

## Minutes PSB Upgrade WG Meeting 26<sup>th</sup> March 2015

**Participants:** J. Abelleira, J. Borburgh, L. De Mallac, T. Dobers, G.M. Georgiev, D. Grenier, J. Hansen, K. Hanke, D. Hay, B. Jones, B. Mikulec, A. Newborough, M. Paoluzzi, J-L. Sanchez Alvarez, L. Sermeus, J. Tan.

**Agenda** (<https://indico.cern.ch/event/383115/>):

- [1. Approval of Minutes](#)
- [2. Communications](#)
- [3. Follow-up of Open Actions](#)
- [4. LIU-PSB BI.DIS rise-time](#)
- [5. Measurement of the current KFA rise-times](#)
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### 1. Approval of Minutes

- The minutes of the last LIU-PSB WG meeting #144, available [here](#), were approved.

### 2. Communications

- **Report from LIU-PT meeting, which was focused today on the LIU-PSB planning:**
  - As weak points in the project definition were identified: EN-EL and EN-CV, as they still need to receive a complete list of requests before they can present a detailed planning and spending profile. This should become a recurrent item on the agenda of the LIU-PSB meetings.
  - Identification of obsolete cables has progressed (~13% identified), but it needs to continue.
  - The needs for EN-EL have to be completed (decabbling, cabling, fibre installation, rack installation). This will be followed up now during each meeting together with requirements to be provided by all WP holders for EN-CV.
- **Requests to EN-MME:**
  - K. Hanke reminded all the WP holders to send their job requests to EN-MME.
  - J. Tan reported that R. Veness was collecting a common list for BI to be sent to EN-MME.
- **Items needed for Linac 4 connection (see [slides](#) from K. Hanke):**
  - B. Mikulec mentioned that a decision is needed whether the WIC should be put in place during the EYETS or LS2 for the LT, LTb and BI line magnets to replace the old magnet interlock system; this decision is mainly related to the question if the cables can be pulled.
  - G. Georgiev mentioned that EN-EL have received a few more requests for cabling.
  - Software applications: J-L. Sanchez mentioned that he estimates that about one year of programming is needed. The first step should be to receive specifications for certain applications. In the meantime work can be done to collaborate with the equipment experts for the specifications of the FESA classes.

Assigned to	Due date	Description
R.Froeschl	2015-05-21	<b>L4 Connection:</b> Evaluate the required cool-down time for remachining of the ring BCTs-BR.TMD in 8L1.

Assigned to	Due date	Description
D.Hay	2015-09-01	<b>L4 Connection:</b> Define the rack layout for the interlock system.

Assigned to	Due date	Description
B.Puccio	2015-09-01	<b>L4 Connection:</b> Submit the DICs for the interlock system. <b>The rack layout is needed first.</b>

Assigned to	Due date	Description
B.Mikulec	2015-06-25	<b>L4 Connection:</b> Clarify the needs for WIC in the PSB.

Assigned to	Due date	Description
T.Dobers	2015-10-31	<b>L4 Connection:</b> Report on the progress and present a planning for the YETS to exchange the jacks for BH162 and BHZ11.

### 3. Follow-up of Open Actions

- BI matching monitor: progress is being followed up by J. Tan.

### 4. LIU-PSB BI.DIS rise-time

L. Sermeus presented one slide showing a [simulation of the BI.DIS10 pulse with PSPICE](#), which indicates that it should be possible to stay within a rise-time of 2 us. A measurement will be done next week, and the results should then be presented in this meeting.

### 5. Measurement of the current KFA rise-times

L. Sermeus presented some slides on the subject of the [current KFA rise-times](#). Measurements are only possible on BT1/4.KFA10 (loop in conductor), not on BT2.KFA20, but L. Sermeus said that in principle BT2.KFA20 should have faster rise-times than BT1/4.KFA10.

Measurements on BT1.KFA10 yield a 2-98% rise-time of 121 ns (1-99%: 156 ns). On BT4.KFA10 the measured 2-98% rise-time value is 114 ns (1-99%: 133 ns), which needs to be compared to the simulated 2-98% rise-time of 100 ns (1-99%: 105 ns). In the simulations an overshoot is present, but not in the measurements. Therefore L. Sermeus proposed to investigate whether the capacitors could be exchanged to provide a slight overshoot, which could increase the rise-time and would be a relatively simple mitigation of the performance concern. This could be done during the upcoming YETS.

B. Mikulec asked if a measurement system could be integrated in the KFA20. The answer was that this could in principle be done, but that the whole tank would have to be removed from the machine. There is a spare KFA20 in the lab, but it is not completely identical.

In any case B. Goddard promised to follow up on potential mitigation proposals, which should then again be presented in this meeting.

## 6. Open actions for survey

- Radial alignment of the main bendings:
  - For the radial movement special connectors are needed to connect pumps for oil film injection, which are no more available.
  - It is proposed to change the current jacks with SPS jacks, where only small modifications would be needed. The jacks are not as high as the ones currently installed in the PSB, but could be 'shimmed'.
  - In principle it should be possible to lift the magnets and exchange the jacks, but this has to be discussed in detail with transport. It also needs to be seen if the vacuum has to be broken for this exchange or not.
  - These jacks are adapted to the weight of the PSB magnet (2 types of jacks available: 6/10 tons).
  - If it is decided to exchange all jacks, this has to be done in 2 steps: e.g. first for the bendings no. 1, then for bendings no. 2.
  - It is proposed to test this exchange on a couple of magnets (BHZ162 and BHZ11?) during the EYETS.
- Produce a tool to align the tilt of the main bending magnets:
  - Start from the existing tilt measurement tool for the main quads.
  - T. Dobers confirmed that he would follow up that new drawings will be made, the tool produced and that it will be tested during the upcoming YETS.
- Find a solution to align magnets where the alignment screws are very difficult to access:
  - For the time being, no good and simple solution could be identified.
  - The proposal is to provide a frame, which can be fixed to the magnets, containing a motorized mechanism to turn a very short key with the needed force of ~10-15 kg. This tool has to work for different types of magnets and should solve the issue for ~95% of the currently identified problematic screws.
  - For the remaining ~5% of cases there are clear obstructions of other equipment, cooling pipes or cables. Action for T. Dobers: Provide a list of equipment with inaccessible alignment screws, add the reason for inaccessibility and illustrate this

with photos. As the last step the integration has to be contacted with this information and asked to propose a solution.

- Align the BRr.BHZ162 vacuum chambers with a precision below 1 mm.
  - Following a meeting end of last year it was decided to install a plate on top of the magnet with a known position wrt the target points. Lines with lead weights fixed on the plate could then be used to adjust the angle of the injection vacuum chambers.

Thanks to this presentation, three open actions for T. Dobers can be closed. Only one action should stay opened concerning the inaccessible alignment screws, but should be modified in the sense that T. Dobers should present around end of April a complete list of equipment where the screws cannot be accessed with the reason for it and some illustrating photographs.

<b>Assigned to</b>	<b>Due date</b>	<b>Description</b>
T.Dobers	2015-10-31	Report about the issues with the alignment of the PSB equipment.

## **7. AOB**

No AOB.