**SPECIFICATION:**

**Software for the ageing and lifetime management of nuclear power plant structures, systems and components**

# Scope

## This specification describes the requirements for a software package (hereinafter referred to as the “software”) for the ageing and lifetime management of NPP structures, systems and components, in support of TC project IRA/2/013 whose general objective is to improve and maintain the safety and reliability of the operating Bushehr-1 NPP. The software will be used by Bushehr Nuclear Power Plant (BNPP) personnel in Iran.

## Alternatives to this Specification, intended to produce the same or better results for this application, are subject to written approval of the IAEA Technical Officer.

# Definitions, Acronyms and Abbreviations

End-user Personnel of BNPP, Bushehr, Iran

FAC Flow-accelerated corrosion

ISI In-service inspection

NPP Nuclear Power Plant

SSC Structures, systems and components

# Requirements

## The software shall meet the following functional and performance requirements:

* + 1. Ageing and lifetime management/control of system, structures and components (SSC) of Bushehr-1 NPP
    2. Flow accelerated corrosion (FAC) management/control of secondary side of Bushehr-1 NPP
    3. Technical support of the secondary circuit water chemistry especially condition monitoring of the steam generators;
    4. Optimization of ISI and maintenance program

## The software shall be capable for the following essential performances:

* + 1. Functions for NPP modeling and parameter management
    2. Robust analysis of chemical calculations in order to identify degraded SSC
    3. FAC analysis
    4. Flow-induced and thermal fatigue analysis
    5. Predictive analysis based on examination data management to support both ISI and maintenance programme

## Other requirements:

* + 1. Supplier to provide remote support for the user in installing the package, along with ongoing troubleshooting and training for a period of one year from first installation.  
       Note that the User is familiar with the applicable principles, though will require training in the specific software.

# Notes on Process

## The envisaged process is:

## Suppliers are requested to quote against this Specification. IAEA selects a winning bidder and places a Purchase Order.

## Supplier contacts User, to conclude any required terms related to usage of the package (such as, if a Software Licence Agreement is required)

## Upon confirmation that the Package can be implemented, the IAEA makes the Licence Fee available for invoicing.

## If a Support Fee is also required, this becomes available for invoicing on confirmation that the Package is successfully in use by the User.

## Note that the IAEA will gain no rights to the software, we only facilitate supply to the User.

# Quality Requirements

## The package shall be produced, installed, and supported in accordance with the supplier’s ISO quality assurance system or an equivalent. The supplier shall retain documents demonstrating compliance, and provide them only if specifically requested.

## The package, prior to shipment, shall be tested for conformance with manufacturer’s performance specifications and the minimum requirements specified herein.

## The package, after installation, shall be tested by the user with remote support from the supplier, to demonstrate that the performance meets the manufacturer’s performance specifications and the minimum requirements specified herein.

## If there are additional industry-specific quality requirements, such as SILx, they may be noted here – or delete this line!

# Language and Deliverable Items

## The package itself shall present solely in English to the User

## The Supplier shall provide a complete manual and technical specifications in the English language, in electronic form for sharing amongst users and printing as required.

# Support

## The Package to be supplied with a comprehensive warranty, valid for one year from date of installation.

## Supplier to provide all Updates free of charge, and maintain support for this configuration for a minimum of ten years.

## Supplier to provide relevant Upgrades free of charge within the first year from start of use.