EXECUTIVE SUMMARY

This report describes the results of the OSART mission conducted at Leningrad Nuclear Power Plant in the Russian Federation, from 13 to 30 November 2017.

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 nine areas: Leadership and Management for Safety; Training and Qualification; Operations; Maintenance; Technical Support; Operating Experience Feedback, Radiation Protection; Chemistry and Accident Management.

The mission was coordinated by an IAEA Team Leader and Deputy Team Leader and the team was composed of experts from Belgium, Brazil, Canada, China, Czech Republic, France, Romania, Slovakia, South Africa, and Sweden. The collective nuclear power experience of the team was approximately 300 years.

The scope of review was the unit 4 of Leningrad NPP. The team noted that an extensive self-assessment was performed by the plant prior to the mission to identify and address existing gaps to the IAEA Safety Standards. Considerable work has been completed before the mission and the plant was able to demonstrate positive results in many areas.

The team identified 7 suggestions for improvement and 4 good practices.

Several areas of good performance were noted:

- The plant has developed several specialized rooms for psychological and physiological support to improve individual performance reliability.
- The plant uses a Full-Scope Simulator equipped with a mobile emergency equipment extension module for training, plant emergency exercises and comprehensive emergency drills of severe accident scenarios.
- The plant has developed and implemented comprehensive probabilistic safety assessment applications in the safety decision-making process and training of plant staff.

The most significant issues identified were:

- The plant should consider updating their performance indicators to ensure that they are more challenging and more leading.
- The plant should consider improving its focus on use of human performance tools and operator aids to ensure their consistent application.
- The plant should consider improving radiation dose control and consistent of the ALARA principle application to ensure effective optimization of both collective and individual radiation dose.

Leningrad 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 the Russia Federation, an IAEA Operational Safety Review Team (OSART) of international experts visited unit 4 of Leningrad Nuclear Power Plant from 13 to 30 November 2017. 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 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 Leningrad OSART mission was the 198th in the programme, which began in 1982. The team was composed of experts from Belgium, Brazil, Canada, China, Czech Republic, France, Romania, Slovakia, South Africa and Sweden. The collective nuclear power experience of the team was approximately 300 years.

The OSART mission reviewed Unit 4, which was connected to the grid in 1981 and is one of four light water-cooled graphite-moderated reactors (RBMK-1000) located at the site 100 km west of St Petersburg. The plant operator is Rosenergoatom.

Before visiting the plant, the team studied information provided by the IAEA and the Leningrad NPP 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 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 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.

MAIN CONCLUSIONS

The team noted that an extensive self-assessment was performed by the plant prior to the mission to identify and address existing gaps to the IAEA Safety Standards. Considerable work was completed before the mission and the plant was able to demonstrate positive results in many areas.

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

- The plant developed several specialized rooms for psychological and physiological support to improve individual performance reliability.
- The plant uses a Full-Scope Simulator equipped with a mobile emergency equipment extension module for training, plant emergency exercises and comprehensive emergency drills of severe accident scenarios.
- The plant has developed and implemented comprehensive probabilistic safety assessment applications in the safety decision-making process and training of plant staff.

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

- The plant should consider updating their performance indicators to ensure that they are more challenging and more leading.
- The plant should consider improving its focus on use of human performance tools and operator aids to ensure their consistent application.
- The plant should consider improving radiation dose control and consistent application of ALARA principle to ensure effective optimization of both collective and individual radiation dose.

Leningrad plant 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.