End Week 46 (November 20th 2011) – Status of Accelerators

Week marked by premature end of protons for the year on Wednesday morning following the detection of a vacuum leak on the PS proton injection septum. Decision made not to risk ion operation by pulsing septum.

TI (Jesper Nielsen)

Quiet week - here's the link to last week's summary:
http://wikis/display/TIOP/2011/11/21/TI+summary+week+46%2C+2011

LINAC 2 & 3 (Richard Scrivens)

Operation of both Linacs was very smooth up to Sunday evening, when the demineralised water pump (supplying both Linacs and LEIR) failed. Restarting on the spare, beam was back by 9pm.

ISOLDE (Emiliano Piselli)

It was really a good week for ISOLDE without any important problem. I was called in only on Sunday morning for a vacuum problem.

LEIR (Django Manglunki)

A very good week for LEIR, no breakdown to mention... until Sunday evening when at 18:00 a water pump in Meyrin tripped, stopping Linacs 2, 3 and LEIR. The water came back at 20:45, and the SPS operators were able to restart the machine and transfer lines from the CCC, but the electron cooler had to be restarted in local. It then appeared the transverse feedback had tripped too, and after a reset, the beam was available for users at 22:15.

Since Tuesday, on request of the LHC which uses it for its pilot bunch, the intensity is intentionally decreased on the EARLY beam, by only injecting one Linac 3 burst instead of two.

During the week-end, and in spite of a relatively low (16uA) but stable ion current from Linac3, LEIR provided good intensities (>4E10 charges/cycle) on the NOMINAL beam for LHC and the North Area.

Booster (Giovanni Rumolo)

Last week for the PSB in 2011, and there's actually not much to report. It was a quiet week, in which a few stops were actually caused by the PS (access for the septum on Wednesday and for the PS radiation survey on Thursday) and by a Linac2 water station fault this afternoon. Several MDs took place this week, in particular the digital beam control for the RF in Ring 4, tune scans for the resonance lines at 160 MeV and BLM studies, and we provided the beam to ISOLDE according to their requests.

PS (Jakub Wozniak)

Last 7 days were marked by 2 major vacuum failures.

As we remember the end of the previous week was smooth only until Sunday morning (13/11) when a vacuum leak was detected on bellows of the wire scanner 54. It was removed and replace by a flange. Due to that intervention no beam was delivered from Sunday morning 6h50 till Monday morning 10h30. Monday afternoon was later on perturbed with the cavity C80-08 power supply burned, the BSW16-14 bump not pulsing correctly due to a wrong cable connection and finally the Booster MPS problem early evening.

Second big vacuum problem came on Wednesday around noon when again a vacuum leak was detected on the septum 42 when it was pulsing. Due to high radiation access was granted by RP only from 15h30. Jan Borburgh team have done multiple tests trying to find the source of the leak with no particular success. It seemed not to be located in the cooling circuit and most likely looked like sparking. Ion beams recovered from this failure around Wednesday 20h15. Nevertheless it has been decided on Thursday morning to stop protons till the end of the run to avoid further risk for ion beams. As a consequence the annual RP survey took place Thursday afternoon after the stoppage of the proton beams in the PS. From then on no major problems noted until Sunday evening (20/11) when a failure of the cooling tower in the Linac3 stopped the ion beams for 4h15min.

SPS (Yannis Papaphilippou)

It was a good week for the SPS, running exclusively with ions, since the failure of the PS septum on Wednesday:

- On Monday afternoon, the beams stopped getting injected due to several interleaved problems related to: the master-ship and the beam destinations, problems with a PS 80 MHz cavity and extraction bumpers and an interlock of SPS dump kickers. All problems were solved by late evening and the LHC got filled by midnight.
- On Tuesday, optimization on SFT Ion and LHC ion cycles continued and a large series of measurements on the nominal and low gammat cycles were made during the night for identifying the threshold of the TMCI instability. At the same time, the 100ns proton beam for tests in the LHC was checked.
- On Wednesday morning and just when we were ready to fill the LHC with the 100ns proton beam, the problem with the PS septum occurred which terminated the proton run. Ions were back in the machine during the evening but without good efficiency. Next morning, the efficiency was increased by optimising the phase loop and changing the energy of the PS at extraction. In the following days, the efficiency was further increased by tunes' optimisation and injection oscillations' reduction, finally delivering 2.3-2.4e11 ions per shot with 0.9microns emittances, in both planes. The problems observed with the extraction of the fixed target ion beams was due to a drift of the radial position, which was also corrected next morning.
- On Thursday, the RP survey was conducted in coordination with the PS between 14 and 18:00.
- On Sunday, the beam was cut due to a water problem in the Meyrin water tower, affecting the LINACS and LEIR.
- The run of the fixed target ion beam with different energy will start on Monday.

LHC

Good first week of ion operation. Timeouts for PS wire scanner leak and PS proton injection septum problem. Proton-lead run cancelled given unavailability of protons from PS.

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