

Accelerator Complex Status

End week 39 (Monday 28 September 2020)

Technical Infrastructure (J. Nielsen):

- Statistics:
 - Over 9'000 alarms were received
 - 812 incoming and 314 outgoing phone calls, totalling 1126
 - 157 ODMs were created
- Wednesday: Evacuation from BA2 to BA4 due to a fire alarm in BA3. The incident was traced back to dust in the fire detector, caused by the stop of the ventilation system for works in BA3.

Friday: At 19:44:54, there was an electrical perturbation, as confirmed by EDF/RTE.

No important consequences for CERN.

Details (from inside CERN only):

<https://wikis.cern.ch/display/TIOP/2020/09/07/TI+week+summary,+Week+36>

LINAC 4 (P. Skowronski):

- Monday
 - Access in the shadow of SMV10 kicker magnet re-installation at PSB injection after its repair. Inspection of the source area. Search of issues leading to L4L power converter trips when the source is sparking. Found: Cable loops, not shielded cage door. A temporary solution put in place with aluminium tape. To be seen if more solid doors are required but it will take time to design and produce it.
 - Troubles with restarting beam to LBE after the access. Linked to BIS update that took place during the access and due to the debuncher sequence missing some steps.
 - In the evening profile measurements along the transfer lines
- Tuesday:
 - Validating with beam the remaining Wire Scanners and SEM Grids in transfer line
 - In the afternoon access to PSB to fix vacuum leaks in the SMV10.
 - Implementation of "easy for dump" optics for L4Z. Converted of the 2 quadrupoles upstream the dump to multi-PPM (destination dependent)
 - Checks with short and zero length pulses. Found issue with BCT, that blocked the zero length beam based on noise reading. Implementation of additional threshold, that should solve the issue, is already on the way.
 - Validation of the BLMs
- Wednesday:
 - Chopper raise time and extinction factor measurements. Found raise times of 20ns, while below 10ns is expected. Additional chopper tuning is scheduled for the next week.
 - Completing transverse profile measurements for all Wire Scanners and SEM Grids along the transfer lines

- Discovered that debuncher currently cannot correctly operate when consecutive cycles have much different amplitude settings. The LLRF will work on the issue next week (when the specialist comes back from quarantine)
- Thursday:
 - Bunch length measurements with BSM2 for the nominal debuncher amplitudes
 - Validation of the polarity swap for 2 quads in LBE
 - Re-check of debuncher phasing
 - Dispersion measurements
- Friday:
 - Checking "easy on dump" optics for the LBE dump
 - Implementation of optics corrections
 - Final optics measurements to validate the optics

PS Booster (G. P. Di Giovanni):

- BI.SMV10 successfully re-installed on Monday (21/09). At the same time TE-ABT replaced a broken stripping foil in ring1 (probably broken during the BI.SMV10 removal phase a few weeks ago).
 - Additional accesses needed on Tuesday and Wednesday for TE-VSC to fix a couple of vacuum leaks on bellows of the BI.SMV10, following the equipment re-installation. Bake out started 23/9/2020.
 - Every day at 7.00 a.m. a short access (30 mins) was needed by TE-ABT to check the BI.SMV10 bakeout.
 - The bakeout has gone according to expectations and the final vacuum leak test and subsequent reconnection of magnet (hydraulic and electrical) is planned for Tuesday 29/09.
- Polarity tests of the vertical shavers in the PSB. The polarity was found to be inverted wrt expectations. The cable inversion will be fixed on the access on Tuesday 29/09.
- Several dry runs performed:
 - BE-BI equipment: H0/H- monitor, matching monitor, pre-LS2 wire scanner.
 - TE-ABT equipment: BI.KSW
- Preparation from BE-ABP, BE-CO and BE-OP of a more realistic 2.0 cycle for POPS-B to test the full chain, including BDL, QSTRIPs and the special TRIMs. The previous test focused on the main bendings and quadrupoles:
 - POPS-B test was done on Thursday and some follow-up is needed, especially on the polarity of the special TRIMs.
- LLRF progress:
 - The RF trains (FREX, H8, H64) can be generated and controlled in FESA.
 - The FREX train was delivered to the old TFB system. FREX was also successfully used to trigger the Tomoscope for all 4 rings.
 - Plan to carry out and complete the RF trains commissioning next week.
 - The start of the LL-RF commissioning with servo-loop is tentatively planned to start on the 5th/10/2020 and will last 5 weeks.

ISOLDE (Alberto Rodriguez)

- Beam commissioning continued. We managed to solve some of the problems related to the silicon detectors. Thanks to that, we were able to calibrate the RFQ power for low A/q beams

and to continue the work on the characterization of very low intensity contaminants from the charge breeder.

- Two additional silicon detectors were installed in the XT02 and XT03 HEBT lines (W. Andrezza from BE- BI)
- The smoothing campaign of the HEBT lines after LS2 was completed (A. Behrens from survey)
- Work continued to try to improve the stability of the superconducting cavities in the linac (D. Valuch and W. Venturini from BE-RF)
- The repair of the 9gap REX amplifier continued (C. Gagliardi, BE-RF)

ELENA (L. Ponce):

- We can summarize the week as despite the controls problem (mainly on Friday!), TL commissioning in LNE00 started on 24th of September.
- For transfer line installation: HV test of the electrostatic elements completed on Wednesday, after the last HSE electrical inspection. Validation of the WIC and vacuum interlock on Tuesday. There are some MC to fix on the vacuum interlock to fully validate all the lines. For the time being, possible to open the valves in LNE00, LNE01 and most of LNE03 (i.e. most the ALPHA line). 8 profiles monitors equipped with acquisitions electronic (2 on LNE50 and 4 on LNE00). Next set of electronics to be installed as of 7th of October
- For the ring commissioning, still struggling with integration problems of LLRF controls settings into the cycle editor and LSA context. Work on-going, spent most of the week to transfer knowledge from RF experts (busy in other machine) to OP to allow efficient use of expert availability to fine tune the system instead of recovering the system after tests.
- Beam extracted to LNE50 all the week for ABT to set-up tools for optics measurement
- beam extracted to LNE00 and seen on the first 4 profile monitors, first time beam is sent after the ion switch on Thursday and Friday, even without most of the controls application