

## Technical Specifications (In-Cash Procurement)

# BRN I-15-751 H&S Specialist Support

The purpose of this contract is to provide the MAI Section with specialist Health & Safety (H&S) support, in the form of an appropriately qualified and experienced Health & Safety expert.

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# 1 Purpose

## 1.1 The ITER Project

The ITER project aims to demonstrate the scientific and technological feasibility of fusion power for peaceful purposes and to gain the knowledge necessary for the design of the next-stage device, DEMO, or the DEMONstration fusion power plant.

Receiving 50MW of input power, the ITER Machine is designed to produce 500 MW of fusion power for extended periods of time. This represents ten times more than the input power needed to keep the plasma at temperature. It will therefore be the first fusion experiment to produce net energy. It will also test a number of key technologies, including heating, control, and the diagnostics and remote maintenance that will be needed for DEMO.

The main regulatory documents pertaining to the mechanical components for ITER are:

- The Order dated 7th February 2012 concerning Basic Nuclear Installations (French acronym: INB) for Design, Construction and Operational Quality
- Order dated 12th December 2005 concerning Nuclear Pressure Equipment (French acronym ESPN)
- Decree No. 99-1046 dated 13th December 1999 concerning pressure equipment – Introduction of the Pressure Equipment Directive in France (French acronym ESP/PED)

Further information can be found on the ITER website (<http://www.iter.org>) and also at the web pages of the ITER Parties that can be accessed via the ITER website.

## 1.2 The ITER Organization

ITER is a joint international research and development project for which initial construction activities have recently started.

The seven Members of the ITER Organization are the European Union (represented by EURATOM), Japan, The People's Republic of China, India, the Republic of Korea, the Russian Federation and the USA. ITER will be constructed in Europe, at Cadarache, in southern France, where the ITER Organization (IO) has its headquarters.

The Members of the ITER Organization will bear the cost of the project through its 10-year construction phase, and its 20-year operational phase before decommissioning. With respect to the construction of the ITER Machine, most of the components will be contributed by the Members as in-kind contributions. The remaining investment will be via cash contributions from the members.

## 1.3 Machine Assembly and Installation Section – The Mission

The mission of the Machine Assembly and Installation Section (MAI) is to assemble the ITER machine, to provide planning, oversight and to undertake the installation of plant systems. In detail, the MAI Section is charged to:

- provide design direction and advice, and be responsible for the approval of all plant system designs from the aspect of assembly and installation;
- design assembly tools, write procedures and prepare schedules for the assembly of the Machine;
- undertake the assembly of the Machine;

- undertake the Tokamak system installations, ensuring close coordination with the relevant Department and system Responsible Officers;
- define the integrated assembly and installation plan and approve plant system installation procedures and plans,
- define and implement a global alignment and metrology plan for ITER, including an appropriate site datum network,
- define and coordinate the implementation of an Integrated Logistics Support strategy for ITER to ensure lifecycle management of plant systems, components, spares and facilities: from design, through construction, operation and maintenance,
- coordinate the global transport, reception, handling and storage of plant system components, spares and tools.

## 1.4 Purpose of this Contract

The ITER project is currently in its detail design, early fabrication and construction phases of work. The PF (Poloidal Field) coils fabrication building and Cryostat workshop are completed, and the Tokamak Complex and Assembly Building are progressing.

By the end of year 2014, the first shipments of ITER components will be delivered to the ITER site (St Paul Lez Durance, France) from the Domestic Agencies (via their suppliers). Shortly afterwards the first systems will be installed.

MAI utilise a combination of both staff and external engineering resources for the production and compilation of documentation and data for **Site Construction**.

**Site Construction** comprises:

- *Site Materials and Logistics*: Site reception, offloading, unpacking, inventory, site storage, on-site component tests and handover to constructor;
- *Works execution*: Assembly & sub-assembly, on-site handling, installation, installation testing;
- *Start-up and testing*: The progressive connecting and testing of the functions within systems and sub-systems comprising the installed ITER plant prior turnover to the Operator for integrated dynamic commissioning.

The purpose of this contract is to provide the MAI Section with specialist Health & Safety (H&S) support, in the form of an appropriately qualified and experienced Health & Safety expert (hereafter known as the H&S Specialist). The H&S Specialist will be deployed in close support on the ITER site, Cadarache, France, to complete the scope of work (Section 2) that will include the preparation of the ITER H&S (works) requirements and technical documents, providing expertise and guidance throughout forthcoming tender processes, and to follow up the implementation of H&S requirements.

Under this contract the H&S Specialist will also provide expertise and guidance on general H&S matters. With reference to the Mission Statement contained in Section 1.3 of this document, guidance could be required in support of any of the charges of the section, or in respect of any H&S related matter required by the Leader of the MAI Section.

## 2 Scope

The scope of work will be carried out in close liaison with the Leader of the MAI Section and will include the preparation of H&S documentation and provision of documented expert advice covering Site Construction activities for the following Worksites:

- No. 1: Tokamak Basic Machine (incl. Assembly and Cleaning Buildings & Sub-Assembly therein);
- No. 2: Tokamak Complex Building;
- No. 3: Control Buildings, Radwaste Building, and RF Heating Building;
- No. 4: Cryoplant (including Bridge) and Site Services Buildings;
- No. 5: Electrical and Power Supplies Buildings;
- No. 6: Site Works (Works Access and Area Management).

### 3 Definitions

Abbreviation	Definition
CMS	Construction Master Schedule
DA	Domestic Agency
DWS	Detailed Work Schedule
H&S	Health and Safety
IO	ITER Organization
MAI	Machine Assembly and Installation (Section)
PIA	Protection Important Activity
PIC	Protection Important Component
SIC	Safety important Classification
SSC	Structure, System and Component

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

### 4 References

- [1] [Order dated 7 February 2012 relating to the general technical regulations applicable to INB - EN \(7M2YKF\)](#)

### 5 Estimated Duration

The estimated duration of the work for the H&S Specialist shall be 220 working days (approximately one year), with options to extend twice by an additional 110 working days.

### 6 Work Description

The approach for Deliverables and Due Dates for work to be performed by the H&S Specialist are specified in Section 8 of this document and each sub-task will be individually specified in consultation with the Leader of the MAI Section.

The Work Description comprises:

- Providing advice and expertise on any aspects related to H&S as required by the Leader of the MAI Section;
- Preparation of H&S aspects of MAI tender documentation for Machine and plant Installation, participation in the tender process and follow up of H&S aspects up to contract award stage;
- Participation in the development of assembly/installation strategies, plans, and procedures to ensure compliance with the H&S requirements;
- Work proactively with Section Leader, managers & engineers to establish and maintain safe systems of work and a safe environment for colleagues, contractors and Domestic Agencies (DAs);

- Development and implementation of H&S best practice, ensuring IO complies with current H&S legislation, approved codes of practice and guidance in relation to all aspects of H&S activities for plant installation, systems & Machine assembly inside the Tokamak Complex, auxiliary buildings and on the ITER Site;
- Development and implementation of the IO Continuity planning process, to ensure that disruption to the Machine assembly, tooling & plant installation's critical functions is minimised;
- Development of schedules, resource estimates and cost estimates for H&S activities;
- Preparation, editing and review of documents in the English language, including documents in connection with manufacturing, construction, testing, codes and standards.

## **7 Responsibilities**

The Leader of the MAI Section will be the point of contact for all technical matters.

The IO shall provide:

- Office accommodation;
- Computing facilities and ITER laptop, access to IDM and software required to fulfil specified functions;
- Component CAD models or access to the CAD models in ENOVIA / CATIA;
- Access to IO information and reports available/requested and as necessary to carry out specified functions.

This work shall be carried out in close collaboration with the Leader of the MAI Section and must therefore be site-based at Cadarache, France.

## **8 List of Deliverables and Due Dates**

Within 1 month of the signature of the Contract, a draft workplan, listing planned Deliverables and associated timescales for delivery by the H&S Specialist, shall be provided by the H&S Specialist, for agreement with the Leader of the MAI Section. Any changes to Deliverables are to be recorded on monthly reports, signed by both the H&S Specialist and the Leader of the MAI Section.

Planned Deliverables shall be prioritised and agreed in accordance with the Detailed Work Schedule (DWS) for MAI, available at the time of kick-off meeting (refer Section 12). Below represents a list of Deliverables currently envisaged for the contract.

1. Documented H&S advice regarding legislative requirements, safety methodologies and approaches for Machine assembly and plant installation;
2. H&S contribution to technical documentation provided by MAI engineers, including standardisation and review of H&S risk assessments, safety requirements and systems;
3. Assistance with IO preparation of tender and contract documentation to include:
  - Compilation and drafting of technical requirements for assembly and installation H&S, based on and supplementing existing IO rules and procedures;
  - Review and update of H&S forms and procedures for Site Construction;

- Review of H&S aspects of tender documentation (provided by others).
4. Provide resources plan detailing H&S support for Site Construction and preparation activities for input to Detailed Work Schedule (DWS), Construction Master Schedule (CMS) and Cost Estimate.

## **9 Acceptance Criteria**

IO shall review and provide comment for any Deliverables prepared by the H&S Specialist as part of the contract associated with this Specification. In the event a resubmission is required, the H&S Specialist shall perform all the necessary modifications or iterations to the Deliverables and resubmit a revised version for IO acceptance.

Deliverables shall be considered complete after IO has issued formal acceptance.

## **10 Specific Requirements and Conditions**

### **10.1 Confidentiality**

The H&S Specialist shall perform all duties under this contract in strict confidence.

### **10.2 Qualifications and Experience**

To effectively complete the work will require a qualified engineer with suitable proven technical skills and previous training commensurate with the role outlined. The suitability of the H&S Specialist for assigned activities shall be demonstrated in submissions.

In particular, the following prior experience is identified as necessary to complete this contract:

- A university degree in engineering or a related discipline, or combination of qualifications and experience acceptable by ITER;
- NEBOSH Diploma or equivalent;
- Member of IOSH/CMIOSH or equivalent;
- Recent relevant experience (ideally a minimum of 12 years) covering H&S;
- Management in large scale construction management projects;
- Incident reporting, investigation and knowledge sharing skills;
- Experienced in drafting technical documents, specifications and reports suitable for use by industry in an assembly/construction environment;
- Excellent understanding of European/French H&S legislation, industry standards and best practice;
- Fluent in the English language, written and spoken;
- Demonstrated ability to develop innovative solutions to complex H&S problems;
- Excellent organisational, problem solving, and communication skills;
- Knowledge of Quality Assurance systems and their practical application;

The H&S Specialist is expected to prepare well written documents and present/compile data in high quality English, which are suitable for senior management acceptance and use by ITER, Domestic Agencies and contractors.

## **11 Work Monitoring / Meeting Schedule**

The H&S Specialist shall report progress to the Leader of the MAI Section, or his delegate, each week. A summary progress report shall be provided by the H&S Specialist on a monthly

basis for acceptance of the Leader of the MAI Section. The progress report shall include detailed status of each Deliverable and the number of days worked.

## **12 Delivery Time Breakdown**

A kick-off meeting shall be convened two weeks after the signature of the contract for the purpose of confirming the background documentation and requirements defining the work. The site-based H&S Specialist shall be required to attend.

The Deliverables shall be completed within 1 year from commencement of the H&S Specialist. Should the options to extend the contract be instructed, new sets of Deliverables shall be agreed with the H&S Specialist and instructed accordingly by the IO.

## **13 Safety requirements**

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

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

In such case the Contractor and its subcontractors are informed that:

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

For the Protection Important Components, structures and systems of the nuclear facility, and Protection Important Activities the Contractor shall ensure that a specific management system is implemented for his own activities and for the activities done by any subcontractor following the requirements of the Order 7th February 2012 [1].