

Accelerator complex status

End week 20 (Sunday 22nd May 2016)

Dominated by stop of PS rotating machine Friday morning.

TI (Jesper Nielsen)

TI summary: <https://wikis.cern.ch/display/TIOP/2016/05/17/TI+summary+week+20%2C+2016>

Linacs (Rolf Wegner)

Linac2 is running very well. A few issues were seen and solved:

- * An increasing number of missing pulses was observed on Friday, which was solved by increasing the H₂ gas flow.
- * On Sunday morning there was no beam for ~3.5 hours. The PLC responsible for controlling the majority of beam stoppers on the Meyrin site was down. It was found to be not powered, a number of circuit breakers interrupted the current. Once re-connected, Linac2 could be restarted.
- * A MD was performed together with the PSB to optimise the phase setting of the Linac2 debuncher to reduce the power demand from the driving amplifier. If acceptable by the PSB, the change will be implemented soon.

The Linac2 intensity given to the PSB (BCT60) is typically 145 mA.

Linac3 was running quite well, a few resets needed here and there. The intensity at the end of Linac3 (BCT41) is typically 30 mA.

AD (Lars Joergensen)

It was a pretty uneventful week at the AD. The machine ran very well with no down time. AEGIS gave up their beam time as they have problems getting their apparatus ready and the two other experiments (ASACUSA and ALPHA) struggled to use the extra beam time, so we ended up moving the planned AD MD from Monday (Whit Monday – a CERN holiday) to Tuesday, Wednesday and Thursday as AEGIS was supposed to have the day shift this week.

Tuesday morning we had an OP7 Excep. to allow the BCCCA cryogenic crew to adjust the pressure. The BCCCA was out of cryogens, but they wanted to observe how it behaved at slightly elevated temperatures.

Tuesday afternoon saw another OP7 Excep. to allow F. Lenardon and J.C. Allica Santamaria to investigate the non-performance of DI.BCT6052.

Wednesday morning saw an OP7 Total to allow the T. Koettig et al. to refill the BCCCA with cryogens. They have to break the security chain to do this so consignment and de-consignment of aqll power converters was necessary.

We had a few minor problems starting the machine again, but with the help of M. Dudek these were all resolved.

Thursdays MD was mainly dedicated to trying to make progress on the BBQ system for the AD. M. Gasior was working on it.

The AD delivered beam to the two experiments during the evening and night without problems.

From Friday morning onwards we have had no more beam.....

ISOLDE (Erwin Siesling)

It has been a busy but good week for ISOLDE.

Running the two separators in parallel: HRS with full intensity max current (2uA) NORMHRS proton beam and GPS with modest intensity (max 8E12ppp) STAGISO proton beam.

GPS:

Change to the Sn target (#514) was done last Tuesday after which stable setting-up started. Proton scan with STAGIOS and yield checks done on Wednesday after which collections on Cd at the GLM line started and lasted as scheduled until Saturday evening. Very successful run according to the users.

Target change foreseen later today.

One issue: The target heating went down on Friday-afternoon for no reason. Could be reheated and the run continued.

HRS:

Change to the ZrO (#551) target was done last Tuesday. Stable molecular beam SeCO setting up was done that same day through the separator magnets and RFQ and used by the TAS users to their setup in the RC3 line overnight. Proton scan done Thursday-afternoon followed by yield checks. Radioactive run started on Thursday-evening.

Users decided to go for GeS beam instead due to the effect of suppressed Se by S. The run continued successfully over the weekend and will be possibly be extended until Wednesday.

Issues: For this particular run where a tape-station at TAS is used that has tape going in and out of the vacuum chamber the thresholds for the vacuum valves, electrostatic elements and PLC automate stepper of the vacuum sectors CC0, RC0 and RC3 needed to be modified. Many thanks to Vacuum Control (Abel Gutierrez) for their help in doing so.

A few times (once-twice a day) the HT has gone off and it seems there was from time to time some pollution coming from the target which caused this. We could live with it.

Over the weekend the vacuum sectors CC0, RC0 and RC3 dropped but recovered automatically. Probably caused by an increased running of the TAS tape-station.

Protons:

Few minor stops due to issues at PSB and PS.

Booster (Gian Piero Di Giovanni)

It was a good week for the PSB.

We supplied the VdM beam adapting to the different LHC requests, as well as provide both STAGISO and NORMHRS beam to ISOLDE, on top of the standard operational beams.

A part some usual resets here and there, we also had few issues during the week:

- On Thursday the extraction septum, BE.SMH15L1, had to be reset several times in a row due to an external fault, causing a downtime of 15 mins. Afterwards, we did not have more instances of this problem. Nevertheless, if it appears again, the experts may need to access the machine.

- In the night between Saturday and Sunday the BI.DIS0 tripped and a thyatron had to be replaced. We could not provide beam from ring1 for about 2h and 35 mins. Luckily, this did not cause any beam time loss, because at the time the only client was STAGISO which is supplied by ring 2,3 and 4.

- On Sunday morning the PLC of the beam stoppers in Linac2 and the BI line was out of order. Fabrice helped the EN-STI piquet to track back the faulty PLC and restart it. The total downtime amounted to about 3h and 25 mins, affecting the NORMHRS data taking.

Concerning other activities:

- Alan worked intensively on the BCMS beam by improving the setting of the longitudinal plane to meet the required specifications. The BCMS beam is generally fine, but some more work is needed to stabilize its intensity fluctuations.

- Last week Maria-Elena commissioned a new version of the LLRF firmware to allow an adiabatic transition from the fixed frequency to the B-Train remarkably improving the process. This new feature is now operational thanks to her, Michael (Jausssi)'s and Alan's work.

Other than that a lot of MD investigations for both the Linac2 and the PSB were carried over the week.

PS (Denis Cotte)

Encore une semaine mouvementé pour le PS.

Le début de semaine fut rythmé par l'amélioration du faisceau LHC25ns. Réglage du retour des cavités 20MHz (BE/RF) et réglage du kicker d'extraction PS.

Le PS a fourni les faisceaux LHC25ns et LHCINDIV VanDerMeer sans gros problèmes.

Mercredi, lors de la session MD, le PS a fourni un faisceau MTE basse intensité $IP \sim 200e10$ au SPS, en parallèle les nouvelles cartes du Transverse Feedback ont été validées et sont opérationnelles.

Le setting up du faisceau LHC25ns BCMS a commencé Jeudi. L'intensité du faisceau MTE a été augmenté à $800e10$ avec les comparateurs réglés à $820e10$.

A noter, quelques interruptions du faisceau à cause de problèmes sur les cavités 10MHz et 200MHz.

Vendredi matin, un accès a été effectué dans la machine PS pour réparer le relai gap de la cavité 10Mhz « C36 ». Lors du redémarrage, on a vu la MPS pulser sur quelques cycles avant qu'elle ne retombe. Appel du piquet PO qui nous a informé d'une alarme incendie.

Un court-circuit sur le jeu de barre qui alimente le transfo B anéantissait tout espoir de redémarrage sur la génératrice pour au moins 15 jours.

Vendredi après-midi, la décision de repasser sur POPS (en mode dégradé) a été prise avec au préalable 3 jours de tests de la part de TE/EPC.

Retour du faisceau prévu Mercredi 26 Mai dans la soirée.

SPS (Verena Kain)

The SPS is still running in degraded mode due to the TIDVG vacuum issue. With the reduced intensity and duty cycles, the vacuum level at the TIDVG situation is however stable.

At the beginning of the week the LHC 25 ns beams caused high losses at SPS extraction as well as in the LHC injection region due to re-capturing initially uncaptured beam. The increased amount of uncaptured beam originated from a PS RF problem. That was solved in the course of the day on Tuesday. Tuesday night the LHC was again struggling with losses at injection. Losses were relatively high in the transfer line TI 2 due to non-optimum scraper settings. The real problem were however longitudinal losses for LHC beam 1. The origin of these losses are not understood (possible candidates: LHC RF beam 1 or injection slot cleaning). During tests with and without improved scraping the issue could not be re-produced.

Next to the 25 ns beams the SPS prepared the beams for the LHC VdM scans this week with the required characteristics.

An interlocking issue was discovered on Tuesday when one of the bumper magnet circuits was off causing a large orbit oscillation around the ring on an LHC cycle. The bumper magnet circuits for the LHC extractions are not surveyed in the ring interlock system, only in the extraction interlock system. An SIS interlock has now been implemented.

The normalised losses on the ZS had increased by 10 % over the last weeks. The ABT team re-aligned the anodes with low intensity of $1.5e+12$ and only one injection and managed to re-establish the original situation. The reference positions had to be modified by 100 to 200 μm .

The COAST on the new cycle for UA9 was briefly tested on Wednesday.

On Thursday the intensity of the fixed target cycle was increased to $1.5e+13$ protons without any major issues (except initially more ZS sparks). The TIDVG vacuum does not seem to be affected.

Since Friday morning the SPS is off as a consequence of the fire in the building of the PS MPS.