

Accelerator complex status

End week 44 (Sunday 1st November 2015)

TI (Jesper Nielsen)

A quiet week in TI:

<https://wikis.cern.ch/display/TIOP/2015/10/26/TI+summary+week+44%2C+2015>

Linacs (Detlef Kuchler)

The linacs had an eventful week.

Linac2

- Monday the Buncher1 and the RFQ tripped and needed a reset (7min).
- In the night to Tuesday all the RF tripped. The reference amplifier was broken and needed to be replaced. Unfortunately the spare died immediately. So a kind of bricolage had to be installed. 8h 10min downtime.
- Wednesday two times tank1 tripped and needed a reset (17min).
- Thursday the bricolage was replaced by a proper solution (1h downtime). But the spares still need to be repaired.

Linac3

The ovens showed signs that we would not have been able to run the source much longer.

So it was decided to refill both ovens Monday afternoon. Tuesday morning the source was restarted and the beam was back at 8:49. Since then the source was quite stable with good intensity (22-24em μ A in ITF.BCT25). Only one source trip (Thursday night, reset by the SPS operator) and the trip of ITF.BHZ11 (last night, PI/PO is working on it while I write).

LEIR (Jerome Axensalva)

It is was a quite short week for LEIR, on Monday: ovens refill and on Tuesday half of the day was lost due to the EN/EL intervention.

Hopefully with had no technical issues and the crash program continued to run as scheduled in parallel with the SPS beam production which is sometimes "acrobatic" (and stressing) to try to satisfy everybody needs...

We are still investigating in all directions to increase beam intensity.

This week, we will discuss ASAP with vacuum experts to check the LEIR's vacuum health and evolution over the last months but till now, we have no obvious clue.

ISOLDE (Emanuele Matli)

Tuesday

- Protons available from ~3PM due to a problem with Linac2 RF and an intervention on an Electrical sub-station.

- Beam to Miniball from 3 to 9PM.

Wednesday

- Beam delivered to Miniball at 10AM, after setting up a slow extraction ($\sim 150\mu\text{s}$) to avoid pile up of events in their detector.
- Superconductive cavities switched OFF at 4PM and rescaled the machine to deliver Zn at 2.85MeV/u.

Thursday

- Back to full energy of 4MeV/u and smooth restart. Beam to Miniball at 10AM.
- Pause of 1h immediately after due to an urgent intervention on Linac2.
- Restart at 11:30 and run until 5:30PM.

Friday

- Early start of HIE to leave room for afternoon's interventions. Beam to experiment at 8:45.
- Stop of protons at 14:30 to fix the faraday cup in XT01. Everything went well, sector was checked for leaks and let to pump down during the w/e.
- In parallel attempted target change on HRS but impossible to pump due to a leak. Not clear if the targets are faulty or the problem is on front end. Will try again Monday with a target we are sure is not leaking.
- Started to set up the machine with $14\text{N } 4+$ for Monday's run with $76\text{Zn } 22+$.

Quiet w/e with no clients.

Others: recurrent problem with BTY.HHZ211.

Booster (Jean-Francois Comblin)

We had several downtimes last week, hopefully not affecting the LHC operation:

- Tuesday morning: 12 hours due to the Linac 2 Dressler amplifier, the ME9 substation intervention and 1 hour restart of the Booster.
- Thursday morning: 1 hour to switch back to the original Dressler amplifier.
- Saturday night: 2 hours due to 1 ejection kicker (1 power supply changed by piquet).

Lots of MDs:

- Measurements of PSB brightness curve.
- Hollow beam.
- Booster injection as a function of de-buncher phase.
- PSB synchro optimization.

Beams:

- All operational beams in specs.
- Optimization of MTE beam (losses and vertical

PS (Rende Steerenberg)

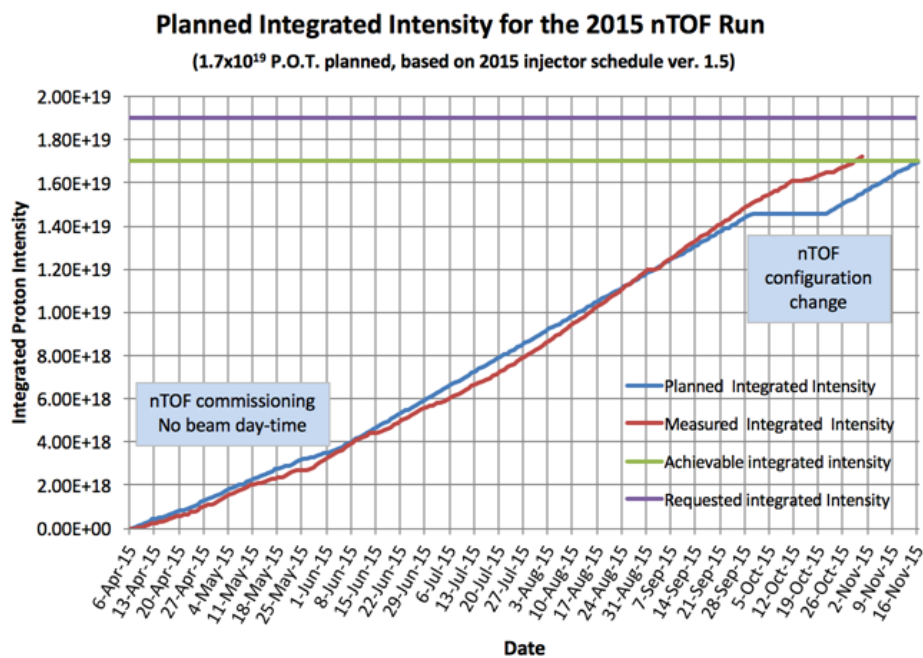
With an average beam availability out of the PS of 91% was the previous week quite good, despite repeated problems with LINAC2. The major sources of down time were the LINAC2 issues and the EN-EL intervention on the ME9 station that was brought forward in order to be at least partly in the shadow of an intervention on LINAC2.

For the PS the main issue of the week was the bad cycling of six of the TT2 power converters, causing losses and fluctuations on the different beams among which the MTE to the SPS. At the end of the week all these problem are still not fully solved and work will continue this week. Some stop of 1 or 2 hours may be requested for this.

Besides all operational beams were also the 36 bunch and the BCMS LHC beams delivered for LHC filling. Also work on the MTE side continued with the deployment of the modified extraction bumps on all operational users, with as last step the AD beam, allowing the extraction septa to be in shadowing mode.

The Pb ions are also routinely delivered to the SPS.

Another good news is that on Thursday we have reached the committed amount of protons on target for nTOF, which was set to 1.7×10^{19} pot. Beam delivery will of course continue as before with the aim to try to reach 1.9×10^{10} pot, which was the amount of pot for 2015, requested by nTOF.



SPS (Benoit Salvant)

It was a reasonably good week for the SPS.

4*36 bunches as well as BCMS 2*48 bunches were sent to the LHC and the MTE beam was provided to the North Area with in general 94 to 97% transmission.

The cycle for the UA9 coast was prepared so that setting up can take place this coming Monday, and work on the ion cycles for LHC continued. As discussed with the physics coordinator, more time is

needed before the end of the proton run to advance the setting up of both the SFTION and LHCION2 cycles.

A few technical issues to note this week:

- On Monday, 2 h were lost for the North Area due to a problem with the MST and MSE septa cooling water. The specialist was called and fixed the problem that was linked to the recent circuit purge.
- Later that day, a radiation alarm level is reached in H6 when the duty cycle for the North Area is maximum and in a specific secondary beam configuration for H6 and H8. In this configuration, the intensity for H6 had to be decreased, causing complaints from NA62. During the night, the alarm could not be reset and the piquet RP had to come to the CCC to restart the ARCON server in BA81 (1h30 min without beam to the North Area).
- On Tuesday, it was decided with the other machine supervisors at 10:00 to profit from the Linac2 stop to perform the electrical intervention on the ME9 that was discussed at the FOM. All other requested interventions in the SPS could also be slotted in (in particular collimators in BA5, TRX6 transmitter, Access in TAG42 for network connection). TE-MS also surveyed the ring and found two small water leaks and a broken shim which were repaired in-situ. Beam was back at 15:20 for the North Area.
- The setting up of the BCMS beam caused trips and problems with PS cavities, which in turn caused radiation alarm in the SPS (ECX4).
- On Wednesday after the dedicated MD (ion cycle for LHC), the emittance of the MTE beam was reduced in the PSB, which yielded good transmission, but an issue with the tune in the PS yielded the core intensity to be much too high. Since the problem was not resolved, it was decided to switch to CT during the night to provide beam to physics.
- On Friday, following the very large TDI8 vacuum spikes at LHC injection, the RF low level specialist took the time to perform a proper setting up of the longitudinal parameters of the 4*36 bunches. He noticed that the PS extraction kicker was still set up for 72 bunches. Reducing the kick length to 36 bunches reduced the amount of beam captured in wrong buckets behind the extracted batch to LHC. The following injections did not cause as large vacuum spikes, and it could be that this setting up helped reducing the beam sprayed onto the TDIs at injection. To be followed up.
- On Friday evening, the MKP4 generator could be restarted by the piquet (1h without beam).
- On Saturday, LHC asked to increase the intensity from $\sim 1.15e11$ p/b to $1.2e11$ p/b.
- On Sunday, TI prepared an access in TCC8 as there was an alarm level 2 on the temperature of the cooling water of the T10 target: temperature went above 35 C instead of the nominal 27 C. A CV valve seemed to be blocked (VMB0801). Since, there is the UA9 run on Monday, the intervention could take some time for radiation cooldown for both COMPASS and NA62, and the T10 temperature has been oscillating and reaching close to similar levels in the past, it was decided to plan the intervention for Monday morning, while reducing the intensity on T10 to keep the temperature reasonably low until the intervention.

There were again QF ripples throughout the week and TE/EPC was notified as requested.