

+Call for Expertise: エキスパート募集

IO References: IO/24/CFE/10027950/JLE

**"IO/24/CFE/10027950/JLE"**

(DMS PIS の先端開発)

IO 締め切り 2024 年 2 月 18 日(日)

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

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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](http://www.iter.org) を参照してください。

## ○作業範囲

「DMS PIS の先端開発」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. 9MSR5N\_v 1.1 (本 PIN 文書の附則 D)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。

### 特に注意:

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、<https://www.iter.org/fr/proc/overview> を参照してください。

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。

➤ 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。

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。

➤ 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。

## ○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 2 月 8 日
関心表明フォームの提出	2024 年 2 月 18 日
IPROC での提案リクエスト (REP) の発行	2024 年 2 月 23 日
IPROC で入札提出	2024 年 3 月 15 日
入札評価と契約授与	2024 年 3 月もしくは 4 月
契約調印	2024 年 4 月
契約開始	2024 年 4 月

## ○契約期間

予想される契約期間は、12 か月です。

## ○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）。

## ○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。

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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「**DMS PIS Advanced Development**」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/10027950/JLE DMS PIS Advanced Development**

Procurement Officer in charge:

Jongeun LEE  
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#### **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](http://www.iter.org).

## 3 Scope of Service

The purpose of this Contract titled “**DMS PIS Advanced Development**” is to procure the provision of services described in the Technical Specifications, ref. 9MSR5N\_v 1.1 (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	8 <sup>th</sup> February 2024
Deadline for Submission of expression of interest form	18 <sup>th</sup> February 2024
Request for Proposals (RFP) publishing on IPROC	23 <sup>th</sup> February 2024
Tender Submission in IPROC	15 <sup>th</sup> March 2024
Tender Evaluation & Contract Award	March or April 2024
Contract Signature	April 2024
Contract Commencement	April 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 Specifications - DMS PIS Advanced Development

This document describes the activities, summarized in the listed deliverables, required to support the update and completion of functional and physical architecture of the DMS Plant Interlock System (PIS) and of its integration into the general IO I&C and operation.

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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 Disruption Mitigation System (DMS) is a key machine protection system for ITER. This system has undergone its Preliminary Design Review (PDR) in February 2022 and it will undergo the Final Design Review (FDR) in March 2024. The purpose of this technical specifications are to outline and define the Instrumentation & Control (I&C) technical services required to finalize the development of the DMS Plant Interlock System (PIS) for the FDR and to help the transition to its manufacturing and the integration with the other systems and the ITER operation.

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### 3 Acronyms & Definitions

#### 3.1 Acronyms

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

Abbreviation	Description
APS	Advanced Protection System
CAD	Computer Aided Design
CIS	Central Interlock System
CODAC	Control, Data Access and Communication
CVVF	Configuration, Verification and Validation Framework
DMS	Disruption Mitigation System
EP	Equatorial port
FOAK	First-of-a-Kind
FDR	Final Design Review
FMEA	Failure Mode and Effect Analysis
HVPPS	High-Voltage Pulsed Power Supply
ICM	Injector Control Module
IDM	ITER Document Management
IO	ITER Organization
ISS	Interspace Support Structure
I&C	Instrumentation & Control
LPM	Local Protection Module
MPP	Machine-Protection Panel
PBS	Plant Breakdown Structure
PCSS	Port Cell Support Structure
PDR	Preliminary Design Review
PFM	Pellet Firing Module
PIA	Protection Important Activity
PIS	Plant Interlock System
PM	Progress Meeting
PSOS	Plant System Operating State
QC	Quality Class
TRO	Technical Responsible Officer
UP	Upper Port

#### 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.

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**Offsite:** Anywhere that is not ITER Site.

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

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## 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

### 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.

Ref	Title	Doc Ref.	Version
-	-	-	-

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## 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 Figure 1). All DMS units on the equatorial share a common and modular design and so do the units on the upper ports.

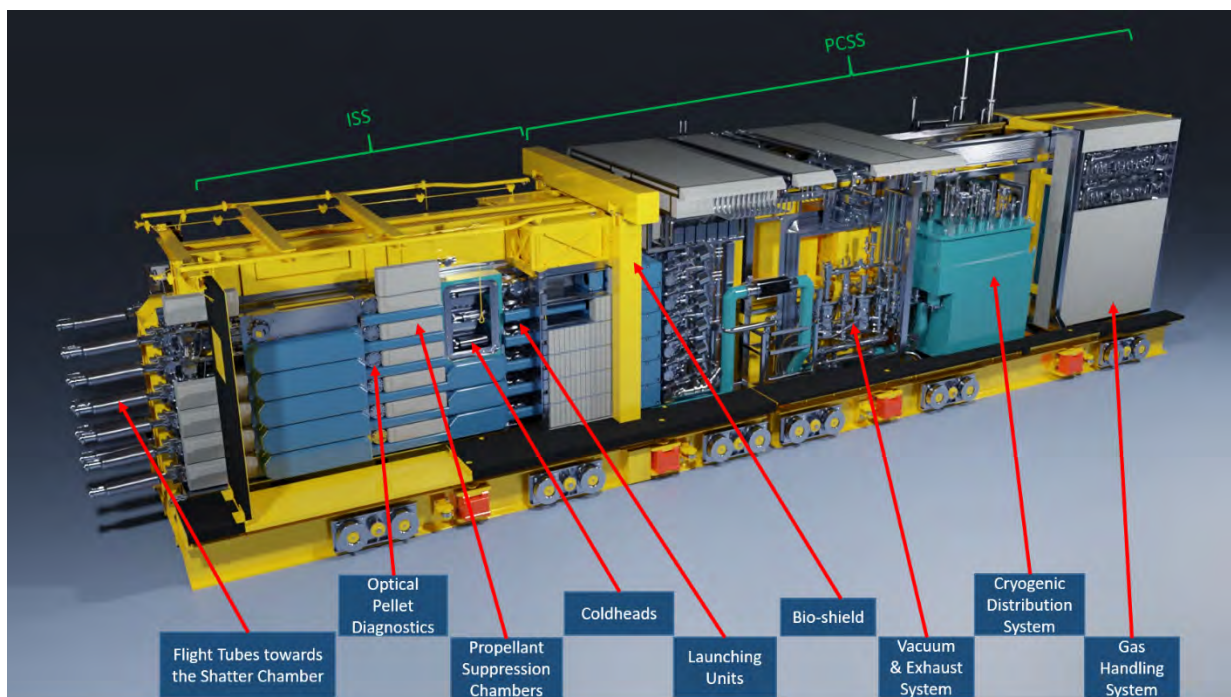


Figure 1: Part of the DMS located in EP #02 with its integration into the ISS and PCSS.

### 5.2 Plant Interlock System

#### 5.2.1 Description of the System

The scope of this contract concerns the DMS PIS.

The DMS PIS is the control system in charge of the critical and non-critical functions related to the investment protection of the ITER tokamak and of the DMS itself. It shares with the DMS plant the sensors and actuators relevant to its functions and is in permanent communication with the upper layer of the protection systems, the Central Interlock System (CIS) and the Advanced Protection System (APS). Functionally, it is also interfaced with the Plasma Control System (PCS).

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According to the most recent agreed functional architecture (Figure 2), the APS calculates in real time, thanks to plasma and other tokamak parameters, the injector triggering sequence (the profile) and stores it. Based on the last stored profile, the APS can trigger the due DMS injectors, through the DMS PIS, if a disruption is detected. The DMS PIS, in turn, monitors the status of the DMS injectors during a pulse and the pellet firing status during a disruption and communicates it back to the APS as a parameter to evaluate both the profile and the potential need to stop the ongoing pulse. The CIS can also trigger the DMS PIS, through the APS, based on reasons different from the disruptions, like for instance protection functions. Exceptionally, the CIS can also inhibit the DMS PIS.

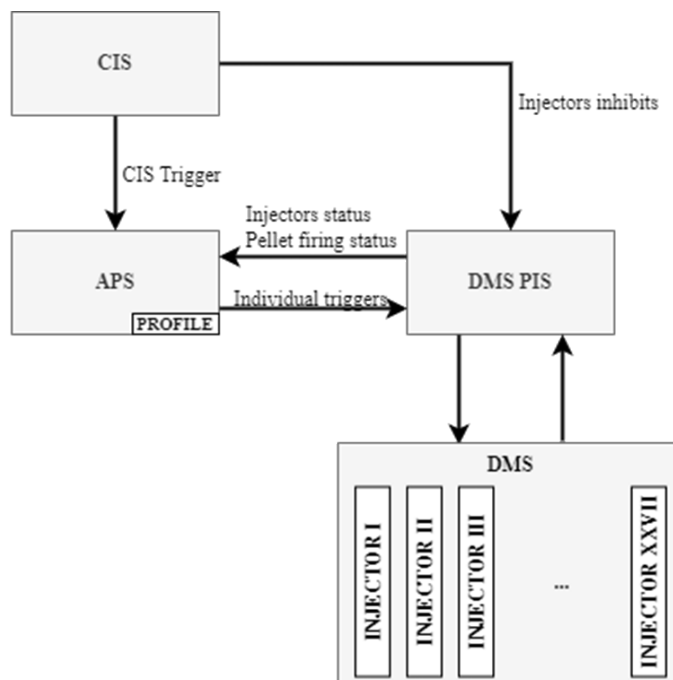


Figure 2: DMS PIS – APS – CIS functional architecture

In its last design and conception, the DMS PIS should be based on an architecture similar to that in Figure 3, relying on National Instruments cRIO chassis NI-9159. These cRIOs are equipped with Virtex FPGAs which communicate internally through Manchester coding. The pellet firing module (PFM) and the injector control module (ICM) constitute the core of the DMS PIS. Each of them is redundant. The PFM is devoted to triggering the injectors based on the triggers received by the APS (or by the CIS if the communication with the APS is lost) and to inform the APS of any injectors whose triggering was unsuccessful. The ICM is devoted to the management of the injectors (locking, unlocking, arming, disarming, etc.) and to their monitoring during the pulse but outside of the disruptions. The local protection modules (LPMs) are distributed across the different injectors; their main purposes are to trigger the firing of the pellets through the high-voltage pulsed power supply (HVPPS) devices and to collect in real time the information about the injector availability and the outcome of the pellet firing (see Figure 2). LPMs are not redundant. In total there are twelve LPMs at EP level (three per drawer) and three LPMs at UP level (one per drawer).

During tokamak operation, the requirements of the system imply the use of components capable of performing control-cycles in the micro-seconds range to meet function input-response requirements.

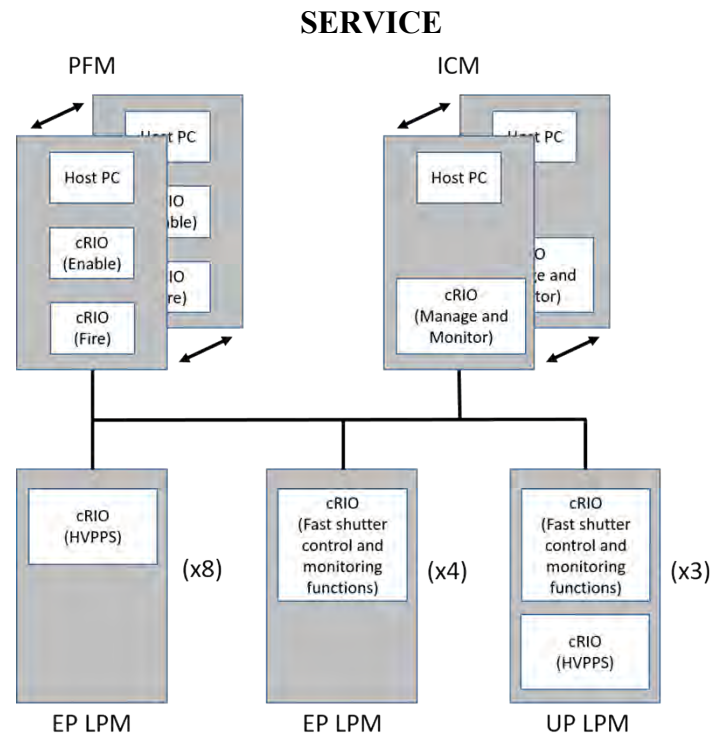


Figure 3: DMS PIS physical architecture

### 5.2.2 Description of the Work

Due to project schedule constraints, the development of individual DMS subsystems are following a concurrent engineering approach. Due to the First-of-a-Kind (FOAK) nature of the DMS, this gives rise to significant known and unknown technical risks related to the interoperability of individual subsystems. Effective identification, management and retirement of these technical risks will be critical to successful subsystem integration and therefore to the delivery of DMS PIS.

The DMS PIS will have to operate within the overall DMS control system consisting additionally of a conventional control system and a plant safety system. Hence, the PIS work will have to be coordinated with those responsible for the integrated control system.

Generally speaking, the Contractor shall have to perform the following activities:

- Updating and finalizing the main DMS PIS design documents.
- Perform failure mode and effect analyses (FMEAs).
- Liaising with DMS and CIS engineering teams.
- Leading the interface with the machine-protection panel (MPP).
- Liaising with other contractors involved in the design of the DMS control system.
- Contributing to the resolution of chits raised during the DMS FDR.
- Carrying out other related requests, upon line management request.

The deliverable tasks are detailed hereafter.

#### Deliverable D0

The Contractor shall supply the quality plan. See Chapter 9 for further details.

#### Deliverable D1

The Contractor shall:

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- Spend the initial weeks by getting acquainted with the DMS system and in particular the DMS PIS, the CIS and the general ITER control system architecture.
- Study the existing documents related to the DMS PIS requirements, functional analysis and architecture.
- Produce a report stating what has to be modified and / or improved concerning the content of the three aforementioned documents.

### Deliverable D2

The Contractor shall:

- Finalize the document related to the DMS PIS requirements, including the requirements on the PIS plant system operating states (PSOS).
- Actively lead the discussions with the MPP to finally reach an agreement on the DMS PIS functional analysis (it is assumed that this activity will span across several months).
- Perform FMEAs of specific DMS PIS subsystems and use the conclusions to improve the DMS PIS design.
- Update the DMS PIS functional analysis.
- Update the DMS PIS architecture, making a difference between the functional and physical architectures.
- Participate in the resolution of the chits raised during the DMS FDR.
- Support the DMS I&C stakeholders with the technical specifications of the cRIO firmware architecture and of the host PC software architecture of the DMS PIS prototype.
- Produce a report of the activities performed in this period.

### Deliverable D3

The Contractor shall:

- Continue to lead actively the discussions with the MPP to finally reach an agreement on the DMS PIS functional analysis.
- If requested, continue to perform FMEAs of specific DMS PIS subsystems and use the conclusions to improve the DMS PIS design.
- Continue to update the DMS PIS functional analysis.
- Continue to update the DMS PIS architecture.
- Continue to participate in the resolution of the chits raised during the DMS FDR.
- Continue to support the DMS I&C stakeholders with the technical specifications of the cRIO firmware architecture and of the host PC software architecture of the DMS PIS prototype, if needed.
- Help with the integration of the DMS PIS requirements into the DMS I&C System Requirement Specifications (SRS) (see Chapter 7), which is the official DMS document about I&C requirements.
- Produce a report of the activities performed in this period.

### Deliverable D4

The Contractor shall:

- Finalize the DMS PIS functional analysis.
- Finalize the DMS PIS architecture.
- Continue to participate in the resolution of the chits raised during the DMS FDR.

### SERVICE

- Help with the integration of the DMS PIS functional analysis and architecture into the DMS I&C System Design Specifications (SRS) (see Chapter 7), which is the official DMS document about I&C design.
- Produce a report of the activities performed in this period.

N.B.: As said above, the DMS has a FOAK nature. The uncertainties related to this and the design evolution can lead to a change in the deliverable requirements. Therefore it is possible that, during the execution of the contract associated to these technical specifications, the content of some deliverables will have to be modified. These modifications will be discussed between IO and the Contractor either during PMs or during gate-review meetings. These modifications will be recorded in the minutes of the meetings.

#### *5.2.3 Service Duration*

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

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## 6 Location for Scope of Work Execution

The Contractor is not requested to perform the tasks on the ITER site.

## 7 IO Documents

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

Ref	Title	Doc ID	Expected date
[I01]	D1 – Intermediate Progress Report #1 (*)	9246NB	Contract start
[I02]	D2 – Intermediate Progress Report #2 (*)	923Z7M	Contract start
[I03]	D3 – Intermediate Progress Report #3 (*)	9246W7	Contract start
[I04]	D4 – Final Report (*)	92474E	Contract start
[I05]	TO4 documentation : PFCS F-PIC functions, Overrides, Simulation template and SPI data publishing	N6D3NM	Contract start
[I06]	Reliability and Availability Analysis of NI CompactRIO-based Fast Interlock System	N5ZKHQ	Contract start
[I07]	NI9159 investment protection manual	88BPRY	Contract start
[I08]	CIS-CG (PROTOTYPE) technical requirements	8M9P9A	Contract start
[I09]	Technical specification for the Manchester Encoder subVI	6MF82E	Contract start
[I10]	DMS PIS Requirements	93QGZS	Contract start
[I11]	DMS PIS Functional Analysis	93QJWU	Contract start
[I12]	DMS PIS Architecture Memo	93QK4R	Contract start

(\*) These are the progress reports concerning the Service Contract IO/23/CT/4300002807 for “DMS Plant Interlock System (PIS) development”.

Inputs [I01], [I02], [I03], [I04], [I10], [I11] and [I12] are relevant to start working on the technical services, in particular on deliverable D1. However, [I10], [I11] and [I12] will be kept alive and also updated throughout the duration of the whole contract.

Inputs [I05], [I06], [I07], [I08] and [I09] will become relevant during deliverables D2, D3 and D4.

During the execution of the contract, IO will deliver to the Contractor any other document deemed useful or requested by the Contractor and not mentioned in the previous table.

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**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	Quality Assurance Plan	D0 – Quality Plan	T0 + 1
Engineering Analysis and Calculation Report	Investment Protection Analysis Report	D1 – Intermediate Progress Report #1	T0 + 3
Engineering Analysis and Calculation Report	Investment Protection Analysis Report	D2 – Intermediate Progress Report #2	T0 + 6
Engineering Analysis and Calculation Report	Investment Protection Analysis Report	D3 – Intermediate Progress Report #3	T0 + 9
Engineering Analysis and Calculation Report	Investment Protection Analysis Report	D4 – Final Report	T0 + 12

(\*) 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].

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### 9 Quality Assurance Requirements

The quality class (QC) under this contract is QC-1. Chapter 8 of [AD1] applies in line with the defined QC.

### 10 Safety Requirements

There are no protection important activities (PIA) related to this contract.

### 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 PMs, the Contractor shall work closely with the DMS PIS 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.

#### 11.4 CAD Design Requirements

This contract does not imply CAD activities.

#### 11.5 Specific Requirements and Conditions

In order to complete the tasks in a timely manner, the following is required:

- The Contractor shall have at least eight years of demonstrated experience in the following technical fields:
  - Design and development of large I&C systems, understanding the difference between requirements, functional specifications and architecture.

## SERVICE

- Use of National Instruments equipment and in particular of cRIO chassis.
  - Management of interfaces on large projects such as particle accelerators, fusion, fission, aerospace projects.
  - Documentation management systems and generation of technical documents.
- Core behavioural competencies
  - Good interpersonal communication skills.
  - Facilitate the dialogue with a wide variety of contributors and stakeholders.
  - Capability of leading discussions and developments based on I&C.
  - Proactivity.
- Language requirements
  - Fluency in English (written and spoken).

The following competencies are considered advantageous:

- Understanding of the requirements for machine protection systems based on fast hardware architectures.
- Knowledge of the Manchester coding.
- Performance of FMEAs.

## Expression of Interest

To be returned by e-mail to: [Jongeun.Lee@iter.org](mailto:Jongeun.Lee@iter.org) in copy to [rossella.muzzetto@iter.org](mailto:rossella.muzzetto@iter.org) within 10 calendar days after PIN is launched.

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/10027950/JLE**

TENDER Title: **DMS PIS Advanced Development**

Officer in charge: **Jongeun LEE - Procurement Division ITER Building 81/140**

☐ 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: .....

Company Stamp

Title: .....

Signature: .....

Date: .....