

Accelerator complex status

End week 25 (Sunday 21st June 2015)

TI (Peter Sollander)

The TI summary of last week on our

WIKI, <https://wikis/display/TIOP/2015/06/15/TI+summary+week+25,+2015>

LINACS (Rolf Wegner)

Linac2

* Last Monday: Technical stop, source cleaned, H2 bottle is at 160 bars, RF maintenance work done. We had some difficulties with the re-start (controls and magnet power converters), beam was back Monday evening but stopped during the night.

* From Tuesday morning onwards, a quite smooth run during the rest of the week (a reset of RF amplifier of tank 3 was needed on Thursday, Saturday morning vacuum valve LI.VVS10 had to be opened after a source flashover and Saturday night a reset of RF amplifier of tank 2 was needed)

* MDs were performed to evaluate and increase the beam intensity

Linac3

* Linac3 is being set up. There is a delay due to an RF amplifier problem but some time could be recovered. First beam to LEIR is foreseen for today, Monday 22 June.

PSB (Gian Piero Di Giovanni)

A busy week for the PSB, after the TS.

We started well as the PSB was back on its feet with beams happily running in the machine by 11 am.

Unfortunately, we soon realized together with the BI experts, that the wire-scanner in ring 3 vertically, the one replaced during the TS, was broken.

On Wednesday, with LHC in TS, experts could focus on 3 dedicated MDs:

1) A dedicated MD for the RFQ in Linac2 to check if the transmission could be improved. In the end, the Linac2 team could only gain in transmission (up to 5-6 mA) in conditions that are not very suitable for operation (significant beam loading, tank3 saturation, unstable RF conditions). The nominal settings run at the moment is still considered to be the best option.

2) A dedicated MD to investigate the position fluctuation, present since the beginning of the year, in the beam position monitors at the end of the BI line. The stability of these pick-ups is very important for the PSB operations/MDs. It turned out that the BPMs are very sensitive to the bunching of the Linac2 beam and more work is needed to have the equipment robust against the L2 beam bunching.

3) A dedicated MD on the TFB to investigate the random losses in ring 4 which are quite disruptive for the PSB operations. A lot of work was done, few hardware parts were changes, but the losses are

unfortunately still there. Some additional useful feedback may come from the Finement MDs currently carried on in the PSB. Generally the issue is closely followed up by the TFB team in conjunction with the PSB crew.

On Wednesday we also had to stop the beam in ring 2 (affecting mostly TOF) for 1 hour due to an HV problem with the CO2 cavity in ring 2. Later in the day, there was an access in the basement of AD target to solve a problem with a water pump. A complete patrol of TT70 was needed afterwards. In total this cost 5 hours and 30 minutes of stop for ISOLDE.

We had some issues to deliver maximum intensity to both ISOGPS and ISOHRS users. The reason of the problem was tracked down to a wrong setting of 3 quadrupole currents in the BTY line. These settings should have not been touched. The issue is being followed up.

Generally, we had some hiccups as few equipments were left off and should have not been, and some of the software updates were not followed by the CCM applications and disrupted a bit the normal operations.

Aside from the problems and the MD work, the PSB crew carried, whenever possible, the usual work to fine tune the beams, in particular this week focusing on minimizing losses in the extraction trajectories to the PS.

PS (Ana Guerrero Ollacarizqueta)

This week was marked by the TS and the SPS scrubbing run. All required beams were delivered: LHC25 72b high intensity ($2e11$ ppb), LHC50 36b, LHC50 6b, LHCINDIV and AD.

Beam for physics was sent to TOF, the EAST Area and SPS (from Saturday).

During the TS the 68H wire scanner was installed again. The bumper 14 power supply was exchanged by the bipolar spare for the MTE extraction and the intervention on the PFWs (FNI, FNP, DNI, DNP) power supply inductance was finished.

The restart was eventful. Most patrols were lost during the stop. The tests on the BHZ10 modification were nevertheless done on the Monday. Once the PSB started delivering beam on Tuesday morning, we had to wait for the OK from RP before sending beam to the T8 line (Irrad and CHARM) due to the foreseen intervention on T9.BHZ01 following the water leak discovered on the magnet during the TS. We also waited for the OK from RP to send beam to TT2 after an intervention on ADT had been agreed from 13h at the FOM the same morning. There was also some issues restarting some equipment (SMH16 and BLMs). The intervention on ADT took longer than expected and all beams were finally produced by 16h on Tuesday.

The T9 magnet water leak issue was solved on Friday morning and the production of beam to EAST North could be resumed.

The tests of BHZ377 new set up have started. A new installation has been envisaged to inhibit via BHZ377 the arrival of beam to the SPS according to the SPS injection kicker strobe.

The changes on the BSW14 and PFWs have provided very good results on the MTE beam, the island capture is stable and the extraction on the outer side of TPS15 is now working. Optimization is ongoing.

The total downtime outside the access and dedicated MD time has been around 2h30mins (extraction kickers communication errors, POPs trip, 10MHz cavity, ADT forced door while in beam mode)

SPS (Hannes Bartosik)

It was a good week for the SPS devoted to the technical stop, to a scrubbing run and to HiRadMat extractions for the HRMT-22 experiment. North Area physics restarted on the weekend.

During the technical stop the firmware of the rotational wire scanners was successfully updated, the COLDEX bypass was re-installed with new Y-chambers and the SLAC rotatable collimator was installed. A water leak was found on the MDLV2115 corrector magnet in TT20, which could not be repaired in a reliable way and thus the magnet needs to be replaced eventually. The endoscopy of sector 101 (where a horizontal aperture restriction is encountered with LHC beams) revealed traces of beam impact on the vacuum chamber in the bending magnet 10130. The alignment of the sector was checked and the orientation of the eccentric vacuum chamber next to the vacuum valve VVSA10101 was corrected.

The start of the scrubbing run on Tuesday was delayed by a few hours due to a problem with the Beam Energy Tracking System, which was related to software modifications performed during the technical stop. COLDEX was taking data in parallel to the scrubbing with high intensity ($2e11$ p/b) 25 ns beams. The scrubbing had to be stopped several times for cool-down of the MKP4 injection kicker. These periods were used for dedicated MDs with single bunch beams. e.g. SPS matching monitor and tests of UA9 equipment, and for the optimisation of the LL-RF for LHC beams.

On Friday afternoon the first series of HiRadMat extractions for the HRMT-22 experiment was carried out and the 50 ns beams for the LHC scrubbing run were checked. The extraction of LHC beams on the T12 and T18 TEDs was tested on the weekend. The current on the power supply RBI816 for the main bending magnets in T18 was corrected by 4 Amps.

North Area physics resumed on Saturday morning with a delay of almost two hours due to beam stability issues in the PSB and due to losses at extraction, which were caused by closed vacuum valves in BA80. No major issues were encountered during the weekend, apart from a problem with the power converter on the quadrupole 021.303 in the H2 line which was eventually solved after several hours by the First Line piquet.

ISOLDE (Eleftherios Fadakis)

Tuesday 16/06

GPS

Target #524 which was put in place on Monday, was causing the heating power supplies to trip, due to vacuum increase. Even increasing the heating ever so slowly gave the same results. We passed on

to target #507 which we discovered while trying to heat it up that it had a broken line and needed to be replaced. Only alternative target #533 Uc which was taken from HRS. Heating it slowly over night.

HRS

Target change, #533Uc replaced by #519Ca0 as a plug target. Shutter got stuck "in movement" state for about 3' then it closed.

Wednesday 17/06

GPS

Beam set up with Rb87 to GLM. When commencing proton scan we discovered that the beam profile was quite off (Vertical -5, Horizontal - 13). After some troubleshooting from the PSB operators they discovered that the power supplies in the BTY line were off. Once they were turned on the profile returned to normal. An intervention further prolonged the proton scan. the AD supervisor needed to enter the sector 2 (TT70) of ISOLDE in fear of a flood due to a broken water pump. A few minutes before 22:00 the proton scan started.

HRS

Target change from #519 to #539 Uc2C. YHRS.SEPMAG90 was in INT REF. After resetting the converter it came back to EXT REF.

Thursday 18/06

GPS

Long collections of 111Ag @ 20kV. Proton scan on converter in search for better yields. Went back shooting protons on the target soon.

HRS

Stable beam setup for CRIS and ISOLTRAP with bunch (35%) and continuous (57%) mode (by Tim)

PSB improved the steering to ensure max intensity could be provided

YHRS.SEPMAG60DEG and 90 in INT REF. After resetting the converter it came back to EXT REF. This happened two times during the day.

Friday 19/06

GPS

Collections, PSB copies and verifies the steering from HRS to ensure maximum intensity also in GPS.

HRS

Proton scan on converter, tape station measurements from target group. After a call to the equipment group of power supplies M. Dudek suggested a power cycle on the electronic of the converter of the power supplies. They stopped tripping for a few hours but since then it has happened a lot.

Saturday – Sunday

Beam to users during the weekend.