IDM UID
5XCCV5

VERSION CREATED ON / VERSION / STATUS
10 Sep 2021 / 1.1 / Approved

EXTERNAL REFERENCE / VERSION

Technical Specifications (In-Cash Procurement)

CFE - Analysis that assists the diagnostic designs and requirements

The objective of this engineering contract is to work with the ITER Diagnostic Team in the analysis that supports the diagnostic design and integrated infrastructure for diagnostics, with particular emphasis on the technical requirements, interface definitions, assessment of loads acting on diagnostic components and integration of diagnostics in tokamak infrastructure.

Table of Contents

1 Purpose

The objective of this engineering contract is to work with the ITER Diagnostic Team in the analysis that supports the diagnostic design and integrated infrastructure for diagnostics, with particular emphasis on the technical requirements, interface definitions, assessment of loads acting on diagnostic components and integration of diagnostics in tokamak infrastructure.

2 Scope

The work involves the support to the ITER Diagnostic Team in the diagnostic design and integrated infrastructure for diagnostics, in particular, in flow-down of technical requirements, interface definitions, assessment of loads acting on diagnostic components and integration of diagnostics in tokamak infrastructure (ports and buildings).

3 Definitions

CM	Configuration Model
DA	Domestic Agency
DM	Detail Model
FDR	Final Design Review
HCC	Hard Core Component
IDM	ITER Document Management
IO	ITER Organization
IO-TRO	ITER Organization Technical Responsible Officer
PBS	Plant Breakdown Structure
PDR	Preliminary Design Review
SLS	System Load Specifications

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 contract. Services are to be provided at the IO work site.

6 Work Description

The work involves technical expertise in the diagnostics design and requirements follow-up, expertise in structural analysis of diagnostics in ITER, as well as understanding and implementation of interfaces for diagnostics integrated in the tokamak infrastructure (ports, buildings). The work involves many areas of activity that have to be documented:

- Meeting preparatory notes, including agenda and draft attendee selection;
- Record of progress against schedule;

- Preparation of technical requirement documents and technical specifications for the diagnostic systems for their design reviews and/ or manufacturing;
- Analysis of various loads on diagnostic components and preparation of analysis reports for ITER diagnostics;
- Update, review or create SLS for various diagnostic systems or integrated ports;
- Defined and justify interfacing loads for diagnostic integrated within tokamak complex;
- To assist Responsible Officers to specify/ follow-up nuclear safety guidelines and documents to ensure that diagnostic systems fully comply with French nuclear safety requirements.

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.

8 List of Deliverables and due dates

The main deliverables are provided as follows:

D #	Description	Due Dates
D1	Assess engineering justification docs and analysis reports, including SLSs, for the upcoming Design Reviews of integrated ports and diagnostic systems scheduled in Q1-2022. Discuss them with analysis experts and put reports or comments in the IDM.	T0 + 3 months
D2	Assess technical requirements and update requirement documents for integrated ports with their design reviews scheduled in Q2-2022. Assist to IO ROs in preparation of technical specifications for eventual procurement of diagnostic	T0 + 6 months

	components under IO responsibility.	
D3	Assess engineering justification docs and analysis reports, including SLSs, for the upcoming Design Reviews of integrated ports and diagnostic systems scheduled in Q3-2022. Discuss them with analysis experts and put reports or comments in the IDM.	T0 + 9 months
D4	Assess technical requirements and update requirement documents for integrated ports with their design reviews scheduled in Q4-2023. Assist to IO ROs in preparation of technical specifications for eventual procurement of diagnostic components under IO responsibility.	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

- Experience in writing SLS for complex integrated systems;
- Experience in structural analysis of mechanical systems and assemblies;
- Experience in thermal analysis of mechanical systems and assemblies;
- Experience in writing technical specifications or requirement documents;
- Experience in interface management for complex integrated systems;
- 3D and 2D schematics definition;
- Design organization;
- Technical document generation;
- System requirements management;
- Technical risk analysis.

11 Work Monitoring / Work Monitoring / Meeting Schedule

Work is monitored through reports (see List of Deliverables section).

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).