

# **[SCOPE OF SERVICE AND METHOD OF PERFORMANCE]**

## **1. PURPOSE**

Korea Hydro and Nuclear Power Co., Ltd. (hereinafter called “KHNP”) has designated KEPCO E&C as a prime contractor for architect engineering services and related services for Shin-Kori Nuclear Power Plant Units 5 & 6 and has entered into a contract for such services to construct nuclear power plants of total nominal capacity of 2,800 MWe consisting of two identical units, which will be located in Haemaji-ro, Seosaeng-myeon, Ulju-gun, Ulsan Metropolitan City, Korea (SKN 5&6).

The scope of services is to perform the integrated post-fire safe shutdown analysis including the multiple spurious operation analysis as well as the RAI support services for SKN 5&6.

## **2. TECHNICAL SCOPE OF WORK**

Contractor shall provide the following engineering services to KEPCO E&C as described in the following tasks:

### **Task 1: Integrated Post-fire Safe Shutdown Analysis including Multiple Spurious Operation Analysis**

#### **Task 1-1: Safe Shutdown Equipment List and Fault Tree Development**

- Development of the safe shutdown equipment list and the fault tree
- Performance of the MSO expert panel review
- Development of the safe shutdown equipment list and the fault tree including the multiple spurious operation
- Preparation of a preliminary report for the safe shutdown equipment list and fault tree development
- Preparation of a final report for the safe shutdown equipment list and fault tree development

#### **Task 1-2: Cable Selection by Detailed Circuit Analysis**

- Cable Selection by the detailed circuit analysis (wire by wire)
- Compliance with KHNP’s detailed circuit analysis guidelines
- Preparation of a preliminary report for the cable selection and the detailed circuit analysis report
- Preparation of a final report for the cable selection and the detailed circuit analysis report

#### **Task 1-3: Fire Area Assessment**

- Assessment for each fire area
- Derivation of resolution methods to fire areas that are dissatisfied with the requirements
- Exclusion of operator manual action (OMA) and fire modeling resolution methods

- Consideration to minimize main control room (MCR) action and design change resolution methods
- Preparation of a preliminary report for the fire area assessment
- Preparation of a final report for the fire area assessment

**Task 1-4: Post-fire Safe Shutdown Analysis Report**

- Preparation of a preliminary report for the Post-fire safe shutdown analysis
- Preparation of a final report for the Post-fire safe shutdown analysis
- Provide analysis data of ARCPlus™ for SKN 5&6.

**Task 2: Support KEPCO E&C Work at Contractor's Office in U.S.**

- Perform and support the detailed circuit analysis for KEPCO E&C Work during 4 weeks within 5 months from the Execution Date.
- Provide office space and related facilities at Contractor's office.

**Task 3: Technical Meeting at Contractor's Office in U.S.**

- 1<sup>st</sup> technical meeting at Contractor's office (3 days) within 1 month after submitting Report for safe shutdown equipment list and fault tree development (Final)
- 2<sup>nd</sup> technical meeting at Contractor's office (3 days) within 2 months after submitting Report for cable selection and detailed circuit analysis (Final)
- Final technical meeting at Contractor's office (3 days) within 2 months after submitting Report for fire area assessment (Final)

**Task 4: RAI Support Service**

- Provide the licensing support services for RAIs and licensing issues.
- Tasks are to be specified and determined by an additional individual work order by KEPCO E&C at the beginning of each task.
- The work order specifies the time, duration and methodologies for each task with mutual agreement between Contractor and KEPCO E&C.

### 3. METHOD OF PERFORMANCE

#### 3.1 Consulting Schedule

Tasks	Months from the Execution Date (Months)													
	1	2	3	4	5	6	7	8	9	10	11	12	~	'23. 3.31
Task 1-1. Safe Shutdown Equipment List and Fault Tree Development														
Task 1-2. Cable Selection by Detailed Circuit Analysis														
Task 1-3. Fire Area Assessment														

Task 1-4. Post-fire Safe Shutdown Analysis Report														
Task 2. Support KEPCO E&C Work at Contractor Office in U.S.														
Task 3. Technical Meeting														
Task 4. RAI Support Service <sup>1)</sup>														

- 1) The end date of Task 4 - RAI Support Service can be changed due to the Authority's Review Process. Any hours to supports this task must be authorized by KEPCO E&C using the form "Work Order Form for RAI Support", Attachment to this Contract.

### 3.2 Method of Performance

- The Contractor shall keep confidential all the data and information from this Contract, and shall not divulge them to any third parties.
- If KEPCO E&C cannot visit Contractor's office due to any reason (for example, COVID-19) then meetings can be substituted by video conference system.

### 3.3 Deliverables

- Report for safe shutdown equipment list and fault tree development (Final) : Within 3 months from the Execution Date
- Report for cable selection and detailed circuit analysis (Final) : Within 5 months from the Execution Date
- Report for fire area assessment (Final) : Within 9 months from the Execution Date
- Report for post-fire safe shutdown analysis (Final) : Within 10 months from the Execution Date
- Meeting Minutes for each technical meeting shall be submitted within 1 week from each meeting.
- RAI responses shall be submitted in accordance with each Work Order.
- The Contractor shall submit each deliverable of each Task within the submittal date. The Contractor shall submit each draft report of Task 1 one month prior to each submittal due date for KEPCO E&C's review and comments. The Contractor shall finalize and submit each report to incorporate KEPCO E&C's review comments and their resolutions within each submittal due date. The schedule of draft report can be adjusted by agreement between KEPCO E&C and Contractor.