

## INTRODUCTION AND MAIN CONCLUSIONS

### INTRODUCTION

At the invitation of the Government of the United States of America, a three-week Operational Safety Review Team (OSART) mission was conducted at Brunswick Nuclear Plant (BNP) in the USA, from 9 to 25 May 2005. The plant is located in North Carolina on the bank of the Cape Fear River near Southport on the coast of the Atlantic Ocean. The site contains two BWR units, with a rated output of 960 MWe each. Unit 2 commenced its commercial operation in 1975 and Unit 1 in 1977. Brunswick Nuclear Plant is part of Progress Energy which is one of the top ten generators of electricity in the United States with 24,000 MW of generation capacity.

The Brunswick OSART mission was the 132<sup>nd</sup> in the programme, which began in 1982. The team was composed of experts from Canada, Slovakia, the United Kingdom, Russia, Japan, France, the Czech Republic, Germany, and Hungary together with three IAEA staff members. In addition, an observer from the Institute of Nuclear Power Operations (INPO) was part of the team. The collective nuclear power experience of the team was approximately 300 person-years.

The team traveled to Southport on Friday, 6 May 2005. Saturday and Sunday (7-8 May) were spent on team training activities. Following the entrance meeting, which took place on Monday, 9 May; the team commenced the OSART review. A report was completed by the team and a summary of this report was presented at an exit meeting on Wednesday, 25 May.

In addition to senior managers and staff from Brunswick Nuclear Plant and Progress Energy, representatives from the US Nuclear Regulatory Commission (US NRC) attended the exit meeting. The team leader presented the team's report at a meeting with senior management of US NRC Region 2 on Thursday, 26 May in Atlanta.

The purpose of the mission was to review operating practices in the areas of management, organization and administration, training and qualification, operations, maintenance, technical support, operating experience, radiation protection, chemistry and emergency planning. In addition, a comprehensive exchange of technical experience and knowledge took place between the experts and their plant counterparts on improvements in operational safety that could be further pursued.

Prior to actually visiting the plant, the team studied information provided by the IAEA and the Brunswick Nuclear Plant to familiarise themselves with the plant's main features and operating performance, staff organization and responsibilities, important programmes and procedures and IAEA Safety Standards relevant to the mission. During the mission, the team reviewed many of the plants programmes and procedures in depth, examined the plants performance, observed work in progress, and held in-depth discussions with plant personnel, NRC staff and off-site authorities.

Throughout the review, the exchange of information between the OSART team members and plant personnel was very open, professional and productive. In addition the experts were able to observe plant actions during an operational event i.e. "Loss of emergency bus E 1". The plant personnel response was observed to be very professional and comprehensive.

The emphasis of the review was directed at assessing the operational safety performance and effectiveness of management rather than simply the content of programmes. The conclusions of

the OSART team were based on the plants performance compared with the IAEA Safety Standards and good international practices.

## MAIN CONCLUSIONS

The OSART team concluded that there is efficient horizontal and vertical communication among the managers and staff. The team found good areas of performance which included the following:

- A strong self-assessment programme and tools
- The comprehensive use of operating experience
- A comprehensive safety and performance indicator programme
- An excellent training programme and training facilities
- A strong cohesive management team

The OSART team offered proposals for further improvements in operational safety. The most significant proposals include the following:

- Reinforcement of the implementation of management expectations in the field
- Attention to certain operational issues
- Improvement of aging management/material condition of some systems, structures, and components of the plant
- Measures to prevent the potential spread of contamination

Brunswick Nuclear 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.

An important element of the OSART review is the identification of those findings that exhibit positive and negative attributes of safety culture. The OSART team used the guidance provided in INSAG-4, INSAG-13, INSAG-15, IAEA Safety Reports Series No.11, IAEA-TECDOC-1321 and 1329 to assess various aspects of safety culture at the Brunswick NPP.

The safety culture review was integrated on a daily basis into the OSART review process. The results of the safety culture review were based on team members daily observations and interviews with the Brunswick NPP staff, a review of the material condition and housekeeping of the plant and an evaluation of the programmes, processes and procedures used at the plant.

The results of the safety culture review are included in the chapter entitled management, organization and administration.