

## End Week 16 (April 22nd 2012) – Status of Accelerators

### TI (Peter Sollander)

The TI summary is in the usual place,

<http://wikis/display/TIOP/2012/04/23/TI+summary+week+16,+2012>

day	events
Thursday, April 19	<ul style="list-style-type: none"><li>21:29 -- 50 minute SPS stop when an emergency stop circuit gr(EUB5/BE) opens and trips the compensator BEQ3</li></ul>
Sunday, April 22	<ul style="list-style-type: none"><li>11:30 -- 15 minute stop of the injectors to switch back on the Meyrin compensator that had tripped on a water fault.</li></ul>

### LINAC 2 (Giulia Bellodi)

Linac2 operation was very smooth this week.

The only thing to report is that an ion pump on Tank2 (LA2.VPI1B) was found off last Monday morning and could not be reset remotely.

A local restart solved the problem.

### ISOLDE (Miguel Luis Lozano Benito)

#### Tuesday

##### GPS

GLM and Isoltrap share the beam .

Two calls , one because of a radiation alarm in the BTY and another because users could not find the new proton request button.

##### HRS

Tim had a look at the RFQ and found one power supply with the wrong polarity .Now it should be fine.

#### Wednesday

##### GPS

ISoltrap took beam during the night.

They stop at 9.10 and leave the central beam line free for HRS proton scan setup. GLM took then beam .

Between 14.00 and 15.45 there were no protons due to a booster planned stop. Protons were back at 15.45.

GLM took beam during the afternoon until 22:52.

##### HRS

Transmission improved a little (up to 51%) after the RFQ and ready for proton scan.

1 hour after asking for protons we still do not have (StagISO beam). Protons back but no beam on StagISO. Booster working on the problem. StagISO proton available at 17.04. There were some problems with the watchdog. Proton scan on mass 111Cd. COLLAPS takes beam after proton scan.

## Thursday

### HRS

Protons for COLLAPS during the night.

End of protons at 08.06 to prepare new servers installation.

Both target and line heating current reduced to 50% to protect them in case of any problem when rebooting.

RFQ RF amplifier also off.

Controls upgrade ended at 13.45.

When rebooting the target and line heating both went to zero so we had to start heating them up from zero. After we checked the beam and everything was OK. Beam for users at 15.28.

Target group took over for target yield measurements.

During the night COLLAPS took beam.

### GPS

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Nobody will take beam from GPS so I decided to turn off the HV to avoid contamination of the extraction electrode.

## Friday

### HRS

COLLAPS took beam until Saturday at 08.45. Very good results.

## Saturday

### HRS

Users called me to ask me what to do with the target because it was no longer going to be used.

I told them to turn the HT off and to close the vacuum valve.

### GPS

Isoltrap takes beam. They had to change the mass factor of the separator because the beam was not centered on YGPS.SC482. Poor transmission in CA0.

## Booster (Jocelyn Tan)

### Tuesday

The PIPO was called for a noisy rack in bld 37: the noise was generated by the water pipes of the converters. It will be fixed during the forthcoming TS.

The injection trajectory issue where several trajectories are displayed while one ring is programmed is being followed-up by BI, with another issue on FECs.

During the night : the PIPO was called for BT2.DVT20 which went off: he has adjusted the cooling water flow. Down time 30mn.

### Wednesday

The PSB has started to fire staggered beams towards HRS target, in parallel with normal beams towards GPS. Franco was called to adjust the acquisition gates of BT.BCT10.

In the afternoon, the beam was cut for 1h45' for a PS access for replacing a septum HV cable. The restart was smooth.

During the night, the operator has compared injection trajectories with the GUI and the FESA navigator. He confirms the GUI is not the culprit for the missing trajectories. This is being followed up by BI : 10MHz counter might yield some jitter of some 2-3 periods.

### Thursday

At 3PM, the beam was cut for 1h10' for a PS access for the bending magnet F61S.BHZ01. The restart was smooth.

Extraction trajectories : the electrostatic BPM BT.UES30 has been replaced by a new inductive type. The bunches being not yet recombined here, the BPM axis is normally set 14mm below the Ring3 level. The BI specialist suspects the new BPM has been aligned with the ring3 which explains the beam strong excursions in the vertical plane. Once the misalignment is confirmed during the next TS, this can be corrected for by changing the offsets in the application.

During the night the beam was cut for 5 min due a Linac2 vacuum valve.

### Friday

The beam was cut at 7PM for 5min rebooting DLINTRAF.

### Sunday

Early in the morning, at 5:45AM the beam was cut for a PS access (septum cable). Down time 2h15mn.

The extraction kicker BT2. KFA20 did not restart immediately : additional down time 12mn.

At 9:40, there was an electric fault :PSB compensator OFF. The MPS had to be reset. The situation was restored after 2h45mn.

### On going tests during the week :

1/FGC3 tests have started JF combline, after some adjustments, all 8 correctors were observed on OASIS. They were cycling successfully (TOF user). He noticed no clear effect with the magnet DHZ2L4.

2/FINEMET Cavity tests by the RF team: good start-up, with improved beam capture. The commissioning has been progressing well throughout the week, with improved injection, capture and acceleration.

3/160MeV flat cycle study by Bettina and Vivien : they have optimized the injection, improved the capture

4/Work on "100ns\_CNGS\_H2+1" has been done by Alan : 8 bunches, bunch spacing 255ns

5/The LHCINDIV\_high\_Int\_SPS has been prepared by Jocelyn with exotic setting, as the goal was to get the highest brightness available : up to 33E10, within 1um (1sig norm) and 0.3eVs

## PS (Jakub Wozniak)

Steady week for the PS with all the beams coming out as expected. Due to radiation limits the CNGS beams had to have the intensity slightly reduced. AD beam was frequently disturbed by the constantly changing super cycle for the LHC. EAST beams were set up according to user requests. The problems this week came from the magnet F61S.BHZ01 overheating found with a closed cooling valve. There was also an intervention for the

cable of the septum SEH23 (EAST slow extraction) causing the EAST beam downtime of 7h and 2h for all other beams on Wednesday. The radiation protection system ARCON caused problems on Tuesday for EAST beams and Thursday afternoon for the TOF with faulty connections to the radiation monitors. The later was caused by electrical problems due to thunder storms and burned PLC.

This weekend was perturbed with occasional trips of POPS and again a faulty cable for the septum SEH31 causing 4h of downtime for all beams.

## SPS (Yannis Papaphilippou)

It was a good week for the SPS providing regularly the LHC 50ns beam with up to  $1.45e11p/b$  and CNGS with intensities of around  $3.3e13p$ . An MD was conducted in parallel with a very high intensity LHCINDIV beam of up to  $4.7e11p$  injected into the Q20 optics and set-up at the flat bottom.

The CNGS 100ns beam set-up started on Tuesday and was accomplished on Thursday. Two batches of 12 bunches were required from the PS for setting up the CNGS transfer line. An intervention on RF transmitters, which tripped on Wednesday morning, took place in the afternoon in the shadow of a PS stop.

A high intensity LHCINDIV beam, with different scraper settings, required for the LHC MD, was set up on Thursday morning. In the evening, the mains and RF transmitters tripped due to an electrical glitch. After a reset, a bus bar fault persisted and TI had to intervene in the electrical building where a burned card was found (2h without beam). This card is consigned until the next technical stop on Tuesday. During the night, a corrector power supply in the TI8 line tripped with a thermal fault and the piquet power had to intervene for changing a card and fixing a bad contact (2h without beam). The weekend was smooth and dedicated to CNGS production, the LHC MD program and testing of the beams for the next week's injector MD

## LHC

Ramp back up to 1380 completed. Peak luminosity up  $5.6e33 \text{ cm}^{-2}\text{s}^{-1}$ . Mixed week with Van der Meer Scan and a week-end of MD before the technical stop which started on Monday 23<sup>rd</sup>.

More details:

<http://lhc-commissioning.web.cern.ch/lhc-commissioning/>