

Technical Specifications (In-Cash Procurement)

Diagnostic Expert Support for 55.G8 Erosion Deposition Monitor

CFE for:

This is a service contract for the provision of expertise to help manage the progress of the design of the ITER Erosion Monitor diagnostic (55.G8 EDM) and some general in-vessel diagnostic section activities. The deliverables are technical reports and progress reports.

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1 Preamble

This Technical Specification is to be read in combination with the General Management Specification for Service and Supply (GM3S) – [R1] that constitutes a full part of the technical requirements.

In case of conflict, the content of the Technical Specification supersedes the content of [R1].

2 Purpose

This document describes technical needs for specialist support work in the ITER Port Plug and Diagnostic Division, for oversight of the development and design of the 55.G8: Erosion Deposition Monitor Diagnostic and general support for the in-vessel diagnostic (IVD) section.

3 Acronyms & Definitions

3.1 Acronyms

CAD	Computer Aided Design
CRO	Contractor Responsible Officer
DA	Domestic Agency
DPP	Document Production Plan
DR	Design Review
EDM	Erosion Deposition Monitor (55.G8)
IDM	ITER Document Management (system)
INB	Installation Nucléaire de Base
IO	ITER Organization
IO-CT	ITER Organization (Central Team)
IO-TRO	ITER Organization Technical Responsible Officer
IVD	In-Vessel Diagnostic section at ITER
KoM	Kick of Meeting
PBS	Plant Breakdown Structure
PIA	Protection Important Activity
PIC	Protection Important Component
PPD	Port Plug and Diagnostic Division
QA	Quality Assurance
RO	Responsible Officer (IO)
SIC	Safety Important Class
TRO	Technical Responsible Officer

For a complete list of ITER abbreviations see: [ITER Abbreviations \(ITER_D_2MU6W5\)](#).

4 References

[R1]	General Management Specification for Service and Supply	82MXQK	v1.4
[R2]	R. Reichle, et al, Journal of Nuclear Materials 463 (2015) 180–184	LINK	
[R3]	G. Pedrini, et al, Appl. Optics 58(5), A147–A155 (2019)	LINK	
[R4]	Conceptual Design Review of 55.G8:Erosion Monitor Diagnostic System	Q7APKA	folder
[R5]	Panel final report on CDR of 55.G8: Erosion Monitor	SA6ECY	v1.0
[R6]	Conceptual Design Review of 55.G8:Erosion Monitor Diagnostic System	Q73TPE	folder
[R7]	55.G8 - Final panel report - PDR	WDS8DF	In work
[R8]	ITER Procurement Quality Requirements	22MFG4	v5.1
[R9]	Requirements for Producing a Quality Plan	22MFMW	v4.0
[R10]	Working Instruction for the Qualification of ITER safety codes	258LKL	v3.1
[R11]			

5 Scope of Work

This section defines the specific scope of work for the service, in addition to the contract execution requirement as defined in [R1].

The work aligns with the ITER project, currently under construction in France. To study the behaviour of this device, a set of monitoring systems (called diagnostics) are required. The work involves technical expertise for:

- Supervising optical, mechanical and opto-mechanical design development related to Erosion Deposition Monitor, PDR and towards first FDR;
- Supervise analyses like load, thermo-hydraulic, electromagnetic, structural, neutronic, safety, risk analysis etc. PDR and towards first FDR;
- Help the TRO in managing the interfaces and port plug integration during the design phase;
- Help in closing 55.G8 PDR chits and preparing for the next design review; FDR for in-vessel and Port Cell components, by generation the required documents as well as help in solving the Chits generated during the reviews and start progress towards an FDR.

This system PDR is planned for October 2023 and FDR approximately 1 year later.

5.1 Detailed scope of work

The Contractor shall:

- Update where needed the document production plan (DPP) of the Erosion monitor and generate, or update, the required documents.
- Supervise the engineering and design contract for the FDR of the EDM
- Follow up on resolving of the chits generated during PDR of the Erosion Monitor diagnostic for ITER, together with engineering and design contractor

- Lead the development of the design through Preliminary and Final Engineering design by supporting in Optical, Optomechanical and Mechanical designs
- Supervise the Thermal and Hydraulic, Neutronics and Electromagnetic analysis and structural analysis etc. of this diagnostic in close cooperation with the Diagnostic Engineering section
- Assist the division in the diagnostic port plug integration relevant to the diagnostic
- Assist the division in generating the relevant documents for getting the design reviewed during the Design Reviews pertaining to the above activities
- Liaise with and drive the work with the Institut für Technische Optik, *ITO*, through the existing Cooperation Agreement. This will involve organising regular meetings with their team and follow-up on ongoing contracts, ensuring timely delivery of the ITO agreed deliverables.

5.2 Service Duration

The duration of this contract shall be for twelve (12) months.

No work shall commence prior to the date of final signature of the Contract.

6 Location for Scope of Work Execution

The services can be rendered remote, with occasional visits to the ITER site, a few days per month, in order to facilitate the collaboration, therefore we request the contractor be located in, or relocate to, an area no further than 750km from the ITER site.

7 IO Documents

No specific input documents are expected from IO, other than those already available in IDM.

8 List of deliverables and due dates

The Supplier shall provide IO with the documents and data required in the application of this technical specification, the GM3S [R1] and any other requirement derived from the application of the contract.

N^o	Deliverable	Dates*
D01	Support IO TRO in managing 55.G8 EDM diagnostic development Work progress is monitored through a bi-monthly progress report detailing the work performed on tasks detail in §5.1 Criteria for completion: 2-month summary report approved in IDM	T0 + 02 m
D02	Support IO TRO in managing 55.G8 EDM diagnostic development Work progress is monitored through a bi-monthly progress report detailing the work performed on tasks detail in §5.1 Criteria for completion: 2-month summary report approved in IDM	T0 + 04 m
D03	Support IO TRO in managing 55.G8 EDM diagnostic development Work progress is monitored through a bi-monthly progress report detailing the work performed on tasks detail in §5.1 Criteria for completion: 2-month summary report approved in IDM	T0 + 06 m

№	Deliverable	Dates*
D04	Support IO TRO in managing 55.G8 EDM diagnostic development Work progress is monitored through a bi-monthly progress report detailing the work performed on tasks detail in §5.1 Criteria for completion: 2-month summary report approved in IDM	T0 + 08 m
D05	Support IO TRO in managing 55.G8 EDM diagnostic development Work progress is monitored through a bi-monthly progress report detailing the work performed on tasks detail in §5.1 Criteria for completion: 2-month summary report approved in IDM	T0 + 10 m
D06	Support IO TRO in managing 55.G8 EDM diagnostic development Work progress is monitored through a bi-monthly progress report detailing the work performed on tasks detail in §5.1 Criteria for completion: 2-month summary report approved in IDM	T0 + 12 m
* T ₀ – date of the kick-off meeting (KoM) of the contract		

The contract shall contain a provision for travel and subsistence for missions, conferences, manufacturer visits, etc., where needed and as agreed with IO before the travel commences. Mission provision expenses should be included in the deliverable report, providing the mission details and the amount of the expenses. Payment is subject to the deliverable report approval by IO CRO.

- Within this contract IO currently foresees two missions of two days, within Europe.

The supplier is requested to prepare their document schedule based on the above and using the template available in the GM3S [R1] appendix II ([click here to download](#)).

8.1 Report and Document Review criteria:

Reports as deliverables shall be stored in the ITER Organization's document management system, IDM by the selected candidate for acceptance. A named ITER Organization's Contract Technical Responsible Officer is the Approver of the delivered documents.

The Approver can name one or more Reviewers(s) in the area of the report's expertise.

The Reviewer(s) can ask modifications to the report in which case the selected candidate must submit a new version. The acceptance of the document by the Approver is the acceptance criterion.

8.2 Contractor's Responsibilities

In order to perform the tasks in these Technical Specifications successfully, 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.

8.3 IO's Responsibilities

The IO shall:

- Nominate the Responsible Officer to manage the contract (IO-TRO);
- Organise a monthly meeting(s) on work performed;
- Grant access to the ITER Document Management, *IDM*, for review of documents and to upload documents as co-author;
- Review documents in a timely fashion
- Provide visitor offices at IO premises when visiting IO site;

9 Quality Assurance 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 [R8].

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 [R9]).

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 [\[R10\]](#).

The Quality class under this contract is QC-2, GM3S [R1] section 8 applies in line with the defined Quality Class.

10 Safety requirements

The scope under this contract does not cover any PIC and/or PIA and/or PE/NPE components or activities, hence GM3S [R1] section 5.3 does not apply.

10.1 Nuclear class Safety

10.2 Seismic class

No specific safety requirement related to PIC and/or PIA and/or PE/NPE components apply.

11 Specific General Management requirements

Requirements for [R1] GM3S section 6 apply, amended with the below specific requirements.

11.1 Progress reports

Progress will be reported on a bi-monthly basis as per the list of deliverables in §8, hence [R1] GM3S chapter 6.1.4.2 and its sub-chapters do not apply.

11.2 CAD design requirements

This contract does not include CAD activities.

