

Technical Specifications (In-Cash Procurement)

Diagnostic In-Vessel Electrical system Engineering

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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	3
7.1	Contractor’s Responsibilities	3
7.2	IO’s Responsibilities	3
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	5
14	CAD DESIGN REQUIREMENTS (IF APPLICABLE)	5
15	SAFETY REQUIREMENTS	6

1 Purpose

This document describes technical needs for specialist work relating to Diagnostic in-vessel electrical systems engineering.

2 Scope

To provide project technical advice on and monitor all aspects of work on the 55NE.V0/D0/C0 project involving the activities of the on-site design team, the interactions with the EUDA as well as the conduct of all related R&D activities. Preparation for and organising work to allow the closure of system design reviews. Documentation required for organisation of Procurement Activities (PAs).

3 Definitions

IO: ITER Organization

DA: Domestic Agency

SSD: See System Design

IO-TRO: ITER Organization Technical Responsible Officer.

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

4 References

Links inserted in text.

5 Estimated Duration

The duration shall be for a period of 12 months commencing from the date of signing of the Contract. No work shall be carried out prior to this date. Services to be provided are to be carried out at least one week per month at the IO work site. The IO expects some missions to be carried out to DA and other premises and they will be defined during the course of the Contract.

6 Work Description

The work involves technical experience for one diagnostic project: 55.NE in-vessel and cryostat services in 3 Work Packages, Looms, Feedthroughs and Remote handling connectors. The system is in the design development phase. The work to be done is to provide technical experience to work with the IO-TRO. It involves many areas of activity that have to be documented:

- Meeting preparatory notes, including agenda and draft attendee selection;
- Meeting notes for IO meetings called by interfacing systems and review bodies;
- Draft minutes for IO and DA meetings;
- Draft deviation requests;
- Technical input relating to project change requests and other actions;
- Draft interface sheets;
- Draft assembly procedures;
- Input documents, presentations, meeting notes related to Port integrator DA meetings;
- Input documents, presentations, meeting notes related to Interface meetings;

- Technical review notes for DA technical documents in IO IDM. Documents include technical reports, 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 IO or DA meetings
- Implementation reports for IO-related actions from IO or DA meetings;
- Implementation reports for Chit resolution from IO and DA design reviews; Amended and reviewed sections of IO schedule;
- Record of progress against schedule;
- Schedule improvements and fix scheduling problems;
- Input documents, presentations, meeting notes related to meetings of DA representatives with IO experts;
- Guidance notes for DAs on execution of PA technical activities;
- Updated and re-evaluated loads, including nuclear loads and other engineering specifications;
- Contributions to design workshops on specific topics (e.g. shutters, neutronics);
- Contribution to conferences on specific topics (e.g. thermal simulations);
- Updated measurement requirements;
- Technical specifications for R&D tasks; Technical requirements collection;
- Drafts and amended requirements-related documentation including joint documents with plasma operations;
- Project risk register updates (technical, cost and schedule);
- Annual internal review of progress (schedule, cost and risk evolution) and related documents;
- Input documents, presentations, meeting notes related to at workshops and conferences.

Visits to 3rd party sites by the Contractor are allowed. However, the travel mission expenses claims process is explained in the Service Contract General Conditions (4EBUPMv2.2) which will be annexed to this Contract.

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 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

D #	Description	Due Dates
D01	Status review of post PDR project and of schedule of work for project over next 12 months	TO + 1 month
D02	Create implementation plan for chits from loom PDR. Report status with plan for completion	TO + 2 months
D03	Follow-up prototype development and test assembly by industry. Review of the manufacturing and assembly work and recommendations of how to include lessons learned in the design work towards FDR.	TO + 3 months
D04	Plan next phase of R & D testing of looms. Produce technical specification document for thermal test approved in IDM.	TO + 4 months
D05	Organise, prepare and document FDR for cable procurement. Notification of meeting approved, Minutes of Meeting and Implementation Plan for chits uploaded to IDM	TO + 5 months
D06	Follow-up testing of F/T primary vacuum interface. Report on critical assessment of the primary vacuum tests and upload to IDM.	TO + 6 months
D07	Complete preparations for FDR for loom assemblies. Notification of meeting approved, Minutes of meeting and Implementation Plan for chits uploaded to IDM	TO + 9 months
D08	Follow-up looms design at IO – Documentation of at least 9 progress meetings and follow-up work with DA on feedthroughs and on the RH Cassette connector with a review of progress from attending at least 10 progress meetings with F4E and its contractors (TSD/VTT/IDOM etc) to be uploaded onto IDM	TO + 11 months
D09	Final report, assessment of project risks, recommendations for future work schedule	TO + 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

Development of equipment designs for fusion facilities
Design of diagnostics for large fusion installations
Operational experience of large fusion devices
R&D oversight experience
Experience of techniques and hardware in deliverables list
Computational work with, e.g, Fortran / C / IDL / Matlab
Schematics definition
Design organization
Technical document generation
System requirements management
Technical risk analysis

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 three 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 [Quality Assurance for ITER Safety Codes \(ITER_D_258LKL\)](#).

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 \(AW6JSB v1.0\)](#)).