外部委託業者の募集

References: IO/25/OT/10032813/SPA

“Supply Contract for Prototypes of Pilot Valve Fire Protection Boxes"

（防火ボックスパイロットバルブのプロトタイプの供給契約）

IO 締め切り 2025 年 8 月 14 日(木)

〇はじめに

本事前情報通知（PIN）は、作業契約の入札授与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。

〇背景

ITER は平和利用の核融合発電の科学的および技術的な実現可能性の実証を目的とした、国際共同研究開発プロジェクトです。ITER 機構の 7 つのメンバーは、;欧州連合（EURATOM が代表）、日本、中華人民共和国、インド、大韓民国、ロシア連邦、および米国です。

ITER の敷地はフランス南東部のブーシュデュローヌ地区にあり、ITER 本社（HQ）もあるフランス CEA サン・ポール・レ・デュランス に近いところに位置しています。詳細については、ITER のウェブサイト http://www.iter.org を参照して下さい。

〇作業範囲

この文書は、国際熱核融合実験炉（ITER）の真空容器圧力抑制システム（VVPSS）向けに調達されるクーラーコンデンサー（EXC）の設計、製作、検査、試験、および認定に関する供給契約を締結することを目的とした入札プロセスです。

詳細については、「附属書II」技術仕様書ECK2BH v1.1.をご参照ください。

〇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）

  事前通知（Prior Indicative Notice）は、公開入札プロセスの最初の段階です。IO は、国内機関に対して、今後の入札に関する情報を公開するよう正式に招待し、企業、機関、またはその他の団体に入札の機会を事前に知らせます。入札に興味のある企業は、下記の調達スケジュールに示された期限までに、表明書（付属書Ⅱ）を E メールでご提出くださいますようお願いいたします。

  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（IIT）

  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。

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
事前指示書（PIN）の発行	2025 年 8 月 4 日
関心表明フォームの提出	2025 年 8 月 14 日
提案依頼書（RFP）–入札への招待（IIT）の発行	2025 年 8 月 14 日
明確化のための質問（もしあれば）	締切りの５日前まで
入札提出	2025 年 10 月 1 日
契約授与	2025 年 10 月 21 日
契約調印	2025 年 10 月 31 日

〇契約期間と実行

ITER機構は供給契約を2025年の10月に授与する予定です。予想される契約期間は、20か月とします。契約調印前の作業はありません。

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。ITER 加盟国は欧州連合(EURATOM メンバー)、日本、中華人民共和国、インド共和国、大韓民国、ロシア連邦、アメリカ合衆国です。

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【※　詳しくは添付の英語版技術仕様書「**Supply Contract for Prototypes of Pilot Valve Fire Protection Boxes**」をご参照ください。】

ITER 公式ウェブ　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。

イーター国際核融合エネルギー機構からの外部委託
に関心ある企業及び研究機関の募集について

＜ITER 機構から参加極へのレター＞

以下に、外部委託の概要と要求事項が示されています。参加極には、提案された業務に要求される能力を有し、入札すべきと考える企業及び研究機関の連絡先の情報を ITER 機構へ伝えることが求められています。このため、本研究・業務に関心を持たれる企業及び研究機関におかれましては、応募書類の提出要領にしたがって連絡先情報をご提出下さい。

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PRIOR INFORMATION NOTICE (PIN)

OPEN TENDER SUMMARY

IO/25/OT/10032813/SPA

for

Supply Contract
for Prototypes of Pilot Valve Fire Protection Boxes

Prior Indicative Notice annexes:
- Annex I: Expression of Interest Form
- Annex II: Technical Specification ECK2BH v1.1

Contact details: Serena.Profita@iter.org
Cc: Jingyu.Gao@iter.org

Abstract

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

1 Introduction

This Prior Information Notice (PIN) is the first step of an Open Tender Procurement Process leading to the award and execution of Supply 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 Work

The present tender process is aiming to set up a Supply Contract for the design, fabrication, inspection, testing and qualification of a Cooler-Condenser (EXC) procured for the ITER Vacuum Vessel Pressure Suppression System (VVPSS).

For more details, please refer to - Annex II: Technical Specification ECK2BH v1.1.

4 Procurement Process & Objective

The objective is to award one Supply Contract through a competitive bidding process.
The Procurement Procedure selected for this tender is called the Open Tender procedure.
The Open Tender procedure is comprised of the following four main steps:

- Step 1- Prior Information Notice (PIN)
  The Prior Information Notice is the first stage of the Open Tender process. The IO formally invites interested Suppliers to indicate their interest in the competitive process by returning to the Procurement officer in charge the attached "Expression of Interest and PIN Acknowledgement" (Annex I) by the date indicated under the procurement timetable.
  Special attention:

Interested tenderers are kindly requested to register in the IO Ariba e-procurement tool called "IPROC". You can find all links to proceed along with instruction going to: https://www.iter.org/fr/proc/overview.
When registering in Ariba (IPROC), suppliers are kindly requested to nominate 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 - Invitation to Tender
  The Request for Proposals (RFP) will be published on our digital tool "Iproc" after the submission of Expression of Interest. This stage allows interested bidders who have indicated their interest to the Procurement Officers 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.

- 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
  One or several Supply Contracts will be awarded on the basis of best value for money method, according to the evaluation criteria and methodology described in the RFP.

Procurement Timetable

The tentative timetable is as follows:

Milestone	Date
Publication of the Prior Indicative Notice (PIN)	04 August 2025
Submission of Expression of Interest form	No later than 14 August 2025
Tender launch	No later than 14 August 2025
Clarification Questions (if any) and Answers	5 days before submission deadline
Tender Submission	01 October 2025
Contract Award	21 October
Contract Signature	31 October

5 Quality Assurance Requirements

Prior to commencement of any work under this Contract, a "Quality Plan" shall be produced by the Supplier and Subcontractors and submitted to the IO for approval, describing how they will implement the ITER Procurement Quality Requirements.

6 Contract Duration and Execution

The ITER Organization is planning to award the Supply Contract in October 2025. The estimated contract duration should be 20 months.

7 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, 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.
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 may 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.

8 Sub-contracting Rules

All sub-contractors who will be taken on by the Contractor shall be declared with the tender submission in IPROC. Each sub-contractor will be required to complete and sign forms including technical and administrative information which shall be submitted to the IO by the tenderer as part of its tender.

All declared sub-contractors must be established within an ITER Member State in order to participate.
The IO reserves the right to approve (or disapprove) any sub-contractor which was not notified in the tender and request a copy of the sub-contracting agreement between the tenderer and its subcontractor(s). Rules on sub-contracting are indicated in the RFP itself.

ANNEX I

EXPRESSION OF INTEREST & PIN ACKNOWLEDGEMENT

To be returned by e-mail to: serena.profita@iter.org in cc to Jingyu.Gao@iter.org

Tender reference: **IO/25/OT/10032813/SPA**

Description: **Supply Contract for Prototypes of Pilot Valve Fire Protection Boxes**

Procurement Officer: **Serena Profita**

Company Name: **……**

Country of Origin: **……**

☐ WE ACKNOWLEDGE HAVING READ THE PIN NOTICE FOR THE ABOVE MENTIONED TENDER

☐ WE INTEND TO SUBMIT A TENDER

☐ WE ARE ALREADY REGISTERED IN IPROC

☐ WE INTEND TO REGISTER IN IPROC

Please list the users of ARIBA/IPROC that you wish to add as response team for this tender:

Name	E-mail
…	…

……

Signature:

COMPANY STAMP

Name: .....
Position: .....
Tel: .....
E-mail.....
Date: .....

IDM UID
ECK2BH

VERSION CREATED ON / VERSION / STATUS
21 Jul 2025 / 1.1 / Approved

EXTERNAL REFERENCE / VERSION

Technical Specifications (In-Cash Procurement)

Technical Specification for prototypes of pilot valve fire protection boxes

This technical specification describes the tasks for the supplier to
1) generate the manufacturing design and design justification for the fire protection boxes based on the preliminary design
2) generate manufacturing drawings for the EQ and UP pilot boxes
3) manufacture the pilot boxes
4) qualify the pilot boxes for fire and seismic

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

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

2 Purpose

This technical specification describes design, manufacturing and delivery of two pneumatic pilot valve box prototypes. The scope of this supply is two fully assembled pneumatic pilot valve boxes with design justification and manufacturing drawings.

The ITER DMS can be isolated from the ITER vacuum vessel by two redundant Torus Isolation Valves (TIVs), which are double acting vacuum gate valves. Under normal operation these valves are opened and closed by a conventional solenoid board, but in case of emergency, the TIVs must be closed reliably without the solenoid boards. For this purpose, pneumatic pilot valves are installed between the TIVs and the solenoid boards. These pilot valves are 3/2-way valves that constantly held in position 2 by the Safety Air pressure TRAIN A/B, allowing the conventional compressed air from the solenoid boards to pass through them. In case of emergency, the pressure in TRAIN A/B drops to zero and the pneumatic pilot valves change to position 1. In this position they allow the venting of the compressed air from the open side of the TIV actuator and the pressurization of the closing side of the TIV actuator with PIC compressed air. Commands of the conventional solenoid board are overruled. Appendix A contains a sketch of the control scheme.

These pilot valves are protection important components as they are essential to bringing ITER into a safe state. Hence, they are classified as PIC/SIC-2. The surrounding boxes keep the valves operational and are thus classified as SR.

The pilot boxes are located behind the bio shield inside the port cells on the DMS ISS structures. As the DMS operates banks of 6 injectors in equatorial ports and the two TIVs of each injector have to have independent pilot boxes, each equatorial bank has two pilot boxes containing 12 valves each. These valves are grouped into valve blocks with 6 valves each. In the upper ports, the DMS has one injector per port cell. Hence, each of the two boxes in an upper port contains two valves. For similarity it was decided to use the same valve block design for the upper ports as is used in the equatorial ports. Therefore, each box in the upper ports actually contains 4 valves from which only two are used.

3 Acronyms & Definitions

3.1 Acronyms

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

Abbreviation	Description
CA	Compressed air
DMS	Disruption Mitigation System
GM3S	General Management Specification for Service and Supply
EQ	Equatorial

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IO	ITER Organization
PT	Dye penetration testing
PED	Pressure Equipment Directive
PIC	Protection Important Component
PQR	Performance Qualification Report
RH	Remote handling
UP	Upper
WPS	Welding Procedure Specification
WPQ	Welder Procedure Qualification

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.

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	Safety Important Functions and Components	347SF3	1.8
3	Quality Classification Determination	24VQES	5.2
4	ITER Seismic Nuclear Safety Approach	2DRVPE	1.6
5	Procedure for management of Nonconformities	22F53X	9.1
6	Procedure for the management of Deviation Requests	2LZJHB	9.1
7	Rules and Guidelines for Drawings & Models for Works Execution	PTYGS4	2.0
8	B11 - Fire Protection Implementation Strategy	2RXZZX	2.3
9	B11 - Requirements for Fire sensitive system	3VSJHD	1.0
10	DMS Qualification Strategy for the Hafner Z-P 311 501 TT AIR ITER	B2JJY7	2.0
11	Qualification of Protection Important Components (PIC)	XB5ABP	2.1
12	Design Seismic Floor Response Spectra	SVBRJZ	1.1
13	Impact of the New Seismic Level SMHV on the ITER Vacuum Vessel	7JHQN8	2.3
14	Procedure for Analyses and Calculations	22MAL7	6.8
15	Template for Seismic Analysis Reports	VAET99	1.0
16	Instructions for Seismic Analysis	VT29D6	2.0

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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	ASME Boiler and Pressure Vessel Code Section V – Non-destructive examinassions	ASME V	
CS2	Fire classification of construction products and building elements - Part 2: classification using data from fire resistance tests, excluding ventilation services.	NF EN 13501-2 + A1	
CS3	paragraph 3.2.1 “standard temperature-time curve”	NF EN 1991-1-2	

5 Scope of Work

5.1 Design of the pneumatic pilot boxes

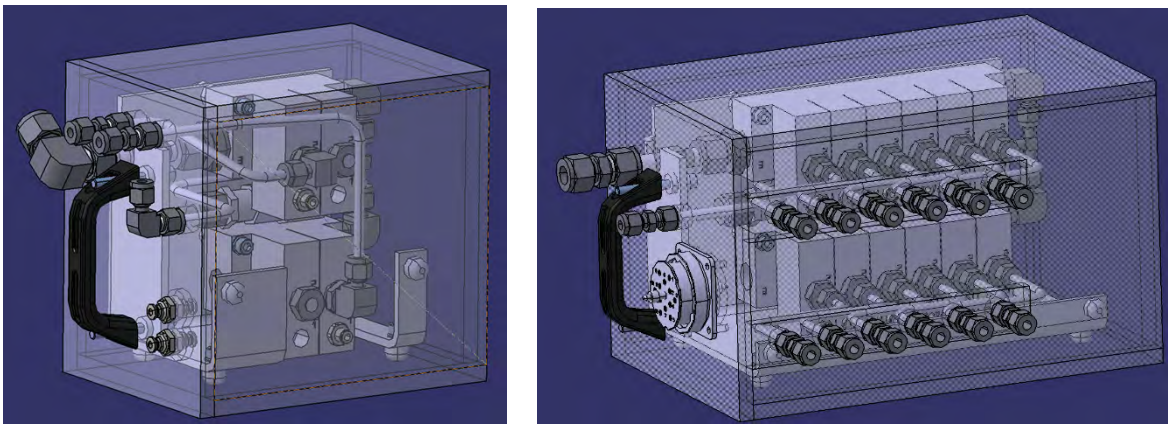

Figure 1: Preliminary designs of the pneumatic pilot boxes for upper ports (left) and equatorial ports (right)

5.1.1 Description

The pneumatic pilot valve blocks are Hafner SET1 R 306 505 ITER and SET1 R 302 505 ITER. These valve blocks are specially developed for ITER with radiation hard, non-magnetic materials. They are however not equipped to operate under the 875°C fire load temperature for 2 hours as it is required by safety regulations. Hence, it is necessary to enclose the valve assemblies in fireproof boxes made from material with low thermal conductivity.

In Fig. 1 the preliminary designs for the pilot boxes are shown. In this design the valve blocks are mounted onto a carrier made from folded stainless steel 5mm thick sheet metal. Spacers (4mm thick) made from MACOR between the sheet metal and the valve blocks serve as thermal insulators. The assembly is then encased in a box made from 10mm thick PROMATECT-200 plates. 10mm thick MACOR spacers insulate the internal assembly from the fire box. Interface for the conventional compressed air is a SMC DM12-04NU multiport connector for the EQ design and two 4mm push-in fittings for the UP design. The connector for the PIC CA is a ½” compression fitting on the front of the boxes and for the TRAIN A/B it is a ¼” compression fitting. The CA outlets are ¼” compression fittings located on the side of the EQ boxes and on the front of the UP boxes.

The classifications for the valves and boxes are shown in Table 1.

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The qualification requirements are listed in Appendix B. These requirements shall serve as design criteria. The qualification activities will be carried out later using the prototypes.

Table 1: Classifications

	Safety class	Quality class	Seismic class	Vacuum class	PED/ESPN class	Tritium class	RH class
Pilot valves	SIC-2	QC-1	SC1(SF)	N/A	N/A	N/A	N/A
Pilot boxes	SIC-2	QC-1	SC1(SF)	N/A	N/A	N/A	N/A

5.1.2 Operating requirements

The operating requirements are given in CAT I in Appendix B.

The boxes shall be maintainable. The design should be as such that the valve blocks can be taken out of the fire boxes and maintained elsewhere. Removal shall be foreseen from the front side. Access to the boxes is also possible from the sides, but not from the back, top or bottom.

5.1.3 Design Requirements

The maximum size of the pilot boxes is given by the preliminary designs. If necessary, the size can be increased by up to 20mm in all directions.

The boxes shall have fixtures to bolt them to the plate underneath.

The orientation of the interfaces shall be the same as in the preliminary design.

The supplier shall design the fire box and the internal valve support, as well as the internal piping to meet the requirements listed in Appendix B. The supplier is free to copy designs from the preliminary designs should they meet the requirements.

Active cooling of the boxes is not possible.

5.1.4 Analysis Requirements

Seismic analysis for seismic events and thermal analysis for fire events are necessary for the design justification of the boxes. Qualification for fire and seismic will be done by testing.

Calculations and Analysis shall follow the procedure for Analysis and Calculations [14][16].

If analysis is used to justify a design, it shall be recorded in an MQP compliant report. For seismic calculations, the template is [15]. The same template can be adapted for thermal analysis reports.

The safety function of the valves, meaning the changing of the valve position to allow the closing of the TIVs, has to be maintained during seismic and fire events.

5.1.5 Material, welding and fabrication requirements

The supplier is free to choose the materials for the internal support, the thermal insulators, the fasteners and the fire protection box. Materials for other components that may be necessary to fulfil the design requirements shall also be chosen by the supplier.

Selected materials shall demonstrate that they maintain their properties required for the safety function during their lifetime (CAT I conditions over 30 years). This may be done by analysis of the material compositions.

All materials shall be agreed with IO.

5.1.6 Quality Control Provisions

The designs shall be agreed with IO before starting manufacturing drawings.

5.1.7 Delivery Time

The maximum expected duration from the contract signature to the supply of the scope of work is 4 months.

5.2 Creation of manufacturing drawings

5.2.1 Description

Following the agreement on the design of the boxes, the supplier shall create the manufacturing CAD model and the manufacturing drawings in preparation of the manufacturing. The supplier shall follow the guidelines [7] for the creation of the drawings.

5.2.2 Software requirements

The CAD model shall ideally be in CATIA format. If this should not be possible, the CAD model shall be delivered in STEP format.

5.2.3 Quality Control Provisions

Manufacturing drawings and manufacturing model shall be approved by IO.

5.2.4 Delivery Time

The maximum expected duration from the contract signature to the supply of the scope of work is 6 months.

5.3 Manufacturing of the pilot boxes

5.3.1 Description

The supplier shall manufacture the two pilot box prototypes using the approved manufacturing drawings and manufacturing CAD model.

Before the start of the manufacturing, the supplier shall prepare a Manufacturing Inspection Plan (MIP).

5.3.2 Mechanical Requirements

Mechanical requirements are given by the manufacturing drawings.

5.3.3 Material, welding and fabrication requirements

Material standard and corresponding grade (eg. 304L / 316L) shall be specified in the manufacturing drawings. The choice of material may be changed in agreement with IO.

Welds, if necessary, can be done with a welding procedure defined by the contractor. The procedure shall be qualified for the application (WPS, PQR).

All welds shall be carried out by a qualified welder (WPQ as per ASME Sec. IX or equivalent).

5.3.4 Quality Control Provisions

All welds, if any, shall be numbered for later PT testing.

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Visual inspection and dimensional inspection shall be carried out for each complete box assembly according to the dimensions on the drawings.

Components shall be numbered for later identification during Qualification.

5.3.5 Non-destructive testing

All welds, if any, shall be subject to PT testing. PT shall be performed as per CS1 reference, PT personnel shall be qualified as per SNT-TC-1A.

5.3.6 Manufacturing dossier

The manufacturing Dossier shall contain as a minimum the documents listed below which are deemed relevant:

- Bill of Materials
- Complete list of critical subcontractors
- A compilation of all contract meeting minutes and reports, NCRs and DRs
- Components technical specifications
- Welding Documents (WPS, PQR, WPQ)
- Visual Examination results (Cleanliness, Geometric measurements, etc.)
- Functional Test results
- Certificates of conformity
- Manuals and Instructions for the handling, installation, assembly and maintenance of all components and equipment
- Drawings marked and signed as “as built”

5.3.7 Spare Parts

No spare parts shall be foreseen for this supply

5.3.8 Delivery Time

The maximum expected duration from the contract signature to the supply of the scope of work is 10 months.

5.4 Qualification of the pilot boxes

5.4.1 Description

Because of their safety classification as SIC-2, the boxes have to prove their operability under different circumstances as outlined in Appendix B. Qualifications for radiation, thermal aging, operational aging, SMF, differential pressure are common for all ITER users of the Hafner pilot valves to a varying degree and thus DMS takes part in a joint qualification effort. Only temperature and seismic loads are specific for the DMS valves inside the fire protection box.

The qualification shall follow the Qualification of Protection Important Components [11].

The qualification strategy is outlined in [10].

5.4.2 Qualification requirements

The supplier shall generate a Qualification Plan, detailing what tests are to be performed. The tests shall cover CAT I, CAT II, CAT III and CAT IV events, concerning thermal loads and seismic. The qualification plan shall be approved by IO. The qualification plan shall also include

the standards (e.g. RCC-E, RCC-M, ASME QME-1) applied for the tests. Qualifications for radiation may be done by similarity. If this is the case, similarity shall be demonstrated according to IEEE 60780 -323 (2016) § 7.4.3.

After approval of the Qualification Plan, the supplier shall write the Test Specification for the single tests. This document shall detail the test procedure and equipment used for the tests. All tests shall be carried out with the same box.

The results of the tests are documented in the Test Report. The supplier acts as EQ performer and is responsible for the supervision of the tests. IO acts as TRO and is responsible for the surveillance of the tests. The test report shall be approved by IO.

Qualification by Analysis is not foreseen for the load cases and thus the Analysis Report does not apply.

After successful completion of the tests, the results shall be summarized in the Qualification Synthesis Report. This Report shall also be approved by IO.

Finally, the supplier shall prepare the Qualification Preservation Sheet and the Reference file.

IO will supply templates for these files in word format. The supplier shall follow these templates. Further description of the documents can be found in the auxiliary documents to the templates and in [11].

Following is a summary of the above-mentioned documents:

- Qualification Plan
- Test Specification
- Test Report
- Qualification Synthesis Report
- Qualification Preservation Sheet
- Reference file

5.4.3 Loads

The loads for the Qualification activities are listed in Appendix B.

	CAT I	CAT II	CAT III	CAT IV
Thermal	11°C to 35°C	85°C	145°C (for 2 h)	875°C (for 2h)
Seismic	N/A	N/A	SMHV	SL2 a_x = 8 m/s² a_y = 7 m/s² a_z = 23 m/s²

Regarding thermal loads, during CAT I and CAT II cases the valves shall be operational inside the fire protection box even when the valves reach thermal equilibrium. In CAT III and CAT IV cases, the boxes with the valves inside shall be exposed to the ambient temperature for 2 hours and the valves shall work afterwards. Leak tightness of the valves is not important as long as their function is maintained.

Regarding seismic loads, the floor accelerations shall be taken from the floor response spectra [12]. SL2 corresponds to 4% damping in horizontal and vertical directions and SMHV shall use 0.73 [13] times the acceleration of SL2. Node 49142 shall serve as reference for all installation locations. Amplification of the acceleration due to the support structure shall be taken into account.

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5.4.4 Delivery Time

The maximum expected duration from the contract signature to the supply of the scope of work is 20 months.

5.5 Delivery of the pilot boxes

5.5.1 Packing & preservation

Open connectors shall be covered with plastic caps to avoid internal contamination with dust. The boxes may be disassembled for shipping. Components shall be wrapped in bubble wrap for shipping or pickup by IO.

5.5.2 Shipping

The delivery address is:

ITER Organization
Route de Vinon sur Verdon
13115 St Paul lez Durance
France

6 Location for Scope of Work Execution

The Contractor can perform the work at their own location.

7 IO Documents & IO Free issue items

7.1 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 models of preliminary pilot boxes		Upon request

7.2 Free issue items:

Under this scope of work, IO will deliver the following equipment/parts by the stated date:

Ref	Equipment / Part Description	Amount	Part Nbr	Expected date
1	Valve block with 6 valves	2	SET1 R 306 505 ITER	At KoM
2	Valve block with 2 valves	2	SET1 R 302 505 ITER	At KoM

8 List of deliverables

The Supplier shall provide IO with the documents and data required in the application of this technical specification, the GM3S [1] and any other requirement derived from the application of the contract.

SUPPLY

You can find here below a minimum list of documents, but not limited to, that are required within the expected timing:

Technical Design Family (TDF)	Generic Document Title (GTD)	Further Description	Expected Timing (T0+x) *
Quality Plan	Quality Plan		T0+0
Design justification	Design justification	Analysis reports	T0+4
3D manufacturing model	3D Manufacturing model		T0+6
2D manufacturing drawings	Manufacturing drawings		T0+6
Manufacturing inspection plan	Manufacturing inspection plan		T0+6
Manufacturing dossier	Manufacturing dossier	Section 5.3.6	T0+10
Qualification dossier	Qualification dossier	Section 5.4.2	T0+20
Pilot boxes delivery			T0+20

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

9 Quality Assurance requirements

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

The contractor shall have ISO 9001 certified quality system or QA program approved by QARO.

10 Safety requirements

The scope under this contract does cover for PIC and/or PIA and/or PE/NPE components, [1] GM3S section 5.3 applies.

10.1 Nuclear class Safety

The nuclear safety class is SIC-2 for the valves, but SR for the box that is subject of this contract.

10.2 Seismic class

The seismic class is SC1(SF).

11 Specific General Management requirements

Requirement for [1] GM3S section 6 only applies when it is required for the manufacturing process.

NCR procedure [5] and DR procedure [6] shall be applicable.

11.1 Contract Gates

Before start of the work, the supplier shall organize a Kick-off meeting.

Before start of manufacturing, the supplier shall organize a Manufacturing Readiness Review (MRR). As this supply is not for the machine, a simplified MRR shall be conducted.

11.2 Work Monitoring

Monitoring shall be done through regular meetings and email exchange.

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11.3 Meeting Schedule

Monthly meetings shall be organized on dates agreed by IO and the contractor.

The contractor shall write minutes of the meeting, that will be uploaded to IO IDM and approved.

11.4 CAD design requirements

The supplier shall follow the Rules and Guidelines for Drawings & Models for Works Execution [7].

11.5 Specific skills

Following competencies are required to perform the task:

- Experience with mechanical design and drawing generation
- Experience with mechanical and thermal analysis tools
- Experience in metal machining (drilling, milling, etc)
- Experience in metal forming (bending)
- Experience with fire protection
- Experience with nuclear safety equipment qualification

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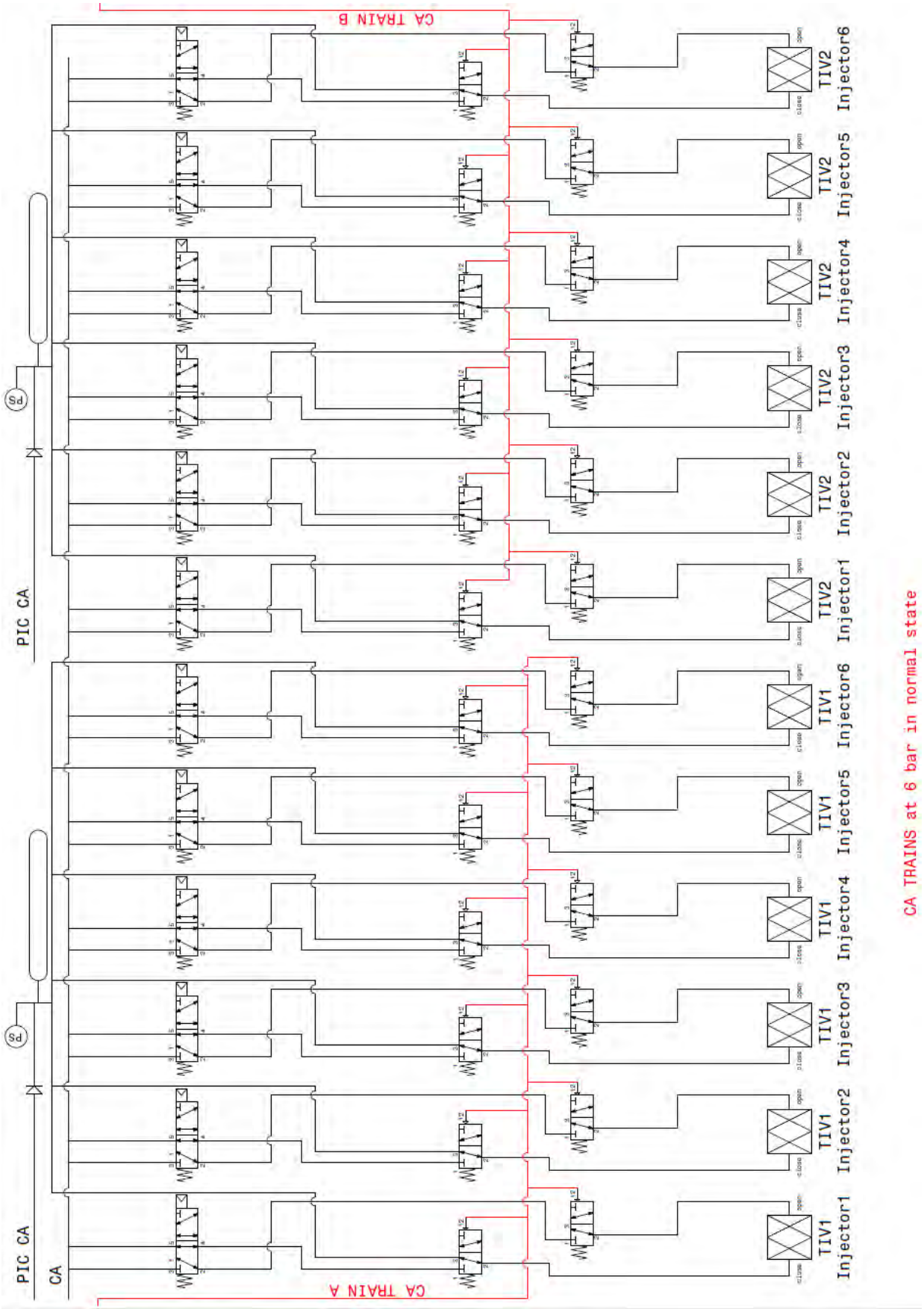
Appendix A



SUPPLY

Appendix B

Qualification events	Conditions	Qualifications for pneumatic pilot boxes	Qualification methodology
CAT I (Normal Operation)	**Operating Temperature**	11°C to 35°C	Test
	Max pressure differential or External pressure	100KPa	Calculation
	Internal Pressure	0.7 MPa	Calculation
	Radiation	100 kGy	Similarity
	SMF	<250mT	Test
	Operational aging	10000 cycles	Test
	Radiation Aging	Radiation aging ITER_D_TMA8KQ v1.1	Similarity
	Seismic	N/A	N/A
CAT II (Baking)	**Ambient Temperature**	85°C	Test
	Baking Temperature	N/A	N/A
	Max pressure differential or External pressure	100KPa	Calculation
	Internal Pressure	0.7 MPa	Calculation
	Radiation	N/A	N/A
	SMF	<250mT	Test
	Thermal Aging	100 cycles	Test
	Seismic	N/A	N/A
CAT III (LOCA, LOVA)	**Ambient Temperature**	145°C (LOCA)	Test
	Max pressure differential or External pressure	200KPa	Calculation
	Internal Pressure	0.7 MPa	Calculation
	Radiation	N/A	N/A
	SMF	<250mT	Test
	Humidity	100%	Test
	Aging	N/A	N/A
	Seismic	SMHV	Test
CAT IV (Accident)	**Max accidental temperature**	875°C for 2h	Test
	Max pressure differential or External pressure	200KPa	Calculation
	Internal Pressure	1.1 MPa	Calculation
	Radiation	N/A	N/A
	SMF	<250mT	Test
	Aging	N/A	N/A
	Seismic	SL2	Test