

Technical and Financial Quotation Documents

Technical Summary for B2M feedthrough box (In-cash procurement)

The information and technical details provided in the present document are preliminary and shared with the Candidates to check their interest and capabilities for this contract. (Separate technical specifications will be issued with full details for tendering.)

7 sets of installed Feedthrough flanges shall be replaced with Feedthrough Boxes. The work is consisted with cutting of nozzles installed on cryostat; fabrication of feedthrough boxes; and installation of feedthrough boxes to the cut cryostat nozzles.

Table of Contents

1	PURPOSE	2
2	SCOPE OF WORK	2
2.1	Work to be performed.....	3
2.1.1	Cutting of nozzle installed on Cryostat.....	3
2.1.2	Fabrication of feedthrough box.....	3
2.1.3	Installation of feedthrough box.....	4
2.2	Components provided by IO.....	4
2.3	Components provided by the contractor.....	4
2.4	Tooling to be provided by IO.....	4
2.5	Tooling to be provided by the contractor.....	5
3	PHOTOS/ILLUSTRATIONS FOR INFORMATION OF COMPLEX SITE CONDITION	6
4	ESTIMATED WORK SEQUENCE	9
5	EXPECTED SCHEDULE	10

1 Purpose

The ITER Organization (IO) intends to issue a Tender procedure for cryostat feedthrough box fabrication/installation.

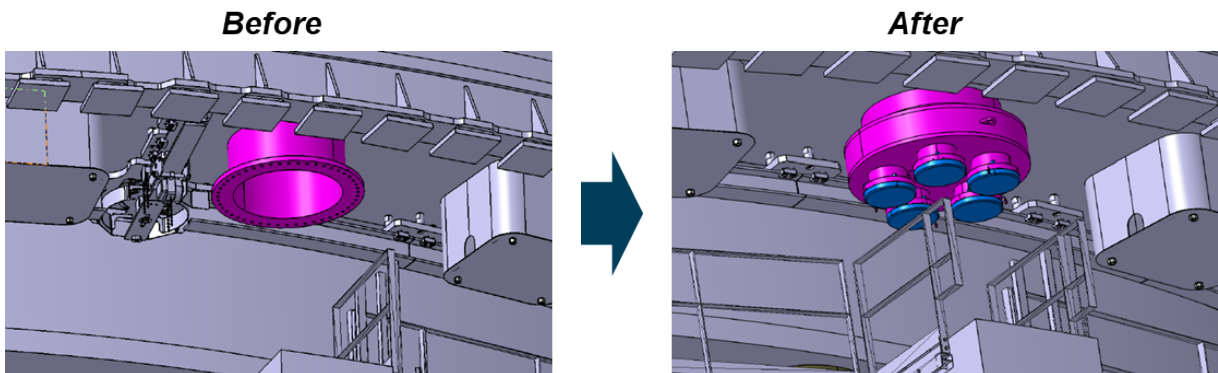
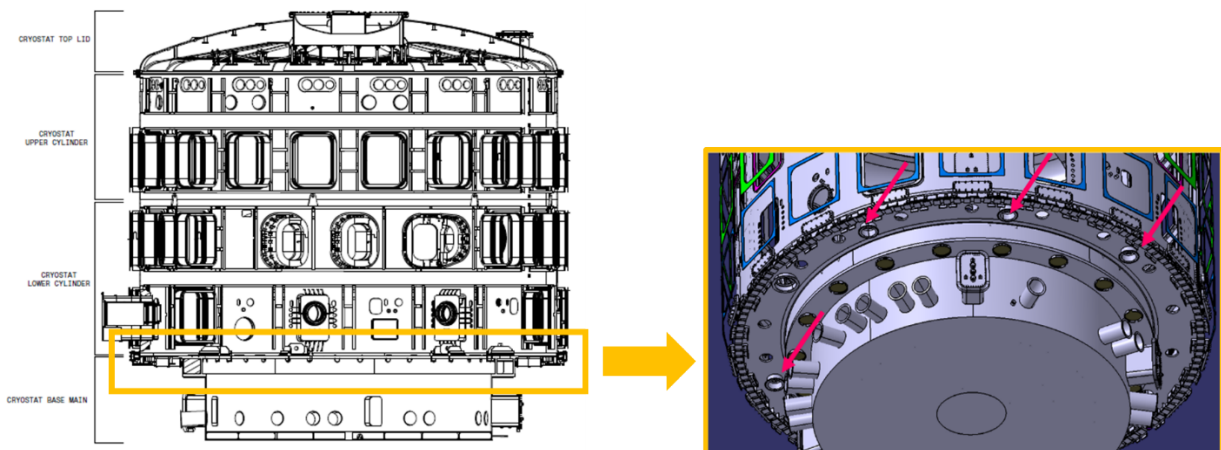
The information and technical details provided in the present document are preliminary and shared with the Candidates to check their interest and capabilities for this contract. Therefore, technical specifications that will be issued for Open Tendering will be the only documents to be considered for bidding.

2 Scope of Work

7 sets of installed Feedthrough flanges shall be replaced with Feedthrough Boxes.

The work is consisted with cutting of nozzles installed on cryostat; fabrication of feedthrough boxes; and installation of feedthrough boxes to the cut cryostat nozzles.

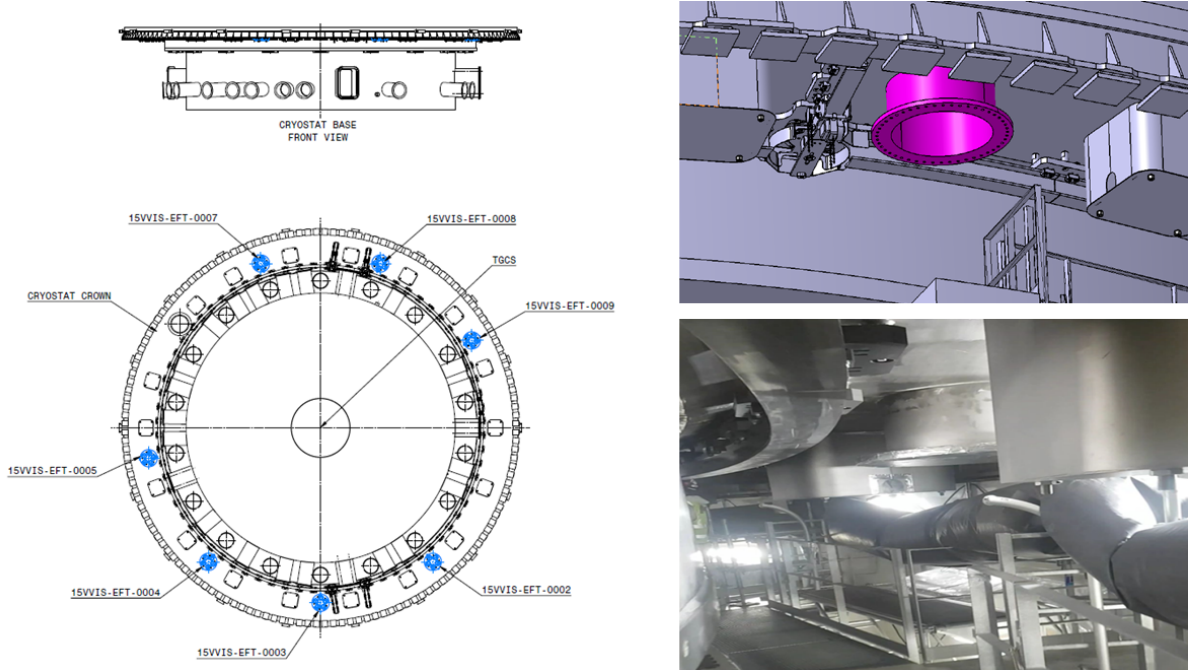
Basic construction code is ASME VIII-2, 2010, and relevant qualification code such as ASME BPVC V, ASME BPVC IX shall be applied.



2.1 Work to be performed

2.1.1 Cutting of nozzle installed on Cryostat

Cutting of nozzles with flange installed on the cryostat base (7 Nozzles, SS304L, OD 960mm, Thickness: 30mm)

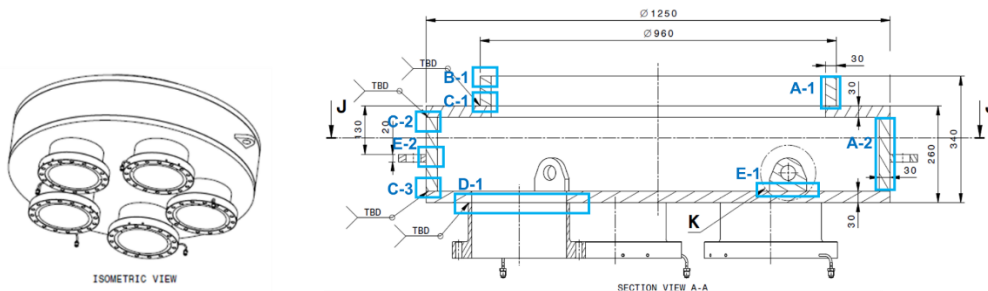


Note: The on-site work areas are complex because many other components have been installed and the components surrounds the work areas. Candidates will have a chance to visit site during open tendering process. (For proper understanding of worksite condition: Mobilization access, Space for lifting, handling, cutting, welding, etc.) See more photos in para 3.

2.1.2 Fabrication of feedthrough box

Fabrication of feedthrough box shall be performed at contractor's premises. (Off Site at Contractor's premises)

- The Contractor is responsible to procure all raw materials required for the feedthrough boxes manufacturing.
- Contractor supplies DN 250 ITER style flanges with VCR pipes and fittings.
- A-1 ~ E-2 in picture below are welded joints to be made in accordance with applicable construction code.



2.1.3 Installation of feedthrough box

Installation of feedthrough box to the cut cryostat nozzle shall be performed again in pit under the cryostat base include followings: (At Construction Site).

2.2 Components provided by IO

None of material will be supplied by IO.

2.3 Components provided by the contractor

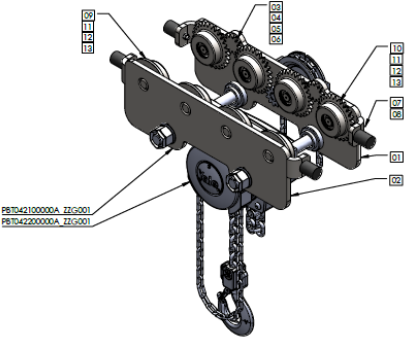
The Contractor shall supply the cryostat feedthrough boxes defined in the bill of materials and applicable documents.

[Bill of material - CWP - Prepare and Weld cryostat feedthrough boxes; 006107-CRYOSTAT_BASE_EFT_BOX](#)

The Contractor is responsible to procure all raw materials required for the feedthrough boxes manufacturing.

The Contractor shall provide the equipment/material for preservation and protection of the cryostat flange after cutting and for feedthrough box during lifting handling and after installation completion.

2.4 Tooling to be provided by IO

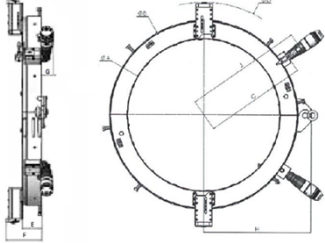
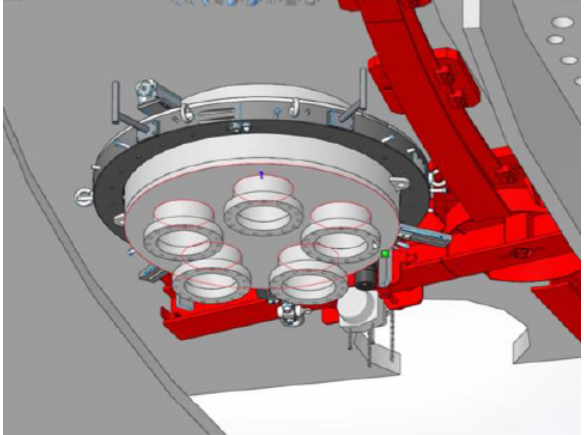
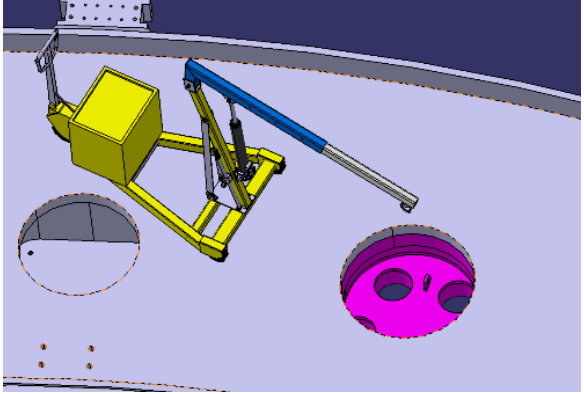
Tool Names	Description	Reference document
MONORAIL SYSTEM TOOL		PBT042000000A_ZZG001-skirt crane system; PBT041000000A_76G001-MONORAIL SYSTEM TOOL
50T crane		NKM BH DW C20001_ME - As-Built Design - PBS 62.13.CL - Tokamak / Assembly Hall Cranes - 50t Cranes - General arrangement

Note: The tools provided by IO will remain IO's property after Contractor's use. The Contractor shall be responsible for the maintenance and repair (including cleaning, removal of traces, rust removal, touch-up painting, weather protections, periodic testing and recertifications) of all tooling.

2.5 Tooling to be provided by the contractor

All the standard tooling and such access tooling not provided by IO for the temporary works are to be assessed, procured, and used by the Contractor, following their own working procedures.

The following table is a non-exhaustive list of tools to be used and provided by the Contractor during CWP execution. Some will require customization to meet the constraints of the work area. Except for protection/preservation systems, all the tools are not required to be handed over to IO, in which case the Contractor shall remove them from IO premises. Tools shall be defined by document input for MRR. (See paragraph 8. List of deliverables and due dates.)

Tool Names	Description																												
Mechanized orbital cutting/beveling machine (Necessity of the tool depends on Contractor plan)	 <table border="1" data-bbox="831 680 1394 745"> <thead> <tr> <th>Mode</th> <th>Motor</th> <th>mm</th> <th>Inch</th> <th>Ø A</th> <th>Ø B</th> <th>C</th> <th>Ø D</th> <th>E</th> <th>F</th> <th>G</th> <th>H</th> <th>J</th> <th>M</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Hydraulic</td> <td>914 - 1219</td> <td>36" - 48"</td> <td>126</td> <td>154</td> <td>826</td> <td>167</td> <td>121</td> <td>228</td> <td>290</td> <td>875</td> <td>101</td> <td>650</td> </tr> </tbody> </table>	Mode	Motor	mm	Inch	Ø A	Ø B	C	Ø D	E	F	G	H	J	M	1	Hydraulic	914 - 1219	36" - 48"	126	154	826	167	121	228	290	875	101	650
Mode	Motor	mm	Inch	Ø A	Ø B	C	Ø D	E	F	G	H	J	M																
1	Hydraulic	914 - 1219	36" - 48"	126	154	826	167	121	228	290	875	101	650																
Mechanized orbital welding machine (Necessity of the tool depends on Contractor plan)																													
Workshop crane, lifting platforms, and other standard lifting equipment	 <p data-bbox="815 1619 1382 1760">Equipment required for transporting, setting up, storing, testing, installing, operating, reconfiguring, handling, dismantling, and removing all tools used in this Services. It shall include temporary structure for installation at CSB location. (Bolting type is preferable.)</p>																												
Standard Non Destructive Examination Devices	Testing equipment for penetrant testing, ultrasonic testing, etc.																												
Metrology equipment	Equipment for metrology surveys and inspection purposes required for the Services execution (such as – laser trackers, photogrammetry equipment, spirit levels, endoscopes, cameras. To be defined by the Contractor)																												
Protection/preservation systems	Temporary protection during this Services. Long term protector(*) of Feedthrough boxes for preservation after Services. This protection shouldn't																												

	damage DN250 flange and SVS nozzles. (compatible with helicoflex joints)
--	--

(*) Contractor shall hand over the Long term protector to IO, and it shall be installed by Contractor.

3 Photos/Illustrations for information of complex site condition

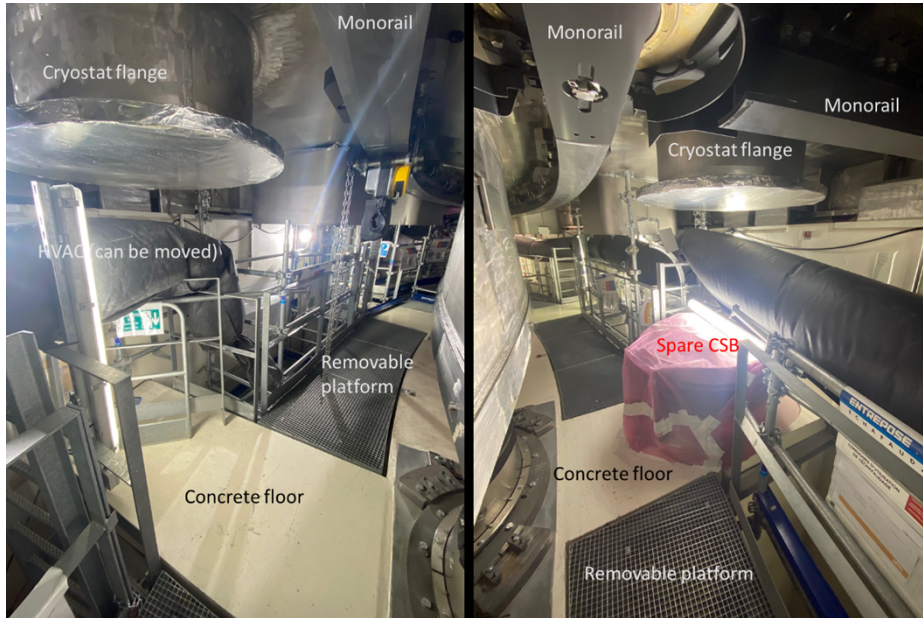


Figure 1 - Left: crown cell environment in the configuration without spare CSB. Right: crown cell environment in the configuration with spare CSB

tooling shall be defined according to the dimensions of the path along the way to the lifting point, where the narrowest points are shown below:

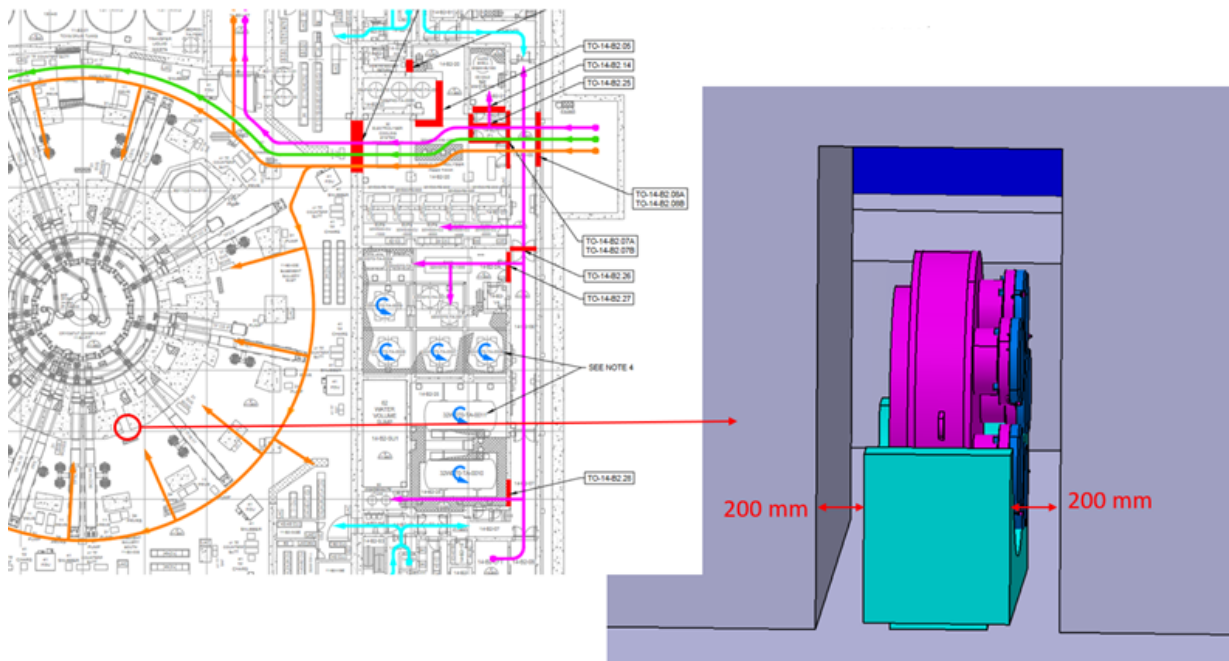


Figure 2 – Transport path from unloading to crown cell – door opening through bioshield

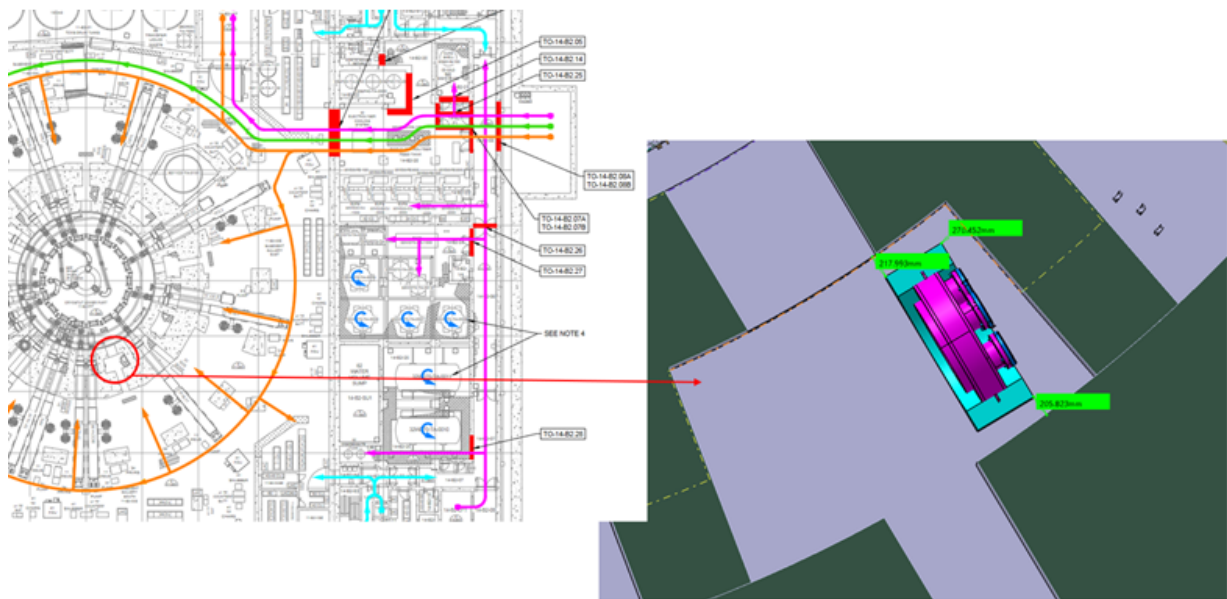


Figure 3 - Transport path from unloading to crown cell – lifting zone using B2 cryostat skirt Monorail

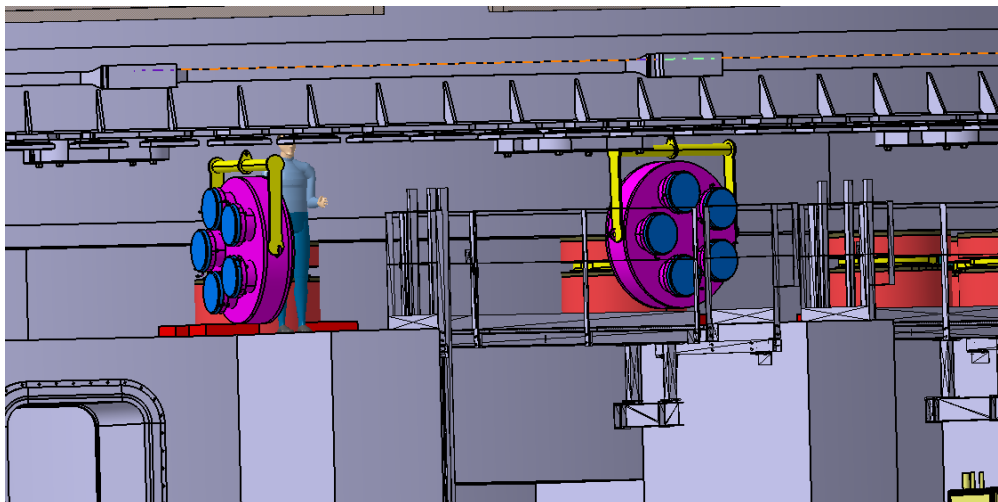


Figure 4 - Feedthrough box lifting in vertical position using the B2 cryostat skirt monorail

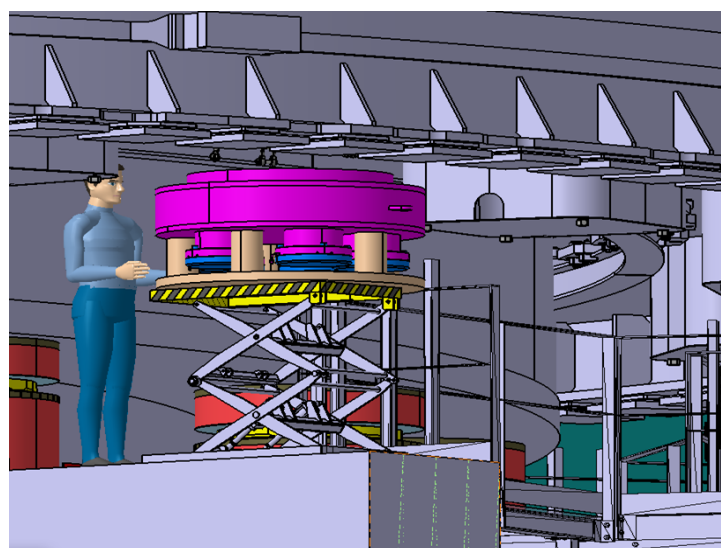


Figure 5 – Feedthrough box in horizontal position preparing for fit-up

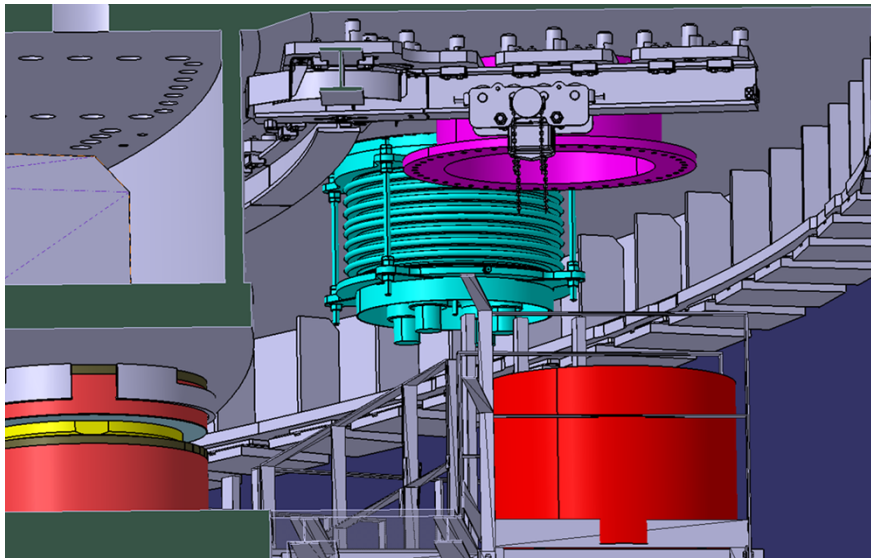


Figure 6 – Spare CSB in position before flange cutting

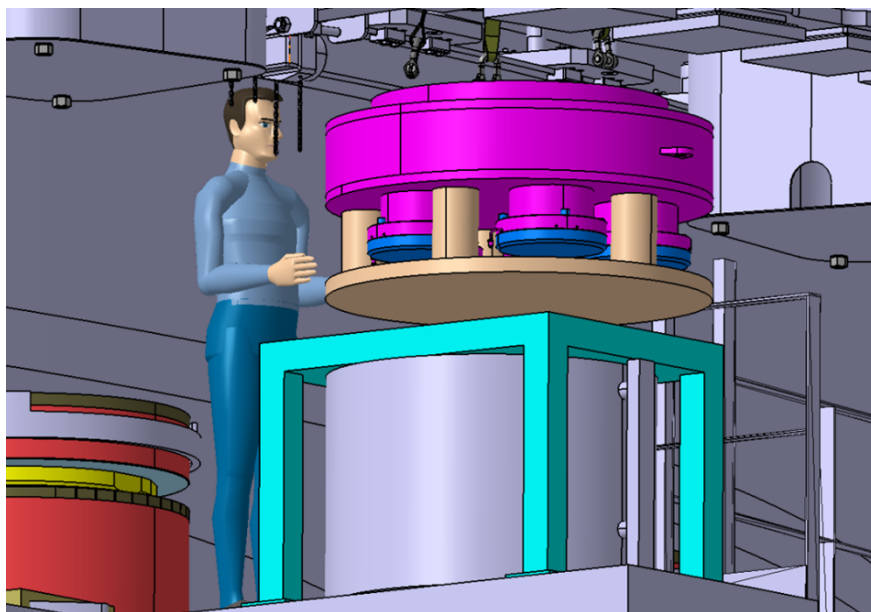


Figure 7 - Spare CSB in position during feedthrough box installation

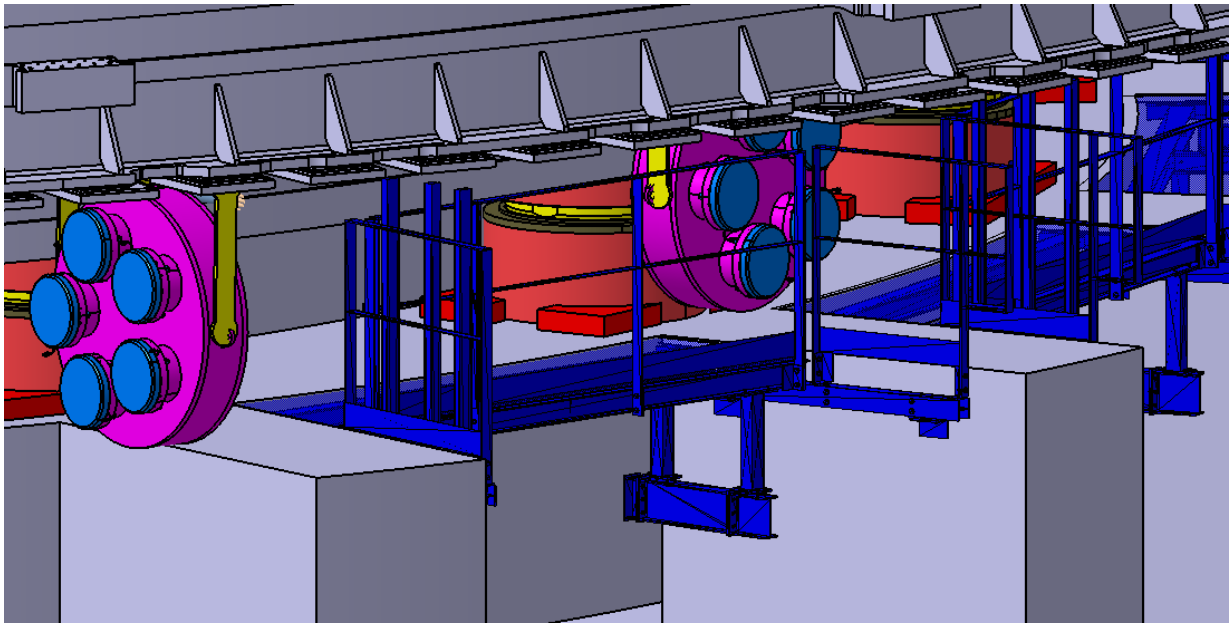


Figure 8 – Removable platforms / in-pit mezzanine floor design in blue

4 Estimated work sequence

Work Step	Description	Qty	Location
1	KOM [Kick off Meeting]^(*)	1 lot	IO Office Area
2	Mock-up Test	1 lot	
2-1	Complete mock-up / demonstration for lifting, handling, cutting, and welding	1 lot	At Construction Site
2-2	Mock-up test Result Review^(*)	1 lot	IO Office Area
3	Feedthrough box Manufacturing		
3-1	MRR [Manufacturing readiness review]^(*)	1 lot	IO Office Area
3-2	Cryostat flange cutting, and measuring nozzle size for manufacturing	7 units	At Construction Site
3-3	Perform inspection (Cleaning, dimension, and protection)	7 units	At Construction Site
3-4	Manufacturing and NDE Inspection		
3-5	Factory acceptance test	7 units	Off Site
3-6	DRR [Delivery Readiness Review]^(*)	1 lot	IO Office Area
3-7	Delivery of feedthrough box	7 units	Off Site
4	Cryostat box Installation		
4-1	CRR [Construction Readiness Review]^(*)	1 lot	IO Office Area
4-2	Assembly and NDE Inspection	7 units	At Construction Site
4-3	Perform final inspection (Within 4 hours before long term protector installed)	7 units	At Construction Site
4-4	Install protector	7 units	At Construction Site

4-5	Preservation Inspection	7 units	At Construction Site
5	Close-out^(*)	1 lot	IO Office Area

() marks means contract gates, and next activities are permitted after the contract gates closed.*

5 Estimated schedule

No.	Milestones	Date
1	KOM [Kick Off Meeting]	T0 ^(*)
2	Mock-up test result review	T1 (T0 + 2months)
3	MRR [Manufacturing Readiness Review]	T2 (T1 + 3months)
4	DRR [Delivery Readiness Review]	T3 (T2 + 5months)
5	CRR [Construction Readiness Review]	T3 (T2 + 5months)
6	Close-out	T4 (T3 + 10months)
Total estimated duration		20 months

() Kick off meeting should be done within 2 months after signing of the contract. And signing of contract is expected to be done in Q2 2025.*