

Technical Specifications (In-Cash Procurement)

Diagnostic Interface Engineering

CFE for:-

The objective of this engineering contract is to provide the engineering assessment of interface definitions, requirements and their follow-up between diagnostic systems, diagnostic integrated ports with Disruption Mitigation System (DMS), as well as related infrastructure in the buildings and relations with external services. The diagnostics have to be integrated within tokamak complex. Interface definitions between different tokamak systems and diagnostics are very important design ...

Table of Contents

1	PURPOSE	2
2	SCOPE	2
3	DEFINITIONS	2
4	REFERENCES	2
5	ESTIMATED DURATION	2
6	WORK DESCRIPTION	2
7	RESPONSIBILITIES	4
7.1	Contractor’s Responsibilities	4
7.2	IO’s Responsibilities	4
8	LIST OF DELIVERABLES AND DUE DATES	4
9	ACCEPTANCE CRITERIA	5
10	SPECIFIC REQUIREMENTS AND CONDITIONS	5
11	WORK MONITORING / MEETING SCHEDULE	5
12	DELIVERY TIME BREAKDOWN	5
13	QUALITY ASSURANCE (QA) REQUIREMENTS	6
14	CAD DESIGN REQUIREMENTS (IF APPLICABLE)	6
15	SAFETY REQUIREMENTS	6

1 Purpose

The objective of this engineering contract is to provide the engineering assessment of interface definitions, requirements and their follow-up between diagnostic systems, diagnostic integrated ports with Disruption Mitigation System (DMS), as well as related infrastructure in the buildings and relations with external services. The diagnostics have to be integrated within tokamak complex. Interface definitions between different tokamak systems and diagnostics are very important design drivers for diagnostic designs. They have to be justified, agreed between all involved stakeholders, documented and, finally, approved.

2 Scope

The work involves the support the ITER Diagnostic Team in definition and follow-up of interfaces for diagnostics (in ports where DMS is deployed and its integration is affecting other systems) and operational systems, including documentation preparation and interface tracking in ITER IDM and, eventually, in the PLM.

3 Definitions

IO: ITER Organization

DA: Domestic Agency

FDR: Final Design Review

SRD: System Requirements Document

S-SRD: Sub-System Requirements Document

IO-TRO: ITER Organization technical Responsible Officer

ICD: Interface Control Document

IS: Interface Sheet

PA: Procurement Arrangement

PDR: Preliminary Design Review

PR: Project Requirements

For a complete list of ITER abbreviations see: [ITER Abbreviations \(ITER_D_2MU6W5\)](#).

4 References

Links inserted in text (where applicable).

5 Estimated Duration

The duration shall be for 12 months from the starting date of the task order. Services are to be provided both at the IO work site (40%) and off-site (60%).

6 Work Description

The work involves technical expertise in interface definitions and propagation between complex systems. The diagnostic projects are in the design development phase. Interface follow-up and eventual freezing for these projects is necessary to meet key Project milestones. The work to be done is to provide technical expertise to work with the IO-TRO. It involves many areas of activity that have to be documented:

- Assessment of the status of interfaces for integrated and distributed diagnostic systems in the ports with DMS (see example of an integrated port in Figure 1);
- Technical assessment of interfaces and propose interface resolution agreed with ROs, DA TROs and experts;
- Draft, follow-up and amend interface sheets and interface control documents for diagnostics and systems in the ports with DMS;
- Draft minutes for IO and DA meetings;
- Draft deviation requests where necessary;
- Technical input in support of project change requests and other actions;
- Input documents, presentations, meeting notes related to Port integrator DA meetings (where interfaces are involved);
- Input documents, presentations, meeting notes related to Interface meetings;
- Technical review notes for DA technical documents in IO IDM. Documents include technical reports, reports on interfaces; draft deviation requests, compliance and requirements matrixes etc. Several technical documents per month need to be reviewed;
- Input documents, presentations, meeting notes related to Monthly DA meetings (where interfaces are involved);
- Implementation reports for IO-related actions from DA meetings;
- Implementation reports for Chit resolution from IO and DA design reviews (where interfaces are involved);
- Input documents, presentations, meeting notes related to meetings of DA representatives with IO experts;
- Guidance notes for DAs on execution of PA technical activities related to interfaces;
- Flow-down requirements from PBS 55 SRD to SSRDs of specific diagnostics and systems and interfaces between them.

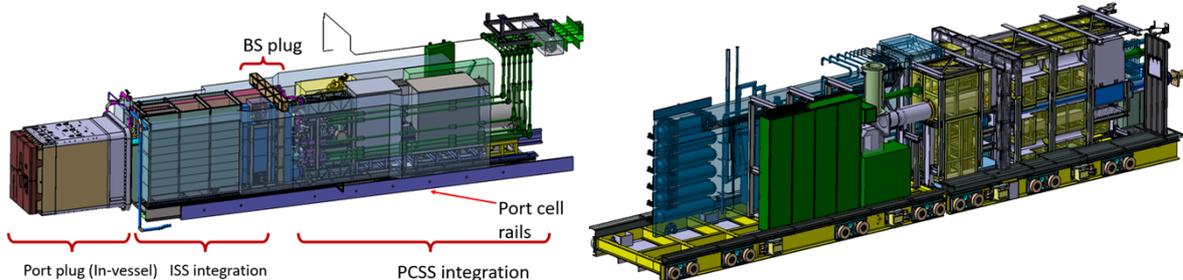


Figure 1. General layout of typical diagnostic port with services (left) and integrated Equatorial Port #8 (ISS/PCSS only, right).

7 Responsibilities

7.1 Contractor's Responsibilities

In order to successfully perform the tasks in these Technical Specifications, the Contractor shall:

- Strictly implement the IO procedures, instructions and use templates;
- Provide experienced and trained resources to perform the tasks;
- Contractor's personnel shall possess the qualifications, professional competence and experience to carry out services in accordance with IO rules and procedures;
- Contractor's personnel shall be bound by the rules and regulations governing the IO ethics, safety and security IO rules.

7.2 IO's Responsibilities

The IO shall:

- Nominate the Responsible Officer to manage the Contract;
- Organise a monthly meeting(s) on work performed;
- Provide offices at IO premises (when on-site).

8 List of Deliverables and due dates

The main deliverables are provided in the Table below.

D #	Description	Due Dates
D01	<p>Preparation of advanced interface documents (interface sheets, interface control documents) for diagnostic systems in the ports with DMS which are having their Design Reviews in the third quarter of 2022. Upload them in the IDM for review, follow-up and approval. Prepare relevant presentations for the Design Reviews.</p> <p>The reviewers of the technical documents need to be coherent with the ITER_D_2EXFXU - Sign-Off Authority for Project Documents.</p>	T0 + 3 months
D02	<p>Preparation of advanced interface documents (interface sheets, interface control documents) for diagnostic systems in the ports with DMS which are having their Design Reviews in the fourth quarter of 2022. Upload them in the IDM for review, follow-up and approval. Prepare relevant presentations for the Design Reviews.</p> <p>The reviewers of the technical documents need to be coherent with the ITER_D_2EXFXU - Sign-Off Authority for Project Documents.</p>	T0 + 6 months

D03	<p>Preparation of advanced interface documents (interface sheets, interface control documents) for diagnostic and operational systems in the ports with DMS which are having their Design Reviews in the first quarter of 2023. Upload them in the IDM for review, follow-up and approval. Prepare relevant presentations for the Design Reviews.</p> <p>The reviewers of the technical documents need to be coherent with the ITER_D_2EXFXU - Sign-Off Authority for Project Documents.</p>	T0 + 9 months
D04	<p>Preparation of advanced interface documents (interface sheets, interface control documents) for diagnostic and operational systems in the ports with DMS which are having their Design Reviews in the second quarter of 2023. Upload them in the IDM for review, follow-up and approval. Prepare relevant presentations for the Design Reviews.</p> <p>The reviewers of the technical documents need to be coherent with the ITER_D_2EXFXU - Sign-Off Authority for Project Documents.</p>	T0 + 12 months

9 Acceptance Criteria

The deliverables will be posted in the Contractor's dedicated folder in IDM, and the acceptance by the IO will be recorded by their approval by the designated IO TRO. These criteria shall be the basis of acceptance by IO following the successful completion of the services. These will be in the form of reports as indicated in section 8, Table of deliverables.

10 Specific requirements and conditions

- Management of technical interfaces in fusion or nuclear facilities;
- Experience relevant to all techniques in deliverables list;
- System and interface requirements management;
- Technical risk analysis;
- Monitoring and reporting of status of projects;
- Generation of technical, administrative, and managerial documents;
- Communication with international local and remote teams in context of nuclear fusion; research or similarly complex research and engineering environment;
- Organization, taking minutes and action tracking of international meetings;
- Understanding of schematics and 3D models.

11 Work Monitoring / Meeting Schedule

Work is monitored through progress reports (see List of Deliverables section) and at monthly project meetings for each of the eight projects.

12 Delivery time breakdown

See Section 8 "List Deliverables section and due dates".

13 Quality Assurance (QA) requirements

The organisation conducting these activities should 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 [Software qualification policy \(ITER_D_KTU8HH\)](#).

14 CAD Design Requirements (if applicable)

For the contracts where CAD design tasks are involved, the following shall apply:

The Supplier shall provide a Design Plan to be approved by the IO. Such plan shall identify all design activities and design deliverables to be provided by the Contractor as part of the contract.

The Supplier shall ensure that all designs, CAD data and drawings delivered to IO comply with the Procedure for the Usage of the ITER CAD Manual ([2F6FTX](#)), and with the Procedure for the Management of CAD Work & CAD Data (Models and Drawings [2DWU2M](#)).

The reference scheme is for the Supplier to work in a fully synchronous manner on the ITER CAD platform (see detailed information about synchronous collaboration in the ITER [GNJX6A](#) - Specification for CAD data production in ITER Contracts.). This implies the usage of the CAD software versions as indicated in CAD Manual 07 - CAD Fact Sheet ([249WUL](#)) and the connection to one of the ITER project CAD data-bases. Any deviation against this requirement shall be defined in a Design Collaboration Implementation Form (DCIF) prepared and approved by DO and included in the call-for-tender package. Any cost or labour resulting from a deviation or non-conformance of the Supplier with regards to the CAD collaboration requirement shall be incurred by the Supplier.

15 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 ([PRELIMINARY ANALYSIS OF THE IMPACT OF THE INB ORDER - 7TH FEBRUARY 2012 \(AW6JSB v1.0\)](#)).

Compliance with [Defined requirements for PBS 55 - Diagnostics \(NPEVB6 v2.0\)](#) or its flowed down requirements in [SRD-55 \(Diagnostics\) from DOORS \(28B39L v5.2\)](#) is mandatory.

This task is PIA.

The supplier must comply with the all requirements expressed in “Provisions for implementation of the generic safety requirements by the external actors/interveners” (ITER_D_SBSTBM).