

Detailed design and Integration of Tritium Plant building layout and sub-systems

Call for Nomination

Purpose

For the procurement of the Tritium Plant systems and buildings, detailed design of various systems layout shall be performed. This Framework Contract is proposed to provide engineering support to develop detailed layout of the Tritium Plant systems and support integration of the systems in Tritium Plant building.

Background

The design of the Tritium Plant and layout of the building has been reviewed in depth taking into consideration site specific requirements and French regulations. Major changes have been identified and recorded in DCR-065. Based on the new concept, layout of the building has been developed in the frame of the engineering support contract carried out by EFDA.

The Tritium Plant Building belongs to the Tokamak Complex and is one of the nuclear buildings of the facility. This building accommodates Tritium Plant and Detritiation Systems, HVAC system for the Tritium Building and Tokamak building, Test Blanket Module (TBM) auxiliary systems as well as systems located in Tokamak Cooling Water System (TCWS) Vault annex.

Specific requirements related to fire hazard have been formulated and implemented into the conceptual design. Systems are arranged in fire sectors with a maximum tritium inventory of 700 grams. Personnel access/egress is provided through the corridors on each level. The corridor allows for equipment transportation within the level and between different levels by means of a freight elevator.

The general arrangement of all systems has been revised and new concept for the layout has been proposed considering primary tritium systems, atmosphere detritiation and HVAC systems, Test Breeding Blanket auxiliary systems, etc.

Several changes have been proposed for the civil design of the building for the purpose of simplification of the access between Tritium Plant and Tokamak buildings and simplification of the structural design of the Tritium Building. These changes considered aligning floors of the two buildings, increasing the size of the building to provide space for the corridor, rearranging external shafts, etc.

The new conceptual layout has been analyzed in the course of Pre Architect and Engineering activities carried out by ITER Civil and Construction Support Office. As a result of this work new designs of the Tritium Plant Building and building systems have been developed and described in the System Requirement Document (SRD), the System Design Description (SDD), the Interface Control Document (ICD) documentation and CATIA models for the buildings.

For the procurement of the Tritium Plant systems and buildings, further work on integration and detailed design of systems layout is necessary.. The objectives of this work are to provide engineering support to develop detailed layout of the Tritium Plant systems and to support

integration of the Tritium Plant systems with the building, implementation of the piping connections between systems and to detritiation systems: support structures, penetration, interconnecting pipes routing, connections to the utilities and other services. The design shall be described in the format required by SDD 3.2.0 document and the associated Interface Control Document and Interface Sheets (ICD/IS).

Scope of work

The work will be carried out under a framework contract with number of subtasks (Task Orders) formulated to support activities required for the particular phase of the design. Duration of the framework contract will be 2 years from the signature. The overall resources required shall be approximately 200 working days professional personal for each year. Preliminary list of sub-tasks includes:

- Engineering support for the identification and preparation of the interfaces with buildings and buildings systems
- Development of the procedures for the systems installation and maintenance
- Detailed design of the Tritium Plant systems Layout
- Preparation of the SDD32.0, ICD and IS documentation

As the work relates to tritium, there may be possible Export Control considerations.

Timetable

The tentative timetable is as follows:

Call for Pre-qualification	07 June 2010
Call for tender	26 July 2010
Tender submission	Mid September 2010
Contract placement	October 2010
First deliverable	February 2011
Completion of Contract	October 2012

Experience

The contractor and its personnel shall have adequate experience of layout design, plant integration, procurement and installation of chemical processing systems for nuclear facilities.

This includes:

- Management of the design and interface data
- Experience in design, manufacturing, installations of systems subject to nuclear regulations
- Experience in design, manufacturing, installations of seismically qualified systems
- Experience in the field of radioactive materials handling and confinement.

Candidature

Participation is open to all legal persons participating either individually or in a grouping (consortium) which is established in an ITER Member State. A consortium may be a permanent, legally-established grouping or a grouping, which has been constituted informally for a specific tender procedure. All members of a consortium (i.e. the leader and all other partners) shall be jointly and severally liable to the ITER Organization.

The consortium groupings shall be presented at the pre-qualification stage. The consortium cannot be modified later without a written approval of the ITER Organization.