Minutes of the 32nd FOM meeting held on 11.11.2014

Agenda:

1) Follow-up of the last meeting (K. Hanke)
2) Status of the Machines (all)
3) Schedule Updates (K. Hanke)
4) Evolution of the radiological situation in PSB section 10 (R. Froeschl)
5) Update on wire scanners (E. Piselli)
6) YETS organization (R. Steerenberg)
7) AOB

1 Follow-up of the last meeting

The minutes of the 31st FOM meeting were approved.

Pending actions:

The open action concerning the recombination kicker rise-time in the PSB is being followed up.

2 Status of the Machines

Linac2 (D. Kuechler)

Excellent week. Only 2 small issues, which amounted to a total downtime of 10 min, related to a valve that closed after a source flashover.

R. Scrivens and G. Bellodi started a campaign to improve the transfer line steering.

PSB (B. Mikulec)

Very busy week with many machine adjustments/investigations and MDs.

Serious controls issues started Wednesday morning and lasted until the afternoon (No Heart-Beat, FESA errors, Lost Updates, very slow response of the controls system). CO investigated and in the end had to restart the PSB INCA server, which was completely overloaded. For ISOLDE this meant that the interlock cut frequently the beam because of missing AQN updates of the end-of-line magnets.

M. Jaussi resurrected the missing LLRF sampler and synchronization signals on Wednesday.

Work was done throughout the week by the RF specialists on the longitudinal blowup of the LHC25ns beam. The changes still have to be applied to the operational users.

Friday early morning the SPS complained about the intensity distribution along the LHC25ns batch. The operator found a problem with a corrector magnet used to define angle and position at extraction for ring 3. With the help of the piquet on the phone he could solve the problem (bad contact; a cable had to be exchanged).

The PS complained about changing trajectories at PS injection. In the beginning of the week a problem with a specialist setting of the extraction pickups could be corrected, which gave wrong readings. There are still a few remaining hardware issues with pickups in BT and BTP (one of the reasons are radiation-damaged cables to be replaced). Throughout the week and the weekend the trajectories to the PS were improved for several users to reduce excursions. During the weekend measurements were made to check whether an equipment in the line was pulsing with the CCV of another cycle; this seems not to be the case. Currently the operators are checking the trajectories during each shift.

During the last Technical Stop RP confirmed that the hot spot in section 10 became even hotter (~2 mSv/h measured). ABP studies and closed orbit measurements clearly show that this is related to the large orbit excursions (mainly in vertical), and the available orbit correctors are not strong enough at higher energies to compensate. A magnet alignment will be proposed (see presentation R. Froeschl in this meeting). In this context, tests were done Monday evening with the new LHC-type BLMs; these first results were very informative; the data will help comparing the current situation to the one after magnet alignment.

ISOLDE (E. Siesling)

GPS:

Running with a TiC target (#527), which was put on the front-end successfully last Monday.

Stable beam tuning to LA1 finished on Tuesday evening with a good transmission of 92%.

Mass-scan and proton scan done by Wednesday afternoon followed by TISD (Target and Ion Source Development) tests & yield measurements.

Physics at the LA1 line (37K half-life measurements) started Thursday afternoon and continued successfully over the weekend. Users seem very happy and obtained good statistics.

Technical points/Issues:

The filters for the GPS20 Turbo Pumps were removed on Tuesday (G. Vandoni TE-VSC) according to plan.

The Turbo Pump TP22 in sector GPS20 had a faulty controller on Tuesday - fixed (Jose Ferreira TE-VSC).

During the proton scan there were controls problems for the PSB BTY elements. Subscription to the INCA server seemed to fail (see also PSB report).

Extraction high voltage tripped 3-4 times during the week. This is not unusual and a reset did the job (except on Thursday when for an unknown reason the HT went in 'interlock to ground', after which a manual re-arming/restart was necessary).

Slow scanner application - was solved by a reboot of the workstation.

HRS:

Target change to the UC target (#521) was moved from Tuesday to Thursday due to technical problems with the target production.

There were a few issues during target change and setting-up, but stable beam tuning through the HRS separator and RFQ cooler was achieved according to schedule on Friday. Very good transmission (close to 100%) was obtained through the separator and cooler now that the problem with the 'forgotten' multipoles has been eliminated.

Technical points/Issues:

The fan for the Turbo Pumps at the HRS10 sector (Front-End) failed. It is possible to run without it, but the fan needs to be exchanged during the shutdown.

The controller of the membrane gauge VGM1 for the HRS10 sector had problems. It could be temporally made working for the target change, but it needs replacing. This is on the action list of the vacuum team (J. Ferreira TE-VSC).

Shutter as well as clamp signals were not showing the 'open' positions; after re-calibration they were OK (C. Mitifiot EN-STI-ECE).

The HRS RILIS laser window was found to have a 'coating' on it and has been replaced Thursday afternoon.

The target cooling water flow for HRS was somewhat low and tripped the target heating during setting-up. The flow has been slightly increased to keep everything well within the margin.

On Monday protons were provided to GPS for yield measurements in the morning in parallel with protons to HRS for Medicis air-activation tests (protons on HRS convertor with Medicis target behind). The measurements were disturbed by the beam sent in parallel to GPS, but nevertheless the air-activation tests could be finished.

In the afternoon the setting-up of HRS stable beam to the tapestation (CAO line) was done to prepare for the proton scan. During the evening/night HRS stable beam tuning (COLLAPS experiment) followed by LA1 physics at GPS. This morning the proton scan took place.

ISOLDE Users (M. Kowalska)

Happy users.

PS (J. Wozniak)

All operational beams were delivered normally throughout the week.

On Monday a B-train correction was put in place to fix the problems with the fluctuations of the B-field at injection. The compensation is done on the preceding cycle (with the energy matching between PSB and PS done by S. Hancock) and copied to all the LSA cycles. This is a preliminary step that has to be followed up by another iteration since the DC part is sill not correct. S. Hancock would like to increase the DC correction and reduce the pulse-to-pulse correction. We still have a mismatch of 1 Gauss (too low).

On Tuesday POPS was down for 1h30 due to a problem with the command redistribution from the main controllers to the local ones.

The ZT8.DHZ01 power converter was fixed. Now it pulses and follows the GFA.

On Wednesday night there was a problem with the low energy quadrupoles PR.QDW06, PR.QDN10, PR.QDW18 and PR.QDW28 affecting slightly the beams for the SPS. They got repaired on Thursday afternoon.

Also on Thursday there was a problem with F16.QDE220 tripping with a high temperature alarm when the rms current exceeded 250A. This caused a downtime of 1h. The magnet is designed for 500A, so there seems to be a problem with it's cooling. This issue continued throughout the weekend.

During the night POPS tripped with a fault in IGBT1, which is a known command problem being currently investigated; downtime of 4h40min until Friday morning. The possible cause might be a signal reflection in the VME bus of the main controller. A "shielding" card was put in place to remedy the problem. In parallel an additional card is being tested that can dump the VME bus traffic when the trip occurs.

On Friday there were problems with the radial loop causing 1h30 downtime due to a faulty timing pulse repeater. PX.SBI was exchanged in CR13. This timing was only received intermittently by the radial loop.

In the afternoon two 80 MHz cavities were causing problems and have to be repaired in preparation for the ion beam next week.

During the weekend there was a downtime of 1h due to the impossibility to restart SMH16.

Operation was also perturbed by timing issues causing that made it impossible to change the supercycle sequence.

A veto on BHZ377 caused a 1h20 downtime for SPS beams.

During the weekend the parasitic TOF beam was re-established on the EAST1 cycle.

All the necessary interventions (F16.QDE220 and cavity repairs) should be organized in the shadow of the PSB stop of 3h that is planned to take place this Wednesday (see below).

East Area (L. Gatignon)

Stable operation for the North branch (T9, T10, T11).

In T8 the time was dedicated to installation work (rollers of mobile shielding completed and validated on Friday afternoon, roof shielding yesterday) and tests (ventilation system). The integration of the ventilation (flush, beam mode) with the access system was successfully validated by a mini DSO-test on Monday morning and the beam permit signed for full operation without special restrictions. Beam tuning with full intensity beam started yesterday.

East Area Users (H. Wilkens)

Happy users.

nToF (S. Montesano)

S. Montesano expressed his excuses for the absence of nToF reports during the last FOMs due to an internal misunderstanding.

In the last weeks a few problems were experienced:

- A jitter in the trigger signal derived from the PS timing system (present since the beginning of the operations). Installing a new dedicated cable solved the problem.
- Frequent alarms of the EAR2 ventilation system in the TI CCC. This issue is due to the faulty automatic closure of the doors. On the short term the users are educated to pay attention to the problem and it was asked to call the nToF Control Room before calling the "piquet" service in case of alarms (to check if the alarm is due to the doors before taking further actions). On the longer term nToF will modify the mechanics of the automatic closure and/or install a sound alarm.
- A broken vacuum window due to a wrong operation resulted in 2 days without beam to recover the damage and produce a new window.

These issues did not affect substantially the physics measurements that are proceeding well. In the old experimental area (EAR1) the first measurement (73Ge) is being concluded and will be followed by the second one (171Tm) at the end of the week.

In the new experimental area (EAR2) the commissioning foreseen in 2014 was finished, and the equipment for the first measurement (240Pu) is being installed.

CTF3 (email from L. Navarro)

During the week CTF3 had drive beam operation until Friday morning.

CLEX had obtained the beam permit and CALIFES operation has been resumed this week.

From Friday afternoon to Monday morning the beam was delivered to the dogleg experiment with the support of the PS operators. Thanks.

Technical issues:

S. Jensen has solved the problem of the missed CVORG waveforms.

Some issues with the new passerelle were solved. Still working on others (crash sending all, not reading one waveform property).

Power oscillations were observed induced by the AD cycle in one of our TWTs.

AD (C. Oliveira)

Calm week.

The 5T field of the AEGIS magnet is affecting the steering of the ALPHA line. When AEGIS switches the magnet ON/OFF, the vertical position in the ALPHA line must be corrected. Two

steering versions had to be prepared, one with the AEGIS magnet ON and another one with the AEGIS magnet OFF.

The stability of the extracted beam is still not OK. It fluctuates in the horizontal plane. All experiments complained about this and the AEGIS line had to be once more re-steered. The instability is not present all the time and we suspect an orbit jump at extraction. Kicker and septum seem not to be the source of the problem.

The C02 cavity with new high-voltage supply is tripping frequently, at least once per day. The experts are still investigating.

T. Eriksson reported on a MD session that took place yesterday: A magnetic probe was installed in one of suspect dipole magnets and is now steadily being surveyed.

He also mentioned that for the water cooling the users would like to switch to the small lake water circuit instead of cooling tower water from the start of the new year. S. Deleval confirmed that this could be done.

AD Users (H. Wilkens)

There was a problem with the AEGIS magnet that affected ALPHA. An agreement could be found to compensate ALPHA for the lost physics time.

SPS (H. Bartosik)

It was a very exciting week for the SPS dedicated to the scrubbing run. Overall, the beam availability from the pre-injectors was fairly good and significant vacuum conditioning of the SPS arcs was achieved thanks to the scrubbing. Towards the end of the week, 4 batches of the nominal LHC beam with about 1.15e11 p/b could be successfully accelerated to extraction energy with good transmission and transverse emittances of about 3 um measured at the end of the flat bottom. In addition to the standard 25 ns beam, also the doublet beam was set up and used for scrubbing at injection energy.

The critical machine elements during the scrubbing run were the MKP4 injection kicker and the new TIDVG high energy internal beam dump. Further conditioning of both elements will be needed, in particular for decreasing the high baseline pressure level at the MKP4. During the scrubbing run, software interlock levels close to these elements were raised in accordance with the equipment specialists.

During the scrubbing run a couple of MDs were taking place:

- COLDEX equipped with a coated LHC beam screen

- Setup of the 200 MHz LLRF on the LHC cycle

- New 800 MHz LLRF

- LHC mastership-dynamic destination and LHC-SPS rephasing tests

- Setup of the doublet scrubbing beam at flat bottom with multiple injections

North Area (L. Gatignon):

No beam until Monday morning (scrubbing run). The collimator on H6 (in TCC2) could not be repaired, but at least fully opened. It will be replaced during the shutdown. Continuous improvements on Cesar (bug fixes, etc).

On Monday early morning there were some difficulties with the access system (Chain-11 software problem). A series of measurements are being made to better characterize the beam on T4.

The GIF++ irradiator will arrive this week and will require a DSO test later this week with minimal impact beyond H4.

North Area Users (H. Wilkens):

There was not much ongoing last week due to the SPS scrubbing run, but during the users meeting there were a few interesting presentations on the last user runs. The users also wanted to express their thanks to the support from the operations team.

IONS

Linac3 (D. Kuechler)

On Monday source and linac were stopped for source maintenance; the plasma chamber and extraction system were exchanged (metal parts strongly sputtered, metallization found on different insulating parts).

Beam could be given back already on Wednesday morning, one day ahead of schedule. Since then calm operation.

LEIR (M-E. Angoletta)

Machine restarted on Wednesday. On Monday Linac3 MD, no operation. Electron cooling optimized.

PS (J. Wozniak)

Nothing to add.

SPS (K. Cornelis)

No ion operation last week due to the scrubbing run.

TI (J. Nielsen)

Tuesday there was a leak alarm on the BA81 water circuit, which stopped all related water cooling circuits. A hose was found disconnected on a magnet.

On Thursday there was a problem with compensator 3, probably due to an animal. No damage was found on the compensator.

3 Schedule Updates

The Injector Schedule (v1.7) is available at

https://espace.cern.ch/be-dep/BEDepartmentalDocuments/BE/Injector_Schedule_2014.pdf

There are no updates with respect to the schedule except for the interventions that have to be scheduled this week (see below).

4 Evolution of the radiological situation in PSB section 10 (R. Froeschl)

R. Froeschl presented the residual dose rate that was measured in the PSB 4 hours after beam stop during the last TS and compared to the values of a similar TS in 2012 (see Radiological Situation in PSB Section 10). BR.BHZ101 (downstream) clearly sees an increase in dose rate up to 2 mSv/h and RP recommends a reduction before the winter stop. The intervention that involves moving one magnet in section 2 would require 30 minutes of cool-down.

A 3-hour slot needs to be found as soon as possible. As usual it should be shared between MD and physics time.

After some discussion it was decided to go ahead with the intervention on Wednesday 12th of November. Beams should be stopped at 9:00; access to the PSB for the alignment from 9:30 after RP survey. B. Mikulec mentioned that after the intervention a new orbit correction and subsequent transfer line steering as to be set up for all the beams.

The SPS MD will take place from 6-9am. They expect beams to be back for 1pm and will run until 9pm.

In parallel there will be a few PS interventions and checks of some PSB trajectory pickups. D. Mcfarlane mentioned that the SPS wouldn't open the machine; Y. Papaphilippou added that only some tests would be done.

J. Vollaire asked that IMPACTs should be sent by 3pm.

5 Update on wire scanners (E. Piselli)

E. Piselli reported (see PS wire scanner status) that the PS wire scanners could only be used this week when A. Guerrero is on shift or present in the PS island. A. Guerrero will test the software this week; she will be asked to present the results during the next FOM.

It was proposed that the installation in the PS machine should take place from Thursday 18th of December at 9:00. The intervention will take 3 hours (contact person William Andreazza).

J.A. Ferreira Somoza added that the vacuum group was not yet contacted and that they first have to check whether the pump-down would still be possible before the Christmas stop.

6 YETS organization (R. Steerenberg)

R. Steerenberg presented a proposal for the YETS organization. All beams will be stopped on the 15th of December at 6am, after which all equipment should be switched of in a controlled

manner. The cooling towers will be emptied from this date (see presentation of S. Deleval during the previous FOM).

Zones that should be remain in restricted mode: Linac2/3, PSB, PS, LEIR, TT2-TFP and SPS. For these zones the beam permits will not be cancelled. All other zones may be put in general access mode.

POPS tests will take place during the first couple of days after the machine stop. F. Tarita warned that there would be a general power cut early in the morning on the 16th of December.

R. Steerenberg then continued mentioning the ccc staffing during YETS and the required piquet services (see his presentation). It was asked if the CO best effort service should also apply to the winter technical stop. M. Gourber Pace replied that this would be discussed.

HIE-ISOLDE expressed their interest to continue working through the Christmas vacation. In principle there is no access allowed for supervised zones – to be discussed with R. Catherall who should then present a slide during next meeting.

It was also mentioned that BI interventions in the PS should not take place during the POPS tests, but can happen during 18th and 19th of December.

A. Bland warned that no special tests should take place during 5-7 January, as controls might not yet be in a stable running condition.

7 AOB

There was no AOB.

The next FOM meeting will be held on the 18th of November. The agenda will be communicated in due time.

Minutes edited by B. Mikulec.