

## **INTRODUCTION AND MAIN CONCLUSIONS**

### **INTRODUCTION**

At the request of the Government of the Republic of Finland, an IAEA Operational Safety Review Team (OSART) of international experts visited Loviisa Nuclear Power Plant (NPP) from 3-21 March 2007. The Loviisa NPP is owned by Fortum utility. The plant operates two VVER-440 type units with pressurized water reactors. The capacity of the units has been uprated to 510 MW. Unit 1 started operation in 1977, unit 2 in 1980. The plant has applied for a 20 year license extension permit recently.

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; Radiation protection; Operating Experience, Chemistry; and Emergency planning and preparedness. 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 Loviisa OSART mission was the 139<sup>th</sup> in the programme, which began in 1982. The team was composed of experts from Canada, Czech Republic, France, Hungary, Japan, the Netherlands, Russia, Slovakia, United Kingdom and the United States of America, together with the IAEA staff members and an observer from France. The collective nuclear power experience of the team was approximately 300 years.

Before visiting the plant, the team studied information provided by the IAEA and the Loviisa 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 IAEA Safety Standards and good international practices.

### **MAIN CONCLUSIONS**

The OSART team concluded that the managers of Loviisa NPP are committed to improving the

operational safety and reliability of their plant. The team found good areas of performance, including the following:

- The Fortum Corporation has demonstrated a long term commitment to ongoing investment in equipment and system upgrades that have significantly reduced overall plant risk for core damage and release of radioactivity.
- Fortum Nuclear Services has developed a high quality and comprehensive Probabilistic Safety Analysis with state-of-the-art methods and tools. The model is used by the plant in several areas.
- The plant uses an analysis programme, named “SaTu” to support the on and off-site emergency organizations to estimate accidental releases in advance and the recommendations for protective actions can be estimated based on averted dose.
- Direct information exchanges with other nuclear power plants, especially other VVER plants, has contributed for getting lessons learned improving plant operations. This has been an important way of sharing operating experience, through twinning and personnel exchange with other plants.

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

- The managers are not providing enough guidance relating to the required use by workers of error prevention techniques such as self verification, peer checking, pre-job briefs and procedure usage.
- A rigorous approach in operators' work practices, including field operators' shift turnover, control room conduct and field rounds is not always evident.
- Control of the modification process is not always comprehensive to ensure that all necessary steps are implemented.
- Managers are not consistently identifying and correcting some industrial safety practices and plant conditions which increase the risk of injury to personnel.

Loviisa management expressed a determination to address the areas identified for improvement and indicated a willingness to invite a follow up visit in about eighteen months.