

Analysis of the Effect of Screen Process Strengthening in Internal OE Reports in KHNP

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1. Introduction

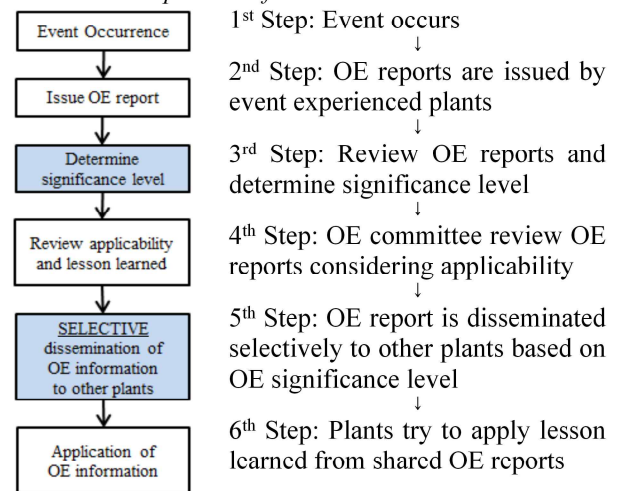
Operating Experience (OE) Report is a document that records accidents occurring during the operation or maintenance of nuclear power plants. OE Reports include a summary of the incident, detailed description, the cause of the accident, the consequences, and corrective actions taken to address events. Nuclear power plants worldwide share insights from these OE reports to prevent the recurrence of identical or similar events. Application of OE Reports play a crucial role in the safety and reliability of nuclear power plants. Accordingly, international nuclear organizations such as the IAEA[1], WANO[2], and INPO recommend the preparation, sharing, and utilization of OE Reports and have developed guidelines to ensure that the processes for utilizing OE at nuclear power plants worldwide operate effectively. KHNP, the domestic nuclear power plant operating company, has also introduced and is operating an OE Process that meets the recommendations of IAEA Safety Standards. Globally, more than 4,000 OE Reports are issued every year, and since it is impossible to utilize and review all of these reports, the screening process for selecting relevant OE is a critically important process in the utilization of OE Reports. In this paper, an analysis was conducted on the effectiveness of the enhanced OE Screening Process implemented by KHNP at the end of 2024. The analysis compared the dissemination (Share) rate of OE reports and the number of CAP(Corrective Action Program) issued before and after the reinforcement of the screening process, and reviewed the changes in the actual utilization rate accordingly.

2. Strengthening of OE Screen process in KHNP

In this section Strengthening of the internal OE screen process in KHNP is described. Screen process involves determining the significance of the OE report, the applicability of the accident details, and whether the same vulnerability exists, to decide whether to disseminate the OE report to other nuclear plants. KHNP's OE process can be broadly divided into six steps. When an accident occurs, the power plant that experienced the accident prepares the OE report and determines its significance. The OE Committee reviews the prepared OE report, considering its significance, applicability to other plants, and implications, before

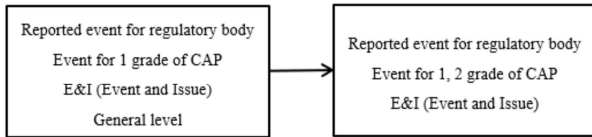
deciding whether to disseminate it to other nuclear plants. Subsequently, the plants that receive the OE report implement corrective actions to apply the report's recommendations.

1. Internal OE process of KHNP



For the efficient utilization of OE reports, selective dissemination of the reports is the most critical factor. If too many reports are disseminated, it can lead to a culture of disregard for OE reports among power plant personnel. Therefore, an appropriate number of OE reports must be disseminated to departments where their application is absolutely necessary. KHNP annually disseminated about 600 domestic OE reports to other power plants, resulting in the dissemination of approximately 5,570 OE-CAP reports each year. Recognizing that too many OE reports were being disseminated, KHNP reinforced the OE Screen process. Consequently, the criteria for the importance of OE reports disseminated to other power plants were changed from 'Reported event for regulatory body', 'Event for 1 grade of CAP', 'E&I' (Event and Issue), and 'General level' to 'Reported event for regulatory body', 'Event for 1, 2 grade of CAP', and 'E&I' (Event and Issue). The enhancement of the Screen process for OE Reports (disseminating only OE reports with high significance level to other power plants) resulted in a reduction in the number of domestic OE reports and OE-CAP cases disseminated to other power plants.

2. Change of Screen Process base on significance level

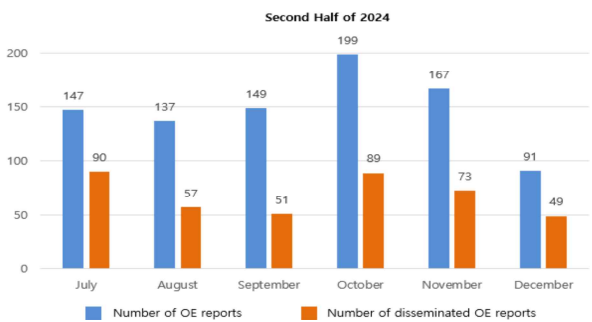


The key concept of the Screen Process change is to disseminate only important OE reports to the necessary departments in nuclear power plants. Typically, General Level graded OE reports are prepared at the discretion of the power plant, which are considered less significant graded reports. By excluding these from dissemination, only important CAP Level 1 and 2 reports are now shared with other power plants.

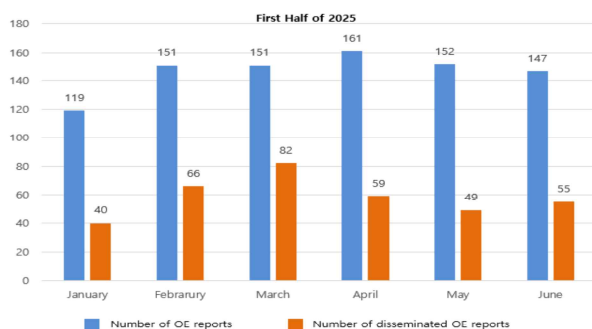
3. Numerical trend changes of internal OE process

Changed screen process was applied to KONIS (KHNP Nuclear Information System – KHNP's OE reports management system) at the end of December, 2014. So we analyzed OE reports data and compared the change for same duration before and after screen process change - 6 months: Second half of 2024 & first half of 2025.

3.1 Numeric comparison of issued OE reports



< Fig. 1. Number of OE reports 2nd half of 2024 >

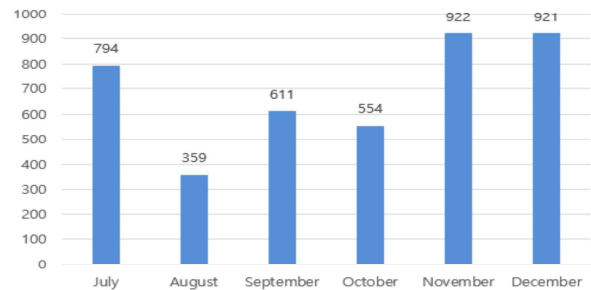


< Fig. 2. Number of OE reports 1st half of 2025 >

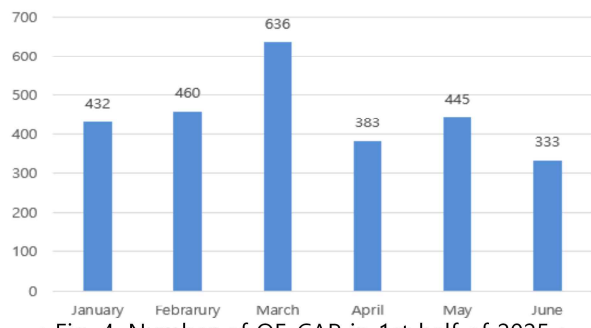
In the second half of 2024, before the Screen Process was changed, the number of issued OE reports was 890, of which 409 OE reports were disseminated to other plants. Dissemination rate was 45.96%. In the first half of 2025, after the Screen Process was changed, the number of issued OE reports was 881 and among these, 351 OE reports were disseminated to other nuclear plants, resulting in a dissemination rate of 39.84%. Although the number of issued OE reports before and

after the strengthening of the Screen Process was similar, the dissemination rate was observed to have decreased by approximately 6.1%. This shows that the effect of strengthening the Screen Process has been demonstrated.

3.2 Numeric comparison of issued OE CAP



< Fig. 3. Number of OE-CAP in 2nd half of 2024 >



< Fig. 4. Number of OE-CAP in 1st half of 2025 >

As mentioned in section 3.1 total number of OE reports was decreased by 6.1% after the change of screen process. It was confirmed that the issuance of OE-CAPs significantly decreased as the dissemination rate of OE reports decreased. The number of internal OE CAPs issued in the second half of 2024 was 4,161, and after the strengthening of the Screen Process, the number of issued OE CAPs was 2,689. It was confirmed that the OE CAP decreased by approximately 54.74% after the change of the Screen Process.

4. Conclusions

By changing the screen process of the internal OE process in KHNP, it was confirmed that the issuance of OE reports and OE CAPs significantly decreased. This indicates a reduction in the indiscriminate dissemination of unnecessary OE reports to the nuclear power plants. This signifies that the intended effect of reinforcing the screen process has been properly reflected in KHNP's OE operations.

REFERENCES

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- [2] WORLD ASSOCIATION OF NUCLEAR OPERATORS, Guidelines for Operating Experience at Nuclear Power Plants, WANO, London(2003)