End Week 29 (July 19th) – Status of Accelerators

Summary

ISOLDE	Good run, users happy and schedule on time
LINACS	OK
AD	Details below
PSB	Smooth running
PS	Smooth running
SPS	Relatively quiet week. Some problems (detailed below).
TI	Main event were 400 kV perturbations Thurs/Friday night cause by thunderstorm
LHC	Vacuum leaks in sectors 81 and 23

Linacs (F. Gerigk)

Apart from the power cut after the storm the linacs did not have any problems.

After the storm we had to access the Linac2 tunnel because of a problem with a flow meter on tank3 in Linac2. The cooling water flow was slightly increased and the flow meter will be checked at the next technical stop. After re-starting vacuum, demineralised water, source and resetting the interlocks Linac2 came back quickly.

After the storm the source oven of Linac3 was refilled, the machine was not yet operational on Friday evening. Before the storm, Linac3 was running relatively stable. Tuning of the source continues.

PSB (A. Findlay)

Ignoring the problems induced by the storm on Friday morning, the Booster didn't have such a bad week!

We had noted that various users had occasional problems with unstable ejection trajectories, and this was most notable on CNGS and AD. On Thursday we discovered that BT4.SMV10 had 100A of fluctuation for the same user, which we linked to the change of the active filter that had been done early in the morning the previous Saturday. The unit had been installed and this had solved the "big" problem at the time, but the regulation of this card needed fine tuning, which when done by the specialist, reduced the fluctuations to 2A.

On Friday Morning around 00H30, we started to see the effects of the storm, and could of elements in the LINAC and PSB had to be reset by the operator. At 02H00 we took a larger hit from the storm, but once all the resets were done, beam was back after about 30 mins. It didn't last long though, 5 minutes later we took a big hit, and were advised by TI that there would probably be more disturbances on the electrical network, so we waited until we got the green light to start everything up again. By 04H30 the restarting of the LINAC was underway, but various problems meant the LINAC supervisor had to be called in to help. The PSB was held up by 4 PSU's which needed

intervention by the piquet, but by 11Hoo we had 3 rings operational and by 11H40 we were back in full operation.

On Sunday the BI4.DISP kept on dropping out and could be reset, but the specialist was called, since it had been dropping out regularly all week. The specialist asked for it to be left in fault, changed a thyratron, and it returned back to normal.

ISOLDE (M. Eriksson)

GPS:

IS456 (Polonium run) successfully runs until power cut abruptly puts an end to it the night towards Friday, users do not call IMS since they are scheduled to stop Friday at 08.00 anyway.

Users are extremely happy with their run as they have managed to measure a large amount of Po-isotopes during the last 2 weeks - something they celebrate with a drink.

GPS has a target change scheduled for Monday 20th.

HRS:

Target changed Thursday morning (from a Uranium to another Uranium target), target heated and partly setup during Thursday afternoon.

Friday morning target is re-heated and beam setup is completed in afternoon, beam handed over to users for their stable beam setup during weekend.

Monday morning, proton scan is scheduled and radioactive beam will be handed over to users as scheduled.

Other:

A water flooding (condensation water) was found on the floor in the room that houses the air clim. system. This happens both on Wed/Thurs. - TCR / S.Deleval is contacted and water cleared by contractors.

It has been an issue earlier years as well when temperatures outside rises - no permanent fix has been taken to overcome this problem.

PS (Y. Papaphilippou)

The PS machine had a fairly good week apart from the long stop on Friday following the storm and electrical network problem.

At the beginning of the week and until Thursday morning, we delivered a 15BP long super-cycle for the injector MDs, followed bya 33BP long one during the rest of the week.

On Monday, a 5BP LHC cycle was tested and 350e10p with double injection, were accelerated and extracted to D3 with all the longitudinal gymnastics well optimized. Work will continue for transition crossing and PFW optimization.

The same day and partially in the shadow of an intervention the PS was down due to a figure of 8 loop fault. Actually, the problem was coming from a door contact in the area of high-voltage which had to be changed (3h without beam).

On Thursday morning and before the IT intervention, the ARCON system (radiation alarms) was in fault and the beam was stopped for 30min. The investigation of RP and CO experts revealed that this

was not due to the intervention but to an electrical cut affecting the network equipment of the ARCON south system.

During the night, an electrical network fault due to the storm, tripped the MPS. A large number of equipments (~300) were on fault. The TI operator informed the crew thatthe machine will not be operational until next morning. PIPO was contacted in the morning for several problems with power convertors with external fault. The convertor faults were triggered by a water flow problem, as the water stations were affected from the power cut. Firstline was also contacted for several problem with magnets in ZT10 and ZT11 which were operational after local resets. Beam was back around mid-day, on Friday morning.

SPS (K. Cornelis)

From Monday to Thursday morning there was dedicated SPS MD. All MD's (including UA9 physics with coasting beam) went very smoothly and all objectives could be met.

Going back to physics on Thursday morning went very smoothly as far as primary beam was concerned. However, the north area suffered from controls problems related to network router changes and problems with middleware, resulting in the inability to move taxes and targets. By Thursday noon these problems were solved and the north area was back in business.

On Thursday afternoon there was a few hours stop for CNGS due to a MOPOS problem in LSS4 causing an extraction interlock. MOPOS was giving data at a wrong cycle time and even from a wrong cycle. After a long expert investigation the problem was solved by changing a "sequencer card".

The night from Thursday to Friday was dominated by violent Thunderstorms resulting in a naughty power cut at 2:00 in the morning. The power cut being mainly at the Meyrin side, the SPS did not suffer too much: some 18kV equipment (MPS, DAMPER, MB2103,…) and a power supply in the faraday cage dropped, but the main infrastructure stayed up and running. Booster and PS were able to give back beam by Friday noon.

The night from Friday to Saturday the CNGS performance (and also the SPS crew) suffered from a lot of control problems with the PC fast extraction interlock to the east (BA4, extraction bumpers and septa). There were problems with driving the settings and keeping the FESA processes running. These problems were kind of under control by Saturday noon, and since then the SPS has been running smoothly with a stable fixed target and CNGS production rate.

AD (P.Belochitskii)

Monday: Magnetic horn off, reset o.k.; No beam from PS from 14 till 17.

Tuesday: Magnetic horn off, reset o.k.

Wednesday: since 7 a.m. intervention into ASACUSA zone to take away MWPC45 (really part of it). Due to vacuum constraints no way to deliver beam to other users, due to interlock system no beam in AD. Beam back after intervention at 15:35.

Thursday: o.k. until power cut off at night

Friday: recovery of machine, fault of DI.BHZ65, solved by first line with help of PO. beam back at 15:30. On top: significant reduction of jittering of beam extraction done by A.Findlay

Saturday: fault of injection kicker, reset o.k. (thanks to CCC team)

Sunday: o.k.

TI (P. Sollander)

Last week, thunderstorm in the night between Thursday and Friday stops physics for all machines at 02.32 (perturbation on 400kV caused water stations to drop on PS complex, SPS ventilation). PS back at 11.00 and SPS at 17.00.

The main transformer down for repair (400 to 66 kV), EHT5, should be put back in service this week 24/7. Causes power limitations for LHC tests and cryo, etc…

For information, the perturbation on Saturday 11/7 mentioned last week (BE9 filter instability and trip) was caused by a fox taking a close look at 18kV. The fox got in through a small hole in the fence.

LHC (R. Bailey)

Two leaks have been found in the LHC, both of them between insulating vacuum and cold helium circuit. The leaks are in sectors 81 and 23, and in both cases have to be repaired, which necessitates warming up the sub-sectors in question. The time needed for the overall repair will impact on the schedule, with sector 81 now being on the critical path for LHC to be ready for beam in mid-November. A new schedule will be presented at LMC on July 22nd.

CTF (F. Tecker)

The main goal last week was to set up Delay Loop recombination in CTF3 and we established 1.5 GHz beam through the Delay Loop with good transmission.

On Friday we had to recover from the power cut. One of the three TWT (traveling wave tube) for the 1.5 GHz sub-harmonic bunching system is broken. No spare is available and repair has to be investigated.

As this excludes combination in the DL without a completely new beam setup with only two TWT, we established 3 GHz circulating beam in the CR on Friday afternoon.

In addition to this, beam was sent earlier last week to the TBTS line to test the 12 GHz PETS power production, and to the CRM line for the CDR (Coherent Diffraction radiation) experiment.