Minutes of the 21st FOM meeting held on 08.06.2010

Agenda:

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

1. Follow-up of the last meeting

The minutes of the 21st FOM meeting were approved.

Follow-up from the last FOM:

a) Status of the PS B-field fluctuations.
Analysis and measurements are ongoing. An MD will be scheduled soon to better understand the problem.

b) Check SFTPRO losses in the PSB when Supercycle changing. K. Hanke reported that the problem was solved.

c) ISOLDE dipole dropping too often. Unfortunately, even after the expert interventions, the problem is still present. Investigations are still ongoing.

d) Linac2 source intensity fluctuation. The fluctuations are still present (see Linac2 report).

The weekly statistics of the operational beams is presented in the following table:

24 May - 31 May			
	CPS		SPS
	rel	abs	abs
NORMHRS			
NORMGPS	93.07	53.76	
AD	Not available	Not available	
TOF	67.41	59.49	
EASTA	81.24	81.24	
EASTB	57.06	56.88	
EASTC	74.45	74.45	
SFTPRO	99.31	75.26	76.00
CNGS	99.78	78.01	82.00

The NORMGPS low statistics was due to the presence of the cycle in the supercycle without the request from the experiments.

2. Status of the machines

Linac2 (R. SCRIVENS):
The recovery from the last week technical stop was possible without any particular problem.
The cause of the source intensity fluctuation has been identified as the cathode circuit. The power converter and the isolation transformer have been changed, but the dips did not disappear. The next possible intervention would be to open the source in order to change the cathode. However, this would require a longer stop, as after the intervention the source will need some time to recover full performance.
For this reason, it was decided to postpone the intervention to the long technical stop in December.

During the week, one hour was lost due a quadrupole failure.

PSB (K. HANKE):
The PSB had a busy week.

During the week, a BTY transformer was not working correctly, measuring erratically wrong intensities. This was causing a wrong triggering of the ISOLDE watchdog. BI expert are following the problem.

On Friday, some investigations were done to understand the source of the high losses on the SFTPRO cycle during a supercycle change. Following a reboot done in the frame of these studies, all kickers went down for about two hours. Finally, it was found that an update library of the TG8 was the source of the problem: the telegram was issued too late and the beam could not be properly executed. The library has been replaced by an older version and a permanently solution is being studied.

The problem with the BTY.DVT212 is still present.

The LHC bam with ultimate intensity has been delivered to the PS, together with the LHCINDIV and PROBE.
The production of the LHC150 is progressing well. The beam has been archived on the LHC75 user.

An MTE beam has been produced up to 2.7e13 with transverse emittances of about 12 mum (1 sigma, normalised) for the horizontal plane and about 7 mum (1 sigma, normalised) for the vertical plane.

ISOLDE (E. SIESLING):
GPS: Last week there was a successful run for a biophysics experiment. The STAGISO beam was regularly used.
There were two problems. The first issue was related to the erratic watchdog triggering due to the problem related to the BTY transformer (see PSB report). The second one was due related to the control of the vacuum system. This, however, is related to the fact that the system is new and still in commissioning phase.

On Wednesday, the target exchange was difficult due to a problem with the PC controlling the robot. The problem could be solved by the CO experts.

The setting-up of REX with stable beam was started.

HRS: The FE was running for the COLLAPS experiment with the RELDIS laser.
On Tuesday, the communication with the control system of the RFQ was lost. The problem was solved by moving the system from GM to FESA.
On Saturday, the transmission efficiency of the RFQ dropped to 2%. The beam was retuned to recover the 60% usual efficiency.

D. Voulot reported that the tuning of REX is progressing, in particular of the low energy part. The Linac was running without problems.

ISOLDE Users (A. HERLERT):
The users were happy.

PS (R. STEERENBERG):
Last week was a rather busy week with technical stop, MDs and many different issues.

During the MD all PS physics beam were provided with only minor interruptions.

On Tuesday around 19:30 different beams started becoming available after the technical stop. By 20:00 all beam were available and minor adjustments to reduce losses followed.
Initially after restarting the MPS it tripped several times as the B-train, used for the regulation did not rise. After several resets and verification on the MPS equipments during which nothing abnormal was found the MPS was restarted and the problem disappeared. When the AD cycle was put in the super cycle the MPS tripped again, but this time because the regulation could not follow the reference. The reason was a corrupted GFAS on the PFW-FN. The function was sent again and the MPS could be restarted again without problem.
The corruptions of the GFAS functions are happening regularly and are not always easy to diagnose.

Some relevant results from the technical stop:

- as reported in the last FOM, the vacuum intervention foreseen on SEH23 did not take place as the leak had disappeared;
- the e-cloud detector in SS84 was realigned and had to be moved 2.5 mm upwards. After resumption of the beam production the voluntary vertical bump downwards could be removed and the losses observed before the realignment had disappeared;
- the BLMs that no longer gave signals were repaired. R. Steerenberg added that all the problems but two were cable issues. This is quite worrying since it could be related to radiation damage. K.Hanke asked the BI colleague present at the FOM (J. Tan) to check if the BLM renovation program, foreseen after 2012, will include the cable exchange. R. Steerenberg added that all the BLMs were tested and calibrated during the last technical stop. A. Bland added that during the renovation, also the online BLM video signal will be changed.
  H. Vincke added that the damage of the cables could also be caused by the inspection of the cables itself. Typically the irradiation of the cables produces

a lot of radicals. Touching the cables during the inspections makes that some oxygen can reach the radicals. The oxides produced in this way weaken the cables, causing mechanical damages which appear few hours after the inspection;

- the RF by-passes were verified, in particular if they suffered from a too high temperature. The highest temperature measured by the thermal stickers attached to the by-passes was ~45 degrees, which is considered fully acceptable;

On Wednesday there was an MD on the injection kicker short circuit mode, with the aim to evaluate the increase of the transverse emittance of the LHCPROBE beam with increased kicker ripple in view of the PSB energy upgrade. This first MD was followed with the MD on the ultimate LHC beam for which the PS extracted 72 LHC 25 ns bunches per cycle with 1.8 10^{11} protons per bunch. The transverse emittance was ~ 5 mm mrad at 1 sigma.

In view of the ion run starting this summer, the PS sublimation system was started and the filaments will be out gassed per group in order not to degrade the vacuum.

Work on the MTE continued with statistics measurements over night and the next day.

A test in collaboration with the EPC group was made to get the sampler acquisition of the new power converters synchronised with the CO C-train. The solution works and will deployed during the next technical stop on all new style power converters.

On Thursday the new GFA/function editor was installed in the working set with the old GFAs editor still available in view of the INCA deployment foreseen for 30 June. At 22:30 the C40-78 did not work and was replaced by the C40-77.

On Friday the BBQ was repaired as the excitation strength table was corrupted.

On Saturday at 18:25 the LHCPROBE beam was no longer extracted with the correct longitudinal structure. The C40-77 did no longer pulse and the C40-78 was already not available. The specialist was called. H. Damerau and E. Jensen intervened to repair the C40-77 cavity. The LHCPROBE beam was available again around 21:00. In order to avoid this problem again, A. Marmillon was asked to come and repair the C40-78.

On Sunday there was a problem with the SMH42 for which the piquet power was called, but the problem disappeared without intervention. After that, a second period of problems appeared and the piquet power was called again in the afternoon and changed an electronics card, after which the SMH42 worked correctly. However a third intervention was required just after midnight where a cable was disconnected and reconnected. The SMH42 pulsed normal again and was surveyed for some time.

The whole week nTOF was hampered by transformer problems on which BI is working, but no final solution has been found until now. There are an old and new electronics attached to the transformer and it was decided in agreement with BI that

the efforts should be concentrated on the new system as it will become the default system for the TT2 line.

The kicker real time task was changed to avoid beam losses at SPS pulse stop/start.

K. Hanke asked about the status of MTE. R. Steerenberg replied that the investigations on the spill fluctuations are still ongoing. S. Gilardoni added that the program foresaw to send regularly the beam to the SPS on a CNGS cycle. However, due to the injector problems before the technical stop, the long radiation cool-down time required before the technical stop, and the long MD afterwards, it was decided to replace for a short period the MTE cycle with a normal CT to recover some CNGS intensity. The MTE cycle is limited to an intensity of 2.1-2.2E13 p/extraction, whereas the normal CT can go up to 2.4-2.7E13 p/extraction. In the meanwhile, a single MTE PS cycle is used for the investigations on the spill fluctuations.

K. Hanke observed that the transformer problem seems to becoming a general issue for the complex and the renovation should take place as soon as possible.

EAST AREA (L. GATIGNON):
The recovery after the technical stop and the MD was pretty smooth.
There is still a very small water leak on the MNP23 which is not considered a problem.

CLOUD will start the data taking.

EAST Users (H. BREUKER):
The users are happy.
In T7 everything is fine.

DIRAC is in excellent shape. The experiments improved the detection efficiency thanks to the new electronics.

In T9, the CMS pixel telescope tests have been extended by one week.

In T10 NA61 finished the run and ALICE is going to start the test beam.

CLOUD will start on Tuesday.

TOF (H. BREUKER):
Despite the problem with the intensity measurement, the run is progressing well.

On Monday the experiment was in access due to some interventions on the detectors.

AD (T. ERIKSSON):
The AD suffered had a very busy week.

On Tuesday, the restart after the technical stop was delayed due to a problem with an emergency stop in FTN. An access was needed to reset the button. Later, the mechanical movement of the stochastic cooling pickup was out of control.

Unfortunately, since this happen late in the night, the specialist could not intervene and the problem could be fixed only on Wednesday morning.

Then, a series of minor problems hampered the operation basically continuously until Monday. The piquet control as Firstline had to intervene at least ten times on different equipments, with the AD supervisor basically always on site.

The beam could be delivered quite often to the users but unfortunately with a poor quality.

There was also a database problem causing a malfunctioning of the program for the switch between the experiments.

Since Monday, the situation improved. The only problem still unsolved is the bunch length of the extracted beam.

K. Hanke asked if all these problems have a common source. T. Eriksson replied that they are unrelated.

AD Users (H. BREUKER):
The users suffered from the various failures.

The ATRAP run is progressing well.

Concerning ASACUSA, due to their internal schedule the Danish group is now completing the setting-up.

SPS (E. METRAL):
The SPS recovered well after the technical stop and the two days of MD.

During the technical stop, a radiation spot in TT10 was found. Investigations to identify the source are ongoing, but the main reason seems to be a bad and uncorrected beam trajectory at that particular point. J. Wenninger is investigating the issue.

During the MD, the LHC ultimate intensity beam was taken for the first time this year. Whereas the beam was in good shape in the PSB and the PS, in the SPS the transverse emittance increase was still too large. The longitudinal emittance was about fine. The setting-up will require further studies.
The SPS cycle has been modified to increase the flexibility of the supercycle composition. The MOPOS were disconnected to avoid damaging the electronics. The observed fast BCT saturation was solved.
One batch of 1.5E11 protons could be accelerated, but with a noticeable increase of the transverse emittance from 5 mum (H, V - 1 sigma normalised) to 8 mum vertically and 10-15 mum horizontally.
Due to the temperature increase of the MKE, the injection was limited to three batches.

A part of the MD was also dedicated to the new control system of the scrapers.

The SFTLONG cycle flat top has been prolonged by 19 ms to have the same ramp down on all the cycles. In this was the subsequent CNGS cycle is now magnetically the same as the following ones.

North Area (L. GATIGNON):
The recovery from the technical stop and the MDs went fine.
A known problem with the access system reappeared.

A radiation alarm was triggered by a too large intensity requested by the H2 users.

North Area Users (H. BREUKER):
The problem on the H6 access system was due to a bad contact. The problem with the H4 access system is still under investigation.

There was a cooling problem for H8, also in the control room with the electronics racks. A portable ventilation system was installed as temporary solution.

On H2, the CMS pixel test beam is using the M1 magnet, so far without magnetic field. Apparently the pion focussing is not the correct one; the focal point of the beam seems to be 200 m before the design point.

Some mechanical work was done to install the spare ECAL barrel.

CNGS (H. BREUKER):
CNGS is running well.

ICARUS detected the first track produced by the CNGS beam.

S. Gilardoni added that the MTE beam at the SPS was not delivered regularly last week to optimize the integrated intensity given to the CNGS after the different stops of the injector complex.

CTF3:
No report.

LINAC3 (R. SCRIVENS):
The Linac was restarted on Monday for the desorption experiment, but it had to stop because the temperature in the building was too high. The air conditioning had been stopped for some interventions. The Linac was finally restarted on Wednesday but the source was less stable than compared to the first desorption run. Beam scrubbing was finished on Monday (7.6.) morning.
Currently, some interventions are taking place in the low energy line. Corrosion has been observed on the inner part of the spectrometer vacuum chamber. This is probably due to the oxygen beam hitting the chamber. The surface will be cleaned manually while the permanent repair will be done after the LHC ion run. The source plasma chamber was changed. The Linac is currently stopped.
E. Mahner wanted to thank R. Scrivens and D. Küchler for their excellent support and commitment during the desorption tests.

TI (P. SOLLANDER):
Nothing special to report.

LHC interface with injectors:
No report.

3. Schedule / Supercycle / MD planning

A new version of the 2010 official schedule (V1.7) is available at:
https://espace.cern.ch/be-dep/BEDepartmentalDocuments/BE/2010-injector-schedule_v1.7.pdf

This new version of the injector schedule will be explained in detail by M.Lamont at the next FOM meeting.

H. Breuker asked about the technical stop durations in the new schedule. E. Metral replied that the durations are still not confirmed as the LHC schedule is not completely defined yet.

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, 15 June at 10:00 in 874-1-011.

Preliminary Agenda:

1) Follow-up of the last meeting
2) Status of the machines
3) Schedule
4) Special topics: CTF3 status and planning.
5) AOB
6) Next agenda

Minutes edited by S. Gilardoni