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CONTRACT TECHNICAL SPECIFICATION

Engineering Work to Support the Investigation on CS Conductor Design and Performance

Technical Specification

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Revision history

Date	Rev.	Note
21 Oct 2011	1.0	First issue

1 Abstract

This technical specification describes engineering support services to the investigations on CS Conductor Design and Performance.

2 Background and Objectives

Following the test results of the Japanese CS conductor performance samples CSJA1 and CSJA2 it has been confirmed that the present strand/cable combination does not meet the requirements of the CS conductor. The tests in the Sultan facility revealed that the conductors tested so far show performance degradation with electromagnetic cycling. Furthermore, the CS jacket experiences large loads during operation in the CS coil. Therefore, tight a follow up of the quality control during procurement of the jacket material at the suppliers is mandatory to guarantee the jacket meets the requirements during the lifetime of the ITER machine.

Based on the Task Force recommendation a program has been initiated to identify more robust strand/conductor design alternatives. In order to minimize delays in the procurement of the CS conductor several alternatives are followed in parallel including different strand supplier, strand with higher Cu ratio and cable designs with different twist pitches and void fractions.

The objective of this contract is engineering work to support the CS conductor design finalization and procurement.

3 Work Description

The work required in this technical specification includes the following engineering activities:

-) contracts follow up and monitoring of superconducting strands and conductor manufacture

-) evaluation and analysis of cable/conductor design options including jacket material

-) review of Sultan sample assembly procedure and analysis of test results

-) support in activities related to the Conductor Database

-) monitoring support in activities related to the Conductor Database

-) monitoring of QC tests during CS jacket production

4 Duration

The contract duration shall be two years. The IO may extend these services for a maximum of one additional period of one year. ITER Organization shall establish the request for services on ad hoc basis and relative to the respective work plan, with specific tasks and deliverables defined on a quarterly basis (every three months).

5 Deliverables and Time Schedule

The specific work to be carried out as part of the scope given above is to be established quarterly (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. These will be part of a work plan for the three-month period. Quarterly, yearly and final reports are the deliverables measuring the accomplishment of the objectives.

6 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 trimester, as well as on the completion of reports and documents specified in the work plan.

7 Experience

The expert proposed by the bidder to carry out the work described in Section 3 must have proven experience in the following areas:

- PhD in physics or engineering
- Experience in production and manufacture of ITER type conductors
- Knowledge in superconductivity
- Knowledge in stainless steel components as used for the ITER conductor jackets, metallurgical analysis and mechanical testing
- Experience in analysis and interpretation of conductor test results
- Ability to communicate fluently and write reports in English
- Able to travel to conduct on-site visits to strand and jacket suppliers

Curriculum Vitae, CV showing evidence above is required.

8 Work conditions

- A work plan shall be established and agreed by IO every three months. Travelling and missions shall be only upon agreement with IO;
- This contract shall be executed by one sole staff. Splitting it into parts and sharing those between several parties or individuals are not permitted;
- The staff working on this contract shall be available full time and deployed to the IO site in St Paul-lez-Durance, France.
- Given the fact suppliers hold trade secrets in the manufacture of the strands and some of their components, and that competitive considerations are at play, the expert is expected to disclose any and all conflicts of interest in the conduct of this contract, and sign non-disclosure agreements as directed by the IO.

9 Timetable

The tentative timetable is as follows:

Call for Expertise	November 2011
Contract award	January 2012

10 Candidature

Participation is open to all individuals, companies, consortia or institutes which are legally registered in one or more of the ITER Member States. A consortium may be either 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 groupings shall be presented at the tender submission stage. The consortium cannot be modified later without the approval of the ITER Organization.