

Accelerator Complex Status

End week 23 (Monday 13 June 2016)

TI (Jesper Nielsen)

Rather eventful week with 8 major events created.

Tuesday 07/06 @ 5:40 electrical perturbation, CERN wide

Wednesday Beam loss due to electrical perturbation causing fault on Linac 2. PS and booster tripped. Cooling station of NA62 restarted by TI. Confirmed by RTE as a short circuit on the 400KV line FRASNE GENISSIAT.

Issues with the North area cooling circuits on Thursday and Friday.

The LHC beam dump, due to FMCM Sunday evening was most likely due to an internal electrical perturbation.

Monday 13/06 @ 1:54 TI received alarms on high rack temperatures for the point 7 BPM system at the same time an electrical supply tripped. The more detailed report can be found at:

<https://wikis.cern.ch/display/TIOP/2016/06/13/TI+summary+week+23%2C+2016>

LINAC2 (Jean-Baptiste Lallement):

It was a pretty good week.

On Wednesday afternoon, the RF team investigated DTL Tank3 instabilities and stopped the beam for 20 mins.

The Linac was perturbed by an electrical glitch on Wednesday night (30 mins downtime).

The source intensity slowly recovered after the technical stop (now 150 mA at the end of the linac).

LINAC3 (Jean-Baptiste Lallement):

A very good week for the Linac3. Both source ovens were refilled on Tuesday. Up to 38 uA at the end of the Linac.

LEIR (Jerome Axensalva):

It was a short week (TechStop & Linac3 MD) for LEIR but nevertheless active:

- LN3 source refill & techstop: some upgrades were performed during the technical stop: FESA3 class now managing the RF power, hardware maintenance on powerconverters (MCB, emergency switch, WIC), etc.
- The EARLY beam was sent to the PS where it was circulating.
- We fixed the ejection pickups reading trouble in YASP.
- Together with BI, we prepared the specifications for a new Schottky measurement system which should replace the Windows-based Keysight spectrum analyzers.
- We suffered from a noisy signal on the BCT ring since Wednesday and the repair was done by Friday noon.
- The old electronic to the SMH11 injection septum is giving us some troubles but we manage to keep the beam injected. (the electronic does not want to work in remote but hopefully keep going in local mode, to be fixed next week

?!)

- Also a Quad (ITE.QFN01) gave us some troubles Friday (3 interventions of PIPO who finally exchanged the electronics power supply)
- We successfully created new cycles and feel more and more confident with LSA now (re)fitted on LEIR.
- Some measurements and preparation were done on the MD multiple injections beam.
- Many time slots were dedicated to the Transverse Feed Back recommissioning & tests of the upgraded system but unfortunately some works have still to be done beginning of this week, this is now on the critical path to be able to setup the multiple injections NOMINAL-type beams.
- As planned, there was no support for LEIR & Linac3 during this week-end and the LINAC3 degraded during Saturday night, thus no beam in LEIR this Sunday.

The next high priority tasks are: TFB completion and the continuation of the installation of the new RF low level.

PSB (Klaus Hanke):

Eventful week in the PSB...

The week for the PSB started with the technical stop. The re-start was attempted at 17:00 but several equipment did not come up (septa and cavities) and needed specialist intervention. Around 19:00 everything seemed to be OK, but then the kickers were found to be down with a leak detector fault. After several attempts by the specialist the PSB was back only at 22:00.

Wednesday the Linac2 intensity went down and became instable, and throughout the day there were perturbations and temporary stops for the RF team to intervene on the Linac. In the evening a micro-glitch caused the linac to go down again, as well as the MPS. The EPC piquet was called in and all was back 22:00

Thursday morning again perturbations due to the Linac RFQ. In the afternoon there was a stop of a few minutes allocated to perform a power cycle on the power supply of BT.QNO50, and in the shadow of this a release of the LL RF firmware was done. The stop lasted in the end about 40 min. The power cycle was unsuccessful and the release was not transparent as announced, instead our beams were found with too high longitudinal emittance and bunch length, and needed to be re-adjusted one by one by the RF expert.

The rest of the week was uneventful.

On the positive side the intensity of the MTE user could be pushed up to 2500E10.

ISOLDE (Miguel Luis Lozano Benito):

It has been a quite good week (not over yet) .

No beam on GPS.

HRS started delivering beam to IDS on Wednesday and will continue until Monday

night most likely when we will stop to start preparing the negative ions campaign. Only minor problems with the LINAC2, BOOSTER ,LASERS and a 5 hours stop on Friday night (19-0:30) due to some controls problems with a PLC controlling the frontend heating. This problem is still under investigation.

PS (Ana Guerrero):

Quiet week with all operational beams delivered as required.

Beam stop on Tuesday 3am for high I beams and 6am for INDIV and PROBE as foreseen for TS2. The recovery from the stop was not straight forward, though partly in the shadow of the PSB extraction kicker problem. The injection kicker kfa45 had to go through the night with one module out of service since the specialist could not be reached. To avoid often trips the SSC was lightened (1EAST and 1 TOF removed). Beam was finally back round midnight.

No other major issue the rest of the week. No beam during ½ hour Wednesday morning due to a cooling issue on C46, 1h was lost due to a power glitch during the night, SFTPRO beam down 40 minutes on Thursday due to a power supply issue on kfa21. Another 40 minutes were lost on Sunday as TT2 went into fall back mode due to radiation. The most likely reason being beam lost in the AD ring.

During the TS works and upgrades were done as expected. In particular, new BLM monitors were installed in 15 and 16 in preparation of the RP MD to commission the efficiency of the shadowing for the MTE beam. Later in the week the high I MTE beam was prepared.

LHC25 5BP cycle set-up continued and the cycle was played in the SSC as ZERO. During the week work on the EARLY ion beam resumed. The coarse longitudinal set up was done. Finally the kicks for the satellite elimination in the LHC25ns beam were adjusted as much as possible and the second kick enabled as requested by LHC.

AD (Bruno Dupuy):

The extraction intensity was around $3.2E7$ antiprotons, and the bunch length is nominal at 130 ns.

Tuesday technical stop, lots of access into the ring for:

- Refilling cryogenic cooler on MCC transformer.
- Intervention by BE-BI on future Q measurement on ramps.
- Vacuum survey on equipment by specialists.
- Noise detection on injection transformer FTA.BCT9053.

Since Saturday night the cavity C02 falls in the highest frequency flat-top and restarts few cycles later (automatically).

Despite the RF specialist (M.Haase) intervention, this random problem can occur 10 cycles continuously, or not appear during 10 cycle.

This problem seems to come from a HF relay board, but there is no spare so it is not completely resolved yet.

Since Sunday afternoon action, the cuts are less frequent.

The attached summary of interventions and actions.

Date	Start/Duration	System	Comment
Wed 08/06	21H01 / 1H18	Power Glitch	Linac, Booster, PS, and AD affected by the power cut
Thu 09/06	11H24 / 0H47	Access DE0.STP16	The beam stopper was down due to installations in ELENA area.
Sat 11/06	03:10 / 2H45	ALPHA steering	Instability horizontal on last GEM
Sun 12/06	00:45 / Random	C02 Trip randomly at high frequency	Intervention specialist but problems not fix yet.

CERN BE-OP eLogbook Statistics

ADE from 06/06/2016 07:00:00 to 13/06/2016 15:00:00. Availability = 90.023[%]

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AVAILABILITY 90.023[%]

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LINE	PLAYED [ms]	PLAYED [hh:mi:ss]
ACE	30000	00:00:30
ALPHA 341320711		94:48:40
ASACUSA	0	00:00:00
ATRAP 168634000		46:50:34
MD	23423000	06:30:23

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LINE	IN FAULT [ms]	IN FAULT [hh:mi:ss]
ACE	0	00:00:00
ALPHA 56823000		15:47:03
ASACUSA	0	00:00:00
ATRAP 6394000		01:46:34
MD	0	00:00:00

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GRPNAME	IN FAULT	DURATION [ms]	DURATION [hh:mi:ss]
MISCELLANEOUS		4724000	01:18:44
PS		3112000	00:51:52
RF		52560000	14:36:00
SECURITY		2821000	00:47:01

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GRPNAME/FAULTNAME	IN FAULT	DURATION [ms]	DURATION [hh:mi:ss]
MISCELLANEOUS/VOID		4724000	01:18:44
PS/VOID		3112000	00:51:52
RF/HL		51969000	14:26:09
RF/Miscellaneous		591000	00:09:51
SECURITY/VOID		2821000	00:47:01

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SPS (Karel Cornelis):

The week started with a 24h UA9 run at 6:00 in the morning. Being the first UA9 run of the year, it took until noon before all the bells and whistles (interlocks from BCT, pulsing servo quad ...) were sorted out. After that, they had a smooth run. Tuesday we had an 8h. TS. The COLDEX run was postponed (no stable cryo due to interventions during TS) and FT physics was planned to resume at 17:00 instead. Due to problems in the PSB and the PS the beam could only be delivered around midnight. The new software for the RBI816 (TT41/TI8 switch), installed during the TS had also an impact on the MBE2103 (TT20) where a few changes were necessary for EQUIPSTATE and SIS. Most of Wednesday morning there were problems with BCT3, resulting in hardware interlocks. The problem was solved by the end of the day. The bunch to bucket transfer was optimized by the PS and SPS RF specialists, reducing the losses on the LHC25nsec cycle from 12% to 7%. A shorter LHC filling cycle was commissioned on Thursday and Friday. It looked OK on Friday afternoon, but when it was tried to fill the LHC on Friday night, there were problems with the BQM once locked to the LHC frequency. It was decided to resume the filling with this cycle after the weekend in the presence of specialists.

The north area suffered from a cooling tower problem in the night of Thursday to Friday cutting several power convertors in the NA. After the repair of the cooling, one power convertor in P0 (NR22_039) could not be restarted and after having exhausted the first line quota on Friday night, it was decided to resume the repair on Sunday morning. The intervention on Sunday was no success and it was decided to replace the convertor on Monday..

LHC (From the 8:30 meeting):

Quite good recovery from the technical stop. All mandatory steps could be completed successfully, but also the miscellaneous activities and request from the experiment side could be completed. The optics check gave good results with an rms error of only $\sim 2\%$. On Friday the aperture was measured and it was the same within a fraction of a sigma, hence well within the tolerances. The loss maps were mainly done in parallel to other fills and gave good results. The 600 bunch fill went smooth and was dumped on operator request.

The Sunday fill with record peak luminosity of more than 8×10^{33} and that accumulated more than 0.4 fb^{-1} was in for more than 21 hours, but was dumped due to a power glitch (FMCM) Sunday around 21:30. A difficult night followed, initially due to injection steering issues and later because of temperature and powering problems of the BPM crates around point 7. Stable beams again early Monday morning.

Next luminosity production with a foreseen interruption on Thursday for the 2.5 km cycle commissioning.