

**MOCHOVCE NUCLEAR POWER PLANT VVER 4 x 440 MW
3rd structure**

FINAL OPINION
(No.: 395/2010 – 3. 4/hp)

issued by the Ministry of Environment of the Slovak Republic pursuant to Act no. 24/2006 Coll.
on environmental impact assessment and on the amendment of certain acts

I. BASIC DATA ON THE PROPONENT

1. Name

Slovenské elektrárne, a.s., Bratislava
Mochovce Nuclear Power Plant, Blocks 3 and 4

2. Identification number

35 829 052

3. Registered office

935 39 Mochovce

II. BASIC DATA ON THE PROPOSED ACTIVITY

1. Name

Nuclear power plant Mochovce VVER 4 x 440 MW, 3rd structure

2. Purpose

The purpose of the proposed activity is to commission into operation and operate a nuclear facility at the Mochovce Nuclear Power Plant, comprising two V 213 VVER reactors, with an output of 2 x 440 MW (hereinafter simply "MO 34"), in order to produce electric energy.

The MO 34 rated thermal output remains unchanged against the original project, at 2 x 1 375 MWth.

Due to the installation of new components (turbines and further technological parts) the efficiency of the assessed MO 34 reactors will be increased from the original 31.7% to 33.9%. The primary circuit components remain unchanged against the original project. The total power output of the reactors will reach the level of 2 x 471 MWe (the original output not adjusted at the secondary circuit was 2 x 436 MWe).

Against the original solution in the design there will be lower heat releases into the environment of approx 7%, the life of the nuclear fuel will be extended, the level of radioactive waste as well as the quantity of released radioactive substances will be reduced.

The final opinion from this process will be used in the approval procedure for commissioning the nuclear facility into operation.

The proposed activity is in accordance with the Energy Security Strategy of the Slovak Republic, approved by the Government of the Slovak Republic under no. 732 on 15.10.2008.

The proposed activity is in accordance with the *Energy Policy of the Slovak Republic*, adopted by the Government of the Slovak Republic under no. 29 on 11.1.2006 and the *Energy Security Strategy of the Slovak Republic*, adopted by the Government of the Slovak Republic under no. 732 on 15.10.2008 and the ***Back-End Nuclear Fuel Cycle Strategy of the Slovak Republic***, adopted by the Government of the Slovak Republic under no. 328 on 11.5.2008.

3. User

Slovenské elektrárne, a.s., Bratislava

Mochovce Nuclear Power Plant, Blocks 3 and 4, 935 39 Mochovce

4. Location

The proposed activity will be located in the eastern part of the Nitra region, in the north-western corner of the district of Levice, close to the boundary with the Nitra and Zlaté Moravce districts, in the cadastral territory of the municipalities of Nový Tekov and Kalná nad Hronom.

The grounds of the nuclear power plant Mochovce are at a terrain elevation of between 200 to 250 m above sea level, and are common to both the MO12 plant in operation as well as for MO 34.

The current status of land parcels for the area of the nuclear power plant Mochovce is indicated in the extracts of the deed of title no. 103 for Kalná nad Hronom, and no. 342 for Nový Tekov, the updated versions are available at www.katasterportal.sk.

The outskirts of Bratislava, the capital of Slovakia, lie approximately 90 km to the west of the proposed activity at the NPP MO 34, i.e. about 120 km by public roads. The outskirts of the Hungarian capital, Budapest, are approximately 85 km southeast of the proposed activity. The outskirts of Vienna, the capital of Austria, are about 145 km southwest of the proposed activity. The Czech Republic is about 85 km away from the proposed activity. Poland is about 130 km away from the proposed activity. Ukraine is about 270 km away from the proposed activity.

5. Date of commencement and completion of activity

Commencement of construction	1986		
Completion of construction	February 2012 (block 3)	–	June 2012 (block 4)
Start of operation	November 2012 (block 3)	–	June 2013 (block 4)
Expected end of operation	November 2052 (block 3)	–	June 2053 (block 4)

6. Brief description of the technical and technological solution

Licensing and construction process for the NPP Mochovce grounds

The original building permit for MO 34 construction no. 2010/86 was issued by the Levice District National Committee on 12 November 1986. The date of construction completion indicated in the permit was extended for the first time on 5 May 1997 by the letter of the Regional Office in Nitra no. 97/02276-004 and was further extended by the Regional Building Office in Nitra no. 2004/00402-007 of 15 July 2004. The latter decision made the further construction conditional upon implementation of technical and safety measures arising out of new nuclear safety requirements, modified or developed since 1992, and the decision also took account of changes in the generally binding legal regulations. The decision forms an integral part of Decision no. 246/2008 of 14 August 2008 issued by the Slovak Nuclear Regulatory Authority (hereinafter simply the “NRA SR”), which subject to Act no. 541/2004 Coll. on the peaceful use of nuclear energy (the Nuclear Act) and on the amendment of certain acts as the building authority for nuclear facilities.

Since proceedings in the matter of Decision no. 246/2008 concerned also interests protected by environmental regulations, the Ministry of Environment of the Slovak Republic pursuant to § 61 and § 126 of Act no. 50/1976 Coll. on land planning and the building code, as later amended, expressed an opinion in its statement no. 7451/2008-3.4/hp of 8 August 2008 that the change to the construction before its completion cannot be deemed to constitute a new activity or a significant change from the original project because the purpose or scope of the activity will not change in the MO 34 project before its completion. Since the administrative proceedings for licensing the activity under specific regulations was initiated before the Environmental Impact Assessment Act entered into effect, it was not possible to apply Act no. 24/2006 Coll. on assessment of environmental impacts and on the amendment of certain acts as later amended to the activity; the permit was granted prior to the effective date of the Environmental Impact Assessment Act.

The construction proponent (Slovenské elektrárne, a.s., Bratislava, Nuclear Power Plant Block 3 and 4, 935 39 Mochovce) submitted, in the framework of the permit proceedings of the NRA SR, a positive opinion from the European Commission with recommendations under Articles 41 to 44 of the Treaty establishing the European Atomic Energy Community (Euratom Treaty), which was issued on 15 July 2008 in the matter of the proposed investment.¹

The European Commission's opinion regarding the completion of blocks 3 and 4 under the Euratom Treaty is fully integrated in the binding terms and conditions of the NRA SR decisions, namely Decision no. 246/2008 (permit for a change to the construction of the "Nuclear Power Plant Mochovce VVER 4x440 MW 3rd Structure" prior to completion) of 14 August 2008, Decision no. 266/2008 (consent to changes in selected facilities affecting nuclear safety at nuclear facilities of the NPP Mochovce blocks 3 and 4 during the construction in the scope referred to in 120 listed parts of the project documentation) of 14 August 2008 and Decision no. 267/2008 (consent to changes in the document "Preliminary Safety Report for NPP Mochovce blocks 3 and 4" in the presented scope) of 14 August 2008.

The approach to the completion of MO 34 is in accordance with IAEA technical document (Management of delayed nuclear power plant projects, IAEA-TECDOC-1110, IAEA, Vienna, 1999).²

The European Commission confirmed that the project for the construction of the MO 34 nuclear facility meets the international requirements for nuclear safety.

International safety assessments (IAEA, WANO, WENRA, Walkdown 1 & 2) confirmed that the safety level of reactors operated in Slovakia is comparable with nuclear power plants operated in other countries of the world.

The Mochovce NPP construction was begun in 1986 by laying down the foundations for the major structures (reactor building, longitudinal electrical building, foundations for transformers, cooling towers, ventilation stack).

According to the original project the nuclear power plant in Mochovce consisted of 4 blocks with Russian VVER 440 reactors (Vodo-Vodnyj Energetitscheskij Reaktor) a

¹ Statement of the European Commission: Notice of the European Commission under Articles 41 - 44 of the Euratom Treaty, which was formally closed by issuance of the European Commission's opinion in July 2008, in which it stated the structure's full compliance with other projects under construction in Europe. It also included some recommendations, fully incorporated in the project subject to the requirements of the SR Nuclear Regulatory Authority - the authority competent to decide on the construction and operation of nuclear installations in the Slovak territory. In the matter of the reactor's containment the Commission stated the following:

- "the project is based on the VVER technology and subsequent development in WER technology, successfully modernised in the case of the existing VVER reactors in several countries, thanks to which additional protection against internal events has been achieved;"
- "additional analyses conducted by the investor showed that the structure of blocks 3 and 4 of the nuclear power plant Mochovce is able to resist an intentional small aircraft impact as an unanticipated event;"
- "blocks 3 and 4 of the Mochovce nuclear power plant have a robust concrete structure, so it is again possible to expect a considerable resistance of the plant's structure against an impact of a large aircraft."

² At the time of writing the assessment report a new IAEA technical document has been published (under the Convention of the Physical Protection of Nuclear Material and Nuclear Facilities) "Restarting Delayed Nuclear Power Plant Projects" (IAEA Nuclear Energy Series Technical Report No. NP-T-3.4, IAEA, Vienna, 2008), summing up the experience from this field, including experience from the Slovak Republic.

pressurised water reactor, type V 213. Following the completion of blocks 1 and 2 (hereinafter simply "MO 12") the blocks 3 and 4 were to be constructed.

The MO 34 NPP will have two independently operating nuclear blocks, both of them containing separate nuclear and conventional islands. Common auxiliary operating systems may be used for all four blocks in the complex.

The NPP MO 12 has been in commercial operation since 1999 and 2000. The construction of the nuclear facility continued up until 1992, when the construction works were suspended. From 1992 to 2000 only maintenance and conservation works were carried out at MO 34 concerning the disused equipment, components and other construction buildings. These works are performed on the basis of programmes approved by the Nuclear Regulatory Authority of the Slovak Republic.

The completion status of the MO 34 civil part was of approximately 70% and the technological part approximately 30%, installation of electrical and system equipment was at 1%.

The NRA SR in its Decision no. 246/2008 of 14 August 2008 set the construction completion date at 31 December 2013.

All the activities in the construction of MO 34 are governed by the above listed decisions of the NRA SR. All structures built to date and components delivered to Mochovce have undergone thorough assessment, consisting of a series of inspections, or tests. This process started with the verification of compliance with the new basic project requirements, to be followed by technical inspections and assessments of documentary completeness and original certification of producers or suppliers.

The aim of this process was to ensure a high level of safety at MO 34.

The ongoing construction to December 2009 reconditioned the primary circuit buildings, replaced the reactor hall roof and seismically reinforced the steel buildings. Certain components in the facilities were not in accordance with the latest requirements and standards were rejected and replaced as needed.

Description of the MO 34 location

- The grounds of the MO 34 plant is divided into:
 - ✓ **the built-up part** of an area measuring approximately **500 000 m²**, which includes the already constructed buildings where the main structures are the: ● reactor hall, ● longitudinal building for electrical distributors, ● hall with turbine generators, ● cooling towers, ● building for diesel generators, ● auxiliary active operations building, ● building for final processing of liquid radioactive waste (for all four blocks).
 - ✓ **the logistics part** measuring approximately **800 000 m²**, which is equipped with infrastructure, i.e. **roads, offices, stores, workshops**, etc.
- MO 34 will be **connected to** the already **operating MO 12 blocks**, and will use the **support systems** shared by all **4 blocks**.
- The nuclear power plant is connected to the **main road network** in Slovakia and with a **dedicated railway line** is also **connected to the Slovak rail network**.
- **The power output** from the nuclear power plant is **fed to four 400 kV dedicated lines** (two for MO 12 and two for MO 34).
- **The source of process water** for the NPP MO 12 and MO 34 is the **river Hron**.

The electricity generation process at the Mochovce nuclear power plant contains three major heat transfer cycles:

1. In the first cycle, the heat obtained from the fuel is used for steam production; the part of the power plant that performs this function is known as the *Primary Circuit*.
2. The second cycle uses the steam to drive turbines connected to generators producing electrical energy, this part of the power plant is known as the *Secondary Circuit*.

- The third cycle removes the remaining energy transferred to steam by cooling; the part of the plant performing this process is called the *Cooling Water Circuit* (or the heat dissipation circuit).

The **primary circuit** of each block is placed in the reactor building. It consists of a reactor and six coolant loops. Each loop consists of a hot leg with an isolating valve, steam generator and a cold leg with the main circulation pump and an isolating valve.

The main circulation pumps circulate the coolant through the reactor for removing heat from the reactor core. The pressuriser creates and maintains the reactor coolant system pressure within the operating conditions and allows compensation for changes in reactor coolant volume during operation.

Steam generators are pipe heat exchangers of horizontal design and provide the interconnection between the nuclear system (the primary circuit) and the steam system (the secondary circuit).

The fuel assemblies are placed in the reactor pressure vessel where chemically treated water runs through channels of the fuel assemblies and removes the heat generated by the nuclear fission reaction. The water exits the reactor at an average temperature of 297°C (the temperature increases through the reactor by 29°C).

The **Secondary circuit** connects the steam supply system to the energy conversion system. The steam generated by six steam generators is piped through six high-pressure steam lines outside the reactor building to the turbine hall. The turbine hall is shared by all four blocks and is parallel to the reactor buildings. For each reactor block the hall houses two turbine generators. Each turbine generator consists of one high-pressure and two low-pressure sections.

The expanded steam condenses in the main turbine condenser which is cooled by the circulation cooling water system. The condensate is then sent back to the steam generators.

The following table gives the basic technical data for the block with an output of 440 MWe.

General technical parameters of 1 block of reactor type VVER 440/213

GENERAL	
Number of operating blocks: 2	Rated reactor power: 440 MWe
Reactor type: VVER 440/V-213 (pressurised water reactor)	Own power consumption: 35 MW (8% of rated power)
Reactor thermal power: 1 375 MWth	Block effectiveness: 29.5%
Reactor pressure vessel	Steam generator
Inner diameter: 3 542 mm	6 per block
Wall thickness: 140 + 9 mm	Type: PGV-213
Height: 11 805 mm	Amount of generated steam: 450 t/h
Weight (excluding internal parts): 215 150 kg	Output steam pressure: 4.64 MPa
Material: Alloyed steel Cr-Mo-V	Output steam temperature: 267 °C
	Feedwater temperature: 158 ÷ 223 °C
Reactor core	Turbogenerator
Number of fuel assemblies: 312	2 na jeden blok2 per block
Number of control assemblies: 37	Type: 220 MWe
Total weight of fuel (UO ₂) in core: 42 t	Stages: 1 high pressure, 2 low pressure
Enrichment of standard type fuel (first core): 3.6%, 2.4% and 1.6% (depending on the position in the core)	Rated speed: 3 000 rpm
Enrichment of radial profile type fuel (for further MO 34 campaigns): 4.87% on average with gadolinium content	Terminal voltage:15.75 kV

Primary circuit	Condenser
Number of cooling loops: 6	Circulating water flow rate: 35 000 m ³ /h
Coolant flow rate: 42 600 m ³ /h	Maximum coolant water temperature: 33 °C
Nominal pressure: 12.26 MPa _{rel}	
Coolant temperature at the reactor outlet: 297.3 °C	
Coolant temperature at the reactor inlet: 267.9 °C	
Total volume: 250 m ³	
EMERGENCY SYSTEMS	
PASSIVE	ACTIVE
Hydroaccumulators (4x)	High pressure system (3x)
Total volume: 60 m ³	Pump capacity: 65 m ³ /h
Volume of water: 40 m ³	Pump head: 13.5 MPa
Volume of nitrogen: 20 m ³	
Bubbler-condenser tower	Low pressure system (3x)
Total volume of bubbler-condenser tower: 13 800 m ³	Pump capacity: 800 m ³ /h
Volume of 4 gas traps: 16 140 m ³	Pump discharge pressure: 0.72 MPa
Volume of 12 bubbler-condenser tanks: 1 380 m ³	
	Spray system
	Pump capacity: 380-520 m ³ /h

Increasing the effectiveness of blocks MO 34 - Installation of new components (turbines and other technological sections) in the secondary circuit of each MO 34 block will achieve a higher power output (increasing the efficiency from the initial 31.7% to 33.9%) without change to the primary circuit components.

The rated reactor thermal power (1375 MW_{th}) will be the same, the electric gross power output will though be 471 MWe (equivalent power output without any change in the secondary circuit was 436 MWe). The most important improvements and their environmental benefits consist of:

- a new turbine with higher efficiency (leading to a decrease in the thermal discharge to the environment as a consequence of reduced thermal power dissipated in the condenser),
- new titanium tubes in the condenser (leading to higher performance of this component),
- new water spraying system in the cooling towers with natural circulation (leading to higher thermal performance of this component),
- new natural cooling tower drop retainer (leading to a decrease in water consumption).

The total reduction in thermal discharges (by 7%) into the environment can be estimated as a percent increase in the original efficiency (29.5%). Moreover, the increase in the Nap's efficiency (the generated electric energy being equal) will:

- extend the service life of the control assemblies by 1 year, representing an increase of fuel use efficiency of about 1%,
- reduce production of radioactive waste, particularly in the case of tritium (a reduction of approximately 7%),
- reduce radioactive discharges from the discharge outlets by about 7%.

Description of the main systems

Primary circuit – consists of the reactor, reactor coolant system and a number of auxiliary and safety systems.

Heat is generated by the process of nuclear fission with the uranium dioxide fuel. The neutron moderator for the fission reaction is demineralised borated water. This water also serves as the primary coolant.

The fuel is placed in the reactor core, in the reactor pressure vessel. The coolant water passes through the core, removing heat from the surface of fuel tubes and thereby maintaining the temperature at the centre of the fuel (at full power) at approximately 1 200 °C.

Control of the fissile chain reaction is achieved by the movement of regulatory assemblies in and out of the reactor core and by varying the concentration of boric acid in the reactor coolant.

In order to remove the heat from the core the reactor is equipped with a coolant system. The reactor core is housed in a steel pressure vessel with a stainless steel inner lining. Reactor coolant passes through the core, removing heat from the fuel, and then enters one of six main coolant loops (the primary circuit). The temperature of the reactor coolant (chemically treated water) is about 297°C, and to prevent it boiling, it is maintained at a pressure of 12.26 MPa by means of a pressuriser connected to one of the coolant loops.

The heated primary coolant enters the heat exchanging pipes of the steam generator. These pipes are surrounded by secondary circuit water, which is itself heated and produces steam. In this way heat is transferred from the primary coolant water to the power conversion system (the secondary circuit), without mixing of the two fluids. The primary coolant is then returned to the core by the main circulation pumps.

The purpose of the auxiliary and safety systems of the primary circuit is to ensure that the reactor can be safely shut down and kept in this state whenever required and have the ability to keep the fuel assemblies reasonably cool and thereby intact, under all circumstances. The auxiliary and safety systems include: boric regulation and feeding system, residual heat removal system, emergency core coolant system, containment systems, auxiliary feed-water system and component cooling system.

Power conversion system

The power conversion system consists of multiple water and steam systems and two steam turbines for each reactor block. Demineralised water (secondary circuit water) is pumped from the turbine condensers to the steam generators, where it passes over tubes containing reactor coolant water. Heat transferred through the walls of the tubes causes the secondary circuit water to boil, producing steam at a temperature of approximately 260 °C and pressure of about 4.6 MPa. This steam is collected in a common main steam header.

Steam from the main steam header passes via pipelines into the turbines, where it transfers approximately one third of its acquired energy in rotating the turbine and the connected electrical generators. A small part of the produced energy is used to power equipment and the rest is fed to the distribution grid. The steam is then condensed in the turbine condensers which are cooled with the circulating coolant water, to which it transfers the remaining two-thirds of its acquired heat energy.

Electrical systems

Each steam turbine generator produces electric power at a voltage of 15.75 kV. The power is discharged via the interface between the generator and the main transformer (15.75/420 kV). The generated electric power of each MO 3 and block is transmitted through a separate single outer 400kV line to the Velký Ďur substation.

Power for internal consumption of each block is normally supplied by two auxiliary transformers (15.75 / 6.3 kV), which are connected by the higher voltage side to the segregated bus bar and lower voltage side to the 6.3 kV bus bars of the block power distribution system.

If the 400 kV network fails and the switching to house load operation cannot be achieved, the power supply is taken from a 110 kV transmission backup source. Two 110 kV lines connect the power plant to the Velký Ďur switchyard. For each block there is one dedicated auxiliary transformer 110 kV / 6.3 kV, with two secondary windings connected to the 6 kV bus bars of the block power distribution system.

The backup 6 kV bus bars are interconnected so that the systems from one block can be powered if necessary from the other NPP blocks.

Some of the 6 kV bus bars are dedicated to powering the essential and safety systems. These bus bars can be powered by onsite power sources composed of 3.5 MVA standby emergency diesel generators.

Batteries and inverters are used for ensuring power supply to the 1st category systems (essential systems).

Instrumentation and control

MO 34 will use the latest commercially available digital technology. Digital electronics is characterized by its vastly increased functionality, reliability and reduced maintenance requirements. Best practices derived from operating experience of Slovak and foreign nuclear power plants will be used for MO 34.

A modern human-machine interface will enhance the operator's response to any situation at the plant. Expert systems will also be used to diagnose the condition of a block and advise operators. The safety parameter display system will be a dedicated interface for the operator, to provide all essential information for the most effective management of the block, even in the most unlikely emergencies.

Cooling systems

In order to minimize the thermal heat dissipation to the River Hron, a closed-loop circulating water-cooling system is used, where heat exchange is performed in natural draft cooling towers. Heated water from the turbine condensers is directed to these cooling towers. There are four cooling towers for each of the twin reactor blocks. All the condensers cooling water pumps for two reactor blocks are located in a common pump station. The steam condenser system in the secondary circuit is cooled by the heat rejection circuit, which contains treated water.

Water is extracted from a reservoir on the river Hron at Veľké Kozmálovce, approximately 5 km from Mochovce.

Fresh water, to replace the loss of cooling water mainly by evaporation and the smaller volume of blowdown water purged from the circuit, passes through the pumping station to twin storage tanks, each with a volume of 6 000 m³. From the tanks water flows under gravity via two pipelines for treatment and is then fed into the cooling water circuit.

There is also available a service water system used for cooling essential appliances. The service water is cooled by wet forced draft cooling towers. There are three service water systems (200% redundancy).

Safety systems. To maintain the reactor in a safe shut-down condition and prevent any uncontrolled release of radioactive materials into the environment, the following critical safety functions must be fulfilled:

- maintaining the reactor in sub-critical condition,
- cooling the reactor core,
- heat removal by the ultimate heat sink,
- integrity of the reactor cooling system,
- integrity of containment,
- coolant inventory.

The fulfilment of these safety functions is ensured by safety systems which must provide the required functions even in the loss of off-site power and following a seismic event. In the case of loss of external electricity source, the emergency diesel generation station (containing six 3.5 MVA diesel generators, i.e. three for each block) ensures the electricity supply to the safety systems. Safety systems provide even in critical situations protection of plant personnel, and of the population around the plant, against the effects of ionizing radiation from the plant.

For this purpose, electrical equipment of safety systems is supplied by power from category I (vital power) or category II (essential power) sources and is seismically certified. Safety systems have 200% back-up, i.e. each system consists of three identical safety systems, of which one alone is sufficient to perform the required safety functions. The main systems relevant for the safety of the plant in different operating conditions can be summed up as follows:

- Emergency high and low pressure core cooling systems, including passive core cooling systems (boric acid accumulators): these systems belong to the emergency core cooling system which ensures core cooling and negative reactivity injection in the case of a primary circuit rupture.
- Containment pressure suppression system (bubbler condenser and spray system): this system performs the fundamental function of controlling the pressure after an accident in the containment, guaranteeing its integrity.
- Emergency residual heat removal system: its task is to ensure the removal of accumulated core residual heat and primary circuit heat during the block cool-down under normal, transitional and emergency conditions.
- Steam generator emergency feed water system: this system supplies the steam generators with feed water in the case of low water supplies in the secondary circuit.
- Service water system: the purpose of this system is to ensure heat removal from each safety-associated device, during each block mode, the transfer of heat generated or released during operation of block equipment and core radioactive decay heat, under normal and emergency conditions.
- Boron control and makeup system: controls the supply of coolant and it is used to maintain optimal chemical characteristics of the reactor coolant; in particular it ensures:
 - coolant supply to the reactor coolant pump seals,
 - compensation of non-organised coolant leaks from the primary circuit and return of organized leaks into the reactor coolant system,
 - correction of reactor coolant chemistry, change (increase / decrease) of boric acid concentration during normal operation and under accident situations.
- Hydrogen autocatalytic recombiner and igniters system: this system control the hydrogen concentration in the containment as an additional measure for severe accident management (hydrogen may be produced during an accident by the reaction of water with metals at high temperature).
- Reactor cavity flooding system: this system ensures reactor vessel cool-down in case of severe accidents.
- Fire protection system.
- The emergency reactor protections are an important protection and control safety system which ensures a quick reactor shut-down. The task of the reactor trip function is to insert accident and control assemblies in the reactor core and ensure the reactor trip in the event of the set conditions being met.

The reactors of blocks 3 and 4 will also be equipped with protection and control system, which will automatically activate protection of AO- 3 and AO-4 to decrease the reactor thermal power in the event of the set conditions being met.

The concept of the twin reactor blocks allows for highly efficient handling of fuel and radioactive waste. The plant safety features and the fire protection have also been improved. To maintain the block's operation the auxiliary systems are installed close to the blocks. Additional facilities such as the auxiliary active operations building, the diesel generator station, the compressor building, essential service water and the fire-fighting pump station also play an important role in ensuring a high level of safety at the nuclear power plant.

Water for the operation of Mochovce NPP is extracted from the dam at Veľké Kozmálovce on the River Hron about 5 km from the site of the plant.

The volume of water drawn from the dam is given on the basis of the water needs of the circulating cooling system of the condensers and also depends on the season and external climate conditions. Operation of all four blocks at Mochovce NPP will require consumption of water from the dam at Veľké Kozmálovce in an average volume of 1.5 m³/s, up to the maximum volume of 1.8 m³/s.

Groundwater is extracted from two wells, HMG-1 and HMG-I/A, owned by SE, a.s. in Červený Hrádok, approximately 8 km away from Mochovce NPP.

After treatment, the groundwater is used for drinking.

The conditions for introducing gaseous radioactive substances into the environment via their discharge through a ventilation stack under normal operating conditions are given by a permit from the Public Health Authority of the Slovak Republic.

In accordance with the radiation monitoring plan for the vicinity of the NPP Mochovce EMO/2/NA-052.01-02, the Mochovce NPP monitors its radiological impacts on the environment and human population. Monitoring is aimed at documenting that radiological impacts, i.e. exposure of inhabitants and concentrations of isotopes from emissions are below the limits set in Annex 3 to Government Decree no. 345/2006 Coll. on the basic safety requirements for health safety and protection of inhabitants from ionizing radiation (and limits set by the NRA SR) and that the impacts are as low as reasonably achievable – ALARA.

Monitoring is controlled pursuant to the regulation “*Radiation Monitoring Plan in the Vicinity of NPP Mochovce (QA-07-01)*”, describing monitoring activities in the radius of 20 km from the Mochovce NPP.

The teledosimetric system is equipped with 40 stations and monitors dose rates of gamma radiation, volumetric activity of radioactive iodine and additional information on the state of the technology.

The monitoring system for the whole of Mochovce was designed so as to include blocks 3 and 4 once they start working.

Basic safety features of VVER 440-213 reactors:

- *Small power output and low power density of the reactor core.*
- *Large design reserves.*
- *Primary circuit with six loops and with a large volume of reactor core coolant water.*

The reactor’s features ensure a large thermal power of the primary circuit as well as broad and stable operational scope of the power plant with great time reserves if corrective measures are needed. VVER 440/213 exhibit high performance in the field of accident prevention.

Based on the above, the nuclear power plant has a high ability to address deviations from the normal operation and operatively restore optimal conditions at the nuclear power plant.

In the framework of the due diligence concept (INSAG-3 and 10) the aforementioned characteristics are essential to attaining advanced targets in the field of safety.

With regard to the IAEA defence-in-depth principles (International Atomic Energy Agency) the improvements in the field of MO 34 safety were designed with two basic aims:

Accident prevention: further reduction of the occurrence of an accident

- reducing the opportunities for deviations from normal operation,
- improving the plant’s response to unusual situations, preventing such a situation escalating into a serious accident (e.g. a meltdown).

Accident mitigation: increasing the plant’s response to emergency conditions

- preventing the accident from spreading and using control means for those accidents that result in damage to the core.

The MO 34 reactor core's primary containment protection consists of:

- The bubbler system of the MO 34 containment system means a large quantity of water that condenses steam coming from the reactor coolant system in the event of depressurisation of the reactor coolant system during an accident.
- In the case of overpressure in the containment due to the release of a large amount of steam from the reactor coolant system, the internal characteristics, passive and active systems are able to rapidly reduce the pressure in the containment back to atmospheric level or lower, and thereby prevent further damage to the environment at a very early stage.

The containment project was carefully examined:

1. in the 1990s, via IAEA experimental and theoretical studies, financed by the OECD and EU (within PHARE / TACIS 2.13/95);
2. in the period 2001-2003, via experimental testing (required by the SR Nuclear Regulatory Authority, Czech Republic and Hungary) conducted with technical support of the OECD.

MO 34 secondary containment

- According to international standards, secondary containment is used to capture, monitor and release in a controlled way, or collect leaks from primary containment in order to reduce the radiological consequences of an accident.
- The area around the containment will be aired during an accident; the air consumed will be filtered before being sent to the stack.

The technical solutions represent improvements in the project against the existing MO 12 operation and further minimisation of the consequences of an accident.

Assessment by the "**Safety Commission**" – an independent body appointed by the company Slovenské elektrárne / Enel, to provide oversight of nuclear safety and reviews of the basic project activities.

The **Safety Commission** was composed from six international experts in the field of safety from: Slovakia, Italy, Austria, Germany, France and Russia.

- In connection with the MO 34 project the Safety Commission issued the following statement:

"The Safety Commission believes that none of the aspects examined will prevent the project Mochovce 3 and 4 from achieving high safety standards and protecting the personnel, public and the environment in accordance with the relevant international standards".

Aircraft impact protection

Starting point:

- on 15 July 2008 the EC DG-TREN (Directorate General for Energy and Transport, based in Brussels) issued an opinion on the MO 34 project in accordance with Article 43 of the Euratom Treaty.
- The European Commission's opinion included a recommendation for "further features, functional capabilities and control strategies" against intentional impacts *from external sources (e.g. a small aircraft impact)*, commenting that this fact goes beyond the current national and international requirements; the **NRA SR accepted these recommendations in full** and transposed them into the binding conditions (together with deadlines for their fulfilment) in Decision no. 266/2008, issued in August 2008.
- The company SE, a.s. began engineering activities in order to comply with the new project requirements in August 2008.

Safety improvements at MO 34 – Control and management system - (CMS improvement)

- Project with the latest technology (increased reliability, maintainability, integrity, safety)
 - Use of a modern digital control system:
 - Increase in control and monitoring capacity at the NPP

- Use of predictive and control functions
 - Increased redundancy
 - Improved HMI (implementation of the safety parameter display system, PAMS/SAMS panels)
 - High performance in terms of measuring accuracy, stability, auto-diagnosis
- Use of new PAMS signals for the SAM strategy:
 - Reactor core - output temperature (signal to move to SA)
 - Water level in the reactor shaft
 - Concentration of hydrogen in various parts of the containment

Habitability of the MCR (main control room) in the case of a serious accident

- It is very unlikely that there would be a radioactive leak as far as into the ventilation system of the MCR. The MCR will be isolated and secured with a supply of fresh air from dedicated tanks designed to ensure a slight overpressure in the MCR and to prevent any penetration of radioactivity or toxic gases from the surroundings;
- This will ensure adequate working conditions for MCR employees for several hours;
- In the case of such severe scenarios it is necessary to anticipate significant leaks in the first hours from the occurrence of a serious accident: after this timeframe the emergency ventilation system may be manually restarted;
- In this way the operator can intervene at any moment during a serious accident.

Improvements to electrical systems – further ensuring an independent and highly reliable power source for each block.

For this purpose:

- New equipment (transformers, generators, switchboards, bus bars, cables, etc.) will be used
- The possibility of interconnecting safety bus bars of the respective safety divisions of adjacent blocks (solution for station black out (SBO) emergencies not anticipated in the project);
- The creation of a 6-kV line between the 4 blocks, allows
 - long-term management of SBO scenarios;
 - greater flexibility in the event of the electrical equipment failure (transformers, etc.);
- Possibility to power the CMS safety systems from the DC and AC sources (from inverters)
- A joint diesel generator for blocks 3 and 4 for SBO incidents

Fire protection improvements

- The fire risk of MO 12 was assessed in accordance with Nuclear Regulatory Authority Regulation no. 50 (probabilistic and deterministic analysis)
- In the current phase of the project the probabilistic analysis results for the fire risk at MO 12 are recognized as suitable also for MO 34
- Measures to reduce fire risk at MO 34 represent improvements in comparison with MO 12:
 - High-pressure fire-extinguishing system
 - Improved fire detection system
 - Certified safety cables will be fire resistant
 - Cable channels, areas and sensitive parts of the plant (the nuclear and non-nuclear sections) will be equipped with fixed fire-extinguishing system.

Seismic resistance

- The seismicity of the main civil and technological parts of the power plants are being reviewed for the PGA (peak ground acceleration) equal to 0.143 grams (as a result arising from a specific probabilistic safety assessment on site, IAEA, 2003).

- Probability of exceeding PGA = 0.143g in the case of a seismic even is 10^{-4} /yr
- At the request of the NRA, the PGA for seismic resistance of the MO 34 has been increased to 0.15g.

The most important buildings and process equipment are seismically resistant to the level of the maximum magnitude of an earthquake for the given locality (peak ground acceleration is 0.15 g). Seismic resistance means ensuring integrity of the reactor coolant system, including the safe shutdown of the reactor and its continuous cool-down during and after an earthquake.

The issue of basic seismic features of the Mochovce power plant site (hereinafter simply the "MO NPP") that were used as input data for seismic resistance of civil buildings, equipment and components essential for safety was addressed by the company Slovenské elektrárne in cooperation with the SR NRA, with the continual involvement of international experts. The IAEA provided for the organisational arrangement and technical selection and participation of experts from abroad (physical protection of nuclear materials and equipment). In the MO NPP seismic-resistance related activities of local experts, methodological assistance and guidance were used, provided by four IAEA missions, which were conducted in 1993, 1995, 1998 and 2003. In addition to these, in 2004 to 2005 the IAEA held for the NRA SR technical cooperation projects (SR/9/002 and RER/9/035) specifically focusing on drafting technical instructions for the seismic review programme for the Mochovce NPP.

The last IAEA mission of 2003 assessed the work done with a fairly positive result in evaluating the seismic characteristics of the MO NPP site, which were prepared by professional contractors of SE, a.s., stating that the site's seismic characteristics of Mochovce were developed at an expert level corresponding to the current level of knowledge.

Fuel

For the MO 34 it is designed to use gadolinium fuel with an enrichment of 4.87% ^{235}U . Gadolinium fuel makes it possible to balance out the growth of energy in the reactor core from the beginning of the campaign where too many neutrons are emitted through to the end of the campaign where more neutrons are needed in order to exploit all fissile products. The fuel will be used in a 5- to 6-year cycle and the spent nuclear fuel will reach burnup of 48÷52.6 MWday/kgU.

The admixture of gadolinium in the fuel enables a reduction in the production of tritium and also tritium discharges into waste waters.

In the case of the VVER 440 reactor, Model V213, the reactor core is composed of:

- ✓ 312 independent fuel assemblies;
- ✓ 37 control assemblies (30 absorbent assemblies and 7 regulation assemblies).

Each fuel assembly is made of 126 fuel rods and a central channel for the instrumentation. The sheath of an assembly comprising of fuel hexagonally shaped rods is made of boron steel.

Transportation and handling of fresh fuel

Fresh fuel is transported by a special railway train. Each wagon carries eight containers, each of which holds four fuel assemblies. Following arrival to the plant the fuel is transferred into fresh fuel storage where it is checked (visually, geometrically) and either put into temporary storage racks, transport containers or into cylindrical magazines in preparation for refuelling. Each of these magazines contains 30 assemblies. During refuelling the magazines are transferred by crane into the receiving part of the fuel storage pool. The fresh fuel is transferred from the magazine to the core by a refuelling machine.

The spent fuel, ready for storage, is removed by the refuelling machine from the core to the fuel storage pool.

Handling spent fuel

Spent fuel is stored over a long term (about 50 years) with the assumption of its permanent storage in a deep geological repository.

In the case of shutting down the EBO V1 block and the 40 year operating period of EBO V2, MO 12 and MO 34 there will be produced 24 698 spent fuel assemblies, which corresponds to approximately 2 960 tonnes of spent fuel, converted into heavy metal content. Of that number the production from EBO V1 and V2 will represent 12 384 spent fuel assemblies and the production of MO 12 and MO 34 will represent 13 104 spent fuel assemblies.

The spent fuel storage in a temporary storage facility is an inevitable technological stage, aimed at reducing the amount of heat and activity produced by spent fuel assemblies before its reprocessing or prior to its insertion in the storage containers and transfer to a deep underground repository.

The interim spent fuel storage facility at Jaslovské Bohunice is presently used for storing spent fuel from the nuclear power plant EBO V1 and V2 and partially from the Mochovce NPP. The first batch of spent fuel from the NPP Mochovce was transported to the JAVYS storage facility in April 2006.

Third-party liability for nuclear damage is governed by Act no. 541/2004 Coll., the Atomic Act, which transposes the provision of the Vienna Convention of 1963 on civil liability for nuclear damage. The Slovak Republic acceded to the Vienna Convention and to the Addendum to the Joint Protocol of 1988 on the Application of the Vienna Convention and the Paris Convention on 7 March 1995.

According to this international convention, binding on the Slovak Republic, liability for nuclear damage, lies with the holder of the permit to commission the nuclear facility into operation and with the holder of the permit to operate the nuclear facility. Nuclear damage means also damage incurred through costs for essential measures taken to prevent or reduce radiation or to renew the previous or a similar state of the environment, provided that these measures were necessitated in consequence of a nuclear event and the nature of the matter allows this. The permit holder is liable for nuclear damage caused by each single nuclear event up to the amount of EUR 75 000 000 where this concerns nuclear facilities for energy purposes, but up to EUR 50 000 000 in the case of other nuclear facilities and radioactive material transport.

Total costs

Projected total costs are planned at:	2 774 848 782 EUR , of which:
Nuclear island:	1 255 048 782 EUR
Conventional island:	1 028 000 000 EUR
Conventional island system balancing:	361 800 000 EUR
Main control and management system:	130 000 000 EUR

Investment for the completion of NPP Mochovce should reach the level of 2.775 billion EUR. Slovenské elektrárne is financing the project mostly from their own operating capital without state assistance. Two new reactor blocks should be phased into the network in 2012 and 2013. Following the completion and start-up of both blocks the 880 MWe installed production capacity will be able to cover up to 22% of consumption in Slovakia.

III. DESCRIPTION OF THE ASSESSMENT

1. Drafting of assessment reports

The assessment report for the proposed activity **“Nuclear Power Plant Mochovce VVER 4 x 440 MW 3rd Structure”** (hereinafter simply the “Assessment Report”) was prepared in July 2009 by the company **Golder (Europe) EEIG** represented by the responsible solutionist Serena Majetta and the solutionist team: Vincenzo Gente in cooperation with the firm AQUATEST P & R, s.r.o. – Oľga Pospiechová, Juraj Pospiech and the firm SE, a. s. – RNDr. Milan Zrubec, RNDr. Pavol Chylý and Velín Balev.

The proposed activity was submitted for assessment in a zero and in a one localisation and technical variant of the solution, since the SR Ministry of Environment, on the basis of a reasoned request by the proponent (letter no. SE/2008/087 3788 of 15.07.2008), pursuant to § 22 (7) of the Assessment Act, waived the requirement for a variant solution for the objective of the activity (letter no. 7451/2008-3.4/hp - 3, 4 of 31.07.2008).

The proposed activity meets the criteria under § 18 (1) of the Assessment Act and subject to its *Annex 8* is classified in *Chapter 2 Energy Industry, item 4 Nuclear power plants and other facilities with nuclear reactors, including their decommissioning and disposal, part A, and for this reason it is subject to mandatory assessment.*

Pursuant to Annex 13 of the Assessment Act the proposed activity is also included in the list of activities subject to mandatory international assessment in terms of their transboundary environmental impact and included in item 2 *Thermal power stations and other combustion installations with a heat output of 300 MW or more, and nuclear power stations and other nuclear reactors* (except research installations for the production and conversion of fissile and fertile materials, whose maximum power does not exceed 1 kilowatt of continuous thermal load).

The proposed activity was assessed under Act no. 24/2006 Coll. on environmental impact assessment and on the amendment of certain acts, Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 97/11/EC and Directive 2003/35/EC, and under the Convention on Environmental Impact Assessment in a Transboundary Context (hereinafter simply the “Espoo Convention”), as well as under the Bilateral Agreement between the Government of the Slovak Republic and Austria (hereinafter simply the “Bilateral Agreement”).

According to the specification of changes in the implementation of the proposed activity against the original MO 34 project, submitted for assessment to the SR Ministry of Environment by the proponent in letter no. SE/2008/060 538 of 16.05.2008, the following conclusions were reached. The changes made in the project resulting from the exchange of technological components do not change the systems and equipment functions, but on the contrary, they increase their safety, reliability and service life. Their implementation does not change the scope of the activity or the installed power output of the blocks. The limits for discharges into the environment likewise remain unchanged compared to the values prior to the changes. All the changes in the project are designed on the basis of experience from the construction, commissioning and operation of blocks of the same type in Slovakia and abroad. The SR Ministry of Environment therefore stated that the completion of MO 34 may not be deemed to constitute a new activity, nor a substantial change to the original project. At the same time it determined that prior to awarding the operation licence for MO 34 by the Nuclear Regulatory Authority of the Slovak Republic, it will be necessary to assess the nuclear facility pursuant to the Assessment Act.

“The nuclear power plant Mochovce VVER 4 x 440MW 3rd Structure” was assessed under Act no. 24/2006 Coll. on environmental impact assessment and on the amendment of certain acts, Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment, as amended by Directives 97/11/EC and 2003/35/EC, and under the Convention on Environmental Impact Assessment in a Transboundary Context (hereinafter simply the “Espoo Convention”), as well as under the

Bilateral Agreement between the Government of the Slovak Republic and Austria (hereinafter simply the "Bilateral Agreement").

The final opinion of this process will be used in the approval procedure for **commissioning the nuclear power plant into operation. This licensing procedure pursuant to Slovak law is an indisputable approval procedure for the proposed activity, since it substantially changes the existing legal and actual situation for the future.**

2. Distribution and publication of the assessment report

The proponent, **Slovenské elektrárne, a.s., Bratislava, Blocks 3 and 4 of the Nuclear power plant Mochovce**, submitted one copy of the Slovak version of the assessment report, prepared under § 31 (2) and Annex 11 to Act no. 24/2006 Coll. on the environmental impact assessment and on the amendment of certain acts (hereinafter simply the "Assessment Act"), for assessment under the Assessment Act to the Ministry of Environment of the Slovak Republic, Environmental Impact Assessment and Evaluation Department (hereinafter simply the "SR Ministry of Environment") on 31.07.2009 in letter no. SE/2009/086482.

On 03.08.2009 the SR Ministry of Environment commented on the submitted assessment report and requested, in accordance with § 31 (5) of Act no. 24/2006 Coll., that comments of a formal nature be incorporated in the report, but also that Chapter III *Assessment of the Expected Impacts of the Proposed Activity on the Environment, including Health, and an Estimate of their Severity* be supplemented by the effects on soil; fauna, flora and their habitats; landscape; protected areas and their protection zones; territorial system of ecological stability; urban complex and use of land; cultural and historical heritage; archaeological sites; paleontological sites and important geological sites; intangible cultural values and spatial synthesis of the effects of the activity in the area.

Subsequently, the proponent supplemented the assessment report by sending letter no. SE/2009/092675 of 14.08.2009 as well as in letter no. SE/2009 093487 of 18.08.2009. The assessment report was submitted in the Slovak and English languages. The submission included brief extracts from the assessment report, summarising the requests of the affected parties:

- requests of the Austrian party were submitted in German to the SR Ministry of Environment in letter no. SE/2009/093010 of 17.08.2009;
- requests of the Hungarian party in Hungarian and of the Polish party in Polish, delivered in letter no. SE/2009/097347 of 28.08.2009.

The SR Ministry of Environment distributed the environmental impact assessment report according to § 33 (1) and (2) of the Assessment Act in letter no. 1277/2009-3.4/hp of 14.08.2009 for opinion, to the following parties of the assessment process in the Slovak Republic: *the department body* (SR Ministry for the Economy, energy section), *the licensing authority and affected municipalities* (Nuclear Regulatory Authority of the Slovak Republic in Bratislava; Municipal Authority in *Kalná nad Hronom*; Municipal Authority in *Nový Tekov*; Municipal Authority in *Starý Tekov*, Municipal Authority in *Veľký Ďur*, Municipal Authority in *Tlmače*; Municipal Authority in *Malé Kozmálovce*; Municipal Authority in *Nemčiňany* and Municipal Authority *Čifáre*), *the affected authorities* (*Public Health Authority* of the Slovak Republic, National Labour Inspectorate of the SR, Department of Labour Inspection in Nuclear Energy; *Precinct Environmental Office in Levice*; *Regional Environmental Office in Nitra*; *Nitra Region Office*; Ministry of the Interior of the Slovak Republic, crisis management and civil protection section; Presidium of Fire and Rescue Corps of the Ministry of the Interior of the Slovak Republic; Regional Public Health Authority seated in Levice; Civil Aviation Authority of the Ministry of the Interior of the SR, Slovak Water Management Enterprise, national enterprise, Branch plant in Banská Bystrica; Labour Inspectorate in Nitra; Technical Inspection, a.s. in Bratislava; Railways Regulatory Authority in Bratislava; Levice Precinct Traffic and Roads Authority; Regional Land Office in Nitra; Local Office of Civil Defence and Crisis Management Department in Nitra).

Furthermore, the assessment report was sent for opinion to the *Slovak Environmental Agency in Banská Bystrica, Ministry of Environment of the SR, Water and Energy Resources Section, Ministry of Environment of the SR, Environmental Risk Management Department and Ministry of Environment of the SR, Geology and Natural Resources Section.*

The same time the assessment report was concurrently published on 17.08.2010 at www.enviroportal.sk so that members of the public could send their opinions by 25.09.2009.

The public of the affected municipalities – *Kalná nad Hronom, Nový Tekov, Malé Kozmálovce, Starý Tekov, Veľký Ďur, Nemčiňany, Čifáre and Tlmače Urban Authority* was informed of the assessment report according to § 34 (1) of the Act, in the manner usual for the locality, for the period of 30 days, on accessible official boards of the affected municipalities. Some of the affected municipalities published a notice of the possibility to view the report and also of the possibility to make comments, on their own websites (e.g. www.mestotlmace.sk; www.starytekov.sk; www.nemcinany.sk), in the period from approximately 18.08.2009 to 21.09.2009. The affected municipalities also published a plain-text final summary on their notice boards and advised when and where it is possible to view the assessment report, make excerpts, or transcriptions or, at their own expense, take copies of it, but also where it was possible to send written opinions on the published assessment report.

Subsequently the affected municipalities under paragraphs (2) and (3) of § 34 of the Assessment Act arranged, in agreement and cooperation with the proponent, a joint public hearing on the proposed activity. The date and place of the public hearing were announced to the public by the affected municipalities at least ten days before the hearing.

The competent authority, departmental body, affected authorities and municipalities were also invited to the public hearing, by invitation letter no.: 488/2009 of 26.08.2009.

Transboundary assessment - distribution of the assessment report

The SR Ministry of Environment, as the party of origin, promptly sent in accordance with Article 4 of the Espoo Convention and under § 47 of the Assessment Act the MO 34 assessment report to the individual affected parties that expressed an interest in participating in the assessment process on the basis of a notice on the implementation of the activity likely to have transboundary effects.

The MO 34 assessment report was sent (*letter no. 1277/2009-3.4/hp of 14.08.2009*) in paper form and on CD in the Slovak and English language through the contact points to the following affected parties: Poland, Ukraine, Hungary, Austria and the Czech Republic.

At the same time the SR Ministry of Environment, as the party of origin, in a letter attached to the assessment report stated that:

- the approval authority for the proposed activity will be the Nuclear Regulatory Authority of the Slovak Republic, which will issue, pursuant to Act no. 541/2004 Coll. on peaceful uses of nuclear energy and on the amendment of certain acts, a permit for commissioning the nuclear facility into operation and subsequently a permit for the nuclear facility's operation.
- the SR Ministry of Environment submits in the framework of the legislative procedure of the Slovak Republic the assessment report to all affected bodies, departmental bodies, approval authorities, affected municipalities and the public for an opinion on the proposed activity.
- the period for public comment on the assessment report is, under national legislation, 30 days from its publication by the affected municipalities in the manner usual for the area.
- complete information on the assessment report is published on the website www.enviroportal.sk.
- during the public comment on the assessment report, the proponent has the obligation to ensure, in cooperation with the affected municipalities, a public hearing of the proposed activity.

- it requests that the affected party notifies it of its interest to participate in the public hearing in the territory of the Slovak Republic so that it can advise the affected party of the place and time of holding the public hearing.
- it requests that the affected party notifies it within 15 days of the receipt of the assessment report as to whether it is interested in participating at the public hearing for the MO 34 assessed activity in the territory of the Slovak Republic, and whether it will, under Article 5 of the Espoo Convention, request any consultations within the transboundary assessment process for MO 34, and which would be held by mutual agreement between the party of origin and the affected party.

In the conclusion to the letter it was stated that statements regarding the assessment process and individual opinions of the affected parties are to be delivered to the contact person in the framework of the Espoo Convention for the Slovak Republic, RNDr. Gabriel Nižňanský, Environmental Assessment and Evaluation Department, Ministry of Environment of the Slovak Republic, Námestie Ľudovíta Štúra 1, 812 35 Bratislava, Slovak Republic, tel. no.: +421905680873, fax: +421264369945, e - mail: niznansky.gabriel@enviro.gov.sk.

The affected parties received in the appendix to the cover letter the following information:

- ✓ *the Czech Republic* – a complete assessment report in the Slovak language in paper form and on electronic data media (*letter no. 1277/2009-3.4/hp of 14.08.2009*).
- ✓ *Poland* – a complete assessment report in the Slovak and English languages in paper form and on electronic data media. A brief abstract from the assessment report on the proposed activity in Polish in paper form and on electronic data media (*letter no. 1277/2009-3.4/hp of 02.09.2009*).
- ✓ *Hungary* – a complete assessment report in the Slovak and English languages in paper form and on electronic data media. A brief abstract from the assessment report on the proposed activity in Hungarian in paper form and on electronic data media (*letter no. 1277/2009-3.4/hp of 02.09.2009*).
- ✓ *Ukraine* – a complete assessment report in the Slovak and English languages in paper form and on electronic data media (*letter no. 1277/2009-3.4/hp of 14.08.2009*).
- ✓ *Austria* – a complete assessment report in the Slovak and English languages in paper form and on electronic data media. A brief abstract from the assessment report on the proposed activity in German in paper form and on electronic data media (*letter no. 1277/2009-3.4/hp of 14.08.2009*).

Invitation to a public hearing on the MO 34 activity in the Slovak Republic with the participation of the affected countries

Under paragraphs (2) and (3) of § 34 of the Assessment Act the affected municipalities arranged, in agreement and cooperation with the proponent, a public hearing on the MO 34 activity. The date and place of the public hearing were announced to the public by the affected municipalities ten days before the hearing in the manner usual for the area. At the same time the representatives of the general government bodies – the competent authority, departmental body and affected authorities were invited to the public hearing, by a letter of invitation (*letter no.: 488/2009 delivered on 28.08.2009*).

Subsequently, on the basis of receiving notification from the affected municipalities and the proponent concerning the joint public hearing under § 34 (5) of the Assessment Act in the territory of the Slovak Republic, the SR Ministry of Environment invited in its letter no. 1277/2009-3.4/hp of 28.08.2009 the affected countries (the Czech Republic, Austria, Hungary, Poland and the Ukraine) to the public hearing on the assessed activity of MO 34, to Bratislava on 18.09.2009 at 14.00 hours.

With regard to the good neighbourly relations and the need for a fair hearing of the Assessment Report, in accordance with the Espoo Convention and the Bilateral Agreement, on 08.09.2009 Dušan Čaplovič, the Minister of Environment of the Slovak Republic, invited in a personal letter Mr Nicolaus Berlakovich, the Federal Minister of Agriculture, Forestry,

Environment and Water Management of Austria, to the public hearing of the assessment report on MO 34, held in Bratislava on 18.09.2009.

By letter of 16.09.2009, Mr Nicolaus Berlakovich sent his apologies for his absence at the public hearing on MO 34 held in Bratislava, stating the reason of parliamentary work engagements and expressed the belief that the public hearing in Vienna to be held on 25.09.2009 would be constructive and open to answer all open questions of the public.

Responses of the affected countries concerning the assessment report within the set deadline of 15 days from its receipt for reason of specifying further procedure in the transboundary assessment of the MO 34 activity under the Espoo Convention – Sending invitations to the public hearing

Austria responded in writing to the delivered assessment report.

In its letter no. BMLFUW-UW.1.4.2/0059-V/1/2009 of 21.08.2009 the Federal Ministry of Agriculture, Forestry, Environment and Water Management of Austria delivered its reply to the received assessment report on MO 34 and also various comments on the complexity of the translation of individual chapters of the assessment report. The Austrian party stated that individual parts of the MO 34 assessment report had not been translated, and which was needed for identifying impacts on the affected party's environment. Slovakia had submitted only a non-technical summary in German. Furthermore, the Austrian party stated that the supporting documentation it had available will be published in Austria on an ongoing basis from 7.09.2009 to 6.10.2009 inclusive. Austria requested a public hearing on the MO 34 report to be held in Austria with a deadline by 31.08.2009, pursuant to Article 5 (2) of the Bilateral Agreement. Furthermore, Austria requested that consultations be held under Article 6 of the Bilateral Agreement in order to distribute information on the assessed activity at the horizontal and vertical level.

Hungary responded in writing to the submitted assessment report.

In its letter ref. no: *KMF-70/21/2009 of 8.9.2009* the Ministry of Environment and Water of Hungary confirmed that in accordance with Article 4 of the Espoo Convention it had received the MO 34 documentation on 25.08.2009, and which it had published on its website www.kvvm.hu together with information on the public hearing in Bratislava to be held on 18.09.2009.

In its reply the Hungarian party stated that it requests a public hearing in Hungary, in the town of Esztergom, around 8. – 30.10.2009, on the Hungarian side, and at the same time it requested consultations under Article 5 of the Espoo Convention in order to clarify certain issues relating to the assessed projects.

Poland responded in writing to the delivered assessment report.

In its letter no. *DOOSsoos-082/2114/974/09/pf of 15.9.2009* the General Director for the Environmental Protection, as the central government body responsible for ensuring Poland's participation in transboundary hearings in matters concerning environmental impact under national law, confirmed that following receipt of the MO 34 assessment report, it had been immediately forwarded to the regional directors of the environmental protection in Rzeszow, Krakow and Katowice, who are locally competent in relation to the area likely to be affected by the transboundary environmental impact. The EIA documentation was made available for viewing by the interested public for a period of 30 days with the possibility of making comments and submitting proposals and reservations. The MO 34 environmental impact assessment report was also analysed by the experts from the National Atomic Energy Agency, which is the central government body responsible for nuclear safety in Poland.

Subsequently, following the submission of opinions from the abovementioned general government bodies, at latest by 30.10.2009, the General Director of the Environmental Protection will issue an official statement for Poland in relation to the submitted documentation.

After a preliminary analysis of the assessment report and after obtaining opinions from the respective general government bodies the Polish side did not find any essential circumstances requiring the presence of Poland at the public hearing proposed for 18.09.2009.

In the end result, Poland will decide on the need for consultations under Article 5 of the Espoo Convention later, only after performing a detailed analysis of the proposed method of implementation of the planned activity.

The Czech Republic responded in writing to the delivered assessment report.

The Czech Ministry of Environment reconfirmed in the same letters with the same reference numbers (*letter no. 64267/ENV/09 dated 15.9.2009, dated 01.10.2009 and dated 09.10.2009*) receipt of the assessment report and its distribution to the affected territorial self-governing units and to the affected administrative offices for its publication and for opinion.

The Ministry did not require any public hearing or consultations under Article 5 of the Espoo Convention in the territory of the Czech Republic.

In its letter (*letter no. 68982/ENV/09 of 15.09.2009*) the Ministry notified the affected self-governing authorities and bodies of the date and time of the public hearing on the assessment report to be held in Bratislava and invited them to participate.

Ukraine

The SR Ministry of Environment sent the MO 34 assessment report (*letter no. 1277/2009-3.4/hp of 14.08.2009*) in paper form and on CD in the English and Slovak languages to the neighbouring affected parties, i.e. also to the Ukraine. The SR Ministry of Environment requested in its cover letter that the affected party express their interest in participating in the public hearing on the assessed activity of MO 34 in the territory of the Slovak Republic, but also as regards their requirements for consultations under Article 5 of the Espoo Convention in the framework of the environmental impact assessment process.

The SR Ministry of Environment received on 25.08.2009 a delivery slip – a notice on delivery, by which it considered that Ukraine as an affected party is actively involved in the transboundary assessment process. Despite this fact, Ukraine did not again respond to the delivered assessment report, not even to the cover letter proposing its participation in the public hearing and consultations.

On 19.11.2009 the Minister of Environment of Slovak Republic received a letter from the Minister of Environment of the Ukraine with a request to send a notice on the assessed activity of MO 34, even though the Ukraine had received the Assessment Report on the MO 34 Activity, which fully respects the particulars of a notice, i.e. it answered all the questions required in the notice. The SR Ministry of Environment considered this request to be unjustified.

The SR Ministry of Environment in its reply of 09.12.2009 to the mentioned letter notified Ukraine that the assessment process for the proposed activity of MO 34 had reached the stage, in which pursuant to § 36 of the EIA Act a team of experts had been appointed to evaluate the whole assessment process in expert opinion. Ukraine was advised that the whole assessment process in the Slovak Republic is time limited by the national legislation. Despite this, the Slovak party was willing to again provide the Ukrainian party with all the information available, for the remaining time up to the completion of the process. Slovak experts were prepared for a working meeting with Ukrainian experts, should Ukraine be interested, at a date up to 21.12.2009.

The working meeting was held on 21.12.2009, on the basis of an intervention of the Ambassador of the Slovak Republic in Ukraine with the Minister of Environment of the Ukraine.

The meeting resulted in stalemate. The Ukraine since 25.08.2009, when it had received the assessment report, had not informed its general public of the proposed activity and had no comments regarding the assessed activity, and had failed to notify howsoever the Slovak Republic of this position. Ukraine communicates with the affected countries exclusively via the diplomatic channel, which is not specified, and does not comply with the

Espoo contact points of communication interface, as is common for other affected countries. The Slovak Republic did not agree to the situation whereby the assessment process on the basis of inactivity and concurrent idiosyncratic Ukrainian attitude would return to the beginning, i.e. to Articles 2 to 7 of the Espoo Convention for reason that the Slovak Republic had not communicated with Ukraine through a nonstandard channel (diplomatic mail); the Slovak Republic had sent the notification to Ukraine to the address of its Espoo contact.

The SR Ministry of Environment sent on 28.12.2009 (*letter no. 1277/2009-3,4/hp*) an in-depth opinion on the course of the whole process of consultations with Ukraine to the Chair of the Implementation Committee of the Convention on Environmental Impact Assessment in a Transboundary Context, seated in Geneva, Mr Mathias Sauer.

Involvement of Bavaria in the transboundary assessment under Article 3 (7) of the Espoo Convention and Article 7 of Directive 85/337/EEC as amended by later directives

By virtue of the ***Federal Ministry of the Environment, Nature Conservation and Nuclear Safety of Germany*** the ***Bavarian State Ministry of the Environment and Public Health*** in its letter no. 91b-U8806.50-2009/5-11, received on 29.01.2010, addressed to the SR Ministry of Environment with a request for Bavaria's involvement in the transboundary impact assessment of the activity of MO 34, even though Germany had not been included among the affected parties.

The Bavarian State Ministry of the Environment of Public Health advised the SR Ministry of Environment, as the party of origin of the proposed activity, that it cannot exclude any significant adverse effects of the proposed activity concerning Bavaria.

Bavaria made use of the possibility afforded by transboundary environmental impact assessment law, whereby the public of an affected country likely to be significantly affected by a transboundary impact of the assessed activity in the country of origin is to be involved in the transboundary assessment process as an affected party under Article 3 (7) of the Espoo Convention and Article 7 of Directive 85/337/EEC, amended by Directive 97/11/EC and 2009/31/EC, should the affected country request so.

The public of the affected country which requested involvement in the assessment process should be informed with the assessed activity in an equal way in which the public of the country of origin was informed, and concurrently this public should be given an opportunity to adopt an opinion and express their objections in respect of the assessed activity.

The SR Ministry of Environment accepted the Bavarian request for reason that under German law the individual provinces are responsible for the participation of their bodies and the public in transboundary hearings concerning the objectives realised abroad.

The Bavarian Ministry of the Environment and Public Health was sent (*letter no. Ba_395/2010-3.4/hp of 12.03.2010*) a full assessment report on MO 34 in the Slovak language in paper form and on a CD, a full assessment report in English on CD and a brief abstract from the assessment report on the proposed activity in German, in paper form and on CD.

The SR Ministry of Environment in its cover letter, sending the assessment report, informed Bavaria that the assessment report in the Slovak and English languages, including the German summary, are published on its website www.enviroportal.sk (link <http://eia.enviroportal.sk/detail/atomova-elektren-mochovce-vver-4x-440-mw-3-stavba>).

Furthermore, the SR Ministry of Environment in its cover letter stated that the Slovak public had, under the Assessment Act, a 30-day period for commenting on the assessment report. With regard to the fact that the assessment process of MO 34 was according to the applicable national law closed, it is necessary to issue a final opinion at latest by 30 April 2010.

On 15.04.2010 the SR Ministry of Environment received an e-mail notification from the Ministry of the Environment and Public Health of Bavaria that on 22.03.2010 it had received

the supporting documentation for the Bavarian general public's participation in the transboundary impact assessment of the MO 34 activity. These documents were made available to the public of Bavaria via the Internet and via their display at the Ministry.

The public of Bavaria was informed on 26.03.2010 through the press that the documentation on the transboundary assessment of the MO 34 activity is published for 30 days on the website of the Bavarian Ministry of the Environment and Public Health (<http://www.stmug.bayern.de/aktuell/presse/detailansicht.htm?tid=19185>).

Bavaria assumes that it will be able to forward to the Slovak party its final opinion from the assessment process in a cover letter by e-mail.

On 29.04.2010 the **Bavarian Ministry of the Environment and Public Health** delivered by e-mail its opinion (*letter no. B-U8806.50-2009/5-27 of 29.04.2010*) on the outcome of the transboundary impact assessment process of the MO 34 activity. The opinion stated that the documents sent from the Slovak party concerning the transboundary assessment of the given activity had been displayed by 27.04.2010 on the website of the Bavarian Ministry. No comments were received concerning the assessed activity during the period for commenting on the MO 34 assessment report.

It requests that it be notified of the results of the assessment process and of the decisions regarding the assessed activity.

3. Hearing of the assessment report with the public and conclusions from the hearing

3.1 Public hearing at the government's Bôrik Hotel in Bratislava – Slovak Republic

The MO 34 assessment report was, under § 34 (2), (3) and (5) of the Act discussed with the public at a joint public hearing, jointly organized by the proponent and the municipality of Kalná nad Hronom, represented by its mayor, and with the consent of the mayors of all affected municipalities (Nový Tekov; Starý Tekov; Veľký Ďur; Tlmače; Malé Kozmálovce; Nemčiňany and Čifáre).

Invitations to the public hearing for all affected municipalities and all affected bodies and authorities were sent by registered mail (letter no.: 488/2009 of 26.08.2009). The public hearing was held on 18.09.2009 in the government's Bôrik Hotel in Bratislava at 14.00 hours. Those attending were representatives of the state bodies, autonomous local authorities and representatives of the proponent, representatives of the SR Nuclear Regulatory Authority, the professional and lay public from the Slovak Republic, Czech Republic, Hungary and Austria, non-governmental organisations (Brečtan, Global 2000, Greenpeace, Ekoforum, Energia 2000, Association of Friends of Slatinka, Green Party and For Mother Earth), inhabitants of the affected municipalities, the lay and professional public. The media were represented in great number (press and television).

The public hearing in Bratislava included the participation of a delegation of representatives of the Ministry of Agriculture, Forestry, Environment and Water Management of Austria, led by Mr Günther Liebel, general director and head of the section for environmental policy, who was representing the Austrian position – a rejective position regarding the use of nuclear power and for constant support for compliance with the highest safety standards in nuclear safety, putting emphasis on Austrian citizens and the protection of their environment.

The public hearing was opened by Mr Josef Havlík, mayor of the village of Kalná nad Hronom, who welcomed the participants present, clarified the meaning and purpose of the public hearing and introduced the main protagonists of the public hearing. Then he handed over to the mediator of the public hearing, *Jozef Mišák*, who informed those present of the technical agenda of the hearing. The mediator called upon the Secretary of State for the SR Ministry of Environment, *Jaroslav Jaduš*, to speak, who emphasised on behalf of the ministry the transparent cooperation with the public and the affected municipalities in the framework of the assessment process. He expressed the that the discussion of the report would be a most professional meeting for all those who wish to learn, wish to ask questions and wish to seek answers. He asked those present not to abuse the professional topics for political "background". He, moreover, appealed to the investor to make all efforts that all reservations,

notices from the side of the professional bodies to be accepted, and thereby minimise the environmental impacts as far as possible.

The next to speak was the Secretary of State for the SR Ministry for the Economy, *Peter Žiga*, who said that the energy sector is one of the key areas of politics also in the European Union. The Slovak Republic in the spirit of the approved strategic document, the *Energy Security Strategy of Slovakia to 2030* wants to achieve a competitive energy industry, providing a reliable, secure and efficient supply of all forms of energy at acceptable prices, taking account of consumer protection, environmental protection, permanently sustainable development, security of supply and mainly technical safety. He said that the MO 34 project is a continuation of a tradition stretching over more than 50 years, created in Slovakia in the field of nuclear energy, which at present employs approximately 5 500 people. He stated that were Slovakia to postpone its investment in MO 34, it would now be hardly able to cover peak consumption by means of its own power production.

Afterwards he handed over to Peter Uhrík, representing the central government body of the Slovak Republic for the field of nuclear supervision.

He noted that the main mission of the SR Nuclear Regulatory Authority is to ensure for the citizens of the Slovak Republic as well as for the international community that nuclear energy in the Slovak Republic is used exclusively for peaceful purposes and that the Slovak nuclear facilities are designed, built, operated and decommissioned in accordance with the relevant legislation.

He stated that the Act no. 541/2004 Coll. on the peaceful uses of nuclear energy (the Atomic Act) is the key law which, among other things, lays down the conditions for the use of nuclear energy for peaceful purposes, obligations and rights of legal and natural persons in the use of nuclear energy, nuclear safety conditions, principle of the state supervision over nuclear safety and sanctions for violation of the obligations arising from non-compliance with the law.

He emphasised that the SR Nuclear Regulatory Authority had assessed the submitted documentation, with the assessment criteria being based on:

- The Atomic Act no. 541/2004 Coll. and related decrees;
- Resolved safety issues for MO 12,
- Safety problems resolved over the course of modernising the JE V-2 nuclear power plant,
- WENRA requirements (*Western European Nuclear Regulators' Association*),
- Best current international practice.

He stated that the SR Nuclear Regulatory Authority has no substantive comments to the report.

For the proponent the first to speak was *Paolo Ruzzini*, CEO and chairman of the joint-stock company, the Slovenské elektrárne, PLC.

He stated that Enel and Slovenské elektrárne will through the implementation of MO 34 continue to contribute to the development of a safe and permanently sustainable environment. Operation of MO 12 has prevented the discharge of about half a million tonnes of CO₂ into the environment.

He stated that by completing MO 34 and their connection to the power grid, we will fully cover power consumption at competitive prices. The nuclear installation MO 1234 will become the main pillar in energy security and stability in the region. There will be employment for about 250 technicians who will hold stable highly-professional positions in Mochovce and in the whole region around Nitra.

He stressed that the project places Slovakia among one of the three countries that at this moment are developing and building nuclear power plants.

He assured those present that the project puts emphasis on safety, reliability and respect for the environment and human health.

The MO 34 project itself with technical details was presented by *Giancarlo Aquilanti*, the project director of Slovenské elektrárne for MO 34.

He stated that the two existing blocks, in operation since 1992 with a gross power output of 880 megawatts, will be joined in 2012 – 2013 by two similar blocks at the site.

He stated the technical facts concerning the MO 34 and the current development in the project and defined some key data concerning the project (project value – €2.7 billion; the construction period for block no. 3 is 50 months and for block no. 4 is 58 months; synchronization – 2012 for block 3; number of personnel for the structure's completion – approximately 3 500 at the time of the peak; main sponsor – Slovenské elektrárne, etc.).

He went on to present the entire process of the project, from its beginning through the current state to the project's completion (opening, preparatory works on the site, engineering currently under way, procurement, preparatory works for the nuclear part, in October 2012 fuelling, the first synchronization in December 2012 and a month or two later the third block will begin to operate at full power).

Jozef Zlatňanský spoke on behalf of Slovenské elektrárne, and presented the EU policy in the field of reducing CO₂ by 2020, the use of renewable sources and the situation in nuclear energy in the EU and around the world. He talked about nuclear safety and compared the environment in the EU countries but also in the world, which have nuclear programmes and those countries which do not.

He said that around the world there are 436 reactors in operation, i.e. nuclear power plant blocks, and 52 new nuclear power blocks under construction in the world.

After describing the preparation and realisation process of the project, the hearing moved toward the presentations and technical description of the project.

A video presentation was shown at the introduction, presenting the strategy and activity of the international group Enel, as well as completion of Mochovce blocks 3 and 4. The safety aspect of the project was also visually presented, incorporating technical solutions well-proven by the long-term operation of other reactors, and other latest safety enhancements.

After that *Mr Federico Peinetti* presented the project for the construction of MO 34 and called it evolutionary, because this realisation will improve the level of safety of the nuclear facility, and at the same time minimise the operational risks and enhance accident prevention. In his presentation he devoted attention to the basic safety characteristics and safety targets of this projects as well as fulfilment of recommendations of the European Commission. ("In accordance with best international practice to complete the project of nuclear facility of blocks 3 and 4 of the NPP Mochovce with a reference scenario of events including a intentional effect from an external source, e.g. impact of a small aircraft"). In his speech *Mr Peinetti* emphasized that the primary concern of Slovenské elektrárne is to observe safety and the principles of the International Atomic Energy Agency.

The representative of the assessment report's author, of the company *Golder (Europe) EEIG*, *Mr Vincenzo Gente* briefly presented the assessment of the effects of the MO 34 project on the environment and public health in the locality. He listed individual components of the environment that may be affected by the MO 34 project (atmospheric environment, hydrology, use of soil and cultural and socio-economic conditions). The environment impacts of MO 34 ranging from minimal to the serious impacts had been assessed. The monitored concentrations of the parameters did not exceed the values beyond the permitted limits. The radiological effects on the human health were presented in the assessment report as greatly below the regulatory limits.

The General Director and Head of the Environmental Policy Section of the Austrian Minister of the Environment, *Günther Liebel*, presented the critical position of the Austrian Government and the Austrian public toward the nuclear energy.

He stressed the need to respect the highest safety standards and the need for constant improvement of nuclear safety. He talked mostly on the protection and safety of people.

He also welcomed the public hearing scheduled for Vienna, thanked the respective Slovak authorities for the provision of experts at this hearing and expressed his hopes that the Slovak authorities would take adequate account of the results from the Vienna hearing.

Mr Joseph Mišák announced a break, during which he held a press conference for media representatives. After the break there followed a discussion, in which participants of the hearing answered written questions of those present.

After the presentation of the MO 34 project the following issues were discussed:

Nuclear and technical safety of the project:

- What professional documents did the report's authors work from in assessing the level of nuclear safety?
- Why is the key risk analysis of the power plant, inherent risks, absent from the report?
- Nuclear damage liability: Since according to the report the nuclear damage liability is limited in scope, what amount is insured by the investor?
- Why do the responsible authorities not require installation of containment?; a nuclear power plant cannot be built in the west without this (i.e. full containment)
- Why does the report not give the algorithm of the software for dose calculation? The results are, compared to the second generation TVR nuclear power plants, very low and disputable. Why are uncertainties in the values of calculated doses not stated?
- How is the lack of water for cooling to be addressed during extraordinary droughts with regard to the forecast climate change in Slovakia, how will the possible shortage of cooling water be addressed in long-term droughts?
- Will you provide specific data that would prove the facility's resistance to external events, preparation of a reference scenario involving an intentional impact from an external source as requested by the European Commission?
- How can Slovenské elektrárne and the Ministry of Environment consider a nearly 40-year-old power plant as modern and of high quality?
- What are the arrangements for the permanent storage and disposal of spent nuclear fuel?

Questions concerning the completion project and its financing:

- Total capital investment (What were the costs for the initial construction and maintenance works up until the start of the completion project and on the completion itself?).

Issues relating to the EIA process:

- The deadline for the receipt of official comments.
- Who is preparing the final opinion? Has a particular person already been assigned with the task?
- Who (and how) will monitor and check the incorporation of all comments and the reworking of the environmental impact assessment report pursuant to them? When and how will the public be able to express its opinions on the re-worked report and what is the official deadline for delivery of written comments on the report to the Ministry?
- Why has Slovakia agreed to a hearing in Vienna?
- Will a public hearing within the EIA process be held also in the vicinity of the power plant?

Other questions:

- How is the region being informed and notified as regards the effect of the operation, what are the radioactivity doses for inhabitants living around MO12 today and how will these doses change after the commissioning of MO 34 into operation?
- If, according to the investor, the nuclear power plant or nuclear power plants reduce the climate change impact, which coal power plant is to be replaced by blocks 3 and 4 after their commissioning in 2012, 2013?
- Why does the report not state the reasons for not respecting the objectives of the European Union Energy Policy to 2020, i.e. to have 20% of electricity produced from renewable sources, and the second objective, energy savings of 20% by 2020?
- What is the point of this study, when the investor has already started the construction?
- If the comment process is important for the next phase of granting the licence for the MO 34 power plant, why did Slovenské elektrárne in the materials published in September 2009, literally write: "The environmental impact assessment does not affect the completion of Mochovce." Is this not a contradiction between the mediator's words and the Assessment Act and the investor's statements? How is it then?

- I request the addition of detailed information on the health of inhabitants around the Mochovce power plant before and after commissioning MO 12 into operation.
- Why has the effect on the population of Hungary not been assessed and how has the 50-km zone been determined?
- Why do the versions of the summary assessment report differ in the individual languages?

The proponent answered the individual questions in the order they were asked.

The course of the public hearing was correct, but emotional. From its results the following may be concluded.

Independent organisations and individual opponents to the MO 34 power plant construction requested that the impact assessment report be supplemented, but also that a new environmental impact assessment be started. The requested supplementing concerned, for example, the solution of the back end of the nuclear fuel cycle, particularly the storage of all types of radioactive wastes and spent nuclear fuel. This is one of the subjects of the *Back-End Nuclear Fuel Cycle Strategy*, which was assessed under § 17 of Act no. 24/2006 Coll. in 2008 and subsequently adopted by the Government of the Slovak Republic.³

At the conclusion of the public hearing on the implementation of MO 34 the municipalities from the vicinity of the nuclear power plant in Mochovce gave the project broad support.

From the public hearing a “Transcript of the record from the public hearing” was made as well as a record under § 34 (4) of the Act, which was signed by the proponent’s representative and representatives of the affected municipalities (mayor).

The signatures are also stamped by the municipal authorities of the affected municipalities.

The record from the public hearing on the proposed activity was delivered to the SR Ministry of Environment, Environmental Impact Assessment and Evaluation Section, on 28.09.2009. The attendance list was attached to the record from the public hearing.

1.2 Public hearing in Vienna – Austria

With regard to good neighbourly relations and the need for a proper transboundary assessment of the MO 34 construction and also in accordance with the application of the Espoo Convention and the Bilateral Agreement between the Government of the Slovak Republic and the Government of Austria, the Slovak Republic, as the party of origin, and Austria, as the affected party, jointly organized on 25 September 2009 at 13:00 hours a public hearing on the assessment report of MO 34 at the premises of the Vienna University of Technology, Karlsplatz 13, 1040 Vienna.

The opening of the public hearing was accompanied by protests of environmental activists who had gathered not in large number (a couple of dozen) in front of the Vienna University of Technology and were present throughout the course of the public hearing.

The first to speak at the public hearing was Ms Ulli Simová, a member of the Provincial Committee for the Environment for the city of Vienna, who reaffirmed opposition to the operation of MO 34.

She mentioned again the relative proximity of MO 34 to Vienna, this being approximately 160 km from the Mochovce power plant.

Despite her generally known attitude, her speech was neither militantly rejective nor confrontational, rather, demanding a detailed, even if controversial dialogue.

Next to talk was Nicolaus Berlakovich, Minister of Agriculture, Forestry, Environment and Water Management of Austria. He stated that from the aspect of Austrian policy, nuclear power is not efficient. In the framework of the transboundary assessment in the field of energy industry he counts on absolute cooperation, transparency and on answers to all

³ At present the Board of Trustees of the National Nuclear Fund of the Slovak Republic is preparing an updated *Back-End Nuclear Energy Strategy*

questions open as regards the construction project. He expects that Austria will in the impact assessment process achieve, in the presence of the public and via consultations with experts, discussion of and answers to all important questions, with emphasis on the structure's safety. He requires compliance, as declared by the proponent in the assessment report, with the highest safety standards in the implementation and operation of the Mochovce power plant.

The Slovak Republic was represented at the hearing by *Jaroslav Jaduš, the Secretary of State for the Ministry of Environment of the Slovak Republic*, who at the start apologised for absence of Dušan Čaplovič, Deputy Prime Ministry of the Slovak Republic, who is in charge of the Ministry of Environment of the Slovak Republic, due to a long-planned journey abroad. He said that he is coming as the representative of a state that respects the protection of human health and of the environment, and is also an observer of environmental policy in Austria. He pointed out a whole set of successes of the Slovak Republic in the field of the landscape preservation (NATURA, ...) and air protection (emission reduction, ...). He expressed a wish that the meeting between the experts and public would clear and solve the issues of a technical and environmental nature. He supported the openness and transparency of the assessment process for the structure. He expressed the opinion that all the questions would be answered and that good relationships between Austria and Slovakia would be strengthened.

The next to follow was a discussion on the *MO 34 Assessment Report* from the professional aspect of the rules of procedure under the *Espoo Convention and the Bilateral Agreement*.

The public hearing was mediated by *Christian Baumgartner*, the representative of the Ministry of Agriculture, Forestry, Environment and Water Management of Austria and the EIA contact point. He introduced the Slovak delegation. He announced that everyone has the possibility to express their opinion and comment on the assessed construction by 10.10.2009.

He handed over to the representative for the Slovak Republic, Daniela Žišková, who briefly described the ongoing course of assessment of the construction in accordance with national and the European legislation.

Then *Slovenské elektrárne, PLC., member of the ENEL group*, which is realising the construction, briefly presented the MO 34 nuclear power plant project.

This was followed by a discussion in which the following issues were discussed:

- ✓ Insufficiently completed containment (protective shield for the reactor);
- ✓ Seismic safety issues;
- ✓ Consequences of aging of the conserved parts of the facility;
- ✓ Unresolved problems in the case of possible aircraft impact on the NPP;
- ✓ Inadequate fire protection of the power plant;
- ✓ Inadequate safety margins of the bubbler condenser;
- ✓ Problematic layout of the electrical wiring within the project in designing the VVER-440/213 nuclear power plant;
- ✓ Unresolved issues relating to the radioactive waste management.
- ✓ Accordance of Act no. 24/2006 Coll. with Article 10 (a) of Directive no. 85/337/EEC on the assessment of the effects of certain public and private projects on the environment as later amended and the provisions of the Aarhus Convention on access to justice for non-governmental organisations. *(The Slovak party answered this question by stating that the mentioned Article of Directive 85/337/EEC is at present harmonised with Act no. 24/2006 Coll., but that clearly there had been incomplete understanding on the Austrian side, which considers the question not to have been fully answered; see fax of the Ambassador of the Slovak Republic in Vienna of 30.09.2009, ref. no.: 253-100/2009, matter – Reaction of the Austrian Ministry of Foreign Affairs to the public hearing on the NPP, held on in Vienna 25.9.2009)*

The proponent answered all the mentioned questions extensively.

The discussion was held not at an emotional but factual level. It seemed to be essential in some cases, 3-5 times, to answer the same question several times (a typical example was a question along the lines of how will it be possible to ensure the protection of the population around Mochovce, but also in Vienna, in the event of the nuclear power plant's explosion. Information on the need to evacuate inhabitants in a radius of at most only 2.5 km from the power plant, should the reactor fully fail, the probability of which is only one in a million, must have been heard for at least three times).

The public hearing was held in a constructive spirit, although those involved in the discussion did not reach agreement in terms of policy, locality, technology, safety, economy or environment.

At the close of the public hearing representatives of the Austrian public expressed their opposition to the project's implementation and confirmed their attitude also through postcards, expressing their "NO" to the Mochovce Nuclear Power Plant.

A protocol was drawn up from the hearing, which was delivered to the Slovak Republic on 23.10.2009 together with the statements and opinions which Austria, as the affected party, received from the public.

Consultations with Austria

In accordance with Article 5 (2) of the Espoo Convention and Article 6 of the Bilateral Agreement between the Government of Austria and Slovak Republic, Austria requested a consultation of experts to discuss the chief issues on the future operation of the nuclear facility, and on the safety requirements and potential risks of the proposed activity.

The invitation for a consultation was preceded by a letter of the Federal Ministry of Agriculture, Forestry, Environment and Water Management, based in Vienna, ref. no.: *BMLFUW- UW.1.4.2/0073-V/1/2009, dated 22.10.2009*. Austria sent to Slovakia, as an attachment to the cover letter, opinions of the Austrian public, including those of the federal provinces, on the environmental impact assessment report (in total 209 269 opinions) together with the expert opinion of Austria⁴, with a request to take account of the comments and recommendations from the Austrian opinions in decision-making on the proposed activity. At the same time Austria asked for consultations.

The Austrian party summarised the most important comments into the following fields:

- problem of discontinuity at the building site, as well as the problem of combining old and new components,
- the project for the reactor does not correspond to the current state of reactor technology,
- insufficient handling and solution of potential severe accidents
- missing full containment and thereby a risk of discharge of radioactive substances in case of an accident,
- inadequate protection against terrorist attacks – intentional aircraft impact,
- seismic resistance,
- inadequately proven disposal of spent nuclear fuel,
- missing statement and evaluation of possible alternatives for the construction of the nuclear power plant,
- inadequate solution of the access to justice in the Environmental Impact Assessment Act,
- requirement for financial coverage of potential future damage.

On 24 and 25 November consultations were held in Bratislava between Austria and Slovakia under Article 5 of the Espoo Convention and Article 6 of the Bilateral Agreement. The proposed activity was discussed at these consultations in the light of the Austria's standpoints, the Slovak side answered all questions and several problematic points were successfully clarified. During the bilateral consultations it was agreed that certain topics

⁴ A. Wenisch – O. Becker – H. Hirsch, - P. Seibert – A. Wallner – G. Mraz: Fertigstellung der Blöcke 3 und 4 des KKW Mochovce - Fachstellungnahme zur Umweltverträglichkeitserklärung. Report 0236. <http://www.umweltbundesamt.at/> . Umweltbundesamt GmbH, Wien, 2009.

require, due to their importance for the facility's safety, deeper discussion at a technical level. These were the following topics or topics touching on the issue of nuclear safety of VVER-type nuclear power plants:

- seismicity and seismic resistance,
- containment,
- severe accidents,
- pressure vessel integrity.

In the protocol from the consultations of 25.11.2009 the Austrian and Slovak sides agreed, through their signatures, to a more detailed discussion of these topics at the professional level in the framework of a separate bilateral agreement between Austria and the Slovak Republic on issues of joint interest concerning nuclear safety and radiation protection. The Nuclear Regulatory Authority of the Slovak Republic invited Austrian experts to the bilateral meeting of experts on the topic "Severe Accidents", which was welcomed from the Austrian side.⁵

The meeting was held on 15.12.2009 in the building of the SR Nuclear Regulatory Authority in Bratislava.⁶

Similar consultations had already been held in 2008 in Austria and then in June 2009 in Banská Štiavnica.

1.3 Public hearing in Esztergom – Hungary

Under Hungarian national law, i.e. under Article 16 (5) (c) of Government Decree 314/2005 (XII.25.) on environmental impact assessment and on the licensing process for integrated use of the environment, in the framework of the transboundary environmental impact assessment process a public hearing on the MO 34 was held in Hungary, in Esztergom at Synagóga, Imaház street. 2, H-2500, on 12.10.2009, at 17:00 hours.

The proposed activity of MO 34 is assessed in Slovakia prior to commissioning the nuclear facility into operation, which is a licensed under specific regulations.

The opening of the public hearing were accompanied by protests of environmental activists who gathered not in large number in front of the synagogue, where the hearing was held, and they were present throughout the course of the public hearing.

Those present at the public hearing were welcomed and the whole hearing was chaired by Mihály Ivanov, Chairman of the Committee for the Environment, of the Esztergom town council.

Hungary was represented by Dr. Bálint Dobi, the head of the Environment Protection Department of the Ministry of the Environment and Water, Hungary, who outlined the reason for the public hearing.

The Slovak Republic was represented by Helena Ponecová, the state advisor for the Ministry of Environment of the Slovak Republic, Environmental Impact Assessment and Evaluation Department, who presented the environmental impact assessment process for the proposed activity in the context of national law, European directive, the Espoo Convention and the Aarhus Convention. She emphasised that the public hearing on the activity is held for reason of informing the professional and lay public of the activity in a

5 Letter of the NRA SR no. 258/230-31/2010 of 26.1.2010, addressed to the SR Ministry of Environment, with regard to this bilateral meeting as well as the Austria's statements on the consultations, which states, among other things, that the questions concern nuclear safety and not the environmental impact assessment report itself of the proposed activity, and the EIA process.

6 The abstract of the draft report, prepared by the Austrian side, states that for many questions the Slovak experts provided important information, presenting a general approach and clarifying the philosophy. This concerns the field of hydrogen creation and its elimination, depressurising of the primary circuit coolant system, trapping the core meltdown in the reactor pressure vessel, target values for management and mitigation of severe accident consequences. In these and other fields, discussed in summary, though still remain open questions.

(H. Hirsch – N. Müllner - E. Seidelberger - A. Strupczewski – G.Weimann – A. Wenish: EMO3+4 Completion - Report of the Slovakian-Austrian Expert Workshop Concerning Severe Accidents in Bratislava, December 15, 2009. Compiled by Order of the Federal Ministry for Agriculture, Forestry, Environment and Water Management Project Supervision Division V/6 "Nuclear Co-ordination" GZ BMLFUW-UW.1.1.4/0022-V/6/2007, Neustadt, February 11, 2010).

manner equal to that in which the public in the country of origin was informed – i.e. in Slovakia.

Next followed the presentation of the project by Slovenské elektrárne:

- General introduction (Igino Chellini, project director for MO 34).
- Brief facts about the project (Štefan Rohár, expert).
- Results of the environmental impact assessment (Fernando Romano, Golder Associates – author of the assessment report).
- A short film about the proposed project.

All the participants had the possibility to apply to the discussion in writing. The following issues were discussed:

- effects of the proposed activity in Hungary, with an emphasis on a 60 km radius around the plant from the aspect of their impacts on the environment of the mentioned area and human health,
- seismic safety issues,
- containment (protective reactor shield),
- consequences of aging of the preserved components of the equipment in the power plant,
- consequences of a potential aircraft impact,
- unresolved issues relating to the radioactive waste management.

During the public hearing discussion focused particularly on questions relating to the derivation of the basic seismic characteristics for the area of the NPP Mochovce, which were used as the input data for seismic resistance of the buildings, equipment and components important for the safety. At the public hearings it was declared that Slovenské elektrárne in cooperation with the SR Nuclear Regulatory Authority had addressed this issue in a transparent manner and in continual cooperation with international experts. The organisational and technical selection and participation of experts from developed foreign countries had been conducted by the IAEA. In local experts work concerning seismic resistance at the MO NPP (and concurrently for EBO), methodological assistance and guidance were used, provided by in total 4 IAEA missions, which took place in 1993, 1995, 1998 and 2003. In addition to these, in 2004 to 2005 the IAEA held for the SR Nuclear Regulatory Authority a technical cooperation project (SR/9/002 and RER/9/035) specifically focused on drafting technical instructions for the seismic review programme of the Mochovce NPP. The last mission of the IAEA in 2003 left a relatively positive assessment of the work performed in the assessment of seismic characteristics for the MO NPP area, prepared by the specialist contractors of Slovenské Elektrárne.

All questions were answered progressively by individual experts and expert surveyors, who cooperated on the project, or are included in the work cycle of the MO 12 operation.

All the participants had the possibility to ask questions provided that they had entered the discussion in writing on a card that served for administrative purposes.

The public hearing was conducted in Hungarian. Interpreting from/to Hungarian/Slovak was provided, and interpreting from/to English/Hungarian and Slovak was also available.

During the hearing the experts had to answer several broad-spectrum questions, ranging from procedural issues to the issues of nuclear safety.

The public hearing was held in a constructive spirit, although those involved in the discussion did not always reach accord of views regarding locality, technology, safety, economy and the environment.

In the framework of the project's hearing an offer made from both the Hungarian and Slovak sides for the development of cooperation in the field of monitoring and constructive exchange of information for ensuring the lowest risk possible in the operation of the existing nuclear facilities.

A DVD record was made of the public hearing on the MO 34 report, which was delivered to the SR Ministry of Environment on 06.11.2009 in a letter envelope with ref. no.: KMF-63/10/2009.

Consultations with Hungary

In accordance with Article 5 (2) of the Espoo Convention Hungary requested a discussion of experts in order to discuss the chief issues for distribution of information on the future operation of the nuclear facility, concerning the safety requirements and potential risks of the proposed activity. The Slovak and Hungarian sides subsequently discussed the possible dates for holding the professional consultations, and following mutual agreement they set the date at 27.10.2009. The expert consultations were held in the premises of the Mochovce nuclear power plant and were also connected with the tour of the site and the steam generator containment of block 3.

The topics for discussion during the consultations were sent to the SR Ministry of Environment by e-mail in advance on 19.10.2009:

- the results of analyses concerning seismicity in the area of Mochovce,
- extension of the monitoring network and possibilities for cooperation with Hungarian experts,
- results of analyses performed on the Hungarian side within the radius of 60 km, which is a likely area to be affected by negative impacts on the environment,
- expected useful life of the Mochovce NPP, blocks 3 and 4,
- actual capacity / power output of blocks at present and after future improvements,
- protection against external damage, including earthquakes and intentional aircraft impact,
- results of detailed analyses of severe accidents.

Many Hungarian questions and comments were answered satisfactorily during the consultations. The Hungarian side was of the opinion that for the decision-making process it was important that the experts provide written answers to certain questions so as to supplement further information not available prior to the meeting.

The parties agreed that this bilateral meeting closed the verbal phase of transboundary consultations under Article 5 of the Espoo Convention. The proponent will gather the necessary answers and send them (in writing and electronic form in the Slovak and English languages) via the SR Ministry of Environment to the Hungarian Ministry of the Environment and Water by 12.11.2009. Following receipt of the answers the Hungarian side will prepare the official statement of Hungary regarding the proposed project, and send it to the Ministry of Environment of the Slovak Republic by 7.12.2009. A signed record in duplicate was prepared from the consultations.

Consultations with Poland

On 6.10. - 7.10.2009 a bilateral meeting between Poland and Slovakia was held on the issues relating to the nuclear safety of both states, during which the representatives of the National Atomic Energy Agency, the body responsible for nuclear safety guarantee in Poland, received comprehensive information concerning the technical issues at dispute. Even on the basis of this fact, the Polish affected party **informed the Slovak party that it is not interested in participating in the transboundary consultations under Article 5 of the Espoo Convention** concerning the means of reducing or eliminating a very harmful transboundary effect.

4. Opinions, comments and expert opinions submitted as regards the assessment report

Within the period under Article 35 (1) (2) (3) of the Assessment Act the SR Ministry of Environment received the following written opinions:

Ministry for the Economy of the Slovak Republic, Energy Industry Section (letter no. 3519/2009-3400, of 28.08.2009)

It states that the assessment report focuses on the environmental assessments with the assumed impact of commissioning all four blocks of the Mochovce NPP, which are documented in the chapters: environmental management, municipal licensing.

It states that land-use planning comprehensively solves the functional use of the territory.

It advises that given the advanced stage of work on the MO 34 it will be possible to quickly ensure coverage of the deficit in power supplies on the Slovak power grid.

With regard to the negligible effects of the proposed activity on the environment and the absence of a different rational alternative, it granted a positive statement in favour of the implementation of the assessed activity.

The Nuclear Regulatory Authority of the Slovak Republic, systems, components and building construction section (letter no. 1948/320-293/2009 of 09.09.2009)

It submitted the following factual and formal comments:

Project framework

It recommends supplementing the missing information on page 107, point 2. 6. 5 – Storage of radioactive oil products and oils, as regards in what time span the presumed production of 9.5 m³ of radioactive oils will be created.

It states that the mentioned volume will be created for the whole period of operation – see Chapter 2.8.2 on page 52 in the part “Plain-Text Final Summary”.

It recommends correcting information on page 166, point 2.10.4 – Radioactive fluid wastes – in table 32, where in the last column it states the discharge of water in % of the annual limit. Values are too high for the whole column - 24751, 47272, 53321, etc. To verify the same incorrect data, given also on page 55 in table 11, in the part “Plain-Text Final Summary”. We recommend that this information be specified in terms predicative value of the given parameters.

Waste water

Adjust data on page 224, point 2.2 – Discharge of liquid radioactive waste into the hydrosphere –penultimate paragraph, in the sentence - “*The value of volume activity in the primary circuit higher than 3.7 10⁹ Bq/m³, which is not admissible for the reason of reducing the moderating ability of water...*” and **state the correct value of volume activity (3.7 x 10 Bq / m³, or 3.7 E+09 Bq / m³).**

Impacts on the population

- a) The report and its annexes contain the results of the evaluation of the radiological impacts on the population, as caused by:
 - gaseous and liquid discharges at the level of emissions measured at MO 12 in 2006, 2007 and 2008;
 - discharges at the level of 100% of the permitted limits applicable for MO 12 during normal operation;
 - selected anticipated accidents for full reactor power output for MO 12.

It confirms that the results conform to SR Government Regulation no. 345/2006 Coll. on the non-exceedance of the effective dose of 250 µSv/year in the critical population group.

It reiterates the request that information be added as to whether the radiation dose values during normal operation also include gas non-hermeticity (1% fuel rods) as considered by the project and the cladding failure (0.1%) as considered by the project.

It points out that the **addition of data** on the projected activity of discharges into the atmosphere and surface water during normal operation, including the leakage limits in the fuel sheath, in the primary and secondary circuits, has already been requested in the framework of the assessment scope for the specific requirement (point 2.2.18, table 1 - page 15). According to the information stated in that table, information should be included in chapters 2.9 (*Discharge of gaseous radioactive...*) and 2.10 (*Discharge of liquid substances under normal operation*), though this is not clear from the relevant text of the submitted assessment report.

- b) The assessed report presents the results of radiation consequences only for the selected

project accidents at full MO 12 reactor power output; **it lacks** an assessment of the radiation effects of accidents in the case of low reactor power output and reactor shutdown modes.

- c) It recommends that certain formulations be modified in the *Report* in order to achieve better orientation in the text and improve its factual value:

To add references to information sources used, which are incomplete or in many cases absent. Often it is not possible to clearly distinguish whether and from where the data were taken, or whether it is merely the opinion of the *Report's* authors.

It states that in the list of supporting reports and studies, which were supposedly the basis for drafting the report, does not at all mention, for example, the PpBS for MO 12, processed at the VUJE in November 2007, even though it documents the results of radiation consequences of anticipated accidents as evidence of non-exceedance of applicable annual limits of effective doses to the population.

It draws attention to the fact that the safety improvements for the MO 34 project, including measures for managing major accidents, are limited to a brief listing of several measures without stating any reference whatsoever to the technical documentation dealing with the assessment of their contribution to reducing the negative impacts on the environment.

It notes that it is necessary to give greater precision to the text of the third paragraph of chapter 1.5.3 Conclusions on page 360 of the main report in order to ensure unambiguous interpretation. The text contains several inaccuracies and contradictions.

On the one hand, it emphasises the conservatism of the radiological analyses carried out, though does not state any concrete evidence of this conservatism, or at least specific references to technical reports that would confirm such conservatism.

On the other hand the stated, significantly lower radiological consequences for the MO 34 anticipated accidents are substantiated by an unspecific claim as to minor differences in the assumptions of analyses and in the model emergency scenarios.

It requires that several incorrectly used terms be modified in the *Report*. For example, the authors in chapter III, point 1.5.4, in the conclusions of the *Radiological consequences for project events* mix the terms “radiation targets” and “acceptance criteria” defined for the MO 34 project. In the conclusions to the evaluation it is claimed that: “...the calculated values of doses are more than an order of magnitude lower than the “radiation targets” alias acceptance criteria (prescribed limits) for the MO 34 project.” In this ... however the acceptance criterion is an effective dose of < 50 mSv/ year and an equivalent dose to the thyroid gland of 250 mSv/ year beyond the limits of the protection zone, whereas the radiation target for the project for the modification of the structure prior to MO 34 completion is an effective dose of < 1 mSv/year, or < 5 mSv/year, depending on the category of the anticipated accident (see the VUJE technical report, reg. no. DMO/012/0502/F2/S, issued on 31.1.2008).

- d) The assessment report according to § 31 of Act no. 24/2006 Coll. should give the comprehensive **finding, description and evaluation** of the projected **impacts** of the proposed activity, including a comparison with the existing state of the environment. In order to meet the requirements of the given provision it is necessary to supplement missing data according to the above-mentioned points (a), (b) and to remove the formal shortcomings as described in point (c).

Impacts on climatic conditions

Page 382, point 3.0 Climatic impacts - the abbreviation “VEC” needs to be added into the list of abbreviations and its meaning explained.

Organisational and operational measures

It states that in chapters 4.2.2 to 4.2.7 on pages 425 to 438 there is described the current Mochovce NPP 12 internal emergency plan, though there is no mention as to whether the same emergency plan or measures, procedures and means to overcome an accident will apply also for nuclear power plants EMO 34 in the case of a nuclear incident.

It notes that the description of the present situation at Mochovce NPP 34 blocks is insufficient and lacks even a specific description of the plans for a future solution of the emergency readiness at MO 34.

It points out that the report lacks an elaboration of the *Emergency Control Centre* (hereinafter "HCC") - it is not clear whether the existing HCC (and the resulting impacts and interactions between the internal emergency plan of the Mochovce NPP blocks 12 and the Mochovce NPP blocks 34), or wherever a new HCC will be built, and if yes, how it will be equipped.

It points out that there is no description of the interactions between the already functioning emergency response structures (e.g. the LRKO, the TDS network, etc) and the planned expansions.

The SR Nuclear Regulatory Authority has no principal comments to the assessment report.

Office of Public Health of the Slovak Republic – Chief Hygiene Officer (letter no. OOZPŽ/6118/2009, dated 27. 08. 2009)

It notes that the report submitted, using available data and reasonable assumptions, documents in a sufficient scope the identification of factors, the description of the environment impact routes and the evaluation of the projected environmental impact of the proposed activity.

It believes that with regard to the anticipated social benefit of the proposed activity and the projected level of environmental impact documented in the assessment report, the proposed activity may be approved.

It states that the proponent in the report has taken account of the requirements that the Office made in its opinion as to the activity's objective ref no. OOZPŽ/2371/2009 of 11. 3. 2009.

It notes that after commissioning MO 34 it will be necessary to continually and redundantly monitor the level of radioactive discharges from MO 34 in all important items, at least in the scope of the present monitoring in place at the MO 12 NPP, and to systematically monitored the impact of the nuclear facility complex on the radioactivity of components of the environment and the dose burden on the population, including a detailed monitoring of the evaluation of the population's exposure. Any amendments to the environmental monitoring program shall be assessed in issuing permits for operating the MO 34 nuclear power plant.

It believes that the concluding comprehensive assessment of the expected impacts as given in the report could be summarised in an overview of the residual impact of the operation of the proposed activity – burden on the environment and population, which will be a logical and inevitable consequence of the proposed activity and will arise in:

- further handling of radioactive waste produced during the operation of the proposed nuclear power plant and during its decommissioning,
- further handling of the spent nuclear fuel produced,
- removing or recycling radioactive contaminated materials, the activity of which will be so low that they may be reprocessed or otherwise returned into the environment.

The comment is substantiated. These data are not comprehensively summarised and evaluated. They are at various places in the assessment report or in the annex part.

Regional Office of Public Health seated in Levice (letter no. D1/2009/02164, dated 04.09.2009)

It notes that the target radiation dose for an individual from the population in consequence of a radioactivity leak from the nuclear power plant during operation for the purposes of the nuclear facility's placement may not exceed the maximum dose permitted by the Slovak supervisory authority (according to SR Government Regulation no. 345/2006 Coll.), which represents 0.25 mSv/year.

It states that the exclusion zone (safety and protection zone) for the Mochovce nuclear power plant was set by the Regional Hygiene Officer in Bratislava; it is a zone in which permanent settlement is prohibited. The average radius of the exclusion zone for the Mochovce nuclear power plant is approx 3 km.

It notes that monitoring is carried out within a radius of 20 km from the nuclear facility.

It states that the teledosimetric system is equipped with 40 stations and monitors the gamma radiation dose rate, radioactive iodine activity per unit volume and additional information on the state of technology. *It comments* that the monitoring system for the whole Mochovce locality has been designed so as to include also blocks 3 and 4 following their commissioning into operation.

It has no comments to the proposed objective.

Ministry of Environment of the Slovak Republic Water and Energy Resources Section
(Letter no.: 39809/2009-8.3, dated 28.08.2009)

It states that the Ministry has no substantive comments from the scope of competence granted to the Water and Energy Resources Section regarding the presented objective of the proposed activity.

Ministry of Environment of the Slovak Republic, Geology of Natural Resources Section, Geological Rights and Contractual Relationships Department (letter no. 43297/2009, dated 21.09.2009)

It states that it has no objections as to the assessment report from the aspect of the overall plan.

With regard to the supplementing of Annex X "Plain-Text Concluding Summary", Chapter 2.5.5 "Deep underground geological disposal site for spent fuel", it states that in the period 2007-2010 the State Geological Survey Institute of Dionyz Stur is realising the geological task "Appraisal of geological and geo-environmental factors for selecting a deep underground disposal site for highly radioactive waste, regional geological survey".

It submits the following comments and recommendations regarding drawing up the chapter "C. II Characteristics of the current state of the environment in the affected area":

Chap. 1.0 Geomorphologic conditions

It states that the described "topographical relief structures" and "basic topographical types" of the area surrounding MO 34 without a clear map depiction have little explanatory power.

It recommends adding a map annex of the topographical units into Annex 2.0 - Map Annexes. In chapter 1.0 Geomorphologic conditions it also recommends adding a reference to the map annex and also citing the source of information on the geomorphological breakdown (particularly Mazúr, Lukniš - Atlas SR).

Chapter 2.0 Geological conditions

It states that the content of the chapter should be focused solely on the geological-tectonic development of the area concerned, with a reference to map annex 5 Landscape structure - Geology, or map Annex 6 Landscape structure – Neotectonic structure (both maps are in Annex 2.0 - Map annexes). It would then be necessary to rename the chapter to "Geological-tectonic development of the area". The chapter itself is not balanced - a disproportionately large space is given to old structural-tectonic units. Volcanic manifestations and their consequences are mentioned only very marginally, despite the power plant being created on volcanic rock.

Chapter 2.1 Geological and structural conditions

It states that it would be necessary to focus attention on the quaternary sediments of the power plant itself and its immediate surroundings, with a reference to map annex 6 Landscape structure - Neotectonic structure.

It draws attention to the situation drawn in the map of Annex 5 Landscape structure - Geology, where the area of the site according to this map is built on biotite pyroxenic and porphyritic andesites with phenocrysts (the so-called "Čifáre andesites") and various types of deluvial and deluvial-fluvial soils, the description of the quaternary soils does not mention these. The description of the geological conditions of the power plant itself should clearly be different from the description of the geological conditions of the surrounding environment.

It recommends that there be mentioned in the part "Engineering-geological properties of rocks" all lithological-genetic types of soils (deluvial, deluvial-alluvial, eolian, proluvial, ...) and their properties (if such data is available), which are already partly contained in table 76.

It draws attention to the incorrect names of the parts of “Geomorphological features”, the correct name is “Geodynamic Features” (erosion is a geodynamic feature). “Hydrocompaction of loess” is incorrect; the correct title is “Loess transfer”.

It recommends that there be described the *geodynamic features* with a focus on the immediate surroundings of the site.

It states that the part “Geology of mineral deposits” should just be called “Mineral deposits”, since the text focuses on the occurrence of deposits and not on their geology. The list of deposits is incomplete and unclear. It is recommended that a table be attached, prepared according to the “Assessment of quantities of reserved deposits of the SR as at 01.01.2009” and the “Register of non-reserved mineral deposits of the SR as at 01.01.2009”, containing current list of mineral deposits located in the assessed area.

It notes that in the case of each deposit there should be indicated its name, mining area, protected deposit area and a designation of the mineral (or raw material).

Chapter 2.2 Seismic activity

It notes that some of the data in the chapter are confusing.

It draws attention to the fact that in paragraph 3 for the surroundings of Levice there are stated earthquakes with an epicentre intensity rarely equal to or greater than 3XX MSK-64 (i.e. below 3XX MSK-64?).

Then in the fourth paragraph it is stated that the monitored area lies in a band with an intensity of 6-7 MSK XX-64.

It notes that it is not clear from the fifth paragraph of this chapter to which “area” the data on 7°MSK-64 refers.

It states that the text of the chapter uses abbreviations that are not explained in chapter 1.0 List of terms and abbreviations used (SL, PGA, ...).

It notes that inconsistent data is given on page 243:

- There were no signs of tectonic displacement in the quaternary sediments.
- The Holocene period can be described as a period of weak tectonic processes.

In conclusion it is recommended that the text of the chapter be revised by a specialist in the field.

Ministry of Environment of the Slovak Republic, Environmental Risk Management Department (letter no. 39614/2009, dated 28.08.2009).

It notes that the Mochovce power plant is under Act no. 261/2002 Coll. on the prevention of major industrial accidents and on the amendment of certain acts classified, under the total quantity of selected hazardous substances present at the plant (hydrazine hydrate – Levoxine has a major impact on the categorisation in the case of the Mochovce NPP), in category “A” and does not reach the threshold value for category “B” even in the case of doubling the stored quantity.

It notes that information on the consumption of chemicals at the Mochovce NPP in 2008 in the submitted documentation is given in table 12 on page 124 of the report and in table 45 on page 198 of the report. With regard to the notification on the plant’s classification of 28 September 2006 it may be stated that the maximum storable quantity of concentrated hydrazine hydrate exceeds the threshold limit for category A (i.e. 0.5 tonnes), though it is below the threshold value for category B (i.e. 2 tonnes). This situation would remain unchanged even in the case of a doubling of the quantities stored, as stated on page 198 of the report. This means that the Mochovce NPP is currently included in category A pursuant to the Act on Accidents and is obliged to adhere to that act’s provisions.

It has no comments regarding the assessed report.

Slovak Environmental Agency in Banská Bystrica, Centre for the Development of Environmental Science (letter no.: CZ3139/2009, dated 11.08.2009)

It states that the assessment report is prepared at a very good level from the aspect of expertise and content, the level of detail and the quality of information and data contained in the report is high.

It states that the environmental impact assessment report is in accordance with the relevant land-planning documents for the Mochovce NPP applicable at the time prior to issuance of the building decision, with emphasis on environmental care and protection of its components

(water, soil, air) and the impact of this activity on the human health. The proposed activity is also in accordance with applicable land-use plan of the Nitra region, as amended in 2004. In the complex urban drawing (settlement infrastructure) this area is classified as an area of "industry, civil engineering and warehousing".

As regards the report it has the following comments, requests and recommendations:

- Add to the summary of the expected creation of non-radioactive waste and methods for its disposal (table 9, page 113 - 120 of the assessment report) also the quantities of these wastes.
- on page 212, in figure 32, in the water circulation in the Mochovce NPP there is incorrectly stated that the sludge layer leads into the Žitava watercourse.
- On the map of the area of the Mochovce power plant for the proposed activity, the annex number or the scale of the map documentation are not stated.

It states that the proponent in the assessment report accepted the comments made by the Slovak Environmental Agency in Banská Bystrica in its Opinion on the objective of the proposed activity no. CZ1150/2009 of 14.4.2009, and incorporated the requested data and information into the report.

It recommends the realisation of the proposed activity with emphasis on compliance with legislative requirements stated in the assessment report in chapter 4.2 - Measures in the event of incidents - emergency conditions.

Jozef Pacala (letter written in Starý Tekov of 03.09.2009 and next letter of 12.09.2009)

Delivered a comment regarding measures in the completion of the Mochovce NPP.

He states that as a designer in energy engineering, from his professional career he is familiar with VVR-type nuclear power plants, such as Mochovce.

He highlights the geographical location of the Nový Tekov municipality and the situation of its residents, with emphasis on solving an escape route across the River Hron.

He proposes that in the framework of the civil protection programme solution, i.e. the emergency response plans for the case of a nuclear accident at the Mochovce NPP there be included among the civil protection measures a solution of the escape route across the River Hron, by building a bridge.

Nitra Precinct Office, Civil Protection and Crisis Management Department (letter no. A/2009/12542/2 dated 07.09.2009)

From the aspect of the civil protection, it has no comments regarding the submitted documentation.

Regional Environmental Office in Nitra, Department for the Protection Of Environmental Components (letter no. 2009/00257 dated 08.09.2009).

In the next stage of approval and licensing it insists on the implementation of measures for the prevention, elimination, minimisation and compensation of the proposed activity's environmental impacts as proposed in the assessment report.

It has no substantive comments regarding the assessment report for the proposed activity.

Office of the Nitra Autonomous Region (letter no. ČZ – 24328/2009 ČS – 1941/2009 dated 11.09.2009)

The Nitra Autonomous Region agrees without comment to the scope of the environmental impact assessment report.

Levice Precinct Traffic & Road Authority (letter ref. no. U/2009/02301 BC 10, reg. no. U/2009/005122, dated 10.09.2009)

It has no objections to the submitted report provided that there is compliance with the following conditions:

- In realising the submitted objectives, during the intervention in road III/51110 and III/05149, it is necessary to proceed according to Act no. 135/1961 Coll. on land communications (the Roads Act) as later amended, in conjunction with Decree no. 35/1984 Coll. as well as the respective Slovak Technical Standards.
- According to § 3 (2) of Act no. 135/1961 Coll. on land communications (the Roads Act) as later amended, the local state administration in matters of local roads and special-

purpose roads is carried out by municipalities, as a delegated state administration performance.

- In the case of works outside the built-up area of a municipality in the road protection zone of road III/51110 and III/05149 it is necessary, under §11 (2) of the Roads Act, to apply for an exemption from activity in the road protection zone.
- It is necessary to present a consenting opinion of the owner of the regional road: the Nitra Autonomous Region, the administrator of the regional communication: Levice Regional Roads Administration & Maintenance PLC, the Levice District Police Directorate, the District Transport Inspectorate.

The authority requests that documentation be submitted for land-use and construction proceedings for opinion.

Nitra Regional Land Office (letter no. 2009/00325, dated 05.11.2009)

It states that in the preparation for realisation of the proposed activity, consent to the expropriation of agricultural land has already been issued (issued by the Ministry of Agriculture and Nutrition of the Slovak Socialist Republic under no. 10 698/81-PV dated 10.12.1981).

The investment is in a functionally approved site and its realisation does not entail an increase in the agricultural landtake, and therefore no new consent by the Nitra Regional Land Office is necessary.

Levice Precinct Environmental Office, Department of Environmental Components Protection (letter no. T2009/01301-002 dated 14.9.2009)

The Office submitted an aggregate opinion for individual sections of the environment.

From the aspect of state administration of waste management:

It states that the manner of management of wastes other than radioactive waste at the Mochovce NPP is at present carried out in accordance with the provisions of Act no. 223/2001 Coll. on wastes.

It states that SE, a. s., has the respective documentation drawn up for waste management at the Mochovce NPP and that it holds permits granted under specific regulations. In the event of changes in the site, current altered permits may be granted, or a new decision may be issued, corresponding to the activity performed.

It has no substantive comments regarding the proposed activity.

From the aspect of state administration of air protection

It states that air pollution sources are operated in the area - gas-fuelled boilers as supplementary sources for heat generation as well as a diesel-generator station as an alternative source for electricity generation.

It notes that the following pollutants will be emitted from these sources: ◆ particulate matter ◆ sulphur oxides, expressed as sulphur dioxide; ◆ oxides of nitrogen, expressed as nitric oxide, ◆ carbon monoxide, ◆ organic substances, expressed as total organic carbon.

It states that the sources listed in the report will meet the emission limits set in SR Ministry of Environment Decree no. 338/2009 Coll. implementing certain provisions of the Air Protection Act, as well as other criteria arising from air protection law.

It points out that the nuclear power plant is not categorised as a source of air pollution and so regulations as amended by regulations under Act no. 478/2002 Coll. on air protection, amending Act no. 401/1998 Coll. on fees for air pollution as later amended (the Air Protection Act), do not apply to it.

It has no comments regarding the proposed activity.

From the aspect of state administration of water management

It has no comments regarding the proposed activity for reason that the respective state administration body is the Regional Environmental Office, the National Water Administration in Nitra.

From the aspect of state administration of nature and landscape protection

It states that the affected area pursuant to Act no. 543/2002 Coll. on nature and landscape protection as later amended, is located in a grade-one protection zone outside of large and small protected areas.

It states that the proposed activity is realised outside the scope of areas of European importance listed in SR Ministry of Environment Edict no. 3/2004-5.1 dated 14.07.2004 setting out the national list of areas of European importance.

It confirms the opinion of the assessment report's author that no negative impact is expected on the gene pool and biodiversity in the case of commissioning the nuclear facility into operation, provided there is compliance with applicable legislation concerning nature and landscape protection.

It gave a positive opinion regarding the realisation of the proposed activity, under condition of compliance with the newly-raised comments concerning potential decisive facts in waste management and compliance with applicable legislation concerning nature and landscape protection, which will be reflected in the next stage of processing the project documentation.

Nitra Labour Inspectorate (letter no. 5041/38/2009/BOZP dated 18.09.2009)

It expressed the opinion under §7 (3) (c) of SR National Council Act no. 125/2006 Coll. on labour inspection and amending Act no. 82/2005 Coll. on illegal work and illegal employment and on the amendment of certain acts as later amended for ensuring health and safety at work (hereinafter simply "HSW") in the framework of implementation of the proposed activity in part 1.0 Programme Framework, in paragraph 2.8.3 Methodological instructions and HSW implementation – it places requirements to incorporate the following duties of the employer:

- on minimum safety and health requirements for a workplace under SR Government Regulation no. 391/2006 Coll.
- on minimum requirements for the provision and use of personal protection equipment in accordance with SR Government Regulation no. 395/2006 Coll.
- on the protection of employees against chemical exposure risks at work in accordance with SR Government Regulation no. 355/2006 Coll.
- on minimum health and safety requirements for the protection of employees against noise exposure risks in accordance with SR Government Regulation no. 115/2006 Coll. as amended by SR Government Regulation no. 555/2006 Coll.

Slovak Water Management Enterprise, state enterprise, Banská Bystrica branch (letter no. CS 104/2009 – CZ 12881/2009-220, 230; dated 11.09.2009)

From the aspect of the administration of water courses management and water quality protection it states that the operation of the Mochovce NPP affects the interests of the Slovak Water Management Enterprise by abstraction of surface water and discharge of waste water (technological water cleaned in special water purification using catex and anex filters, sewage waste water and rainfall water flowing through the retention tanks with a scumboard) into the Hron watercourse via one outlet at river km 75.4, below the Kozmálovce dam.

It states that for the MO 12 operating conditions a permit has been issued for the discharge of waste water into the Hron watercourse by the Nitra Regional Environmental Office under ref. no. 2007/00029 dated 25.01.2009 and valid to 31.12.2010. With regard to the limit values permitted therein for pollution in discharged waste water, the submitted assessment report (tables 54 - 55 on pages 216-217) documents the development of concentration and balance values of the discharged pollution in 2004 - 2008.

With the exception of values in the indicator RL (105°C) in 2007 the tables also clearly show compliance with the permitted values (permitted limit of 1000 mg / l, stated annual average of 24-hour samples: 115.44 mg / l).

In the specified profile – at the road bridge Kalná nad Hronom, there has also been full compliance with immission values (Annex 1 to SR Government Regulation No. 296/2005 Coll. laying down quality requirements and qualitative targets for surface water and limit values of pollution indicators for waste water and specific water) in the monitored indicators as: alpha and beta activities per unit volume, radium and tritium.

Commissioning MO 34 into operation will proportionately increase demands for water abstraction and, in connection with the discharge of waste water into the Hron watercourse, also the demands for ensuring the required quality of surface water below the outlet of waste water from the Mochovce NPP.

In this regard it states the same requirement as made in comment on the objective of the proposed activity (opinion no. CS 34/2009 CZ 4645/2009-230,220 dated 20.03.2009)

Quote: "The Slovak Water Management Enterprise, state enterprise, as the administrator of the Veľké Kozmálovce hydrostructure ensures the supply of surface water for MO 34. The main purpose of the Veľké Kozmálovce hydrostructure is to supply its surface water in the quantity of $1.8 \text{ m}^3 \cdot \text{s}^{-1}$ at an annual volume of $47\,304 \text{ m}^3$ (in accordance with the applicable decision no. 10924/2/177/405.1/93-M dated 09.07.1993) with a 99% safety factor.

Under the applicable handling code approved by the Nitra Regional Environmental Office no. 2007/00509 dated 20.7.2007 the priority of the administrator for the Veľké Kozmálovce hydrostructure is the provision of water abstraction for the Mochovce NPP.

The Veľké Kozmálovce hydrostructure handling code also incorporates the water management procedure in the case of a fall in the storage volume to 50% and long-term deficit inflows below $Q_{364} = 9.233 \text{ m}^3 \cdot \text{s}^{-1}$; the steps to limit water abstraction to the water necessary for cooling the reactors will be taken.

In connection with the siltation of the Veľké Kozmálovce reservoir with sediments, technical measures have been designed for removing them from the hydrostructure. The project "Veľké Kozmálovce hydrostructure, elimination of sedimentation in the reservoir for ensuring water abstraction by the Mochovce NPP", which it is proposed be financed from the Cohesion Fund.

It refers to the fact that due to the construction of the Mochovce NPP a decision was issued on the minimum flow in the profile of the Veľké Kozmálovce hydrostructure at $6.6 \text{ m}^3 \cdot \text{s}^{-1}$, which was set as temporary, because the objective need in this section is approx. $11 \text{ m}^3 \cdot \text{s}^{-1}$, which corresponds to Q_{355} of the daily water.

It notes that in the case of the advised increase in water abstraction, there will be an increase in the balance tension in relation to the minimum residual flows, which at present are ecologically unbearable.

Subsequently in the case of minimum flows on the river Hron, the water needs of other users may not be covered, leading to their regulation and to a tense balance regarding the quality of surface water in the case of the problematic indicators such as N-NO_3^- , N-NH_4^+ , or water temperature."

Nový Tekov Municipal Authority (letter no. 505/2009, dated 17.09.2009)

The local mayor calls for a bridge to be built across the river Hron between the villages of Nový Tekov a Starý Tekov, which will serve as an escape route for the residents of Nový Tekov in the case of incidents, due to the fact that the municipality lies in the zone I of the Mochovce NPP and the escape route must be away from the power plant and not parallel with it.

Malé Kozmálovce Municipal Authority (letter no. 310/2009, dated 17.09.2009)

The municipality's public has no comments to the assessment report of the proposed activity.

Town of Tlmače (letter no. 1137/2009, dated 21.09.2009)

It states that the assessment report was made available to the public through publicly accessible notice board, the website www.mestotlmace.sk, as well as being broadcast on municipal tannoy announcements.

The town has no comments regarding the assessment report and no written opinion was delivered from residents.

Nemčiňany Municipal Authority (letter no. 456/2009 dated 24/09/2009)

On 19.8.2009 the authority informed the public and residents by way of a public notice and broadcast on the municipal tannoy system of the possibility to view and comment on the assessment report. The public notice was displayed for 30 days up to 18.9.2009.

During the course of this period two citizens inspected the material. During this period the municipality, following agreement with the proponent SE, a.s., convened with the municipality of Kalná nad Hronom a public hearing on the proposed activity on 18.9.2009, for which buses were provided for those wishing to take part. The mayor and five residents from the Nemčiňany municipality attended the public hearing.

No comments regarding the activity.

Kalná nad Hronom Municipal Authority (letter no. 488/2009 dated 29.09.2009)

On 17.08.2009 the authority informed the public and residents by way of a public notice on the official municipal notice board of the possibility to view and comment on the assessment report. The public notice was displayed for 30 days up to 17.09.2009. The municipality has no substantive comments regarding the assessment report, leaving in force its opinion from 25.03.2009. The municipality has no objections to the assessment report and supports the realisation of the objective.

Starý Tekov Municipal Authority (letter dated 24.09.2009)

On 18.08.2009 the authority informed the public and residents by way of a public notice and broadcast on the municipal tannoy system of the possibility to view and comment on the assessment report. The public notice was displayed for 30 days up to 24.09.2009. During this period ten citizens inspected the assessment report. The residents had no comments regarding the assessment report. The elected municipal council representatives were not against the implementation of the activity. The municipality agrees with the assessment report.

Veľký Ďur Municipal Authority (letter no. 390/2009 dated 25.09.2009). On 18.08.2009 the authority informed the residents by way of a public notice and broadcast on the municipal tannoy system of the possibility to inspect and comment on the assessment report. The public notice was displayed for 30 days up to 19.09.2009. No one from the village inspected the assessment report or raised any comment regarding the report.

Jozef Pacala, Starý Tekov (letter no. 42357/2009, dated 03.09.2009)

The resident supports completion. He would, nevertheless, welcome a solution of bridging the Hron river between the municipalities of Nový and Starý Tekov that would serve as an escape route for residents of Nový Tekov in case of emergency incidents.

Energy 2000 Association represented by Ľubica Kupke-Šipošová and Magda Papánková (letter ref. no. 42817-1277hp dated 17.09.2009)

It comments that the opinion regarding the objective was not incorporated into the scope of the assessment, though the author of the report had it available for analysis and took account of all relevant comments.

It disputes the selection of the author for the assessment report and the objective, since this subject solved the objective of uranium mining in Slovakia; in the documents the authors of the report are presented only in the form of illegible signatures (by hand), without any statement of their expert competence and without stating the address of the parent firm.

It disputes the validity of the building permit issued by the Levice District National Committee of 12.11.1986.

It notes that Jaslovské Bohunice has neither an integral store nor deep underground repository.

It considers the *transports* of spent nuclear fuel into the interim storage at Jaslovské Bohunice to be a high-risk activity.

It criticises the methodology for sample taking and measurement of the Levice Environmental Radiation Monitoring Laboratories.

It mentions an underestimation of the seismic risk of the given area.

Energy 2000 Association represented by Ľubica Kupke-Šipošová and Magda Papánková (letter delivered on 17.12.2009), response to the supplement to the MO 34 assessment report by the proponent on the basis of comments to the report

It states that the distributed material does not correspond to the quality and scope of requirements under European directives, since there are no directives for supplementing assessment reports, so the SR Ministry of Environment in discussing the material could not rely on any directive as regards the particulars and content.

From the aspect of the significance of the needs of an EIA *it does not accept* the hypothetical argumentation and tendentious statements, such as “it is the author’s opinion”, “this is a personal view”, “the data on the report are relevant”.

It requests a solution of the quantitative problems of water management for MO 34.

It draws attention to sediments polluting the water in the water reservoir at Veľké Kozmálovce.

It draws attention to the unsolved problem of sufficient cooling water.

It draws attention to the fact that the mere verbal statement does not turn the technology of the nuclear power plant from the 1970s to the quality of a Finnish VVER nuclear power plant with a generation III containment. The containment does not protect the primary circuit parts and in an unprotected cooling pool the spent fuel removed from the reactor is to dangerously remain for several years without protection equivalent to full containment.

It requests that the spent nuclear fuel management is solved so that the issue is not carried over as a debt on future generations.

It states that the 20% increase in employment overlooks the fact that since 2000 there has been a rapid decrease in employment (in 2000 there were 2435 employees at the NPP MO, but in 2007 the figures had been reduced to 1459 employees).

It notes that the massive reduction in personnel is a matter entailing increased risk at individual workplaces.

Slatinka Association, Zvolen represented by Martina Paulíková (letter without reference number, registered on 21.09.2009)

It makes the following comments and proposals focusing on three spheres of concern:

✓ Proposal of an alternative using a coolant other than water cooling at the Mochovce NPP.

It requests that, prior to a decision recommending or not recommending the implementation of the proposed activity from the aspect of environmental impact, an assessment be made of the requirements for water and draft measures for ensuring sufficient cooling water for the 4 blocks of the Mochovce NPP in the case of an administrative decision to increase the minimum ecological flow below the Veľké Kozmálovce hydrostructure to $9.233 \text{ m}^3 / \text{s}^1$ for a period of extreme drought.

✓ Assessment of the proposed activity's impact on the ecosystems of the river Hron.

It requests that an assessment be made as to whether there will be sufficient coolant water for the four NPP MO blocks without adverse impacts on the ecosystems of the river Hron even in the case of extreme drought, in the case of the siltation of the Veľké Kozmálovce hydrostructure (and the consequent inability to use the storage volume of this reservoir) and in the case of an administrative decision to increase the minimum flow below the Veľké Kozmálovce hydrostructure to $9.233 \text{ m}^3 \cdot \text{s}^{-1}$.

The assessment report for the proposed activity, however, makes little elaboration of this issue, and does not even assess at all the requirements formulated in point 2.2.17. Only minimal attention is given to assessing the impact on the ecosystem(s) of the river Hron (point 2.2.15 of the scope of the assessment), although the report mentions it at several places as the aquatic biotope (but we do not know what biotope this actually concerns, in what state it is at present and what is its desired state, where it is located, etc).

✓ Proposal of mitigating measures for eliminating the adverse impacts of the proposed activity on the environment. With regard to the previous 2 spheres of issues, this chapter of the assessment report is not sufficiently complete.

Association of Friends of Slatinka, Poštová 6, 917 01 Trnava, represented by Ľudovít Buzalka submitted an opinion (letter without reference number delivered on 22.09.2009) identical to that of the Slatinka Association, Zvolen.

The Civic Association For Mother Earth, PO Box 93, 814 99 Bratislava, represented by Pavol Široký (letter without reference number, delivered on 28.09.2009):

It requests under § 24 (c) of the Environmental Impact Assessment Act that for this case it be treated as the public concerned and in future requests recognition of its standing as a participant in related decision-making procedures, as guaranteed by the Environmental Impact Assessment Act and the international Aarhus Convention.

✓ It considers the most serious shortcoming of the entire EIA process as being the fact that even though the assessment of this project's environmental impacts has not yet been

completed, the completion of the nuclear blocks is already under way. The affected public in the town of Ilmače has not been sufficiently informed of the project and has had little room for commenting on the project. Based on this warning an extension was made to the comment proceedings for the assessment report in Ilmače.

- ✓ Criticism of an internal document of the company Enel / Slovenské elektrárne describing the investor's opinion as to how the public hearing on the MO 34 assessment report should proceed. The document was to have proven the investor's attempt to manipulate the public hearing. The public hearings were held in Bratislava, Esztergom and Vienna. The course of the hearings was substantive and transparent.
- ✓ It calls for a suspension and investigation of the EIA process and for a new date to be set for the public hearing.
- ✓ Comments not incorporated into the report: propose a different alternative for reactors cooling down at the Mochovce NPP blocks 1, 2, 3 and 4; e.g. air cooling; environmental impacts of spent fuel throughout the whole fuel life-cycle; state the method of transporting spent fuel into interim storage.
- ✓ Insufficient fulfilment of the European Commission's requirements dated 15.7.2008. Non-provision of concrete data proving the facility's resistance to external events.
- ✓ Misleading, incomplete and false information and statements: The MO 34 reactors referred to as generation III reactors; safety measures in the transportation of fresh fuel; the limit for tritium activity per volume unit in liquid radioactive discharged is based on an obsolete and outdated expert documentation; the author avoids comparison with renewable energy sources that in every aspect (safety, health, environmental, economic and social) exceed the benefits of nuclear power; the author has omitted to mention the radiation effect of potential unanticipated incidents; the report's author states that there are no adverse impacts from the proposed activity on the atmosphere during the operational phase; the author has omitted the issue of the threat to the flow of the river Hron; terminologically and stylistically incomprehensible text.
- ✓ The approach to handling spent nuclear fuel and radioactive waste management is clearly inadmissible in the SR (also in the framework of this EIA process) with regard to its real safety, health, environmental and economic risks and requests that this serious issue be properly elaborated.
- ✓ The absence of an evaluation of the likelihood of an accident with a radioactive discharge into the surrounding environment and of its potential impacts.
- ✓ Inadequate assessment of impacts of the MO 34 operation on the water flow in the river Hron.

Jozef Križan, Adlerova 21, 04 022 Košice (letter without reference no. delivered on 25.09.2009)

General comments:

- ✓ The EIA process began only following the opening of the building permit proceedings and is being realised only after works on the completion project have already started.
- ✓ The report's author did not address any of the comments regarding the objective, which were submitted by Mr Križan on 24.03.2009.
- ✓ The specific requirements of the SR Ministry of Environment did not include all substantive comments made by non-governmental organisations.
- ✓ Neither the report, nor the objective, is based on the current project supplemented by the changes that were incorporated into the original project.
- ✓ The report and the objective were developed without Slovenské elektrárne having submitted a pre-operation safety report.
- ✓ The report and the objective were drawn up without a probabilistic safety assessment (PSA) of this power plant and without probabilistic risk assessment (PRA) of the project.
- ✓ The report and objective lack scenarios for accident anticipated in the project and scenarios of unanticipated accidents, including the most serious accident, i.e. "a meltdown of the reactor core with a disruption to the core and containment integrity with a hydrogen explosion in the reactor core, rupturing of the reactor lid and dispersal of fissile products from the core into the atmosphere".

- ✓ The report lacks analysis of the chief risks of nuclear energy (inherent safety and environmental risks and the risk of nuclear proliferation).
- ✓ The report does not assess the impact of the back-end of the fuel cycle (spent nuclear fuel management).

Comments on specific sections of the report:

- ✓ Requirements for the growth in electricity consumption – Growth in electricity consumption in Slovakia does not justify the construction of any mega-sources for electricity generation.
- ✓ Reliability of the power system - Nor does the requirement for power system reliability justify the completion of MO 34.
- ✓ Obligations toward the European Commission under the Euratom Treaty (Chapter 1.6.4) - Completion of the MO 34 does not fulfil the EU recommendations; the project is not in accordance with current best practice.
- ✓ Permits – he disputes the validity of the change to the structure completion date from 1997.
- ✓ Improved safety – there is no description of the specific design enhancements compared to blocks MO 12, or even compared to the original Soviet project. In the construction stage and the low level of project safety from the aspect of the safety concept of this power plant it is not possible to enhance the power plant so as to achieve a level of safety equal to that of power plants with generation III or generation III+ reactors.
- ✓ Spent nuclear fuel management - neither the objective nor the report address the impacts of deep underground geological repository of stored waste on the environment and human health.
- ✓ Radioactive and non-radioactive waste management - only general information is given.
- ✓ Raw materials - poorly described chemical changes in the technological process and their subsequent management.
- ✓ Discharge of gaseous radioactive substances - add information on all source elements of gaseous discharges (description and number of them) for normal operation, abnormal operating and emergency conditions.
- ✓ Supplement the report so as to include the stochastic effects of ionising radiation emitted from discharges of radionuclides from the power plant's operation.
- ✓ Supplement the report so as to include the precise procedures of measuring radionuclides discharged into the atmosphere, stating measurement uncertainties, uncertainties arising from sampling, from adjustment of samples for measurement.
- ✓ Complete the report with the severe accident scenarios, their time course, an inventory of radionuclides discharged into the atmosphere and a calculation of radiation doses for the population.

Greenpeace Slovakia, Nám. SNP 335, P.O. Box 58, 814 99 Bratislava 1, represented by Katarína Bartovičová and Andrea Zlatňanská (letter without ref. no. 20 5009.2009):

- ✓ Draws attention to the fact that the different language versions of the assessment report differ from one another. Consequently the affected public in the different countries has received differing content of information on the assessed activity.
- ✓ Comments on the EIA process are identical to those in the case of the association *For Mother Earth*, plus they objected that the affected municipalities in cooperation with the proponent had organised a joint hearing on the report in Bratislava and not in the affected region.
- ✓ Comments not incorporated in the report are identical to those in the case of the association *For Mother Earth*.
- ✓ Insufficient compliance with the European Commission requirements of 15.07.2008 (comments are consistent with those of the association *For Mother Earth*).
- ✓ Misleading, false and incomplete information and statements (comments are identical to those in the case of the association *For Mother Earth*).
- ✓ The approach to spent nuclear fuel and radioactive waste management in the SR (comments are identical to those in the case of the association *For Mother Earth*).

- ✓ Missing evaluation of the likelihood of an accident with a radioactive discharge into the surrounding environment and potential impacts. Several comments are consistent with those of the association For Mother Earth. Furthermore, in this point the opinion notes that “issues of nuclear safety are an indisputable subject of any assessment of the environmental impact of nuclear reactors”. In the field of nuclear safety they require:
 - a. complete the report with the transparent and reliable calculations of the containment integrity values,
 - b. complete and support the report with transparent and reliable calculations for the concrete values of the accident risk assessment parameters – the large early release frequency (LERF) and core damage frequency (CDF),
 - c. state how the reactor shaft will be solved from the safety aspect, in particular weakening points in its building structure,
 - d. justify the risk zone in terms of radiation protection (up to 50 km),
 - e. consider the accumulation of negative environmental and health impacts in the field of influence of both nuclear power plants, i.e. at Jaslovské Bohunice and Mochovce.
- ✓ Inadequate assessment of effects of the MO 34 operation on the water flow in the river Hron.

The annexes contain: ● internal materials of Slovenské elektrárne, ● correspondence with the SR Ministry of Environment, ● document of Mr D. Strašky: ● Assessment of possibility for increasing the level of nuclear safety at the considered completion of blocks 3 and 4 of the Mochovce nuclear power plant (Greenpeace, Bratislava, 2007) and ● excerpts from Act no. 24/2006 Coll.

Greenpeace Slovakia, Nám. SNP 335, P.O. Box 58, 814 99 Bratislava 1, represented by Katarína Bartovičová and Andrea Zlatňanská (letter delivered on 01.12.2009) - answer to the supplement to the MO 34 assessment report by the proponent on the basis of comments to the report

It considers the supplement to the report as purely formal and without content - it provides no new information on the proposed activity, which they have repeatedly requested in the process to date.

The proponent instead of answering the questions refers the public to other documents that, according to the investor, are not a component or subject of the environmental and human health impact assessment, and “justifies” why it “cannot” provide the requested information. The investor also continues to argue with the same statements, for example the claim that the issue of nuclear safety is outside the framework of the EIA. The investor has also disregarded several comments from the report and has not even mentioned them in the supplement to the report.

It lists the most important comments:

✓ ***Radioactive Waste (RAW) and spent nuclear fuel (SNF)***

It stresses that radioactive waste and spent nuclear fuel from the proposed activity will actually exist from the first moment of operation of the proposed activity and it will be necessary to manage them. It is therefore essential to assess also their impact on the environment and human health and related risks. It expresses the opinion that the investor should have firstly solved the problem of RAW and SNF and only then realised the proposed structure.

It requests that the investor state in concrete terms how the back-end of the fuel cycle will be solved for the nuclear reactors of the Mochovce NPP 3, 4 and that it seriously assessed its impact on the environment and human health, as well as all the related risks.

✓ ***Nuclear safety and its environmental impact***

It states that if, according to the investor an unanticipated accident is unlikely, it does not mean that the likelihood is zero (in the end recognised by the nuclear power engineers themselves, including representatives of SE, a.s. - Enel at the public hearing). The risk of an unanticipated accident and its impact on the environment and human health therefore must be the subject of an environmental impact assessment under the relevant legislation.

It disagrees with the investor's claim that the assessment of safety issues "is not the subject of the environmental impact assessment" and that such an assessment falls within the competence of the SR Nuclear Regulatory Authority.

It notes that Act no. 24/2006 Coll. expressly requires such an assessment, for example in Annex no. 9, Part IV, points 4 and 9, Annex 11, Part III, point 1 and 19 and others. The consequences of any emergency (anticipated or unanticipated) accident have a major impact on the environment and human health. It maintains the opinion that **safety issues must therefore be appropriately analysed and assessed from the aspect of their impact on the environment and human health.**

✓ **Alternative solution of the proposed activity**

It considers the abandonment of the alternative solution to the proposed activity under §22 of Act no. 24/2006 Coll. as unjustified, since the measures for increasing energy efficiency and electricity generation from non-nuclear sources, for example from renewables, are now common practice and renewable energy resources have incomparably lesser negative impacts on the environment and are much more environmentally friendly than nuclear energy.

It requests the SR Ministry of Environment to reconsider its opinion on the alternative solution of the project.

✓ **Method of drafting the Supplement to the Report**

It notes that the substantive essence of the "*Supplement*" to the Report was not in any way fulfilled, since the investor did not provide any concrete and relevant information and merely repeated the misleading information from earlier stages of the EIA process.

The document *Supplement to the Report* is, furthermore, written in a very chaotic manner, mismatching certain questions and their addressees.

✓ **Approach and procedure of the SR Ministry of the Environment**

It is convinced that the SR Ministry of the Environment is tolerating insufficient processing of the documentation to the proposed activity from the side of the investor, even despite the fact that the SR Ministry of the Environment returned the submitted objective and assessment report for completion, where it stated also the scope of required completion of the materials. The assessed activity itself is complex and could be endlessly improved.

It believes that in the assessment process the public is being manipulated, that there is a breach of its fundamental constitutional and civil rights, a breach of Slovak legislation and the SR's international commitments, eroding the international credibility of Slovak Republic and its position among the democratic states of the EU, as well as jeopardising Slovak economy and safety, the environment and human health in Slovakia and central Europe.

It holds the above mentioned statement on the basis of information gained by chance from an internal document of the investor, concerning arrangements for the invitation to the public hearing, and also its preparation in Bratislava on 18 September 2009 at the Hotel Bôrik at 14:00 hours. Furthermore, Slovenské elektrárne, a. s., Bratislava at its own initiative created the non-standard instructions "**to achieve the least possible attention from the media and public**", ... "**to prevent public discussion of the assessed activity in Vienna**" and "**to restrict participants of the public hearing and to restrict the media at the planned briefing**".

The subject of the internal communication of the proponent Slovenské elektrárne, a. s., Bratislava is not identical to the formal procedures and documents by which the Slovak Republic as the party of origin communicated with Hungary and other affected parties under the Convention on Environmental Impact Assessment in a Transboundary Context (hereinafter simply the "Espoo Convention").

The SR Ministry of Environment cannot agree with the statement of Greenpeace Slovakia that in the framework of the process of assessing the proposed activity there has been intentional manipulation of the public, a breach of the public's fundamental constitutional and civil rights, a breach of Slovak legislation and the SR's international commitments, eroding the international credibility of the Slovak Republic and its position among the democratic states of the EU, as well as jeopardising the Slovak economy and safety, the environment and human health in Slovakia and central Europe. The SR Ministry of Environment in the process of assessing the proposed activity has an interest that communication between the

party of origin and the affected parties' proceeds in a spirit of mutual agreement and openness toward solving issues of environmental protection and human health in accordance with national and international legislation.

It calls for a technically competent entity that will prepare an expert opinion, and calls on the SR Ministry of Environment to issue a negative opinion regarding the assessed activity, unless information is supplemented and solution offered for the problematic questions of the public.

Jan Haverkamp - EU policy campaigner dirty energy, Greenpeace European Unit, Rue Belliard 199, 1040 Brussels, Belgium, (independent expert on the energy industry, specialising in nuclear power; letter received on 24.09.2009).

By way of introduction he stated that he has participated in the environmental impact assessment processes of the Temelin NPP in the Czech Republic, the Belene NPP in Bulgaria, the Cernavoda NPP in Romania and the Visaginas NPP in Lithuania.

He presented a personal opinion and comments regarding the MO 34 assessment report, He described the drafting of the environmental impact assessment report by the company Golder Associates as a chaotic arrangement of information, and due to this he, too, was forced to proceed in the same chaotic sequence.

He presented a list of 99 detailed comments on the text of the English version of the report that the author himself summarised as follows:

General comments:

He states that the assessed environmental impact assessment report was without doubt the worst in quality he has ever evaluated. It lacks key questions such as an alternative solution, impacts of the initial starting points (uranium mining, fuel production) and the environmental consequences of the project (waste treatment and decommissioning), the dispersal of radioactive materials in the case of large-scale unanticipated accidents, basic epidemiological data, basic data and estimates of impacts on the landscape and much else. The level of the English version of the assessment report was worse than the assessment report for Černavoda – the twin-reactor block “CANDU 6” in Romania.

He states that the MO 34 assessment process without considering alternative procedures is particularly unacceptable, and this even when the assessment process is being conducted in what at the very least may be termed a non-standard manner following its completion and prior to granting a permit under specific regulations.

He states that the Aarhus Convention and Slovak law prescribe that an assessment report must be able to justify each and every impact on the environment. For this purpose it is necessary to have alternative solutions available for comparison so that it may be determined whether it is possible to achieve similar or even more positive benefits with a lesser impact on the environment and human health.

He insists that without such alternative solutions the assessment report is a worthless piece of paper.

Ignoring impacts at the start and end of the nuclear chain is also unacceptable. It is not possible to compare the proposed activities with other appropriate alternative solutions, if these associated activities are not taken into account. Storage of nuclear waste is an issue that needs to be included here in view of the fact that MO 34 will inevitably produce radioactive waste, the processing of which cannot be solved with the technology available today.

He states that the authors of the report have not included an mentioned alternative solution together with an assessment of the initial starting points and consequences, neither did they included here the basic data necessary for making an assessment of the impacts of the proposed MO 34 construction. Neither is there an attempt at forecasting the long-term impacts on nature, the environment or human health; most data is based on the relatively short period of MO 12's operation. Neither have the authors attempted to adapt this already insufficient data from the old project for the changes proposed in the MO 34 project. The changes to the project have been described insufficiently so that it is not possible to make any estimates from outside.

He draws attention to the fact that, moreover, the final report does not reflect recommendations submitted by the public concerned in their opinions to the objective of the proposed activity and it is a mystery why the Slovak Ministry of Environment did not request a rectification of this situation and accepted this version of the report for public assessment. He criticises the fact that the report almost entirely lacks references to information sources. He comments that an assessment report can be convincing only if based on publicly available sources that can be reviewed.

Comments regarding the process:

He is of the opinion that the ongoing environmental impact assessment procedure for the MO 34 activity, running concurrent with the construction of MO 34, is a violation of the Slovak Act no. 24/2006 Coll. as well as the Aarhus Convention, which clearly state that public discussion must take place in the early stages of the process, prior to irreversible changes.

He believes that the role of Slovenské elektrárne, PLC. in the assessment process also seems problematic. Several weeks prior to the public hearing in Bratislava held on 18.12.2009 Greenpeace obtained a copy of a presentation by the head of the communications department of the Mochovce nuclear power plant, from which there is a clear attempt to influence the public's participation at the hearing, to prevent the public hearing in Vienna, and to achieve the least possible media attention.

He recommends that the SR Ministry of Environment reject the assessment report as insufficient and inappropriate, and that it instruct Slovenské elektrárne, a. s. to prepare a new report of appropriate quality. He recommends that in accordance with the Aarhus Convention all building works on the MO 34 project be suspended until completion of the new environmental impact assessment.

He warns that otherwise Greenpeace will probably recommend taking legal steps against approval of the assessment report, in the framework of which they would seek annulment of the decision, by exercising rights in accordance with the Aarhus Convention.

The conclusion to the opinion comprised detailed comments on the text of the English version of the MO 34 Assessment Report

The comments concerned various problems ranging from deficiencies in strategic scenarios with their possible consequences in generating the projected consumption of power export and import of; the method, complexity of applying a professional, detailed, legal and transparent process of assessing the impacts of the activity; problems in ensuring quality and sufficient infrastructure (water, nuclear fuel); the manner of compliance with nuclear safety; protection from major accidents; the scope of monitoring and communicating the impacts of the activity; continual and sufficient information for the professional and lay public; transparent application of liability for damage in the framework of the nuclear facility's operation; ensuring fire safety and civil protection; as well as ensuring the back-end fuel cycle of the nuclear facility.

Ir. Jan Haverkamp, EU policy campaigner dirty energy, Greenpeace European Unit, Rue Belliard 199, 1040 Brussels, Belgium, (independent energy expert, specializing in nuclear energy) letter received on 30.11.2009) - response to the supplement to the MO 34 assessment report by the proponent on the basis of comments to the report

In the opinion he does not agree with the supplement to the assessment report also with regard to the fact that he received the supplement to the report later by e-mail due to the fact that his return address, stated in his opinion delivered in the framework of comment proceedings on the MO 34 report to the contact point, was incomplete and the letter was returned to the SR Ministry of Environment as undelivered. The SR Ministry of Environment distributed the supplement to the report only in Slovak due to the fact that it did not have an English version available. Neither the Espoo Convention nor the EIA Directive explicitly require a certain language for the assessment process, and the submission of different language versions of the assessment report was only at the goodwill of the proponent, or on the basis of bilateral agreements between individual countries.

He states that the drafting of the report and supplement to the assessment report is insufficient.

He identified with the comments to the supplement to the assessment report as prepared by the independent organisation Greenpeace Slovakia, seated in Bratislava.

Opinions, comments and conclusions from transboundary impact assessment consultations under §42 (6) of the Act:

Statements from the Czech Republic on the proposed activity

Ministry of Environment of the Czech Republic (letter no. 64267/ENV/09, dated 27.08.2009)

It announced that on 14.08.2009 it had received the MO 34 assessment report.

It confirmed that it declared its interest to participate in the environmental impact assessment process by letter dated 25.03.2009.

It stated that it, as the affected party, will contact the party of origin, the SR Ministry of the Environment, with regard its participation in consultations in accordance with Article 5 of the Espoo Convention in the course of sending opinions on the assessed activity.

It announced that it plans to attend the public hearing on the MO 34 report.

It requested timely provision of information as to where and when the public hearing will be held.

It described the steps that it had undertaken as the affected party in the transboundary assessment under national legislation.

It stated that under § 14 of Czech Act no. 100/2001 Coll. on environmental impact assessment and on the amendment of certain acts as later amended, it had sent a copy of the report to the affected territorial administrations and affected administrative offices for publication and opinion.

It informed the addressees that they will find the MO 34 assessment report in the EIA information system on the websites of CENIA <http://eia.cenia.cz/eia/> and on the pages of the Ministry of Environment of the Czech Republic (<http://www.env.cz>), project code MZP014.

The Ministry of Environment of the Czech Republic recommended the addressees to publish the information on the MO 34 assessment report on their official notice boards as well as in regional media.

It asked the addressees to send their written opinions on the report, in accordance with Act no. 100/2001 Coll., within 15 days of the date of publication of the information on the report on the official notice board of the affected body.

Ministry of the Environment of the Czech Republic (letter no. 68982/ENV/09, dated 15.09.2009)

In letter no. 1277/2009-3.4/hp, dated 28.08.2009 it received an invitation to a public hearing on the transboundary assessment of the MO 34 activity, which was held in the Slovak Republic, in Bratislava on 18.09.2009 at 14:00.

It distributed the invitation to the public hearing on the transboundary assessment of MO 34 under national law to the affected local authorities, affected administrative authorities, urban offices and Ministry of Environment departments with a request for statement.

The Ministry sent the invitation to the public hearing on the MO 34 activity to the attention of the Ministry of Environment - state administration departments, Regional authorities, the Czech Environmental Inspectorate, the Czech Agency for Nature Conservation and Landscape Protection, the Ministry of Foreign Affairs of the Czech Republic and the Ministry of Environment of the Slovak Republic.

The Ministry of Environment of the Czech Republic sent in the attachments to three cover letters under one reference (letter no. 64267/ENV/09, dated 15.9.2009, 01.10.2009 and 10.09.2009) the following statements received from the affected local authorities and affected administrative authorities:

Urban Authority, Břeclav (letter no. MUBR 63438/2009, dated 09.09.2009)

It has no comments on the MO 34 report.

Czech Environmental Inspectorate, Regional Inspectorate, Ostrava (letter no. ČIŽP/49/IPP0906226.004/09/VMJ, dated 08.09.2009),

It agrees with the conclusions of the MO 34 report and with the measures and proposals arising from it.

Czech Agency for Nature Conservation and Landscape Protection, Administration for the Protected Countryside Area White Carpathians, Luhačovice (letter no. 1539/BK/2009, dated 08.09.2009),

It foresees no impacts from the objective on the statutory protected interests in its competence, and has no requirements for supplementing the MO 34 report or other comments.

Ministry of the Environment, Department of Integrated Prevention and Integrated Register of Pollution (letter no. 1751/760/09, dated 03.09.2009),

From the aspect of its department's competences, it has no comments on the MO 34 report.

Town of Uherský Brod, Uherský Brod Urban authority, Department of Environment and Agriculture (letter no. OŽP/2816/09/So, dated 24.09.2009)

It agrees with the conclusions of the MO 34 report without comment.

On the basis of individual opinions issued under special regulations, it agrees with the MO 34 report.

Town of Uherské Hradiště, Uherské Hradiště Urban Authority, Department of Environment (letter no. OŽP/64012/09, dated 14.09.2009)

Based on the individual statements of departments for water protection, nature and landscape conservation and from the aspect of air protection, it agrees with the MO 34 report.

Town of Vizovice, Vizovice Urban Authority, Department of the Environment (letter no. MUVIZ 020548/2009/Rd S, dated 16.09.2009)

Based on individual statements from the aspect of laws on: water protection, waste, forests, hunting, nature and landscape conservation, as well as on protection of agricultural land, it agrees with the MO 34 report provided that all international treaties and agreements will be complied with.

Town of Vsetín, Vsetín Urban Authority, Department of Environment (letter no. MIAS OŽP 17206/2009, dated 09.09.2009),

It assessed the objective from the aspect of: water management, waste management, nature conservation, protection of agricultural land and forest management.

It reached the conclusion that the objective needs to be assessed under Act no. 100/2001 Coll. on environmental impact assessment and on the amendment of certain related acts, as later amended.

South Moravian Regional Authority, Department of Environment, Brno (letter no. S-JMK 46520/2009/OŽP/Vr, dated 18.09.2009)

It states that the submitted environmental impact assessment report on the MO 34 has been assessed by the departments of the environment, transport, regional development, land planning, the civil engineering code and by the department for crisis management and defence.

It expressed the opinion that it has no comments on the MO 34 report.

Member of the South Moravian Regional Council, Mr Ivo Polák (letter no. S-JMK 55668/2009, dated 18.09.2009)

After assessing the MO 34 report he has no comments on it.

Moravian-Silesian Regional Authority, Department of the Environment and Agriculture, Ostrava (letter no. 151196/2009 MSK, dated 29.09.2009)

It states that from the individual aspects of environmental protection in its competence, it has no comments on the objective.

Regional Hygiene Station of the Moravia-Silesia Region, seated in Ostrava (letter no. HOK/OV-8299/215.1.2/09, dated 11.09.2009)

It stated that from an assessment of the MO 34 report's compliance with regulatory requirements in the field of public health protection, and also with regard to the fact that the nuclear facility is 130 km from the Moravia-Silesia region borders, it accepts the proposed activity without comment.

Regional Hygiene Station of the South Moravian Region, seated in Brno (letter no. BM/46513/2009/odb.HOK, dated 15.09.2009)

It stated that it had assessed the objective with regard to its location, nature and capacity. It had considered the scope of activities relating to the objective's implementation in relation to its expected effects on public health, possible health risks and on components of the environment, and expressed the opinion that it has no objections to the MO 34 objective.

Czech Environmental Inspectorate, Regional Inspectorate, Brno (ČIŽP/47/IPP/0900030 006/09/BLV, dated 15.09.2009).

It states that from the aspect of environmental protection in its competence, it has no comments on the objective.

State Office for Nuclear Safety, Prague, (letter no. SÚJB/RCKA/20786/2009, dated 29.30.2009)

It states that after studying the MO 34 report, in particular part III-1.0 "Effects on the population", it has no comments.

Ministry of Defence of the Czech Republic, Property Management Section (letter no. 1466-65/2007-2697, dated 30.09.2009)

It states that in the MO 34 report the radionuclides discharges from the NPP MO 12 are extremely low; it does not foresee discharges from the MO 34 ventilation stacks into the atmosphere above the current applicable limits.

It states that also the calculation of the radiation burden on the population from the aspect of the transboundary impact assessment shows that this factor is negligible.

It has no comments on the proposed action.

Statements from Hungary regarding the proposed activity

Ministry of Environment and Water of Hungary - affected party under the Espoo Convention - formal final opinion (letter ref. no.: KMF-70/82/2009, Budapest, dated 18.12.2009)

in which the Hungarian affected party:

- ✓ stated the similarity of the impacts, mainly between the MO 12 blocks and the Paks nuclear power plant,
- ✓ stated that as regards the circular area with a radius of 50 km, the impact assessment report describes only the Slovak part, and details concerning the Hungarian area are absent. Based on further explanation at consultations it accepted the calculated dose at the Slovak-Hungarian border area, which appears insignificant; likewise it took note of the impact assessment of accidents, and this in the range of 2-3 km from the Mochovce nuclear power plant,
- ✓ stated that on the basis of available professional literature and inspections of the site during consultations with experts, they consider the scope and conclusions of micro-seismic monitoring to be favourable. It also stated that a probabilistic safety analysis in relation to earthquakes had not been made, that this is not mandatory in the level-1 requirements, that the conclusions of the reassessed seismic risk analysis had been incorporated into the basic project, that their technical dimensions are beyond the scope of the environmental impact assessment and, therefore, it is necessary to take account of them together with the project requirements defined by the competent authorities and relevant regulations,
- ✓ reported information on the Mochovce subprogramme in the framework of the Radman monitoring programme, in which radioactivity is monitored in the Hungarian territory up to

- a distance of 80 km from the Mochovce NPP and reported insignificant impacts of the MO 34 blocks, indistinguishable from natural background variability,
- ✓ with regard to air protection it stated that the population's exposure to radiation in consequence of gaseous discharges will not be measurable at a distance beyond 35 km from the source,
 - ✓ with regard to water protection it stated that radioactive emissions will not have adverse impacts on the population; it stated that the total (i.e. including discharges into the air) annual effective dose for an individual from the critical group (residents living at the confluence of the river Hron and Danube) was estimated at 4.3 nSv, i.e. this figure is negligible in comparison with the dose from natural background radiation,
 - ✓ stated that the environmental impact assessment does not analyse the impacts of cooling water abstracted from the river Hron from the aspect of nature and landscape protection, and drew attention to the natural area of the national park protected by law, particularly the Natura 2000 sites lying within the radius of 50 km from the power plant,
 - ✓ stated that in connection with incident management the competent Hungarian authorities have online access to information provided by remote monitoring stations and off-line access to radiological information from the Slovak side,
 - ✓ summed up all statements, opinions and concerns of the affected Hungarian municipalities and non-governmental organisations. From among the likely affected municipalities, the district notary offices of the municipalities Kemence and Bernecebaráti submitted their objections (letters ref. no. 466-2/2009 and 215-2/2009, both dated 05.10.2009) in view of the fact that most of the residents of the affected municipalities live from agriculture, primarily fruit growing. The Hungarian branch of Greenpeace and the Energy Club, two of the non-governmental organisations in Hungary submitted their objections to the Hungarian Ministry of Environment in a joint letter dated 07.10.2009. Their questions and concerns were discussed in detail in the framework of expert consultations and the main findings from these consultations are summarised in the final opinion.
 - ✓ stated that the implementation of the proposed activity will not entail any risks to public health. According to data (WHO / HFA 2009), the standard mortality indicators do not suggest a significant increase in the region at the Slovakia-Hungary border, compared with data from other regions of Hungary in the period 1992-2005,
 - ✓ it proposed providing data from 40 monitoring stations in areas 20 km from the Mochovce NPP to a competent Hungarian organization, to allow Hungarian authorities to set up and operate at least three of their own radiological measurement stations within a radius of 30 km from the Mochovce NPP and ensure data interchange from aerosol collectors operated by Austria in parts of Hungary and Slovakia,
 - ✓ proposed that the respective issues be discussed and implemented in the framework of a Slovak-Hungarian committee established by the SR Nuclear Regulatory Authority and the Hungarian Atomic Energy Authority,
 - ✓ proposed that systematic control of radioactive substance admissions be carried out in accordance with the cited Hungarian legislative regulation.

It stated the opinion that the planned construction of the Mochovce nuclear power plant blocks 3 and 4 is a potential source of possible nuclear risk. The adverse effects on the environment of the nuclear facility under normal operating conditions are very low and represent a minimal risk for Hungary. Nevertheless, any change from normal operation, however unlikely, may pose a serious risk to Hungary, and this risk must be reduced and controlled.

Furthermore the opinion as regards the evaluation of the environmental impact assessment report stated that the report does not entirely fulfil scientific and technical criteria. Even though it contains all the required particulars, in certain points it does not deal with the given issue in sufficient detail.

All replies to the questions raised by Hungarian experts during the consultations and also written references sent following these consultations were convincing and indicated that with regard to the analysis the environmental impacts under the power plant's normal operation are negligible and do not cross state boundaries.

Based on expert consultations, written references sent to the Hungarian party, and also based on expert literature, it is clear that the drafting of the environmental impact assessment report was preceded by a carefully conducted survey, partly under the supervision of the IAEA. Conclusions have been incorporated into the interim safety analysis and project supporting documentation, which have been approved by the Nuclear Regulatory Authority.

Following the addition of further information and documents during the course of expert consultations, the Hungarian party stated that the final conclusions of the environmental impact assessment report are acceptable.

Public opinions from Hungary on the proposed activity

The Ministry of Environment and Water of Hungary summarised all statements, opinions and concerns of the affected Hungarian municipalities and non-governmental organisations.

Municipalities **Kemence and Bernecebaráti** (letters no. 466-2/2009 and 215-2/2009, both dated 05/10/2009) are identical and express concerns: "because the majority of the residents in the affected municipalities live from agriculture and primarily fruit growing."

The Hungarian branch of Greenpeace and the Energy Club submitted joint comments (letter dated 07.10.2009):

- ✓ Construction work started without the environmental impact assessment process having been concluded.
- ✓ The projects for the reactors are from the 1970s and the safety is incomparable with that of modern-day reactors.
- ✓ The project has undergone a number of changes; therefore the whole licensing procedure should have been started anew.
- ✓ Several safety issues have not been answered.
- ✓ The impacts of unanticipated accidents have not been adequately assessed.
- ✓ Lack of containment.
- ✓ The effect of a large aircraft impact into the nuclear facility was not assessed.
- ✓ No satisfactory answer has been given to the question as to whether or not the Slatinka hydrostructure is necessary for the power plant's operation.
- ✓ The solution for spent nuclear fuel management is not stated; while this issue is not clearly addressed in terms of organisation or finance in the Slovak Republic.
- ✓ Information is lacking on the protection of the interim spent fuel stores. These facilities are more vulnerable to malicious attacks than the reactors themselves

Statements from Austria regarding the proposed activity

Federal Ministry for Agriculture, Forestry, Environment and Water Management, A - 1010 Vienna, Stubenbastei 5 (letter no. BMLFUW-UW.1.4.2/0091-V/1/2009, dated 15.12.2009)

It states in its opinion as regards the results of the consultations, sent to the Ministry of Environment the Slovak Republic, that: "... Against this background Austria assumes that the Ministry of Environment of the Slovak Republic will postpone preparing the final opinion until the aforementioned issues have been clarified, so that it may take into account the recommendations arising from expert consultation."

Austria also states that, according to information of the Slovak party, obtained in consultations, access to courts will be ensured for environmental organisations in the framework of the environmental impact assessment process, even for those organisations seated abroad. And this through the fact that they will have the status of a party in the approval process that follows the environmental impact assessment under the Slovak EIA Act, and will have the possibility, after exhausting all previous options, to turn to the respective court for the purpose of a review the environmental impact assessment process and its incorporation in the approval process.

Austria assumes that Slovakia will in future take all steps leading to a formal unambiguous and express codification of this right in the Slovak law.

This opinion was reaffirmed by the Austrian Embassy in Slovakia in an Aide Mémoire to the Minister of Environment of the Slovak Republic on 28.01.2010, in which it is stated that the questions of the Austrian party at the bilateral meeting on “Severe Accidents” were answered in a manner that cannot be described as sufficient, because certain questions remained unanswered due to the absence of a competent expert. Austria is convinced that the questions which remained unanswered in this issue, as well as other issues, will, as agreed, be discussed smoothly and with sufficient technical expertise and resolved within the framework of a bilateral agreement on the information exchange concerning nuclear safety. Austria reiterated its wish expressed in its letter of 15.12.2009 that the respective body of the SR Ministry of Environment wait before granting a final opinion on the effects of the proposed activity until the aforementioned issues have been clarified, so that any recommendations arising from the expert consultations may be implemented.

At the request of the SR Ministry of Environment, raised at the meeting of secretaries of state at the Ministry for the Economy held on 26.01.2010, the SR Nuclear Regulatory Authority, which was the coordinator and organiser of the above-mentioned bilateral meeting regarding severe accidents, on the same day issued a written opinion (*letter no. 258/230-31/2010*), in which it is stated, inter alia, that the organization of the seminar on severe accidents at the SR Nuclear Regulatory Authority and of the planned expert seminars on other issues stated is being conducted on the basis of a separate bilateral agreement with Austria, concerning exclusively the field of nuclear safety and therefore, in the opinion of the SR Nuclear Regulatory Authority, this and any further expert seminars on the aforementioned issues cannot be deemed a continuation of the EIA process, or an a prerequisite to completion of the whole EIA process. To the contrary, the Authority expressed the conviction that it is necessary to complete the EIA process as soon as possible so that the content focuses of individual processes do not become mixed.

Neither does the author of the expert opinion identify with the need to make issuance of a final opinion conditional upon the conclusions of consultations of experts from both parties under a separate agreement in the aforementioned fields, for the following reasons:

The issues concern the nuclear safety and are the content of the safety documentation, on the basis of which the SR Nuclear Regulatory Authority issued decisions no. 246/2008, 266/2008 and 267/2008. They will also be included in the subsequent safety documentation drawn up for the application for permission to commission the facility into operation and in the framework of the respective proceedings.

Supplementary questions from Austrian experts at the seminar on severe accidents mainly related to the detailed construction solution of certain equipment specified in the MO 34 project for management of severe accidents.

Statements as regards the assessment report on the MO 34 proposed activity from Austria

Federal Ministry of Agriculture, Forestry, Environment and Water Management in Vienna (letter no. BMLFUW-UW.1.4.2/0073-V/1/2009, dated 22.10.2009).

It stated that individual Austrian provincial governments had made the assessment report in Slovak and English available to the public, together with a brief summary of the assessment report for the assessed activity of MO 34. The Austrian public was able to inspect all documents in the period from mid-September to mid-October. In this period the affected authorities and public under § 10 (6) of the Austrian EIA Act, BGBl No. 697/1993 as amended by BGBl I No. 87/2009, had the possibility to express an opinion on the report.

Attached to the letter was the expert opinion (“Fertigstellung der Blöcke 3 und 4 des KKW Mochovce - Fachstellungnahme zur Umweltverträglichkeitserklärung”)⁷, Austria’s

⁷ A. Wenisch – O. Becker – H. Hirsch, - P. Seibert – A. Wallner – G. Mraz: Fertigstellung der Blöcke 3 und 4 des KKW Mochovce - Fachstellungnahme zur Umweltverträglichkeitserklärung. Report 0236. <http://www.umweltbundesamt.at/> - Umweltbundesamt GmbH, Vienna, 2009.

opinion on the MO 34 assessment report. The cover letter contained an attachment with the opinions of the affected authorities and Austrian public.

Opinions were received from individual federal lands as follows:

In the letter the Austrian party calls for, inter alia, bilateral consultations under Article 5 of the Espoo Convention.

From Vienna:

City Councillor Ms. Ulli Sima for the Vienna provincial government, the Vienna Ombudsman for the Environment as the City of Vienna's nuclear protection commissioner,

a further 204 000 opinions were received from the public and the Office of the Vienna Provincial Government. These are the opinions of private persons and non-governmental organisations such as Greenpeace Central and Eastern Europe, the Green Parliamentary Club, the Austrian Federation of Nature Conservation and the Science & Environment Forum.

Vienna's environmental protection represented by Dr. Andrea Schnattinger, the Vienna's Ombudsman for the Environment, and Ms. Ulli Sima, Vienna City Councillor for the Environment submitted identical comments (*letter ref. no. 52 045-1277hp*, received on 23.10.2009):

- ✓ Due to the long period of construction and its interruption, problems arise in the continuity of project management. In addition to this, there has been degradation of the building components and technological parts as a result of ageing.
- ✓ Obsolescence of the generation II VVER 440/213 reactors.
- ✓ Absence of full containment.
- ✓ Unanticipated accidents - the likelihood is irrelevant, what is more important are the maximum possible impacts.
- ✓ Management of spent fuel and radioactive waste from the operation; decommissioning of the plant. These aspects are of paramount importance for Vienna's residents, as is the transportation and processing of fuel.
- ✓ Seismic design of VVER 440/213 does not meet ordinary international standards.
- ✓ Spatially unsuitable arrangement of axes in relation to the reactor.
- ✓ Electrical cabling and fire prevention plans do not correspond to the state of technology.
- ✓ Planned 40-year versus the projected 30-year operation period.
- ✓ Lack of data on management of anticipated and unanticipated accidents.
- ✓ In connection with the formal requirements of the process, the possibility of access to courts is elaborated rather modestly.

Green Parliamentary Club, represented by the Member of the Austrian Parliament Ms. Christiane Brunner, spokesperson for the environment (*letter no. MA 22 - 1030/2009, dated 07.10.2010*) had the following comments:

- ✓ Construction work started without the environmental impact assessment process having been concluded.
- ✓ No review of alternatives - a non-nuclear alternative should be submitted, e.g. drafting an alternative to the MO 34 completion, for example in the form of an energy strategy that would propose a reasonable energy mix for the Slovak Republic.
- ✓ The argument that much of the data (e.g. data on emissions and water consumption, etc) can be taken over from MO 12 is untenable, since numerous changes are planned for MO 34.
- ✓ Questions regarding safety are answered too generally, describing the manner of the VVER 440/213 type reactors' working without giving the specifics of the planned reactors, which will contain various innovations. In terms of the environmental impact, the project has considered only a limited spectrum of anticipated accidents.
- ✓ From the statement on the environmental impacts for Mochovce 3 and 4 the transboundary impacts of severe accidents cannot be estimated.
- ✓ The issue of a collision of large aircrafts is not clarified.

- ✓ The strategy for spent nuclear fuel management is insufficiently described.
- ✓ Issues of damage compensation in the case of minor and major accidents are inadequately described.

Forum of Austrian Scientists for Environmental Protection represented in Vienna by its President, Dr. Peter Weish, (letter reg. no. 52046-1277hp, received on 23.10.2009) submitted the following opinions and comments:

- ✓ Completion of MO 34 represents for Austria a transboundary threat.
- ✓ Austrian experts have differing opinions as to the size of the risk from MO 34, but are consistent in that that it would be better not to complete MO 34 if there were alternative solutions to meeting the energy needs.
- ✓ In order for the impacts of severe accidents to be eliminated in Austria, or maintained at the lowest possible level, it is necessary to take measures in Austria, too, for averting disaster.
- ✓ Recommendations to the Slovak side are primarily focused on win-win projects instead of lose-lose projects, as represented by the MO 34, from which profits only the Western nuclear industry.
- ✓ The nuclear energy industry worldwide has proven to be a technical blind alley, creating more problems than it solves.
- ✓ Western reactors are not safe at all, despite having certain technical devices for eliminating and mitigating damage. combining Soviet design reactors and Western technology will result in a hybrid with unknown system properties.
- ✓ In the densely populated areas of central Europe the possibilities of coping with the consequences of a disaster in the event of an accident on the reactors are considerably more complicated than in the case of Chernobyl.
- ✓ Estimating the nuclear risk is essentially not possible with regard to the interconnection of accidents and unknown system properties.
- ✓ After the accidents at Three Mile Island and Chernobyl, it is clear that in the event of a major nuclear disaster a small country with a large part of its territory contaminated would lose its sovereignty. In this regard nuclear energy in a small country takes on a new dimension of danger, putting the existence of a nation and culture at stake. In the case of Mochovce this applies not only for Slovakia, but also for Austria.
- ✓ The assessment report does not cover the impacts from uranium mining through to waste processing.
- ✓ The report should contain in tabular form anticipated and unanticipated accidents.
- ✓ For each type of unanticipated accident, state the maximum releasable quantities of radionuclides, their types and toxicity, calculations of their dispersal and subsequent transboundary fallouts.
- ✓ In the event of an accident with transboundary consequences, the report must state to what degree the operator is able to pay damage compensation.
- ✓ The report must describe a zero option and alternative options to the planned completion of MO 34.
- ✓ Problems with the amount of water needed for cooling during periods of low water levels are not analysed.
- ✓ The consequences of seismic events have not been sufficiently analyzed.
- ✓ According to the report, highly active waste will be stored in a repository at Jaslovské Bohunice. This repository, however, has not been set up.
- ✓ A more detailed technical description of technical deficiencies is given in the appendix to the opinion (physical separation and independence of safety systems, twin-block arrangement (with a shared engine room, fresh fuel store, gantry cranes and certain other systems), the bubbler system, the lack of containment, reactor trip function, parallel orientation of turbines, old project for fuel, absence of a "trap" for a molten core, the

project uses an analogue system of control management, large values of gaseous discharges into the atmosphere under normal operation).

From Lower Austria:

Lower Austria province, represented by the Provincial Government (DI Friedrich Rauter) a further 320 statements were received at the Office of the Lower Austrian Provincial Government. These are the opinions of individuals, municipalities and municipal councils, and non-governmental organisations such as the Green provincial parliamentary club.

Office of the Provincial Government of Lower Austria, construction management group - environmental equipment unit, represented by Friedrich Rauter, anti-nuclear coordinator for the Lower Austria province (e-mail:post@ma22.wien.gv.at, dated 06.10.2009) submitted the following comments:

- ✓ In the case of severe accidents it is necessary to reduce the probability of their occurrence and reduce the consequences of such accidents.
- ✓ 440/V213 VVER reactors are not equipped with full containment. The containment they are fitted with has much lower protective efficacy and resistance (e.g. only small aircraft impact resistance). Other advantages of this solution, while stated, are not explained.
- ✓ The ageing of the construction and technological parts (many of which are more than 25 years old) leads to the question as to whether, with regard to the planned extended operation to 40 years, these parts will undergo thorough re-testing and verification of their functionality and safety.
- ✓ High-voltage cabling is conducted partially in parallel with no physical separation. There are no measures stated for preventing incidents in which a breakage on one would cause damage to the other line.
- ✓ Significant improvements to fire protection are mentioned only briefly.
- ✓ The stated electric output of 471 MW on the block is significantly higher than the originally planned 440 MW. There arises the question as to which output will form the basis in licensing the operation and whether the electrical equipment is dimensioned for the higher output.
- ✓ In the case of spent nuclear fuel management, extensive mention is made of the importance of interim storage and the national deep-underground geological repository. In each case consideration is also given to the option of exporting the fuel abroad. This, nevertheless, does not solve the problem but simply shifts the solution of a significant part of the waste into the future.

From Burgenland:

- 69 statements from the public were received at the Office of the Provincial Government of Burgenland.

From Upper Austria:

- The province of Upper Austria, represented by the commissioner Anti-Atom Radko Pavlovec.
- a further 4350 statements from the Austrian public (individuals, municipal councils, and non-governmental organisations) were received at the Office of the Provincial Government of Upper Austria,
- a further 314 statements from the German public and 114 statements from other countries were received at the Office of the Provincial Government of Upper Austria.

Office of the Anti-Nuclear Commissioner represented by Mr Radko Pavlovec, anti-nuclear commissioner had the following comments (letter ref. no. 52063-1277hp, received on 23.10.2009):

- ✓ Slovak Act no. 24/2006 Coll. is at variance with EU law and therefore considers the whole process as illegal and calls for its suspension.
- ✓ They consider the submitted assessment report to be “totally inadequate”.

- ✓ The SR Ministry of Environment approved the proponent's request without regard to a zero alternative or alternative scenarios. He requests that consideration be given to alternative renewable and thermal sources. For these reasons they request that the objective be abandoned.
- ✓ The reactor lacks safety casing (containment).
- ✓ The report does not address the disposal of highly active waste and spent nuclear fuel.

Wolfgang Goebel, a citizen of Vienna, (opinion received at the SR Ministry of Environment on 23.10.2009) submitted the following comments:

- ✓ The effects of aging on the conserved parts of the installation.
- ✓ Lack of containment (protective casing).
- ✓ Aircraft impact, possibly as a result of terrorist attacks.
- ✓ The location and the reactor itself must be examined in more detail, or an assessment made with regard to earthquake resistance.
- ✓ Problematic arrangement and routing of electric cabling (insufficient fire protection) must also be examined more closely.
- ✓ It is necessary to carry out a cross-sectional examination of the parallel routing of high-energy coolant pipes from the safety aspect.
- ✓ A more extensive explanation is needed of the disposal solution for the radioactive waste created.
- ✓ The presentation of alternatives and a zero option.

Lothar Berlich, a citizen of Gross Thondorf, Germany (opinion delivered to the SR Ministry of Environment on 23.10.2009)

He requests that his opinion against the realisation of the blocks 3 and 4 at the Mochovce nuclear power plant be forwarded to the responsible bodies in the Slovak Republic by means of the Federal Ministry of Agriculture, Forestry, Environment and Water Management of Austria.

He submitted the following comments:

- ✓ Nuclear safety - the reactor lacks safety casing (containment).
- ✓ No alternatives for electricity supply have been presented.
- ✓ Radioactive waste - from the information on the disposal of highly radioactive waste it results that Slovakia does not have a demonstrable plan for disposal of highly-active waste.
- ✓ He objects that the Slovak Act no. 24/2006 Coll. violates the applicable EU law - it is in contravention of it. In particular, that it is in contravention of Article 10a of the Environmental Impact Assessment Directive no. 85/337/EEC.

From Salzburg:

- The Salzburg Province, represented by the Provincial Government (Dr Constanze Sperka-Gottlieb),
- a further 102 statements from the public were received at the Office of the Provincial Government of Salzburg, between the Austrian Association for Nature Conservation and Salzburg Platform Against Nuclear Hazards.

On behalf of the Provincial Government Dr. Constanze Sperka-Gottlieb submitted the following comments (letter no. 216-02/48/81-2009 dated 02.10.2009):

- ✓ Concerns that the interruption in the construction will prevent continuity of project realisation and documentation.
- ✓ The conserved parts of building have been and are exposed to degradation processes.
- ✓ The completion is a cost-effective solution and this evokes fears as to whether savings will be made at the cost of safety.
- ✓ Absence of full containment.
- ✓ Lack of information on accidents in the case of the anticipated accidents, which are relevant for Austria.

- ✓ Severe accidents with significant transboundary impacts on Austria cannot be excluded.
- ✓ In connection with the spent nuclear fuel repository, the report contains only vague statements as to how this is to operate.

Konrad Egger, citizen of St. Leonhard (letter ref. no. 52054-1277hp, received on 23.10.2009) submitted the following comments:

- ✓ Lack of containment (protective cover).
- ✓ Open questions regarding earthquake resistance.
- ✓ The effects of aging on the conserved parts of the installation.
- ✓ Unresolved issues in the case of the potential collisions of aircraft into the nuclear power plant.
- ✓ Insufficient fire protection.
- ✓ Inadequate safety margins on the bubbler condenser.
- ✓ Problematic arrangement of electric cabling in the VVER-440/213 project.
- ✓ Unresolved questions regarding the radioactive waste disposal.

From Styria:

The Styria Province represented by Commissioner for Radiation Protection (Kurt Fink) A further 19 statements were received from the public at the Office of the Provincial Government of Styria, though they were not delivered in time to the contact point according to the Espoo Convention, and therefore were not in the annex.

Expert-technical service of the Office of the Provincial Government of Styria, represented by Mr Kurt Fink, Commissioner for Radiation Protection (letter no. FA17B-54.2-5/2007-9, dated 01.10.2009) had the following comments:

- ✓ The reactor lacks safety casing (containment).
- ✓ Major fire hazard at the new blocks.
- ✓ Low seismic resistance of buildings, request for seismic review of the site.
- ✓ In the case of severe accidents, Styria and its residents could be affected.

From Carinthia:

25 statements were received from the public at the Office of the Carinthian Provincial Government, including the opinion from Green Carinthia.

Gerald Smolle, citizen of Friesach (letter no. 52051-1277-hp, received on 23.10.2009) submitted these comments:

- ✓ Construction work without the environmental impact assessment process having been concluded.
- ✓ No examination of alternatives.
- ✓ Questions regarding safety are answered too generally, describing the functioning of the VVER 440/213 type reactors without giving the specifics of the planned reactors, which will incorporate various innovations. In terms of the environmental impact, the project has considered only a limited spectrum of potential accidents.
- ✓ The issue of a large aircraft impacts is not made clear.
- ✓ The argument that much of the data (e.g. data on emissions and water consumption, etc) can be taken over from MO 12 is untenable, since numerous changes are planned in the case of MO 34.
- ✓ Inadequately described spent nuclear fuel management strategy.
- ✓ Damage compensation in the case of minor and severe accidents is very low.

From Vorarlberg:

3 statements were received from the public at the Office of the Vorarlberg Provincial Government, including the Vorarlberg Association for Nature Conservation.

Harald Mark, citizen of Nenzing (letter no. 52050-1277-hp, dated 23.10.2009) submitted the following comments:

- ✓ No examination of alternatives.
- ✓ Obsolete project for the reactors and ageing of conserved building and technological parts.
- ✓ No scenarios for severe accidents.
- ✓ MO 34 can withstand only a small aircraft impact.

Opinions from the Federal Republic of Germany

The SR Ministry of Environment received from the Federal Republic of Germany a joint opinion regarding the proposed activity from the Bund für Umwelt und Naturschutz e.V. (BUND) and the Bund und Naturschutz in Bayern e.V. (BN) (letter ref. no. 46398-1277hp, dated 06.10.2009), containing the following comments:

- ✓ The reactors at Mochovce do not correspond to the state of science and technology. Conceptual weaknesses (“structural defects” are mentioned) are known and do not permit significant improvement.
- ✓ No alternatives to electricity supply are given. As can be seen from the EU data, the Slovak Republic makes almost no effort to exploit water, wind or solar power.
- ✓ The number of nuclear power plants in Europe has been drastically reduced and, with few exceptions, most countries are withdrawing from nuclear power or not using it. Uranium is coming to an end throughout the world.
- ✓ The radioactive waste disposal is not solved in Slovakia, or in other countries. They also reject interim storage and other temporary solutions and the export of problems abroad or their being passed onto future generations.
- ✓ They protest that Germany has not been involved in the transboundary assessment.
- ✓ The EIA proceedings have taken place under Slovak Act no. 24/2006 Coll. which is at variance with EU law.

Other opinions on the proposed activity

Commission of European Communities - Commission recommendation of 15.7.2008 under Article 43 of the Euratom Treaty on the project to complete blocks 3 and 4 of the Mochovce nuclear power plant in the Slovak Republic (No. C (2008) 3560)

Slovenské elektrárne in accordance with Article 41 of the Euratom Treaty of 16.07.2007 notified the Commission of the capital project concerning completion of blocks 3 and 4 of the Mochovce nuclear power plant. The Commission's recommendation is as follows:

The Commission, on the basis of the assessment and intensive negotiations with the investor, as well as with the national regulator, has taken the opinion that provided that the necessary additional measures recommended in this opinion are taken, the proposed investment meets the objectives of the Euratom Treaty.

As regards project's safety, the Commission notes, inter alia, in paragraphs 8 a, b:

- a) Where an opinion is to be issued regarding new equipment, given the fact that there is no EU-wide legislation on the safety of nuclear facilities, it entails that the opinion must be based on the application of the national legislation as well as a recognized international best practice.
- b) The Commission noted that the basic project for blocks 3 and 4 is based in many aspects on the original project for blocks 1 and 2. This project is, in turn, based on VVER technology with subsequent development of VVER technology, the modernisation of which has been successfully carried out in the case of existing VVER reactors in several countries thanks to which sufficient protection against internal incidents has been achieved.

The Commission emphasises that it remains the sole responsibility of the investor to ensure that the selected project will provide an equivalent level of protection as that provided by “full containment”. It may be expected that the level of protection provided by full-containment structures will become the standard practice for the most modern future projects solutions for

all new nuclear power plants in the EU. This level of protection has been applied in recent construction projects reviewed by the Commission.

To this end, the Commission recommends that the investor in close cooperation with the national authorities:

1. in line with international best practice, develop a reference scenario including the intentional effect from an external source (e.g. small aircraft impact)
2. working from this, in the framework of the design basis of the proposed investment, evaluate and implement appropriate additional elements, functional potential and a management strategy for resisting potential intentional effects from an external source (e.g. malicious small aircraft impact), so as to bring the project into line with current best practice.

The Commission also stresses the importance of diversifying the supply sources in the aspect of secure supply of nuclear fuel for the whole EU nuclear industry, as well as proper management of funds intended for financing decommissioning the nuclear facilities and for management of spent nuclear fuel and radioactive waste in accordance with the Commission's recommendation⁸.

Opinions from Poland regarding the proposed activity

Directorate General for Environmental Protection, based in Warsaw - the central government body responsible for ensuring Poland's participation in transboundary hearings under the Espoo Convention – formal final opinion (letter no. DOOSsoos-082/2114/1349/09/pf dated 30.10.2009) - writes, inter alia, that on the basis of information received, as well as on an analysis of the formal-legal and meritorious scope of the documentation submitted, as well as taking into consideration the assumptions and concerns of the Polish side (letter no. DOOSsoos-82/429/216/09/pf dated 11.05.2009) which largely decided on the Polish side's accession to the transboundary proceedings, states the following:

- under normal operation the investment does not represent a significant adverse transboundary impact on the territory of Poland,
- on the basis of the assessment report the radiation safety of Poland will be preserved under normal operation and in the case of an accident,
- Poland has no substantive comments or objections with regard to the planned commissioning into operation and the operation of the MO 34 nuclear power plant,
- 6 comments regarding the Polish version of the plain text of the final summary concerning spent nuclear fuel storage, liquid radioactive waste management, the issue of water abstraction from the Kozmálovce water reservoir and the special system of gas purification,
- warning of terminological errors leading to incongruity in information.

Based on the above it may be said that **the final conclusions from the environmental impact assessment report are acceptable** also for Poland

5. Preparation of the expert opinion under § 36 of the Act

The expert opinion was prepared on the basis of appointment by SR Ministry of Environment, letter no. 1277/2009-3.4/hp of 10.11.2009, by the firm **DECOM, a. s., Sibírska 1, 917 01 Trnava**, whose authorised representative is **Ján Timuľák, CSc.**, general director and the chairman of the board of directors. The firm is registered as a legal entity in the list of professionally qualified entities under no. 33/02-OPV-PO 441/2006 - OPV pursuant to § 9 of the SR Ministry of Environment Decree No. 52/1995 Coll. (as amended by Decree No. 113/2006) on the list of professionally qualified entities for the environmental impact assessment of activities.

⁸ Commission Recommendation 2006/851/Euratom, OJ EU L. 330, 28.11. 2006, pg. 31 – 35.

Due to the fact that the assessed activity is the subject of extraordinary interest to the professional and lay public, as well as on the basis of the nature of the impact of the proposed activity on the environment and human health, the respective body - the SR Ministry of Environment - recommended the professionally qualified entity DECOM, a.s. (*in the form of a list of names in the annex to the assignment*) to expand its solutionist team so as to include other professionally qualified persons registered under specific regulations in the field of public health and transboundary experts with experience in nuclear energy.

The solutionist team, engaged in drafting the opinion, comprised a group of experts of internal staff of the appointed company DECOM, PLC: Ján Timuľák, CSc. (director), Igor Matejovič, CSc. and Peter Salzer; external local staff: Ludmila Auxtová and Štefan Rohár and external foreign staff: Prof. Helmuth Böck (Austria) and Peter Ormai (Hungary) (hereinafter simply the "opinion's authors").

The opinion's authors drafted the expert opinion and the draft final opinion on the basis of the submitted documentation – the Assessment Report (including all its annexes), its addendum under § 35 (5) and (6) of Act no. 24/2006 Coll., opinions received, documentation and records from the public hearing of the assessment report and transboundary consultations, requested supplementary specialised studies, or expert opinion, supplementary information from the proponent, consultations with Slovak and foreign experts, the relevant environmental legal regulations and own knowledge and information in the given field.

The assessment report was drafted in the scope of 478 pages of text with diagrams and tables and the annexes: 0.1 - 0.8 (Building permit and decisions of the authorities, scope of the assessment and basic legislation in the energy sector), 1 Ownership relations, 2.0 (Map documentation), 3.1 (Photo documentation of the current state), 4.1 (Assessment of the radiological impact of radioactive discharges from the operation of the 4 Mochove NPP reactors), 4.2 (Report on the control of radioactivity around the SE-EMO for 2005, 2006, 2007 and 2008) and 5.1 - 5.10 (Thematic blocks). A plain text final summary is given in Annex X.

The content and structure of the text is drafted according to Annex 11 of the Act and the prescribed scope for the assessment, and includes furthermore incorporated chapters "Programme Framework" and "Project Framework". This division is, nevertheless, at the expense of clarity, since the data regarding the individual spheres of problems in these chapters is found at multiple places of the report (not always accompanied by references), is repeated, some is again repeated in annexes, and is drafted differently in different places and sometimes differs in the use of professional terminology, which, moreover, is not always correct.

The content and structure of the text part is written with varying depth and level of professional content in individual chapters, not always of satisfactory quality, but nevertheless sufficiently capturing all essential facts that may impact on the environment in connection with the implementation of the proposed activity. An exception are the consequences of unanticipated accidents and their transboundary effects, which were sufficiently clarified at public hearings.

Extensive annexes to the assessment report provide a sufficient picture of the spatial arrangement and technological solution of the proposed activity and on the level of nuclear safety and radiation protection, and adequately support individual statements regarding the expected impacts of the proposed activity on health and the environment. It should be noted that for the assessed sphere of the issue the relevant annexes 4 and 5 are at a qualitatively higher level than the relevant part of the report's text.

The quality of the assessed report would significantly increase by a substantial revision of the text's breakdown and terminology, harmonisation/unification of terms used in individual parts and annexes, as well as stylistic editing of the text. It is clear that many of these shortcomings arose through unprofessional translation of certain parts of the text from English into Slovak and vice versa, possibly by multiple translations, where the text was not then edited and harmonised in terms of the respective expert terminology in the Slovak language. As a result, the text contains technical errors at first glance. There were pointed

out not only by Slovak, but also foreign parties from Poland, Hungary and Austria in the transboundary consultations.

The report deals with an activity of a great public interest, was distributed in the presented version abroad and the facts given in it led to undesired doubts as to the whole project objective and work of experts involved in the preparation of supporting documentation and sub-reports (see in particular the statements and comments from some members of the public as well as non-governmental organisations).

Despite the stylistic and terminological shortcomings of some of its parts, and despite the substantial degree of opacity, it is, nevertheless, a document that provides comprehensive information on the impacts entailing from the proposed activity, even if it is very difficult to find related thematic units and the relevant data in them. All environmental assessments have been carried out with regard to the impact from the operation of all four blocks.

Non-governmental conservation associations and activists (Slatinka Association - *letter ref. no. 1277hp-43210 dated 21.09.2009*, Association of Friends of Slatinka - *letter ref. no. 1277hp-43543 dated 22.09.2009*, Energy 2000 - *letter ref. no. 1277hp-42817 dated 17.09.2009*, For Mother Earth - *letter ref. no. 1277hp-44704 dated 28.09.2009*, Greenpeace Slovakia - *letter ref. no. 1277hp-44988 dated 25.09.2009*, Mr Jozef Križan - *letter ref. no. 1277hp-44157 dated 25.09.2009*, Greenpeace International represented by Jan Haverkamp - *letter ref. no. 1277hp-44135 dated 24.09.2009*), who expressed an opinion in the framework of the assessment process, were in all their statements opposed to the implementation of the proposed activity and/or in favour of drafting a new assessment report in line with their comments and a new public hearing.

According to § 35 (5) of Act no. 24/2006 Coll. the Ministry asked the proponent (*letter no. 1277/2009-3, 4/hp dated 01.10.2009*) to supplement the assessment report so as to include comments arising from these statements. The proponent responded to 196 of the comments from civic associations, the public and the affected public in a 78 -page Addendum to the Report, which it delivered to the Ministry on 02.11.2009 (*letter no. SE/2009/120678*).

Several comments focused on the unsystematic nature of the report's drafting, its stylistic and terminological shortcomings, deficient translation, etc, which had been criticised also in the expert opinion, on the safety aspects of the power plant, the unresolved back-end of the nuclear energy sector, the procedural legality of the EIA in this proposed activity, etc. Certain comments were strongly emotionally charged, even irrational, while others represented solely the strictly anti-nuclear attitudes of their authors. These are not included in this statement. Commenters often responded to a problem at its first mention in the text, whereas the topic was usually developed in greater detail and substance in later parts of the report or addenda.

Several associations and individuals were dissatisfied with the quality and scope of the proponent's answers (according to expert opinion this criticism in certain cases was justified) and clearly indicated their disapproval in writing to the SR Ministry of Environment (Energy 2000 - *letter dated 17.12.2009*, Greenpeace Slovakia - *letter no. 1277hp-59024 dated 25.11.2009*, Greenpeace International, represented by Jan Haverkamp - *letter no. 1277hp-58648 dated 30.11.2009*, Jozef Križan - *letter no. 1277hp-57664 dated 25.11.2009*).

It should be stressed that at public hearings on the report, including transboundary consultations, the proponent's experts had prepared presentations with expert interpretation regarding key comments on the proposed activity, and in discussions explained matters in more detail and provided more detailed information.

Several comments from Slovak and foreign participants in the process, as well as misunderstandings with the proponent resulted, according to the expert opinion, from an insufficiently clear dividing line between the safety documentation and the EIA documentation, and their logical substantive intersection in the field of nuclear and radiation safety and impacts on human health and the environment.

In the process of assessing the proposed activity under the Act, several statements received regarding the report (but not its addenda), throughout the whole assessment process, expressed consent (with the exception of the Austrian party, and the unclear opinion from the Ukraine and from Slovak and foreign non-governmental organisations, environmental activists and the Austrian public – citizens) to the implementation of the proposed activity at the given locality. The proponent responded to all opinions openly, professionally and appropriately.

A more detailed description of the evaluation of the proponent's responses to statements under § 35 of Act no. 24/2006 Coll. is given in the expert opinion of the assessment report as drawn up pursuant to § 36 of that Act.

Several opinions were incorporated in the preparation of the recommended conditions for construction and operation stage of the proposed activity, particularly respecting fully the comments and requirements of the administrator of the affected watercourses in accordance with applicable permits and statutory provisions as expressed in the statement of Slovenský vodohospodársky podnik, š.p. (*Slovak Water Management, state enterprise*), Banská Bystrica.

The results of the environmental impact assessment process for the proposed activity under Act no. 24/2006 Coll. sufficiently proved that the implementation of the proposed activity is in accordance with applicable generally binding legal regulations, standards and criteria of permanent sustainability and a bearable human-environmental burden. Actual or potential adverse impacts of the proposed activities that were identified in the assessment are acceptable or can be eliminated, or can be limited by carrying out the proposed measures and creating the conditions for their exclusion or reduction, as set out in the report and reflected in the draft final opinion.

The comprehensive assessment of the expected impacts has been conducted in a not entirely clear and orderly manner. The findings of positive and adverse effects from the activity and their interaction are, however, sufficiently elaborated.

The submitted report, despite several justified comments in statements from authorities, the public and the affected public, comments from transboundary consultations and comments from the author of the expert opinion, does nevertheless prove the environmental effects of the proposed activity to a sufficient degree so that on the basis of this report it is possible, following fulfilment of the conditions in the SR Nuclear Regulatory Authority Decisions no. 246/2008, 266/2008 and 267/2008, and following assessment by the Nuclear Regulatory Authority of the respective documentation and readiness, to decide in favour of commissioning MO 34 into operation.

All the mentioned adverse impacts, whether actual or potential, are, in the opinion of the assessor, acceptable in comparison with the advantages of the region's evident socio-economic development.

The assessment report describes sufficiently well also the "Safety Improvement Programme of the Mochovce NPP 34 Project". In addition to this, at each public hearing supplementary information was presented on the conceptual approach and on the main fields, in which the improvement in safety of the Mochovce NPP 34 project was focused in comparison with the MO 12 project (whose safety level was taken as the starting point for further improvement in safety).

As regards the controversy concerning the comparison of the level of the MO 34 project and projects for generation III nuclear power plants, which are in construction today, it may be said that the MO 34 project is, from the safety aspect, comparable in the field of certain characteristics with generation III reactors, for example reinforcement against the consequences of severe accidents, reduction in the likelihood of reactor core meltdown to below the value of 1×10^{-4} per year, minimisation of radiation consequences on the external environment, seismic reinforcement. In the field of economic characteristics such as the unit power output per block, fuel burn-up, service life, standard project for licensing, generation III reactors have higher parameters than the Mochovce NPP 34 project.

The opinion's authors identify with the motion of the independent group of nuclear reactor safety experts from the IAEA, France, Germany, Russia, Austria and Italy, who reviewed the *MO 34 Safety Concept*, processed by the organisations VUJE Nuclear Power Plant Research Institute Trnava and Rež Nuclear Research Institute (Czech Republic) for this evolutionary project, that none of the evaluated project aspects that were the subject of assessment and discussion prevent the Mochovce blocks 3 and 4 from achieving a very high standard of safety and protection of personnel, inhabitants and environment in accordance with current applicable international standards.⁹ This expert group operated at the time of preparing the feasibility study for MO 34 completion at the initiative of Slovenské Elektrárne, PLC.

Based on the comprehensive assessment of the environmental impacts of the proposed activity, including socio-economic impacts in the affected area, the energy interests of the Slovak Republic, as well as with regard to the state of works under construction, the opinion's authors recommended the assessed variant "Nuclear Power Plant Mochovce VVER 4 x 440MW – 3rd Structure", i.e. commissioning and operation of the 2 MO 34 blocks with a power output of 2 x 440 MW, under construction at the site of the Mochovce nuclear power plant, by using the existing permits; and whose socio-economic and nationwide advantages greatly exceed the acceptable environmental impacts in comparison with the zero option, i.e. continuation of the operation of the MO 12 NPP without commissioning MO 34 into operation.

A prerequisite is compliance with the conditions resulting from the assessment process, and at further stages of the proposed activity's preparation the solution and supplementing of the comments raised by the affected parties in the assessment process and which are listed in point VI (3) herein. However, an essential condition for granting permission for commissioning the nuclear facility and subsequent licence for its operation will be the fulfilment of all conditions under the aforementioned decisions of the SR National Regulatory Authority nos. 246/2008, 266/2008 and 267/2008.

IV. COMPREHENSIVE ENVIRONMENTAL AND HEALTH IMPACT ASSESSMENT OF THE PROPOSED ACTIVITY

The environmental impact assessment report evaluates the expected increase in the effects on the environment and human health following completion and commissioning of the MO 34 nuclear facility.

The evaluation is based on actual data on the activity of individual radionuclides in discharges into the atmosphere and hydrosphere during the operation of the MO 12 reference nuclear facility and on actual parameters affecting their transport from the source of discharges through to the residents in individual municipalities in the surroundings of the Mochovce nuclear power plant.

The impacts of the proposed activity on the affected area were comprehensively documented on the basis of a detailed review of all submitted materials and statements of interested parties. The anticipated impacts of the proposed activity on the environment were divided into radiation and non-radiation. They were evaluated from several aspects - direct, indirect and cumulative, positive and adverse. This section evaluates the impacts of the proposed activity from the aspect of individual environmental components.

The effects of radioactive discharges under normal operation, or leaks in the case of anticipated incidents and major accidents

For the four operated blocks of the nuclear power plant at Mochovce it may be assumed that the balance values for annual limits of gaseous discharges (activity of radioactive noble gases, ¹³¹I in gas and aerosol and the mixture of radionuclides other than

⁹ Safety Board Final Report, No. PNM34080125, December 2007

¹³¹I -with a half life of less than 8 days - in aerosols) and balance values of annual limits of liquid discharges (activity of tritium and fission and corrosion products, other than tritium) will be double the present limits of MO 12. If the discharges were to be at these values, the effective dose for an individual from the critical population group under normal operating conditions calculated using the validated program RDEMO would stand at approximately 1.8% of the statutory limit value of the annual load of effective dose for an individual from the critical population group, i.e. 250 µSv.

Should the discharges be double the actual values discharged from Mo 12 over the recent years, the effective dose for an individual from the critical population group would be approximately 20 times lower. The value of the effective dose will even in the case of discharges at the limit values be about three orders of magnitude lower than the effective dose to the population coming from external and internal radiation from natural radiation sources.

As regards the impacts of anticipated incidents, a decision in the statement of the District Office of Public Health OOZPŽ/8155/2006 issued in 2007 by the Office of Public Health for MO 12 set reference values - criteria below which these values may be considered controlled by design solutions: 50 mSv of effective dose and 250 mSv of dose in the thyroid gland. Safety analyses carried out in accordance with the U.S. Nuclear Regulatory Authority Regulatory Guide 1.70 and the Safety Instructions of the SR Nuclear Regulatory Authority, under conservative assumptions in incidents scenarios anticipated in the project (LOCA and PRISE – rupturing of the steam generator's lid) and using the RTARC code for calculating external consequences of incidents, it was shown that the effective dose values at a distance of 2 km or 3 km are well below the prescribed reference values.

During the public hearings information was provided on the impacts of unanticipated accidents, which were analysed in the Mochovce NPP 34 project, on their radiation consequences and the consequences of their sequences. The issue was also the subject of a monothematic expert seminar organised in the framework of a Slovak-Austrian bilateral agreement on issues of common concern in the field of nuclear energy. At request of experts on both the Hungarian and Austrian sides, data on the transboundary impacts of severe accidents anticipated in the MO 34 project was also prepared and provided. The information was based on data given in the Preliminary Safety Report for MO 34, in which it is stated that the transboundary impacts expressed in effective dose values for 7 days from the start of an accident for the unsheltered population from a sequence initiated by a blackout (which has greater radiation consequences) is approximately 4.3 µSv at a distance of 35 km from the accident-stricken block (Hungary), or approximately 0.83 µSv at a distance of 100 km from the accident-stricken block (Austria). These values are about three orders of magnitude lower than the reference values of emergency levels for urgent action (Annex 10 of Government Regulation no. 345/2006 Coll.)

From this it results that:

- the consequences of radioactive discharges under normal operation are insignificant for inhabitants,
- anticipated accidents are, according to project solution, manageable so that there is no inadvertent exposure of the residents at a distance of 2 km or 3 km from the point of leakage,
- consequences of large-scale disasters on the boundaries of neighbouring states will not require the implementation of urgent intervention actions with regard to the reference values as set by Slovak legislation.

Impacts on inhabitants

The assessment report gives a comparison of data on the state of health of inhabitants living in the Levice, Senica and Dunajská Streda districts, comparing the impact on the state of health of the inhabitants as demonstrated by the incidents of cancer in the period before and after the start-up of the first two Mochovce NPP blocks. Statistical data from the Levice, Senica and Dunajská Streda districts on the incidence of cancer from the period before and after the start-up of the two Mochovce NPP blocks sufficiently proves that

the present operation of the Mochovce nuclear power plant has not proven any adverse impact on the state of health of residents of the monitored Levice district. Though the chosen form of data presentation from the National Cancer Register does not differentiate among cancer types, the fact is that no epidemiological study around the world conducted in the vicinity of a nuclear power facility demonstrated, at the effective dose levels to which the population in the vicinity of Mochovce could be exposed (see above), effects on the incidence of thyroid gland disease, leukaemia or other cancers.

The cost of a study that would examine relations between the incidence of cancer diseases and the effect of the nuclear power station's operation has no scientific justification. Therefore it is possible to accept unconditionally the conclusions of the relevant section of the report that is it not possible to distinguish the number of deaths from natural causes from deaths due to the presence of the Mochovce NPP, as the use of the calculated annual effective dose values in estimating the cancer risk in inhabitants leads to a result of approximately 1 case in 100 million inhabitants.

Impacts on the rock environment

The construction activity is approximately 70% complete and the proposed activity will be mostly implemented inside the already constructed parts, so the rock environment cannot be affected in any significant way. Operation of MO 34 will not affect the rock environment.

Impacts on the air and climate change

Implementation of the proposed activity will have an effect on the atmosphere at a local level. These impacts will be a result of the release of combustion products (NO_x, SO_x a CO₂) and water vapour emissions from the cooling towers. A nuclear power plant is not a significant source of conventional emissions discharged into the atmosphere, such as NO_x, SO_x, CO₂ and particulate matter. The main sources of such emissions during operation are the backup diesel generators.

The effects of emissions from the backup diesel generators, which are not in continuous operation, but must be regularly tested, have been evaluated using the SCREEN 3 model (US EPA) and compared with the guidelines of the World Health Organisation (WHO) and Canadian guidelines (Ontario Ministry of the Environment). The criteria are sufficiently stringent and based on the results contained in the presented report the conclusions that the nuclear power plant will not be a significant source of conventional emissions may be accepted.

The release of water vapour and heat via the cooling towers during full operation of MO 12 represents approximately 3740 MW of thermal energy emitted into the atmosphere in the form of waste heat. If we take into account the relatively low energy output of the nuclear power plant, the emissions of heat and water could lead more to local rather than regional climate changes. The following impacts in particular come into consideration:

- increased average humidity at ground level,
- increased average air temperature at ground level,
- increased incidence of ground fog,
- increased amount of rainfall,
- increased formation of frost cover,
- reduced sunlight time,
- formation of clouds of water vapour from the cooling towers.

The intensity of the effects depends on the power plant output and the season. The greatest intensity of effects may be expected in summer months. All in all, the effects of emissions from the cooling towers on the local microclimate are negligible or barely noticeable.

Waste water

Waste water from the Mochovce NPP is discharged into the river Hron (waste water from MO 12 and rainwater collected in the Mochovce NPP), into the Telin stream (sanitary water from MO 34 and drainage water from the settling pit at Čifáre), into the Širočina stream

(drainage water coming from the drying process of sludge generated in the treatment of drinking water from the Červený Hrádok source). The Telin and Širočina streams flow into the river Žitava.

The main source of waste water discharged into the river Hron is industrial waste water (cooling water) from MO 12. The industrial waste water can be divided into:

- waste water without radionuclides including water used for flushing cooling towers and water from the regeneration of resins for the production of demineralised water,
- waste water with low activity radionuclides, generated through the condensation of vapours from the treatment of liquid radioactive waste (if the activity is higher than 40 Bq/l, the waste water is not discharged into the environment, but is returned back for liquid radioactive waste treatment).

The information given in the assessment report (Chapter II, 2.1) clearly demonstrates that the limits for waste water discharged into surface flows have not been exceeded.

During the operation of the 4 blocks it may be presumed that the volume of discharged waste water will double and the quality of the discharged waste water using current water treatment technology will not change significantly. Under these assumptions the permitted limits for waste water discharge from the nuclear power plant and for drinking water treatment at Červený Hrádok will be complied with. It is necessary to take measurements at the Čifáre settling pit so that the limit values are not exceeded.

Conventional waste management

During operation, following the increase in electricity generation after starting up blocks 3 and 4, there will be an increase in the production of non-radioactive waste. The types of waste will remain unchanged, and it is expected that there will be effective waste separation.

Radioactive waste management

Radioactive waste is generated during the operation of a nuclear power plant and during its decommissioning. From the aspect of their consistency, radioactive wastes are divided into: gaseous, liquid and solid.

According to their type, the radioactive wastes of each consistency require a specific approach during their collection, sorting, preliminary treatment, storage, final processing and treatment into a form suitable for storage and final storage or discharge into the environment.

Trapping radioactive gases is problematic and they are mostly discharged into the air, on the basis of authorised limits specified for each radionuclide. In the case that they cannot be freely discharged at the time of their creation, they are kept for the necessary time in extinction or extinguishing gas tanks and after achieving the limit values are discharged into the air.

All liquid wastes from the operation are subject to radiological and chemical control and, provided their quality complies with the prescribed limits, they can be discharged into the environment. A part of wastes are liquid wastes, which need to be reprocessed and subsequently undergo chemical and radiological monitoring prior to their discharge. A part of liquid wastes can be recycled and returned back for technological reuse in technological circuits, using cleaning station systems. The last group comprises liquid wastes that are not usable and cannot be discharged into the environment. These wastes are: radioactive concentrates, low-level and intermediate-level sorbents, radioactive oil products and radioactive sludges and sediments. These wastes will be stored in the auxiliary operations building.

Liquid RAW and saturated ionexes will be transported by pipeline either to storage tanks at the auxiliary operations building or directly into the Mochovce FPLRAW (final processing of liquid radioactive waste) unit for processing. The Mochovce FPLRAW unit's maximum capacity for processing and treatment of liquid radioactive waste using bituminisation and cementation is 870 m³/year for radioactive concentrates and 40 m³/year for sorbents and sludges, which corresponds to four times the annual production of the twin-

reactor unit. From this it is obvious that this capacity is sufficient also for processing liquid radioactive waste from blocks 3 and 4.

Active oils, lubricants and solvents will be processed at the Bohunice Treatment Centre. Transportation will be undertaken by using a special transport container that meets the requirements for transportation on public roads.

Settled sludge from the sedimentation tank will be processed by sludge fixation into a compacting mould at the sludge fixation point - "in situ fixation". This technology will be located in the auxiliary operations building.

The technological solution for management of solid RAW is based on the waste being separated by activity into radioactive waste and waste that may be discharged into the environment. Its further segregation depends on its subsequent management. All waste created in the controlled area is treated as potentially active.

Produced radioactive wastes are included in the flow of active material in the waste management process and are temporarily stored in the premises for radioactive waste storage or in the storage areas of the auxiliary operations building.

Systems for the collection and separating solid radioactive wastes include: the collection point (temporary and permanent) and vehicles for transferring solid radioactive waste from the point of production and separation to the point of their temporary storage. The management of low-level and intermediate-level dry solid radioactive waste at the Mochovce NPP comprises the following stages:

1. collection, segregation and fragmentation at the collection point and storage in the grounds of the power plant,
2. transportation of combustible solid radioactive waste to the Bohunice treatment centre and, following their treatment, transportation to the national radioactive waste repository,
3. volume reduction (low pressure moulding) of non-combustible solid radioactive wastes, their transportation to the Bohunice treatment centre and, following their treatment, transportation to the national radioactive waste repository,
4. treatment of other solid radioactive wastes at the waste treatment centre (cementation) and, following their treatment, transportation to the national radioactive waste repository.

Impacts on water conditions

Implementation of the proposed activity will affect surface and groundwater, particularly during the nuclear facility's operation. The most likely impacts will be connected with the heat leaks, liquid discharges which may affect the quality of surface and groundwater and the conditions of aquatic habitats.

Impacts on soil

The proposed activity will be conducted directly in the grounds of the NPP MO and therefore the completion, commissioning and operation of the MO 34 blocks does not require further agricultural or forest landtake and in no other way affects the scope of land used.

The rainwater collection system from at the Mochovce NPP is common for MO 12 and MO 34. For this reason any impact on soil stability and erosion is unlikely.

The fallout of non-radioactive imissions from the MO 12 and MO 34 sources will form a negligible share of the total imission fallout particularly from more remote sources and from remote transmission, and its impact on the soils in the affected area is not significant today and will not be significant following implementation of the proposed activity.

Normal operation of the nuclear power plant, following implementation of the project, will have an indirect impact on the soils of the assessed area via the air and imission fallout of emissions and radionuclides. Given compliance with the set emission limits and limits for radionuclide discharges there will be a negligible impact that will not be manifested in the soil properties.

Likely impacts on vegetation, flora and fauna, natural resources and protected areas

It is unlikely that the operation of MO 34 could (either by synergistic or cumulative effects with the existing nuclear sources and natural background sources) have any significant impact on vegetation, flora and fauna.

The impacts of the proposed activity on the gene pool and biodiversity will be mediated via abiotic components of the natural environment. In previous surveys of ecosystems in the affected area, the Mochovce NPP has no recorded impact on the gene pool and biodiversity, or genetic changes in organisms caused by radiation (mutation). The natural ecosystems, gene pool and biodiversity in the affected area are determined primarily by agricultural production. Likewise it is not likely that there will be any increase in pollutants in the environment.

Impacts on the landscape

The implementation of the proposed activity will not impair the present structure and scenery of the landscape, since the built part is already 70% finished and the continuing completion of the internal equipment of the MO 34 power plant and its subsequent commissioning into operation will not change the landscape scenery.

Impacts on protected areas and protection zones

The proposed activity will not have any impact on the geological component during operation, or subsequently during the nuclear facility's decommissioning. The activities will take place in the grounds of the Mochovce NPP, which is located approximately in the middle of a 3-km protection zone around the nuclear power plant (the area of the actual facility). There are not and cannot be declared any protected areas or other protection zones in this area without taking account of the existing nuclear facility. The conservatively set expected contribution of the facility's effect right on the edge of this area is below the level of natural background radiation and does not entail any negative consequences in more distant protection zones.

Noise and vibration

Noise from the operation of the Mochovce nuclear power plant in the surroundings of the facility is negligible. Moreover, the nearest settlement is approximately at a distance of 3 km, where the level of noise from the Mochovce power plant is practically nil. The increase in the level of noise was determined only at the local level (within the limits of the facility) at individual machines and has an effect only on the staff working near this machinery.

Radiation and other physical fields

Gamma and neutron radiation is produced in the nuclear reactor's operation. Other sources of radiation are the reactors' primary circuit cooling systems, active parts of the reactor (reactor core), installation units for spent nuclear fuel located in spent nuclear fuel pools, which are subsequently transported to the spent nuclear fuel processing point at Bohunice; in future to a dry store within the grounds of the Mochovce nuclear power plant.

The management of these radiation sources is solved by personal protection, whereby the residents adjacent to the area and the environment are practically protected too.

Impacts on the urban complex and land use

Implementation of the proposed activity does not alter the basic relations and links of the current grounds of the Mochovce NPP to the urban complex of the affected territory. The activities will not have any direct effect on cultural and historic heritage, archaeological and palaeontological sites, or on cultural values of intangible nature in the affected area.

Agriculture, industry, infrastructure, services, recreation and tourism will not be adversely affected. The traffic burden on local roads will increase slightly in the time leading up to starting up operation.

Impacts on natural components of the landscape will not be seen. The functional use of the areas of the affected territory will not change. The impact of the proposed activity on the structure and use of the landscape is practically negligible.

Socio-economic impacts

The proposed action will create new jobs and stabilize or even improve the standard of living in the affected area. The potential job opportunities are creating an indirect positive impact for the development of municipalities, the development of infrastructure and civic amenities, increased care of heritage, etc. Implementation of the proposed activities will improve electricity generation for production sectors (agriculture, industry, the local economy), for transport, services, recreation and tourism. It does not entail demands for creating related structures, activities and infrastructure.

Monitoring of radioactivity in the environment

Monitoring of radioactivity in the environment is carried out according to the regulation "Monitoring plan of radiation control in the surroundings of the Mochovce Nuclear Power Plant (EMO/2/NA-052.01-02)", which describes the monitoring in a radius of 20 km from the Mochovce plant.

Around the Mochovce nuclear power plant there are 24 teledosimetric system monitoring stations and 15 fixed teledosimetric stations, which monitor the input gamma radiation dose, the activity per unit volume of aerosols and radioactive iodine and additional data on the state of technology.

The purpose of monitoring Mochovce nuclear power plant surroundings is to continually acquire data on the radioactivity of the environment in the vicinity of the power plant and thereby monitor the effect of the power plant's operation on the environment. The aim of the monitoring is to document that the radiological effect, i.e. dose, on the inhabitants and the concentration of radioisotopes from discharges is below the level of the limit set in Annex 3 to SR Government Regulation no. 345/2006 Coll. on basic safety requirements for health protection from ionising radiation in personnel and residents (and the limits and conditions set by the SR Nuclear Regulatory Authority) and that this impact is as low as reasonably achievable - (the ALARA optimisation principle).

The monitoring system for the whole Mochovce site was designed so as to include blocks 3 and 4 once they start working.

In addition to this, there is monitoring of emission points for gaseous and liquid discharges and monitoring in discharging solid radioactive materials into the environment to check whether the discharge criteria as set by the Regulatory Authority are met.

Emergency readiness

Emergency readiness is defined in legislation by the Atomic Act and the SR Nuclear Regulatory Authority Decree no. 55/2006 Coll. on details in emergency planning for the case of an accident or emergency.

Emergency planning is a set of actions and procedures to detect and combat accidents and emergencies at nuclear facilities and for detecting, mitigating and eliminating the consequences of a leakage of radioactive substances into the environment during the management of nuclear materials, radioactive waste or spent nuclear fuel and in transportation of radioactive materials. The set of actions is part of the documentation that forms the emergency plans.

Emergency readiness means compilation of emergency plans, a training system, correct procedures and exercises for individuals, authorities and organisations for performing measures that are to be carried out in accordance with the emergency plan for the grounds of the power plant (the internal emergency plan), and the civil emergency plan, which contains measures for protecting the residents in the hazard area during a leak of radioactive substances into the environment, as well as connection to the internal emergency plan.

The national emergency plan contains competences, duties and scope of cooperation for individual state administration authorities and organisations included in the structure of emergency planning at the national level. Responsibility for emergency planning lies with the SR Nuclear Regulatory Authority, Department of Emergency Planning, Information Technology and Personnel Preparation.

Emergency readiness also includes emergency exercises performed at various levels, including international.

Assessment of the positive and negative effects, including their interaction

A positive effect of the normal operation is the effect on the socio-economic stability and the region's development, as has been seen in the case of both the Slovak nuclear regions so far.

As regards the negative impacts, there practically include only the radiation burden on environmental components and adjacent residents that will approximately double in comparison with the current state, but with regard to the annual effective dose limits set for an individual from the critical population group is insignificant.

An indirect effect may be the further production of non-radioactive waste, radioactive materials releasable from under the institutional control due to their low activity level (i.e. those discharged into the environment as non-radioactive), radioactive waste and spent fuel. According to the back-end nuclear energy strategy as approved by the departmental body, assessed in the SEA process and adopted by the Government, the national system for radioactive waste and spent nuclear fuel management is set in an appropriate manner for coping with the planned quantities of these materials.

The National Radioactive Waste Repository at Mochovce was right from the start dimensioned for storing operational radioactive waste from eight nuclear VVER blocks (and acceptable waste from decommissioning the A1 nuclear power plant).

Storage installations already established or under preparation for storing spent fuel and radioactive waste that cannot be stored in the existing repository will solve the problem of storage for several decades. This is a sufficiently long time for coping with the technical, safety and institutional demands of the back-end fuel cycle management, i.e. storage in a deep-underground repository.

A further adverse impact is the need to decommission the nuclear power plant, which may take a period comparable with that of the power plant's operation. It ends with the storage of waste from the disassembly and demolition works and with the release of the power station facility and/or its site from the institutional control, unconditionally or under set restrictive conditions (e.g. a prohibition on housing construction, fruit growing for foodstuffs produce, and animal rearing etc). Decommissioning of the nuclear power plant will be subject to a separate environmental impact assessment process.

In the back-end nuclear energy system, as defined in Slovakia, the proponent is not directly responsible for the back end (storage and decommissioning). Nevertheless, the "originator pays" principle does apply everywhere where nuclear energy is used for peaceful ends.

Besides the impacts of normal operation, it is necessary to include in the calculation of impacts also the potential impacts of abnormal incidents, anticipated or unanticipated accidents. With the exception of the issue of unanticipated accidents and their consequences both on local and transboundary areas, which nevertheless have been explained at public hearings and consultations (in the assessor's opinion satisfactorily so), the assessment report addresses also these negative impacts / hazards in a satisfactory manner. The conclusions from safety analyses are interpreted through the need for relief interventions following an accident, should the radiation reach the statutory reference values for the residents' exposure to radiation.

For completeness it is necessary to mention also the adverse impacts during completion (increased traffic, noise, waste from construction and assembly). These impacts will last until the MO 34 is commissioned into operation.

The final opinion was drafted according to § 37 (1) and (2) and Annex 12 of the Act, the assessment report, its annexes and the supplement to the report, further supporting materials and documents (primarily the MO12 operation reports, annual environmental impact assessment reports for the MO 12 operation, safety documentation), statements from individual affected entities received during the assessment process, the results of public hearings held in the Slovak Republic, Hungary and Austria, consultations with the affected Austrian and Hungarian parties in the framework of the transboundary assessment (the Czech, Polish and Ukrainian parties were also contacted), the source documentation for

drawing up the expert opinion under § 36 of the Act, meetings with the proponent's competent staff, affected authorities and the assessor's Slovak and foreign consultants.

Transboundary impacts

The proponent does not foresee any transboundary effects regarding the radiation impact assessment on the surroundings. The radionuclide discharge from the Mochovce NPP MO 12 are extremely low; it is not expected that discharges from the MO 34 ventilation stack into the atmosphere will be above the current applicable limits. The calculation of the radiation burden on the residents from the aspect of the transboundary impact assessment shows that this is negligible.

The assessed activity will not have any adverse effects on the environmental components of neighbouring states.

V. Overall impact assessment of the proposed activity on the proposed protection areas for birds, European important sites or the European network of protected areas (Natura 2000)

MO 34 will operate in the enclosed grounds of the Mochovce NPP, which is located approximately in the middle of a 3-kilometre protection zone around the nuclear power plant. There are not and cannot be declared any protected areas or other protection zones in this zone without taking account of the existing nuclear facility. The conservatively set expected contribution of the facility's effect right on the edge of this area is below the level of natural background radiation and does not entail any negative consequences in protected areas and their protection zones.

The workplace of the Slovak Academy of Science, Arboretum in Mlyňany, and the Patianska cerina nature site are located in a zone of 5-10 km from the Mochovce NPP grounds. On the northeast outer edge of this zone there is found the southwest extremity of the Štiavnica Hills protected landscape area. The impact of the NPP MO 12 on these protected areas has not been proven.

It should, however, be mentioned that the Ministry of Environment and Water of Hungary in its final statement (*letter no. 1KMF-70/2009 dated 18.12.2009*) comments that there has been no analysis of the impacts of cooling water discharged into the river Hron from the aspect of nature and landscape protection in the case of the 50 km distant natural area of the Duna-Ipoly National Park, the Natura 2000 special protection areas of the Börzsöny and Visegrád foothills, and also the Community important area, Natura 2000 special protection area, Börzsöny and Alsó-Ipoly, mentioned in the Hungarian final statement regarding MO 34 (*letter no. 1KMF-70/2009 dated 18.12.2009*).

CONCLUSIONS

1. Final opinion on the proposed activity

Based on a comprehensive assessment of the proposed activity, submitted statements, as well as the state of the environment of the affected area, the anticipated positive and adverse effects of the proposed activity on the individual components of the environment, and the proposed measures for mitigating its potential impacts

recommendation is given

to implementation of the proposed activity “**Nuclear Power Plant Mochovce VVER 4 X 440MW – 3rd Structure**”, i.e. the commissioning of the nuclear facility into operation under the conditions set out in point **VI. 3** of the final opinion.

2. Recommended variant

Based on the conclusions from the comprehensive assessment of the proposed activity under the Act the **variant of the proposed activity given in the assessment report** is recommended for implementation. “**Mochovce Nuclear Power Plant VVER 4 x 440MW – 3rd Structure**” is located in the eastern part of the Nitra region, in the north-western part of the Levice district, in close proximity to the Nitra and Zlaté Moravce district boundaries, in the land register territory of the Nový Tekov and Kalná nad Hronom municipalities.

The proposed activity is to commission into operation and operate the nuclear facility in the grounds of the Mochovce Nuclear Power Plant, comprising two VVER reactors of type V 213 with a power output of 2 x 440 MW (hereinafter simply “MO 34”), with the objective of electricity generation.

The rated thermal output of the assessed MO 34 reactors is unchanged against the original project, and will achieve the value of 2 x 1375 MWt.

In consequence of the installation of new components (turbines and other technological parts) in the secondary circuit of each MO 34 block, the effectiveness of the assessed MO 34 reactors will be increased from the original 31.7% to 33.9%. The primary circuit components remain unchanged against the original project. The total power output of the reactors will be 2 x 471 MWe (the original power output without modifications to the secondary circuit was 2 x 436 MWe).

Compared to the original solution the project will reduce heat leaks into the environment by approximately 7%, extend the nuclear fuel life, reduce the production of radioactive waste and the quantity of radioactive substances discharged into the surroundings.

3. Recommended conditions for the construction and operation phase of the proposed activity

Based on an assessment of the state of the environment in the affected area, the environmental impact assessment results for the proposed activity and on the basis of the statements of the affected municipalities, statements of the affected authorities, the results of transboundary consultations and requests and submissions from the Slovak and foreign public, the following conditions are recommended for implementation of the proposed activity:

3.1 Following the approval of commissioning the nuclear facility, ensure fulfilment of all conditions set out in SR Nuclear Regulatory Authority Decisions nos. 246/2008, 266/2008 and 267/2008; following the approval issued by the SR Nuclear Regulatory Authority for

commissioning and operation of MO 34, ensure fulfilment of all conditions set in the respective SR Nuclear Regulatory Authority permits.

3.2 Continue in the provision of information and organisation of professional seminars in fields of common interest in nuclear safety with experts from Austria in the framework of the bilateral Slovak-Austrian agreement in the framework of the European Community for the Atomic Energy, Euratom, coordinated by the SR Nuclear Regulatory Authority, and accept the conclusions reached at these expert consultations.

3.3 Ensure the participation of statutory representatives and experts on behalf of the proponent Enel and SE, a.s. at professional consultations on the issues regarding safety at MO 34 that remained unanswered at the consultations under the Espoo Convention from the assessment process, held between the Austrian affected party and the SR Nuclear Regulatory Authority in the framework of the approval process in commissioning the nuclear facility into operation.

3.4 In cooperation with the regulatory authorities incorporate into the safety documentation recommendations set out in the statement of the Commission of the European Community under Article 43 of the Euratom Treaty [C(2008)3560 of 15.07.2008]. To this end, the Commission recommends that the investor in close cooperation with the national authorities:

- in line with international best practice, develop a reference scenario including the intentional effect from an external source (e.g. small aircraft impact)
- working from this, in the framework of the design basis of the proposed investment, evaluate and implement appropriate additional elements, functional potential and management strategies for resisting potential intentional effects from an external source (e.g. malicious small aircraft impact), so as to bring the project into line with current best practice.

The Commission also stresses the importance of diversifying the sources of supply within the aspect of secure supply of nuclear fuel for the whole EU nuclear industry, as well as proper management of funds intended for financing decommissioning of the nuclear facilities and for spent nuclear fuel and radioactive waste management in accordance with the Commission's recommendation¹⁰.

3.5 Initiate the respective intergovernmental agreement on data exchange from 40 radiological monitoring stations located in the area within 20 km from the Mochovce nuclear power plant to the Hungarian national centre and on the provision of measurement results from the Hungarian remote radiation monitoring system to Slovakia.

3.6 Allow the Hungarian authorities responsible for emergency planning to set up and operate at least three remote radiological measurement stations in the direction toward the border with Hungary at a distance of 30 km from the Mochovce nuclear power plant.

3.7 Arrange for data exchange from aerosol monitors operated by Austria in the territory of Hungary and Slovakia.

3.8 In implementing health and safety at work finalise methodological instructions on the employer's duty with particular regard to SR Government Regulations nos. 391/2006 Coll., 395/2006 Coll., 355/2006 Coll. and 555/2006 Coll.

3.9 Comply with all obligations under Act no. 261/2002 Coll. on the prevention of severe industrial accidents and on the amendment of certain acts, and to adopt all measures necessary for preventing severe industrial accidents and, in the case of such an accident occurring, or in the case of its imminent threat, design measures necessary to combat and limit its consequences for human life and health, the environment and property.

3.10 During operation, observe the limits for factors of the working and natural environment at a level as low as reasonably achievable and ensure compliance with the provisions of Act

¹⁰ Commission Recommendation 2006/851/Euratom, OJ EU L. 330, 28.11. 2006, pg. 31 – 35.

no. 355/2007 Coll. on the protection, support and development of public health and on the amendment of certain acts as later amended and related legislation.

- 3.11 Address conditional comments of the Levice District Road & Traffic Authority.
- 3.12 Take measures to ensure that residents' exposure in consequence of radioactive substance discharges from the Mochovce nuclear facility site into the environment during its operation does not exceed the limit dose of 0.25 mSv per calendar year, which is set in SR Government Regulation no. 345/2006 Coll. on basic safety requirements for protecting the health of personnel and residents from ionising radiation.
- 3.13 Comply with all obligations under Act no. 541/2004 Coll. on the peaceful use of nuclear energy (the Atomic Act) and on the amendment of certain acts, and to manage activities according to the provisions of that Act.
- 3.14 Comply with the provisions of SR Nuclear Regulatory Authority Decree no. 50/2006 Coll. laying down details on nuclear safety requirements for nuclear installations in their location, design, construction, commissioning, operation, decommissioning and closure of a repository, as well as criteria for categorisation of selected installations into safety classes.
- 3.15 Continue also in later periods to comply with the provisions of SR National Council Act no. 543/2002 Coll. on nature and landscape protection as later amended and SR National Council Act no. 223/2001 Coll. on wastes as later amended and related implementing regulations.
- 3.16 Comply with all obligations under Act no. 364/2004 Coll. on water and on the amendment of Slovak National Council Act no. 372/1990 Coll. on offences as later amended (the Water Act).
- 3.17 Comply with the limit values for contamination indicators of waste water and specific water discharged into surface waters under SR Government Regulation no. 296/2005 Coll. setting out the requirements for the quality and quality targets of surface water and the limit values of contamination indicators of waste water and specific waste.
- 3.18 In taking water from the river Hron for operating needs, take account of the flow in the river and potential effects on protected areas in Hungary. Address the issue if due to the Mochovce nuclear power plant operation the balance tension at the Veľké Kozmálovce hydrostructure profile increases in relation to the minimum residual flow that are at present ecologically unbearable. At a time of minimum flows on the river Hron there may for this reason be a shortage of water for the needs of other users, which may lead to water regulation, and also to a tense balance regarding the quality of surface water in problematic indicators, such as N-NO_3^- , N-NH_4^+ , or water temperature. (Due to the construction of the Mochovce nuclear power plant, a decision has been issued on the minimum flow at the Veľké Kozmálovce hydrostructure profile at the value of $6.6 \text{ m}^3 \cdot \text{s}^{-1}$, which was set as temporary, because the objective need in this section is approx. $11 \text{ m}^3 \cdot \text{s}^{-1}$, which corresponds to Q_{355} of the daily water).
- 3.19 In the framework of the approval procedure under specific regulations, prove arrangements for ensuring the necessary quantity of water for operating purposes and in case of emergencies. Fully respecting the comments and requirements of the administrator of the affected watercourses.
- 3.20 Take the necessary technical measures for ensuring the necessary quantity of water for operating purposes and for emergencies in the case that the minimum flows on the river Hron fall in low-water periods and in the case of a permanent reduction in the water level on the river Hron in consequence of climate and other changes (the proven fall in flows in the major part of the Hron basin over the period 1980 - 2000 is almost 20%). Consider the possibility of creating water accumulation, or another method of cooling.
- 3.21 Prove, within the approval proceedings under specific regulations, sufficient capacity of the reservoir for reliably ensuring abstraction in the necessary quantity of water for

operating purposes and for covering emergencies at Mochovce nuclear power plant following completion.

- 3.22 Ensure that the proposed operation encompasses such technical solutions for the equipment dealing with hazardous substances that would allow the capture of hazardous substances that could leak in the case of a technical fault or machine destruction, or could be washed away in the case of fire fighting by water, and that these technical design solutions are constructed in accordance with the requirements of Slovak technical standards.
- 3.23 For ensuring health and safety at work complete the employer's duties regarding:
- ✓ minimum health and safety requirements for a workplace under SR Government Regulation no. 391/2006 Coll.;
 - ✓ minimum requirements for the provision and use of personal protection equipment under SR Government Regulation no. 395/2006 Coll.;
 - ✓ protection of employees against risks of chemical exposure at work under SR Government Regulation no. 355/2006 Coll.;
 - ✓ minimum health and safety requirements for the protection of employees against noise exposure risks under SR Government Regulation no. 115/2006 Coll. as amended by SR Government Regulation no. 555/2006 Coll.;
- 3.24 Review the system of monitoring environmental components (air, surface water and groundwater) in connection with commissioning and operation of MO 34 blocks. Adjust the monitoring system if necessary.
- 3.25 After commissioning, ensure monitoring of the parameters in the scope set by the respective regulatory authorities and specialised general government authorities in the approval to MO 34 operation. Ensure constant and detailed monitoring of the power plant's impact on the environment, and this through accurate measurement of discharges and of radioactive materials released from control into the environment and to assess the dose burden on residents caused by the operation of the Mochovce nuclear power installations throughout the whole life of their operation.
- 3.26 Regularly review all proposed monitoring activities. Regularly provide monitoring results to the affected state administration authorities and the public.
- 3.27 In the periodic nuclear safety assessment, as to be performed during the facility's operation under SR Nuclear Regulatory Authority Decree no. 49/2006 Coll. on periodic nuclear safety assessments, evaluate also the impact on the human health.
- 3.28 In the field of radiation protection, review in cooperation with the licensing authority the method and formulation of limiting discharges from individual nuclear installations in the locality so that it is clear:
- which annual effective dose represents the upper optimisation limit for their derivation,
 - what are the site-specific activity/dose conversion coefficients,
 - what are the requirements for monitoring discharges with regard to the limits that are to reflect the need to evaluate discharges from the aspect of the dose burdens on inhabitants,
 - what will be the communication method (content and frequency of reporting) with regulatory authorities on the given matter.
- 3.29 Preserve the protection zones of the existing and new energy installations in the given area under §36 of Act no. 656/2004 Coll. on energy and on the amendment of certain acts, and also to perform such measures so that the existing energy facilities are not damaged.

- 3.30 In further stages of the project documentation design a technical solution for overhead power lines that would prevent killing birds.
- 3.31 During the facility's operation thoroughly comply with all legal regulations concerning the recovery and disposal of non-radioactive waste created during the facility's operation. Ensure the regular removal of hazardous, non-hazardous and communal waste by means of authorised organisations. Ensure waste management in accordance with Act no. 223/2001 Coll. on wastes as later amended and the generally binding regulation of the municipality Kalná nad Hronom.
- 3.32 Ensure personal training focused on safety at work, accident prevention and response to emergency situations.
- 3.33 Resolve infrastructure issues of spent nuclear fuel management at the Mochovce site (construction of interim storage repository for spent nuclear fuel).
- 3.34 Address the possibility of implementing into practice as soon as possible the approved Back-End Nuclear Energy Strategy in the field of solving the back end of the spent fuel and radioactive waste management that cannot be deposited in the existing national repository.
- 3.35 Address the option of building a bridge across the river Hron between the municipalities Nový Tekov and Starý Tekov, which would serve as an escape route for residents of in the case of emergency incidents (request of the municipal mayor of Nový Tekov and citizen Jozef Pacal from Starý Tekov).

4. Reasoning for the final opinion, including reasoning for the acceptance or rejection of submitted written statements concerning the objective

The final opinion was drafted according to § 37 (1) and (2) of and Annex 12 to the Act in collaboration with the Office of Public Health of the Slovak Republic and on the basis of the MO 34 assessment report. More information in the assessment process was provided by supplementary materials and documents relating to the activity, individual stakeholders' statements issued during the assessment process from the country of origin as well as from the affected countries (from the Slovak Republic, the Czech Republic, Poland, the Ukraine, Hungary, Austria and from Bavaria), from the results of public hearings (in the Slovak Republic, Austria and Bavaria), from consultations with the affected parties under Article 5 of the Espoo Convention (with Hungary and Austria), from a bilateral meeting of experts held in the framework of the European Community for atomic energy, Euratom¹¹ between Poland and the Slovak Republic, as well as in connection with the transboundary assessment of the MO 34 activity, from the prepared expert opinion according to § 36 of the Act, supplementary materials and documents and other meetings with Slovak and foreign consultants of the assessor.

In the framework of the environmental impact assessment under the Assessment Act, an assessment was made of those environmental impacts that could be predicted at this stage of knowledge, and this primarily by using real measured data from the operation.

The procedure in evaluating source documents and in preparing the final opinion was in accordance with the provisions of Act no. 24/2006 Coll. The SR Ministry of Environment thoroughly analysed comments and statements from the affected subjects and experts. Justified comments are reflected in the proposal of measures, i.e. section VI. 3. of this final opinion. The above does not apply for the statements of Slovak and foreign non-governmental organisations, conservation activists and individual opponents of the peaceful use of nuclear energy, who reject the proposed activity.

The assessment process did not find any facts that would, following implementation of the measures proposed in the assessment report and in the final opinion, pose a severe

¹¹ Treaty establishing the European Atomic Energy Community (or the Euratom Treaty, signed in Rome 25.3.1957) is one of the founding treaties of the European Union.

jeopardy to the health of residents in the affected municipalities and personnel or would negatively impact on the environment of the affected area.

Measures proposed in the assessment report and in the final opinion are based on applicable legislation, international recommendations and scientific knowledge; their objective is to ensure optimal and reasonably achievable conditions for protecting human health and the environment and to ensure the fulfilment of reasonable suggestions and requirements of the affected entities, presented during the assessment.

The recommendation for implementation of the proposed activity is based on the following facts:

- ✓ International safety assessment (IAEA, WANO, WENRA, Walkdown 1 & 2) confirmed that the safety level of reactors operated in Slovakia is comparable with nuclear power plants operated in other countries of the world.
- ✓ An important fact for the international assessment mission is that the MO 12 reactors have been operated for over 10 years reliably, safely and without negative environmental impact.
- ✓ All operating incidents were evaluated by the SR Nuclear Regulatory Authority as below the scale or below 1 of the IAEA INES scale. No mission had a negative opinion regarding the safety of the nuclear power plants' operation in Slovakia.
- ✓ Given the high degree of construction completion and interconnection of the objects with the already existing operating blocks, with regard to the economic, factual and time reasons, only the one rational alternative of the proposed activity was presented in the assessment process.
- ✓ The European Commission on 15.7.2008 issued a positive opinion regarding the planned investment under Article 43 Treaty establishing the European Atomic Energy Community (Euratom Treaty). The European Commission confirmed that the project, after taking account of the Commission's recommendations, meets international requirements for nuclear safety.
- ✓ Based on the course and results of public hearings regarding the proposed activity, as well as the process itself of assessing the proposed activity, it may be stated that the public in the affected area does not have objections to the implementation of the proposed activity. At a joint public hearing on the assessment report in Bratislava of 18.9.2009 representatives of all affected municipalities expressed consent to the implementation of the proposed activity.
- ✓ For the affected area the proposed activity has positive socio-economic impacts: it will create new jobs and stabilise or improve the standard of living and will contribute to the development of infrastructure and civic amenities.
- ✓ No significant transboundary impact was confirmed in the transboundary assessment and participants to the transboundary assessment process agree to the implementation of the proposed activity (with the exception of Austria and the Ukraine, consultations with which ended in stalemate not at fault of the Slovak party).
- ✓ No significant increase in the effective dose rate for the population in comparison with existing and statutory limits is predicted through the implementation of the proposed activity.
- ✓ Adverse impacts from the proposed activity of MO 34 have been assessed as bearable and the activity as feasible. The assessment process did not reveal any facts that, following implementation of the measures proposed in the assessment report and in the final opinion, would pose a major jeopardy to the environment or health of residents in the affected municipalities.

The proposed activity is in accordance with the approved Energy Security Strategy of the Slovak Republic to 2030. Aspects of the radioactive waste and spent nuclear fuel management and decommissioning nuclear facilities are in accordance with the Back-End

Nuclear Energy Strategy currently approved or under preparation. Both strategies in 2008 underwent an environmental impact assessment of draft strategic documents with a nationwide scope in accordance with Act no. 24/2006 Coll.

The presented statements of individual stakeholders in the framework of the assessment process may be evaluated as follows:

In total 24 statements and opinions were received from bodies involved in the assessment process. Subjects that expressed a written opinion regarding the proposed activity recommend the proposed activity either without comment, or subject to compliance with conditions that were reflected in chapter VI. 3. of this final opinion.

A further seven statements were received from independent non-governmental organisations and two statements from an independent expert.

Austria, as an affected party, received during the transboundary assessment process in total 209 269 statements and opinions from citizens of Austria and Germany and from independent non-governmental organisations. The originals of these statements were delivered to the Slovak Republic with a request to take them into account in the process of assessing the proposed activity.

The Austrian party summarised the most important comments into the following fields:

- problem of discontinuity at the building site, as well as the problem of combining old and new components,
- the project for the reactor does not correspond to the current state of reactor technology,
- missing full containment and thereby a risk of radioactive substances leaking in the case of an emergency,
- inadequate dealing with potential severe accidents,
- inadequate protection against terrorist attacks - malicious aircraft impact,
- seismic resistance,
- insufficiently demonstrated disposal of spent nuclear fuel,
- missing statement and evaluation of possible alternatives to building the nuclear power plant,
- insufficient solution of access to the courts in the Environmental Impact Assessment Act,
- requirement for financial coverage of possible future damages.

Hungary, as an affected party, attached to its final opinion a further three opinions from participants to the assessment process.

The Czech Republic, as an affected party, attached to its final opinion 17 consenting opinions to the proposed activity.

The spheres of problematic issues were discussed at public hearings on the assessment report held in Bratislava on 18.9.2009, in Vienna on 25.9.2009 and in Esztergom on 12.10.2009. All public hearings were attended by representatives of state administration and non-governmental organisations from Austria, Hungary and the Slovak Republic. Representatives of the Czech Republic also attended the Bratislava public hearing.

Insufficiently explained issues were thoroughly discussed at consultations under Article 5 of the Espoo Convention on 27.10.2009 at Mochovce in the presence of experts and representatives of Hungarian state authorities. Similar consultations were held on 24 - 25 November 2009 in Bratislava in accordance with Article 5 of the Espoo Convention, with Austrian experts, Austrian government representatives and representatives of the individual Austrian provinces. Consultations for clarification of certain safety issues were held with the Austrian affected party in Bratislava on 15.12.2009 and on 28.4.2010.

6. Required scope of the post-project analysis:

The scope of the post-project analysis is designed with the aim of verifying the level of compliance achieved between actual and anticipated impacts from the activity on individual components of the environment, to ascertain possible differences of actual impacts from those projected in the assessment report, and on the basis of this to ensure a

modification to or addition of the measures for mitigating the negative impacts from the proposed activity.

The executor of the assessed activity is, under § 39 (1) of the Act obliged, in particular, to:

- systematically monitor and measure its impacts,
- monitor compliance with all conditions specified in the permit and related to the licensing of the proposed activity and to evaluate their effectiveness,
- ensure an expert comparison of the anticipated impacts listed in the assessment report with the actual state.

The following scope of post-project analysis is recommended with the aim of verifying the degree of conformity between actual and projected impacts from the activity on individual components of the environment and, on the basis of this, subsequent ensuring the modification or addition of measures for mitigating the negative impacts from the activity:

Ensure regular expert comparison of all projected impacts listed in the assessment report against the actual state, and this in the scope and period set by the respective licensing authority. In the event of finding negative deviations in the actual state against the projected impacts (on the basis of which the activity was approved), it is necessary to ensure measures for bringing this state into compliance with the conditions set in the permit for the activity.

- 6.1 Prepare a separate programme for monitoring discharges and radioactive materials discharged into the environment, aimed at monitoring the respective limits for the power plant's safe operation and at estimating the impacts of discharges on the residents and the environment. Furthermore, according to the monitoring plan, carry out monitoring measurements to observe specific properties of the environment and to record and evaluate any adverse impacts. The monitoring programme must include also the duty to regularly evaluate the measurement results.
- 6.2 Submit conclusions from monitoring works to the respective regulatory authorities and ensure their publication by means of municipal authorities for the affected municipalities so that their residents have the possibility to familiarise themselves with the possible impact of the activity on the quality of the environment in which they live.
- 6.3 At the internal level the operator shall ensure regular checking of the effectiveness of the implementation of all the adopted measures concerning environmental impacts and measures taken to mitigate the adverse effects on the environment.
- 6.4 Ensure periodic safety evaluation during operation according to the provisions of SR Nuclear Regulatory Authority Decree no. 49/2006 Coll. on the periodic nuclear safety evaluation and in accordance with § 23 (2) of Act no. 541/2004 Coll. on the peaceful use of nuclear power, also from the aspect of comparing the achieved state of nuclear safety at the nuclear facility against current nuclear safety requirements and against proper technical practice, and to prove that the required level of nuclear safety is ensured up until the next periodic evaluation, or until the expiry of the permit.
- 6.5 In the framework of the periodic evaluation carry out a comprehensive assessment of the monitoring programme for the whole monitoring period and, on the basis of it, modify as appropriate the monitoring proposal for the following period.
- 6.6 The duration of the post-project analysis is set in the monitoring programme, approved by the respective licensing authority and lasts at least throughout the power plant's lifetime.
- 6.7 In the post-project analysis take account also of other reasonable requirements resulting from the statements of participants in the assessment process, or from new legislative requirements.

Monitoring should be performed by internal units of the organisation, as well as by other eligible specialised organisations so that it is possible to obtain a comprehensive picture of the quality of the environment in the area affected by the proposed activity.

Measurement results must be evaluated from the aspect of compliance with the permitted limits.

The control of compliance with set conditions shall be performed by way of regular submission of conclusions from monitoring reports by the proponent to the respective regulatory authority. In addition, it will be ensure their publication via the municipal authorities of the affected municipalities so that the residents have the possibility to familiarise themselves with the quality of the environment in which they live and/or work.

With regard to the nature of the proposed activity, the required scope of the post-project analysis is not limited to a definite period of time, but will last almost the entire period of operation of the proposed activity.

If pursuant to § 39 (3) of the Assessment Act it is found on the basis of an operative evaluation of monitoring results that the actual impacts of the activity assessed under this Act are worse than those stated in the assessment report for the proposed activity, the proponent shall take measures for bringing the actual impact into compliance with the impacts stated in the report for the proposed activity. The licensing authority shall bring this duty to the attention of the proponent in accordance with SR National Council Act no. 541/2004 Coll. on the peaceful use of nuclear energy (the Atomic Act) and on the amendment of certain acts.

VII. CONFIRMATION OF DATA ACCURACY

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2. Confirmation of data accuracy

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3. Place and date of issuing the final opinion

Bratislava, 28. 04. 2010