

End Week 45 (November 14th 2011) – Status of Accelerators

TI (Peter Sollander)

<http://wikis/display/TIOP/2011/11/07/TI+summary+week+45%2C+2011>

Events of the week:

- Technical stop, number of calls up last week.
- ATLAS detector cooling problem in the night between Saturday and Sunday, partially in the shadow of the PS vacuum problem.

Linacs (M. O'Neil)

Linac 2:

Good week. On Tuesday the technical stop work was completed on time and the Linac was ready to deliver beam as planned by 16:00. Only a minor problem on Friday, a quadrupole power convertor failure which was quickly replaced by the piquet power.

Linac 3:

Good stability and intensity (20-22uA) this week. The oven was refilled as scheduled on Tuesday. The source was restarted on Wednesday afternoon and stable beam was from the Linac was available by the evening.

On Thursday and Friday, some problems with the temperature stability of the cooling water caused the source to trip twice. The RF amplifier for Tank 1 also tripped twice and had to have some timing adjustments made by the RF group to compensate for an aging amplifier tube.

PS Booster (B. Mikulec)

Resonable week for the Booster.

- Tuesday the technical stop took place. It took only ~1 hour to switch everything back on and first beam was back at 5:40pm. Unfortunately the C04 cavity of ring 3 tripped immediately and required to access the machine – the relay gap had to be changed and beam was again available at 7:40pm. Then losses were observed at injection, which turned out to be due to BI.QNO30. In addition, now the C02 cavity of ring 3 tripped without the possibility to reset it locally. The piquet PO and M. Haase could solve these 2 problems, and beam was finally available for the dedicated injection kicker MD around 10pm, which suffered a bit from the reduced beam time.

- During the MD it was observed that the ring BLMs were showing confusing and incorrect values on the 25ns user. This has been followed up throughout the week, but the BI specialist was not available due to interventions in the LHC. BI, OP and CO will have a common look today.

- On Wednesday several trips and resets of BR4.C02 in the morning. Apparently the temperature of building 361 was too high – air-conditioning problem after the CV interventions during the technical stop. TI put the air conditioning back into operation.

Ring 4 of the AD beam was in bad shape. Only in the evening the problem could be traced back to the transverse feedback (inner amplifier off and had to be reset). Also on TOF the transverse feedback caused troubles as the timing was found disabled and the amplitude at wrong value.

- On Sunday beam was stopped at 8am to allow vacuum leak detection in the PS (2h30 downtime). In the afternoon beam had again to be stopped for PS access to remove the wirescanner in section 54 (4h40 downtime).

BTY.DVT324 tripped twice in the evening. Another trip occurred around 11pm, then the intervals between trips shortened further. Finally in the morning of Monday the Piquet Firstline had to be called; a VERO power supply needed to be changed.

BEAMS and AOB:

- Various MD beams have been provided throughout the week.

- The RF team continued making progress with the new digital LL-RF control system (working in ppm-mode on ring 4 of a MD user).

ISOLDE (M. Lozano Benito)

Very good week for ISOLDE without any important problem. All the experiments got the beam according to the schedule.

- Tuesday

GPS: Stable beam for witch and beam setup for REX.

HRS: Cooling target for target change on Wednesday

- Wednesday

GPS: Stable beam for witch

HRS: Target change , new target 467 SiC. No problems during the target change. Stable beam set up 50KV 39 KV untill CA0.

- Thursday

GPS: Separator setup and beam for witch.

HRS: Stable beam to LA1 set up. Stable beam for users .We see some noise after the RFQ in the beam but good transmission anyway.

- Friday

GPS: The planned target change was canceled and we decided to keep on using the same target because of the good yields.Beam for witch.

HRS: Proton scan and Target yields checks.Beam for users during the night. Call from users to increase the proton current limit from 1.5 uA to 2 uA.

- Saturday

HRS: Beam for users in LA1. No problems

- Sunday

HRS: Beam for users without problems. Protons were not available from 8 AM until 10.44 am because of a vacuum problem at the booster

REX:

- Beam for wicth using the trap and stable beam for miniball during the weekend.

PS (A. Guerrero)

The run this week was smooth with some issues arising Sunday morning when a vacuum leak at the wire scanner 54H was detected. The LHC was filled with ions nevertheless before the intervention to seal the leak. All other beams were stopped. It is foreseen to be able to provide ions again this morning.

The week was mainly devoted to MDs, nevertheless beam was available for physics too after the TS. On Monday high intensity beams were switched off in preparation for Tuesday TS. On Tuesday at 5:00 all beams were off. Round 16:00 POPS tests started and beam was back by midnight.

Other highlights of the week are:

- POPS is back in service. The setting up took a bit longer than expected due to one broken card, cooling problem from a water leak and door interlocks. As a total 2 hours of beam were lost. All the arrivals on the different flat tops have been now optimized, in particular at high energy the overshoot has been reduced to 0.4 gauss (out of ~12500).
- It has been agreed to stop sending beam to the east line ZT10 after ZT10.BHZ01's fault. The users affected by the magnet problem (T10) will move to T9 for the rest of the physics run (1 week).
- Ions were sent to SPS, then LHC despite several problems affecting cavity 80-08. The fire brigade had to intervene because of a burning pre-amplifier of this cavity on Thursday afternoon....

LEIR (S. Pasinelli)

A calm week for LEIR

Tuesday : Linac 3 refill.

Wednesday afternoon beam back

Few RF tuning on the Linac 3 .

Few adjustments of the transfer line ETL + ETP

Beams: EARLY: 1 bunch total : ~1.5e10 charges, NOMINAL: 2 bunches total: ~4.8e10 charges

AD (B. Lefort)

It was a tough week for AD:

48H technical stop and 28H total lost due to injector problems (PS complex) and the setting up of our new experiment AEgIS in the DEM zone.

SPS (K. Cornelis)

From Monday to Friday the SPS had MD, interrupted by a technical stop on Tuesday. The technical stop went smoothly and all scheduled repairs could be finished. The MD ended on Friday morning with last year's ion cycle for NA61 which was running all night in order to calibrate some fragmentation detection devices. On Friday morning we started with a complete new cycle for NA61. On Thursday, we were asked to raise the flat top energy from the nominal 400GeV to 412GeV. A new cycle was created over night, but, the main power supplies were tripping on the flat top, which turned out to be too long for this energy. Yet another cycle was created with a flat top shortened by 1.2sec. This cycle was running for two hours when again overheating problems occurred in the main power supplies. Instead of creating a new cycle, we shortened the flat top by another second with a momentum trim. Most of Friday evening was spent on setting up this cycle and the extraction to the north area. The setting up was lengthy and painful because of frequent problems with the 80MHz cavities in the PS. The final steering on T2 was finished by Saturday morning.

CNGS was off all week, and the stop was used to install new diamond muon detectors. On Friday evening we resumed CNGS operation with the nominal high intensity beam.

Over the weekend we were also delivering ion beams to the LHC.

All beams were stopped on Sunday morning, due to a vacuum leak in the PS. At this moment, the PS is still recovering.

LHC (B. Holzer, M. Lamont)

Main issues:

- Technical stop until Friday 11.11
- Weekend for recovery and restart for ion physics
- Restart went very fast since machine was well prepared after technical stop.
- Correction of injection trajectories and optimisation of injection kicker timing.
- Saturday/Sunday night intervention on ATLAS water cooling.
- Sunday morning injection of 9 & 9 single bunches and stable beams.
 - o $N_p = 10^{10}$
 - o Lifetime single bunch 25 hours
 - o Lumilifetime 2-3 hours,
 - o Bunch lengthening from 1 ns to ~ 1.6 ns during 8 hours
- Due to problem with Alice pixel cooling dump of beams.
- No beams from PS due to vacuum recovery after replacement of a broken wire scanner, now waiting for PS recovery of vacuum

Plans for this week

- Recovery PS vacuum
- Ion physics (170 bunches)
- Request for installation of additional BLMs in L2

- **P6 compressor station water** leak discovered, being checked. 24 hours intervention expected, possibly 25. 11 in parallel to oven re-fill or earlier if problem becomes urgent.

More details under: <http://lhc-commissioning.web.cern.ch/lhc-commissioning/>