

**CONTRACT TECHNICAL SPECIFICATION****Engineering Support in the Areas of Vacuum  
Testing****Technical Specification  
Rev. 1.3**

	<i>Version: 1.0</i>	<i>Date: 07/07/2011</i>
	<i>Name</i>	<i>Affiliation</i>
<i>Author</i>	<b>L. Worth</b>	<b>CEP</b>
<i>Reviewers</i>	<b>M. Glugla</b>	<b>CEP</b>
<i>Approver</i>	<b>R. Pearce</b>	<b>CEP</b>

## Table of Contents

<b>1</b>	<b>Abstract</b> .....	<b>3</b>
<b>2</b>	<b>Scope</b> .....	<b>3</b>
<b>3</b>	<b>Background and Objectives</b> .....	<b>3</b>
<b>4</b>	<b>Work Description</b> .....	<b>3</b>
<b>5</b>	<b>Duration</b> .....	<b>4</b>
<b>6</b>	<b>Deliverables and Time Schedule</b> .....	<b>4</b>
<b>7</b>	<b>Acceptance Criteria (including rules and criteria)</b> .....	<b>4</b>
<b>8</b>	<b>Payment schedule / Cost and delivery time breakdown</b> . <a href="#">Error! Bookmark not defined.</a>	<b>5</b>
<b>9</b>	<b>Experience</b> .....	<b>5</b>
<b>10</b>	<b>Work conditions</b> .....	<b>5</b>
<b>11</b>	<b>Timetable</b> .....	<b>5</b>
<b>12</b>	<b>Candidature</b> .....	<b>5</b>

### Revision history

Date	Rev.	Note
08 July 2011	V1.2	First issue
11 July	V1.3	Accounting for comments

## 1 Abstract

This technical specification describes engineering work in the areas of acceptance/ installation vacuum testing.

## 2 Scope

The scope of this contract is to provide engineering and technical support services in the following areas:

- Analysis of ITER design(s) with respect to acceptance vacuum leak testing
- Analysis of ITER system design(s) with respect to installation leak testing
- Review of acceptance / installation leak testing procedures
- Develop leak acceptance / installation leak testing plans
- Cultivate and maintain a project wide positive attitude to leak testing and vacuum quality
- Support vacuum acceptance testing at the Supplier and the IO

## 3 Background and Objectives

The vacuum performance of the ITER machine is critical to the project so at all stages of design and manufacture vacuum leaks must be minimised and the risk of leakage mitigated. Where possible, to minimise the effect of leaks during ITER operations, the vacuum components for use on ITER systems must be designed to facilitate remote leak testing. The objective is to ensure the timely and effective leak testing of ITER vacuum systems / components, through design assessment, vacuum test procedure review, vacuum test plan development and vacuum test support.

## 4 Work Description

The work required in this technical specification includes engineering activities and vacuum test scheduling.

The scope of work described below is expected to entail a time commitment of 100% over the contract duration on the part of one Expert.

Work is organized over a one-year period, with specific tasks and deliverables defined on a quarterly basis in advance.

### Scope of Work

- Analysis of ITER design(s) with respect to acceptance vacuum testing
 

The Expert shall assess ITER designs with respect to acceptance vacuum testing. Where it is shown that acceptance vacuum testing with the required sensitivity (etc.) is not feasible the Expert shall provide design input to allow for acceptance vacuum testing with the required sensitivity (etc.)
- Analysis of ITER system design(s) with respect to installation leak testing
 

The Expert shall assess ITER designs and installation plans / procedures with respect to installation vacuum testing. Where it is shown that installation vacuum testing with the required sensitivity (etc.) is not feasible the Expert shall provide design input to allow for installation vacuum testing with the required sensitivity (etc.)
- Review of assembly schedules
 

The Expert shall review installation schedules of vacuum equipment and where necessary provide input to the schedule to allow for timely installation leak testing
- Review of acceptance / installation leak testing procedures

The Expert shall review IO and Suppliers acceptance / installation vacuum testing procedures to ensure vacuum testing can be performed to the required sensitivity (etc.). The Expert shall provide input to the reviewed procedures as necessary

➤ Develop leak acceptance / installation leak testing plans

The expert shall develop with system Responsible officers (ROs), Domestic Agencies (Das), Suppliers (etc.) detailed leak testing procedures and test plans to facilitate timely vacuum testing to the required sensitivity (etc.)

➤ Cultivate and maintain a project wide positive attitude to leak testing and vacuum quality

The Expert shall continue to promote project wide vacuum quality and leak avoidance / mitigation by system design

➤ Support vacuum acceptance testing at the Supplier and the IO

Where required the Expert will witness / support vacuum testing at the IO or the Suppliers premises.

In addition the Expert shall perform the following functions over the duration of the contract:

➤ Advising and training of other vacuum staff either responsible or involved with the above work

➤ Work in other area as appropriately assigned by the ITER vacuum section leader

## 5 Duration

The Contract duration shall be one year.

## 6 Deliverables and Time Schedule

➤ Monthly reports shall be submitted to the ITER Contract RO with a summary of activities during the reporting period, including approximate time spent on each activity

ITER Organization shall during the Contract period establish the Expert work plan on ad hoc basis and relative to the respective annual work plan, with specific tasks and deliverables defined on a quarterly basis.

Every three months the IO will, in mutual agreement with the Expert, establish tasks and priorities, along with the written reports to be produced, documentation to be reviewed, or travel needed to monitor supplier progress. These will be part of a work plan for the three-month period. Specific deliverables are:

➤ Final design reports, reports on reviewed documents, interface documentation, or any other written report as specified in the work plan

➤ Details of system design assessments made and any changes to be implemented to improve the leak testability of the systems assessed

➤ Details of suppliers' procedures reviewed and modifications to be implemented

➤ Reports on any vacuum tests performed at IO or at the suppliers' site

➤ Leak testing plans developed under the scope of the contract

➤ Trip reports each time there is a visit to a supplier to follow up or inspect work

## 7 Acceptance Criteria (including rules and criteria)

The acceptance of the work is based on completion of the tasks and goals set on the work plan for each quarter, as well as on the completion of reports and documents specified in the work plan.

