

**CIVIL EMERGENCY PREPAREDNESS
AT THE IGNALINA NUCLEAR POWER PLANT**

**ACTIVITY AND FUNCTIONS OF VATESI
(STATE NUCLEAR SAFETY INSPECTORATE)**

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ACTIVITY AND FUNCTION OF VATESI

A strict division of functions between the operating organisation and the regulatory authority is a must when dealing with the nuclear safety issues. It is the State Enterprise Ignalina Nuclear Power Plant as an operator that is responsible for the safe operation of the units. VATESI performs the functions of the national regulatory authority by determining national nuclear safety regulation following up on their implementation of nuclear related facilities, exercising corresponding control measures.

The Republic of Lithuania has undertaken an obligation to ensure safety at all nuclear installations under its jurisdiction, including Ignalina NPP, and to establish the legal framework for the nuclear safety regulatory system, namely:

- national safety rules and requirements;
- licensing system for nuclear facilities;
- system for analysis and assessment of nuclear installations;
- enforcement mechanism, ensuring observance of the requirements and license conditions.

To deal with these issues, the Government has established State nuclear Safety Inspectorate (VATESI) on 18 October, 1991. Such system to ensure nuclear safety is a must for any country, envisaging the development of nuclear energy. The basic guidelines for the regulatory institutions are formulated in the recommendations of IAEA.

The establishment of VATESI was complicated by the absence of experts, qualified in nuclear safety regulation and inspection.

At first VATESI consisted of a group of inspectors, working at Ignalina NPP.

On 21 October, 1992, the government of Lithuania approved the statute of VATESI, regulating its activities and determining the basic objectives, functions, and rights of the inspection.

The main goal of the Inspectorate, as prescribed by the statute, is to ensure the state regulation and supervision of nuclear and radiation safety at nuclear installations and other related organisations.

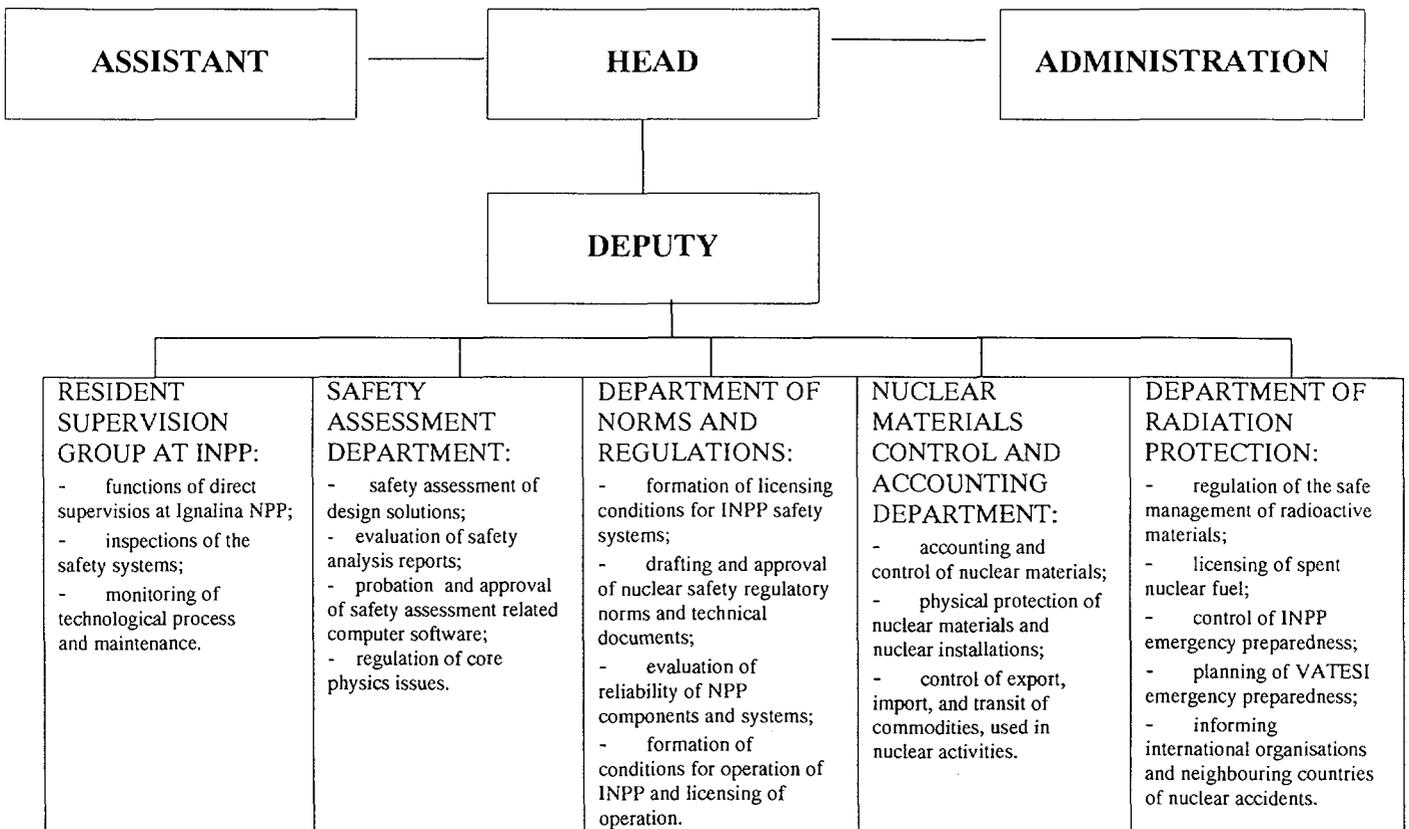
In addition to that, VATESI performs the following functions to:

- form the principles and criteria of safety in nuclear energy, safe utilisation, transportation and storage of radioactive and nuclear materials, establish safety related norms and regulations;
- issue licenses for the operators of nuclear or radiation related production or technologies;
- prepare and perform inspection programmes;
- make proposals related to preparation of laws and other normative acts, nuclear safety documentation in the facilities under control;
- supervise the accounting of nuclear and radioactive materials.

VATESI is an independent organisation, the head of VATESI is appointed by the Prime Minister. VATESI reports directly to the Government.

The structure of VATESI is presented on Fig.

VATESI STRUCTURE



Today VATESI consists of 26 employees. Lack of qualified experts is one of the main problems faced by VATESI. The majority of them work in Vilnius, but VATESI also has a group working at INPP, which is an extremely important division of the regulatory authority, performing supervision functions at INPP, the “ears and eyes” of VATESI. Inspectors of the supervision group are involved in the direct monitoring of the technological process within a nuclear installation. They focus their attention on all of the safety-activities at the nuclear power plant.

VATESI co-operates with technical support organizations in Lithuania, also foreign and international institutions.

The main national law, which regulates use of nuclear energy, is “Law on Nuclear Energy”. Parliament promulgated it on 14 November 1996. This law is not the only law regulating this area: the Law on State Enterprises (promulgated in 1990), Law on Energy (promulgated in 1995), Law concerning control of import, transit and export of strategic goods and technologies (promulgated in 1995) and other which also regulate usage of nuclear energy.

State control and supervision of the construction of nuclear facilities shall be effected during all the major stages of work: design and construction, commissioning, operation and decommissioning.

Lithuania pledged to regulate internal relations, connected to the usage and international experience, IAEA requirements and recommendations require handling of nuclear energy and radioactive materials in a way it.

Lithuania has signed international conventions, which directly regulate the use of nuclear energy:

1. The 1968 Treaty on the non-proliferation of Nuclear Weapons was ratified in 23 September 1991. The agreement with IAEA for Application of Safeguards in Connection with the Treaty on the non-proliferation of Nuclear Weapons was signed in 1992;

2. In 1992, Lithuania acceded the 1963 Vienna Convention on Civil Liability for Nuclear Damage, the 1988 Joint Protocol Relating to the Application of the Vienna Convention and Paris Convention and the 1997 Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage;

3. The 1986 Convention on Early Notification of a Nuclear Accident was acceded in 16 November 1994;

4. The 1979 Convention on Physical Protection of Nuclear Materials was acceded in 7 December 1994;

5. The 1994 Convention on Nuclear Safety was ratified in 12 June 1996;

6. The 1997 Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management was signed 30 September 1997;

Safety of Radioactive Waste Management was signed 30 September 1997. The 1997 Convention on Supplementary Compensation for Nuclear Damage was signed 30 September 1997.

In implementing state regulation nuclear safety, radiation protection and accounting for nuclear materials in the area of nuclear energy VATESI shall:

1. Together with the Ministry of Construction and Urban Development approve technical regulations of the design and construction of nuclear facilities, and of maintenance of the structures;

2. Approve standards and rules of operation of nuclear facilities, standards and rules of storage and disposal of radioactive materials used in nuclear energy and establish the procedure for their drafting;

3. Control the compliance with the requirements stipulated in licences and safety regulations;

4. The state regulatory system for the accounting for and control of nuclear materials and ensure its viability;

5. Establish the procedures of accounting for and control of nuclear materials in the Republic of Lithuania and monitor compliance with them during the import, export, re-export, transport, use, storage and disposal of nuclear materials;

6. Issue licences to legal and natural entities for the design, construction, operation, safety appraisal of nuclear facilities and their systems, and other work related to safe operation of nuclear facilities;

7. Inform the mass media about the radiation and safety situation in nuclear facilities;

8. Prepare surveys on the safety of nuclear facilities and submit them to the Government, local authorities and other authorities concerned;

9. Organise and support research into and expert analysis of nuclear safety and radiation protection, independently carry out the analysis of incidents and occurrences;

10. Co-ordinate and control the preventive measures for the staff and the population in the event of a nuclear facility accident, monitor the state of accident preparedness of the facility;

11. Impose sanctions established in statutory acts on violators of safety rules;

12. Organise bilateral and multilateral international co-operation in the sphere of nuclear safety and radiation protection.

In performing its functions VATESI shall act independently, in accordance with laws, its own regulations and other legal acts. To prevent a possible nuclear accident, VATESI may resort to any preventive measures within its competence, a temporary shutdown of a nuclear facility included.

Standards and rules (guides and regulations) of nuclear safety and radiation protection approved by the Government or by the institutions authorised. It is mandatory for all public and local authorities, enterprises, institutions, organisations, their associations, the officials and other persons whose activities are related to the operation of nuclear facilities, to the use and management of nuclear and radioactive materials therein. Safety guarantees in nuclear energy based on the requirements of the laws and regulations of the Republic of Lithuania, on the requirements of the international treaties to which the Republic of Lithuania is a party, also on the recommendations of the IAEA and other international organisations and authorities.

VATESI confirmed the regulations on Physical Protection of Nuclear Facilities in 1997 and also confirmed part of regulation and guides on nuclear safety and development procedures. Licensing procedures, list of regulations and guides on nuclear safety has been prepared.

VATESI has prepared draft "Law on Radioactive Waste Management" and participated in drafting laws on radiological protection and on management of Ignalina power plant.

A Grant Agreement was signed on 10 February 1994 by the Lithuania Government, the Ignalina Nuclear Power Plant (INPP) and the European Bank for Reconstruction and Development (EBRD). The grant was to fund a project of short term safety upgrades in support of the Safety Improvement Program (SIP) being implemented at INPP. Included in the Grant Agreement was a commitment by Lithuanian authorities that an "In-Depth Safety Assessment of the Ignalina NPP" would be performed. The safety assessment was the responsibility of the INPP with the support of Western and Eastern nuclear safety experts and the reactor designer, NIKIET. Subject to budget and time constraints, the in-depth safety assessment was to be comparable to a Safety Analysis Report (SAR) produced in Western countries to demonstrate the adequacy of plant safety and to provide the major contribution for the regulator in the licensing process. In addition to production of the SAR, this particular project included the independent review of the safety analysis report (RSR) jointly by Western and Eastern experts. Unit 1 of INPP was the objective of this assessment. However, since no significant differences were identified between Units 1 and 2, the results apply to both units. Prior to project execution, Guidelines were developed and endorsed by the regulatory authority (VATESI). This endorsement required the examination of Lithuanian/Russian standards. The examination concluded that in general the current Lithuanian/Russian regulations constitute an adequate framework, but a number of specific areas were identified where the Western practice was to be taken as the basis for comparison for the plant.

A Panel of international nuclear safety experts, Ignalina Safety Panel (ISP), was established in accordance with the Grant Agreement. The objectives of the Panel were to define, monitor and supervise the scope and production of the Ignalina SAR and its review. The Panel was to make independent recommendations to the Lithuanian Government, which has ultimate responsibility for plant safety, regarding a decision for continued INPP operation and implementation strategies of the SAR and RSR recommendations and to the EBRD.

Ignalina Safety Panel recommendations were presented to the Lithuanian Government in February 1997. In April 1997 ISP members have visited Lithuania to present their recommendations to and discuss them with Lithuanian Government and specialists.

All ISP recommendations were accepted and included into "INPP Safety Improvement Programme No 2" (SIP-2).

SAR has examined three areas that are equally important to the safe operation of a nuclear power plant: Systems Analysis, Accident Analyses and Operational Safety Management. Each area has different requirements and different methods of assessment. Differing degrees of non-compliance with requirements were found in each area. However none of the numerous non-

compliances were severe enough to require shutdown of the reactors while they are being remedied.

In view of the results of the accident analysis, assessment of the capability of the existing safety systems and of safety management practices produced in SAR, and with expeditious implementation of all of the identified modifications, procedures and processes, the SAR team supported the INPP management conviction that:

1. An adequate safety case for continued operation of INPP has been demonstrated.
2. The safety case is adequate to the point of first gap closure which is the life limiting factor.
3. The plant's safety standards and practices have been assessed and recommendations for improvement have been made and accepted.

The Ignalina Safety Panel has evaluated the SAR development and its independent review. ISP had stated that this project was the first attempt to produce a Western style SAR for any Soviet designed NPP. The Panel believed that it represented an impressive effort that achieved a high degree of success. The Panel believed that it represented an impressive effort that achieved a high degree of success. The Panel made a summary on the major conclusions of SAR and RSR with regard to this project.

In Lithuania the operation of Ignalina nuclear power plant is the dominant nuclear activity. The plant is located on the north-east corner of Lithuania, close to the borders with Belarus and Latvia and is situated on the southern shore of Lake Drūkštai, 39 km from the town of Ignalina. The nearest cities are the Lithuanian capital Vilnius (130 km away) with a population of approximately 575,000 and the city of Daugavpils, in Latvia (30 km away), population 126,000. The plant's closest neighbour is the town of Visaginas, the residence of the Ignalina nuclear plant personnel. The town is located 6 km from the plant and has a population of about 32,600.

The main document that regulates development of defence and national security system of the Republic of Lithuania, is the Act of the Fundamentals of National Security accepted in Seimas (Parliament) on 19th December, 1996. The system of national security in Lithuania consists of the basic resolutions, principles and methods confirmed by the purpose activities of the State and citizens, the whole complex of means directed towards the country integration into Europe and Transatlantic Unions, laws and other legal acts, activities of state institutions founded for this purpose and ways of their interaction. There are civil protection and rescue institution among them. Government manages all national security means implementation and obligates all civil protection institutions and Lithuanian economy infrastructure objects to execute compulsory rescue and civil security tasks.

A radiation accident at the Ignalina NPP is defined as an infringement of the normal operation in which release of radioactive and ionising radiation goes beyond the specified limits and which requires stopping the operation of the facility/equipment containing ionising radiation sources. Accidents are classified according to the spread of involved radiation materials or ionising radiation into three types: on-site or local, off-site or area and general accidents. To enable an early start-up of the emergency organisation, on-site as well as off-site, technical criteria are under the development that will identify the level of radiation accident at an early stage.

Local accident is an infringement of plant operation in which on-site release of radioactive materials and ionising radiation goes beyond the normal operation limits specified for equipment, process systems, facilities and buildings. Certain actions have to be taken to protect the plant personnel.

Area accident is an infringement of plant operation in which off-site release of radioactive materials and ionising materials and ionising radiation within the exclusion zone exceeds the specified normal operation limits. Radiation exposure of personnel and contamination of plant facilities, buildings and territory may occur and go beyond the permissible limits. Actions have to be taken to protect the plant personnel.

General accident is an infringement of plant operation in which off-site release of radioactive materials and ionising radiation outside the exclusion zone exceeds the specified normal operation limits. Radiation exposure of plant personnel and population may exceed the specified limits. Actions have to be taken to protect the plant personnel and population.

On site emergency plan defines three levels of emergencies based on radiological hazard. However, no alert status has been established to ensure early activation of emergency response. For example, situations that may degrade the safety of the plant, such as fire with potential damage of safety equipment or systems, may not cause activation of emergency plan. So alert status should be included in the emergency plan to ensure an adequate response to the events that threaten a radiological release but have not yet resulted in such release.

Civil emergency preparedness is one of the main state functions that includes the preparation of all governmental institutions, local authorities executive institutions, all economy subjects and population for crisis situations and operational activities during them, utilisation of all state resources to provide its vitality, inhabitants survival, to protect property and environment from the consequences of the extreme situation, when inhabitants take active participation in these activities. Civil emergency preparedness is the whole complex of activities and means of state executive bodies and special forces, it is a prior trend of the governmental activity, providing organised, directed and expedient utilisation of forces and resources, implementing effective liquidation of disaster consequences and solving war time problems.

Territory and publicity principles are the main principles according to which activities of civil protection and rescue institutions are organised. Civil protection is organised in the whole state territory according to its administrative division and covers all the population of the country and the foreigners who are in the territory of the Republic of Lithuania. All activities of governmental institutions connected with assuring safety of population are open for the society and its information means.

In case of emergency residences of Lithuania will be protected in accordance with the "Plan for the Protection of residents of the Republic of Lithuania in the Event of Accident of the Ignalina NPP" adopted by the Prime Minister of the Republic of Lithuania on 4 of May 1995. The plan is needed for organisation and coordination of actions taken over by town and municipal authorities ministries, governmental authorities and services for taking safety measures with regarding to population and cattle, for arrangement of immediate response actions after the accident.

According Nuclear Law INPP carries responsibility for nuclear emergency prevention and its consequences elimination. Nuclear emergency and its consequences elimination work is carried out in compliance with INPP Emergency Preparedness Plans and instructions. INPP Emergency Preparedness Plan is the main operative instruction to carry out organisational, technical, medical, evacuation and other activities to protect the plant personal the population, the plant and the environment from emergency consequences, catastrophes, natural calamities, the threat of attack and black mail. New Plan was approved in 1998.