

## Minutes PSB Upgrade WG Meeting 7<sup>th</sup> May 2015

**Participants:** E. Benedetto, T. Birtwistle, D. Grenier, J. Devine, G.P. Di Giovanni, A. Findlay, R. Froeschl, G.M. Georgiev, M. Haase, J. Hansen, D. Hay, B. Mikulec, S. Moccia, A. Newborough, S. Pittet, J. Tan, W. Weterings.

**Agenda** (<https://indico.cern.ch/event//392215/>):

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### 1. Approval of Minutes

- The minutes of the last LIU-PSB WG meeting #147, available [here](#), were approved.

### 2. Communications

- **No LIU-PT meeting was held this morning:**
  - The meeting has been postponed to the afternoon to allow people to join the staff association meeting.
- **Budget:**
  - The recent expenditures have been extracted yesterday from APT and currently **only 4.5% of the money requested has been spent.**
  - CET reports that additional money is in the pipeline to be spent (mostly from EPC), but the overall spending profile is still not looking as expected.
  - This is a worrying issue for the management, as it could lead to problems in carrying over the money not spent this year to the next years.
  - **All the WP-holders are reminded to please make sure their group spends the money that has been requested.**

### 3. Follow-up of Open Actions

- All the WP-holders are reminded to verify that their group requests for EN-MME have been propagated to B. Riffaud.
- All the WP-holders are reminded to verify that their group requests for EN-EL have been propagated to G.M. Georgiev.
- All the WP-holders are reminded to verify that their group requests for CV have been propagated to S. Moccia.
- All the WP-holders are reminded to verify that their group requests for work activities during the technical stops have been propagated to D. Hay.
  
- R. Froeschl on "Evaluate the required cool-down time for remachining of the ring BCTs-BR.TMD in 8L1". → J. Tan mentioned that the intervention work needed on each BCT in the

radiation laboratory would be 4 days per BCT, for a total of 16 days. R. Froeschl reported that for the extraction of the BCTs, there are no major show-stoppers and that the proposed cool-down time was about 2 weeks. The action is closed, but another one is opened to follow up on the optimization and scheduling of the work in the radiation laboratory.

Assigned to	Due date	Description
R.Froeschl, J.Tan	2015-11-12	<b>L4 Connection:</b> Optimize the scheduled work in the radiation laboratory for the BCTs-BR.TMD currently installed in PSB section 8L1.

#### 4. Progress on LIU-PSB Upgrade Work Activities

- D. Hay reported that two new columns for the DEC and DIC requests have been added to the master table, as previously recommended by B. Mikulec:
  - J. Coupard is taking care of it.
  - The information will be provided by G. M. Georgiev who is collecting all the cabling requests.
  - In order to make sure no part of the project is overlooked, the requests are being cross-checked with the expected work reported in the work-packages (WP) in EVM (apt.cern.ch).
- B. Mikulec suggested that even if there are no updates, it would be useful to show the file with the status of the planned activities at every meeting.

#### 5. Collect Needs for Cooling And Ventilation

- S. Moccia presented the latest status, see [here](#).
  - Several missing requests have been received.
  - **Tunnel circuit:**
    - **Some info about the C16, which is going to be on a separate circuit, is still missing.**
    - For the time being, TT2 is still part of the baseline of the LIU-PSB CV project. The requested values have to be confirmed, but no dramatic change with respect to the present situation is expected.
    - R. Froeschl noticed that there is no request for the cooling circuits for the H<sup>+</sup> injection dumps in the table:
      - D. Grenier will follow this up and send the request to S. Moccia.
    - R. Froeschl mentioned that there is not yet an estimation of the radiation received for the cooling circuit in the tunnel. S. Moccia replied that the reason why the circuits have been split between tunnel and surface is to address RP concerns. If some radiation issue requiring special care appears (like for the H<sup>0</sup>/H<sup>-</sup> dumps), it should be discussed with the RP group. It is not the case at the moment.
  - **Surface circuit:**
    - EPC provided updated specifications for the power converters. These estimates are good enough to start having an idea of the circuit design.
    - **A possible issue is about the power consumption of BR2/BAT, which is estimated to be 100 kW for the water on top of the air cooling:**

- The issue for the BRF2/BAT is mostly related to air cooling rather than to water. For the water it can be managed, but the real problem is the present **air flow available that will not be enough to keep the room temperature within the acceptable limit of maximum 27° C.**
    - A more precise evaluation for the air loading is needed by the EPC group.
    - If the power converters will be indeed needed for the Linac4 connection before LS2, some temporary air ventilation installation should be put in place.
    - The air ventilation issue will be addressed in a more permanent way during LS2 when the PSB ventilation is foreseen to be redone.
  - The consumption of the power converters in B271 will be measured on the field.
  - **A campaign to measure the flow and the power consumption on the existing equipment has been launched recently.**
- **The CV group is considering to start working on the cooling towers during EYETS 2016/2017.** The planning is being discussed with D. Hay and it will save some time during LS2.
- One open point is when to start the work on TT2:
  - The PS cooling station will have to be updated as well.
  - Currently the budget requested is 50% lower than needed.
  - There could be some budget cuts for the work to be done in LS2.
  - M. Nonis will be discussing with M. Benedikt about this issue, as it concerns expenditures for consolidation.
- **B. Mikulec asked if it would be possible to get the complete picture for the requests to CV by the end of May:**
  - S. Moccia replied that he was **not sure that the request for the surface from RF for the C16 could be finalized by the end of May.**
  - M. Haase added that there should not be problem for the water cooling requests. It is indeed unclear if the air cooling requests will be finalized by the end of May, especially for the racks in the surface.
  - For the tunnel ventilation S. Moccia does not expect that the needs will change in a significant way.
  - Nevertheless, by combining the requests obtained **by the end of May** with the measurements on the power converters, **the overall picture should be clear enough to work on the baseline of the CV WP.**

## 6. Requests to EN/EL for LIU-PSB

- G.M. Georgiev reported that the table has not been finalized yet to be presented today, but there are updates to be reported:
  - The rack requests from EPC have been checked and now the EPC group will submit the templates filled with the information:
    - S. Pittet mentioned that the DIR template for the rack installation is not really suited for the EPC needs.
    - B. Mikulec invited S. Pittet and G.M. Georgiev to resolve the issue offline.
  - This afternoon G.M. Georgiev will meet with the ABT group to discuss their needs.
- B. Mikulec asked D. Hay if he managed to update the list of contact names for the cabling requests, which was found to be outdated in one of the recent IEFC meetings:

- D. Hay mentioned that he will present a follow up of the PSB cabling requests the 22<sup>nd</sup> May 2015 at the IEFC. On that occasion, the updated list will be shown. Hopefully an action will follow in order to finalize the cabling requests.

## 7. Rack Space Allocation Layout of BRF2/BAT

- D. Hay presented the rack space and layout of the BSW magnet power converters in the BRF2 for the stripping foil chicane, see [here](#).
- The specifications for the power converter racks are taken from the EDMS document 1495860 (appendix B), prepared by D. Aguglia, which is currently circulating for approval.
- The current layouts proposed are the result of several PSB injection coordination meetings, combined with a site meeting done the 5<sup>th</sup> May 2015.
- There are two possible options for the layout:
  - **Option one** which allows to allocate only 54 racks, so still space for the 6 additional racks for controls&interlock would have to be found:
    - A solution would be to extend the placing of the racks in the BAT. Unfortunately, the BAT has some constraints about the cables length to the BSW transformers which should not exceed 30 m.
  - **Option two** allows to not over-extend the rack layout in BAT and it includes the additional 6 racks for interlock. The price to pay is to displace 4 RF cabinets.
  - In both options, one can notice that the racks for EPC are arranged in multiple of threes.
- **The proposed layout is the second one:**
  - A zone for placing the BSW2, 3, and 4 pulse transformers has been identified.
  - As mentioned earlier, 4 RF cabinets should be moved and this could be planned during YETS 2015/2016. M. Haase has been contacted and he agreed with moving these cabinets, which currently belong to C16.
- If the option two is approved, then the **following steps before YETS are:**
  - Finalise integration studies, including the BSW transformers and DCCTs.
  - Resolve equipment transportation issues:
    - The racks for EPC are all pre-constructed in metal frames.
    - It is not straightforward to transport these racks into B361 and BRF2. A solution, requiring civil engineering work, should be found.
    - S. Pittet mentioned that another possibility would be to dismantle the racks and re-assemble them in BRF2 or BAT, but it would be preferable to avoid this choice.
    - Finalise power requirements.
    - Finalise cooling and ventilation requirements:
      - The issue mentioned by S. Moccia before about the 100 kW will have to be followed up.
    - Prepare the displacement of the RF racks, which is looked at by M. Haase.
    - Prepare the area including the removal of the storage cabinets in BAT.
      - There are several cupboards in the area, mostly belonging to the BI group.
      - The cupboards will have to be removed. L. Soby has been contacted and he is looking for a solution.
      - The plan is to identify the cupboards sometime in June, give the owner a month warning and then remove them.
    - Obtain cost estimates and agree on a schedule (co-activity issues during YETS 2015/16).

- B. Mikulec asked if the layout was acceptable from the safety point of view:
  - **D. Hay replied that indeed the safety group should review the layout.**
  - M. Haase mentioned that the main issue is the access to the back of the rack of the RF power supplies, but he does not need this access.
  - G.M. Georgiev noticed that the 2D layout in slide 8 is not the updated one, so the 3D model should be taken as a reference.
    - In this layout there is enough space between the interlock rack and the wall (~1.20 m), which should be enough for safety.
    - Other areas can be accessed through stairs and walking slightly longer paths, but avoiding narrower areas.
    - M. Haase mentioned that, in his opinion, the racks currently belonging to high voltage BTKRF could be removed as they are not needed anymore.
    - **D. Hay proposed to have a written statement to agree on their removal.**
    - G.M. Minchev reminded that a DEC should be prepared as well.
    - M. Haase reported that generally he does not need access to the back of the racks for the tuning power supplies of the C16, which are foreseen to end up ~0.70 m close to the EPC racks. These racks will be updated during LS2 and on that occasion one could evaluate to move them further away or displace them somewhere else in the area more convenient from the safety point of view.

Assigned to	Due date	Description
M.Haase	2015-05-21	Provide an official statement that the racks for the high voltage BTKRF can be removed from BRF2 before/during the YETS 2015/16. Send a DEC for the concerned cables.

- **The racks will be placed on a metallic platform as high as 0.5 m:**
  - The integration of the support structures will be done by the GS group. The model will be then passed to A. Kosmicki.
- Concerning the integration, S. Moccia reminded not to forget about the pipes, which will have to be placed for cooling and ventilation.
- S. Moccia mentioned that, by looking at the layout and counting the racks, one could estimate the power distribution would be ~70% in BRF2 and ~30% in BAT:
  - S. Pittet confirmed this should be more or less the case and could be used for the CV estimate.
- **T. Birtwistle proposed to have an ECR describing the work needed to be circulated and approved.**

Assigned to	Due date	Description
D.Hay	2015-11-16	Prepare and submit an ECR to describe the proposed new rack layout in BRF2/BAT.

- **The layout presented as option two has been approved:**
  - D. Hay is in charge to follow up these modifications and will report progress at the LIU-PSB WG meeting.

## 8. AOB

- The next meeting is tentatively scheduled for the 21<sup>th</sup> May 2015:
  - The plan is to have a follow-up of the "end-2016 readiness for Linac4 connection" review, see [here](#).
  - All the open actions associated with the topic will be reviewed. The updated list is available [here](#).
- D. Hay reminded that tomorrow there will be the first YETS coordination meeting where he will present the current requests for the PSB.
- J. Tan is still working on the rebaselining of the WP for BI. It is a bit complicated because the group was given a single budget code, which was then split into five budget codes later on. It should be ready within the week.
- B. Mikulec proposed to J. Tan to check together the losses in section 4L1 of the PSB using the new BLMs. This is important for the space reservation for the matching monitor, as currently there is a hot spot from the radiation point of view. This could create problems to the electronics to be installed, which are sensitive to radiation.
- A. Findlay reported about progress on the Finemet: An operational test is up and hopefully it will be running continuously very soon.
- T. Birtwistle mentioned that there is an ECR concerning the installation of a KSW magnet in the PSB section 16L1 circulating for approval, see [here](#).
- S. Moccia mentioned that the work on the CV circuits for the EYETS is going to be reviewed in June 2016 by the finance committee, so the data should be frozen by the end of this year:
  - B. Mikulec asked which was the margin applied to the requests for CV. S. Moccia replied it is between 10% and 20%.
- J. Devine reminded about the campaign to measure and understand the power load. D. Hay asked if during the campaign one would need to lift the floor. J. Devine said it should not be needed, as they will modify the switchboards.
- B. Mikulec asked W. Weterings about the ongoing progress with the stripping foil equipment:
  - W. Weterings mentioned that the work was progressing very slowly because of some mechanical, probably alignment, issue, which is not yet understood.