**Technical Specifications (In-Cash Procurement)**

# Technical_Specifications_Analysis to the integrated diagnostic system designs

The objective of this engineering contract is to provide the analysis to the integrated diagnostic system designs, with particular emphasis in the areas of diagnostic integration within ports and in the buildings. The diagnostics have to be integrated within tokamak complex. Transmission lines, cables and cubicles will be located in different places across the tokamak complex and have to be designed and integrated to withstand the loads, to ensure confinement and to provide functionality to the ...

# Table of Contents

# 1 Purpose

The objective of this engineering contract is to provide the analysis to the integrated diagnostic system designs, with particular emphasis in the areas of diagnostic integration within ports and in the buildings. The diagnostics have to be integrated within tokamak complex. Transmission lines, cables and cubicles will be located in different places across the tokamak complex and have to be designed and integrated to withstand the loads, to ensure confinement and to provide functionality to the diagnostic systems.

# 2 Scope

The scope of work for this contract will be the following Diagnostics development activities: **Advance diagnostic designs in their integration into the tokamak complex.**

The work comprises of integration of distributed ex-vessel diagnostic systems in the buildings and integration of diagnostic systems inside port plugs and in the port cells.

Task encompasses several activities divided in Deliverable-based Sub-Tasks

# 3 Definitions

For a complete list of ITER abbreviations see: ITER Abbreviations (ITER_D_2MU6W5).

# 4 References

N/A

# 5 Estimated Duration

The duration shall be for 12 months from the starting date of the contract. Services are to be provided at the IO-CT work site.

# 6 Work Description

- The deliverables as described in the following section shall take of full-time involvement
- Control and integration of the design of equipment (or parts of equipment) performed by external companies and other parts of IO impacting on diagnostics scope especially for the diagnostic systems in gallery of the building 11 and diagnostic building.
- Working on the development of alternatives to conflicting designs.
- Ensuring design compliance with the ITER requirements and with the Diagnostics system requirements.
- Contribution to the preparation of data for CAD exchange to facilitate the provision of data to IO and external agencies.
- The work is to be performed on ITER site. However, the contractor may be asked by the Responsible Officer to perform travel missions of a short duration for the purpose of the execution of the Contract.

# 7 Responsibilities

The Responsible Officer for the Contract at ITER Organization is Thibaud GIACOMIN.

# 8 List of deliverables and due dates

| | Deliverable | |
|---|---|---|
| D1 | Integration of the diagnostic at the B1 level.<br><br>The aim of this deliverable is to create the configuration stable of the diagnostic at the B1 level in the building 11 (B11) and building 74 (B74).<br><br>This configuration needs to reflect the phase approach.<br><br>In order to achieve this goal some step need to be follow by the contractor:<br><br>  a) Check in the ENOVIA data base in order to extract the component installed at the B1 level of the building 11 in the gallery and in the building B74.<br>  b) Make a comparison between the "WORK", "CONTEXT" and "CONFIG" branch in ENOVIA. This will be done in order to evaluate which version is the most up to date. This work will be done with the help of the CAD office<br>  c) Make a list of the task that need to be done by the DO in order to propagate the most up to date version in the 3 ENOVIA branch.<br>  d) Make a meeting with DCIN in order to present the clash and for each clash a proposal need to be done by the contractor.<br><br>The deliverable will be a PowerPoint store on IDM. The list of the reviewer and approver need to be put by the contractor this list need to be done in accordance with the ITER_D_2EXFXU - Sign-Off Authority for Project Documents. | TO + 4 months |
| D2 | Integration of the diagnostic at the L1 level.<br><br>The aim of this deliverable is to create the configuration stable of the diagnostic at the L1 level in the building 11 (B11), building 14 (B14) and building 74 (B74).<br><br>This configuration needs to reflect the phase approach.<br><br>In order to achieve this goal some step need to be follow by the contractor:<br><br>  a) Check in the ENOVIA data base in order to extract the component installed at the L1 level in the area mention before.<br>  b) Make a comparison between the "WORK", "CONTEXT" and "CONFIG" branch in ENOVIA. This will be done in order to evaluate which version is the most up to date. This work will be done with the help of the CAD office<br>  c) Make a list of the task that need to be done by the DO in order to propagate the most up to date version in the 3 ENOVIA branch.<br>  d) Make a meeting with DCIN in order to present the clash and for each clash a proposal need to be done by the contractor.<br><br>The deliverable will be a PowerPoint store on IDM. The list of the reviewer and approver need to be put by the contractor this list need to be done in accordance with the ITER_D_2EXFXU - Sign-Off Authority for Project Documents. . | TO + 8 months |

| D3 | Integration of the diagnostic at the L2 level. | TO + 12 months |
| --- | --- | --- |
| | The aim of this deliverable is to create the configuration stable of the diagnostic at the L2 level in the building 11 (B11), building 14 (B14) and building 74 (B74). | |
| | This configuration needs to reflect the phase approach. | |
| | In order to achieve this goal some step need to be follow by the contractor: | |
| | a) Introspection in the ENOVIA data base in order to extract the component installed at the L2 level in the area mention before.<br>b) Make a comparison between the "WORK", "CONTEXT" and "CONFIG" branch in ENOVIA. This will be done in order to evaluate which version is the most up to date. This work will be done with the help of the CAD office<br>c) Make a list of the task that need to be done by the DO in order to propagate the most up to date version in the 3 ENOVIA branch.<br>d) Make a meeting with DCIN in order to present the clash and for each clash a proposal need to be done by the contractor. | |
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Note that the work on the IO-scope systems includes the design development of these systems, whereas the work on the DA-scope systems is integration design work.

# 9 Acceptance Criteria

The deliverables as described in section 8 shall be reviewed for acceptance by the Responsible Officer for the Contract - or his delegate.

# 10 Specific requirements and conditions

- Engineering Degree in appropriate Engineering discipline is necessary
- Minimum of 5 years' experience in Construction /Facilities Engineering
- Experience in Nuclear Fission/Fusion is very important
- Experience with remote handling equipment is an advantage
- Experience of working with CAD and CAD Designers
- Ability to balance quality/risk/cost when providing design information.
- Ability to work in multidisciplinary, international team environment.
- Knowledge of Quality Assurance systems and their practical application
- Must be fluent in English language, both written and oral.

# 11 Work Monitoring / Meeting Schedule

The work progress shall be reported in Port-Plug and Diagnostics Division meetings on a Monthly basis.

# 12 Delivery time breakdown

See section 8.

# 13 Quality Assurance (QA) requirements

The organisation conducting these activities should have an ITER approved QA Program or an ISO 9001 accredited quality system.

The general requirements are detailed in ITER Procurement Quality Requirements (ITER_D_22MFG4).

Prior to commencement of the task, a Quality Plan must be submitted for IO approval giving evidence of the above and describing the organisation for this task; the skill of workers involved in the study; any anticipated sub-contractors; and giving details of who will be the independent checker of the activities (see Procurement Requirements for Producing a Quality Plan (ITER_D_22MFMW)).

Documentation developed as the result of this task shall be retained by the performer of the task or the DA organization for a minimum of 5 years and then may be discarded at the direction of the IO. The use of computer software to perform a safety basis task activity such as analysis and/or modelling, etc. shall be reviewed and approved by the IO prior to its use, in accordance with Quality Assurance for ITER Safety Codes (ITER_D_258LKL).

# 14 CAD Design Requirements (if applicable)

For the contracts where CAD design tasks are involved, the following shall apply:

The Supplier shall provide a Design Plan to be approved by the IO. Such plan shall identify all design activities and design deliverables to be provided by the Contractor as part of the contract.

The Supplier shall ensure that all designs, CAD data and drawings delivered to IO comply with the Procedure for the Usage of the ITER CAD Manual (2F6FTX), and with the Procedure for the Management of CAD Work & CAD Data (Models and Drawings 2DWU2M).

The reference scheme is for the Supplier to work in a fully synchronous manner on the ITER CAD platform (see detailed information about synchronous collaboration in the ITER GNJX6A - Specification for CAD data production in ITER Contracts.). This implies the usage of the CAD software versions as indicated in CAD Manual 07 - CAD Fact Sheet (249WUL) and the connection to one of the ITER project CAD data-bases. Any deviation against this requirement shall be defined in a Design Collaboration Implementation Form (DCIF) prepared and approved by DO and included in the call-for-tender package. Any cost or labour resulting from a deviation or non-conformance of the Supplier with regards to the CAD collaboration requirement shall be incurred by the Supplier.

# 15 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 Suppliers and Subcontractors must be informed that:

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

For the Protection Important Components, structures and systems of the nuclear facility, and Protection Important Activities the contractor shall ensure that a specific management system is implemented for his own activities and for the activities done by any Supplier and Subcontractor following the requirements of the Order 7th February 2012 [20].