

INTRODUCTION AND MAIN CONCLUSIONS

INTRODUCTION

At the request of the government of the Russian Federation, an IAEA Operational Safety Review Team (OSART) of international experts visited Balakovo Nuclear Power Plant from 19 May to 5 June 2008. 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 and Chemistry. 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 Balakovo OSART mission was the 146th in the programme, which began in 1982. The team was composed of experts from Bulgaria, China, Czech Republic, France, Germany, Hungary, Slovak Republic, United States of America and together with the IAEA staff members and observers from France and IAEA. The collective nuclear power experience of the team was approximately 280 years.

Balakovo NPP is located on the left bank of the Saratov Reservoir of the Volga River 900 km South-East from Moscow. Balakovo NPP is part of the nuclear utility Rosenergoatom. The plant has four 1000 MWe VVER type units in operation. The units were commissioned in 1985, 1987, 1988 and 1993. The plant has 4450 employees.

Following the request of Balakovo NPP and Rosenergoatom the OSART mission was conducted on unit 4 and common site systems.

Before visiting the plant, the team studied information provided by the IAEA and the Balakovo 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 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 Balakovo NPP are committed to continuously improving the operational safety and reliability of their plant. The team found good areas of performance, including the following:

- Comprehensive motivation programmes of professional competition are implemented both at the corporate and the plant levels;
- Psychological training of managers, operation and maintenance staff is organized to establish and maintain a psychological attitude, orientation and priorities, psychological qualities and skills important to profession;
- The plant has implemented innovative sealing technologies, such as: Teflon based sealant stripe to seal the horizontal flanges of the low pressure turbines, graphite gaskets on the reactor vessel head penetration flanges and on the control rod drive mechanisms;
- Methodology to define steam-air leak from containment via measurement of ultra-low values of pressure difference and flow is used for measuring the containment tightness.
- The plant implements chemical cleaning technology with application of acetate ammonia and EDTA solutions for steam generator cleaning from dense crud consisting of iron and copper oxides.

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

- The plant should characterize its contamination source term and based on the characterization improve the sensitivity of contamination monitors at the exit from the radiation control area;
- The plant should consider improving the management of chemicals to ensure that industrial safety protection is completely provided to the personnel regarding the labeling of chemicals, availability of equipment, availability of safety information;
- Consideration should be given for preventing unauthorized access to safety systems and manipulation of the equipment of safety systems;
- A quality control programme should be provided by the plant to ensure that laboratory measurements lead to validated results, with graphical trending of parameters, analysis of deviations and corrective actions;
- Consideration should be given by the plant to improving the radiation survey programme outside the radiation controlled area in order to detect contamination in timely manner.

Balakovo NPP 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.