+Call for Expertise: エキスパート募集

IO References: IO/24/CFE/10028482/RMO

"Engineering Analysis for DMS"

（DMS のためのエンジニアリング解析）

IO 締め切り 2024 年 4 月 29 日(月)

概要：

イーター機構（IO）では、上記タスクの支援をいただく作業を ITER 参加極の企業・機関等から募集します。応募を希望される企業・機関等は、所定の期限までに応募書類を直接 ITER 機構の下記担当までご提出下さい。

○ 今回の募集に関する書類は以下の通りです。

・招待状

・技術仕様書

・履歴書（CV）テンプレート

・見積もり提案書テンプレート

・誓約書

・守秘義務に関する誓約書(契約締結時に署名されること)

○ 応募者は、以下の申込用紙を ITER 機構に直接送付願います。

・履歴書（ITER 機構の招待状と技術仕様書で規定した要求事項と基準を満足していることを示す経験について明記されていること）

・誓約書（署名入り）

・見積もり提案書

（※提出書類は pdf ファイル 1 本にまとめて送付願います。）

○ 応募書類の提出先

ITER 機構の下記担当者宛に電子メールにて送付：

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ITER Organization

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○はじめに

この事前情報通知（PIN）は、供給契約の審査および実行につながる公開入札調達プロセスの最初のステップです。この文書の目的は、作業範囲と入札プロセスに関する技術的内容の基本的な概要を提供することです。

○背景

ITER プロジェクトは、欧州連合（EU）（EURATOM を代表とします）、日本、中華人民共和国、インド、韓国、ロシア連邦、米国の 7 カ国が共同出資する国際的な研究開発プロジェクトで、ITER 機構（IO）の本部（HQ）があるヨーロッパ、フランス南部のサン・ポール・レ・デュランスで建設されています。

ITER プロジェクトの組織面および技術面の詳細については、www.iter.org を参照してください。

○作業範囲

「DMS のためのエンジニアリング解析」と題した本契約の目的は、技術仕様書に記載されたサービスの提供を調達することです。詳細は技術仕様書 ref. ASLBG5 VERSION_v1.0（本 PIN 文書の附則 I）を参照下さい。

○調達プロセスと目的

目的は、競争入札プロセスを通じて供給契約を落札することです。

この入札のために選択された調達手続きは公開入札手続きと呼ばれます。

オープン入札手順は、次の 4 つの主要なステップで構成されています。

> ステップ 1-事前情報通知（PIN）
>
> 事前情報通知は公開入札プロセスの第一段階です。IO は、関心のある候補企業に対し、10 作業日までに担当調達担当官に以下の情報を提出し、競争プロセスへの関心を示すよう正式に要請します。
>
> -候補会社の名称
>
> -登録国
>
> -連絡先の名前、電子メール、タイトル、電話番号。
>
> <u>特に注意:</u>
>
> <u>関心のある候補企業は、**IO Ariba** の電子調達ツール 「**IPROC**」 に登録してください（まだ登録していない場合）。手順については、</u>
>
> <u>https://www.iter.org/fr/proc/overview を参照してください。</u>

<u>Ariba（IPROC）に登録する際には、お取引先様に最低1名の担当者の登録をお願いします。この連絡担当者は、提案依頼書の発行通知を受け取り、必要と思われる場合は入札書類を同僚に転送することができます。</u>

➤ ステップ2-入札への招待
関心のある候補企業の完全登録後、提案依頼書（RFP）を「IPROC」に掲載します。この段階では、担当の調達担当者に関心を示し、かつIPROCに登録している関心のある候補企業は、RFPが公表された旨の通知を受けることができます。その後、RFPに詳述されている入札説明書に従って提案書を作成し、提出します。

<u>このツールに登録されている企業のみが入札に招待され、登録されている企業は、自社の名前でのみ提案を提出できます。</u>

➤ ステップ3-入札評価プロセス
入札者の提案は、IOの公平な評価委員会によって評価されます。入札者は、技術的範囲に沿って、かつ、RFPに記載された特定の基準に従って作業を実施するために、技術的遵守を証明する詳細を提供しなければなりません。

➤ ステップ4-落札
認定は、公開されているRFPに記載されている、コストに見合った最適な価格または技術的に準拠した最低価格に基づいて行われます。

〇概略日程
概略日程は以下の通りです：

マイルストーン	暫定日程
IOWebページとDAとの連絡により 事前指示書（PIN）の発行	2024年4月19日
関心表明フォームの提出	2024年4月29日
IPROCでの提案リクエスト（REP）の発行	2024年5月9日
IPROCで入札提出	2024年5月24日
入札評価と契約授与	2024年6月
契約調印	2024年6月
契約開始	2024年6月

〇契約期間

予想される契約期間は、12 か月です。

〇経験

入札者は、IO の技術的要件に沿った期待される支援を提供するにあたり、その知識と経験と能力があることを英語で示す必要があります。ITER での使用言語は英語です。流暢でプロレベルが必要です（スピーキングとライティング共に）。

〇候補

参加は、個人またはグループ/コンソーシアムに参加するすべての法人に開放されます。法人とは、法的権利及び義務を有し、ITER加盟国内に設立された個人、企業又は機構をいいます。

法人は、単独で、またはコンソーシアムパートナーとして、同じ契約の複数の申請または入札に参加することはできません。共同事業体は、恒久的な、法的に確立されたグループ又は特定の入札手続のために非公式に構成されたグループとすることができます。

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どのコンソーシアムメンバーもIPROCに登録する必要があります。

【※ 詳しくは添付の英語版技術仕様書「**Engineering Analysis for DMS**」をご参照ください。】
ITER 機構のウェブサイト
http://www.iter.org/org/team/adm/proc/overview からもアクセスが可能です。

「核融合エネルギー研究開発部門」の HP： http://www.fusion.qst.go.jp/ITER/index.html
では ITER 機構からの各募集（IO 職員募集、IO 外部委託、IO エキスパート募集）を逐次更新してい
ます。ぜひご確認ください。

PRIOR INFORMATION NOTICE (PIN)

IO/24/CFE/10028482/RMO

Engineering Analysis for DMS

Procurement Officer in charge:

Rossella Muzzetto - EXT
rossella.muzzetto@iter.org

Abstract.

The purpose of this summary is to provide prior notification of the IO's intention to launch a competitive Call for Expertise process in the coming weeks. This summary provides some basic information about the ITER Organisation (the "IO"), the technical scope for this tender, and details of the tender process.

1   Introduction

This Prior Information Notice (PIN) is the first step of a Call for Expertise Procedure leading to the award and execution of a Service Contract.

The purpose of this document is to provide a basic summary of the technical content in terms of the scope of work, and the tendering process.

2   Background

The ITER project is an international research and development project jointly funded by its seven Members being, the European Union (represented by EURATOM), Japan, the People's Republic of China, India, the Republic of Korea, the Russian Federation and the USA. ITER is being constructed in Europe at St. Paul–Lez-Durance in southern France, which is also the location of the headquarters (HQ) of the ITER Organization (IO).

For a complete description of the ITER Project, covering both organizational and technical aspects of the Project, visit www.iter.org.

3   Scope of Service

The purpose of this Contract titled "**Engineering Analysis for DMS** " is to procure the provision of services described in the Technical Specifications, ref. **ASLBG5 VERSION_v1.0 (ANNEX I in this PIN document).**

4   Procurement Objective & Process

The objective is to award a Contract through a competitive bidding process.

The procedure is comprised of the following four main steps:

➢ Step 1- Prior Information Notice (PIN) – publication on IO web procurement page
   The Prior Information Notice is the first stage of the process. The IO formally invites interested candidate companies to indicate their interest in the competitive process, within **10 calendar days**, by returning to the Procurement officer in charge the following information by the date indicated under paragraph 5 below:

   - Name of candidate company
   - Country of registration
   - Point of contact name, email, title, and phone number.

   Special attention:

   Interested candidate companies are kindly requested to register in the IO Ariba e-procurement tool called "IPROC", if not so done yet. The process on how to do is described at the following link: https://www.iter.org/fr/proc/overview.

   When registering in Ariba (IPROC), suppliers are kindly requested to register at least one contact person. This contact person will be receiving the notification of publication of the Request for Proposal and will then be able to forward the tender documents to colleagues if deemed necessary.

➢ Step 2 - Request for Proposals
After the full registration of interested candidate companies, the Request for Proposals (RFP) will be published in "IPROC". This stage allows interested candidate companies who have indicated their interest to the Procurement Officer in charge AND who have registered in IPROC to receive the notification that the RFP is published. They will then prepare and submit their proposals in accordance with the tender instructions detailed in the RFP.

Only companies registered in this tool will be invited to the tender and registered company can only submit a proposal in their name.

➢ Step 3 – Tender Evaluation Process

Tenderers proposals will be evaluated by an impartial evaluation committee of the IO. Tenderers must provide details demonstrating their technical compliance to perform the work in line with the technical scope and in accordance with the particular criteria listed in the RFP.

➢ Step 4 – Contract Award
The award will be done on the basis of best value for money or lowest price technically compliant offer as described in the published RFP.

5 Procurement Timetable

The tentative timetable is as follows:

Milestone	Date
Publication of the Prior Indicative Notice (PIN) on IO Webpage and communications with DAs	19th April 2024
Deadline for Submission of expression of interest form	29th April 2024
Request for Proposals (RFP) publishing on IPROC	9th May 2024
Tender Submission in IPROC	24th May 2024
Tender Evaluation & Contract Award	June 2024
Contract Signature	June 2024
Contract Commencement	June 2024

6 Contract Duration and Execution

The estimated contract duration shall be 12 months.

7 Experience

The tenderers shall demonstrate their knowledge, experience and capabilities in the implementation of providing expected supports in accordance with the IO technical requirements.

The working language of ITER is English, and a fluent professional level is required (spoken and written).

8 Candidature

Participation is open to all legal entities participating either individually or in a grouping/consortium. A legal entity is an individual, company, or organization that has legal rights and obligations and is established within an ITER Member State.

Legal entities cannot participate individually or as a consortium partner in more than one application or tender of the same contract. A consortium may be a permanent, legally established grouping, or a grouping which has been constituted informally for a specific tender procedure. All members of a consortium (i.e. the leader and all other members) are jointly and severally liable to the ITER Organization.

In order for a consortium to be acceptable, the individual legal entities included therein shall have nominated a leader with authority to bind each member of the consortium, and this leader shall be authorised to incur liabilities and receive instructions for and on behalf of each member of the consortium.

It is expected that the designated consortium leader will explain the composition of the consortium members in its offer. Following this, the Candidate's composition must not be modified without notifying the ITER Organization of any changes. Evidence of any such authorisation shall be submitted to the IO in due course in the form of a power of attorney signed by legally authorised signatories of all the consortium members.

Any consortium member shall be registered in IPROC.

9 Sub-contracting Rules

Sub-contracting is not allowed.

Technical Specifications (In-Cash Procurement)

Technical Specification - CFE Engineering Analysis for DMS

Technical Specification for Engineering Analysis for DMS (post-FDR)
This is planned to be a Call for Expertise (CFE) contract

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1   Preamble

This technical specifications are to be read in combination with [AD1] that constitutes a full part of the technical requirements. In case of conflict, the content of the Technical Specification supersedes the content of [AD1].

2   Purpose

The purpose of this technical specification (ITER_D_ASLBG5) define how the development of the Disruption Mitigation System (DMS) shall be supported after the FDR.

3   Acronyms & Definitions

3.1   Acronyms

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

For a complete list of ITER abbreviations see: ITER Abbreviations (ITER_D_2MU6W5).

Acronym	Meaning
ALARA	As Low As Reasonably Achievable
CAD	Computer Aided Design
DA	Domestic Agency
DET	Data Exchange Transfer
DFW	Diagnostic First Wall
DIR	Design Integration Review
DMS	Disruption Mitigation System
DSM	Diagnostic Shielding Module
EP	Equatorial port
FDR	Final Design Review
FP	First Plasma
HFE	Human Factors and Ergonomics
HIRA	Hazard Identification and Risk Assessment
HoF	Human Organizational Factor
IO	ITER Organization
ISS	Interspace Support Structure
ORE	Occupational Radiation Exposure
PCSS	Port Cell Support Structure
PDR	Preliminary Design Review
PFPO-1	Pre-Fusion Plasma Operation 1
PI	Port Integrator
PIA	Protection Important Activity
PIC	Protection Important Component
PP	Port Plug
RH	Remote Handling

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3.2 Definitions

Site or ITER Site or IO Site: Covers the Construction site and Areas under Operation. By extension, any place where IO staff is operating on a regular basis is to be considered ITER Site, if specified as such by IO.

Offsite: Anywhere that is not ITER Site.

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

It 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.

These technical specifications take 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 four weeks of any impact on the execution of the contract. Without any response after this period, no impact will be considered.

Ref	Title	IDM ID	Version
[AD1]	General Management Specification for Service and Supply	82MXQK	1.4
[AD2]	Project Requirements	27ZRW8	6.3
[AD3]	System Requirement Document (SRD) 18.DM	BEJQWA	2.4
[AD4]	Defined requirements PBS 18 DMS	45P8YK	2.3
[AD5]	18.DM System Design Description for DMS	2NC6CB	2.1
[AD6]	Safe Access for Maintainability	RUGWUK	1.4
[AD7]	Working Instruction for the Qualification of ITER safety codes	258LKL	3.1
[AD8]	ITER Human & Organizational Factors Policy	QUK6LF	1.1
[AD9]	ITER Abbreviations	2MU6W5	1.17
[AD10]	Software Qualification Policy	KTU8HH	2.0
[AD11]	Quality Classification Determination	24VQES	5.2
[AD12]	Order dated 7 February 2012 relating to the general technical regulations applicable to INB - EN	7M2YKF	1.7

4.2 Applicable Codes and Standards

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

However, there are no particular Codes and Standards identified for the work under the scope of these technical specifications.

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Ref	Title	Doc Ref.	Version
-	-	-	-

5   Scope of Work

5.1   Introduction

This section defines the specific scope of work for the service, in addition to the contract execution requirement as defined in [AD1].

The purpose of the ITER DMS is to provide machine protection in order to reduce the detrimental effects of plasma disruptions and to ensure the appropriate lifetime of all affected ITER components. It utilizes cryogenic hydrogen and neon pellets which are generated inside the injectors, which are located in the Interspace Support Structure (ISS). These pellets are pneumatically propelled, in the period of milliseconds, towards the plasma and, just before entering the plasma, they are shattered into small fragments so as to reduce damage to the plasma facing components and to other structures inside the ITER tokamak. The DMS is located in ITER ports on the equatorial level and the upper levels (see an example of the DMS integrated in the Equatorial Port (EP) #2 in fig. 1). All DMS units on the equatorial share a common and modular design and so do the units on the upper ports.
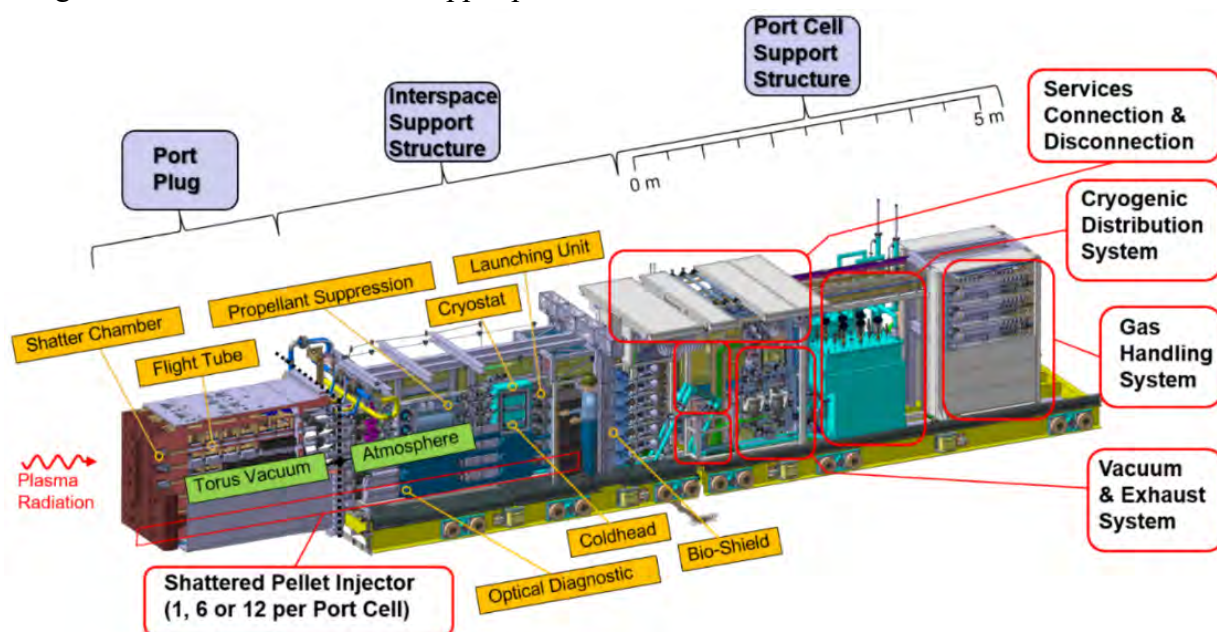

Figure 1 Typical DMS in EP integrated into the ISS and PCSS

The ITER DMS is a large system with a total of 27 injectors distributed toroidally and poloidally in EP #02, EP#08, EP#17 and Upper Port (UP) #02, UP#08, UP#14. Each of these systems can be broken down into a series of work packages such as the Pellet Injector, Cryogenic System, Gas Handling System, Vacuum System and the Control System as shown in figure 2. Each of these work packages can be broken down further into individual components or assemblies.

There is no specific work package of interest for this contract since it is of transversal nature covering the overall engineering analysis of the system.
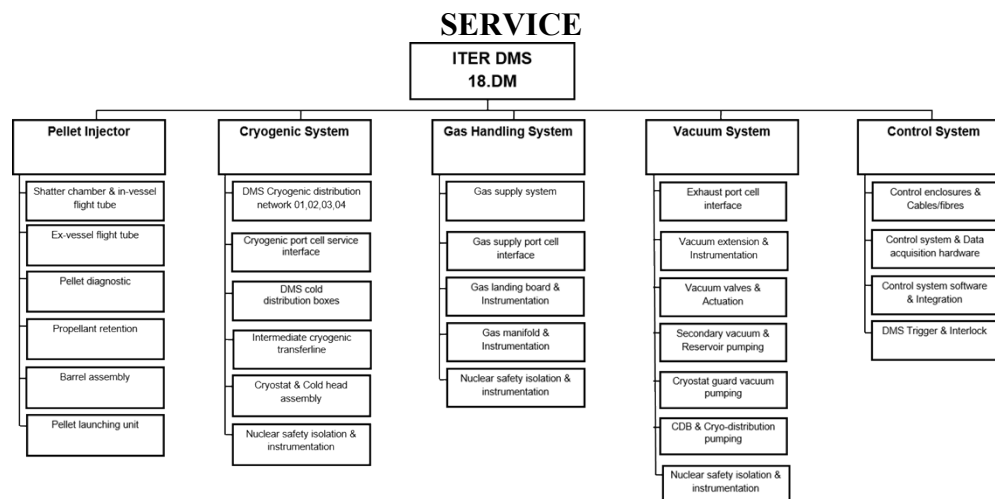
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Figure 2 The DMS Plant Breakdown

5.2 Engineering Analysis

5.2.1 Description

The objective is to continuously support the DMS design. The list of specific and general activities expected to be performed is

- Preparation and/or update of Load Specification documents for DMS In-vessel component and Ex-vessel components, in strict compliance with ITER General Load specification
- Preparation and/or update of Structural Integrity Reports for DMS In-vessel and Ex-vessel components, in strict compliance with ITER MQP standards
- Performing thermal assessment of DMS In-vessel and Ex-vessel components
- Performing linear/non-linear excessive deformation analysis of DMS In-vessel and Ex-vessel components
- Performing linear/non-linear progressive deformation analysis (fatigue etc.) of DMS In-vessel and Ex-vessel components
- Performing elastic/elastoplastic instability analysis (buckling) of DMS In-vessel and Ex-vessel components
- Performing Seismic assessment of DMS In-vessel and Ex-vessel components
- Performing fatigue assessment of bolts/welds in accordance with analysis codes
- Carrying out other related engineering tasks, upon line management request.

5.2.2 Engineering Documentation

Some of the technical documentation which maybe expected to be prepared are

- Load specifications
- Analysis reports
- Technical specification for external engineering services
- Presentations

Furthermore it may be expected

- to participate in regular DMS group meetings and in person meetings if required

5.2.3   *Service Duration*

The maximum expected duration for this activity is twelve months (see also Chapter 8).

6   Location for Scope of Work Execution

The Contractor will work predominantly off-site.

Note: The contractor will may be asked to be present on the ITER site for in person meetings on short notice for a non-specific number of weekdays throughout the contract period

7   IO Documents

Under the scope of work, IO will provide relevant / appropriate input documents as necessary during the course of the contract. A preliminary list of documents will be discussed during the Kick Off Meeting.

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, of [AD1] and any other requirement derived from the application of the contract.

The list of deliverables is available hereafter with associated due dates. The content of the deliverables has been detailed in sub-section 5.2.2

Technical Design Family (TDF)	Generic Document Title (GTD)	Further Description	Expected date (T0+X) *
Contract Management	D0 – Quality Plan	Quality Assurance Plan from the Contractor specific to the execution of the contract	T0 + 1
Report	D1 – Intermediate Progress Report #1	Assess the available and required analysis results and tasks in preparation of the FDR chit resolution and FDR closure planning. Provide a report on IDM summarizing the work of this deliverable.	T0 + 3
Report	D2 – Intermediate Progress Report #2	Support the DMS design team in chit resolution. Perform initial analysis tasks in preparation of the FDR closure. Provide a report on IDM summarizing the work of this deliverable.	T0 + 6
Report	D3 – Intermediate Progress Report #3	Support the DMS design team in chit resolution. Perform detailed analysis tasks in preparation of the FDR closure. Provide a report on IDM summarizing the work of this deliverable.	T0 + 9
Report	D4 – Final Report	Support the DMS design team in the initial setup towards the manufacturing phase and identify required engineering analysis tasks for DMS and related integration activities (analysis correlation with port	T0 + 12

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		integrators activities). Provide a report on IDM summarizing the work of this deliverable.	

(*) T0 = Start date of the kick-off meeting; X in months.

The Contractor is requested to prepare their document schedule based on the above and using the template available in the appendix II (click here to download) of [AD1].

9 Quality Assurance Requirements

The quality class (QC) under this contract is as per [AD3]. Chapter 8 of [AD1] applies in line with the defined QC.

10 Safety Requirements

DMS Design activities are Protection Important Activities (PIA), while the Safety Class is as per [AD3]. Hence section 5.3.3 of [AD1] apply.

11 Specific General Management Requirements

Section 6 of [AD1] applies in full, except for section 6.4, amended with the following specific requirement:

- The Contractor shall not subcontract any part of this contract.

11.1 Contract Gates

The contract gates are defined in section 6.1.5 of GMS [AD1]. This service contract shall have the following technical gates:

- Approval of deliverable D1 by the IO Technical Responsible Officer (TRO).
- Approval of deliverable D2 by the IO TRO.
- Approval of deliverable D3 by the IO TRO.
- Approval of deliverable D4 by the IO TRO.

11.2 Work Monitoring

As stated in [AD1], the work progress will be managed as explained in sub-sections 6.1.4 for progress reports and 6.1.6 for progress meetings.

Moreover, the work monitoring can also be complementary achieved through the formal exchange of documents transmitted by emails or over IDM.

11.3 Meeting Schedule

In addition to the Progress Meetings, the Contractor shall work closely with the DMS designers from PBS 18.DM and also of other PBSs if needed. Routine technical meetings will take place to monitor work progress and approaches, discuss and decide on technical solutions, provide additional information, address hold points, and identify actions which require follow-up. These meeting will have an agenda. Actions/issues identified in these meetings will be recorded and reviewed in subsequent meetings until completed/resolved. It is duty of the Contractor to properly upload in IDM the minutes of these meetings.

On request and by agreement, additional special subject meetings will be organized.

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11.4 CAD Design Requirements

As per section 6.2.2.2 of [AD1]

11.5 Specific Requirements and Conditions

In order to complete the tasks in a timely manner the following experiences are required:

- Experience in Mechanical Engineering;
- Sound experience in FEA analysis;
- Experience in using ANSYS Classic & workbench v.15 or higher (and associated packages for CFD (CFX or FLUENT), EM (Maxwell or ANSYS) analysis and pre-processing (SpaceClaim / DesignSpace)).
- Experience in FEA pre-processing, mesh generation and model's quality assessment;
- Experience in Mechanical (linear/non-linear/static/dynamic);
- Experience in thermal-hydraulic analysis (single and coupled);
- Experience in electromagnetic analysis; if particularized to ITER related loads defined from primary inputs (DINA) is considered as an advantage;
- Experience in ParaView and post-processing tool (interface with ANSYS to be developed);
- Experience in advanced Finite Element Analysis techniques (sub-modelling, interpolation, contact technologies, programming (APDL) and coupled field analysis);
- Experience in structural assessment Code post-processing techniques (linearization and categorization of stresses, fatigue, limit analysis);
- Experience in application of appropriate industrial Codes and Standards of nuclear/non-nuclear equipment (e.g. ASME VIII Div 2, ASME III, RCC-MR);
- Experience in creation of Load Specifications for ITER complex integrated systems and management of interface loads between upper level components and tenant systems following an integrated analysis approach;
- Monitoring and reporting of status of projects;
- Communication with international local and remote teams in context of nuclear fusion research or similarly complex research and engineering environment;
- Organization, taking minutes and action tracking of international meetings;
- Understanding of schematics and 3D models.

It is expected to have all the licenses for any software used for this contract on the contractor side (Office, Teams, Ansys or any other if was used for deliverables). IO does not provide any licenses.

All the work is supposed to be carried out 100% off site.

Expression of Interest

> ITER Organization / ITER Headquarters
> Procurement & Contracts Division
> Route de Vinon-sur-Verdon
> CS 90 046
> 13067 St. Paul Lez Durance Cedex
> France

TENDER No.   **IO/24/CFE/10028482/RMO**

TENDER Title: **Engineering Analysis for DMS**

Officer in charge: **Rossella Muzzetto – EXT - Procurement & Contracts Division
ITER Building 81/139**

☐ We acknowledge receipt of all tender documents for the above mentioned tender.
  (In event of missing documents, contact the ITER Officer in charge)

☐ We intend to submit a tender

Contact Person for this solicitation Process:

Name: ....   Tel: ....

Position: ....   E-mail address: ....

Signatory Name: ....

Title: ....

Signature: ....

Date: ....

Company Stamp