

Accelerator complex status

End week 34 (Sunday 24th August 2014)

TI (Peter Sollander)

The TI summary is on the wiki page as

usual, <https://wikis/display/TIOP/2014/08/25/TI+Summary+week+34,+2014?src=contextnav>

Last week, one electrical perturbation took out the booster again, another stop of the cooling water station in the east area and early this morning Meyrin filters and compensator tripped. The injectors were stopped during the restart procedure (30 minutes) this morning.

Linac2 (Rolf Wegner)

A very good week for Linac2.

- On Thursday we increased the attenuation of the current transformers (T02, T06, T07, T10, T20, T30, T40, T50, T60) in order to avoid saturation of ADCs. The readings became more stable.
- On Friday afternoon power supply LA2.QFN13S was repaired by the PIPO (~20 min down time)

LEIR (Jerome Axensalva)

During the past short beam week (Linac3 pepper pot intervention this Friday), we managed to restart the Electron Cooler on top of our "bare machine" while maintaining ~50% of the Argon target: ~1.5E10 charges accelerated - also with the help of continuous improvements on the Linac3 side.

RF could then be re-worked and re-tuned in more normal LEIR conditions to bring the beam to its top energy along with tune measurements and adjustments.

Thursday, we got our first shots of the Argon beam on the ejection line TV screen. More adjustments are still needed to get something usable for the PS this week (RF, timings, etc.). YASP was used successfully to create the extraction bump.

Now that we can accelerate and extract the beam, the RP measurements on the LEIR's visitor platform can be performed, they are scheduled this Friday 29th of August.

The Ion beam is expected to be back before noon this Monday, we will concentrate on optimizing the extraction to the PS.

Nevertheless, we are still suffering of unstable conditions on the power converters, in building 250 mainly. It seems that the root cause is now identified as EMC (shielding/grounding) on the cables carrying the GFA digital references & the acquisition request pulses sent from the CTWOR cards to the G64 electronics chassis inside the power converters. It is now in the hands of EPC-CCE (Benjamin

Todd) for a global analysis in collaboration with CO-HT. We hope a solution could be found and implemented quickly as it really impacts the LEIR beam quality and reliability.

We also noticed that the LSA DB, for instance Trims on high level parameters kill our "bare machine" by driving/reactivating elements that we don't want yet in this mode. We will investigate this issue with LSA specialists. Since the restart of LEIR, we are quite uncomfortable with the LSA DB on LEIR as many dark sides remains.

ISOLDE (Erwin Siesling)

HRS:

- Running with target #510 UC with quartz line (to control the Cd versus Cs release) at 30kV.
- Tuesday RILIS laser tuning on Cd and proton scan on the target convertor followed by Cd yield checks.
- As of Tuesday evening Cd beam to the ISOLTRAP experiment until Thursday afternoon when the run finished.
- Average proton intensities between 1 - 1.8 uA.

HRS issues:

Separator magnets cycling: AQN/software values in working set coincide with the actual Teslameters values on the display. After replacing one of the Teslameters with its spare things have improved. Elefthrios Fadakis (BE/OP ISO) together with Peter Galbraith (TE/MSC), Mark Butcher (EN/STI) and Marco Buzzio (TE/MSC) are following up this (rather annoying) problem.

GPS:

Running with target #463 Pb (used) since Tuesday. In agreement with the users it was decided to run at 30kV (instead of 50kV) to avoid sparks endangering the lifetime of this used target.

GPS issues during setting-up:

- Target coupling problems faced on Monday where overcome after changing the clamps on the target unit as well as re-aligning the high-current connectors for target heating. This is all to decrease the friction while coupling.
- After these steps target #463 has been placed on the calibration pump stand to make sure that the target is leak tight.
- New problems started on Wednesday when setting up stable beam: The target heating would drop (as seen before with the previous target) due to what we thought was a vacuum interlock.
- After profound investigation and analysis the cause of the different interlocks was found in a faulty potentiometer on the GPS front-end clamping system giving (from time to time) a random acquisition for the clamp position.
- A temporary and acceptable solution proposed by us BE/OP and Alex Gottberg EN/STI (replacing Richard Catherall as Isolde technical coordinator) was found on Thursday in setting the clamps position to 'closed' in the PLC. It was implemented with help of Christophe Mitifiot, Alessandro Masi and Mathieu Donze (EN/STI).
- The temporary fix will avoid the cuts of the isolation transformer, the HT and the vacuum GPS10 provoked by a wrong clamp status whereby the individual interlocks for target current, high voltage and vacuum remain active in protecting the machine and target.

GPS physics:

- Stable beam tuning to GLM (CRIS DSS2 chamber), LA1 (TATRA experiment) and RC4 (Decay station) done Thursday-night.
- STAGISO proton-scan on done on Friday-morning followed by yield checks on Hg and RILIS laser tuning on Hg. For the STAGISO proton beam PSB OP adjusted the gate timing for the BCT to catch all 3 bunches taking the bunch distance of 16us in account.
- Physics started according to schedule on Friday-evening with shared beam to GLM (182Hg) and LA1 (189Hg).
- Proton integrated beam current up to 0.5uA with low intensity STAGISO proton pulses up to 7E12ppp.
- GPS is running very stable. No hick-ups of interlocks for the heating, HT or vacuum over the weekend. The solution to the clamp status problem is working.

Coming week:

GPS physics will continue. Next GPS target change Monday 1 Sept.

HRS will not restart until the end of the coming week with a run on Hg with the same target. Next HRS target change Monday 8 Sept.

Booster (Jocelyn Tan)

Tuesday

With increased Linac2 intensity, the input signal to the injection trajectory system was saturating the amplifiers. This explains the lack of beam excursion induced by corrector bumps. Extra attenuators have been added by the specialist.

Further, upon OP's request, the horizontal cables of LT.BPM50 have been swapped. The injection trajectory now matches with YASP. However the cable inversion will be checked during the forthcoming TS.

The C02-Ring4 went down in the evening. The specialist came, and worked till 2AM but could not solve the problem. He suspected a connection problem.

The temperature in the RF cage was 28deg, but this could not cause the issue. This affected AD and Isolde.

Wednesday

The RF specialist has switched off the the BR1.C02 for 30mn to understand the problem with BR4.C02.

We spotted also a problem with the C16-ring3: the RF tube is showing its age. We cannot feed the cavity with more than 3.6kV (max 6kV).

Thursday

Following the RF specialist's request, a machine access was scheduled in the afternoon. People in the access list have been informed.

- The BR3.C02 tripped shortly at 1:15PM. OK after a reset.
- Beam off for cool down at 1:30PM
- Access at 2PM, for 2 hours.
- BR4.C02 issue: a short circuit on the cavity tuner was found and fixed.
- BR3.C16 issue: the RF tube of has been changed.
- The beam was back at 5PM.

The BI0.DIS tripped shortly at 6PM. OK after a reset.

Monday

Early in the morning the R4-TBF needed a local reset.

Next, came the ejection kickers which went off. The operator found the electrical breaker of the oil system down. The called the specialist who could remotely help him to restart only 3 kickers. Finally he came for the last module. Down time 2h.

At ~4AM, the 18kV compensating filter was down. The piquet First Line came, but the normal piquet for the filter could not be reached. This does not prevent beam production but induces unwanted reactance components in the electrical network. Before putting the filter back, both the Booster and PS MPS will have to be off according to the procedure.

BEAMS

- EastA+TOF beam has been set-up.
- SFTPRO: splitting on Ring3 done,
- LHC25: setting started
- STAGISO: set-up and sent to GPS on Friday morning

PS (Guido Sterbini)

This week the PS delivered beam to the East Area, nToF and the AD (for the machine beam commissioning). There was a significant progress in the commissioning of the EAST+nToF beam, MTE and LHCINDIV. Since Sunday evening the EAST+nToF beam is operational. Concerning ions, injection timing and injection elements were checked and are ready receive the Ar beam next week.

On Monday late afternoon, due to the unavailability of the KFA4, nToF and AD beam could not be produced (4 h perturbation).

On Tuesday, there was a 4h30 stop for the EAST beams for an intervention on the quadrupole ZT9.QF003. During the night a fault in the injection kicker stopped all beams for 4h40.

On Wednesday the operations were perturbed due to the PSB unavailability of R1 and R4. RP requested to send the beam to different target on the East Area to made radiation tests in that zone.

On Thursday afternoon there were 3h30 stop for an intervention with PSB R4. Profiting from the stop, the PFN of the kickers 13 and 21 were inter-changed. At the end of the afternoon the parasitic nToF extraction was commissioned and, as outcome of the tests of the previous day, S. Mataguez and RP asked to reduce the intensity of the East spill to 20E10 p.

On Friday the operations were hampered by minor trips in KFA4 and the extraction bumper 14.

During the weekend the slow extraction of the EAST beam of the EAST+nToF was commissioned and the beam was sent to the experiments.

AD (Tommy Eriksson)

Since last Monday:

Slow progress with various issues:

- Longitudinal blow-up at 2 GeV/c – workaround implemented
- New orbit correctors polarity issues sorted out with orbit response measurements
- Random aperture limitations caused by s-cool movement systems going out of control
- Lengthy tuning of tunes to get down to 300 MeV/c
- Large orbit excursions not solved. Does not point to one particular area. General correction solution not found.
- We now have ~50% of beam surviving at 300 MeV/c and are ready to start set-up of e-cooler

Will give more news to the AD users tomorrow. Certainly no extracted beam in sight until the end of this week.