

## End Week 48 (December 3<sup>rd</sup> 2012) – Status of Accelerators

### Statistics

nTOF: <https://espace.cern.ch/be-dep/OP/PS/default.aspx>

CNGS: [https://accstat.web.cern.ch/accstat/statistics/charts/2012/SPS/CNGS\\_Target\\_Cumul2012.jpeg](https://accstat.web.cern.ch/accstat/statistics/charts/2012/SPS/CNGS_Target_Cumul2012.jpeg)

LHC: <http://lhc-statistics.web.cern.ch/LHC-Statistics/index.php>

### TI (Jesper Nielsen)

Rather quiet week for TI operations.

<http://wikis/display/TIOP/2012/11/26/TI+summary%2C+week+48+2012>

Wednesday, November 28	BA2 high level in sumps. As we've seen what can happen, TI OP on-site to check level. Floor was already well flooded, firemen called in to install pump temporarily to avoid problems in the tunnel.
Friday, November 30	ODH alarm in UP63. It was decided to wait for an access or TS.
Saturday, December 1	Some problems with nTOF, filters blocking up and the level in the expansion tank low. (demineralized water)
Sunday, December 2	<ul style="list-style-type: none"><li>• BB81 CRYO stopped. Faulty UPS which was bypassed by EN-EL. See <a href="#">Major Event</a></li><li>• nTOF stopped, high radiation levels. At the same time problems with ice water production, but not necessarily connected (Investigations ongoing) See <a href="#">Major Event</a></li><li>• Many alarms on ventilation units (anti gel..) TI spent the night resetting on-site!</li><li>• SU5 compressed air stopped, caused fire alarm when the belt broke. Belt replaced and compressors restarted without problems.</li></ul>

### Linacs (G. Bellodi)

#### Linac2:

it was another good week for Linac2.

Only about half an hour beamtime was lost on Friday afternoon for the replacement of a faulty power supply on LA1.QDN21s.

#### Linac3:

Following adjustment of the phase of tank2 and with new stripping foil the nominal intensities for LEIR were reached. The source oven was re-filled on Friday. Presently restarting the source.

### **PS Booster (K. Hanke)**

The main events of the week:

Thursday 29 November at 03:28 unresettable trip of the distributor. Intervention of the kicker piquet plus equipment specialist. The PSB operator moved around the number of turns and tail clipper timing in order to provide some (degraded) beam on all four rings.

During most of the time 'degraded' operation, during certain periods complete stop for all beams. A cable and a power supply were changed to spares, but it was found that the spare power supply was not working either. Repair of the spare Thursday morning, degraded mode during the rest of the night. Problem permanently fixed Thursday 13:31 (diagnosis: short circuit).

During the intervention on the distributor on Thursday morning there was another intervention by the power piquet on BTP.QNO40, it tripped a few times after reset. The power piquet was called, but eventually it was found out that this was due to an MD on the PSB-PS transfer line where the MD participants had exceeded the allowed values...

On Friday 33' stop due to Linac2 (quad power supply failure) and a short resettable fault of the distributor. Saturday another 6' stop due to the Franck-James of Liac2.

Otherwise quiet weekend.

### **PS (J. Wozniak)**

It was a very good week for the PS with only few interruptions.

On Monday the PFW where heating up and going down due to a too high RMS current from 12 consecutive MD LHC cycles.

Wednesday night the PSB distributor problem led to unstable proton beams.

On Thursday until 17h00 there was an MD in the injectors.

During the weekend there were few erratic problems with CNGS extraction and around 2h of downtime for TOF due to water cooling problems and faulty quad FTN.QFO415S.

This Monday morning there is a special SPS MD for proton-ion beam setup.

Otherwise the beams were delivered as expected outside MD periods..

### **AD (B. Dupuy)**

The AD had another really good week. The physics was only perturbed by some external events unrelated to the AD.

Main external disruption were

- PS extraction PE.KFA13 PE.KFA21, POPS.
- Booster distributors and Linac 2

Only one AD failure this Friday. The RF system bunches rotation at ejection was not stable. One connection was defaulting.

The bunch length is stable 160ns (except during RF problem Friday), and the AD beam intensity was greater than  $3.5E7$  anti-protons extracted.

AD beamtime: No beam during 26h22m, Beam during 168h00m => 15% without beam.

### LEIR (S. Pasinelli)

Very productive week.

#### Machine development:

We have created a "hybrid cycle" MDOPTICS with parts from EARLY and NOMINAL cycles, with this cycle we have reached  $8e10$  charges at the injection and  $6e10$  at the ejection!

In collaboration with the LINAC3 we have played with the ramping cavity and RF TANK2 and we have taken measures/data in LEIR.

#### Production beams

EARLY and NOMINAL cycles were available for PS/SPS with the nominal current values ( $1.25E10$  and  $5E10$ ) during major part of the week.

Thursday morning: lower intensity from the Linac 3 with effect on the efficiency of accelerated beam in the LEIR. RF specialist was called.

Friday: Refill of the source and put LEIR in standby.

Monday morning restart of LEIR for ion operation.

### SPS (E. Gschwendtner)

This was the last week of protons operation to North Area and CNGS for this run.  $3.9E19$  protons delivered for CNGS this run.

From Monday to Thursday lots of beams with different intensities and bunch schemes were provided for the LHC MD.

Monday was mainly dedicated to p-Pb MD where many problems at the long proton cycle appeared. In addition the cycle length was so long that no beam to the North Area and CNGS could be delivered for ~8hrs. Further tests were planned for Thursday.

On Tuesday the mains tripped due to a door switch failure, causing a beam-stop of 1.5hrs.

Tests on the H9 beam were performed.

Problems appeared on the TED in TI2 where the TED took much longer than usual to go IN.

On Wednesday scraping tests as function of bump amplitudes and angle were performed.

A series of HiRadMat pilot shots were taken for setting up the experiment.

On Thursday the SPS MD was foreseen from 7:00-17:00 and was prolonged until 19:00 to perform additional tests with the long proton cycle needed for p-Pb. For these tests the SC length was 71bp - with LHCION2 and LHC1. The results of the tests showed that the PS bumper setting had to be corrected.

On Friday the HiRadMat experiment finished successfully by receiving their final shots of 288 bunches, 25ns.

First H9 beam injection to LHC did not succeed due to timing issues.

It was found out on Saturday, that the TED in TI2 is badly aligned and could not be moved for further LHC access. After agreement with the DSO it was decided to use as protection TT60 TED instead of TI2 TED until a proper repair is made next week. Also some BIC interlocks had to be reset due to this.

On Sunday it was not possible to do a scan on the T4 target- eventually it was found out that a server (v1nb80) does not exist anymore but is still in diamond.

Otherwise the weekend provided good beam for physics, sometimes though CNGS and SFTPRO suffered from PS extraction perturbations.

### **LHC (E. B. Holzer, G. Arduini)**

- Total integrated luminosity during the week (four days physics), 0.7 fb-1
- Total integrated luminosity this year 23.4 fb-1.
- Stable beams during 35% excluding MD periods, i.e. 46 hours.

Following the TED TI2 problem (movement blocked), a special procedure was put in place for LHC access, SPS chain 4 needs to be put in access mode by the operation team, in this chain there is another TED to guarantee three safety elements in the chain. For document see: <https://edms.cern.ch/document/1255294/1>

More details under:

<http://lhc-commissioning.web.cern.ch/lhc-commissioning/news-2012/LHC-latest-news.html>