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CASE STUDY ON PROBLEM SOLVING BY BUILDING TRUST AND COMMUNICATION WITH LOCAL RESIDENTS NEAR NUCLEAR POWER PLANT SITE

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ABSTRACT

This paper presents a problem solving case of how the nuclear plant owner and the local society overcame a significant issue together. The issue dealt here is a seawater inflow incident at Shin-Wolsong Unit 1 and 2 nuclear power plant site located at Gyeongju, South Korea, which took place in 2009, flooding some structures that were under construction.

To resolve the incident, the plant owner, Korea Hydro & Nuclear Power (hereinafter KHNP), tried to seek a resolution by itself at the early stage, which was confronted by strong opposition from the local residents. They claimed that the investigation and countermeasures conducted solely by KHNP was not reliable. Under this circumstance, KHNP established a Joint Investigation Committee with the local residents, held official brief sessions actively taking various opinions into account, and transparently shared inspection procedures and results with the residents near the power plant site. Through this process, KHNP could break through this crucial incident and firmly build trust with the local society.

OUTLINE

At 16:55, 29 April 2009, approximately 230,000 tons of seawater flowed into Shin-Wolsong Unit 1,2 nuclear power plant site. There was no casualty, however it was investigated that an area of 37,000m² covering the Turbine & Generator Building (TGB) and Seawater Coolant Intake & Discharge Structures were flooded 1.2m ~ 10.0m in depth, resulting in concrete and rebar damage due to the seawater's salt.

According to the investigation result, it was revealed that the waterstop (bulkhead) breakage of the submerged tunnel (a structure constructed to discharge condensation cooling water) was the main cause of the accident. In addition, the influence of local marine environment and the inflow pressure of consolidated soil into the tunnel were considered as the contributing factors of the waterstop breakage.

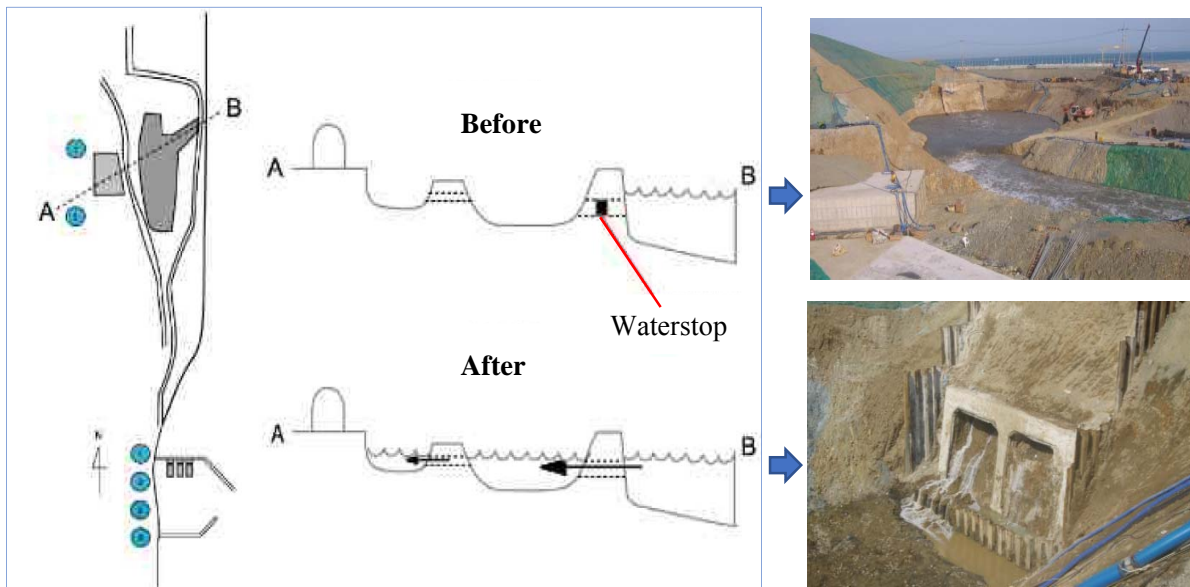


Figure 1. Seawater inflow route due to waterstop failure

Until now, the general perception over nuclear industry was passive information disclosure poor in sharing, a concealed and exclusive group, and a one-way decision making rather than interactive conversation with the outside world. This led to an expansion of distrust among the local society, and further on, a cognition prevailed in some local residents that additional compensation can be received by continuously raising unconditional opposition and unreasonable complaints towards the company. Under this circumstance, KHNP and local residents came into conflict while KHNP tried to seek the resolution for this seawater flooding problem solely by itself, both technically and financially, from the beginning.

To resolve local residents' distrust and settle a reasonable cause analysis and countermeasure, KHNP involved local residents and experts from all related fields in every investigation and decision stage. This helped KHNP to restore public acceptance and regain confidence, and paved the way to solving the issue smoothly.

This article is written to introduce how KHNP solved a crucial issue by proactive communication and building trust with the local residents near the nuclear power plant.

DISTRUST AND REQUESTS OF RESIDENTS

After the accident, some of the local residents claimed that all flooded structures should be completely demolished and reconstructed because KHNP's capability of safety management was not trustworthy enough. Some also suggested all work to be stopped in Shin-Wolsong site until the root cause analysis and precise safety investigation were thoroughly carried out.

Wolsong Nuclear Power Plant's private environment supervisory organization, established for efficient monitoring of local environment and radiation safety near the power plant, carried out inspections over whether the site condition and work procedures were appropriate and to check the status of the flooded structures immediately after the accident took place. In addition, the organization insisted that safety investigation led by KHNP is not sufficiently reliable, therefore requested the nuclear power regulator, Korea Institute of Nuclear Safety (KINS), for the investigation.

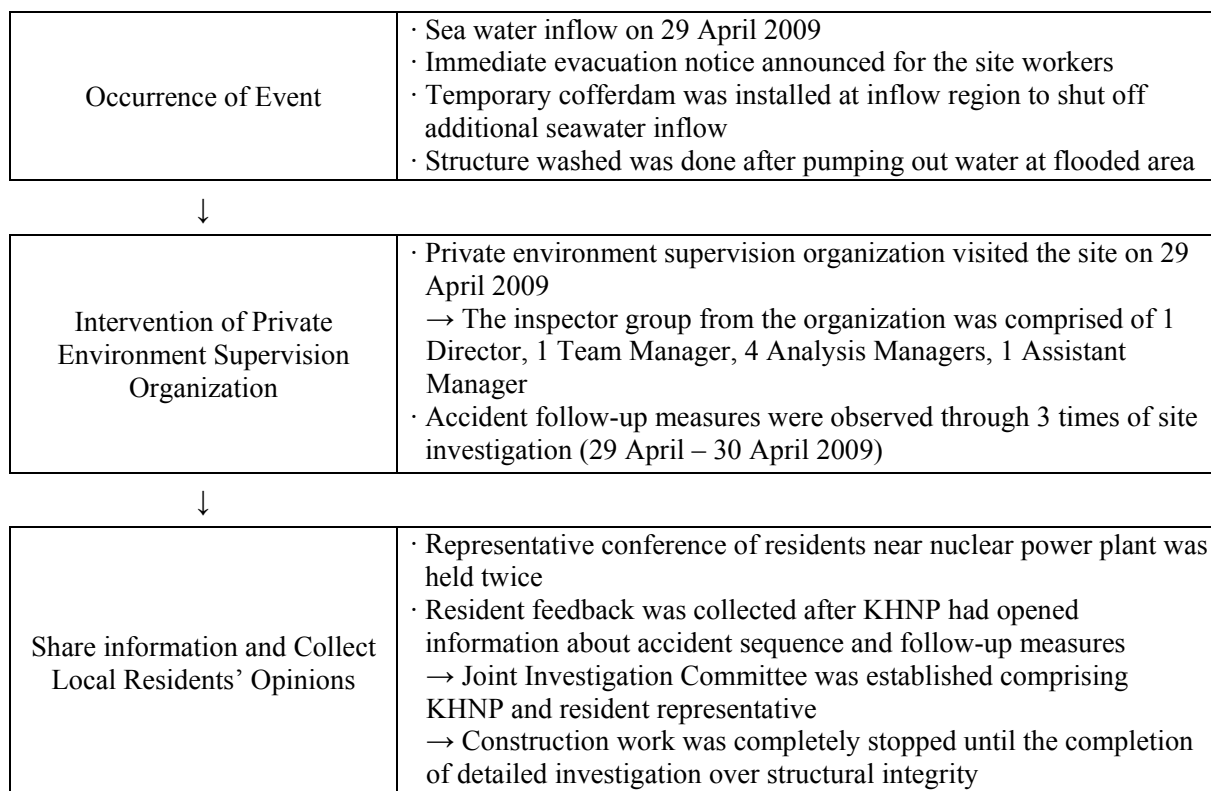
ENDEAVOUR TO RECLAIM CREDIBILITY

KHNP recognized that the key factor to solving the problem in the first stage was gaining trust and cooperation from local residents near Shin-Wolsong nuclear power plant. Accordingly, KHNP held numerous meetings and conferences with the residents to seek the most reasonable resolution for both the residents and the company itself. Moreover, by establishing a Joint Inspection Committee consisting of the both parties, KHNP actively accepted residents' request on conducting a precise safety investigation. Furthermore, KHNP agreed on an overall work stop in Shin-Wolsong site until the safety investigation over the site and structure was clarified as acceptable, taking the local residents' social sentiment into account.

As the first action to reclaim trust from the local residents, KHNP gave out always-passes to members of the Joint Inspection Committee and private environment supervisory organization, and to the resident representatives directly related to the issue, establishing the foundation for an always accessible investigation and monitoring environment. Also, KHNP admitted the investigation agency's witness on all investigation processes and shared the results with the parties. Moreover, by blocking outside social organization's intervention into the issue, KHNP created an atmosphere where local residents can play the main role by positively leading and participating in solving the issue, and prevent any kind of opposition for opposition sake conditions.

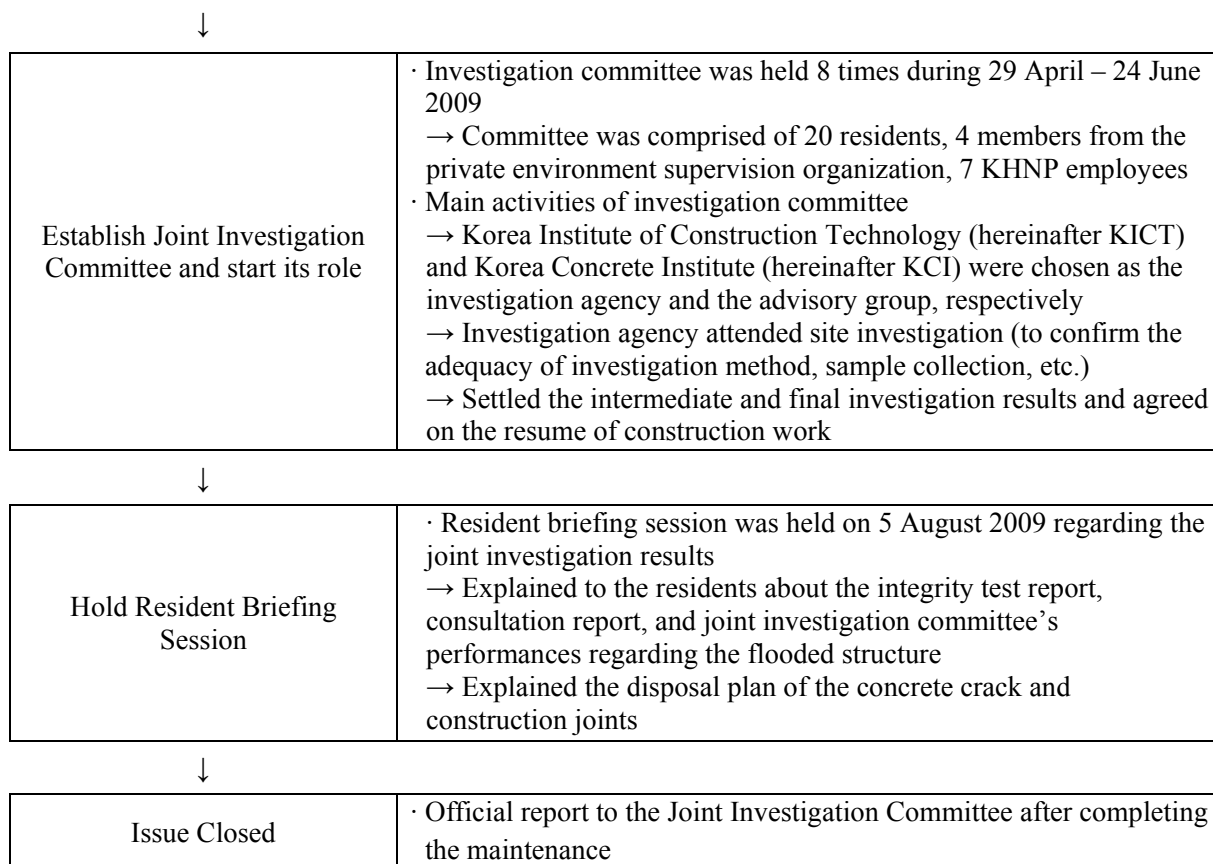
By sharing and opening all information such as the investigation agency's precise safety investigation report, advisory group's consultation documents, and Joint Inspection Committee's performances to local residents through briefing sessions, KHNP prepared the steppingstone to recover trust from the residents.

Chart 1. Event Follow-Up Action Flow



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ORGANIZATION AND ACTION OF THE JOINT INVESTIGATION COMMITTEE

The Investigation committee was comprised of total of 31 members – 18 representatives of residents near Wolsong nuclear power plant, 2 members of city council, 4 members from private environment supervision organization, 7 KHNP employees. The investigation committee was held 8 times in total for the decision making of the follow-up measures as below.

Chart 2. Major Activity Follow-Up

Date	Major Activity
12 May 2009	<ul style="list-style-type: none"> · Joint Investigation Committee was founded and the selection method of the investigation agency was discussed <ul style="list-style-type: none"> → Failed to come to an agreement on the investigation agency selection method due to different opinions between KHNP and local resident representative
14 May 2009	<ul style="list-style-type: none"> · Reached an agreement on how to select the investigation agency and advisory group
20 May 2009	<ul style="list-style-type: none"> · Investigation agency and advisory group selected as KICT and KCI
27 May 2009	<ul style="list-style-type: none"> · Listened to the investigation plan and discussed on how to resume work for unflooded structures <ul style="list-style-type: none"> → Resident representatives claimed that resuming work by taking the investigation agency's technical review into account is unacceptable

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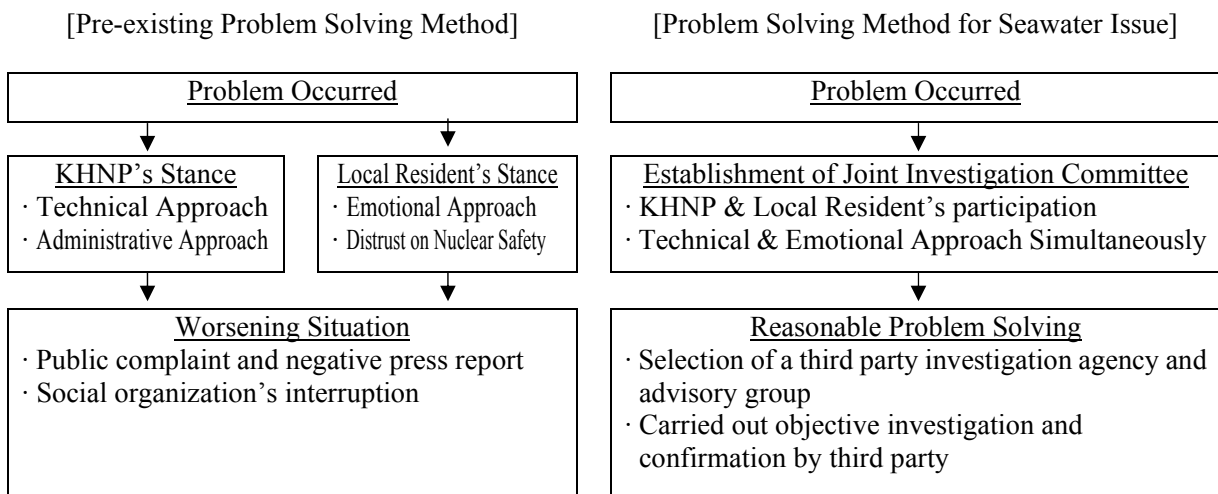
28 May 2009	· Reached consensus to resume work on unflooded structures by reflecting the advisory group's examination result → Investigation agency reviewed the adequacy of investigation process, sampling method, etc.
10 June 2009	· Reported Interim Investigation Result → Overall structural integrity confirmed
17 June 2009	· Reported Final Investigation Result → Joint Investigation Committee accepted the investigation results by the investigation agency and advisory group
24 June 2009	· Decided to hold resident briefing session and ended Joint Investigation Committee program
Investigation & Analysis Procedure	Data collection → Field investigation (sampling) → Analysis of washed structures (rebar steel and concrete) → Submit Interim Investigation Result → Submit Final Investigation Result

THE SIGNIFICANCE AND VALUE OF THE JOINT INVESTIGATION COMMITTEE

When any kind of nuclear issue was risen in the past, conflict between the nuclear operator and local residents frequently occurred due to residents' complaints resulting from different positions between the two parties, unfriendly press reports, and intervention of social organizations. However, when dealing with this seawater inflow accident, the issue was resolved in a reasonable manner by taking proactive countermeasures such as establishing a joint investigation group with the local residents, which eventually prevented the problem to get worse.

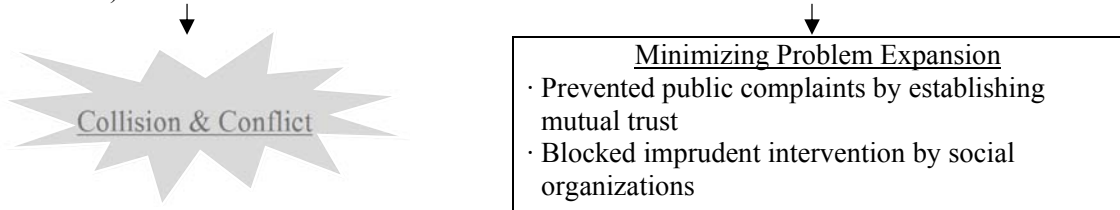
While conducting the joint investigation, KHNP, the nuclear operator, showed desirable aspects of partnership trying to solve the issue with the local representatives on the basis of mutual trust with its counterpart, the local residents, who also proactively contributed to resolving the problem with authentic ownership. This can be recognized as a model example of nuclear operator - local resident's cooperative problem solving.

Chart 3. Problem solving method comparison



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CONCLUSION

KHNP recognized that the key point to settling the issue and regaining trust from the public was achieving true cooperation from the local society. Accordingly, KHNP provided free-passes to the members of the Joint Inspection Committee and private environmental supervisory organization, and also to resident representatives so that they could be always accessible to the site for inspection. In addition, the investigation group's witness was opened to all inspection process and procedures, and official brief sessions and meetings were held to share all information regarding the whole investigation until the issue was closed. By doing so, KHNP could resolve the seawater inflow issue in a rational way, and in the same time get an opportunity to recover trust from local residents and the public. End.

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