

## Accelerator complex status

### End week 46 (Sunday 20<sup>th</sup> November 2016)

#### TI (Jesper Nielsen)

Please find the TI summary here:

<https://wikis.cern.ch/display/TIOP/2016/11/21/TI+summary+Week+46%2C+2016>

The stats are not added, we had a small server problem this morning. They will be added after.

The only "real" event being the weasel of Sunday evening.

#### AD (Pierre Freyermuth)

This 46th week was not exceptional for the AD with roughly 74% of availability.

##### Monday

The all day was taken by the RP survey of Booster and PS, therefore no beam was available for AD.

##### Tuesday

We get back the beam from PS around 17:20.

We have some issues with one of the Electron cooling power-supply.

Some of the injection line power supplies take a very long time to be switched on (more than 15min)

CO2 cavity had a broken module, which had to be changed by the specialist (low high freq selector). (2h stop)

The beam was lost completely at the last ramp. Apparently an orbit jump is the cause. Ring steering had to be done. (2h)

##### Wednesday

Asacusa didn't see any beam, all the line had to be re-steered, and the bending values were very far from the references. Maybe an unlisted magnet for ELENA future extraction was left on after some test. (3h)

##### Friday

Main quads tripped (18min)

##### Saturday

Electron cooling tripped and 2 power supplies had to be reset on site with the piquet online. (1h30)

## **Booster (Klaus Hanke)**

An extremely quiet week with only a few users in the supercycle for the LHC, AD and a couple of MDs.

The RP survey was done on Tuesday and since then only low intensity beams are delivered. The only problems of the week were related to the slow kickers tripping in the beginning of the week (always resettable). The expert was called to have a look, but found nothing abnormal and the trips did not occur any more. Apart from that a power glitch this night, with numerous equipment tripping but all could be re-started smoothly.

## **PS (Ilias Efthymiopoulos)**

Smooth operation of PS with high availability (99%)

The HI proton run concluded on Monday 14/11, followed by a RP survey of the machine until Tuesday @ 17h00PM where the beams were restarted.

Throughout the week PS delivered Ion beams for LHC and North Area, as well as protons to LHC, AD and the MDs. Operation with very long super-cycle up to 56 bp! For the long SC configuration, AD would have preferred more cycles during LHC filling with ions but is not possible.

Few faults on RF cavities, kicker magnets and AD e-cooler repaired without major loss of beam time (~1.4h).

A fully charged MD schedule for the week including: hollow bunches on the flat-bottom, longitudinal performance of LHC25ns, beam studies for BCMS beams at injection, studies of vertical emittance blow up of LHC beams, PSB-PS transfer of long bunches, space charge studies using double harmonic h7/14, hardware tests of LLRF on coupled-bunch feedback, and working point studies for integer tune 7/7 optics.

## **SPS (Francesco Maria Velotti)**

On Monday at 6:00 the proton physics program 2016 ended. The set-up of FT ion cycles started. The ion 33 GeV equivalent beam was setup up to flat top as well as the 380 GeV beam. The DSO test was attempted, but due to the low current requested from this cycle to the MSE, it was only terminated on Tuesday and beam permit was signed. After discussion with the EPC experts, a lower I<sub>0</sub> was chosen, which is 6% of 24 kA (1440 A) instead of the original 10%.

After the DSO test, the RP survey and the end of the source refill, the slow extraction setup started. Both the 33 and 380 GeV equivalent beams were brought to TT20, but a quite long steering for the 33 GeV one was needed. On Wednesday evening, the setup of the 33 GeV ion cycle was completed. FT ion physics with the first energy started.

After few trips of the LSFA/B power converters, the EPC experts requested time for intervention and fixed the problem (pulse transformer).

To be highlighted, still few trips (4 times) of the mains with the same signature as last week - cause still unknown. Also, repeatedly missing trigger of the MKD - it seemed to be solved as the fault could be reproduced, but it is still not the case as few events have been recorded after.

Regarding LHC proton beam at 100 ns, Thursday the problem of the reduced intensity on the last bunch of first batch and first bunch of the second batch was fixed. The damper, due to the reduced intensity wrt to standard proton operation was not working.

Not a quite weekend, in fact we had problems with interlock BPMs in LSS4, rephrasing and one of the main vertical bends at the of T18 down - all regarding the LHC ion cycle. The BIS didn't permit the extraction of the LHC ion beam. After few attempts, S. Jackson was called and the problem was fixed. The Nr. turns and the acquisition delay of the MOPOS changed. It seems that the orbit on the LHC ion cycle is not very stable - quite a few times the interlock BPM settings had to be adjusted in order to extract. Also, due to rephrasing problem on the LHC ion cycle T. Bohl was called. One of the last vertical dipoles, MCAIV.88117, was not receiving the right current - the control piquet was also called from the first line and finally a card was exchanged which finally solved the problem after few hours.

## LHC

Good progress over the weekend at 6.5Z TeV. Hit hard by the weasel/SVC on Sunday night.