

End Week 19 (May 11th) – Status of Accelerators

Linac2 (G.Bellodi)

The RF problems that plagued last weekend (mainly affecting the RFQ and Tank2 and requiring a manual reset each time) were investigated on Monday by the RF team, who lowered the RFQ voltage to 3650mV and eventually found a problem in the grounding of Tank2 line voltage detector.

Operation on Tuesday and Wednesday went smoothly.

On Thursday Tank2 started to become unstable, with frequent drops in voltage amplitude causing trips every couple of hours. This behavior deteriorated on Friday morning, when it became increasingly difficult to make a reset. In the afternoon we stopped the beam to make investigations and a problem was eventually found with 1800V spark gaps in Tank2 notwithstanding the tension.

While the Linac was down we were informed of a water leak affecting the LEIR station (2m³/day, and a total of 15m³ gone lost). The leak was located in the inflector zone area, at the PSB sieve near the BI.STP beam stopper. Since this is only used for MDs the water supply was cut off, a consigne was put on the sieve until further notice and operation was resumed after 5hrs down time.

PSB (A.Findlay)

Fairly good week for the PSB, with a lot of work going into beam setting up, and good results were achieved.

The VELO experiment started taking beam this week, and once they got over a few timing issues, they were happy with the beam they received. They tried to take beam during specific times when D.Allen was on shift, as the target is placed in front of the PSB dump, so we must avoid dumping large beams during this time. D.Allen has done all the setting up of these beams for VELO.

The wire scanners have been tested all week, and by Thursday, results were achieved that were consistent with those of the SEM grids in the measurement line, for all but R2 horizontal.

We have been having problems with the PSB Tomoscope which is our principal longitudinal measurement tool. The age of the oscilloscope means that repairs are no longer possible, as we found out when we tried to get it fixed during the shutdown. After a lot of effort to find a solution between the PS and PSB hardware, we were able to find a fix that worked for both the PS and PSB. This involved re-writing the PS code for this. Follow-up needed.

On Friday it was found that the PSB sieve in the BI injection line had a leak and so its water was shut off and the firemen cleaned up the water. We decided just to leave the repair of this device until the upcoming technical stop, as it is only really used for MDs to reduce the beam intensity, and not for operational beams.

ISOLDE (D.Voulot)

Three main problems:

- The stepping motor drivers that control the position of the puller electrode on the front ends stopped working (Mon. 4/5). In the absence of spare parts or circuit diagram, this prevented all target changes on both front ends. EN/STI finally managed to fix the faulty cards and the target changes could be done Wednesday and Thursday.

- The Ar venting line for the front ends remained closed preventing the venting of HRS on Wed 6/5. An access to the separator zone was necessary to repair the equipment.

- The CA0.FC68 Faraday cup on the central beam line is out of operation, most likely due to a broken connection in the vacuum. This needs to be repaired under the supervision of RP (contamination). Unfortunately this cannot be done before week 21 due to unavailability of RP personnel. This FC is required to measure the transmission through the separators.

Despite these problems the physics program could go on with a number of collections (solid state physics) and a run on LA1 (IS417) which started to take beam on Friday.

REX training for ISOLDE operators also took place (28-29/4 and 4-5/5).

PS (A.Grudiev)

Setting up of the beams for AD and EASTB, as well as LHCPROBE and TOF.

Providing SFTPRO to SPS and EASTA and EASTC to East zone.

On Tuesday night there were no beams from 00:30 till 6:45 for two reasons. First, there was a problem with one of the dipole in the EAST zone extraction line F61.BHZ01. PIPO and magnet specialist had to be called during the night to diagnose the problem and repair the magnet which had a water leak. They finished at about 5:00. During the night at 3:44, suddenly no control was possible; no Working Set could be opened. No passarelle access as well. PICO was not reachable nor the specialists from the call list. Only at 5:36 one of the specialists called back and arranged that somebody will come to solve the problem. Finally, a specialist came and fixed the control system by rebooting the directory service. ALL beams went back at 6:45. No beams for 6.5 hours.

On Wednesday MPS went down at 10:50. Someone pushed an old emergency stop by mistake. It came back on line only at 13:24. No beams for 2.5 hours.

On Friday afternoon, at 15:20 PS access has been organized to localize the water leak. The team has found ~15m³ water on the floor near the BI beam stopper. Fire brigade was asked to pump the water out. They have finished at about 19:00. All beams went back.

AD (P.Belochitskii)

The last week of hardware tests.

The main problems/activities are:

1. Fixing of bending magnet coil movement during the cycle (vertical movement about 3mm in one magnet, about 1mm in other one).
2. Change of the flow sensor and air filters in the target area, test of interlocks there.
3. Control issues, application program faults fixing.
4. Tests of main power supplies (bending magnets, quadrupoles magnets).

For the moment all is fine. The beam is expected this Tuesday.

SPS (D.Manglunki)

On Monday from 8:00 till 14:30 very little beam was seen as the morning was devoted to fixing some software problems on the ZS and mugefs, and also there were Linac RFQ problems. Meanwhile the servo spill was fixed.

On Tuesday the polarity switch problem in the lines was fixed by S.Page.

On Wednesday morning more tests on the ZS software were done. In the afternoon MBE2103 tripped several times and necessitated calling the first line piquet.

On Thursday at 12:00 the supercycle was changed to include an LHCFast cycle on request from the LHC EiC. After a few minutes the main dipole power supply tripped. Meanwhile the first line had to be called several times for the trip of MBE2103. MPS tripped twice more in the afternoon and necessitated intervention of specialists C.Mugnier and K.Fischer, and switching to a spare. Unfortunately when switching on the beam again after the repair of the power supply, there were more than 50% losses at the start of the ramp. The situation degraded and orbit analysis pointed in the direction of a faulty dipole. The magnet piquet and J.Bauche were called in and could confirm the inductance of MBB50070 had a value 200 times lower than expected. It was then possible to start calling the various actors to plan the magnet exchange for the next morning.

The intervention took a bit longer than anticipated and was over by 15:45. At 22:00 we got the OK from the vacuum experts to restart with beam.

Suddenly at 2:09 in the night the beam could not circulate for more than 3 turns. Immediately an obstacle was suspected. A first idea consisted in maneuvering all vacuum valves and checking their state was open, but without success. It took the whole day with the help of various BT specialists on the phone, and the RP piquet N.Conan, vacuum piquet A.Vidal and eventually the valve specialist W.Maan on site to find out the culprit: fast valve VVFA21701 was closed, with all status indicating it open, including the command box at ground floor in BA2. This valve is now blocked open in local.

Optimization resumed around 19:00, and went on all night.

On Sunday the CNGS beam was requested again in order to verify it. After optimization by the morning operations team the transmission was back to 97%.

Physics in North Area can now start one week earlier than foreseen on V3.4 of the schedule (<https://espace.cern.ch/be-dep/BEDepartmentalDocuments/BE/Schedule2009.pdf>)

TI (P.Sollander)

No major problems at the TI desk last week.

Yesterday and this morning there were perturbations on the electrical network.

No consequences as far as we have seen (this morning there was an interlock on the PS 5 minutes after the perturbation. It is still unclear if it is related).