Accelerator complex status

End week 34 (Sunday 28th August 2016)

TI (Ronan Ledru)

Summary for the last week:

https://wikis.cern.ch/display/TIOP/2016/08/26/TI+summary+week+34%2C+2016

Linacs (Rolf Wegner)

Linac2 was running quite well until the weekend.

- The cathode resistance increased further at the beginning of last week so that we reduced the cathode heating on Monday slightly from 48.0 A to 47.5 A in order to save the cathode until the next technical stop. The cathode resistance and beam intensity stood approximately constant over last week.
- On Tuesday the RFQ suffered ~10 min from discharges.
- On Saturday intensity fluctuations started. They come from the source which seem to deliver either 250 mA or 270 mA. I did not manage to improve the behaviour with the typical parameters (gas flow, cathode heating, Arc current, Main magnet current). Investigations are ongoing to find the problem and solve it.

Linac3 is running pretty well.

- On Monday morning the power supply of the extraction solenoid had to be repaired.
- Otherwise a few resets.

The intensity at the end of Linac3 (BCT41) was typically 28 mA.

ISOLDE (Erwin Siesling)

GPS:

Using a used Pb target #577 which is on the front-end for the third time this year. Running with STAGISO proton beam from PSB.

Difficult set-up due to unexpected wide beam coming from the target. Previous settings from the runs earlier this year could not be used. However, careful and long tuning into the experiment through their collimator paid off and the users at the LA1 line (IS521 experiment) had finally a very good radioactive 183Hg beam by Friday.

From time to time beam to the GLM line for biophysics (LOI161 experiment) when LA1 was not taking.

Issues:

When trying to do the proton scan the tapestation stopped working saying 'tape full' after long investigation it was found that the PLC had stopped working which caused the issue. Many thanks to Gerrit Jan Focker from BI for his patience and help.

Another issue is the extraction electrode which moved in a few times, very close to the target (at 64mm), with a completely different CCV value send (125mm). Investigations by Christophe Mitifiot (EN-STI-ECE) did not lead to a conclusion yet.

The target line dropped to 0A once on Saturday and both the line and target dropped to 0A last night.

Unfortunately the tape of the tapestation at the experiment broke twice. On Friday night, which was repaired on Saturday morning but also on Saturday afternoon again which is being repaired as we speak.

HRS:

Was in standby till Thursday when we performed a target change for a used UC target #573. A few issues during the target change:

- Target #579 did not unclamp easily. Somehow the target unclamped a the moment we opened the shutter again for a second unclamping sequence. The target valve closed by itself and the target was arranged on the shelf and after re-closing the shutter by using the intervention settings the target #573 could be clamped.

- However, the used target #573 showed a leak when trying to pump the sector. Friday tests were done with another target to exclude the HRS front-end from having a leak. Today at 10h another production target will be mounted on the HRS front-end for the upcoming run.

LEIR (Steen Jensen) – see below

Booster (Alan Findlay)

It's been a good week for the PSB with only around 30 mins of downtime for the machine, most of which was due to a power glitch Friday morning that took out our cavities for 20 mins.

The only other issue to mention is the beam intensity fluctuations we're getting from the Linac, which was first noted on Saturday evening. The operators were in touch with Rolf, but there wasn't much he could do at that point, so they set the PSB comparators to try to filter out the large intensity shots for the LHC. Rolf was in again Sunday morning and seemed to find a reasonable compromise by reducing the arc current that would see us through until today. We've understood the L2 team will get together this morning to take another look, so I'll keep in touch with them.

Otherwise the machine has been behaving herself, probably still due to the holidays.

PS (Heiko Damerau)

The PS had a good week with almost 97% of beam availability.

The only major downtime was caused by the vertical wire scanner SS85 which did not move back to its home position due to a power supply issue. On Tuesday evening the AD and TOF beams had therefore been stopped during 1h40 for investigation. An access to move the wire scanner back manually has been organized on Wednesday morning during which also the broken power supply was exchanged.

Despite the smooth access of about 1h30, POPS could not be restarted thereafter, requiring an intervention by the power piquet. An interlock from a cooling ventilator prevented the restart and was found to be caused by a circuit-breaker supplying the fan

The total length of the beam stop for wire scanner and POPS interventions was about 3h00.

An intermittent fault of the 10 MHz cavity C10-86 is under investigation and the anode power supplies of C40-77 and C80-08 had to be swapped on Wednesday afternoon. All 40 MHz and 80 MHz are available.

During the rest of the week, all beams were delivered smoothly.

Various beams were prepared for PS and SPS MDs: 8b4e, bunch rotation with both 40 MHz cavities, 2 bunches spaced by 100 ns for PS ion MDs.

SPS (Django Manglunki)

An interesting week for the SPS.

On Monday 22/08 in the morning, several fixed target cycles were lost due to subscription data arriving too late for SIS analysis. At 13:25 the fixed target intensity was raised to 1.2E13 in the CPS. At 13:50 a dump of the full SFTPRO beam at high energy caused a pressure step at the TIDVG, above the 2e-7 Torr interlock threshold. As the pressure seems not to recuperate but to stay above 2e-7, the beams were then stopped for the whole afternoon. After discussing with EN/STI and TE/VSC it was agreed raise the interlock threshold to 2.5e-7, and restart with lower intensities: 5e12 for fixed target and the equivalent for the LHC (i.e maximum 48 bunches of 1.0e11 protons). At 17:30 the reason for the missed SIS subscription data was found by BE/CO to be a development system running an additional client.

On Tuesday 23/08 at 9:00 the intensity of SFTPRO was raised to 1e13/cycle. At the same time it was agreed to deliver up to 96 bunches of 1e11 (or 72x1.1e11) to the LHC, but the LHC was in MD and only requested single bunches. At 14:30 a first test of injecting the "nominal" ion beam (4 bunches spaced by 100ns) in the SPS was successful. At 17:30 EN/STI agreed to let us increase the SFTPRO intensity to 1.5e13/cycle.

On Wednesday 24/08 morning at 8:30 an access in BA5 was organized in the shadow of a PS beam stop, to try and identify the culprit for the increasing vertical orbit distortion. It was found that one of the three jacks supporting QF50610 had collapsed by 4mm due to a deteriorating polyurethane ring (picture below). The jack will be changed during the technical stop but it was decided to try and get a support crash-manufactured to stop the jack from collapsing any further. The PS access was over at 11:00 but followed by a 1h POPS stop. Once the CPS beam came back, the SPS experienced an MKP problem that needed a thyratron exchange, so the beam could only be delivered to the users after 13:30. At 15:00 it was agreed to increase the SFTPRO intensity back to 2e13.

Thursday 25/08 in the morning special INDIV beams with low emittance and low intensities were delivered for the LHC MDs. The ion commissioning went on with the rephasing of the pilot beam.

In the evening the 800MHz RF cavity nr1 was down and the specialist together with the RF power piquet decided to switch to cavity 2.

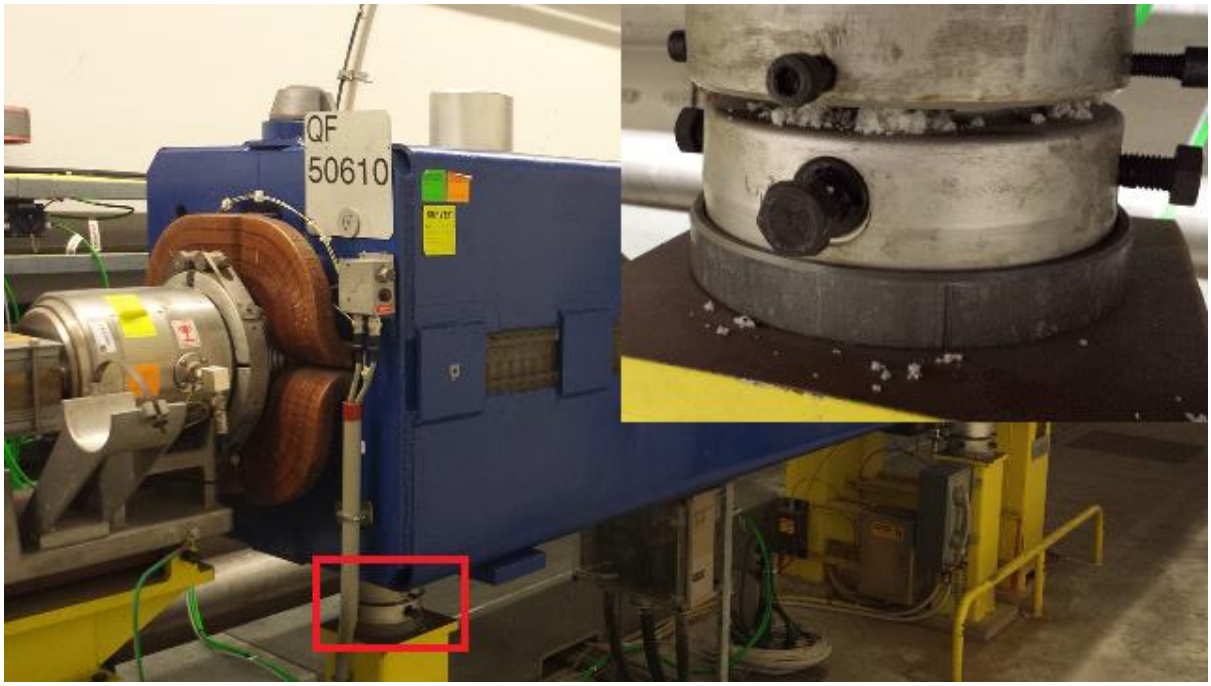
On Friday 26/08 morning 800MHz cavity nr 1 was fixed so both 800MHz cavities are now operational again. An access was organized in BA5 to install a support for QF50610, and to allow EN/CV to empty a sump.

A fixed target ion cycle was tried in the supercycle but it was not possible to play it in parallel with the SFTPRO beam, because of a new ZS interlock. Also it turned out the LSFB sextupoles tripped often on that cycle due to an overshoot happening in the beam out segment. The EPC specialist has been contacted by e-mail. Due to the access and the LSFB problem there was no beam from 9:00 to 12:00. On Friday afternoon took place tests of rephasing the ion pilot beam with low intensity by scraping at the end of the ramp. The pilot beam can be synchronized with intensities down to 3e9 charges/bunch.

On Saturday 27/08 at 14:00 beam was stopped for 50' by a missing trigger on the injection kicker. This had already occurred on 14/08 and was traced like the previous time to a missing revolution frequency distribution, eventually solved by the LLRF specialist. In the evening the intensity delivered by the LINAC became very unstable, and eventually at 20:30 several dumps caused a pressure increase on TIDVG. It was then decided to stop the SFTPRO beam while filling the LHC.

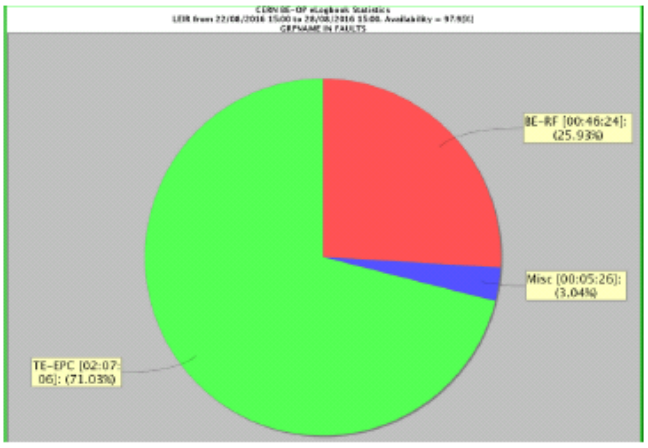
On Sunday 28/08 morning at 10:00, as the intensity delivered by the PS complex was becoming too unstable, it was decided to decrease the SFTPRO intensity, in order to limit the number of dumps.

There was a short (15') beam stop at 7:00 on Monday 29/08 morning due to too many erratics on MKP. The ABT standby person was able to reset the fault remotely.



QF50610 with its collapsing jack. One can see the polyurethane flakes from the deteriorating ring at the base of the jack.

LEIR summary, Steen Jensen



LEIR summary – week 34, 2016

- Tuesday, August 23rd 2016
  - Issues
    - Nothing to report
  - Activities
    - Resonance studies
- Wednesday
  - Issues
    - Nothing to report
  - Activities
    - Resonance studies
    - MDOPTIC development => First circulating beam with new optics
- Thursday
  - Issues
    - 08h17, 10m – ER.CRF41 tripped => remote reset => OK
    - 08h35, 2h – ER.QFT23 & ER.QFN2344 tripped => remote reset => no effect => PiPo called => electronic cards changed => OK
    - 23h33, 10m - ER.QFT23 & ER.QFN2344 tripped again => remote reset => OK
    - 23h42, 10m - ER.QFT23 & ER.QFN2344 tripped again => remote reset => OK
  - Activities
    - Tune shift measurements, beam to sps
- Friday
  - Issues
    - 08h00, 45m - ER.QRF41 tripped => remote reset => OK
    - 22h33, 5m - ER.QFT23 & ER.QFN2344 tripped again => remote reset => OK
    - 22h44, 5m - ER.QFT23 & ER.QFN2344 tripped again => remote reset => OK
    - 23h00, 5m - ER.QFT23 & ER.QFN2344 tripped again => remote reset => OK
    - 23h13, 5m - ER.QFT23 & ER.QFN2344 tripped again => remote reset => OK
  - Activities
    - Resonance studies
- Saturday
  - Issues
    - ER.QFN2040 tripped => remote reset => OK
  - Activities
    - Resonance studies
- Sunday
  - Issues
    - LN3 source off => LEIR put in access mode in preparation for Mondays accesses (beam stopper check & pick-up test) during LN3 oven refill
  - Activities
    -
- Monday
- Tuesday