

Accelerator Complex Status

End week 42 (Monday 19 October 2020)

Technical Infrastructure (J. Nielsen):

- Compared to previous weeks last week was a reasonably calm week for the Technical Infrastructure.
- Statistics:
 - Slightly more than 8000 alarms
 - 998 phone calls (708 incoming, 290 outgoing)
 - 111 ODM created
- Events worth mentioning:
 - On Monday 12.10, the whole Meyrin site was switched to the ME59 supply.
 - Saturday 17.10 at 13:25, 400V alarm in USC55 (S1A13/55) linked to fire alarm SFDEI-20006. Works were ongoing and the IS37 was not correctly done.
- Upcoming:
 - Consignation of EHT4 and EHT5, in order to add new gas detection system. There's not a big risk involved, however if things do not go as planned, it will cause a full power cut.
- Details:
<https://wikis.cern.ch/display/TIOP/2020/10/19/TI+week+summary%2C+Week+42>

LINAC 4 (B. Mikulec):

- On Monday we noticed an average phase drift corresponding to the reference phase of around 1.5 degrees over time of all Linac4 cavities. This might be due to temperature changes. Also the absolute phases (determined with time-of-flight) were a bit off. Moreover, in the afternoon we discovered that a systematic error corresponding to the selected phase step size was made during the Linac4 cavity phasing campaign, as the data from the TOF measurements arrive only 1-2 cycles after the phase change. It seems that the linac was therefore at a too high energy, which fitted some recent indirect ABP analysis from some measurements of beam arrival time at the debuncher (for Linac4 we have to direct means to measure the absolute energy; the PSB will be our measurement device...). We therefore decided to rephase, which was started on Friday and finished over the weekend.
- Regular PIMS11/12 TOF measurements to evaluate the effect on the beam of such a (small) coherent drift will be made.
- After having run with the debuncher in ppm without problems for a while, issues returned. The RF team worked again on the debuncher, and the problem seems solved now (a new firmware was deployed for bunchers and debuncher). Also, some adjustments on the Switch & Limit were needed for DTL1 following several trips.
- Source and RF stops during 2 MEQ59 switches.
- Tibor could solve the serious issue that SIS cut the beam 1 cycle too late (for the wrong cycle when working in ppm).
- Some measurements with ABP (reference profiles, dispersion) did not fit the predictions. To be followed up by ABP.

PS Booster (F. Chapuis):

Activité échelonné sur toute la semaine:

- **TE-EPC – Main Power Supply, du Lundi 12/10 au Mercredi 14/10 :**
 - Poursuite et finalisation des Tests BR.MPS (back-up POPSb) ;
 - Les tests ont été terminés avec 2 jours d’avance sur le calendrier initial.
 - 2 cycles (160Mev à 1.4Gev) ont été testés ayant des courants RMS différents : 2100A et 2350A.
 - Résultat : tests réalisés avec succès.
 - BR.MPS a pulsé avec un taux de répétition de 100% avec le cycle $I_{rms}=2100A$, malgré les craintes concernant le refroidissement.
 - Donc, il n’y a pas eu d’interruption causée par un manque de refroidissement provenant du circuit d’eau-déminéralisée.
 - Néanmoins, nous étions proche des limites thermiques point de vue BR.MPS et le circuit d’eau-déminéralisée n’était pas à 100% de sa charge point de vue des autres équipements à fournir et saisonnalité.
- **Du Jeudi 15/10 au Vendredi 16/10 :**
 - Reprise et finalisation de Tests POPSb. Le transfert de responsabilité TE-EPC à BE-OP est prévu début de la semaine prochaine avec livraison du HMI.
- **BE-OP – toute la semaine :** poursuite des Hardware-Tests selon checklist.

Activité journalière :

- **Lundi 12/10 :**
 - DRY-RUN - BQSB (mesure de Tune) - BE-BI : test réalisé avec succès, de nouvelles fonctionnalités ont été ajoutées et testées (ex : possibilité de personnaliser l’excitation du faisceau) ;
- **Mardi 12/10 :**
 - Préparation DRY-RUN – BLMDO + BLMPOD (BLM Diamond) – BE-BI : génération de la Class FESA BLMPOD permettant le contrôle de la tension des BLM Diamond via Knobs (utile pour l’aide au diagnostic en cas de défaillance) ;
- **Jeudi 14/10 :**
 - LLRF –Test et mise en service du process de synchronisation de l’injection Booster, réalisés avec succès.
<http://elogbook.cern.ch/eLogbook/eLogbook.jsp?shiftId=1114631>
- **Vendredi 16/10 :**
 - DRY-RUN – Kickers d’éjection et de la recombinaison (BE/BT.KFA) – TE-ABT :
 - Quelques problèmes à revoir concernant les timings, les conditions externes et signaux OASIS. Sinon, ils fonctionnent dans l’ensemble.

ISOLDE (A. Rodriguez):

- The RF specialists spent a lot of time working on the stability of the SRF cavities and manage to improve the situation significantly. We really appreciate their efforts to get to this point. We are now at integrated field levels comparable to those in 2018.

- The repair of the amplifier of the 9gp continued. The best estimate at this time is that we will connect the amplifier back to the cavity early this week and start using it for beam acceleration towards the end of the week
- We also had a problem with the amplifier of the 7gap3 cavity. This was quickly solved by L. Timeo and C. Gagliardi last Wednesday
- On Friday, we had a problem with the cryogenics. One of the valves used to supply LHe to CM4 failed. We lost quite a bit of Helium. They managed to solve the problem in the evening. Thankfully, the SRF cavities stayed superconducting the whole time and we don't expect longer term problems because of it.
- Regarding the beam commissioning, we were able to set-up the IH and the 7gap1 structures before the work on the SRF cavities started and the problems with the cryo and the 7gap3.
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ELENA (Laurette Ponce):

- Completed installation of the IN/OUT controls boards for the profile monitors on Tuesday, some clean-up to be done next week (cables to be correctly attached to follow movement)
- Beam extracted to Gbar for setting-up of their equipment, they will start deceleration next week.
- Beam successfully sent to end (last vacuum valve before experimental set-up) of LNE04 and LNE07.
- quad scans started in LNE50 and LNE00 by ABT colleague.
- One major problem with the BTV118 in the injection line, extensively used for injection optimization (to compensate for the position drift of the beam spot in the source). It got stuck IN beam and had to be condemned out of beam. BI would like to remove the device to investigate the cause of the problem as the other BTV is the EiS beam (BTV117). Problem, this is in the longest vacuum subsector and the one containing the injection kicker which has an internal leak. The spare is not yet ready for installation and if installed 3 weeks of bake-out have to be planned depending on vac exeperts availability.