

## Accelerator complex status

### End week 47 (Sunday 23<sup>rd</sup> November 2014)

#### TI (Jesper Nielsen)

Weekly summary:

<https://wikis/display/TIOP/2014/11/24/TI+summary+week+47%2C+2014>

#### ISOLDE (Pascal Fernier)

##### GPS :

- Target #529 Ti – Run at 30kV pour GHM – studies of 27Mg
- Setting-up + proton scan + yield check and beam available Friday afternoon.

##### HRS

- Target #521 UC2C Ta. Run at 40kV pour CRIS on LBO line.
- In continuous mode global transmission is around 70%.
- In bunching mode tests with 238U show a low transmission (20%) all over the machine, and 27% for 221Fr, we didn't understand why.

Both experiments are working fine.

#### Technical issues

From time to time we lost the control of the HT, and sometimes ccv changes. We need to reboot work-station twice a day each, otherwise application programs are crashing.

#### LEIR (Michael Bodendorfer and Sergio Pasinelli )

- 1) The LEIR Electron-Cooler went in fault twice during the week. A. Frassier has diagnosed a flowmeter alarm on a solenoid. The flow has been increased and the issue has been solved.
- 2) Wed. 19th Nov. The LEIR extraction kicker power supplies suffered from a PXI communication error. Whenever this error is present we cannot control the kickers remotely anymore and a local reset is necessary. Specialists are aware about this error and they plan to install a "remote relay" in order to restart the respective crate remotely. However, no finish date is yet foreseen for this solution, because the specialists are waiting for the remote control relays.
- 3) The low-level-digital-RF main computer (cfv-363-all1) got stuck. Only a local cold restart (OFF/ON) can currently save this situation.
- 4) On Friday late afternoon, a Linac3 optimization on RF-tank2 has cured a strong shot-to-shot fluctuation. Since then LEIR has worked flawlessly and it has made available argon beam to the PS.

#### Overall:

LEIR has made available Argon beam to the PS consistently with extracted intensities between  $1.5E10$  and  $3E10$  charges per bunch, depending on the state of optimization. We are aware of the

longitudinal emittance of LEIR which is over specifications for the PS. Currently we measure more than 2eVs (matched area). We are investigating why the longitudinal emittance is too large.

Additionally, we have tested the operation of four consecutive ANOMINAL (2.4s) cycles in a super cycle for the SPS. This serves as a test-run for the actual physics run in 2015, which will require four consecutive ANOMINAL cycles.

### **Booster (Alan Findlay)**

All in all a good week for the PSB with no major issues to report, but lots of work by lots of people to improve performance and reduce losses in our wee machine.

There was about an hour lost on Wednesday where an unexplained change in R2 & R4 disturbed the high intensity users causing losses at extraction and tripping the BLMs. The OPs crew and LL teams investigated but could not find the source, then the problem disappeared as quickly as it had appeared, never to be seen again.

In amongst the many MDs this week, work on the orbits paid dividends when the ISOLDE users got new orbits helping greatly reduce losses in our hot spots. The cycles were also worked on to slowly bring back up the performance to the 3000E10 we had the previous week, and the steering improved to reduce losses in the transfer line.

The optics were later updated for all operational users to reduce the losses in our hot spots at injection/capture.

Work was started to create the high intensity LHC25ns beam requested for the upcoming SPS scrubbing run.

So, a lot of MDs and a lot of work by a lot of people, but with an improved machine by the end of the week.

### **PS (Gabriel Metral)**

Semaine sans problème majeur.

- Environ 2H d'arrêt faisceaux (changement d'alimentation nécessaire sur les KFA13 et 21).
- Retour à un mode où toutes les extractions ont été réglées pour le TPS15 en position IN. Reprise du setting up de l'extraction MTE.
- Ajustement du B mesuré à l'injection pour être compatible avec le programme de fréquence.
- Nombreux déclenchements du Bumper PE.BSW14 qui est utilisé proche de sa limite max.

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

Week 47 was mostly a good week for the different beams and activities.

#### **SFTPRO:**

The intensity on SFTPRO was increased to 60e+11 on Monday to have more on T6 for COMPASS. COMPASS was very happy with the quality of the beam during the week and asked for another intensity increase on Friday. Now we are running with 100e+11 on T6.

SFTPRO improvements: The spill was equalized along the flattop to have roughly the same intensity for the whole time by adjusting the momentum of TT20. The 50 Hz noise on the spill spectrum was also greatly reduced on Thursday.

As usual the pilot cycle in the supercycle perturbs the following SFTPRO cycle. The reason seems to be that the magnetic history of the main bends and main quads is changed. The B field and tunes are different at injection and hence the spill and horizontal trajectory in TT20. We tried to adapt the functions during the beam-out, but could not improve the situation so far.

Downtime: No significant downtime from equipment (1 h for cooling issue on main bend power converters). But 5 h of downtime Tuesday night due to a problem with beam on SFTPRO and 30 mm interlock. The origin of the problem was never understood and could not be reproduced Wednesday evening after the MD. The injection kickers, which were suspected as the culprit by the shift crew, were not the origin. All checked beam parameters were OK: injection oscillations, tune, beam was not unstable on the BBQ. Dampers did their job correctly as well.

#### **LHC transfer line tests:**

Pilot beam is now available in the SPS. It was used during the transfer line tests. The tests were a big success. A detailed report on this will follow.

The extraction septa jitter has been greatly improved - for both lines by about 50 %. SPS orbit reproducibility is however not great. We will have to investigate this and improve it by correction with the bumpers.

#### **Otherwise:**

There was a COAST MD for the button collimator on Wednesday - everything good from the SPS side. The wire scanner 416 is ready for the scrubbing run with bunch-by-bunch acquisition. We had up to 4 injections of Ar<sup>+</sup> on Thursday and Friday during the ion period.