

End Week 35 (August 30th) – Status of Accelerators

Summary

ISOLDE	Excellent until LINAC2 fault
LINACS	Serious vacuum problem tank 2 – no protons since 20:45 Friday.
AD	OK
PSB	Running well with only minor niggles and glitches.
PS	Quiet week – few minor problems
SPS	Good
TI	No major problems
LEIR & Ions	Looking good. Ions to flat-top in SPS

LINAC 2

A serious vacuum developed in tank 2 (drift tube 5) at around 20:45 Friday 28th August. No indications of any problems up to this point. Big leak – 3 e-4 mbar l/s – with vacuum in tank up to 1 e-3 mbar.

Vacuum and LINAC teams worked all weekend attempting to locate and fix the leak(s). A secondary vacuum was established but this made no difference to the vacuum in the tank. One leak found but it seems there is still another one in or around the drift tube assembly.

Experts meeting at 09:00 Monday – more news later.

ISOLDE (Didier Voulot)

- REX delivered 138Xe from HRS to Miniball at 2.85MeV/u from Thu (20/8) to Tue morning (25/8).
- COLLAPS started taking Mg beam from GPS on Thu (27/8). The run is scheduled until Wed morning.
- Collections are taking place in parallel on the newly installed solid state physics set-up on GHM after the removal of the ECR source test stand this week.
- The run was interrupted on Friday night following the vacuum failure on linac2.
- Two target changes took place this week: one on Monday (24/8) on GPS and one on Fri (28/8) on HRS. Everything went fine both times.

LEIR (Django Manglunki)

Apart from frequent trips of the power supply of a quadrupole in the LINAC filter (ITF.QFN06), LEIR has been running without major problems all week, delivering the EARLY beam regularly to the PS for SPS RF recommissioning during the day.

During the night, the machine has been set up to execute long flat "scrubbing" cycles, monitored by the SPS operations team.

On Wednesday, optics references have been taken on the EARLY beam into the PS, profiting from the dedicated MD.

The machine was partially stopped on Friday at lunch time for the refill of the ion source; only the main magnet and one RF cavity were kept cycling during the afternoon for RF tests. LEIR was then turned completely off for the week-end.

SPS (Jorg Wenninger)

The SPS production beams for CNGS and SFTPRO ran smoothly. Some problems were observed starting Wednesday after the PS MD when the intensity was increased on the SFTPRO. The beam was periodically cut by the 30 mm beam position interlock at transition. An increase of the CNGS beam to over

4.2E13 p extracted/cycle on Friday went smoothly, but did not last long...

RF work on the ion beam continued, and on Thursday evening the ions passed transition and reached the flat top. Friday morning the ion source exchange was initiated.

The problems of unstable re-phasing with the LHC beam were solved by the RF group Friday afternoon. In parallel the fast scrapper was tested. The LHCPROBE beam could be fully scraped on the flat top without interference with SFT and CNGS beams (no visible beam loss on the BLMs) using a parking position of ~30 mm.

First tests were made with the MTE beam. Large losses were observed in TT10 (> 20%) and at injection (>25 %) during the first tests. The trajectory of the islands different by more than 10 mm in the SPS. An incorrect setting of the PS extraction kickers and of a quadrupole in TT2 were discovered later. A second attempt Friday evening with improved optics worked a bit better, but had to be stopped due to a problem with one of the PS kickers (HW problem) that delivered unstable kick strengths.

Then 20:45 on Friday the LINAC vacuum problem brought an abrupt end to the week.

PS (Yannis Papaphilippou)

Quiet week for the PS. A few minor problems:

- The TT2 line magnet BHZ377, which failed last Sunday, was put back in operation by the specialist on early Monday morning. After discussion with the TE/EPC piquet responsible and group leader, it was apparent that there was a series of unfortunate miscommunications, which resulted in such a long down time for this magnet and the SPS not receiving beam for almost 18h. In fact, the piquet PO, responsible for the equipment, and who was initially called, directed the OP crew to the piquet Firstline who did not have the necessary training and competence for solving the problem. The immediate action of the TE/EPC colleagues was to produce a list of equipments under the piquet's responsibility to be always present in the piquet's car. This list has to be consulted before any

intervention. On the other hand, the TE/EPC group leader asked that in similar circumstances to be directly informed.

- Right after giving the beam back, it was observed that the BFA9 (staircase) was not functioning correctly and the specialist had to change the thyatron (1H without CNGS and SFTPRO).
- On Tuesday afternoon, an RF specialist asked an access to repair the relay gap of a 10MHz cavity (C36 replaced with C11). The intervention was scheduled for the next morning just before the dedicated PS MD. During the night, losses appeared on the high-intensity beams around transition. After transverse beam parameters setting up, the piquet LLRF was called for further investigation. With the help of a specialist, the problem was identified at a longitudinal instability forming during the intermediate flat-top and a fix was found. It was suspected and confirmed next morning that this was coming by the open gap of C36 which was repaired.
- No beam since Friday evening due to the LINAC2 problem.

PSB (Alan Findlay)

Although it's rather unimportant at the present moment, then PSB had been running well with only minor niggles and glitches.

The specialist had to change a bank of transistors for the C04 R2 which were slowly breaking one by one, but this is part of the normal maintenance, and took an hour.

The R3 shaver power supply died during the Wednesday night shift, but the crew found a fix until the morning, when the PO piquet came in to replace a couple of fuses and clear a short circuit fault.

We had our usual problems on R4, where with H1 high intensity beam for ISOLDE, we have problems with losses and cavities dropping out. By adjusting the beam shape and changing some RF other parameters, we can stabilize the beam to give more intensity than required by the users. At this point, we usually turn the intensity down a little bit to give us some margin.

Along with all the wire scanner tests this week, there have been a number of parasitic MDs looking into methods of blowing up the beam transversally, by using the transverse damper. The results are not yet conclusive, as we only seem to be able to achieve 20-30% blow up when we'd wish for 200-300%, but the MD's will continue.

The PSB machine has been very stable since Friday evening.