

Accelerator complex status

End week 42 (Sunday 19th October 2015)

TI (Peter Sollander)

Quite a few major events for TI last week:

<https://wikis.cern.ch/display/TIOP/2015/10/19/TI+summary+week+42,+2015>

Linacs (Giulia Bellodi)

Linac2 had a week of smooth operation until the weekend.

Half an hour beam time was lost on Tuesday for the replacement of a regulation card on a Tank2 quadrupole power converter.

On Friday night the vacuum specialist noticed a vacuum pressure rise in Tank2 due to the failure of a pumping group. He performed a remote intervention to re-establish the pressure levels temporarily. Even if the pressures kept stable overnight, on Saturday it was decided to schedule an intervention in the afternoon to replace the faulty pumping group. During the access to the machine and equipment inspection it was then found that the pump failure was linked to a problem with the ventilation unit acting on the Tank2 pumping group (which explains the two recent pump failures in the sector). A temporary ventilator was initially put in place, then a proper spare unit was eventually found and installed.

The intervention took a total of ~3hrs including the preliminary ½ hour beam stop required by RP. LHC operation was however not disrupted.

Linac3 had fairly stable operation. The source performance was fluctuating at the beginning of the week, but stability improved towards the end and during the weekend, when an average of 22uA was delivered to LEIR. An oven refill is taking place as I write (Monday morning).

LEIR (Jerome Axensalva)

This past week was quite intense for LEIR. With the kindly help of Christian Carli, during 2 days, we reviewed many things in order to increase the intensity delivered by LEIR.

- Consolidation has been made all along the injection lines, now the injected beam is much more stable and less "biased" by the PS cycles because the beam is much centered up to LEIR.
- A new cycle (user MDNOM) has also been investigated and we reached up to 6.5E10 at the begin of the acceleration, unfortunately, time was missing for an RF check & tuning of this beam, there are still some improvements which can be made on this beam and we will concentrate on them this week.
- Apart from that, the EARLY production beam was delivered with no disruption to the SPS for the continuation of the RF setting up.

- Linac3 also delivered stable and good intensity which is really appreciated during our production and tuning sessions.

Booster (Gian Piero Di Giovanni)

It was a reasonable good week for the PSB. There were some glitches and equipment failures that cut the beam during the week, but the PSB team and the relevant experts got the beam back always in good time.

The most relevant issue of the week happened on Friday night when the pumping group number 2 of the LINAC2 tank2 stopped. The specialist managed to re-establish a lower vacuum level with only one group, but an intervention was needed to repair the failure and avoid the risk to cut the beam because of the vacuum pressure increasing beyond the interlock threshold. The intervention took place on Saturday starting at 14.30 and took about 3 hours, including the 30 minutes cool down time required by RP. The intervention was successful and the problem was tracked to the ventilator system acting on the tank2 pumping group, which also explained the problem experienced in the last months with the vacuum of tank2 in Linac2. A spare ventilation unit was installed. More spares will be ordered for the other pumping groups but no replacement should be needed until the end of the run. The intervention was completely transparent to LHC which was running in stable beam all time.

A lot of MD sessions as well as optimization works were carried throughout the whole week. In particular Alan and Steve worked on the PSB-PS synchronization and managed to reduce the injection oscillation in the PS to a barely measureable level and with excellent shot to shot stability thanks to the new low level in the PSB.

As last point the BCMS 25 ns beam was checked together with the PS and it should be ready for LHC.

PS (Ana Guerrero Ollacarizqueta)

All operational beams have been delivered normally including the LHC100ns at the end of the week. The LHC25ns BCMS and 8b4e beams have been made ready for the LHC to take on Sunday if requested.

On Thursday and Friday SPS took the CT SFTPRO to compare performance with the current MTE beam. Due to a problem with the BFAs it was switched to MTE for a while on Friday.

H8/H16 beams were affected by a connection issue in the beam control during 1h.

All operational beams except AD are MTE shadowing compatible using only KFA71 for the extraction. The modification is also ready for the AD beam but will be applied only when PS receives the permit to send the beam to the target.

On Wednesday the new BLM electronics and software have been deployed operationally, the beam was down for around two hours during the dedicated MD on Wednesday to allow the switch between the old and new systems.

SPS (Karel Cornelis)

Last week SPS availability turned out to be pretty bad, especially for fixed target physics. On Monday evening, five hours were lost, due to a problem with the access system in the north area. After that,

it all looked very promising: very smooth operations on Tuesday and a successful UA9 run on Wednesday.

Thursday morning however, saw the beginning of long series of problems for the North area physics. It turned out that the 100nsec beam, which the LHC needed for the TOTEM run, produced sparks in the electrostatic septum (ZS3). In order to avoid spark interlocks, fixed target physics was stopped, and the ZS turned to -30kV, during LHC filling. The cost of this procedure was 13 hours of fixed target physics lost between Thursday and Sunday. To this, one has to add the problems with the BFA's in the PS on Friday morning (7 hours) and the stop of LINAC2 on Friday evening and Saturday afternoon.

On Thursday, the SPS went back to the CT beam in order to perform a series of measurements. Initially this was scheduled for a day, but because of all the stops, it took until Saturday to finish the measurements. Thursday and Friday, the RF experts continued with the setting up of the Pb-ions on the LHC cycle. They also were slowed down by the problems with the ZS sparking, and lengthy LHC fillings.