

EXECUTIVE SUMMARY

At the invitation of the Government of the Republic of Bulgaria, the IAEA conducted a SALTO (Safety Aspects of Long Term Operation) mission at Unit 5 and 6 of the Kozloduy Nuclear Power Plant (NPP) (further referred to as ‘the plant’) from 6 to 15 July 2021.

Kozloduy NPP Unit 5 and 6 started commercial operation in 1987 and 1991, respectively. The Bulgarian Nuclear Regulatory Agency (BNRA) renewed the operation licences until 2027 for Unit 5 and 2029 for Unit 6.

The 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 and deputy team leader), six international experts and one observer, covering all six 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 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 Safety Standards and other topics are planned to be addressed in upcoming years. Many activities are still in progress.

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

- A comprehensive configuration management process has been developed and established at the plant in support of LTO.
- Detailed evaluation of modifications on the ageing management review enabling the plant to identify the impact on ageing management from an early stage in the process.
- Specific section in ageing management programme implementation reports dedicated to needed improvements to communicate to higher management level.
- Comprehensive annual visual inspections of civil structures that enables the plant to identify ageing effects at a very early stage.
- Monitoring of level of prestress of containment tendons.
- Systematic strategical cooperation with technical universities and high schools to support meeting future staffing needs for the long term operation period.
- Comprehensive information system to monitor and evaluate risk of loss of tacit knowledge that ensures an opportunity for early intervention.

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

- The scope setting of SSCs for LTO is incomprehensive.
- The ageing management review for mechanical SSCs and cables is not completed.
- The ageing management programmes for mechanical SSCs are not fully developed and implemented.
- The TLAAs development and implementation for mechanical SSCs is not completed.
- The implementation of ageing management programmes for cables is not completed.
- The equipment qualification programme is not yet fully implemented at the plant.

- Ageing management review for extended scope of civil structures is not completed.
- Some aspects of human resources policy and strategy are incomplete for the whole LTO period.

A summary of the review was presented to the plant management during the exit meeting held on 15 July 2021. The plant management expressed a determination to address the areas identified for improvement and indicated their intention to initiate the invitation of a ‘SALTO Peer Review Follow-up Mission to Kozloduy Nuclear Power Plant’ to be conducted in June 2023.

FOLLOW-UP MISSION CONDUCT AND RESULTS

At the invitation of the Government of the Republic of Bulgaria, the IAEA conducted a SALTO follow-up mission from 13 to 15 June 2023. The IAEA follow-up team consisted of two experts from Armenia and Slovakia, three IAEA staff members (team leader, deputy team leader and an observer), and one observer from the Netherlands.

The IAEA follow-up team reviewed the progress in resolving each of the issues from the 2021 SALTO mission. Based on the observations of the follow-up mission, the team has concluded that the plant has made a significant effort to solve all the issues. The resolution degree was determined by the team for each issue sheet separately, with the following results:

- 1 issue was assessed as satisfactory progress to date;
- 7 issues were assessed as issue resolved.

The SALTO team concluded that actions taken to solve the recommendation and the suggestions are sound, well established and led to tangible improvement. The following can be highlighted:

- Issue C-1: The plant completed the ageing management review for mechanical SSCs and cables.
- Issue D-2: The plant fully implemented an equipment qualification programme.
- Issue F-1: The plant analyzed the human resources situation and extended the human resources policy and strategy for the whole LTO period.

One issue was assessed as satisfactory progress to date, the completion of which will require further works from the plant:

- Issue C-2: The plant should consider fully developing and implementing the ageing management programmes for mechanical components.

A summary of the results was presented to the plant management during the exit meeting held on 15 June 2023. Plant management expressed a determination to maintain the level of preparedness for safe LTO and continue cooperation with the IAEA in the area of long term operation.