

## Accelerator complex status

### End week 31 (Sunday 3<sup>rd</sup> August 2014)

#### TI (Peter Sollander)

Short summary from TI in the usual place:

<https://wikis/display/TIOP/2014/07/28/TI+Summary+week+31,+2014>

PSB and ISOLDE tripped Saturday due to an electrical perturbation (another thunderstorm). Downtime 18 minutes.

#### LEIR (Django Manglunki)

- On Monday, cabling inversion corrected for the fast transformer. It now gives a positive signal for the Ar beam, and negative for secondary electrons when the beam hits the chamber - as it should.
- HW/SW upgrade of Agilent signal analyzers proved problematic due to licence issues. Jerome is following up closely.
- Longitudinal tomoscope is now working
- In collaboration with Linac3 team, tuning of RF in ramping cavity/debuncher; injection/accumulation being optimized, so far still a factor 4 in intensity is missing.
- First RF capture & beginning of acceleration achieved this week by Steve Hancock
- Problems continued with the Low level RF front end computer (cfv-363-all1). 5th CPU card and counting. Being followed up by Andy Butterworth & Anthony Rey.
- ETL.BHN20 developed problems on Friday (freezing to a single value instead of following its double ppm cycle). Being followed up.

Monday 4/8 beam is only expected around 16:30 after the weekly Linac3 MD. We will profit of this interruption for more debugging (ETL power supplies, LLRF front end computer, ...) Once again many thanks to all specialists involved (mainly from RF this week).

#### ISOLDE (Miguel Luis Lozano Benito)

##### Short report:

Very intense week at ISOLDE.

Many issues during the week but I am glad to announce that the physics program has started according to schedule last Friday on GPS.

On HRS we are still working to get the RFQ going and preparing the rest of the machine.

### **Detailed report:**

#### **HRS**

##### *Tuesday*

-SEMGRID target tests and RFQ replacing of the ejection side insulators.

##### *Wednesday*

-Target change (new target #509) .Access to HRS separator to increase the air compressed pressure for the frontend.

-First part of the Frontend HT tests during the afternoon.

##### *Thursday*

-Frontend HT tests repeated during the morning.

-Target and line cooling PLC got stuck and specialist has to reset it. New reset button will be installed on the PLC touchscreen to reset it in case it happens again.

-Second part of the HT test during the afternoon. During these tests the target HT power supply broke.

##### *Friday*

-Spare power supply installed on HRS and continuation of the HT tests.

-RFQ investigations once HT tests were over.

##### *Saturday*

-Users called because one of the frontend computers at the control room was making a lot of noise. I came and stopped and restated the computer and noise disappeared. One of the cooling fans has to be replaced.

-One of the knobs could not be set to the required value due to a wrong upper limit set on the software. INCA support called but not reachable. Users managed for the weekend with the FESA navigator.

#### **GPS**

##### *Tuesday*

-GPS.FC20 intervention .Some problems with the vacuum system and the clamping and unclamping of the target.

##### *Wednesday*

-Continuation of the GPS.FC20 intervention. Connectors replaced and now working fine.

##### *Thursday*

-GPS target and line heating are dropping due to sparks on the target. This issue will need investigation as soon as the expert is back.

-Some beam tuning for GLM and GHM.

## **Friday**

-During the day some trips of the HT and the target and line heating. After some investigations we discovered that the target faraday cage door was creating some intermittent interlocks.

-Proton scan done in the afternoon (some issues with the tape station) and after a long and difficult week beam for users at around 16.00 h.

-A couple of radiation alarms went ON as soon as we started taking protons. RP contacted and proton beam current lowered to 1 microAmp during the weekend.

-Some problems during the weekend with the GLM and GHM deflector plates and knobs but nothing that stopped users.

## **Booster (Elena Benedetto)**

Fixed the two main problems which appeared at the end of last week to send beams to Isolde.

1. For the beams to GPS: the SIS tail clipper was not cutting the Linac2 beam. It was a timing issue.
2. The second main issue concerned BTY.BHZ301 and BTY.BTV101. For USER NORMGPS the power supply was taking the value of HRS, but for 2 subsequent cycles with destination GPS the second cycle was correct. After lengthy investigation it was found that the power converter was evaluating a wrong condition from the Telegram and it was decided to add the following conditions: FIRSTISO, ISOCONSECUTIVE, FIRSTHRS, HRSCONSECUTIVE to correctly deal with switches between GPS and HRS and to consecutive cycles to one destination. The release of the MGT and the changes to the magnets FESA class were eventually deployed on Friday.

On Tuesday afternoon SEM grid measurements to HRS were done (to GPS were done last week). The SEM grid were removed on Wed morning, after cooling down during the night.

Isolde was then ready to start taking beam.

Problems on all high intensity users: losses on the flat top before extraction in the Ring 4. They were fixed by slightly modifying the working point. Still appearing when intensity is raised, fine tuning of the working point solves the problem.

On Wed morning, access in the PSB to investigate a water leak. A problem with a pump was found. In the meanwhile: new release of FGC3, restart of the central timing, deployment of a new version of the MTG.

Due to a bug in the access system, the beam was back only at 11h30 (instead of 10h30).

Found that the AD beam sent to the PS had no orbit correction. The beam was cloned and the setting up was done in the PSB, while providing the “old” AD beam to the PS. We will commute to the new cycle once the PS is ready (and happy about the extraction steering).

On Wed. morning, some tests of the new LHC-type BLMs took place. The acquisition for the time being is done with an expert application, while waiting for the new electronics, they look promising,

Inversed polarity of LTB.BPM10 was found and fixed.

On Friday morning: deployed new version of the MTG and changes in the FESA class to solve the problems for BTY.BVT101 and BHZ301.

On Friday afternoon, losses were found on NORMGPS right after injection. Finally it was discovered that the cavity C04 was on fault but no alarm was shown on LASER. It happened again during the weekend. Again no alarm shown.

Problems with BTY.QFO184, tripped several time on Sunday

Found that the MPS was pulsing even for the “zero” cycle, since 2 weeks. It was put back to zero

Plans for the week: increase the intensity of AD, TOF and ISOLDE. Start preparing the LHC beams (LHCINDIV is already done).

## PS (Ana Guerrero Ollacarizqueta)

The PS has been delivering the EAST and TOF beams as requested the whole week. On Friday a low intensity AD beam was sent to the target.

This week there was one access of three hours on Wednesday. Switching the beam on again was long due to a radiation monitor not in the appropriate mode to set the beam back. Switching back POPS was also longer than expected.

On Friday POPS tripped after a reboot of an MTG crate as consequence of a misunderstanding. The incident was due to a lack of communication of the supervisor that did not leave precise instructions on the intervention (1h30 no beam).

The TOF beam was down over 6h due to a kicker problem. The EAST beam was down around 4h30 in total due to an external condition cable crossing between two stoppers and also due a quad power supply failure. On top of that all beams were down over 1h due to 10MHz cavity failures.

Both TOF and AD beams follow the new fast extraction schema with an increased number of elements. The EAST with parasitic TOF is underway.

The week has been mainly devoted to set-up the AD beam which still needs to be worked on. For nominal intensities the emittance grows along the flattop and the losses at extraction are too high.

Radiation monitor PAXP502 has been seeing 2.5 $\mu$ s/h instead of last year's maximum of 1 $\mu$ s/h. In a first approximation these losses seem to be related to a continuous screen presence though it remains to be confirmed.