

Accelerator complex status

End week 43 (Sunday 26th October 2014)

TI (Jesper Nielsen)

<https://wikis/display/TIOP/2014/10/22/TI+summary+week+43%2C+2014>

Fairly quiet weekend in TI, a few interventions here and there, but all without stopping any machines.

Linacs (Jean-Baptiste Lallement)

Very good week for both Linac2 and Linac3. Very smooth operation and nothing special to report.

AD (Bruno Dupuy)

Back to normal after power cut of the last week. This week the machine asked monitoring at all times, and much more....

Here are the actions of the week.

Monday 20 ;

- Bad pressure in beam-line BASE, the DE0.VPG25 pump is broken.

Tuesday 21;

- We had some problem with monitor DE0.GEM107 (grid pickup) not completely operational (after power-cut). The ALPHA setting had to be adjusted several time.

Wednesday 22:

- The orbit of the machine at 300MeV and 100MeV changed suddenly. Corrector DR.DHZ2908 magnet seems to be the origin. This could be the origin of the instabilities of extraction.

Thursday 23

- Partial power failure in the building 193. The patrol is lost for the ring.
- For the second time, the Tune power supply was broken on C02 cavity,

Friday 24

- The extraction septum does not start because there is poor water flow.
- Vacuum pump failure on extraction BASE line prohibiting the beam during this weekend.

Sunday 26

- Low voltage on power-supplies "stochastic cooler" requires OFF/ON in local.

LEIR (Django Manglunki)

An eventful week for LEIR. The ANOMINAL beam was kept operational for the PS and the SPS, while some MDs were performed on the AMDNOM user. It turns out the injection settings have to be retuned daily.

- On Monday 20/10 during the weekly Linac3 MD, access was given to TE-ABT to upgrade software for the extraction kickers. Access was also granted to TE/VSC to fix a vacuum pump which had suffered from the power cut. Beam was back at 17:00. ETL.BVN10 tripped and needed intervention of TE/EPC. When it came back up it turned out to give 2/3 of the requested current. This was due to the fact that this power supply consists of 3 modules in parallel, one of which out of order, and no more spare available after the power cut. Meanwhile, at 19:00 the power supply of the injection septum SMH11 tripped too on a magnet fault, and it was decided to keep the machine in standby and wait for the next morning to have the specialists intervene.
- On Tuesday 21/10 Th. Masson accessed at 8:00 to fix the problem on SMH11 (low pressure on demineralised water). The machine was restarted after calling the EPC piquet once more, this time for SMH40 which had tripped. The Electron Cooler had tripped too but could be restarted remotely. A temporary solution to work with ETL.BVN partly broken consisted in applying a reference of 150% of the requested current. At 12:00 EPC was able to fix one spare and install it in ETL.BVN10. In the afternoon A.Frassier started a test campaign on the ionisation profile monitor (IPM).
- On Wednesday morning we notice the injection efficiency had dropped at 06:00 when the supercycle was changed for the weekly injector complex MD. The injection line had to be retuned. In the afternoon BI changed the TRIC card for EE.BCT10 which was noisy and made the measurement too optimistic. At 17:30 one of the extraction kickers, ER.KFH32, tripped and could not be reset. The main switch thyatron has to be changed. In the mean time we work with only two kickers, a higher voltage (70+80 instead of 3x53kV), but one of them, KFH31, trips often, fortunately remotely resettable. The thyatron will be changed on Monday 27/10 during the Linac3 MD.
- On Thursday the ANOMINAL beam was sent to the PS for the SPS setting-up. In parallel A.Frassier resumed IPM tests, and TE/EPC was called to have look at large 50Hz ripple on ETL.BHN10, observed in the CCC via samplers & OASIS. According to TE/EPC, this ripple comes from the sampler as it cannot be observed locally.
- On Friday after another round of injection line retuning as very good beam ($>2E10$ charges/pulse) was routinely sent to the PS for SPS setting up. TE/ABT accessed over lunch time to tune KFH31.
- During the week-end the machine was pretty stable; M. Bodendorfer used AMDNOM for orbit & tune measurements and correction tests.

Since Sunday at 17:00 LEIR is partially stopped; main magnet and RF cavities in standby, vacuum valves closed and security chain in access mode, to prepare for the access of TE/ABT on Monday 27/10 morning (change of KFH32 main switch).

ISOLDE (Miguel Luis Lozano Benito)

I am happy to say that this was a good week at ISOLDE.

All experiments took beam according to the schedule and without any long interruption.

Still suffering some small problems on some equipment and controls from the power cut but nothing important.

HRS

- Stable beam setup. Some difficulties to take the beam through the machine but we managed to solve all them in time.

- Beam for users on Thursday afternoon and until Sunday night without major problems.

GPS

- Beam for users during the week until Thursday afternoon (when HRS took the central beam line).
- Only some issues with some residual problems due to the power cut affecting some devices and controls.

All solved and running smoothly.

Getting now target and frontend ready for target change on Monday.

Booster (Jocelyn Tan)

It was a quiet week, with a few issues to report.

Tuesday

There were some tuning of the debuncher cavity LT.CDB10 done by Jose during the WE, in order to improve the injection efficiency and capture for Isolde and TOF. Unfortunately the phase setting was such that the cavity was slightly accelerating the beam. As a consequence the beam was pulling the RF power out of the cavity, which according to the RF specialist reduces the tuning module lifetime. Furthermore, it was stated by the Linac RF team that although both the RF amplitude and phase are PPM, the phase setting must stay identical for all users. Hence,

- the phase was put back to the nominal value for all users (manually done by Bettina), as ppm copy : optimum value = 285,6 deg
- the injection frequencies have been optimized for Isolde and TOF.
- The “ppm copy” and “clone” functionalities are still problematic. The PICO was called. Investigations are on-going.

In the afternoon, there were some transverse instabilities for high intensity beams, affecting all rings. It was due to some new cabling in the TBF system. A temporary fix was found by adjusting the TFB attenuators.

Wednesday:

The dipole BE.DHZ4L1 shows a 0.4A offset between CCV and AQN values. As the specialist needs to switch it off, it will be done during the forthcoming TS. Optimization of injection frequencies for AD. The frontend cfc-363-rlinac2 dropped in the night and went back on its own after a couple of minutes.

Friday

The SEM grid application was not working properly, and the specialists are on vacation...

Quiet WE.

BEAMS

- LHCPROBE: The longitudinal shaving now works. But it's difficult to stabilise very low beam intensities. The intensity at capture is much sensitive to SFC and position in the supercycle. The RF team is working on synchro.
- STAGISO 16us and 20us bunch spacing: checked
- SFTPRO: all rings have now nominal bunch length, and even particle distribution.
- LHC25 and 50 for the SPS scrubbing run: checked during the WE.

PS (Guido Sterbini)

It was an average week for the PS without major problems. The production beams (EAST1, nToF, AD and SFTPRO) were regularly delivered to the users. The EAST2 beam commissioning continued together with the LHC beams commissioning.

On **Monday** two short accesses on the PS ring were necessary to allow RP to intervene on a radiation monitor (PAXP303, 1h30 of downtime in total for all beams). In the meantime there were strong perturbation on the EAST1 beam due to a faulty connection with a beam stopper on the T8 line (ZT8.STP01). The problem was solved in the afternoon by the intervention of the specialist. The late afternoon and night operation were hampered by trips on the 10 MHz (C46) and the 80 MHz cavities.

On **Tuesday** the C46 was fixed by the specialist and the MTE kickers were back in operation and tested on the nToF cycle.

On **Wednesday** morning there was a total of 2.5 h downtime in TT2 due to a problem to a quadrupole (F16.QFO215).

On **Thursday** morning the AD Ring patrol was lost (the problem was related to an electrical problem). The SPS extraction was perturbed by continuous trips of the C80-08. The issue was solved by changing the beam radial position and therefore easing the synchronization between the two machines. During the afternoon an additional timing card was installed on the wire scanner crate to improve the logging and post-mortem capability of the system.

The operation was perturbed by problem with the injection and extraction kickers fixed rapidly by the specialists. During the night the EAST2 beam was centered on the T8 final doublet.

On **Friday** the vacuum specialist performed a sublimation of the whole PS ring and $2e10$ Ar ions per pulse could be delivered towards the SPS.

The weekend was devoted to prepare, together the PSB team, the LHC beam that the SPS will use for its scrubbing run.

SPS (Django Manglunki)

An eventful week in the SPS, with access problems, LHC pilot to TT40/60 TEDs, coasting MD, and ions for the first time surviving the flat bottom.

- On **Monday** 2/10 Quad01 in M2 tripped on magnet fault. Access needed was planned for the end the MD on Wednesday as it needed at least four hours of beam down time (2 for cooldown, 2 for ventilation). The LHC pilot beam, when in front of an SFTPRO cycle, perturbs it.
- On **Tuesday** 21/10 Intervention on MKQV by TE/ABT, switch suspected. It cannot be changed during the technical stop as the crane needed in BA1 (CRPR-00598) is still out of order. At 17:00 the beam permits for TT40/TT60 were signed and a fat pilot beam ($5e10$) started to be extracted on the TEDs.
- On **Wednesday** at 6:00 started the coast MD (preparation for UA9, and collimation). At 9:00 TE/EPC proposed to switch spare SMD11 with SMD3 which was repaired. This intervention was postponed to the next day. During the MD the BA80 turnstile was fixed, and also the intervention on Quad01 in M2 took place. The MD finished at 18:00 as planned but it took 1h30 to retrieve beam conditions in the North Area as some power supplies could not be

restarted, and the TT20 TED could not be moved out without intervention by EN/STI & TE/EPC.

- On **Thursday** at 4:00 the kicker MKDV went in fault. Kicker Piquet called fixed it by 9:30 (short circuit on a 60kV cable). Ion setting up could start after this. On SFTPRO the vertical octupoles were increased by Karel. At 17:15 the RAMSES system tripped SIS. The fault was masked with the agreement of RP which helped restore the situation overnight. In the evening after orthogonal steering in TT10, the Ar ion beam was circulating, captured, and partly surviving the flat bottom.
- On **Friday** morning the Ar ion setting up resumed.
- On **Saturday** 25/10 H6 complained of communication problems with CESAR. At 18:30 there was again a trip of MKDV, which needed the intervention of the kicker standby service, and generated 3 h beam downtime. No fault was found.
- On **Sunday** 26/10 more problems occurred with door 146 where status shows 1 key missing although they are all in. GS/ASE piquet fixed a faulty relay.
- During the **week-end** the RF power standby was called several times to restart TRX8, and the DIP server had to be restarted many times.