

INTRODUCTION AND MAIN CONCLUSIONS

INTRODUCTION

At the request of the government of Ukraine, an IAEA Operational Safety Review Team (OSART) of international experts visited Khmelnytsky Nuclear Power Plant from 29 October to 14 November 2007. 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 feedback; radiation protection; 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 Khmelnytsky NPP (KhNPP) has a design capacity of 4000 MW for four units VVER-1000. The first two power units have been built. The Unit 1 was commissioned in 1987 and unit 2 in 2004. Today total installed capacity of KhNPP is 2000 MWe.

The construction area of KhNPP facilities is located in the North-West of Ukraine, at the North of Khmelnytsky region, and in the Western part of Slavuta district. NPP is located in 4 km to South of the satellite town Neteshin. Distance from the NPP site to district centre Slavuta to South-East is 15 km, to regional centre Khmelnytsky to South direction is 100 km, and to the nearest regional centre Rovno to North-West direction is 44 km and to the capital Kiev to Eastern direction is 265 km. The nearest border is with Belarus located 150 km to the North. Cooling of the plant is provided with water from a cooling-lake build in the floodplain of the rivers the Goryn and the Gniloy Rog.

The Khmelnytsky OSART mission was the 143rd in the OSART programme, which began in 1982.

The OSART team was composed of 10 experts from Belgium; Canada; China; Czech Republic; France; Germany; the Netherlands; Slovak Republic; Spain, the USA and the European Commission, together with the two IAEA staff members and three observers from Iran, Russia and Ukraine. The collective nuclear power experience of the team was more than 340 years.

Before visiting the plant, the team studied information provided by the IAEA and the Khmelnytsky 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 opportunities for improving 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.

OSART MAIN CONCLUSIONS

The OSART team concludes that the senior management at KhNPP is committed to improving the operational safety. The team found that significant improvement has been already made since the preparatory meeting for OSART, which was held in September 2006. The plant has introduced or extended several programmes contributing to the improvement of the operational safety by using lessons learned from the previous OSARTs at the Ukrainian plants. During this process, the plant has efficiently used the OSART methodology for self assessment and the IAEA Safety Standards to benchmark their existing practices.

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

- local simulators are widely used at KhNPP, both for initial training and for acquiring skills of safe work on plant process systems and activities such as welding simulator, refuelling machine simulator, training simulator for I&C personnel and Klotik simulator on systems of chemistry and electrical departments;
- an on-line database for communicating and tracking personnel comments has been developed on various safety aspects of the NPP operations;
- an operating strategy and resin selection for the steam generator clean-up process has been implemented to eliminate out-of-service time for resin regeneration during power operation;
- a technical control department subordinated directly to the deputy chief engineer for Quality Assurance and Management, has been created respecting independent decision making;
- and a programme has been developed on ageing of electrical cables, which is running at KhNPP as a pilot for Ukrainian nuclear power plants.

A number of proposals for improvements in operational safety were offered also by the OSART team. The team pointed out some concerns that include the following:

- boundaries of the fire zones in the plant are not sufficiently identified nor systematically inspected, tested, and maintained. These programmes should be supported by developing a comprehensive fire hazard analysis for identifying potential fire risk; this programme is missing at the KhNPP unit 1;
- a system of key performance indicators for safety that would allow good planning, trending, oversight and easy communication across the plant has not been fully implemented nor yet effectively managed at the plant;
- the use of human error prevention techniques and tools to improve human performance is not efficiently carried out or sufficiently enforced;
- and the plant management expectations for industrial safety are not fully known and implemented; supervision and corrective actions are not always sufficient.

Khmelnitsky NPP management expressed a determination to address the areas identified for improvement and indicated a willingness to host a follow-up visit in about eighteen months.

Khmelnitsky management and personnel are eager to resolve any concerns raised by the OSART team by analyzing root causes and making necessary global corrective actions. The willingness to resolve any issue is already a strong sign of good safety culture.