

## Technical Specifications (In-Cash Procurement)

### **Technical Specification and Statement of Work - PC contract for Mechanical, Electrical and field I&C works**

This document provides the technical requirements for the performance of Mechanical, low and medium voltage Electrical and field I&C works under a Contract for IO OPD division.

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## 1 Purpose

This document provides the technical requirements for the performance of Mechanical, low and medium voltage Electrical and field I&C works under a Service Contract for IO OPD division.

## 2 Scope

The ITER Organization will place a contract to perform Mechanical, low and medium voltage Electrical, field I&C works (including Procurement and Construction activities) on the ITER Construction Site for IO OPD. This document outlines the specifications for such services.

The Contractor shall be responsible for providing State of the art fully adequate and cost optimized solution, including the provision of the adequate team composed of qualified personnel with demonstrated skills and experience. This contract only applies to the Equipment (PE/NPE) for which takeover by Commissioning has taken place. The Contractor shall not under any circumstances work on Equipment that is in the process of being manufactured. And in any case, any intervention on a PE or NPE shall not be started and carried out without prior information and agreement of the PSE Group.

The scope of this contract is to support on-demand the Maintenance/Commissioning /Operations activities with modifications, closure of punch items, and implementation of corrective actions on the ITER site. Each Instruction-To-Proceed (ITP) that will follow this contract, will have a different scope, potentially including several activities as defined in section 6.1.

As the different systems of the ITER Project are not driven by the same sets of codes and standards, for each work requests, the Contractor will be provided with the relevant sets of codes and standards and shall abide to it. The codes to be applied will be international codes and standards including NF, IEC, RCCM, ASME, AWS, ASTM, BS, ISO, ANSI, API, DIN, EN...

The Contractor is responsible to comply with the requirements defined in these regulations.

## 3 Definitions and Acronyms

### 3.1 Definitions

Common areas	Any area where more than one works contractor is working simultaneously
Construction Management-as-Agent	Entity responsible for the Management for the IO of the Assembly, Installation and Testing IO systems, structures and components
ITER Construction Site	ITER buildings under construction, including assembly, installation or testing activities with surrounding areas
ITER Site	ITER buildings and areas included in ITER site boundary as per [20]
The Contractor	Contractor is the entity that was awarded and responsible of the Mechanical, Electrical and Field I&C Works
The Client	ITER Organization (IO)
Tokamak Complex	Used to identify all Tokamak building (11), Diagnostic building (74), Tritium Building (14)
Tokamak pit	Area within Tokamak building (11) inside the bioshield area.
Works Contractors	IO Contractors in charge of assembly ITER equipment

### 3.2 Acronyms

CISSCT	Collège Inter-Entreprises de Sécurité, de Santé et des Conditions de Travail (Inter-Company Health and Safety Committee. Established under the French Labour Code for the operation of buildings, Articles L.4532-10, R.4532-77 and R.4532-78)
CMA	Construction Management as Agent
CRO	Contract Responsible Officer
CWP	Construction Work Package
DR	Deviation Request
IDM	ITER Document Management (system)
INB	Installation Nucléaire de Base
IO	ITER Organization
NCR	Non-Conformance Report
NDT	Non-Destructive Testing
OPD	Operations Division
PIA	Protection Important Activities
PIC	Protection Important Components
PI&D	Process and Instrumentation Diagram
PPE	Personal Protective Equipment
PPSPS	French acronym for Plan Particulier de Sécurité et de Protection de la Santé – Specific plan of safety and health protection
PRE	Environmental Protection Plan
PTW	Permit To Work
RFI	Request For Information
SIC	Safety Important Class components
SPC	Site Planning and Coordination Section
SHS	Security, Health & Safety Division
SIM	Site Management Section
SCOD	Science & Operation Department
OPD	Operations Division
ITP	Instruction-To-Proceed
PE/NPE	Pressurized Equipment / Nuclear Pressurized Equipment

For a complete list of ITER abbreviations see: [ITER Abbreviations \(ITER\\_D\\_2MU6W5\)](#).

## 4 List of Applicable Documents and References

Please refer to the enclosed list of applicable documents in Annex A (some provided at the tender phase / some on demand before or after the kick-off meeting).

The following chapters of the French Environmental code and regulation are applicable

- For the manufacture of Pressure Equipment (PE): Articles L557 and R557-9 + PED 2014/68/UE
- For the manufacture of Nuclear Pressure Equipment (NPE): Articles L557 and R557-12 + ESPN Order dated 30/12/2015
- For the modification or repair of PE: Articles L557 and R557-14 + French Order dated 20/11/2017
- For the modification or repair of NPE: Articles L557 and R557-14 + Annex V of French ESPN Order dated 30/12/2015

The following codes are applicable for the Electrical scope:

- **IEC 61508** - Functional safety of electrical/electronic/programmable electronic safety-related systems
- **IEC 61511** - Functional safety – Safety instrumented systems for the process industry sector
- **IEC 61513** - Nuclear power plants – Instrumentation and control important to safety – General requirements for systems
- **IEC 60364-1** - Low voltage electrical installations
- **IEC 61936-1** - Power installations exceeding 1 kV AC and 1,5 kV DC
- **IEC 62271-1** - High-voltage switchgear and controlgear
- **NF C13-200** - High voltage electrical installations for electrical energy production sites, industrial, commercial and agricultural sites
- **NF C15-100** - Low-voltage electrical installations
- **NF C18-510** - Operations on electrical network and installations and in an electrical environment - Electrical risk prevention

## 5 Contract Start and Estimated Duration

The Contract duration is 4 years.

## 6 Work Description

### 6.1 Details of scope

The Contractor will need to carry out all types of mechanical, electrical and field I&C activities within this contract, activities will cover both temporary and permanent equipment. The type of works to be performed by the Contractor will depend on the nature of the IO request, the request can require:

- 1- Procurement + Prefab in shop + Installation on site
- 2- Procurement
- 3- Procurement + Prefab in shop
- 4- Procurement + Installation on site
- 5- Prefab in shop + Installation on site
- 6- Installation on site

Installation works can include new components or rework/modification of existing components.

In any case, the Contractor will be responsible for its own Project Management and should reflect it in its Organization. See below a diagram representing the overall scope required from the Contractor.



Figure 1: Scope overview

### 6.1.1 Procurement of components & bulk material:

The Contractor may be requested to procure components and material required to perform activities. The Contractor procurement will cover the following but it will not limited to:

- Identify Procurement needs & technical requirements for material and components.
- Provide services to early procurement activities necessary to support the works required by IO.
- Identify the existing suppliers comprising the supply base.
- Evaluate the supply base to determine if they have the capabilities and capacities to produce the quantities that are required.
- Evaluate supplier bids, terms and conditions. Identify supply chain risks and develop and implement risk mitigation plans.
- Provide IO with Cost Proposals for required procurement.
- Provide frequent follow-up and communications with suppliers to ensure progress consistent with plans and schedule.
- Identify supply issues and execute timely corrective action when required.
- Provide supply status to the IO team. Plan and coordinate logistics and transportation for delivery to the Site.

- Deliver the Components and bulk material as per the applicable technical specifications and related design documents as provided by IO.  
All equipment, tools and consumables required shall be the responsibility of the Contractor as described in [4] of ANNEX A.

### 6.1.2 Construction Management Method, Execution & Supervision

Within the Construction scope, the Contractor may be in charge of the following activities depending on the nature of the request submitted by IO OPD:

- **Method & Production of Construction documentation** (preparation of the CWP including Instructions, Isometrics, Inspection & Test Plans and documents provided by IO such as PI&D, arrangement drawings, single line diagrams, termination diagrams, list of applicable documents, etc.)
- **Standard prefabrication:** Spooling design (to be recorded in The Client documentation system) / Spool fabrication in shop (including required NDT) / Cabling and Electrical/I&C cabinets preparation / Transport to site.
- **Standard site pipework:** positioning / blanketing / welding / Support installation / pipe cutting (cold and hot) / Valve installation / Valve repair / flange opening and closing (bolt torqueing) / perform golden joints / heat tracing.
- **Standard site mechanical works:** equipment connection / equipment shimming, levelling / anchoring / install-change gaskets / equipment alignment / rotating equipment alignment / equipment grouting.
- **Standard for repair/ modification/pre-fabrication of PE and NPE to take into account the requirements not limited to:** Material, Material storage, Welding, NDT, Picking and Passivation, etc.
- **Standard site low and medium voltage electrical works:** cables connection / cables pulling and laying / cabling of cabinets / cabling of MCCs
- **Standard site field I&C works:** sensors and instrumentation installation / cables pulling and laying / cables termination / cabling of cabinets
- **Pressure test** in shop and/or on site (including test pack preparation, to be validated through The Client documentation system).
- **NDT** in shop and/or on site (UT/RT depending on requirement).
- **Painting/Insulation** installation
- **Labelling** of piping, mechanical items, electrical and I&C cables and components.
- Any miscellaneous piping/ mechanical/electrical and field I&C works in the Contractor's capacity.
- **Lifting** of material/components included.
- **Field Supervision** and follow up of all activities
- **Field quality assurance and quality control**
- **Coordination** with IO OPD and CMA for all worksite activities
- **Oversight and Inspections of Construction Activities**

The Contractor shall perform and organize Quality Control inspection of the works according to approved Inspection & Test Plan and liaise with the IO Quality organization. Depending on the quality classes of the items to be controlled, the Contractor will not have the same quantity of inspections to be undertaken. This will be detailed case by case in each Inspection & Test Plan.

Construction oversight activities for the given scope will always start with a kick off meeting chaired by Contractor including all stakeholders.

The Contractor will have to formalize his activities through inspection records recalling the scope, and indicating all his comments supported as much as possible by pictures.

The oversight of construction shall include the technical assessment of Non-Conformances and Deviation Requests submitted. For processing deviation requests, follow IO procedure given at reference [125].

As almost all the major buildings have a nuclear safety related function, the Contractors resources shall have experience of working in the construction of nuclear facilities and at least one senior member of the Contractors team shall have experience of working under applicable French legislation in the construction of nuclear facilities.

### **6.1.3 Project Management:**

In addition of the Procurement and Construction activities listed above, the Contractor will be responsible for its own Project Management. Activities are not limited to the following:

- **Monthly project report:** Which includes project control report, project schedule status update, etc
- **Quality Assurance and Management of Non-Conformities**
- **Conduct monthly project status review meetings**
- **Organize and communicate on Monthly schedule updates**
- **Consolidate monthly status reports**
- **Organize Procurement**
- **Management of Staffing and Contracts**

## **6.2 Contract mechanism**

### **6.2.1 Permanent work**

During the overall duration of the contract, the Contractor's Permanent team on site will cover Method & Production of Construction documentation for execution of known/scheduled Construction activities (part of section 6.1.2), prepare Procurement activities (section 6.1.1) and Project Management activities (section 6.1.3) including the deliverables defined in section 8. The permanent team, responsible for, to be considered is pre-defined below:

- 1 Method Preparation Engineer (preparation of all technical and installation documentation for future installation works: procedures, installation packages, etc.)
- 1 CRO Site/Project manager (with the role of HSE, Quality Assurance & Control/Procurement Management/Administration)

### **6.2.2 Instruction-To-Proceed**

The IO OPD will issue ITPs following review and discussion between IO and the Contractor for specific needs or to launch Procurement not already covered by the Permanent Team. Examples of activities that may require an ITP are listed below:

- Procurement of components and bulk material as per section 6.1.1.
- Installation works as per section 6.1.2 (specific activities such as Painting, Insulation, cabling, welding, etc.) with an on-demand team

### **6.2.3 Management of Requests**

All work requests for the Contractor will be handled through a computerized ticketing system (SAP). This ticket system will be put in place by The Client and each ticket shall be approved by The Client before the Contractor can start the work.

The Contractor shall provide schedule and price for requests within 7 days through the ticketing system.

This application is part of The Client's Ticket System. The Contractor shall appoint suitably qualified and experienced staff to proceed with clarification and reply to the requests. The concerned staff shall be fluent in English language (oral and written) and common computer applications (Microsoft package / Catia / Enovia).The Ticketing system described above may change with IT working Environment evolution. Any change of ticket system shall be endorsed by the Contractor without additional cost and he shall be proactive and liaise actively with



ITER Organization stakeholders involved in the change to welcome the new system without service disruption. Relevant documentation modification as well as necessary training attendance related to this change shall be endorsed by the Contractor without additional cost.

### **6.3 Working time**

Normal hours are considered to be from 07:30 to 19:30 from Monday to Friday.

Upon request, specific working hours may be requested (i.e. night shifts), bank holidays and Sundays (corresponding mark-up multiplier will be applied over the concerned scope).

### **6.4 General Requirements**

Contractor shall comply with General Management Specification for Execution Entities at the ITER Site [4] and all related applicable documents (e.g. 3E8289 – Overarching PTW Procedure [6]).

### **6.5 Occupational Safety requirements**

The Contractor shall protect at all times people, equipment and premises from any risk generated by his activity. These means are (non-exhaustive list):

- Mobile worksite signalization;
- Protection carpets (e.g. during welding, grinding); Organizational means such as working hours adaptation, risk avoidance with ITER Construction Site
- Full alignment (in details) with area coordinator

Safety instructions should be complied with whenever carrying out dangerous tasks as detailed in its risk assessment and PTW, e.g. Hot works, Radiographic testing, etc...

### **6.6 Consumable products linked with the activity**

In the scope of this contract and more specifically section 6.1.2 Construction, the Contractor shall provide all consumable products required for correct service performance. This includes items such as (non-exhaustive list):

- Tools (non-exhaustive list: welding machines, hydraulic wrenches, plasma torch, gas bottles...)
- Welding filler / Gas, etc... anything required for the activities.
- Bulk items (e.g. standard gaskets / bolts & nuts...) except if specifically clarified in the request.

Stock management (concerning consumable products and standard tools) is incumbent upon the Contractor. Moreover, the Contractor shall not avail itself of any stock shortages to justify deviations in its contractual commitments. Contractor shall maintain an inventory of its consumable products.

The Contractor shall dispose of all waste resulting from its activity as per ref [4] and [16], except if specifically clarified in the request.

### **6.7 Contractor's resources**

The Contractor shall maintain the necessary resources to undertake the activities described in the technical specification. The Contractor shall appoint a CRO (site/project manager) to be responsible for the activities of the Contractor teams

The Contractor shall appoint only appropriately qualified staffs. All the Contractor staff(s) assigned to the ITER Project shall be individually assessed by the Contractor for competence prior to commencing work under this contract. IO may request the evidence of the required qualification (e.g. resume, the technical qualifications)\_in order to verify if the Contractor's

team including the proposed Contractor's staff(s) may perform the required scope of work satisfactorily.

In its resources selection, the Contractor shall take in consideration that IO requires proactive behaviour of the Contractor's team and, in particular, will require the Contractor's team to propose solutions in the identified issues. Therefore, the Contractor should organize and assign their required resources accordingly.

The Contractor shall ensure continuity of knowledge throughout the project by ensuring that established engineers and experts remain allocated to the on-demand contract on a long-term basis.

The Contractor shall produce all deliverables in English. All communications shall be carried out in English language.

The list of the Contractor pre-defined positions is as follow:

	Position description
Permanent team	CRO site/Project Manager
	Method Preparation Engineer
On-demand team	Mechanical Installation supervisor
	Electrical and I&C Installation supervisor
	Skilled Worker – rigger /pipe fitter / insulation/ painter / steel work
	Skilled Mechanical worker – pumps / valves
	Welder
	Welding Engineer
	Engineer of all disciplines
	Skilled Electrician
	Quality Control Inspector
	Unskilled worker

#### 6.7.1 Location of the Contractors Resources

Procurement activities can be done remotely without loss of efficiency. Other administrative tasks may be performed remotely as well.

#### 6.7.2 Replacement of Contractors Resources

Due to the obvious need to maintain continuity of resources during implementation of an ITP, no person shall be removed or replaced from the Contractors team without prior approval of the IO CRO.

#### 6.7.3 Absence of Contractors Resources

The Contractor shall ensure that any absence periods of their personnel from the permanent team are managed in such a manner as to not have a negative impact on the tasks to be completed and that all agreed deadlines are respected (milestones defined in each and every ITP).

In case of unplanned leave, the Contractor CRO shall immediately inform the IO CRO about the risk of delay generated by this leave and propose remedial actions to mitigate this risk.

#### 6.7.4 Contractors to Maintain Flexibility in Carrying out Tasks

As the tasks to be performed by the Contractor will vary, the Contractor will maintain a flexible approach in the assignment of task within his team and his resources shall be suitably qualified and experienced such that they can work on a range of different task if required.

#### 6.7.5 Skills and Qualifications

The Contractor CRO (Site/Project Manager) shall:

- Ensure the qualification of the Contractor's execution for each task.
- Apply specific scrutiny for welding activities; only welders with solid experience on the type of weld (or with a higher difficulty) shall be appointed. Relevant welding records shall be made available on demand.

- Ensure proper training of its team for all the required activities including appropriate Welding certifications and Electrical qualifications (as per French legislation).
- Ensure that its team has proper knowledge of the facilities and equipment in order to ensure technical efficiency in terms of Quality, Security and Safety.
- Implement a dynamic and flexible organisation, fully able meet the objectives and deadlines set.

The Contractor shall provide its execution team with the working authorisations and relevant safety training certificates and support all costs pertaining to training, qualification, upgrading, safety audits, etc. The Contractor undertakes to maintain these qualification levels for the whole term of the contract. The following trainings will be requested at some point, hence the Contractor shall ensure its team is fully trained (non-restrictive list):

- Electrical safety as per requirement of documents UTE C 18 510, C 17100, C 17102, C 15100, C13200
- Work at height (French Labour Code R.4323-31 and 32, Decree 2008-244 of 7 March 2008, European Directive 2001/45/CE, 95/63/CE, Decree 98-1084, etc.)
- CACES or equivalent if needed
- Dedicated training to work around PIC components
- Dedicated training to work around Vacuum components and in clean environment
- Qualification of NDT personnel as per EN ISO 9712 or, equivalent for PE / NPE categories as applicable

## **6.8 Access to the site / Worksite installation**

The ITER site is located in the municipality of Saint-Paul-Lez-Durance (13) on the outskirts of Vinon-sur-Verdon, south of departmental road 952, just next to the CEA at Cadarache.

- The site encloses about 100 hectares of fenced land and is divided into several parts, whose perimeter and access may change:
- The Headquarters building (Building 72), in the north-east part of the site houses around 1000 people.

The Construction site is made of one single “closed and independent” worksite, split into different areas managed by different “area responsible entities” such as ITER Organisation, Fusion For Energy (F4E), Réseau de Transport d’Energie (RTE), etc.

Access to ITER Site is subject to the ITER Site Access Procedures.

The Contractor shall be responsible for supplying and installing fencing protecting the worksite which shall be maintained for the duration of the works and removed after completion of the Works. The Contractor shall also display signs prohibiting entry onto the worksite.

## 6.9 Worksite authorisation

## 7 Responsibilities

## 7.1 IO responsibilities

In order to facilitate the Contractor's undertaking of work, IO will provide the following estimated required facilities on the ITER site:

- Up to 3 IO computers (upon justification of the need)
- Up to 20 lockers, including shared break rooms, bathrooms, and showers
- If needed and duly demonstrated, the IO could provide a space for two containers of 20feets for equipment and consumable storage and additional ITER computers or lockers.

## 7.2 Contractor responsibilities and timeline

- Provide basic Planning and Scheduling of each activities.
- Notify to IO any discrepancies, contradictions, or omissions from drawings, specifications or other documents or any doubt arising as to the meaning or intent of any part thereof, shall be referred to the IO for clarifications. All dimensions shown on the drawings which are related to installed equipment or pertinent embedded parts shall be verified by the contractor by field measurement before the fabrication of relevant

pipelines is started.

- Dully justify any deviation to proposed Codes and Standards and track in the system, then approve the deviation via internal Contractor's quality control, get it approved by the requestor (The Client or its delegates) and a representative from The Client (or its delegates) quality team.
- Record and track in the ticketing system any interfaces with other Contractors with clear interfaces dates and battery limits for each scope.
- Address Any defect or not dully approved non-conformity in line with the Project schedule at Contractor's own cost.
- Be solely responsible for all procurement, construction means, methods, techniques, sequences, procedures, safety and quality assurance, and quality control programs in connection with the performance of Contractor's Work.
- The supply of deliverables including but not limited to: as-built drawings, Manufacturing/Installation specifications and procedures, Quality Control related documentation, etc.
- Providing personnel with demonstrated skills and experience
- Providing timely quotation (number of hours, procurement, etc.) and planning
- Providing most competitive prices for the material supply and any activities not defined in the schedule of price and within the technical capability of Contractor.
- Ensuring full compliance with coordination rules and strict respect of guidelines provided by area Coordinators.
- Ensure cleanliness/tidiness in at the end of each day, the Contractor shall clean its area after its works is complete.
- Ensuring its staff Safety Install on site if needed, site containers to store equipment after IO approval,
- For the specific case of the manufacture of PE and NPE, Contractor will assume the regulatory responsibility of "Manufacturer". IO PSE Group will periodically audit the contractor in this regard; Any Notified Body mandated by IO can also audit the contractor.
- Implement and follow strict a Foreign Material policy
- The respect of the following timetables
  - Start of Contractor Mobilization:

D#	Deliverable	Due date**
D1	Kick off meeting	T0* + 1 week
D2	Start of Site Mobilization for Permanent Team	T0* + 4 weeks

- T0\*= signature of contract

- Contractor Timeline for Construction Work Execution per Activity:

D#	Deliverable	Due date**
D1	Documentation readiness for IO approval	T1* + 2 weeks
D2	Start of works	Delivery of materials + 2 weeks
D3	Final Report/as-built documentation (to be detailed)	Final installation (including NDT/Inspection) + 4 weeks

- T1\*= Issuance of ITP from IO
- \*\* Unless agreed otherwise by IO in ITP

○ Contractor Timeline for Procurement Activity:

D#	Deliverable	Due date**
D1	Procurement proposal to IO (cost/schedule)	T1* + 1 week
D2	Placement of orders and confirmation of delivery schedule (if proposal formally agreed by IO)	D1 + 2 weeks

- T1\*= Issuance of ITP from IO
- \*\* Unless agreed otherwise by IO in ITP

### 7.3 Interfaces

The main interface and contact point for the Contractor will be IO CRO or his/her delegate at operational level. All important exchanges shall be recorded in the ticketing system.

The Contractor is made aware that it may have to liaise directly with other entities performing works including CMA (in particular CMA coordinator), scaffolding contractors, lifting contractor, environmental responsible entities, general service contractor, health and safety responsible entities (non-exhaustive list), in order to fine tune the way to perform its activities.

When a dedicated Contract between Contractor and any other contractor on site, this should be arranged without IO involvement and shall not impact the execution of the Contract between IO and the Contractor.

## 8 List of deliverables and due dates

#	Title	First Issue	Frequency of updates	Minimum Content	Comments
[1]	Personnel training records (more details required for welders)	30 days after contract signature. Before starting Operations/Site Mobilization			
[2]	Contractor main Procedures	30 days after contract signature. Before starting Operations/Mobilization	As necessary	WPS / Handling / Torqueing / Post welding heat treatment / Pressure test/ Flushing / drying / equipment levelling / equipment alignment / PE and NPE / cable pulling and laying / cable termination...	
[3]	Ticket management workflow	30 days after contract signature. Before starting Operations/Mobilization	As necessary		
[4]	Quality Plan including Quality Control system	30 days after contract signature. Before starting Operations/Mobilization	As necessary		
[5]	Monthly Mechanical Electrical and field I&C work Contract Report	First month of Operations (mobilization)	Monthly basis	<ul style="list-style-type: none"> <li>- Activity report (resources (number of people present on site in the past month), list of all ongoing works (references with hyperlink to the tickets and deliverables))</li> <li>- Issues and associated action plan for resolution</li> <li>- level 4 planning of tickets and other activities (with start and end dates), status and particular point of attentions with a 2 month look-ahead</li> <li>-level 2 planning of tickets and other activities (with start and end dates), status and particular point of attentions with a 6 month look-ahead</li> <li>- Resource plan for next 6 months</li> <li>- Financial contract status (Details supporting current monthly invoice and overview of the financial status of the contract: Actuals Spent, Estimated to Complete, Budget plan, Variations)</li> </ul>	Invoicing approval subject to this report approval
[6]	PPSPS + Prevention Plan	30 days after contract signature. Before starting Site mobilization	As necessary		
[7]	Environmental Protection Plan (PRE)	15 days after contract signature. Before starting Site Mobilization.	As necessary		
[8]	Documentation Release timeline	7 days after contract signature.			
[9]	Monthly Environmental Report	First month of Operations/Mobilization	10 <sup>th</sup> day of each month	Information for the previous month: <ul style="list-style-type: none"> <li>- Number of worked hours on the site;</li> <li>- Electricity consumption;</li> <li>- Raw water consumption;</li> <li>- Potable water consumption;</li> <li>- Fuel consumption;</li> <li>- Quantities of waste generated, distinguishing between hazardous waste, non-hazardous waste, inert waste, concrete laitance and the overall percentage of recycled waste;</li> <li>- Number of observation sheets and non-conformity reports opened.</li> </ul>	If deemed applicable by IO CRO
[10]	End of installation report	7 days after end of installation	As necessary	-Report with full installation documentation including ITP, as-built drawings, etc.	

## 9 Acceptance Criteria

The performance of the Contractor shall be monitored through periodic contract follow-up meetings. The performance shall be expressed in Key Performance Indicators (KPIs), which shall be reported by the Contractor. Technical Control in the sense of article 2.5.3 of the INB Order shall be performed by the Contractor [19]. KPIs could be adapted, modified or added following discussion with Contractor within the various ITPs.

### 9.1 KPI 1: Health and Safety

Working hours from the contractor staff, number of accidents and lost working days shall be reported. Objective is set to 0 accident and 0 lost working days. Any accident or working day lost will set to 0 KPI 1 on an annual basis.

### 9.2 KPI 2: Percentage of non-accepted deliverables

All deliverables provided by the Contractor are subject to validation.

KPI 2 consists of calculating (for each activity) the percentage of non-accepted deliverables at first issue.

Issuance of Organizational documentation (procedures, PPSPS, RPE) and documentation following site works (ITPs, etc.) can be followed separately.

For each activity, the Contractor shall provide to IO summary table showing:

- Number of deliverables produced (NbL),
- Number of deliverables approved at first issue (Nb),

KPI 2 is calculated according to the following formula:  $KPI\ 2 = Nb / NbL * 100$

### 9.3 KPI 3: Quality

All defects / quality issues shall be reported timely after detection (at least within 5 days) with an NCR (refer to [120]). All NCRs shall be duly resolved in line with installation need dates in order to mitigate cost and schedule impacts.

Objective is set to 0 delay / cost impact due to quality issues. In case of quality issues, the Contractor shall propose an action plan and corrective measures. In addition, a Root Cause Analysis must be initiated, conducted by the Contractor and approved by IO.

The following indicators will be followed:

- Number of Quality issues (NbQ),
- Number of NCR resolved on time (Nbncr) without impact,

KPI 3 is calculated according to the following formula:  $KPI\ 3 = Nbncr / NbQ * 100$



## 9.4 KPI 4: Percentage of activities with unmet deadlines

KPI 4 consists of calculating the percentage of tasks whose start date or deadline was not met.

Contractor activities shall not delay other planned construction activities.

The Contractor shall permanently update a summary table:

Total number of requested or scheduled tasks (NbT),

The number of tasks not completed within deadlines (NbTnC). KPI 4 is calculated per activity according to the following formula:  $KPI\ 4 = NbTnC / NbT * 100$ .

## 10 Meeting Schedule

### - Meetings attendance:

During the execution of the Contract, the Contractor shall attend meetings as instructed by IO/SCOD/OPD (for instance regular coordination meeting, monthly Performance Contract meeting). The Contractor shall liaise with IO representative to decide which meetings it needs to attend. The Contractors' representative(s) shall have the appropriate level of responsibility and expertise for the purpose of the meeting. A non-exhaustive list of meetings is provided below.

### - Contract kick-off meeting:

After signature of the contract, a contract kick-off meeting is organised by the ITER Organization in the ITER premises. At the meeting the Contractor shall present its implementation plan for the ramp-up phase.

The minutes of the meeting shall be drafted by the Contractor.

### - Weekly follow-up meetings:

Weekly meetings could be held between representative of The Client (or its delegate) requesting works to discuss any topic related to the activities.

The minutes of the meeting shall be drafted by the Contractor in the form of an action list and issued for approval to the ITER Organization no later than 2 working days following the meeting.

### - Monthly progress meetings:

Monthly progress meetings shall be held between the parties before the 10<sup>th</sup> day of the following month, aiming to follow-up the performance of the Contractor and discuss any technical or contractual issues that have arisen during the past month.

The Contractor shall present the content of the corresponding monthly project report (which includes project control report, project schedule status update, etc. including updated value of the KPIs defined in section 9).

The minutes of the meeting shall be drafted by the Contractor and issued for approval to the ITER Organization no later than 15 working days following the meeting.

### - Steering committee meetings:

A steering committee meeting is scheduled yearly during which the Contractor presents its annual activity report.

The minutes of the meeting shall be drafted by the Contractor and issued for approval to the ITER Organization no later than 15 working days following the meeting.

### - Construction coordination meetings:

While performing activities on the ITER Construction Site, the Contractor shall attend the daily and weekly coordination meeting (relevant to areas where Contractor activities is going on), any meeting required to plan the Radiographic testing (see ref [128]), intervention and may

attend the weekly Site Construction Coordination Office meetings, in charge of the operational coordination of the works on the ITER Construction Site.

**- Safety meetings:**

The Contractor shall attend all meetings organised by the ITER HSE officers/coordinators considered necessary for Health, Safety or Environmental issues, including common inspection meetings, CISSCT meetings etc.

**- Quality meetings:**

While performing activities on the ITER Construction Site, the Contractor shall attend the bi-weekly quality supervision meeting. This meeting shall be attended by contractor QA/QC manager, IO QCC, CMA quality manager, the IO CRO/TRO/SRO, supervisors.

## 11 Document exchange and approval process

**- Language:**

Since the official language of the ITER Organization is English, all written communication and deliverables shall be in English.

**- Document Release Schedule:**

At the start of the contract, a list of planned document deliverables shall be established between the ITER Organization and the Contractor. For this purpose, at the latest 2 weeks after the signature of the contract, the Contractor shall submit a draft list of deliverables and their planned issue date. In addition to that, each time a request calls for documentation, the same process shall be followed.

**- Document and data exchange:**

All deliverables shall be transmitted through the ITER Document Exchange Area in IDM / Construction Completion platform (Smart plant or equivalent) / PLM (as appropriate), as detailed in the In-Cash Procurement Technical and Management Documentation Exchange and Storage Procedure [24].

**- Document format:**

All deliverables shall be provided in both PDF format and in the original format. PDF documents shall have text recognition and include bookmarks.

All deliverables shall be provided in English, unless stated otherwise in this document. For documents to be provided in French, an executive summary in English shall be included. Written text must be well-written and grammatically correct.

**- Document review and approval:**

The Contractor shall allow for a review period by the ITER Organization of 15 working days (Will be expedited in case of need for urgent works).

The review period shall start after the upload and the Contractor's signature of the document in IDM / Smart plant (or equivalent) / PLM (as appropriate).

In case the ITER Organization disapproves the document or requests a revision, the Contractor shall update and resubmit the deliverable within 10 working days, taking into account the comments issued by the ITER Organization.

**- Archiving**

The Contractor shall maintain available at its premises an archive of all documentation developed in the frame of the works (all type of documents; preparatory such as PPSPS, lift

plan, etc, design documents such as drawings, etc, quality control, such ITPs, Quality plan, etc...) under his scope.

The Contractor shall ensure that the archive is permanently kept up to date with the latest approved versions and shall be able to retrieve any document instantly in case of an audit or inspection.

## 12 Quality Assurance (QA) requirements

The organisation conducting these activities should have an ITER approved QA Program or an ISO 9001 accredited quality system. The general requirements are detailed in [36]

Prior to commencement of the task, a Quality Plan must be submitted for IO approval giving evidence of the above and describing the organisation for this task; the skill of workers involved in the study; any anticipated sub-contractors; and giving details of who will be the independent checker of the activities (see [37]).

All subcontractor shall be ISO9001 certified and accepted before subcontracted activity starts.

Documentation developed as the result of this task shall be retained by the performer of the task or the DA organization for a minimum of 5 years and then may be discarded at the direction of the IO. The use of computer software to perform a safety basis task activity such as analysis and/or modelling, etc. shall be reviewed and approved by the IO prior to its use, in accordance with [39].

## 13 CAD Design Requirements

Not applicable.

## 14 Nuclear Safety requirements

ITER is a Nuclear Facility identified in France by the number-INB-174 (“Installation Nucléaire de Base”) [17].

The Contractor shall comply with all the requirements expressed in the Provisions for Implementation of the Generic Safety Requirements by the External Interveners [19] which defines generic safety requirements to be implemented by all external interveners of the ITER project in order to satisfy the requirements of the French regulation applicable to nuclear facilities.

For Protection Important Components and in particular Safety Important Class components (SIC), the French Nuclear Regulation must be observed, in application of the Article 14 of the ITER Agreement.

In such case the Suppliers and Subcontractors must be informed that:

- The Order 7th February 2012 applies to all the components important for the protection (PIC) and the activities important for the protection (PIA) [18].
- The compliance with the INB-order must be demonstrated in the chain of external contractors.
- In application of article II.2.5.4 of the Order 7th February 2012, contracted activities for supervision purposes are also subject to a supervision done by the Nuclear Operator.

For the Protection Important Components, structures and systems of the nuclear facility, and Protection Important Activities the contractor shall ensure that a specific management system is implemented for his own activities and for the activities done by any Supplier and Subcontractor following the requirements of the Order 7th February 2012 [18].

## 15 Environmental protection

The Contractor shall comply with environmental protection requirements and procedures applicable at the ITER Site:

- ITER Organization Environmental Management System doc 1: PMAE v1 (ITER\_D\_97W4PN);
- Environmental requirements, (ITER\_D\_97WRFP).

An environmental respect plan shall be provided by the Contractor 2 weeks prior to the start of the Works, using the ITER template ([ITER\\_D\\_9FUP5C v1.9 - Environmental Respect Plan english template](#)).

Debris and waste of all type shall be removed as work progresses.

The Contractor shall be responsible for cleaning, repairing and restoring facilities that it dirtied or damaged to their original condition, and shall remove their debris and rubbish to public rubbish tips. Should said cleaning fail to be performed, it will be done by a third party at the loss and expense of the Contractor.

Furthermore, the [ITER Policy on Safety, Security and Environment Protection Management \(43UJN7\)](#), presenting the strategical objectives of the ITER Organization for protecting the interests mentioned under Article L593-1 of the French Environmental Code, must be circulated, known, understood and applied by all staff of the Contractor and cascaded down in the managerial lines of the Contractor and his sub-contractors.

## Annex A. List of Applicable Document