EXECUTIVE SUMMARY

This report describes the results of the OSART mission conducted for Unit 1&2 of SAEUL Nuclear Power Plant in the Republic of Korea, from 31 October to 17 November 2022.

The purpose of an OSART mission is to review the operational safety performance of a nuclear power plant against the IAEA safety standards, make recommendations and suggestions for further improvement and identify good practices that can be shared with NPPs around the world.

This OSART mission reviewed ten areas: Leadership and Management for Safety; Training and Qualification; Operations; Maintenance; Technical Support; Operating Experience Feedback; Radiation Protection; Chemistry; Emergency Preparedness and Response; and Accident Management.

The mission was coordinated by an IAEA Team Leader and Deputy Team Leader and the team was composed of experts from Canada, Czech Republic, Germany, Hungary, Ireland, Romania, South Africa, Sweden, United Kingdom, United States of America, and the IAEA staff members. The collective nuclear power experience of the team was 354 years.

The team identified 10 issues, three recommendations, and seven suggestions. Four good practices were also identified.

Several areas of good performance were noted:

- The use of self-sufficient portable backpacks for monitoring of environmental radiation in case of radiological emergency
- The adoption of a mobile water purification system for accident management
- The utilization of innovative methods for the control, storage, and identification of radioactive waste

The most significant issues identified were:

- The plant should improve department-level performance assessment to effectively track, identify and correct shortcomings in procedures, programmes, worker behaviours and performance to ensure sustained safety performance improvement.
- The plant should improve the development and oversight of Local Operator's performance to ensure error-free manipulation of plant equipment.
- The plant should improve the implementation of its operating experience feedback programme to prevent occurrence of repeat events.

SAEUL NPP management expressed their commitment to address the issues identified and willingness to invite a follow up visit in about eighteen months to review the progress.

INTRODUCTION AND MAIN CONCLUSIONS

INTRODUCTION

At the request of the government of the Republic of Korea, an IAEA Operational Safety Review Team (OSART) of international experts visited Unit 1&2 of SAEUL Nuclear Power Plant (NPP) from 31 October to 17 November 2022. The purpose of the mission was to review operating practices in the areas of Leadership and Management for Safety; Training and Qualification; Operations; Maintenance; Technical Support; Operating Experience Feedback; Radiation Protection; Chemistry; Emergency Preparedness and Response; and Accident Management. In addition, an exchange of technical experience and knowledge took place between the experts and their plant counterparts on how the common goal of excellence in operational safety could be further pursued.

The SAEUL NPP OSART mission was the 217th in the programme, which began in 1982. The team was composed of experts from Canada, Czech Republic, Ireland, Germany, Hungary, Romania, South Africa, Sweden, United Kingdom, United States of America, and the IAEA staff members. The collective nuclear power experience of the team was approximately 354 years.

Before visiting the plant, the team studied information provided by the IAEA and the SAEUL Nuclear Power Plant to familiarize themselves with the plant's main features and operating performance, staff organization and responsibilities, and important programmes and procedures. During the mission, the team reviewed many of the plant's programmes and procedures in depth, examined indicators of the plant's performance, observed work in progress, and held in-depth discussions with plant personnel.

Throughout the review, the exchange of information between the OSART experts and plant personnel was very open, professional and productive. Emphasis was placed on assessing the effectiveness of operational safety rather than simply the content of programmes. The conclusions of the OSART team were based on the plant's performance compared with good international practices.

The following report is produced to summarize the findings in the review scope, according to the OSART Guidelines document. The text reflects only those areas where the team considers that a Recommendation, a Suggestion, an Encouragement, a Good Practice or a Good Performance is appropriate. In all other areas of the review scope, where the review did not reveal further safety conclusions at the time of the review, no text is included. This is reflected in the report by the omission of some paragraph numbers where no text is required.

The NPPs recently changed its name from Shin-Kori Unit 3 and 4 to SAUEL Unit 1 and 2, as all the identifications of the plant structures, systems and components have remained as Shin-Kori Unit 3 or 4 at the time of the review, these identifications are used as it is in the detailed report below.

MAIN CONCLUSIONS

The OSART team concluded that the managers of SAEUL NPP are committed to improving the operational safety and reliability of their plant.

The team found good areas of performance, including the following:

- The use of self-sufficient portable backpacks for monitoring of environmental radiation in case of radiological emergency
- The adoption of a mobile water purification system for accident management
- The utilization of innovative methods for the control, storage, and identification of radioactive waste

A number of proposals for improvements in operational safety were offered by the team. The most significant proposals include the following:

- The plant should improve department-level performance assessment to effectively track, identify and correct shortcomings in procedures, programmes, worker behaviours and performance to ensure sustained safety performance improvement.
- The plant should improve the development and oversight of Local Operator's performance to ensure error-free manipulation of plant equipment.
- The plant should improve the implementation of its operating experience feedback programme to prevent occurrence of repeat events.

SAEUL management expressed a determination to address the areas identified for improvement and indicated a willingness to accept a follow up visit in about eighteen months.