

Minutes of the 33rd FOM meeting held on 18.11.2014

Agenda:

- 1) Follow-up of the last meeting (K. Hanke)
- 2) Status of the Machines (all)
- 3) Schedule Updates (K. Hanke)
- 4) Beam request for the next Scrubbing Run (G. Rumolo)
- 5) AOB

1 Follow-up of the last meeting

The minutes of the 32nd 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 \(R. Scrivens on behalf of J.-B. Lallement\)](#)

It was a good week for the Linac2.

On Wednesday, there was a problem on the source after the PSB scheduled stop. The issue was rapidly solved. This morning (18 November) a source flashover closed the vacuum valve.

[PSB \(K. Hanke\)](#)

It was an eventful week for the PSB.

On Wednesday an access was given to re-align a main dipole in order to cure a hot spot, which had been detected during the Technical Stop on the 29 October. Beams were stopped at 09h00 and access was given at 09h30. At the same time an access was given to BI to fix a few instrumentation issues. Beam was back in the PSB only at 13h42 (slightly later than planned). The afternoon was spent to re-adjust the orbit for the different users. The steering was completed by the evening. The theoretical models and measurements of the orbit match remarkably well.

During Wednesday night and Thursday, beams were delivered with good performance, but on Thursday evening around 18h30 the injection efficiency dropped by 10% and beam losses in sectors 4 and 10 appeared.

During Friday all possible sources of beam losses were investigated but the analysis was not conclusive. During the weekend optimization of the tunes at injection ("Qstrips") and multipoles were done.

At present the situation is still not understood and the losses are still higher than acceptable.

K. Hanke proposed to continue to investigate the source of the losses today in the afternoon (18 November). This will reduce the intensity the ISOLDE beams intensity during about 2 h. A. Findlay and M. Kowalska agreed.

K. Hanke reported that occasionally there is no “heart-beat” for the FGCs. Investigations are on going.

Helmut Vincke asked if, after the realignment, the old hot spot disappeared. K. Hanke answered positively, the old hot spot disappeared but at the moment the beam losses concentrate elsewhere. During the Christmas stop two additional magnets will be re-aligned. This intervention could not take place on Wednesday due to time constraints and would allow reducing the overall losses in the PSB machine. R. Catherall asked if the new hot spots are on the ISOLDE line. K. Hanke answered that they are located in the PSB ring.

ISOLDE (D. Voulot)

ISOLDE has been running smoothly during the week with n-rich Zn beams to COLLAPS on HRS until Friday and some target and ion source development run on GPS during the weekend. Next week GPS will continue with n-def Ba beams to IDS.

ISOLDE Users (M. Kowalska)

HRS users are satisfied and GPS users are reasonably satisfied.

PS (R. Steerenberg)

The PS had quite a good week with good machine availabilities.

During the week substantial time was dedicated to setting up the beams for the new East Area IRRAD/CHARM facility.

During the Wednesday beam stop planned for the PSB magnet realignment the PS profited to unblock a filter in the water cooling circuit of a quadrupole magnet in the TT2 line that overheated and to check the tuner of one of the 80 MHz cavities that was mis-behaving. For the latter it was found that the stepping motor is moving correctly, but that the tuner inside the cavity is blocked. This will require an intervention with possible venting, which is presently being discussed to take place during the YETS-2014.

POPS tripped several times last week and during the Wednesday stop the POPS team has put extra diagnostics in place.

At the moment nTOF cannot receive consecutive pulses until the end of the 2014 run due to a limitation in the experimental DAQ. This limits the possibility to provide the maximum number of cycles, especially now when the parasitic cycle become available again.

The setting up of the TPS15 compatible bumps on the different users is ongoing in view of putting the TPS15 (dummy septum) in this week and to resume the MTE.

The new wire scanner software has been deployed which allows operational use of the wire scanners again without any restrictions. The PS has now one horizontal wire scanner and two vertical wire scanners.

The priorities for the week are:

- Restore the TPS compatible bumps on the operational users. Once completed move the TPS15 to allow continuation of the MTE setting up.
- In view of the LHC injection line test during next weekend verify the LHC PROBE and LHCINDIV beams.
- Propagate in collaboration with the SPS, the new extricate timing scheme, already present on LHC1 (25 ns standard beam) to the other LHC beams.
- Setting up of the SFTPRO high intensity, $2 - 2.5E13$ for Route Goward shielding measurements, requiring a flux of $1E13$ p/s.

For the YETS there are now three interventions lining up that require venting sectors of the PS:

- Wire scanner replacement in SS54
- Wire scanner replacement in SS65
- Wall current monitor replacement in SS03
- Possible repair of tuner on 80 MHz cavity in SS89

This means that 4 sectors out of 10 need to be vented. These interventions should be made in week 51 to allow for sufficient pumping prior to the 2015 Ar ion physics run. This implies that the POPS test foreseen for 15, 16 and 17 December has to be re-discussed and try to plan all these vacuum interventions on one of these days. One could compensate the lost day of POPS testing in week 4 for one or more days. A proposal is to allow POPS testing on Monday 15 and Wednesday 17 December and do the vacuum interventions on Tuesday 16. The final schedule remains to be discussed and confirmed by the people concerned. E. Piselli informed that the two horizontal wire scanners are ready for installations.

S. Gilardoni confirmed that today the MTE related activities will continue and by the end of the week the dummy septum will be put in his in position.

East Area (L. Gatignon)

The running was smooth in the test beams and for CLOUD, with a long and heavy change of user in T9, where the heavy installation of CBM took more than three full days.

On Tuesday, after signing the full beam permit, the commissioning of CHARM and IRRAD at high intensity has started, with some difficulties to steer the beam in the beginning, leading to some irradiation alarms upstream. After some discussions it was decided that two optics will be commissioned for this year, one for IRRAD and one for CHARM. The maximum current for ZT8.QFO02 had to be increased from 500 to 800 A. ZT8.GSDVT01 had difficulties to follow its function and needed to be fixed. First users in IRRAD started last Wednesday, and on Monday the CHARM data acquisition started too. The beam stopper problem of T8 is recurrent. It is planned to repair it during the YETS-2014.

East Area Users (H. Wilkens)

On the T9 line important installation works were on going to prepare next experimental setup (CBM experiment). On T10, ALICE users are running smoothly. CLOUD is performing ionization studies.

Helmut Vincke informed that during the week there were 10-11 min were the alarm threshold on one monitor of the East Hall exceed by a factor 20 the limit. R. Steerenberg explained that this occurred during the steering of the line for T8. The PS-OP team was in direct contact with RP during this period. Helmut Vincke remembered that it is important to limit the beam losses also during the beam commissioning.

[nToF \(S. Montesano\)](#)

The facilities are running smoothly most of the time. A problem with a sweeping magnet (water circuit) perturbed the operation but the problem was identified and promptly solved.

EAR2 is running with plutonium sample. The zone in class A and the access are under the supervision of DSG-RP.

EAR1 is running for the moment with a dummy sample. Tomorrow (Wednesday 19) a thulium sample will be installed and also EAR1 will pass in class A.

[CTF3 \(F. Tecker\)](#)

The CTF3 probe beam was successfully transported through the newly installed two-beam module on the first day of operation.

Concerning the drive beam, a good recombination in the Delay Loop was established.

The dogleg running was stopped for two days to remove a vacuum valve in the waveguide network that was identified as the reason for RF pulse shortening.

There are some problems with the setting of the measurement cursors for the XenericSampler FESA class. The specialist is working on it. The problems on the new passerelle are being investigating too.

[AD \(B. Lefort\)](#)

It was a positive week for AD even if the operation was still hampered by the problem of the trajectory stability at extraction.

Several FGC power supply faults occurred during the week. The system is not yet fully integrated in the control room environment (problem with the interaction between the FGC class and LASER).

Concerning the problem of the trajectory stability the studies are trying to correlate the jitter to the other machine's devices (at the moment several devices have been considered but no direct correlation has been found). A magnetic probe has been installed to investigate a possible correlation of the orbit jitter with the magnetic field reproducibility. The electron cooler is producing a bad shot once out of 10 pulses but there is no correlation with the orbit jitter.

L. Bojtar modified the magnetic cycle editor to add flexibility in the definition of flattop for MD studies. J. C. Oliveira improved the fine tune of the stochastic cooler. T. Eriksson acknowledged BE-BI for the support in the commissioning the new orbit system.

K. Hanke asked if the FOM could help with the problem of the trajectory stability. B. Lefort answered that a support to put in place the logging of the ejection kickers would help.

AD Users (H. Wilkens)

The users are complaining about the beam position jitter. There will be a 3-weeks stop for He station maintenance. The period on the He maintenance will be combined with the water-cooling maintenance. S. Deleval confirmed the scheduling.

SPS (V. Kain on behalf of Y. Papaphilippou and H. Bartosik)

After the successful scrubbing run of previous week, the SPS continued its operation smoothly, by delivering beam to the North Area (with increased intensity since Tuesday morning, 11 November), the HIRAMAT cycle setting up, a dedicated MD on Wednesday with successful acceleration of the doublet beam, interleaved with a short technical stop, and optimization of Argon beams for fixed target physics, during the last part of the week.

On Tuesday, the fixed target intensity was increased, delivering $30e11$ in each North Area target. The setting up of the cycle for HIRADMAT also started.

On Wednesday, the dedicated MD was focused on the setting up of the doublet beam for LHC scrubbing. The SPS also profited from the PSB intervention to work on the beam energy tracking system and the filters in the QF power convertor regulation. As the beam from the PS complex came back only at 16h15, with the agreement of the physics coordinator, the MD was prolonged until 21h00. Then 2 batches with 48 doublets were successfully accelerated, with $1.4e11$ /doublet. After the beam was given back to the users, it was found that the spill in the North Area was sometimes perturbed and this was associated to the QF current regulation. The specialist suspects that problem is due to the power supplies in the electronic rack of the regulation and will further investigate the issue.

On Thursday morning, the beams were cut for 2 h due to the failure of a magnetic by-pass power convertor (SBYH2109) in the extraction line towards the North Area, which required the intervention of the First Line.

On Friday morning, the beam to the North Area was stopped for 1.5 h due to the DSO tests of H4. During Friday night, all beams were cut for 1.5 h due to a server connection problem with RAMSES.

On Saturday, the LHC DSO tests took place. In the afternoon, the piquet EN-STI had to intervene to unblock a collimator jaw in H4 (XCHV.022.131).

On Sunday a problem with a magnet in the North Area caused 2 h downtime.

North Area (L. Gatignon):

The intensity on T4 was increased last Tuesday (from 15 to $30 \cdot 10^{11}$ ppp) and on T6 today (up to $60-70 \cdot 10^{11}$ ppp). The commissioning of the K12 beam has been completed successfully on Tuesday, but the quality of the incoming beam on T4 needs further study (backgrounds from upstream line). Also the spill shape, both on T4 and T6 needs optimization. A strong 50 Hz ripple (factor 3 between max and min) was reported by NA62, very similar to the observation done by COMPASS in the last weeks of the 2012 run. The latter is quite critical for the

experiments. Some work has already been done and a feedback is expected from the experiments.

In the areas various problems on collimators required interventions for the EN-STI piquet. On Sunday around noon the magnet piquet was called for a coil temperature interlock on a series of 9 MBN dipoles in P42, zone TCC8. This was found to be due to a broken interlock cable (3.5 hour downtime).

The DSO test for GIF++ took place successfully on Friday.

On Friday the increase of intensity in the secondary beam caused a radiation alarm on a monitor inside the M2 tunnel (beam for COMPASS). After discussion with DGS-RP, the threshold was increased by more than a factor six. However, due to a problem with RAMSES connectivity, it took more than an hour to reset the veto.

North Area Users (H. Wilkens):

There were perturbations related to the access system. On NA62 and COMPASS, new detectors were installed during the week.

IONS

Linac3 (R. Scrivens on behalf of J. B. Lallement)

It was a smooth week except an RF related problem today (18 November) presently under investigation.

LEIR (S. Pasinelli)

It was a calm week for LEIR. Beam was available for PS and SPS during the week.

There was a problem with the magnet dipole ETP.BHN10 (1 h downtime). The EPC piquet replaced one of the three power supplies and solved the problem.

The electron cooler went suddenly off on Monday during the operation with all solenoids in "external fault" error. The interlock seems to come from a faulty flow-meter. The specialist will check the flow-meter next Monday during an access.

Tests are going on for the BIPM. To reduce the magnetic cross-talk between LEIR and PS an approach similar to the Linac2 one will be tested with the aim to reduce the beam position fluctuation at the LEIR injection.

PS (R. Steerenberg)

There was a problem with the ion cycle. The magnetic cycle definition was wrong and the beam could not be injected.

SPS (V. Kain and T. Bohl)

The setting up of the Ar beam for fixed target physics continued on Thursday and Friday, with the successful acceleration of the beam to the intermediate flat top (26 GeV/c proton equivalent momentum).

TI (P. Sollander)

It was a relatively quiet week. Despite the heavy rain there were no floods in the tunnels.

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.

Concerning the UA9 experiment and the MD next Wednesday it was confirmed that the UA9 will run from 18h00 to 06h00 and the MD will start at 06h00 and end at 18h00.

R. Scrivens remembered that there will be an evacuation exercise in Linac2 tomorrow morning (19 Wednesday) starting at 09h30.

4 Beam request for the next Scrubbing Run (H. Bartosik)

H. Bartosik presented the request for the SPS scrubbing concerning the beam characteristics. The slides can be found at

<https://espace.cern.ch/be-dep/FOM/Presentations%202014/Forms/AllItems.aspx>

The main requests for the scrubbing run concern the 25 ns standard and doublet beams:

- 25 ns standard production scheme
 - Nominal intensity (1.2e11 p/b) with optimized transverse emittance,
 - High intensity (~2e11 p/b).
- 25 ns doublet
 - Up to 2e11 p/b.

Other desired variants for electron cloud studies and future scenarios

- BCMS 25 ns up to 2e11 p/b to check low transverse emittance beams,
- 80 bunch trains on standard 25 ns beam to test effect of longer trains on electron cloud,
- 8b+4e on standard 25 ns beam to test electron cloud mitigation with this scheme.

R. Steerenberg commented that some of these beams are challenging.

To measure the emittance blow-up along the train, a bunch-by-bunch emittance measurement is required. At the moment this is possible only with the BWS 519 but not with the BWS 416. E. Piselli commented BWS 416 has a broken amplifier and 1 h access has to be planned to repair it. A possible slot for the intervention will be tomorrow (19 November) at 06h00. E. Piselli will transmit the information to BE-BI.

5 AOB

The status of the WS was presented by E. Piselli. The slides can be found at

<https://espace.cern.ch/be-dep/FOM/Presentations%202014/Forms/AllItems.aspx>

From 17th November at 16h00 the modified WS FESA class deployed for all the injectors WS. All WS can be used without any restriction. The software has been corrected by A. Guerrero and it is believed that the WS will come back to a stable operation as it was the case the last 5 years. The hardware and the firmware did not show any correlation to the breakage and no changes are needed on all the operational wire scanners.

K. Hanke remembered that there will be the test of the “Reseaux de Secours” on the 16 December. F. Tecker asked if could be moved by one day since the CTF3 run will stop on the 17 December. K. Hanke replied that this intervention was already planned and unfortunately the FOM cannot reschedule it.

K. Hanke reported there are two interventions planned for the Access system. The first intervention concerns the maintenance of the AD access door (YEA01.ADR=193) on the 20th and 21st November. The second intervention concerns an update in the access software. During the interventions there will be no impact on the beam but during the second intervention (1 hour maximum) the use of all PS complex access points in restricted mode will not be possible. The proposed day for the second intervention is on the 25th November between 13h00 and 14h00. Both interventions were approved.

Concerning the work in the ISOLDE hall, E. Siesling and R. Catherall confirmed that work can continue during the Christmas stop. There is no problem working in the hall, both zones of the hall can be accessed and DGS-RP have approved the work. E. Siesling will supervise the activities. K. Hanke asked E. Siesling and R. Catherall to provide their telephone numbers to the CCC (TI) during the Christmas stop if needed.

S. Mataguez informed that all required maintenance work of the “ponts roulants” for Linac2, Linac3, PSB and PS will be performed, tested and validated during the YETS-2014.

C. Mastrostefano asked if the YETS-2014 activities could be anticipated to the 15th December in the first half of the Linac2. Helmut Vincke will verify with the DGS-RP team and report during the next FOM. K. Hanke reminded that all interventions for the YETS-2014 have to be validated at the FOM before the Christmas break. Helmut Vincke reminded to submit the IMPACT requests within the deadline otherwise RP cannot validate them.

The next FOM meeting will be held on the 25th of November. The agenda will be communicated in due time.

Minutes edited by G. Sterbini.