Minutes of the LIU-PSB Ad-hoc Meeting #25, on 24th February 2020

Agenda (https://indico.cern.ch/event/891208/)

1. Executive Summary


Excused: A. Akroh, M. Haase.

1. Executive Summary

Reason for the meeting:

- Due to the recent issues with the water pollution in the RF Finemet circuit, the Individual System Tests (IST) of the Finemet system in the PSB have been delayed by about 2 months. The meeting has been called to work out a planning compatible with the current schedule and define the relevant milestones in order to mitigate a knock down effect on the LLRF commissioning and OP training phase.

Discussion:

- Because of the cumulated delay in the commissioning of the Finemet system, M. Paoluzzi asked which would be the level of accessibility of the PSB machine in the next months.
- F. Chapuis presented the key dates (see Fig. 1 and refer to EDMS 2332798) for the accessibility levels in the PSB and the constraints:
  - The PSB HW commissioning will start in w16. Until w20 there is no major constraint in accessing the machine.
  - From w21, the access conditions will change because of the POPS-B tests, which will be part of the interlock of the PSB safety chain.
    - The access in the PSB will be still possible, but it should be coordinated with BE-OP and the TE-EPC because of the POPS-B tests.
  - From w23, the beam tests up to the LBE dump will also start:
    - This is going to add an extra constraint, because any access in the PSB will also stop the LBE run.
Nevertheless, access in the PSB will be still possible, and BE-OP should be contacted to coordinate it, defining the priority and the best timing.

- **M. Paoluzzi** commented that an earlier start of the POPS-B tests is beneficial for the Finemet system, as one of the main concerns with the new system is the noise and during the first days of POPS-B tests, the RF team will be able to learn a lot on this front. On the other hand, in case of issues, it will be crucial to revisit the current planning. **Action: BE-OP and BE-RF to discuss the status of the tests and, if needed, review the planning, following the experience during the POPS-B tests.**

- **M. Paoluzzi** asked how much flexibility is possible in the presented planning. **F. Chapuis** replied that, at this point in time, there is none, as fixing the POPS-B test was already a challenge and any modification will have implications across machines, e.g., in the PS. **M. Paoluzzi** remarked that the BE-RF team lost already 50% of the time that it was supposed to have for the reliability run. Because of the current delay and the impossibility to move around the baseline dates, the HLRF team will work on best effort basis (no engagement on achieving the required results within the allowed timeframe) to commission a system as ready as possible within the current constraints. **G.P. Di Giovanni** confirmed that the planning should remain as it is. If, in a few weeks, the HLRF team will realize that extra time is needed to commission the system, we will re-assess the needs.

- **M.E. Angoletta** and **A. Findlay** mentioned that the LLRF team will be able to start working with the Finemet from the beginning of June 2020. **M. Paoluzzi** confirmed that this request is compatible with the current Finemet HLRF planned tests. In any case for reliability tests, it is not crucial that the signal comes either from the LLRF or it is locally generated. In general, the LLRF team needs a time between 5 to 7 weeks to commission the LLRF. The exact duration of the LLRF tests depends on the co-activity with the commissioning of the anti-protons chain and experts’ availability. Ideally, the LLRF would prefer to work with an entire sector at the time. **A. Findlay** added that the LLRF will start with one ring and move their way up to 4 rings with time and compatibly with the HLRF needs for testing. The LLRF and HLRF teams will coordinate the tests and the handover of which part of the system and
when internally. **M.E. Angoletta** underlined that the flexibility that will be required when commissioning the LLRF with the HLRF system will come at the cost of work efficiency. The extra time that might be required by the PSB hardware commissioning would reduce the LLRF progress on antiproton machines, thus impacting CERN’s antiproton program.

- All experts agreed that the current planning is still compatible with BE-OP receiving (part of) the new PSB RF system to start the training. In fact, while the PSB beam commissioning is expected to be an experts’ job, BE-OP will need some training to be able to offer supports, ie during nights and week-ends.
- In summary:
  - The LLRF will be able to work on the Finemet starting from the beginning of June. The handover of which part of the system to work with and at which moment will be handled internally by the LLRF and HLRF teams.
  - If all goes according to plan and no major issue appears, the HLRF expects to hand over a system fully commissioned by the end of July. The next milestones for HLRF are:
    - Stop and restart the Finemet system and be able to drive the required voltage on the cavities. The milestone is almost achieved.
    - Run the cavities reliably for 24 hours.
    - Run the cavities reliably for 1 week.
    - Check the noise during the POPS-B tests.
  - Thanks to a good level of flexibility and collaboration between the teams, we should be able to retain the baseline planning, eg. hand-over of the Finemet system to BE-OP in August for training.

**G.P. Di Giovanni** thanked all the experts for joining the meeting and having shown a great deal of flexibility and collaborative spirit, necessary to maintain the current baseline planning for the PSB HW commissioning. The situation will be revisited as the RF tests advance and a deeper understanding of the system is obtained.