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## SUMMARY

### Call For Nomination ITER/11/C4N/5805/JTR

# Framework Service contract for Engineering Support to ITER Controls

## **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 engineering contract is to support the ITER Controls Division. The scope of the engineering support services covers the supply of suitable and experienced experts to reinforce the ITER controls effort in several specific areas.

For some of these positions, experience in Tokamaks is highly desirable, as would be knowledge and experience in nuclear design. For others, familiarity with the technologies outlined in the specific profiles given below is required or desired as indicated.

Personnel provided shall include professional engineers, technicians and administrative personnel to complement IO staff in controls engineering support. This personnel shall have a wide knowledge and experience about the technologies selected, e.g.

- General Controls Engineering
- Experts in concept, design, realisation, interface definition and documentation of interlock systems for investment protection and for nuclear safety systems
- Experts in the concept, design, realisation, interface definition, administration and documentation of both fast and conventional digital networks
- Experts in large-scale Linux infrastructure (Debian, SuSE, RedHat.) Experience in embedded Linux systems, RT Linux being an asset.
- Experts familiar with the EPICS control system software toolkit at both the user and implementer levels
- Technicians familiar with PLCs (Siemens) and a wide range of I&C I/O standards and devices, as well as signal interfaces, equipment integration and acceptance testing and the maintenance of electronic equipment in harsh environments
- Technicians familiar with a range of modern I/O bus technologies, including PCIE, PXIe, xTCA/AMC etc.

Administrative and project management support for Conceptual and Preliminary Design Reviews.

### **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 February 2012.

### **Procurement Time table**

A tentative time table is outlined as follows:-

Release Call for Nomination	31 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 2 January 2012</b>
Estimated Contract Award Date:	January 2012
Estimated Contract Start Date:	February 2012

## Experience & Profiles

The Contractor's personnel will form a team dedicated to IO, and will be located on the IO site at Cadarache. In case of non EU personnel, it is required for the employees to obtain their French working visa prior their arrival in France.

This specification seeks in particular nine individuals with the capabilities listed below, and for the work described below:

- An experienced engineer in Nuclear Safety I&C systems (familiar with IEC61513 and 61508) and in particular with nuclear qualification processes who will work with ITER staff and other contractors to design the CSS-OS and Access Safety Systems, to prepare, launch and manage the planned single procurement for SCS-N, and to support the licensing process.
- A Safety System engineer experienced in I&C who will work with ITER staff and other contractors to design and manage interfaces with plant safety systems and assure that those interfaces cover all requirements.
- An Engineer to work with ITER staff and other contractors to support the design (PDR and FDR) of the Central Interlock System.
- A Network Engineer to design and implement the CODAC synchronous data network (SDN) and maintain and improve the existing CODAC timing control network (TCN) as well as implementing other, general purpose and special digital networks as detailed in the CODAC conceptual design. This engineer shall participate in the preparation and review of "Call for Tender" documents related to network construction.
- A software engineer with EPICS experience to assist with the prototyping, implementation and delivery of the software for the Plant System Host (PSH) and Mini-CODAC and to develop and maintain the processes for software building and testing.
- An experienced real-time software developer (in particular RT Linux) with competence in digital electronics and with software engineering skills who will work with ITER staff and other contractors to develop, deploy and maintain hardware support software, such as drivers, for the ITER fast controllers..
- A senior electronics technician to support all I&C cubicle configuration, including signal interfaces, PLC hardware management, PLC user software development and support of PLC hardware database and catalogue updates. Responsible for maintaining and improving the usability of the Technical Rooms and for keeping up the equipment inventory database.
- A senior system technician to support and maintain CODAC distribution and remote access, servers, the Red Hat Linux-based development and control system infrastructure, including fast controllers.

- A project management assistant to assist with the preparation of design reviews, weekly and monthly reports, earned value reports, schedule updates, CPI and SPI reports, variance reports etc.

## **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)