

Minutes of the 16th FOM meeting held on 22.07.2014

Agenda:

- 1) Status of the Machines
- 2) Schedule Updates
- 3) AOB

1 Follow-up of the last meeting

The minutes of the 15th FOM meeting were approved.

Pending actions:

There are no pending actions.

2 Status of the Machines

Linac2 (R. Wegner)

Linac2 was running stably during this week.

The RF amplifier faults observed last week were seen for Tank 1 also during this week (a few times per day). The tube of the amplifier on Buncher 1 degraded and had to be exchanged.

In parallel to an access to the Switchyard on Wednesday morning, the Buncher 1 tube was replaced as well as several parts of the amplifier of Tank 1 were changed (2 h of stop). Unfortunately, the fault rate of Tank 1 increased thereafter. The RF team continued working with 3 experts Wednesday afternoon and also Thursday morning when the problem was finally solved (it was a faulty current sensor in the amplifier).

Since then, no further faults of Tank 1 were seen and Linac2 operated stably.

R. Wegner added that the faulty sensor dated from the 70s. B. Mikulec commented that therefore this problem could potentially occur in the future for the others tanks.

PSB (A. Findlay)

It was a busy week for the PSB. The setting-up and the MD program have continued.

There were some breakdowns that took a while to fix, notably on Wednesday the distributor BI3.DIS was down for 2 h 15 min, then on Saturday night the MPS went down and the power piquet needed 3 hours to fix it. The problem was partly related to a faulty QFO power supply. It was replaced with the spare, but the spare was faulty too, so the original was put back in place and repaired. B. Mikulec urged the equipment groups to make sure that their spares were operational.

The MDs on orbit correction and resonance compensation continued throughout the week, but by Friday both had advanced significantly. The FGC3's were returned to their regular configuration and the data is being analysed ahead of the orbit corrections planned next week. The resonance compensation with the multipoles was done for all four rings and the values are ready to be propagated to all users.

The nToF and AD beams were worked on all week, with nToF being sent to the PS on Tuesday and the AD following it on Saturday. The AD has an issue on R4 where losses are seen at extraction with more than 350E10 (nominal 400E10), which is being investigated. The PS asked for 150-200E10 to get them started, which was possible to deliver without problems.

A trigger problem for one ring of the Tomoscope required a lengthy investigation by J.-C. Bau and the timing support team. They identified the problem and had a fix in place by late Friday afternoon. A. Findlay acknowledged them for the support. During these investigations both the BSM and the Tomoscope were not available, making the setting up of the transfer of the AD beam rather challenging.

The ISOLDE watchdog and transfer line were being checked and debugged ahead of the DSO that took place on Monday. The ISOLDE beam is still low at 400-450E10 per ring (50% of the nominal intensity), but it is expected that the orbit correction and resonance compensation work this week will improve the situation when applied to the user. Once this is done, the fine-tuning of the RF and TFB is expected to produce further gains.

On Monday the nToF beam was optimized but it is still far from the 900E10 of the nominal beam. The current nToF bunch population is around 550E10. The PS team commented that 900E10 were still far from being requested.

The ISOLDE DSO test took place as scheduled and revealed no problem.

[PS \(R. Steerenberg\)](#)

It was a busy week for the PS.

The first accelerator-based physics at CERN after LS1 started this week successfully in the East Area, North branch.

The remainder of the week was used to continue the setting up of the nTOF and AD beams, during which many smaller problems were observed that have or are being solved. The aim is to get the beam ready for delivery, but afterwards a big effort will be needed to correct and solve all issues in the control system.

The AD beam was taken on Friday from the PSB, but not all rings were fully available yet. Nevertheless the PS batch compression could be tested with the first bunch (Ring 3) and the last bunch (Ring 1). Over the weekend all the PSB rings became available and the intensity was pushed to 1.2E13 total intensity, without the batch compression.

The TOF beam was also taken and further adjusted. The intensity in the PS went up to $4.5E12$, but was limited by the PSB. It was possible to provide $7E12$ by Thursday.

The beam stoppers are now included in the MTG external conditions, meaning that the Linac2 beam production for a particular destination is stopped whenever the beam stoppers are not out. Following simulations it turns out that the beam stopper in the TT2 line that received beam during a prolonged period is not damaged and can fulfill its function normally.

On Monday the reference saving and online check do not yet work, as many old equipments are still declared in InCA. G. Kruk and his team will clean this up. The external condition for those beam stoppers that were already interlocked before LS1 was re-established.

On Tuesday during the setting up of the East Area beam on the North branch target it was realised that the secondary emission chambers do not work and that no intensity information is available for the extracted beam.

On Wednesday during an access where several interventions took place the polarity of the two last quadrupoles in front of the East area North branch target were measured and found to be wrong. This was corrected and as a result the secondary particle production more than doubled.

Thursday the DSO test of the nToF target zone was done, but not completed. The setting-up of the AD beam in the PS started. F. Pirotte added that the nToF beam permit is not yet signed and the DSO test has to be repeated.

On Friday the AD batch compression was set up with only two bunches from the PSB, while awaiting of the full AD beam from the PSB during the weekend.

During the weekend the AD and nToF beam were adjusted and optimised. There were also several issues with 10 MHz cavities that dropped out and the low-level beam control that was solved by the RF piquet.

On Monday the external conditions for the remaining beam stoppers were implemented in the MTG.

This week is another decisive week for the PS, as beam needs to be sent on the nTOF target and the final preparations of the AD beam need to be made for beam on AD target next week.

S. Hancock asked if the machine is using the nominal or the spare B-train system. R. Steerenberg answered that the spare B-train is still in use. Investigations on the magnetic reproducibility of the beam cycle are ongoing by using the FMR devices.

[SPS \(Y. Papaphilippou\)](#)

A lot of activities took place concerning the SPS internal dump (TIDVG) and were presented

at IEFC and others satellite meetings. The program is to replace the internal dump on the 12th of August. Intense investigations are ongoing to establish the reason for the accident. It seems that on several occasions high intensity beam was dumped there during 2012 and 2011.

The SPS cold checkout is continuing. Last week there were several accesses due to vacuum problems mainly for the MKE4 vacuum leak, and a leak in a dipole and a quadrupole.

The polarity checks together with the preparation of the single power converter test are ongoing. The main circuit will be pulsed soon.

Concerning the schedule, an important source of uncertainty is the conditioning time to recover the good vacuum condition needed for injecting the beam. By mid of August the situation will be more clear and official change on the schedule may be requested.

[ISOLDE \(D. Voulot\)](#)

GPS:

Stable beam commissioning on the GPS target is continuing using the Hg target.

HRS:

Stable beam commissioning on the HRS is continuing.

The targets are presently in robot and DSO test phase. SEM grid tests on the two targets are expected to be performed on Wednesday and Thursday (23 and 24 July) for GPS and on Friday (25 July) for HRS.

M. Kowalska informed that the physics program should start by next week.

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

The beam is scheduled on nToF target for Thursday (24 July). The installation of the vacuum pipe and the vacuum sealing is expected for today (22 July). Even if the schedule is tight it is still possible to meet the deadlines.

[East Area \(L. Gatignon\)](#)

The setup of the East Area was very intense.

There were polarity problems in T10 and T9 and the commissioning was hampered by frequent trips of the power supplies.

The beam stoppers can now be now controlled by CESAR interface.

At the moment everything is working and there is quite a large number of users.

H. Wilkens informed that the users are satisfied of the beam quality delivered.

AD 0

T. Eriksson sent an email before the FOM:

“AD currently is in cold checkout phase.

- Target area / Horn stripline: final tests were done last Thursday where after installation in the target area the horn was pulsed over night with nominal current and repetition rate. No abnormalities could be observed.
- DSO tests are almost complete, for AD-ring we are missing C10 RF interlock test which will be done tomorrow. Secondary zones tests are planned on 8 August.
- Some delays related to AD cycle/timing generation.
- Most HW has been successfully tested, but mainly with local timing.
- First beam on target is planned on 1 August.”

F. Pirotte confirmed that the AD DSO test is planned for tomorrow.

Linac3 (R. Wegner on behalf of R. Scrivens)

The week of Linac3 was hampered by problems with the chilled water supply.

The specialist reported that there were three different problems causing the blocking the circuit, but at the moment all them are fixed.

R. Wegner commented that whenever CV/TI detects problems in the cooling circuits they should contact the CCC or the machine supervisor to avoid possible overheating and damage of the machine equipment. P. Sollander mentioned that he would analyse in detail the reported incident.

LEIR (M. Bodendorfer)

At the beginning of last week, un-noticed, double-scaled magnet values in the ITH line (at the end of Linac3) led to propagate this error into the optimization process of the remaining transfer line (ITE, ETL and EI), including the injection septa. LEIR refused to circulate the injected beam.

On last Tuesday (14 July), the double-scaled values were discovered in ITH. Afterwards the transfer line and the LEIR ring was rescaled with the theoretical values, provided by R. Scrivens. Immediately, the beam was transferred to LEIR, but LEIR did not circulate it. Small corrections (-1.5% for ITE bendings) led to an improved beam centering of the Argon beam until LEIR.

On Wednesday (17 July), beam was circulating in LEIR. The final step was taken by scaling down the LEIR ring by another -0.5% in beam rigidity.

A number of issues have occurred since then. Timing and acquisition signals are not always received by the power supplies, nor by the working sets for status reports. Power supply control processors now crash on a daily basis. D. Calcoen is helping us to identify this problem. More statistics is needed to identify the exact cause.

Since Ar¹¹⁺ beam was circulating in LEIR, the transfer line from Linac3 to LEIR was rescaled with the newly found beam rigidity.

The present immediate goal is to accumulate more Ar¹¹⁺ beam in LEIR and prepare for RF-capture and acceleration.

M. Bodendorfer added that almost 50% of the allocated beam commissioning time is absorbed by the Switchyard/PS ring accesses.

D. Manglunki informed that on 4th of August, RP would measure the radiation on the LEIR platform to determine if it has to remain closed during the Ar run.

TI (P. Sollander)

There was nothing to report. P. Sollander will follow up the problem related to the piping consolidation in Linac3.

3 Schedule Updates

B. Mikulec presented the Injector Schedule (v1.6). It can be found at

https://espace.cern.ch/be-dep/BEDepartmentalDocuments/BE/2014-injector-schedule_v1.6.pdf

There is no change in the schedule except for the fact that the nToF DSO test has to be repeated.

4 AOB

M. Gourber-Pace informed about the request of A. Blas for installing four cables for the trigger signals needed for the OASIS channels dedicated to the LEIR TFB. There was a discussion about the needs and the procedure for the installation. After the FOM another solution was adopted that requires no intervention: the request to pull the cable has been cancelled.

Also after the meeting M. Tavlet informed by email that the management had taken the decision that it was forbidden to remove panels from the false floor during accelerator operation to avoid false manipulations that could stop operation. Every exception from this rule should be discussed at the relevant committees (IEFC/LMC).

The next FOM meeting will be held on the 29 July. The agenda will be communicated in due time.

Minutes edited by G. Sterbini.