

Accelerator Complex Status

End week 22 (Monday 25 May 2015)

TI (Jesper Nielsen)

Details at:

<https://wikis.cern.ch/display/TIOP/2015/05/28/TI+summary+week+22%2C+2015>

Wed. 27/05:

- A small water leak on a CRYO compressor caused the level of the expansion vessel of the mixed water station in US25 to lower slowly until the station stopped. Unfortunately no alarms on the level were sent before the station was stopped. The stop caused a stop also of the CRYO. See [Major Event](#).
- Small perturbation on the electrical network caused a stop of the PS complex for a few minutes. See [Major Event](#)

Fri. 29/05:

- Trip of the 18kV breaker for the Dipole in Alice. No perturbations seen in TI.

Sat. 30/05:

- From the [e-logbook](#): "*The EPC piquets have finally changed the board for the firing of the thyristors, since a noise was observed.*" See [Major Event](#)
- The UW25 demineralised water station stopped due to an interlock (Water leak) coming from the DSS system. A leak was found on the Dipole and repaired in the evening. See [Major Event](#)

LINAC2 (Giulia Bellodi):

It was a very quiet week for Linac2, with nearly full-time beam availability.

LINAC3 (Giulia Bellodi):

At Linac3 we are still investigating the source PLC communication problem. If no solution is found in the next 24-48 hrs the system will be reconfigured so that the ovens will be controlled with the old HW based microcontroller module while keeping in parallel the new PLC-program for data acquisition.

PSB (Jose-Luis Sanchez Alvarez):

A good week for the PSB with one major issues to report.

Thursday, the distributor for the ring2 tripped. The specialist changed a cable.

Downtime 4 hours.

E. Benedetto has applied the high working point to LHC50 to reduce transverse emittance.

BI specialist continues to investigate the injection pick-up problem.

Bettina, Elena and Alan did the Setting-up: LHCINDIV_VdM and LHCF_INDIV. We still have some intensity instability on LHCF_INDIV.

ISOLDE (Alberto Rodriguez / Erwin Siesling):

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PS (Guido Sterbini):

It was a good week for the PS without major downtime related to the machine. On Tuesday the EPC Piquet intervened and fixed two low energy correctors (DHZ73 and DHZ87). The SFTPRO intensity was increased from 1600 to 1800e10 ppp mainly by optimizing the angle of the septum 16 blade (increased by about 2 mrad). In this condition the losses on the PAXP304 were lowered and we could run under the limit of the 20 uSv/h (level A threshold). Investigations are continuing in particular to optimize the extraction trajectories to meet the 2000e10 ppp target. A problem with one T9 quadrupole (ZT9.QDE01, lost communication) was solved by the EPC piquet.

On Wednesday there was a problem on the Delay Wire Chamber in East North (T9) solved by the specialist the day after.

On Thursday night the operation was perturbed by a fault in the distributor of the PSB (2h 30 min without R1 and R2).

During the weekend the operation were marginally hampered by minor resettable fault (C10-86, C40-78 and C81).

During the week the work on the commissioning the optics for the T8 line (IRRAD/CHARM) progressed very well. As requested by LHC, the LHCINDIV doublet beam (low intensity and large longitudinal emittance) was prepared and send to the SPS. Concerning the MTE, good progresses were done extracting the islands on the other side of the dummy septum. The SPS scrubbing beams (LHC25 Scrubbing, LHC25 double and BCMS) were played and measured. The beam intensity is respectively 2.1e11, 2.1e11 and 17.5e11 ppp.

AD (Tommy Eriksson):

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SPS (Verena Kain):

Week 22 was a good week for the SPS with relatively little downtime and many interesting findings.

1 h was lost due to a SPS MKD temperature sensor problem on a discharge resistance, 1 h due to the PSB distributor and 3 h due to the closure of a fast vacuum valve in 6 that was not straight away recognized as it was not interlocked.

The fixed target beam is in good shape. We now have the requested intensity on T6 (> 120 e+11) thanks to the PS loss reduction.

The last issue causing the extraction loss problem on LHC25NS in LSS6 was resolved Monday morning by optimizing all transverse settings. The problem on HiRadMat however remained and was only understood Thursday. The extraction prepulse was generated using the LHC synchronization and not simply synchronizing to the revolution frequency. It was hence not stable. The injection kickers MKP are also adjusted now to allow for 250 ns batch distance.

On Friday the first series of HiRadMat extractions was carried out, extracting 288 bunches with bunch intensities of around 1.25e+11. On Sunday the first HiRadMat experiment was successfully completed.

The TIDVG dumped intensity interlock has become a limitation for 288 bunches in the SPS. The LHC beams are performing better and have more bunch intensity than assumed for the EN/STI simulations. Together with the other beams in the super cycle the intensity limit on the beam dump within 36 s is exceeded after one 288

bunch LHC25NS shot causing an interlock and 70 s no beam each time. 50 ns 6 bunch beams were injected into the LHC. The trajectories in the transfer lines are different in H between the long LHC cycles and the short LHC cycles due to the horizontal orbit in the SPS. Unfortunately the transfer line collimators had been set up on the short cycle. The trajectory had to be corrected back to the collimator reference as well as possible with the 50 ns cycle. The short indiv cycle has been removed now.

LHC (From the 8:30 meeting):

Overall good machine availability.

End of last week there were beam instabilities at the end of the squeeze resulting in large transverse emittances, making setting up of the collimator difficult.

Transverse emittance below 2 micrometers with $1.2E11$ ppb are on the edge of single bunch instability due to the machine impedance.. The octopole strength was increased, resulting in stable beam. Following chromaticity measurements at the end of the squeeze and without octopoles it turns out that beam1 vertical is only about 0.7 instead of about 3, which is a potential cause for beam instability in the vertical plane.

Following the completion of the setting up, the ADT is now fully operational.

Collimator validation will have to be completed, requiring 6 full cycles (about 18 hours).

This morning access to fix a list of issues (experiments + machine)

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For details: <https://indico.cern.ch/event/394164/>