Diagnostic Port Plugs
Manufacturing Expert

Technical Specifications

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1 Abstract

This document describes technical needs of Diagnostics, especially on expertise on manufacture of generic port plug structures, including activities and follow up activities.

2 Background and Objectives

ITER is a major new device that is under construction at Cadarache, near Marseille, in the South of France.

The ITER Organization is bringing together people from all over the world to be part of this unique project and to contribute to building the ITER device which requires the best people from many disciplines. The work environment is flexible and dynamic with opportunities to work closely with many people and cultures from around the world. The device will study the potential of controlled nuclear fusion to provide energy for the future of mankind. In order to study the behaviour of this device, a set of monitoring systems (called Diagnostics) are required. These systems will provide the information required to understand and control the performance of the device.

The work described below is related to the hardware required to physically support the diagnostics in ITER, e.g. port plugs and similar structures, and in some cases the diagnostics themselves.

3 Scope of Work

The objective of this engineering contract is to support the ITER Diagnostic Team in the manufacture of generic port plug structures and in relations with the French Nuclear Regulator (ASN).

It is anticipated that the contracting body will second to ITER on a part-time basis one or more experts to fulfil the Work Description below.

4 Estimated Duration

The expected duration shall be up to 2 years from the starting date of the contract.

The work base is at the ITER IO Worksite. It is expected that the contractor will be on-site approx. 100 days per annum (it is anticipated that these days will be spread evenly throughout the duration of the contracted period), it is expected there will some international travel on behalf of ITER.

5 Work Description

See References in Section 11 for background information.

**Description of the tasks to perform:**

- To be responsible for supervising the manufacturing of the generic port plug structures, with an emphasis on appropriate code compliance (e.g. such as RCC-MR and ASME) and reporting.
• Implementing requirements related to the French Regulations for Pressure and Nuclear Pressure Equipment for the Diagnostic Division.

• Identify and organise production of detailed drawings and manufacturing documentation (material documentation, welding book, WPS, NDT procedure, forming procedure, testing procedure) with emphasis on compliance with appropriate codes and the technical specifications.

• Monitors the fabrication of the generic port plug structures for the Diagnostic Division built according to the appropriate codes and is responsible for reports including, materials, welding and welding qualification, NDT, dimensional test, pressure test and leak testing.

• Liaises with ITER Quality Assurance (QA) Division for the implementation of QA requirements on the generic port plug structures

• Supervises (for the Division) the qualification program for alternative NDE techniques such as advanced U.T. examination

• Advises the Division on the selection of manufacturing techniques (welding, NDT) and supervises any Research & Development (R&D) and qualification programs

• Advises the Division on the selection of materials

6 List of deliverables and due dates

The deliverables for the 1st year are as follows:

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<th>Subtasks</th>
<th>Deliverable</th>
<th>Dates</th>
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<tr>
<td>1</td>
<td>Initial progress report</td>
<td>1 month after the starting date</td>
</tr>
<tr>
<td>2</td>
<td>Progress reports</td>
<td>Every month thereafter</td>
</tr>
<tr>
<td>3</td>
<td>Interim &amp; Final report</td>
<td>At end of the 1st &amp; 2nd year</td>
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7 Evaluation Criteria

The selection will be done taking into account the following criteria:
1) Expert CV 70%
2) Price 30%
8 Specific requirements and conditions

The staff proposed by the bidder to carry out the work described in Section 5 must have proven experience in the following:

- Extensive experience in the design and manufacturing supervision of components for Nuclear Pressure Equipment and/or Pressure Equipment
- Experience applying the acceptable appropriate codes to large Nuclear Components
- Experience implementing all requirements related to the French Regulation for Pressure and Nuclear Pressure Equipment including Conformity Assessment of Nuclear Pressure Equipment (or acceptable alternative)
- Experience in fabrication (procurement of materials, forming and welding) of large stainless steel structures.
- Experience working with nuclear, and conventional pressure, vessel codes.
- Must be fluent in English language, written and oral.

We wish to bring to the attention of all potential tenderers who may consider bidding for this CFE requirement the following information:-

The successful tenderer by providing personnel for this CFE requirement may preclude themselves from any future tenders relating to the specific works completed in order to fulfil the requirements of this particular contract.

9 Work Monitoring / Meeting Schedule

Meetings and Progress Reports

The work will be managed by means of Progress Meetings and/or formal exchange of documents transmitted by emails which provide detailed progress. Progress Meetings will be called by the ITER Organization, to review the progress of the work, the technical problems, the interfaces and the planning. It is expected that Progress Meeting will be held weekly or bi-weekly or as needed.

The main purpose of the Progress Meetings is to allow the ITER Organization/Diagnostics Division and the Contractor Technical Responsible Officers to:

a) Allow early detection and correction of issues that may cause delays;

b) Review the completed and planned activities and assess the progress made;

c) Permit fast and consensual resolution of unexpected problems;

d) Clarify doubts and prevent misinterpretations of the specifications.

In addition to the Progress Meetings, if necessary, the ITER Organization and/or the Contractor may request additional meetings to address specific issues to be resolved.
It is expected that on occasion the Contractor will be required to make a presentation to Topical Technical Meetings either by videoconference or in person. If in person, the ITER Organization will reimburse travelling expenses.

For all Progress Meetings, a document (the Progress Meeting Report) describing tasks done, results obtained, blocking points and action items must be written by the Contractor. Each report will be stored in the ITER IDM in order to ensure traceability of the work performed.

As specified, the Contractor shall submit to ITER Organization Progress Reports to be issued five working days before a Progress Meeting so that the report can be reviewed prior to, and discussed at, that Meeting.

10 Payment schedule / Cost and delivery time breakdown

According to deliverables mentioned in paragraph 6 “List of deliverables and due dates”, after submission and acceptance of reports to the ITER Organization.

11 Quality Assurance (QA) requirement

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 document \textit{ITER Procurement Quality Requirements (22MFG4)}.

Prior to commencement of the task, a Quality Plan \textit{Quality Plan (22MFWM)}, 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.

Prior to commencement of any manufacturing, a Manufacturing & Inspection Plan \textit{Manufacturing and Inspection Plan (22MDZD)}, must be approved by ITER who will mark up any planned interventions.

Deviations and Non-conformities will follow the procedure detailed in IO document \textit{MQP Deviations and Non Conformities (22F53X)}.

Prior to delivery of any manufactured items to the IO Site, a Release Note must be signed \textit{MQP Contractors Release Note (22F52F)}.

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, it should fulfil IO document on Quality Assurance for ITER Safety Codes \textit{Quality Assurance for ITER Safety Codes (258LKL)}.

11 References / Terminology and Acronyms

These documents are available upon request.

\textit{DDD - Diagnostic Generic Upper Port Plug Structures (33D8FB)}
\textit{DDD Diag EPP (3U8JU7)}