

End Week 24 (June 14th) – Status of Accelerators

Summary

Overall a good week with the main down time (~25 hours) to a vacuum leak in the PS – good recovery from this.

ISOLDE	Overall a good week with only minor technical problems.
AD	Looking good.
PSB	Time off on Wednesday for PS vacuum repair and a couple of problems coming back but not too bad of a week.
PS	Good week apart from vacuum problem Wednesday (see below). Delivered super-cycles from 34 to 40s with EASTA, EASTB, SFTPRO, CNGS, TSTLHC25, TOF and AD beams.
SPS	Good delivery to fixed target and CNGS. LHC beam well use on LHC fast during day. Ongoing RF problems.
TI	No major problems.

Isolde (Emiliano Piselli)

HRS:

Since Wednesday we work with stable beam in preparation of the coming REX run.

GPS:

GLM (low mass beamline) got beam from Tuesday to Sunday morning.

We had only 2 small problems:

-on Tuesday evening a vacuum valve didn't open and was necessary an intervention from a vacuum specialist (H.Vestergard - TE/VSC).

-on Wednesday early morning target HV dropped very often and was necessary my intervention to rescale all the machine to a lower value (from 50KV to 30KV).

REX:

Tuning the machine with stable beam coming from HRS target since Wednesday.

GENERAL:

1- We had another small problem on Tuesday evening to restart vacuum in the central beamline. Vacuum specialist was already here for GPS and he has fixed this problem as well.

2- Still under study the problem we have with the high activity we have on the radiation monitor PAXY02. Therefore we have always worked with a restricted max proton intensity of 1.7uA which gives 100uS/h on PAXY02.

Booster (Alan Findlay)

Not such a good week for the PSB, as we had a number of things that kept us from our usual good performance.

On **Tuesday evening** VELO took their last beam for this run at least, and they were very happy with the beam time they were given.

The **PS vacuum problem** meant we cut the PSB beam at 09H40 on Wednesday, to allow for the various machine interventions. We had the green light from the PS around 15H00, but a water cooling problem in the LINAC, stopped us from injecting beam until 17H00. When the the beam came back we noticed that we had injection intensity fluctuations, which at first we thought were due to the PS MPS being switched on and off. We soon realised that the Stray Field Compensation (SFC) system was not working, and this was since Jean-Michel had made a modification. We decided to switch the system off and live with the fluctuations until he came back on shift and could try to fix the situation.

We noted that the beam Wiki no longer worked after a "downgrade" by IT, so we didn't have access to our beam references held therein. This situation would continue all week.

Thursday we managed to improve the performance of rings 1 & 4 acceleration, which had been giving problems on many users since the previous week. It was difficult to adjust the beams though, as the intensity fluctuations were still a feature.

By early **Saturday morning** Jean-Michel thought he had found a solution to the SFC problem, and put it under test for the next two shifts. This seemed to have done the trick, so by early Sunday we were able to confirm that all our main users were now injected with the usual stability.

Otherwise, it was not our best week, but far from our worst!

PS (Yannis Papaphilippou)

- Delivered super-cycles from 34 to 40s with EASTA, EASTB, SFTPRO, CNGS, TSTLHC25, TOF and AD beams.

- **On Monday**, the specialist informed us that he needed a tunnel access for investigating a problem with 10MHz cavity 91. The beams were stopped for 2h and until the next day cavity 11 replaced C91. This created certain problems with the SFTPRO/CNGS beams in the SPS because of a non-optimized tuning of C11. Next morning, C91 was operational again after replacement of a LEMO 00 cable.

- **During Tuesday night**, the vacuum valves between SS50 and 60 closed and a number of vacuum pumps tripped. The piquet vacuum was called and found that the pressure has risen to around 10-3 mbar, indicating a vacuum leak. Unfortunately the vacuum pressure was not logged due to a CO problem and we were unable to make a proper diagnose of the failure (apparently a recurrent problem with the CMW subscription to the devices connected with DCPSVAC1). Next morning (9:30), the machine was accessed for leak detection. In the meantime, a BT team dried the cooling circuit of septum 57, in order to be able to intervene if needed. After some investigation (first suspecting the wire scanner in 55, than the semgrid in 54), the leak was found at the end of magnet 52 (towards the SS53) in the joint of the vacuum chamber collar. Apparently the RF bypass clamped to the joint presented indications of an electrical arc. The intervention finished in the early afternoon (2pm) and

pumping started. The BT specialist estimated that the septum57 will not need bake-out. The pressure dropped to around 10⁻⁷ mbar by 22:30 and low-intensity beams were re-injected (EAST), followed by SFTPRO/CNGS at low intensities (at around 1am). All beams were fully operational by Thursday morning. As there are still on-going investigations for identifying the problem with the RF bypass, the TOF intensity remained at around 6x10¹² during the whole week.

- **During Sunday afternoon**, one of the injection bumpers stopped pulsing (PI.BSM40). The piquet PO was called and solved the problem after passing to the auxiliary power supply and changing two fuses (2h without beam).

SPS (Django Manglunki)

CNGS (67% availability) 2E13/extraction

North area (70% availability) 40E11 on T2, 40E11 on T4, 160E11 on T6

The whole week was plagued by RF power problems (9 h down time), with RF piquet and specialists present in BA3 most of the week-end to try and identify the cause for trips on the TRX. Whenever one transmitter was down and waiting for repair, the intensity was lowered in order to give at least some beam to the users, particularly CNGS.

There were also several beam stops due to a faulty switch on MKD.

During the 25 hour beam stop due to the PS vacuum leak, an access was done to check the condition of magnet MBB62130 which showed some damage by the beam. The PS gave beam at low intensity just before midnight on Wednesday evening, and by 1:30 all beams were back at nominal intensity.

The LHC beam has been set up with 12 and 24 bunches, up to nominal intensity.

On Sunday, the faulty switch #1 on MKDV was replaced by the BT piquet, partly in the shadow of a PS injection problem.

Another concern is a software problem with the SIS subscription loss for BLMs, which caused about 1.5 h of beam unavailability. CO is working on it.