

Accelerator Complex Status

End week 42 (Monday 23 October 2017)

TI (Ronan Ledru)

Wednesday 04:58: Smoke detection and 18kV trip in building SHM6 due to overheating of the compressor LHCA-6 CP1.

Thursday 14:34: Power cut in several buildings of LHC2. During maintenance of the transformer EMD307/2E, the spare supply EBD113/2E tripped because it was not powerful enough to supply the area.

Details: <https://wikis.cern.ch/display/TIOP/2017/10/23/TI+Summary+Week+42>

LINAC2 (Jean-Baptiste Lallement):

There was only one minor issue this week. On Tuesday afternoon, for an unknown reason, the amplitude of the first DTL tank went down generating losses downstream. It was solved by the RF team switching the tank amplitude command in remote (15 mins downtime).

LINAC3 (Jean-Baptiste Lallement):

Overall a good week with some source pulse to pulse instabilities (especially on the second part of the week) and few source RF generator resets.

PSB (Bettina Mikulec):

Good week for the PSB. Few faults and many MDs as usual.

Faults:

- Monday morning access was needed to repair a ventilation unit of the R3 C02 cavity.
- On Wednesday the RF team had to intervene to solve a TFB cooling issue.
- Saturday morning all C16 cavities tripped with an 'air flow' fault. The HLRF piquet had to exchange a ventilation power supply (1h20m downtime for certain beams).

Many MDs were again performed last week with the involvement of several groups, and for the first time the Finemet cavity was successfully used for beam splitting (production of an h2 MTE-type beam).

We stopped all beams this morning at 6am to prepare the RP survey after the stop of the NA proton run; only exceptions are LHC fills.

ISOLDE (Alberto Rodriguez):

It has been a pretty busy week here at ISOLDE. On Tuesday morning, experiment IS562 finished (108Sn at 4.5 MeV/u from the HRS target to the Miniball experimental station). That same day, we started preparing the machines for the next experiment (9Li at 8 MeV/u to the Scattering chamber). It took us a couple of days to prepare the linac and on Wednesday evening, we started delivering stable beam (12C) to their experimental station. In parallel, we also worked on the low energy side. The transverse cooling in the REX-TRAP proved to be quite

difficult due to the low mass of the Li. But, thanks to the hard work of Miguel and the help of Fredrik Wenander, at the end of Thursday we had the set-up ready. The users continued to debug their system using ^{12}C until Friday evening (they had to open their chamber three times) when we started delivering ^9Li at the 8MeV/u . They have been taking radioactive beam since then.

On the issues side: we have had to push all the superconducting cavities quite a bit to be able to reach the requested 8 MeV/u energy. And, although most of them have performed well, we have been less stable than usual, two of them tripped quite often during the weekend and needed to be reset by the users. In addition, the yield of the target was lower than expected and the users had to solve several problems with their target holder and some EM noise in their DAQ system.

PS (Frank Tecker):

The PS had an excellent week with a beam availability of 97%. Two third of the downtime resulted from the injector side. On the PS side, two trips of POPS caused a total of 0:40 downtime, a fault of the C81 10 MHz cavity perturbed the AD beam for an hour, since the C11 spare did not follow the RF function, and a problem with the C66 10 MHz cavity stopped the MTE beam for 0:12.

The B-train distribution was changed back to the WhiteRabbit transmission on Thursday to investigate the earlier problem of the POPS not pulsing occasionally on one individual cycle. This reproduced the problem 3 times during one day, after which the transmission was changed back to the previous for the week-end. The experts think that they may have found the cause. A fix requiring a short POPS stop is foreseen on Tuesday during the stop for the RP survey.

AD (Bruno Dupuy):

Week without failure on the AD machine.

Here some extra activities:

- Monday 7H00-15H00: Periods of AD MD on stochastic cooling. Small problem, it was not possible to switch the AD cycle in PAUSE mode, due to a bug in the Beam Request Server. (Correct by Sergio)
- Wednesday 7H00-15H00: The antiprotons from AD to Elena. M.Dudek worked on a problem POW_1553 FESA class for the PPM destination switch towards Elena. Final tests will be done on Monday.
- Friday 7H00-15H00: The antiprotons from AD to Elena has been disrupted by lots of Elena power supplies problems.

At the end of the week the stochastic cooling efficiency became very variable. It suddenly goes from 100% efficiency to 80% in a very random way. Actions are underway to solve this problem.

SPS (Francesco Velotti):

Very busy last FT proton week at the SPS. At 6:00 this morning, the 2017 proton run for the NA officially ended, with about 10% more protons delivered to T6 than foreseen at the beginning of the year.

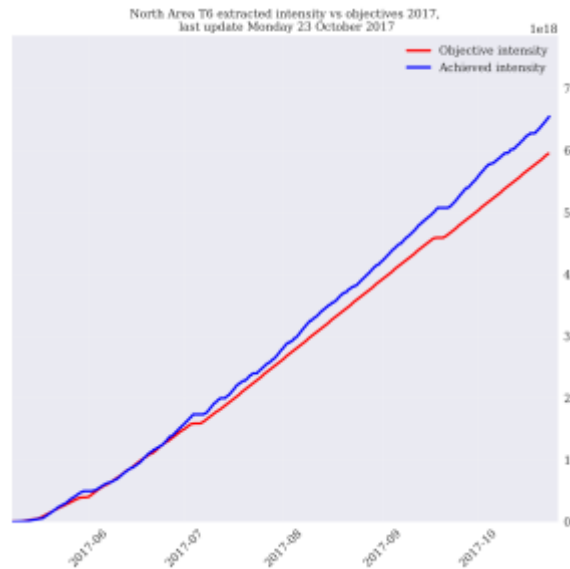
Quick start on Monday with DSO test for the ions to the NA. All the programmed tests were carried out successfully, except for the fact that the requirements for the lowest requested extraction energy, 31 GeV proton equivalent, couldn't be satisfied. The problem, as last year, are the minimum current requested for the extraction septa, MST and MSE. In the present configuration, a minimum of 34 GeV proton equivalent can be delivered, satisfying the safety requirements, to the NA. Reyes is following this up with the experiments requesting this beam. To date, EPC experts are looking at the possibility to develop a new card which should permit to satisfy the requirements, although this will comport the necessity to have another DSO test. On Monday night, HiRadMat MultiMat experiment has been also completed.

On Tuesday, the SPS was dedicated to the UA9 physics run. Another very successful session of data taking for the "double" channelling. During the coast, a problem of connection to one card of the RF system was identified and solved. This improved the beam stability too, although the overall machine stability was not perfect, probably amplified by the optics used during this run, i.e. Q20.

Wednesday was the time of high intensity runs, for both LHC and FT beams. On the 25ns beams side, it was basically a continuation of the studies of last week. For the FT, it was taken on the SHiP cycle, the high intensity beam prepared during the week in the pre-injectors. Despite the short time available, about 4×10^{13} p were accelerated above transition. The main losses were observed as consequence of the large (~ 6.5 μm) vertical emittance, as expected.

On Thursday and Friday (only in the morning) the setting up of the partially stripped Xenon beam was continued but still not fully completed, together with many parallel MDs, trying to profit of the last days with protons. Also, LHC was filled with the same delay on the MKP for all injections, finally coming back to the nominal settings - this was probably possible as consequence of the scrubbing carried out during last days.

It was also a pretty quiet weekend, still with many parallel MDs (Q" measurements and automatic aperture scan), although a quite critical problem was observed - for still not understood reasons, one server of BA4 PCs was not sending the reference to controlled PCs, this included also one of the extraction sextupoles. Thanks to the quick reaction of the shift crew, the slow extraction was stopped. EPC experts are still investigating the reasons for this, also because the server was not reporting any errors.



LHC (Jorg Wenninger):

Smooth operation with 8b4e BCS. New BSRT calibration improved agreement between luminosity from ATLAS/CMS and luminosity estimated from beam parameters. On Saturday the LHC passed the 40 fb-1 delivered mark.

On Sunday a beam was again dumped by 16L2 when the bunch intensity was accidentally increased to 1.3E11 ppb.

Upcoming:

- No beam for 6 hours on Tuesday due to injectors RP survey
- High beta* optics tests, followed by 150b luminosity calibration fill for ATLAS
- 2-hours access for CMS to be scheduled
- Intervention on post-mortem server next week
- Triplet cooling test with beam head-on (no leveling) to see what the actual cryo limit is. (week 44)
- Point 4 cryoplant de-clogging required before YETS