

Minutes of the 30th FOM meeting held on 28.10.2014

Agenda:

- 1) Follow-up of the last meeting
- 2) Status of the Machines
- 3) Schedule Updates
- 4) AOB

1 Follow-up of the last meeting

The minutes of the 29th FOM meeting were approved.

Pending actions:

There were two open actions.

Concerning the stability of the power supplies for LEIR and the quality of the corresponding diagnostic signals, there were several TE-EPC interventions. The situation is now under control. The action is closed.

Concerning the rise time of the recombination kicker of the PSB, the problem is under study and some MDs are planned to have beam-based measurements. G. Métral commented that for the kicker qualification local measurements should be done and that, due to the jitter of the longitudinal characteristic of the beam coming from the PSB, a beam-based characterization was challenging. S. Gilardoni added the beam-based approach can be tested under the condition that the PSB phase jitter and the length of the bunches are sufficiently small. B. Mikulec suggested discussing the details of the MD offline.

B. Mikulec informed that BE-OP-TI gave instructions to inform Linacs supervisors in case of alarms on the Linacs cooling status. This will ease a prompt intervention if needed.

2 Status of the Machines

[Linac2 \(J.B. Lallement\)](#)

It was a very good week for Linac2. The operation was smooth and there was nothing special to report.

[PSB \(J. Tan\)](#)

It was a quiet week, with a few issues to report.

After some tuning of the de-buncher cavity LT.CDB10 done during the weekend, on Tuesday some problems with the cavity working point were identified. The phase setting was such that the cavity was slightly accelerating the beam. As a consequence the beam was pulling the RF power out of the cavity, which according to the RF specialist reduces the tuning module lifetime. Furthermore, although both the RF amplitude and phase are PPM, the phase setting should stay identical for all users. Hence, the phase was put back to the nominal value for all users.

The “PPM copy” and “clone” functionalities are still not working as expected. The CO specialist was called. Investigations are ongoing.

In the afternoon, transverse instabilities were observed for the high intensity beams, affecting all rings. The source of the problem was related to a modification of the TFB cabling to prepare some MD. A temporary fix was found by adjusting the TFB attenuators.

On Wednesday, the dipole BE.DHZ4L1 showed a 0.4 A offset between CCV and AQN values. As the specialist needs to switch it off for a proper diagnosis, the power supply will be checked during the forthcoming Technical Stop. The injection frequencies for AD were optimized.

On Friday, the SEM grid application was not working properly, and the specialists were not available (annual leaves). A. Guerrero explained that there was a problem related to the new release of the JAPC libraries. M. Gourber-Pace commented that, even if the solution to the problem is still outstanding, a quick fix is in place.

The operation during the weekend was quiet.

Yesterday evening there were perturbations due to a problem with the extraction kicker.

Concerning the beams:

- LHC PROBE. The longitudinal shaving is now working as expected. It is still difficult to stabilize very low beam intensities. The intensity at injection/capture is very sensitive to the stray field from the PS and therefore the position in the supercycle. OP is working on the issues.
- STAGISO was checked with 16 μ s and 20 μ s bunch spacing.
- SFTPRO. All rings have now the nominal bunch length and even particle distribution.
- LHC25 and 50 for the SPS scrubbing run were checked during the weekend.

S. Gilardoni asked if there were modifications of the extraction trajectories on Monday on the LHC beams since they changed with respect to the ones measured during the weekend. J. Tan answered that there were no intentional hardware modifications.

ISOLDE (M. L. Lozano Benito)

It was a good week for ISOLDE. All experiments took beam according to the schedule and without any long interruption. The operation is still suffering for some small problems on some equipment and controls since the general power blackout.

HRS: The first part of the week was dedicated to stable beam setup. There were some difficulties to send the beam through the machine, but all issues were solved in time to deliver the beam for users from Thursday afternoon until Sunday night without major problems.

GPS: There was beam for users during the week until Thursday afternoon (when HRS took the central beam line). There were some residual problems due to the power cut affecting some devices and controls. A very old quadrupole was found powered in the beam line producing an unwanted deflection to the beam. The system could not be controlled remotely. Grounding the magnet solved the problem.

During the end of the week the preparation for the target and frontend started. The target, extremely fragile and difficult to handle, was changed yesterday.

ISOLDE Users (M. Kowalska)

ISOLDE users are relatively happy. ISOLTRAP team took ^{32}Ar beam from GPS, but the intensity was too low and contaminants too high. They then started using the HRS beam, looking for scandium isotopes. No Sc was observed, but a back-up plan was successful: new masses of short-lived Rb isotopes were measured. The proton intensity was very smooth and high all the time. The PSB team was acknowledged.

PS (G. Sterbini)

It was an average week for the PS without major problems. The production beams (EAST1, nToF, AD and SFTPRO) were regularly delivered to the users. The EAST2 beam commissioning continued together with the LHC beams commissioning.

On Monday two short accesses to the PS ring were necessary to allow RP to intervene on a radiation monitor (PAXP303, 1h30 of downtime in total for all beams). In the meantime there were strong perturbations on the EAST1 beam due to a faulty connection with a beam stopper in the T8 line (ZT8.STP01). The problem was solved in the afternoon by the intervention of the specialist. The late afternoon and night operation were hampered by trips on the 10 MHz (C46) and the 80 MHz cavities.

On Tuesday the C46 was fixed by the specialist and the MTE kickers were back in operation and tested on the nToF cycle.

On Wednesday morning there was a total of 2.5 h downtime in TT2 due to a problem with a quadrupole (F16.QFO215).

On Thursday morning the AD Ring patrol was lost (the problem was related to an electrical problem). The SPS extraction was perturbed by continuous trips of the C80-08. The issue was solved by changing the beam radial position and therefore easing the synchronization between the two machines. During the afternoon an additional timing card was installed in the wire scanner crate to improve the logging and post-mortem capability of the system.

The operation was perturbed by a problem with the injection and extraction kickers fixed rapidly by the specialists. During the night the EAST2 beam was centered on the T8 final doublet.

The weekend was devoted to prepare, together with the PSB team, the LHC beam that the SPS will use for its scrubbing run.

Yesterday in the morning there were perturbations on the LHCINDIV and 2 h stops of POPS for a HW problem.

S. Gilardoni added that next week, with the two fully repaired PFNs, MTE would resume operation. The spare PFN will be available in a month. R. Steerenberg added that during the Technical Stop there would be a test on the motion mechanism of the blade of the dummy septum. Concerning the wire scanners in the PS, S. Gilardoni commented that at the moment they are not yet available. G. Métral explained that a proper logging system is going to be put in place to monitor in details the status of the wire scanner and to help the post-mortem analysis in case of breakage. G. Arduini commented that it was extremely important to have the wire

scanner back in operation as soon as possible in particular in view of the SPS scrubbing run next week. M. Gourber-Pace added that BE-CO would intervene today for adding the requested timing necessary for the new logging system. B. Mikulec commented that hopefully the WS would be available by the end of the day.

G. Métral asked to schedule a 20 min POPS stop today in the afternoon (28 October) for an intervention in view of the PS B-Train tests. D. Manglunki suggested that the PS could be stopped between two injections for the UA9 coast. There were no objections and the intervention was approved.

East Area (L. Gatignon)

T9, T10 and T11 are running smoothly.

In T8 steering studies were made to find a trajectory with minimal sensitivity to changes of current in the final quadrupole doublet. The beam was then used for instrumentation studies. A modification of the electronics of the ionization chamber allows a better overlap with the SEC for calibration purposes. From now on the intensity limitation is $5 \cdot 10^9$ p/s (was $2.2 \cdot 10^9$ so far), still limited to 8 hours per day and without target. Work on the ventilation and for adding the additional shielding can continue under these conditions.

CHARM is interested in a SEC cross-calibration with a BCT using a fast extracted beam. And, if possible, a cross-calibration between the XION and the SEC with a very low intensity slowly extracted beam (well below 10^9 ppp). Discussions on the subject with BE-OP are ongoing.

East Area Users (H. Wilkens)

In T9 the FCAL (the Forward CALorimeter for a next linear collider detector) was running this week. Their tests were very successful and they obtained more results than anticipated. This week will be dedicated to DAMPE (Dark Matter Particle Explore), a Chinese satellite for a cosmic ray detector to be launched during the last quarter of 2015.

In T10 and T11 the ALICE ITS (Inner Tracker System) have been running fine over the last week.

nToF ()

There was no report.

CTF3 (L. Navarro)

In CTF3 most of the beam time was devoted to improve the conditioning of the CLIC structure prototype.

Operation was hampered by faulty power converters probably related to the general electrical blackout. There was an issue with the water station serving the klystron gallery and some minor issues on the “passerelle” system.

AD (T. Eriksson)

During the week there were a total of 20 h downtime.

There are still orbit fluctuations in the extraction line towards the experiments perturbing the data taking.

There were many problems. Among them there was yet another vacuum pump breakage (DE0.VPG25) in the BASE line. The specialist suspects that the responsible is the fringe field at the pump location. Presently technical solutions to displace the pump are under investigation.

The PS supercycle changed very often in the last week and this is affecting the AD efficiency. In fact AD needs at the moment two identical consecutive SC to complete its injections. A solution is under study to overcome this limitation.

After many problems ASACUSA managed to collect good data over their last 5 shifts. They are now moving to their second detector (CUSP). The situation with the liquid He deliveries stabilized and, with the two major He consumers running, this gives confidence for the rest of the year.

AD Users (H. Wilkens)

ASACUSA finally got a good set of data. Concerning the problem with the liquid He supply this seems solved for the moment.

SPS (D. Manglunki)

It was an eventful week in the SPS, with access problems, LHC pilot to TT40/60 TEDs, coasting MD, and ions for the first time surviving the flat bottom.

On Monday the Quad01 in M2 tripped with a magnet fault. An access was needed and planned for the end of the MD on Wednesday, as it needed at least four hours of beam downtime (2 for cool-down, 2 for ventilation).

On Tuesday there was an intervention on MKQV by TE-ABT. It will be replaced during the Technical Stop, as the crane needed in BA1 is still out of order. At 17h00 the beam permits for TT40/TT60 were signed and a large emittance pilot beam ($5e10$ ppp) started to be extracted on the TEDs.

On Wednesday at 06h00 the coast MD started for the preparation for UA9 and collimation. At 09h00 TE-EPC proposed to switch the spare SMD11 with SMD3, which was repaired. This intervention was postponed to the next day.

During the MD the BA80 turnstile was fixed, and also the intervention on Quad01 in M2 took place. The MD finished at 18h00 as planned, but it took 1 h 30 min to retrieve beam conditions in the North Area as some power supplies could not be restarted, and the TT20 TED could not be moved out without intervention by EN-STI and TE-EPC.

On Thursday at 04h00 the kicker MKDV went in fault. The kicker Piquet was called and fixed it by 09h30 (short circuit on a 60 kV cable). Ion setting-up could start afterwards. On SFTPRO the vertical octupoles were increased by K. Cornelis to stabilize the beam.

At 17h15 the RAMSES system tripped SIS. The fault was masked with the agreement of RP, which helped restoring the situation overnight.

On Saturday, H6 complained of communication problems with CESAR. At 18h30 there was again a trip of MKDV, which needed the intervention of the kicker standby service, and generated 3 h beam downtime. No fault was found.

On Sunday more problems occurred with door 146 that was showing one key missing although they were all in. The GS-ASE piquet fixed a faulty relay.

During the weekend the DIP server had to be restarted many times. The RF power piquet was called several times to restart TRX8 and eventually changed a PC board control card.

On Monday there were more problems with MKQV (the piquet was called). There was a 4 h stop in the North Area (cooling water and burst pipe problem). The octupoles were reduced after the damper tuning. The fixed target physics stopped at 06h00 for the UA9 MD until tomorrow 06h00 (Technical Stop access for RP will start at 07h00).

MST and MSE will be equipped with the new versions of the Ion Interlock cards today (28 October) and tested tomorrow (29 October).

J. Nielsen asked where the faulty crane was located. D. Manglunki answered that the crane was in BA1.

North Area (L. Gatignon):

So far quite stable running of all NA beam lines except for an unusually high number of rectifier faults at the end of the Wednesday MD and a stop for a water leak on a flexible on Monday morning. There were several issues with single keys being seen in an incorrect state in several access doors.

The new K12 beam performs according to specification. However, the transmission of the existing P42 line from T4 to the T10 target needs further study.

North Area Users (H. Wilkens):

In H2 and H4 there were calorimeter tests for CMS. In H2 different configurations of hadronic calorimeters for the CMS upgrade were tested successfully. Since yesterday the beam was moved to the NA61 experiment. In H4 there were tests for the electromagnetic calorimeter; the tests on the currently installed electronics and of a radiation damaged barrel and end-cap crystal are now completed. The tests on the prototypes for the end-cap calorimeter upgrade started.

In H6 the ATLAS upgrade projects are taking beam. Upstream in the beam line the TGC prototypes for the New Small Wheel have been running fine. Downstream different pixel projects were taking beam, but had to face many issues with their setups. They will continue running parasitically to catch up.

In H8 the LHCb upstream tracker project is progressing well through their test program. In the beam line 2 other parasitic users are also profiting from the available beams.

NA62 reported at last week's PS/SPS user meeting that a failure on the demineralized water supply caused their cryogenic system to stop. This caused some down time. After the meeting it has been clarified that there was actually an announced intervention on the demineralized

water system and that the cryogenic system of NA62 should instead be connected to the 'normal' water supply; this is being followed up.

Concerning COMPASS, the polarized target is now cold. They start the commissioning of the new power supply system for the target magnet before the Drell-Yan measurement campaign.

IONS

Linac3 (R. Scrivens)

The operation was smooth. A HT supply was changed with a spare unit. Next week Linac3 will be stopped for 3 days. The pepper pot installation was moved from tomorrow's Technical Stop to next week.

LEIR (D. Manglunki)

It was an eventful week for LEIR. The ANOMINAL beam was kept operational for the PS and the SPS, while some MDs were performed on the AMDNOM user. It turns out that the injection settings have to be retuned daily.

On Tuesday T. Masson accessed at 08h00 to fix the problem on SMH11 (low pressure on the demineralized water). The machine was restarted after calling the EPC piquet for a SMH40 trip. The Electron Cooler had tripped too, but could be restarted remotely. A temporary solution to work with ETL.BVN partly broken consisted in applying a reference of 150% of the requested current. At 12h00 the EPC Piquet was able to fix one spare and install it in ETL.BVN10. In the afternoon A. Frassier started a test campaign on the ionization profile monitor (IPM).

On Wednesday morning the injection efficiency dropped at 06h00 when the supercycle was changed for the weekly injector complex MD. The injection line had to be retuned. In the afternoon BE-BI changed the TRIC card for EE.BCT10. At 17h30 one of the extraction kickers, ER.KFH32, tripped and could not be reset. The main switch thyatron has to be changed. In the meantime only two kickers were available, a higher voltage was applied (70+80 kV instead of 3 x 53 kV); one of them, KFH31, tripped often, but could be remotely reset. The thyatron will be changed on Monday during the Linac3 MD.

On Thursday the ANOMINAL beam was sent to the PS for the SPS setting-up. In parallel A. Frassier resumed the IPM tests, and TE-EPC specialist was called to analyze the large 50 Hz ripple on ETL.BHN10, observed in the CCC via samplers and OASIS. According to TE-EPC this ripple comes from the sampler, as it is not observed locally.

On Friday after another injection line retuning a very good beam ($>2E10$ charge per pulse) was routinely sent to the PS for SPS setting up. TE-ABT accessed over lunchtime to tune KFH31.

During the weekend the machine was stable. M. Bodendorfer worked on AMDNOM for orbit correction, tune measurements and tests. There were problems with the Q-meter (BE/CO is aware of it).

Concerning the Technical Stop there are three main interventions for LEIR are

- Brambles removal (gardening service informed)
- KFH31 main switch (confirmed by M. Hourican, TE-ABT)

- The tests of power supplies not monitored in the alarms program (M. Dudek, TE-EPC)

PS (D. Manglunki)

The problem with the 80 MHz cavity was solved.

On Friday the vacuum specialist performed a sublimation of the whole PS ring and $2e10$ Ar ions per pulse could be delivered towards the SPS.

S. Gilardoni informed that the new extraction setting will be propagated also to the Ion bump.

SPS (T. Bohl and D. Manglunki)

An Argon beam was injected and captured (up to $2e10$ charges per pulse). The commissioning will continue next Thursday (30 October) and Friday (31 October), but not during next week (SPS scrubbing run).

There is the possibility to have an Ar coast request by UA9 for their next MD on the 25 November (to be confirmed by W. Scandale).

The installation of ion interlock cards (new versions) in MSE and MST power supplies will be completed by today.

TI (J. Nielsen)

J. Nielsen reported that the LEIR local MPS reboot during the week produced perturbations on the network. It would be better to do a software reboot instead of a local reboot. D. Manglunki explained that the software reboot is not available. B. Mikulec asked the LEIR team to check the procedure with the TE-EPC specialist.

On Tuesday the SPS started to test the LHC extraction without the LHC2 compensator on. During the extraction it is mandatory to have the compensator on. V. Kain will propagate the information.

3 Schedule Updates

The Injector Schedule (v1.7) is available at

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

This week the UA9 run and the Technical Stop will take place. Next week there will be the SPS scrubbing run.

4 AOB

J. Vollaire informed that tomorrow the AD Technical Stop would continue until later in the afternoon (access to the target zone in the afternoon).

V. Baggiolini presented the planned CO upgrades during the Technical Stop. The presentation can be found at

<https://espace.cern.ch/be-dep/FOM/Presentations 2014/Forms/AllItems.aspx>

D. Mcfarlane informed that BA1 and BA2 would remain closed during the Technical Stop.

G. Sterbini informed that there would be no replacement of the WS 54H.

The next FOM meeting will be held on the 4th November. The agenda will be communicated in due time.

Minutes edited by G. Sterbini.