



EDMS NO.
2046672

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VALIDITY
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REFERENCE : NOT REQUIRED

INTEGRATION meeting #3

Date: 2018/11/28

Project/Activity: WP6a

Attendees:

TE-MS: Amalia Ballarino [AB], Iole Falorio [IF], Jerome Fleiter [JF], Alan Gharib [AG], Yann Leclercq [YL], , Vittorio Parma [VP], Patrick William Retz [PR], Tomas Stephen Northam De La Fuente [TS], Yifeng Yang [YY].

EN-MME: Robin Betemps [RB]

EN-HE-PO : Jani Hattunen [JH]

ATS-DO : Michele Modena [MM]

Excused: Caterina Bertone [CB], Catarina Carvalheiras [CC], Paolo Fessia [PF], Jean-Philippe Tock [JPT].

Agenda: <https://indico.cern.ch/event/773187/>

- Installation of the DFX in the tunnel [YL]
- Installation of the SDFM in the tunnel [YL]
- DFX vertical design: update on integration aspects [YY]

DISCUSSION

DFX TRANSPORT AND INSTALLATION BRAINSTORMING [YL]

- The boxes are expected to weigh less than 2 tons and list of the biggest components and relative weight has been presented. The transport path has to be discussed with the transport team but no showstopper are expected since the components are smaller than the dipole;
- The installation will take place after locating the magnets and the cryogenic lines but before the installation of the beam line;
 - There is a clear interest to install the DSH early enough to have space and definitely before the installation of the power converters [AB];
 - MM is invited to provide the non-boundary condition in the galleries, to work around them and to see if there is an available space where the DSHx could be temporarily parked [AB].
 - AG and YL are invited to start working on a procedure for installation to be presented to WP15. The proposal should include the sequence of integration and the evaluation of the time during which some components (i.e. the DSHx) would remain “parked” in some areas of the galleries [AB];
- The engineering constraints on the alignment are on the shaft side, whilst the box is decoupled by the beam line and do not require a precise alignment with the D1 side [YL];
 - A final decision on the choice of a flexi or rigid cryostat connecting the DFX to D1 should be made. If the line is rigid there will be alignment constraint from D1 too. The choice of the line depends on the choice on the bus-bars [AB];
 - The engineering tolerances should be taken into account. MM is invited to check those value and communicate them [AB];



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- The DFX supports are under study and the decision has not been taken yet. One possibility is hanging the box from the walls the other is have a support that goes around the beam line but it might be difficult [RB];
- The safety aspects should be discussed among VP,YL,VP. The impact of the unlikely event of breaking of the λ -plate on the safety devices design and on the SC-link should be quantified [AB]. VP observes that the design of the facility should not be overdone to take all the flow from the magnets [VP].

DFM TRANSPORT AND INSTALLATION BRAINSTORMING [YL]

- The box is expected to weigh less than 1 ton. The system is composed by one main component plus a D2-DFM line (mix of flexi and rigid). A length of about 45 m is available between the DFM and the shaft;
 - It should be checked if there are existing standard solution to lift a component of 1 ton above the magnet inside the tunnel [RB];
- The DFM is foreseen to be located on top of D2 and supported by the magnet underneath [YL]. In case of maintenance/replacement of D2 the DFM needs to be supported, another support should be envisaged [AG]. To be studied if the DFM can be supported to the ground [VP] or from the walls [RB]. The required supporting structure will need to be communicated to WP15 [AB];
- The installation proposal from YL include attaching the DHSm to the walls while D2 is installed. The D2-DFM line will have then to be installed underneath the cryo-jumper unit;
 - Space should be left available in case of need to replace D2 [AG];
 - YL is invited to work on a conceptual installation sequence and evaluation of the installation time for the DFM too, including on an eventual parking position required for the DSHm link [AB];

UPDATE ON INTEGRATION CHECKS AND POSSIBLE CONCEPT REVISION [YY]

- Repair of LTS-LTS splices: it can be achieved by sliding the VV and un-welding the helium vessel;
- Repair of MgB₂-LTS splices, all the alternative solutions have to be studied:
 - Removal of the beam line to drop the DFX on the floor [YY];
 - Cut of the top weld (and removal of the horizontal box) to lift the DFX up in the shaft [YY]. The process to bring the DFX back to the service gallery would require further study, the length of the link during the retraction process should be dealt with too [AB];
 - Lifting the box of only 1 m, to allow removal of the outer vessel and make the splices accessible in the tunnel [YY]. Possible, to be studied considering the space available in the surrounding area [AB];



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ACTIONS

Conceptual study on the installation sequence of the DFX and the SC-Link	AG,YL	ASAP
Conceptual study on the installation sequence of the DFM and the SC-Link	YL	2019
Checking the shaft engineering tolerances	MM	Next week
Investigate what is the standard solution for lifting equipment of 1 ton in the tunnel	YL	2019
Study on the DFM support	YL	2019
Quantify the implication on the safety devices design and on the SC-link due to a failure of the λ -plate	VP,YL,YY	2019
Study on the maintainability of the MgB ₂ -LTS splices	YY,RB,AG	ASAP

Documents:

Prepared by: Iole Falorio, Amalia Ballarino

Date: 2018-11-30

Distribution List: All attendees