

Report on the preparation works of the lifetime extension of the Paks Nuclear Power Plant

Preamble

The feasibility study for the lifetime extension of the nuclear power plant units was carried out in 2000. The aim of this study was to assess the safety and the technical status of the plant and to make a prognosis about what changes can be expected, in other words the prognosis of the aging of the plant. It was determined whether it is possible to extend the plant lifetime by 20 years over the original 30 years of operation, and whether the preservation routine is sufficient for the extended operation time. The conclusion was simple and clear: There are no technical or safety obstacles to extend the operational lifetime of the plant and from an economic point of view it is a sound investment. This last conclusion was several times reassured since 2000 by internationally acclaimed financial consulting companies (Ernst&Young, KPMG). In 2009, the Paks Nuclear Power Plant performed another evaluation based on the latest figures and its preliminary results further confirm the thrift of the lifetime extension.

Based on the previously described factors, the Paks Nuclear Power Plant included the lifetime extension of 20 years in the strategic goals of the plant defined in 2001 - which correspond to the long term plans of the MVM Ltd.

The lifetime extension is a procedure that requires special licences. According to the Nuclear Safety Regulations, the operation licence must be renewed to extend the operation period of the nuclear power plant. The intentions for extension must be made known to the Nuclear Safety Division of the Hungarian Nuclear Authority (OAH NBI) 4 years prior to the original shut-down period. At the same time, the detailed program of the preparation works for the lifetime extension must be presented. The licence for extended operation must be applied for each unit, one year before the original lifetime ends. (In the case of the first unit this date is 2011.) In the licence request it must be stated that the extension program determined for the preparation for extension was reviewed and complemented by the authority and has been successfully completed, and the given unit is well prepared for the extended operation. In the licence request the technical documentation and the specific authority licences must be supplied, of which the most important is the environmental licence. The nuclear licence for the lifetime extension can only be awarded with a valid environmental licence.

Environmental licensing

In 2006, the documentation of the ‘Paks Nuclear Power Plant Units 1-4, Lifetime Extension, Environmental Impact Assessment’ was completed as a requirement for the environmental licensing procedure. The Paks Nuclear Power Plant presented the application for 20 years’ extended operation to the ADUKÖVIZIG, the local authority for environment and water, on 13th March, 2006.

The environmental impact study assesses in detail the environmental situation of the plant, the present effects and the effects of the extended period. As a conclusion of the environmental impact assessment it can be stated that compared to the environmental effects at present no significant changes can be expected in either volume intensity or diversity of future effects. During the extended period of 20 years (with the maintenance and safety regulations adapted and in place) no change can be expected in the severity or the magnitude of malfunctions.

During 2006, a national and, based on the Espoo Convention, an international environmental licensing procedure took place. The public hearings organised by the authority and the local governments were held in Paks and Kalocsa. In the international procedure Austria, Romania and Croatia wished to participate. Therefore public hearings were held in Mattersburg, Oradea and Osijek. The conclusion of the Espoo procedure was accepted in writing by all three countries.

Based on the questions and answers of the public hearings and the statements of special authorities and experts on the 25th of October, 2006 the Environmental Authority awarded the environmental licence for the lifetime extension. The Energy Club Environmental Association lodged an appeal against the decree. The appeal was found unfounded by the National Authority for Environment and Water, and on the 31st of January, 2007 the first decision was amended in one point and otherwise affirmed.

The Energy Club proceeded to the County Court of Baranya. The first trial was held on the 24th of September, 2007, when the details of the case were introduced to court. The second hearing was held on the 5th of December, 2007, when the Court declared its verdict. In this verdict the petition of the plaintiff to suspend the decree of the environmental licence and to order a new procedure was refused without appeal.

The technical specifications of the preparation works for the lifetime extension

First those systems and system elements need to be identified that are necessary for the safety of the extended operational time. The aging processes that must be managed for the licensing procedure must be determined. The systems, and system elements need to be assessed, the aging management programs need to be evaluated and modified if necessary, and new programs also need to be established. The scope, validity, and expendability of such analyses that have limited timeframe must be evaluated. The status of qualification must be ensured. After these steps the necessary actions must be determined.

The action list (lifetime extension program) for each unit was compiled based primarily on the findings of the previously described tasks. After the review and consent of the plant management the program was sent to the authority (OAH NBI) one month before the deadline of 15th of December, 2008. Afterwards, materials for complementation were asked for and consultations took place in the first half of 2009, after which on the 19th of June, 2009 the authority evaluated, and with the consideration of the specifications described in the HA 4918 Decree, ordered the implementation of the lifetime extension program.

The HA 4918 Decree enlists the requirements for the execution of the lifetime extension program in six points, which on the one hand include the requirements for authority supervision and on the other hand determines specific tasks for the program and the funding documentation of the oncoming extension licence application. No such shortcomings were identified in the Decree by the authority (OAH NBI) that would rule out the possibility for the lifetime extension. According to the authority, the presented documents cover the specifications determined in the Nuclear Safety Regulations and are presented in the required format. Meanwhile, there are some shortcomings in the content and format alike. There were several notices in the Appendix of the Decree related to these issues which need to be taken into consideration during the implementation of the program and the compilation of the licensing documentation.

The lifetime extension program that is the result of the ongoing preparation works since 2001 and the extended tasks specified in the HA 4918 Decree determine the volume of tasks that must be carried out in order to compile the lifetime extension licence documentation. These documents were used as a basis to determine in detail the actions, the responsible organisations and persons. In order to manage all tasks in one place, the task list was complemented with the unfinished tasks of the project approved in 2002. The lifetime extension action plan set up accordingly will give the exact actions necessary for licensing

and a weekly status report will provide a base for management inspections and for regularly informing the authority. The tasks are carried out according to the timing – although due to the novelty of the tasks there are some minor delays. However, these do not jeopardise the completion of the lifetime extension action plan by the deadline.

The completion of the tasks in the lifetime extension action plan on time requires great efforts from the technical personnel employed to operate the nuclear power plant. As the actions of the lifetime extension action plan apart from their novelty require extensive operational and maintenance knowledge of the plant systems and equipment, this program provides great challenge for all the technical personnel of the plant.