

Accelerator Complex Status

End week 44 (Monday 6 November 2017)

TI (Jesper Nielsen)

Saturday 4/11 at 21:52 Mixed water leak on ALICE low voltage power supply in UX25. The leak was detected due to electrical alarms and later on a frequent filling alarm on the cooling system. The leak was due to a low voltage power supply which had an internal leak. The power supply which had the leak was the lowest of a bank of 9. Damage was limited to this power supply.

Details: <https://wikis.cern.ch/display/TIOP/2017/11/06/TI+Summary+Week+44>

LINAC2 (Giulia Bellodi):

Very good week, we had 100% beam availability.

LINAC3 (Giulia Bellodi):

There were a few trips of the RF Thomson generator at the beginning of the week (one of them needing cage access to reset).

The source was retuned on Wednesday afternoon to gain in beam stability (though at the cost of a couple of emA decrease in intensity on BCT41, and slightly worse shot to shot variation).

Performance was very stable in the second part of the week.

LINAC2 (Giulia Bellodi):

First week of Linac4 under BE-OP responsibility (phase 2 of the reliability run):

- Running fine with a few trips from pre-chopper and RF.
- Beam instrumentation issues being followed up.
- Tests for full ppm operation still ongoing.
- Source cesiation not successful.
- RF MDs during the week, mostly for software upgrades

LEIR (Steen Jensen):

Issues

- Tuesday, October 31st 2017
 - CRF41 trip => restart => ok
 - No ejection, FEC cfv-150-rpow => reboot difficult, but then ok
- Wednesday
 - B-train FECs dleibgen& cfv-363-cbsyn seem to crash when switching to LHC filling cycle (changes phase) => reboot => ok, but being investigated
 - CRF41 trip => restart ok
- Thursday
 - cfv-363-cbsyn down again => reboot => ok
 - CRF41 trip => restart => ok
 - OASIS multiplexer changed in cfi-363-ceaos1, noise problem => ok
- Friday
 - dleibgendown again => reboot => ok

- LN3 source (RF Thompson) in fault => restart => ok
- Saturday
 - dlibgen& cfv-363-cbsyn down again => reboot => ok
 - Several faults on ER.XSK42 => reset => ok. Being investigated
- Sunday
 - No magnetic cycle seen in Vistar => reboot FEC cfv-250-cpow => ok
- Monday
 - Again trips of ER.XSK42 => restart = ok
- Tuesday

Activities:

- Delivering beam
- LN3 source optimized
- Progress on new orbit measurement system

PSB (Jean-Francois Comblin):

It was a good week for the Booster.

Just a few resets were needed, as well as an intervention of RF specialists for a beam loading problem. All together the total downtime was less than 1 hour.

There was lots of MDs as usual. For the first time, the new B Train distribution with Withe Rabbit was tested on an LHC25ns type beam with very promising results.

ISOLDE (Eleftherios Fadakis):

Very interesting week with 4 different experiments sharing the beam from GPS. MINIBAL requires the lasers to minimise contamination while the remaining 3 experiments need to run in VADIS mode

From GPS we have been delivering :

206Hg46+ to Miniball (IS547) since Thursday night.

199Hg to GLM for both Biophysics and Solid State Physics (IS585, IS515, IS602), since Tuesday night.

This Pb target needs approximately 450A to heat it up, melt the Pb (at 327Deg) and produce the beam. The temperature inside the target needs to remain quite stable at ~480Deg. When turning on the stagiso beam, the target heating had to drop to ~100A. This meant that every fluctuation on the supercycle had to be compensated by either increasing or minimising the heating of the target. If the target cools down, the Pb will solidify which would be problematic for the remaining of the run. I would like to thank the PSB colleges for calling our control room and informing us before performing any change. We also profited from receiving up to 60%(for a few hours) of the cycles during this run.

Issues

-On Tuesday the proton scan could not be performed because the two wire grids used to steer the protons onto the target were giving 0 values. Restarting their FEC solved the issue although the experts do not know what happened exactly.

-Needed to operate SRF05 at smaller gradient than what was originally set up, due to field emissions. It was set to 3.1MV/m and the following two SRF(06, 07) had to be re phased.

-While setting up on Thursday, the extraction electrode moved in by itself and got stuck there. The expert was called and managed to set it free. This allowed the set up to continue.

PS (Ilias Efthymiopoulos):

Smooth running for the PS with excellent overall 97.8% availability!

PS delivered beams to all destinations during the week with typical intensities: East Area (including IRRAD, ~ 3.12 Tp/pulse), nTOF (~ 8.0 Tp/pulse), AD, and ions (Xe) to SPS ($\sim 2.0 \times 10^{10}$ charges/pulse), LHC beams of 8b4e_BCS (with $\sim 1.1 \times 10^{11}$ ppb, and 1.107/1.049 mm.mrad e_h/e_v). The yearly scheduled protons on target for nTOF was reached on late Thursday, and we are now at 1.87×10^{19} pots, or 101% and continue.

The total down-time of the week was 3.71h, attributed mainly to transient faults related to RF cavity (60%) and power converters including POPS (36%). Since Thursday we are running the AD and nTOF beams with the upgraded B-train measurement system and white-rabbit transmission without problems. We still observe missing signals from the B-train to execute the programmed cycles on the other beams that we hope will be removed once all beams will be transferred to the new system – hopefully this week.

On the MD side, we had a full week with 10 MDs planned and took data. In view of the decision later in the year to dismantle the CT equipment from the ring, we maintain a high-intensity MTE SFTR0 cycle @ 2.4×10^{13} to continue the studies and accumulate statistics.

AD (Pierre Freyermuth):

This week the AD was stopped for up to 9h leading to a 94% of availability. It started on Monday with more than 5h of stop due to our main cavity fault. The high-level hardware had a worrying behaviour. The problem had solved by itself, and is therefore not fully understood, which adds some worries for the equipment specialists.

Tuesday the main quadrupole power supply tripped and the PS crew called the first line piquet.

Wednesday, an electron cooler power supply needed a local reset. An energy adjustment was necessary afterwards.

On Thursday, the Aegis experiment suffered of an unusual rate of lost cycles, not fully understood.

The Friday we figured out the ejection kicker timing needed to be adjusted, the extracted bunch was indeed touched by the rise time.

Saturday sees the two lines Aegis and Alpha completely re-steered, maybe the magnetic condition of the hall changed again.

SPS (Verena Kain):

Week 44 was the second week of this year's ion run in the SPS. The problem of the vertically drifting beam in H2 for NA61 was understood and could be mitigated. It was due to the change of field with temperature of one of the vertical bends in H2. As soon as it had been switched into DC no more issues were reported.

Due to the ZS sparking with ions in the supercycle during 8b+4e filling, the LHC filing supercycle was changed and does not include any fixed target cycle anymore. Switching from this supercycle to the fixed target one, with different offsets at the beginning of the sequence, lead however to a still not fully understood issue in the LEIR B-train frontend and made it trip. The fixed target supercycle has therefore also been modified and now starts with an LHC beam MD cycle.

The low emittance roman pot beam was taken on the indiv cycle in the SPS. 0.5 um in V and 0.8 um in H were measured for $\sim 1e+11$ p+ per bunch.

The SPS had ~ 95 % of availability despite the ~ 6 h stop due to a LOKN configuration issue on a power converter card in the North Area.

LHC (Wolfgang Höfle & Enrico Bravin):

Operation with 8b4e BCS. After the announcement of the early stop for CMS and the reshuffling of the LHC schedule (1 week earlier, December 4th instead of 11th), it was decided to keep fills very long to help LHCb a bit. The integrated luminosity at the end of the weekend reached 48.3 fb^{-1} .

Over the weekend a few accesses were required for power converter issues, water leak and the an error on compensation power supply for the BETS.

Next:

- Keep long fills
- Preparation for special runs, High beta test at 900 GeV amd test of the 2.51 TeV cycle.
- BSRT calibration