

EXECUTIVE SUMMARY

At the invitation of Nuclear Power Operations Management Co., Ltd. (CNNO), a SALTO (Safety Aspects of Long Term Operation) mission was conducted at Unit 1 of the Qinshan Nuclear Power Plant in China from 6 to 15 June 2017.

The plant is owned and operated by China National Nuclear Power Co., Ltd. (CNNP). Operation started in 1991. The unit will achieve its original design life time of 30 years of operation in 2021 and the plant owner intends to extend the unit's lifetime by 20 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 two IAEA staff members, six external experts and four 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 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. Many activities are completely implemented and others are 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 in the following areas:

- Organizational structure to support preparation for safe LTO;
- Comprehensive implementation of leak rate testing of containment isolation valves;
- Revalidation of time limited ageing analyses for mechanical components.

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

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

- The plant periodic safety review (PSR) is not comprehensive;
- Design basis documentation is not adequately managed to ensure its availability for the plant;
- The final safety analysis report (FSAR) has not been adequately updated for LTO;
- Active and short-lived passive components, which are not assessed for LTO as part of the operating license extension (OLE) project, are not consistently identified as included in other plant programmes relevant for LTO;
- Identified ageing related activities are not fully implemented in the current plant programmes and relevant results from plant programme activities are not always used in the ageing management programme;

- Trend monitoring of ageing management programme (AMP) results does not fully meet the needs for safe LTO;
- A periodic evaluation of plant programmes important to ageing management and LTO does not include evaluation of their effectiveness or feedback from operating experience and research and development (R&D);
- Ageing management programmes for mechanical components do not have in all cases adequate provisions to ensure effective ageing management during the LTO period;
- The plant has not established and implemented a comprehensive environmental qualification programme;
- The plant has not yet fully implemented its ageing management programmes for electrical and I&C components;
- Technological obsolescence of SSCs important to safety is not managed proactively throughout their service life;
- The ageing management review (AMR) for civil structures is not comprehensive;
- The ageing management programmes for civil structures and components do not meet the intent of an effective programme and have not been implemented;
- The TLAA for containment prestress loss is not adequate;
- Systematic, coordinated and well-embedded competence and knowledge management is not developed and implemented to support the plant LTO.

A summary of the results was presented to plant management during the exit meeting held on 15 June 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 Unit 1 in May 2019 to review the progress in resolving the issues.