

**System engineer service
for Pressurized Hot Water Test Facility**

Technical Specifications

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1 Abstract

The purpose of this contract is to acquire the services of a system engineer for a fixed period to assist in the design follow-up of the ITER Port Plug Test Facility (PPTF). The system engineer will support the PPTF responsible officer in particular for all what concern the hot pressurized heating loop.

2 Background and Objectives

The ITER design integration section is responsible for the port plug test facility. The Russian Federation Domestic Agency is in charge of the design and procurement of the PPTF. The PPTF procurement arrangement has been signed with the RF-DA. The preliminary design phase is scheduled early 2013, whereas, the final design is planned early 2014.

The Port Plug Test Facilities aim is to reduce the risk of a Port Plug failure during the ITER machine operation. The PPTF provide the capability to test the Upper and Equatorial Port Plugs before installation on the machine and after refurbishment in the hot cell facility. The port plugs to be tested are the IC system equatorial port plugs, EC system equatorial and upper port plugs, diagnostics equatorial and upper port plugs, and test blanket modules.

To heat-up the port plugs and the test stands, the port plug test facility is equipped with a pressurised hot water circuit.

3 Scope of Work

The scope of the work of this contract is to provide support to the IO in the follow-up of the PPTF's design activities.

4 Estimated Duration

The contract is for a minimum of 40 work days over a period of 104 weeks from the signature date.

5 Work Description

The engineer would be expected to provide support to the PPTF equipment responsible officer on a range of design tasks:

- Assisting in the definition on design detail requirements.
- Assisting in the definition on design process.
- Assisting in verification on design compliance vs requirement.
- Performing engineering design validation activity.
- Participate to design reviews

These tasks will focus on, but won't be limited to, the PPTF's heating system.

The work could include travels to Moscow's region to oversee the activities of the RF-DA.

6 Required Skills

The engineer providing the services should meet the following requirements:-

- Degree in system engineering,
- Minimum of 5 years' experience in hot pressurised water loops,
- Experience development and operation of hot water loops
- Experience of large component in high vacuum
- Excellent knowledge of English, to allow easy communication and adequate drafting of technical documentation.

7 List of deliverables and due dates

The system engineer shall work closely with the ITER PPTF staff throughout the period and produce a progress report every 3 months based upon the work description (see chapter 5) and clarified with IO-TRO each beginning of the 3 months period . The contract shall have the following deliverables and due dates:-

| Deliverable | Deliverable description | Due date |
|--------------------|--------------------------------|-----------------|
| D1 | Progress report D1 | T0 + 3 months |
| D2 | Progress report D2 | T0 + 6 months |
| D3 | Progress report D3 | T0 + 9 months |
| D4 | Progress report D4 | T0 + 12 months |
| D5 | Progress report D5 | T0 + 15 months |
| D6 | Progress report D6 | T0 + 18 months |
| D7 | Progress report D7 | T0 + 21 months |
| D8 | Progress report D8 | T0 + 24 months |

Further details of the deliverables shall be established by the IO-TRO at the beginning of the relevant work period.

8 Acceptance Criteria

The deliverables shall be reviewed by the IO-TRO for acceptability.

9 Specific requirements and conditions

In response to this call for expertise the company/individual shall provide:

- Financial proposal (including cost for 4 days travels to Moscow (Russia))
- Profile(and/or CV) of key personnel involved in execution of the work activity

The official language of the ITER project is English. Therefore all input and output documentation relevant for this Contract shall be in English. The Contractor shall ensure that all the professionals in charge of the Contract have an adequate knowledge of English, to allow easy communication and adequate drafting of technical documentation. This requirement also applies to the Contractor's staff working at the ITER site or participating to meetings with the ITER Organization.

Documentation developed shall be retained by the contractor 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, it should fulfil IO document on calculation code for safety analysis.

The work shall require the presence of the Contractor's personnel at the site of the ITER Organization, Cadarache, 13108 St Paul-lez-Durance, France, for the duration of the contract.

For all deliverables submitted in electronic format the Contractor shall ensure that the release of the software used to produce the deliverable shall be the same as that adopted by the ITER Organization.

Financial proposal: The daily rate will involve all travelling and accommodation costs.

The engineer provided for on-site duties shall keep the normal daily working hours of the ITER Organization.

10 Work Monitoring / Meeting Schedule

The system engineer shall report to the ITER Organization PPTF RO. Meetings shall be held as and when deemed necessary by the ITER staff.

11 Quality Assurance (QA) requirement

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 document: ITER Procurement Quality Requirements ([22MFG4 v4.0](#)) and can be used in analogy to this Task Agreement.

Prior to commencement of the task, a DA Quality Plan (conformant with [22MFMW v3.0](#)) 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.

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, it should fulfil IO document on Quality Assurance for ITER Safety Codes (Quality Assurance for ITER Safety Codes [258LKL v1.4](#)).

12 References / Terminology and Acronyms

12.1 References

PPTF procurement arrangement: [ITER D 6JL69X - 5.8.P1.RF.01 Port Plug Test Facility \(PPTF\) Annex B](#)

12.2 Terminology and Acronyms

In the following table denominations and definitions are given of all the actors, entities and documents referred to in this Specification, together with the acronyms used in this document.

| <u>Denomination</u> | <u>Definition</u> | <u>Acronym</u> |
|-------------------------|---|----------------|
| ITER Organization | For this Contract the ITER Organization | IO |
| Port Plug Test Facility | Set of 4 port plug test stands | PPTF |