End Week 11 (March 21st 2011) – Status of Accelerators

Linacs (R. Scrivens)

Linac 2: Very quiet operation. Only thing to mention is the faulty emergency stop (fixation to wall was faulty), that was activated during work on the elevator at back of Linac2.

Linac3: -shutdown

PS Booster (K. Hanke)

All in all good week, beams were delivered to the LHC , nTOF & CNGS.

Problems worth mentioning:

Tuesday 15 March 2h stop, an AUG (emergency stop) stopped Linac2 (see Linac2). Some problems with BR4.C04, resettable.

Wednesday 16 March the Linac watchdog triggered, not resettable. Rebooting dlinpow had no effect. Eventually we found that closing applications and rebooting the workstations in the CCC and Linac CR cured the problem (some overload). CO is looking into a permanent solution to this problem. In the evening renewed trip of BR4.C04.

Thursday 17 March at 01:30 the Booster went down (RF cavities down plus BT4.SMV10); could be re-started but tripped again; the operator did another local intervention again, and beams were back 03:53. Later during the morning M.Haase passed by to check the cavities after the troubles during the night, but he could find no reason. He will check the water flow in the machine for the cavities during the technical stop, to make sure the pressure is correct.

15:37 all beams off with vacuum problem in LTB and BI. Two valves closed, and two pumps OFF. Vacuum piquet called. Changed controls chassis, 17:53 beams back.

Friday 18 March BR3.On311L1 had positive sign for LHC25, negative for all others. Needed local reset by the EPC piquet.

Saturday 19 March at 01:40 MPS tripped; EPC piquet changed a fuse; 02:45 all beams back.

PS (A. Grudiev)

No major problems. Steady providing beams for LHC. TOF operation started and goes now almost at the maximum allowed flux. CNGS operation started. Two new LHC beams prepared: LHC 50 ns double batch and LHCINDIV with 4 bunches.

Still some issues to report:

Tune measurement system suffers from the noise apparently coming from the POPS. It has higher frequency spectrum ~10 kHz than old MPS and clearly can be seen in the tune signal even if the beam is not present. Two accesses to PS ring of ~ 1 hour have been done: 1. To check the system

integrity and 2. to put new electronics with more attenuation in 10 kHz range. Unfortunately, it did not help and tune measurement system still is not operational. Investigation is ongoing.

These new frequencies are also present in the B-dot signal and could be heard in the tunnel. Acoustic measurements have been done to be compared with electrical signals.

On Friday STOP TOF at about 8:00: radiation alarm PAXTOF04. At the beginning the reason was not clear at all. RP did several measurements. Finally, fault has been found on the bending magnet FTN.BHZ403 which was kicking erratically beams going to TOF or D3. At 19:30 it was put back in service. TOF could start cycling without radiation alarms.

SPS (K. Cornelis)

The week started with the repair of the broken PFN on the proton inflector which took most of Monday daytime.

After having recovered the full kick strength we could inject the CNGS beam without problems, and on Tuesday the first CNGS was send down TT41 to do target scans. There were some problems with the acquisition of the horn-reflector currents and the target scans were resumed on Wednesday after an ADC was changed. CNGS operation had to be interrupted again on Thursday in order to repair a vacuum leak on the window before the CNGS target. This intervention took until Friday morning. In the mean time the damper was commissioned on the CNGS beam and on Friday afternoon we could send two batches to the CNGS. The intensity over the weekend was kept to two batches of 1 10e13. On Saturday we were informed that the extraction timing was not sent to OPERA. Experts were called in and the problem could be fixed.

On the LHC side, we have been sending the probe and 75nsec beam on request. We also prepared an INDIV beam with four bunches per CPS cycle, 525nsec apart. We also checked the 50nsec beam. With four batches of this beam there is still some out gassing of MKE4 due to electron cloud.

LHC (J. Uythoven, G. Arduini)

AIM for the week:

75 ns set-up for physics, 100+ bunches, luminosity of more than 1E32

Sunday: stable beams for physics with 136 bunches, 1.4 E13 total intensity per beam, beam lifetime around 50 hours. 8.5 MJ per beam.

Total luminosity during the week L = 8.7 inverse pb

E-cloud effects visible with 136 bunches

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

TI (P. Sollander)

Two major events this week; 400kV perturbation on Monday and Linac2 emergency stop (human error) on Tuesday.

- Monday 14. March: 7:19, over-voltage on french 400kV supply. The voltage goes from 412 to 425kV due to RTE (french electricity distributor) switching a customer off. Only the LHC saw the perturbation, beams were dumped.

- Tuesday 14. March: 13:28, emergency stop cuts power to Linac2. During an intervention to change a lock on a lift in building 363. An emergency stop button mounted on the lift was "tweaked" during the intervention and the AUG signal was sent. Caused 2 hour stop for Linac2 so no protons to any machine. EN/EL on site to move the emergency stop button off the lift and to a nearby concrete wall. EN/HE has agreed with TSO not to make interventions while the machines are running.