Minutes of the 34th FOM meeting held on 07.09.2010

Agenda:

1) Follow-up of the last meeting (B. Mikulec)
2) Status of the machines (Supervisors)
3) Schedule (B. Mikulec)
4) AOB
5) Next agenda

1. Follow-up of the last meeting

The minutes of the 33rd FOM meeting were approved.

Follow-up from the last FOM:

a) Status of the PS B-field fluctuations.
S. Gilardoni reported that OP observed again a drift of the radial position at injection of the second SFTPRO in the supercycle.

b) Problem of beam synchronisation between PSB/PS. See PSB report.

c) Electron trajectory measurements in the AD e-cooler. T. Eriksson reported that the request has been made to G. Tranquille to have the measurement back in operation.

d) Status of AD bunch-length.
T. Eriksson reported that the situation has slightly improved and that the user suffering most from the too long bunch length it is not scheduled for the next two weeks. See also c).

The beam statistics can be found here.

2. Status of the machines

Linac2 (D. KUCHLER):
The pepper pot has been installed in the measurement line. Some measurements were already taken and will be analysed soon.
There were no particular problems during the technical stop and the Linac has working fine since.

PSB (J. TAN):
The technical stop finished as scheduled and without any particular problem.
The re-start was slightly hampered by problems to re-start some equipment, to reset water interlocks, to solve a problem with the QD and QD circuit and with a ground fault of the MPS.
Beams was nevertheless available at 20:00 as scheduled.

On Wednesday, there was a 30 min stop due to an access in the PS.
Also on Wednesday, some losses were observed at the extraction of the ISOLDE beams. Apparently, the RF train was shifted. The control piquet and the LLRF experts identified a problem in the RF train distribution: at the final distribution unit, the signal of train is distributed by a LEMO cable, split in two by a Y connector. One of the two ends of the cables leaving the LEMO connector was not properly terminated. The problem was solved once a dedicated cable was connected for the signal. The problem of the PSB-PS synchonisation observed last week has been also solved thanks to this intervention.

The C16 cavity of ring4 sufferes from frequent faults. A temporary fix was installed but an intervention in the tunnel to change the cavity driver is needed (see Schedule).

There were a few problems with the BWS after the filter change. The equipment specialist had to reset the hardware.

The injection distributor had a fault that required the exchange of set of thyratrons. This caused a stop of one and a half hours.

On Friday afternoon, attempts were done to increase the emittance of the LHC150 ns on request of the LHC. Unfortunately, two out of the three grids in the measurement line were not working. The specialist needs an access to fix the problem. At the same time, the BWS of ring4 was indicated to be broken by the BWS application. In fact, the resistance of the wire used by the application to check the wire integrity was not updated after the BWS exchange. After the correction, the BWS was again operational.

B. Mikulec added that all these instruments are fundamental for beam setting-up, in particular the LHC beams. An access will be schedule to fix the SEMgrid (see Schedule).

The weekend was pretty good. On Monday, there was a problem with the CNGS extraction: the synchronisation with the PS was not correct but it went back to normal after about 20 minutes without any apparent reason.

S. Hancock asked if the timing issue between PSB and the PS of last week was solved after the LEMO cable exchange. A. Findlay replied in the affirmative.

ISOLDE (E. PISELLI):

HRS: on Saturday, the FE was running with stable beam until a vacuum valve in the experimental zone closed. After checking that the vacuum levels were correct, the valve was opened manually. Later, the vacuum control expert found a damaged cable that was replaced.

On Saturday evening there was a problem with the control system. Many devices in the lines could not be reached. The controls piquet indentified a problem with an unstable PLC. The same problem appeared on Sunday, with many working sets changing suddenly their status.

On Wednesday, some of the FE acquisitions of the vacuum equipment showed the error “Failed subscription”.
The controls piquet and the vacuum controls expert were contacted to solve the problem. However, as mentioned by K. Kostro, a clear procedure will be put in place to define the expert to be contacted in case this problem will reappear. The controls piquet is not responsible for vacuum controls equipment. However, the PVSS support for the vacuum control system is done by CO. G. Vandoni is following up this matter, since the correct acquisition of the vacuum status is fundamental for machine operation. K. Kostro stressed again that CO will give full support to the control piquet experts for the PVSS system.

The HRS target was changed on Monday.

GPS: On Thursday, the faulty Faraday cup was exchanged. There was also an attempt to change the FE electrode tips. Unfortunately the robot could not be started for this operation. Finally, thanks to R. Catherall, the intervention could be done on Friday.
From Friday afternoon until Monday morning, GPS could run without [???]. The restart was possible only at about 19:00, but the target heating was powered off. The extraction line and the FE could be restarted but the extraction line went off again after five minutes. The line was restarted and went off again twice: the suspect is that the extraction line has been damaged and should be replaced.

B. Mikulec asked if the problem of the water cooling has been understood. S. Deleval replied that the cooling plants went off without any apparent reason. The plant was restarted but the reason of the fault was not understood. E. Siesling asked if the problem could be related by some air left in the circuit after the HRS target exchange.
S. Deleval replied that this could be the case but it is difficult to be sure that this would be the only cause of the failure.
S. Siesling added that problem like this should be avoided since a sudden thermo-shock can damage the targets.

L. Bruno asked more details about the failure of the extraction line. E. Piselli replied that the line cannot be heated-up any longer and that this is the line from the target to the external lines.

L. Bruno asked about the missing interlock on the target focussing mentioned during the last FOM. E. Piselli replied that an interlock is already in place to prevent the use of a wrong focussing on the target or on the converter. However, there is not interlock to prevent using a correct focussing for the converter on the target and vice-versa, i.e., there is no interlock on the beam position but only the beam waist. E. Piselli is developing a new interlock on the beam position.

L. Bruno asked about the consequences of the fault of the cooling water on the target. In particular, he asked how to prevent target damage in the case of the water plant fault.

E. Siesling replied that this situation is not clear. Unfortunately, there is a single water stations for the two targets. One has to notice that this is the first time that this failure occurs, at least in recent year.

M. Kowalska added that this case should be considered an isolated accident.
E. Siesling suggested that S. Deleval or a CV expert should be present for the next target exchange to supervise the behaviour of the cooling station.

ISOLDE users (M. KOWALSKA):
The users were happy, even with all the aforementioned problems.

HRS: REX was running for the Miniball experiment. During the technical stop, data were taken by using long-lived isotopes produced by the target irradiation done before the technical stop. This opens the possibility to have some runs offline during periods when the primary protons are not available.

On Wednesday, the run was done with middle-life time isotopes. The runs could be successfully concluded, with four different isotopes.

On Friday, users said that they were very satisfied of their run with those offline-produced isotopes. Their run was as good as with primary protons.

During the week end, stable beam was provided to commissioning a new experiment.

GPS: On Friday the tip electrode was changed but the FE voltage could not be increased to 50 kV. Fortunately, it turned out that the scheduled experiment could run with only 40 kV. The data were taken using Mg with the RELDIS laser. The results were excellent.

PS (A. GRUDIEV):
The restart after the technical stop was without any particular problem.
The beam was ready at about 20:00 onceproblems with an injection bumper and with the vacuum external conditions had been solved.

During Wednesday and Thursday, the PS delivered the beam for the UA9 experiment. One hour was lost due to an access to fix the C66 cavity.

On Friday, some tests were done to increase the transverse emittance of the LHC150 ns beam. Unfortunately, the setting up was hampered by the lack of beam instrumentation: the BWS in the ring were providing doubtful measurements, the tune measurement was not working, and the TT2 SEMgrids were not operational.
The setting up continued during the weekend with the BWS at SPS extraction being the only operational diagnostics.

During the weekend, an access was done to fix one of the 10 MHz gap relay.
Also during the weekend, the air conditioning in the central building was not available.

On Monday night, a PPM copy of the timing on a single instrument from the TOF user to all the other users resulted in copying all settings of the TOF user on all the other users. All the 1 basic period users were corrupted, including the user ZERO. Due to this, at first the PFW and the F8L were off due a too large RMS current,

blocking all the users. Then, once this was realised, the two basic period users could be delivered again whereas the recovery of the 1 basic period users started with the CO-INCA experts. In particular the CNGS and the MD4 (MTE users) could be recovered only after 6 hours. The details of the accident can be found in the slides (available here) presented by S. Deghaye. The two basic periods user were not affected because of an exception during the PPM copy. It is not possible to copy settings from a one basic period user to a two basic period user. Due to this, the PPM stopped for these user and the original settings were left unchanged. The wrong PPM copy was due to an INCA bug that was isolated.
Investigations are continuing since some problems were not understood yet, like the corruption of the SFTPRO user after 15 minutes from the first PPM copy.
S. Gilardoni added that the MTE user was could not be correctly recovered after the crash, like if the restoring of the user from the INCA database was not correct. In fact, the TT2 trajectories of the beam were different than on Sunday just before the PPM copy incident. Due to this, all the work done by the SPS crew during the weekend had to be redone.

B. Mikulec added that any change of request of the LHC beam transverse emittance should be communicated well in advance, since already the blow-up process was not easy to implement, but also it turned out to be difficult to measure due to the poor efficiency of the beam instrumentation.

S. Hancock asked why the SFTPRO was not affected by the entire user PPM copy. S. Deghaye replied that an exception of the PPM copy application interrupted the PPM copy.

S. Deghaye apologised for this unfortunate incident. He added that the long time required to recover the SFTPRO and the CNGS users were due to some problems related to specific FE.

A. Grudiev asked what the status of the PPM copy is. S. Deghaye replied that tests were done to be sure that only the requested setting are copied and nothing else. There is also an extra feature of the PPM copy: if some of the settings are not correctly copied, all the settings selected for the PPM copy are set back to the original values. This feature is related to the LHC requests. For the future, however, the PPM copy will be changed in such a way that in case of copy failure of some of the settings, the correctly copied ones are not restored to the original settings whereas the un-copied ones produces an error. Currently, it is advisable to avoid copying the entire machine settings from one user to another, but it would be better to copy the users by group of settings.

B. Mikulec asked about the status of the archives. S. Deghaye replied that currently all the settings stored in the INCA database can be driven to the hardware. However, there are still some settings that are not correctly store, in particular some GM classes like the LINC.

B. Mikulec asks how CO intends to proceed to debug the system. S. Deghaye replied that it would be necessary to check the result of every drive one by one (drive is the action to send a setting from the INCA database to the hardware).

S. Gilardoni asked if there is a control to check if the settings which are driven by the INCA database are correctly taken by the hardware. . Deghaye replied that there is no check on the result of a drive. If no errors are returned by the FEC during the set, it is assumed the setting is accepted.
B. Mikulec added that a team of PS/OP and CO should be put in place to improve the INCA status.

S. Hancock asked why it is not possible to send twice a reset to a device via INCA. This would reduce a lot the stress on high power RF equipment, since to reset them twice, the second time an OFF command has to be sent before being able to send another reset and a ON command. S. Deghaye replied that for some equipments the state of the device plus the commands are mixed in some properties, and sending twice a reset risks to change some of the states.
S. Hancock asked why it is not possible to simply write twice a given property. S. Deghaye replied that this reduce the performances of the control system. S.Hancock replied that the continuous switching ON and OFF of HV equipment shortens its lifetime.
H. Damerau added that there are also some inconsistencies between the data stored in the INCA database and the machine settings. Some of the timing trees are sometimes only half correctly updated. This causes a lot of time lost during the machine debugging and setting up. Moreover it seems that INCA cannot control all the HW settings.
S. Deghaye replied that this is a problem related to the configuration in the InCA database. H. Damerau asked how to be sure that all the necessary hardware properties are correctly declared and stored in the INCA database. S. Deghaye replied that a check should be done and that the properties have been discussed with R. Steerenberg in the past. S. Gilardoni asked about the status of the missing properties, since this was discussed already about one month ago. S. Hancock added that the list of the important RF parameters could have been made available to CO about ten weeks ago, if the RF experts would have been contacted in due time.
S. Deghaye replied that work is progressing to reduce the number of not declared properties.

EAST AREA (L. GATIGNON, mail):
“In the East Area, there is the planned interruption of EASTA, to give more cycles to DIRAC. DIRAC and IRRAD are running”.

EAST AREA USERS (H. BREUKER):
Currently there are no users in the North branch. DIRAC is thus profiting from more spills, despite the problem of the experiment DAQ.

TOF :
No report.

AD (T. ERIKSSON):
The technical stop activities were completed without any particular problem.

On Tuesday afternoon there was a problem with the oil system of one of the kickers. The pump for the oil had to be exchanged by four colleagues from BT group. T. Eriksson wanted to thank the kicker team for the intervention.

On Wednesday morning, the proton beam from the PS was with a particular high intensity, about 1.6E13. The AD also was behaving pretty well, with an extracted intensity of about 4E7 antiprotons.
On Thursday, unfortunately the efficiency already degraded.
S. Hancock added that the exception intensity in the PS was due to the fact that larger losses were exceptionally accepted for the AD beam.

The rest of the AD week was only with minor faults.
One intervention was required on Saturday when the fuse on one of the FE rack had to be exchanged. The repairing was done by the CCC crew.

AD USERS (H. BREUKER):
ASACUSA lost almost one shift over the weekend due to a problem with a power converter to decelerate the beam. This unfortunately was not communicated to the CCC crew. The expert could intervene then only on Monday.

SPS (E. METRAL):
After the technical stop, most of the SPS week was devoted to the UA9 run, to the setting up of the LHC150 ns and the e-cloud MDs.

During the technical stop, three dipoles were exchange to install new vacuum chambers with different coatings. This was done in preparation of the SPS electron cloud MD. The dipoles were not magnetically measured before installation. Just after resuming operation, the orbit was measured to compute the necessary variation of the magnetic length of the three magnets. Some of the shims had to be removed to improve the orbit. During the same intervention, two water leaks were indentified for MBB magnets. These will be exchanged during the next technical stop in week 44.

During the machine stop, a radiation survey was done in TT10 to verify the dose levels in correspondence of the hot spot. There are still more than 9 mSv/h on the wall side of the line.

Some DSO tests were done for BA7 during the UA9 run.

The physics was resumed on Saturday morning, where multibatch LHC injection was done on a new cycle. Up to 4 batches were taken from the PS.

During the weekend, the MTE beam was taken to improve the steering in TT10.

New attenuators have been installed for the orbit pickups in sextant 1-2-5. Now all six sextants are equipped with attenuators to measure the high intensity LHC beams.

S. Deleval reported that during the weekend the PLC controlling the BA3 cooling had to be switched in manual mode since the automatic system was not working correctly. The water is not any longer regulated. An intervention should be planned to fix the problem, but it would be better to do it while the machine is not running. K. Cornelis replied that this intervention is not urgent, since the not automatic regulation should only cause an important variation of the temperature during a machine stop, which is not scheduled.
The intervention should be scheduled paying attention to inform the RF experts.

H. Vincke reported that high sensitivity dosimeter have been removed from the hot spot position in TT10 and will be analyse. The results will be communicated to the FOM as soon as they will be available.

S. Gilardoni reported that the work done during the weekend for the MTE beam will repeated since lost after the user corruption (see PS report).

CNGS (E. GSCHWENDTNER):
There was an access to change some filter.

Otherwise the facility has been running without any problem.

NORTH AREA (L. GATIGNON, mail):
"The North Area started up only on Saturday morning (as planned). It went smoothly and there is nothing to report"

NORTH AREA USERS (H. BREUKER):
The UA9 run went fine. S. Gilardoni added that the run was fine but about 6-8 hours were given to the SPS-LHC, so some of the data could not be taken.

COMPASS and NA61 are running fine.

In H4 there was a pixel detector study group. Unfortunately the colleagues did not follow correctly the access procedure to leave the experimental zone, causing some problem with the access system.

CTF3 (S. BETTONI, mail):
"From a point of view of the drive beam generation during this week the factor 4 using the 3 GHz beam has been optimized in terms of the ring length (so the frequency of the recombined beam) to maximize the power produced in the PETS structure in TBTS. Streak camera measurements have also been used to measure the bunch length along the different parts of the beam train (from 12 ps to 20 ps: close to nominal). The transmission to the PETS have been also improved (from the combiner ring to the PETS in TBTS) losses of about 8 % (from 11.5 A 10.5 A in the PETS) and some more studies have been performed to improve the optics model of the line downstream the combiner ring (found possible errors in the bends model). This includes kick and dispersion measurements of the single turn extracted and dispersion and dispersion of the different extracted turns.
In TBTS the probe beam has been successfully accelerated by the drive beam of some MeV.
The recombined beam has been sent also to TBL with a transmission which must be improved. In any case some power measurements have been done. The produced power is in good agreement with the simulation assuming a form factor of 0.85.
The 3 GHz beam has been also sent to the delay loop to check the optics correction introduced in the model during the winter shut-down.
Other experiments have been performed during some lunch time and evening: CRM experiment (some scans taken) and current stability and reproducibility measurements for the implementation of a feed-forward system in CTF3.

The conditioning of the PETS structure, the recirculation loop and the accelerating structure is going quite well thanks also that we can leave the machine running during the night and the week-end. This is possible because of the supervision of the PS CCC.
A vacuum leak in the combiner ring has been found and repaired on Monday.
On Monday a MKS (MKS07) has been changed and we are presently waiting for the conditioning.
During the day of the beam in TBL (losses during the set up of the line with the recombined beam) a radiation level quite high have been measured in CTF2. The radiation people are taking care of it".

LINAC3 (D. KUCHLER):
On Monday the oven was refilled and the beam was available on Tuesday at about 12:00. Since then, the source had few trips related to the microwave. By some retuning the number of the discharges could be noticeably decreased.

B. Mikulec asked if the intensity is still enough and stable. D. Kuchler replied in the affirmative and added that, not to perturb the SPS setting up, the next refilling of the oven has been postponed from Friday to Monday.

LEIR (S. PASINELLI):
The LEIR has been running without any particular problems.

On Monday the transverse emittance device in the extraction line was repaired. Unfortunately, due to lack of communication, the BI expert was not aware that there was the possibility of an access. The intervention has been postponed, also because the intervention is possible only by accessing the PS tunnel.
B. Mikulec asked if the BI expert is on the access list. S. Pasinelli replied that the expert was not informed of the technical stop.

There were some control problems due to the 1553 loop. Some investigations are ongoing to solve the issues.
There is also a control problem related to the references: it is possible, in fact, to store the EARLY beam but not the NOMINAL. CO is also following these issues.

PS-IONS:
No report.

SPS-IONS (K. CORNELIS):
Ions should be taken starting from Tuesday for the beam setting-up.

S. Pasinelli asked to pay attention to the programming the LEIR supercycle composition. The ZERO and the MEAS cycles should be avoided. S. Gilardoni added that the LEIR supercycle should be always filled.

TI (P. SOLLANDER):
The unscheduled water interruption in the PS central building mentioned during the last FOM was due to a communication problem with the colleagues intervening for the maintenance.

On Monday 13/9 at noon there will be a restart of the TIM system. The accesses of the CPS complex will not be available for about 15 minutes.

LHC interface with injectors (M. LAMONT):
The commissioning of the bunch trains and the operation of the crossing angles started. These imply a re-commissioning of the injection and the collimation.
At start, only 4 bunches train will be taken, to go up to 12 trains.

The LHC physics should restart next week.

K. Cornelis asked if there was any feedback on the bunch satellites observed in the LHC. M. Lamont replied in the negative.

3. Schedule / Supercycle / MD planning

The 2010 injector schedule (V1.8) is available at:
https://espace.cern.ch/be-dep/BEDepartmentalDocuments/BE/2010-injector-schedule_v1.8.pdf

The SPS ion setting up will take place between Wednesday and Friday.

There will be an access in the CPS-SPS complex on Monday morning 13/9 at 8:30 for one hour to: a) intervene on the C16 cavity in the PSB; b) fix the semgrids in the PSB measurements line; c) fix the emittance measurement in the LEIR extraction line; d) intervene in the SPS cooling station.

There will be a 15 minutes un-availability of TIM system (access system in the CPS) on Monday 13/9 at noon.

All planned interventions for the injector complex are available via the on-line agenda:
https://espace.cern.ch/be-dep/FOM/Lists/Agenda/calendar.aspx.

4. AOB

5. Next meeting

The next meeting will be held on Tuesday, 14 September at 10:00 in 874-1-011.

Preliminary Agenda:

1) Follow-up of the last meeting
2) Status of the machines
3) Schedule
4) AOB
5) Next agenda

Minutes edited by S. Gilardoni