EXECUTIVE SUMMARY

This report describes the results of the OSART mission conducted for Wolf Creek Nuclear Power Plant, United States of America from 6 to 23 March 2023.

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 & 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 Argentina, Czech Republic, France, Germany, Slovak Republic, South Africa, Spain, Sweden, Switzerland, United Kingdom and one Observer from Netherlands. The collective nuclear power experience of the team was 286 years.

The team identified nine issues, one recommendation, and eight suggestions. One area of good practice was also identified.

Several areas of good performance were noted:

- The use of a spreadsheet calculator to predict and minimize lithium deviations from the chemistry specifications requirements during load-following activities.
- The use of a chemistry software package to record chemistry analysis results, check violations and abnormalities and to automatically send an e-mail every morning to notify the Chemistry supervisors, Laboratory Supervisors and Quality personnel of any deviations.
- The use of an indicator to clearly show to the plant management, the impact and potential vulnerabilities for the staffing of key positions within the emergency response organization.

The most significant issues identified were:

- The plant should enhance the control and implementation of maintenance activities to ensure equipment reliability and personnel safety.
- The plant should consider enhancing its arrangements for fire evacuation and training with all involved firefighting services to ensure a more effective fire response capability.
- The plant should consider reinforcing its continuous improvement approach to take advantage of all learning opportunities to ensure sustainable safe plant operation and performance improvement.

Wolf Creek 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 United States of America, an IAEA Operational Safety Review Team (OSART) of international experts visited Wolf Creek Nuclear Power Plant from 6 to 23 March 2023. 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 & 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 Wolf Creek Nuclear Power Plant is located near Burlington, Kansas, United States of America. The plant is jointly owned and operated by Evergy and Kansas Electric Power Cooperative. The Wolf Creek plant consists of a single unit Westinghouse four-loop pressurized light water reactor rated at 3565MWt with reference output of 1200 MWe gross. The Wolf Creek plant employs approximately 738 permanent staff.

The Wolf Creek OSART mission was the 217th in the programme, which began in 1982. The team was composed of experts from Argentina, Czech Republic, France, Germany, Slovak Republic, South Africa, Spain, Sweden, Switzerland, United Kingdom and one Observer from Netherlands and two IAEA staff members. The collective nuclear power experience of the team was 286 years.

Before visiting the plant, the team studied information provided by the IAEA and the Wolf Creek 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 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.

MAIN CONCLUSIONS

The OSART team concluded that the managers of the Wolf Creek 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 a spreadsheet tool to predict and prevent lithium deviations from the chemistry specifications requirements, during load-following activities.

– The use of a chemistry software package to record chemistry analysis results, check violations and abnormalities and to automatically send an e-mail every morning to notify the Chemistry supervisors, Laboratory Supervisors and Quality personnel of any deviations.

– The use of an indicator to clearly show to the plant management, the impact and potential vulnerabilities for the staffing of key positions within the emergency response organization.

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

– The plant should enhance the control and implementation of maintenance activities to ensure equipment reliability and personnel safety.

– The plant should consider enhancing its arrangements for fire evacuation and training with all involved firefighting services to ensure a more effective fire response capability.

– The plant should consider reinforcing its continuous improvement approach to take advantage of all learning opportunities to ensure sustainable safe plant operation and performance improvement.

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