

## EXECUTIVE SUMMARY

Upon the invitation of the Inspectorate of the Ministry of Housing, Spatial planning and the Environment (VROM), Department of nuclear safety, security and safeguards (KFD), a peer review mission on safe long term operation (SALTO) was provided to review programmes/activities of Borssele Nuclear Power Plant (NPP).

The Borssele Nuclear Power Plant (in Dutch: Kernenergie Centrale Borssele or KCB) is located on the estuary of the Schelde River in the South of the Netherlands. The NPP lies just behind a sea dyke in the industrial area Vlissingen-Oost. The Borssele NPP is located near the village of Borssele in the Borsele municipality. The plant is owned and operated by N.V. Elektriciteits-Produktiemaatschappij Zuid-Nederland (EPZ), which has received its NPP operating license, on the basis of the Nuclear Energy Law from the Ministry of VROM and other Ministries in The Hague.

The Nuclear Power Plant Borssele (KCB) was designed and built by Kraftwerk Union (KWU) and is owned by NV EPZ.

The plant has been in operation since October 1973. For the main nuclear components a design life of 40 years was assumed in the original design. In 1997 a comprehensive modernization project was performed at the plant in which also some design modifications were implemented. For the relevant components in this project it was proven that the required safety margins are warranted assuming operation until at least the end of 2013 (to be consistent with the original design lifetime of the rest of the plant).

The Borssele NPP in 2003 finalized its second 10-yearly periodic safety review (PSR). The evaluation process was started by the definition by licensee and regulator of the scope of the evaluation, and after discussions agreed upon. The first phase of the evaluation has resulted in a list of concrete items to be addressed in the evaluation and meanwhile almost completely implemented.

In October 2013 NPP Borssele will reach the original design lifetime of 40 years. The current license of NPP Borssele is unlimited in time. Every ten years NV EPZ has to perform a PSR. An agreement between the stakeholders of the power plant and the Dutch government was signed which allows the NPP to extend its operation until 2034.

An LTO assessment shall be performed to demonstrate the safety of the plant for 60 years of operation. The scope of the limited SALTO mission was agreed and defined in Terms of Reference through preparatory meeting in March 2009.

The mission reviewed the planned, started and partly performed plant activities related to LTO and ageing management of systems, structures and components (SSCs) important to safety.

The IAEA team found that plans are being prepared and extensive engineering work has been started to review ageing degradations and review/implement ageing management programmes with goal to justify safe continued operation after October 2013 with time horizon of 60 years of operational life. In addition, the team noticed good practices and good performances in areas such as follows:

### *Good Practice*

- Collaboration between the plant and manufacturer to share associated information and to transfer related knowledge to younger generation
- Scope of the testing, calculation and analyses to prove RPV integrity
- Ambient Mapping in the Containment

### *Good performance*

- Revalidation of analyses related to leak before break concept implementation

Taking into account of the above mentioned points, the team recognized that the plant approaches and initial preparation work for safe long term operation are basically following international practices.

Nevertheless, the team also noticed that actual plant activities were in the very initial phase. The team suggested to the plant management to facilitate early implementation of all related activities. In addition, the team raised some areas which are to be improved or have a room for further improvement and raised 10 issues including:

- Scoping and screening process
- Overview of activities for LTO
- Identification of SSCs for LTO – data collection and record keeping
- Replacement of electrical equipment with a short qualified life
- Effectiveness of AMPs and justification of use of AMPs
- Significance of possible ageing degradations for the RPV support
- Identification of SCs on the boundary of the scope of the LTO assessment
- Different pressure vessel & piping codes and standards in the stress analysis
- Transients in the primary system design specification and calculations
- Differences between the design and the accumulated number of occurrences in Borssele NPP annual transient report.

The summary conclusion of the review was presented to the Borssele NPP plant management and KFD representative during the exit meeting held on 13 November 2009.

This report includes the detailed recommendations issued by the Team presented in Appendix III.