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Technical Specifications (In-Cash Procurement)

CFE - Specialist Engineering work for the Fibre Optic Current Sensor installation and design

This document describes technical needs for specialist engineering work relating to In-Vessel Diagnostic Systems.

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1 Purpose

This document describes technical needs for specialist engineering work relating to In-Vessel Diagnostic Systems.

2 Scope

The work aligns with the ITER project, currently under construction in France. This device will study the Fusion concept on a scale previously unequalled on earth. To study the behaviour of this device, a set of monitoring systems (called diagnostics) are required. This will provide all the information to show and understand the performance of the device. The work involves technical expertise for two work groups related to the Fibre Optic Current Sensor (FOCS) diagnostics project.

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 12 months from the starting date of the contract. Services shall be provided on-site, when possible.

6 Work Description

The work involves technical expertise for the Fibre Optic Current Sensor (55.A8) diagnostic project: the components of this system are mainly in the final design and construction phase, with the back-end being in PDR phase. The work to be done is to provide technical expertise working with the IO-TRO, the suppliers and construction department. It involves many areas of activity that have to be documented:

- Meeting preparatory notes, including agenda and draft attendee selection for FOCS;
- Meeting notes for IO meetings called by interfacing systems and review bodies;
- Draft minutes for IO and DA meetings;
- Draft deviation requests;
- Technical input in support of 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 DA meetings

- Implementation reports for IO-related actions from 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;
- Drafts of technical specifications for call for tender;
- 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.

Travel to the DA or other sites (including conferences and manufacturing sites) may be required to carry out the work.

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 on work performed;

• Provide office space at IO premises during visits.

8 List of deliverables and due dates

The main deliverables are provided in a periodically report, with 2 Work Packages as follows:

1. WP1: FOCS EWP and Installation Support
    a. Attend/organize meetings, including progress meeting
    b. Make and/or review technical documents
    c. Update schedules
    d. Follow-up interfaces and CAD evolution
    e. Monitor and manage the testing/prototyping contracts
    f. Actively take on actions for Engineering Work Package preparation and follow-up;
    g. Launch/follow-up call for tender
    h. Manage the likely deviation request from providers
    i. Quality control of the manufacturing process ensuring that the provider delivers the needed quality documents.
    j. Technical recommendations, risks and mitigation measures
    k. Follow-up of installation activities
    l. Other required actions and progress
2. WP2: FOCS Back-End design support
    a. Attend/organize meetings
    b. Follow-up of interfaces and CAD evolution
    c. Make and/or review technical documents including DR and NCR.
    d. Update schedules
    e. Summary of launch/follow-up of call for tender
    f. Technical review of DR and NCR from providers
    g. On-site inspection reports
    h. Technical recommendations, risks and mitigation measures
    i. Other required actions and progress

The report shall have appendix with a complete list of all relevant IO IDM, CAD (Enovia, SSD) and all other relevant database references with version number. The contents of each report are summarised by deliverables in the table below, where T0 is the KOM. The supplier can re-arrange the contents by agreement with the TRO to suit the construction deadlines.

D #	Description	Due Dates
D01 (WP1)	*Report of FOCS Front End issues.* The manufacturing of FOCS Front End components is going through the most intense phase, and it is needed to follow it up, manage the DR's and control, hold and witness points of the manufacturing process until the delivery of the components at IO side, as well as organization of Delivery Readiness Reviews.	T0 + 3 months
D02 (WP1)	*Report on Chit close out action plan for Back-End PDR.* The Back-End PDR is scheduled for October 2021. The contractor will provide support in the closing of the review as well as in the coordination of the different sources needed	T0 + 6 months

	to perform the tasks and subsequently resolve the corresponding chits.	
D03 (WP1)	*Report on FOCS design, engineering and installation support.* The FOCS Back End is currently in the PDR phase, and the Front End is in manufacturing. Many aspects are related to mechanical integration. This report contains a summary of the activities and actions undertaken to support the design and guarantee mechanical integration of the FOCS back-end in the port-cell area and of the FOCS front-end in the framework of the Engineering Work Package preparation, as well as support to the actual installation.	T0 + 9 months
D04 (WP2)	*Report on EWP production for all sectors.* FOCS are present in three sectors, therefore preparation of specifications for relevant contract for mechanical components need to be performed, as well as EWP production on three different sectors. The report summarizes the results of these activities.	T0 + 10 months
D05 (WP2)	*Report of construction activities status.* Summary of support on coordinating the activities related to construction, including meetings with construction, development of construction specifications and on-site inspection.	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

- Configuration control;
- Experience in 3D and 2D drawings interpretation;
- Experience of techniques in deliverables list;
- Schematics definition;
- Design organization;
- Design review organization;
- Technical action follow-up;
- Technical document generation;
- Generation of technical specifications;
- Manufacturing follow-up;
- Testing follow-up;

- Maintenance and assembly troubleshooting.

11 Work Monitoring / Meeting Schedule

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

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].