End Week 44 (November 1st) – Status of Accelerators

Summary

ISOLDE	A number of issues – physics established none-the-less.
LINACS	Quiet week.
AD	No news is good news.
PSB	The PSB had a reasonable week, but not without incident.
PS	Good week.
SPS	Good week. 3e19 protons on target passed for CNGS.
TI	Quiet week.
LEIR & Ions	Ions to LHC – excellent end to commissioning. Work continues in LEIR this week.

ISOLDE (Magnus Eriksson)

Difficult week - most things were restored for the weekend (thanks to great efforts from the support groups and a portion of luck). HRS-users are taking excellent data since Friday evening and ISOLDE has been very stable since then.

Now for the technical problems that we had:

GPS:

Nothing mayor, experiment finished on Tuesday and GPS was prepared for a target change which took place on friday morning. While trying to get GPS to atmosphere the vacuum sequence stopped due to a valve-sensor not giving a "closed" -signal to the vacuum system. This was intervened by VAC specialist and the signal is now simulated for the rest of this years run. For IMS's this means operation can continue like before. Action to be taken during shutdown.

HRS:

In last FOM it was reported that several 24V power supplies broke during the week.

The reason has been found to likely come from the fact that target group had provided wrong info regarding the offset that the extraction electrode should be located at.

For Surface ionizers the offset is normally 0mm and for plasmas 60mm. In this particular case we had a surface target that needed a 60mm offset, something that was never forwarded to the IMS's. In the provided documentation there was also faulty indicated "0mm". This was corrected the same morning as the last FOM and since then things improved.

However, the beam as seen on the HRS-scanners looks not good. We have a ripple-effect which none of IMS's or various specialists have managed to find the source of.

We have tested all possible equipment (scanners, high tension, beam element power supplies, beam gates, magnets, target parameters) but no success of surpressing these effects. It will be interesting to see if the problems will be there with the next target or not.

We were already almost two days late with setup when I took over on Tuesday at 15.00, beacuse of several target heating drops (60mm-problem). And to not risk delaying/cancelling the physics run it was decided to setup beam even though we had the ripple-effect. The in-house ISOLTRAP experiment had already been cancelled.

Stable beam/proton scan/yield tests were all done on Wednesday and beam handed over to users in the evening for their stable beam setup. On Thursday users got a taste of radioactive beam before the MPS broke down and caused a 2h stop. When protons were back they only had them for a while before HRS target/line dropped at ~18:00.

I was called in and had CO-piquet/PO-piquet working on the problems, PO-piquet was unable to restore power and as I was supporting them I get a call from the fire brigade telling me there was a fire alarm in the target building.

Together with firemen and RP-piquet we did an access in the bat.179 and had a look via cameras in robot control room if something obvious could be seen, but nothing unusual observed. While walking out of the building I smelt something which later was located to a pump used for sucking in air to the fire detection system and which had burned.

I called R. Catherall who decided to stop physics since we were now in a non-safe situation and heating targets would not be an option before this system was working again.

Later this night I get a call from CEGELEC about ventilation of bat.170 (ISOLDE) that had stopped, this was checked and re-setted by them and another call to me for my info.

Fire detection pump was running next morning, HRS PO-problems restored after replacing 2 Siemens 24V power supplies (like the one's reported in last FOM) + a fuse in the same power rack.

Since then HRS-target was restored to operating conditions and radioactive beam was delivered to users running without a glitch until now!

Booster (Alan Findlay)

The PSB had a reasonable week, but not without incident.

An access had been agreed for Wednesday at 08H00, when we were to replace the RF tubes for the RF C04 system in R4, which took place without any problems. The result of this, was that we could set up the high intensity H=1 users again with the lower voltage at extraction on the C04, which improves the matching to the PS, and reduces the bunch length for PS and ISOLDE. The Beam was back by 10H00, and the beam adjustments carried out on the ISOLDE and AD users over the following days.

On Thursday at 12h40, the PSB MPS went down a couple of times, forcing us to call in the PiPO. They found that a driver card for the TRIM 1+4, known as "Trim A", was over heating, so replaced this supply with the spare "Trim B". This proved more difficult than expected to get up and running, but by 14H40 we had stable beam back. However, at 16H20 the MPS went down again with the same fault, so the PiPO was called in again. They had had the time to repair the previously faulty card on "Trim A", and so exchanged this with the "Trim B" and beam was back by 16H55. The specialist will investigate the reason why the "Trim B" does not behave as expected upon his return from holiday on Monday.

Otherwise, we're keeping our heads above water.

SPS (Jorg Wenninger)

It was a very good production week for CNGS, and the 3E19 protons on target mark was reached on Saturday 31.10. Friday lunchtime a phase rotation of 35 degrees between cavities was fixed by the RF power guys, and this resolved a loss that could be observed at high energy on the CNGS. The transmissions were in the range of 96% for a target intensity of 4.2E13/cycle. A temperature alarm on the target appeared in the late Sunday afternoon of 01.11, when one T40 temperature reading exceeded 70 degrees. The seems to be due to the high efficiency and slightly higher intensity that we had over the weekend. As a first measure an empty MTE CNGS cycle was inserted and the temperature decreased rapidly below 60 degrees. A vacuum gauge fault on the injection kickers around 19:00 stopped all beams for around one hour, and this led to a further reduction of the temperature below 50 degrees. We are now back with 4 CNGS and the temperature is monitored. If the temperature alarm comes back, we will drop slightly the intensity (5% or so).

The FT beams were affected by ZS 3M cooling liquid problems between Tuesday and Thursday. Between Friday and Sunday they were affected a few times by a problem on a bypass PC in TT20. Fortunately it was possible to correct the steering error using another corrector. The problem was finally solved around 01:00 on Sunday 01.11 when the DCCT was replaced on the converter and a bad connection fixed.

Emittance measurements on the LHCPROBE confirmed that the H emittance was large, ~ 5-6 microns. After adjustments in the CPS, the emittance is now back around 1.5-1.8 microns in both planes.

PS (Gabriel Metral)

La machine PS a fonctionnee sans probleme majeur cette derniere semaine.

En plus des operations AD, TOF, EAST, SFTPRO & CNGS, les faisceau LHCPROBE, TSTLHC25 et LHC25 ont ete envoyes au SPS.

Quelques petits problemes avec les cavite 10MHz

Toujours quelques problemes avec le programme d'application pour les mesures avec les fils volants.