| IDM UID |
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| **YX55YY** |
| VERSION CREATED ON / VERSION / STATUS |
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**Plan**

# General Management Specification for Executing Entities at the ITER Site

The purpose of this General Management Specification (GMS) is to define to the Executing Entities at the ITER site the main requirements and expectations of the ITER Organization and its Construction Manager as Agent (the CMA) in relation to the organization and management of the site works.

| *Approval Process* | | | |
|---|---|---|---|
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| *Change Log* | | | |
|---|---|---|---|
| **General Management Specification for Executing Entities at the ITER Site (YX55YY)** | | | |
| ***Version*** | ***Latest Status*** | ***Issue Date*** | ***Description of Change*** |
| v1.0 | Revision Required | 08 Nov 2019 | |
| v1.1 | Approved | 13 Dec 2019 | updated according review of previous version<br><br>Addition of XFUDAL as applicable document<br>Addition of 4ALJEU as reference document<br>Link to 4ALJEU<br>Addition of Quality Coordination Meeting |
| v1.2 | Approved | 15 Jul 2020 | Dear all,<br>This version was updated mainly to address F4E (Ampegon) comments following thorough joint review of the document.<br>It also includes the following modifications:<br>- Modification of applicable document list and reference document list.<br>- Addition of XFUDAL as applicable document<br>- Addition of 4ALJEU as reference document<br>- Link to 4ALJEU<br>- Addition of Quality Coordination Meeting<br>- Addition of cleanliness section |
| v2.0 | Signed | 08 Nov 2020 | This MQP document (https://user.iter.org/?uid=3LE4TY) aims at gathering the requirements applicable when working on the ITER Construction site.<br>The General Management Specification for executing entities (i.e. contractors on site under DA management) is a reduced version compared to the one sent to IO contractors under CMA supervision, as the contract management and technical supervision aspects have been removed.<br>This GMS focuses on the Management Requirements for all contractors (executing entities) on site.<br>It includes the following description:<br>- The regulatory context of the site<br>- H&S: French Labour Code [already part of the PAs through the Annex A PA-ADs for On-Site Work and QA / QC]<br>- Nuclear Safety : INB order [already part of the PAs through the Annex A PA-ADs for On-Site Work and QA / QC]<br>- The Subcontracting process to be applied to meet the regulatory context (Selection and approval of the subcontractors)<br>- The Health and Safety Requirements [already part of the PAs through the Annex A PA-ADs for On-Site Work and QA / QC]<br>- The Environmental Requirements [already part of the PAs through the Annex A PA-ADs for On-Site Work and QA / QC]<br>- Quality Requirements (as per the MQP documentation) [already part of the PAs through the Annex A PA-ADs for On-Site Work and QA / QC]<br>- The Project Control requirements<br>- The Management and Coordination Requirements<br>As mentioned, Health & Safety, Environment, Security, Nuclear Safety, Quality, Access are already part of the PAs through the Annex A PA-ADs for On-Site Work and QA / QC, therefore it is not anticipated to have impact in terms of cost / schedule on the DAs and their Contractors.<br>However this document collects in a consistent and exhaustive way all requirements for working on the ITER Construction Site, including Project Control and Management and Coordination, in order to improve understanding on the common context of work of the various involved |

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| | | | Parties.<br>This version reflects some recent changes in site organization (IO/CMA integrated team – HSPC role – PTW process standardization) and a track change version is enclosed for reviewers that already worked with the previous version.<br>Being mostly regulatory or transverse requirements, the document is not expected to change much over the review process, it is therefore recommended to DAs to include it already as part of the T&C of the DA contracts when Contracts are being prepared [It will avoid / minimize cost and schedule impacts on DA contracts from working on IO site].<br>Thank you in advance for your review. |
| v2.1 | Signed | 02 Dec 2020 | - Modification of Executing Entity definition to avoid issues in applicability of this document for F4E BIPS new contracts and to ensure applicability to all Contractors (including IO Contractor under CMA FIDIC).<br>- Deletion of an applicable document listed twice [2LZJHB] [former number 34].<br>- Addition of the "Physical Security Protection Management Procedure" TZYDJH V.2.2 to the applicable documents.<br>- Renaming of 4.2 from Momentum to Construction Management as Agent.<br>- Addition of paragraph 5.4 Site Security.<br>- Addition of "and related procedures" in 6.2. The Executing Entity shall comply with the ITER Site access procedure [6] and related procedures in order to get access to the ITER site.<br>- Correction of formatting issue on the last page of the document |
| v2.2 | Approved | 11 Dec 2020 | Modifications from Version 2.0 to 2.1:<br>- Modification of Executing Entity definition to avoid issues in applicability of this document for F4E BIPS new contracts and to ensure applicability to all Contractors (including IO Contractor under CMA FIDIC).<br>- Deletion of an applicable document listed twice [2LZJHB] [former number 34].<br>- Addition of the "Physical Security Protection Management Procedure" TZYDJH V.2.2 to the applicable documents.<br>- Renaming of 4.2 from Momentum to Construction Management as Agent.<br>- Addition of paragraph 5.4 Site Security.<br>- Addition of "and related procedures" in 6.2. The Executing Entity shall comply with the ITER Site access procedure [6] and related procedures in order to get access to the ITER site.<br>- Correction of formatting issue on the last page of the document<br><br>Modifications from Version 2.1 to 2.2:<br>Added DA in many parts of the document to reflect the fact the DA would be the entity contractually exchanging with the Executing entity (IO/DA instead of IO only)<br>- 1. Purpose:<br>• Clarification that the scope "does not concern off-site activities (e.g. design, manufacturing, pre-fabrication…)"<br>• Modification to request to apply the version of the GMS that was contractually instructed rather than the "latest" as was written before.<br>- 2.1 Definitions:<br>• Executing entity definition modified to clearly exclude all subcontractoors and F4E BIPS contractors. It was clarified that Contractors will have to cascade the relevant requirement to their Subcontractors.<br>• Building owner definition added<br>- 3.1 Applicable documents:<br>• RWWAX3 common site rules version was clarified to require update.<br>• UG4XJB ref modified to 34Q3GJ with clarification that update |

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| | | | required<br>- 4 Organisation:<br>• 4.2 Fusion for Energy (F4E) definition added<br>• 4.4 Architect Engineer (AE) definition added<br>• 4.5 H&S Coordination, Clarified that HSPC contract is a joint one between IO and F4E.<br>• 4.6 (former 4.4) renamed “Mandatory Periodical equipment checks” instead of “Regulatory Inspection Certification”<br>- 5. General requirements:<br>• 5.1: Clarified that a French practitionner shall all workers shall undergo a medical examination by.<br>• 5.2 Clarified that the bi-weekly nuclear Safety culture toolbox talks where only for Executing entities working on PIA/PIC.<br>• 5.3: Subcontracting rules: Clarified that GMS has to be cascaded to Subcontractors.<br>• 5.3.1: Clarified that the waiver on the issuance of a Quality Plan is not driven by the criticality of the activities.<br>• 5.3.3: Clarified that DAs could use their own SAF corresponding document as long as it provides sufficient information to serve its purpose.<br>- 6. HSE Management<br>• 6.3: Site HSE organisation and responsibilities: Clarified that DAs with contractors on site attends the Inter-Company Health and Safety Committee (CISSCT in French), CMA removed from entity that shall be contacted.<br>• 6.4. Worksite HSE training and qualifications: “Training records” terminology changed to “Qualifications” and paragraph reworded so that tool box talks are recommended to be recorded instead of being mandatorily recorded.<br>• 6.8 Typo modified (=> “All Executing Entity personnel shall undergo a dedicated safety induction training performed by HSPC within 8 days of commencing works.” Brought back to previous paragraph as it was in the title). Two sentences clarified about deadlines for PPSPS: “The PPSPS shall be provided at least 10 working days before the start of work. / For subcontractors: 5 days befor the start of work. “<br>• 6.14.5: Clarified that details about waste management could be found in reference [9]<br>- 7. Quality Requirements:<br>• 7.2: Following part made non applicable to DAs: “At least 10 working days before the kick off meeting, the Executing Entity shall produce a Quality Plan in accordance with the Requirements for Producing a Quality Plan [12]. This shall describe how the Executing Entity will implement the ITER Procurement Quality Requirements, as defined in [11].”<br>Erections data sheet removed as part of the list of details required.<br>• 7.3.2: Added description of ITP: “The Inspection and Test Plan (ITP) is a document used to demonstrate conformity with the relevant Requirements, evidence is supported by records attached to each step of the ITP [This document could be recorded under a different name for DA Contractors].”<br>• 7.3.4: Clarification that document could be produced as well (not always site visit).<br>• 7.3.7: Clarified that RT shoot organization allowed under strict conditions to organize shoots not during night shift.<br>• 7.3.8: Part of the requirements made non applicable to DAs: [All the signatures shall be completed in the ITP for an operation before the Executing Entity is allowed to move to the next task] and [In order to meet the above requirement to complete an ITP task before to move to the next one, the related ITR shall be uploaded in the system in real time. In the case of full dematerialization of ITRs and ITPs in the system, IO will provide |

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| | | | tablets to the Executing Entity in order to avoid duplication of efforts (paper documents on site then electronic documents to upload in the system).]<br>- 12. Change and Non-Conformity Management<br>• 12.2: Part of the paragraph removed (was already not concerning DAs): “A limited number of NCs are allowed per year by the Executing Entity, before the application of penalties by IO, in accordance with the Contract.”. Clarification added: “The target is to open the NCR within 48hours following the discovery of the event.”<br>• 12.4 Deviation Request and Field Change Request: Broken cross link updated, additional point for DA Contractors: “In case other process are already established, the DA shall share the corresponding information with IO.”<br>- 14.1 Mechanical Completetion works: Clarification about temporary systems used to simulate a missing interface with segregation between IO contractors (leave temporary equipment in place) and DA contractors (request DA approval prior removal, IO then able to buy back or replace).<br>- 15.1.1: Mobilization plan: Part of the requirement made non applicable to DA contractors: “The mobilisation and logistics plan shall be accepted by the IO and implemented prior to commencing any site construction mobilisation activities.”<br>- 18. Interface Management: Clarification on the interface document: “An Interface document is to be written for each Executing Entity Contract Works. This detailed interface document shall be based on the IO Interface sheet and developed by the entity in charge of the execution design.”<br>- 19.3: Framework Contract for General Services: “Collective Protection” added in the exemples.<br>- 20. Executing Entity’s facilities:<br>• Wording modified: IO will define within… => IO defines within…<br>• 20.3. Areas for Executing Entity Facilities other than offices and welfare: CMA modified to IO/CMA |
| v2.3 | Approved | 24 Mar 2021 | Modifications from Version 2.2 to 2.3:<br>- 2.1 Definitions:<br>• Executing entity definition modified to take out EU-DA PF Coil contractors (when working in or in the vicinity of B55/.1/.3) and Cryo-PT (Eu-DA / IN-DA).<br>- 3.1 Applicable documents:<br>• Removed some two applicable documents from the list.<br>• Added a possibility for DAs to discuss Detailed applicability of the some non PA-AD applicable documents ([4], [5], [7], [9], [17], [18], [19], [22], [23], [29], [31], [33] ).<br>• Added a reminder on PA Annex A articles 12. And a procedure to follow to confirm compliance (or log derogations) with the aforementionned procedure<br>- 3.2 Reference documents:<br>• Added a reference listing the requirements from the above mentionned non PA-AD documents the "Flat list of requirements". |

# Table of Contents

# 1. Purpose

The purpose of this General Management Specification (GMS) is to define to the Executing Entities at the ITER site the main requirements and expectations of the ITER Organization and its Construction Manager as Agent (the CMA) in relation to the organization and management of the site works. It does not concern off-site activities (e.g. design, manufacturing, pre-fabrication…)

*< Definition not applicable to DA's Contractors >*

*The GMS is the reference document for the management of the works that are to be performed in preparation for, and during the execution of the Contract, in conjunction with the contract conditions. It starts with preparation activities and runs through mechanical completion.*

*<Requirements only applicable to DA's Contractors>*

*The GMS is the reference document for the management of the works that are to be performed on ITER Site. It covers prerequisites applicable in preparation of an intervention and runs through to mechanical completion*

The Executing Entity shall comply with all instructions and requirements issued by the IO/DA or its representative during the execution of the Works, as summarized hereinafter.

The GMS presents the main principles and requirements which the Executing Entity must take into account during the execution of the works and defines the minimum standards expected for the management of the health, safety and environment ("**HSE**"), nuclear safety, quality and project control during the execution of the Works.

The Executing Entity shall comply with all the requirements of the latest instructed version of the GMS.

For requirements specific to DA contractors or the others the following will be written in front of the said requirement:

- *<Requirements not applicable to DA's Contractors>*, when they are not applicable to DA's Contractors,
- *<Requirements only applicable to DA's Contractors>,* when they are only applicable to DA's Contractors,

*The concerned requirement will be in italic to identify the extent of the concerned content.*

Nothing highlighted when requirements are applicable to all.

The term IO/DA shall be understood as IO or DA depending on the case (IO for IO contractors / DA for DA contractors)

# 2. Definitions and Acronyms

## 2.1 Definitions

The following definitions are used within the context of this document -

| Term | Definition |
|---|---|
| Employer | The Employer is a FIDIC definition which means the person named as employer in the Appendix to Tender and the legal successors in title to this person. |

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| Executing Entity | All IO Contractors, and Domestic Agencies' Contractors performing work on the ITER site in buildings/area handed-over to or taken-over by the IO.<br>EU-DA BIPS, EU-DA/IN-DA Cryo-PT and EU-DA PF Coils Contractors are already following processes in line with French regulation and coordination rules on site as collected in this document, accordingly they are not part of the definition of the Executing entities. EU-DA PF Coils Contractors are not expected to intervene elsewhere than within or in the direct vicinity of B55 / B55.1 / B55.3 but would be considered as Executing entity in case of activity somewhere else on the platform. |
| Building Owner | IO or F4E for Buildings erected by F4E and before their Take-Over by IO. This term is equivalent to the French word Maitre d'ouvrage. |
| Contract | The contractual conditions under which the Executing Entity has been employed to perform the works. |
| Coordination | To facilitate the co-activity between Executing Entities and organisation, company or group of companies under CMA's direct control. This includes Permit To Work issuance with its associated pre-requisites and implications as per defined procedures. |
| Supervision | *< Definition not applicable to DA's Contractors >:*<br>*To organise and follow up the technical execution of the Works. Engineering/Preparation/Quality Control/Quality Assurance/Completion / Project Controls (Progress Control, Cost, Planning) / Doc Control / Deliverables Control/ FIDIC Contract management / Any other requirement by CMA must be formalised by IO through appropriate process.* |
| Works | Any work being performed under the Contract by the Executing Entity. |
| Sub-Contractor | Any lower-tier member of the Contractor's supply chain. |

## 2.2 Acronyms

The following acronyms are the principal ones that are relevant to this document. For a complete list of ITER abbreviations refer to [34].

| | |
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| AF | Acceptance Form |
| ARIF | Access Request Information Form |
| BOQ | Bill Of Quantities |
| CFSI | Counterfeit, Fraudulent and Suspect Items |

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| CI | Configuration Item |
| CIS | Company Identification Sheet |
| CMA | Construction Management as Agent |
| CRR | Construction Readiness Review |
| CWP | Construction Work Package (definition in section 13.2.1) |
| DA | Domestic Agency. |
| DR | Deviation Request |
| EAC | Estimated At Completion |
| Engage | The Architect Engineer appointed by F4E, responsible for construction of the buildings and site infrastructure |
| EoCP | End of Construction Report |
| EWP | Engineering Work Package |
| F4E | EU-DA: Fusion for Energy |
| FCR | Field Change Request |
| FIDIC | Fédération Internationale des Ingénieurs Conseils |
| FME | Foreign Material Exclusion |
| GMS | General Management Specification |
| HELIOS | Site access control system used on ITER Site |
| HP | Hold Point |
| HSPC | Health and Safety Protection Coordinator |
| ICPE | Installation Classée pour la Protection de l'Environnement |
| IDM | ITER Documentation Management System |
| INB | Installation Nucléaire de Base (Nuclear Plant Facility) |
| IO | The ITER Organisation. |
| ITP | Inspection and Test Plan |
| ITR | Inspection Test Record |
| IWP | Installation Work Package (definition in section13.2.2) |
| LSP | Logistics Service Provider |
| LTIR | Lost Time Incident Rate |
| MCD | Mechanical Completion Dossier |
| NC | Non-conformance |
| NCR | Non-conformance report |
| OTD | On Time Delivery |
| OHSAS | Occupational Health and Safety Assessment Series |
| OQD | On Quality Delivery |
| PBS | Plant Breakdown Structure |
| PDCA | Plan, Do, Check, Act |
| PIA | Protection Important Activity |
| PIAP | Post Installation Anchor Plates |
| PIC | Protection Important Component |

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| PGCSPS | Plan Général de Coordination en matière de Sécurité et de Protection de la Santé |
| PMP | Project Management Plan |
| PPSPS | Plan Particulier en matière de Sécurité et de Protection de la Santé |
| PRE | Environmental Protection Plan |
| PTW | Permit to work |
| QA | Quality Assurance |
| QC | Quality Control |
| QP | Quality Plan |
| RFC | Ready For Construction |
| RFI | Request For Information |
| RT | Radiographic test |
| SAF | Subcontractor Acceptance Form |
| SSC | System, Structure and Component |
| SQEP | Suitably Qualified and Experienced Person |
| TAR | Total Accident Rate |
| WAR | Obsolete term - Former appellation of Work permits in Engage areas (Work Authorisation Request) |

# 3. Applicable and Reference Documents

## 3.1 Applicable Documents

| | Title | Reference | Version |
|---|---|---|---|
| [1] | ITER Policy on Safety, Security and Environment Protection Management | 43UJN7 | 3.1 |
| [2] | Quality Classification Determination | 24VQES | 5.2 |
| [3] | Health Protection and Safety General Coordination Plan – ITER Construction Site – Volume 0 – General Safety Rules | 2NUEYG | 5.7 |
| [4] | PGC SPS Vol. 1 - IO&F4E (Safety coordination plan for projects under IO and F4E building ownerships)<br>*<Detailed applicability of the document to be discussed with DA's Contractors prior mobilization>* | T6V4RP | 4.0 |
| [5] | Overarching Permit to Work Procedure.<br>*<Detailed applicability of the document to be discussed with DA's Contractors prior* | 3E8289 | 2.3 |

| | Title | Reference | Version |
|---|---|---|---|
| | *mobilization>* | | |
| [6] | ITER Site Access Procedure | S3893D | 3.1 |
| [7] | Pre-CMA EPR Environmental Protection Plan Phase<br><br>*<Detailed applicability of the document to be discussed with DA's Contractors prior mobilization>* | U6933Q | 4.0 |
| [8] | Environmental Requirements | 97WRFP | 2.2 |
| [9] | Chemical Product Management Procedure.<br>*<Detailed applicability of the document to be discussed with DA's Contractors prior mobilization>* | TF5GP8 | 1.6 |
| [10] | ITER Procurement Quality Requirements | 22MFG4 | 5.1 |
| [11] | Requirements for Producing a Quality Plan | 22MFMW | 4.0 |
| [12] | *<Document not applicable to DA's Contractor>*<br><br>*Working Instruction for Construction Readines Review* | QXW4KQ | 2.7 |
| [13] | *<Document not applicable to DA's Contractor>*<br><br>*IO/In-Cash Contractor Documentation Exchange and storage working instruction* | G8UMB3 | 4.1 |
| [14] | *<Document not applicable to DA's Contractor>*<br><br>*Document Management Procedure* | 22K5JQ | 7.0 |
| [15] | Procedure for management of Nonconformities | 22F53X | 8.2 |
| [16] | Procedure for the management of Deviation Request | 2LZJHB | 8.1 |

| | Title | Reference | Version |
|---|---|---|---|
| [17] | Organisation of radiological tests on ITER Construction Site<br><br>*<Detailed applicability of the document to be discussed with DA's Contractors prior mobilization>* | T2GPED | 2.4 |
| [18] | Work Instruction for Producing an Inspection Test Plan for Construction<br><br>*<Detailed applicability of the document to be discussed with DA's Contractors prior mobilization>* | UELU9F | 3.0 |
| [19] | Cleanliness Strategy<br><br>*<Detailed applicability of the document to be discussed with DA's Contractors prior mobilization>* | WW78E8 | 1.2 |
| [20] | Propagation of the Defined Requirements for Protection Important Components through the chain of External Interveners | BG2GYB | 3.3 |
| [21] | *<Document not applicable to DA's Contractor>*<br><br>*CAD Data Requirements Summary for Contractor supplied Data* | HPQ64Y | 5.0 |
| [22] | Conditions of Use of the ITER radio Communication System<br><br>*<Detailed applicability of the document to be discussed with DA's Contractors prior mobilization>* | Y73ERA | 1.3 |
| [23] | Lock Out Tag Out Procedure<br><br>*<Detailed applicability of the document to be discussed with DA's Contractors prior mobilization>* | 34Q3GJ | 3.3 (to be updated) |
| [24] | *<Document not applicable to DA's Contractor>* | UYUSEE | 1.1 |

| | Title | Reference | Version |
|---|---|---|---|
| | Working Instruction for Completion Dossier Preparation | | |
| [25] | *<Document not applicable to DA's Contractor>*<br><br>CMA Mechanical Completion Procedure | UFATL8 | 5.0 |
| [26] | *<Document not applicable to DA's Contractor>*<br><br>Working Instruction for Construction Field Change Request (FCR) | EBUK3B | 3.4 |
| [27] | *<Document not applicable to DA's Contractor>*<br><br>Working Instruction for Implementing Request for Information (RFI) for Construction | UBEN9H | 4.0 |
| [28] | *<Document not applicable to DA's Contractor>*<br><br>Working Instruction for Intervention in case of pollution or overflow of the rainwater drainage network | NEBB44 | 3.1 |
| [29] | Rules of Cooperation for Safety Coordination between the Health and Safety Protection Coordinator and the main Contractors<br><br>*<Detailed applicability of the document to be discussed with DA's Contractors prior mobilization>* | UJ95AV | 4.0 |
| [30] | Provisions for Implementation of the Generic Safety Requirements by the External Actors/Interveners | SBSTBM | 2.2 |
| [31] | ITER Site Golden Rules of Safety Enforcement Rules<br><br>*<Detailed applicability of the document to be discussed with DA's Contractors prior mobilization>* | YSU3VK | 1.1 |

| | Title | Reference | Version |
|---|---|---|---|
| [32] | *<Document not applicable to DA's Contractor>*<br><br>Working Instruction for Construction Field Change Request (FCR) | EBUK3B | 3.4 |
| [33] | Physical Security Protection Management Procedure<br><br>*<Detailed applicability of the document to be discussed with DA's Contractors prior mobilization>* | TZYDJH | 2.2 |

**Table 3-1 – Applicable Documents**

*<Requirements only applicable to DA's Contractors>,*

*With regards to references [4], [5], [7], [9], [17], [18], [19], [22], [23], [29], [31], [33] in relation to Health, Safety, Security and Environmental rules:*

*As mentioned in PA Annex A articles 12 on Environment, Safety and Health and Security (Ref. EU DA Annex A Template (C7TMP3 v2.3)); All applicable environment, safety and health and security provisions for work on the ITER Site in Cadarache shall be observed. Any activity on the ITER Construction Site shall be subject to the "Health Protection and Safety General Coordination Plan - ITER Construction Site - volume 0 (Ref [3]) and resulting procedures (Including ref [4], [5], [22], [23], [29], [31]). Any additional applicable provisions regarding environment, safety and health shall be communicated by the IO to the DA at least 30 (thirty) calendar days in advance of the activities to be performed at the ITER Site.*

*IO therefore proposes to have these procedures applicable unless equivalent DA processes ensuring compliance with law and allowing acceptable coordination between entities are available, in which case derogations would be accepted. A flat list of the requirements from these procedures will be available in reference [60] and shall be used to document all derogations to the requirement with details on the alternative. This list of derogations shall then be uploaded in IDM folder 4XKS62.*

## 3.2 Reference Documents

| | Title | Reference | Version |
|---|---|---|---|
| [34] | ITER Abbreviations | 2MU6W5 | 1.17 |
| [35] | CMA Interface Management Procedure | UAYW4R | 3.0 |
| [36] | Instruction_CMA_Lifting Contract - Lifting | W6TC23 | 3.0 |

| | Title | Reference | Version |
|---|---|---|---|
| | Operations Management | | |
| [37] | Procedure_CMA_Scaffolding Operations Management | YRJQ87 | 4.0 |
| [38] | Instruction_CMA_Scaffolding Contract - Scaffolding Operations Management | X9FAFL | 4.0 |
| [39] | Environmental Respect Plan english template | 9FUP5C | 1.9 |
| [40] | Annex 2 – List of PIA for Construction | U4FKA5 | 1.5 |
| [41] | Protection Important Activities and Defined Requirements for all ITER Mechanical PIC Equipment | 338G4B | 4.1 |
| [42] | *<Document not applicable to DA's Contractor>*<br>*IDM Manual* | 22223J | 8.24 |
| [43] | ITER Site Signage and Graphics Standards | 4ALJEU | 2.5 |
| [44] | List of ITER-INB Protections Important Activities | PSTTZL | 2.2 |
| [45] | List of Protection Important Components(PIC list) | JDS5K7 | 1.2 |
| [46] | Overall Site Organisation, Safety Coordination and Environmental Protection during ITER Construction | 2LH9QC | 1.0 |
| [47] | Environmental Management Plan for ITER construction site (PMAE) | AGC5G4 | 2.4 |
| [48] | IO Environmental Management System doc1: PMAE | 97W4PN | 1.4 |
| [49] | IO Environmental Management System doc2: Environmental Analysis | 9RA6KJ | 1.2 |
| [50] | IO Environmental Management System doc3: Objectives, Targets and Environmental | 9RENJN | 1.2 |

| | Title | Reference | Version |
|---|---|---|---|
| | Management Programme | | |
| [51] | IO Environmental Management System doc5: Requirements applicable to the ITER worksite | N5QKG5 | 1.6 |
| [52] | IO Environmental Management System doc 6: Emergency situations inventory | N9Z2LE | 1.1 |
| [53] | Site Coordination procedure | UBERHM | 2.0 |
| [54] | Nomenclature of classified facilities | 7JFYC5 | 1.3 |
| [55] | Prerequisites before the start of Construction Activity Procedure | XFUDAL | 3.0 |
| [56] | Access Request Information Form (ARIF) | RT6ZVQ | 1.5 |
| [57] | Template for specific health and safety plans (PPSPS) bilingual Version | K7C6SZ | 2.1 |
| [58] | Template_CMA_Monthly_Environmental_Data | VCG4XS | 4.0 |
| [59] | JIRA HSR Tool - INCIDENT user's manual appendix | YUJT67 | 1.0 |
| [60] | Flat list of requirements | 4XLA38 | 2.0 |

# 4. Organisation

## 4.1 ITER Organisation(IO)

ITER Organization (**IO**) is the owner of the Site.

## 4.2 Fusion for Energy (F4E)

Fusion for Energy is the Building owner for buildings and infrastructures under its Procurement Arrangement scope until Take-Over by the IO.

## 4.3 Construction Management-as-Agent

The MOMENTUM joint venture was selected by the IO as their Construction Management-as-Agent contractor (the **CMA**).

The CMA brings established skilled resources, tools and systems to perform the following main missions for which it is responsible:

- **General Coordination of the Construction Site**

  The CMA provides the Site Construction Manager and a team dedicated to site coordination, site space management, site access management, general services management and more generally, all tasks required by a construction site for a nuclear facility in France. In addition to the transverse activities required for construction site coordination, the CMA responsibility is to prepare and manage the Works performed by the IO and coordinate with the works performed by the Executing Entities safely and in such a manner as to achieve schedule optimization, cost reduction and compliance of the Works quality with the requirements established by the IO [53].

## 4.4 Architect Engineer (AE)

For the supply of the architectural, civil engineering, building-related systems engineering design and follow-up services to F4E throughout the duration of the Project, F4E selected the consortium ENGAGE SNC. The scope covers the project phase from elaboration of the Preliminary Design to the commissioning and hand-over of the Works :

- Preliminary Design, the Tender Design, and the Construction Design;
- Providing technical assistance to F4E in respect of Construction Contract tendering;
- The follow-up and the approval of the execution studies;
- The supervision and monitoring of the Works;
- The technical management of the different Construction Contracts;
- The technical coordination and Site coordination;
- The schedule management and coordination;
- Providing assistance to F4E in respect of acceptance of the Works;
- The constitution of technical and administrative files for obtaining permits and licenses required for the execution of the Works, in particular by Nuclear Safety Authorities;
- Monitoring the general attendance charges (Pro-rata account);
- The definition of the topographic network and the monitoring of the surveying control.

## 4.5 Health & Safety Coordination

The IO and F4E have placed a joint contract to provide the services of an Health and Safety Protection Coordinator (HSPC) during the construction works. This contract is under the authority of the IO Safety Department and F4E BIPS Project team. The HSPC is mandatory for construction projects performed under the French 94 decree. The HSPC will define the H&S rules applicable on site, review and approve the PPSPS, co-ordinate activities from a H&S perspective and ensure the organization of the emergency services. HSPC has responsibility for overall co-ordination and compliance with French Legislation.

The HSPC intervenes at each progress stage of the Works entrusted to the Contractor, in the conditions defined by Act no. 93-1418 dated 31st December 1993 and associated texts, notably, decree no. 94-1159 dated 26th December 1994 pertaining to the integration of safety and the coordination of health & safety protection in the operation of buildings and civil engineering works, modified by the 2003-68 decree, dated 24th January 2003.

The HSPC is responsible for the issuance and regular updates of the “Plan Général de Coordination en matière de Sécurité et de Protection de la Santé” (PGCSPS), (translated as General Coordination Plan for Health and Safety) and the associated volumes.

Technical inspectors will also be designated later on by IO. The technical inspector will intervene at each progress stage of the Works and his mission will be subject to the provisions of:

- The Construction and Accommodation Code (Code de la Construction et de l'Habitation) (Articles L.111-23 to L.111-26, R.111-29 to R.111-42);
- Decree No. 92-1186 dated October 30, 1992, pertaining to the general technical terms and conditions applicable to technical inspection contracts - Ministry of Economy and Finances (official publication dated November 6, 1992);
- Standard NF P 03-100 dated September 1995 “General criteria for the contribution of technical inspection toward the prevention of technical hazards in the field of construction”.

The CMA will no longer lead the H&S function on the Worksite in areas coordinated by CMA, HSPC will now lead H&S function on the whole site (including areas coordinated by CMA).

The Executing Entity shall work in close coordination with the HSPC representatives to implement the safety programme. Executing Entities will report directly to the HSPC and will comply with their requirements.

In the frame of the HSPC contract, the IO has also included a team of on-site health and safety inspectors who will verify the compliance with the safety rules by all the personnel present on the site. This team will work in close coordination with the Executing entities.

The Contractor (Executing entity) remains responsible for the HSE of its own staff.

### 4.6 Mandatory periodical equipment checks

The Executing Entity (when required) will ensure that independent regulatory inspections required under French Law are carried out for items under their scope (such as electrical installation works, cranes, doors, fire detection equipment etc.)

### 4.7 Multiple Executing Entities

The Executing Entity will be expected to work concurrently with other entities in the same geographical area during the performance of the works. This interface will be coordinated by the CMA for zones under CMA coordination and by Engage for zones under Engage/F4E coordination.

## 5. General requirements

### 5.1 French Labour Code

The Executing Entity shall comply with the French Labour Code.

The ITER Project is classified as a Category 1 activity, as per Article L4531-1 of the French Labour Code (ie. above 10 distinct companies and 10,000 man hours, which leads to an obligation for a coordination committee).

Executing entity has to comply with the entire Fourth Part of the French Labour Code : “Occupational Health and Safety at Work” which includes in particular to register with a work health service and to ensure that all workers undergo a medical examination by a French practitionner.

## 5.2 Nuclear Safety

### 5.2.1 *The IO Policy on Safety*

Under Article 14 of the ITER Agreement, the ITER Organisation has certain privileges and immunities but it must observe French national laws and regulations in the fields of public and occupational health and safety, nuclear safety, radiation protection, licensing, nuclear substances, environmental protection and protection from acts of malevolence. The ITER facility is categorized as a Basic Nuclear Installation works ("**INB**") under French law (*Installation Nucléaire de Base – INB-174*). The IO is the nuclear operator of this INB.

As an INB, the ITER facilities are to be built in accordance with the authorisation basis defined in French Decree No. 2012-1248 dated 9 November 2012 authorising the IO to create a basic nuclear facility called « ITER » and the associated Autorité de Sureté Nucléaire ("**ASN**") decision 2013-DC-0379 dated 12 November 2013 establishing the prescriptions applicable to the IO for the design and construction of the licensed nuclear facility INB No. 174 called ITER and modified by the decision 2015-DC-0529 dated 22 October 2015 and modified by the decision 2017-DC-0601 dated 24 August 2017.

The construction activities must comply with these authorisations including the applicable regulations, codes and standards and regulatory directives received at various stages of the construction. As per the INB Order dated 7th February 2012, the nuclear operator is responsible for the final compliance with the defined requirements and as such applies surveillance on the whole supply chain involved in the construction related to the Protection Important Activities. Provisions for Implementation of the Generic Safety Requirements by the External Actors/Interveners are defined in [30]

The Executing Entity is informed that the Works are performed in the ITER nuclear facility identified in France by the number "INB no.174".

The Executing Entity shall demonstrate that his Quality Management System is compliant with the IO quality management requirements and in particular, complies with the INB Order. For each step of the Contract, the Contractor shall provide the corresponding Quality Plans demonstrating conformity with the INB Order.
Strategic objectives of the IO in order to comply with the above requirements are presented in the ITER Policy on Safety, Security and Environment Protection Management" [1].

Nuclear Safety covers the various provisions made at all stages in the design, construction, commissioning, operation and decommissioning of nuclear facilities to protect people and their environment against radiation and the dispersal of radioactive substances. To achieve this, all the stakeholders involved in the ITER Project have to ensure that the installation is correctly built & tested to the required standards and operated within its normal operating envelope. Everyone must understand their responsibility at the time of construction and tests should be performed to contribute to prevention of incidents and accidents occurring later on.

Nuclear safety refers to all technical, individual and organizational measures taken in performing the work to ensure that the installation INB 174 will be able to be operated safely under all conditions.

Nuclear safety culture within the project is evident throughout all project operations and is built on the following fundamental principles:

- Ensuring a common understanding of the key aspects of nuclear safety culture within the organization – all stakeholders understand the importance of adherence to nuclear safety requirements,

- Everyone is personally responsible for nuclear safety
- Leaders from all the stakeholders (IO, the CMA, Contractors …) are the "leading advocates" of nuclear safety culture and demonstrate their commitment both in words and actions
- Providing the means by which the organization supports individuals and teams in carrying out their tasks safely and successfully, taking into account the interaction between individuals, technology and the organization
- A high level of trust is implemented on the ITER Project through relevant and transparent communication
- Cultivating and reinforcing a learning and questioning attitude at all levels of the organization,
- Providing the means by which the organization continually seeks to develop and improve its nuclear safety culture – periodic safety culture assessments are conducted and used as a basis for improvement.

The Executing Entity shall establish and promote an effective nuclear safety culture aligned to the above principles within its own organisation and through its supply chain. All Contractor's personnel must be made aware of them and understand them.

The Executing Entity shall ensure that all Contractor's Personnel involved in the provision of the Works for the Employer have demonstrable skills and understand any nuclear safety implications of failure of the product or service.

The Executing Entity shall implement an induction course describing the nuclear safety requirements (with the support of the CMA). The Contractor shall ensure that all their personnel deployed for execution of the on-site work receive the induction course prior to commencement of the Works.

The Executing Entity shall develop:

- Regular toolbox talks on nuclear safety culture (2 per month as a minimum) for Executing Entities working on PIA/PIC.
- Periodic nuclear safety assessment in order to monitor and maintain the appropriate level of knowledge regarding nuclear safety in their organisation.

### 5.2.2 *Protection Important Component (PIC)*

For the purpose of the ITER Project, a Protection Important Component ("**PIC**"), as per INB Order art. 1.3, is defined as "A component which is important for protecting the interests mentioned under Article L.593-1 of the Environmental Code (nuclear security – i.e. nuclear safety, radiation protection, the prevention and fight against malicious acts, and also civil security actions in the event of an accident –, public health and sanitation or protection of nature and the environment), i.e. structure, equipment, system (programmed or not), material, component or software that is present in the basic nuclear installation or that is under the responsibility of the operator and that implements a function required for the demonstration mentioned under the second paragraph of Article L. 593-1 of the Environmental Code (safety demonstration) or that ensures that this function is implemented;"
Reference [45] lists all the PICs.
The list of PIC applicable to an Executing Entity shall be communicated by its Employer.

### 5.2.3 *Protection Important Activities (PIA)*

As per articles 1.3 of the INB Order, a PIA is defined as an "Activity important for protecting the interests mentioned under Article L. 593-1 of the Environmental Code (public safety, health and sanitation, the protection of nature and of the environment), i.e. activity that falls under the technical or organizational provisions mentioned under the second paragraph of Article L. 593-1 of the Environmental Code or that is liable to affect them;"

In practice, **PIA** means any activity which is related to or can impact a PIC. The PIAs are defined by the IO through the document "List of ITER-INB Protections Important Activities" [44] and Annex 2 – List of PIA for Construction [40]. In any case, the PIAs identify in the section 5.1 of this document apply to all contractors on site.
The Executing Entity shall define and propose in its Quality Plan its own PIAs and put in place an accurate quality management system. The process of identification /definition of the PIA's is defined in the Protection Important Activities and Defined Requirements for all ITER Mechanical PIC Equipement [41].

For each PIA performed by the Executing Entity or one of its sub-contractor (disregarding the level in the supply chain), the Executing Entity must ensure that:

- The PIA is performed in accordance with procedure and using means for meeting a priori the related defined requirement.
- The PIA is tracked to check a posteriori whether the defined requirement were met.

The performer of PIA shall have necessary skill and qualification as per INB order 2.5.5.

### 5.2.4 *Defined Requirements*

As defined in Article 1.3 of the INB Order, the Defined Requirements are "requirement assigned to a protection important component so that it fulfils – with the expected characteristics – the function provided for in the demonstration mentioned in the second paragraph of Article L. 593-7 of the Environmental Code, or to a protection important activity so that it fulfils its objectives as regards this demonstration.
In other words, it means any requirement that has been assigned to a PIC or a PIA so that it may perform the function provided for in the safety demonstration.

The initial list of "**Defined Requirements**" is provided by the IO/DA in the Technical Specifications of the Contract. The Executing Entity shall establish clear procedures, setting the rules for implementation of such defined requirements. The document [20] defines the process of propagation of the nuclear defined requirements for PIC though the chain of external interveners.

### 5.2.5 *Surveillance (INB Order - article 2.2.2)*

Surveillance is performed by IO as Nuclear Operator of the INB 174. Surveillance activities are organized by the IO through Surveillance Plans and programs.

Surveillance undertaken by the IO will not supersede the Executing Entitie's role and responsibility to manage, control and provide the contracted works.

### 5.2.6 *Supervision*

Construction supervision is organized by the CMA as overall site coordination manager for all IO Works contractors.

Note: The role of the CMA is defined in Section 4.2 of this GMS. The CMA does not perform supervision for the works of Executing Entities works to which this document applies (except if otherwise agreed).

### 5.2.7 *Technical Control (INB Order - article 2.5.3)*

The Executing Entity shall put in place a technical control for each activity, performed under the Contract, especially for PIAs.
In the context of Article 2.5.3 of the INB Order, technical control is the act of verification that:

- the PIA has been performed according to the prescriptions and that the result is in compliance with the Defined Requirements.
- Appropriate corrective and preventive actions have been defined and implemented.

Technical Control is mandatory for each PIA.
Parties carrying out technical monitoring for a PIA are distinctly separate from the parties who perform the activities

As per Article 2.5.5 of the INB Order, individuals performing technical controls shall have the appropriate skills and qualifications necessary for the performance of their specific duty. As such, the Executing Entity makes the necessary provisions for training in order to maintain these skills and qualifications for his staff and, whenever necessary, to develop them, and ensures that its supply chain make similar provisions for its own staff

### 5.2.8 *Records (INB Order - article 2.5.6)*

The Executing Entity shall ensure that all the records including those generated by its supply chain are timely completed in accordance with the requirements of each Manufacturing and Test Plan or Inspection and Test Plan and compiled. These records shall be available to the IO and third parties in case of inspection.

The Executing Entity must keep updated records of the results of implemented PIA and their technical control, the related action of verification and the assessment when requested by IO and must provide them to IO and DA (for DA contractors) for documentation management.

The Executing Entity records must be easily accessible and legible by IO, protected, kept under appropriate conditions and archived for an appropriate and justified period of time.

## 5.3 **Subcontracting Rules**

### 5.3.1 *General*

The Executing Entity shall have a process for selection of subcontractors through assessment and analysis of their competencies, facilities and equipment to ensure that they have the capability to conform to the Contract requirements, delivering products and services safely, to schedule, of the correct quality and to the agreed cost.

The Executing Entity shall ensure that all the relevant requirements from this document (GMS for Executing Entities) are cascaded to its Subcontractors and make sure Subcontractors are fully abiding to them.

The Executing Entity shall ensure that each of its subcontractors has a quality system compliant with this document and if applicable, the requirements are cascaded to low-tier subcontractors. The Executing Entity shall issue an assessment statement for each subcontractor.

The subcontractor’s quality documents (including the relevant quality plan) must be approved by the Executing Entity and sent to the IO and DA (for DA Contractors) for acceptance.

The issuance of the Quality Plan may be waived in agreement with the IO Quality Officer and replaced by a Statement of Compliance to the Executing Entity's Quality Plan (see template in appendix A).

The Executing Entity shall ensure that subcontractors do not start work on any contract without a Quality Plan and an Inspection and Test Plan [11] &[18] in place that has been accepted by the IO.

The quality plan shall be compliant with requirements from Section 7.2.

The Executing Entity shall ensure that each of its subcontractor also provide a PPSPS according to Section 6 and a PRE according to Section 6.14.2 and get it accepted before the issuance of any permit to work.

The Executing Entity shall ensure that purchased or subcontracted goods and materials (filler materials, base materials, etc.) are supplied together with their certificate of conformity to the specified requirements.

The Executing Entity shall implement a process for ongoing verification and monitoring of its subcontractors to ensure that they are delivering products and services safely, to schedule, to the specified requirements *(<Not applicable to DA Contractors>) and to the agreed cost.*

The Executing Entity shall provide to the IO/DA for its approval, details and justifications of any proposed increase or reduction of scope of work of its subcontractors or replacement of any subcontractors.

### 5.3.2 *Subcontracting Schedule Approval*

Each subcontractor activities shall be identified in a consolidated schedule issued and updated by the Executing Entity last week of every month as a minimum in addition to participation at weekly CMA led In-processing sessions.

This subcontracting schedule shall contain the following information:

- The item(s) / service(s) / activity or activities to be subcontracted by the Executing Entity, and their associated specifications.
- Deliverable(s) to be provided
- Identification if any of the item(s) / service(s) / activity or activities are considered as a Critical Activity, i.e. an activity related to PIC and/or Quality Class 1 items (See [2] for Quality Class 1 definition).
- Level of subcontracting (L1).
- The name of the entity, including its qualification(s), when known.
- Company Identification Sheet (HELIOS reference)
- Identification if a Subcontractor Acceptance Form is requested for the subcontracted activity and the related reference
- Identification if a subcontractor's quality plan is requested for the subcontracted activity and the related reference
- The reference of the PPSPS and the PRE when requested
- Duration of the subcontract.
- *Value of the works <Requirement not applicable to DA's Contractors>*
- Location of the works (if different from the Site).
- Observations
- The status (approved / refused) of the Subcontractor Acceptance Form (SAF) and the subcontractor's quality plan

- Mobilisation plan / resource plan over time for sub contractors

No part or revision of the subcontracting schedule is to be implemented by the Executing Entity until it has been approved by the IO. Alternative way of notifying small changes to the subcontracting schedule is acceptable if there is no impact on the milestones dates set with IO/DA.

### 5.3.3 *Technical and administrative approval*

For each proposed subcontractor, the Executing Entity shall fill-in a SAF (or corresponding document part of the AD for DA Contractors, as long as it provides sufficient information to serve its purpose).

The SAF shall contain the following subcontractor's information:

- Detailed scope of the subcontracted services / supplies / works (the exact works to be performed by the subcontractor, on or off the site) in order to clearly identify his limits,
- General information about the the subcontractor,
- Subcontractor's financial information.

In addition, the Executing Entity shall submit all the documents listed in the SAF:

- Exclusion criteria documents.
- Technical capability documents. These documents shall be in line with the activity to be performed by the subcontractor and included within the Executing Entity's tender.
- Note: In particular, the Executing Entity shall provide a report describing the scope of the subcontracted services, supplies or works and the roles, activities and responsibilities of the subcontractor. Applicable sections of the Contract and Contract annexes transferred to the subcontractor shall be clearly listed inside this report.
- Human resources data (ARIF [56]+ ID) and documents (qualifications). These documents shall be in line with the activity to be performed by the subcontractor and within his price, after agreement with the IO.
- The SAF shall be agreed with the IO.

The SAF and the associated documents shall be submitted to the IO as a unique document.

The information included in the SAF shall be submitted in the official language of the country where the subcontractor is established. Where the language of such documents is not English, an official translation in English shall be provided by the Executing Entity. Such official translation shall be certified unless otherwise agreed with the IO.

If any information or document is considered as non-applicable by the Contractor, a justification has to be provided.

### 5.3.4 *Subcontractor's Quality Plan Approval*

For each proposed subcontractor whose scope of work is identified as a Critical Activity or upon the IO and DA (if applicable) request, the Executing Entity shall submit the subcontractor's quality plan as a separate document.

This quality plan shall be issued according to the Section 7.2.

For other proposed subcontractors, the Executing Entity shall submit with the SAF a Subcontractor's statement of compliance with the Executing Entity's quality plan, the quality manual of the subcontractor and an organisation note describing at least the following items:

- A full and clear definition of the subcontractor's scope of work.
- The organization of the subcontractor and their links with the Contractor's organization.
- The communication (in particular documentation) exchanges between the subcontractor and the Executing Entity.
- The way the subcontractor will control his activities and the way the Executing Entity will supervise the activities performed by the subcontractor.

### 5.4 Site security

All Executing Entities shall comply with the ITER Site security rules mentioned in Physical Security Protection Management Procedure [33].

The Executing Entity shall work in close coordination with the IO Security section representatives to implement the security rules and to enhance the security culture. Executing Entities will report directly to the IO Security section any event that could affect security.

## 6. HSE Management

### 6.1 Site HSE Requirements

The relevant guidelines for site activities are described in the following management plans, which shall form the basis for management of each discipline:

- Health Protection and Safety General Coordination Plan – ITER Construction Site – Volume 0 – General Safety Rules [3]
- Environmental Management Plan for ITER construction site (PMAE) [47]
- PGC SPS Vol. 1 - IO&F4E (Safety coordination plan for projects under IO and F4E building ownerships) [4]

Site construction activities must meet or exceed French occupational health and safety laws and environmental regulations, and aim for continuous improvement.

### 6.2 Site safety rules/procedures

All Executing entities shall adhere to minimum standards as embedded in PGC SPS Vol1 [4]. The Executing Entity shall follow the Permit to Work Procedure [5].

The Executing Entity shall comply with the ITER Site access procedure [6] and related procedures in order to get access to the ITER site.

The Executing Entity shall ensure that the risk assessment is contained in the PPSPS – refer to [57].

### 6.3 Site HSE organisation and responsibilities

Health and Safety roles are defined in the rules of cooperation [29].

The Executing Entity remains responsible for the HSE requirements of its own staff.

An Inter-Company Health and Safety Committee (CISSCT in French) is established for the ITER Site on the initiative of the Building Owners , according to articles L.4532-10, R.4532-77 and R.4532-78 of the French Labour code, for the operations of buildings. All Executing Entities shall convene in this committee with the IO, DAs (with Contractors on-site).

## 6.4 Worksite HSE training and qualifications

Building Owners recommend Executing Entity to establish a management and records system to demonstrate that their own staff members, subcontractors are SQEP. This will include educational qualifications, work experience and training. Qualifications shall be made available by the Executing Entity and provided to the IO upon request.

Tool Box talks shall be held by the Executing Entity at least once per week. CMA will attend where practicable. Tool box talk are recommended to be recorded.

## 6.5 HSE communication and coordination

The Executing Entity shall coordinate with the IO Health and Safety staff, the CMA and subcontractors' HSE coordinators. To continuously improve safety, the Executing Entity will support site visits and inspections recommended and organised by the IO/DA (or both) representatives and will allow permanent access to the construction worksites. The Executing Entity shall supply a dashboard of basic information and safety report being provided monthly for the 5th working day of the month at the latest. The required information is included in the cooperations rules [29].

Weekly coordination Health and Safety visits will be carried out by the HSPC: actions will be recorded in the dedicated JIRA tool for follow up and close out. Upon situations incidents or critical observations Executing Entities may be requested by IO or HSPC to identify corrective actions, assign them and provide periodical updates on close out. A monthly meeting will be held by HSPC with all contractors to review the previous month's report. These meetings shall be attended by the Executing Entity Managment and HSE.

The instructions for the use and the implementation of the ITER Radio system are described in the reference [22]. [24] outlines the responsibilities of IO and all radio operators, the basic principles, the operating procedures and special conditions of use. IO SHS is responsible for this system and ensures its management.

The ITER Radio System is only for official ITER business. It is primarily for use by security and emergency purposes. After authorization by SHS, this radio trunked system can support the use of hand-held radios used to conduct ITER construction, coordinate operating and commissioning activities and communicate during critical incidents or emergencies on the ITER Site.

The main security and safety objectives of this radio system are to:

- Communicate security and safety instructions to security guards and emergency response team during daily operations
- Improve on scene communication between the Command Post and security guards and emergency response team during normal events and emergencies
- Relay immediate messages and information to stakeholders from and to anywhere on the ITER Site
- Preserve the security of information being transmitted
- Increase security and safety of the lone workers
- Ensure communication in case of general power cut

Finally, any use of UHF between 460MHz and 960MHz on ITER site will be subject to signalling and approval by IO SHS.

## 6.6 HSE inspections, pre-start meetings and audits

All site works will be subject to a pre-start safety meeting and inspection with the HSPC prior to work initiation with the objective of validating the PPSPS prior to works commencement.

All Executing Entities will be subject to regular inspections by the IO, DA or HSPC to ensure compliance with the PGC SPS Vol.1 [4].

Executing Entities shall perform internal HSE evaluations extended to its tiers, who are also involved in the ITER Project. The findings shall be reported in the dedicated HSR jira tool [59].

## 6.7 Occupational Health and Safety

The Executing Entity has a legal obligation as an employer for the organisation of safety for his own team and shall:

- Respect the 9 prevention principles as embedded in applicable cooperation rules document [29].
- Elaborate occupational health and safety policy objectives.
- Give risk prevention proper organization and means.
- Identify hazards and risks for his employees by risk assessment (Document Unique).
- All works must be assessed through the PPSPS in line with PGC SPS Vol.1 [4], or a separate method statement upon HSPC Approval.
- Failure by the Executing Entity to enforce the applicable safety rules will result in the suspension of the works at the Executing Entity's cost, until such time as the failure is rectified. The CMA will intervene in any breaches of the safety rules for the safety of the individual/others/equipment. The Executing Entity's managers shall support the CMA in such instances. Matters that cannot be dealt with on site will be escalated to Works Contract Management and IO or HSPC. The CMA, HSPC or IO TRO for the contract may wish to call an immediate meeting to investigate any such breaches and request remedial actions /reports/retraining/disciplinary action.
- Ultimately, the Executing Entity's failure to comply with the safety regulations may result in the imposition of sanctions and may also lead to the Executing Entity being denied access to the site and to the termination of the Contract/arrangement. This may also apply on an individual basis in case of breach of IO golden rules [31].
- All Executing Entity personnel shall undergo a dedicated safety induction training performed by HSPC within 8 days of commencing works.

## 6.8 Specific Health and Safety Protection Plan (PPSPS)

The Executing Entity shall provide a PPSPS in accordance with PGC SPS Vol.1 [4] requirements. This document shall be sent to HSPC for approval before the joint inspection within the following time frame (and always before the start of Works). The PPSPS shall be approved by the HSPC representative.

- The PPSPS shall be provided at least 10 working days before the start of work.

## 6.9 For subcontractors: 5 days befor the start of work.First Aiders

The Executing Entity shall ensure the permanent presence of one occupational first-aider in accordance with PGC SPS Vol.1 [4] provisions. This rule applies to all Executing Entities on the site. Each first-aider shall be clearly identified, and shall be able to communicate clearly and easily in English with the rescue team

Amongst their first aiders, the Executing Entity shall identify the ones that will be the contact persons for the IO emergency response team to guide them to the incident/accident spots in case of intervention.

French Labour Code Articles R4224-14 to R4224-24 legislates for first aid training, material and signalization.

## 6.10 Alert Procedures

The Executing Entity shall follow the Alert procedure on the ITER construction site and shall liaise with the CMA to identify the most suitable location to shelter his personnel in case of external threats such as nuclear accidents.

During exercises/drills, the Executing Entity shall ensure participation of relevant personnel and incorporate any corrective actions into their procedures. Emergency drills may be held monthly.

Executing Entity HSE personnel and additional nominees will be part of the IO/CMA Emergency Response Team.

## 6.11 HSE Reports

Executing Entity shallprovide the HSPC, each month information regarding its health, safety and environmental performance on the project for its own staff and sub-contractors. This will include:

- Details of any accidents and incidents. These must be notified to HSPC immediately, and at the maximum within one hour, and an interim report and alert must be provided before close of business the same day
- Near miss and potential incident reports
- Details of staff on site and a weekly hours worked total summary with split by trade showing direct and indirect staffs total manhours
- Copies of internal audits or site inspections implemented by the Contractor
- Toolbox talks progress
- Hours worked on site

## 6.12 Signage

As and when required for specific activities, Executing Entities may be required to install, upkeep and remove its own signage. Provisions for such signage activities shall be addressed in the Executing Entity’s PPSPS and shall adhere to the guidelines provided for signage in [43].

## 6.13 Lockout / Tagout

Reference [23] is applicable.

## 6.14 Environmental Protection

As environmental protection has been classified as a PIA for the IO site, the CMA has developed an environmental management system to achieve the environmental targets and performances for the ITER construction site. This system includes the organizational structure, planning, functions and responsibilities, practices, procedures and processes, means and resources.

The ITER Worksite must be exemplary from a quality, safety and environmental viewpoint. The Executing Entities must implement suitable measures in order to eliminate or at least reduce to a minimum any environmental impacts generated by their activities. A continual improvement policy shall be applied.

The Environmental Management Plan for ITER construction site (PMAE) [47] / [48] / [49] / [50] / [51] and [52] has been defined by the IO as owner of the site. The CMA Environmental Protection plan applies [7] and details the provisions to be satisfied by the Executing Entities and its sub-contractors for planning, implementing, monitoring and maintaining an environmental management system on site.

The emergency Situation Inventory are listed in IO Environmental Management System doc 6: Emergency Situations Inventory [52].

The CMA will ensure that the environmental requirements are respected on site through regular site visits, inspections and audits. In case of deviations or anomalies, JIRA observation sheets will be issued by the CMA or opening of non-conformance reports requested according to the severity and frequency of the deviations or anomalies. Both are communicated to IO, tracked and will only be closed after confirming appropriate remedial actions have been carried out by the Executing Entity.

### 6.14.1 *Requirements*

The Executing Entity and its subcontractors must comply with the rules set out in the following documents:

- Environmental Requirements [8]
- Chemical Product Management Procedure [9]

The Executing Entity shall:

- Play an active part in the continual improvement policy by proposing new measures (related to his scope of work) to the CMA environment representatives.
- Comply with the latest approved version of the above documents.
- Instruct his subcontractors of any changes and follow up the implementation of the rules by the Contractor under Contractor coordination.
- Maintain a daily tidy and clean workplace.
- Identify any **ICPE**s (Installations Classées pour la Protection de l'Environnement) that could be induce by its scope of works: the Executing Entity will identify before the beginning of the works, every activity that could lead to a potential ICPE classification due to volume/ flow / power / surface involved based on the nomenclature of Classified

Facilities [54]. The Executing Entity will provide CMA with this information at the earliest stage.

In the case where the Executing Entity's activities lead to an ICPE classification of any activity/plant/facility in its scope of works (see criteria in [54]), the Executing Entity shall be responsible for the preparation of the complete dossier which shall be submitted to CMA for assessment and submitted, at least, by the IO to the relevant French Authorities. The Executing Entity shall take due note of the durations necessary for the French Authorities to process the files. Failure of the Executing Entity to obtain the necessary approvals in a timely manner shall not be a cause for an extension of time or additional cost.

In case of Pollution or overflow of the rainwater drainage network, Ref [28] section 5.2 applies. At revision 3.1 the paragrpah is as follows:

In case of Pollution or Overflow of the Rainwater Drainage Network, the Executing Entity is required to declare any accidental discharges of hazardous materials and other pollutants to the Building owner and the Environmental coordinator. It is also required to implement measures required to stop and contain pollution on the accident site, as well as clean up this pollution thereafter. Lastly, it must see to removing the pollutants according to approved procedures - if there are any - and rectify any negative effects of the discharges by restoring the natural environment.

### 6.14.2 *Environmental Protection Plan ('PRE')*

The Executing Entity shall produce his own Environmental Protection Plan ('PRE') and ensure that each subcontractor prepares his own. PRE shall be approve before works start. This PRE will include the identification of the impacts and risks for the environment that are generated by the Execution entities activities, with the detail of the measures to be implemented in order to reduce these impacts on the environment. A template is given in [39].

The Executing Entity shall also follow the specific requirements on protection of the environment including the following (see details in Environmental Requirements):

- Hazardous product management
- Water and soil pollution prevention including chemicals management, effluents discharge, etc.
- Air pollution prevention including all atmospheric emissions
- Waste management
- Noise pollution prevention
- Order, cleanliness and tidiness
- Ressources and energy consumption management (fuel, water, electricity, etc.)
- Ionizing radiation emission prevention

According to the ISO 14001, the Environmental Protection Plan should recall the objectives and targets covered, the means to implement them (compensatory measures), the schedule of activities, responsibilities and time to achieve goals.

The Executing Entity shall submit the PRE to the IO/CMA for acceptance at least 1 month after the kick-off meeting. No Permit to work can be issued without an approved PRE or an approved Deviation Request.

### 6.14.3 *Environmental Reporting*

Every month the Executing Entity shall collect and provide construction site environmental data to the CMA environmental representatives. The data is to be presented in an Excel spreadsheet template drafted by CMA [58] and submitted for approval by the CMA at least on the 5fth of the following month.

It must include an overall synthesis for each Executing Entity and will contain a minimum of the following data:

- Number of environmental actions assigned by CMA to the Executing entities,
- Number of non-conformities,
- Electrical consumption (kWh),
- Raw water consumption ($m^3$),
- Potable water consumption ($m^3$),
- Fuel consumption (L),
- Non-hazardous waste (tonnes),
- Inert waste (tonnes),
- Concrete water and muds (tonnes), if applicable,
- Hazardous waste (tonnes),
- Recycled waste (wood, metal, cardboard, paper),
- Chemical consumption ($m^3$)

### 6.14.4 *Chemicals Management*

The Executing Entity shall apply and follow the ITER Site rules and as part of it, the IO Chemical product management procedure [9].

Chemical product management on Site is a major aspect of safety and environmental management. Indeed, chemical product characteristics may cause a variety of hazardous situations following the type of use, the quantity used, the place of use, etc.

A common approach allows to:

- Integrate all stakeholders in the process ;
- Avoid work duplication between areas and stakeholders ;
- Integrate both safety and environmental protection aspects ;
- Have a common chemical product inventory on site ;
- Automatize the process as much as possible.

The methodology for managing chemical products used on the construction site consists firstly of a process for acceptance of the chemical product before entrance on site and secondly, a process for managing the inventory of the chemical product as per legal requirements.

Every chemical product is subject to the same procedure, using the standard chemical product acceptance form and inventory form for each product.

Detail of these processes is available in the chemical product management procedure [9].

Other requirements, in particular with regards to retention, are listed in [8].

### 6.14.5 *Waste Management*

Waste management has been classified as a PIA for the IO site. The Executing Entity is deemed to be the producer of any waste material arising from the execution of the work and therefore shall comply with all relevant legislation.

The Executing Entity and its subcontractors are responsible for waste disposal according to the following principles:

- Reduction of construction site waste to a reasonable, justified minimum.
- Treat and optimize all waste produced in the best possible way, in accordance with the Environmental Code and the Prefectural Orders. Waste must be sorted on the worksite in order to manage and recycle the greatest possible amount of waste and to allow ITER Organization to track the waste. For more details refer to [8].
- Waste must not be left on the ground either during or after the works. It is forbidden to burn waste.
- Waste Tracking Sheets must be always transmitted to the CMA and ITER Organization as soon as they are received, and they must be integrated in the environmental monthly reporting to the IO and CMA.
- The Executing Entity may choose to manage its waste by itself instead of using IO facilities in place on the worksite but such solution has to be indicated in the PRE and this must be done with respect for the French Environmental Code and the Prefectural Orders.
- Provision of facilities for Hazardous Waste collection, removal and treatment remain responsibility of the Executing Entity and its subcontractors.

Separate collection of certain types of waste is required in France as per the Decree no. 2016-288 of 10 March 2016. This concerns in particular paper, metal, plastic, glass, wood and “office paper” (art. 3 of the Decree).This requirement appears to apply to all producers of waste, and so is applicable to ITER and to the Executing Entities working on the ITER site. Therefore, the Executing Entity shall sort its waste at the source as per the above Decree.

The following waste categories (with examples) are given below:

Non-hazardous waste (NHW) :
- Non recyclable: household refuse, etc.
- Recyclable: paper, cardboard, plastics, etc.

Hazardous waste (HW) :
- Empty spray cans,
- Contaminated empty cans (oil, petrol etc.),
- Contaminated hoses, used oil filters (routine maintenance of engines), etc.,
- Contaminated cloths and gloves,
- Polluted absorbent materials (accidental spillage), etc.

Inert waste: optimize the transport of earth and other inert materials in order to limit the amount of waste taken to landfill sites and examine any possible recuperation/recycling of soil or other materials that are not to be used as backfill.

# 7. Quality requirements

## 7.1 Quality Assurance

The Executing Entity shall have an ITER approved QA Program or an ISO 9001 accredited quality system in accordance with all the European standards, construction and design rules and French laws and decrees.

In addition, the quality management system shall comply with the IO quality requirements [10].

The Executing Entity shall comply with the technical and the contractual requirements included in:

- The Contract and appendices
- The IO/DA applicable documents, including construction rules and technical specifications
- Applicable French and European regulations, norms and standards.

## 7.2 Quality Plan

*<Requirements not applicable to DA's Contractors>:*

*At least 10 working days before the kick off meeting, the Executing Entity shall produce a Quality Plan in accordance with the Requirements for Producing a Quality Plan [11]. This shall describe how the Executing Entity will implement the ITER Procurement Quality Requirements, as defined in [10].*

<Requirements applicable to All>

The Quality Plan shall cover the whole scope of the Contract including services performed by subcontractors and address all activities performed in connection with the contract. It shall be brief and to the point, while giving sufficient visibility on the control of the activities to be carried out. It will remain a live document and will be updated regularly.

The Quality Plan shall be accepted by the IO/DA before the kick-off meeting. The Executing Entity shall provide each update with the described modifications which have to be sent to the IO/DA for acceptance.

The Organisation of the Executing Entity shall be described precisely, including at least:

- Scope of work
- Description of the measures implemented to answer to the IO requirements; (including clear SMART objectives)
- In case of a consortium or a Joint Venture, a clear description of the roles and responsibilities of the different constituting companies as well as the way the interfaces between companies are managed
- Organization procedures
- Site organization chart; Resources management including SQEP approach & training; Approval and acceptance of procedures; Document Control Management
- Approval and acceptance of Inspection and Test Plans (ITPs); management of quality records
- Coordination procedures
- Change order procedures
- Means of Project Control (Program management and cost management)
- Work progress calculation instructions
- Deviation Request Management

- Non Conformances Management
- Auditing Scheme of the Contractor Management System and his tiers
- Interfaces between Contractor & CMA & IO
- Reference to applicable quality standards
- Methods to be used to evaluate, select and control suppliers and subcontractors
- List of suppliers and subcontractors
- Managing of measurement and test equipment
- Design Management (carring out, controlling, documenting, etc.)

The Executing Entity shall ensure that suppliers and subcontractors do not start services or works without a quality plan in place that has been accepted by the IO.

## 7.3 **Quality Control**

### 7.3.1 *Quality Classification*

The Executing Entity shall comply with the IO Quality Classification Determination [2] or the equivalent DA document. This document defines the quality classes, specifies the criteria for assigning quality classes and defines actions appropriate to quality classes.

### 7.3.2 *Inspection and Test Plan*

The Inspection and Test Plan (ITP) is a document used to demonstrate conformity with the relevant Requirements, evidence is supported by records attached to each step of the ITP *[This document could be recorded under a different name for DA Contractors]*.

Prior to commencement of any manufacturing or site installation, an Inspection and Test Plan (ITP) shall be produced by the Executing Entity and subcontractors for IO review and acceptance. Any change to an approved ITP shall be resubmitted to the IO/DA (or both where applicable) for new acceptance.

The ITP shall comply with the Work Instruction for producing an Inspection and Test Plan for construction [18] or other equivalent DA procedure (for DA Contractors). This ITP shall incorporate the control points required by the IO in the Technical Specification and shall be submitted within 20 calendar days before starting the work. The IO will mark up any additional control points.

ITPs are used to monitor quality control and acceptance tests during the execution of the Contract.

*<Requirements not applicable to DA's Contractors>:*

*The overseeing of the quality control operation by the IO shall not release the Executing Entity from his responsibility in meeting any aspect of this specification.The IO shall ensure a close oversight of the production of his main Executing Entity and*
*subcontractors in accordance with the approved Inspection and Test Plan (ITP). The IOshall insure the quality control supervision of the contractors and subcontractors. This monitoring shall include control points at critical steps in the Executing Entity's plans. The control points shall be integrated into the agreed schedule.*
ITPs shall clearly highlight the PIAs, Technical Controls and PICs.

Drawings, standards, specification, instructions, codes and Executing Entity quality control procedures which are applicable to the ITP shall be clearly identified as to their source, title, number and applicable revision. All drawings, codes and standards referred in the ITP shall be listed in a separate document section. Reference to a standard and/or code shall indicate the

pertinent chapter, section clause or paragraph and edition. Flow diagrams or a separate sequential plan that would enable to clearly define some completion stages, if needed. The applicable procedures shall be mentioned for each ITP phase.

The Executing Entity shall not commence Works prior to confirmation of ITP's acceptance by the IO/DA (or both where applicable).

### 7.3.3 *Control Points*

Several control points shall be added in each Inspection and Test Plan:

**HP (Hold Point)** identifies an operation that must be formally sign-off by IO/DA (or both where relevent) or Third Party demonstrated SQEP representative before the work continues beyond this point.
The work must not continue until the release delivered by IO/DA (or both where relevent) or/and the Third Party. Where physical witnessing is required for a HP, this must be clearly indicated in the ITP for the associated task.
IO/DA or Third Party may add a Hold Point to a specific activity at any time during execution of the work by the Executing Entity.

**NP (Notification Point)** identifies an operation/task that must be notified to the IO/DA (or both where relevent) or a Third Party. The IO/DA (or both where relevent) or a Third Party are invited to attend to the operation/task but if they don't attend at the notified time, the work can be proceeded by the Executing Entity.

**RP (Registration Point)** identifies an activity where the IO/DA (or both where relevent) is not invited to attend but they need to be informed immediately of the results by Executing Entity. The information is delivered by the relevant record signed-off by the Executing Entity. The work can continue when the record has been delivered to IO/DA (or both where relevent).

**R (Review)** identifies a document that must be reviewed by the IO/DA (or both where relevent) or Third Party. Executing Entity may use any additional complementary Control Points they need to support their activity (specific inspection …).

For Hold Points and Notification Points the Executing Entity shall notify the inspection body representative at least 12 calendar days prior to the implementation of the activity for any operation, this can be reduced to 48 hours for on site installation.

Note: On a case by case basis and upon mutual agreement between the different stakeholders, the notification period may be reduced.

### 7.3.4 *Invitation process*

During the implementation of its works, the Executing Entity is in charge of inviting all the involved parties or providing the required information (As described in 7.3.3) to a Control Point as per its ITP. The particular response to this invitation and the inspections management process are agreed between the parties.

### 7.3.5 *Works Procedure*

For any operation that requires on site works, Executing Entity shall issue a procedure referenced in the ITP.
These procedures shall detail equipment to be used, limiting conditions, acceptance criteria, technique, etc., that will be employed to meet the following requirements:

- Applicable regulations requirements
- Standards and codes requirements

- Customer additional requirements

All these requirements are defined in the technical specification.

### 7.3.6 *Pre-Inspection Meeting*

The Pre-Inspection Meeting shall be the first sequence of each ITP. After notification by the Executing Entity, the IO/DA or his representative shall lead the Pre-Inspection meeting.

This meeting can be organized at the Executing Entity office or directly on site or remotely. The following Executing Entity representatives shall attend the meeting:

- quality control department,
- field construction team leader,
- department responsible for sending the notifications.

The main objectives of this meeting are to:

- Verify that all the documents referred in the Quality Plan and ITP are approved with the expected
  revision before to commence the field works. Otherwise, conditions on the commencement shall be defined.
- Verify that all the tools planned to be used during execution of the ITP are calibrated
- Verify that all personnel involved in the execution of the ITP are demonstrated SQEP: welders, NDT etc.
- Ensure that Executing Entity stakeholders know the quality expectations and processes
- Especially the invitation process for control points, the main QC interfaces between the Executing Entity and the stakeholders
- Documentation database utilization, NCR; specific risk on quality of the works, any other relevant subject.

### 7.3.7 *Radiographic Test requirements*

The Executing Entity shall provide on a weekly basis, a three weeks look ahead plan for its radiological test activities that shall be performed on night shift (except where otherwise agreed as per [17]).

The Executing Entity shall be responsible for its own radiographic source storage according to the IO procedure [17].

All Radiological Tests performed in the perimeter of the ITER Site shall comply with the requirements described in the working instruction “Organization of radiological tests on ITER Construction Site [17].

The Executing Entity is required to perform digital RT or to digitalize any radiographic film. The digital films shall ensure the same level of quality than the RT films and shall conform to the applicable standards.

The Executing Entity shall be responsible for managing the schedule of radiography to meet his contract requirements while maintaining safety and co-activity on site. In particular, the Executing Entity shall provide on a weekly basis, a three weeks look ahead planning for its radiological tests on night shift.

The Executing Entity shall consider qualifying the use of a technology where suitable to minimise exclusion zones and maximise opportunity for radiography activities on site (An example of techonology allowing the aforementioned is Gamma-Prox from the company Institut de Soudure Industrie).

The Executing Entity is required to improve the traceability of radiographic tests through the use of an anti-counterfeit seal fixed on the equipment close to the weld which guarantee the proper identification of the weld and traceability with the film, such as BE-tag© from the company BEWEIS or equivalent.

### 7.3.8 *On-site operations and tests*

Only Suitably Qualified and Experience Personnel (SQEP) shall perform construction works requiring special skills.

On-site operations and tests are covered by the ITP. Each Executing Entity shall implement his own QC, including Technical controls and tests, in accordance with the approved ITP and procedures.

The ITP is a "workplace" floor working document using an accepted printed hard copy. The document shall be accessible directly in the field by the resources in charge to carry out the different actions.

The Executing Entity shall complete the ITP on site with the following information:

- Check the version of the procedure or other applicable documents applied for the associated operation
- Date at which the operation has been performed
- Name (capital letters using the Latin alphabet) and wet signature of the operator
- Status of the control (conform, not conform)
- Reference of the record and possible FCR, RFI, NCR or other relevant document

Use of stamps instead of names is allowed. Stamp identification shall be provided on the ITP or in separate report.

*<Requirements not applicable to DA's Contractors>*
*All the signatures shall be completed in the ITP for an operation before the Executing Entity is allowed to move to the next task.*

<Requirement applicable to All>

The criteria for acceptance of any measurement or test shall be provided in the Inspection and Test Record (ITR) attached to the relevant sequence of the ITP and uploaded in the applicable database.

Regarding the welding and NDE activities, the Executing Entity can be required to use a welding management system and associated database currently in development for the ITER project. In this case all welding input data, welders' activities and related ITRs shall be uploaded in the system.

*<Requirements not applicable to DA's Contractors>*
*In order to meet the above requirement to complete an ITP task before to move to the next one, the related ITR shall be uploaded in the system in real time.* The ITR templates shall be issued by the Executing Entity and included in the associated works procedure.

### 7.3.9 *Final documentation*

After completion of the works, the Executing Entity shall issue a mechanical completion dossier, see details in section 14. Among others, this dossier shall compile the completed ITPs and associated ITRs, Requests For Information, Field Change Requests, Non-Conformance Reports, Deviation Requests, Calibration certificates, material certificates. This dossier shall be uploaded to the documentation Database.

## 7.4 Audits and Inspections

If and when required, audits, inspections and surveillance visits of the Executing Entity's activities or its sub-contractors may be organized by either IO/DA, notifiable bodies or the French Nuclear Authority without prior warning.
The Executing Entity shall grant access rights to IO/DA and regulatory body representatives to its offices, facilities and records.
The Executing Entity shall flow this requirement down in its procurement documentation to its subcontractors to allow IO/DA(or both where applicable), the notifiable bodies and the French Nuclear Authority to also perform the above actions in their premises.

After each audit, inspections or surveillance visit, planned corrective actions shall be defined, when appropriate. Follow-up actions shall be taken in order to check that each corrective action has been well implemented.
The Executing Entity shall perform internal quality audits extended to its tiers, and for this purpose will submit a rolling program for these audits to the IO/DA (or both where applicable) once per year. The findings of these audits will be submitted to the IO/DA (or both where applicable) once completed with appropriate action plans.

## 7.5 Measurement and Test Equipment

Executing Entity shall issue a specific procedure which covers the provisions for calibration and control of all Measuring and Test Equipment.

The Executing Entity ensures that all measuring and test equipment used in connection with the contract is suitably identified and controlled. These arrangements are:

- Unique identification of all such equipment
- Method of indicating and recording the calibration status
- Method and periodicity of calibration against measurement standards traceable to international or national measurement standards
- Maintenance of calibration records
- M&TE shall be traceable to its application and use
- Actions in the event of measuring and test equipment being found to be out of calibration or otherwise unfit for its intended purpose.

Also, this procedure shall indicate for each type of M&TE:

- Applicable standard for calibration & control
- Frequencies for calibration according to national standard
- Frequencies for control according to reference sample / block gauge
- Reference of internal procedure / instruction for control

The Executing Entity shall utilize a storage room for his M&TE. Requirements of the storage room (e.g. ambient conditions) shall be define in the M&TE procedure.

A master list of all M&TE shall be maintained by the Executing Entity.

The Executing Entity shall notify IO/DA of any product that may be affected by the failure of measurement and test equipment or by the measurement and test equipment failing recalibration. The Executing Entity shall evaluate the impact on product affected by such equipment; this product shall be treated as nonconforming product until demonstrated otherwise.
The legal requirement is defined by the French Order 1/3/2004 including details of frequency and typology of tests (e.g. dynamic, static and visual inspections). For instance, all

lifting equipment and attachments shall undergo periodical inspections and testing.

### 7.6 FME (Foreign Material Exclusion) Management

Foreign Material Exclusion (FME) is a system of arrangements to prevent the uncontrolled introduction of foreign material (materials such as residue, dirt, debris, plastic, tools and equipment) into open systems and manufactured components to ensure that those systems and components can function fully and reliably as per their design intent. FME is of particular importance in the nuclear environment because:

- Many systems and components installed in nuclear environments play a direct or indirect role in maintaining the safety of plant and process.
- Many systems and components are installed in areas where access to replace failed components or make repairs to the components is very costly and difficult.

FME management requires that individuals think through activities before they are performed to prevent the introduction of foreign material. In addition to these conscious efforts, a number of other key principles and expectations underlie all work to be performed in the installation.
Workers must recognize when they are about to perform an activity that can generate foreign material. Any drilling, cutting, grinding, machining, filing, lapping, and other such activities generate small particles of foreign material that require attention. All foreign material created must be captured or otherwise contained. Action must be taken to prevent the possibility of spreading the material.

The Executing Entity shall develop appropriate arrangements in order to avoid the introduction of uncontrolled “parts” into systems or components.

### 7.7 Management review

The Executing Entity shall provide the IO/DA, upon demand, copies of management review records relevant to the Contract scope of Works. In that case, management review output shall identify responsible persons and due dates for completion of agreed actions.

### 7.8 Lesson Learnt

The Executing Entity shall have arrangements to capture relevant lessons learnt and to share these with the IO/DA. This has to include incidences of CFSI.

## 8. Meeting Management

*<Requirement not applicable to DA’s Contractors>:*

*During the execution of the works, the following meetings will be implemented by the IO.*

*<Requirements only applicable to DA’s Contractors>:*

*IO recommends the DAs and DAs’ contractors to implement the selected meetings to follow .*

*End of section only applicable to DAs’ Contractors.*

All these meetings will take place on ITER Site. A representative of the Executing Entity shall attend all the meetings on ITER Site.

| Type of Meetings | Description | Frequency |
|---|---|---|
| Contract kick- | The Executing Entity shall participate in the kick-off | Once, at start |

| Type of Meetings | Description | Frequency |
|---|---|---|
| off meeting | meeting as required by the IO/DA.<br>The IO/DA will arrange this high level meeting. It gathers the main actors of IO/DA (both where applicable) and the Executing Entity and its aims are:<br>• Reminder of the general context of the Contract and the organization of the ITER construction<br>• Reminder of the main objectives and principles of the Executing Entity's scope of works<br>• Presentation of the organization to be put in place by the Executing Entity to successfully perform his duties for each mission<br>• Presentation of the contractual mechanisms implemented on the contract<br>• Highlighting of the project success factors and the Executing Entity's proposals to implement them<br>• Review of the applicable documents<br>• Define the interfaces management arrangements<br>• Confirm the contractual communications required (monthly report, meetings, invoicing …)<br>• Define the quality assurance and quality control arrangements<br>• Confirm the project control procedures (including expectations on programme, cost, risk & opportunities updates …)<br>• Reporting of milestones progress<br>• Miscellaneous questions<br>• Etc.<br>Minutes of the meeting to be written by IO. | of the Contract |
| Early warning meetings | These meetings should allow the Executing Entity to make the IO/DA aware of important unexpected issues which may have a significant impact on activities in the area.<br>Minutes of meeting to be written by the Executing Entity | Ad hoc |
| Ad-hoc meetings | In the course of the project, whenever considered necessary by the IO/DA, and after agreement between the parties, specific actions requesting dedicated meetings will be launched. The Executing Entity shall commit to participate in these meetings which may, potentially, take place at external locations. Minutes of meetings to be written by the organizer. | Ad hoc |
| *<Requirement not applicable to DA's Contractors>:* | | |
| *Construction progress meetings* | *Construction progress meetings shall be arranged by the IO to monitor the progress of the construction and to review the following key highlights for the month:*<br>• *Health, safety & environmental statistics & KPIs* | *monthly* |

| Type of Meetings | Description | Frequency |
|---|---|---|
| | • *Nuclear safety (KPI on induction, toolbox talks, assessment and action plans)*<br>• *Key progress and key events of last month*<br>• *Technical and contractual issues*<br>• *Schedule monitoring to enable site coordination (follow-up of the main and specific milestones), recovery measures*<br>  ○ *Level 3 (IWP level) Programme showing baseline vs current position by building for Construction Activities.*<br>  ○ *3 months look-ahead*<br>  ○ *Milestone progress*<br>  ○ *Take over progress*<br>• *Earned value achieved (planned value, earned value, cost variance, variance at completion explanations ...)*<br>• *Quality assurance (through indicators and feedback on non-conformances, deviations requests, pending documents, audits, lesson learnt, completion...),*<br>• *NCR Progress*<br>• *Risk management*<br>  ○ *Top 5 risks – include risk title, risk description, proximity, probability, impact (cost & schedule), mitigation plan and timeline for completion*<br>  ○ *In the period – new risks, closed risks, emerging risks*<br>  ○ *6 months look-ahead – key risks over the next 6 months and summary of mitigation plans.*<br>• *The same for opportunities*<br>• *Human capital*<br>  ○ *Resource profile KPI*<br>  ○ *6 months look-ahead – planned mobilisation and demobilisation of resources*<br>• *Explanation of variances and associated project impacts / mitigation measures, interfaces management, cost & schedule.*<br>• *Feedback on the operation of the site construction.*<br>• *Commercial / Contractual issues (early warnings ...)*<br>*Minutes of meeting to be written by the IO.* | |
| *Technical meetings* | *The Executing Entity shall, at the request of the IO or by his own request, participate in technical meetings necessary to prepare the execution of the works and to* | *Ad Hoc* |

| Type of Meetings | Description | Frequency |
|---|---|---|
| | *resolve technical issues.*<br>*These meeting include involvement in the collaborative Integration Cell meetings to resolve technical interface issues using input from the Executing Entity's construction experience.*<br>*Minutes of meeting to be written by the IO.* | |
| *Commercial meetings* | *Ad Hoc*<br>*Meetings where specific contractual related issues will be treated.*<br>*Minutes of meeting to be written by the IO.* | *Ad Hoc* |
| *Contract performance progress meeting* | *The Executing Entity follow-up meetings shall be arranged by the IO; they should gather at least the relevant IO contract procurement officer, the concerned IO contract responsible officer and the Executing Entity's representatives. This meeting will be chaired and recorded once per month by the IO and should be aimed at general contract progress, identifying any issues and practical solutions and preparing technical and contractual documentation for forthcoming workloads.*<br>*The Executing Entity shall presents, with the support of a monthly report:*<br>• *Key progress*<br>• *Key events*<br>• *Main forecasted activities and events for the next period*<br>• *Technical and contractual issues*<br>• *Early warnings and risk register*<br>• *Invoicing status*<br>• *KPI's*<br>• *Bonus / Penalty progress*<br>• *If applicable in the contract, estimated price at completion and variance with the target price*<br>*Minutes of meeting to be written by the IO.* | *monthly* |
| *Construction readiness review* | *The IO will arrange and manage Construction readiness reviews, based on the Executing Entity's deliverables and other works prerequisites. The main objective of these reviews is to confirm that all prerequisites to construction are met (or under control) and refine the forecast of the start of construction date.*<br>*Minutes of meeting to be written by the IO.* | *Ad hoc according to the Works schedule and to the Construction Work Packages* |
| *Quality Coordination Meeting* | *The IO QC organizes a Quality Coordination meeting in order to arrange the supervision activities and the agenda includes:*<br>• *Quality Activities of past week*<br>• *Quality Planning of this week* | *Weekly* |

| Type of Meetings | Description | Frequency |
|---|---|---|
| | • *Discussion of critical quality issue & follow up*<br>• *Status of Quality pending* | |

During the execution of the works, the following meetings will be implemented by the CMA. All these meetings will take place on ITER Site. A representative of the Executing Entity shall attend all the meetings on ITER Site. Minutes of meetings will be issued by the CMA after each meeting.

| Type of Meetings | Description | Frequency |
|---|---|---|
| Coordination meetings | The Executing Entity shall participate in daily & weekly coordination meetings, when required.<br>The CMA organizes weekly site construction coordination meetings in order to coordinate and ensure safe and smooth delivery of all works in the area: to do so, the agenda includes:<br>• 3 week look aheads review<br>• 3 months look ahead schedules<br>• 1 year look ahead schedules<br>• Executing Entity's staff and main tools on site<br>• Issues encountered and solutions implemented<br>• Construction site organization feedback including health & safety and environment aspects<br>• Coordinate the works between the different Contractors and Executing Entities<br>• Forecasts for delivery, logistics and activities for the following weeks<br>• Check that all operational prerequisites to works (health and safety measures, workers access, specific authorizations, access to delivery points …) are cleared [55].<br>Analysis of the specific constraints identified on the schedules issued by the Executing Entity.<br>Minutes of meeting to be written by the CMA. | Daily, Weekly and Monthly |
| CISSCT (French Inter-Company Health and Safety Committee) | The Executing Entity shall attend inter-company health and safety committee meetings (Collège Inter-Entreprises de Sécurité, de Santé et des Conditions de Trava–l - CISSCT) chaired by the HSPC and be part of the progress of this meeting by bringing the information requested<br>HSPC and Inspection meetings as required by French Law. | |

| Type of Meetings | Description | Frequency |
|---|---|---|
| Meetings | Minutes of meeting to be written by the HSPC. | weekly / daily |
| HSPC | The Executing Entity shall attend all meetings with HSPC and the Legal Inspector considered necessary by one of the entities for Health and Safety issues.<br>Minutes of meeting to be written by the HSPC. | As required |
| Monthly Safety meeting | In depth review of the monthly report. Action plan ahead for the next month | Monthly |
| Weekly Safety meeting | The purpose is to review the weeks performances and discuss on issues. The attendees are the Executing Entity Management and HSE. | Weekly |
| Quality Coordination Meeting | The IO QC organizes a Quality Coordination meeting in order to arrange the supervision activities and the agenda includes:<br>• Quality Activities of past week<br>• Quality Planning of this week<br>• Discussion of critical quality issue & follow up<br>• Status of Quality pending<br>Preparation of minutes of meeting to be done by the Executing Entity<br>Review and confirmation of minutes of meeting to be done bt CMA and / or IO | Weekly |

# 9. Project Controls

The Executing Entity shall adhere to the project control principles and requirements described in the following sections.

## 9.1 Schedule Management

The Executing Entity shall develop the schedule in Primavera P6 (version 16.2.3 or higher) for their activities. The schedule shall be issued to CMA for site coordination purposes.

The Executing Entity shall show in the schedule all the required tasks to cover their full scope, including:

- Milestones
- Lifting and handling, indicating equipment needs;
- Deliverables activities;
- Manufacturing and procurement;
- Works preparation and mobilizations;
- Site installation works
- Tests and Inspections including mechanical completion milestones;

- Logistics and scaffolding requirements indicating equipment needs.

The structure of the Executing Entity schedule shall abide by the following rules:

- Construction Detail Work Schedule (C-DWS): this is the responsibility of the IO/CMA. The level of detail of this schedule is at the CWP. In other words, the activity in the C-DWS is a CWP.
- Works Schedule: this is the responsibility of the Executing Entity. This schedule shall de developed by the Executing Entity in Primavera P6 at the lower level to help coordination activities per area. The Executing Entity shall provide a monthly update in P6 electronic format (XER) and in PDF format. Any schedule shall be communicated with an explanatory note.
- The cut-off date (data date) is the last day of the month at 23:59.

The Executing Entities schedule shall be resource loaded with direct hours by trade types relevant to the nature of the work planned to be carried out.

Every time it is submitted to the IO/CMA, the schedule will include a narrative in pdf format explaining:

- Assumptions made when developing the schedule
- Any drawings / illustrations needed to explain the sequences and contents of the schedule
- Reference documents (e.g. relevant Contractual documents, Procedures, Design documents, previous versions)
- Risks and opportunities associated with the schedule
- Description of the Critical Path
- Description of changes from previous schedule submission, progress achieved since previous submission, description of possible delays, impacts and recovery actions
- Each modification on the critical path during the contract execution needs to be supported by a narrative.
- Description of calendars, labour and non-labour resources, external dependencies.

Time unit shall be set to days. Calendar settings shall reflect work patterns and include holidays, public holidays, expected site closures etc.

The following settings and rules must be respected by the Executing Entity:

- The scheduling software (P6) language shall be set to English
- date format shall be set to 27-Jun-17
- Activity name shall be long enough to avoid confusion on scope (for example action verb, equipment or line ref, location, discipline). It is a good practice even if this involves repeating some information several times.
- Activities shall be logically linked, and constraints on dates shall be avoided. All activities shall have at least 1 predecessor and 1 successor except minimum number of start or finish milestones (start of contract, delivery, end of contract, external dependency)
- The % complete column shall be shown on the pdf
- No remaining work shall be planned in the past (prior to the data date), and no actual work shall exist after the data date.
- The total float column shall be added on the pdf

- The calendars applied to the Executing Entitys schedule activities should be defined clearly with consideration of number of shifts, weekends and holidays, bank holidays, Iter Site closure days.
- Calendar names in P6 shall start with Executing Entitys name with max 10 digits. Example [EXECUTINGENTITY1 - Default calendar 5d x 8h - 1 shift work on Iter Site]
- Activity code names in P6 shall start with Executing Entitys name with max 10 digits. Example [EXECUTINGENTITY 1 - Supervisor Name]

## 9.2 **Cost Management**

### 9.2.1 *Cost estimating and budgeting*

*<Requirements not applicable to DA's Contractors>:*

*The Cost estimates will be issued with the CWPs developed by the CMA through Smart Plant Construction. The Executing Entity will review the CWP and provide a list of IWPs and associated estimates per IWP using the schedule of rates in the Contract for review and acceptance by CMA. Level of details must be as per the contract pricing sheet with assumptions listed in the preambles used at tender stage.*

*Once approved by the CMA, the estimate for the IWP becomes the IWP approved budget.*

### 9.2.2 *Earned Value Analysis*

*<Requirements not applicable to DA's Contractors>:*

*Each month, the Executing Entity shall perform an earned value analysis, at a contract level, using the following data:*

*BCWS (Budgeted Cost of Work Scheduled), also called PV*
*BCWP (Budgeted Cost of Work Performed), also called EV*
*ACWP (Actual Cost of Work Performed), also called AC (for reimbursable contracts only)*
*CV (Cost Variance), Calculation EV – AC (for reimbursable contracts only)*
*SV (Schedule Variance), Calculation EV - PV*
*CPI (Cost Performance Index, Calculation EV / AC (for reimbursable contracts only)*
*SPI (Schedule Performance Index, Calculation EV / PV*

*This analysis shall be reflected on the reports sent by the Executing Entity as per section 9.3.5.*

### 9.2.3 *Forecasting*

*<Requirements not applicable to DA's Contractors>:*

*The Executing Entity shall calculate the Estimated Price At Completion (EPAC) cost per CWP based on:*

*Actual costs to date (for reimbursable and remeasurable contracts),*
*Estimated costs to complete for work remaining (for reimbursable and remeasurable contracts)*
*Productivity to date (for reimbursable contracts)*
*Trends (potential for a change)*
*Changes*
*Early warnings*

*The explanation of the calculation of EPAC shall be provided in the cost report and be consistent for all cost reports.*

## 9.3 **Reporting**

### 9.3.1 *Reporting calendar*

The IO/DA and the Executing Entity shall agree a reporting calendar at the start of the execution works.

### 9.3.2 *Schedules Reporting*

The Executing Entity shall submit one schedule with different layouts to be issued at the same time as the usual weekly or monthly reports:

- Level 1 = General schedule
- Level 2 = 3 months look ahead based on monthly schedule layout
- Level 3 = 3 weeks look ahead based on weekly schedule layout
- Level 4 = Daily detailed schedule

All the schedules need to be provided with assumptions (adjusted if needed in comparison with the previous version), with a narrative supporting the relevant details and a red line.

### 9.3.3 *Labour reporting*

The Executing Entity shall report on a monthly basis the manpower histogram per building.

# 10. **Project Risk and Opportunity Management**

## 10.1 ***Risk and Opportunity Management***

*<Requirements not applicable to DA's Contractors>:*

*The Executing Entity shall identify and manage pro-actively risks and opportunities to its delivery of the scope associated with its contract.*

*Risks and opportunities are managed by an iterative process of identification, assessment and response.*

*Risks are qualitatively and quantitatively assessed as soon as possible following identification to determine their inherent exposure. Risks are assessed for their potential to affect the Executing Entity's ability to perform the Works or the Works itself. These assessments are reported by the Executing Entity to the IO.*

*Risks and issues on the risk register are managed by the Executing Entity in a pro-active manner:*

- *A response strategy and action plan is identified for each risk by the Executing Entity in liaison with the IO*
- *An assessment based on the response strategy and action plan is performed to determine target residual exposure*
- *Control actions are identified for, and implementation responsibility assigned to the person best placed to undertake the action(s);*
- *Post-action assessments are performed to determine if further actions are required;*
- *Contingency plans are developed and proposed for risks that cannot be reduced to an acceptable level;*

*The definition of managing risks is:*

- *All risks and opportunities are recorded in a risk register. The following details shall be documented per risk in the risk register:*
  - *Risk unique Identification*
  - *Risk description – description of the condition for the risk to happen and the consequence*
  - *Date raised*
  - *Risk status: open, closed*
  - *Risk owner*
  - *Probability (ranking from 1 – very low, 2 – low, 3 –medium, 4 – high, 5 – very high)*
  - *Impact (ranking from 1 – very low, 2 – low, 3 – medium, 4 – high, 5 – very high)*
  - *Response strategy*
- *Risks: mitigate, accept with contingency, avoid, etc.*
- *Opportunities: enhance, accept, exploit, share, etc.*
  - *Action plan*
  - *Action owner*
  - *Action review date*
- *All risks are ranked in terms of probability and impact.*
- *Risk response strategies are identified per risk: mitigation, acceptance with contingency etc.*
- *Action plans derived from the risk response strategies to be realistic and embedded in the Executing Entity plans with action owner assigned.*
- *Risks & opportunities to be monitored and updated each month to demonstrate relevant management of the registers*

*The Executing Entity produces a risks & opportunities management plan to describe the process and responsibilities for his implementation.*

## 10.2 **Reporting**

*<Requirements not applicable to DA's Contractors>:*

*Executing Entity shall send the updated risk register in Excel and PDF formats (template to be provided by the IO), with risks ranked with highest impact and highest probability order, on a monthly basis as part of the monthly reporting obligations.*

## 10.3 **Early Warnings**

*<Requirements not applicable to DA's Contractors>:*

*Should any unforeseen event, action or omission directly or indirectly hamper execution of the Contract, either partially or totally, the Executing Entity shall:*

- *Warn the IO as early as possible if it identifies risks that may impact the proper execution of the Works;*
- *Immediately and on its own initiative record and report to the IO in writing and as soon as possible but not exceeding (3) calendar days after he became aware (or should have become aware) of such event, action or omission;*
- *Provide a report which shall include a description of the problem or the risk and shall indicate the date on which it started and a remedial action proposed by the Executing Entity to ensure full compliance with its obligations under the Contract. Such a report*

*shall be submitted to the IO within ten (10) calendar days, unless agreed otherwise by the Parties.*

*Following such early warning, the IO and the Executing Entity will meet as soon as practicable to discuss the matter and agree a remedial plan.*

*In any event the Executing Entity shall give priority to mitigating the consequences and solving the problem rather than determining liability.*

*The above provisions shall not constitute a waiver of the Executing Entity's liability under the Contract.*

*In case the agreed remedial plan results in a change to the Contract, such change will be implemented as a variation or an amendment as per the change management procedure.*

*If within a period of thirty (30) calendar days after it became aware (or should have become aware) of such event, action or omission, the Executing Entity has not complied with the above provisions, it shall be precluded from making any claim resulting from such occurrence.*

# 11. Data and Documentation Management

## 11.1 Document and Data Exchange

*<u><Requirements not applicable to DA's Contractors>:</u>*

*The exchange of all quality, technical, management documentation and information between IO and the Executing Entity must be conducted through and between, the Contract Manager in charge of the Contract and the Executing Entity's technical responsible person.*

*The Executing Entity shall be responsible for completing all documentation relevant to the Contract in the IO's document management systems here below described. Before being distributed, documents and data must be verified by individuals not involved in their drafting, and approved by the Executing Entity.*

*The Executing Entity shall provide a documentation schedule and shall not commence performance of the Contract until the documentation schedule has been approved by IO in writing.*

*The Executing Entity manages a list of documents by listing all the documents issued and to be issued and specifying the responsibilities for their execution and their internal approval. This list also specifies acceptance responsibilities including any external certification body required by the IO. It is accompanied by a timetable for transmission of documents for the IO's acceptance.*

*This list is transmitted to the IO for acceptance. This list with any update is presented at each progress meeting.*

*It is updated as often as necessary.*

*For example:*

- *Each identification of a new document to be issued,*
- *Each issue documents*
- *Each progress meeting.*

*The Executing Entity shall keep all necessary documents and technical information relating to the Contract and subcontracts for monitoring, quality assurance controls, checks and audits. If so required, the Executing Entity shall provide copies of such documents for the use by the IO.*

*The Executing Entity shall at his own cost store all documents relating to the Contract for an initial period of ten (10) years after the payment of the final balance of the Contract Price or, if the IO so requires, the Executing Entity shall at his own cost transfer the documents to the IO.*

*The Executing Entity shall use its own documentation management tools and process. The codification of the Executing Entity documents shall comply with the numbering system defined in section 16.*

*For each document, the modifications compared to the older version must be clearly identified.*

*Special processed records such as radiographic film, electronic media (such as magnetic media, optical media), archival samples, and photographs shall be handled and stored to preclude damage. At a minimum, the Executing Entity's information for proper handling and storage should be used in preparing proper controls for these types of records. When transmitted to the IO for final storage, records in special formats should be converted into high-quality digitalized documents to allow long-term storage, retrieval and access.*

## 11.2 **Time frame for the Executing Entity's documentation approval**

*<Requirements not applicable to DA's Contractors>:*

*All Executing Entity's documentation produced for fabrication or site installation must be reviewed and accepted by IO before the Works can commence:*

*Unless otherwise specified, the Executing Entity's documentation must be reviewed by the IO within 28 calendar days as follows:*

- *The review duration shall start after receipt of the Executing Entity's documentation compliant with the Executing Entity's transmission sheet.*
- *The Executing Entity's transmission sheet must be sent by the Executing Entity to the IO at least 10 calendar days prior to the issuance of the actual Executing Entity's documents.*
- *After receipt of the reviewer's comments, the Executing Entity shall update and submit their actual documentation within 10 calendar days.*

*The Executing Entity shall return redline mark-ups and as-built drawings 20 calendar days after the mechanical completion.*

## 11.3 **CAD**

*<Requirements not applicable to DA's Contractors>:*

*The Executing Entity shall assume normal, good engineering practices, and comply with the CAD Data requirements specification for the Mechanical Handling Equipment [21].*

## 11.4 **Documentation Control**

*<Requirements not applicable to DA's Contractors>:*

*Documents and data generated during the execution of the Contract shall be handled electronically and entered into the appropriate IT system (Smart Plant, IDM, or other tools provided by ITER) as defined in section 16.*

*Documents and data shall not be distributed or published without explicit authorisation from the IO.*

## 11.5 **IO Acceptance**

*<Requirements not applicable to DA's Contractors>:*

*For deliverables that require the acceptance of the IO before application, the internal approval by the Executing Entity of these documents must be made before transmission to the IO. Document verification must be done by SQEP persons different from those who prepared the documents.*

*In response, the IO provides an Acceptance Form (AF) that determines what action to take based on the following criteria:*

> ***Acceptance (A):*** *The Executing Entity can apply the document.*
>
> ***Non-Acceptance (NA)****: The Executing Entity shall revise the document and incorporate the comments of the IO and forward it to the IO again for comments. The version of the document is updated.*
>
> ***Acceptance with Comments (AC):*** *The Executing Entity can apply the document but an updated version shall take into account the comments and be sent to IO for review within 20 (twenty) working days.*
>
> ***Refusal (R)****: By this notice, the IO refuses to analyse the document, because the content is too incomplete, not accurate, or non-compliant with the requirements. The Executing Entity shall complete the document and re-issue it to IO for comments. In that case, the timing is not modified. The IO can open a NC to the Executing Entity.*

*The quality system of the Executing Entity shall ensure traceability between the version of the document in force and the AF of the IO.*

*The Executing Entity shall follow and monthly update an On Quality Delivery ("**OQD**"). The OQD counts the number of comments looped by the IO for each document. 95% of the documents shall be accepted by the IO in less than one loop of comments.*

# 12. **Change and Non-Conformity Management**

## 12.1 **Change Management**

The site construction field change management procedure [26] is the reference document for all construction worksite team members performing activities related to changes of the technical and construction worksite baselines and configuration items, during the planning, mobilisation, execution, and closing of site construction work. Executing Entities shall comply with this procedure (or where applicable: with the DA's process).

Utilising configuration and baseline management processes, the Executing Entity shall support the IO in close partnership to control construction changes and measure progress. IO will communicate any changes to the Executing Entity, (or where applicable: to the DA, which shall then propagate it to the executing entity) and oversee their implementation of rules and procedures.

Where justified, an order to stop the Works (a "**Stop Work Order**") shall be enforced until such time a resolution on the change is established. The Stop Work Order shall be proposed by the IO or where applicable: to the DA, which shall then propagate it to the executing entity.

Any change with an impact on the contract conditions (milestones, cost and quality requirements) shall be prior approved by the IO/DA. In that case, the change shall be confirmed through a variation sent by the IO (Or via the appropriate DA's process where applicable).

## 12.2 **Non-conformance (NC)**

Non-conformances (NC) may be due to:

- A failure to comply with quality, safety, regulatory, technical, project, management, product, process, or legal requirements
- A failure of one or more characteristics of a product (a system, sub-system or component) to meet specified requirements
- Any non-compliance with a requirement of this specification or other applicable documents

In case of non-conformance, the Executing Entity shall apply the NCR Control Procedure [15] and use the IO NCR Database.

Considering that ITER is an INB, the quality assurance and quality control is a high level priority of the project. The Executing Entity shall take detailed account of all the IO Quality requirements, and have an adapted organization to achieve the quality objectives defined by these IO Quality requirements.

As a matter of information:

- Any non-compliance with a specified IO requirement affecting Regulatory Requirements, Safety, Environmental impact, with an impact on a Baseline document Level 0/1/2, with interaction with other PBS, Construction and/or other Process, with implication on Functional performance shall be considered as a major NC (a "Major NC") by the Executing Entity. This Major NC shall be remedied by the Executing Entity according to remedial action proposed by the Executing Entity and accepted by the IO.

Several similar NCs can trigger one major NC to investigate root cause of recurrence.

The Executing Entity shall establish a documented process to identify, segregate, clarify, resolve and close-out NCs throughout the life of the Contract. The Executing Entity is not authorized to implement any corrective actions without a clear acceptance by the IO. The target is to open the NCR within 48hours following the discovery of the event.

The IO will confirm the non-conformance, assess the impact on the engineering and accept or reject the remedial action following his assessment. The IO will transmit the NCR notice to the Executing Entity or, where applicable: to the DA, which shall then propagate it to the executing entity.

The Executing Entity shall take the remedial actions as accepted with the following manner per each category:

- Use as is: Follow-up action is not required.
- Rework and Repair : a detailed action plan with all the documents accepted by IO shall be established and reviewed by the IO, if it is for Major NC, before the rework or Repair commence
- Reject : the non-conforming item shall be isolated for the prevention of their misuse or released from the site

After completion of remedial action, the evidence supporting remedial action shall be included in an appendix of the NCR. The Executing Entity shall complete a root cause analysis for any Major Non-Conformance. This analysis must define if corrective actions have to be put in

place to eliminate the cause of a detected nonconformity or other undesirable situation. The actions taken shall be written on the NCR.

The IO shall verify the adequacy and completeness of Executing Entity's remedial and corrective actions and supporting documentation. If acceptable, the IO shall sign off the NCR for closure.

The Executing Entity shall strive continuously for the as-fast-as-possible closure of NCRs and DRs. If necessary, corrective and preventative actions will be gathered in a specific action follow-up report to be updated at least on a monthly basis.

The Executing Entity shall ensure that its subcontractors apply the above management of NCs and corrective actions.

## 12.3 **Progressive learning and continuous improvement**

On a monthly basis, the Executing Entity shall provide a report of the follow-up status of non-conformances, correctives actions and preventive actions scheduling, resolutions and efficiency of such activities.

## 12.4 **Deviation Request and Field Change Request**

In line with ITER MQP processes, for works without permanent impact on the Baseline Configuration, the Executing Entity can request a Deviation prior to executing the Works (as per [16]) or later if the Works have started and are found to be outside the initial requirements (as per [32]).

*<Requirement only applicable to DA Contractors>*

*In case other process are already established, the DA shall share the corresponding information with IO.*

## 12.5 **Request For Information (RFI)**

The Executing Entity can ask a technical question for clarification prior to executing the Works or later if the Works have started and are found to be outside the initial requirements. RFIs are raised to help inform or clarify the contract technical requirements [27] (or where applicable: Request is raised through DA's process).

Once the IO agrees to a RFI (or where applicable: DA agrees to a request) that requires a change in the design, then the Executing Entity will raise a deviation request or a field change request in accordance with associated procedures [16] and [26] (or where applicable: in accordance with DA's process).

# 13. **Construction Management Requirement**

The overall construction management requirements are described in the List of Applicable Documents (for IO Contractors) or Annex A and B (for DA Contractors) and works procedures attached. The Executing Entity shall refer to the list of applicable documents to be respected during the execution of the work.

## 13.1 **Common Site Rules, including Permit to Work**

A Common Site Rules document is currently applicable (see Common Site Rules **Error! Reference source not found.**).

This process is shared with Engage for the civil and utilities construction of the ITER buildings.

In the updated version of the common site rules, additional rules are planned to be introduced (but not limited to):

- The PTW process must be adhered to over the whole ITER Site (both areas under ENGAGE & CMA coordination). Refer to the permit to work Procedure [5] Appendix I for guidance.
- Safety requirements more stringent than the one existing due to the higher risk of our activity (closed buildings, coactivity, hot work, pipe or vessel under pressure, RT in buildings, …) are checked in the PTW process.

The List of Applicable Documents shall address but not be limited to:

- Co-activity management
- Surveying / metrology measurements
- Routing management: equipment from the Contractor's warehouse to the final point in the building/room
- Temporary services management (lights, ventilation, compressed air, demineralized water …)
- Return to zone management
- Removal / installation of grating, metal floor, temporary structures …
- Construction tools and equipment (documentation, quality release if design and manufacturing is needed, preservation and maintenance plans, …)
- Construction outstanding and temporary means: principles for tests (safety valves, diaphragms, insulation, strainers, blind flanges …),how to manage the traceability in order to avoid "foreign" bodies in the systems
- Access control (see later on in this document)
- Storage and workshops areas
- Temporary protections (to adjacent properties / installed services ...)
- Scaffolding
- Handling, lifting, rigging
- NDT (including source management)
- Permit to work / permit to test office
- Test procedures ,including consumables and tools
- Post Installation Anchor Plates (PIAP) and drilling intervention requests during construction and test activities
- Preservation and maintenance
- Final cleanliness

## 13.2 **Construction Requirements**

### 13.2.1 *Technical Specification*

*<u><Requirements not applicable to DA's Contractors>:</u>*

*A construction technical specification is a construction deliverable that includes all information necessary to instruct the Executing Entity to proceed with detailed planning and preparations and produce one or more construction documentation package(s) for the scope. The Executing Entity shall comply with Technical Specification's requirements.*

*Indicative information to be contained in a Construction Technical Specification includes:*

- *The detailed scope of work, giving step-by-step instructions for constructing the scope,*

- *All required safety information and documentation including a list of all PIAs and PICs (where applicable to the Construction scope),*
- *Information on the materials required and provided by IO**
- *The completion and quality requirements*
- *The Executing Entity's expected deliverables list (Agreed by the Executing Entity)*
- *The Level 3 schedule of the Construction ( Agreed by the Executing Entity)*
- *The IO's cost estimates ( Agreed by the Executing Entity)*

*(*) The materials provided by the IO will be placed on the ITER Site.*

### 13.2.2 *Construction Documentation Packages*

*<u><Requirements not applicable to DA's Contractors>:</u>*

*These deliverables, produced by the Executing Entity, contain all the safety, engineering, construction & other information necessary to ensure the Works can be completed safely and in a controlled manner. Construction work covers all site activities from commencement of works, through to mechanical completion. Routine activities for which defined procedures exist such as loading and unloading operations, deliveries, on-site security etc., do not require a Construction Documentation Package.*

*Upon receipt of a Construction Documentation Package, the complexity of the Works may require that specific activities be segregated. Thus several Construction Documentation Packages may be issued by the Executing Entity in such a manner that they encompass the Construction Documentation Package whole scope of Works.*

*It is the responsibility of the Executing Entity to evaluate the complexity of each Construction Documentation Package. The completion of each Construction Documentation Package shall serve the purpose of measuring the Executing Entity's performance.*

*Before any prefabrication, the Executing Entity shall produce all related drawings and documents for prior approval by the IO.*

*Construction Documentation Package's issued by the Executing Entity typically include, but are not limited to:*

- *Detailed scope of the Works,*
- *List of documents,*
- *List of materials issued by IO,*
- *List of materials supplied by the Executing Entity (if any),*
- *List of consumables supplied by the Executing Entity (if any), and tools required (general or special) to be provided by IO*
- *Confirmation of quantities and princing based on the contract conditions*
- *Tools provided by the Executing Entity with the list of associated documents (manufacturing certificates if any, quality release note, operation and maintenance manual when needed ...) and Executing Entity's procedures,*
- *Mobilization and logistics plan,*
- *Checklist and ITPs (with needed records to be filled during the work execution),*
- *Quality control documents,*
- *Health and Safety requirements,*
- *Environment requirements,*
- *Special requirements*

- *Products planned to be used (lubricants, chemical products ...) with compatibility demonstration with the installed systems and components, scaffolding requirements,*
- *Lifting requirements,*
- *Scaffolding requirements,*
- *Storage requirements (for tools, ...),*
- *Construction Documentation Package's detailed schedules,*
- *Man hours with justification,*
- *Other resources justification (welding equipment, utilities, ...)*
- *Construction Documentation Packages prices justifications – cost allocation for EV analysis*
- *PIA and PIC list*
- *Completion certificates*
- *Risk assessments*
- *Risk and opportunities list*

*Some of these deliverables constitute a part of the Mechanical Completion Dossier (MCD). A Mechanical Completion Dossier should gather several Construction Documentation Packages. In some cases, the Executing Entity is allowed to optimize the deliverables. This optimization should be confirmed and accepted by the IO.*

### 13.2.3 *Construction Readiness Review ("CRR")*

The Executing Entity shall apply the Construction Readiness Procedure [12] (for DA contractors limited to the coordination aspects).

*<Requirements not applicable to DA's Contractors>:*

*A pre-requisite to this CRR is the issuance by the Executing Entity of the Construction Documentation Package including any required information. Each Construction Documentation Package shall be formally validated by the IO at the time of the CRR.*

The CRR constitutes a hold point ("HP") within the site construction preparations that must be satisfactorily completed prior to further execution of the associated Works by the Executing Entity.

### 13.2.4 *Cleanliness strategy*

The Executing Entity shall be compliant with the requiremnents defined in [19].

These requirements are applicable only for WS 1 and 2 except B14, B15 and B74.

# 14. Completion Management

The Executing Entity shall provide to the IO all necessary quality and completion documents to justify the proper and satisfactory execution and completion of the Works to enable handover of the facilities and introduction of energy to the systems.

## 14.1 Mechanical Completion works

Mechanical completion means the completion of a multi-disciplines system or subsystem. It includes electrical, instrumentation, command control, mechanical, piping, parts and components of the system or subsystem.

Mechanical completion work shall be performed at successive stages of receiving, pre-installation, installation and completion during the construction phase by the Executing Entity in accordance with the approved construction and test procedures.

The results of inspections and tests on completion shall be recorded by the Executing Entity in the Inspection Test Records (ITR).

The Executing Entity is responsible for developing and implementing the completion and testing process in accordance with the general rules described in the mechanical completion procedure [25] (or where applicable: in accordance with the DA's Process).

During the phases of mechanical completion up to taking over of the Executing Entity works by the IO, the Executing Entity shall provide all the means (human, materials, equipment, consumables, etc.) necessary to perform all works according to the technical specifications. All required means shall be provided by the Executing Entity at the workshop, onsite or wherever they are needed. The Executing Entity shall provide all specific services necessary to perform all the tests necessary to demonstrate mechanical completion as been achieved..

Where completion testing includes facilities that are beyond the test limit boundary (several Executing Entity, several areas,...), the Executing Entity may have to simulate the other part (other Executing Entity scope, area) of the boundary with adapted temporary equipment provided by the Executing Entity (I/O cabinet, by-pass, temporary HVAC…) in order to demonstrate the performance of its tests (at the workshop and on site).

*<Requirement not applicable to DA Contractor>*

*Executing Entities shall not remove any temporary equipment used to simulate the other part of the boundary of a system before connection to the final system on site (network, cabinet, etc.).*

*<Requirement only applicable to DA Contractor>*

*Executing Entities shall seek DA approval to remove any temporary equipment used to simulate the other part of the boundary of a system before connection to the final system on site (network, cabinet, etc.). IO could then decide to purchase or replace the concerned temporary equipment.*

## 14.2 **Mechanical completion walkdown and punch list**

Mechanical completion walkdowns shall be performed during the works and at the end of each Construction Documentation Package performance. The walkdowns consist in verifying that all works have been completed according to all legal, regulatory and customer requirements (applicable procedures and specifications).

Mechanical completion walkdowns results shall be traced by the Executing Entity in checklist ITRs and punch-lists.

Final punch list for an Construction Documentation Package shall be accepted by the Executing Entity and the IO construction and commissioning teams.

## 14.3 **Mechanical Completion Dossier**

A Mechanical Completion Dossier shall be issued by the Executing Entity for each Construction Documentation Package, according to the Working Instruction for Completion Dossier Preparation [24] (or where applicable: following the DA's Process).

The Mechanical Completion Dossier is a list of content and shall mainly refer to already approved documents. It shall refer to among others:

- The list of as-constructed/as-built data
- The completed ITPs and related ITRs
- The NCRs, DRs, FCRs, RFIs

- The accepted punch list.

The Executing Entity shall compile the Mechanical Completion Dossier in a timely manner as the Works proceed in order that it can be submitted to the IO on the working day following the last task of the ITP is signed-off and all contained documents are approved.

After the last Mechanical Completion Dossier of a Construction Documentation Package scope of work is approved by the IO, the IO issue Mechanical Completion Certificate.

### 14.4 **Final cleaning**

Before final acceptance of the Works and issuance of the Taking Over Certificate, the Executing Entity shall clean down all the surfaces after removal of all plant, tools, temporary structures, materials, protective casings and coverings etc., leaving the Works and the installation in a condition acceptable to the IO.

### 14.5 **Taking Over**

After all items contained in the mechanical completion punch lists have been resolved by the Executing Entity, and all deliverables have been issued by the Executing Entity and approved by the IO, the Executing Entity may apply for the Taking-Over Certificate of the Works.

## 15. **Resources Management**

### 15.1 **Staff and Labour**

#### 15.1.1 *Mobilization Plan*

The Executing Entity shall provide its Site works details inclusive of its mobilization and logistics plan. The mobilization and logistic plan shall provide explicit technical information for how each worksite shall be prepared for site construction including the plan for staffing, delivery of tools and equipment, organising and utilising a specific worksite including the provision of temporary support services, facilities and structures that will be located on the worksite.

The mobilization and logistics plan shall typically provide details of the following items:

- Layout drawings including:
  - Worksite boundaries
  - Emergency assembly points
  - Restricted areas
  - Locations of temporary services including AC power, water supply, tool stores, compressed air, and purging gas for the on-site welding, etc..,
  - Identification of storage and laydown areas for tools, equipment, SSCs, and consumable materials
  - Access paths for staff
  - Access routes for vehicles and equipment
  - Locations and types of temporary facilities including offices, tool stores, workshops, toilets, and first aid stations
  - Water stations, smoking areas.
- Schedule of works
- Procedures for mobilisation including labour resources,

- Communication devices including telephones, radios, and mobile phones (the CMA will provide a site communication plan).
- Mandatory conditions required including constant temperature and humidity control, overhead cranes with their certified lifting capacities, on site chemical drain places for chemical product consuming areas, hazardous material storage locations, etc..,
- Specific rules and guidelines including:
  - Working hours,
  - Access restrictions,
  - Evacuation,
  - Emergency contact numbers,
  - Security clearances,
  - Badges,
  - Environmental monitoring systems,

*<Requirements not applicable to DA's Contractors>:*

*The mobilisation and logistics plan shall be accepted by the IO and implemented prior to commencing any site construction mobilisation activities.*

The most accurate version of the aforesaid plan shall be provided to IO and CMA minimum 3 months before arrival on-site.

### 15.1.2 *Hours and days of work including overtime*

The Executing Entity shall record shift working of its personnel and make them available to the IO.
The Executing Entities personnel shall include all manpower needed to perform the Works, as well as the management staff in charge of executing the management part of the Contract and the associated documentation

The Executing Entity shall be responsible for the proper assignment of demonstrated skilled and qualified manpower (in quantity and in quality) required for carrying out all operations described:

- In this GMS
- In technical specifications
- In the Inspection and Test Plans
- In compliance with the schedule and cost
- In accordance with the quality, security and the safety regulations

The Executing Entity shall provide the IO with an estimation of the number of staff personnel and workers, detailed per activities and working areas and/or buildings (forecast and update), supervisor to worker ratios. The supervisor to worker average ratio target expected is around 1:12.

The Executing Entity shall define an on-call organisation supporting the Works execution during shifts or week-end activities.

### 15.1.3 *Suitably Qualified and Experienced Persons ("SQEP") assurance and training*

The Executing Entity shall provide to IO/DA a demonstrated SQEP team with robust systems and processes in order to perform efficient planning, management, supervision and inspection of all works to maintain a consistent level of knowledge and experience over the lifetime of the project for the Executing Entity.

The Executing Entity also shall have systematic process for allocation of SQEP and associated training, based on the Executing Entity's own quality and implementation plan.

Staff, both from the Executing Entity and his subcontractors who participate to quality or safety related activities (PIA), must be suitably qualified and experienced persons (SQEP). Staff qualification must be done according to applicable standards for each case.

In addition to special processes, staff performing activities such as tests, inspections, audits, dimensional metrology and NDT shall be demonstrated SQEP.

Executing Entity shall qualify workers to use mobile equipment and cranes for its own use according to the French laws.

Subcontracting of activities shall not exempt the Executing Entity from his responsibility to supervise and inspect those activities with qualified staff in accordance with the present document.

The Executing Entity shall implement and maintain a competency/training register supported by appropriate training and qualification records. The register shall identify:

- All personnel engaged on the works
- Role specification
- Status of training received for each individual
- Experience of each individual (nuclear industry experience to be underlined)
- Degrees if any
- Forward plan to close out identified competency requirements

The Executing Entity shall routinely perform documented reviews of personnel to maintain competency.

The Executing Entity shall notify the IO of any deficiencies identified with personnel competency that may affect the product or service provided. The Executing Entity shall propose and take corrective actions to eliminate personnel competency deficiencies.

The Executing Entity shall, upon request by the IO, provide documented evidence of Executing Entity's personnel competencies. The IO reserves the right to interview the Executing Entity's personnel performing and controlling PIA.

The Executing Entity shall notify the IO/DA formally of any organisational changes that could impact on environmental, health and safety, nuclear safety and quality performance.

The Executing Entity shall be able to demonstrate the qualification and independence of the Executing Entity's personnel controlling work from those performing the Works in the case of PIA.

### 15.1.4 *Executing Entity appointed persons*

The Executing Entity shall provide a description of the organization put in place to meet the contractual requirements and ensure the proper outcome of the Works. This description identifies all contributors to the Works including the Executing Entity's quality management

and any other personnel providing support to the Executing Entity in connection with the Works.

The description of the organization is to be provided in the Executing Entity's QP.

#### 15.1.5 *Working Shifts*

Construction activities shall be executed in shifts if and when required, planned according to the CMA construction calendars. Each calendar includes rest periods and National Holidays.
Each Construction Activities shall be scheduled in the Construction Detail Work Schedule using the appropriate shift calendars.
The Executing Entity is responsible to ensure that their staff are compliant with the relevant French Labour Regulations and the EC Working Time Directive 2003/88/EC.
IO and CMA require an advance notification to work additional overtime hours and this shall be be identified in the 3 month look-ahead plan in order to prepare coordination for long term (scaffolds, utilities, transverse contracts…) and the 3 week look-ahead schedule.

# 16. Information Management

## 16.1 ITER Document Management System

*<Requirements not applicable to DA's Contractors>:*

*The ITER Document Management System (IDM) is based upon an internally developed database. This system includes the usual features of a document management system (work-flows, version control, archiving) and is available for use by all the IO staff and Executing Entities. The IDM Manual [42] serves as an introduction to the main features, and to the most commonly encountered document management tasks, of the ITER Document Management system.*

*During the course of the Works, the Executing Entity shall use (and ensure the use by all entities involved in the construction) the dedicated documentation numbering system describes in the procedure [14]and [13].*

*Only final versions of documents approved by IO have to be registered in IDM by the Executing Entity.*

*The other working documents shall be registered by the Executing Entity through equivalent data management tool defined by the IO.*

*The Executing Entity shall be responsible for uploading all documentation relevant to the Contract in the data management tool defined by the IO. Only the document published using the data management tool will be recognized by the IO as contractually valid.*

## 16.2 Primavera

Refer to section 9.1

All schedules for the ITER project are currently developed and maintained in Primavera P6 version 16.2.3 or higher.

The Executing Entity is hence required to issue schedules which are compatible with Primavera software P6 v16.2.3 (xer format). The Executing Entity will be informed in due course when the IO migrates to a newer version.

*<Requirements not applicable to DA's Contractors>:*

*The Executing Entity is made aware that changes in the tools used for scheduling and coordination may happen during the progress of the Works and the IO will provide access and*

*licenses for these new tools. The Executing Entity shall consider that the change of tool is not a cause for a claim in extra cost or additional time.*

### 16.3 e-PTW

The Executing Entity shall use the permit to work system implemented on site by the IO as defined in the Overarching Permit to Work Procedure [5]. The system is an Electronic PTW (e PTW) system. At least one user licence will be provided by the IO to the Executing Entity depending upon the volume of work and permits anticipated.

The Executing Entity shall use the e-PTW system in order to have an authorisation to proceed with works execution at site.

The e-PTW system is based on the English language. All users must be able to read, write and speak English to use the system.

### 16.4 Contract Management Tool

*<Requirements not applicable to DA's Contractors>:*

*IO will implement a Contract administration software (CEMAR solution) to assist the Employer and Executing Entities to better manage contractual communications, sequence of events and associated time bars. The systems are typically web based which means it is accessible from anywhere and not limited to a physical server connection.*

*This application do not replace contractual commitments, but provides a platform to give wider access to information, provides a structured process for managing the contract as well as a central database to capture contractual communication.*

*IO will give a free access to that tool to the Executing Entity, and a training for two people. The Executing Entity shall use this tool for contractual communication and contractual events records.*

## 17. Configuration Management

### 17.1 Configuration Management

To successfully control changes to the ITER Site Configuration, IO/DA communicates technical configuration and design instructions to the Executing Entity. Consideration will be taken of the impacts upon risk, cost/value and schedule based upon:

On completion of the final construction readiness review (CRR), the Configuration Items (CIs) forming the construction baseline (including interfaces with the ITER technical baseline) shall be baselined and subsequently subject to the change control processes.

The site construction baseline is defined by the technical baseline (system designs and interfaces), and the construction worksite baselines (1 to 6).

The technical baseline is controlled by IO who is responsible for coordinating the implementation of changes to the construction worksite baseline and for communicating the completion of the technical and baseline changes to all stakeholders.

The Executing Entity shall be responsible to ensure that sketches, as-constructed drawings and data, reflecting all approved changes made in the specifications and working drawings during the execution of site construction, and showing the dimensions, geometry, and location of all elements of the work completed are collected and correctly stored according to the ITER Site construction documentation and data management plan, thus forming a comprehensive record of the site construction works.

### 17.2 **Configuration follow-up**

*<Requirements not applicable to DA's Contractors>:*

*The Executing Entity shall provide in the monthly report the configuration status of its own contract including Instructions, Amendments, NCR, DR, FCR and RFI status.*

## 18. **Interface Management**

The scope of work specification of the contract defines the interfaces, the boundaries, the limit of supply and other technical specifications.

The CMA has set up a process to clearly define the interfaces between the different works stakeholders to limit the risk of inconsistencies in these interfaces. This interface management is based on the following principles:

- For geometrical interfaces: The geometric interfaces are managed through the 3D model. The IO is responsible for managing the 3D Model.
- For non-geometric interfaces: An interface matrix between contractors is built and identifies all non-geometric interfaces within each Executing Entity Contract/Works.

A list of Construction non-geometric Interfaces is created (by the Coordinating entity and IO Logistic team?) and complied with by the Executing Entities, mainly addressing:

- Co-activity
- Permits
- Temporary General Services: Electricity, Lighting, HVAC, Water distribution and drainage, compressed Air and other gases, fire protection,Waste management, etc.
- Routing (equipment procurement and transportation)
- Storage areas and workshops
- Centralized Lifting (IO Framework Contract)
- Centralized Scaffolding (IO Framework Contract)
- Availability of overhead cranes in buildings
- Handling/Lifting/Asembly Special Tools and Mocks-up
- Mechanical Supports: embedded plates, plints and foundantions, post installation Anchor Plates (PIAP)
- Tests
- Others

An Interface document is to be written for each Executing Entity Contract Works. This detailed interface document shall be based on the IO Interface sheet and developed by the entity in charge of the execution design. This will define:

- The interfaces definition and requirements
- The responsibilities of each stakeholder in terms of the definition of the interface and associated milestones
- The limits of services and supplies of each stakeholder and
- The interface arrangements (solutions)

The Executing Entity will provide IO/CMA with their most accurate forecast dates for executing their works if they differ from the IO Construction Detailed Work Schedule (C-DWS).

Executing Entities shall provide to CMA an accurate outlook of the expected activities (template provided by CMA) which will:

- require space segregation (e.g pressure tests (pneumatic, hydrotest, hotworks, etc.), use of dangerous chemicals, use of specific tools, etc.) with estimated space occupied and durations. This information is required for anticipating co-activities and the sequencing the Works with the best fashion possible

- require specific materials access routes, logistics constraints and the storage requirements for undertaking their works, information communicated shall contained (but not limited to) :
  - Purpose of the laydown area
  - Prefered location of the area (marked up drawing and organisation of site visit)
  - Requested area availability date
  - Estimated area release date
  - Size in square meters (m2)
  - Material storage plan indicating : a schedule of materials to be stored with quantity, size and sequencing (arrival date on area & site transfer/demob date).

This information is expected to be communicated 6 months in advance as reasonably practicable.

The interfaces reviews are conducted regularly (as necessary) by the CMA with the Executing Entity.

The Executing Entities shall also provide CMA with an accurate outlook of the expected utility needs (power supply, raw water supply, demin water supply, compressed air, etc.) with appropriate description.

The CMA will coordinate ad hoc meetings with all affected interfaces, including the Logistics Service Provider (LSP), to maintain effective communication and coordinate the on-site delivery, storage and issuance of materials.

Shall there be any disagreement either with the proposed Interface Arrangenments (solutions), CMA and Executing Entities will jointly escalate the issue as per the Site Escalation process defined by the Employer.

In the event of any major engineering issues or other interface issue being identified that obstruct or prevent completion of construction, or impact the future operation of the facility, the Executing Entity will be invited to participate in integration cell meetings by the CMA (and others as may be required). This has the purpose of developing the best practical and economical solutions which may then be implemented by the Executing Entity to complete the construction works. The integration cell committee will seek to identify and implement solutions that mitigate any impacts to cost schedule quality and functionality of the project.

More information are given in Construction Interfaces Management Procedure [35].

# 19. IO Framework Contracts

## 19.1 Framework Service Contract for Lifting

IO put in place a single framework contract through which mobile cranes can be leased by Executing Entities.

This contract is a framework contract for the provision of lifting equipment (primarily mobile cranes). The intention of the contract is to make available to all Executing Entities working at the ITER Site a readily available contractor capable of leasing mobile cranes (with driver) or undertaking a full lifting operation (so called Contract Lift).

The use of this framework contract shall be obligatory for the IO Contractors working in Areas 1 and 2 as well as for the IO contractor offloading components at the warehouse (Daher). In these cases where the use of the lifting contractor is obligatory, IO will pay the lifting contractor directly thus avoiding the mark up that would normally be applied by the Executing Entity for managing the works of the lifting contractor. The responsibility for the lifting operation shall remain with the Executing Entity and this shall be clearly stated in the conditions of contract.

For Areas 3 to 5, the use of the lifting equipment services contract is "encouraged" but not obligatory for IO and Executing Entities contractors. In these cases the entity requesting the services is responsible for performance and payment to the lifting contractor.

Regardless of the area, it is expected that the Executing Entities provide CMA with an accurate outlook of the expected lifting works (template provided by CMA) to be undertaken with estimated heavy plants used, logistics constraints and space required. This information is required for anticipating co-activities and sequencing the Works with the best fashion possible therefore such outlook shall be jointly reviewed on a monthly basis, refer to the meeting management section.

Shall there be any disagreement with the proposed sequence, CMA and Executing Entities will jointly escalate the issue as per the Site Escalation process defined by the Employer.

In case of use of the Framework Service Contract for Lifting, the provisions are described in the CMA Instruction for Lifting Operations [36].

## 19.2 Framework Service Contract for Scaffolding

A guidance stipulating the minimum standards that are required to be met for the scope are given in [37].

IO has put in place a framework contract for the lease of scaffolding (scaffolding contract). This contract will be for the provision of scaffolding to Executing Entities.
Due to the high level of interaction between different entities, the use of this scaffolding contract will be obligatory for all work – for workers and their portable tooling – being carried out in Area 2 as several Executing Entities may use the same scaffolding, IO shall pay the scaffolding contractor directly.

For Area 1 and Areas 3 to 5 contractors will be encouraged to use the services of the scaffolding contractor but it will not be obligatory. In these areas the Executing Entity shall pay the scaffolding contractor directly.

Regardless of the Area, it is expected that the Executing Entities provide CMA with an accurate outlook of the expected scaffold (template provided by CMA) works to be undertaken with estimated space occupied and durations. This information is required for anticipating co-activities and the sequencing the Works with the best fashion possible therefore such outlook shall be jointly reviewed on a regular basis, e.g once a month – refer to the meeting management section.

Shall there be any disagreement with the proposed sequence, CMA and Executing Entities will jointly escalate the issue as per the Site Escalation process defined by the Employer.

In case of use of the Framework Service Contract for Scaffolding, the provisions are described in the CMA Instruction for Scaffolding Operations [38].

## 19.3 Framework Contract for General Services

IO has put in place a Framework Contract to provide the necessary transverse General Construction Services required by the construction activities on the ITER site when these services cannot be clearly assigned to a single contractor.

The activities mainly focus on common areas and transverse tasks; all demands shall go through CMA (Scaffolding team / General service team / lifting team) who will answer if the requested service is at IO or Executing Entity cost and – if at IO cost – will coordinate the performance of the works (when the works are recognized as transverse ones).

The Executing Entity will express their needs per area, with a reasonable notice period according to the type of service, and especially at least 2 months in advance for utilities.

Within this scope, IO defines updates and monitors the application of the following documents:

- Worksite access procedures
- Worksite alert procedures
- Environmental specifications
- Respect of the Common Site rules
- Conformity to PGC Vol 1
- Rules and procedures governing the operation of joint hydraulic and electrical networks on the site

The transverse Shared *General Services* are listed below. The CMA shall supervise the use of these services to ensure efficient and reasonable use by the Executing Entity:

- GS01: Site Utilities
- GS02: Construction Waste
- GS03: Cleaning of buildings and common areas
- GS04: Temporary Barriers and Fences
- GS05: Temporary Access Control Measures
- GS06: Temporary Air Locks
- GS07: Temporary Site Signage
- GS08: Temporary Lighting
- GS09: Compressed Air and Other Gases
- GS10: Water Fountains
- GS11: Chemical Toilets
- GS12: Low-level Maintenance of Mechanical Equipment
- GS13: Physical Protection of Mechanical Equipment
- GS14: PPE
- GS15: Temporary Firefighting Equipment
- GS16: Other Minor and Miscellaneous works

In the case that the Executing Entity fails to use these services in a reasonable and responsible manner then IO reserves the right to either charge the Executing Entity the cost of usage and/or stop providing these services.

Any services necessary for the Executing Entity to carry out their works shall be provided and paid for by the Executing Entity. These facilities to be provided by the Executing Entity include, but are not limited to:

- ✓ Fencing of the Executing Entity's storage area or the building area;
- ✓ Specific signage involved by the nature of the works performed by the Executing Entity;
- ✓ Cleaning of the Executing Entity's work area and workshops;
- ✓ Specific health and safety collective protection means necessary for the safe execution of the works performed by the Executing Entity.

Few examples:

- Service provided at IO cost:
  - Waste management
  - Water fountains
  - Chemical toilets
  - Lighting and Cleaning of common areas
  - Barriers and fences for common areas
  - Clean-room coveralls, boots, and hoods for B11 and B13
  - Collective protection
- Services to be provided by the Contractors:
  - PPE
  - Extinguishers for Hot Works
  - Hazardous waste management
  - Waste management inside the building till the skips provided by the IO outside the buildings
  - Fencing, cleaning and signalling of dedicated storage and working areas
  - Fuel for machinery

# 20. **Executing Entity's facilities**

The Executing Entity will be deemed to have inspected the site and made sufficient allowance within its tender rates for any necessary temporary facilities it may require in order to execute its contractual obligations. This includes but is not limited to the costs for any new temporary buildings, facilities or networks, the costs for modifications to the existing surface and buried networks; design costs, the cost of making connections to existing networks and the cost of removal of any temporary facilities installed.

IO defines within the individual specifications the dedicated allocated areas.

## 20.1 **Provision by the IO of Welfare and Office Facilities**

The IO has constructed common office/welfare facilities to be shared by a number of the IO and Domestic Agency works contractors working at the Site. These facilities are located within Contractors Areas 1 & 2. Space within these facilities will be made available for the Executing Entity. No other space for office/welfare shall be made available.

Allocation and management of space within these facilities shall be done by the CMA. Desks shall be allocated to the Executing Entity's full-time managerial and administrative staff and welfare facilities (showers, lockers, and refectory) shall be provided for the Executing Entity workers.

At least two months prior to commencing works at the site, the Executing Entity shall provide to the CMA a fully justified list of the anticipated number of desks and lockers required. Thereafter the Executing Entity shall provide an updated list every three (3) months. The IO will provide one labtop or computer with a full access to the IO network for Executing Entities which need to upload documents in IT System.

The Executing Entity shall use the space allocated in an effective and efficient manner. In the case that the CMA considers that the Executing Entity is failing to use the allocated space effectively and/or efficiently then, the CMA at its sole discretion shall reduce the allocated space.

The electricity and water consumption costs shall be borne directly by IO. Operation and maintenance costs of the electricity and water networks within the office/welfare facilities shall also be borne directly by IO. The Executing Entity shall take all reasonable measures to minimise water and electricity consumption and it shall respect the housekeeping rules for the facilities as developed and updated by the CMA.

In the case that the CMA considers that the Executing Entity is failing to take reasonable measures to minimise water and electricity consumption or is failing to respect the housekeeping rules established by IO, then the IO may apply appropriate penalties as defined in the Contract, and/or cease to provide the Executing Entity with space within these common facilities.

## 20.2 **Allocation of Car Parking**

The Executing Entity shall be provided with parking areas within a maximum distance of 500 metres of the welfare facilities. A parking area for Executing Entities staff will be allocated. A maximum of 1 parking space for every 3 Executing Entities staff will be allocated. The Executing Entity will therefore have to establish shuttle bus facilities and/or car-sharing for their staff and workers.

The Executing Entity shall put in place a system to forecast and report their parking needs to the IO/CMA. The CMA shall monitor the use of the parking areas and appropriate action shall be taken in the event that the allocation quotas are not respected.

## 20.3 **Areas for Executing Entity Facilities other than offices and welfare**

Workshops and other facilities directly linked to the construction activities will be located within the ITER Site either on or close to the ITER Platform. The areas will be allocated and adjusted by the IO/CMA. These may be several hundred metres from the actual locations where work is to be carried out by the Executing Entity. Space is limited at the site and the Executing Entity may need to seek additional off-site space according to its needs.

Within the allocated lot, the Executing Entity will be free to construct any necessary workshops or other facilities deemed necessary for carrying out his construction activities. The allocated lot will be on an undeveloped part of the platform. The Executing Entity will need to develop the lot to suit his own purposes. The Executing Entity shall construct a suitable fence around his lot.

The IO will provide a connection point for electricity (400v, 3 Phase) and raw water at or close to the allocated lot. The Executing Entity shall, at his own expense, make the connection from

the connection point to his own facilities. Details of allocations of lots are provided in the contract documentation.

As there are no locally available waste water networks, the Executing Entity shall be responsible for the collection and disposal in accordance with Applicable Laws of any water used in these workshop areas and/or the provision of chemical toilets if necessary.

Should the Executing Entity wish to connect to other networks within the Site, then it may be authorised to do so at his own expense. However such authorisation will be given at the sole discretion of the IO/CMA.

Any facilities constructed by the Executing Entity within the allocated lot shall be designed and installed in such a manner as to maximise the use of the available space. In the event that the Executing Entity does not require the full allocated lot, then the remaining land will be returned to IO. In the event that the IO/CMA, at its sole discretion considers that the Executing Entity is not using the space efficiently, then the IO/CMA may reduce the size of the lot made available to the Executing Entity.

The lots described herein will be provided for the exclusive use of the Executing Entity. No other areas will be provided other than inside the worksites themselves where space will be allocated and managed by the IO/CMA and will be adapted to suit the nature of the Works that is being carried out.

Any new construction or modifications and connections to existing facilities shall be subject to approval by the IO/CMA. The Executing Entity shall respect the general architectural rules foreseen on the platform. The buildings shall respect the French Labour code requirements. The Executing Entity shall provide drawings and specifications for the purpose of obtaining such approval. The Executing Entity shall ensure their facilities are designed to minimise as far as reasonably possible, the impact on the environment. In this regard specific measures must be taken to minimise water and energy consumption. The IO/CMA approval of the Executing Entity facilities will not be given unless such specific measures are taken.

The Executing Entity's temporary facilities shall include a public address system in accordance with *EN54-16*. The system shall be designed and installed in such a manner that it can be connected to the Site wide ITER public address system. The Executing Entity shall be responsible for providing a suitable connection point outside his facility for the connection to the IO site wide system after his facilities are completed.

The Executing Entity's temporary facilities (for example Executing Entity's workshop) shall include a Category A Fire Safety System in accordance *with NF S61-936 - Systèmes de Sécurité Incendie, Equipements d'Alarme and NF S61-931 Systèmes de Sécurité Incendie (S.S.I.) Dispositions générales*. The system shall be designed and installed in such a manner that it can be connected to the site-wide ITER public address system. The Executing Entity shall be responsible for providing a suitable connection point outside his facility for the connection to the IO site-wide system after its facilities are completed.

In the case that the Executing Entity requires an ICPE or building permit for any of their temporary facilities, the Executing Entity shall be responsible for the preparation of the complete dossier which shall be submitted by the IO to the relevant French Authorities. The IO shall have no responsibility for the correctness or otherwise of the files submitted. The Executing Entity shall take due note of the durations necessary for the French Authorities to process the files. Failure of the Executing Entity to obtain the necessary approvals in a timely manner shall not be a cause for an extension of time or additional costs.

The Executing Entity shall be responsible for the construction of a fence and any necessary gates around their allocated areas.

## 20.4 **Canteen and Medical Facilities**

Executing Entities will be authorised to use the Site Canteen that has been established by Fusion for Energy. In order to do so, the Executing Entity will need to sign the Collective Convention. The Canteen is not subsidised and is managed as a commercial operator by an external company.

The Executing Entity shall be authorised to use the medical facility located on the construction site.

# APPENDIX A: Statement of compliance

## WORKS CONTRACT FOR [*Title of Main Contract*] IN BUILDING XX

## Contract N0: XXXXXXXX

Subcontractor of level 1: [Name of sub-contractor]

Statement of Compliance with [*Name of main Contractor*]QUALITY PLAN

In order to fulfill the applicable requirements in Quality Management, I undertake that [Name of Director of Sub-Contractor] will:

- Respect and discharge all obligations arising from the following documents:
  - [1] [*Name of main Contractor*] Quality Plan – [Reference of Quality Plan] – under the latest current version known at this date,
  - [2] Associated [*Name of main Contractor*] Quality Procedures under the latest current version known at this date,

  That I fully understand,

  With the exclusion of the following sections:

  *Not applicable*
- Respect and apply the requirements of any revision of the documents [1] and [2] above, or to give immediate notice of any difficulty I may experience to implement them.
- Implement the adequate organization described in section 3 of the Subcontracting Acceptance Form (SAF) or in appendix of this compliance letter to carry out all the works as defined in the scope of Works for which our SAF has been issued:
  - On the work site, our person in contact with [*Name of main Contractor*] is: Full name
  - The contact in [*Name of main Contractor*]'s team for these works is: Full name
  - Meetings shall be held: according to your requirements
- Apply our quality controls and adhere to the supervision to be exercised on them by [*Name of main Contractor*]

Full name Position: Director

Date: DD/MM/YYYY Signature:

## [Name of sub-contractor] Organization Chart

Integration of the sub-contractor Organization Chart with the [Name of sub-contractor] Manager for the contract, the Team Manager, the operators, the Controllers…

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Interlocutor [*Name of main Contractor*]: Full name