



Summary of the 31st FOM Meeting

Held on Tuesday 24th October 2017

Agenda (<https://indico.cern.ch/event/674478>)

- 1. Follow-up of the last FOM*
- 2. Status of the machines*
- 3. Schedule updates*
- 4. AOB*

B. Mikulec chaired the meeting.
The list of presence can be found in [Annex 1](#).

1. Follow-up of the last FOM

Minutes of the previous meeting were approved.

2. Status of the machines

LHC

M. Giovannozzi gave the LHC status. This should be a standard week with the exception of Thursday, when in the morning high beta optics will be tested and afterwards a special fill for ATLAS calibration (150 nominal bunches separated by 525ns to avoid any encounters in the straight sections) are scheduled.

Comment from **F. Tecker**: The Van der Meer beam with 4 bunches spaced by 525ns was taken by the PS. The emittances are 2.5/2.1 μm rad H/V. The SPS will measure the emittance and an eventual further tuning can be done on the PS/PSB side.

Comment from **M. Fraser**: It was not yet sent to the SPS.

Question from **B. Mikulec**: During previous meetings **R. Steerenberg** and **J. Wenninger** commented on the requested beams for the special LHC runs at the end of the year, which were not yet fully defined. Are they already defined?

Answer from **M. Giovannozzi**: This needs further discussion.

Comment from **R. Steerenberg**: There are ongoing discussions to give extra MD time to the LHC at the end of the run, so it is possible that additional requests for special beams will be placed.



Linac2&Linac3

J.-B. Lallement provided the status of the linacs by email. Slides are in [Annex 2](#).

Linac2: There was only one minor issue this week. On Tuesday afternoon, for an unknown reason, the amplitude of the first DTL tank went down generating losses downstream. It was solved by the RF team switching the tank amplitude command in local (15 mins downtime).

Linac3: Overall a good week with some source pulse to pulse instabilities (especially during the second part of the week) and few source RF generator resets.

LEIR

S. Hirländer reported for LEIR ([Annex 3](#)) Not a bad week, availability was 94%.

There were 2 problems

- A broken PCB had to be exchanged in the electron cooler.
- Power converter ER.CRF41 tripped, however, the piquet was investigating ER.CRF43 instead. When it was clarified a simple reset solved the issue.

The injected beam intensity was increased to $3e10$ charges (a new record) thanks to transfer line optics rematch and the source tuning. Increase of ejection intensity to $5.6e10$ charges for NOMINAL beam is also thanks to RF tuning.

PSB

B. Mikulec presented the status of the PS Booster ([Annex 4](#)). Excellent week with only little downtime due to the following faults:

- Monday morning (last week) access was needed to repair a ventilation unit of the R3 C02 cavity.
- On Wednesday, the RF team had to intervene to solve a Transverse Feedback cooling issue
- Firstline intervention for a BTY line quadrupole (it influenced only ISOLDE).
- Saturday morning all C16 cavities tripped with an 'air flow' fault. The HLRF piquet had to exchange a ventilation power supply (1h20m downtime for certain beams).

Many MDs were again performed last week with the involvement of several groups, and for the first time the Finemet cavity was successfully used for beam splitting (production of an h2 MTE-type beam). New request for Roman Pots beam MD_LHCINDIV_LowInt_lowEmit: quick check confirms transverse emittances around 0.5 mm mrad for $\sim 10E10$ p on R3 and it can be taken by PS. All beams were stopped this morning at 6AM to prepare the RP survey after the stop of the NA proton run; only exceptions are LHC fills.

Today there will be an intervention on the BT1.SMV10 septum to cure drifts of R1 trajectories and to connect BLM to investigate losses.



ISOLDE

J. A. Rodriguez reported the status of ISOLDE ([Annex 5](#)). Availability was 93%. During the week ${}^9\text{Li}^{3+}$ at 8.0 MeV/u to the Scattering Chamber (XT03) was set up, which turned out to be very difficult. Main Issues:

- Lower yields than expected in the target (probably due to the material chosen for the ion source).
- Difficult setup of the REX-TRAP because of the low mass of the ion.
- Gradient of SRF cavities pushed very high: quite a few trips of two of them.
- Problems with the movement of the target holder in the experimental station.

From Wednesday to Friday and from Monday to Tuesday ${}^{12}\text{C}^{4+}$ at 8.0 MeV/u beam was delivered to the users.

ISOLDE Users

K. Johnston: The physics aim in week 42 was to perform transfer reactions with a ${}^9\text{Li}$ beam – to study ${}^{11}\text{Li}$ – at 8MeV/u to the scattering chamber at XT03. Li is a very light ion and extremely challenging to transport through the machine, but the run was more difficult than expected. In addition to transporting the beam – for which the users are very grateful to the whole operations team who performed heroics to achieve this – there were issues with the experimental setup, which delayed the start of the experiment, and the target/ion source were under-performing: initially thought to be solely an ion source problem, there are some doubts about the target itself; standard isotopes are not being well produced. In the end, with a factor of 10 less yield than expected, the experiment can only perform a proof of principle run – which has been successful – but to achieve the final physics goal this experiment will have to be re-scheduled in the future.

PS

F. Tecker reported the status of the PS ([Annex 6](#)). Good week with 97% availability and only 1/3 of the downtime was due to the PS faults:

- POPS trip
- Some short trips of 10 MHz cavities caused 0.5h down time, and additionally 1h of degraded beam for AD because the spare cavity used as the replacement of the faulty one didn't follow the requested RF function. This has been fixed by now.

B-train distribution was switched back to the White Rabbit and the issue with POPS occasionally missing a single cycle was observed again. However, the experts think that they found the cause and it should be fixed today.

High Intensity MTE ($\sim 2.5 \times 10^{13}$) was sent to SPS on Wednesday.

The rate of the delivered intensity to nTOF is still above the originally assumed one and already 94% of the target was accomplished.



East Area

B. Rae: A good week, nothing to report.

East Area Users

H. Wilkens: I confirm a good week in EA. On the user meeting a possibility to have more cycles, but with lower intensity to reduce the amount of radiation alarms, was discussed.

Comment from F. Tecker: The request was passed to the operators.

nToF

D. Macina send an email that there was nothing to report for nTOF.

AD

B. Dupuy reported on the AD status ([Annex 7](#)).

Availability was 99.8%.

A software problem did not allow to finish the stochastic cooling MD on Monday (impossible to put AD in PAUSE mode). Since Friday important variations in deceleration are observed, which are still under investigation.

Following several breakdowns of the ELENA H⁻ source, it is out of spare components for protection circuits, and now it can work only with p-bars from AD.

AD Users

H. Wilkens: BASE wanted to refill the trap these days, but due to their issues they postponed until the next week.

SPS

H. Bartosik in place of **F. Velotti** reported the SPS status ([Annex 8](#)).

Availability was 93%.

Main downtime due to:

- DSO tests for NA.
- Control of the main PCs caused wired trips (bug which is being fixed) of the QF and QD as consequence of dV/dt threshold exceeded. EPC experts remove this threshold, as not harmful for the converter itself.
- Server in BA4 was not sending the right functions to the PCs. This also included one of the extraction sextupoles provoking high losses at the ZS and blocking the extraction. Prompt reaction of the shift crew stopped the SE. Reason is not yet understood.
- BCT4 published data with shift of 200 ms - this caused the PROBE-BEAM-FLAG to be always true. A reboot fixed the issue.
- Interventions on Full Economy mode.



The 2017 proton run for the NA officially ended with about 10% more protons delivered to T6 than foreseen at the beginning of the year. The ion beam setup for the NA has started. On Wednesday, during the dedicated MD the high intensity MTE beam was injected into the SPS. It was to check for any unexpected showstoppers with the MTE scheme with the intensity needed for the future beam dump facility experiments at the SPS (e.g. SHiP). As expected the transmission was lower compared to the operational Fixed Target beams due to the higher vertical emittance and the limited vertical acceptance of the SPS. Apart from this expected degradation, no other immediate issues were encountered on the SPS side. Up to $4e11$ ppp could be accelerated to 30 GeV in the SPS, i.e. beyond transition crossing.

Comment from R. Steerenberg: In view of the soon to be taken IEFC decision whether some machine elements for the CT extraction can be removed from the PS during LS1, the input about possible emittance reduction from the Linac4, PSB and PS needs to be provided.

Comment from R. Alemany Fernandez: The setting up of the ion beams was finished within 16 hours while it was scheduled for 24 hours. Thanks to all the teams involved.

North Area

B. Rae: Last week was fine. We got ion beams fast to H2 and H4, while H8 is still outstanding.

North Area Users

H. Wilkens: The completed proton run was very successful and I would like to thank all the machines.

AWAKE

No report.

TI

R. Ledru: Nothing to report.

3. Schedule Updates

B. Mikulec presented the latest version of the [injector schedule](#).

At the moment the radiation survey is being prepared. The protons were stopped already yesterday, with the exception of LHC fills, and ions will be stopped at 11h30. No LHC filling from 10AM until 4PM.

Question from D. Mcfarlane: Is the 2018 schedule already available?

Answer from R. Steerenberg: The SPSC was discussing the very last requests and it should be published very soon.



4. AOB

Maintenance AD Access Point YEA01.ADR=193 from Thursday October 26 08h30 to Friday October 27 17h00 **was approved.**

From November 1st **S. Hirländer** will replace **P. Skowronski** in the function as scientific secretary. B. Mikulec thanked P. Skowronski for his important contribution. From now on please send requests and comments concerning the FOM to **S. Hirländer** and **J.-B. Lallement** in parallel.

Next Meeting: 31st of October.

Minutes reported by P.K. Skowronski on 25th of October.