

Technical Specifications (In-Cash Procurement)

Framework contract for PT07 - Support for safety and accident analyses - Technical Summary

The purpose of this contract is to provide support to the Plant Engineering Department in the area of safety analyses and accident analyses. Technical expertise from a specialist supplier in these analyses including radiation protection, confinement, internal and external risks, etc, will provide the technical information required in order to answer to the engagements related to Hot Cell, Radwaste and Tritium Plant facilities, including the Remote Handling equipment and the treatment of ...

TECHNICAL SUMMARY

Framework Contract

**Support for safety and accident
analyses**

Technical Summary

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1 Abstract

The purpose of this contract is to provide support to the Plant Engineering Department in the area of safety analyses and accident analyses. Technical expertise from a specialist supplier in these analyses including radiation protection, confinement, internal and external risks, etc, will provide the technical information required in order to answer to the engagements related to NB Cell, Hot Cell, Radwaste and Tritium Plant facilities, including the Remote Handling equipment and the treatment of radiological waste.

ITER is a nuclear facility (an “INB”, for Installation nucléaire de base, “Basic nuclear installation” in French regulation) identified in France by the number “INB no. 174”. ITER Organization (IO) is the nuclear operator of this INB.

The aim of this document is to define the scope of a framework contract for safety and accident analyses.

2 Background and Objectives

As part of the ITER licensing and following the Decree authorizing IO to create a basic nuclear facility called « ITER » (*Décret d'Autorisation de Création*), safety studies and demonstrations have to be provided to the French Regulator (ASN: *Autorité de Sûreté Nucléaire*).

The objectives include:

- Support to the reply to ITER Technical Prescriptions related to the activities of the department,
- Provide the assessments of the impact of design changes on the safety case.

3 Scope of Work

On request, the supplier shall perform safety analyses and safety demonstration on subjects such as:

- (1) Radiation protection (e.g. shielding calculation, ALARA approach...),
- (2) Confinement (beryllium, activated dust, activation corrosion products, tritium),
- (3) Accident scenario,
- (4) Fire,
- (5) Explosion (dust and hydrogen isotope explosion),
- (6) Lightning (protection measures, impact of magnetic field, etc),
- (7) Flooding (analysis of the systems and vessels containing fluids, detection measures, impact reduction, etc),
- (8) Overpressure, missile and pipe whip effects (identification of pipe or component under high pressure, prevention, impact on PIC/SIC, etc), and mechanical risks (load drop...),
- (9) Chemical risks (use of beryllium and appropriate zoning, requirements on Test Blanket Modules, etc),
- (10) Waste management (waste study, waste zoning, waste management),
- (11) Human factor,

(12) Instrumentation & control.

All safety analysis is a PIA.

The implementation of the Safety Requirements shall be implemented in the quality system of the performer.

The studies can involve the use of modelling codes and calculations (fire analysis, overpressure, radioprotection...) with qualified software.

The studies must follow the French regulations and ASN guide requirements.

Reports need to be provided within the contract.

A technical control shall be performed on the analysis by a skilled person who was not involved in performing the analysis.

4 Deliverables and Time Schedule (proposed or required by ITER)

The duration of the Framework Contract will be 2 (two) years from the signature date with an option of 1 additional year.

It is anticipated that an initial set of Task Orders will be issued in 2020.

Individual Task Orders will have varying durations depending on the content of the Task Request.

Specific deliverables and due dates will be defined in each Task Order.

When the need arises, IO launches a Task Request defining:

- the technical content (input data, the detailed specification),
- the deadline and schedule,
- the necessary meetings for the follow-up of the contract,
- required languages (English, French).

The supplier has to answer to IO within the time specified in the Task Request with an offer indicating the firm price for delivering the services and confirm the schedule.

Upon agreement with the supplier, a formal Task Order will be issued by IO mentioning the technical request, the deliverables, the deadline and the firm price.

The following deliverables can be requested by the IO to the supplier, and further detailed in each Task Order :

- Report on results of modelling and calculations, plus related set of computed data,
- Report on the safety analysis of Hot Cell and Radwaste facilities design changes and the impact on the safety demonstration,
- Report on the safety analysis of systems to be implemented in Hot Cell and Radwaste facilities.
- Sections/chapters of the response to the ASN technical prescriptions for the Tritium Plant and Hot Cell Complex, such as zoning, safety and accident analyses, as well as supporting documents,
- Report related to ALARA approach,

- Report on the handling system used in the Neutral Beam Cell,
- Report related to the accidental scenario for each phase of the project (from PFPO to DT phase),
- Report on the analysis and synthesis of existing technical reports,
- Report on the analysis and synthesis of R&D results.

The Supplier will be required to provide quality and implementation plans for all Task Orders.

5 Required skills

The companies or consortia of companies selected shall be recognised for their knowledge and expertise in nuclear engineering and will have experience in:

- providing technical support on safety issues, either directly or indirectly, with the French nuclear regulatory body ,
- reading reports both in French and in English language (some report from Safety Authority are in French),
- writing reports in French and in English language (the final version of the technical documents to be sent to the Safety Authority must be in French)
- providing safety and accident analysis related to nuclear hot cells or tritium facilities, in particular justification of the safety zoning, implementation of ALARA approach,
- developing maintenance solutions and procedures (remote and hands-on) for nuclear plants with a similar profile to ITER,
- developing in-service inspection, surveillance, and maintenance programs for basic nuclear installations,
- implementation of infrastructure for operation of a maintenance system suitable for nuclear plant installations,
- providing safety analyses related to shipping flask and/or transfer cask,
- producing documentation for the nuclear installation licensing basis,
- providing support in the areas of nuclear qualification planning and program supervision.

The companies shall have suitable qualified staff covering all the disciplines required for carrying out the tasks outlined in the scope of work.

- Senior safety engineer,
- Senior accident analysis engineer,
- Fire protection specialist,
- Remote Handling engineer,
- Radwaste engineer,
- HVAC engineer,
- Control command specialist,
- Technical writers.

The companies or consortia of companies shall have suitable code and software to support the broad nature of the work:

- MCNP code for shielding calculations,
- Melcor code for overpressure calculation,
- CDI code for fire simulation.

6 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 groupings shall be presented at the pre-qualification stage. The tenderer's composition cannot be modified without the approval of the ITER Organization after the pre-qualification.

The UK is not a party to the ITER Agreement but part of EURATOM. In the most likely scenario of a BREXIT without a withdrawal agreement between the EU and the UK or a delay of the BREXIT date (no deal BREXIT), then until such a date, the UK remains a full member of the EU and until that date UK entities retain the right to participate in IO procurement procedures. However, as from a no deal Brexit date, any UK bidding as a prime contractor or consortium partner, will be rejected from the procurement procedures as UK entities will no longer have the right to participate in IO procurement procedures.

Legal entities belonging to the same legal grouping are allowed to participate separately if they are able to demonstrate independent technical and financial capacities. Candidates (individual or consortium) must comply with the selection criteria. The IO reserves the right to disregard duplicated reference projects and may exclude such legal entities from the pre-qualification procedure.