

## End Week 29 (July 25<sup>th</sup> 2010) – Status of Accelerators

### AD (Lajos Bojtar)

#### Monday:

- Target area water cooling interlock. We learned now all how to reset it.
- DI.BHZ6034 power supply broke down. F.L replaced a capacitor.
- DR.BHZTR20+21 cycled between ON/OFF. F.L Restarted power supply CPU.

#### Wednesday:

- DR. BHZ6045 power supply broke down. F.L replaced a capacitor again.

Previous weeks we had many similar cases.

We are investigating the possibility to pulse these elements only a short time before injection. If this works we increase the lifetime of the capacitors and reduce power consumption by a factor 8.

#### Thursday night:

- DE1.DHZ65 off, can't reset. CCC called specialist. It was only a faulty connector.

#### Friday:

The deceleration efficiency between 3.5 and 2 GeV/c is only 90%. It looks like it is due the stochastic cooling pickup cryo. It is not clear who is responsible for this equipment. According to Fritz C. in the past Jan Hansen was, but he is on holiday.

### Booster (Giovanni Rumolo)

The Booster has been very well behaved this week. It was back up to operation rather quickly after Monday's technical stop and it has been delivering the requested beams to PS/ISOLDE all week long. The ISOLDE watchdog problem is fixed for the moment through a re-calibration of BT.BCT, which appeared to give too high values and would translate into an unreal loss above threshold (300e10) when compared with the acquisitions of the HRS and GPS transfos.

### SPS (Elias Metral)

The beginning of the week was devoted to the exchange of 2 magnets (QD.11310, due to a water leak, and MBB.40690, due to a vacuum leak). In parallel, 2 e-cloud monitors were installed but could not be operational for the subsequent MD: the pressure in the SPS machine in the region of the e-cloud monitors was too high to hope for a beam start in time. The origin of the problem was suspected to be water out-gassing from the Kapton sheet on the two freshly inserted liners. Possibly the Kapton was exposed to air for a too long time after bake. The section had to be reopened, the Kapton was removed and the pump down restarted. Note that during the night between Tuesday and Wednesday, the Fire brigade removed a wasp hive in building 898, which was huge but uninhabited.

The machine studies started on Wednesday by a MD on the newly installed (during the 2009/2010 shutdown) LHC prototype collimator with 4 integrated BPMs (using a coast at 120 GeV/c), which went well. It was followed by high-intensity studies on the nominal LHC cycle, which suffered from out-gassing in the regions where magnets were exchanged. On Thursday, the first UA9 run took place and it was a great success. The results of last year were rapidly reproduced and the channeling with crystal 1 was obtained in few minutes. All the new hardware was tested and was performing as expected. The IHEP goniometer was working perfectly well, with an angular resolution of 10  $\mu$ rad. The quasi-mosaic crystal 3 was easily producing channeling with a simultaneous reduction of the nuclear background by a factor of 5. The collimator and the Cherenkov in the dispersive area downstream of the crystal collimation area were producing a first set of very interesting results.

On Friday, the MD with the LHC50 beam could not take place due to another magnet problem. Large horizontal rms excursions were observed during the LHCFast1 ramp and the kicks from MICADO pointed towards the cells 206-208. J. Bauche did an inductance measurement in BA2 and confirmed the diagnostic: the magnet MBB.20750 had to be replaced which was done during the afternoon. Note that the replaced magnet has a coil displaced longitudinally on the right (clockwise) of 10/15 mm, and because of the displacement the RF contact of the pumping port 2074 could not be put in place.

The CNGS beam could only be sent on Saturday due to the fact that an access was needed to fix a horn water cooling problem.

On Saturday, the LHCINDIV instability sometimes observed during the ramp (at 1300 ms) was found to be due to a bad radial steering. Going back to a previous radial steering trim, the beam is now stable.

Two problems with transverse dampers took place during the week-end (V2 on Saturday and H1 on Sunday), which needed the intervention of R. Louwerse.

Finally, the LHC2 cycle (with multi-injections for the LHC) was checked during the night between Saturday and Sunday to be ready for the morning, but it was finally decided on Sunday to use it only on Monday.

## PS (Gabriel Metral)

User en opération: AD, EASTA, EASTB, EASTC, CNGS, LHC50, LHCINDIV, LHC PROBE, MD2, MD4, SFTPRO, TOF,

Semaine sans problème majeur Arrêt technique suivi d'un long MD, puis redémarrage de la physique en fin de semaine Plusieurs interventions sur les cavités 10Mhz. Boucle en 8 avec une réponse légèrement différente après arrêt technique.

### Lundi

Arrêt technique

Problème accès tunnels (plus accès database et TIM planté) Patrouille PS a refaire, la vidéo s'est figée pendant l'accès.

Patrouille extérieure PS

Redémarrage machine en fin d'AP

PFW ok a 20H15

Redémarrage MPS Ok après changement alim auxiliaire 15V (control thyatron)

Démarrage du MD 'fluctuation du B à l'injection ' a 21H.

### **Mardi**

2h30 arrêt faisceau : probleme avec la PFW PR.WFW

Faisceau pour AD a partir de 14H Faisceau pour EAST et TOF a partir de 16H

### **Mercredi**

Debut MD pour SPS

1H sans faisceau : remplacement d'une alim auxiliaire sur la MPS.

Problème de control du KFA45 : le reset ne marche pas depuis le programme d'application alors qu'il fonctionne en accès direct JAPC toolbox.

### **Jeudi**

La boucle en 8 a une réponse différente depuis l'arrêt technique. (elle semble avoir un retard de 500us)

LHC150 : faisceau produit a l'intensité nominale (voir Log book)

Problème avec le programme d'application EJ61 spill control.

### **Vendredi**

ras

### **Samedi**

2H30 arrêt faisceau (Cavite 91 et 71) => intervention du spécialiste.

Intervention sur C91 : acces tunel (arrêt faisceau 1h30 sauf PROBE 1H) [problème dans la distribution de puissance pour la C91 => changement d'1 fusible par piquet EN/EL]

TOF : 40mn d'arrêt faisceau en milieu de journée. Problème avec la station de refroidissement => Intervention du TI.

1H30 arrêt faisceau (cavite 91)

### **Dimanche**

Other

Le TRIM de PA.GSRPOS ne marche. (2 accès possibles pour gérer la position radiale : le GFA ou les Perturbation). De plus la fonction est de 6000ms (plus longue que le cycle)

Pas de TRIM possible des perturbations (pas d'overlap..)

Problème sur PTIMv, pas de Trim de ccv2

Samplers des alims type PFWs changés

MPS : possible incohérence entre programmation et hardware. Etat NONE =>prévoir une modification du programme d'application (Pierre) [plus d'état NONE] et voir si cote hardware si une

tempo qui copierai la mémoire tampon (stockage permanent) vers la mémoire utilisée (hardware) pourrait être ajoutée.

BFA :Modification des max value des timings contrôlant le 1er step des stairs des BFA 9 et 21 (16000 au lieu des 8000) pour pouvoir les utiliser de façon indépendante (besoin pour les études MTE)

## **ISOLDE (Erwin Siesling)**

### **GPS:**

Pb target mounted on the GPS front-end. Ment to be running with STAGISO proton beam. Successful set-up at the beginning of last week.

But: After the GLM (GPS Low Mass line for collections and implantation. Solid state physics) finished setting up with stable we noticed we did not get any beam into the central beamline anymore. Investigations pointed out that the deflector plates in the GPS switchyard do not move anymore.

As of wednesday several intervention into the GPS separator zone took place to find and solve the problem. The GPS switchyard was opened up on thursday and we found a worn pinion on the driving axe for the GLM deflector plates.

Today (monday 26th) another intervention will take place on the hardware to remove the axe and the pinion.

The switchyard is heavily contaminated inside. All interventions take place wearing protective gear and with the assistance of RP. For each intervention a RWP (Radiological Work Package) and WDP (Work Dose Planning) is done (Ana-Paula Bernardes and Luca Bruno) according to the DIMR and ALARA rules.

For the time being the GPS separator is out of order. We hope to have an estimation of the duration of the work by the end of today.

### **HRS:**

UC target mounted on the HRS front-end. Successful set-up during the week. Stable beam for REX and Isoltrap.

Proton-scan was done on thursday and Isoltrap has been taking radioactive Ar beam over the weekend, mainly for commissioning their new trap to separate isobars.

HRS will not be able to take protons during the interventions at the GPS side. We are in close contact with Isoltrap to plan the interventions the best way.

## **LHC – full details under coordination at:**

Technical stop

<http://lhc-commissioning.web.cern.ch/lhc-commissioning/>