

End Week 50 (December 13th) – Status of Accelerators

Summary

ISOLDE	Shutdown
LINACS	Linac2 fine
AD	Shutdown
PSB	Good
PS	Good
SPS	Good
TI	-

Booster – Bettina Mikulec

Throughout the week, the PSB delivered the LHCPROBE and LHCINDIV beams at varying intensities to the LHC.

The main issue of the week has been the broken wire of the ring 3 horizontal wire scanner; it will be repaired during the January stop.

Other minor problems:

- The slow extraction bumpers required some hardware and interlock resets on Tuesday and Friday.
- On Sunday afternoon the beam got lost in ring 3. The operator identified a problem with multipole power supply for BR3.QNO816L3. The piquet PO finally found that there was a bad connection on the transceiver card. This might also have been the reason for the required working point change of ring 3 on Thursday.

SPS (Elias Metral)

The SPS could deliver the LHCPROBE bunch to the LHC using the LHCFast2 cycle and the LHCINDIV bunch using the LHCFast1 cycle or using LHCFast2 and changing the RF MMI mapping. In order to avoid sending too much beam to the LHC with the LHCINDIV bunch, Jorg implemented a BCT interlock in the SPS (working at few $1E10$ p/b). Furthermore, the SPS scraper was successfully used to adjust the intensity and the transverse emittances in the SPS.

On Monday, a first intervention on the NA bypass (MSE2103) took place (to remove a "contre-source") and a second one in TI8 to repair a bypass on an ionic pump. A magnet patrol also took place in TT20 and the QTLF2102 was found in fault OFF (the first line was called). The transmitter TRX5 tripped several times during the week.

On Wednesday, the LHCFast1 cycle was checked to try and understand the emittance blow-up which was observed before. The emittV (rms, norm) was 2.2 microm in TT2 and at C630 (i.e. 5 ms after injection), it was already 3.0 microm according to the BWS application (with corrected oscillations at injection and a sigmay of 1.7 mm) and even more at top energy. Two reasons were

eventually found. The first was an error in the BWS application, which used a beta of 21 m instead of the correct 28.15 m. The second came from a bad orbit near 2.17. After correction, the transmission was perfect and the transverse emittance was kept at 2.2 microm up to top energy. Note that huge transverse emittances were sometimes measured in the past at top energy when the coherent oscillations at injection were not well corrected.

On Saturday, the MAIN_POWER_CIS MASTER communication was lost at some point. The procedure from the wiki (<http://wikis/display/SPSOP/Mains+and+Power+Converters>) was tried without success, and the PO piquet was finally called. The solution was to reboot the PLC HPCISLO4. The piquet was also called for the transmitter TRX2 (unable to restore level 1, UG2 crowbar and UG1 faults seen on BA3): 1 tube was put offline for TRX2, and transmitters 1 and 2 balanced to give almost the same power in the cavity.

PS (Rende Steerenberg)

From machine operation point of view the week was rather calm and the beam availability to the LHC was 100%. All the interventions that had to be performed were planned and done during periods that the LHC did not request beam. However, during the 2nd half of the week, including the weekend there were many issues, technical and safety, concerning the exchange of pumps underneath the AD-target zone.

Monday morning at 08:00 the beams for the AD and the Cloud experiment in the East area were stopped. Our main client left is now the LHC, as AMS is not ready to take beam. In parallel to the LHC operation work on the MTE continues. All the equipments that are not used for LHC beam operation or MTE are now switched off.

At the beginning of the week besides the LHCPROBE beam the LHCINDIV beam was also send to the SPS for setting up in view of a request for higher intensities per bunch by the LHC.

On Thursday preventive maintenance took place on some of the CT equipments in order to anticipate possible use for the AMS run at the very start of January.

Also on Thursday a planned intervention on the pumps in the TT6 tunnel underneath the AD-target zone could not take place and access was refused by the CCC team, since there were some safety concerns that needed clarification and rectification. As a result several urgent piquet interventions took place as the temporary pumps stopped working on several occasions and the water level became much too high. On Friday the controlled access with key was reestablished to the TT70 zone, which lifted one of the safety concerns. The pump exchange work was discussed between the AD responsible and the DSO. Unfortunately there were no clear instruction left to the CCC crew dealing with the many accesses for this problem. This created an unclear situation during the several urgent interventions that took place over the weekend and that were necessary to restart the temporary pumping underneath the AD-target as water levels again became too high.

This week the pump issue underneath the AD-target has to be solved. Therefore the CCC crew providing access has to be given clear instruction on what can and cannot be done and who should be present during this intervention in order to guaranteed radiation safety.