

End Week 47 (November 25th 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

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

TI (Peter Sollander)

TI summary in the usual place: <http://wikis/display/TIOP/2012/11/26/TI+summary,+week+47+2012>

Apart from the fire in the H4IRRAD facility Tuesday morning, a very calm week for TI.

day	events
Tuesday, November 20	<ul style="list-style-type: none">01:54 -- Fire alarms at H4IRRAD in north area. Fire brigade and OP on site. Beams cut. A UPS in the test area had caught fire. 

ISOLDE (Didier Voulot)

A very quite week at Isolde.

Beam to the WITCH experiment until Wednesday morning. Wednesday was devoted to emittance tests for HIE Isolde then Thursday and Friday target change and set-up on HRS for a Mn run for COLLAPS. They are taking beam since Friday afternoon. No problem.

On Wednesday and Thursday we made use of the RABBIT set-up to irradiate samples with the proton beam. Also no problem.

LEIR (Maria Elena Angoletta)

It has been an excellent week for LEIR.

It started with some issues, such as a) the impossibility to measure tunes on the EARLY beam and b) the impossibility to extract beam to the PS machine owing to the element ETP.QFN20 that failed to remain ON for more than a few minutes at a time. The former problem was traced to wrong measurement settings accessible only from the FESA navigator (hence only to BI experts) and was solved by BI experts. The latter was due to a

water temperature fault traced to a dirty filter in the cooling water circuit and was solved by the magnet expert during a PS access.

The rest of the week went on **very** successfully. All supervisors and several experts contributed to a big effort, which paid off tenfold, to optimise various machine parameters.

The phase and slope of the LINAC3 energy ramping cavity and debuncher were changed on all users so as to make them equal to the settings found last week for EARLY.

The magnetic field was changed and optimised during accumulation on NOMINAL.

The LLRF was optimised for EARLY and was partially optimised for NOMINAL (the MD will continue next week). The vertical tune was changed on NOMINAL so as to help optimising the capture.

The tank 2RF phase was changed resulting in a slightly higher LINAC3 current and in excellent injection efficiency for all beams, owing very likely to a lower energy spread at injection into LEIR.

By Friday 23rd for NOMINAL we managed to basically reach the maximum possible accumulated intensity given the number of charges received from LINAC3, which was typically of 18 or 19 microamp as measured on T41. In fact, we could accumulate up to 6.5×10^{10} and we managed to extract 4.8×10^{10} to 5.0×10^{10} and sometimes 5.1×10^{10} charges, i.e. around 100% of the nominal intensity expected for the user NOMINAL (5×10^{10} charges).

For EARLY we could accumulate and extract 1.2×10^{10} to 1.4×10^{10} charges with minimal losses, i.e. between 100% and 115% of the nominal intensity expected for the user EARLY (1.2×10^{10} charges).

AD (Lars Varming Joergensen)

The AD had another really good week and probably set a new record by having no loss of beam beyond what was caused by the very few mishaps from the PS. There were only two very minor problems all week, so it really was a very good week for the AD.

FAULTS					
Date	Start/Duration	Symptom	System	Resolved	Comment
21/11/2012	00:16/7H*	Corrector not responding	DE2.DVT15 corrector on ALPHA line	YES	No loss of beam time due to this!
25/11/2012	07.58/37"	Low intensity to ASACUSA	DR.DVT2904 reset	YES	No loss of beam time due to this!

Machine Tuning and General Comments			
Date	Start/Duration	Sub-system	Comment
26/11/2012	Morning	RF + e-cooling	Bunched beam cooling studies
26/11/2012	Morning + Afternoon	Orbit measurement system	Tests + fix hardware problems + measurements
26/11/2012	Afternoon	Start tune measurements	Part of program of references before shutdown

BOOSTER (Jocelyn Tan)

Excellent week for the PSB. Only a couple of resettable faults and operation routine (some fine tuning of the ejection trajectory and Qstrips)..

PS (Ana Guerrero Ollacarizqueta)

This week POPS tripped twice with non resettable faults (cooling and IGBT card problem) causing around two hours beam stop. On Thursday, an access to the PS tunnel was needed in order to repair a quad in LEIR ETP line while the LHC was also in access. Unfortunately the access took 1h more than foreseen (2h45m).

Also on Thursday, ions were sent to SPS. The 2-bunch 200ns ion and proton beams for Monday MD have been prepared.

SPS (Django Manglunki)

An eventful week for the SPS. Lots of beam down time, but the positive aspect is we now have all four wire scanners working.

On Monday 19/11 took place the last UA9 coasting MD for crystal collimation. Coming back from the MD we had a two hour stop because of a bad communication between the BCT and the MKD interlock.(2 hours down time).

During the night there was a fire alarm in the North Area, caused by an UPS (3 hours down time for H4).

On Tuesday morning a vacuum problem appeared in BA2, on the vacuum chamber of magnet MBA20730. It was first decided to wait for the LHC to be filled to start the repair, but as the LHC needed an access, the SPS was stopped for cooling down at 12:00 and the exchange of the magnet followed (~24 hours down time).

We took advantage of the stop to repair the two broken wire scanners, 416V and 519H. There was also work in parallel on the RF transmitters which had caused trouble during the previous week, on the elevator in BA2 which had been flooded 10 days earlier, and the long list of access requests was generally cleared.

The vacuum conditions allowed to restart the SPS on Wednesday at 11:30, and beam was produced again for about one hour.

Then, at 12:40, occurred the first of a long series of MKD faults (MKDV3). After intervention by the ABT piquet and several specialists, we had beam again at 18:39. (6 hours down time).

LHC filling for vdM scans started at 20:20 but was inhibited by BQM faults. It turned out the rephasing software had been modified while the beam was stopped for MKD repair. After the RF software expert reverted to the previous version it was eventually possible to fill the LHC (2 hours downtime/delay of LHC filling).

The full 144 bunch 50ns LHC beam was tested during Thursday, in view of the end of vdM scans and resuming of physics at the LHC.

During Thursday night, a fault developed again on MKD. The ABT piquet had to be called twice, and spent most of the night on site to try and fix it.(~3 hours down time) On Friday morning, thanks to the tunings performed by the piquet during the night, the MKD seemed to have reached a stable state, so the specialists decided at 10:30 not to change the faulty switch by its spare, as the spare had not had time to be tested in the lab, but to prepare another spare and put it to test over the week-end.

There were more MKD erratics during the afternoon and night however; the problem was provisionally solved by the piquet and specialists (~7 hours down time).

It was eventually decided to replace the switch with the untested one on Saturday at 9:30 (7 hours down time) after having filled the LHC.

All beams were back at 16:30. The new switch, although untested, performed well so the rest of the week-end was quiet.

On the ions front, the single bunch beam has been prepared on Q20 and optimized over the week-end. There are still some losses but more than

$1.2E8$ ions get accelerated to the 177GeV/u flat top, ready for the MD on Monday. Unfortunately it was not possible to use only 3 MKP generators for injection, so the batch spacing will have to stay 225 ns in any case.

The 12 injection proton cycle on Q20 (filling for p-Pb MD on Monday, and for the January-February run) has also been prepared. It could only be tested briefly with beam during the week-end, as its length prevents it from cohabiting with the CNGS cycles.

LHC

Difficult week with some major time-outs (SPS magnet exchange, SPS MKD switches, transfer line collimator set-up..). However Van der Meer scans successfully performed and a good weekend's production yielded 0.52 fb^{-1} .

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