

# Accelerator Complex Status

## End week 35 (Monday 4 September 2017)

### TI (Jesper Nielsen)

A reasonably quiet week for the technical infrastructure.

Details: <https://wikis.cern.ch/display/TIOP/2017/09/04/TI+Summary+Week+35>

### LINAC2 (Detlef Kuchler):

Very good week. Only on Monday evening there was a 30min downtime.

The RF tripped due to some vacuum interlock. There were some pressure spikes recorded on Tank1 and one of the ion pumps tripped. The RF could be reset and the ion pump was restarted the next day.

### LINAC3 (Detlef Kuchler):

Until Wednesday no problem. On Wednesday the RF instabilities due to ageing RF tubes seen in Tank1 became so serious that it was decided to change them.

Unfortunately one of the replacement tubes was damaged before and during the start-up of the amplifier an insulator inside was destroyed. As there is no spare a new one has to be produced.

The present estimation is that the beam will be back this Friday.

### LEIR (Steen Jensen):

It was a quiet week with little beam time.

Issues

- Tuesday, August 8th 2017: Nothing to report
- Wednesday PM: No beam (changing LN3 tube amplifier tank 1)
- Thursday: No beam (changing LN3 tube amplifier tank 1)
- Friday: No beam (changing LN3 tube amplifier tank 1)
- Saturday: No beam (changing LN3 tube amplifier tank 1)
- Sunday: No beam (changing LN3 tube amplifier tank 1)
- Monday: No beam (changing LN3 tube amplifier tank 1)

Activities

- Test for BPM charging effect (inconclusive).

### PSB (Vincenzo Forte):

A calm and overall positive week for the PSB with 98.4% availability.

Main issues:

- The breakage of the wirescanner R2H on Monday night. BI team will try and substitute it during the incoming technical stop along with the prototype wirescanner.
- Beam inhibit happened on Tuesday for ~1hr45mins. It was caused by access to the switchyard following a PS request for exchanging a tube in cavity 36.

Many MDs were scheduled and performed last week, like emittance measurements along the cycle, finalisation of BCMS 1.5 eVs, RF tests and MTE optimisations.

### **ISOLDE (Emanuele Matli):**

After last week's troubles setting up the beam the experiment on XT03 has been running quite smoothly. Some minor tuning was necessary and we run into some minor issues like line heating drop and some RF amplifiers trips. They will continue taking beam until Monday morning.

A new Target has been installed on HRS and is now ready to be set up.

### **PS (Heiko Damerau):**

Another very good week for the PS with an average beam availability of 98%.

No beam could be delivered to TOF on Monday evening during 0h25 minutes due to the power converter of a quadrupole (QF0415S) in the FTN line.

On Tuesday a short access was required to exchange the final amplifier of the 10 MHz cavity C10-36 causing a total downtime of 2h.

Again some resets to restart the pole face winding circuit PR.WFW were needed. The circuit is still running with the spare power converter and it is planned to switch back to the operational one this morning.

The 8b4e 56 bunch beam has been re-checked and a blow-up of the horizontal emittance could be reduced by adjusting the low-energy quadrupoles. This beam has also been taken by the SPS on Friday.

On request of the experiment in the T9 branch of the east hall, which will finish on 13/09, as many EAST\_North cycles as possible are produced in agreement with the physics coordinator.

### **AD (Lajos Bojtar):**

The AD has been running well this week. The few problems worth to mention were the following:

- The injection kicker went down often, causing radiation alarms. Friday evening a thyatron finally broke down and it was running without spare module. After that, at the next break down the specialist came in. He understood the problem and since that the kicker has been running well.
- The injected intensity varied sometimes about 20 % , this problem is coming and going, its not always there. This seems to be a regulation problem of a power supply in the injection line. To be investigated further this week.
- All stochastic cooling amplifiers went down, and we lost the control of them too. This was fixed in about a half an hour.

### **SPS (Verena Kain):**

Week 35 was very good in the SPS with an availability of more than 95 %. The main faults are again from injector chain. Second place is the RF system this time. This is due to a scheduled intervention of 2 h last Thursday, where a limitation against overdriving the new solid state amplifiers was implemented in the low level.

The configuration issues with the 50 ns LHC cycle and the RF interlock as well as the revolution frequency missing with AWAKE in the super cycle followed by MD2 were solved already on Monday.

During the MD on Tuesday to measure the tune shift in the SPS with intensity, experts found that the chirp signal was not properly configured (had not been for years) and repaired it. Also, Gerd from the damper team finalised the FESA class to automatically measure the tune bunch-by-bunch from the injection oscillations in both planes with the damper pick-ups every cycle. Both efforts are very appreciated and much improve our tune diagnostics.

AWAKE has been running all week on and off with bunch intensities of up to  $\sim 3e+11$  and emittances for that intensity of  $\sim 2 \mu\text{m}$ . The 8b+4e was taken again on Friday with a bunch intensity of about  $1.2e+11$ . The emittances had been improved in the PS and are now  $\sim 2 \mu\text{m}$  in the horizontal plane and  $1.8 \mu\text{m}$  in the vertical plane.

Since Wednesday evening the quality of the fixed target beam with about  $3.4e+13$  is also very good from the PS and a transmission of more than 96 % could be achieved in the SPS. On Friday intensity fluctuations at 70 Hz appeared on the slow extracted spill linked to a ripple at the same frequency of the SPS main dipoles. The EPC experts investigated and removed finally SMD11 from the configuration. But already before, the amplitude of the 70 Hz bump had been reduced. Since then there is no more issue in this frequency range.

The MD with the partially stripped Xe ions could not take place with beam due to a problem of a LINAC3 RF amplifier. The cycle was however played and checked without beam. It is ready.

We notice that more and more reboots of the wire scanner front ends are necessary to acquire reasonable data.

### **LHC (J. Wenninger and M. Zerlauth):**

The week started with smooth operation using 1550 bunches per beam, delivering 300-400 pb<sup>-1</sup> per day. Unfortunately, in the night from Wednesday to Thursday 3 consecutive ramps were lost on 16L2 prompting a reduction of the number of bunches to 1164b Thursday morning that could be recovered to 1550 bunches again before the weekend. Unfortunately, during the weekend beam was lost again on consecutive ramps and the number of bunches was lowered again to 1164 bunches on Sunday evening.

Saturday evening an issue with the standby cryo station P18 had some problems and required investigation

Despite the issues, the machine availability was 80% with 57% of time in stable beams. The integrate luminosity passed the 20 fb<sup>-1</sup> last weekend.