

**Technical Specifications (In-Cash Procurement)**

**Call for Expertise for Purpose-built Tool Design and  
Manufacture**

This Specification is for the services of one Mechanical Engineer to support the ITER Organization in the supervision of contracts for the design and manufacture of purpose-built tools for the assembly of nuclear and non-nuclear components of the ITER Tokamak

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## 1 Purpose

This Specification is for the services of one Mechanical Engineer (hereafter referred to as the Contractor's Engineer) to provide engineering support to the ITER Organization in the supervision of purpose-built tools for the assembly of nuclear and non-nuclear components of the ITER Tokamak.

## 2 Scope

The ITER Organization (IO) is actively preparing for the construction of the ITER Tokamak at St Paul, Lez Durance, France.

IO's Construction Department (CST) requires engineering support to assist with the project and contract management of a number of functional specification and build to print contracts for purpose-built assembly tools. The overall objective is to support the IO Technical Responsible Officers (TRO) throughout the contract lifecycle to ensure effective, continuous communication, to ensure compliance with contract schedules and to avoid cost over-runs.

## 3 Definitions

| Abbreviation | Definition                               |
|--------------|--|
| C-R          | Contractor Responsible Officer           |
| CAD          | Computer Aided Design                    |
| CD           | Current Drive                            |
| CHWS         | Chilled Water System                     |
| CCWS         | Component Cooling Water System(s)        |
| CMA          | Construction Manager as Agent            |
| CODAC        | Control, Data Access and Communication   |
| CST          | Construction Department                  |
| CWP          | Construction Work Package                |
| DA           | Domestic Agency                          |
| DCIF         | Design Collaboration Implementation Form |
| DO           | Design Office (IO)                       |
| ECH          | Electron Cyclotron Heating               |
| EWP          | Engineering Work Package                 |
| H & CD       | Heating and Current Drive                |
| I2P          | Instruction to Proceed                   |
| ICH          | Ion Cyclotron Heating                    |
| IDM          | ITER Document Management (system)        |
| INB          | Installation Nucléaire de Base           |
| IO           | ITER Organization                        |
| IV           | In-Vessel                                |
| NB           | Neutral Beam                             |

| Abbreviation | Definition                                   |
|--------------|--|
| PBS          | Plant Breakdown Structure                    |
| PIA          | Protection Important Activity                |
| PIC          | Protection Important Component               |
| PRO          | Procurement Responsible Officer              |
| QA           | Quality Assurance                            |
| RF           | Radio Frequency                              |
| RO           | Responsible Officer (IO)                     |
| SIC          | Safety Important Class                       |
| SQEP         | Suitably Qualified and Experienced Personnel |
| TRO          | Technical Responsible Officer (IO)           |
| VVPSS        | Vacuum Vessel Pressure Suppression System    |
| WBS          | Work Breakdown Structure                     |

For a complete list of ITER abbreviations see: [ITER Abbreviations \(2MU6W5\)](#).

## 4 References

- [1] [Work Breakdown Structure for Site Construction Phase I \(QPY7MQ\)](#) [latest version]
- [2] [Internal Regulations \(27WDZW v2.2\)](#)
- [3] [In-Cash Procurement Technical and Management Documentation Exchange and Storage Working Instruction \(G8UMB3 v3.0\)](#)
- [4] [ITER Procurement Quality Requirements \(22MFG4 v5.0\)](#)
- [5] [Requirements for Producing a Quality Plan \(22MFMW v4.0\)](#)
- [6] [Quality Assurance for ITER Safety Codes Procedure \(258LKL v2.2\)](#)
- [7] [Procedure for the Usage of the ITER CAD Manual \(2F6FTX v1.1\)](#)
- [8] [Procedure for the CAD management plan \(2DWU2M v2.0\)](#)
- [9] [Specification for CAD data production in ITER Contracts \(P7Q3J7 v2.0\)](#)
- [10] [CAD Manual 07 - CAD Fact Sheet \(249WUL v4.0\)](#)
- [11] [Order dated 7 February 2012 relating to the general technical regulations applicable to INB - EN \(7M2YKF\)](#)
- [12] [PRELIMINARY ANALYSIS OF THE IMPACT OF THE INB ORDER - 7TH FEBRUARY 2012 \(AW6JSB v1.0\)](#)

## 5 Duration

The duration shall be for 12 months (a maximum of 220 working days) from the starting date, defined by the Contract.

## 6 Work Description

The Contractor's Engineer will provide support to CST at IO Headquarters, and also at the premises of IO's contractors, within 2 hours drive of Aix-en-Provence. In general, the Contractor's Engineer should expect to spend around 2 days per week at each location with the remainder at the Contractor's own premises.

In the event that it is necessary to travel to visit contractors or sub-contractors at other locations outside the range mentioned above, the mission costs will be reimbursed by IO according to IO mission rules.

The Contractor's Engineer shall assist the IO Technical Responsible Officers (TRO) as follows:

1. Facilitate continuous communication between the IO TRO and the Tool Contractor TRO and to ensure clear understanding of IO's requirements.
2. Ensure traceability, clarity and common understanding of all communication related to the contract.
3. Closely monitor the progress of the tool contracts according to their contract schedule;
4. Monitor closely the implementation of any actions on both IO and the tool contractor to ensure both parties meet their obligations in due time. Assess whether the actions implemented or data exchanged meet the obligations. This may involve preparing and maintaining a detailed schedule to underpin contract schedule.
5. Monitor closely the evolution of the conceptual designs proposed by the contractor, ensuring that the concepts being developed are consistent with IO requirements. In case of doubt, consult immediately with the IO TRO.
6. Carefully assess whether any aspect of the ongoing tool design could adversely affect the duration or safety of the execution of the related assembly task. In case of doubt, consult immediately with the IO TRO.
7. Review concept tool designs proposed by the Contractor in advance of formal design reviews to ensure consistency with IO requirements, and to help Contractor achieve a better performance at design review to help maintain schedule;
8. Support the IO TRO with justified technical responses to any weaknesses identified;
9. Advise when contractual amendments are required and expedite the process.
10. Participate in the review of deviation requests (DR) and Non Conformance Reports (NCRs);
11. Reviews suppliers' documents related to tool manufacturing (Manufacturing Inspection Plans, Manufacturing Drawings, Procedures, Reports, etc.);
12. Witness Factory Acceptance Tests (FAT) as required, and advise on their acceptance.

The Contractor's Engineer shall not be empowered to make any decision on behalf of the IO TRO.

## **7 Responsibilities**

### **7.1 IO Responsibilities**

The IO shall appoint a TRO for the Contract, who will be the point of contact for all technical matters, and a Procurement Responsible Officer (PRO) for all contractual and commercial matters. The TRO shall organise a Monthly Meeting (which may be by phone, video conference etc) with the Contractor on work performed.

In addition, IO shall provide:

- Office accommodation if required during visits to IO Headquarters;

- Access to IDM and software required to fulfil specified functions;
- Access to requirements documents, presentations and other information explaining installation concepts on which current contracts and schedules are based (where available);
- Access to IO design and design review information and reports as available/requested;
- Any input information needed by the Contractor for production of the various Deliverables.

## 7.2 Contractor Responsibilities

The Contractor shall:

- Appoint a TRO for the Contract, who will be the point of contact for all technical matters, and a C-R for all matters related to this Contract; The C-R and TRO may be the same person.
- Appoint an operational point of contact for the management of the Deliverables;
- Provide a suitably experienced and trained engineer to complete all aspects of Deliverables and associated documentation;
- Strictly implement the IO procedures, instructions and use IO templates, where provided;
- Organise work in an efficient way according to the workload and monthly commitments and objectives;
- Report to the IO TRO any issues during the performance of the Contract which require IO intervention or decision including potential delays in the submission of Deliverables;
- Provide monthly reports, minutes of meetings, records of decisions and other Deliverables as required in section 8;

Contractor's personnel shall be bound by the rules and regulations governing the IO ethics, safety and security – refer [2] [Internal Regulations \(27WDZW v2.2\)](#).

## 8 List of deliverables and due dates

All work shall be output and recorded as Deliverables in IDM.

In the event that sufficient input information is not available, or as a consequence of reprioritisation of scope, substitution of Deliverables may be agreed, with any changes regarding content, timing, or format of Deliverables being recorded on Monthly Progress Meeting minutes, signed by both the Contractor Responsible (C-R) and the IO Task Responsible Officer (TRO) or delegated Responsible Officer (RO).

The deliverables for this task are:

- **Quality Plan** if applicable.
- **Minutes of monthly progress meetings** shall be submitted 1 day after the monthly progress meeting. *The kick-off meeting shall be considered as the first monthly progress meeting.*
- **The monthly report** which shall be submitted at the end of the month, describing the work done on activities mentioned in 6 or alternatives as agreed in advance in writing by TRO and shall include:
  - Include IDM references of documents reviewed/produced as follows:
    - Report of review of MIPs and other technical reports (every 2 months)
  - Progress report on each of the contracts / tasks being followed, highlighting specific issues requiring further action / potential solutions to issues identified / opportunities to improve schedule or quality and / or reduce cost;

| Deliverable Ref. | Deliverable Description  | Due Date |
|------------------|--|----------|
| <b>D1</b>        | Quality Plan (if applicable)<br>Minutes of kick-off meeting<br>Monthly report including links to the deliverables completed in the previous month. | T0 + 1   |
| <b>D2</b>        | Minutes of monthly progress meeting.<br>Monthly report including links to the deliverables completed in the previous month.                        | T0 + 2   |
| <b>D3</b>        | Minutes of monthly progress meeting.<br>Monthly report including links to the deliverables completed in the previous month.                        | T0 + 3   |
| <b>D4</b>        | Minutes of monthly progress meeting.<br>Monthly report including links to the deliverables completed in the previous month.                        | T0 + 4   |
| <b>D5</b>        | Minutes of monthly progress meeting.<br>Monthly report including links to the deliverables completed in the previous month.                        | T0 + 5   |
| <b>D6</b>        | Minutes of monthly progress meeting.<br>Monthly report including links to the deliverables completed in the previous month.                        | T0 + 6   |
| <b>D7</b>        | Minutes of monthly progress meeting.<br>Monthly report including links to the deliverables completed in the previous month.                        | T0 + 7   |
| <b>D8</b>        | Minutes of monthly progress meeting.<br>Monthly report including links to the deliverables completed in the previous month.                        | T0 + 8   |
| <b>D9</b>        | Minutes of monthly progress meeting.<br>Monthly report including links to the deliverables completed in the previous month.                        | T0 + 9   |
| <b>D10</b>       | Minutes of monthly progress meeting.<br>Monthly report including links to the deliverables completed in the previous month.                        | T0 + 10  |
| <b>D11</b>       | Minutes of monthly progress meeting.<br>Monthly report including links to the deliverables completed in the previous month.                        | T0 + 11  |
| <b>D12</b>       | Minutes of monthly progress meeting.<br>Monthly report including links to the deliverables completed in the previous month.                        | T0 + 12  |

## 9 Acceptance Criteria

Acceptance based on the review by the IO TRO of the content of each of the deliverables specified in Section 8 in accordance with the Work Description given in Section 6.

## 10 Specific requirements and conditions

The engineer proposed by the bidder to carry out the work described in Section 6 must have at least 15 years of proven experience in the following areas:

- Degree in Mechanical Engineering, with additional qualifications in project / contract management or an MBA
- Knowledge of French nuclear codes;
- Experience in the supervision of mechanical assembly works;
- Ability to participate and report on technical and project meetings in both English and French;
- Proposal, review, implementation and control of design changes in international construction or nuclear projects;
- Technical review and assessment of manufacturing and testing documents (plans, drawings, procedures, manufacturing and inspection plans, as-built drawings).
- Good knowledge of the European Machinery Directive and applicable French Health and Safety legislation;
- Experience of working in a multi-cultural environment would be a definite advantage;
- Prior knowledge of the ITER tokamak assembly would be a definite advantage.

The engineer proposed should be fluent in written and spoken English and French.

## **11 Work Monitoring / Meeting Schedule**

Weekly meetings with IO.

## **12 Delivery time breakdown**

See section 8.

## **13 Quality Assurance (QA) requirements**

The organisation conducting these activities should have an ITER approved QA Program or an ISO 9001 accredited quality system. Alternatively the contractor may opt to follow the IO QA processes. In this case, the requirement to prepare a Quality Plan is not applicable. Specific training shall be provided by IO.

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)**

Not applicable.



## 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 [20].