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## SUMMARY

### Call For Nomination ITER/11/C4N/5717/JTR

# Framework Service contract for Engineering Support to ITER Central Interlock System

## **Purpose**

The primary objective of ITER is to show fusion could be used to generate electrical power, and to gain the necessary data to design, construct, and operate the first electricity-producing plant. It will generate 500 MW of fusion power for extended periods of time, ten times more than the energy input needed to keep the plasma at the right temperature. It will therefore be the first fusion experiment to produce net power. It will also test a number of key technologies, including the heating, control, diagnostic and remote maintenance that will be needed for a full-scale fusion power station.

## **Background**

ITER is a joint international research and development project for which initial construction activities have recently started. The project aims to demonstrate the scientific and technological feasibility of fusion power for peaceful purposes. 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.

## **Scope of work**

The objective of this contract is to incorporate new members to the interlock team to work on the areas listed above during 2012 and 2013.

The Interlock Control System or ICS is the ITER control system in charge of implementing the investment protection functions. It is composed of the Central Interlock System (PBS-46) or CIS and around one hundred Plant Interlock Systems (PIS).

The team in the CSD Division in charge of developing the Central Interlock System is also responsible of:

- Coordinating the design of the Plant Interlock Systems included in the different PAs
- Designing and deploying a common Quality Plan for the development of the in-fund and in-kind parts of the Interlock Control System (CIS+PIS)
- Ensuring the proper integration of the local interlocks among them and with the central systems
- Coordinate the different development activities with the objective of elaborating a common catalogue of hardware and software products to be used by ITER IO and the DAs for the implementation of the plant system and central interlocks.

The scope of the engineering support services requested in this specification covers the supply of suitable and experienced experts to reinforce the ITER interlocks team.

For these positions, experience in Tokamaks is highly desirable, as would be knowledge and experience in large scientific facilities design.

The expected services shall in particular complement IO staff in interlocks engineering support, but at the same time have a wide knowledge about the technologies selected, e.g.

- General Controls Engineering
- Concept, design, realisation, interface definition and documentation of interlock systems for investment protection
- Wide range of Interface and I/O standards, including PLCs (Siemens), PCI, PXI, cRIO etc
- Machine protection in large scientific installations such as tokamaks and high energy particle accelerators.

### **Duration of services**

The contract will be carried out over an initial period of Three (3) years with an option to extend the services for two (2) additional periods, each of one (1) year duration. The contract is scheduled to come into force in January 2012.

## Procurement Time table

A tentative time table is outlined as follows:-

Release Call for Nomination	30 AUGUST 2011
Receipt of nominations	End September 2011
Issuance of Call for Tender incl Pre-qualification	Early October 2011
IO Receipt of the pre-qualification questionnaire	End October 2011
Notification of Pre- qualification results	Early November 2011
Clarification questions related to this Call for Tender	Mid November 2011
Response to Questions from ITER Organization	End November 2011
<b>Tender Proposals Due Date:</b>	<b>17.00 CET 20 December 2011</b>
Estimated Contract Award Date:	January 2012
Estimated Contract Start Date:	January 2012

## Experience

Companies experienced in providing a significant contribution in design, engineering and analysis of complex interlocks systems. These companies shall have proven experience in the following areas:

- interlocks I&C systems for tokamaks or similar scientific facilities. Design and implementation of machine protection systems, control of interfaces, of central interlocks with the different plant systems (up to 100), definition of investment protection functions for complex industrial or scientific facilities and R&D contracts follow-up.
- Interlocks technologies based on Siemens S7 PLCs (400-FH series) and PXI and cRIO fast controllers
- Use and development of control systems based on EPICS
- quality assurance of I&C systems, particularly IEC61508 standards and PLM tools.

Experience in large physics experiments will be considered as a major asset for the contractor's selection.

## **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 legal person cannot participate individually or as a consortium partner in more than one application or tender. 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 members) are jointly and severally liable to the ITER Organization. The consortium cannot be modified later without the approval of the ITER Organization.

Legal entities belonging to the same legal grouping are allowed to participate separately if they are able to demonstrate independent technical and financial capacities. Bidders's (individual or consortium) must comply with the selection criteria. IO reserves the right to disregard duplicated references and may exclude such legal entities from the tender procedure.

## **Reference**

[RD1] Plant Control Design Handbook (27LH2V)

[HTTP://WWW.ITER.ORG/DOC/WWW/EDIT/LISTS/WEBSITE/TEXT/ATTACHMENTS/94/PCDH\\_V6\\_1.PDF](http://www.iter.org/doc/www/edit/lists/website/text/attachments/94/PCDH_v6_1.pdf)

Further information on the ITER Organization procurement can be found at:

[HTTP://WWW.ITER.ORG/ORG/TEAM/ADM/PROC/PAGES/WELCOME](http://www.iter.org/org/team/adm/proc/pages/welcome)