Joint Convention
Answers to Questions Posted to Lithuania in 2015

Q.No 1	Country	Article Planned Activities	Ref. in National Report K, Page 95

Question/ Comment: It is mentioned in the Report that "…the Near Surface Repository should meet following criteria:

• …Design life time of the disposal vaults, sealing and water drainage system: 300 years."

Could you clarify that measures do you plan to provide operation and maintenance of "sealing and water drainage system" during the 300 years (100 years of institutional control and 200 years of passive control)?

Answer: The containment of waste at the Near Surface Repository (NSR) relies on 3 independent components of the disposal system:

- Waste package (only solid waste forms are considered);
- The disposal structure;
- The geological system.

The waste package comprises conditioned waste in a stablising matrix and a container.

During the institutional active and passive control phase the disposal structure includes the disposal vaults, clay material, in which the vaults are embedded, and forms part of the capping system which are the engineered barriers of the disposal system.

Active institutional controls are put in place to prevent intrusion into the facilities and to ensure and confirm that the disposal system is performing as expected by means of surveillance and environmental monitoring. It is planned that the active institutional control period will last for at least 100 years.

The Environmental Laboratory at NSR Site will be in charge of monitoring the site and in particular the state of the final vault or top cover, which is an essential element against the intrusion of water into the vault and preventing its contact with and transport of radioactive material, out of the vault enclosure.

Monitoring of the cover includes, in particular, the following:

- **Subsidence and erosion –** the monitoring of the top cover detects possible subsidence of the cover or the thinning of its layers, and enables measures to be devised to suppress the origin of this phenomenon and return the cover to its intended fully functioning state.
- **Vegetation layer condition –** the vegetation layer is set as an aesthetic feature of the cover, but it also contributes to holding the cover together, preserving it from erosion due to wind and water, provides for run-off of precipitation water an appropriate distance from the vaults, increases evapotranspiration, reduces frost penetration thus protecting the capping system from freezing and thawing damage.
- **Geodesic monitoring** – setting and displacement control of structures positions, soil foundation and layers of the top cover.
- **Top cover materials condition monitoring** – Control of changes in properties and characteristics of materials used to form the engineered barriers of the disposal system. Monitoring of changes in properties and characteristics of the cover materials in the course of time and adoption of necessary measures to prevent unacceptable degradation, provides the long-term operational safety of the NSR during the designed lifetime.
- **Monitoring of water infiltration through the system of barriers** - Detection of water in the leakage control system of engineering barriers of the NSR top cover. The system is intended for diagnostics and quantitative estimation of water precipitation into disposed Waste Packages due to aging of the engineered barriers as well as during the flooding of disposal vaults due to unexpected groundwater level rise which might result in

radionuclide release outside the erected barriers.

In order to avoid water contact with the disposed waste, reliable **drainage systems** are engineered on the NSR site. These systems moreover enable to collect, store and control possible water contamination by radionuclides, in order to follow-up water release from the disposal vaults, trigger alarms and, should an abnormal contamination level be detected, make possible the implementation of mitigation measures.

After the closure of the vaults, a cover system will be set to impede water from precipitation to permeate to the waste enclosed in the vault. This cover system consists in layers of natural soil selected for its draining or confining properties placed on top of the closed vaults with appropriate slopes to facilitate water run-off.

The storm basins collect precipitation water from the vault drainage system (before start of operations), the vault group drainage system, the site drainage system and the precipitation water collected on the roads and building roofs.

The storm basins play a role to prevent flooding due to an uncontrolled discharge of collected rainwater by the site and must therefore be preserved from such risk itself. Concurrently, the storm basin will be located low enough so that drainage systems direct the collected water to it by gravity, thus keeping the system passive.

Only non-contaminated water may be directed to the storm basin and the absence of contamination is monitored by the Environmental Laboratory which only allows release of the water it contains when allowable radioactive contamination levels are verified. Control and accounting of water discharged into the environment will be performed by direct continuous measurements of the flow in discharge pipeline of storm basin.

At the start of the of the 200 year period of passive control the radioactive material disposed of in the NSR will have decayed to a significant extent and will continue to decay. Studies show that even allowing for an eroded top cover the sealing of radioactive material is adequate given the effect of dispersal and dilution in the surrounding environment. The passive nature of the drainage system, since the NSR is located on a hill, ensures that adequate drainage continues to be provided. The short-lived nature of the radioactive material and the control and limitation of long-lived radioactive material disposed of in the NSR ensures that after 300 years no environmental hazard remains.

Q.No	Country	Article	Ref. in National Report
2		General	General

Question/ Comment: Was there an assessment of the cumulative effect of radiation and nuclear facilities on the environment and trans-boundary transfer performed?

Answer: Environmental impact assessment procedure is performed in accordance with the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo convention) if a proposed activity is likely to cause a significant adverse transboundary impact and national legislation.

One of the requirements during the planning of the new nuclear installation is an assessment of the effect of radiation on the environment and population. If there are several nuclear facilities (existing or planned) at the same site or close to it, an assessment of cumulative effect of radiation should be done.

A new assessment of cumulative effect of radiation (including possible trans-boundary transfer) is done during environment impact assessment procedure for every new planned installation taking into account an effect of existing installations and possible effect of all installations, for which decision has been already made.

Cumulative effect shouldn‘t exceed dose constraint – 0.2 mSv per year.

Q.No 3	Country	Article General	Ref. in National Report Section A

Question/Comment: What role the previous European projects for supporting decommissioning of Ignalina NPP have played on the “changes” which started to occur in the “legislative system” since 2011? Have some recommendations from these projects been found particularly relevant for some aspects?

Answer: No recommendation came from European projects for supporting decommissioning of Ignalina NPP which influenced legislative system changes in 2011.

The previous European projects mostly were oriented to provide services to review submittals of Ignalina NPP in the field of decommissioning and radioactive waste management.

Changes in 2011 in Laws were initiated when it was realized the need of improvements in describing licensing system, ensuring nuclear safety, describing and distinguish competence of regulatory bodies and operator, ensuring independence of regulatory body.

Q.No 4	Country	Article General	Ref. in National Report Sections A, K, I

Question/Comment: On the way towards a relative global independence concerning the radioactive waste management in Lithuania, is it an identified objective to avoid as far as possible in the future, the shipment of radioactive waste for disposal in a foreign country?

Answer: In the legal acts of the Republic of Lithuania there are no specific provisions which would require avoiding the shipment of radioactive waste for disposal in a foreign country.

In general, the Law on Management of Radioactive Waste states that management of radioactive waste must ensure that radioactive waste generated in the territory of Republic of Lithuania shall be disposed in disposal facilities in the territory of Republic of Lithuania or transported for disposal to other country, except cases related to management of spent sealed sources. According to provisions of this law, radioactive waste from Lithuania may be transported only to such states that have the administrative and technical capacity to receive it, as well as the regulatory and other structures, needed to manage radioactive waste in accordance with the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management and prohibited to export radioactive waste for disposal in sites lying south of 60 degrees latitude South.

Specific attention is given to the management of spent sealed sources. With the aim at decreasing the amounts of radioactive waste in Lithuania, legal acts have established additional requirements for import of sealed sources into Lithuania. In such cases it is obligatory for licence holder to obtain a written commitment from the source provider to return the sealed source after its disuse and to contract the state enterprise Radioactive Waste Management Agency (RATA) for the management of source in a case, if due to arisen circumstances it would be impossible to return the source to the supplier, and to insure for the value equivalent to RATA services.

Q.No	Country	Article	Ref. in National Report

5		General	Section K

Question/Comment: Does Lithuania develops or intends to promote innovative concepts, methodologies, technologies or tools at any stages of waste management? If yes, could Lithuania give a short description and the possible collaborations which could emerge in the European context?

Answer: As a small country Lithuania has limited possibilities for development of innovative concepts, methodologies, technologies or tools of radioactive waste management. However Lithuanian scientific and research institutions collaborate with foreign research bodies and entities in this research field.

Q.No	Country	Article	Ref. in National Report
6		General	Overview matrix

Question/Comment: According to the new Guidelines regarding the Form and Structure of National Reports (INFCIRC/604/Rev.3 Draft 3), Lithuania's National Report should include an overview matrix to be used by the Rapporteur during the Country Group review.

Answer: Agreed matrix will be presented during Lithuanian presentation in the next Review Meeting.
In next National report it will be also included. You can find the matrix below.

Type of Liability	Long Term Management Policy	Funding of Liabilities	Current Practice / Facilities	Planned Facilities
Spent Fuel	Storage for 50 years. Disposal in deep geology	Funding available for storage only.	On site storage- dry (storage facility) and wet (in pools)	Construction of new dry storage facility. Investigation for disposal
Nuclear Fuel Cycle Waste	Storage on site, management and disposal	Funding available except for disposal of HLW	Conditioning and storage on site	Retrieval of old waste, storage and disposal facilities
Application Wastes	State register, collection, pretreatment and storage, disposal	Waste producers pay	Some waste in Maišiagala (old practice). Other stored at Ignalina NPP.	No additional facilities. Shall be treated in existing or planed for nuclear fuel cycle facilities.
Decommissioning Liabilities (1)	Immediate dismantling	Available for the first steps	Continuation of decommissioning activities of Unit 1 and Unit 2.	Facilities for waste management, storage and disposal
Disused Sealed Sources	Returned to supplier. Recovery of orphan sources	Waste producers pay. State budget for orphan sources	Registration and collection and storage	No additional facilities. Shall be treated in existing or planed for nuclear fuel cycle facilities.

Q.No	Country	Article	Ref. in National Report
7		Article 4	Section G, (v), page 65

Question/ Comment	All spent nuclear fuel in Lithuania is located in INPP's storage pools, or in the dry interim storage facility. Biological, chemical and other hazards are subject to the environmental and radiation protection legislation, which aims at human health protection. Hazards other than radiation encountered by workers during handling of spent fuel are covered by general legislation on safety in the workplace. How the materal conditions of the spent fuel bundles and their integrity (to be managable for a final storage placement) will be checked and guaranteed for the long term of 50 years? Are they potential degradation mechanisms and processes discussed or how there are taken into account?
Answer	The casks loaded with SNF are transferred from Reactor Units into the newly constructed ISFSF for long-term interim storage. Technical Specification (TS) provides condition for design life for storage casks and civil constructions (storage for 50 years after insertion of the final spent fuel into the store) plus an allowance of 5 years for the subsequent transport of the fuel to a different location. Design principles and design methods of CONSTOR® RBMK1500/M2 casks ensure adequate protection of the spent fuel during long-term storage. Degradation of SFA structure and cladding is prevented during long-term storage in CONSTOR® RBMK1500/M2 casks by limiting the fuel rods cladding temperature and by inert gas filling of the casks. Cladding temperature is held below 300 °C during SNF storage and handling. After the SNF loading and vacuum drying casks are filled with an inert gas. The cask cavity is dried by vacuum and the degree of dryness is measured according to the pressure rise method (criterion < 3 hPa in 2 hours) prior to filling of the cavity with helium. This ensures that the water content in the cask is < 10 g/m³ (corresponding to a dew point of < 10 °C). Condensation of water in the cask and significant corrosion effects are therefore excluded. If the fuel bundles with cladding leakage have been loaded to the cask, a cartridge filled with a drying agent is inserted into the cask to collect the small amount of water that may be left in leaking fuel rods after vacuum drying. Calcium oxide is used as drying agent which is transferred to calcium hydroxide which is stable up to 550 °C. This drying agent has been specifically validated for the application in spent fuel storage casks. The cartridge filled with a drying agent is inserted into the centre tube of the 32M-basket. Due to the fact that the cartridge is geometrically separated from the fuel bundles and the loaded cask is handled, transferred and stored in vertical position, blockage of the cartridge by CRUD is excluded. The hermetically sealed containment of the casks excludes air ingress. Thus, significant material deterioration due to corrosion is prevented. Integrity of casks is secured even after long-term storage.

Q.No	Country	Article	Ref. in National Report

8		Article 7	G, P.69
Question/ Comment	In 2009, the regulator issued a license for the construction of a new intermediate storage facility for spent nuclear fuel from INPP. Please specify the license conditions for the construction of a new intermediate storage facility for spent nuclear fuel from INPP in terms of safe storage of uranium-erbium fuel.		
Answer	Specific requirements in terms of safe storage of spent nuclear fuel have not been established in the licence conditions of the Construction license No.2 /2009 issued for Interim Spent Fuel Storage Facility (B1). The abovementioned requirements were established and adopted by VATESI in B1 project documentation and Preliminary SAR. License conditions of the B1 Construction license are identified only the general requirements related to B1 management and organizational requirements during construction and the requirements to provide relevant documents according to Lithuanian laws before getting B1 commissioning license.		
Q.No	Country	Article	Ref. in National Report
9		Article 7	G, Page 69
Question/ Comment	Do you use burn-up as a parameter for the nuclear safety justification of spent nuclear fuel storage facilities?		
Answer	Yes, in frame of existing and new spent nuclear fuel storage facilities burn-up was used in safety justification in accordance with “THE GENERAL REQUIREMENTS FOR DRY TYPE STORAGE FACILITY OF SPENT NUCLEAR FUEL”, BSR-3.1.1-2010: " Clause 84.1. all calculations for the spent fuel shall be done with a presumption, that the spent fuel is of such burnup and such enrichment, which would correspond the maximal reactivity, excepting the cases, when, in accordance with the corresponding justification and methodology, agreed by VATESI, the reduction of fissile materials concentration due to the fuel burnup is being evaluated. Such methodology shall be validated and verified properly, using the experimental data and the fuel assembly burnup shall be confirmed by the measurements and controlled by technical and administrative measures".		
Q.No	Country	Article	Ref. in National Report
10		Article 9.2	G, Page 62
Question/ Comment	During the planning and implementation stage of each decommissioning activity the licence holder also shall: … that conditional and unconditional clearance levels are applied for the radioactive substances that are transported from the nuclear facility or reused. On page 12 it is said that unconditional clearance levels are established by Nuclear Safety Requirements BSR-1.9.2-2011 “Derivation and Use of Clearance Levels of Radionuclides for Materials and Waste Generated during Activities in the Area of Nuclear Energy” (2011). Could you clarify, did Regulatory Body establish “clearance levels for conditional release of materials from regulatory control”? If yes, does License Holder apply such levels in practice? Provide some examples, please.		
Answer	The license holder may apply to VATESI considering conditional clearance levels derivation. Conditional clearance levels shall be derived for every particular use of materials or waste management options. For now, there were not any practice, yet the possibility is foreseen in Lithuanian legislative system.		
Q.No	Country	Article	Ref. in National Report

11		Article 10	Sections A, G

Question/Comment: Assuming that geological disposal of spent fuel will occur on the Lithuania territory, geological disposal is considered as a “final solution” despite the difficulties described in article 10 of section G. However, does the possibility still exist in the future, that other approaches (e.g. deep boreholes), which might arise and judged trustworthy, would be considered?

Answer: Various spent fuel disposal methods are still under consideration. The major plan is to investigate applicability of the ”traditional” repository design for Lithuania, consisting of excavated underground tunnels and caverns (Geological disposal). Other spent fuel disposal methods (like deep boreholes approach and other) will be investigated too.

Q.No	Country	Article	Ref. in National Report
12		Article 10	B-32.1.i:p9/D-32.2.i:p15/G:p74/K:p96

Question/Comment: In Ignalina NPP, the spent fuel is stored in reactors' pools for 5 years. When this time limit is reached, the spent fuel is loaded into casks and transferred to the dry storage facility where it is stored in the same casks, normally for a few decades (50 years). Section B of the report mentions that the geological disposal is considered as a final solution. However, a possibility to ship the fuel abroad for reprocessing has to be analyzed too. The following measures are foreseen in the strategy on radioactive waste management of spent fuel : 1) to construct a new spent fuel storage facility; 2) to transfer spent fuel from INPP to the dry storage facilities; 3) to analyse the possibilities to dispose of spent fuel and long-lived radioactive waste in Lithuania or to reprocess or dispose it in other countries investigations lead on the possibilities to dispose spent fuel and long-lived radioactive waste in Lithuania or to reprocess or dispose it in other countries.
Could Lithuania provide more information or preliminary conclusions for the long term management of spent fuel?

Answer

Current Radioactive Waste Management Strategy was approved in 2008 and it now is under revision taking into account requirements of council directive 2011/70/EURATOM. New Lithuanian National Programme for the Management of Spent Fuel and Radioactive Waste will be prepared until September of 2015. This new Programme will cover all aspects of spent fuel and radioactive waste management from generation to disposal.

In general, direct disposal of the spent fuel is considered as a basic spent fuel management option. All feasibility and cost investigations are based on this strategic approach. As it is foreseen to store the spent fuel in the dry storage containers for 50 years, and repository siting and construction takes about 30 years, the final decision on future management of the spent fuel has to be taken by 2030. Up till then all management and disposal options should be analysed and compared.

Initial studies on geological disposal possibilities were performed. The main objective was to demonstrate that in principle it is possible to implement a direct disposal of spent fuel in Lithuania in a safe way. The choice of option for the potential disposal of Lithuanian spent fuel is to a large extent a political decision. The main conclusion made during the studies that employing present technologies it would in principle be possible to dispose spent fuel and other long-lived high level radioactive wastes into the repository built in Lithuania.

Q.No	Country	Article	Ref. in National Report

13		Article 10	G, 74

Question/ Comment: Please provide information on the progress made so far concerning the political decision whether or not spent fuel will be directly disposed of in Lithuania? Have there already been talks and negotiations with other countries?

Answer

Current Radioactive Waste Management Strategy was approved in 2008 and it now is under revision taking into account requirements of Council directive 2011/70/EURATOM. New Lithuanian National Programme for the Management of Spent Fuel and Radioactive Waste will be prepared until September of 2015. Adoption process of the new Lithuanian National Programme for the Management of Spent Fuel and Radioactive Waste will be good opportunity for the discussion among politicians and society.

Lithuania has not entered into negotiations with other countries regarding disposal of Lithuanian spent fuel.

Q.No	Country	Article	Ref. in National Report
14		Article 10	Section G, second par., page 74

Question/ Comment: In the text it is stated that it is essential to analyse the possibilities to dispose spent fuel and long-lived radioactive waste in Lithuania or to reprocess or dispose it in other countries. Are they any time frames or schedule set up for analyses especially regarding the possibilities to dispose spent fuel and long-lived radioactive waste in Lithuania?

Answer

In general, direct disposal of the spent fuel is considered as a basic spent fuel management option. All feasibility and cost investigations are based on this strategic approach. As it is foreseen to store the spent fuel in the dry storage containers for 50 years, and repository siting and construction takes about 30 years, the final decision on future management of the spent fuel has to be taken by 2030. Up till then all management and disposal options should be analysed and compared.

New Lithuanian National Programme for the Management of Spent Fuel and Radioactive Waste will be prepared until September of 2015 (considering to the requirements of the Council directive 2011/70/EURATOM). In New Programme will be schedule of the disposal of spent fuel and long-lived radioactive waste in Lithuania

Q.No	Country	Article	Ref. in National Report
15		Article 10	G, Page 74

Question/ Comment: It is mentioned in the Report that "…Despite a scientific evidence of achievable safety, the implementation of a geological disposal encounters difficulties because of lack of confidence from the politicians and the public. It is intended to use several means to increase such confidence level…" Does Lithuania plan to develop and approve some governmental document related to detail investigations of siting of geological disposal including involving of public to this process?

Answer

New Lithuanian National Programme for the Management of Spent Fuel and Radioactive Waste will be prepared until September of 2015 (considering to the requirements of the Council directive 2011/70/EURATOM). In New Programme will be

schedule and required steps (required investigations, development plans and so on) of the disposal of spent fuel and long-lived radioactive waste in Lithuania. The Programme includes tasks related to involvement of public to the process.

Q.No 16	Country	Article Article 11	Ref. in National Report H, Page 76

Question/ Comment	Does Lithuania have a normative document, establishing acceptance criteria for the Radioactive Waste transfer for the disposal?
Answer	Lithuania has General Radioactive Waste Acceptance Criteria for Disposal in Near Surface Disposal Facilities, which includes very general requirements on chemical, physical, thermal, mechanical characteristics for the waste intended for near surface disposal. It also includes requirements on preparation of waste package specification – the document describing waste packages of disposal facility including procedure of quality assurance. Detailed waste acceptance criteria for disposal facility shall be prepared by the future operator of such a facility. These criteria shall be developed based on safety analysis of the disposal system taking into account operational safety and all possible scenarios in future evolution of the disposal system.

Q.No 17	Country	Article Article 12	Ref. in National Report H p. 78

Question/ Comment	"RATA performs conditioning of institutional waste." Question: Where and how is institutional waste conditioned?
Answer	Institutional waste is collected and transported to RATA‘s laboratory in Vilnius. In this laboratory radioactive waste is sorted, processed and packed into appropriate containers. After this RATA transports these packages to Ignalina NPP radioactive waste storage facilities.

Q.No 18	Country	Article Article 14	Ref. in National Report H p.81

Question/ Comment	Could you give more detailed information on the decommissioning of the Maišiagala storage facility?
Answer	Maišiagala radioactive waste storage facility decommissioning process will be performed in two stages: 1. Preparation for the storage facility decommissioning: preparation of licensing documentation and submission to the competent authority - VATESI (State Nuclear Power Safety Inspectorate) as well as elaboration of decommissioning design documentation. Expected dates 2016-2019; 2. Construction of infrastructure necessary to retrieve the radioactive waste,

radioactive waste retrieval, processing and transporting to Ignalina NPP for conditioning and storage. Expected dates 2019 – 2022.

Q.No 19	Country	Article Article 16	Ref. in National Report H

Question/Comment: We would like to clarify what radiation safety requirements for management of liquid RW of medical origin, are applied in Lithuania. Under which circumstances the construction of a special sewage and septic tanks for liquid RW is required, under which conditions discharge of liquid RW of medical origin into the drainage system is possible?

Answer: According Lithuanian Hygiene Standard HN 89:2001 "Management of Radioactive Waste" (for institutional waste), liquid radioactive waste management should be carried out by one of the way:
1) is discharged to the environment, if the activity levels do not exceed clearance levels, set in legislation;
2) the radioactive waste contaminated with short lived radionuclides (half live not more than 100 days) is reserved at temporary storage facilities until the activity will become less than clearance levels and then is discharged to the environment;
3) if the requirements of point 1) nor 2) is not satisfied, then liquid radioactive waste should be solidified and disposed in radioactive waste storage facility.

Liquid radioactive waste should be storied at temporary storage facilities in the special containers which must be made of chemically resistant materials, to be hermetic, resistant to outside mechanical impact and must be market with the sign of ionizing radiation and to have a label “radioactive waste“.

If it is evaluated, that the annual dose for members of public can exceed 0.2 mSv, special sewage tanks and drainage system is required and sewage should be stored in these special tanks until the activity of radionuclides will reach levels which determine the annual dose for members of public less than 0.2 mSv.

The permission of discharges to the environment from the medical departments in which the unsealed sources are used is a part of authorization process.

Q.No 20	Country	Article Article 16	Ref. in National Report H

Question/Comment: What are criteria (reference levels) of radioactivity content in water and foods used in safety evaluation of radioactive waste management facilities and decision-making concerning the imposing of restrictions on the consumption of food and clean drinking water delivery in case of a nuclear or radiological emergency?

Answer: Radioactivity content in water and foods used as criteria (reference levels) in safety evaluation is not established, however, during the safety evaluation it should be shown that it would not be necessary to apply any protective action in case of a severe accident. During the safety evaluation the exposure doses to the public are calculated taking into account different food consumption chains.

Council Regulation (Euratom) No 3954/87 of 22 December 1987 laying down maximum permitted levels of radioactive contamination of foodstuffs and of feedingstuffs following a nuclear accident or any other case of radiological emergency is used in the European Union as a main document regulating maximum permitted levels of radioactive

contamination of foodstuffs and of feedingstuffs. In case of radiological emergency EU Regulation 3954/87 will be applied for the food and feed in the EU countries.

Criteria (reference levels) for decision-making concerning protective actions including restrictions on the consumption of food and drinking water are established in the Hygiene Standard HN 99:2011 "Protective Actions of Public in Case of Radiological or Nuclear Accident" approved by the order No. V-1040 of Minister of Health on 7th December 2011.

Operational intervention levels (OILs) are given in Table 1.

Table 1. Operational intervention levels (OILs)

Order No.	OIL	OIL value	Response action (as appropriate) if the OIL is exceeded
	Environmental measurements		
1.	OIL1	Gamma (γ) 1000 μSv/h at 1 m from surface or a source 2000 counts/s direct beta (β) surface contamination measurement 50 counts/s direct alfa (α) surface contamination measurement	Immediately evacuate or provide substantial shelter inside closed halls of large multi-storey buildings or large masonry structures and away from walls or windows Provide for decontamination of evacuees. If immediate decontamination is not practicable, advise evacuees to change their clothing and to shower as soon as possible. Reduce inadvertent ingestion. Advise evacuees not to drink, eat or smoke and to keep hands away from the mouth until hands are washed Stop consumption of local produce (food that is grown in open spaces that may be directly contaminated by the release and that is consumed within weeks, e.g. vegetables) , rainwater and milk from animals grazing in the area Register and provide for a medical examination of evacuees If a person has handled a source with a dose rate equal to or exceeding 1000 μSv/h at 1 m , provide an immediate medical examination. This external dose rate criterion applies only to

			sealed dangerous source and does not need to be revised in an emergency
2.	OIL2	Gamma (γ) 100 μSv/h 1 m at 1 m from surface or a source 200 counts/s beta (β) surface contamination measurement 10 counts/s direct alfa (α) surface contamination measurement	Stop consumption of local produce (food that is grown in open spaces that may be directly contaminated by the release and that is consumed within weeks, e.g. vegetables) , rainwater and milk from animals grazing in the area until they have been screened and contamination levels have been assessed using OIL5 and OIL6 Temporarily relocate those living in the area; before relocation, reduce inadvertent ingestion; register and estimate the dose to those who were in the area to determine if medical screening is warranted; relocation of people from the areas with the highest potential exposure should begin within days If person has handled a source with a dose rate equal to or exceeding 100 μ Sv/h at 1 m, provide medical examination and evalution; any pregnant women who have handled such a source should receive immediate medical evaluation and dose assessment
3.	OIL3	Gamma (γ) 1 μSv/h at 1 m from surface 20 counts/s direct beta (β) surface contamination measurement. (Deposition by rain of short lived naturally occurring radon progency can result in count rates of four or more times the background count rate, it should be	Stop consumption of non-essential local produce, rainwater and milk from animals grazing in the area until it has been screened and contamination levels have been assessed using OIL5 and OIL6 Screen local produce, rainwater and milk from animals grazing in the area out to at least 10 times the distance to which OIL3 is exceeded and assess samples using OIL5 and OIL6 Consider providing iodine thyroid blocking if replacement for essential local produce or milk is not immediately available

		evaluated.) 2 counts/s direct alfa (α) surface contamination measurement. (Deposition by rain of short lived naturally occurring radon progency can result in count rates of four or more times the background count rate, it should be evaluated.)	Estimate the dose of those who may have consumed food, milk or rainwater from the area where restrictions were implemented to determine if medical screening is warranted
Default screening OILs for food, milk and drinking water concentrations from laboratory analysis			
4.	OIL5	Gross beta (β): 100 Bq/kg or Gross alpha (α): 5 Bq/kg	Above OIL5: Assess using OIL6 Below OIL5: Safe for consumption during the emergency phase
5.	OIL6	Radionuclide specific activity for food, milk and drinking water according to the Annex No. 3 of this Hygiene Norm (not applicable for dried and concentrated food)	If OIL6 is exceeded, the following actions should be taken: Stop consumption of non-essential food, milk or water and conduct an assessment on the basis of realistic consumption rates. Replace essential food, milk and water promptly, or relocate people if replacement of essential food, milk and water is not possible For fission products (e.g. containing iodine) and iodine contamination, consider providing iodine thyroid blocking if replacement of essential food, milk or water is not immediately possible Estimate the dose to those who may

			have consumed food, milk or rainwater from the area where restrictions were implemented to determine if medical screening is warranted

Q.No 21	Country	Article Article 16	Ref. in National Report Page 85

Question/ Comment: What is the strategy of Lithuania related to Long-Lived Waste Management (storage, disposal)?

Answer:

Construction of a new storage facility for Long Lived Waste at Ignalina NPP is in the finalization stage. The purpose of this facility is to store Long Lived Waste during the coming 50 years. During that time a solution on underground disposal should be taken.

New Lithuanian National Programme for the Management of Spent Fuel and Radioactive Waste will be prepared until September of 2015 (considering to the requirements of the Council directive 2011/70/EURATOM). In New Programme will be schedule and required steps (required investigations, development plans and so on) of the disposal of long-lived radioactive waste in Lithuania.

Q.No 22	Country	Article Article 16	Ref. in National Report H, Page 86

Question/ Comment: Does Lithuania perform radioactive waste inventory, including state accounting and control? If yes, what is the frequency?

Answer: There is no general state accounting and control of the waste stored in nuclear facilities. Radioactive waste inventory of nuclear facilities is managed by operators and reported to regulatory body - VATESI. Ignalina NPP has the database which includes inventories of all radioactive waste in all facilities of Ignalina NPP. Radioactive waste management agency is operator of Maišiagala storage facility and also has data on inventory of this facility.

RPC manages the State Register of Sources of Ionizing Radiation and Occupational Exposure (hereinafter – Register). The aim of the Register is to collect, compile, systematize, store and provide the data of sources of ionizing radiation and doses of workers according to the order established by legal acts. The Register is not designed for radioactive waste inventory accounting and control, however it keeps information about disused sealed sources which are temporary stored in users temporary storage facilities until they will be returned back to the manufacturer or disposed as radioactive waste at Ignalina NPP storage facilities.

Q.No 23	Country	Article Article 17	Ref. in National Report E, pg. N/A

Question/ Comment: It is acknowledged that the Ignalina plants are both shut down. However, there is no mention of application of lessons learned from the Fukushima event to spent fuel storage in Lithuania. Please explain.

Answer: It should be noted that this question was discussed in detail during the last review meeting of Nuclear Safety Convention and detail information regarding evaluation of spent nuclear fuel storage was presented at the corresponding national report.

Following the decision of the European Council the “stress tests“ were carried out at INPP in mid of 2011 during which potential adverse impacts of earthquakes, flooding, extreme weather conditions, loss of electrical power and loss of the ultimate heat sink to the safety of the finally shut-down Ignalina NPP Units, the operated Spent Nuclear Fuel Storage Facility of Dry Type and the newly constructed Interim Spent Fuel Storage Facility were analysed.

The results of the Final Stress Tests Report revealed that the relevant technical and organizational measures are available at INPP enabling to adequately control the emergency situation in order to protect to the maximum extent the environment, workers and the general public against the hazardous effects of radiation even in the most adverse conditions, such as earthquake, flooding, long-term blackout and failure of the SNF cooling systems.

Following the peer review of the national “stress tests” reports and the site visit it was concluded that no factors requiring urgent actions to be taken to ensure acceptable level of nuclear safety of all reviewed INPP Nuclear Facilities were identified. However, in order to further increase the safety level and considering the provided recommendations, INPP prepared the Safety Improvement Plan encompassing, among others, such measures as assessment and, if necessary, implementation of measures for mitigation and elimination of earthquake consequences while handling SNF, for instance, if a container transported from INPP Units to the SNF Storage Facilities is overturned, if building walls and structures of both SNF Storage Facilities crack or collapse and fragments of structures crash down onto containers, as well as installation of additional means for measuring the temperature and water level in the SNF storage pools and to ensure autonomous and safe operation of this equipment in emergency conditions, performance of additional assessment of SNF storage pools safety in order to define adequate measures for management of possible accidents and mitigation and elimination of consequences of these accidents. Almost all measures predicted in the Safety Improvement Plan have already been implemented and the remaining will be implemented by the end of this year.

Q.No 24	Country	Article Article 17	Ref. in National Report G, pg. N/A

Question/ Comment: Please provide clarification on how the safety implications of long-term storage and delayed disposal of spent fuel have been addressed.

Answer: Construction of a new storage facility for Long Lived Waste at Ignalina NPP is in the finalization stage. The purpose of this facility is to store Long Lived Waste during the

coming 50 years. Existing spent fuel storage facility started operation in 2000. Spent fuel in this facility will also for 50 years. During the time of storage a solution on underground disposal should be taken.

New Lithuanian National Programme for the Management of Spent Fuel and Radioactive Waste will be prepared until September of 2015 (considering to the requirements of the Council directive 2011/70/EURATOM). In New Programme will be schedule and required steps (required investigations, development plans and so on) of the disposal of long-lived radioactive waste in Lithuania. Option of continue of operation of spent fuel storage facilities for some restricted time will be also included into Programme.

Q.No 25	Country	Article Article 19	Ref. in National Report Sections B, E, K

Question/Comment: Despite improvements provided in section K, from a legislative and technical point of view, what are the main difficulties or challenges Lithuania still expect in the future, in order to be properly in compliance with the whole WENRA and IAEA recommendations and/or requirements? In which sectors technical expertise is the most expected?

Answer: The mandate to create, maintain and improve the state regulatory and supervision system for nuclear safety, including preparation of relevant nuclear safety requirements and rules, is given to VATESI by the Law on Nuclear Safety and by Statute of VATESI.

Drafting of new and revision of the approved regulations, including relevant Laws and Governmental documents, is performed in accordance with Nuclear Safety Requirements BSR- 1.1.1-2011 “Rules of Procedure for Drafting of Nuclear Safety Requirements and Nuclear Safety Rules“ and VATESI internal procedure. According to BSR-1.1.1-2011 5-year program (program for development of technical-normative documents) and annual plan for drafting of new regulations and revision of approved is established. When drafting nuclear safety requirements and rules, operating experience of Lithuanian nuclear facilities, advanced international practice and advanced practice of foreign countries, recommendations of IAEA, WENRA and other international organizations or institutions shall be taken into account. VATESI has enough resources to perform its task of improvement of regulations.

VATESI has to carry out review of safety analysis materials within licensing and based on this reviewed shall make a decision of issue of authorization. VATESI also may use scientific or technical support to strength the reviewer’s team by including some experts with special skills and competencies. Services are provided on the basis of contracts between the regulatory body and service provider through the process of public procurement.

Q.No 26	Country	Article Article 19	Ref. in National Report E, Pages 35-36

Question/Comment: It is mentioned in the Report that “…Every licence may have licence conditions attached….Licence conditions should be oversighted during the construction, commissioning, operation and decommissioning stages of the facility”. In the same time in the list of types of licenses to be issued by the Regulatory Body there is no such type of license as “commissioning of nuclear facilities”. Could you explain how the activity related to commissioning of nuclear facility (RW treatment facility, RW storage facility, ISF) should be licensed?

Answer: There is no separate licence for commissioning of nuclear facilities because commissioning process goes under two types of licences – construction and operation. Commissioning process starts after construction of the facility, but still having

construction license. Licence holder shall prepare commissioning program which includes so called “cold” trials (trials of the facility without radioactive waste) and submit it for approval to regulatory body. After approval of this program, operator performs “cold” trials and prepares report of “cold” trials and updates commissioning program including “hot” trials (trials of the facility with radioactive waste). Both documents are one of submittals to receive licence for operation. When operational licence is issued (with restriction to perform “hot” trial only), licence holder may perform “hot” trials (trials of the facility with radioactive waste). After all process, licence holder receives a permission for industrial operation of the facility. At the same time full set of operational licence conditions are issued.

Q.No 27	Country	Article Article 20	Ref. in National Report Section E

Question/ Comment: How the responsibilities between VATESI, Radiation Protection Centre and Ministry of Environment are delimitated?

Answer: In addition to the competences provided in National Report of Lithuania in Article 20 there is provided shorten version describing main responsibilities of VATESI, Radiation Protection Centre and Ministry of Environment:
VATESI is a competent authority for the licensing of activities involving nuclear or nuclear cycle materials and activities carried out in nuclear facilities. Radioactive waste management in nuclear facilities is licensed and supervised by VATESI.
Radiation Protection Centre issues licences to small producers (generators) for the activities related to radioactive waste management.
Ministry of Environment coordinates the process of environmental impact assessment of proposed economic activities and organizes, coordinates and performs state environmental monitoring, and controls environmental monitoring of economic entities.
Competences and responsibilities are described in Laws of the Republic of Lithuania.

Q.No 28	Country	Article Article 20	Ref. in National Report Section E

Question/ Comment: How the responsibilities regarding the monitoring of discharges/releases are divided between VATESI and Radiation Protection Centre ? What authority establishes limits for releases as well as the clearance levels?

Answer: The Ministry of Environment approves requirements on radiation protection of environment while Environment Protection Agency (EPA) controls the implementation of these requirements. EPA provides environmental radiological control within the sanitary protection zone of the nuclear facility. Environment samples are periodically taken within the zone of INPP: water, biota and bottom sediments of the Lake Drūkšiai. Control of INPP laboratory is provided for ensuring of reliability of the INPP measurements results.
Requirements for radiological environmental monitoring are laid down in the Order of the Minister of Environment “On approval of regulation of environmental monitoring of economic entities”. In accordance with these requirements, the operator of nuclear facility has to work out the monitoring programme and implement it. The monitoring programme shall cover all important routes of radionuclide dispersion and population exposure to enable the proper evaluation of annual airborne and water discharges, likewise their short term and consequently doses for critical group members, changes. Environmental samples

shall be taken from the vicinity of release points and from potentially most contaminated (according the radionuclide diffusion calculations and specific circumstances of landscape) places of sanitary protection and monitoring zones. EPA controls how the entity of nuclear facility is implementing the monitoring programme.

Nuclear Safety Requirements BSR-1.9.1-2011 „Limits of Radioactive Discharges into Environment from Nuclear Facilities and Requirements for a Plan for Radioactive Discharges into Environment" (2011) establishes the limits of the discharges of the radionuclides from nuclear facilities to atmosphere and water, including methodology for calculating of activities of radionuclides discharged to environment, requirements for the preparation and submission of the Plan of Discharge of Radionuclides and requirements for the control of the discharges. Discharges (in liquid or gaseous form) can be released into the environment by the nuclear facilities only when a Plan for Radioactive Discharges into Environment is coordinated with VATESI. The entity of nuclear facility shall ensure the control of the releases into environment carrying out the monitoring of pollutants. VATESI establishes the clearance levels of the radioactive waste from nuclear facilities and approves requirements limiting discharges of radionuclides into environment, controls the implementation of these requirements and approves of the submitted plan for radioactive discharges into the environment. During the annual inspections implementation of environmental monitoring programme, procedures of operational control of liquid and gaseous discharges from nuclear facilities are inspected.

Among other responsibilities Radiation Protection Centre (RPC) is responsible for the radiation protection of the general public from negative impact which may cause the ionizing radiation. RPC is regularly assessing exposure for public due to discharges to the atmosphere and water. Within the execution of the State Environmental Radiological Monitoring the measurements of radioactivity in the foodstuffs (milk, meat, vegetables, grains, and fish), raw food, drinking water, and mushrooms are performed. According to the Order of the Ministry of Health "On Granting The Permits of Radioactive Discharges into Environment from Medical, Industrial, Except Nuclear Facilities, Agricultural Facilities and Perform Research", RPC establishes the limits of discharges to the environment from all the facilities, except from the nuclear facilities.

Q.No	Country	Article	Ref. in National Report
29		Article 20	Section E, page 40

Question/ Comment: Article 20 requires each Contracting Party to provide competence and financial and human resources to acomplish assigned responsibilities of the regulatory body. As this part of information is missing in the report, please describe how this requirement is fulfilled.

Answer

Pursuant to Paragraph 3 of Article 21 of the Law on Nuclear Energy, "the structure, competence of the State Nuclear Power Safety Inspectorate (VATESI) and its provision with resources shall correspond with the nature and scope of the activities in the field of nuclear energy, activities involving nuclear materials and other activities in the field of nuclear energy involving sources of ionising radiation undertaken and planned to be undertaken in the Republic of Lithuania".

The maximum number of positions of the VATESI is established by the Government of Lithuania. The Head of VATESI establishes the concrete number of positions and approves the administrative structure of the VATESI and job descriptions of all employees.

The assessment of the adequacy of human resources is done through following procedures:

- Strategic Planning, which includes planning of the need of a particular number of

employees, which is based on main strategic goals (such as main foreseen functions, main legislative initiatives) of the VATESI for the planning period (3 years). The Strategic Plan of the VATESI is approved by the Head of VATESI;

- Annual evaluation of qualification and activities of civil servant, conducted pursuant to Law on Civil Service. This procedure is also used to establish the training needs of the VATESI employees.

VATESI has 75 full-time staff positions approved by the Government of Lithuania. 68 of these 75 positions are occupied (57 public servants, 8 employees under employment contracts and 3 state officials). The number of personnel employed at VATESI is appropriate for current stage of nuclear programme.

Financial Resources

According to Paragraph 2 of Article 21 of the Law on Nuclear Energy, VATESI activities are financed by the Lithuanian state budget appropriations and other legitimate income.
To fulfil its mission and strategic goals every year VATESI prepares Strategic Activity Plan for next three years. It is a part of national strategic planning and budgeting system. According to this plan, Government approves allocations for the implementation of the VATESI Programme.
Financial resources of VATESI cover the need for offices and office equipment, the salaries of staff, the costs of communications, transport, training, consultancy services, technical support and international co-operation. Financing of VATESI is appropriate for current stage of nuclear programme and covers VATESI's needs related to regulatory activities.

Radiation Protection Centre (RPC) is principally financed by the state budget (2014 – 2962,4 thous. LT (857,97 thous. EUR)). RPC also generates non-budget income, i.e., income for provided services (income contribution funds). For the implementation of the particular assignments and projects other financial sources can be obtained (funds of EU and other international organizations).
RPC has 59 civil servants and employees employed on a labour contract basis.

Q.No	Country	Article	Ref. in National Report
30		Article 20.1	E, p 43
Question/ Comment	"Regarding the application of clearance procedure in Lithuania, the operator shall measure waste or materials, intended for free release, ensuring that clearance levels are not exceeded." How much are the values of clearance levels?		
Answer	Unconditional clearance levels are established by Nuclear Safety Requirements BSR-1.9.2-2011 “Derivation and Use of Clearance Levels of Radionuclides for Materials and Waste Generated during Activities in the Area of Nuclear Energy” (2011).		

Radionuclide			Unconditional clearance level Bq/g, Bq/cm^2*
^{228}Th** ^{230}Th ^{232}Th ^{234}U	^{235}U** ^{237}Np** ^{239}Pu ^{240}Pu	^{241}Am ^{244}Cm	0,1
^{22}Na ^{24}Na ^{54}Mn ^{60}Co ^{65}Zn	^{94}Nb ^{110m}Ag ^{124}Sb ^{134}Cs** ^{137}Cs	^{152}Eu ^{210}Pb** ^{226}Ra** ^{228}Ra** ^{238}U**	0,4
^{58}Co ^{59}Fe ^{90}Sr	^{106}Ru** ^{111}In ^{131}I	^{192}Ir ^{198}Au ^{210}Po	4
^{51}Cr ^{57}Co ^{99m}Tc	^{123}I ^{125}I ^{129}I	^{144}Ce ^{201}Tl ^{241}Pu	40
^{14}C ^{32}P ^{36}Cl	^{55}Fe ^{89}Sr ^{90}Y	^{99}Tc ^{109}Cd	400
^{3}H ^{35}S	^{45}Ca ^{63}Ni	^{147}Pm	4000

* Bq/g for mass activity concentration, Bq/cm^2 for surface contaminated objects. Numerical values are the same.

** A radioactive equilibrium between the parent and the daughter radionuclides is referred to.

Q.No	Country	Article	Ref. in National Report
31		Article 21	F, 44

Question/Comment: According to the report, the license holder has to provide safety reports. Are these safety reports assessed by the regulatory bodies? Do criteria exist for the evaluation and assessement of the safety reports?

Answer: Safety analysis reports (SAR) are submittals to receive construction, operation or decommissioning license and are assessed by VATESI. When SAR is submitted to VATESI, the review of deferent part of SAR is divided between the sections of VATESI taking into account the competence of the section (radiation safety, transport, decommissioning and etc.). Criteria of evaluation are indicated in nuclear safety requirements (requirements indicated in set of documents covering deferent spheres) issued by VATESI. If SAR does not comply with the requirements then comments are prepared and sent to applicant.

Q.No 32	Country	Article Article 21	Ref. in National Report Page 42

Question/Comment: Whether the post-closure surveillance of RAW disposal facility is considered as a licensed type of activity?

Answer: Yes. In the Law on Nuclear Safety there is indicate as separate kind of license - supervision of a closed radioactive waste repository (repositories).

Q.No 33	Country	Article Article 21	Ref. in National Report Section E

Question/Comment: Who provides scientific and technical support to the regulatory authority? In particular, who has to carry out review of safety analysis materials within licensing?
Whether any special authorization (licence) from regulatory authority is required to perform such activity?

Answer

VATESI has to carry out review of safety analysis materials within licensing and based on this reviewed shall make a decision of issue of authorization. VATESI also may use scientific or technical support to strength the reviewer's team by including some experts with special skills and competencies. A licence to provide scientific or technical support to the regulatory authority is not needed. Services are provided on the basis of contracts between the regulatory body and service provider through the process of public procurement.

Q.No 34	Country	Article Article 21	Ref. in National Report F, pg. 44

Question/Comment: The report states that the waste generator shall pay all the expenses involved in the management of radioactive waste from the moment of its generation to its disposal." What financial arrangements are in place for generators who become financially insolvent?

Answer: Article 11 part 3 of Law on Radioactive Waste Management: Where the authority having issued a licence, a temporary permit or a permit to the radioactive waste generator establishes that the radioactive waste generator does not conform to the requirements of safe management of radioactive waste or if it has otherwise violated the terms and conditions of the activities regulated by the licence, temporary permit or permit, the authority having issued the licence, temporary permit or permit may decide on a compulsory transfer of the radioactive waste to the radioactive waste manager. In such case the radioactive waste manager shall ensure completion of the unfinished tasks in the radioactive waste management. The expenses for the management of the radioactive waste shall be recovered from the radioactive waste generator in the manner prescribed by laws, i.e. in case if the waste generator would not reimburse the waste manager willingly, the case of recovery of expenses would be submitted to the court and dealt according to the procedures described in the Code of Civil Procedure, Bailiff Law and other related legal acts.

Article 24 part 2 of Law on Radioactive Waste Management: Sealed sources of ionising radiation may be imported into the Republic of Lithuania if after their use it is intended to return them to the supplier of the sealed sources of ionising radiation. The Recipient of a

sealed source of ionising radiation shall enter into a contract with the radioactive waste manager on the management of the sealed source of ionising radiation in case the sealed source of ionising radiation cannot be returned to its supplier. The Recipient of a sealed source of ionising radiation shall obtain suretyship insurance in the amount specified in the contract with the radioactive waste manager for the services, except in the cases stipulated in the legal act establishing the procedure for import to, export from, shipment in transit or transportation within the Republic of Lithuania of radioactive materials, radioactive waste and spent nuclear fuel and for issuance of permits (authorisations), such legal act being approved by the Head of the State Nuclear Power Safety Inspectorate jointly with the Minister of Health, where the contract is made in relation to the sealed source of ionising radiation which will be used and stored until it no longer requires control.

Q.No 35	Country	Article Article 23	Ref. in National Report p. 47
Question/ Comment	How does VATESI audit the GS-R-3?		
Answer	The existing VATESI`s requirements BSR-1.4.1-2010 “Management system requirements” were developed taking into account IAEA safety standard GS-R-3. Compliance with above requirements is checked (audited) by VATESI during review and assessment of documentation, submitted by licensee (or applicant), and by means of inspection.		

Q.No 36	Country	Article Article 23	Ref. in National Report p. 49
Question/ Comment	In 2009 RATA implemented the new quality and environmental management system in compliance with standards LST EN ISO 9001:2008 and LST EN ISO 14001:2005. All RATA procedures are accustomed to VATESI management system requirements. What is the system of checks and audits of the management system? How independent audits are conducted?		
Answer	Internally, RATA performs Internal Audits and Management Review each year. Independent audits are conducted by an ISO certified organisation: re-certification audits (for LST EN ISO 9001:2008 and LST EN ISO 14001:2005) each 3 years, and supervisory audits each year in between. Once a year VATESI performs a special review of the compliance of RATA management system to VATESI management system and licence requirements.		

Q.No 37	Country	Article Article 23	Ref. in National Report p. 49

Question/ Comment: The external and internal auditors reports confirmed that the Quality Management System of Radiation Protection Centre successfully operates and is a daily working tool, the staff performs everyday tasks according to the system procedures and work instructions. Is it possible to estimate the number of modifications within the management system? What is the impact on safety culture?

Answer: During the period 2012-2014, 74 Quality Management System documents were revised and amended, 24 new documents were approved. Quality Management System implementation and development improved efficiency and productivity of the accomplishment of assigned responsibilities of the Radiation Protection Centre.
Implemented Quality Management System improved operational efficiency, performance and quality of performance of public services and accomplishment of assigned responsibilities of Radiation Protection Centre as regulatory body in the field of radiation protection.

Q.No 38	Country	Article Article 24	Ref. in National Report F

Question/ Comment: What is the quota of exposure (dose constraint) for population established in Lithuania and used in evaluating safety of radioactive waste management in planned exposure situations?

Answer: According to the requirements of the Lithuanian Hygiene Standard HN 73:2001 and nuclear safety requirements BSR-1.9.1-2011 the annual dose constraint applied for the members of public during design, operation and decommissioning of nuclear facilities is 0.2 mSv. This dose constraint is applicable for safety evaluation of radioactive waste (including spent nuclear fuel) management at nuclear facilities.

Q.No 39	Country	Article Article 24	Ref. in National Report F

Question/ Comment: As Ignalina NPP is located in close proximity to the state border of the Republic of Belarus, it would be useful to present the layout of observation points for radiation monitoring in the area of both Ignalina NPP and radioactive waste and intermediate spent nuclear fuel storage sites.
Besides is it possible to present the results of radiation monitoring of soils in the area of Ignalina NPP in the border area with the Republic of Belarus?

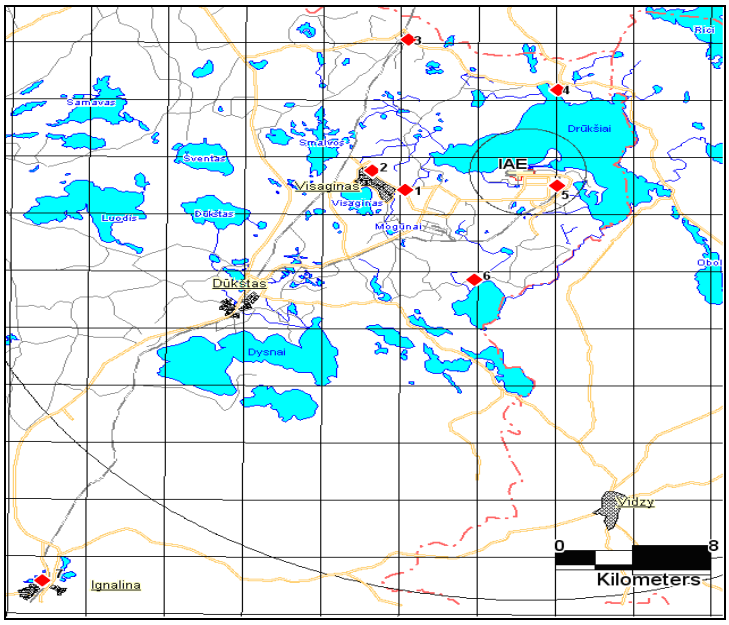
Answer

Concentration of radionuclides in soil samples, taken in Tilzhe village (Continuous monitoring station in the border area with the Republic of Belarus)

Year	Concentration, Bq/kg								Total excl. Ra, Th, K. Bq/kg
	Cs-137	Mn-54	Co-58	Co-60	Sr-90	K-40	Th-228	Ra-226	
2011	0.31	0.17	<DL	<DL	7.02	404	13.9	<DL	7.50
2012	0.66	<DL	<DL	<DL	11.3	414	20.1	10.5	11.96
2013	3.39	0.28	<DL	<DL	<3.61	462	23.0	0.76	3.67

* DL – Detection Limit

Pattern of continuous monitoring stations allocation within INPP area



♦ - Continuous monitoring stations (CMS)

CMS ♦ 4 – Tilzhe village

Q.No 40	Country	Article Article 24	Ref. in National Report F, P.54

Question/ Comment: Tables F-5 and F-6 summarize the data on discharges of radionuclides into Lake Drukshay and releases of radionuclides into the atmosphere from Ignalina NPP.
Please, provide the radionuclide composition of discharges and emissions, as well as information about the activity and radionuclide composition of bottom sediments of Lake Drisvyaty.

Answer

Radionuclide content of INPP air-gas releases by years

Radionuclide	**Releases activity, Bq/year**		
	2011	**2012**	**2013**
Mn-54	2.52E+05	4.00E+03	1.309E+04
Co-58	5.26E+04	-	-
Co-60	2.09E+07	3.32E+07	1.372E+07
Sr-89	3.15E+06	2.19E+06	1.708E+06
Sr-90	3.22E+06	2.82E+06	3.690E+06
Zr-95	4.81E+04	-	-
Nb-94	5.55E+05	-	8.149E+03
Cs-134	7.57E+04	1.70E+05	-
Cs-137	2.93E+06	7.39E+06	9.371E+06
H-3	6.23E+09	4.82E+09	4.144E+09
C-14	3.52E+09	2.07E+09	4.392E+09
Total	**9.782E+09**	**6.935E+09**	**8.564E+09**

Note. Radionuclide content of INPP air-gas releases by years includes hydrogen-3 H^3 and radioactive carbon C^{14} activity.

Radionuclide content of water discharges from INPP to Lake Drukshay by years.

Radionuclide	Discharges activity, Bq/year		
	2011	2012	2013
H-3	2.24E+10	2.11E+10	1.92E+10
Mn-54	1.64E+04	-	-
Co-60	1.18E+06	1.15E+06	7.00E+05
Cs-137	2.70E+05	4.89E+05	1.70E+05
Сумма	**2.24E+10**	**2.11E+10**	**1.92E+10**

Note. *In Table F-5 of the report text (English version) total activity value of radionuclides discharged* into Lake Drukshay within 2012 is *2,16E+10 Bq. For the consolidated report INPP provided value 2,11 Bq.*

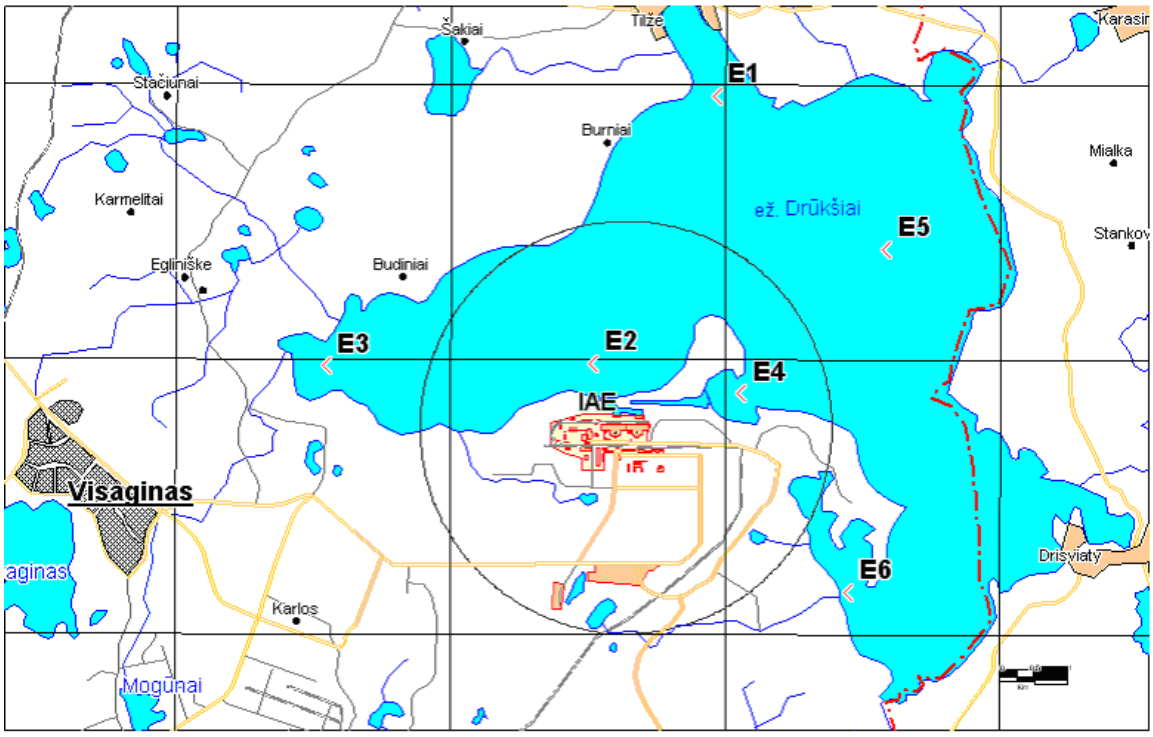
Concentration of radionuclides in bottom sediments “zero background” points of Lake Drukshay by years

Year	Concentration, Bq/kg													
	Cr-51	Cs-137	Cs-134	Mn-54	Co-58	Co-60	Zr-95	Nb-95	Fe-59	Sr-90	Ra-226	Th-228	K-40	Total excl. Ra,Th, K
Lake Drukshay . Point E1														
2011	<DL	0.69	<DL	0.21	<DL	<DL	<DL	<DL	<DL	<5.15	<DL	25.0	405	0.90
2012	<DL	13.2	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<3.05	11.8	25.5	476	13.2
2013	<DL	2.83	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<6.23	2.64	13.2	309	2.83
Lake Drukshay . Point E2														
2011	<DL	18.7	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<3.50	<DL	11.8	442	18.7
2012	<DL	2.85	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<2.75	4.05	19.9	342	2.85
2013	<DL	1.27	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<4.86	<DL	9.62	393	1.27
Lake Drukshay . Point E3														
2011	<DL	47.9	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<2.01	<DL	28.6	650	47.9
2012	<DL	73.1	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<2.94	18.2	<DL	592	73.1
2013	<DL	3.99	<DL	0.34	<DL	<DL	<DL	<DL	<DL	<3.01	<DL	15.9	438	4.33
Lake Drukshay . Point E4														
2011	<DL	54.8	<DL	<DL	<DL	2.82	<DL	<DL	<DL	<2.01	<DL	35.6	831	57.6
2012	<DL	17.2	<DL	<DL	<DL	0.83	<DL	<DL	<DL	5.59	1.20	18.8	394	23.6
2013	<DL	12.3	<DL	<DL	<DL	5.83	<DL	<DL	<DL	<2.39	<DL	17.8	372	18.2
Lake Drukshay . Point E5														
2011	<DL	30.5	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<2.56	89.9	41.6	725	30.5
2012	<DL	8.80	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<2.84	20.9	40.3	745	8.80
2013	<DL	7.94	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<3.43	3.06	<DL	313	7.94
Lake Drukshay . Point E6														
2011	<DL	17.0	<DL	<DL	<DL	<DL	<DL	<DL	<DL	7.57	50.3	<DL	420	17.0
2012	<DL	41.9	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<2.38	<DL	32.4	554	41.9
2013	<DL	57.6	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<2.64	<DL	36.5	541	57.6
Lake Drukshay , “zero background” points, average														
2011	0	28.3	0	0.04	0	0.47	0	0	0	1.26	23.4	23.8	579	28.8
2012	0	26.2	0	0	0	0.14	0	0	0	0.93	9.36	22.8	517	27.3
2013	0	14.3	0	0.06	0	0.97	0	0	0	0	0.95	15.5	411	15.3

* DL – Detection Limit

Note. “zero background” points - 6 fixed places of Lake Drukshay for water sampling, where annual investigations are performed beginning from the prelaunch period.

Lake Drukshay "zero background" points allocation patterns



Q.No 41	Country	Article Article 25	Ref. in National Report F

Question/ Comment: How is response in case of fire on the INPP site organized? Are fire brigades from the nearby towns involved?

Answer: Management of fire safety at INPP is carried out in accordance with the Integrated Management System procedure for managing fire safety.
Organization and management of work on fire safety at INPP is carried out in accordance with the applicable procedures of INPP, which also contains the requirements for the qualifications of personnel, training and guidance for staff actions in case of fire.
Fire-fighting and rescue works at the INPP implemented by brigades of Visaginas Fire - Rescue Administration located 6 km away from INPP and time of arrival is 15-20 minutes. Fire fighting is done in accordance with Visaginas Fire - Rescue Administration Plan to eliminate extreme situations and consequences of accidents at the Ignalina Nuclear Power Plant. Also in the case of major fire at the plant to assist may be involved the State Fire - Rescue Service departments from the neighboring towns of Lithuania under the Plan to concentrate fire and rescue forces to mitigate extreme events in the area of Visaginas Municipality and INPP site.

Q.No 42	Country	Article Article 25.2	Ref. in National Report p60

Question/ Comment: VATESI and RPC have its own emergency staff training and exercising program. Considering the differences between nuclear activities and transport, this kind of separation may effective in some cases, however, EPR activities in nuclear emergency and transport emergency have many common areas such as radiation protection. Please identify pros & cons on separating of EPR training and exercise between VATESI and RPC.

Answer

A training system for emergency preparedness in the Republic of Lithuania ensures that personnel assigned to respond to all type of emergencies including nuclear or radiological emergencies shall be appropriately trained and exercised. Basic requirements for civil protection training are defined in the Law on Civil Protection. For implementation of these requirements the Regulation of Training of Civil Protection has been approved by the Resolution No 718 of the Government of the Republic of Lithuania on 7th June 2010, and the Regulation for Organization of Civil Protection Exercise has been approved by the Resolution No 1295 of the Government of the Republic of Lithuania on 8th September 2010 (last amended on 24th April 2012). These regulations establish purposes, goals, planning, frequency and etc. of the training and exercises of civil protection. Also there are established the programs of civil protection training for people, who are working in state, municipal and other institutions. VATESI and RPC personnel are trained in accordance with these regulations.

VATESI and RPC functions in case of a nuclear emergency are described in the State Plan of Public Protection in Case of Nuclear Accident (off-site Plan).

According to the off-site Plan VATESI is responsible for assessing the situation and forecasting the course of nuclear and (or) radiation accident in Ignalina Nuclear Power Plant or other nuclear facilities; providing urgent information about nuclear accident, its development and liquidation course, consequences and other related information to state and municipality institutions concerned and notification of European Commission, IAEA and other international organizations.

According to the off-site Plan RPC within its competence is responsible for organizing and implementing radiological monitoring of residents and residential environment, radiological research; presenting recommendations regarding application of urgent protective actions, early protective actions and long-term protective actions to Ministry of Health, proposing the application of measures of residents protection and suitability of food products, drinking water to Ministry of Health; organising the monitoring of individual exposure of residents as well as research and assessment of ionizing radiation impact on people; organising and performing radiological monitoring of residential environment, providing recommendations, regarding the extent of environmental decontamination to Municipality Emergency Commission and (or) Government Emergency Commission on the basis of monitoring results

The national State emergency management Plan (for all hazards) describes the functions of all the institutions involved in EPR in case of contamination by radioactive materials, dangerous discovery of radioactive item as well as other radiological accidents and incidents. According to the mentioned Plan RPC is responsible institution for dealing with

such an accidents. VATESI acts as supportive institution and is responsible for notification European Commission and IAEA about the radiological accident.

VATESI and RPC has different responsibilities and functions in EPR activities. To meet the requirements set in the off-site Plan, as well as in the national State emergency management Plan (for all hazards), VATESI and RPC has their own emergency management plans and organize staff emergency training in field of their competence. Also various scenarios of nuclear and radiological emergencies exercises are organized at state, municipal levels. In that case a lot of state, municipal institutions and rescue services as first responders participate in training or exercise. During these trainings and exercises participating institutions, including VATESI and RPC have a possibility to improve cooperation, coordination and communication between each other. VATESI also participate in various international exercises organized by IAEA and European Commission.

Q.No 43	Country	Article Article 26	Ref. in National Report Section F

Question/ Comment: What measures are taken to maintain and preserve knowledge important to carry out Ignalina NPP decommissioning?

Answer:

1. For organizing the activity on preserving the knowledge at INPP the Programme on preserving the knowledge, UTCpr-1410-346 is developed. Starting from 2010 the activity is carried out on preserving the knowledge of the personnel who are getting fired in accordance with the following programme: evaluation of critical knowledge of the getting fired personnel and assessment of the risk of their loss, interviewing the getting fired personnel and evaluation of consequences of the loss of knowledge, plans development and performance on preserving the knowledge.
2. The Programme on maintaining a qualification of the INPP personnel is developed and carried out annually. Furthermore, starting from 2013 at INPP, the additional INPP personnel training in the decommissioning field is carried out in accordance with the Programme on improvement and maintaining INPP personnel qualification, EPg-88 (3.67.6) on strategic management and planning, project and risk management, strategic negotiation, etc.
3. With the purpose of using the experience of other nuclear sites in decommissioning field and exchange of the available at INPP experience, the employees of the Enterprise are actively participating in the activities, organized by IAEA and in visiting the other nuclear sites.

Q.No 44	Country	Article Article 27	Ref. in National Report I, pg. 90

Question/ Comment: Lithuania has borders (with Latvia, Belarus, Russia and Poland) along with a coastline along the Baltic Sea. Please describe any monitoring and detection mechanisms in place to detect the unauthorized transboundary movements of radioactive materials into and out of Lithuania. In addition, please provide information on occurrences and frequencies of any violations since the last review meeting.

Answer: The State Border Guard Service is responsible for protection of state borders, the Customs Department – for control of cargos. Border-crossing points with Russia, Belarus, also the port of Klaipeda and the Vilnius Airport are equipped with stationary radiation monitoring equipment (gates). Beside that, the state border guard and customs officers have portable radiation monitoring equipment.

The Regulations on Management of Illegal Sources of Ionising Radiation and Objects Contaminated with Radionuclides (approved by the Government), define responsibilities of state and municipality institutions after they receive notification about radiological accident, including the cases of illicit trafficking. The regulations also describe actions in such a case. Management of illegal sources is coordinated by Radiation Protection Centre.

In 2012-2014, 168 radiological events were detected at the border crossing points of individuals and cargoes emitting increased ionizing radiation. More than 96% of cargoes (potassium fertilizer, fire-resistant building materials, ceramic tiles, etc.) emitted ionizing radiation of naturally occurring radionuclides (potassium, uranium, thorium isotopes) and was allowed to cross border. Other 4% stopped and directed back to the country of origin.

Q.No 45	Country	Article Article 28	Ref. in National Report p. 92 (Section J)

Question/ Orphan sources

Comment As stated in the report some actions have been established in order to manage the handling of orphan sources. Could you please specify these actions as well as the implemented measures for avoiding disused sealed sources becoming orphan?
Who is responsible for the further handling of orphan sources?

Answer In case of emergencies with orphan ionizing radiation sources, actions of the state and local authorities, managers of radioactive waste and other response organizations are determined in the Rules on the Handling of Orphan Ionizing Radiation Sources, Substances of Orphan Nuclear Fuel Cycle, Orphan Nuclear and Fissile Substances and Objects Contaminated with Radionuclides, approved by the Resolution No 280 of the Government of the Republic of Lithuania on 16th March 2005 (last amended on 23rd January 2013. The rules determine actions in pursuance of discovery, identification and suspension of orphan ionizing radiation sources, orphan substances of nuclear fuel cycle, orphan nuclear and fissile substances and objects contaminated with radionuclides, products or materials of consumption containing natural radionuclides (hereinafter – orphan ionizing radiation source), and the identification of the ionizing radiation sources in the body of the person or on its surface, emitting ionizing radiation in excess of 0.2 μSv/h (20 μR/h), or upon the receipt of notification on this matter.

State and local authorities which are involved in process of management and handling of orphan sources: Radiation Protection Center (RPC), State Nuclear Power Safety Inspectorate (VATESI), Administration of Municipality, in whose territory orphan ionizing radiation source has been discovered, Fire and Rescue Department under the Ministry of the Interior and its local Counties Fire and Rescue Boards and subordinate Fire and Rescue Services (FRD), the Police Department under the Ministry of the Interior and its territorial police institutions (PD) and Radioactive Waste Management Agency (RATA). State Border Guard Service under the Ministry of the Interior and its structural units (SBGS) or the Customs Department under the Ministry of Finance of the Republic of Lithuania and its territorial Customs offices (CD) also can be involved if orphan source is discovered by officers of these institutions.

The main actions after the discovery of orphan source:
1) withdrawal of people from the place of radiological emergency in established distances

in accordance with the procedures set by the Minister of Health. First responders (rescues of FRD, policemen of PD and the ambulance medics) implement this action depending who first arrive to the place of radiological emergency. If orphan source is found in jurisdiction of SBGS, SBGDS implements the action;
2) notification of RPC, registration of the event (RPC, VATESI);
3) radiological dose rate measurements and initial evaluation (FRD or SBGS. SBGS also carry out identification of radionuclides);
4) protection and control of entrance into the place of radiological emergency. If it is necessary, PD organize and carry out an escort and protection of transportation of orphan source to the site of decontamination or radioactive waste treatment facility (PD);
5) radiological investigation (dosimetric, spectrometric, surface contamination and etc.) - implemented by RPC;
6) if it is necessary, implementing the measures to protect employees and residents from undue exposure to ionizing radiation and the environment – from the pollution from radionuclides;
7) assurance of compliance with the requirements relating to the radiation protection indicated by the RPC, and if orphan source includes nuclear radionuclides in amounts of which exceed 5 g, the requirements on the nuclear safety by the VATESI shall be followed as well (all institutions);
8) selection of suitable container for the transportation of orphan source, packaging, and transportation to the radioactive waste treatment or storage facility (RATA);
9) notification of the European Commission and International Atomic Energy Agency (VATESI)
10) carrying out further investigation of the case, site evaluation, dose evaluation and etc. (RPC);
11) if it is necessary, crime investigation implemented by SBGS, PD, CD.

Works related to the handling of orphan sources are funded in accordance with the procedures provided for in paragraph 5 of Article 9 of Law on Radioactive Waste Management of the Republic of Lithuania. There are determined that works and other management of orphan sources are financed from the state budget. Radioactive Waste Management Agency (RATA) is responsible for the handling of orphan sources.

One of the main measures for avoiding disused sealed sources becoming orphan is establishment and management of the State Register of Sources of Ionizing Radiation and Occupational Exposure (hereinafter – Register). The aim of the Register is to collect, compile, systematize, store and provide the data of sources of ionizing radiation and doses of workers according to the order established by legal acts.

RPC at the end of 2010 approved Orphan Sources Search Program at the Sites Used Sources of Ionizing Radiation for 2011-2013. During this program at the 24 territories search of orphan sources was performed. The list of territories was prepared according historical data where the sources were used in former soviet time at industry, medicine and at territories that were used by the soviet army. The search of lost sources is performed periodically performed at antiquarian goods stories, markets for the used goods.

The new one program for the search of orphan sources was approved for 2014-2016 year and the list of territories was prepared according the asking for the search of local authorities.

Q.No	Country	Article	Ref. in National Report
46		Article 28	J, pg. 93

Question/Comment: What mechanisms does Lithuania have in place to return disused sealed sources to the country of origin? Does the designation of disused sources as radioactive waste in Lithuania, hinder the return process since many countries do not allow imports of waste? Please elaborate.

Answer: According the Law on the Management of Radioactive Waste of the Republic of Lithuania (adopted on 9 June 1999, last amended 2014), Article 24, sealed sources may be imported into the Republic of Lithuania if after their use it is intended to return them to their supplier. Also the recipient shall agree with RATA for the management of radioactive sources for cases, if due to unforeseen circumstances there are no possibilities to return them back to supplier, and to insure the source for value of RATA services. In licensing practice (for small users) agreement with RATA and insurance of the source for value of RATA services is required before licence to use the source in practice will be granted.

Disused sealed sources are designated and managed as radioactive waste only in case, if there are no possibilities to return them back to supplier and then these sources are delivered to Ignalina NPP radioactive waste storage facilities.

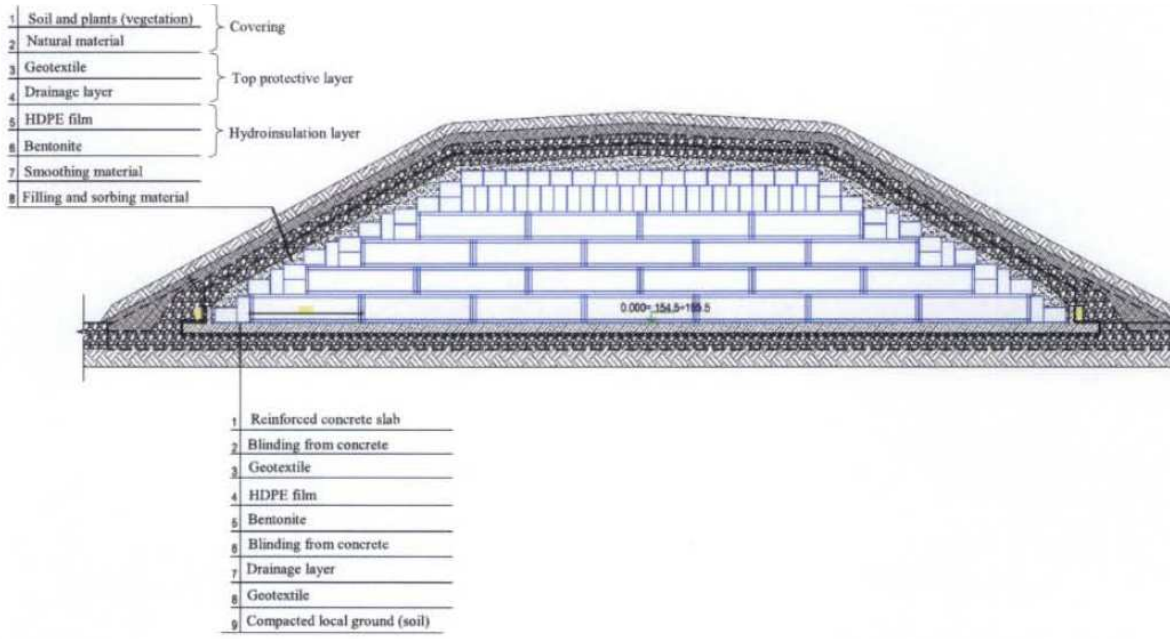
When the disused sealed sources of ionising radiation are returned to supplier (between EU member states), the holder of the sources in the forwarding country must present to Radiation Protection Centre the confirmed, by regulatory authority of supplier, Standard Document, according to the Council Regulation No 1493/93/Euratom of 8 June 1993 on shipments of radioactive substances between Member States, where include all information about sources (radionuclide, activity, number of sources).

When sources are returned to supplier of non EU countries, the holder of sources must present to Radiation Protection Centre duly fulfilled application to issue the permission to transport sources, where include all information about sources (radionuclide, activity, number of sources). Also, the holder of sources must present the copy of the consignee license or the importing State confirmation, that the consignee is authorized to manage the sources.

Q.No	Country	Article	Ref. in National Report
47		Article 32	D, P.21

Question/Comment: The National Report indicated that the disposal of very low level waste (VLLW) is planned at Landfill Facility.
What are the physical barriers (engineering and natural) used in it? What is the isotopic composition of VLLW and what are their approximate specific activities? Will any processing of VLLW take place?

Answer: The conceptual layout of the barriers of the VLLW disposal is shown at the following picture. Please take into account, that bentonite carpet of Bentofix® type (or similar) is proposed in Technical Design to be used as hydroinsulation (layers 6 for top and 5 for bottom).



The list of important nuclides and maximum values of their specific activities (Waste Acceptance Criteria) in Ignalina NPP waste, intended for disposal at the VLLW facility are presented in the following table.

Radionuclide	Specific activities, Bq/kg		
	Limit values derived in this report		
	$B_{i,l}$, from operational period scenarios	$A_{i,l}$, from facility evolution scenarios	$C_{i,l}$, from inadvertent intrusion scenarios
^{14}C	4.80E+10	4.00E+05	1.40E+07
^{36}Cl		4.00E+05	4.00E+05
^{54}Mn	9.60E+05		
^{55}Fe			
^{60}Co	3.36E+05		4.50E+10
^{59}Ni		4.62E+05	3.30E+08
^{63}Ni			2.90E+08
^{65}Zn			
^{90}Sr		2.75E+16	4.20E+05
^{93}Zr		9.76E+04	1.40E+08
^{93m}Nb			9.90E+10
^{94}Nb	4.84E+05	5.17E+04	1.40E+05
^{99}Tc		4.00E+05	4.00E+05
^{110m}Ag			
^{129}I		4.00E+04	7.30E+04
^{134}Cs	4.48E+05		5.00E+19
^{135}Cs		3.33E+04	1.30E+07

^{137}Cs	1.34E+05		3.30E+06
^{234}U		1.76E+04	6.00E+06
^{235}U		1.64E+04	1.80E+06
^{238}U		1.71E+04	3.50E+06
^{237}Np		7.57E+03	1.40E+06
^{238}Pu			1.90E+06
^{239}Pu		1.77E+05	7.80E+05
^{240}Pu		6.98E+08	7.90E+05
^{241}Pu			5.00E+09
^{241}Am			1.10E+06
^{244}Cm			7.60E+07

Treatment of VLLW is not required in accordance with Lithuanian legislation. The only processing of VLLW which take place at INPP is:

- compaction of compactable waste in bales by 70-tons compactor,
- packaging of not-compactable waste in 20-feet half-height ISO container,
- packaging of bulk waste in FIBC containers.

Q.No 48	Country	Article Article 32	Ref. in National Report B, P.9

Question/Comment: The National Report indicates that in the 90s an intermediate dry storage facility for spent nuclear fuel was planned to be placed at the site of Ignalina NPP.
Was there an environmental impact assessment on siting the mentioned storage facility on the territory of Ignalina NPP?

Answer: The decision to construct the intermediate dry storage facility for spent nuclear fuel at the site of Ignalina NPP was made in 1993. The first version of the Law on Environmental Impact Assessment of Planned Economic Activity was adopted in 1996 m. Lithuania became a Party of the Espoo convention in 2001.
Construction of installations that had been started before the dates specified was carried out in the accordance of the requirements of legislation in force.
Although environmental impact assessment was not performed before 1996, however there was the requirement for the technical design documentation to include environmental part, for which expertise had to be carried out.

Q.No 49	Country	Article Article 32	Ref. in National Report B, P.11

Question/Comment: The National Report indicates that the criterion for classifying waste as RW is excess of clearance levels, but the clearance levels are used only for classification of solid waste as RW.
We would like to know what criteria for classifying liquid and gaseous wastes as RW are used in Lithuania?

Answer: Liquid radioactive waste shall be classified and segregated according to:

(a) The specific activity - in low level ($\leq 4 \cdot 10^5$ Bq/l) and intermediate level ($> 4 \cdot 10^5$ Bq/l) waste;

(b) The chemical nature - in aqueous and organic waste;

(c) The phase state - in homogeneous and heterogeneous waste.

It shall be noted, that the radioactive waste classification system introduced in 2001 is applied for new radioactive waste treatment facilities. Classification of radioactive waste at INPP comply with the old regulations of the Soviet Union (SP AS-88).

Liquid radioactive waste is classified into three groups according to specific activities at INPP:

a) Low level - $\leq 3.7\times10^5$ Bq/l

b) Intermediate level - $3.7\times10^5 – 3.7\times10^{10}$ Bq/l

c) High level - $> 3.7\times10^{10}$ Bq/l.

Waste in gaseous form, which contains aerosols, go through filtration. The gas is discharged to the environment if activity levels do not exceed clearance levels, set in legislation. Nuclear Safety Requirements BSR-1.9.1-2011 „Limits of Radioactive Discharges into Environment from Nuclear Facilities and Requirements for a Plan for Radioactive Discharges into Environment" (2011) establishes the limits of the discharges of the radionuclides from nuclear facilities to atmosphere and water, including methodology for calculating of activities of radionuclides discharged to environment, requirements for the preparation and submission of the Plan of Discharge of Radionuclides and requirements for the control of the discharges.

Q.No 50	Country	Article Article 32	Ref. in National Report B, P.9

Question/ Comment

The report reads: «The policy for management of solid radioactive waste of INPP is the following:
1. To modernize the management and storage of solid short-lived and long-lived radioactive waste of INPP...».
«4. A suitable technology for treatment of spent oil shall be chosen».
What is this modernization, and what are its terms (deadline)? How is spent oil currently being managed?

Answer

The modernization of the solid radioactive waste handling system includes the change to a new classification, compliant with international standards, and the operation of solid radioactive waste storage and processing facilities in 2018. The content of the project for new solid radioactive waste storage and management facility, a retrieval facility (to retrieve waste from the existing storage) and the solid radioactive waste treatment facility, which scope includes facilities for:

- receipt of retrieved solid radioactive waste (SRW);
- sorting;
- fragmentation;
- compaction of combustible low level SRW;
- combustion of combustible medium and low level waste;
- super-compaction of medium and low level waste;
- compacting in containers;
- cementation;
- decontamination of transport containers;

- measurement and accounting;
- transport system;
- interim storage for the SRW bales;
- management of Ignalina NPP decommissioning waste.

Radioactive waste processing facilities and modular design storage facilities are currently under construction with the storage capacity of one module of 2500 m^3 for treated short-lived waste (in to be disposed containers) and 2000 m^3 for long-lived waste (in storage containers).

Radioactive oil will be burned on in the radioactive waste treatment facility where the oil burning is foreseen. Operation start is foreseen in 2018.
At present time spent radioactive oil are collected in the reservoir which is located in the controlled area of INPP in building G1.

Q.No 51	Country	Article Article 32	Ref. in National Report D, P.16

Question/ Comment: Section «"Dry" storage for spent fuel» of the Report reads: «At present time at INPP it is foreseen 2 different dry storage facilities for interim storage of transport casks with spent fuel bundles (likely that these casks will be casks for final disposal also because they are multipurpose)».
Is there the safety assessment of spent nuclear fuel disposal in transport casks?

Answer: There is no safety assessment for SNF disposal in transport casks. Safety assessment of disposal will be done in stage of design of disposal facility.
Dry storage concept of the SNF in the dual purpose (storage and transport) casks is chosen in Lithuania. Not for final disposal. The storage casks of type CONSTOR® RBMK1500/M2 are designed for the following operating phases:
• Wet loading in the SPH;
• Transfer to a nearby dry ISFSF;
• Long term interim storage in the ISFSF.
We recognized that misleading information has been provided in the Lithuanian national report regarding suitability of the storage containers for geological disposal. Application of the storage containers for spent fuel disposal has never been considered and it is very unlikely that these containers will be suitable for geological disposal. Therefore, elaboration of the Spent Fuel Disposal concept including selection of appropriate disposal casks as well as introduction of an Encapsulation Plant has been foreseen in the Draft National Radioactive Waste Management Plan (www.rata.lt).

Q.No 52	Country	Article Article 32	Ref. in National Report Section D

Question/ Comment: As pointed out during previous European projects, characterization of the waste (especially institutional waste), is known to be a difficult task taking into account: the lack of information about some waste, the heterogeneities of the waste and the uncertainties inherent to the characterization process. Which means and strategies have been implemented to overcome those difficulties?

Answer: The radiological characterization procedure has been developed and is currently being applied at INPP. Within the scope of the radiological characterization:
- radiological surveys are carried out (taking into consideration the historical assessment);
- nuclide vectors are developed;

- radiological inventory is performed (taking into consideration results of engineering inventory) and waste is segregated into separate streams.
The generated waste is packed into packages following the applicable requirements and delivered to appropriate facility for final survey by applying available methodologies and nuclide vectors developed for corresponding waste stream. All uncertainties originated during the waste generation and waste packages formation processes are considered in the above mentioned methodologies.
A waste stream is defined as single-type waste originating due to specific activity performed at INPP and possessing the common radioactive contamination source and similar contamination transfer mechanism.

Radiation Protection Centre has equipment and experienced staff to characterize institutional waste, orphan sources and radioactive contamination in emergency situations.
Usually, characterization of the institutional waste (except of radioactive waste from Ignalina NPP) in Lithuania doesn't cause difficulties, because of comparatively small amounts of waste and not very complicated composition of radionuclides in the institutional waste.

Q.No 53	Country	Article Article 32	Ref. in National Report Sec.D-32.2.iii:p20/Sec.K:p94/Sec.L:p114
Question/ Comment	In Ignalina NPP, some liquid radioactive effluents are evaporated and the resulting salts are mixed into bitumen. The bitumen compound is transferred to the bituminized waste storage facility (building 158) where it is stored in tank-cells. (The total volume of bituminized compound in building 158 is 14263 m3). Preliminary study was prepared for bituminized radioactive waste storage facility in order to know if it could be converted into a final repository or not. It was decided that more investigations are needed. INPP should complete their studies by 2020. If the feasibility of conversion of the bituminized radioactive waste storage facility into a final repository is not justified, the bituminized radioactive waste shall be retrieved and enclosed into suitable containers as required for storage and disposal in the near surface repository radwaste. Could Lithuania provide preliminary information on the potential conversion of the existing bitumized waste storage facility, into a final repository?		
Answer	At present, the schedule of measures on transfer of the bitumenized waste storage in final repository is prepared and is in agreement with VATESI. In accordance with this schedule execution of investigations is foreseen in 2017, development of the technical design is foreseen in 2020, and commencement of reconstruction works is foreseen in 2023.		

Q.No 54	Country	Article Article 32	Ref. in National Report p25
Question/ Comment	According to the National Report, it is possible to recognize that INPP building 117/1 and 117/2 contain power plant equipment which is not related to safety function. To achieve better understanding of Equipment Decontamination and Dismantling Project, can you identify what major equipment contained in those buildings?		
Answer	Buildings 117/1,2 contained part of INPP Unit 1 and Unit 2 Emergency Core Cooling System Equipment. Following the reactors final shutdown the equipment located in buildings 117/1,2 lost their functionality, therefore the equipment was taken out of service and isolated. Following its isolation the equipment did not perform any functions, including safety related functions, and therefore it was dismantled.		

Q.No 55	Country	Article Article 32	Ref. in National Report p26
Question/ Comment	The decommissioning of the INPP is divided into a number of projects. Is this intended to divide the work to ensure safety? If so, please describe your policy and strategy for dividing the projects.		
Answer	All INPP decommissioning projects are grouped subject to programs defining specific areas of decommissioning activities: enterprise management; post-operation; preparatory works; equipment dismantling; facility demolition and the site restoration; SNF handling; waste management. Safety is justified for those activities that are subject of authorization by nuclear safety regulatory authority VATESI. Subdivision of projects/works based on safety related aspects has not been performed.		

Q.No 56	Country	Article Article 32	Ref. in National Report D, Page 15
Question/ Comment	What is the procedure for the management of spent nuclear fuel that has been damaged during operation at Unit 1 and Unit 2?		
Answer	Damaged fuel handling includes its loading into special baskets which are later inserted inside the cask. The cask body is the same as of the cask dedicated for non-damaged fuel, however the number of fuel bundles to be loaded into the cask is considerably less: (depending on the damage nature – from 10 to 36). Development of the damaged fuel handling technology is included into the scope of B1 Project Basic Design. Working procedures will be developed on the basis of the Basic Design requirements.		

Q.No 57	Country	Article Article 32	Ref. in National Report D, Page 16
Question/ Comment	Do you plan to store spent nuclear fuel that has been damaged during operation at Unit 1 and Unit 2 in the new Interim SNFSF?		
Answer	INPP plans to store damaged fuel in new CONSTOR® RBMK1500/M2 casks. For this purpose the special handling/loading technology, basket&cartridges for damage Fuel Bundle (FB) will be designed. These special baskets with damaged FB will be loaded into the CONSTOR® RBMK1500/M2 casks. Technical design and Preliminary SAR for Damaged Fuel Handling System is currently under discussion with VATESI.		

Q.No 58	Country	Article Article 32	Ref. in National Report B, pg. 9
Question/ Comment	The current long strategy for spent fuel management in Lithuania is for dry type interim storage at INPP for 50 years. What plans does Lithuania have to look beyond the 50 year period of storage and for eventual permanent disposal?		
Answer	In general, direct disposal of the spent fuel is considered as a basic spent fuel management option. All feasibility and cost investigations are based on this strategic approach. As it is foreseen to store the spent fuel in the dry storage containers for 50 years, and repository siting and construction takes about 30 years, the final decision on future management of the spent fuel has to be taken by 2030. Up till then all management and		

disposal options should be analysed and compared.

New Lithuanian National Programme for the Management of Spent Fuel and Radioactive Waste will be prepared until September of 2015 (considering to the requirements of the Council directive 2011/70/EURATOM). In New Programme will be schedule and required steps (required investigations, development plans and so on) of the disposal of spent fuel and long-lived radioactive waste in Lithuania.

Q.No	Country	Article	Ref. in National Report
59		Article 32.1.1	Section D, page 16

Question/ Comment: The spent fuel is handled according to the design documentation, adopted by the regulatory body and both methods are licensed (with involvement from experts from Western Europe), thereby providing a justification for safety. It is shown, that the safety criteria, particularly criticality and sufficiency of removal of residual heat, are fulfilled during normal operation and during design basis accidents. However, the interim storage is expected to be in use and the transport casks transferred to interim facility where should be stored up to 50 years. Where it is stated and which basis has been used for justification of just 50 years?

Answer: All safety justifications are stated in Preliminary SAR and Technical Design of new Interim Spent Fuel Storage Facility.

The intended fuel storage time amounts to 50 years after last cask is placed in the Storage Hall. During this time span, following safety objectives are met:

- Safe containment of the radioactive inventory;
- Shielding of the ionizing radiation;
- Subcriticality;
- Sufficient heat dissipation;
- Safe handling and retrievability;
- The casks are suitable for off-site transport of the spent fuel at the end of the storage period.
- The casks feature the potential for service life extension in case that the scheduled end of the storage time has to be exceeded:
- The casks are designed to withstand extreme accidental loads. Therefore, structures are oversized for operational loads. Operating stresses of the casks are low and material degradation during the storage period e. g. by fatigue is excluded;
- The safety related structures of the casks are made from metallic materials which are resistant against ageing;
- The cask cavity is filled with inert gas. Relevant corrosion of fuel and structural materials therefore excluded;
- The cask containment is fully metallic with through welded joints. Decrease of containment leak-tightness over the service time is therefore excluded;
- The outer containment of the cask can be fully inspected using adequate non-destructive examination methods.

Q.No	Country	Article	Ref. in National Report
60		Article 32.1.5	B, p 12

Question/ Comment	"Table B-1: Solid waste radiological classification" Are the dose rate measurements suitable (sufficient) method for waste categorization?
Answer	In the table of waste classification (table B-1) there is a column “Disposal method”. It means that radioactive waste are classified not only according dose rate, but also according waste acceptance criteria for the disposal. So according dose rate goes preliminary classification, final classification goes after comparing if the waste comply waste acceptance criteria. For example, the waste that comply waste acceptance criteria of very low level waste repository is class A.

Q.No	Country	Article	Ref. in National Report
61		Article 32.2.3	D, p 21

Question/ Comment	"Main purpose of complex B10 is to ensure measurement of wastes packages or big size wastes of relatively non radioactive wastes (non radioactive wastes after dismantling up to verification on B10 at INPP so called "relatively non radioactive wastes") and after measurements and confirmation of criteria for non radioactive wastes - wastes of class "0" or free release wastes" What does measurement of waste packages cover?
Answer	During the waste package formation process all waste is checked for surface contamination by applying the set criteria (radiometric measurements). The final characterization of waste packages is performed at B10 Facility where, considering uncertainties, the waste activity, nuclide composition is determined on the basis of available methodologies (spectrometric measurements) and the obtained results are compared with the free release criteria.