Accelerator complex status

End week 32 (Sunday 9th August 2015)

TI (Peter Sollander)

The TI summary is
available, https://wikis.cern.ch/display/TIOP/2015/08/06/TI+summary+week+32,+2015

Nothing much last week apart from a spurious problem with the BA2 evacuation system pending an access and the trip of the LHC point 8 compensator.

LEIR (Michael Bodendorfer)

The LEIR supervision week was productive. We have achieved up to 4E10 ion charges in LEIR for the NOMINAL cycle with 7 multi-turn injections.

The first three of these 7 multi-turn injections are efficient, injecting close to, or more than 50% of the beam, which is provided by the Linac3. This is close to what we can expect to be injected per multi-turn injection. However, the remaining 4 injections, being below 30%, are not yet as efficient. We have not yet found the reason for this. Next week, we will investigate further this mystery by launching a brain storming meeting on Wednesday.

LEIR has captured and accelerated ion beam at a very stable 2E10 intensity. The RF capture process will be improved further next week.

The LEIR hardware has behaved stably. Any Linac3 occurring issues have been attended very quickly and effectively - essentially providing stable ion beam through the whole week. What remains to be mentioned is that we lose the LEIR intensity sampler on a regular basis, providing blank intensity diagrams, which is disrupting the LEIR debugging and setup process. The phenomenon appears several times a week, sometimes 3 times a day. The interruptions last from 5 minutes to 2 hours. The most recent observation of said phenomenon is that in LASER we see no error message. Just the sampler window itself tells us that the Xeneric sampler is not responding. We don't know whether this phenomenon comes from a hardware or from a software bug or whether it comes from silent software releases or silent software beta-testing.

The LEIR setup process will continue next week with trouble shooting of the remaining multi-turn injections, the transverse feedback damper and the RF setup.

ISOLDE (Erwin Siesling)

Another exciting week at ISOLDE.

GPS:

Normal operations for collections in the GLM and GHM lines and occasionally beam to ISOLTRAP using a Ta target #544 and RILIS laser ionization.

The tape-station was successfully repaired last Tuesday by GJ Focker (BI) after which a proton scan was carried out and physics / collections started at the GLM and GHM lines.

A temporary fix was put in place by EPC for the aqn readback of one of the electrostatic power supplies (RC4.QP20) (until specialists are back from holidays – this week).

There has been an accidental venting of the GPS lines (and front-end) on Friday-morning when a collection chamber was opened but due to fast reaction from the OP team the situation was under control and we were back in business in 1 1/2hr.

This morning (Monday) at 4h the line heating dropped off but was restarted and the line re-heated ok.

HRS:

During the preparations for a target change last on Wednesday a problem with the front-end shutter and target valve occurred. The valve would not close.

All possible actions outside the target zone were done: all compressed air lines checked and pressures verified, electro valve exchanged and verification via the camera's done.

An intervention on Friday with the Telemax remotely controlled robot was carried out to investigate and exclude different scenarios on what could be wrong.

After disconnecting the arriving compressed air with the robot and re-connecting it the valve would close to 1cm under its end position.

The findings will be discussed and action to remove the present target will be taken this week.

The HRS physics planned for the weekend unfortunately had to be cancelled.

Booster (Bettina Mikulec)

Statistics prove more and more Alan's hypothesis of the 'holiday effect'.

The PSB behaved exceptionally well, only 2 things to mention:

• Thursday evening the ejection kickers tripped with an oil interlock. The piquet ABT came in, but had to call the specialist. The problem was solved 2h12 later.

• Today early morning the SPS complained about high LHCPROBE intensity. The operator found the C16 cavity disabled with a Level 1 fault (cavity airflow). He went locally and saw that there was no power on the rack, so he called the specialist. Despite being on vacation M. Haase came in and replaced the power supply – thanks a lot Matthias! 1h20 of perturbations.

Many MDs throughout the week (despite the holiday period…).

PS (Guido Sterbini)

It was all in all a good week for the PS.

The LHC, AD, EAST, TOF and SFTPRO beams were regularly delivered by the PS.

On Monday there was longest downtime of the week (6h 30 min) due to a faulty transformer in the converter of one of the extraction bumper (PE. BSW14).

On Wednesday operation was perturbed by several resets of the 200 MHz cavities (the problems with the 200 MHz cavities, mainly resettable faults, continued during the week).

On Thursday evening there was a problem with the PSB extraction kickers (2 h 20 min of downtime).

On Friday the SFTPRO beam was affected by problems with the fast correctors in the TT2 line (DFAs) due to a wrong setting in the MTE cycle.

On Saturday the EPC Piquet had to intervene on a faulty converter in the BSW12.

On Sunday there was a problem with a dipole in the AD target zone (DI.BHZ6034). A control card was replaced but at the moment the device is not recognized as EIS (to be followed up).

During the week the timing of the injection kicker (second injection timing) had to be adjusted several times (impact on LHC beams).

The injection and the extraction elements for the ion beam were tested during the week.

SPS (Benoit Salvant)

It was a busy yet good week for the SPS, with regular delivery of trains of 25 ns (up to 144 bunches), doublets (up to 48 doublets) and even BCMS doublets to the LHC as well as proton beams to the North Area. The MTE beam was injected during a dedicated MD on Wednesday but there were too many losses at injection in the SPS and the extraction trajectory of the islands with this intensity need to be optimized further in the PS and transfer lines.

The COMPASS experiment was affected by the QF ripple that occurred almost every cycle on Monday after the restart, but luckily the rate decreased shortly afterwards. This issue has been there for some time and TE-EPC has been again informed that it seemed to be worse at the occasion of the restart after a long stop. In addition, the quadrupole 34 tripped many times due a temperature fault. TI had already been informed and EN-CV had checked that all valves for the cooling circuit were fully opened. The issue was attributed to the hot outside temperature. During the hottest day of the week, as they noticed that the current was half of the nominal value, the operators called the TE-MSC piquet who accessed and found out that the cooling water pressure was lower than in the rest of the circuit. Together with the piquet DALKIA, they found a piece of cloth clogging a filter and removed it. The quad34 did not trip since on this temperature fault. Attempts at reducing the 50 Hz and 100 Hz lines using the Servo Spill active filter are ongoing.

The SPS took advantage of the long PS stop on Monday to diagnose the scraper BSHV.11772 in BA1, which was stuck in parking position: it is broken and needs a repair. In addition, TE-MSC accessed in BA2 and saw that the MDLV in TT20 is still leaking. An intervention at the next technical stop will therefore be required.

The main issues of the week were:

- Fake evacuation alarms occurred again in BA2 when launching the end-of-access sequence on Monday in the shadow of the PS access: the fire brigade had to intervene again and an IS37 was created to disable the alarm. Access was suspended by the DSO until a test was planned on Tuesday, but the issue did not reappear (40 min without beam). The alarm was therefore put back in service. There were no other access in BA2 until the end of the week

and this issue should be followed up. The DSO and GS-ASE should be called immediately should this issue reappear.

- An issue with the cooling of a water pump for cavity 4 stopped the beam for 1 h on Tuesday. A more thorough intervention is planned for the technical stop.
- Parallel MDs on the BBLR wire were planned, but there were still problems to control the hardware. An extraction sextupole in BA5 was turned off by mistake during the investigations that followed (15 min downtime).
- Chain 11 tripped on Thursday due to a bad reading of a TAX (XTDV022.520 in H4). The EN-STI expert intervened on the hydraulic system and fixed the issue. This stopped the North Area beam for 2 h.
- On Friday, the SMD4 station was on fault and taken out of the circuit by the First Line Piquet (1h downtime).
- The access piquet was called as both access consoles had crashed. A workaround using remote desktop was put in place until Monday morning.

To be noted that the intensity interlock to limit the beam dumped on the TIDVG triggered several times when the LHC beam was used in parallel with HiRadMat and SHIP beams at flat top.

Finally, the new Q-split optics to T4 were implemented on Thursday.