End Week 30 (July 29th 2012) – Status of Accelerators

Statistics

nTOF: https://espace.cern.ch/be-dep/OP/PS/default.aspx

CNGS: https://accstat.web.cern.ch/accstat/statistics/charts/2012/SPS/CNGS_Target_Cumul2012.jpeg

LHC: http://lhc-statistics.web.cern.ch/LHC-Statistics/index.php

TI (Jesper Nielsen)

Full list reproduced at bottom of this report.

http://wikis/display/TIOP/2012/07/24/TI+summary%2C+week+30+2012

LEIR (Maria Elena Angoletta)

Another rocky week in LEIR county.

The Linac3 source was refilled as planned on Monday 23 and beam was available for injection into LEIR on Tuesday morning. From then onwards, the intensity available from the source was sometimes variable and low but we got also nice periods when 20 microamp were available for LEIR. A pity that LEIR often could not make use of them…

To make a long story short (or at least less long), the week had some positive results:

a) Ecooling adjusted on EARLY and NOMINAL, thus eliminating the steep loss after capture. The second injection on EARLY (added in the previous week to improve the intensity) was removed as a careful setup of the ecooling allowed to obtain the same results with a single injection.

b) LLRF setup started. In particular, we started using the adiabatic capture functionality recently introduced in the function editor and we obtained good results with it.

c) Beam (NOMINAL and EARLY beams) was delivered to PS so that the PS crew could advance with their setup. The intensities available were below nominal values for both NOMINAL and EARLY users.

d) BI changed the frontend for the tune measurement system to their new version. The validation of the new frontend was started and will be completed when beam is available again in LEIR.

On the negative side, the week was once more plagued by problems with the power converters, either concerning the remote communication with them or their functionality. Very often the beam could not be injected because of malfunctioning power converters and MDs in LEIR and/or in the PS had to be delayed or cancelled.

Just to give you some more details, it appears that the piquet PO should be called at least every 4 hours to reset several (up to 5 or 6 every time) power converters that go “incommunicado”. The situation is visible on the workingsets as several knobs get red and show errors such as “status Illegal” and “1553 RTI has nothing to send” or similar. Sometimes the status of each power converter changes from cycle to cycle on the same user, thus generating an out-of-season “Christmas lights” effect on the workingset, somehow pretty but totally un-appreciated by whoever has to control the machine.

Most of the times a power cycle (OFF and then ON) of the power converters is sufficient to restore the remote communication. Other times, stronger measures had to be used, such as with the main magnet ER.BHN that

remained “uncommunicado” (Status = ERROR, Mode = NOTHING, Control = ILLEGAL ... nice! :-)) but still working for one whole day.

However, as PIPO pointed out, the electronics doesn’t like to be switched OFF and ON several times per day, and this could impact its lifetime. So a proper solution should be found.

Functional as well as communication problems were increasingly shown by ETL.BHN20-INJ, whose malfunctioning often prevented beam from being injected in LEIR. On Tuesday evening the element cured itself (beam injected again and communication restored) after about one hour of malfunctioning and without any intervention from PIPO or others, but this lucky event never happened again.

The ETL.BHN20-INJ health steadily deteriorated during the week and by Friday evening it appeared to be pulsing (instead of being totally stuck as was the case before) but with a wrong reference (40 A instead of 194 A). There was also no way PIPO could restore the remote communication, so a local reference of 194 A was set and some weak beam could then be injected. The element was switched off for the weekend and tomorrow we’ll try to find a solution.

Next week the LEIR controls coordinator as well as the PO expert should be back from holidays. CO has already appointed a person to look at the MIL 1553 communication and several observations have already been made. It is absolutely imperative that CO and PO get together and agree on a solution to the above-mentioned problems that can be implemented BEFORE LS1 … I heard of wonderful solutions that could be implemented in one or two years’ time, unfortunately we still have this year’s run to do.

The delayed SPS ion run gives us a bit more time and it is essential we use it wisely, to avoid getting in deep trouble later on during the NA61 and LHC runs.

ISOLDE (Emiliano Piselli)

On Tuesday evening we have delivered beam to REX (BNMR experiment). Then, REX has shared beam with solid state physics users (at GHM and GLM beamlines) without any problem till Saturday morning, when we had to stop taking protons because of a vacuum problem in the BTY line (transfer line from PSB to Isolde).

In fact, on Thursday, vacuum people have reported that the vacuum pressure in the BTY line section 3 (ISOLDE) was increasing since the 24th July. On Friday, vacuum people together with RP, have decided to intervene as soon as reasonably possible in order to identify the source of the leak while the equipment was relatively operational. Therefore, considering the 48hr proton beam stop before intervention requested by RP, we have stopped the beam at 11h00 on Saturday morning.

AD (Joao Carlos Oliveira)

The week was calm. Nothing special to say.

Monday we will have an MD on the AD machine.

Booster (Jose-Luis Sanchez Alvarez)

The PSB had an excellent week, with only one major issue: Ring 1 was unstable during 2h30min. It was the distribution of the RF train for Ring 1 to the TFB (Transverse FeedBack). Action taken:: all the connectors have been replaced and the air conditioning in the equipment rooms had to be repaired.

The beam to Isolde was stopped Saturday 11am to allow vacuum leak detection in the BTY line Monday morning.

Sunday, the EPC piquet restarted the MPS (downtime 40 min).

PS (Gabriel Metral)

En début de semaine, problème avec le transfert des faisceaux entre PSB et PS. Une carte timing qui pilote les kickers d'extraction PSB a été changée.

Quelques perturbation du a la cavité 10Mhz C46

Dans la nuit de mercredi à Jeudi, le BFA9 (équipement utile au faisceau CT), fluctuait en temps de plusieurs Us. Le Piquet CO a été appelle (problème non compris)

Le DSC qui control les équipements de la ligne TT2 a été en panne à plusieurs reprises cette semaine.

Lundi

Problème avec les timings des kickers PSB (Perte faisceau pendant le transfert)

45mn arrêt faisceau EST HALL le matin (thermique interlock problème sur SMH57)

3H arrêt faisceau TOF la nuit (swipping magnet de TOF)

Mardi

Call bleus pour KFA71 il dit que tous est OK attendre pbl avant intervention.

Réglage sur la cavité C46 par Gerard après changement d'un ampli

Mercredi

Changement de l'ampli de la cavité C46 (l'ampli mis la veille perturbait le faisceau)

Ion sur D3

Problème avec les BFAs et DFA (jitter de quelques us du start de Stair 9)

call PICO qui constate, retour a la normal sans intervention…

Vendredi

Problème avec le MTG (pendant ½ H pas de faisceau produit) impossible d'envoyer un nouveau SC

Fin d'après-midi, changement de l'alimentation de DCPSFT16.

Problème à nouveau avec DCPSFT16 qui a du être reboote pendant la nuit

Dimanche

A plusieurs reprise, perte de communication avec DCPSRG1 =>Perte des faisceaux Haute intensité

OTHER

LHC_SU (32 bunch) mis à plusieurs reprises cette semaine.

Wire scanner : mesure IN et OUT ne donne pas les mêmes emittances …

PS Orbit : la mesure sur les derniers tours d'un faisceau CT bunché semble poser quelques problèmes.

SPS (Yannis Papaphilippou)

The SPS had a busy which started with a dump kicker system fault on Monday night due to a broken analogue fanout of MKDV1, fixed by the kicker piquet (3h without beam).

Beam was sent to the HiRadMat experiment on Tuesday and was continued all through the week, with probe bunches and several accesses of the experimental area team.

On Wednesday, the 12h MD took place which included Q20 50ns beam setting up and e-cloud measurements. It was abandoned in the evening due to the LHC fill preparation and several subsequent faults mainly of the MPS (power piquet had to change the voltage variation detection card of the quadrupole mains). In addition, during the night, the transverse dampers tripped and they were back operational with the help of the equipment specialist but remain in local mode. Apparently there is a controls problem that will be solved on Monday upon the return of the CO specialist.

On Thursday, an important water leak occurred at BA4, which tripped the mains, as a large amount of water was falling on magnet bus bars. All beams were stopped for more than 5h for the repair. During the evening, the magnetic extraction septum MSE418 tripped due to a mixed water problem. During the CV intervention, the ABT specialist increased temporarily the temperature interlock threshold for filling the LHC, but CNGS was cut to avoid overheating. The equipment was operational at the beginning of the night shift.

On Friday, we were prepared to send to the LHC the 32 bunches beam (produced with a batch compression), but the idea was abandoned as the beam was not brighter than the one delivered usually to the LHC. In fact, lately, all LHC 50ns beams seem to be injected with larger emittances at the SPS flat bottom. Investigations are still on-going for identifying the reasons of the blow-up.

The week-end was quite with only one fault, on Saturday evening, in one of the extraction kicker MKE modules, fixed by the kicker piquet (PFN changed).

LHC

Productive week. More details:

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

TI (Jesper Nielsen)

Monday, July 23

- 11:15 Fire alarm in UW25. The LHC is already stopped for ATLAS access. Firemen go in and find a demineralized water pump smoking. Intervention by CV to exchange the pump with a spare one. Water back on 18:40
- 23:16 US85 UPS alarms (EBS21/85 and EBS22/85). The battery breaker tripped. Need for access to investigate and switch batteries back on.

Tuesday, July 24

- CTF3 reports problem to switch lights in combiner ring hall. A new automatic system was installed three weeks ago. It should cut the lights automatically when beam is on. The system does not work any longer and it is now impossible to switch the lights off, automatically or manually. This is very invalidating for the CTF streak cameras. --EN/EL intervention planned for Thursday morning.

Wednesday, July 25

- 14:00 -- LHC access. We will send in people to US85 for the UPS batteries and to RE38 to restart the ventilation unit that tripped with the UW25 water problem on Monday.

Thursday, July 26

- 10:25 -- SPS BA4, water cooled cable leak. 5 hours lost during repair.

Saturday, July 28

- 03:00 -- Alpha stopped by local power cut. After intervention first by TI then by EN/EL it turns out the problem is on a PLC that thinks there is an emergency stop when in fact there is not. Alpha back around 13:00, 10 hours lost.
- 09:00 -- DIRAC stopped for intervention on ventilation. Back up and running 16:35
- 10:08 -- Network switch in UJ56, P2537-1-IPZ-S3C44-1 fails. LHC down. Intervention by TI. Cannot get in because the access system is linked to this switch. Door forced and switch rebooted. OK. LHC back in business 16:42

Sunday, July 29

- Beginning of the afternoon stop of CNGS. Several racks (921-S4) without power, TI went onsite with OP SPS. Found open circuit breaker. Rearmed after dividing some power plugs in the racks. All ok. Major event to come.