

EXECUTIVE SUMMARY

At the invitation of the State Enterprise “National Nuclear Energy Generating Company” (SE NNEGC) EnergoAtom, the IAEA conducted a Pre-SALTO (Safety Aspects of Long Term Operation) mission at Unit 3 of the South-Ukraine Nuclear Power Plant in Ukraine from 17 April to 25 April 2018.

South-Ukraine NPP is operated by the SE NNEGC EnergoAtom. The plant consists of WWER-1000 Power Units of various series. Power Unit – 3 (SU-3) was put into operation in 1989, it was licensed for 30 years, the licence will expire in 2020. EnergoAtom intends to extend the plant lifetime for extra 10 years, subject to the findings of the next Periodic Safety Review to be completed in 2019.

This Pre-SALTO mission focused on the status of activities for the Long Term Operation (LTO) assessment of the plant. The review team consisted of two IAEA staff members (Team Leader, Deputy Team Leader), six external experts and three external observers, covering all areas of the standard scope of a SALTO mission.

The team reviewed the completed, in-progress and planned activities related to LTO, including Ageing Management (AM) of the Systems, Structures and Components (SSCs) important to 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 had made progress in the field of ageing management and initiated many activities to prepare for safe long-term operation. The LTO project has already addressed several topics as recommended by the IAEA, with some activities partially implemented and many others initiated.

The team found the plant staff professional, open and receptive to suggestions for improvement. The mission team concluded that plant management was committed to improving plant preparedness for LTO. Walk-downs showed that some structures and components were in a good condition and others were planned to be refurbished and modernized.

In addition, the team found good practices and good performances, including the following:

- Monitoring of safety indicators including ageing related failures since the start of operation (Current Safety Level Computer-based System) (area A);
- Atlas of operational defects in WWER Reactor steam generators tubes (area B);
- Development and implementation of the RPV irradiation embrittlement surveillance programme (area B).

The team found areas which should be improved to reach the level of international good practice. Fifteen issues were raised for further improvement:

- Organizational structure for LTO preparation and implementation is not fully implemented;
- The content of the LTO implementation programme is not complete;

- The current safety analysis report and ongoing periodic safety review are not sufficiently comprehensive for demonstration of safety for LTO period;
- The scope of SSCs that affect the safety of LTO is not complete and the scope setting process is not documented in a sufficient and traceable manner;
- Plant programmes relevant to safety during LTO do not properly identify and address ageing effects and are not linked to the ageing management programmes;
- Management of ageing related data does not fully support effective ageing management of SSCs in the scope of LTO;
- Ageing management review for mechanical, electrical and I&C SSCs within LTO scope is not complete;
- Ageing management programmes for mechanical, electrical and I&C components in the scope of LTO are not comprehensive;
- The relevant TLAAs for mechanical components were not properly identified and revalidated;
- The equipment qualification status is not adequately preserved;
- Technological obsolescence of SSCs important to safety is not managed proactively throughout their service life;
- Containment concrete structure strain monitoring is unavailable;
- Assessment of the safety consequences of containment building foundation movement is not performed for LTO;
- Corrective actions for ageing effects on civil structures have not been implemented in a timely manner;
- The plant has not systematically analysed and implemented all the components of an integrated knowledge management process.

A summary of the results was presented to the plant management during the exit meeting held on 25 April 2018. The plant management expressed a determination to address the areas identified for improvement, and indicated their intent to invite a ‘SALTO Peer Review Mission to South Ukraine Nuclear Power Plant Unit 3’ in quarter 4 of 2019 to review of progress in ageing management and LTO activities.