

**Technical Consulting Service for Development of the  
Statistics Based Radiological Characterization  
Guideline of very low contaminated wastes generated  
during decommissioning of the Commercial NPPs**

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## **1.0 OBJECTIVES**

The objectives of this technical consulting service are to provide the following services:

- (1) Survey of experiences of radiological characterization evaluation based on statistical techniques for clearance/recycling/reuse of solid material (e.g., metal and concrete) with low contamination during decommissioning.
- (2) Development of guideline for the radiological characterization based on statistical techniques for clearance/recycling/reuse of solid materials during decommissioning
- (3) Development of guideline for clearance/recycling/reuse of solid materials

## **2.0 SCOPE OF SERVICES**

To achieve the above objectives, the Contractor shall provide the technical consulting services to KEPCO E&C with the following tasks:

### **Task 1. Conduct of Kick-off Meeting**

Contractor will host a 2-hour kick-off meeting in video conference with staff from KEPCO E&C within 2 weeks after the Contract signing (Execution Date). Activities that will be done during the meeting are as follows:

- Explanation and clarification of purpose and content of the technical service
- Contractor presents the plan and strategy for performing this engineering service.
- Both discuss details on how to perform the consulting services and on the schedule

The Contractor provides the meeting minute including the presentation materials to KEPCO after the meeting

### **Task 2. Preparation of Technical Report**

The Contractor prepares a technical report which includes the following information.

- (2.1) Survey of cases/experiences (including licensing process with regulatory authority and lessons learned) of radiological characterization evaluation based on statistical techniques for unrestricted clearance and restricted clearance (i.e., recycling/reuse) of solid material (e.g., metal and concrete) with low contamination during decommissioning.

- (2.2) Development of guideline for the radiological characterization based on statistical techniques for unrestricted clearance and restricted clearance (i.e., recycling/reuse) of solid materials (e.g., metal and concrete) with low contamination during decommissioning including the following but not limited to:

※ *It should be noted that all the necessary information shall be incorporated into the guideline to be developed*

- (a) Methodology of the radiological characterization (including evaluation model) based on statistical including the following but not limited to:

- Methodology of selecting the suite of radionuclides of concern
- Methodology of deriving (or evaluating) nuclide vector and scaling factor based on the statistical distribution for each of the various waste
- Methodology of validation of representativeness/homogeneity of radiological measurements
- Applicability of background level (i.e., natural radionuclides)

- (b) The methodology of the radiological measurement (including techniques) for solid materials with low contamination for each type and configuration of solid materials and each type of contamination, including the following but not limited to :

- Survey of radiological measurement techniques
- Method and process/procedure of radiological measurement
- Method of selecting the measurement techniques (considering MDA, etc.)
- Permitted averaging areas and masses
- Survey of sampling techniques/methods
- Method of determination of the number of sampling and its locations

- (2.3) Development of guideline (including process/procedure) for unrestricted clearance and restricted clearance (i.e., recycling/reuse) of solid materials including the following but not limited to:

※ *It should be noted that all the necessary information shall be incorporated into the guideline to be developed*

- Statistical estimation method for each type of contamination distributions (statistical tests)
- Method for determining survey units for each type of wastes
- Methodology and procedure for decision-making of (un)restricted clearance of solid materials

The Contractor provides the Preliminary Technical Report to KEPCO E&C when the above work activities are completed. KEPCO E&C will review the report and send comments and questions, if any. The comments shall be reflected in the Final Technical Report.

### Task 3. 2<sup>nd</sup> Technical Meeting

A technical meeting is held after completion of Preliminary Technical Reports performed in Task 2 at Contractor's office for three (3) days with KEPCO E&C staff, or, if not available, in video conference. Activities that shall be done during the meeting are as follows

- (3.1) The Contractor presents the Preliminary Technical Report in detail.
- (3.2) Both sides discuss the results of the performance in the Preliminary Technical Report.





The Contractor shall revise the reports if there is any comment which impact on the reports during the technical meeting and submit the Final Technical Report to KEPCO.

Details of the technical meeting agenda will be prepared at the time of completion of the Preliminary Technical Report

## 3.0 METHODS OF PERFORMANCE

### Consultation Schedule

The Contract Period shall be 8 months from the Execution Date.

Tasks	Months from the Contract							
	1	2	3	4	5	6	7	8
Task 1 Kick-off meeting								
Task 2 Preparation of technical report								
Task 3 Technical meeting								
Final Technical Report for Task 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. KEPCO E&C will provide information so that the Contractor could perform the tasks. KEPCO E&C will review the results of each task and Preliminary Technical Report which is prepared by the Contractor. KEPCO E&C will discuss the problems and issues encountered during the execution of Task 1 to Task 3.

### **Deliverables**

The final deliverables are fully verified technical report which incorporates the KEPCO E&C's comments and all of the analysis input and output files in the tasks.

<b>No</b>	<b>Activities/Deliverables</b>	<b>Date of Submittal*</b>
1	Meeting minute including Presentation materials for each meeting	Within 2 weeks after each meeting
2	Preliminary Technical Report	T0 + 7 months
3	Final Technical Report	T0 + 8 months

\*T0 : Execution Date