EXECUTIVE SUMMARY

This report describes the results of the OSART mission conducted at Loviisa Nuclear Power Plant in Finland from 5 to 22 March 2018.

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 twelve areas: Leadership and Management for Safety; Training and Qualification; Operations; Maintenance; Technical Support; Operating Experience Feedback; Radiation Protection; Chemistry; Emergency Preparedness and Response; Accident Management; Human, Technology and Organization Interactions; and Long Term Operation.

The mission was coordinated by an IAEA Team Leader and Deputy Team Leader and the team was composed of experts from Brazil, Canada, China, France, Germany, Hungary, Romania, Russia Federation, Slovak Republic, South Africa, Spain, Ukraine, United Kingdom, United States of America and the IAEA staff members. The collective nuclear power experience of the team was approximately 400 years.

The team identified 21 issues, resulting in 18 recommendations, and three suggestions. Five good practices were also identified.

Several areas of good performance were noted:

- The plant has developed an automatic calculation of the Local Leak Rate Tests (LLRT) parameters as well as the global containment leak rates within the plant information system.
- The plant has established a process simulation to test and improve plant engineering process during design of modifications and upgrades.
- The plant has adopted a sophisticated key cabinets control system for the effective control of access to different rooms in the field

The most significant issues identified were:

- Plant leadership should improve communications on their expectations and consistently reinforce their implementation in the field.
- The plant should improve the control and implementation of maintenance activities and procedures to ensure safe and reliable performance of systems and equipment.
- The plant should ensure a comprehensive set of condition monitoring and operability assurance programmes are in place.

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

INTRODUCTION AND MAIN CONCLUSIONS

INTRODUCTION

At the request of the government of Finland, an IAEA Operational Safety Review Team (OSART) of international experts visited Loviisa Nuclear Power Plant from 5-22 March 2018. 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; Accident Management; Human, Technology and Organization Interactions; and Long Term Operation. 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 Loviisa OSART mission was the 202nd in the programme, which began in 1982.

The Loviisa NPP is located close to the Finnish town of Loviisa, about 100 km east of Helsinki. It is owned by Fortum. It comprises two VVER-440 type pressurized water reactors. The capacity of the units has been increased to 520 MW. Unit 1 started operation in 1977, and Unit 2 in 1980.

Before the mission, the team studied information provided by the IAEA and the Loviisa 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 IAEA Safety Standards.

The following report summarizes 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.

MAIN CONCLUSIONS

The OSART team concluded that the managers of Loviisa NPP are committed to improving the operational safety and reliability of their plant. The team found good areas of performance, including the following:

- The plant has developed an automatic calculation of the Local Leak Rate Tests (LLRT) parameters as well as the global containment leak rates within the plant information system.
- The plant has established a process simulation to test and improve plant engineering process during design of modifications and upgrades.
- The plant has adopted a sophisticated key cabinets control system for the effective control of access to different rooms in the field

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

- Plant leadership should improve communications on their expectations and consistently reinforce the implementation in the field.
- The plant should improve the control and implementation of maintenance activities and procedures to ensure safe and reliable performance of systems and equipment.
- The plant should ensure a comprehensive set of condition monitoring and operability assurance programmes are in place.

Loviisa 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.