End Week 28 (July 12th) – Status of Accelerators

Summary

ISOLDE	See below
LINACS	
AD	Generally good week
PSB	Smooth running
PS	Smooth running
SPS	Relatively quiet week. Some problems (detailed below).
TI	Quiet week. Few events at the weekend.
LHC	See below

ISOLDE ETC (P.Fernier)

REX : stopped this week

HRS : lundi +mardi + mercredi : fin du run precedent. Mesures faites par l'experience WITCH; resultats incomplets car la cible en fin de vie a une production en baisse; resultats a discuter car jusqu'a mardi la cible a ete utilisee sur la cible et non le convertisseur, d'ou une pollution du faisceau et un comptage d'evenements sans doute faux en debut de run.

GPS : cible #404 Uc2C
Setting-up de la machine GPS et des 3 lignes utilisatrices : 1)GLM 2)RA0 3)CA0-LA0-LA1
Bonne efficacite de l'ensemble avec une transmission > 90%.
Les physiciens sont tres contents avec la qualite du faisceau, l'amelioration semble spectaculaire avec les nouveaux lasers solid-state de Rillis.

Problemes techniques : mise a l'atmosphere de la ligne RA0 pour reparation d'une MCP (Micro Channel Plate = detecteur silicium agissant comme un photomultiplicateur) puis pompage. Cette intervention n'a pas reduit le temps faisceau.
Un grand merci a H.Vestergard qui a accepte de faire une intervention vide hier soir.

Depuis hier midi nous avons des problemes avec les laser de Rillis, et depuis cette nuit la Haute Tension de Gps a des arrets frequents; intervention ce matin de H.Schipper pour un diagnostic.

AD (P.Belochitskii)

Monday
8:00 till 20:00 AD MD, problems with with extraction line transfo 7049, which sometimes work, sometimes no.

Tuesday
No problems in machine.

Wednesday
Jittering of beam ejection from AD about 40 to 80 nsec. No essential complins from users. Investigated by A.Findlay.
Stochastic Cooler's vertical predriver's down. Reset o.k.
Late evening: quench of SC solenoid of ATRAP experiment, which made required new steering of transfer line for ALPHA experiment.

Night: re-steering for ASACUSA experiment for the same reasons.

Thursday

Transfo 7049 no more works.
New steering done on request by ALPHA. Problems with usage of application program in charge of steering (will be solved next day)

Friday
Fault of quadrupole DE0.QN80 in extraction line, firstline solved the problem.

Weekend: no faults.

In general, good week for AD.

PSB (G.Rumulo)

This week the PSB has been running very smoothly.
On the good side, it is only worth mentioning that the problem with BTY.BHZ301, which would not set to the right AQN value for two consecutive ISOLDE pulses, has been finally fixed (and tested) by S.Pittet.
The LHC25 and LHCPROBE beams have been all tested before the weekend in view of the TI2 tests.
MDs on the single batch transfer PSB to PS for the 50 and 75ns LHC beams have been done.

PS (Y.Papaphilippou)

Very smooth running with no failures for the PS machine.

The only important item to mention is that on Thursday morning the nTOF beam was stopped as the shielding around the water cooling station was increased. This was the limiting factor to provide higher intensity beam as the alarm level of 3.5 mSv/h was reached with a proton flux of 5E11p/s protons (as compared to 2.2E12p/s delivered during 2000-2004). In the afternoon, a test was made by putting 7 dedicated cycles at 7E12 and 2 parasitic cycle at 3E12 in the super cycle giving a proton flux of 1.5E12p/s.
The alarm level of the radiation monitor was adjusted to 10 mSv/h in order to have an acceptable dose rate outside the increased shielding. Its reading stabilized after 45 minutes at about 9.2 mSv/h. This modification leaves margin to recover the integrated NTOF intensity which suffered due to the several nTOF stops and the reduced flux.

During the weekend the LHCprobe and TSTLHC25 beam was delivered without problem to the SPS for the TI2 injection tests.

SPS (E.Metral)

It was a relatively quiet week with beam sent to SFT (T2/4/6: 40/40/145 E11 until Thursday and then 40/30/50 E11) and CNGS. The MD cycle was used for BBLR studies during the whole week except on Friday when the MD cycle was replaced by the LHCFAST to prepare the TI2 tests of the week-end, which took place a foreseen. Below, some more details of the week are given.

On Monday, it was believed that the problems we experienced on the remote control of TBSJ.11995, TBSM.11672, TIDH.11795, TIDP.11434, TIDVG.11892 were due to a connection loss between the gateway cfc-ccr-cgtasea and the PLC plcatbba1gw as consequence of a new router installed by IT last week. When we lose the control of these obstacles we have to reboot the gateway cfc-ccr-cgtasea to re-establish the connection between PLC and gateway. Stephen Page located and corrected the issue with the cycleStamp in Rocs published data. There was a missing assignment in the adaptation between the old TG8 and the new CTRV timing. He deployed a new version of the acquisition real-time process on TU during the PS intervention for the removal of the 6th turn of the BFAs (at 14:00). The MD cycle for the BBLR meas. (MD_55_106_2009_V1) was prepared. We noticed that there was a problem with the supercycle: from trim editor it was shown that it was mapped to CNGS4 instead of LHC3. Removing it from resident and trying remapping it to LHC3 solved the problem. One has to be careful when doing a HW drive as then all the Timings NEW and LEGACY may be wrong! When we do a drive it takes the values from the Trim Editor and replace the ones from the Timings NEW and LEGACY by them. There is an inconsistency there as we should have only one of them! To be followed up. Moreover, in the Autotrim, when we try to delete only one point the application send us an error message and doesn't allow us to go further. At some point we had no extraction anymore on CNGS, and we didn't have any interlock. We checked the kicker MKE4 and it was disabled, trying to enable the extraction again we realized that the kesca4 was down. We rebooted the server. When coming back with the reboot, all the settings for MKE4 were at 0. References settings had to be reloaded from documentation. Two converters RQID.20300 and RBIV.26407 in TI2 were ok after intervention: on the first a card has been exchanged (offset problem) and on the second the water flow was not sufficient. J. Bauche correctly opened a water valve in the tunnel, which was not fully opened.

On Tuesday, few perturbations coming first from RF, a tube had to be disabled on TRX7. Then we suffered several times from cfc-ccr-cgtasea instabilities. At 14:00, we had the foreseen PS intervention to remove the 6th turn of the BFA: We checked that it was OK, comparing the numbers on the SPS page 1. A more detailed comparison between the TT10 FBCT and SPS BCT (logged in Timber) is being done. During the PS access, we took the opportunity to make some SPS accesses: access in LSS5 (for ecloud antenna, F. Caspers) and RF/ main power supply interventions. In the evening, the MD cycle was replaced by LHCFAST2 to prepare the TI2 tests of the week-end. Between 20:36 and 21:19 we had no beam (MPS & RF power) due to thunderstorms.

On Wednesday, the MD was stopped between 12:00 and 14:00 and continued until 20:00 instead of 18:00. This is the advantage of the “ppmization” of the SPS! It seems there might be a problem with the trim editor: after a certain time we are no longer able to make trims, the application complains about RBAC privileges. If we restart the application we can trim once again.

On Thursday, we had pretty stable beam conditions. As requested, the intensity sent to T6 was reduced from ~ 150E11 to ~50E11, which induced some steering in TT20.

On Friday, we were asked to change the NA sharing to 40/30/50 E11. We also had no beam between 13:01 and 14:56 due to an access to check the cooling in TED TT60. M. Donze said that they found 2 valves closed on TED in TT60. Another access was needed again in BA6 because pump tripped every time. They had to purge the circuit. There was no MD cycle, only LHCFAST to prepare/check the beams to be delivered during the WE, i.e. LHCPROBE and 12 bunches. Ilias informed us to stop CNGS on SU night. Therefore, a // MD (BBLR) was planned during the night between SU and MO.

On Saturday, a problem of blown fuse caused supply failure on a wobbling magnet of T2NR22-003 causing 45 mins of stop for SFT. A trip of chain 13 and subsequent veto on area 211 caused beam stop to compass for about 20-30 mins.

On Sunday, no beam between 11:13 and 15:17. Francesco and Etienne had to change a CO card on the MKD. This was identified because the event SX.KIKDMPCH-CTM was triggered any time. This made us suspect an RF problem, because the main fault on MKD, was "MKD No Trigger". This is why Thomas has been called too. No beam between 17:23 and 18:26 due to Mains down and trouble to restart TRX1&2. After the 3rd time that the mains tripped with a default on SMD6, we call the PO piquet to inform him. He came to check voltages on the SMD6. The situation reminded us the problems we had on the 3rd of July. We were playing the same sequence and had the same trip of the mains several times (SMD6 was found "guilty" too). Could this be that we are at the limit of the power load for this super cycle? PO Piquet changed a +/- 15V power supply on SMD6. Just before Midnight, a blow-up was observed on all the beams, the situation being worst on CNGS. The piquet low level was called and Thomas Bohl for assistance with MKD no trigger problem on LHC3. Furthermore, M1SBA2 was down and we were unable to restart it. Stephen Page was called. At 01:04, the beam was back. Stephen saw that M1SBA2 was off due to a blown fuse on the crate. Jesper went to replace the fuse and Stephen restarted the machine. We saw that the damper functions were handled by this machine, so perhaps this was causing the beam blow-up that we saw. In the meantime Thomas was working on a frequency problem for the MKD no trigger. When the beam came back we had the nominal conditions. The CNGS cycles were stopped (as requested) at ~ 01:00. At ~ 01:42, we switched to a new supercycle with an MD in: SFTLONG - CNGS1 - LHCFAST2 - LHC3. It went perfectly well for few minutes and then the LHC mastership was lost on LHCFAST2. After lots of investigation as to why we could not re-enable the LHC mastership we went back to the original supercycle SFTLONG-3xCNGS-LHCFAST2 and still not able to re-enable. Out of desperation we restarted horn and reflector as the problem seemed to arrive at the same time, more or less, when we stopped them and we were able to take mastership again....??? We added the MD cycled at the end and everything was fine like that.

During the week-end, the TI2 tests took place: extraction to TT60, dispersion measurements, screen matching studies, MKE6 kick delay measurements, kick response measurements etc.
=> Extracted intensities on LHC2 user (latest values entered in the elogbook):

- Down TI2: 8.30 e12 protons,
- In TT60: 9.72 e12 protons.

TI

Not many events last week:

- Saturday
  - 00:45, gas alarm at LHC point 5. The fire brigade can reset the alarm from the surface. Seems to have been a false alarm.
  - 03:11, electrical perturbation, instability on BE filters. TE-EPC piquet sent on site. No consequences
  - 13:30, vacuum piquet intervention on insulation vacuum UJ33
- Sunday
  - 18:24, nTOF demi water alarm (degazage trop long). Beam stop and intervention planned for Monday (today) morning

LHC (Roger)

Beam tests in TI2 successful over the weekend.

S12

Cooling down normally towards 80K

S23

Was pretty stable at 80K, but then event at the weekend. Could be vacuum degradation.

S34

Leak tests performed week 27. 3 leaks found. Fixed during week 28 (took the whole week)

S45

Warm measurements remade. Report at LMC July 15th but nothing new found.

Top 3 outliers fixed on the M3 line fixed. “Several outliers left behind” something like 12 at > 35 μΩ and up to 50 μΩ. No interventions on the M1 and M2 lines.

S67

ELQA requested last minute repairs on a splice. Unchamfered U pieces. Related to series 500 busbar repairs?

Hardware commissioning workshops

- Safety. July 23. Half day.
- Readiness for continuation of power tests. August 6..