

Accelerator Complex Status

End week 47 (Monday 23 November 2015)

TI (Jesper Nielsen):

- Monday POPS trip caused interlock alarms on 18kV in TI. Impossible to reset from TI supervisions, TE-EPC was called in by PS operators, caused 20 minutes downtime
- Tuesday Trip of power supplies on the LHC due to a perturbation on the 400kV electrical distribution. The cause was a short circuit on the 400kV line Creys / Génissiat.
- Tuesday Power cut in North Area of Preveessin. The reason was a cable to an emergency stop rack that had been cut by error during cabling works in the North Area. The power was cut to the IT star points in the area which caused a complete loss of communication for Cooling & Ventilation, electricity, the whole CSA control room, half of TI phones, and all IT networks in general in a big part of Preveessin. The UPS supplying the main starpoint had bad batteries, they lasted for less than 2 minutes, the diesel generator that should have taken over was out of service since 1 week before the cut. Power and / or IT network was cut also to the NA62 liquid krypton installation, fortunately it came back within an hour which was before the UPS for NA62 ran out of battery. Power was restored within an hour thanks to a quick intervention by EL, even without knowing what had been cut (no network) !
- Tuesday Loss of Cryo conditions in P4 on stop of QSCCA-4 due to malfunction of TSH129 (high temperature on discharge He of MYCOM Compressor). This leads to the stop of the whole LHCCA cryoplant, then the rise in temperature of magnets, hence the loss of Cryo Maintain.
- Wednesday Interlock EIS caused dump of LHC. Loss of conditions due to a FDI controller card fault (internal power). The card has been changed.
- Thursday Trip of compensator in LHC4. No problems found when measuring, the reason is thought to be an animal. Agreed with LHC operations and EN-EL / TE-EPC to wait until a stop of the LHC before repowering the compensator

Detailed report can be found at:

<https://wikis.cern.ch/display/TIOP/2015/11/17/TI+summary+week+47,+2015>

LINAC2 (Detlef Kuchler):

On Thursday Tank1 tripped with "cavity vacuum error". No real explanation could be found.

Vacuum specialists following up the issue.

We started to test a new SIS watchdog version. But as it disturbed the operation, we could not do very much. But some bugs could already be identified. Linac2 will continue to run until next Monday (until this Wednesday with RF, the rest of the time only the source).

LINAC3 (Detlef Kuchler):

Some source trips during the week. In the night to Friday remote intervention necessary due to low intensity. Sunday source intensity was low. SPS operators called two times. Several remote interventions were necessary. Only in the evening the normal intensity could be re-established (after starting oven 2).

WARNING: As oven 2 had to start already now it is possible that we will not be able to run the source until the next planned oven refill (01/12).

LEIR (Maria-Elena Angoletta):

Focus of the week was the debugging and improvement of the BIOMD user, which continued also on Saturday. Problems with the extraction reference, due to incorrect timings, were solved as well as problems with the kicker length. As noticed for other beams, the BIOMD beam performance seems to depend on the previously played LEIR user and the accumulation on BIOMD was significantly improved after putting NOMINAL in front instead of EARLY.

RF studies have taken place on the capture of operational as well as MD beams. More studies and MDs to come.

The work on the automatic cycle generation is ongoing.

On Friday LEIR provided EARLY and NOMINAL operational beams as expected. There was a programmed interruption of about 45 minutes to allow TE/EPC colleagues to take some measurements (that will be analysed offline) on ETL.BHN10.

On Sunday afternoon the Linac3 source started to get weaker so the Linac3 supervisor came in and improved the situation.

PS Booster (Gian Piero Di Giovanni)

it was a good week for the PSB as we gently cruised towards the end of the proton run.

We had few technical issues and the only one worth mentioning is the replacement of a faulty control module on BI3.DVT50 on Thursday, which anyway did not affect the LHC operations.

Despite the apparent calm, we a lot of last-minute activities profiting from the LHC-type beams still circulating in the machine. The activities mostly focused on the commissioning of the 3 turn-by-turn pickups installed in ring 2 and on the investigation of the open issues with the PSB-PS synchronization. Concerning the latter study, a lot of progress was done on avoiding the typical overshoots during the synchronization process which could disturb the bunch structure. Moreover, with the help of the control group, there is a plan to improve the measurement of the synchronization frequency at the PSB, which is a precious tool to diagnose of any future problem.

The rest of the time was intensively spent on acquiring snapshots of the current system to serve as a basis for the PSB start-up next year after the YETS..

PS (Rende Steerenberg)

With an average PS beam availability of 98% it was a good week.

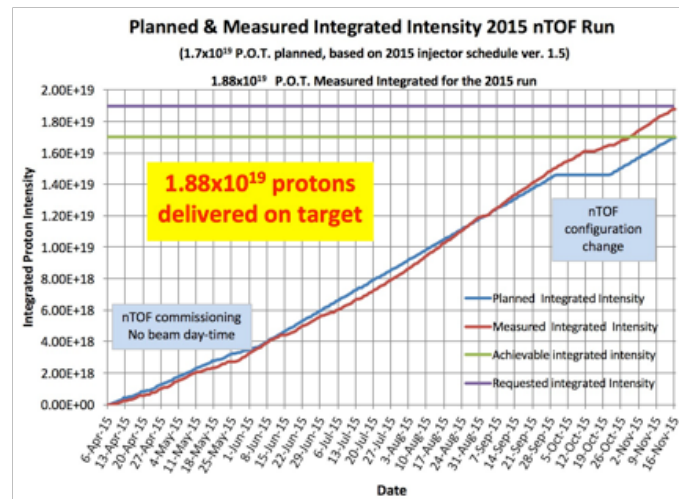
All high intensity protons beam were stopped as planned on Monday at 06:00 and the RP survey took place on Tuesday afternoon. In the shadow the 40 MHz cavity C40-78 was repaired. The fast feedback loop needed to be readjusted.

Throughout the week there were several issues with the 10 MHz and 80 MHz cavities that were solved. One of the 10 MHz cavities is also broken, but all beams can be produced thanks to the hot-spare.

POPS and the power converter for the low energy quadrupoles tripped several times but could be reset.

The LHC PROBE, LHC INDIV, LHC INDIV_vdM, LHC 25 ns 12 bunches and 72 bunches were delivered as well as the AD beam and the EARLY and NOMINAL ion beams.

For nTOF the committed number of protons was reached and surpassed by 11%.



AD (Bruno Dupuy):

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SPS (Karel Cornelis):

Proton physics finished at 6 :00 last Monday. After the DSO tests on the primary ion interlock, ion beams were commissioned for both fixed target and LHC-injection. The ion beam setting up was hampered by RF-control's problems in both SPS and PS. By Tuesday morning the Pb-ion beam reached the NA targets (T2 and T4 only in use) and a Pb-probe beam could be sent to the LHC. All machines were stopped for the RP survey on Tuesday afternoon. Fixed target ion physics started on Tuesday evening and LHC turned back to proton filling for the rest of the week. A vacuum leak was noticed while moving the TED in TI2. In order to avoid further degrading, the TED was blocked out and a special procedure was put in place to give access to LHC by cutting an upstream chain. On Friday afternoon, a lot of time was spent on setting up the very long ion filling cycle (12 injections) for the LHC. Early Sunday morning NA physics was stopped for several hours because of the ion primary beam interlock. The electronics of one of the two BCT's had stopped because of a temperature out of range reading. The specialist was called in to repair the BCT and the system could be restarted with the agreement of the DSO.

HiRadMat profited from the protons still being available for a short experiment on Saturday during an LHC coast.

LHC (From 8:30 meeting):

The initial return from the TS3 seemed to be smooth over the previous weekend, but the start of last week was difficult, with many uncorrelated issues, resulting in low machine availability. Fortunately, things picked up towards the end of the week with an excellent weekend during which the 2.51 TeV proton-proton run could be completed. Therefore, the two foreseen contingency days are no longer needed anymore.

On Sunday afternoon some commissioning with ions was done and in the evening the machine was switched back for a proton physics fill overnight with 1825 bunches per beam. The fill was dumped due to a trip of sector 7-8 (QPS fault) and a cryo recover is needed. 28 pb⁻¹ was accumulated while the experiments asked for 20 to 40 pb⁻¹.

The aperture scan for ions could be done and the vertical plane the aperture seems to be a bit smaller, but this should not be problematic for the ion run. Collisions have been reestablished too. The TCT collimators were also realigned.

Next steps:

- ADT setting up and loss maps at end of squeezed synch dump if needed
- Tuesday should be first physics fill with a few bunches.