVSB 220431, VVSB 211625, VVSA 250117, VVSB 230102) were all closed. An increase of the pressure in the sector 2040 could be observed. Ionic pumps were all switch off and the Vacuum Piquet was called. After few hours it was found that the position of the vacuum leak was 240400. The leak was fixed by screwing the below. In the evening, the vacuum leak reappeared and

it was decided to make an intervention on Thursday morning to change the bellow. This was done and the reason of the leak was found to be a cable, which was rubbing.

During the night between Wednesday and Thursday, we tried to read the SPS machine timing offset (SX.CZERO-CTM, which should be 1670 ms since the 2009 start-up) with the passerelle. After a read the offset was corrupted and set to zero (even if the min value was said to be 100 ms) and we could not set back the value to 1670 ms (as it was said that we had no write access). We managed to reload the table using the BRED (with the help of I. Kozsar) but in fact this value was not really taken into account from the hardware. Finally, we managed to write back 1670 ms using the "passerelle".

On Thursday, the SFTPRO and CNGS beams came back only in the afternoon. In the evening, huge losses were observed after the second injection, which were due to a problem with the vertical damper V1.

On Friday, the intensity on CNGS was reduced in the morning (from 2300 to 1800) due to an RF intervention on the transmitter TRX2 and 3. At 16:00, the intervention on TRX2 and TRX3 was finish, but due to a problem in the PS the beam came back in the SPS only at 22:00.

The week-end was quite, with only some small problems with the T10_FAN_ON Interlock on SIS and a PFN 2 Clipper switch Anode heater fault on the injection MKP kicker.

Booster (Jocelyn Tan)

Tuesday 11th

The pumping of TT70 was completed late in the afternoon. Isolde could take the beam at ~8PM.

During the morning the transformer of BI2.SMV has been replaced by the specialist who diagnosed breakdowns. Although the down time was ~3h, only the LHC25 user was affected.

Large intensity fluctuations at injection were caused by B-field fluctuations : the specialist has identified one thyristor of bank 5 which was not working. He switched to another bank. The MPS was off for 5mn.

BT.QNO30, after being powered by its spare power supply the day before, the specialist has switched back to the normal device. Down time 30 mn. There was no consequence for the users as the PS was stopped + SPS was on coast.

Wednesday 12th

Early in the morning, BTY.QFO148 was not powered with the required value. The operator had to go locally for resetting a CPU board. Down time for Isolde : 1h30

Thursday 13th

In the afternoon, the specialist has changed a power supply of BE.SMH. The beam was cut for 15mn.

In the shadow of this, Alan has replaced a defective potentiometer of an RF board (PLA).

Friday 14th

There were complains about the B-field instability at extraction. Specialists of LLRF, B-train and MPS have checked all their respective relevant parameters and concluded that the B-field at extraction is stable within +/-0.5Gauss.

Measurements with the samplers gave +/-0.7Gauss. So the magnetic field at extraction is well regulated.

In the afternoon, there was no beam for ~6h for an intervention into the PS.

Week end : very quiet.

PS (Rende Steerenberg)

The week started with a technical stop for which all PS beams were cut at 6:00 for access at 08:00

Many interventions took place during this stop among which the change of a motor in one of the Ps ventilation changes. This was a major intervention and caused the stop to be a bit longer as the machine could be restarted around 17:30.

The technical stop was followed by an MD block until Thursday morning, during which the machine performed well. During the night from Wednesday to Thursday there was a timing problem concerning the offsets between the machines of which the origin is not yet understood, but hits was solved the same night.

The restart after the MD was correct and the machine ran well for all the users until Friday towards the end of the morning, when the power converter of the slow extraction sextupoles started tripping more and more frequently with a magnet interlock. All beam were stopped in the PS around 15:05 and the machine was accessed several times starting at 15:50 in order to investigate the cause of the trips, which was quickly thought to be a loose contact. On the magnet side or the interlock electronics side. Later it turned out that one of the thermal switches in the magnet in SS7 was the cause. There were two problems with this switch, 1) it did not work correctly anymore, 2) it was moving within the coil risking to damage the coil insulation. It was therefore decided to bypass the switch and to glue the it in the magnet and avoid a magnet exchange which would require a much longer intervention and lead time. The other choice was to postpone the repair until Monday, but this would mean that there would be no beam to the East Area until well after the repair (i.e. approximately Wednesday) and again the cool down time. The magnet was repaired on Friday evening and was finished at 22:00 when all beams except the East Area beam were restarted. The restart of the magnet and therefore the East Area beams was made Sunday morning at 08:00 for the glue to dry and harden.

Sunday morning around 11:00 the wire or the wire scanner H64 was most probably broken. More detailed investigations will be made this morning. In the afternoon there were another two stops. One on an RF front end that needed to be rebooted and a second on one of the PFW's for which the piquet power was called who switched the FNI to the spare converter.

LHC

Sector 12 – ELQA and bits and bobs this week. LSS powering tests to start Friday. Hope to start QPS ISTs next week in parallel with powering tests.

S23 – springs, doors, cool-down resumes today.

S34: springs & b n b, flushing++, cool-down starts next week.

S45: sealing, BLM tests, springs

S56: springs, QPS cables, now at 20 -30 K, RRR measurements en passant

S67: cool-down started Saturday

S78: started filling last week, springs on LSS, GIWCC test next week.

S81: flexible repair to plan, leak confirmed on hose, 2 distinct leaks, beam vacuum checked with endo, fixed by tomorrow, under vacuum by middle of next week. Start cool-down in arc. Fair bit of consolidation to do this week (doors, cleaning, alignment etc.)

QPS testing to start this week – installation to start Monday.