

End Week 27 (July 11th 2010) – Status of Accelerators

PS (Alexej Grudiev)

Smooth running during the whole week except for the 18 kV trip on Monday night. Over the week several problems related to the INCA deployment were found and solved very efficiently by the INCA support team on the spot or will be treated ASAP. On very strange thing happened to MD4 (operational MTE user) which is not understood see below..

Day by day:

Monday-to-Tuesday night 23:07 - 4:23 A 18kV sub-station over in Meyrin tripped, this concerns the LINAC, the AD and a bit of the PS (SMH61, SMH16, SEH31, SEH23, BSW57). 4:23 All beams were back except for CT ones since PE.SEH31 OFF. Call PIPO. They say they are not responsible for septa. Finally at 7:24 Restart of the cooling system by the septum expert J. Borburgh. Resolved the problem PE.SEH31 -> OK

Thursday: MD4 hardware settings (a lot of them including GFAs) found to be corrupted. No trace in the INCA trim history. How the settings went to hardware is not clear (VARILog, X-motif)??? Thanks to the trim history in INCA/LSA we managed to recuperate the settings on MD4. The complete drive of the users caused some issues that are under investigation by our INCA support team members. Only by Friday evening after RF expert tuned MD4 it become fully operational almost as before.

Sunday 10 MHz cavity C91 trips quite often on CNGS. Specialist (M. Haase) has come and adjusted driver current. The final amplifier which must be exchanged next technical stop on 19.07 is working OK for the moment. If C91 trips too often, there are two options: 1 reduce CNGS/SFTPRO intensity, 2 replace C91 by C11 and switch OFF C91 completely. Hopefully it will hold on till tech. stop.

Booster (Klaus Hanke)

Main problems of the week due to ISOLDE watchdog, recombination kicker and Linac2.

Monday 5 July 23:07 Linac2 went down due to an 18 kV fault, all beams back around 05:00 am on Tuesday.

Thursday 8 July in the evening ISOLDE watchdog problems re-started (had already problems last Friday). We had GPS and HRS beam in parallel in the super cycle, it cut regularly the beam every 5 min.

Friday 9 July investigations on the watchdog continued, the expert did not understand the problem and eventually increased the threshold which allowed us to run. Obviously this is not a solution, and a new system is urgently needed. During the investigations we found also, that the watchdog did NOT cut the beam when it should have, i.e. when we removed some cables...

Around 17:00 problems started with recombination kicker BT.KFA20, could be reset. Same problem re-occurred 21:00. During the night 3 more resettable faults of this kicker.

Saturday 10 July early morning the kicker went down for good. Booster supervisor and BT specialists investigated, and eventually (after changing a voltage) it would work again. Since then no more

problems. Beams for all users were back 08:25, the LHC was not affected by the problem as it is only using ring 3.

Sunday 11 July 01:11 Linac2 went down with vacuum faults following a power glitch. The vacuum piquet was called and vacuum wise the situation seemed to be OK around 05:15, but it was still impossible to start the Linac source. Another intervention of the vacuum controls specialist and the Linac supervisor was necessary before all beams could start again at 10:32; 9h down time for all users.

SPS (Django Manglunki)

On Monday TRX1, which had suffered from the week-end thunderstorms was repaired (tube changed). In the afternoon 2 hours were lost because of a compensator trip, then during the night ten hours were lost because of three consecutive breakdowns, respectively on the SPS RF, on Linac 2, and on the PS septum.

On Tuesday morning the CNGS and North Area beams were turned off for LHC studies involving a screen to blow up the emittances. Then, in the afternoon, the blowup method with the transverse damper and octupoles started to be set up.

On Wednesday rephasing problems on the LHCFast2 beam turned out to have their origin in a wrong frequency reference sent by the LHC.

During the night the scraper became operational again, after intervention of the STI piquet; it can be useful to remove tails on the LHC beam, especially after the controlled transverse blowup.

On Thursday a floating MD was started at 8:30 to try and set up a quadruple injection of a single PS bunch into the SPS on user LHC2, in order to prepare for a faster filling. Longitudinal setting up was finished when the study was stopped at 14:00 for LHC filling.

On Friday systematic transfer line studies took place on the scraping and blowing up of the LHC beam.

During the night from Saturday to Sunday, 9 hours were lost because of a vacuum problem in Linac 2.

On Sunday evening the LHC2 beam was taken for the first time by the LHC for injection tests for two hours, turning off the beam for CNGS and North Area. Some work is still needed on this beam in the transverse planes. Apart from that, the breakdowns were dominated by TRX trips, with frequent calls to the RF piquet, always very responsive..

Over the week-end, CNGS has reached $1.65E19$ protons on target ($1.4E19$ expected).

AD (Joao Carlos Oliveira)

It was a tough week.

- Various failures in PS, 18Kv & etc.
- Injection Power Supply DI.BHZ6045. Power Supply ON, no fault, but acquired current zero.
- Main power supply (DR.BHZ)

This fault happened almost every day and some days several times a day.

It was finally repaired on Friday afternoon, when the expert found the correct electronic card to replace.

Since there, no more faults

- Stochastic Cooling power supply

Intermittent fault, happened very often Wednesday early morning. The problem was eventually repaired Friday morning with help of F.Caspers We found that it was a control problem. An electronic card on the DSC was sending bizarre commands to the power supply.

Since there no more faults with these equipments.

- Vacuum leak on the stopper DE4.STP15

It happened Wednesday end of the day. It was solved during the night by vacuum people. It took us 23h to put beam back.

-Target Station Cooling Fault

The station stopped because of a temperature fault. It happened Friday end of the day. Hard to find people who knows the installation. We changed the temperature threshold and it's ok since there.

-Trim power supply (DR.DHZ5404)

We noticed that we where extracting less beam than usual and that it was very unstable. After a while we realised that the power supply

DR.DHZ5404 was not following the GFA. In fact, the positive polarity of this power supply wasn't working. This issue was solved Saturday 4h00 AM.

Since there we have $> 3E7$ anti-protons extracted all the time.

LHC – full details under coordination at:

Up to 9 on 9 bunches, injection set-up for over $1e12$ at 450 GeV – but a difficult week.

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