**Technical Information**

# Technical Consulting Services on Fire PRA for Barakah Nuclear Power Plant Project

*July 2022*

한국전력기술주식회사
KEPCO ENGINEERING & CONSTRUCTION COMPANY, INC

## 1.0 PURPOSE

The purpose of this contract is to apply the state of the art methodologies for Fire Modeling and Circuit Analysis by NRC and EPRI to the Barakah NPP Fire PSA after FSAR issuance under the CCR-297 contract.

## 2.0 TECHNICAL SCOPE OF WORK

The scope of services is divided into following tasks:

Task 1: Fire Modeling

Task 1.1 RCP Fire Modeling for PSA

- Contractor shall calculate the RCP lube oil spill fire scenario for ET analysis. Simple way (not the CFD, not whole compartment fire scenario) for ET analysis to calculate the fire scenario frequencies.

Task 1.2 Containment Transient Fire Modeling

- Transient fire modeling by the NUREG-2178, Vol.1 and NUREG-2233.
- Contractor shall identify and characterize a sample containment transient fire modeling.

Task 1.3 Methodology and Review for Fire Modeling with NUREG-2178, NUREG-2230

- Contractor shall review and provide comments.

Task 1.4 Q&A for Task 1

- Five day training course covering Task 1.1 to 1.3
- Response to KEPCO E&C's questions or requests.

Task 2: Circuit Analysis

Task 2.1 Associated Circuit Analysis

- Contractor shall perform associated circuit analysis for fire PSA circuits and cables.
- Contractor shall ensure that the topic of associated circuits (i.e., by common power supply and common enclosure) can be adequately supported by the existing plant design and calculations.
- Contractor shall identify Open Items for common power supply and common enclosure study.

Task 2.2 Review of KEPCO E&C Analysis

- Contractor shall provide detailed methodology and technical guides for performing associated circuit analysis for Open Item which is identified in Task 2.1

- KEPCO E&C will perform associated circuit analysis for Open Item and Contractor shall review and provide recommendations to KEPCO E&C.

Task 2.3 Q&A for Task 2

- Five day training course covering Task 2.1 and 2.2
- Response to KEPCO E&C's questions or requests.

## 3.0 METHOD OF PERFORMANCE

Consulting Schedule

| Action Items | Months from the Execution Date | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Task 1 [1)] | | | | | | | | | |
| Task 2 [1)] | | | | | | | | | |

1) The schedule can be adjusted by agreement between KEPCO E&C and Contractor

Method of Performance

- KEPCO E&C will provide related information and documents within 30 days after Execution Date, and will communicate and have discussions to expedite the progress of each task.

- The Contractor shall submit each deliverable of each Task one month prior to Date of Submittal. The Contractor shall finalize and submit each deliverable to incorporate KEPCO E&C's review comments and their solution within Date of Submittal.

- For the Task 1-4 and 2-3, KEPCO E&C will visit Contractor's office and the Contractor shall conduct the face-to-face training with related experts. If KEPCO E&C cannot visit Contractor's office and training cannot be conducted face-to-face due to any reason (for example, COVID-19) then virtual training is possible.

- The Contractor shall provide each response to the question or request of KEPCO E&C within 10 working days. The response schedule can be adjusted by agreement between KEPCO E&C and Contractor

Deliverables

| Tasks | Activities/Deliverables | Date of Submittal |
|---|---|---|
| 1 | 1. Training materials for Fire Modeling<br>2. Fire Modeling Analysis Results<br>3. Response of Q&A task | Within 9 months after Execution Date |
| 2 | 1. Report for Associated Circuit Analysis<br>2. Response of review comments for analysis examples performed by KEPCO E&C<br>3. Response of Q&A task | Within 9 months after Execution Date |