

## EXECUTIVE SUMMARY

Upon the invitation of the CEZ, a.s. Company, a peer review mission on safe long term operation (SALTO) was provided to review programmes/ activities of the Dukovany Nuclear Power Plant (further referred as “the plant”).

The plant is composed of two twin-units, each consisting of two reactor units (Units 1-4). There are four pressurized water reactors (PWR), VVER 440-V213 type, in operation. Each reactor unit had two turbo-generators with an initial electrical capacity of 220 MW each. Initially, the total electrical output of the power plant was  $4 \times 440 \text{ MW} = 1,760 \text{ MW}$ .

After modernization carried out between 2005 and 2008 the increase of the output was  $4 \times 16 \text{ MWe}$ . It resulted in each unit capacity of 456 MWe. Further modernization was accomplished and the plant has reached  $4 \times 500 \text{ MWe}$  capacity.

The designed lifetime of the plant was initially considered for 30 years.

During the SALTO mission in November 2014, all four units were reviewed.

Plant	Unit	Reactor type	Status	Location	Nominal electric power MW	Date of commissioning
Dukovany	1	VVER 440- V213	In operation	Dukovany	500	1985
	2	VVER 440- V213	In operation		500	1986
	3	VVER 440- V213	In operation		500	1987
	4	VVER 440- V213	In operation		500	1987

The plant is performing an LTO assessment to demonstrate the safety of the plant for long term operation (LTO). This SALTO mission has reviewed details related to this LTO assessment. A preparatory meeting was held in April 2014. The scope of the SALTO mission was agreed to and defined in the Terms of Reference issued in April 2014. The review team was organised accordingly; it comprises two IAEA staff and five external experts covering all disciplines stated in the Terms of Reference.

The mission reviewed completed, in-progress and planned plant activities related to LTO including activities involving the ageing management of systems, structures and components (SSCs) important to safety and revalidation of time limited ageing analyses (TLAA).

The SALTO team concluded that plant management is committed to improving plant preparedness for LTO. In addition, the team noticed the following good practices and good performances:

- The plant has installed active instrumentations and passive radiation dosimeters in many locations in the containment area;
- The plant established a comprehensive reactor pressure vessel (RPV) surveillance programme;
- The plant implemented an effective maintenance strategy based on the reliability engineering process according to INPO AP913.

Taking into account the evaluation by the team and the above mentioned points, the team recognised that the plant has a deep and comprehensive approach in preparation for safe LTO and is thoroughly following the IAEA Safety Standards and international practices. Nevertheless, in implementation of the plant LTO programme, the team identified some areas where further improvement is needed. Eight issues were raised:

- The emphasis of the plant approach for LTO is limited to the 10 year licensing period rather than the full intended period of LTO.
- The scoping and screening process has not clearly defined and documented the boundary limits of all areas to be reviewed in the ageing management review (AMR), at the system level and between disciplines.
- The ageing management review and ageing management programmes (AMP) for some mechanical components are not completed.
- The evaluation and revalidation of TLAAAs for some components are incomplete.
- The identification of ageing mechanisms in AMR for electrical and I&C equipment is incomplete.
- The ageing management review and the ageing management programmes for civil structures have not been completed.
- Some relevant data being gathered from existing plant activities is not being communicated to, and addressed in, ageing management programmes relevant to LTO.
- Coordination between key LTO functions and partners does not ensure that all relevant documents, data and knowledge are being systematically reviewed, archived and shared.

A summary of the review was presented to the plant management during the exit meeting held on 27 November 2014. The plant management expressed a determination to address the areas identified for improvement, and indicated the intention to invite a “Follow-up SALTO peer review mission” in November 2016 to complete the review of implementation of the corrective actions. The follow-up mission will review progress in solving issues raised during this mission.

Appendix III of this report includes the team’s detailed recommendations and suggestions arising from this mission.