

**Technical Specifications**  
for  
**Integration and Diagnostics Support on ITER**

	<i>Version 1.0</i>	<i>Date: 08/06/2011</i>
	<i>Name</i>	<i>Affiliation</i>
<i>Author</i>	<b>FX ETIENNE</b>	<b>CHD</b>
<i>Reviewers</i>	<b>M WALSH</b>	<b>CHD/ DIAGNOSTICS</b>
<i>Approver</i>	<b>D BORA</b>	<b>CHD</b>

## Table of Contents

1	Abstract .....	3
2	Background and Objectives .....	3
3	Scope of Work.....	3
4	Estimated Duration.....	3
5	Work Description .....	3
6	Responsibilities (including customs and other logistics) ..Error! Bookmark not defined.	
7	List of deliverables and due dates (proposed or required by ITER).....	4
8	Acceptance Criteria (including rules and criteria).....	4
9	Specific requirements and conditions.....	4
10	Work Monitoring / Meeting Schedule .....	5
11	Payment schedule / Cost and delivery time breakdown.....	6
12	Quality Assurance (QA) requirement .....	6
13	References / Terminology and Acronyms .....	6

## 1 Abstract

This document describes technical needs for a Technical Officer on the ITER Diagnostics for engineering and integration support of various systems specifically to support the Procurement arrangement preparation.

## 2 Background and Objectives

ITER is a major new device that is under construction in Cadarache in Provence, 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. They will provide all the information to show and understand the performance of the device.

Many of these devices are based on optical effects and as a result light is required to be collected from the tokamak and transported to an area where it can be sampled and analysed.

The work described below is related to the engineering system-concept-defining of optically or laser based systems to ensure that procurements can be carried out. Most of these procurements are at the functional specification level and hence significant experience in the fusion and optical field is required to allow an optimum system to be specified.

## 3 Scope of Work

The objective of this contract is to provide to the Diagnostics team engineering and integration support of various systems specifically to support the Procurement arrangement preparation. The work would be 100% carried out at the IO-site.

## 4 Estimated Duration

The duration shall be for approximately 220 working days from the starting date of the contract spread over 14 months.

## 5 Work Description

### **Description of the tasks to perform:**

- Support diagnostic design development Responsible Officers to achieve their objectives for engineering design of specific diagnostic systems
- Be responsible for Interface specification and negotiation to completion with opposite side for specified diagnostics
- Integration of diagnostics in to the ITER infrastructure- this will include in vacuum and ex vacuum areas, specifically assist with Port Plugs Integration engineering.
- Report work at regular intervals or as required by the DH or RO.
- Be able to deliver to time, cost and specification where required.
- Ability to work with the organisation's processes to achieve the best results
- Must work and set priorities with overall project schedule

- Support ROs in the Interface specification and negotiation to completion with opposite side for specified diagnostics
- Integration of diagnostics into the ITER infrastructure.
- Provide reports about the performed activities at regular time intervals to the ROs
- To assist ROs in the structural integrity analysis /activity of the diagnostics systems
- The engineering disciplines required are in order of importance: Mechanical design, Thermal Analysis and Electromagnetic force analysis; experience with design work for nuclear environment is an advantage.

## 6 List of deliverables and due dates

Subtask	Deliverable	Dates
1	Progress report	3 months after starting date
2	Progress report	6 months after starting date
3	Progress report	9 months after starting date
4	Final report	12 months after starting date

## 7 Acceptance Criteria

The selection will be done taking into account the following criteria and an interview:

- |              |     |
|--------------|-----|
| 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 following areas:

### Decision Making

Applies knowledge and judgement to ensure that the most appropriate decisions are agreed.

### Knowledge

Professional expertise in mechanical and systems engineering.

Ability to comprehend technical issues and work with others to resolve them.

To have awareness of the organisation, aims, objectives and departmental procedures.

### Skills and competencies

- Proven experience in the design of diagnostic systems (at least 5 years);
- Proven experience in working with CAD designers (at least 5 years);

- Capability to work in English language.
- Ability to work with the organisation's processes to achieve the best results
- Ability to align work priorities with overall project schedule
- Very good technical writing skills
- Excellence in communication and influencing
- Attention to detail
- Excellent inter-personal skills
- Ability to be consistent and work well under pressure

### **Interviews**

Before any appointment is made it may be necessary to conduct interviews. ITER reserve the right to call for interviews which will be held at the ITER site in Caderache. Interviews may be conducted through telephone or video conference. All associated costs for attending interviews at IO will be for the account of the contractor.

## **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.

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 asses 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.

For all Progress Meetings, a document describing tasks done, results obtained, blocking points must be written by the engineer. Each report will be stored in the ITER IDM in order to ensure traceability of the work performed.

Every 3 months, the Contractor shall submit to ITER Organization a Progress Report to be issued five working days before the each Progress Meeting so that the report can be reviewed prior to, and discussed at, that Meeting.

The quarterly Progress Report shall illustrate the progress against the baseline work plan and indicate variances that should be used for trending. Performance indicators suitable to measure the progress of the work as compared to the approved work plan shall also be reported in the Monthly Progress Report.

## 10 Payment schedule / Cost and delivery time breakdown

Interim payments will be made monthly upon production of a monthly report and completed time sheet in line with the table of deliverables in section 6. Payments will only be processed upon IO approval of the reports and against receipt of a valid invoice.

### 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 [ITER Procurement Quality Requirements \(22MFG4\)](#)

Prior to commencement of the task, a Quality Plan [Quality Plan \(22MFMW\)](#) 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 [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 [MQP Deviations and Non Conformities \(22F53X\)](#)

Prior to delivery of any manufactured items to the IO Site, a Release Note must be signed [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 [Quality Assurance for ITER Safety Codes \(258LKL\)](#).

## 11 References / Terminology and Acronyms