

Accelerator complex status

End week 49 (Sunday 6th November 2015)

TI (Jesper Nielsen)

Quiet week...

TI summary: <https://wikis.cern.ch/display/TIOP/2015/12/01/TI+summary+week+49%2C+2015>

LEIR (Steen Jensen)

Tuesday 01 December

- AM: LN3 oven refill in the morning
- AM: Installation – supposedly transparent - of FEC-controlled relays in e-cooler to allow fast cut-off of electron beam.
- ~17h00: Beam back, but low - and decreasing - intensity from LN3
- ~17h00: Low injection efficiency in LEIR. Injections 5, 6 and 7 cause no increase.
 - ~5h effort to increase intensity
 - Suspicion about beam being too big
- ~23h00: Intensity finally back to acceptable levels thanks to:
 - Lowering (~10V) of e-cooler gun voltage on NOMINAL
 - Fine-tuning of steps in function for ETL.BHN10 (increased injection efficiency)
 - Tuning of freq corrector, injection bump and e-cooler bump.
- It seems the e-cooler intervention had a side effect after all – to be understood.

Wednesday 02 December

- ~9h00: LN3 stripper foil changed
 - => 50% increase in LEIR output, possibly due to change in energy spread.
 - Improved vacuum in extraction region
- 16h22: Low intensity from LN3, traces of sparks found in HT
- 20h53: LN3 intensity back up after major increase in power of oven 1: from 8W to 13.5W (to be understood why this was necessary)

Thursday 03 December

- Nothing to report

Friday 04 December

- 15h06: RF Process BnldspSCOPE_R missing in FEC cfv-363-all1, causing missing signals in OASIS. Reboot by RF expert => OK
- 17h01: RF cavity tripped. Reset by RF expert => OK
- 19h26: Again problems with BnldspSCOPE processes. Reboot by RF expert => OK

Saturday 05 December

- Sampler ER.BCT-ST not working. Reboot of FEC dleibgen => OK

- Impossible to edit freq correction function (device EA.FGFREVCORR). Restart of process
bnldspGFAS_R => OK

Sunday 06 December

- 00h32: RF cavity 43 down, RF experts called => OK @ 02h50

PS (Gabriel Metral)

Semaine ou seulement les ions restent en opération.

Ion servi avec une très bonne intensité (environ $5e10$ charge par cycle).

Pas de problème important pendant cette semaine.

Mardi, un accès a été fait dans l'ombre du remplissage de la source pour remettre en état la PU93S qui est utilisée pour la boucle radiale du beam control basse intensité.

Reste toujours a corriger l'orbite basse énergie des cycles ions et faire une mesure de chromaticité a l'injection.

SPS (Hannes Bartosik)

On Monday **the beam transmission on the nominal LHC ion cycle with 12 injections could be improved from 60% to 80% by optimising RF parameters around transition** (RF voltage dip at transition, phase loop gain optimisation after transmission). Since then intensities higher than $4e11$ charges could be successfully transferred to the LHC.

The North Area ion run finished on Tuesday at 8:30 when the beam was stopped for the planned oven refill of the Linac3 ion source. During this intervention, one of the thyratrons for the MKP injection kicker was exchanged in order to reduce the kicker rise time in view of further decreasing the batch spacing between two injections in the SPS. Some difficulties due to large transverse emittances on every other bunch and losses in the transfer line (in particular T18) were encountered during LHC filling in the evening. The problem could be mitigated by adjusting the injection kicker delay and the settings of the transverse damper by the specialist who was called in during the night. Further investigations on ABT side on Wednesday morning revealed a bad synchronisation of the injection kicker generators after the thyatron exchange, which had resulted in a large jitter of the kicker pulse.

After the kicker specialist re-optimised the synchronisation of the MKP generators on Wednesday, **a batch spacing of 175 ns (instead of 225 ns) could be achieved in the SPS with no measurable impact on transverse emittances and bunch intensities**. This reduced batch spacing is now used by default for LHC ion filling since the successful injection tests on Friday.

Thursday and Friday were devoted to the UA9 run with coasting ion beams.

LHC

Good availability – good performance. Peak luminosity fluctuating from excellent to acceptable. Peak in ATLAS $2.6e27 \text{ cm}^{-2}\text{s}^{-1}$, ALICE levelled at $1e27 \text{ cm}^{-2}\text{s}^{-1}$. Total on Monday 7th a.m.: 360 ub^{-1} in ATLAS, around 230 ub^{-1} in ALICE.