

INTRODUCTION AND MAIN CONCLUSIONS

INTRODUCTION

At the request of the Government of Sweden, an IAEA Operational Safety Review Team (OSART) of international experts visited Ringhals Nuclear Power Plant from 1 to 18 March 2010.

Ringhals NPP is part of Vattenfall AB and has four units namely R1 – BWR (Asea Atom) 885 MW, R2 - PWR (Westinghouse) 866 MW, R3 – PWR (Westinghouse) 1000 MW and R4 – (Westinghouse) 935 MW in commercial operation. The units were commissioned in 1976, 1975, 1981 and 1983 respectively. The Owner-Operators are Vattenfall (70,4%) and E.ON (29,6%). There are approximately 1530 workers on site. The OSART mission focused on Units 3 and 4.

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 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 Ringhals OSART mission was the 156th in the programme, which began in 1982. The team was composed of experts from Belgium, Canada, France, Germany, Italy, Romania, the United Kingdom and the United States of America, together with the IAEA staff members.

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

- A comprehensive site commitment to realistic training evidenced by the Testen maintenance training facility, the creation of a field operator radiological protection practical training facility and the Barseback training centre where the workforce have the opportunity to conduct realistic in-plant tasks in a low dose environment.
- The use of in-situ gamma spectrometry to determine the surface activity concentrations of radionuclides on the internal surfaces of plant systems to evaluate the effectiveness of the plant's source term reduction initiatives.
- The reduction of Argon-41 emissions from the plant by the use of a gas transfer membrane system.
- The close cooperation with local authorities regarding responses to hostile events at the plant.

A number of proposals for improvements in operational safety were offered by the team. These included the following:

- The plant has a self-assessment programme in place to monitor and improve its safety performance. The team determined that this self-assessment programme could be made more effective to ensure that continuous improvement takes place at the plant. This could include the extension of the use of performance indicators and the systematic use of other inputs such as audits and previous action plans.
- Management expectations exist with respect to operations activities but they should always be followed, particularly regarding the status of systems and equipment, the control of operator aids, housekeeping, reactivity management and the reporting of anomalies.
- The management system for operational experience should include coordinating departmental operational experience to ensure that the process is used consistently and effectively.
- Contamination control measures are in place but these should be enhanced to minimize the potential for the spread of radioactive contamination.

The team also determined that there was too much consideration, at times, given to expert judgment and/or individual experience being used at the plant and that this had not been captured in procedures. Good international practice and the IAEA safety standards place a heavy reliance on procedural guidance to ensure that all expert judgment and individual experience is taken into account to ensure a consistent approach to operational safety.

Ringhals 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.