

Interface data sheet

IS-22-41-003 Interface Sheet between Machine Assembly & Tooling (PBS 22) and In-Vessel Coil Power Supplies (PBS 41) in B13

This Interface Sheet IS-22-41-003 records the agreements made between PBS 22 and PBS 41 ICPS on the handover conditions of the commonly used floor areas in Building 13

Approval Process			
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<i>Change Log</i>			
IS-22-41-003 Interface Sheet between Machine Assembly & Tooling (PBS 22) and In-Vessel Coil Power Supplies (PBS 41) in B13 (5XL6W4)			
<i>Version</i>	<i>Latest Status</i>	<i>Issue Date</i>	<i>Description of Change</i>
v0.0	In Work	19 Dec 2024	
v1.0	In Work	20 Dec 2024	First issue
v1.1	Revision Required	20 Dec 2024	Update of Figure 5-1
v1.2	Revision Required	19 Feb 2025	Revised following discussions between PBS 22 and PBS 41 on the need of preserving the anchors and baseplates of the SSATs in order to allow potential re-installation.
v1.3	Approved	02 May 2025	Comments on v1.2 addressed, mostly through removal of requirements on slab status reporting. Document with tracked changes available as attachment. Draft Baseline 2024 removed from title following approval of PCR-001640.

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1 Purpose

This Interface Sheet (IS) defines the interface requirements associated to the interfaces between PBS 22 (22.CH, 22.CS, 22.SA) and PBS 41 In-Vessel Coil Power Supply (ICPS) components (41.EL, 41.V3) in Building 13 in agreement with ICD-22-41.

The purpose of this IS is to allow the design definition of PBS 41 structural components around existing and remaining PBS 22 anchors and supports, while simultaneously securing the possibility of potential reinstallation of PBS 22 SSAT for high-impact maintenance scenarios requiring machine sector handling.

2 Acronyms

CHT	Common Handling Tools
CS	Central Solenoid
DT-1	Deuterium-Tritium Phase 1
DT-2	Deuterium-Tritium Phase 2
ELM	Edge Localized Mode
ICD	Interface Control Document
ICPS	In-Vessel Coil Power Supply
IDD	Interface Definition Document
IP	Interface Point
IR	Interface Requirement
IS	Interface Sheet
NA	Not Applicable
PA	Procurement Arrangement
PBS	Plant Breakdown Structure
PS	Power Supply
SRD	System Requirements Document
SRO	Start of Research Operations
SSAT	Sector Sub-Assembly Tool
SSCs	System, Structures and Components
TBD	To Be Defined
VS3	Vertical Stabilization 3

3 Applicable Documents

Reference	Title	UID	Version
[AD1]	Interface Control Document (ICD) between Plant Installation Tooling (PBS-22) and Coil Supply & Distribution (PBS-41)	33ACF8	2.0
[AD2]	SRD-22 (Machine Assembly and Tooling) from DOORS	2EQXFV	4.1
[AD3]	SRD-41 (Coil Power Supply and Distribution) from DOORS	28B6XQ	5.0
[AD4]	Staged Approach Configuration - PBS Level 3	SNE6G8	4.0

4 Reference Documents

Reference	Title	UID	Version
[RD1]	Project Requirements (PR)	27ZRW8	7.1
[RD2]	IS-22-62.13-001 Interface between Assembly Building (PBS 62-13) and Machine Assembly and Tooling (PBS 22)	2WZGKF	1.20
[RD3]	IS-41-62.13-001 Interface sheet between PBS41.EL, PBS41.V3 and PBS62.13	9RCYJ5	1.6
[RD4]	ELM-PS Conceptual integration in B13L1	7G6KWJ	1.7

5 Interfaces Identification

The interface points concern the status and handover responsibilities for the concrete slab, bedplates, steel base plates and anchors in Building 13, used successively by PBS 22 and PBS 41 In-Vessel Coil Power Supply components (41.EL, 41.V3).

Table 1: Interfaces Identification

IP No.	Location	PBS 22				PBS 41			
		Designation	Reference	PIC (Y/N)	Procurement	Designation	Reference	PIC (Y/N)	Procurement
1	13-L1-01 (East)	CS Assembly Tools	22.CS	N		ELM Power Supply and MV Substation	41.EL	N	In-cash procurement
	13-L1-01 (East)	Common Handling Tools	22.CH	N					
	13-L1-01 (West)	Sector Sub-Assembly Tools	22.SA	N		VS3 Power Supply	41.V3	N	In-cash procurement

6 Interfaces Description

6.1 IP1: Floor areas B13-L1-01 used successively by PBS 22 and PBS 41

Interface Point IP1 concerns the areas in B13 room 13.L1.01 where PBS 41 PS components will be installed once PBS 22 assembly tools have been disassembled and removed. The areas are used successively by PBS 22 and PBS 41 in the project schedule.

It is noted that PBS 41 remains a client of PBS 62.13 and will therefore liaise with PBS 62 for any modification related to the existing slab and bedplate in B13.

Figure 6-1 shows the anticipated floor areas occupied by PBS 41 ELM PS and VS3 PS components, in the floor map of Building 13 indicating PBS 22 fixation components.

The following types of support and anchoring features have been identified:

- A1** areas with remaining anchor bolts above slab level in circular pattern
- A2,A3** areas with remaining anchor bolts above slab level in square pattern
- B** curved rail baseplates, thickness 50mm, S355 steel, anchored to slab
- C** areas with 100mm diameter holes (remaining after CS tool and grout removal)
- D** areas with cut anchors, non-reusable and not in as-built documentation

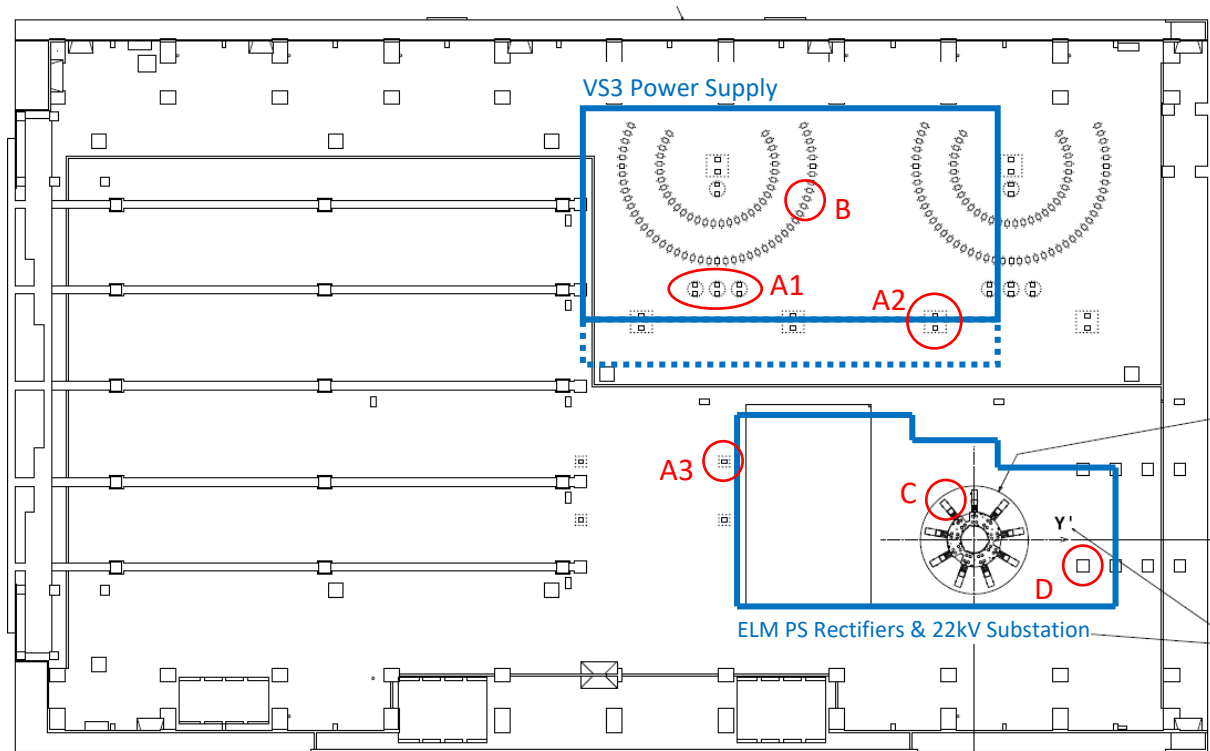


Figure 6-1: common areas in B13 used successively by PBS 22 and PBS 41, with indication of specific floor anchoring features. VS3 area demarcated by dashed lines is a shared volume subject to specific operating and dismantling conditions

7 Interface Requirements (IR)

7.1 IP1: Base support B13-L1-01 used successively by PBS 22 – PBS 41

The components concerned by the interface between PBS 41 ELM/VS3 and PBS 22 in B13 are the floor concrete slab, the bedplate and all baseplates and anchors installed by PBS 22.

7.1.1 *Curved rail baseplates of SSAT*

[2241-003i001-R] PBS 22 shall keep intact the SSAT curved rail baseplates (“B” in Figure 6-1) for use by PBS 41.

[2241-003i002-R] PBS 22 shall install protective caps in all threaded holes of the curved rail baseplates that need to be preserved.

[2241-003i003-R] PBS 41 shall not irreversibly damage the SSAT curved rail baseplates and its threaded holes to the extent that it would prevent the potential future use by PBS 22, whereas PBS 41 may weld onto the baseplate, drill into the baseplate, and use the threaded holes of the baseplate for anchoring PBS 41 SSCs.

[2241-003i004-I] For calculation of the baseplate strength, PBS 41 may refer to: ITER_D_LBZRRT v1.0 - Construction Design - Building 13 - Assembly Tooling Anchor Design- ENG_50_CR_130005_CW_v02.0

7.1.2 *CS Tool and Common Handling Tools in B13 East*

[2241-003i005-R] PBS 22 shall remove all anchors (grouting and metallic parts) related to the CS Tool (“C” in Figure 6-1) and install visible caps flush with the slab surface to cover the resulting 100mm diameter holes.

[2241-003i006-I] PBS 41 has no obligations with respect to the preservation of the CS Tool supports or CHT bedplate and may use or not use these components as part of its base support, which may involve welding, drilling and any other type of mechanical operation.

7.1.3 *Remaining anchoring bolts*

[2241-003i007-R] PBS 22 shall keep intact the existing anchoring bolts and nuts of the various SSAT baseplates (such as “A1”, “A2” in Figure 6-1) and Common Handling Tools (such as “A3” in Figure 6-1) for potential use by PBS 41.

[2241-003i008-R] PBS 22 shall provide and install protections on all the remaining anchoring bolts and nuts (such as A1, A2, A3). The protections shall be designed and installed to provide protection against shock (impact, collision) and shall be marked to be clearly visible. The installation of such protections shall not exclude the use of the respective anchors by PBS 41.

[2241-003i009-R] PBS 41 shall not irreversibly damage the existing anchoring bolts related to the SSATs to the extent that it would prevent the potential future use by PBS 22, but PBS 41 may use the bolts and associated nuts in conjunction with newly manufactured baseplates for anchoring PBS 41 SSCs.

7.1.4 Reinstallation of SSAT

[2241-003i010-R] PBS 22 and PBS 41 shall not damage the SSAT anchors (threads) during installation/removal of their SSCs.

[2241-003i011-R] PBS 41 shall design, install and operate their SSCs in such way that they can be dismantled with reasonable effort in order to permit the reinstallation of PBS 22 equipment when needed.

[2241-003i012-R] PBS 41 shall use the concrete slab and the bedplate in such a way that PBS 22 SSATs may be reinstalled back at any time when requested, using the same anchors and threaded holes that were previously used by PBS 22.

8 Division of Responsibilities

PBS 41 is responsible for:

- Preserving the slab, baseplates and anchors related to SSATs to allow for potential reuse by PBS 22

PBS 22 is responsible for:

- Preserving the SSAT curved rail baseplates and threaded holes, and all anchors
- Removing the CS Tool anchors and covering the resulting holes with visible caps

9 Staged Approach

Table 2: Physical implementation of interfacing PBS entities according to the Staged Approach.

Interfacing PBS entity		Assembly	SRO	DT-1	DT-2
Designation	PBS Reference				
PBS 22 SSAT	22.SA	X	*	*	*
PBS 22 CS Tool	22.CS	X			
PBS 22 CHT (in B13 East)	22.CH	X			
PBS 41 ELM Coil Circuits	41.EL	X	X	X	X
PBS 41 In-Vessel VS3 Circuits	41.V3	X	X	X	X

* possibility of re-installation of SSAT to be considered