

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.

This report describes the results of the OSART mission to the Cernavoda Nuclear Power Plant in Romania from 7-24 November 2016.

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, the team was composed of experts from Bulgaria, Canada, China, Czech Republic, Finland, France, Hungary, South Africa, Ukraine, United States of America, and together with the IAEA staff members and an observer from Russian Federation. The collective nuclear power experience of the team was approximately 337 years.

The team identified 10 issues, one was a recommendation, and nine were suggestions. Four good practices were also identified.

The most notable good practices were:

- The plant has developed an innovative solution to leak check individual cable penetrations without the need for conducting a full scale Reactor Building Leak Rate Test (RBLRT)
- The plant applies an accurate heavy water leak rate determination method through the use of the Tritium in Air Monitoring System (TAM).
- The plant has developed Gamma dose rate simulation software with the possibility to simulate gamma dose rate evolution over unlimited time periods.

The most significant issues were:

- Some important spare parts are not acquired in a timely manner due to the challenges in the overall procurement process to support the reliability and safety of plant systems and equipment.
- Deficiencies are not always identified and reported proactively to ensure reliability and safety of plant equipment and systems.
- The plant maintenance expectations and work practices are not always adequate to ensure equipment reliability.

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

INTRODUCTION AND MAIN CONCLUSIONS

INTRODUCTION

At the request of the government of Romania, an IAEA Operational Safety Review Team (OSART) of international experts visited Cernavoda power Plant from 7-24 November 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; 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.

Cernavoda nuclear power plant is located on the bank of Danube River - Black Sea Channel, about 200 km from Bucharest, capital city of Romania. Cernavoda nuclear power plant consists of two CANDU Pressurized Heavy Water Reactors, each with an output of 700 MWe.

The Cernavoda OSART mission was the 191st in the programme, which began in 1982.

Before visiting the plant, the team studied information provided by the IAEA and the Cernavoda 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 Cernavoda 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 has developed an innovative solution to leak check individual cable penetrations without the need for conducting a full scale Reactor Building Leak Rate Test (RBLRT)
- The plant applies an accurate heavy water leak rate determination method through the use of the Tritium in Air Monitoring System (TAM).

- The plant has developed Gamma dose rate simulation software with the possibility to simulate gamma dose rate evolution over unlimited time periods.

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

- Some important spare parts are not acquired in a timely manner due to the challenges in the overall procurement process to support the reliability and safety of plant systems and equipment.
- Deficiencies are not always identified and reported proactively to ensure reliability and safety of plant equipment and systems.
- The plant maintenance expectations and work practices are not always adequate to ensure equipment reliability.

Cernavoda 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 to review progress.