

Accelerator Complex Status

End week 30 (Monday 31 July 2017)

TI (Chris Wetton)

Wednesday 26/07 at 00:58 LHC lost cryo conditions due to a communications fault on the cryogenics system - The fault disappeared just as the piquet arrived on site.

Thursday 27/07 at 06:25 Cryo conditions for LHC were lost for a second time. Intervention made in UA27 to replace a faulty Profibus AI/AO card.

Friday 18/07 at 15:42 A trip of the chilled water production for SPS BA2 caused a short stop the SPS due to temperature interlocks on the extraction septa.

Details: <https://wikis.cern.ch/display/TIOP/2017/07/31/TI+Summary+Week+30>

LINAC2 (Rolf Wegner):

Linac2 was running well, apart from a difficult night Wednesday-Thursday. In this night the beam was interrupted twice due to a fault of the tank2 amplifier, causing about 3 hours down time. Moreover, some beam still passed the Linac but was less accelerated and arrived with a wrong phase at debuncher CDB10. This stressed the amplifier which broke 2 hours later, causing another 2 hours down time.

The source spark rate continues to be quite high (~10 per day).

LINAC3 (Rolf Wegner):

Linac3 is running quite well.

A tube was exchanged in the tank2 amplifier on Tuesday morning in a scheduled intervention. The RF Thomson generator of the source tripped a few times but could be remotely restarted. A longer beam interruption from Saturday afternoon until Sunday morning until the RF specialist restarted the tank2 amplifier (although specialist support was agreed to be only during working hours for the moment).

Beam intensity fluctuations have been seen at the beginning of the week, Detlef managed to stabilise and improve the intensity on Thursday morning to about 35 uA.

LEIR (Steen Jensen):

Issues

- Tuesday, July 25th2017: Nothing to report
- Wednesday: Nothing to report
- Thursday: ~20h00 -PS access, no beam for ~1h
- Friday: Nothing to report
- Saturday:15h50 -No beam, LN3 RF problem
- Sunday: 12h50 -Beam back

Activities

- Tuesday: NOMINAL study: inj. eff. optimization
- Wednesday: NOMINAL study: quality of multiple injections

- Thursday: NOMINAL study: e-cooler setup (high losses @ 2ndinj). EARLY to SPS for RF setup
- Friday: EARLY to SPS for RF setup.

PSB (Bettina Mikulec):

Calm week for the PSB with only minor downtime due to a few extraction/recombination kicker resets and FEC reboots.

Wednesday night there were several problems with Linac2 (exchange of a trigger module and a connector for the Franck James Amplifier of tank 2 and exchange of the Dressler pre-amplifier for debuncher DB10 with its spare; see Linac2 report).

The week was characterized by the final setup of the Van der Meer beam for the LHC Van der Meer run, the longitudinal optimization of the BCMS 25ns 1.5 eVs version and finalization of the 2 versions of ISOLDE beams where the Finemet cavity acts either as h=1 or h=2 replacement on ring 4.

Investigations ongoing for the wire scanner issues.

ISOLDE (Emanuele Matli):

Wednesday morning target change on HRS and, in parallel, two interventions to replace ventilation filters of the Hall and High Tension source #2 by J.Shipper.

GPS/REX-HIE

On Wednesday we switched to the atomic form of Ba instead of the molecular due to the decreasing yields for $^{144}\text{Ba}^{19}\text{F}$ as no more CF_4 could be injected into the target through the calibrated leak that got obstructed.

Delivered $^{142}\text{Ba}^{33+}$ to Miniball until Thursday evening when the target failed marking an early end of the run.

Friday commissioning the XT03 experimental line (first beam transported to XT03).

Toward the end of the day set up with stable Ne delivered over the w/e to Miniball for setting up and beam tuning (but no physics).

HRS

Target installed on Wednesday morning and preliminary set up on Friday.

PS (Matthew Fraser):

It was another good week for the PS with the average machine availability well over 90%. Most of the downtime was due to problems upstream in the injector complex. The LHC took the VdM beam that had been requested and the 56b version of 8b4e was played and sent to D3 within specification at an intensity a little over $1.6\text{E}11$ ppb. On Tuesday morning an issue with the injection kicker (KFA45) was experienced when an MD user trimmed outside of its operational range using YASP, causing some confusion as to the source of the KFA45's external condition. After discussion with the kicker specialist the maximum limit

on the kicker voltage was correctly set to avoid this issue happening again. On Thursday evening an access to the PS switchyard was needed to replace a faulty electrovalve on the extraction septum (SMH16), taking a few hours. Since Friday afternoon issues have been encountered with the feedback on the C86 10 MHz cavity intermittently not following its programmed function. The spare C11 cavity could not be used when it was swapped into operation. The LLRF piquet managed to get the C86 pulsing reliably by Sunday lunchtime. Over the weekend the LHC also reported losses during filling, possibly caused by satellites. As an immediate mitigation measure, the PS extraction kicker (KFA71) flat-top was tightened around the batch. The C10 MHz issues, splitting and cause of satellites as well as any link between them will be followed up on Monday. We are also following up repetitive trips of the PR.WFW circuit; TE-EPC are ready to exchange the HW at the next available stop in operation longer than 30 minutes. False radiation alarms coming from a problem with the power supplies of some monitors will also be checked on Monday by RP.

AD (Pierre Freyermuth):

The week was fine for the machine, the only stop was due to RF. Fortunately, C.Rossi was available to help us (the 3 experts are on holiday). Two problems need follow-up. Sometimes the trajectory in the ejection line becomes random, with vertical shot to shot differences. Surprisingly playing with the ejection kicker tend to stabilise the situation. The other problem started Friday, two front-ends needed to be rebooted often to unfreeze the Schottky and transfo measurement.

SPS ():

...

LHC (Jorg and Markus Zerlauth):

The week started with a 2 day MD that was quite successful, with an availability of around 90%.

On Wednesday the vdm cycle setup was completed with TCT alignment and MP validations. The [B1V](#) loss map at 6.5 [TeV](#) had to be repeated because the hierarchy was broken by a small 0.2 mm bump at the edge of the betatron cleaning section. The hierarchy was restored by cleaning up the bump. A problem with the filling schemes that included long range collisions in IR1 and IR5 where the crossing angle is switched off along the entire cycle delayed the start of the first scans in ALICE and LHCb to Thursday afternoon. Two more cycles were lost due to a problem with the klystron HV settings before the ATLAS and CMS scans could start on Friday morning.

Physics operation resumed on Saturday morning with a 600b fill that was used for low-mu studies by ATLAS and CMS. The first fills with 2556B suffered from QPS and PC issues as well as from injection losses (most likely longitudinal) leading to dump triggers by LHCb. Eventually a first good and long fill started Saturday late evening.