

Accelerator complex status

End week 30 (Sunday 31st July 2016)

TI (Chris Wetton)

TI summary of the week:

<https://wikis.cern.ch/display/TIOP/2016/07/29/TI+summary+week+30%2C+2016>

Linacs (Jean-Baptiste Lallement)

Linac2

We still have some concerns with the proton source. Although the situation is now rather stable, the intensity level is maintained by keeping the cathode and arc current at pretty high values, which might shorten the cathode lifetime. Another beam stop time will certainly be requested this coming week to further investigate what might be wrong inside/outside the source (last week checks were inconclusive).

Apart from that, everything went very well last week.

Linac3

A very good week. The ovens were refilled on Monday. 30 uA stable beam current out of the Linac.

AD (Bruno Dupuy)

It was a good week for the ADE with only minor hardware problems.

- Tuesday afternoon (20H00-22H00) beam was unstable for AEGIS. A new steering was done together with kicker timing adjustment. During this period some C02 malfunctioning was observed. The C02 doesn't drop but there is no voltage visible, this problem is now recurrent but random.
- Friday night (23H00-2H30) the RFQD stopped working at the start of this evening shift. Although an expert kindly visited ASACUSA at midnight, it turns out that the problem can't be fixed before Monday. It's an experimental device with no specialist outside daytime.
- Sunday afternoon (18H30-20H00) AEGIS complains. The beam is unstable. The ring power-supply DR.BHZTR20.21 was detected broken down. The First Line fixed this issue.

Remarks:

- Measures on Kickers Injection modules and Extraction modules confirm the presence of a drift of 100 ns. The specialists are informed of these measures, but we have no results about the ongoing action.
- The timing kicker drift and some big temperature variation lead to the beam intensity unstable. The intensity is in a range of $2.8E7$ to $3.8E7$ antiprotons by extraction.

LEIR (Django Manglunki)

A short but good week for LEIR

Since last week the machine is operating completely with the new Low-Level RF system, with cavity CRF41 as normal. Cavity CRF43 can be used as spare or to provide additional voltage.

On Monday 25/7 the Linac3 source was being refilled, and on Tuesday 26/7 in the morning the beam was taken by the Linac3 team for their weekly MD. LEIR took the beam from Tuesday afternoon onwards, delivering the single bunch EARLY beam to the PS, mainly for lifetime measurements.

The only breakdowns to note were the HV trips of CRF41 which are unresettable remotely. It happened on Tuesday evening and had to be reset locally by the expert on Wednesday morning. This is not the first time this happens, and a solution is planned to be implemented during the EYETS. The beam was only back at the end of the morning on Wednesday as there had meanwhile been an access in the PS switch yard.

MDs that took place: more optics (Hannes B, Alex H), impedance/instabilities studies (Nicolo B), modulation for longitudinal shaping (Simon A), e-cooling rate (Gerard T).

Wednesday, Thursday and Friday saw more optimization on the operational beams EARLY & NOMINAL (Jerome A, Alan F & DjM)

During the weekend, a trip of CRF41 happened again Saturday night during the thunderstorm. OP could not reset it remotely nor locally. The RF expert will restart the cavity first thing on Monday morning.

Booster (Jean-Francois Comblin)

Another good week for the Booster.

The only faults to mention are:

- Monday night, the injection septa tripped. Specialist was called, with RP piquet, for an intervention in the machine. An electrovalve was changed. The total downtime was 3h42. This has not affected the LHC as it was already in fault at that time.
- Wednesday, the 2 hour stop planned for the Linac 2 source.
- Sunday morning, a distributor tripped. Piquet needed to change a thyatron. This stopped the machine, and delayed the LHC fill, for 1h44.

The regular MD program progressed well.

For the first time, Isolde asked to have a staggered beam to both of the targets at the same time. Even if this is not technically difficult, only one timing user is dedicated for this, and some Isolde applications can only deal with that user. We finally managed to make everything working, and now all is understood if it happens again in the future.

PS (Guido Sterbini)

It was a good week for the PS with 94% of beam availability.

On Monday night there were 3h45min of downtime due to the unavailability of the PSB injection septa.

During the afternoon the HL-RF team adjusted the setting of the C40-77 (the spare of the C40-78 for the LHC beams production).

On Tuesday at 10h00, POPS went down (known problem with an IGBT off-command, TE-EPC investigations are ongoing). Due to the problem with the C20-80 and the C80-08 (needed for the ion beam final rotation), an access was requested and endorsed by the FOM.

Wednesday morning was dominated by the access (beam was stopped from 8h30 to 11h in the Switchyard and from 8h30 to 12h00 to the PS RING). The problem with the C80-08 was solved but the one with the C20-80 needs further investigation.

On Thursday night there was a 3 h downtime for the EAST beams due to the SMH57 problem that required TE-ABT specialist intervention (adjustment of the temperature interlock).

On Friday POPS went down for a magnet interlock for 1h15min. When the magnet and the interlock specialists checked for the interlock signal, it has already disappeared and POPS could be restarted.

The weekend was smooth apart from 1h30 min downtime due to unavailability of the PSB (distributor issue).

During the week there were several non resettable trips of the F16.QDE217 quadrupole (TT2 quadrupole needed for the ions). Several interventions were done by EPC Piquet but the magnet continues to trip frequently.

SPS (Hannes Bartosik)

In week 30 the fixed target beam had an availability of about 88%. The 10 and 30 Hz components in the frequency spectrum of the extraction spill are still observed, in particular after periods without beam where the SPS mains had a reduced load due to the dynamic economy. To be followed up by EPC.

On Wednesday evening, ABT experts could optimize the normalised losses in the extraction channel for the fixed target beam by realigning the ZS extraction septa.

The problem of the spurious TIDVG dumped intensity SIS trigger could be temporarily fixed by a modification within the SIS. ABT experts are still working on a fix on the hardware side.

About 8 hours down time were accumulated on Wednesday due to a fault on the drainage water pumps in BA5. Auxiliary pumps and a temporary water reservoir had to be installed to pump away the water in the drainage. The broken pumps need to be repaired during the next technical stop. On Sunday, almost 3 hours of downtime were caused by low water level on the cooling circuit of the power couplers of cavity 3 requiring an access of the RF power piquet.

The SPS prepared and delivered a variety of LHC MD beams. On Wednesday evening the 225 ns batch spacing was re-validated by ABT experts with the BCMS beam, and successfully tested during an LHC MD on Thursday. It can be tested for LHC physics production next week. On Sunday morning the SPS provided a low intensity and low emittance single bunch beam for the 2.5km beta* test fills. On the weekend some issues were encountered with the longitudinal beam quality of the BCMS beam during LHC filling. PS colleagues are working on the problem.

