

## EXECUTIVE SUMMARY

At the invitation of Nuclearelectrica, the IAEA conducted a Pre-SALTO (Safety Aspects of Long Term Operation) mission at Cernavoda Nuclear Power Plant (NPP) unit 1 (further referred to as ‘the plant’) from 11 to 19 February 2020.

Cernavoda NPP, the only NPP in Romania, has two units in operation, both pressurised heavy water reactors of CANDU 6 design (CANAdian Deuterium Uranium), each with a design gross output of 706.5 MWe. Unit 1 and unit 2 started commercial operation on 2 December 1996 and 1 November 2007, respectively. The licence holder for Cernavoda NPP is the National Company Nuclearelectrica (SNN - Societatea Nationala Nuclearelectrica S.A.)

The Pre-SALTO mission reviewed the status of activities related to long term operation (LTO) assessment of the plant against IAEA Safety Standards and international best practices. The review team consisted of two IAEA staff members (team leader, deputy team leader), five international experts and four observers, covering all six areas of the standard scope of a Pre-SALTO mission. The team reviewed the completed, in-progress and planned activities related to LTO, including ageing management of the structures, systems 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 observed, in the field of ageing management and preparedness for safe LTO, that some topics are managed as recommended by the IAEA and other topics are planned to be addressed in upcoming years. Many activities are still in progress or not yet initiated, due to the early stage of LTO preparation before feasibility study approval of the refurbishment project.

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

- Effective use of international experience shared in CANDU Owners Group (COG) for improvements (in area A);
- Successful long-term application of corrective action programme (in area B);
- Dynamic learning approach for irregularly performed work (in area F).

The team recognized that the plant intention is to follow the IAEA Safety Standards in preparation for safe LTO. The team identified several areas for further improvement. Fifteen issues were raised:

- The plant LTO strategy is not fully comprehensive;
- The plant organization does not address all stages of LTO;
- The current Periodic Safety Review (PSR) methodology is not fully comprehensive;
- The methodology for scope setting for ageing management and LTO assessment is not comprehensive;
- Identification and revalidation of TLAAs for mechanical SSCs is not in place for justification of safe LTO;
- Ageing Management Review (AMR) for mechanical, electrical and I&C and civil SSCs is not adequate;
- The Ageing Management Programmes (AMPs) for mechanical SSCs for LTO are incomplete;

- The revalidation of qualified life of equipment for the LTO period is not comprehensive;
- AMPs for electrical and I&C SSCs are not sufficient to support safe LTO;
- The plant’s obsolescence management programme is not proactive in implementation of solutions;
- The plant does not have sufficient AMPs to address all in-scope civil SSCs for LTO;
- The plant did not perform comprehensive scope setting of civil SSCs for ageing management and LTO;
- The plant did not perform comprehensive identification and revalidation of TLAAAs for civil SSCs;
- The plant’s human resources policy and strategy is incomplete for LTO;
- A risk assessment process for knowledge retention of suppliers, TSOs and outsourced service providers is not in place.

A summary of the review was presented to the plant management during the exit meeting held on 19 February 2020. The plant management expressed a determination to address the areas identified for improvement and indicated their intention to continue cooperating with the IAEA on the review of progress in preparing unit 1 for safe LTO

