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Technical Specifications (In-Cash Procurement)

Maintenance technical specification for TIPI TFC in pit installation tool

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Table of Contents

1 PURPOSE.....2

2 SCOPE.....2

2.1 In the scope of supply2

2.2 Out of the scope of supply2

3 DEFINITIONS.....2

3.1 Maintenance2

3.2 Spare parts.....3

3.3 Consumables3

3.4 Abbreviations3

4 REFERENCES3

4.1 General references.....3

5 ESTIMATED DURATION.....4

6 WORK DESCRIPTION5

6.1 Special Skills and expertise applicable5

6.2 Environment of work in pit and associated documentation5

6.3 Work description part of the basic scope of supply6

6.4 Work description based on instructions to proceed7

7 LIST OF DELIVERABLES AND DUE DATES.....7

8 ACCEPTANCE CRITERIA.....7

9 SPECIFIC REQUIREMENTS AND CONDITIONS8

10 WORK MONITORING / MEETING SCHEDULE8

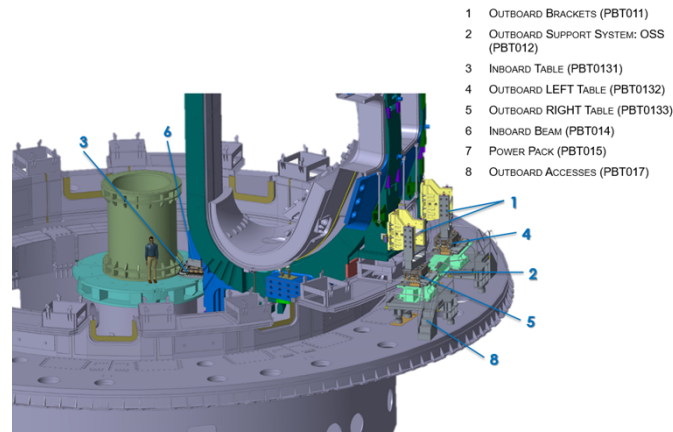
11 QUALITY ASSURANCE (QA) REQUIREMENTS.....8

12 SAFETY REQUIREMENTS.....8

13 CLEANING AND CLEANLINESS PRESERVATION9

1 Purpose

This document defines the Technical Specifications applicable to the maintenance activities for the Toroidal Field Coil In-Pit Installation tool (hereinafter referred as “TIPI” or “The Tool”).



2 Scope

2.1 In the scope of supply

The Contractor shall provide a complete engineering and management solution in order to cover the preventive and corrective maintenance of the TIPI, this will include:

- Man power with appropriate technical and management skills to establish the diagnostic and perform the preventive and/ or corrective maintenance,
- Contractor’s Equipment: means all apparatus, machinery, vehicles, consumables and others things required for the execution and completion of the Works and the remedying any defects,
- Supply of Spare parts,
- Proper planning, documenting and reporting of the activities to the IO and coordination with the third party inspector (as applicable).

2.2 Out of the scope of supply

The access means in pit are supplied by the IO,
The lifting equipment in pit are supplied by IO

3 Definitions

3.1 Maintenance

“Maintenance” is defined in this document as the activities required to keep The Tool in good operational conditions during on site use in the pit in bdg 11. This means to perform the planned

maintenance activities and to perform the corrective maintenance as necessary to keep the tool in good operational conditions.

The boundaries of the scope starts after reception of The Tool from storage and stops once The Tool is evacuated from the pit to be sent back to storage.

3.2 Spare parts

“Spare parts” are defined as the individual pieces of equipment which constitute The Tool and that need to be supplied by The Contractor to fulfil his obligation of the contract.

e.g. electrovalves, bolt, washer, nuts.

3.3 Consumables

Working consumables are defined lubricants, swabs, etc.

3.4 Abbreviations

ARIF:	Access Request Information Form
CIS:	Company Identification Sheet
CMA:	Construction Management As agent
I&C:	Instrumentation and Control system
ITP:	Instruction to proceed
TIPI:	TFC in pit Installation tool
VVTS	Vacuum Vessel Thermal shield
VGP	Vérifications Générales Périodiques
HPU	Hydraulic Power Unit
HMI	Human Machine Interface
PPE	Physical Protection Equipment
PGS SPS	Health and Safety General Coordination Plan for the construction of ITER Project
PPSPS:	plan particulier de sécurité et de protection de la santé
FM	Facility Management
SAF:	Subcontractor Acceptance Form
WAR	Work Authorization Request
CANECO	Name of software developed by ALIPI

4 References

4.1 General references

- [1] [ITER Site access Procedure \(S3893D v3.1\)](#)
- [2] [How to request access to and within the ITER Site \(WRWQRG v3.1\)](#)
- [3] [Internal Regulations \(27WDZW v3.1\)](#)
- [4] [Contractor Safety Management Procedure \(Q2GBJF v1.4\)](#)
- [5] [PGC SPS Vol. 1 - IO&F4E \(T6V4RP v4.1\) 4.4](#)
- [6] [ITER Site Permit to Work Overarching Procedure \(3E8289 v2.5\) 3.1](#)
- [7] ITER Lock-Out Tag-Out Instruction ITER_D_34Q3GJ 3.2
- [8] All site maintenance plan ITER_D_PVJLAJ 2.11
- [9] Sam-FM WAR Management and User Guide ITER_D_BH43H2 3.6
- [10] [Procedure CMA Permit to Work Daughter Procedure - Deliverable 5.1 \(UBET39 v9.5\) \(current\)](#)
- [11] [ITER Site Permit to Work Overarching Procedure \(3E8289 v3.1\) \(current\)](#)
- [12] [ITER_D_Y4CTM6 - A7 - Global ITER Worksite Synthesis Drawing \(Spie deliverable\)](#)
- [13] Electrical safety procedure ITER_D_3XULVS 3.1
- [14] Site network diagram – PAS ITER_D_PVJRYL 8.1
- [15] Plant Control Design Handbook (PCDH) ITER_D_27LH2V 7.0
- [16] Operations Handbook ITER_D_2LGF8N 1.3
- [17] Electrical Design Handbooks (EDH):
 - i. Part I: Introduction ITER_D_2F7HD2 1.4
 - ii. Part II: Terminology and Acronyms ITER_D_2E8QVA 1.4
 - iii. Part III: Codes and Standards ITER_D_2E8DLM 1.3
 - iv. Part IV: Electromagnetic Compatibility ITER_D_4B523E 3.0
 - v. Part V: Earthing and Lightning Protection ITER_D_4B7ZDG 3.0
- [18] Pre works Briefing Procedure ITER_D_9PSPTY 2.5
- [19] ITER Site Roads & Parking Data ITER_D_VQ6Q2M 2.0
- [20] List of ITER Buildings and Areas ITER_D_VE3CZC 1.3
- [21] Guideline for CANECO calculation notes for ITER project
ITER_D_VZKRDC 1.2
- [22] Procedure for management of Nonconformities (22F53X v8.2) 9.1
- [23] IO / In-Cash Contractor Documentation Exchange and Storage Working Instruction (G8UMB3 v4.1)
- [24] How to use the SMDD application (XSXCL2 v1.0)
- [25] Working Instruction for the Delivery Readiness Review (DRR) (X3NEGB v2.0)
- [26] Procedure for the management of Deviation Request (2LZJHB v8.1)
- [27] Deviation Request Template (2LRNQP v4.0)
- [28] [TO1-1 Design description document \(V3EJ3W v2.1\)](#)
- [29] [TO1-1 User manual \(V3EVXA v5.0\)](#)
- [30] [TO1-1 Maintenance Plan \(V3ELUK v3.0\)](#)
- [31] Full list of drawings applicable : <https://user.iter.org/?uid=V3PTRU>

5 Estimated Duration

The contract duration is set to 4 years with the possibility to extend of maximum 2 years as option.

6 Work Description

6.1 Special Skills and expertise applicable

Hydraulic: The Contractor shall identify and allocate a skilled Hydraulic Engineer able to assist the on-site team in the expertise of the Machine. The personnel shall be able to read the single line diagram, identify the components on site and establish the tests procedure to be followed to establish the diagnostic and perform the maintenance tasks. The personnel operating The Tool shall be trained to the hydraulic risks.

Electric: The Contractor's personnel allocated to this Contract shall have the necessary training to be able to open the HPU electrical cabinet, perform some diagnostic and test and replace the components that are not operational.

I&C: The Contractor's personnel proposed shall contain an I&C engineer able to connect to the HPU, establish the diagnostic, propose the repair to be done and perform the repair.

6.2 Environment of work in pit and associated documentation

[Req.1] The Contractor shall work in pit respecting the references [1] to [6].

[Req.2] Prior to any work on site, the Contractor shall develop the following:

- a. Company Identification Sheet "CIS" (to be filled At least 72 hours prior to the access, before 11h00) to be submitted to CMA,
- b. If some tasks needs to be sub-contracted on IO site, the contractor shall Complete Subcontractor Acceptance Form "SAF",
- c. Request for access to the site: fill the Access Request Information Form "ARIF",
- d. Work permit request,
- e. Participation to training on safety on IO site,
- f. Participation to training on cleanliness protocol in the building and safety on site,
- g. PPSPS to be submitted directly from the contractor to the IO HSPC at least 15 days before the work on site,

- h. During site works, participation to the coordination meetings.

6.3 Work description part of the basic scope of supply

- [Req.3] Taking into account the inputs from the TIPI manufacturer's documentation from ref [28],[29] and [30]. The Contractor shall establish his maintenance plan and submit it to the IO.
- [Req.4] Based on the excel maintenance sheets from the TIPI manufacturer's documentation in attachment to the IO IDM [21], The contractor shall establish and maintain his own detailed maintenance procedures including the list of Contractor's Equipment.
- [Req.5] The first version of the Contractor's detailed maintenance procedures shall be submitted to the IO 3 months after the KOM maximum.
- [Req.6] Based on the manufacturer maintenance plan Ref[30], the contractor shall establish the recommended spare part list with lead time and associated quotations (minimum 3 to be submitted), this shall enable to perform the preventive maintenance over the Contract duration.
- [Req.7] Based on the manufacturer maintenance plan Ref[30], the contractor shall establish the recommended spare part list with lead time and associated quotations (minimum 3 to be submitted), for the corrective maintenance.
- [Req.8] Based on the established Contractor's maintenance plan, The Contractor shall perform the maintenance operations and record it in the maintenance log of The Tool and Maintenance report and upload it to IDM within 5 working days after the maintenance is done.
- [Req.9] At the start of the contract, the Contractor shall perform a first inspection of the Tool to control the initial record of information on the maintenance log.
- [Req.10] The Contractor shall provide and maintain the necessary Contractor's equipment to perform the maintenance operations as planned, this may include but is not limited to:
 - a. Mechanical tool box: Basic hand tools such as spanner set, hammers, chariots
 - b. Electrical Tool box,
 - c. Hydraulic tool box: the necessary equipment to connect and purge a line
 - d. Cleaning set: Vacuum cleaner, with cloth, VQC allowed cleaning fluid,
 - e. Calibrated numeric Dial Gauge, calibrated gauge blocks, meters, calibrated pressure gauges,
 - f. Safety materials and PPE,

[Req.11] During works on site on the TIPI Machine, as defined in the work permit, the Contractor is responsible for keeping the site safe and shall clean the area at the end of the task.

[Req.12] The Contractor shall dispatch at least one safety controller to the site during the maintenance period.

6.4 Work description based on instructions to proceed

[Req.13] The Contractor shall establish rates for electrical trouble shooting, hydraulic or mechanical.

[Req.14] Once notified by the IO through an “intervention request”, based on the severity the Contractor shall mobilize a resource within a maximum deadline:

- a. Severe: intervene within 3 hours and establish the report within a day,
- b. Medium: intervene within 5 working days and establish the report within 2 weeks,
- c. Light: intervene within a week and establish the report within 1 month,

[Req.15] Once the troubleshooting done, the Contractor shall submit to the IO the necessary quotations (3 necessary above 1000 EUR) and attach it to the report of intervention.

[Req.16] The IO shall send the approved ITP to the Contractor to launch the Corrective maintenance tasks.

[Req.17] Following the reception of the ITP, the Contractor shall perform the supply and the repair work within the agreed schedule.

7 List of deliverables and due dates

[Req.18] Based on this specification, the Contractor shall establish the list of deliverables with identification, description and due date.

[Req.19] This shall be established at maximum 3 months after the KOM after completion and shall be approved by the IO.

D#	Deliverable	Due date
Preparatory tasks		
D1.1	Quality plan Organization chart Detailed maintenance plan approved [Req.2] achieved	T0+ 2 months
D1.2	Detailed Maintenance plan and detailed maintenance sheet with equipment necessary established [Req.3] to [Req.5], [Req.10] achieved	T0+ 3 months
D1.3	The recommended spare part list with lead time and associated quotations (minimum 3 to be submitted) is approved by IO for preventive maintenance and for corrective maintenance.	T0+ 6 months
Execution tasks for preventive maintenance		
D2.1.1	Initial verification: First maintenance done on the TIPI machine and maintenance log verified [Req.8] to [Req.9] achieved	T0+ 4 months
D2.1.2	Preventive maintenance done for full first year	T0+ 12 months
D2.2.1	Preventive maintenance done for 6m the second year	T0+ 18 months
D2.2.2	Preventive maintenance done for 6m the second year	T0+ 24 months
D2.3.1	Preventive maintenance done for 6m the third year	T0+ 30 months
D2.3.2	Preventive maintenance done for 6m the third year	T0+ 36 months
D2.4.1	Preventive maintenance done for 6m the fourth year	T0+ 42 months
D2.4.2	Preventive maintenance done for 6m the fourth year	T0+ 48 months

Option preventive maintenance		
DO1.1	Preventive maintenance done for 6m the fifth year	T0+54 months
DO1.2	Preventive maintenance done for 6m the fifth year	T0+ 60 months
DO2.1	Preventive maintenance done for 6m the sixth year	T0+ 66 months
DO2.2	Preventive maintenance done for 6m the sixth year	T0+ 72 months

8 Acceptance Criteria

[Req.20] The contractor shall upload the deliverables to the IO document management system called IDM.

[Req.21] The Contractor’s deliverables shall be approved by IO in IDM, refer to [24].

9 Specific requirements and conditions

Working hours: The IO site availability for working hours referred to in this document are (unless specified otherwise for the specific activities):

From 7.00 am to 7.00 pm throughout the entire site on week days,

From 07:30 to 13:30 on Saturdays (including on-call service and technical team).

10 Work Monitoring / Meeting Schedule

[Req.22] The Contractor shall plan for a yearly monitoring meeting presenting the main results of the contract, the maintenance done vs planned.

11 Quality Assurance (QA) requirements

The organisation conducting these activities shall have an ITER approved QA Program or an ISO 9001 accredited quality system.

The general requirements are detailed in [ITER Procurement Quality Requirements \(ITER_D_22MFG4\)](#).

Prior to commencement of the task, a Quality Plan must be submitted for IO approval giving evidence of the above and describing the organisation for this task; the skill of workers involved in the study; any anticipated sub-contractors; and giving details of who will be the independent

checker of the activities (see [Procurement Requirements for Producing a Quality Plan \(ITER_D_22MFMW\)](#)).

Documentation developed as the result of this task shall be retained by the performer of the task or the DA organization for a minimum of 5 years and then may be discarded at the direction of the IO. The use of computer software to perform a safety basis task activity such as analysis and/or modelling, etc. shall be reviewed and approved by the IO prior to its use, in accordance with [Quality Assurance for ITER Safety Codes \(ITER_D_258LKL\)](#).

12 Safety requirements

ITER is a Nuclear Facility identified in France by the number-INB-174 (“Installation Nucléaire de Base”).

For Protection Important Components and in particular Safety Important Class components (SIC), the French Nuclear Regulation must be observed, in application of the Article 14 of the ITER Agreement.

In such case the Suppliers and Subcontractors must be informed that:

- The Order 7th February 2012 applies to all the components important for the protection (PIC) and the activities important for the protection (PIA).
- The compliance with the INB-order must be demonstrated in the chain of external contractors.
- In application of article II.2.5.4 of the Order 7th February 2012, contracted activities for supervision purposes are also subject to a supervision done by the Nuclear Operator.

For the Protection Important Components, structures and systems of the nuclear facility, and Protection Important Activities the contractor shall ensure that a specific management system is implemented for his own activities and for the activities done by any Supplier and Subcontractor following the requirements of the Order 7th February 2012 [20].

[Req.23] Only the management of wastes shall be considered as a PIA for this contract

13 Cleaning and cleanliness preservation

Cryostat surfaces in PIT are classified as vacuum components VQC2A according to the ITER Vacuum Handbook (2EZ9UM).

In general, any fluid or material in permanent, potential contact or accidental contact with the Vacuum cryostat surface shall be previously approved by IO. A list of approved fluids is available in IDM (Fluid and Processing Material Approval Request, ITER_D_VH2KDW).

[Req.24] If the Contractor proposes to use a different product, it shall be sent for IO approval though a dedicated FAR (ITER_D_2MGWR4).

List of Prohibit products:

- Direct contact with lead or other materials with low melting point

(such as tin, antimony, mercury, zinc, arsenic, cadmium, etc...) is prohibited.

- The use of halogenated solvents is prohibited (e.g. trichloroethylene, perchloroethylene...)
- The use of phosphoric acid on final surfaces is prohibited
- Chlorine-based lubricants is prohibited during manufacturing or completely removed from internal and external surfaces by cleaning in order to preserve a stainless steel vacuum system from corrosion during the entire lifetime of the machine.
- Direct contact of the components with handling device in carbon steel is prohibited.

These requirements applies to any phase of the work (repairing, cleaning, protection for cleanliness preservation...)

[Req.25] The Contractor shall define:

- Cleaning procedure in compliance ITER Vacuum Handbook requirements.
- A protection/preservation plan for cryostat surface cleanliness preservation during the work.
- A preservation plan for the working area in compliance with the Cleanliness strategy (WW78E8).