Summary of the 10th FOM Meeting

Held on Tuesday 30th May 2017

Agenda (https://indico.cern.ch/event/642059)

1. *Follow-up of the last FOM*
2. *Status of the machines*
3. *Technical stop schedule and update*
4. *Schedule updates*
5. *AOB*

B. Mikulec chaired the meeting.
The presence list can be found in Annex 1.

1. Follow-up of the last FOM

Minutes of the last meeting were approved.

Follow up of the open action: **C. Mugnier** has organized the meeting that is scheduled on June 28 to discuss required improvements for monitoring and/or procedures for FGC power converters.

2. Status of the machines

Linac2 & Linac3

D. Küchler reported the status of the Linac2.
Linac2 was running smoothly.

Linac3 developed an issue with the RFQ on Wednesday. The amplifier was repaired, but still there is some sparking. Should be fixed tomorrow.

Question from **B. Mikulec**: Is the reason of the problem understood?
A: Yes. The RFQ coupler came to the end if its life, which is normal as it wears out. The newly installed piece was apparently not a good one and now it needs to be replaced again.

LEIR

D. Manglunki reported for LEIR (Annex 2). It was a beam commissioning week.

There were still some issues with the ITE.BHN30 power supply. First Xe beam extracted to PS last Tuesday. LEIR was in standby during the Ascension long week-end. No beam on Monday due to the Linac3 RFQ amplifier shorted gaps.

PSB

A. Findlay presented the status of the PS Booster (Annex 3). 99% availability.
No major issues to report. 2 faulty wire scanners (R1 H & R4 V) will be replaced during the upcoming technical stop. MTE beam with 600E10 is now available for tests with PS.

ISOLDE

E. Siesling reported the status of ISOLDE (Annex 4).

HRS:
STAGISO tests were carried out last Tuesday after which HRS has been in standby. Target change on Monday.

GPS:
The originally planned new target was unfortunately not ready and it was decided to use last year's target #513 carbon nanotube for the production of the 8B beams.

Stable beam setting up and proton scan plus yield checks (on Sulphur Fluorides, Tantalum Oxides, Tantalum Fluorides and Boron beams) finished on Tuesday evening showed positive results, which led to the decision to continue the run with this used target.

Tuesday night during IDS stable beam tuning the HT gave up after a whole day running perfectly at 60kV; not possible to ramp it back up.

Wednesday morning an intervention in the HT room had been planned anyway to replace a leaking heat-exchanger gauge and this access was used as well by the specialists to investigate the failing GPS (HT2) power supply. The power supply was replaced by the spare, which had just come back after a previous failure a few weeks ago. Several checks pointed this time to an issue at the GPS Front-End side and after severe investigations CV found the de-humidifier in the zone malfunctioning and using up (leaking?) chilled water used for condensation of the target zone air. This repair can only be carried out during the technical stop on Wednesday due to radiation in the target zone.
It could still run at 30kV, which is sufficient for the IDS users.

Wednesday morning after the intervention, when finally HT was back GPS suffered from another failure. This time the problem was related to a tripping circuit breaker, which cut all power in the HT room including HT and target heating. It is not known what caused it and after re-arming the circuit breaker all went rather smoothly.

Since Wednesday evening IDS is taking data on radioactive Boron beams from GPS using full intensity and max p-current from the PSB. The run will finish Monday morning when beam will be taken by REX for Trap and EBIS tests.

Few more issues during the run:

- Friday after refilling the SF6 gas in the target gas-line the yields did not improve as expected. The beam also needed retuning/calibrating. This will be discussed with the target group to have a better understanding of what is happening inside the target.
- Saturday night a few trips of the vacuum gauges causing some elements to trip and vacuum valves that closed. Sunday morning the target anode voltage tripped.

Despite quite a number of unforeseen circumstances and issues, from the physics point of view it was a good week with very happy users with the obtained data.

ISOLDE Users

K. Johnston: Very happy users. The experiment was running with 8B beams (extracted as BF2 molecules), which is still a relatively new and challenging beam at ISOLDE. A newly prepared target developed problems with the chemistry required to produce these beams (especially during the fluorination process), but fortunately the original prototype target unit was available and was found to work well. Running at 30kV was not ideal (50kV was the desired acceleration voltage), but was acceptable in the end. Hopefully by tomorrow it will be fixed because it is needed for the remaining part of the run.
The experiment IS633 used the ISOLDE decay station to measure the beta-decay of the halo nucleus 8B into 8Be, on which not much data exists. This was the first part of the experiment where precise measurements of the decay were collected. The second part of the programme will focus on measuring a weak proton branch, and will run later this year or in 2018. The first part of the experiment yielded excellent data and this part of the experimental programme is completed, with satisfied users.

Question from **B. Mikulec**: The HV voltage problem was due to the dehumidifier?
A: Yes, the high humidity lead to sparking.

Comment from **B. Mikulec**: Quick reminder: please always inform TI in case of electrical or cooling and ventilation issues, even if the specialist is contacted directly. This way the issues can be better tracked and handled if a problem persists.

PS

I. Efthymiopoulos reported the status of the PS (Annex 5).
Good week with multiple users and 95% availability. On Saturday for EAST_IRRAD-CHARM beam the PS had to reduce the number of cycles by 20% because cooling could not deal with the hot day and SMH57 was tripping. Delivered to nTOF 14.1% of the request intensity.

Comment from **S. Deleval**: The cooling issue is probably just a reduction of flow, for example because of a motor. We will follow it up.
Comment from **M. Houricane**: There was a 2 degrees temperature increase observed.
Answer S. Deleval: The 2 degrees offset is normal.
Comment from **K. Hanke**: I think that the cooling is at the limit. This type of problems is recurring and is always fixed by some temporary measures. It should be brought up to the management and an upgrade plan worked out.

East Area

No report.

East Area Users

H. Wilkens: Very happy users, it was a good week.

nToF

D. Macina: All fine.

AD

P. Freyermuth reported on the AD status (Annex 6**).**
Availability of 98%: couple of hours due to an injection line power supply fault and an RF issue in the PS. Two periods with degraded intensity due to a missing cavity that was finally fixed by a PLC upgrade. Observed intensity drifts during hot days. The exact reason is still not understood.

Question from **B. Mikulec**: Do you have any clues concerning the drift?
A: The intensity drift is most probably a temperature effect. The beam was not yet fully optimized, so it is very likely that a very small effect pushes the beam out of acceptance range.

Comment from **T. Eriksson:** Yesterday for the first time ELENA took anti-protons from AD.

AD Users

H. Wilkens: The power cut that happened 10 days ago showed a communication issue. Now we look for solutions how the experiments should be informed in case of such major events.

SPS

F.M. Velotti reported the status of the SPS (Annex 7).
An average week for the SPS, with 98% beam availability.
Main down time:

- Injector complex.
- RF 800 MHz: non-blocking issue but it didn't permit LHC 72 b injection on Wednesday. Beam delivered on Friday and ready for Monday scrubbing.
- Access (hence not a fault) in NA for hardware installation.

First experiment of HiRadMat is done. 3 high intensity shots (216 bunches) were delivered with new optics. Beam size at the experiment is uncertain, the investigation is ongoing.
Question from **B. Mikulec**: What could be the reason for the uncertainty?
A: The optics is new and the profile sizes are not as expected.

AWAKE is being commissioned. Primary proton beam was delivered to the plasma cell. Alignment of the beam with respect to the iris at the plasma cell done. Aperture was checked.

North Area

No report.

North Area Users

H. Wilkens: There were problems with H2 beam line: some magnets settings of cooling temperature and flow were changed without informing the user (CMS) so they could not be operated with nominal beam, and the experiment could not proceed.
Question from **B. Mikulec**: Do I understand correctly that it was a communication problem?
A: Yes.
Comment by **S. Deleval:** All the users on our list were informed and it was presented at the AITM.
Comment from **B. Mikulec**: Either the users need to attend the AITM meeting (or at least read its minutes), or the way the information is spread should be changed.

AWAKE

E. Gschwendtner reported for AWAKE. The run started last Friday. Proton beam, laser beam, diagnostics successfully commissioned and aligned. Now there is an access for laser works, also technical work and heating up the Rb plasma cell. From Thursday on AWAKE will start with plasma cell physics.

LHC

R. Steerenberg: The LHC operates with 300 bunches. This morning start with BCMS beam. Yesterday there was one fill for scrubbing, which provoked some problems with the access and cryogenic systems.

At 4AM before the technical stop the LHC foresees to take a 400 bunch fill and plans to keep it as long as possible.

Question from **B. Mikulec**: Is UA9 informed?
Answer by **V. Kain**: Yes, we will be able to refill for UA9 just after serving the LHC.
Comment from **R. Steerenberg**: The LHC could eventually delay the refill for some minutes if needed.

TI

Easy week.

3. Technical stop schedule and update

The coordinators showed the latest list of interventions for Linac2, Linac3 and LEIR. No major changes were signalled. For the remaining machines no changes with respect to the plannings presented on the previous FOM were confirmed.

Comment from **D. Mcfarlane**: There is a high possibility that the RP will block the magnet change in the SPS because of high radiation in the area.
Comment from **H. Vincke**: The levels rose recently, and now we simply don't know what is the dose.

Question from **B. Mikulec**: What is the decay rate in case the level is high and we needed to estimate the required cool-down time?
Answer by **H. Vincke**: Not sure, it all depends on the initial value that is unknown. There is a high chance that the intervention will be possible.
Comment from **D. Mcfarlane**: Assuming the RP gives the green light, the access starts at 8:30.

Question from **R. Steerenberg**: For the apertures that will be checked with endoscopy, in case it turns out that the magnet is damaged, are there spare magnets ready?
Answer: Yes.
Comment from **H. Vincke**: We knew that this RF finger was affected since quite some time and we should plan this intervention earlier for a shutdown period when the machine is cooled down.
Answer V. Kain: I agree.

Question from **R. Steerenberg**: What is the expected impact of this intervention on the performance of the SPS?
Answer by **V. Kain**: We will need to scrub because the sector will be vented. It should be quick, but there will be some impact.

Reminder from **H. Vincke**: Cool down times need to be watched (see the last meeting for details) and only special Technical Stop Impacts have to be used, not the standard ones.
Question from **R. Scrivens**: In case of an urgent additional intervention, the standard Impact still could be used?
Answer: Yes.

Question from **F. Tecker**: When will the PS Booster restart?
Answer by **B. Mikulec**: Not earlier than 24 hours from the start of the Technical Stop, and it all depends if all the interventions go as planned without unexpected issues.

4. Schedule Updates

B. Mikulec presented the latest version of the injector schedule.

5. AOB

No AOB.

Next Meeting: 6th of June.

Minutes reported by P.K. Skowronski on 31st of May.