# End Week 32 (August 9th) – Status of Accelerators

## Summary

Overall – very good performance.

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| **ISOLDE** | Intermittent problems and a very difficult Sunday. |
| **LINACS** | Good performance |
| **AD** | |
| **PSB** | Quiet week. |
| **PS** | Very smooth week. |
| **SPS** | A very good week. “Houston – we have a problem” – Friday evening. |
| **TI** | |
| **LEIR** | Good progress. |

## CTF (Frank Tecker)

Last week's running of CTF was dominated by technical problems:

- Restarting the machine on Monday, it was found that the **klystron phase for MKS02 was arbitrarily jumping** by 3-4 degrees (while the klystron amplitude was stable) which made beam operation unstable. The rest of the day was spent on localizing the problem but it could not be solved. During the rest of the week, this problem intermittently disappeared and reappeared again. The present investigations indicate that the LLRF is stable and the problem seems to be on the high level RF side.

- One afternoon was spent on making the system for **180 degrees SHB phase switches** work again, where two components in the trigger generation chain were broken. The phase flips still show an unexpected transient behaviour that is still being investigated.

- Tuesday morning, a **water interlock on the DL septum** required an access but the problem was actually found in the interlock control.

- Thursday morning, a **magnet** in the CR showed a **water interlock**, that was identified in a following access as a wrong interlock from an Eletta flow meter.

- Almost one afternoon was lost due to a **CO problem for the timing telegram**, so that the beam could not be switched on.

During stable periods, a 1.5 GHz beam with 2 sub-harmonic (SHB) bunching cavities could be set up. Some bunch length measurements using the 1.5 GHz RF deflector were started. Finally, quad scans could be performed on a screen at the end of the TL2 line and beam was sent to the TBTS line.

## LINAC 2 & 3 (Giulia Bellodi)

**Linac2** - Very good week, no problems to report, 100% beam availability since last Tuesday.

**Linac3** - The linac intensity during the week was around 18-20muA on TRA25.

On Wednesday pm there was an intervention on the RFQ to repair a faulty grid 1 supply.

On Thursday morning there was a repeat of the CO problems seen last week, with some of the knobs left open the night before giving "AQN polling" errors.

An oven refill is scheduled during the technical stop tomorrow.

## PS (Alexej Grudiev)

Normal operation during the whole week. Providing all nominal users: SFTPRO, CNGS, AD, TOF nominal and parasitic together with EASTA and EASTB.

On Monday we lost one hour due to problem on the 10 MHz rf system.

There were also two problems related to timing system:

1. On Thursday 14:13 - 15:18 Major timing problem: several MTG timings are not generated. Resolved by PICO rebooting the MTG.

2. During the whole week intermittent problem of missing timing for extraction elements (QKE16) resulting in bad extraction and losses. The elements are under surveillance since last week and the experts try to understand the reason.

## ISOLDE (Emiliano Piselli)

### GPS

*Target change done on Thursday. Setting up foreseen for tomorrow (Monday 10th).*

### HRS

**Tuesday:**

*RFQ and central beam-line vacuum restarted from vacuum group (H.Vestergard and S.Blanchard). Vacuum stopped because the tanks #1 was full and the system didn't switch automatically to #2. Therefore they have forced the system to #2 and the vacuum was running again.*
*Tuned the separator and RFQ till late evening, proton scan and beam to users (Nicole) in the night. This target was not easy to tune and we needed the help of T.Giles.*

**Wednesday and Thursday:**

*Beam to users.*

**Friday:**

*Beam to users till the evening when I've been called because of vacuum problem. I have called H.Vestergard who has restarted the system and users got back the beam at 22.00.*

**Saturday:**

*Beam to users.*

**Sunday (long day):**

*I was called by the users at 6.40 in the morning...they found a vacuum valve after the RFQ closed and they hadn't had beam for 2 hours.*
*Once at Isolde I checked that this valve had been closed by an RFQ interlock, although it showed "Pumping OK" in the HRS working set.*
*I called the vacuum expert who has found RFQ vacuum not ok...After sometime he has momentarily solved the problem but a gauge in the RFQ should be changed as soon as possible.*

*After lunch users got beam back until 18.30 when I have been again called because the beam has disappeared. All the front end devices (Target/Line/SRCMAG/Anode1/...) were showing "No IP Connection". Once in I checked that the PLC controlling these devices was in a faulty status. I tried to restart it but it didn't work. Therefore I called CO piquet, who, after checking the network connection, called PO first line because this PLC belongs to PO group. PO piquet couldn't help us so much, but fortunately we have reached a PO software engineer (D. Calcoen) who was able to connect to the PLC and restart the main process.*
*Beam to users since the evening at 22.30.*

## REX

*Nothing to report.*

## Booster (Giovanni Rumolo)

It was a very quiet week at the PSB. I can only report that the wire scanners have been checked again and comparative measurements with the SEM grids were carried out several times during this week. Finally, it seems that the results from WS and SEM grids converge for both planes on all rings (also on Ring 2, which seemed to have a problem), and therefore the intervention on the H2 WS scheduled for tomorrow during the technical stop will not take place.

## SPS (Django Manglunki)

Although it started with a 3 hour stop because of a cooling water problem in BA6, this has been very good week for the SPS: 92% beam availability for CNGS (~1.45E19 pot so far), 94% for North Area.

Hence not many problems to report:

- on Tuesday afternoon a complex-wide timing problem prevented acquisition of intensities on targets and forced us to stop the beams for one hour.

- on Friday two consecutive trips of the main power converter lost a bit less than one hour beam time and led the piquet to change the SMD configuration (SMD07 currently replaced by SMD14)

- During the night from Friday to Saturday, an interlock on the LHC collimators lost one hour of beam time, and was solved from Texas (!) by the one joinable expert. Closer equipment specialists could not be contacted, and this service has no piquet (as already mentioned week

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- Mains tripped on Sunday evening because of the thunderstorm, causing

TRX1 trip, restarted by the RF piquet.

Both North Area and CNGS beams have been turned off at midnight for cooldown of the CPS septum, in view of the interventions during the technical stop.