

Week 14 - 21 September

Linac2 (R. Scrivens):

Nothing to report, no stops.

PSB (G.P. Di Giovanni):

Overall it was a good week for the PSB. Nevertheless, we had some issues to report which affected the PSB performance mostly in the night between Tuesday and Wednesday.

On Tuesday at 11.30 M. Dudek started the software intervention (agreed at the FOM) concerning the class of POWM1553. The intervention was supposed to last 10 minutes, but it took almost 1 hour (beam back at 12.28). Additional 5 minutes were needed at 13.30 to remove some false alarm coming from the acquisition. Afterwards, the class was found to generally work fine, but at the same time the response of BT.QNO50 et BTM.QNO05 was tested. Just to remind the problem, sometime ago it was found that both elements change to the CCV value with one cycle of delay. BTM.QNO05 is now working fine, but BT.QNO50 still shows the same issue. The experts have been informed.

On Tuesday at around 21.30, the PSB experienced issues with delivering the beam to ISOLDE: The BLMs were firing and cutting the beam, the bunch shapes were distorted as well as the extraction trajectories. More or less at the same time the bunch shape and extraction of LHC25 beam looked problematic. All the signs pointed to the issue with the RF synchronization we had in May and August this year. We collected useful information, but when the LLRF Piquet was called in and started looking into it, the issue did not appear anymore. In fact, the complexity of solving this issue comes mostly from its intermittent behaviour which makes the debugging so complicated. The problem persisted on and off up until 1.00 a.m.

As a follow up, the RF team investigated all the power supplies in the chain and no sign of any perturbations in the signals was found. All the synchronization trains have been left on a scope in the cage for HRS/GPS beams with infinite persistence, so the problem can be observed if it re-appears.

Together with the PS team, we have also defined a set of instructions for the operators in order to record the maximum number of useful information to debug this issue.

In the shadow of this issue, at around 00:20, the BTP.DHZ20 tripped as already happened last week. The PIPO was called and an auxiliary power supply was exchanged. The corrector magnet did not give any more problems after that.

After Tuesday no more any major issue for the PSB to deliver the physics beams within specifications. As usual, several MDs were carried over the week.

Last but not least, some measurements were taken with a LHCINDIV beam (where longitudinal shaving is applied) to investigate the hotspot in section 4L1. The BI group has in fact displaced 2 of the temporary BLMs from section 3L4 to just upstream of the vacuum flange where we observe the hot spot. We have now 2 BLMs just upstream and 2 BLMs just downstream of the flange. It was observed that the important losses are practically exclusively seen on the downstream BLMs. While additional information have to be gathered, a proposal would be to already prepare the exchange of the 2 vacuum pipes in ring 3 with a single one for the YETS. It would be nice if the bellow/flange location could be inspected during this intervention before complete dismounting to have the possibility of an explanation for this hot spot.

ISOLDE (E. Siesling):

A very good week for ISOLDE in many aspects.

HRS:

Running with target #548 UC.

The run for ISOLTRAP stopped last Wednesday with a few yield tests and then the target was cooled down to save it for this week (when it will be used again). The central beamline was given to the GPS users.

GPS:

Target change to target #550 UC last Tuesday. Setting-up of stable beam through the separator was done followed by an advanced p-scan and RILIS setting up for the Mn run. The night was used for stable tuning to the ISOLDE Decay Station and GLM line.

Yield tests followed on Thursday-morning and physics started right after.

A successful Mn run for the IDS station with very good yields.

Issues:

The Target heating dropped once on Thursday night and the Line dropped once on Saturday afternoon. We are investigating but this is an ongoing issue and not fully understood (might be the current ramping card).

During the p-scan on the convertor (which is not used for the IDS run but scan was done to be ready in case) we found an inversed polarity on the vertical BTY element DVT212 which was somewhat confusing. Will be verified with PSB.

Physics: The users are very happy with their Mn beams

HIE Beam Commissioning:

Last week the beam permit to take the beam out of the tunnel was signed. A lot of hard work at the REX side was performed and this weekend the stable 12C+4 beam was taken into the first experimental line (Miniball experiment).

This is REX accelerated beam at 2.85MeV/u and not accelerated by the Cryo Module (yet...). A lot of work still needs to be carried out but it is a very important milestone.

PS (J. Wozniak):

It was a very good week for the PS with only short stops.

On Monday we had around 35 minutes of intermittent problems with the kickers in the PS and the booster.

During the night there was a problem with PSB dipole in BTP DHZ20 1h15 min of downtime.

On Wednesday afternoon we had problems with the cavity C80-89 causing around 2h of downtime. An ADC card had to be changed. Perturbations touched mainly the LHC and EAST beams.

We would like to put the MTE extraction in place during the Monday morning stop at 8h00 for the 80 Mhz RF cavity as announced during the FOM. Django gave a short presentation of this extraction schema during the PS/SPS Users meeting on Thursday and explained the gains over the CT one.

Otherwise all the operational beams are delivered as expected.

AD (L. Varming Joergensen):

It was another good week for the AD.

Only two issues to report:

Wednesday we had two hours of downtime in order to install the changes to the ejection septum power supply that should make the rise time slower and hence ameliorate the horizontal jitter problem in the ejection lines (in particular ALPHA). After installation some time was spent to re-optimize the timing. However, preliminary feedback from the experiments after half an hour was that the intervention had NOT helped.

More information will be gathered in the coming days.

Also on Wednesday we had severe problems with fall-out of the CO2 cavity. M. Haase spent many hours trying to diagnose the problem before reaching the conclusion that the problem was with the new control card installed a month ago to fix the similar problem at that time. A new card was prepared for installation on Thursday morning. This new card was installed at 8.40 on Thursday morning, but this only made the problem worse. After 3 hours we swapped back to the original card and the problem almost went away. Since then we have still had the cavity go down one-two times per hour on average, but nothing like the 50% dropped shot experienced on Wednesday and Thursday. It appears that the problem might be a contact issue for the control card.

The rest of the week passed without incident.

SPS (D. Manglunki):

A good week for the SPS, beam delivered to the LHC, the North Area, and HiRadMat which completed their current programme on Friday morning.

- On Tuesday at 22:00 XTDV.042.572 (H8) was blocked in moving position, tripping chain 11. EN/STI standby was able to block it to "IN BEAM" position, allowing to serve beam to the North Area overnight, except to H8.

The XTDV could not be fixed on Wednesday afternoon during the dedicated MD, but it is now out of the security chain until further notice.

- On Saturday evening bunches were too long for the LHC (4ns), due to problems during the rephasing, temporarily solved by switching to playback mode. It was eventually traced to a modification in the LHC RF during their last access. Situation re-established as normal now, back to live mode.

- In order to save their lifetime, scrapers used to be disabled from pulsing in economy mode. It turned out they also would not pulse on an LHC cycle following an SFTPRO cycle in economy. This caused an LHC beam dump on Saturday at 21:37. For that reason, the scrapers are now set to pulse everytime, even on an economy cycle.

- The Servo tripped twice during the night, the power supply has been replaced by its spare.

- RF transmitter TRX7 failed many times over the week; the RF power team offers to implement a solution over a 4 hour beam stop.

- It is planned to put the MTE beam in operation on Monday morning, in the shadow of the intervention in the PS - from 8:00 to 10:30, depending on the LHC filling - and the change of users in the North Area. The situation of the interlock was tested by the OP team on Sunday morning.

LHC (J. Uythoven):

Over the last week the LHC has been running well, producing about 350 pb⁻¹, which is about 50 % of this year's luminosity for the two large experiments. The number of bunches has been increased from 745 bunches per beam on Monday to 1177 bunches per beam towards the end of the week. The main limitation for operation is cryogenics, which has difficulties handling the transients during injection and the total load at top energy. As of Monday tests will be made by increasing the maximum allowed beam screen temperature by 10 degrees. Initially tests will be on one sector only, results to be discussed in the LMC.

Linac3 (R. Scrivens):

The beam was quite unstable and intensity on the low side, probably due to the two source ventings of the previous week affecting the oven performance.

The ovens were refilled on Friday afternoon, and the start-up began during the weekend.

LEIR (S. Pasinelli):

The week was calm until Friday.

We spent time to adjust and optimize the beams.

We are close to the nominal values for both cycles EARLY and NOMINAL.

Linac3 instabilities were observed Wednesday.

Friday morning a severe water leak was detected by the specialists, on the coil of the extraction septum SMH40.

The specialist have spent the afternoon on the leak but unfortunately they were not able to fix it before the weekend.

The specialists will continue to work on it Monday morning.

Beam is expected not before Monday 12h.

The refill of the source has started Friday around 12h instead of 14h.

After discussion with Giulia, the measurements on the Linac3 will take place Monday & Tuesday morning.