

## Annex II

# Diagnostics Thomson Scattering Expert

## Technical Specifications

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## 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	List of deliverables and due dates .....	4
7	Acceptance Criteria .....	4
8	Specific requirements and conditions.....	5
	<b>Technical Experience.....</b>	<b>5</b>
	- At least 5 years of relevant experience in the design and operation of Thomson Scattering systems .....	5
	- Should have designed and implemented an advanced system.....	5
	- Should have direct and up to date experience in installation, commissioning.....	5
	- Experience in the project initiation, management, design of diagnostic systems on magnetic fusion devices; .....	5
	- Experience in project management and in effective Quality Assurance management.....	5
	<b>Specific skills: .....</b>	<b>5</b>
	- Knowledge and experience working with appropriate software tools to meet the technical requirements of the post, for example IDL (Interactive Data Language) or MATLAB;.....	5
9	Work Monitoring / Meeting Schedule .....	5
10	Payment schedule / Cost and delivery time breakdown.....	6
	Quality Assurance (QA) requirement .....	6
11	References / Terminology and Acronyms .....	6

## 1 Abstract

This document describes technical needs of **Diagnostics Thomson Scattering Expert**.

## 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 system-concept-defining and assessing the performance to ensure that procurements can be carried out. Most of these procurements are at the functional specification level and hence significance 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 **Thomson Scattering Expertise** to support the Procurement arrangement preparation and progress.

The work would be mostly carried out at the IO-site.

## 4 Estimated Duration

The duration shall be for approximately 3 years from the starting date of the contract.

## 5 Work Description

- Assists in developing and preparing the project and technical strategy and methods needed to implement the Thomson scattering systems on ITER;
- Develops detailed project implementation plans for all related work, and monitors and controls cost and schedules for all related activities;
- Develops necessary documentation on these systems;
- Effectively interfaces with other ITER Organization Departments and with ITER Domestic Agencies as necessary to achieve successful implementation;
- Assists in the development of other ITER diagnostic systems and appropriate documentation as needed;

## 6 List of deliverables and due dates

<b>T</b>	<b>Deliverable</b>	<b>Dates</b>
1	Progress report	Latest 3 month after starting date
2	Progress report	Latest 6 months after starting date
3	Progress report	Latest 9 months after starting date
4	Progress report	Latest 12 months after starting date
5	Progress report	Latest 15 months after starting date
6	Progress report	Latest 18 months after starting date
7	Progress report	Latest 21 months after starting date
8	Progress report	Latest 24 months after starting date
9	Progress report	Latest 27 months after starting date
10	Progress report	Latest 30 months after starting date
11	Progress report	Latest 33 months after starting date
12	Progress report	Latest 36 months after starting date

## 7 Acceptance Criteria

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

- |                            |     |
|----------------------------|-----|
| 1) Expert CV and Interview | 70% |
| 2) Price                   | 30% |

## 8 Specific requirements and conditions

### Technical Experience

- At least 5 years of relevant experience in the design and operation of Thomson Scattering systems
- Should have designed and implemented an advanced system.
- Should have direct and up to date experience in installation, commissioning.
- Experience in the project initiation, management, design of diagnostic systems on magnetic fusion devices;
- Experience in project management and in effective Quality Assurance management.

### Specific skills:

- Knowledge and experience working with appropriate software tools to meet the technical requirements of the post, for example IDL (Interactive Data Language) or MATLAB;

## 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 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.

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 monthly payments.

### 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