

Accelerator Complex Status

End week 47 (Monday 28 November 2016)

TI (Jesper Nielsen)

Mon. 21/11: Not possible to repower 18kV breakers for RF in LHC 4 remotely. The PC needed to be rebooted on-site.

Thu. 24/11: BB3 cooling station tripped on low pressure alarm. The station was quickly restarted; the alarm was potentially caused by an intervention on the chilled water circuit in the CCC

The complete report can be found

at: <https://wikis.cern.ch/display/TIOP/2016/11/28/TI+summary+Week+47%2C+2016>

LINAC2 (Michael O'Neill):

Good week. No major faults. The source settings were adjusted on Friday to improve the stability of the beam.

LINAC3 (Michael O'Neill):

Good week. Beam current between 40-44uA. Ovens will be refilled today.

LEIR (Maria-Elena Angoletta):

Excellent week for LEIR, who has delivered the required intensity (and much more than that) without particular problems. To be underlined that an intensity of 8.5 E10 charges extracted from LEIR is now routinely provided, whilst it was a still dream one year ago. This has not been of course for free, as a substantial manpower has been invested to obtain this result and to keep it.

In parallel to normal operation, an intense MD program is still taking place.

In particular studies are being carried out to ascertain the effectiveness of modulating the frequency at capture to obtain a more repeatable intensity out of LEIR, without sacrificing the intensity.

In addition, the synchronisation at extraction has now been optimised on NOMINAL and on EARLY, profiting from additional features in the new LEIR LLRF and developed in 2015 for the intense PSB beams. This allows eliminating dipolar structures in the extracted beam as well as obtaining an unprecedented jitter-free position of bunches arriving to the PS.

Beam will be available in LEIR until Monday morning when, at approximately 6:00 am but after the last LHC fill, the source will be stopped to be refilled.

PSB (Bettina Mikulec):

Quiet week - the end of the run is approaching...

Many last-minute MDs, also during the weekend, in accordance with the RP restrictions.

- Fine adjustments of the AD beam (working point of R1+R3) and of the

LHC100ns production beam (recombination and steering to PS).

- The intensity stability of LHC100ns was unsatisfactory. Finally the problem was found to be related to the Linac2 pulse and wrong settings of the arc current of the 2 users, which was corrected Friday morning.
- The too low measured horizontal emittance of R2 for LHC100ns seems to be a measurement error of the wire scanner (for both speeds); to be followed up by BI.

On Sunday BI4.DIS10 tripped at 18:30. The piquet diagnosed a problem with the power switch; in order to keep the distributor running through the night, he adjusted some settings; 1h44m downtime. The power switch should be changed as soon as possible; an occasion might be during the Linac3 source filling on Monday.

The temporary solution of the BI4.DIS10 didn't hold. During this night, the piquet ABT had to come in and exchange twice the high voltage switch (the first one he exchanged was not working). 3h50m downtime in total.

PS (Ana Querrero):

With an availability of 94% the PS delivered currently operational beams and many MD beams all along the week. Just to note that the RP 'consignes' were not clear enough for the agreed MDs. In some cases the intensity and frequency did not match for PSB and PS restrictions together.

Several interventions on 10Mhz cavities were needed (Monday C86, Wed C36, Thu C96, Fri & Sat C96), also two on C40-77 causing a proton down time of 2 hours and one on C80-08 causing an ion downtime of 40 minutes. A Kfa71 timing error stopped the beam during ½ hour.

At the same time of the foreseen stop for the PFWs dedicated MD on Wednesday, an intervention on the PS water cooling system was programmed due to a malfunctioning pump. Most PS equipment had to be switched off but everything came back without issues.

The Wednesday afternoon dedicated MD was delayed by 3h waiting for SPS to go in coast. The PFW focusing wide was connected to a power supply controlled by FGC3, switching always at 5kHz but with a resultant harmonic seen by the beam of 10kHz and synchronized at start of cycle. The MTE beam was played successfully and measurements taken. Other beams were also played successfully.

The EAST ion beam was successfully extracted to the EAST line dump with a spill of 400ms.

AD (Lajos Bojtar):

The AD was working very well, no faults worth to mention.

SPS (Verena Kain):

93 % of the time in week 47 were without fault in the SPS. The main downtime was caused by the PS RF, unauthorised trimming of a vertical corrector in ITH of LINAC3 via a script, the frequently tripping main power supplies and 3 h of downtime were due to a disk problem of the SPS post mortem server which blocked all frontends in the SPS that push data to it.

The main power supply problem seems to have been temporarily solved by

removing the more fragile power supply SMD10 from the configuration and replacing it by SMD14 as well as disabling the dV/dt warning.

Week 47 was a busy week. A UA9 ion run took place from Wednesday 11am to Thursday 8am. This was followed by the switch of the extraction energy for the North Area ion run from 33 GeV to 76 GeV proton equivalent. The North Area has been smoothly running with 76 GeV proton equivalent since Thursday evening. The proton and ions for the LHC occasionally suffered from quality issues this week. The 100 ns proton beams had to be equalised with the help of PSB at several occasions and the last ion bunches were unstable every so often at transition crossing during one of the fills on Wednesday. Unfortunately the degraded ion beam had not been stopped by the BQM. Since then the BQM settings have been adjusted to avoid injecting bad beam in the future.

Upcoming:

Monday: source refill in parallel with MD on crystal enhanced slow extraction.

Thursday: AWAKE back with beam and plasma.

LHC (From the 8:30 meeting):

Entering the last week of physics in 2016.

Thanks to the excellent availability the Pb-p qualification, intensity ramp up and three fills with 500 bunches could be achieved over the weekend.

The availability was around 97%, but this does not include the down time of the PSB on Sunday, as the fill was kept longer than planned.

On Friday there was an access to prepare the switch from p-Pb to Pb-p. This was followed with requalification, loss maps and asynchronous beam dump.

During the filling the beam losses at injection reached dump threshold and the injected beam was dumped followed by a refill.

Next: This morning fill and then start the LINAC3 source exchange. Tuesday there will be a crystal collimation MD followed by VdM scans on Wednesday and Thursday.