

End Week 15 (April 16th 2012) – Status of Accelerators

Linac2 [D. Küchler]

We had a good week for the Linac2. Only in the night from Friday to Saturday there was a problem with LA1.QDN19S. After 3 resets the EPC piquet had to be called to fix the power converter (total time lost ~45min).

PSB [A. Findlay]

A good week for the PSB, with no problems keeping us from production for any length of time.

We kept ourselves busy with beam setting up for MDs and upcoming operations, as well as measurements to help us understand what beams can be offered for MD. We set up the LHC_lowemt25 (low emittance beam for LIU studies) cycle during the week and delivered it to the PS on Friday so they could start their setting up. The request for the LHC 100 ns was received on Thursday, so this was investigated on Friday and work will start on Monday. The MDs in collaboration with GSI colleagues that are expected in June require a series of longitudinal measurements to define what we're capable of producing, so Celine was tasked with these having had the longitudinal blow-up process explained.

We still have an issue with fluctuations in the PSB extraction/PS injection line, and a change of the power supply for BT.BHZ10 back to the original was hoped to help, but doesn't seem to have. The search continues.

ISOLDE [D. Voulot]

This week there was a GPS run with Hf beams for an experiment on LA1 and ISOLTRAP. Target #472 (Ta/W HP with special Re line). The run was schedule to start on Thursday night. On Wednesday evening the target line broke. The current on the line dropped to zero and we found that the line was open circuit. The target was taken to the hot lab and opened by Richard's team on Thursday to see if it could be fixed (the target had not seen any proton yet) and they found that indeed the line was physically broken. This is normally due to overheating or a defect in the line material. Apparently this was not linked with heating or vacuum problems. A spare target #446 (YO HP) was installed on Thursday and set-up between Thursday and Friday. Physics started late on Friday.

On HRS target #449 (molten Sn) was installed on Friday it will be set-up on Monday and Tuesday. Physics starts on Thursday. Need staggered beam with 16 us and 1e13 ppp max.

Still some controls problems: ramping cards cooling down and reheating unexpectedly the target, slow controls on REX linac rending set-up almost impossible, quadrupole steerers switching off on the ISOLDE lines...

PS [S. Gilardoni]

The PS had a good week, without any major problem.

We delivered as requested all the operational beams (CNGS, AD, TOF, LHCS) plus we prepared the slow extraction for the EAST area. Physics should start in fact on Monday.

There are two open issues for the EAST beams: a) the spill measurement is not working correctly. The expert will intervene on Monday; b) the ARCON system in the EAST hall is sometimes generating a spurious monitor fault. RP is investigating the issue, but it will not be solved on a short time scale. However, we can run in this condition according to RP.

The RF experts continued the setting up of the CNGS-100 ns, now preparing the beam injected on h=9.

On Tuesday we had an access to change the HV cable of the electrostatic septum 31, the one for the CT extraction, since it was not possible to keep the nominal voltage. We had also few trips of the KFA71, the one used for the fast extraction. The expert is following the issue.

During the entire week we tried to optimize either the supercycle composition or the TOF beam intensity (limited below 700×10^{10}), to keep as much as possible the PAX35 (top of septum 16) below the radiation alarm level A. Still, we are running always at the limit, even by reducing by one the number of CNGS cycles sent to the SPS. Obviously we tried to reduce the losses, but actually it seems that there is not much left to gain. We also had few radiation alarms, either for beams not correctly extracted, or because of too much intensity, or because a CNGS is completely lost at transition. The reason of these is also being investigated.

Concerning beam instrumentation, we have problems with the OASIS signals of the pickup. Sometimes the signal reflection completely covers the signal, sometimes due to the OASIS multiplexing, the signal disappears. This makes beam debugging more difficult.

AD [T. Eriksson]

We are still having HW-problems with the electron cooler – cooling at low beam energies have not yet been accomplished.

More news today about this.

For the rest of the AD things look better, beam can be decelerated to 100MeV/c but of course with large beam emittances and losses.

SPS [K. Cornelis]

The main event last week was the repair of the Beryllium vacuum window at the end of the CNGS transfer line. The intervention started on Tuesday and the beam conditions were only re-established on Wednesday afternoon. After some initial problems with the RF phase loop (not completely understood), CNGS could be restored at around three o'clock in the afternoon. Thursday morning there was an injection problem, on both CNGS and LHCfast, after the change to a filling super cycle. A timing problem, on switch 5 and 6 of the proton inflector, was diagnosed by the kicker expert who could fix the problem. Starting on Thursday afternoon, and lasting the whole night until Friday morning, we had problems with frequent bad readings of the BPMs on the CNGS target. At certain moments the operators had almost a full time job resetting the interlocks, resulting from these bad readings. On Friday afternoon the problem gradually disappeared and during the weekend the BPM's behaved very well. In fact the weekend was pretty calm, except for some power convertors that dropped a few times, for no obvious reasons, in the LHC transfer lines.

LHC [B. Holzer]

Plan for the week was intensity increase via bunch number with protons per bunch = 1.3×10^{11} const. and nb=624 ... 840 ... 1092 in steps; each time a number of fills to validate the intensity step (equivalent to 20h run)

Major achievements:

up to 3.8×10^{33} lumi ... more with 1092 bunches than in 2011 with 1380
IP8 vertical crossing & leveling works perfect

Problems:

Injection kicker beam 2 showed 2 times a short pulse, dumping the injected 108 bunch train.

Beam dump system UPS needs attention: complete power out observed, could lead to an asynchronous dump.

Orbit reference system needs attention, loads from time to time zeros.

In general: 46 % efficiency
60cm beta function OK
108 bunch transfer optimised

Some lifetime dips during squeeze and adjust but in general smooth operation

TI [P. Sollander]

Wednesday, April 11 -- Communication error on the cryogenics field bus (WorldFIP). We had problems to get hold of the BE-CO specialist. This problem was brought up at the TIOC. BE-CO has now added another name to the list and we should be better off next time it happens. However, CO plans to add more names to the list to improve the coverage further more.

Thursday, April 12

02:00 -- electrical perturbation hits all the accelerators. The LHC was in stable beams and it took until the afternoon to get back in physics again. 14 hours lost. Also touched Booster, PS and SPS, but they were all up again after about an hour and a half when POPS was up again.

22:12 -- Another electrical perturbation. This time, only the LHC was hit. 3 hours lost.

Sunday, April 15 12:10 -- Electrical perturbation stops the LHC in stable beams. About three hours until stable beams declared again.