EXECUTIVE SUMMARY

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

At the request of the government of Canada, an IAEA Operational Safety Review Team (OSART) of international experts visited Pickering Power Plant from 19 September to 6 October 2016. This report describes the results of this OSART mission.

This OSART mission reviewed thirteen 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; Interactions between Human Technology and Organization, Long Term Operations, and Transitional Period from Operation to Decommissioning.

The mission was coordinated by an IAEA Team Leader and Deputy Team Leader, the team was composed of experts from Belgium, Brazil, China, Czech Republic, France, Germany, Hungary, Romania, Slovak Republic, Sweden, United States of America and the IAEA staff members. The collective nuclear power experience of the team was approximately 396 years.

Throughout the review, the exchange of information between the OSART experts and plant personnel was very open, professional and productive.

The team identified 21 issues, 10 were recommendations, and 11 were suggestions. Eight good practices were also identified.

The most significant issues identified were:

- The plant should continue to aggressively pursue improvements in areas that directly impact plant operational safety.
- The plant should enhance its work control process to ensure that system, structures and components important to safety are repaired in a timely manner.
- The plant should enhance its practice for identification and reporting of deficiencies to ensure that deficiencies are identified and reported in a timely manner.

The most notable good practices were:

- The plant used Severe Accident Software Simulator application for supporting multi-unit severe accident management guideline development.
- The plant obsolescence management takes into consideration the long term aging management assessments and transition to decommissioning requirements.
- The plant has established longstanding positive relationships with community partners to develop young leaders and improve environmental stewardship and awareness.

Pickering 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 Canada, an IAEA Operational Safety Review Team (OSART) of international experts visited Pickering Nuclear Power Plant from 19 September to 6 October 2016. 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; Interactions between Human Technology and Organization, Long Term Operations, and Transitional Period from Operation to Decommissioning. 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.

Pickering Nuclear Power Plant has six reactors at the site, with an additional two reactors in safe shutdown state. Each operating reactor has a gross electrical output about 550 MWe (megawatts electrical). The reactors are CANDU pressurized heavy water reactors, which use natural uranium as fuel and heavy water as a coolant and moderator. Unit 1 came online in 1971, while unit 8 was connected to the grid in 1986.

The Pickering Nuclear Power Plant OSART mission was the 189th in the programme, which began in 1982.

Before visiting the plant, the team studied information provided by the IAEA and the Pickering 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 the 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 OSART team concluded that the managers of Pickering NPP are committed to improving the operational safety and reliability of their plant. The team found some good practices, the most notable ones were:

- The plant used Severe Accident Software Simulator application for supporting multi-unit severe accident management guideline development.
- The plant obsolescence management takes into consideration the long term aging management assessments and transition to decommissioning requirements.
- The plant has established longstanding positive relationships with community partners to develop young leaders and improve environmental stewardship and awareness.

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

- The plant should continue to aggressively pursue improvements in areas that directly impact plant operational safety.
- The plant should enhance its work control process to ensure that system, structures and components important to safety are repaired in a timely manner.
- The plant should enhance its practice for identification and reporting of deficiencies to ensure that deficiencies are identified and reported in a timely manner.

Pickering 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.