

## EXECUTIVE SUMMARY

This report describes the results of the OSART mission conducted for Bugey Nuclear Power Plant in France from 2 till 19 October 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 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 team noted the implementation of a new Integrated Management System at the end of 2016 for the plant and confirmed that further actions are needed to demonstrate sustainable safety improvement results.

The mission was coordinated by an IAEA Team Leader and Deputy Team Leader. The team was composed of experts from Belgium, Bulgaria, Canada, the Czech Republic, Germany, Slovakia, Spain, Sweden, the United Kingdom, the United States of America and the IAEA staff members. The collective nuclear power experience of the team was approximately 360 years.

The team identified 16 issues leading to 6 recommendations and 10 suggestions that, if addressed, will assist the plant in their drive for continuous improvement in safety. The examples of outstanding practices and performance identified by the team during the mission will be disseminated to the rest of nuclear community via the IAEA OSMIR data base.

Several areas of good performance were noted:

- The use of 3D digital technologies in an innovative way to enhance the training and performance of plant personnel;
- The environmentally-friendly way of treating plant cooling water to remove scale and sludge;
- The use of a computer system equipped with personnel badge recognition for easy control of access to the radioactive sources present on the site.

The most significant issues identified were:

- The plant should improve the rigor and supervision of its conduct of operations;
- The plant should consistently ensure proper preparation and high quality of its maintenance work;
- The plant should ensure adequate training is implemented for all the personnel responsible for the implementation of the severe accident management guidelines at the plant.

Bugey 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 France, an IAEA Operational Safety Review Team (OSART) of international experts visited Bugey Nuclear Power Plant from 2 to 19 October 2017. The purpose of the mission was to review operating practices in the areas of Leadership and Management for Safety; Training & Qualification; Operations; Maintenance; Technical support; Operating Experience Feedback; Radiation protection; Chemistry; Emergency Preparedness and Response; Accident Management; interactions between Human, Technology and Organization; 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 Bugey OSART mission was the 197th in the programme, which began in 1982. The team was composed of experts from Belgium, Bulgaria, Canada, the Czech Republic, Germany, Slovakia, Spain, Sweden, the United Kingdom, the United States of America and the IAEA staff members. The collective nuclear power experience of the team was approximately 360 years.

The Bugey Nuclear Power Plant is located in Bugey in the Saint-Vulbas commune (Ain), about 65 km from the Swiss border. It is on the edge of the Rhône River, from where it gets its cooling water, and is about 30 km upstream of Lyon. The site houses 4 operating units, employing pressurized water reactors of the EdF CP0 design, each having a design electrical output of 900 MW. The units were commissioned between 1978 and 1979. Some of the cooling comes from direct use of the Rhône water (units 2 and 3) while some is done by the use of cooling towers (units 4 and 5). There are about 1,200 EdF employees at the site.

Before visiting the plant, the team studied information provided by the IAEA and the Bugey 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 these 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 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 team noted the implementation of a new Integrated Management System at the end of 2016 for the plant and confirmed that further actions are needed to demonstrate sustainable safety improvement results.

The team found good areas of performance, including the following:

- The use of 3D digital technologies in an innovative way to enhance the training and performance of plant personnel;
- The environmentally-friendly way of treating plant cooling water to remove scale and sludge;
- The use of a computer system equipped with personnel badge recognition for easy control of access to the radioactive sources present on the site.

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

- The plant should improve the rigor and supervision of its conduct of operations;
- The plant should consistently ensure proper preparation and high quality of its maintenance work;
- The plant should ensure adequate training is implemented for all the personnel responsible for the implementation of the severe accident management guidelines at the plant.

Bugey NPP 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.