End Week 33 (August 19th 2012) – Status of Accelerators

Statistics

nTOF: https://espace.cern.ch/be-dep/OP/PS/default.aspx

CNGS: https://accstat.web.cern.ch/accstat/statistics/charts/2012/SPS/CNGS_Target_Cumul2012.jpeg

LHC: http://lhc-statistics.web.cern.ch/LHC-Statistics/index.php

TI (Peter Sollander)

No big problems, despite the high temperatures
http://wikis/display/TIOP/2012/08/19/TI+summary,+week+33+2012

day	events
Friday, August 17	• 07:55 -- Local power distribution tripped in BA4 (ECA4). A fault (?) on BI equipment trips a 'reglette' in ECA4 and brings down some network switches with it. BI on site to change equipment. EN/EL sent to try to find the problem which turned out to be very localized. SPS ejection stopped and LHC could not resume filling. About one hour lost.
Sunday, August 19	• A lot of equipment suffering from the heat; cooling towers at their maximum, ventilation units in alarm, difficult to keep the chilled water temperatures down. No real problems however, accelerators experiments and computer centre seems to have survived. 

LINAC 2 (Rolf Wegner)

It was again a very good week for Linac2, no major problems.

LEIR (Django Manglunki)

Apart from a trip of several elements including the main bending magnets on Tuesday at 17:45, LEIR behaved very stably during the whole week.

The EARLY beam has reached usual performance of 1E10 and was delivered to the SPS whenever possible (in between LHC fillings and various breakdowns in the rest of the complex).

For the NOMINAL beam, there is still about 25% missing compared to the peak performance of 2011.

The machine was stopped for the week- end this Friday morning and will be restarted on Monday morning, as the source is being refilled and will only deliver beam again on Monday at noon.

ISOLDE (Erwin Siesling)

Once again a good week for Isolde with minor issues.

GPS:

Running with a UC target. Stopped taking protons with a collection run on 27Mg on Tuesday to cooldown the separator.

Since 2 weeks the vacuum in the GPS20 (separator) sector has increased dramatically due to a burned o-ring by the laser which is sealing the laser window. All ALARA procedures in place and approved. The intervention will be today 20 august followed by a target change later today.

HRS:

Running with a UC target.

Proton scan and yield checks done last Tuesday, then setting-up of the separator, the REX low energy and linac plus laser ionisation by the RILIS team.

Since Wednesday evening 30Mg radioactive beam for the Scattering Chamber experiment at the REX L20 beamline.

Their run finished successfully on Saturday-evening, then stable beam has been used since Sunday-morning to the CRIS experiment.

Technical:

On Wednesday we had a small intervention in the HRS zone by vacuum to verify communication with the new dry-pump set-up: Pump has been taken out for repair.

Wednesday-evening a wrong manipulation from our side vented the trap with He causing a delay of 2 hours. Many thanks for the fast intervention by vacuum (piquet and Giovanna Vandoni).

The 9-gap amplifier went down once on Wednesday evening, no problems since.

Today, Monday 20th, preparations are on-going at REX for the test of the new HIE Isolde faraday-cup from AVS for the future diagnostic boxes.

As well as the intervention in the GPS separator zone to replace the laser window and o-ring as described earlier.

All in all a very good week.

BOOSTER (Alan Findlay)

Giovanni reported that the machine had been very stable during the last week when he handed it over to me on Sunday. The machine was operating normally for most of the week, with many MD's also being carried out in parallel.

A notable technical issue was the lack of stability of the syncro for the CNGS beam (one of our second harmonic beams) on Saturday afternoon, requiring the intervention of the RF Low Level piquet. Fredi took a few hours to work on the syncro process bringing the jitter down from ~30ns to the normal ~5ns. Although there was still an occasional bad shot, this was good enough to continue normal operation. This can be followed up today if there is still an issue.

PS (Rende Steerenberg)

The PS had an eventful week, but also booked a nice result on the LHC 50 ns beam brightness.

The week started with a problem on a quadrupole in the TT2 line that tripped on too high coil temperature. An access on Tuesday revealed that the cooling water filter was partly blocked with paint flakes. After the cleaning the quadruple works fine again. However, that fact that these paint flakes are present in the cooling water system is worrying as the same cooling station provides TT2 and (part) of the PSB. Until now it is not yet clear where these paint flakes come from. Beam operation on Tuesday and Wednesday were also hampered by problems on the figure of 8-loop power converter for which the specialists had to intervene and switch back and forth between the normal and spare power converter. During the first intervention POPS tripped wit a water cooling fault and the specialist filled the circuit that seems to contain one or a few minor leaks that will be definitively repaired during LS1.

On Wednesday there was an access to verify the state of the spare 40 MHz cavity as it did no longer work. The final amplifier was found with water in it and it was decide to plan a repair campaign for Friday morning that would last 5 hours. Friday morning the specialist found that the extent of the damage went far beyond a water leak and that excessive heating cause silicon water hoses to melt. It was decided not to replace the final amplifier, as long as the cause of the overheating is not identified and understood. In any case the repair work will take more time. No spare 40 MHz cavity until at least the next technical stop in September, but this could also be until the end of the year.

The remainder of Friday and Saturday was smooth running, but Sunday was hampered by a series of uncorrelated problems. First the 20 MHz cavity stopped working and low level RF specialists and later also high level RF specialists had to intervene. During the work ongoing on the 20 MHz cavity the 10 MHz cavity in SS66 broke and had to be replaced by the spare on in SS11. Before the repair of the 20 MHz cavity could be finally validated POPS stopped working around mid-night with an earth fault. Both piquet power and piquet magenta intervened to diagnose if the earth fault was on the side of POPS or on the side of the magnets. Since the earth fault was found to be on the POPS side and the fault could not be traced back quickly, it was decided to switch to the old MPS (motor generators set). This switch was started early Monday morning.

In order to end on a positive note, a good result was obtained after several adjustments on the working point of the LHC 50 ns cycle. The fluctuation on the vertical transverse profile were observed again, exactly as two week ago. The achromaticity at this point in the cycle was increased and the problem disappeared. Further tuning on the low energy working point resulted in a reduction of the transverse emittances at the PS flat top from 1.14 pi microrad. in the horizontal and 1.51 pi mirrorad. in the vertical plane down to 0.98 pi microrad. in the horizontal and 1.29 pi microrad. in the vertical plane, resulting in an average decrease of the transverse emittances of about 16%. This contributed greatly to the record peak luminosities achieved since then in the LHC.

SPS (Edda Gschwendtner)

Monday there was still no beam to the North Area; on Tuesday, the vacuum leak in the North Area extraction line was repaired, followed by pumping for ~20hrs, so that beam to the North Area could be reestablished on Wednesday.

However, on Wednesday there were several stops due to the PS cable en huit and 40MHz cavity issues.

On Thursday morning beam was stopped due to EL 18kV cable (SMB10) interventions in BA4 inside SMB.

SPS CCC suffered from some general control problems on the operational consoles in the CCC.

After 2 trips of the MST2177 the temperature interlock was increased from 102 to 105deg.

In the shadow of the PS intervention on the 40MHz cavity in the morning on Friday, EL continued the repair work on the SMB10 cable in BA4. Final tests for that cable were performed in the afternoon for ~1hr. Therefore no further EL interventions are foreseen on Monday 20/8.

Saturday was very quiet, apart from magnet issues in the North Area, where power converter failures due to water cooling problems (too high temperature in the building) in BA81 appeared. These problems also continued on Sunday, when also the MST and MKE4 tripped.

LHC ion commissioning continued from Monday to Friday.

LHC

Mon-Wednesday ALICE polarity switch in shadow of CMS cryogenics recovery. Then record luminosity and good fills. Sunday to Monday was hampered by a series of technical problems in LHC and injectors. More details:

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