



EDMS NO.  
**2046672**

REV.  
**0.1**

VALIDITY  
**DRAFT**

**REFERENCE : NOT REQUIRED**

## WP6a Integration meeting #4

**Date:** 2018/12/11

**Project/Activity:** WP6a

Attendees:

TE-MS: Amalia Ballarino [AB], Iole Falorio [IF], Jerome Fletier [JF], Yann Leclercq [YL], Vittorio Parma [VP]

EN-MME: Robin Betemps [RB]

EN-HE : Jani Hattunen [JH]

ATS-DO : Paolo Fessia [PF], Maria Amparo Gonzalez De La Aleja Cabana [MA], Michele Modena [MM]

Excused : Alan Gharib [AG], Patrick William Retz [PR], Yifeng Yang [YY]

Agenda: <https://indico.cern.ch/event/780306/>

- Installation of DFX in the tunnel: sequence of operations [RB]

- DFX installation: interfaces in the tunnel [RB]

- Status of documentation for WP6a [JF]

### **DISCUSSION**

- The equipment integration note (EIN) describing the space available for the integration of the DFX in the tunnel has been released in EDMS (number 1991506), link: <https://edms.cern.ch/document/1991506/1.1> [PF];
- A complete sequence of the DFX assembly including the sequence of transportation of the different items to the tunnel will be provided to the integration team by January 2019 [AB].

INSTALLATION OF THE DFX IN THE TUNNEL: SEQUENCE OF OPERATION [RB]

- The proposed assembly sequence for the up-to date DFX conceptual design has been presented [RB]:
  - The DFX vertical main body is proposed to be the first to be installed;
  - The top flange is proposed to be supported from the top during installation, the SC-Link will be lowered down the shaft until touching the pre-placed flange;
  - An access of about 100 mm on top of the flange is left for tuning the flange position;
  - The double wall vessel at the bottom of the vertical DFX is proposed to be inserted around the bus-bars after performing the bending of the LTS cables. A specific tool will be needed for this insertion since the vessel weight is estimated to be around 80-100 kg;
  - During the assembly, the DFX is suggested to be supported from the top while a final support from the bottom is foreseen to withstand the horizontal forces;
  - Maintenance: the intervention on the LTS-LTS splices do not require the removal of the beam pipe while in case of intervention at the SC-Link level the beam line is likely needed to be removed, but the problem is still under investigation;



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- The location of the connection box for the instrumentation is yet to be defined but there is flexibility in this choice;
- The location of the jumper is yet to be defined but there is flexibility in this choice from CRG point of view;
- VP is invited to present a proposal for the recuperation/redirection of the gas to somewhere safe in the tunnel. The proposal will be presented in January;
- Following RB's presentations the comments from the integration team [PF] are:
  - In the shaft it is foreseen an insulating shield from the radioactive area below;
  - The services available in the tunnel will be checked by Maria and communicate in the following meetings, what it has to be re-done will require extra cost from wp6a;
  - A preliminary proposal on the horizontal part of the DFX up to the  $\lambda$ -plate and on the DFX support should be provided;
  - The location of the instrumentation connection box and of the jumper should be defined ;
  - The volume needed for the DFX assembling and the maintenance of the DFX system should be defined;
  - If the horizontal part of the DFX presents a slope, the alignment requirement should be specified ;
  - The level of radiation on the DFX vertical solution is different from the one considered in the previous studies since before the system was imagined to be closer to D1 and it should be double checked;
  - It is strongly advised to consider in the installation sequence the planning for vacuum and electrical tests as well as the welds qualifications that will be performed in the tunnel: some components might need to be left open or not assembled to allow the tests performance, or some other component should be specifically used perform for example leak tight tests ;
  - The DFX needs to be pressure tested [YL]. The pressure test on the vessels will be done before installation, but this will imply the cut of some of the pre made welds. Only the welds re-done in situ will need requalification [VP];
  - The responsible of the intermediate tests are yet to be clarified [AB];

#### STATUS OF DOCUMENTATION FOR WP6a [JF]

- A DIC (Demande d'Installation de Cables) has to be filled for any request of cables installation for any component [PF], i.e. termoswitch, heater for current leads and so on
  - AG and JF are in charge of filling the DIC requests for ancillaries[AB];
- A space reservation for the pumping units should be done both in the tunnel and in the service area. Requirements have to be checked with the vacuum group [JF];
- The document on the ancillaries will be shared for comments before the end of next week [JF];
  - JF is invited to specify in the document who provides the component and which budget code is used to purchase it. If spares components are required, a different budget code should be used [PF].



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### **ACTIONS**

Complete the DFX design up to the lambda-plate	YY	Jan-2019
Propose a preliminary supporting structure of the DFX in the tunnel	YY	Jan-2019
Proposal on the volume reservation for the equipment needed for installation of the components in the tunnel	YY	Jan-2019
Definition of a a maintenance volume where the accessibility is needed	YY	Jan-2019
Definition of the jumper location	YY	Jan-2019
Clarify the alignment requirement for the horizontal DFX part	YY	Jan-2019
Define which DFX sub-units will be delivered pressure and leak tested	YY	Jan-2019
For ALARA requirements, we shall think about installation of spare joints.	YY	Jan-2019
DIC requests for installation services of the ancillaries and cables	JF	Jan-2019
Document on the ancillaries to be shared	JF	Dec-2018
Document with DFX assembly sequence	YY	Jan-2019
The insulation vacuum proposal document (EDMS 2048016) has to be released	YL	Jan-2019
Proposal for the gas recuperation/redirection in the underground galleries	VP	Jan-2019

**Documents:**

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**Date:** 2019-01-07

**Distribution List:** All attendees