

INTRODUCTION AND MAIN CONCLUSIONS

INTRODUCTION

At the request of the government of the Republic of Armenia, an IAEA Operational Safety Review Team (OSART) of international experts visited Armenian Nuclear Power Plant from 16 May to 2 June 2011. 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; and Preparedness for transition from operations to decommissioning. 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 Armenian Nuclear Power Plant (ANPP) is situated in the western part of the Ararat valley, 10 km north-east from regional center Armavir, 28 km west from Yerevan city, 16 km from the border with Turkey. ANPP consists of two WWER-440/270 type units. This is a version of the WWER-440/230 serial model with the special seismic considerations in the original design. Unit 1 of ANPP was commissioned in 1976 and Unit 2 was commissioned in 1980. The installed power of the units is 407,5 MWe, the design service life is 30 years. Following the destructive Spitak earthquake Units 1 and 2 were shutdown in February and March 1989 respectively. After the collapse of USSR the subsequent political events in 1990-1993 led to blockade of Armenia and, as a result, to a severe energy crisis of the Republic. Following the completion of repair and safety upgrading activities Unit 2 was connected into power grid in November 1995. Unit 1 is in long-term shutdown condition and restart is not planned. The design lifetime of unit 2 expires in January 2016. The plant has 1785 employees.

The ANPP OSART mission was the 161 in the programme, which began in 1982. The team was composed of experts from Finland, UK, France, Hungary, Lithuania, European Commission, United States of America, Netherlands and Slovak Republic, together with the IAEA staff members. The collective nuclear power experience of the team was 311 years.

Before visiting the plant, the team studied information provided by the IAEA and the Armenian NPP 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.

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 OSART team concluded that the managers of Armenian NPP are committed to improving the operational safety and reliability of their plant. The team found good areas of performance, including the following:

- During last number of years the plant has implemented the upgrading of several important safety systems, using resources of their own staff. This unique approach resulted in acquiring deep knowledge and skills to successfully operate and maintain new equipment.
- A user-friendly event database is maintained incorporating parameters such as time, cause, corrective measures, implementation deadline, direct and root causes, etc. When accessing the database all plant personnel can easily get on-line information about the trends of interest and can build their own trend reports without additional effort.
- The plant has introduced a plant simulator (mock-up) utilizing instrumentation and control panels and components from the turbine systems of shutdown unit 1 for training plant staff. The simulator is located within the turbine hall and fully replicates the plant conditions both operations and maintenance staff will be exposed to.
- The plant has developed a specific and comprehensive system supported by procedure to mitigate the consequences of a station black-out by providing power to systems and components necessary for cooling the reactor in emergency conditions. Operation personnel are regularly trained to use this system in order to reinforce their capability to put it in operation during the accident.

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

- The plant should reinforce the radiation protection practice to ensure that the barriers against spread of contamination are well established and effective to avoid that people and rooms are contaminated, and contamination spreads beyond the boundaries of the Radiation Controlled Area.
- Senior Management should find solutions to increase the resources needed for safe operation and significantly increase funding for safety upgrading measures that is under Senior Managements control.
- Management should comprehensively establish, communicate and reinforce expectations for eliminating industrial safety risks and using personal protective equipment.
- The plant should develop and implement a comprehensive severe accident management programme.

- The plant should improve temporary storage of Low Level Waste to ensure optimal utilisation of storage capacity and retrievability. The plant should initiate establishment of national waste disposal strategy to allow adoption of long term strategy for waste management at the plant site.

Management of the plant expressed a determination to address the areas identified for improvement and indicated a willingness to accept a follow up visit in about eighteen months.