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# Summary of the 24<sup>th</sup> FOM Meeting

Held on Tuesday 5<sup>th</sup> September 2017

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Agenda (<https://indico.cern.ch/event/663191/>)

- 1. Follow-up of the last FOM*
- 2. Status of the machine*
- 3. LHC MD3 beam requests*
- 4. Schedule update*
- 5. ITS3 preliminary list of interventions*
- 6. AOB*

## 1. Follow-up of the last FOM

**V. Kain** chaired the meeting.

The list of presence can be found in [Annex 0](#).

The [minutes of the 23<sup>rd</sup> FOM](#) were approved.

## 2. Status of the machines

### Linac2 & Linac3

**D. Kuchler** reported the status of the linacs.

It was a very good week for Linac2. There was only a 30 min downtime on Monday evening when the RF tripped due to a vacuum interlock. There were some pressure spikes recorded on Tank1 and one of the ion pumps tripped. The RF could be reset and the ion pump was restarted the next day.

The week was much more problematic for Linac3 suffering since Wednesday from an RF issue on tank1. **R. Wegner** reported on this issue ([Annex 1](#)). After instabilities were observed on the tank1 RF, it was decided to replace the tube, on Wednesday afternoon, following the standard procedure. Unfortunately, during the amplifier restart, the crowbar stopped the high voltage at relatively low power level. The amplifier was disassembled on Thursday and the grid1 support was found to be partly molten. On Friday, further investigations showed the replacement tube had a bad vacuum and caused the problem at the restart (first defect of this kind in 20 years). As there was no spare for the grid1 support, and in the view of producing a new one, it was measured at the metrology and its material was analyzed. The first replacement piece in DELRIN will be ready tomorrow and two others, in PEEK, will go into production as soon as possible. The amplifier will be restarted on Friday and normal Linac3 operation will resume on Friday afternoon. Note that it is already foreseen to replace



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the RFQ and tank1 amplifiers by solid-state amplifier during the LS2 in the framework of the consolidation project.

**R. Alemany** asked whether the high-voltage impedance tests that were done on the faulty replacement tube could be now done systematically before any tube replacement. **R. Wegner** answered that this problem never happened in the last 20 years but he will pass the message to the linac RF operation team.

## LEIR

**S. Jensen** reported on the LEIR status ([Annex 2](#)).

As there was no beam for most of the week due to the Linac3 issue, there was nothing special to report.

## PSB

**V. Forte** presented the status of the PS Booster ([Annex 3](#)).

It was a good week with an availability of 98.4%. The main issues were the breakage of the wire-scanner R2H on Monday night (BI team will substitute it during the incoming technical stop along with the prototype wire-scanner), and a beam inhibit that happened on Tuesday for 1h45 (was caused by an access to the switchyard following a PS request for exchanging a tube in cavity 36). There is still an issue with R4 MRP (BI following-up). Many MDs were scheduled and performed last week, emittance measurements along the cycle, finalisation of BCMS 1.5 eVs, RF tests and MTE optimisations.

## ISOLDE

**E. Malti** reported the status of ISOLDE ([Annex 4](#)).

It was a quiet week and the experiment on XT03 ran pretty smoothly. There were many RF issues related to cooling water interlocks which are being solved now. A new target was installed on HRS.

## ISOLDE Users

**K. Johnston** reported that last week's run on GPS was a continuation of the previous with IS619 taking  $^{15}\text{C}$  to the third beamline of HIE-ISOLDE (scattering chamber) where scattering measurements of  $^{15}\text{C}$  from a  $^{208}\text{Pb}$  target were made to study the properties of this halo nucleus. With the exception of a few trips from time to time and occasional optimization, the run went quite smoothly, and new data were obtained on this system. Since yesterday morning GPS is running for medical isotopes and biophysics and HRS is setting up for laser spectroscopy of Ni, which should start properly on Friday morning.

## PS

**H. Damerou** reported the status of the PS ([Annex 5](#)).



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It was another very good week for the PS with an average beam availability of 98%. No beam could be delivered to TOF on Monday evening during 25 minutes due to an issue with the power converter of a quadrupole (QF0415S) in the FTN line. On Tuesday a short access was required to exchange the final amplifier of the 10 MHz cavity C10-36 causing a total downtime of 2h. The 8b4e 56 bunch beam has been optimized and delivered to the SPS since Friday. On request of the experiment in the T9 branch of the east hall, which will finish on 13/09, as many EAST\_North cycles as possible are produced in agreement with the physics coordinator. The preparation of 8b4e and BC(MS) (4x8 bunches) is being prepared. Although ToF was penalized last week, the integrated delivered beam intensity is still well above schedule.

### East Area

**B. Rae** said that it was a smooth operation for all beam lines in use. T11 will start operation for CLOUD on September 18<sup>th</sup>. Magnets have been tested successfully.

### East Area Users

**H. Wilkens** said the users were very happy as they received 80% more intensity than standard weeks.

### nToF Users

There was no report.

### AD - ELENA

**L. Botjar** reported the status of the AD.

The AD ran pretty well. There were nevertheless few problems over the week. The injection kicker went down many times causing radiation alarms and on Friday evening a thyatron finally broke down. The specialist came in and solved the issue. The injected intensity varied sometimes about 20%. It seems to come from a regulation problem of a power supply in the injection line and it will be further investigated this week.

**T. Eriksson** reported on the ELENA status.

There are waiting for the RF reliability to improve. There are still some H<sup>-</sup> source instabilities. The Ecooler has to be installed but there is no detailed planning for installation yet.

### AD Users

**H. Wilkens** said it was a week with good beam availability. The AD experiments could have an issue with liquid helium during the long weekend. The delivery is normally planned before Thursday. The BASE experiment will continue running until Friday when other experiments will hopefully be able to cool down.



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## SPS

**V. Kain** reported the status of the SPS ([Annex 6](#)).

It was a very good week in the SPS with an availability of more than 95% with the main faults coming from the injector chain and a scheduled intervention of 2h last Thursday, where a limitation against overdriving the new solid state amplifiers was implemented in the RF low level. During the MD on Tuesday to measure the tune shift in the SPS with intensity, experts found that the chirp signal was not properly configured (had not been for years) and repaired it. The FESA class to automatically measure the tune bunch-by-bunch from the injection was finalized by the damper team. Since Wednesday evening the quality of the fixed target beam with about  $3.4e+13$  is very good from the PS and a transmission of more than 96% could be achieved in the SPS. On Friday, intensity fluctuations at 70 Hz appeared on the slow extracted spill linked to a ripple at the same frequency of the SPS main dipoles. The EPC experts investigated and removed finally SMD11 from the configuration.

## North Area

**B. Rae** said that the beam quality (H6 dose, transmission to T10) improved significantly. On Thursday morning, a general water cooling problem in BA81, tripping many power converters. It was due to a valve opened by users (about 1 hour lost). COMPASS/M2 had some problems with the SM2 spectrometer in the last few weeks. When they change polarity (2x per week), they see often a "MCB Error" and the power converter cannot be reset. The CCC always needs to call a piquet when this happens and the problem can be solved remotely.

## North Area Users

**H. Wilkens** said it was a good week for the NA users.

## HiRadMat

There was no report.

## AWAKE

**E. Gschwendtner** could not be present at the meeting and sent the following information:

*AWAKE physics run since 25 August 2017 until Monday, 11 September early morning. During this run the alignment of the laser and the proton beam has been strongly improved, which is reflected in more stable measurements of the seeded proton self-modulation. Laser timing scans and beam intensity scans are performed at different plasma densities, unfortunately some of the measurements had to be delayed due to the frequent LHC filling. Several short accesses were needed to fix experimental diagnostics and laser issues.*



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## LHC

**R. Steerenberg** said that the week started pretty well with standard beam using 1500 per beam. Few ramps were then lost in 16L2 during the week that forced operation to go down to 1164 bunches. The tests with 8b4e worked very well. And the LHC is now taking 1500 bunches. A comparison with and without electron cloud will be drawn. A decision will be taken in the LMC on the strategy to adopt in the coming days.

## TI

**J. Nielsen** reported on the main perturbations of the week. There was a major water leak on Tuesday in BA2. Wednesday. On Thursday, there was a trip of the NA cooling station in BA81 due to a user refilling his circuit.

### 3. LHC MD3 beam requests

**M. Solfaroli** presented the LHC MD3 beam requests ([Annex 7](#)). Several beams (high intensity 8b+4e and  $1.4e+11$  25ns standard) still need preparation. The Wednesday MD still needs to be confirmed depending on the machine status at that time.

**K. Cornelis** commented that information on how often they will request the beam should be provided.

### 4. Schedule update

**V. Kain** presented the injector schedule version 1.4 ([Annex 8](#)).

The LHC MD3 is taking place next week. The technical stop is scheduled for the following week. In view of the technical stop, RP will circulate a tentative planning for beam stops and access start times by the end of the week. It will be presented at the next FOM.

### 5. ITS3 preliminary list of activities

**A. Berjillos** presented the list of Linac2 and Linac3 activities ([Annex 9](#)). The Linac3 source plasma chamber will be replaced from the 18/09. Normal operation is scheduled to resume on the 22/09

**D. Nicosia** presented the list of LEIR activities ([Annex 10](#)). The LEIR TS is depending on the Linac3 schedule and will be extended accordingly. The maintenance of the BPMs in the ITE line taking place in the switch yard, it will be coordinated together with the PS coordination.

**D. Hay** presented the list of PSB activities ([Annex 11](#)). The 2L1 and 4L1 wire-scanners will be replaced. The cabling intervention is meant as a test in preparation of the 131 cable installation scheduled in the YETS. It requires a special authorization for the safety group. The intervention on the pickup coil will



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require a main power supply lock-out. Concerning the wire-scanner replacements, **J. Ferreira** commented that the vacuum group will first intervene in the PS as the pump down time is much longer there.

**F. Pedrosa** presented the list of PS activities ([Annex 12](#)). He highlighted the interventions requiring a stop longer than 24 hours. They will be discussed with intervention responsables.

**D. Macfarlane** presented the list of SPS activities ([Annex 13](#)). At the moment. There is no intervention requiring breaking the vacuum. Intervention are mainly usual visits and maintenance. The BA5 lift is out of order and should be repaired. If a 2 hours access occurs by the technical stop time, EN/EL should be informed such that they can anticipate the TS work. In the worst case scenario, access to BA5 will be granted through BA6. As usual, one can expect to have a more complete list of activities next week.

## 6. AOB

There was no AOB.

**Next Meeting: Tuesday 12<sup>th</sup> September 2017**

Minutes reported by [JB. Lallement](#) on 6<sup>th</sup> September.