

# Accelerator complex status

## End week 39 (Sunday 28<sup>th</sup> September 2014)

### TI (Peter Sollander)

A rather quiet week with just one major event on Tuesday when at 19:23 the 18 kV trip cut the North Area and the SPS RF for 1 hour. The source of the trip was a broken cable on the current reader.

More details at: <https://wikis/display/TIOP/2014/09/29/TI+summary+week+39,+2014>

### LINAC3 (Rolf Wenger)

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### LEIR (Maria-Elena Angoletta)

It was a productive week for LEIR. On Thursday there was a problem with the extraction kicker KF31, due to PXI communication problem. The experts traced that to a faulty crate power supply and solved quickly the situation. As PS was not taking ions, this did not result in a beam down time.

On the RF front, several MDs were carried out. The final outcome is that now LEIR produces a beam conform to the emittance requirements of the PS (1.5 eVs in a bunch). The intensity we have now at extraction is on average 1 E10 charges (fluctuations typically from 0.8 E10 to 1.2 E10 charges). The emittance is typically 1.4 eVs max. This means that LEIR can now deliver a beam that the PS can deliver to the SPS without the need of doing any splitting.

### PS Booster (Jose-Luis Sanchez Alvarez)

The PSB had an excellent week, with only a major issue at the end of the week.

Tuesday morning, the Ejection Kicker FEC has been rebooted to solve the extraction kicker problem (downtime: 25 min).

Wednesday the LL RF specialists have changed the dsp code to solve the h=2 synchro problem of the ring 4.

Sunday afternoon, no beam during 4 hours. The extraction kickers did not receive the warning timing.

It was blocked by the FIB (fast interlock beam) card. The BIS was OK. Specialists and piquet kickers have been called. No Spare FIB card found. The beam permit A was OK but not for the beam permit B. So the beam permit B (FIB) has been by-passed.

### ISOLDE

#### **Short version:**

#### **HRS**

Since Monday the 22nd when a target change was attempted on HRS, the clamps are stuck. The target group tried to evaluate and resolve the situation with the use of a robot. Finally a human intervention is foreseen for tomorrow Monday the 28th. This led to receive a smaller current of 0.1uA max on GPS for this whole week.

#### **GPS**

Collections were running smoothly whole week, from Saturday evening and Sunday TISD observed a transmission dependency according to the mass, also a fluctuation on the readings of two faraday cups (YGPS.BFC4900, YGPS.BFC5580).

On Sunday a change in the beam profile was also noticed which was resolved by re loading the configuration file of the set up we did on Friday. The fluctuation and transmission issues need to be further investigated.

**Detailed version:**

**Tuesday 23/09/14**

HRS:

Following up on the problem we had since Monday with the target change on HRS. In the beginning we could open/close the shutter but not the clamps then also the shutter became not operational.

GPS:

Since we could not go through with the target change in HRS we continue collections on GPS for SSP. The Windmill has been removed from LA1. Christelle Saury from RP has identified some residual activity (12 counts/s in b-g) inside the chamber. It is labelled and will be kept in the extension hall until IS534 returns to LA2 (installation from 6 Oct onwards).

**Wednesday 24/09/14**

HRS:

Further investigation on HRS clamps with the TELEMEX robot.

GPS:

Collection on GLM with STAGISO beam with Cd for SSP.

**Thursday 25/09/14**

HRS:

Further investigation on HRS clamps with the TELEMEX robot. A human intervention in the HRS FE is foreseen for Monday.

GPS:

Last collections for SSP with 111mCd in the morning. Cooling down the target. Target change in the afternoon to #499 Graphite target with Multi-wall Carbon nano tubes.

There was a small problem with the clamps of GPS but C. Mitifiot of EN-STI/ECE did a calibration and then everything was fine.

Heating up target and line to be read for set up on Friday.

**Friday 26/09/14**

GPS:

Setting up the GPS to CA0 with 40Ar having a transmission of almost 60%. It was not very easy to reach this number and the beam profile has looked better but the team decided that we can work fine like this.

The initial beam current on the first faraday cup (YGPS.BFC0600) is really big: 4.28E-6!

Proton scan done.

ISOLTRAP takes beam for stable beam tuning.

HRS:

A human intervention in the HRS front end is to be made on Monday.

On two different occasions we noticed a small proton current on the HRS vistar.

Checked the proton integrator and this current was not added to the previously taken value. The specialist is informed and we are waiting his reply.

**Saturday 27/09/14**

GPS:

TISD doing measurements with different temperatures for this target (#499)

TISD reports a variation in the transmission efficiency for different masses FC490->CaO.FC68.

While the transmission for 40Ar is almost the same as in the beginning (~50%) we only see 11% for mass 8 and mass 6.

**Sunday 28/09/14**

GPS:

TISD continues yield measurements on the MWCNT target.

Proton intensity reduced to 1e13. With former 3e13 ppp they get close to the limit of 0.1 uA.

Problems at the Booster with a kicker magnet. No protons from 14:30 until ~19:00.

TISD reports again a dependency of transmission according to the mass.

mass 40: 50%

mass 46: 25%

TISD observes that the total current coming from the target decreased by a factor of 20!

Also the beam profile in CA0 has changed since Friday and now has a double peak.

Further more they notice that two faraday cups show fluctuations in their readings:

YGPS.BFC4900, Minimum value is  $9.87E-10$  and maximum is  $1.18E-9$ .

YGPS.BFC5580, Minimum value is  $7.20E-10$  and maximum is  $1.16E-9$ .

I had to go there and inspect the situation. I re loaded the equipment array file from Friday and the beam profile on CA0 return to a good shape. Unfortunately the fluctuations on the faraday cups still continued.

With a better beam profile TISD were able to continue measurements with protons for two more hours.

They did a final transmission efficiency check by changing masses. There was a variation from 12-57%. We will investigate further tomorrow morning.

### **PS (Jakub Wozniak)**

It was a quiet week for the PS with all the beams delivered as expected for the current operational users.

The SPS is now also actively taking the LHC 25ns 12b & SFTPRO beams.

On Tuesday the PSB had extraction kicker problem, SPS access for TT2 QIIF.1002 was planned in the shadow of this problem. The time of beam stop was around 2h30 min for both issues.

On Wednesday until late afternoon PS didn't have much clients as only AD requested beam. In the shadow of no beam POPS tripped because of cooling water problem that was repaired without causing much additional downtime. All beams were back in the late afternoon.

On Thursday night there was a problem with AD pickups which caused a beam stop for around 4hours.

On Friday we were supposed to have the DSO tests for EAST IRRAD which were finally canceled due to technical problem in the zone (cut cables).

The weekend was very calm as well only marked with Sunday's stop of 4h due to a booster timing problem with a kicker BE.KFA14L1.

### **AD (Lars Joergensen)**

This week was the first full week of beam for physics for all experiments (or at least those that were on the schedule to take beam this week).

The week saw a great number of problems that slowed down progress with physics, but gradually the problems were resolved. The problems mainly involved the stochastic cooling pick-up movement, extraction kickers, extraction line stability, e-cooling, CO2 cavities, GEM detectors and main quad power supplies.

The electron cooler still drops a few shots, but it is now down to a shot every few hours, so is now very difficult to optimize further.

The overall efficiency has increased slightly so that we now extract about  $2.5E7$  pbar to the experiments.

### **SPS (Karel Cornelis)**

The week in the SPS was mainly used to do the damper setup on the FT cycle. The low level electronics and the software is new, the commissioning took the whole week and is not completely finished. We also debugged the monitors in the north extraction channel.

The LHC 25nsec beam is limited by the vacuum in MKP4. The beam is warming up the kicker yoke and a temperature rise from 33 degrees to 36 degrees is sufficient to come to our interlock level of  $2 \cdot 10E-7$ . We used the week to condition MKP and MKD with beam and we can now have 48 bunches for 3 seconds, 36 bunches for the whole cycle.

On Wednesday a vacuum leak developed on the bellows of a mini-scan in the ZS region. This will be repaired on Tuesday. This week we will have DSO tests for the north area (Monday, Tuesday and Wednesday)