

Call for Expertise

Quality Engineering Coordination for the Machine Assembly and Installation Section

Technical Specification

ABSTRACT

This document specifies the requirements for the provision of a Quality Coordinator to carry out services relating to Quality activities for ITER machine assembly and plant installation.

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1. ABSTRACT

This document specifies the requirements for the provision of a Quality Coordinator to carry out services relating to Quality activities for ITER machine assembly and plant installation.

2. BACKGROUND AND OBJECTIVE

2.1 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 Quality Order dated 10th August 1984 concerning Basic Nuclear Installations (French acronym: INB) for Design, Construction and Operational Quality
- Order dated 12th Dec 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.

2.2 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.

2.3 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.

2.4 Objective of the Contract

The objective of this contract is to provide the MAI section with specialist Quality support, in the form of an appropriately qualified and experienced Quality expert (hereafter known as the Quality Coordinator). The Quality Coordinator will be deployed in close support on the ITER site, Cadarache, France, to complete the scope of work (section 3) that will include the preparation of the ITER Quality contract for MAI activities, providing expertise and guidance throughout the tender process, and to follow up the contracts.

Under this contract the Quality Coordinator will also provide expertise and guidance on general Quality matters. With reference to the Mission Statement contained in section 2.3 of this document, guidance could be required in support of any of the charges of the section, or in respect of any Quality related matter required by the Leader of the MAI section.

3. SCOPE OF WORK

The scope of work will be carried out in close liaison with the IO QA Division Quality Officer and will include, but shall not necessarily be limited to:

- providing advice and expertise on any aspects related to Quality related activities as required by the Leader of the Machine Assembly and Installation section;
- preparation (production of Tender Documentation) and follow up (management) of the ITER Quality Contract for MAI activities through all phases;
- participation in the preparation, and tendering of any other contracts where the control of quality is an important requirement;
- participation in the development of Quality Plans, Procedures and Strategies for Assembly/Installation activities to ensure compliance with the ITER Quality Program;
- development of schedules, resource estimates and cost estimates for Quality activities;

- preparation, editing and review of documents in the English language, including documents in connection with manufacturing, construction, testing, codes and standards.

4. ESTIMATED DURATION

The contract duration shall be for an initial period of 12 months with an option for an additional 12 months, and shall cover 220 working days per year, in accordance with the working practices of ITER.

5. WORK DESCRIPTION

The Quality Coordinator's full-time presence at the ITER site is necessary for the effective performance of his duties.

Details of work to be performed by the Quality Coordinator will be specified as needs arise by the Technical Responsible Officer mentioned in the contract, or his authorized deputy.

Each work task will be individually specified in consultation with the Quality Coordinator and a deliverable date will be agreed.

The Quality Contract for MAI activities will need to cover all Quality related activities foreseen during assembly/installation of the machine and its supporting systems. These activities are likely to include but are not limited to:

- set-up and implement processes and procedure to successfully manage the Quality of MAI tasks;
- assess and define quality controls commensurate with Safety and Quality classifications allocated to ITER systems, in compliance with the French nuclear regulatory approach and the 1984 Order;
- advise on inspection activities and the acceptability of NDE procedures where qualified to do so or to source such advice from suitably qualified and experienced personnel;
- advise on welding processes where qualified to do so or to source such advice from suitably qualified and experienced personnel;
- put in place controls to ensure that drawings, documents and data are at the correct issue for the task to proceed;
- carry out periodic surveillance to ensure compliance with specification in areas such as:
 - material compliance, mill certificates coupled with material and drawings
 - operator adherence to work procedures
 - control of measuring and test equipment
 - worker qualification and training
- Witness and sign off quality related documents on behalf of the IO for activities such as:
 - welding/brazing processes and operator qualifications;
 - non-destructive examination;
 - production proof samples;

- pressure and functional tests;
- Manage non-conformance, concessions and rework ensuring that all such activities are correctly authorised and documented;
- review of contractor/DA generated documents/data;
- review of supplier quality verification documentation package(s) for completeness and traceability of item(s);
- identification of quality problems, initiating documented actions for resolution and verifying implementation of solutions;

6. LIST OF DELIVERABLES AND DUE DATES

Each package of work to be performed will be discussed with the Quality Coordinator before its commencement, and a specification for the work package, schedule and form of deliverables agreed.

A monthly progress report shall be submitted and it shall reflect the agreed deliverables for that month.

7. ACCEPTANCE CRITERIA

All deliverables will be subject to the approval of the Technical Responsible Officer mentioned in the contract, or his authorized deputy.

8. WORK MONITORING / MEETING SCHEDULE

Completion of work items will be confirmed by the Technical Responsible Officer mentioned in the contract, or his authorized deputy. For longer tasks an interim monitoring point may be defined.

9. REQUIRED QUALIFICATIONS AND EXPERIENCE

The Quality Coordinator shall have:

- A university degree in Mechanical Engineering / Quality Assurance, or a combination of qualifications and experience acceptable by ITER;
- Recent relevant experience (ideally a minimum of 15 years) covering the specification and implementation of Quality processes and procedures;
- Demonstrable experience in NDE techniques and applicable practises;
- Demonstrable experience in implementing the requirements of the 1984 Nuclear Safety and Quality Order is desirable;
- Demonstrable experience in implementing the requirements of the Order for Nuclear Pressure Equipment and the decree for Pressure equipment is desirable;
- Demonstrable practical knowledge of Quality Control Techniques
- Demonstrable experience of applying the BS EN ISO 9000 standard or other international equivalent on a multimillion Euro engineering construction project

- Broad based knowledge and demonstrable experience in the implementation of codes and standards such as:
 - ASME codes
 - RCC-MR
 - EN harmonised standards, e.g. EN13455, EN13480
- Fluent in the English language, written and spoken;
- Good planning, organisation, communication and negotiation skills