

End Week 20 (May 23rd 2011) – Status of Accelerators

Linacs (F. Gerigk)

Linac 2: on Monday it was found that there were several missing pulses from the source, and as a consequence the watchdog kept cutting the beam. The problem was traced to a faulty insulator in the gas return line of the source. It was exchanged on Tuesday in a dedicated technical stop, after which the beam came back.

PS Booster (K. Hanke)

Busy week but without major breakdowns.

Monday morning Linac2 source prbs started, some missing pulses. A short access was done and the linac experts concluded that they would need 4h the following day.

In the afternoon a bad bunch shape and length in Ring 3 required intervention of the LL RF piquet

On Tuesday the LHC requested LHCINDIV and PROBE, and it was found that the bunch shape and length of INDIV was very bad (noisy and far too long), the LL RF piquet did some adjustments which improved the situation.

As from Tuesday and throughout the week the SPS and LHC complained about too large emittance on LHC_A. They were repeatedly measured with the wire scanners, the measurement line and in the PS and found in specs.

It is worth noting that measurements with the wire scanners in the PSB were extremely difficult, the system is instable and works only occasionally. On the Ring 4 scanner the filters are now blocked in one position. Therefore measurements were also done in the measurement line. In general one can say that the emittance of all rings is within the specified 2.5 pi mm mrad, but that rings 2 and 3 show smaller emittances than specified (around 2.0 or smaller) while Ring 4 is close to the specified value.

Thursday evening BR3.C16, BR4.C16, BT3.DVT40 tripped, apparently due to thunderstorms although TI did not record any glitch, 13 min stop.

Weekend quiet apart from a 15 min stop Sunday morning (C16 cavities tripped, resettable).

ISOLDE (E. Siesling)

HRS:

Running with a UC/ThC target. Physics at the LA1 line. RILIS laser ionisation used for At beams. The run was successful and stopped according to schedule on Friday-morning to start radioactive cooldown. Target-change foreseen today (monday).

Earlier during the run we had problems with sparks in the ISCOOL (HRS RFQ) on one of the two extraction plates. We thought we had solved this problem at the 2011 start-up but it came back. However, during this run it disappeared again. We have a solution in mind which we will apply during the next longer HRS period without beam. The gasflow in the RFQ also needs attention (aging needle gas-flow meter).

Furthermore we had a few minor problems with the vacuum valves due to too high thresholds for closing/opening. Solved during the week by Sebastien Blanchard.

GPS:

Target-change was done on Wednesday-morning to a YO target for collections in the GLM line. During the run we noticed sudden changes in the extraction high voltage (HT2). Changing by 1kV by itself which is disastrous for the beam energy. It disappeared after a while and came back on Friday-afternoon. Since HRS wasn't running we decided to swap HT2 for HT1 (HRS extraction) to have a stable situation over the weekend. The HT2 problem is under investigation (Jan Schipper).

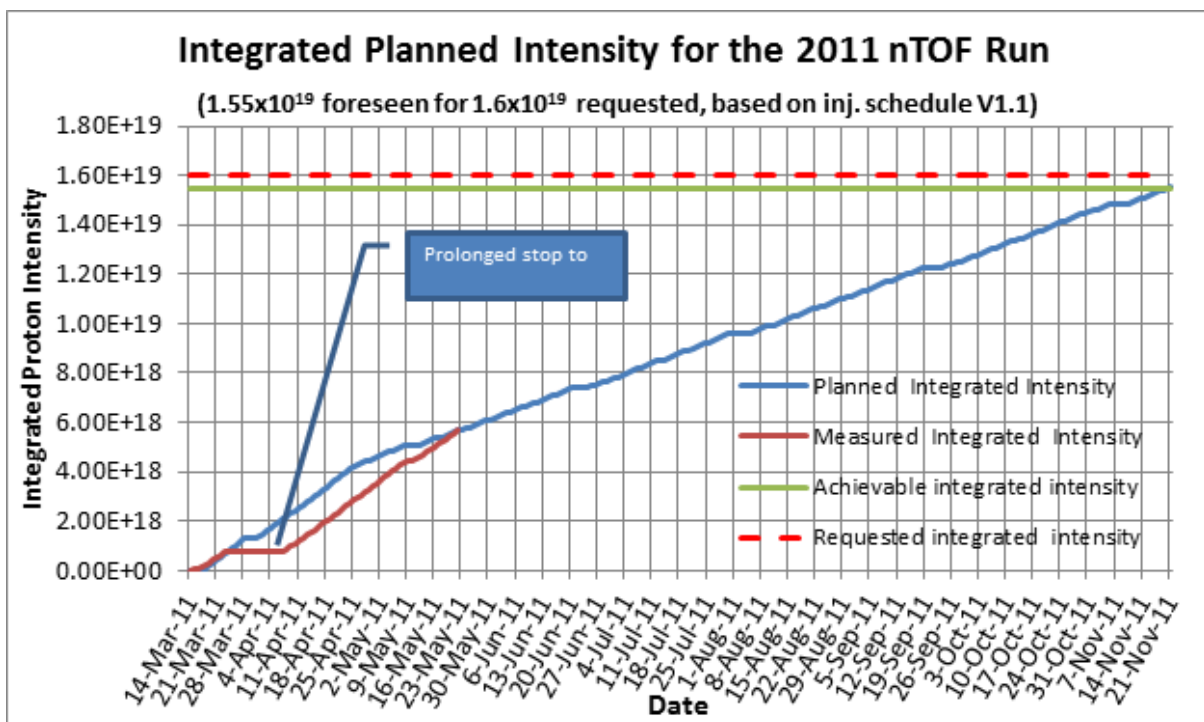
This YO target is not completely performing according to the wishes of the users: A few of their wanted isotopes are not coming out or there is stable contaminants coming with it. It will be discussed with the target-production group. This target also seems to accumulate elements at lower temperatures which then come out when heating again causing the extraction high voltage to drop. We found a work-around to re-condition the HT whenever this occurs.

PS (Y. Papaphilippou)

The PS machine had an excellent week with no major fault worth mentioning apart from a cooling issue with one of the EAST area magnets which cut the EAST area beams for 2h on Thursday evening.

We delivered all operational beams without problems and Dirac started its run during this weekend.

The lost integrated intensity for nTOF has been recuperated. In March nTOF was stopped to solve ventilation issues causing it to fall well behind the planned integrated intensity curve. Thanks to the efforts of the OP team, optimising continuously the super cycle composition and the beam intensity on the dedicated and parasitic cycles, we managed Sunday evening to reach the planned integrated intensity again. Sunday midnight nTOF had accumulated $5.67E18$ protons on target for $5.66E18$ planned.



SPS (D. Manglunki)

The SPS has supplied beam to the LHC (probe, indiv, and 50ns spacing with up to 144 bunches) and to CNGS. Because of the TAX problem, the North Area is still down until early June, with the positive consequence that the CNGS proton on target figure, $1.8E19$ today, is about 15 days ahead of schedule.

During the week, power supplies tests for HiRadMat took place, as well as dry runs, and on Friday evening, beam was extracted for the first time to the TT60 TED on the HiRadMat cycle.

At the beginning of the week, the large emittances of the 50ns beam for LHC coming from the injectors necessitated more scraping than usual in the SPS. The beam loss monitors had to be masked.

Investigations are taking place to try and understand coupling between the LHC and HiRadMat cycles, generating a high ripple on MST6177.

The CNGS beam needs to be stopped every hour to let the target cool down as soon as its temperature reaches 80 degrees.

During the week RF transmitter TRX8 tripped several times; over the week-end it repetitively tripped and necessitated the intervention of the piquet. A 1kW amplifier will need to be changed on Monday morning, outside of the LHC filling period. Tests of the MST6177 for HiRadMat will be done in parallel.

LHC (B. Holzer)

Main goals for the week: establishing 108 bunch train transfer to prepare for higher bunch numbers, establishment of 912 x 912 filling scheme for physics, reached on Saturday/Sunday.

Luminosity reached 1.1×10^{33} .

More details under:

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

TI (P. Sollander)

- Monday, May 16, 06:41 -- Another electrical perturbation stops SPS and LHC.
- Thursday, May 19, 19:32 -- Electrical perturbation, 80ms due to fault on 225kV line in Switzerland due to thunderstorm
- Sunday, May 22, 9:09 -- Yet another electrical perturbation. This time due to a fault on the 400kV line near Albertville causes a 1.5 hour LHC stop.