

## EXECUTIVE SUMMARY

At the invitation of NASA, operator of Atucha Nuclear Power Plant (NPP), the IAEA conducted a Pre-SALTO (Safety Aspects of Long Term Operation) mission at unit 1 of the Atucha NPP from 23 to 31 October 2018.

Atucha NPP unit 1 has been in operation since 1974. The plant reached the end of its design lifetime of 32 effective full power years in March 2018. The current operating license is valid until 2023. The plant management intends to extend the operation for another 24-25 effective full power years, which is approximately 26 calendar years.

## MAIN MISSION CONDUCT AND RESULTS

This Pre-SALTO mission focused on the status of the preparation for the long term operation (LTO) of the plant. The review team consisted of two IAEA staff members (team leader, deputy team leader), six external experts and four 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 has made progress in most of the activities to implement systematic ageing management and prepare the plant for safe LTO. The IAEA team noted that the LTO project has already addressed several of the topics recommended by IAEA Safety Standards. Some activities are partially implemented, and many others are initiated or in planning stage.

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

In addition, the team found several good performances, including the following:

- Short-term trending of preventive maintenance activities allowing validation of information and identification of abnormal short-term evolutions;
- Condition assessment reports in the mechanical area with regards to both traceability and completeness;
- TLAA revalidation of the cumulative fatigue factor at locations between the containment liner and penetrations.

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

- The current LTO organizational arrangements and processes do not ensure timely implementation of all activities required to demonstrate preparedness for safe LTO;
- The current approach to periodic safety review is inadequate to manage full scope periodic safety review to support LTO;
- The methodology for scope setting for assessment of SSCs for LTO does not provide clear and unambiguous guidance and is not consistently applied;

- The analysis and implementation of maintenance programmes do not ensure effective management of ageing effects for LTO;
- The effectiveness of existing plant programmes has not been demonstrated for the period of LTO;
- The ageing management review of mechanical components for LTO is not complete;
- The ageing management programmes for mechanical, electrical and I&C components for LTO are incomplete;
- The plant has not fully established and implemented a comprehensive equipment qualification programme;
- The scope of electrical and I&C systems and components for assessment for LTO is incomplete;
- The ageing management review for electrical and I&C components and traceability of identified activities is not comprehensive;
- A proactive technological obsolescence programme is not yet implemented;
- The plant has not developed effective ageing management programmes for civil structures and components (SCs);
- The revalidation of TLAAAs for mechanical, electrical and civil SCs is not completed;
- There is no long term human resource plan for LTO;
- There is no formal knowledge management process in the plant.

A summary of the results was presented to the plant management during the exit meeting held on 31 October 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 Atucha Nuclear Power Plant Unit 1’ in November 2020.

## FOLLOW-UP MISSION CONDUCT AND RESULTS

The IAEA follow-up team consisted of one IAEA staff member (team leader) and three external experts from France, Pakistan, and Sweden.

The IAEA follow-up team reviewed the progress in addressing each issue from the 2018 pre-SALTO mission. Based on the findings, the team noted that the plant had progressed in resolving most of the issues. Complete resolution of some issues requires further work by the plant. The progress was assessed by the team for each issue sheet separately, with the following results:

- Two issues were assessed as issue resolved;
- Twelve issues were assessed as satisfactory progress to date;
- One issue was assessed as insufficient progress to date.

The SALTO team concluded that actions taken to solve most of the recommendations and suggestions are sound and implemented well. The following can be highlighted:

- Issue B-1 – The plant improved the methodology for defining the scope of components designated for ageing management.

- Issue D-2 – The plant completed the scope setting and assessment of electrical and I&C systems and components for LTO.
- Issue D-3 – The plant ensured a comprehensive ageing management review for electrical and I&C components and traceability of identified activities.

Nevertheless, some issues will still require significant attention and effort of the plant. The most important ones are as follows:

- Issue A-1 – The plant should improve LTO organizational arrangements and processes to ensure timely implementation of all activities required to demonstrate preparedness for safe LTO.
- Issue D-4 – The plant should consider implementing a proactive technological obsolescence programme.
- Issue F-1 – The plant should develop a long term human resource plan that addresses the organizational requirements for LTO.

A summary of the results was presented to the plant management during the exit meeting held on 26 November 2021. The plant management expressed a determination to continue addressing all issues and strengthen preparation for safe LTO and decided to invite a full scope SALTO mission in 2023.