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# Summary of the 21<sup>st</sup> FOM Meeting

Held on Tuesday 15<sup>th</sup> August 2017

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Agenda <https://indico.cern.ch/event/659235/>

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

## 1. Follow-up of the last FOM

**K. Cornelis** chaired the meeting.

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

The minutes of the 20<sup>th</sup> FOM were approved.

## 2. Status of the machines.

### Linac2 & Linac3

**G. Bellodi** reported the status of the linacs ([Annex 1](#)).

The overall availability of the machine was almost 97% dominated by three major faults.

On Thursday (10<sup>th</sup> August) an access was scheduled in the shadow of the PSB fault for maintenance to the source HV system (2.5 h).

On Saturday (12<sup>th</sup> August), a fault of a power converter (LTB.QDW40) caused almost 2 h of downtime. The EPC piquet was called and replaced the power converter.

During the second half of the week the beam transmission was affected by frequent breakdown of the buncher (LI.BU01). The situation worsened during the evening of Saturday (12<sup>th</sup> August). The RF piquet was called but did not manage to fix the problem. The source of the breakdown is not yet identified. In the morning of Sunday there were several iterations on this issue and investigations are still ongoing. Whenever a LI.BU01 breakdown occurs, almost 60 mA are lost in the transmission (LT.BCT20).

**K. Cornelis** asked if stops are foreseen to investigate or fix the problem. **G. Bellodi** explained that the piquet asked for a short stop yesterday (Monday, 14<sup>th</sup> August) but the intervention did not help. Additional short stops may occur depending on the progress in the understanding of the source of the problem. **K. Johnston** commented that HRS would like to run at the beam intensity limit next week (2  $\mu$ A) and this intensity jitter can jeopardize the data acquisition.

**G. Bellodi** reported that Linac3 ran smoothly.



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## LEIR

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

Apart from a few hiccups (mostly resettable faults) the week was very quiet. Several MD studies are ongoing.

## PSB

**A. Findlay** presented the status of the PS Booster ([Annex 3](#)).

The availability of the machine was 95%. In addition to the Linac2 downtime, there was a problem with the QDE power supply on Thursday (10<sup>th</sup> August, 3 h downtime). After the intervention, the current ripple on the power supply was solved. In the shadow of this intervention an access was organized to reset the R2V wirescanner (this device is now operational) and to measure the radiation hotspot around BHZ52. Preliminary analysis showed that this could be generated by the PSB R2. Investigation will continue.

On Sunday (13<sup>th</sup> August) there were 2 hours of downtime for R1 on MTE due to a fault on the LLRF frontend. Due to an ongoing issue (no alarms notified by the low-level frontend) the problem was difficult to diagnose. The LLRF piquet (responsible for the frontend) was called and restarted it. **A. Findlay** reminded that operational alarms and samplers are not available for the 4 operational FEC since the last upgrade on 6<sup>th</sup> July 2017 and urged to restore them rapidly.

**K. Cornelis** asked if the reduced ripple in the QDE impacted positively on the beam quality. **A. Findlay** answered that it had an effect on the tunes but there were no investigations on the impact on the beam brightness.

## ISOLDE

**L. Faradakis** reported the status of ISOLDE ([Annex 4](#)).

The availability of the beam was 94%. In addition to the Linac2 and PSB problem, the fault time was dominated by a problem with the cryogenics of HIE-ISOLDE, induced by a level drop of the LHe in the cryo-module1 (XLL2). The problem occurred during the night between Tuesday and Wednesday (8<sup>th</sup> and 9<sup>th</sup> August). On Monday (7<sup>th</sup> August) the increase of the field in the cavity SRF05, increased the power dissipation by 3-4 W. Due to the strict margin of the regulation valve (2CV960) the system could not provide enough cooling power. The LHe level started to drop but unfortunately went unnoticed. When it reached the 8% level the LLRF amplifier interlock was raised. There is no piquet service during the night so during Wednesday morning, the cryogenic operators adjusted the upper limit of the main valve 2CV960 from 33% to 36% to increase the margin of regulation and corrected the issue with the alarm of the LHe level which was not working at the time.

Apart from the issues stated above ISOLDE delivered beam ahead of schedule.

## ISOLDE Users

**K. Johnston** informed that it was a very good week for ISOLDE users.

The delivered beam was intense and very clean (no oxides). Few hiccups with tripping cavities perturbed the run but did not prevent to collect a significant amount of data.



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## PS

**F. Tecker** reported the status of the PS ([Annex 5](#)).

The overall PS availability was of 93.1%. In addition to the upstream machine downtime, the main issues were related to a trip in one of the Pole Face Winding converter (WFW, 1h45 downtime), to a problem with C80-88 cavity (2h30 of perturbation with degraded longitudinal characteristic of the LHC beam), a fault on the power converter of F61.DVT02 (30 min downtime for the EA beams) and a scheduled access in the shadow of the PSB access (2h3). During the access the C10-11 cooling system was regulated.

**F. Tecker** informed that the wire scanner 64V has the wire broken and that the Multi Harmonic Sources (MHS) RF synchronisation to PSB is being deployed on the operational beams. The nToF delivered integrated intensity is ahead of the schedule.

## East Area

**B. Rae** informed that all lines are working as expected.

## East Area Users

**H. Wilkens** informed that the users are satisfied with the beam quality.

## nToF Users

**D. Macina** informed that nToF run is proceeding smoothly. During this week, a beam position scan will be requested. **D. Macina** asked to the PS team to measure and log on daily bases the position of the beam on the nToF target.

## AD - ELENA

**L. Joergensen** reported that it was a good week for AD.

A dipole magnet was found with a wrong current value. A restart of the PLC solved the problem.

Between Thursday and Friday night (10<sup>th</sup> and 11<sup>th</sup> August) AD was switched off to allow the background magnetic measurement in ELENA.

Monday (14<sup>th</sup> August) was dedicated to MD but was perturbed from an OP7 for access. The calibration of the cryo-beam current transformer with the conventional BCT was not very successful.

In addition there was an intervention of the power supply of the injection line. **L. Joergensen** pointed out that the time to ramp the current to the nominal value is very long. This is due to the fact that the power converter controller can take only one instruction per AD cycle and can be increased only by 300 A per AD cycle (a minimum of 7 AD cycles are needed to reach the nominal current). **L. Joergensen** commented that an improvement on this aspect of the power supply would be beneficial.

**R. Froeschl** asked if the rate increase of losses could be related to the magnet fault issue. **T. Eriksson** recalled that this was the main objective of the Monday MD (14<sup>th</sup> August) but due to the problem with the beam setup, the investigation could not be carried out.

**T. Eriksson** reported that there was some progress with ELENA especially on the RF side. The commissioning is slow due the limited AD duty cycle.



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## AD Users

**H. Wilkens** informed that ASACUSA is collecting data on the pbar-He experiment. Towards the end of the month, they intend to cool and operate the CUSP experiment. Some delays are expected due to the increased demands in LHe during this transition.

## SPS

**F. Velotti** reported the status of the SPS ([Annex 6](#)).

The beam availability was good (88%) mainly dominated by the pre-injectors. Frequent but short hiccups perturbed the beams, mainly dominated by few trips in SMD10 and SMD12.

The intensity delivered to T6 is ahead schedule. During the week AWAKE started the second part of the 2017 run. HiRadMat is ready to start for the next experiment.

Thanks to the BE-BI collaboration, a significant improvement on the bunch-by-bunch wire scanner measurement was observed.

**S. Montesano** asked if the problem with the UA9 interlock was understood. **F. Velotti** explained that the issue was fixed by masking the interlock.

**K. Cornelis** commented that it was observed a correlation between the SMD10 and SMD12 trip.

**C. Mugnier** recalled that SMD12 indeed seems affected by the other mains from the 16<sup>th</sup> July. Investigation are on-going but the progress is slow due to the limited statistics.

## North Area

**B. Rae** reported that it was a good week hiccup in K12. Since Saturday afternoon many trips are affecting MNP33. Each trip can cause several hours downtime for NA62. The problem seems related to a fire cable. Investigation are ongoing.

## North Area Users

**H. Wilkens** reported that the CMS M1 magnet, one of the supra-conducting experimental spectrometer magnet, in the H2 beam line, was successfully brought to nominal current. During the test the outlet water temperature reached 35°C. The maximum temperature allowed by the power converter is 37°C. At earlier tests this year it was not possible to bring the magnet to nominal current (only about 50%) due to insufficient cooling capacity.

## HiRadMat

There was no report.

## AWAKE

**E. Gschwendtner** informed that the AWAKE run will continue until Sunday (20<sup>th</sup> August). This week was mainly devoted to beam commissioning, in particular to the alignment of the proton beam with the laser beam.

The measurement of the bunch length is now available after the bunch rotation.



Trips in the kickers and interlocks of the Fast Magnet Current change Monitoring (FMCM) perturbed the beam commissioning causing the loss of each second shots. **K. Cornelis** commented that the expert of the kicker will be back next week. **T. Kramer** added that the kicker is getting inhibited by the FMCM due to the current tolerances set in the extraction line elements. Investigation are ongoing.

#### LHC

**R. Steerenberg** informed that after a very good start of the week, following a heating of the vacuum pipe at 80 K in the problematic section 16L2, the LHC has difficulties to recover its performance. Several dumps occurred also at moderate beam intensities. In one case a quench was also produced. The problem is presently under close scrutiny by several experts.

#### TI

**C. Wetton** reported that there is nothing special to mention on the TI side.

### 3. Schedule update.

**K. Cornelis** presented the injector schedule version 1.2 ([Annex 7](#)). There was nothing special to mention for the coming week.

**J. Coupard** presented the proposal to reduce the LHC TS2 from 5 to 3 days ([Annex 8](#)). This correspond to the ITS3. The impact on the TS3 was described.

The proposal is to anticipate the TS3 (presently 24h long) from Wednesday to Tuesday and to reschedule COLDEX experiment after it.

In addition, **J. Coupard** explored the possibilities to reduce the ITS3 from 24h to 12/10 h. At the moment a shorter ITS3 will impact mainly the foreseen activities of the PSB wire scanner prototype and the maintenance of the 925 sump. **K. Cornelis** observed that part of the activity of the 925 sump can be anticipated since does not prevent to deliver most of the beams and in particular can be started before the ITS3 (in the shadow of the UA9 coasts). **R. Langlois** confirmed that the intervention on the 925 sump can be managed in 24 h.

**J. Coupard** will present the proposal to the LMC tomorrow (16<sup>th</sup> August) for final approval.

**E. Gschwendtner** asked when the ITS3 will start. **K. Cornelis** and **R. Steerenberg** informed that it is expected to start from 08h00 (access on the machines). The beams have to be stopped before following RP indications. **K. Cornelis** commented that after the LMC approval additional iterations will follow to define the details of the schedule.

### 4. AOB

The maintenance of the access point YEA01.ISO=179 from Wednesday 16<sup>th</sup> August 8h30 to Thursday 17<sup>th</sup> August 17h00 was presented and approved.



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**T. Eriksson** asked if the PS MD will be transparent for the AD run during next Wednesday (16<sup>th</sup> August). **H. Bartosik** answered positively commenting dedicated MDs are foreseen only for the SPS.

**Next Meeting: Tuesday 22<sup>th</sup> August 2017**

Minutes reported by **G. Sterbini** on the 16 August 2017