Accelerator Complex Status

End week 1 (Monday 11 January 2021)

First weekly report of 2021….., Happy New Year !

Executive Summary:

The first week of the year started with a 4-day long control system administration period that was successfully completed Thursday afternoon.
LINAC4 source and RF restart resumed on Thursday with the aim to deliver beam to the LBE line by Wednesday this week. The source is still unstable and a change of the H_2 valve is planned for this afternoon, while the leak test is foreseen for Tuesday afternoon. LINAC3 beam tests will resume this week as well as the PSB beam commissioning. The PS, SPS and ELENA have also resumed their hardware commissioning. ISOLDE will follow later.
On the LHC side the machine was patrolled last week, and the powering DSO tests passed on Friday.
On the general infrastructure side, it was quite busy with some water leaks, electrical perturbation and an UPS battery that caught fire.
More details report at:
https://be-dep-op.web.cern.ch/system/files/2021-01/Status%20End%20Week%201.pdf

Technical Infrastructure (J. Nielsen):

- A fairly quiet week for TI.
- Statistics:
  - About 7200 alarms
  - 948 phone calls 601 incoming, …347 outgoing)
    118 ODM created
- Events worth mentioning:
  - Wed. 06.01: Water leak in RB66, which was quickly fixed by EN-CV.
  - Thu. 07.01: Electrical perturbation in LHC5, as a result of a human error during the DSS maintenance, several electrical supplies opened.
  - Thu. 07.01: Leak on a water-cooled cable in UA47, EN-CV contacted EN-EL for the repair.
  - Fri. 08.01: Fire alarms in the BA2 during RF maintenance, Fire Brigade sent on-site – false alarm.
  - Sun. 10.01: Smoke from UPS battery EBS12/18 in RE18. The fire brigade and EN-EL went on-site. EN-EL has disconnected 2 batteries under the supervision of the fire brigade. The batteries were replaced in 2019.
- Details: https://wikis.cern.ch/display/TIOP/2021/01/11/TI+Week+summary%2C+Week+1

LINAC 4 (L. Timeo):

Early last week:

- upgrade of the control system that entailed checks from OP and specialists;
- replacement of the electron multiplier for the BSM1;
- characterisation of the chopper cables;
- RF and safety-related equipment maintenance;
- Servicing of the access system, followed by the patrol;
- RFQ thermal tuning: deployment of the PLC software update;
- an inspection highlighted some electrical non-conformities (missing connection to the earth):

- one magnet: A. Newborough already solved it;
- supports holding radiation monitors and HV boxes feeding the ion pumps: the TSO will act when the report is available.

Thursday:
In the morning, while EN-EL was replacing the batteries for the UPS distribution, the IT intervention took place (risk of losing synchronisation for 20-30 seconds). For caution, klystrons, solid-state amplifiers, and the source restarted in the afternoon. The reconnection of the compensator, after the repair, required to stop the equipment for roughly 20 minutes around 4 p.m.
Friday:
SY-RF continued debugging problems. Also, I discussed with B. Bielawski a change in the RFQ thermal tuning system. The latter shall be deployed and validated as soon as possible, if that is compatible with the other tests. BE-ABP followed up the slow recovery of the source with smooth cesiation. H_2 injection monitoring confirmed the degradation of the valve.
Over the weekend:
The e/H carried on improving. The beam was still a bit unstable, and the instability in the gas valve was visible. On Sunday afternoon, the reboot of the RFQ tuning PLC affected the source RF amplifier that tripped. It restarted smoothly.
Early this week:
At the moment of writing e/H = 1.4 (was 3.2 on Friday afternoon). The RF tests will continue this morning and tomorrow morning as well as the RFQ thermal tuning validation. I will keep the latest software version if stable operation is guaranteed. Otherwise, I will roll back to the previous one. Concerning the source: changing the H_2valve is planned for this afternoon with the consequent interruption of RF operation, while the leak test is foreseen for tomorrow afternoon.

Conclusion:
On Wednesday, both RF and source are expected to be ready for delivering beam to LBE line, but the source stability is not 100% guaranteed, yet.

PS Booster:
Will resume beam commissioning this week.

PS (K. Hanke):
SWY
- Main units covers installation complete
- RF by-pass measurements complete
  - By-pass in SS20 had a problem => has been replaced on Friday
    - SEH23 needs reconditioning after this intervention (save vacuum sector) but NO bake-out needed
  - By-pass in SS17 has a problem => has been consolidated on Friday
- Slabs installation complete
- Patrol ongoing, then HV tests. Lockout will be removed soon (from Wednesday?), accesses still possible today and tomorrow. In BEAM from tomorrow evening or Wednesday morning

PSR
- Main units covers installation ongoing
  - Scheduled for this week and next one
- SMG48 intervention complete

CCC
- Cycles and settings generation
- A few dry-runs such as KFA45 tests or BFA/DFA tests scheduled for this week

SPS:
Beginning of the week mainly accesses. Resumes hardware commissioning this week.

ISOLDE (A. Rodriguez):
Water cooling will be switched back on 8 February after which re-commissioning will start.

ELENA (Laurette Ponce):
Resumed commissioning.

LINAC 3 (G. Bellodi):
Will resume beam tests this week.

LHC (J. Wenninger):
Machine patrols took place between Tuesday and Thursday, 4 points by OP (2,5,6,7) and 4 points by EN (1,3,4,8).
Powering DSO tests on Friday 8th January passed, see link to logbook. Tests of the UPRs for powering will be done March 12th.
The whole machine in automatic supervised mode.