

Minutes of the 16th FOM meeting held on 07.07.2009

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 15th FOM meeting were approved.

Open actions from last FOM:

- a) the problem with BTY.BHZ301 is still under investigation;
- b) the calibration of the AD extraction transformer is now correct;
- c) the transverse PU of the AD stochastic cooling did not block again. M. E. Angoletta added that F. Casper is trying to optimise the cooling;
- d) for the beams requested for the TI2 tests, the injectors should prepare: LHCPROBE and LHC25 with 12 bunches with intensities of 1E10 to 5E10 per SPS bunch. The supervisors should check that the beams are ready and within specifications.

2. Status of the machines

Linac2 (D. KUECHLER):

On Tuesday large losses were observed on the TOF beam. This was due to the timing LX.WBHZ10 found enabled. By enabling this timing, the BHZ10, even with a CCV at zero current, was kicking sufficiently the beam to produce losses. After disabling this timing the losses disappeared.

On Wednesday during the router upgrade small power glitches caused RF trips.

PSB (K. HANKE):

Early in the week, the C02 cavities went down for all the rings. Eventually the problem could be solved for all the rings except ring 2. Beams were then produced using the other rings with the intensities per ring adjusted to compensate, at least partially, for the missing one. The cavity of ring 2 was fixed on Thursday. The specialist had to access the ring to repair a gap divider. On Wednesday the recombination kicker tripped and 2 hours of run were lost.

The extraction trajectories of the LHC25 beam were thought to be wrong. In fact, it turned out that the setting of the PU gain in the application showing the trajectories were in manual mode, i.e. the trajectories were correct, but wrongly displayed.

Intensity fluctuations were observed first on the EASTB user and later also on other users. This was due to a fluctuation of about 5 Gauss on the MPS, solved by changing a thyristor on Group 5.

On Friday, the beam for the SPS impedance measurements (MD3) has been delivered to the PS.

The preparation of the LHC75 single batch PS injection beam is progressing. The staggered ISOLDE beam has been prepared and used.

ISOLDE (E. SIESLING):

ISOLDE had a busy week. On Tuesday there was a double target exchange. GPS started with physics on Tuesday. The new interlock implemented by E. Piselli has been working correctly also with a STAGISO beam. The collection on GLM was fine. A small vacuum problem appeared on GLM on Sunday and could be solved. On Sunday night, a target development experiment started. Since Monday, a UC target has been installed.

On HRS, stable beam was delivered until Wednesday, when a fuse of the humidifier broke and the resulting moisture in the frontend Faraday cage caused a short. The beam could be taken again on Friday. The run during the weekend was fine until the RFQ tripped. On Monday morning a Faraday cup remained blocked in the beam. After the removal, it was decided that the cup would not be used again during this year, in particular because the zone is too hot to repair it. The RFQ suffered from controls problems, solved later by CO. Then the helium pressure had to be adjusted.

F. Locci mentioned that the CO problems were related to the database improvements done the 20th of June. At that time, it has been decided to move the configuration database from the test one to the operational one. Unfortunately, some equipment in the complex were lacking correct configuration, with problems showing up in many PLCs in the entire CPS complex. On Saturday the RFQ tripped with a vacuum problem; all the RFQ valves suddenly closed and only on Sunday evening running conditions could be restored. Unfortunately the problem reappeared on Tuesday.

For REX there are some problems of the control of the low energy part. K. Hanke added that the controls in general will be consolidated.

For the scanners, BI and OP decided that measurements should be reduced from 15 to 10 minutes to preserve their lifetime. K. Hanke added that the scanners are discussed since long time in the ISOLDE technical meetings. A new mechanical design will be investigated for the future, but in the meanwhile at least their usage will be reduced.

ISOLDE users (A. HERLERT):

The GPS users are happy since they had a good run. For HRS, the vacuum problem caused the stop of the tests for the new target. The data taken are not conclusive and the run cannot be rescheduled.

The GPS users would like to be informed about eventual change in the supercycle composition, in particular if the position of the NORMGPS cycle gets changed. R. Steerenberg mentioned that this can be difficult since there will be four days of MDs, during which the SPS will be the master of the supercycle.

PS (R. STEERENBERG):

The PS had quite a good week, with only minor problems. On Tuesday last week the super cycle was short and there was an attempt to increase the number of TOF cycles and therefore the number of protons per second to nTOF. Unfortunately there is a limit at a flux of $5E11$ protons per second due to a radiation limit of approximately 3.2 mSv/h on the cartridge of the water

cooling station. In the past, with the old target configuration, this limit was beyond a protons flux of $2.2E12$ protons per second, more than a factor 4 higher. Since nTOF was started later than planned due to several stops because of accelerator related problems and to assure correct sealing of the nTOF zones, an increase in flux is needed in order to be able to reach the committed integrated intensity of $7E18$ at the end of the 2009 nTOF physics run. Extra shielding will be installed to attempt an intensity increase. On Tuesday afternoon the DIRAC beam was perturbed for a few hours as the ZT8.BHZ01 power converter pulsed wrong on the first EASTB cycle in the series of 5 EASTB cycles. The piquet first line solved the problem late afternoon. On Wednesday at 8:00 the PS dedicated MD started, using the injection SEM-grids with the new control, FESA classes and application software. This was successful until the grid in SS48 stopped providing data in the afternoon. The problem was traced back to a bad connection, but this remains to be confirmed. The MD could not be concluded. During the morning the nTOF crew entered the primary beam zone in order to increase the sealing, as there was no beam in TT2. Between 15:00 and 17:00, there were only ZERO cycles in the super cycle with as few equipment as possible pulsing for the TechNet router upgrades. The internal dumps worked badly and an intervention on the PLC configuration had to be done. This problem was a dormant problem that became apparent after the router upgrade. It has now been solved by the PiCO, but a definitive solution has to be put in place by the equipment specialist. On Thursday work was done on the EASTB extraction in order to improve the spill structure for DIRAC. This was in part successful as the spill structure improved, but the S/N ratio degraded slightly. The latter will be improved over the coming days. DIRAC also complained about intensity fluctuations, ranging from $5E10$ up to $1.5e11$. Yesterday after an intervention on the PSB MPS the fluctuations reduced to normal values. On Saturday an intervention was made on the C66 that worked badly. M. Haase came in and solved a problem on one of the small tubes. On Monday evening there was a problem with too high losses on the CNGS extraction, triggering a radiation alarm on the PAX35 (extraction). After some adjustments the situation improved and the PS could return to nominal intensity. In fact it would be needed to re-optimize the extraction to reduce losses, followed by a steering in the TT2 line and the SPS. Since the router upgrade there is also a rather annoying connection fault alarm on the ARCON system, generating an audible alarm every hour. This problem is under investigation and followed up by M. Widorski. At present the timeout delay has been increased and the alarm feature is disabled during the night shifts. In the afternoon there will be a stop for SFTPRO and CNGS of about 1 hour to intervene on the BFAs for the CT extraction.

East Area (L. GATIGNON):

On Wednesday the T7 line was checked for the overheating of the previous weeks. No damage has been found on the magnets. The power converters are now consigned since the line will not be used this year.

R. Steerenberg asked how it was possible that the magnets of T7 gave signs of overheating if the line was powered and cooled correctly. L. Gatignon replied that this is not clear, but the line will be checked during the next shutdown.

East Area Users (L. GATIGNON):

T10, the CMS test beam was cancelled, but announced by the users too late to reschedule another user; T9, CALICE, could conclude the physics program; at T11, tests of the new hodoscopes are ongoing.

AD (K. MIKLUHA):

During the week the C02 cavity tripped off from time to time. Only on Wednesday a remote reset was not possible and M. Haase was called in. Since then it has still been tripping off, but not that frequently. The injection kicker module number 2 continued tripping off until Tuesday when H. Gaudillet managed to fix it. The BI team was working on the DE.TFA7049 transformer. Now the output corresponds more to the expected intensity.

The week was not that smooth, especially not for the ASACUSA experiment:

- On Monday afternoon the ejection bunch showed a jitter on the longitudinal pickup (DA.PULONG) up to 230 ns, and finally half of the intensity was lost. This was traced back to a faulty electron cooler chassis, which was later bypassed. It was decided to keep it like this until the end of the run to avoid further problems. ASACUSA lost 2h30 of beam time because of this.

- On Wednesday evening the ASACUSA had problems with their access system, and the specialist was called in. This time they lost 2h beam time.

K. Hanke added that this problem should have been expected since there was the announced upgrade of the network routers.

- On Thursday and Friday the ASACUSA experiment was suffering from frequent beam losses because of the vertical pre-drivers of the Stochastic Cooler, whose power was occasionally dropping down to 0 W. The system recovered by itself.

- On Friday afternoon the ASACUSA experiment was receiving only 10% intensity. The problem was fixed in the evening simply by cycling the ejection line back and forth to the ASACUSA line. Because of this problem 4h30 of beam time was lost.

AD users ():

Nothing to report.

NTOF ():

Nothing to report.

SPS (D. MANGLUNKI):

The SPS did not have a great week.

CNGS had only 58% of the allocated beam time and SFTPRO only 63%. At 8:00 on Tuesday 30th, North Area and CNGS beams were turned off to prepare the coast cycle for the UA9 crystal collimation experiment, which took place quite successfully until Wednesday 7:00.

On Wednesday, the dipole magnet MBB621 was changed and several interventions took place in the shadow. During the transport of the magnet, five water leaks were spotted, 3 of which could be fixed rapidly. One water leak was found on dipole magnet MBA232, where the attempt to repair failed, meaning that magnet would have to be changed the next day; another one was found on the cable supplying MSE4183 (extraction septum for CNGS). The cable was purged in the afternoon and the repair was organised for the following day.

In the afternoon, IT updated the firmware of the routers. The vacuum was good enough to open the valves around 22:00, but as there was a PSB problem at the same time (RF cavity on ring2), the SPS only tried to restart at 23:30. Unfortunately it was then impossible to open or acquire the status of the TED in TT20, for which there is no piquet service. The equipment specialists were unavailable. As the IT intervention on the routers was suspected as the culprit, A. Bland was called in. Eventually at 4:40 the OP team succeeded to open the TED locally in BA2 and masked

the interlock in order to supply some beam to the North Area. Unfortunately the PSB was even more broken at that time (recombination kicker) and could only deliver one ring at -25% of the required intensity. Less than 40 minutes later, at 5:20, another interlock, this time from cooling of one of the first-turn stoppers TBSM, prevented to give beam. The OP team found the rack where the equipment was, but could not reset it as it was locked. As the intensity was low anyway it was decided to stop earlier for the next magnet change.

On Thursday 2/7 at the same time as the MBA232 dipole magnet change, work continued on the water-cooled cable for MSE4183, which was repaired by 15:30. Vacuum conditions allowed opening the valves at 23:30, but only the North Area beams could be delivered as the MKE4 would not fire for CNGS. This was later traced to a false interlock on the warm magnets (WIC). Several people got called in during the night (BT piquet, N.Voumard, N. De Metz-Noblat). The OP team found the PLC that was responsible for the interlock, but could not reset it during the night as it required a password. The morning shift upon arrival called P. Dahlen who provided the password to restart the PLC.

All those PLC problems (TED, TBSM cooling, WIC) were later traced to an intervention by CO on June 26th, an upgrade of the PLCs configuration, for which the specialists were notified on Friday lunch time. This modification only showed its effects when the PLCs needed to restart, probably after the IT intervention on the routers. It is not clear whether all the consequences are solved.

On Friday afternoon the mains tripped and caused a 3 hour problem on TRX1, eventually solved by the RF power piquet.

On Saturday morning 4h40 were lost for the North Area because of a wobbling station problem, which required the First Line, X. Genillon and D. Calcoen to be called in. During that time, the OP team put the TT20-TED in and masked the software wobble interlock in order to at least supply beam to CNGS.

On, Monday there were still interlocks from TBSM cooling. On Monday night, more trips of TRX7 required the RF power piquet intervention.

D. Manglunki asked why no CO piquet service is provided for the SPS like for the other machines. This would have saved a lot of downtime. K. Kostro replied that the idea is that the expert service should intervene because the CO piquet would not have the required knowledge of all the systems. K. Hanke replied that the fact of the missing piquet seems to result in a noticeable increase of machine downtime. K. Kostro replied that in the CPS complex, the piquet service is provided because the piquet is more expert than the responsible of the equipment. For the SPS, this is not the case and a better information of how to reach the equipment expert should be provided. K. Hanke replied that the operation of the machines cannot be based on the good will of the experts.

M. Lamont asked if the problems with the PLC configuration could show up again. F. Locci replied that this could be the case, but investigations are ongoing to fix potential problems. K. Kostro added that the problem appeared because some equipment experts did not update the operational configurations of their equipments.

D. Manglunki added that a lot of time was lost because the expert from the ATB group could not be found.

CNGS ():

No news.

SPS North Area (L. GATIGNON):

The North Area had a good run when beam was available and except for the problem with the wobbling. The H4 run stopped 3 hours in advance because of the trip of the Goliath magnet.

North Area users ():

Nothing to report.

LINAC3 (D. KUECHLER):

The light in the linac hall is still missing from time to time. The expert is working on the problem. Power was lost on one half of the quadrupoles due to the tripping of a circuit breaker outside the linac. The breaker has been replaced with the last available spare. A new one has been ordered. On Wednesday, a short circuit stopped the source. During the repair the two ovens were refilled and the source restarted on Friday. There was also a problem with one of the workstation. A. Bland added that the workstation is an old PC. D. Kuechler replied that the slowing down of the PC is a new problem. A. Bland replied that it could be that some applications started to loop. Since Monday, the source was pretty stable, but the linac not yet optimised. 80% of the nominal intensity can be delivered. The new RF-LL control of the ramping cavity has been installed. Since unfortunately the SW is not behaving as expected and the expert is on holiday, the old SW will be used instead.

LEIR (S. PASINELLI):

The cold checkout is progressing well. Some timing problems were related to bad cable connectors. The DSC control via FESA is still problematic. Sometimes the control is blocked for about 40 devices. The problem is under investigation but not yet understood. The control of the electron cooler has been solved. On Monday, one of the sextupoles has been found not fixed to its support, moving and badly misaligned. The first beam has been injected on Monday, down to the first screen in the ring.

CTF3 ():

No report.

TI (E. LIENARD):

Nothing to report.

3. Schedule / Supercycle / MD planning

The 2009 schedule (V3.4) is available at:

<https://espace.cern.ch/be-dep/BEDepartmentalDocuments/BE/Schedule2009.pdf>

The supercycle composition is available at [this web page](#).

During the week end, TI2 tests will require LHC beams in the injectors. Then there will be a 4 day long MD block. One hour stop for the CNGS-SFTPRO extraction in the PS will take place on Monday to intervene on the PS BFAs. At the same time there will be an access in BA5.

The 13th in the morning there will be a displacement of the routers for the North Area.

K. Kostro added that on Wednesday no new LASER connection will be possible for about 2 hours due to a new database deployment.

P. Belochitskii asked if AD will receive regularly beam during the MD block. E. Metral replied that the users should receive beam most of the time.

D. Kuechler asked if the LEIR water station would be available during the technical stop. This is not clear yet.

The colleagues should start to communicate the activities for the next technical stop to the machine superintendents.

4. AOB

5. Next meeting

The next meeting will be held on Tuesday, July 14th 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

Minutes edited by S. Gilardoni