End Week 15 (April 19th) – Status of Accelerators

See latest schedule – setting up for non-LHC physics in full swing.

SPS (Django Manglunki)

On the LHC front, it was an uneventful week for the SPS which supplied the LHC probe beam without any problem.

On the CNGS front

- the zone is closed and the beam permit is signed

- Wolfgang has set up the dampers with intensities up to 2x1.8E13

- BT have reconditioned the MKE4

- Jorg has tested the extraction timings

- The MTE beam at 1.6E13 is reasonably stable

- The high intensity (2.2E13) MTE beam has been taken from Thursday onwards, including for some periods during the week-end, but there is still a lot of work needed, both in the PS and the SPS, to make it operational. As one 10MHz cavity broke down in the PS on Sunday, these studies will resume on Monday.

PS (Simone Gilardoni)

Beams:

CNGS (CT extracted, 2E13): prepared, optimisation ongoing.

MD2 (MTE extracted, high intensity, 2.5E13): setting-up ongoing.

SFTPRO (MTE extracted, 1.5E13): delivered regularly to the SPS.

LHCINDIV, LHCPROBE, LHCPILOT: delivered regularly.

AD (up to 1.5E13): delivered regularly.

LHC25: setting-up ongoing.

MD3 (studies of beam instabilities at transition)

Monday: Start of the AD. Access to unblock a beam stopper in TT2.

Tuesday: Patrol of the EAST hall. Normal operation.

Wednesday: Safety tests of the EAST hall. Minor problem with the power converter of the F16.QFO225S (quad in TT2). Solved by PIPO.

Thursday: Setting up of the CNGS with the classical CT.

RP survey on top of the extraction septum during MTE operation. The measurements were done to check the shielding on top of the region were there are most of the MTE losses. The results should be available this week.

Minor problem with the power converter of the F16.QFO225S (quad in TT2). Solved by PIPO. It did not reappear during the week.

Friday: MTE setting up with 2.5E13. LHC25 setting up. Normal operation

Saturday: Problem with a radiation monitor in the North-South Hall (PAXS41), the monitor itself. According to the RP piquet, we can run without it until Monday since there is another PAXS just nearby (PAXS43) and the supercycle is not filled by high intensity beams.

Problem with a 2-10 MHz cavities during the night. One repaired, the other replaced by the spare. The faulty one has problems only for high intensity beams (>2E13).

Sunday: Normal operation

Comments:

Bfield fluctuations: the injection still sometimes shows fluctuation of the radial position. On Monday the magnet experts will continue with the measurements.

Observation of power converters from the CCC. We noticed that the samplers have a time jitter from cycle-to-cycle. This is due to a missing synchronism of the acquisition at the level of the power converters. The problem is followed with the PO experts, since it is difficult due to this to understand if a power converter is fluctuating from cycle-to-cycle.

Concerning MTE, the commissioning continued for the entire week. 1.5-1.6E13 (extracted) were regularly delivered to the SPS on the SFTPRO user in the PS on a CNGS cycle in the SPS. Also accordingly to Django, the spill at 1.5E13 was sufficiently stable and in the SPS the transmission was fine. We had also double batch injections with good transmission.

Then we increased the extracted intensity up to 2.4-2.5E13. Unfortunately in this case, we observe a fluctuation in time of the spill we cannot explain yet. On Friday the spill was pretty nice, flat, with only few rare bad shots. Then it degraded on Saturday, with spill quite often not flat. We injected it in any case in the SPS, but the setting up was more difficult due to the fluctuations. According to the SPS shifters, when the spill was flat the transmission was fine.

We continued on Sunday with the 2.4E13. The quality of the spill was still fluctuating in time but not shot-to-shot (same situation as on Saturday). We have periods of few ten minutes were the spill is very nice (more than 60 consecutive good flat spills), then it degrades for few minutes, and then again good. We are currently trying to correlate this behaviour with some HW fluctuation or beam instability.

In any case, a CT extracted beam is being prepared.

Booster (Jocelyn Tan)

The PSB has been running very smoothly, with only minor issues to report.

Tuesday 13th:

BTY transfos have bee calibrated by F.Lenardon : he found a bad electrical contact between the monitor and the electronics.

Ejection trajectory for MD1 (used for MTE in the PSB)

Although amongst the first beams to set-up and extensively used, the bunches were found extracted 3 turns earlier. The ADCs which were triggered by BEX.SEJ (a timing independent of the kickers), acquired the trajectory 3 turns too late, i.e. when most of the beam was gone. After tuning this timing, the ejection trajectory could be measured again. ADCs are showing their age, the new ones are under test.

Thursday 15th

Morning : BT4.SMV10 went down, could be restarted remotely after 5mn.

Afternoon : BI4.KSW went down, could be restarted remotely right after .

BEAMS SETTING-UP :

AD :

Transverse dampers were found off and in fault, for an unknown reason. Putting it on reduced the looses along the cycle.

Q strips for ring 1 requires a -0.1 delQh which is an unusually high negative value, but the beam seems to need this.

A fine tuning of the parameters (GFAs, phase, phase loop) helped to reduce the bunch length (Ring1+4).

CNGS / NORMGPS : setting-up is progressing

LHC – full details under coordination at:

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