

EXECUTIVE SUMMARY

At the invitation of the Belgian Nuclear Regulatory Body (FANC), a SALTO (Safety Aspects of Long Term Operation) mission was conducted at units 1 and 2 of the Doel Nuclear Power Plant in Belgium from 14 to 23 February 2017.

The plant is owned and operated by ENGIE Electrabel, part of ENGIE (formerly GDF Suez). Operation of unit 1 started on 15 February 1975 and unit 2 on 1 December 1975 respectively. The units achieved 40 years of operation in 2015 and the plant owner has the intention to extend the units' lifetime by 10 years.

This SALTO mission reviewed the status of plant activities for the long term operation (LTO) assessment of the plant. The IAEA review team consisted of four IAEA staff members, five external experts and three observers covering all areas of the standard scope of a SALTO mission.

The IAEA team reviewed the completed, in-progress and planned plant activities related to LTO, including activities involving the ageing management (AM) of systems, structures and components (SSCs) important for safety and revalidation of time-limited ageing analyses (TLAAs).

Through the review of available documents, presentations and discussions with counterparts and other members of the plant staff, the IAEA team concluded that the plant has made significant progress in the field of ageing management and preparation for safe long-term operation. The LTO project addresses most of the topics as recommended by IAEA and other topics are being addressed by relevant plant processes. Many activities are complete, others are still in progress.

The team found the plant staff to be professional, open and very receptive to suggestions for improvement. Walk-downs showed that the plant is in good condition. The IAEA team concluded that plant management is committed to improving plant preparedness for LTO. In addition, the team noted the following good practices and performances:

- Integrated risk management for LTO both on programme and individual project level creating strong risk awareness and real-time monitoring of risks;
- A comprehensive, well-defined scoping methodology for LTO evaluation;
- Retention incentives introduced to reduce the loss of experienced personnel and retain important knowledge.

The team recognised that the plant approach to and preparatory work for safe LTO follows the IAEA Safety Standards and international practices.

However, the team identified several areas for further improvement. Thirteen issues were raised:

- Organization of ageing management for LTO period is not fully implemented;
- Final Safety Analysis Report (FSAR) is not fully updated regarding ageing management for LTO period;
- Ageing management process for LTO period is not fully implemented;

- With the density of upcoming projects in the LTO outages, the current plant project arrangements might not always ensure timely and comprehensive integration of project-related activities into the line organizations;
- The scope of SSCs for ageing management during the LTO period is incomplete;
- The continuous feedback loop for information relevant to ageing management for the LTO period is not fully implemented;
- The evaluation and documentation of mechanical components for LTO is not fully complete;
- There are several stand-alone databases for SCs used in the LTO programme that are inconsistent and incomplete;
- The plant equipment qualification (EQ) of some safety related cables is not finalized;
- Ageing management review of qualified electrical and I&C components is not fully complete for LTO scope;
- The plant has not completed a comprehensive ageing management review for civil SCs for the LTO period;
- The plant has not completed the review and update of the ageing management programmes for civil structures and components for the LTO period;
- The plant has not finalized the process of identifying and enhancing the knowledge and competences related to ageing management for LTO period.

A summary of the review was presented to plant management during the exit meeting held on 23 February 2017. The plant management expressed a determination to address the areas identified for improvement, and indicated the intention to invite a ‘SALTO follow-up peer review mission’ for units 1 and 2 in March 2019 to review the progress in resolution of issues.