javys
jadrová
a vyraďovacia
spoločnosť, a.s.

DECOMMISSIONING OF NUCLEAR FACILITIES

Jaslovské Bohunice area

Nuclear facility

V1 Nuclear Power Plant

Milestones

1972	Beginning of construction
1978 – 2006	Operation of Unit 1
1980 – 2008	Operation of Unit 2
1999	Decision no. 809/1999 of the Government of the SR on Early Shutdown
2000	Termination of the program of improvements and issue of licence for time-unlimited operation
2006	Shutdown of Unit 1
2008	Shutdown of Unit 2
2011	Beginning of decommissioning

Technical data

Reactor type	pressurized water reactor, 2 x VVER 440 (V230)
Fuel	uranium oxide UO_2
Moderator and coolant	water H_2O

Operation

The V1 Nuclear power plant in Jaslovské Bohunice became the first Czechoslovak nuclear power plant of industrial type with serial-produced equipment.

During its 28-year operation the power plant produced 159,000 GWh of electricity, which represents more than 5-year consumption in Slovakia. The power plant allowed the economic growth, development of industry and construction area as well as vocational education.

By minimal emissions including greenhouse gases, zero oxygen consumption at production of electricity and small number of fuel transports, this power plant had a minimal impact on the environment.

In 1999 the Slovak Republic pledged to shut down the V1 NPP during the accession negotiations to the European Union. JAVYS, a. s., fulfilled the Slovak government resolution in 2006 and 2008 respectively.

Operation termination

Due to the complicated physical phenomena occurring in a nuclear power plant its shut down and subsequent decommissioning is a demanding process. From several procedures, the model of continuous decommissioning has been selected for the V1 NPP.

After shut down and after-cooling of reactor units, the company JAVYS, a. s., ensured the transport of spent fuel from the reactor into the spent fuel pool and then into the interim spent fuel storage facility. The company continued with disconnecting of individual equipment parts and relieving them from operational charges in order to prepare them for dismantling. The company also performed processing and transport of operational radioactive waste.

Decommissioning

In July 2011 the Nuclear Regulatory Authority and the Public Health Authority of the Slovak Republic allowed the execution of activities of the 1st stage of V1 NPP decommissioning. Demanding works related to logistics and controlled management of thousands of tons of dissimilar material began immediately after obtaining the licence for decommissioning. These works were focused on decommissioning of non-contaminated systems and buildings, dismantling of transformers, diesel generators, outdoor electric substation and thermal insulation of equipment in the turbine hall. Also the cooling and service water systems and the system of warning and notification to the public were modified. Radiation control monitoring system was modernized and storage containers for spent nuclear fuel were delivered. Other decommissioning activities were related to dismantling of the equipment in the turbine hall, the pumping station, demolition of buildings not suitable for other use and to processing of waste generated during the decommissioning. The specialised monitoring workplace was built to control clearance of materials from the decommissioning.

The permission for the 2nd stage was accorded by the end of 2014. The subject of 2nd stage of the V1 NPP decommissioning includes decontamination of equipment in the active part of the power plant, dismantling of insulations and dismantling of equipment. The sectioned large-dimension components will be transported into a newly built integral storage facility and they will be subsequently treated. Other equipment will be dismantled and treated directly in the site of the power plant. In the final stage of the decommissioning, civil structures will be removed after decontamination of walls.

Transport of the last spent fuel from the V1 NPP

Shutdown of the 1st unit of the V1 NPP

V1 NPP Reactor hall

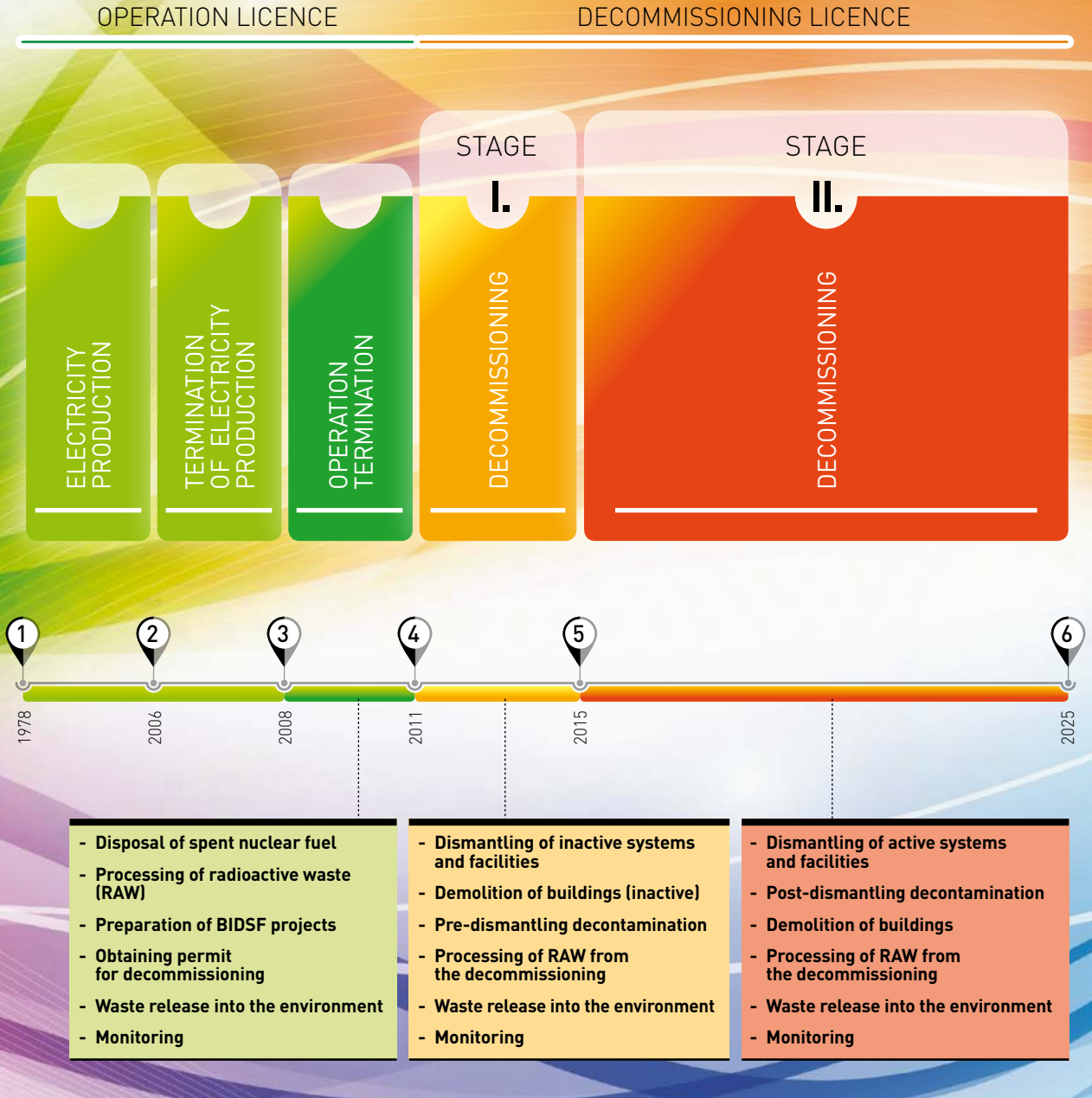
Minimization of Waste Generation

Estimated quantity of material from the decommissioning represents more than 800,000 tonnes. Radioactive waste will represent less than 1% of this volume. The existing and newly-built fragmentation and decontamination lines will be used for treatment of metallic waste. Most radioactive waste is to be processed in the reconstructed Bohunice RAW Treatment Centre.

After its treatment the radioactive waste is fixed in fibre-concrete containers, transported and stored in the National Radioactive Waste Repository in Mochovce. Very low level radioactive waste is stored in the newly-built repository in Mochovce site. The effort of the company JAVYS, a. s., is to recover the material from the decommissioning as much as possible and thus minimize the generation of waste.

The V1 NPP site will be cleared for non-nuclear industrial utilization after completion of the decommissioning.

Timetable of the V1 NPP operation and decommissioning



Bohunice International Decommissioning Support Fund

The V1 NPP decommissioning activities are financed from national funds (in particular from the National Nuclear Fund) and from the Bohunice International Decommissioning Support Fund (BIDSF). Funds from the BIDSF for performance of individual projects of decommissioning are paid on a base of grant agreements closed between the company JAVYS, a. s., and the European Bank for Reconstruction and Development (EBRD). The signature of agreements is preceded by preparation of the projects when JAVYS, a. s., as beneficiary from the BIDSF, identifies individual projects at first, suggests ways of their technical implementation and financing and defends them through the national coordinator the Ministry of Economy of the Slovak Republic at the meeting of the Assembly of Contributors of the BIDSF which is held twice a year.

Basic Groups of V1 NPP Projects

A Modifications and maintenance of the power plant systems
B Decommissioning documentation
C Radioactive waste management
D Dismantling of systems and equipment, demolition of buildings

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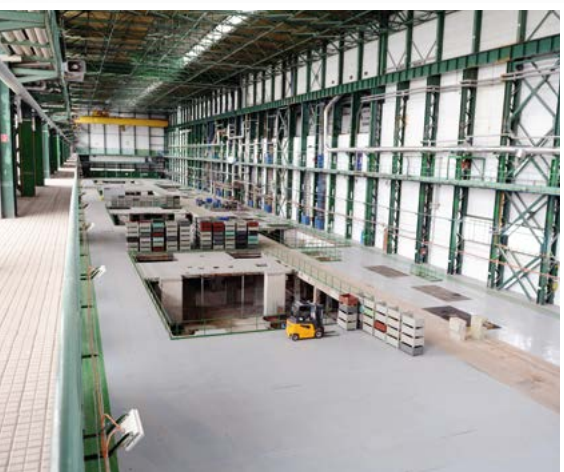
Turbine hall after dismantling of equipment



Dismantling works in 220 kV substation

Dismantling of transformers