



MINISTRY OF THE ENVIRONMENT OF THE REPUBLIC OF LITHUANIA

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Lithuanian Energy Institute

Cc: Visagino Atominė Elektrinė UAB

DECISION ON THE FEASIBILITY OF THE CONSTRUCTION OF VISAGINAS NUCLEAR POWER PLANT

1. **The contracting organization of the planned economic activity.** Visagino Atominė Elektrinė UAB, Žvejų str. 14, LT-09310 Vilnius, phone: + 370 5 2 782589.

2. **The contractor who prepared the documents of the Environmental Impact Assessment.** Pöyry energy Oy (Finland), Tekniikantie 4A, P.O. Box 93, FI-02151 Espo, Finland, phone: +358 103324346. Lithuanian Energy Institute, Breslaujos str. 3, LT-44403 Kaunas, phone: +370 37 401891.

3. **Title of the planned economic activity.** Construction and operation of Visaginas Nuclear Power Plant with the capacity up to 3400 MW (MW_{el}).

4. **Site of the planned economic activity.** Utena County, Visaginas Municipality, territory of Ignalina Nuclear Power Plant.

5. **Description of the planned economic activity.**

It is being planned to construct a nuclear power plant with the total power capacity up to 3400 MW_{el}. The planned nuclear power plant will consist of from two to five nuclear reactors of modern technology (commonly known as no older that of generation III/III+). It is planned to start the operation of the first reactor in 2015. Its operational lifetime will be approx. 60 years, decommissioning will last some 20-100 years.

In the Environmental Impact Assessment (EIA) Report eleven models of nuclear reactors proposed by various vendors were analyzed, namely AP-600, EC-6, V-392, ACR-1000, AP-1000, SWR-1000, ABWR, V-448, ESBWR, EPR, APWR, falling under three types of nuclear reactors (boiling water, pressurized water and pressurized heavy water).

Depending on the type, model, power capacity and total number of the reactors, the maximum annual public effective dose of exposure under normal operating conditions of the nuclear power plant will vary from 0.004 up to 0.033 mSv. Radiological impact on the general public and the environment was conservatively assessed by choosing different possible power capacities of the power plant, however not exceeding the total maximum power capacity of 3400 MW_{el}. A power plant with smaller capacity will cause a lower radiological impact.

When Visaginas Nuclear Power Plant is launched into operation, the total annual public dose

of exposure is predetermined by the discharge of radionuclides into the environment from Visaginas Nuclear Power Plant and the existing or planned nuclear facilities in the territory of Ignalina Nuclear Power Plant will be up to 0.0514 mSv.

The nuclear power plant will use water from lake Druksiai for cooling. Three alternatives of cooling water points were analyzed in the EIA Report (the existing inlet point, a point located in some 2 km distance westward from the existing cooling water inlet location, and the tunnel from the deepest part of the lake) along with two alternatives for water discharge (the existing one in the middle of the lake, and the point in the bay in the southern part of the lake). Direct cooling will not be sufficient for the power plant of 3400 MW_e power capacity, therefore a system of indirect cooling will be installed as well. Three alternatives of indirect cooling - wet, dry and combined cooling towers - were analyzed.

Two construction sites of Visaginas Nuclear Power Plant were analyzed in the EIA Report; they both are located in the territory of Ignalina Nuclear Power Plant. The first site is eastward from Ignalina Nuclear Power Plant. This territory, having the area of approx. 0.494 km², had been allocated for the construction of Unit 3 and Unit 4 of Ignalina Nuclear Power Plant. The second site, having the area of approx. 0.424 km², is westward from electricity distribution yard of Ignalina Nuclear Power Plant.

6. Description of measures aimed to avoid, decrease, compensate a negative impact on the environment or to mitigate its consequences.

The reactors of the nuclear power plant, buildings and other safety-relevant constructions, systems and components will be designed, constructed and operated so that they would remain safe under the impact of external factors of the environment and induced by a human being, and the parameters thereof will be assessed in line with the IAEA safety requirements NS-R-3 *Site Evaluation for Nuclear Installations*.

In the process of construction of the nuclear power plant in order to reduce noise caused by the increased intensity of the traffic and construction works, the schedule of the works will be regulated and the noisiest work will be performed during day-time and on weekdays. If necessary, noise prevention shields will be mounted in the residential settlements along the main roads.

In the specially formed ecological protection area going between the banks of lake Druksiai and Visaginas Nuclear Power Plant the construction works will have to be limited and the impact of the noise caused by construction works will have to be reduced in April – June months, a small bridge will have to be mounted for safe movement of small animals from one cooling channel to another. The area should be fenced by the protective hedge.

The monitoring system of the lake water temperature will be installed which in the course of operation of the nuclear power plant will enable to ensure compliance with regulations of permissible heating of the water of lake Druksiai. If necessary, the thermal load of lake Druksiai will be regulated by launching the system of indirect cooling and/or by reducing the heat capacity of Visaginas Nuclear Power Plant. It is being planned to consume the heat energy produced at the power plant for heating of residential houses or other facilities.

Mechanical, chemical or biological measures will be applied for waste water treatment. The quality control plan of waste water and surface water will be developed. Groundwater contamination will be restricted by installing an underground water discharge from all equipment to the drainage system. The groundwater level will be continuously reduced around the depth structures of constructions and equipment thus protecting the groundwater from possible contamination.

Control of radiological contamination sources and discharge of radionuclides into the environment will be carried out by implementing different technical measures, e.g. by mounting the protective barriers restricting release of radionuclides into the environment.

The monitoring system for the environment of the nuclear power plant will be designed so that it would comply with all requirements of the laws and other legal acts of the Republic of Lithuania, the requirements of Article 35 of the EURATOM Treaty, the IAEA safety standards and United Nations conventions.

7. Conclusions submitted by the environmental impact assessment subjects:

The Public Health Centre of Utena by the letter Ref. No. S-1093 dated 20/11/08 and by the letter Ref. No S-169 dated 10/03/09 approved the EIA Report and the planned economic activity.

The Fire and Rescue Department of the Ministry of the Interior by the letter Ref. No 9.4-17.6(10.18) dated 21/01/09 and the letter Ref. No. 9.4-723(9.4) dated 20/03/09 approved the EIA Report and the planned economic activity.

The Utena local office of the Cultural Heritage Department at the Ministry of Culture by the letter Ref. No 2U-(13.3)-2 dated 06/01/09 and the letter Ref. No. 2U-(13.3)-179 dated 25/03/09 approved the EIA Report and the planned economic activity.

The Administration of the Governor of Utena County by the letter Ref. No. (1.50)-6-1864 dated 11/11/08 and the letter Ref. No (1-41)-6-504 dated 19/03/09 approved the EIA Report and the planned economic activity.

The Administration of Visaginas Municipality by the letter Ref. No. (4.17)-1-4278 dated 19/11/08 and the letter Ref. No (4.27)-1-1307 dated 30/03/09 approved the EIA Report and the planned economic activity.

The Administration of Ignalina District Municipality by the letter Ref. No R2-1429-3.14 dated 21/11/08 and the letter Ref. No R2-361-3.23 dated 06/02/09 approved the Environmental Impact Assessment Report and the planned economic activity.

The Administration of Zarasai District Municipality by the letter Ref. No (6.57)3-3 dated 05/01/09 and the letter Ref. No (6.57)3-437 dated 10/03/09 approved the Environmental Impact Assessment Report and the planned economic activity.

The State Nuclear Power Safety Inspectorate by the letter Ref. No (8.3.17)-22.1-23 dated 09/01/09 and the letter Ref. No Nr. (8.3.17)-22.1-224 dated 20/03/09 approved the EIA Report and, subject to some preconditions, approved the planned economic activity.

The Radiation Protection Centre by the letter Ref. No 03-11-80 dated 14/01/09 and the letter Ref. No 01-11-577 dated 09/03/09 approved the EIA Report and the planned economic activity.

The State Service of Protected Territories by the letter Ref. No Nr. V3-10.7-2827 dated 03/12/08 approved the EIA Report and the implementation of the planned economic activity subject to the installation of the combined (direct and indirect) cooling system or the indirect cooling system.

8. Information dissemination and public participation.

The commenced EIA of the construction of Visaginas Nuclear Power Plant with the power capacity up to 3400 MW_{el} was announced in the following newspapers: *Lietuvos rytas* on 30/07/07, *Respublika* on 30/07/07, *Lietuvos žinios* on 30/07/07, *Valstiečių laikraštis* on 31/07/07, *Kauno diena* on 30/07/07, *Verslo žinios* on 30/07/07, *Zarasų kraštas* on 31/07/07, *Mūsų Ignalina* on 31/07/07, *V každyj dom* on 03/08/07.

The public was informed about the possibility to get acquainted with the EIA Report and its public presentations in the newspapers: *Lietuvos rytas* on 27/08/08, *Respublika* on 27/08/08, *Lietuvos žinios* on 27/08/08, *Valstiečių laikraštis* on 27/08/08, *Kauno diena* on 27/08/08, *15 min.* on 27/08/08, *Verslo žinios* on 27/08/08, *Zarasų kraštas* on 29/08/08, *Mūsų Ignalina* on 29/08/08, *V každyj dom* on 29/08/08. Public presentations of the EIA Report were conducted on 23/09/08 at the Administration of Visaginas Municipality and on 24/09/08 in Vilnius in the Conference Hall of Lietuvos Energija AB. No motivated proposals were received from the public on the environmental impact assessment of the planned nuclear power plant prior to or during the public presentation. During the meetings the planned economic activity was presented, the entities which had prepared the EIA Report were introduced along with the objectives, procedures of the environmental impact assessment, the content of the EIA Report, potential impacts during the construction and operation of the nuclear power plant and the conclusions of the EIA Report; answers were given to the questions of the present participants.

After the public debate, on 06/10/08 the chairman of the partnership Atgaja and on 2008-10-08 the CEE Bankwatch Network coordinator in Lithuania presented their motivated proposals, which were reasonably evaluated by the developers of environmental impact assessment documents. On

24/03/09 the discussion regarding these proposals was held at the Ministry of the Environment, which was attended by the representatives of the public who presented motivated proposals, subjects of the environmental impact assessment, the entities which had prepared the EIA documents and the Contracting Organization of the planned economic activity.

9. International consultations

The trans-boundary environmental impact assessment of the planned Visaginas Nuclear Power Plant with the power capacity up to 3400 MW_{el} was carried out according to provisions of Convention on EIA in a Transboundary Context (Espoo).

On 27/07/07 the Ministry of the Environment notified Belarus, Estonia, Latvia, Poland, Russia and Sweden about the commenced environmental impact assessment of construction and operation of the planned Visaginas Nuclear Power Plant by enclosing thereto the EIA Program, its Summary and asking these countries about their request to participate in the procedure of the trans-boundary environmental impact assessment. The aforesaid countries had been given a possibility to submit their comments and proposals on the EIA Program. Open presentations of to EIA Program to the public were arranged on 03/09/07 in Daugavpils (Latvia) and on 27/09/07 in Tallinn (Estonia).

Russia did not provide its request to take part in the process of the environmental impact assessment. Belarus, Estonia, Finland, Latvia, Sweden and Austria (the latter was involved in the process on its own request) have provided comments on the EIA Program, and the comments were taken into consideration while developing the EIA Report.

On 27/08/08 the EIA Report was submitted to Austria, Belarus, Estonia, Latvia, Poland, Finland and Sweden. Open presentations of the EIA Report to the public of these countries were arranged: on 01/10/08 in Tallinn (Estonia), on 08/10/08 in Daugavpils (Latvia), on 09/10/08 in Riga (Latvia) and on 14/10/08 in Braslav (Belarus).

All countries have provided comments and proposals on the EIA Report. Most questions were related to the choice of technological alternatives, radiological impact on the public health, radioactive waste management and risk analysis. The received comments and proposals of the countries have been reasonably taken into account.

On request of the countries, the Ministry of the Environment arranged in Vilnius the consultation meetings with the representatives of the relevant institutions of these countries on the matters of concern for these countries. The meetings were arranged: on 19/11/08 with experts from Austria, on 18/12/08 with experts from Poland, on 22/12/08 with experts from Belarus and on 09/02/09 with experts from Latvia. The meetings were also attended by the representatives of the Contracting Organization of the planned economic activity, the consortium which prepared the environmental impact assessment documents, interested authorities of Lithuania.

Moreover, the remarks and comments on the EIA report were submitted by international non-governmental organizations Greenpeace and CEE Bankwatch network. Received proposals were reasonable evaluated.

On January 26-30, 2009 in Lithuania a special expert mission of the International Atomic Energy Agency (IAEA) experts was held, it was arranged by the Ministry of the Environment, State Nuclear Power Safety Inspectorate (VATESI) and the Radiation Protection Centre. The mission revised the procedures of the environmental impact assessment of the planned Visaginas Nuclear Power Plant and evaluated its compliance with the best international practice and procedures from the point of view of radiation protection and protection of the environment. The IAEA experts stated that the information and data provided in the EIA Report are sufficient for the authorities of Lithuania to make decisions on the projected impact on the environment.

10. Conditions set forth in the Decision:

It is necessary to undertake the detailed assessment of the sites No 1 and No 2 in line with the IAEA Safety Standards document NS-R-3 *Site Evaluation for Nuclear Installations*. The assessment of the seismic hazards at the sites has to be carried out in line with the IAEA Safety Standard DS422

Evaluation of Seismic Hazards for Nuclear Installations. A seismic monitoring system will have to be installed for the surveillance of the seismic impacts.

Prior to the end of the development of the technical specification for the choice of the reactor technology, to perform the feasibility study on the planned use of the repositories for the low and intermediate short-lived radioactive waste (assigned for disposal of waste from Ignalia Nuclear Power Plant) for disposal of radioactive waste from Visaginas Nuclear Power Plant. With regard to the results from the study, to draw the requirements for radioactive waste treatment in the technical specification. The facilities for treatment of radioactive waste which will be generated at Visaginas Nuclear Power Plant as well as for storage of radioactive waste and spent nuclear fuel will have to be designed and constructed in line with the procedure defined by the legal acts. In the technical specification for the choice of the reactor technology to indicate the following limiting criteria: 1) the total public annual effective dose predetermined by the operation of all nuclear facilities shall not exceed 0.2 mSv; 2) the public dose resulting from the design basis accidents shall not exceed 10 mSv; 3) the frequency of accidents which can cause core damage (severe accidents) – no more than 10^{-5} event per one year of a reactor's operation; 4) the radioactive release limit during severe accidents – 100 TBq of Cs-137; 5) the frequency of large release – no more than 10^{-6} event per one year of a reactor's operation. These criteria will have to be used during the preparation of the safety analysis report in line with the requirements of the legal acts.

During the detailed territorial planning of Visaginas Nuclear Power Plant on the banks of Drūkšiai lake to develop an ecological protection area.

During the development of the technical design of Visaginas Nuclear Power Plant the management planning for protected *triturus cristatus* and *bombina bombina* shall be developed and approved, along with the selection of the technical impact mitigation measures.

The sanitary protection area of Visaginas Nuclear Power Plant has to be defined during the preparation of the technical design and approved in line with the procedure set for in the legal acts.

To prepare the technical design of Visaginas Nuclear Power Plant in compliance with the established procedure, including the environmental protection part therein. In the course of the development of the technical design of Visaginas Nuclear Power Plant there shall be worked out the respective measures for the monitoring of the environment with regard to the needs of the neighboring countries.

Prior to start of the operation of Visaginas Nuclear Power Plant, abiding by the requirements of LAND 2 -95 *Typical Regulations for the Use and Maintenance of Dams*, to develop and to get approved according to the established procedure the Rules for the Use and Maintenance of Drūkšiai lake.

During operation of Visaginas Nuclear Power Plant, the thermal load to lake Druksiai due to direct cooling shall not exceed 3160 MW. In addition to that, there has to be ensured compliance with permissible heating norms of water in the lake. The cooling water shall be taken from the existing water inlet point or from the inlet point in the western part of the lake, and the water has to be discharged through the existing outlet.

In the course of the design and operation of Visaginas Nuclear Power Plant, the residents (in the neighboring countries as well) have to be continuously informed about the operation of the nuclear power plant, data of the environmental monitoring, etc. with an aim to confirm that the undertaken economic activity does not cause negative impacts on the environment and public health, and also to avoid negative image of the nuclear facility and related negative consequences on the attractiveness of the territory.

11. The main motives which served as a basis during the decision –making process:

The Ministry of the Environment, upon having analyzed the EIA Report, the conclusions provided by the environmental impact assessment subjects on the feasibility of the activity, remarks and comments provided by the countries – participants of EIA in a Trans-boundary Context, states the following:

Nuclear reactors meeting the contemporary safety and technological (no older than those of generation III/III+) requirements will have to be designed.

All examined technologies of the nuclear reactors are acceptable in terms of the impact on the environment and public health.

Total radiological impact on the environment and general public to be caused by the nuclear facilities located in the territory of the planned nuclear power plant and Ignalina Nuclear Power Plant will comply with the requirements stipulated by the legal acts subject to the implementation of the relevant mitigation measures.

The thermal load of lake Druksiai will be restricted by administrative and organizational measures in order to reduce a negative impact on the ecosystem of the lake.

12. The statement of the Decision – According to the submitted EIA Report, the construction and operation of Visaginas Nuclear Power Plant with the power capacity up to 3400 MW_{el} in the examined sites is permissible.

Undersecretary of the Ministry of the Environment

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