

Technical Specifications (In-Cash Procurement)

Technical Specification of Feeder Analysis Contract (service)

This document is to describe the scope of work to be provided by the Contractor to the ITER Magnet Delivery Project.

The purpose of this contract is to provide analysis services on systems and components of Magnet Feeder.

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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) – [Ref 1] that constitutes a full part of the technical requirements.

In case of conflict, the content of the Technical Specification supersedes the content of Ref [1].

2 Purpose

This document is to describe the scope of work to be provided by the Contractor to the ITER Magnet Delivery Project.

The purpose of this contract is to provide analysis services on systems and components of Magnet Feeder.

3 Acronyms & Definitions

3.1 Acronyms

The following acronyms are the main one relevant to this document.

Abbreviation	Description
CRO	Contract Responsible Officer
GM3S	General Management Specification for Service and Supply
IO	ITER Organization
PRO	Procurement Responsible Officer
TF	Toroidal Field
PF	Poloidal Field
CS	Central Solenoid
PA	Procurement Arrangement
ICF	In Cryostat Feeder
SSC	System, Structure and Component
ICF	In-Cryostat Feeder
CFT	Cryostat FeedThrough Feeder
KOM	Kick-Off Meeting

3.2 Definitions

Contractor: shall mean an economic operator who have signed the Contract in which this document is referenced.

4 Applicable Documents & Codes and standards

4.1 Applicable Documents

This is the responsibility of the Contractor to identify and request for any documents that would not have been transmitted by IO, including the below list of reference documents.

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This Technical Specification takes precedence over the referenced documents. In case of conflicting information, this is the responsibility of the contractor to seek clarification from IO.

Upon notification of any revision of the applicable document transmitted officially to the contractor, the contractor shall advise within 4 weeks of any impact on the execution of the contract. Without any response after this period, no impact will be considered.

Ref	Title	IDM Doc ID	Version
1	General Management Specification for Service and Supply (GM3S)	82MXQK	1.4
2	Load Specifications (LS)	222QGL	6.2
3	Magnet Feeder System Load Specification	5K2Q5B	2.5
4	Global Tokamak Seismic Analysis Report	33W3P4	2.1
5	Design Seismic Floor Response Spectra in the Tokamak Complex	SVBRJZ	1.1
6	SL-3 Floor Response Spectra for Tokamak Complex	SFSN7Q	2.0
7	Safety Important Functions and Components Classification Criteria and Methodology	347SF3	1.8
8	ITER Seismic Nuclear Safety Approach	2DRVPE	1.6
9	Report of final design of TF ICF structure	44TLW2	2.1

4.2 Applicable Codes and Standards

This is the responsibility of the contractor to procure the relevant Codes and Standards applicable to that scope of work.

Ref	Title	Doc Ref.	Version
CS1	Pressure Equipment Directive		2014-68 EU
CS2	Magnet Structural Design Criteria: Part 1: Main Structural Components and Welds	2FMHHS	2.0
CS3	Part II: Magnet Windings (Radial Plates and Conductors) with High and Low Voltage Insulation and Epoxy Filler	2ES43V	2.0
CS4	Part III: Bolts, Keys, Supports and Special Components	2FKTTG	2.0
CS5	Structural Design Criteria for Magnet Shipping and Assembly	SVNT35	2.0
CS6	EN13480-3 Metallic Industrial Piping – Design and Calculation		August 2002
CS7	EN13480-4 Metallic Industrial Piping – Fabrication and Installation		October 2012

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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 Ref [1].

5.1 Firm part

5.1.1 *Scope of work #1*

5.1.1.1 *Description*

Structural analysis of CS Feeders integrated with CS coil terminals and updated boundary condition from CS coil analysis. Two feeders to be analysed: one at lower level and the other at upper level. The 3D model of analysed feeder will be provided to Contractor after KOM.

The analysis must consider all loads in Ref [2], Ref [3] and seismic loads in Ref [5], Ref [6], by using report template Ref [4].

Detail analysis on conductor and clamp contact shall be included to investigate the gap distribution impact on stress level in conductor and interface load during manufacturing and assembly.

Local detail analysis shall be performed if stress concentration and sensitivity are detected by global structural analysis.

5.1.1.2 *Service Duration*

The maximum expected duration for this activity is 6 months.

5.1.2 *Scope of work #2*

5.1.2.1 *Description*

Structural analysis of PF Feeders integrated with PF coil terminals and updated boundary condition from PF coil analysis. Two feeders to be analysed: one at lower level and the other at upper level. The 3D model of analysed feeder will be provided to Contractor after KOM.

The analysis must consider all loads in Ref [2], Ref [3] and seismic loads in Ref [5], Ref [6], by using report template Ref [4].

Detail analysis on conductor and clamp contact shall be included to investigate the gap distribution impact on stress level in conductor and interface load during manufacturing and assembly. “

Local detail analysis shall be performed if stress concentration and sensitivity are detected by global structural analysis.

5.1.2.2 *Service Duration*

The maximum expected duration for this activity is 4 months.

5.1.3 *Scope of work #3*

5.1.3.1 *Description*

Structural analysis of CC Feeders integrated with CC coil terminals and updated boundary condition from CC coil analysis. Two feeders to be analysed: one at lower level and the other at upper level. The 3D model of analysed feeder will be provided to Contractor after KOM.

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The analysis must consider all loads in Ref [2], Ref [3] and seismic loads in Ref [5], Ref [6], by using report template Ref [4].

Detail analysis on conductor and clamp contact shall be included to investigate the gap distribution impact on stress level in conductor and interface load during manufacturing and assembly.

Local detail analysis shall be performed if stress concentration and sensitivity are detected by global structural analysis.

5.1.3.2 Service Duration

The maximum expected duration for this activity is 4 months.

5.2 Optional part

5.2.1 Scope of work #4

5.2.1.1 Description

Structural analysis of ICF integrated with handling tools for on-site assembly. The 3D model of analysed feeder and tooling will be provided to Contractor.

The quantity and feeder type will be defined after previous scope of work are completed.

The analysis must consider all loads in Ref [2], Ref [3] and seismic loads in Ref [5], Ref [6], by using report template Ref [4].

Local detail analysis shall be performed if stress concentration and sensitivity are detected by global structural analysis.

5.2.1.2 Service Duration

The maximum expected duration for this activity is 2 months per analysis.

6 Location for Scope of Work Execution

Contractor can perform the work at their own location.

7 IO Documents

Under this scope of work, IO will deliver the following documents by the stated date:

Ref	Title	Doc ID	Expected date
1	3D model of Feeder and related coils		KOM

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 Ref[1] and any other requirement derived from the application of the contract.

A minimum, but not limited to, list of documents is available hereafter with associated due dates:

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	Technical Design Family (TDF)	Generic Document Title (GTD)	Further Description	Expected date (T0+x) *
Firm Part	Engineering Analysis and Calculation Report	Structural Integrity Report	Analysis report of CS Feeders	T0*+6
		Seismic Analysis Report	Seismic analysis report of CS Feeders	
	Engineering Analysis and Calculation Report	Structural Integrity Report	Analysis report of PF Feeders	T0*+10
		Seismic Analysis Report	Seismic analysis report of PF Feeders	
	Engineering Analysis and Calculation Report	Structural Integrity Report	Analysis report of CC Feeders	T0*+14
		Seismic Analysis Report	Seismic analysis report of CC Feeders	
Optional Part	Engineering Analysis and Calculation Report	Simulation Analysis Report	Simulation analysis report of integrated feeder with tooling	T1*+2

(*) T0 = Commencement Date of the contract; X in months.

T1=the date of the release of the Option

Supplier is requested to prepare their document schedule based on the above and using the template available in the GM3S Ref [1] appendix II ([click here to download](#)).

9 Quality Assurance requirements

The Quality class under this contract is Class 1, [Ref 1] GM3S section 8 applies in line with the defined Quality Class.

10 Safety requirements

The scope under this contract covers for PE/NPE components, [Ref 1] GM3S section 5.3 applies.

10.1 Nuclear class Safety

Not Applicable.

10.2 Seismic class

The scope under this contract covers components for SC-1 (SF) safety requirement.

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11 Special Management requirements

Requirement for [Ref 1] GM3S section 6 and 7 applies completed/amended with the below specific requirements:

11.1 Contract Gates

The contract gates are defined in [Ref 1] section 6.1.5, this scope of service call for the following technical gates:

- KOM
- Analysis report and data review for each work scope in section 5.
- Close-out

11.2 Meeting Schedule

Meetings can be organized face to face or remotely as agreed by the Parties.

- After contract signature, a KOM shall be organized to make sure all necessary data has been provided to contractor.
- Regular progress shall be tracked by weekly meeting.
- Final review meeting shall be organized for each work scope to verify the deliverable.
- Upon request of any party, the Contractor or IO, ad hoc meeting can be organized to tackle any specific topics not covered in the planned meetings

11.3 CAD design requirements

This contract does not imply CAD activities.