

## Accelerator complex status

### End week 14 (Sunday 5<sup>th</sup> April 2015)

#### LEIR (Jerome Axensalva)

Except 1 RF cavity trip for a very short time during Sunday night, LEIR was running fine all over the week.

#### ISOLDE (Miguel Benito)

It has been a quite busy (and short) week at Isolde with many last moment surprises with the vacuum system. All of them have been solved very fast (many thanks to the vacuum team).

Some unplanned modifications (GLM/GHM deflectors) were needed and done and GPS is in good shape for the beginning of the campaign.

HRS and mainly the RFQ need some more attention during this week to get it going properly after some mysterious behaviors were discovered (more details in the logbook).

We also had a very useful meeting with controls people where we both understood why transparent doesn't mean the same for us. No doubt things will improve now.

#### Booster (Klaus Hanke)

- On Wednesday 1 April the vertical Wire Scanner on Ring3 broke between two scans. It was not blocked in the beam, it just broke between two scans. As Emiliano was absent, Ana and J. Emery had a look but for the moment there is no explanation. This is particularly worrying as the LHCPROBE beam is delivered on Ring 3. The tomoscope was also temporarily down, but could be reset.
- Thursday afternoon there were the ISOLDE DSO tests which perturbed slightly operations; we could nevertheless perform some MDs in the background.
- We started to set up LHCPROBE on Ring2, where we have both wire scanners available. Setting up continued Friday and Saturday.
- On Saturday, when LHCPROBE was ready on R2, we got the warning "Too high wire resistance" for Wire scanner Ring 2 Vertical ☹. We therefore started now to set up LHCPROBE on Ring 4....

#### PS (Ana Guerrero Ollacarizqueta)

LHCPROBE beam was revisited to be ready for injection in LHC on Sunday.

The doublet beam was sent to the SPS as requested.

Beam line hardware check and beam ready for nTOF start-up today. The control of the sweeping magnet needs still clarification. The EIS condition will have to be strapped in order to send beam to the line.

The extraction field of the ion beam had to be changed in two occasions this week to match the SPS energy.

On Monday the 30th we had one hour of down time due to a POPS IGBT fault. On Thursday the scheduled stop of two hours for PFW measurements took place (finally 2h30). The stop lasted 1h longer for protons due to ISOLDE DSO tests. High losses in SS16 produced by the SFTPRO beam increased the vacuum in the sector which in turn triggered an interlock on the extraction septum power supply. PIPO was called. The beam was down for 30 minutes.

From Thursday onwards The INCA server suffers from overloading which sometimes creates difficulties in tracing beam issues and or controlling devices.

## SPS (Benoit Salvant)

It was a good week for the SPS, with very good availability of both proton beams for the LHC commissioning and Argon beam for the North Area users.

The week started with the last energy change for the Argon beam. Thanks to the flexibility and understanding of the doublet beam team, the doublet setting up was started with the short LHC pilot cycle during the morning to speed up the energy change process.

The transverse damper and RF setting up for the doublet continued on Monday, Tuesday and Thursday (since a doublet day had been lost two weeks before). Up to 72 doublets could be injected, but significant work is still needed on many fronts to get the high intensity doublets ready for both SPS and LHC scrubbing. The newly exchanged dipole magnet in 211 still outgases a lot with both high intensity 25 ns and doublet beams and requires more conditioning before the scrubbing runs.

The preparations for injecting beams into the LHC were performed: steering to TT40 and TT60 TEDs on Wednesday afternoon, debugging and pulsing of TI2 and TI8 power supplies on Wednesday and Thursday, shots on downstream TEDs on Saturday and injection into LHC on Sunday.

Finally calibration tests of the SPS Synchrotron Light monitor took place during the weekend after the successful attempt to realign the telescope during the 2h-beam stop on Thursday.

The main issues of the week were:

- The piquet FirstLine was called several times on Monday for a North Area transfer line bending magnet (MBB2505).
- An increased ZS sparking rate with high intensity doublets on Tuesday could be traced to bad RF capture due to too long bunches at SPS injection.
- A TI alarm that would have prevented SMD7 rearming was solved by the TE-EPC specialist during the 2h beam stop on Thursday.
- Several transmitter issues were solved by the RF piquet:
  - An access was required for transmitter TX4 on Monday evening.
  - one water flow level monitoring issue with cavity 1 was fixed on Thursday evening (1h beam stop for North area users).
  - Another problem with a relay of TX3 occurred during that same night and was temporarily fixed on Friday morning, without beam stop for the North Area users. It tripped again during the afternoon but could be reset. This will be followed up after the Easter weekend.

- The watchdog for the transfer line TEDs was preventing them to move out on Wednesday and Saturday. Both times the EN-STI piquet could remotely allow to move the TEDs.
- Two power supplies interlocks had to be bypassed to send the beams to the downstream TEDs: RBI816 (wrong status in the interlock tree) and RBI660 (issue with the power supply that could not be solved by the piquet Firstline and that will be looked at with the specialist after the Easter weekend).
- A disconnected cable was preventing RF synchronization between SPS and LHC during the attempts to send the beams to the downstream TEDs on Saturday.
- The TE-VSC piquet came for a vacuum issue in H8 on Saturday and this will have to be investigated by the specialist after the Easter weekend.
- SMD14 tripped on Sunday morning while it was not used and it could not be restarted. The First Line piquet put it in safe mode (1h30 without beam for the North Area). There are therefore no more spares for the Mains and time should be found soon to look at SMD6 and SMD14.
- The emittance of beam 2 injected into LHC was found to be very large but changing the amplitude of the extraction bump in LSS4 solved the problem (knob reduced from 35.2 to 29). The extraction of beam 2 and steering of TT40 and TI8 should therefore be retuned.

In fact, quite a few requests for beam stop are now pending:

- 2 to 3h for intervening on TX5 as the attempt to repair it on Thursday did not work (no access).
- 3 to 4 h for a change of amplifier for TX7 and 8 for a new technology and the related LLRF tuning (no access).
- Intervention on TX3 to find a more permanent fix for the "IG2 overcurrent" fault.
- Intervention on ZS
- 2h to repair SMD6 (no access)
- Intervention to repair SMD14.