

## End Week 45 (November 15<sup>th</sup> 2010) – Status of Accelerators

### Linacs (R. Scrivens)

**Linac 2:** running was very smooth.

**Linac3:** stripper foil level was changed in order to get back higher intensities (11 unused foils remaining), otherwise also smooth running.

### PS Booster (J. Tan)

The Booster has had a very smooth run, with minor issues to report.

#### Tuesday

BT.KFA20 had to be reset twice, due to a timing jitter on a TG8 board.

The MDPSB (LHC50-like, single bunch in H2 acceleration) was checked.

#### Wednesday

All flavors of LHC25A have been checked.

#### Thursday

BR4.C16 went off for a couple of mn. It was a resettable fault.

LHC75 (6 bunches in a single batch) has been checked

Quiet WE with only one event to report : DLINPOW1 had to be reloaded, causing a 15mn beam stop.

Ejection PUs : since the implementation of the new trigger (BEX.SEJ) for the ADCs in 2007, there were frequent jitter issues (~a couple of RF trains) with this timing which led to misleading interpretation from the FESA software : the specialist has decided to come back to the initial setting, ie the system trigger is now the fine delay of the kicker timings..

### ISOLDE (E. Piselli)

Last week ISOLDE's operation was very smooth. No big problems and GPS and HRS users got beam without any interruption.

### PS (R. Steerenberg)

The PS has been running well last week. There were some issues, but most of them could be solved rather quickly.

A few issues on the INCA side came up that caused some problems. Most of them are now understood and have been or will be solved this week.

On Tuesday morning the 80 MHz cavity used for ions (C80-08) could no longer hold its required voltage and tripped too often. It was therefore decided to retune one of the two 80 MHz cavities

(C80-88) used for LHC protons beams (MD's) to the ion frequency. This stopped all parallel MD's on the LHC protons beams. However, the C80-88 also trips regularly and we also had to reduce the voltage. We will check with the specialist if there is not a systematic problem with the maximum voltage when these cavities are tuned to the ion frequency. We should perhaps also reconsider the spare situation of the 80 MHz cavities especially in view of longer runs with ions for the north area possibly in parallel to ion operation for the LHC in the future, leaving no spare in case of problems like the ones we have now. In addition we cannot open the cavity during a technical stop as it will degrade the vacuum too much for ion operation.

During the whole week the 4 LHCIION cycles in the PS super cycle were very often requested, reducing severely the place in the super cycle for some other users, among which TOF and EAST.

### **LEIR (D. Manglunki)**

The week started well for LEIR until Thursday afternoon, when the extracted intensity became unstable. The transverse feedback was immediately suspected but did not seem to be faulty at first. The LHC was then filled under unstable conditions with 69 bunches per ring during the night from Thursday to Friday.

More investigations on Friday showed it was indeed the damper which caused a variable beam loss during the last part of the LEIR cycle. The fault disappeared on Friday during the investigations, but could reappear any time as it was not completely understood.

The intensity was pretty satisfactory on Friday and Saturday, but somewhat lower - and less stable - on Sunday; those intensity variations are correlated with the one supplied by LINAC3.

On Sunday the LEIR Vistar stopped working; cold resets of the front end, suggested by the controls piquet, did not help. After consultation of several controls specialists, it was decided to let them delay the repair until Monday as all the essential signals are still observable on OASIS.

### **AD (P. Belochitskii)**

Monday: beam losses of around 10% to 15% at capture before ejection were found. Phase loop adjustment solved the problem.

Tuesday evening: beam was lost at many shots, while surviving on other shots. More lately, faulty behavior of the dipole magnets BHZTR20+21 was found. Fixed by first line intervention.

Friday afternoon: faults of two magnets in ATRAP ejection line, DE0.QN60 and DE0.DVT45. Solved by first line intervention (change of module in each of the power supplies).

Sunday morning: the main quadrupole circuit went down. Power supply side (convertors) looked o.k. Intervention in the machine (piquet for magnets arrived) revealed a water leak in the quadrupole magnet QFW22. The repair will start on Monday. Electrical test of quadrupoles shows they are o.k. Shortcut found for cable connecting quadrupoles in the ring with power supply in other building. Magnet group will continue to work on faults on Monday.

### **SPS (K. Cornelis)**

The SPS run without any big problems for fixed target and CNGS physics this week. Only a few hours were lost for the north area on Wednesday evening (after the floating MD) because of problems with a power converter (MB2505M) and on Thursday evening due to problems with the control of a collimator in the H2 line. The collimator could not be repaired, but it was put in a position which should be compatible with the H2 operation until the end of the proton run.

We spent a lot of time running the LHC ion cycle, first of all, to fill the LHC, but also to improve the performance and stability of the ions in the SPS.

The floating MD on Wednesday was used for to investigate the e-cloud instability at 450 GeV with the 50 nsec. beam. Vertical single bunch instabilities could be observed at the end of the second and third batch. The second part was supposed to be devoted to the setting up of the fixed target ion cycle for the NA61 fragmentation test. Most of this MD was spent on filling the LHC (5 hours) and only two hours were spent on the setting up of the FT-ION cycle. The beam was injected and captured on the flat bottom but acceleration and extraction still remains to be done.

### **TI (P. Sollander)**

TI operation had a good week except the false ODH alarms, when switching the lights in the LHC tunnel.

- Thursday 11, switching lights on in point 7 creates false ODH alarms and evacuation signal in UJ76. Intervention by fire brigade and GS-ASE. Later, when the lights were switched off, ODH alarms went off again, but this time without the evacuation signal.
- Saturday 13, lights switched on again for an intervention on the QPS, ODH alarms and evacuation again. Fire brigade had to go down to reset the alarms.
- Lights are now left ON and will not be switched again.

### **LHC (R. Assmann, M. Lamont)**

Full details under "coordination" at

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