Minutes of the 17th FOM meeting held on 11.05.2010

Agenda:

1) Follow-up of the last meeting (K. Hanke)
2) Status of the machines (Supervisors)
3) Schedule (K. Hanke)
4) Special topic: Incident on SPS QD mains (K. Kahle)
5) Special topic: Report on the PS radiation survey after the first MTE-CNGS run (G. Dumont)
6) AOB
7) Next agenda

1. Follow-up of the last meeting

The minutes of the 16th FOM meeting were approved.

Follow-up from the last FOM:

a) Status of the PS B-field fluctuations. Yesterday M. Buzio presented an overview on the measurements that have been performed. Also yesterday, additional measurements were undertaken to try to find a correlation with increased losses at septum 16. This correlation still needs to be confirmed.

b) Send activities for the next technical stop to the machine superintendents. Ongoing. A first draft for the interventions will be presented during the next FOM.

c) EAST area magnet water leak status. See report from L. Gatignon under East Area.

d) Linac2 source intensity fluctuations. The fluctuations are still present and not yet understood.

The weekly statistics of the operational beams (relative and absolute availability in percent) is presented in the following table:

3 May - 10 May			
	CPS		SPS
	rel	abs	abs
NORMHRS			
NORMGPS			
AD	Not available	Not available	
TOF	No Data	No Data	
EASTA	No Data	No Data	
EASTB	No Data	No Data	
EASTC	No Data	No Data	
SFTPRO			
CNGS	98,83	90,78	85,00

2. Status of the machines

Linac2 (G. BELLODI):
Smooth running throughout the week. The source dips are still present and their origin not yet understood. Additional investigations will be done during the next technical stop.
During the weekend, the Linac2 tank1 went down three times with a cavity vacuum fault. Still the vacuum level was OK and the RF cavities could be reset remotely. The vacuum specialist diagnosed on Monday that the problem was linked to the pumps interlock cables. During the next 1h stop the interlock cables will be exchanged and connected differently; in the meanwhile a reset can cure the problem.

PSB (B. MIKULEC):
On Tuesday the GPS and HRS lines were set up and alignment of the beams on the targets was optimised. An interlock on the bending magnet BTY.BHZ301 avoided sending the beam to HRS Tuesday evening, which could be cured by the specialist Wednesday morning.
Apart from 2 resets of the recombination kicker BT.KFA20 and an addressing problem of 3 ISOLDE quadrupoles (still controlled via CAMAC; second time this year), the week was absolutely calm.

Concerning beams the setting up of NORMGPS and NORMHRS including final steering could be finished and the beams archived.
Comparative transverse emittance measurements with wire scanners and SEM grids were done with a MD version of the ultimate LHC beam and in addition with NORMHRS over the weekend; the measurements yielded differences in the normalised emittance values up to 20% depending on the ring and wire speed, and for smaller beams up to 23%. There seems to be a calibration issue with the wire scanner measurement at 15 m/s for ring 4 horizontal and ring 1 vertical. BI has been informed.

ISOLDE (E. SIESLING):
Between Monday and Wednesday the lines were set up to the ISOLDE SEMgrid target. Beam shape and position were fine.

GPS: As of Wednesday target development tests were performed on GPS, which did not yield the wished results. From Friday afternoon and during the weekend target tests continued with protons, after which solid state physics took over with implantations at GLM.
On Friday night the GPS high voltage stopped working, which meant that no beam could be extracted anymore. The problem (a loose contact in a Burndy connector of the power cable) could be repaired by J. Schipper, who came in on Saturday.
On Sunday afternoon the vacuum stopped in the GLM line for unknown reason. It was only possible to manually open the valve. The problem was related to a faulty Pirani gauge.

HRS: When starting pumping the HRS target on Thursday, all vacuum in the facility dropped out due to pumping on a leak. This was due to filling up the exhaust system too rapidly. An alarm has been implemented on the specific sectors by S. Blanchard to prevent this from happening again. The HRS target was de-coupled twice, after

which the leak disappeared. This should be closely surveyed during the next target change.

Despite the problems it can be considered a good first week for the facility after the large number of major changes that have been implemented during the shutdown.

ISOLDE Users (E. SIESLING in the absence of the physics coordinator):
Biophysics is running.
The ion source development run was not very successful, but data has now to be analysed.

PS (R. STEERENBERG):
Last week was a rather good week. More and more beams reach their final setting up phase as many of the experiments start taking beam. The East Area is delayed until the 19th of May because of the magnet replacement in the primary beam zone, and nTOF will start on Monday 17th of May as foreseen.

The LHC has been taking predominantly the LHCINDIV beam, which has a good availability and of which the beam characteristics are well monitored and maintained.

During the whole week the MTE extracted beams for fixed target physics setting up and CNGS neutrino production were provided to the SPS. The fixed target beam at 1.6E13 is rather stable. However, the beam for CNGS suffers from more important losses as a consequence of the periodic instability that is still under investigation. On Thursday morning during a planned access the radio protection technician made dose rate measurements around the SMH16 and found high values. At the same time they had a quick look around the machine and found that everywhere else the dose rate is lower than usual. This result confirms the prediction of running with MTE extraction. All the losses are now concentrated on SMH16. To these intrinsic losses one has to add the extra losses due to the periodic instability and the setting up. Discussions on how to proceed with MTE and the SMH16 activation are ongoing. In parallel to the normal MTE operation another MTE cycle on MD4 was successfully set up and used to make the RF multi-harmonic sources active on the beam control in view of being able to use the 1-turn delay feedback to stabilize the beam better longitudinally.

Tuesday:
· At 18:15 the 10 MHz cavity C66 did not pulse correctly anymore and M. Haase was called in. In the meantime the cavity was replaced by C11. About 30 minutes later the C66 was available again.
· Around 21:00 the extraction kicker KFA71 had many of its modules in fault. Resetting them made the kicker available again. About 30 minutes later the same situation reoccurred; again the modules were reset together with the reboot of the dcpsk71.

Wednesday:
· At 01:00 the C51 had to be reset, but this was unsuccessful. It was therefore replaced by the C11. Early in the morning, around 7:30, G. Lobeau fixed the C51, which then replaced again the C11.

· E. Effinger checked the electronics for the broken BLMs (10, 21, 53, 62, 68, 83, 94). All works well, so the problem seems to be in the tunnel. This most probably will have to wait until the next technical stop beginning of June.

Thursday:

· At 7:30 after agreement with the LHC operations team, all beams in the PS were stopped for cool-down prior to the planned PS access to repair an emergency button on a magnet towards the East Area.

· RP made dose rate measurements around the SMH16 and found an initial dose rate after the beam stop of 42 mSv/h and 31 mSv/h after 140 minutes. At the same time RP found a very clean machine in all the other straight sections apart from the injection septum 42, where they found 7 mSv/h after the beam stop.

· During the night the injection on the MD2 user (CNGS beam) was optimised, but the BLM's still showed slightly high values; further optimisation will continue.

Friday:

· Around 11:00 the SPS complained that the MTE was in a bad shape on both the SFTPRO and the MD2 users. The transverse damper was down and after resetting it, it tripped immediately on over-current on the amplifiers. A. Blas, the transverse damper specialist, was called for help. Later the BBQ was found to be active on the ZERO user. Disabling the BBQ on the ZERO user and resetting the transverse damper normalised the situation again. It caused in total nearly 1 hour downtime as the SPS could not accelerate the beam with these losses. The PS crew will ask for a warning in LASER when the BBQ is active on a user.

· Around 14:50 the piquet power was called for the ejection bump BSW16-14, which was not pulsing and therefore caused important losses. After about 30 minutes the bump power converter and beam were back again.

Saturday:

· Around 21:20 the cavity C96 went down. After reset it went back on, but did not stand the required voltage. G. Lobeau intervened after agreement of RP to change the gap relay. The fire brigade did no longer want to give the RP piquet number, but they called the RP piquet and transmitted the information. This is considered not very efficient and constructive, and R. Steerenberg will try to discuss the situation.

Sunday:

· Around 12:00 the cavity C66 went down and was replaced by C11, which again remained blocked at harmonic 8.

· M. Haase was called and repaired the C96, while Heiko Damerau intervened on some cabling and replaced an OR gate module. After these interventions the C96 worked well and the C11 followed the harmonic program.

Monday:

· The power converter F16.QFO225S had an earth fault problem, which was repaired by the piquet power, but nevertheless caused a down-time of 1h15.

· Around 21:30, the 80 MHz cavity in SS88 tripped on an unresettable fault and was replaced by the one in SS08, awaiting the repair of the C80-88.

EAST AREA (L. Gatignon):
The facility has not yet started due to the MNP23 magnet problem. The magnet repair could be completed last Wednesday, after which a test program of 1.5 days followed. On Friday afternoon it was installed in the East Area. Currently the closure of the roof is ongoing and should last until Wednesday next week. Access tests will most probably also happen then, which would mean that first beam to the facility could be sent on Wednesday 19th according to the revised schedule.

EAST AREA Users (H. BREUKER):
There has been a small misunderstanding with the ALICE Tof users; they installed their equipment on Friday as they believed not to be affected by the magnet problem. Otherwise there is nothing special to report.

AD (T. ERIKSSON):
The last week was dedicated to set up the machine with special attention to the low energy part and the extraction line. Fewer faults appeared, which is a good sign. After the beam permits were signed, physics started yesterday at 7:05.
Small issues: The main power supply for the bending magnets dropped out frequently, and occasionally bunching failed.
The production beam from the CPS showed consistently good quality.

AD Users (H. BREUKER):
ALPHA started on time.
ASACUSA is also already online in the same configuration as last November, hoping to confirm an anti-hydrogen trapping signal with their trap. The tracking chamber still needs to be installed.

SPS (D. MANGLUNKI):
In addition to CNGS production, the SPS has been delivering beam to the LHC.

Setting up of the slow extraction to the North Area started. The slow extracted beam has been given on Thursday and Friday to EN/MEF for setting up the secondary lines, and then turned off for the weekend. The machine was ready for physics start-up yesterday.

On Wednesday at 11:00 the mains tripped several times, causing a total breakdown time of about 4h40. The SMQD power supply had to be replaced with its spare; it is being repaired and will be put back in operation on Wednesday morning (12th). A stop of 1.5-2h is required. See special topic and Schedule.

On Thursday morning there was a machine stop. Due to a longer CNGS stop, the RF high-level team took the opportunity to exchange some tubes on TRX6, while TE/EPC worked on the MSE4 (ripple on septum).

NORTH AREA (L. GATIGNON):
The beam lines start up as soon as the users are ready.

Beam has been sent to COMPASS without problems. In the M2 beam line for COMPASS the rectifier NR11-123 stopped working on Monday. It controls a magnetic shielding magnet, not critical at this stage. The fault was traced back to an

electrical board ERD61, which also affects at least 8 other rectifiers in building BA81. The repair takes between 1-2 hours. Therefore it was decided to postpone the repair to the next 2-hour SPS stop. A natural occasion seems to occur on Wednesday 12th of May at 10am (see Schedule).

The H2 line still requires some DSO tests. These will take place coming Monday. The exact time has to be defined by the DSO responsibles; there will be no beam to the North Area during that period.

NORTH AREA Users (H. BREUKER):
COMPASS started detector commissioning with beam. The first spectrometer magnet has been powered yesterday and will be followed by the second one tomorrow.
H2: NA61 people are preparing the run.
H4: CMS ECAL is present, and the users wanted to take beam last night.
H6: The Silicon Linear Collider R&D detector is installed.
H8: The telescope still needs to be installed as well as the 2nd TOTEM T1 spectrometer.

H. Vincke mentioned some reservations on the RP signature for the beam permit of the North Area. There seems to be some confusion maybe related to the fact that an old paper form had been used, but K. Cornelis confirmed that all signatures were present. The confusion seems to be related to the question if S. Roesler had also signed the North Area permit (he has signed for sure the TCC2 beam permit). This question will be clarified after the meeting between H. Vincke and K. Cornelis.

CNGS (E. GSCHWENDTNER):
The CNGS facility requires an access tomorrow. Beam to CNGS will be stopped between today at midnight until Wednesday after the intervention.

CTF3 (D. MANGLUNKI):
The facility is still down.
Tomorrow the new schedule will be presented to the IEFC. The plan is to have the beam permit signed by mid-June.

TI (E. LIENARD):
There is nothing to be mentioned except for the problems described under 'Special Topics'.

LHC interface with injectors (M. LAMONT):
The LHC has been running over the weekend and is preparing to step up the intensity for stable running with 4 bunches over the coming long weekend.
The required beam will be LHCINDIV.

3. Schedule / Supercycle / MD planning

The current 2010 official schedule (V1.6) is available at:
https://espace.cern.ch/be-dep/BEDepartmentalDocuments/BE/2010_injector_schedule_v1.6.pdf

nTOF physics will start on the 17th of May and the East Area on the 19th.

There will be a technical 2h-stop tomorrow morning at 10am for the SPS intervention.

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. Special topic: Incident on SPS QD mains (K. Kahle)

K. Kahle explained the incident on the SPS SMQD mains; the slides are available at https://espace.cern.ch/be-dep/FOM/Presentations%202010/05-11-2010/QDmains6mai2010.pdf.

On Wednesday 5th of May a trip occurred on the SPS mains. The incident happened in three stages:

11:02: SPS normal operation, then over-voltage trip of SMQD. It was reset in the CCC and the power converter re-energized at 11:06.

11:06: Following energization, the SMQD tripped again (ripple, over-voltage). There was no trip on secondary over-current of SMQD. The related SVCs BEQ1 and BB3 also tripped due to network unbalance. It was thought that there was a problem with SVC BEQ1. Verification of SVC BEQ1 took place.

14:15: Re-energization of SVC BEQ1 and BB3. Re-energization of SPS mains. Following energization, another trip of SMQD (and SVCs BEQ1 and BB3) occurred.

The question here is why the SMQD over-current protection did not detect and react to the over-current. The 18 kV SEPAM in the BE substation had also tripped on over-current, but the reset was not coordinated between EL and EPC. The circuit was most probably switched on twice on a short circuit on SMQD.

After the fire brigade arrived in BA3, the damage of the circuit was established. The consequences are that thyristors and thyristor switches will have to be replaced as well as damaged cables. As an immediate action the SMQD power supply was exchanged with its spare, and the SPS could continue operating from 15:35.
Recording of the 18 kV bus voltage in the BE sub-station during the final short circuit showed a 3-phase short circuit during 320 ms.

As a conclusion, the repairs are ongoing. The SPS will have to stop tomorrow at 10am for at least 1h to allow re-installing and testing the repaired SMQD. During the upcoming technical stop, all secondary over-current protections of the mains will be tested in all BAs.
A major event report is under preparation.

5. Special topic: Report on the PS radiation survey after the first MTE-CNGS run (G. Dumont)

G. Dumont reported on radiation measurements on the septum 16. The already high level of radiation increased with respect to last year. A survey in the tunnel yielded ~42 mSv/h, approximately a factor 10 higher compared to the end of last year. An interpolation towards the end of 2010 would therefore result in ~100-150 mSv/h on the septum, which in return would mean an unacceptably long cool-down time between 30-50 days in case of a required intervention. These values are of course also an issue for the equipment in the proximity of the septum.
During an intervention on the fire detection system, 1 mSv/h has been measured at the door (the septum showed at that time a radiation level of ~16 mSv/h).
The losses lead also to increased radiation levels at the surface.
T. Otto will present the findings tomorrow during the IEFC, where different operational modes will be discussed and actions proposed.

6. AOB

7. Next Meeting

The next meeting will be held on Tuesday, 18th of May at 10:00 in 874-1-011.

Preliminary Agenda:

1) Follow-up of the last meeting
2) Status of the machines (Supervisors)
3) Schedule
4) Special topic: Draft list of interventions during upcoming technical stop
5) AOB
6) Next meeting

Minutes edited by B. Mikulec