

Development of Historical Site Assessment (HSA) Procedure for Decommissioning Nuclear Power Plants

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I. INTRODUCTION

- ❖ Characterization requires a lot of time and money, it should be limited to the minimum required to prepare the decommissioning plan.
- ❖ An effective way to limit characterization is to use historical knowledge for a plant, which is usually called Historical Site Assessment (HSA).
- ❖ For this reason, MARSSIM, also recommends starting the characterization with HSA and then performing a subsequent radiation surveys based on the results of HSA as shown in Fig. 1.
- ❖ KHNP has developed the procedure of HSA based on the relevant guidance in the MARSSIM and related overseas experiences. This paper presents a brief introduction to the procedure of HSA developed by KHNP.

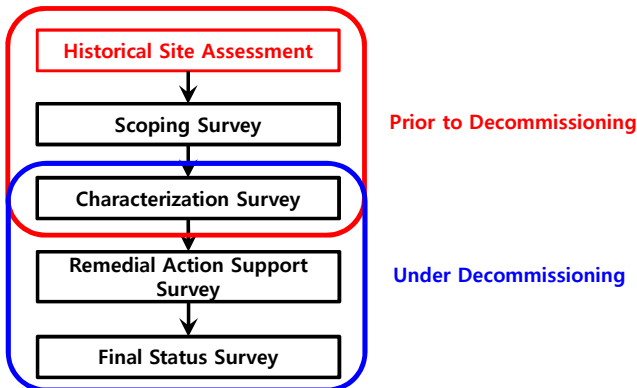


Fig 1. Conceptual schematic process of RSSI

II. HSA PROCEDURE

- ❖ The HSA is the first radiation survey to collect existing information that describes the site's complete history from the start of site activities to the present [1].
- ❖ The HSA needs to describe the physical configuration of site, identifies the radioactive constituents of site contamination, assesses the migration of contaminants, identifies contaminated media and identifies non-impacted areas and impacted areas.

The primary objectives of HSA are to;

- Identify potential, likely, or known sources of radioactive and non-radioactive contamination based on existing or derived information.
- Provide an assessment of the likelihood for contamination migration.
- Provide initial classification of the site as impacted or non-impacted.
- Provide necessary input materials for the next planning.

The following describes information collection procedure, selection method and evaluation method for successful HSA.

2.1. Identification of survey target

- ❖ Sites, buildings, SSCs (System, Structure, Components) are first identified as survey targets. If there are other neighbor plants in operation, they should exclude sites and buildings that could affect the safe operation of the plants.

2.2. Collection of document and data

- ❖ The document and data to be evaluated must be collected according to whether they meet the purposes of HSA.

2.3. Considering factors

- Effect of manpower and resources to input
The investigator can exclude documents and data for effective collection.
- Information validity
Some of them have been created a long time ago, so they should be collected according to the result of reviewing the validity of the documents and data.
- Documents and data classification
Duplicate or missing documents and data may occur when classified by classification system and title alone. In order to prevent that, it should be assisted by those who have knowledge of the classification system of documents and data created in the past.

2.4. Review of documents and data

- ❖ For each event, available supporting documentation should be collected and reviewed [2, 3, 4].

2.5. On-site personal interviews

- ❖ During the preparation of the HSA, numerous individuals from the operating staff, the present staff, as well as vendors and contractors are informally interviewed to verify, provide or clarify data used to develop the HSA document.

2.6. Evaluation of HSA data

- ❖ The evaluation requires professional guidelines to identify and determine the lot of information on the site. This screening process can serve to provide a site disposition recommendation or to recommend additional surveys [3].
- ❖ HSA information is used to identify and classify survey areas. Sites and buildings are divided into non-impacted area and impacted areas.
- ❖ Impacted areas can be evaluated base on known DCGL (Derived Concentration Guideline Level) values.
- ❖ This classification base on previous radiation survey as Class 1, Class 2, or Class 3 areas according to the MARSSIM guideline, and these areas should be subjected to a scoping survey or characterization survey [1]. The survey area classification and sizes are shown in Table I.

Table 1. Description of classification and size

Classification	Impacted Area			Non-impacted Area
	1	2	3	
Class	1	2	3	-
Criterion	Contamination > DCGL	Contamination < DCGL	Small fraction	Background
Area size	≤ 100m ²	> 100m ² and ≤ 1000m ²	No limit	No limit (Off site)
Structure size	≤ 2000m ²	> 2000m ² and ≤ 10,000m ²	No limit	No limit (Off site)

III. CONCLUSION

- ❖ The ultimate goal of decommissioning is unrestricted release or use of the site. Therefore, the HSA is essential, which is the first step to complete the FSS according to the RSSI procedure.
- ❖ We propose a procedure based on the MARSSIM guideline and describe the considering factor, which will be helpful for HSA activities, the first step of decommissioning Kori unit 1.

REFERENCE

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- [2] U.S. NRC, YAEC; "Haddam Neck Plant Historical Site Assessment Supplement", ML012420073, 2001.
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- [4] U.S. NRC, ComED; "Zion station Historical Site Assessment (HSA)", Version 1, ML15342A281, 1999.