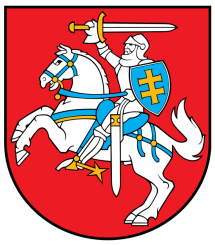

REPUBLIC OF LITHUANIA
STATE NUCLEAR POWER SAFETY INSPECTORATE

IMPLEMENTATION OF PLAN

OF STRENGTHENING NUCLEAR SAFETY IN LITHUANIA

(Follow-up of the “stress tests” performed in European Union)

Status report

Vilnius
31 December 2014

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List of Abbreviations

ENSREG	European Nuclear Safety Regulators Group
EPREV	International Atomic Energy Agency service on Emergency Preparedness Review
EPA	Environmental Protection Agency under the Ministry of the Environment
CNS	Convention on Nuclear Safety
FRD	The Fire and Rescue Department under the Ministry of the Interior
IAEA	International Atomic Energy Agency
Ignalina NPP	State Enterprise Ignalina Nuclear Power Plant
MoH	Ministry of Health of the Republic of Lithuania
NPP	Nuclear Power Plant
RPC	Radiation Protection Centre under the Ministry of Health
VATESI	Lithuanian acronym for “State Nuclear Power Safety Inspectorate”
WENRA	Western European Nuclear Regulators Association

Introduction

In the aftermath of the nuclear accident that occurred at the Fukushima Daiichi nuclear power plant in Japan on 11 March 2011, the European Council decided that all European Union nuclear power plants should be reviewed on the basis of a comprehensive and transparent risk and safety assessment ("stress tests"). The European Union countries together with Switzerland and Ukraine that operate nuclear power plants or spent fuel storage facilities produced national „stress tests" reports. The national „stress tests" reports in 2011 were submitted and in 2012 peer reviewed through a process organised and overseen by ENSREG [1]. The European Union countries and the European Commission as ENSREG have endorsed the conclusions from the "stress tests" and their peer review results [2] and concluded that follow-up activities would occur through an Action Plan [3]. The ENSREG developed an Action Plan and requested that all countries develop and make public their National Action Plans associated with post-Fukushima lessons learned and „stress tests" peer review recommendations and suggestions.

Following the ENSREG Action Plan, the European Union countries participated in the „stress tests" produced National Action Plans and submitted them to ENSREG. The ENSREG orginized a National Action Plans Workshop, which was held in Brussels on 22-26 April 2013, to discuss and review the contents and status of implementation of National Action Plans. All countries participated in the National Action Plans Workshop committed to continue implementation of their National Action Plans until all activities and measures had been finalised [4].

The Plan of Strengthening Nuclear Safety in Lithuania (National Action Plan) (hereafter – the NAcP) in 2012 was prepared in accordance with ENSREG Action Plan and in 2013 peer reviewed during a National Action Plans Workshop. The NAcP provides general information about the nuclear safety in Lithuania and activities and corresponding measures taken to improve the nuclear safety in the light of Fukushima accident lessons learned. VATESI has been approved this NAcP, considering the status and dates of implementation of measures that were indentified on the day of preparation of the NAcP. The NAcP was published in Lithuanian in early January 2013 and is available on VATESI website [5].

The present Status Report is prepared in order to reflect progress on implementation of measures of the NAcP, as well as emphasize and justify main changes in the NAcP since it was prepared and presented during the 2013 ENSREG National Action Plans Workshop. The Status Report of the NAcP is prepared considering the ENSREG terms of reference [6, 7] and includes only relevat technical details, which are nessessary for clarification and justification of changes of measures of the NAcP. The main information and the basis of the safety relevance of all measures are provided in the NAcP. The corresponding Status Report of the NAcP in Lithuanian is going to be updated in early January 2015 and and published on VATESI website.

1. Status of the National Action Plan

Status of the NAcP is provided in Table 1. with comments, which explain the progress of all measures.

1.1. Response/clarification on issues identified in the rapporteur's report from the 2013 workshop

The conclusions related with Lithuanian NAcP from 2013 workshop [4]:

"The Lithuanian NAcP informs comprehensively and well understandably on how the safety of the Ignalina NPP, which is shut down, and the spent fuel storage facilities, including all spent nuclear fuel handling processes, in the country is going to be improved in the aftermath of Fukushima according to the national assessments, the recommendations and suggestions of the European Stress Tests and the conclusions of the CNS process.

The NAcP is transparent and accessible on the regulator's website.

The NAcP follows the structure of the ENSREG guidance. The items, that are relevant for Lithuania, which does not have operating nuclear power plants, are grouped in several subjects. Therefore, it is not always clear how specific ENSREG recommendations and suggestions have been addressed.

The NAcP does not directly reply to comments related with the possible practical improvements of the spent fuel pools safety formulated by the Peer Review team in the Peer Review country report. During the workshop, Lithuania provided explanations on this issue, as well as how other ENSREG recommendations and suggestions have been addressed."

No additional response or clarification needed in this Status Report.

1.2. Progress on implementation and update of the National Action Plan

The NAcP includes 14 measures, 8 of them are implemented and 6 – are in progress. The main changes of the NAcP are explained in Chapter 1.3.

1.3. Main changes in the National Action Plan since the 2013 workshop with justification

1.3.1 Additional measures

No additional measures were added in the NAcP.

1.3.2 Measures removed or modified

The measures No. 1 and 2 of the NAcP were modified in order to reflect WENRA Safety Reference Levels for Existing Reactors, which were updated on 24th September 2014 in relation to lessons learned from TEPCO Fukushima Dai-ichi accident [8].

The measures No. 3 of the NAcP was modified taking into account the results of the IAEA EPREV mission that was contucted in Lithuania during 1-11 October 2012.

1.3.3 Changes in the schedule

The deadlines of measures No. 2, 4, 5 and 13 was changed. For clarification, see the relevant comments in Table 1.

1.4. Technical basis leading to the main changes identified in the National Action Plan

The technical basis leading to the main changes is explaned in Chapter 1.3 and in Table 1.

1.5. Nationally identified good practices and challenges during implementation

The NAcP is implementing in proper way.

2. Conclusions

The main technical and organizational measures are implemented in Ignalina NPP (measures No. 6, 7, 8, 9, 10, 11, 12 and 14). The remaining technical and organizational measures (measures No. 4, 5 and 13) are onging.

Table 1. Summary of measures of the Plan of Strengthening Nuclear Safety in Lithuania (National Action Plan)

No.	Topic	Measure/Comments	Basis	Status/ Deadline	Responsibility
1.	Natural hazards	**Measure:** To consider the necessity of revision of the national nuclear safety regulations applied to the identification of natural hazards, their assessment and the corresponding assessment for "cliff-edge" (margins) effects in compliance with planed WENRA guidance when it will be issued. **Comments:** The measure is included in the NAcP in accordance with WENRA statement [9]. VATESI is participating in the WENRA activities (working group T1 Natural hazards) related to preparation of the guidelines.	ENSREG Peer Review Report Planned WENRA guidance	In progress/ 1 year after issuing of WENRA guidance	VATESI
2. 2.1 2.2	General	**Measure:** To carry out review of WENRA Safety Reference Levels for Existing Reactors, which were updated on 24th September 2014 in relation to lessons learned from TEPCO Fukushima Dai-ichi accident, and if necessary: - update of existing or develop of new ones national nuclear safety regulations applied to finally shutdown Ignalina NPP; - as much as it is applicable update of existing or develop of new ones national nuclear safety regulations applied to new NPP. **Comments:** The updated WENRA Safety Reference Levels for Existing Reactors are going to be reviewed and, were appropriate, national nuclear safety regulations would be improved.	ENSREG Peer Review Report, WENRA Safety Reference Levels for Existing Reactors	In progress/ 2017	VATESI
3.	Emergency	**Measure:** To implement the following actions of EPREV Action Plan:	EPREV	In progress/	

No.	Topic	Measure/Comments	Basis	Status/ Deadline	Responsibility
	preparedness/ Severe accident management		review mission report		
3.1		- in connection with revised emergency classes of Ignalina NPP, to carry out renew of the "State residents protection plan in case of nuclear accident";		2016	VATESI
3.2		- to conduct a joint Radiation Protection Centre (RPC) under the Ministry of Health (MoH), Environmental Protection Agency (EPA) under the Ministry of the Environment, VATESI and Ignalina NPP table top exercise to test collaboration abilities for predictions on radiological consequences, including dose projection and formulating recommendations for residents, in case of nuclear accident;		2015	RPC, EPA, VATESI, Ignalina AE
3.3		- to conduct a joint Fire and Rescue Department (FRD) under the Ministry of Interior, VATESI, RPC and MoH table top exercise to test effectiveness of public information system in case of radiological accident. **Comments:** The measures linked to the results of the EPREV mission and related to emergency preparedness for responding to a nuclear or radiological accident have been included in the NAcP after approval of the measures of improvements among all Lithuanian institutions involved in this mission.		2016	FRD, VATESI, RPC, MoH
4.	Natural hazards	**Measure:** To evaluate the spent fuel cask tip over in case of earthquake during transportation and to assess radiological impact on the environment, personnel	National final report on	In progress/ 2017 (initial deadline	Ignalina NPP

No.	Topic	Measure/Comments	Basis	Status/ Deadline	Responsibility
		and population. **Comments:** Initialy the action was planned to be finished in 2013. The date of implementation of the action is revised taking into account updated schedule of the Ignalina NPP Interim Spent Fuel Storage Facility (ISFSF) construction project. The activity is going to implement before start of operation of the ISFSF (scheduled for 2017).	"stress tests"	2013)	
5.	Natural hazards	**Measure:** To consider the necessity of improvement of emergency preparedness procedures or updating those after confirmation of the calculation results of the spent fuel cask tip over during transportation. **Comments:** See comment No. 4.	National final report on "stress tests"	In progress/ 2017 (initial deadline 2013)	Ignalina NPP
6.	Natural hazards	**Measure:** To assess the robustness and availability of accident management centre of organization of emergency preparednness against an earthquake. If needed, to develop measures to improve the robustness of accident management centre. **Comments:** Ignalina NPP has performed the assessment of the robustness and availability of accident management centre (AMC) of organization of emergency preparednness in case of earthquake and has prepared the report of the assessment. The seismic analisys, including specific calculations were carried out for the assessment of the robustness and availability of AMC. The model of AMC was developed and computer code (SCAD) was used for calculation of seismic impact. The results of the calculations confirmed the	National final report on "stress tests"	Implemented/ 2014	Ignalina NPP

No.	Topic	Measure/Comments	Basis	Status/ Deadline	Responsibility
		robustness and availability of the AMC in case of earthquake with peak ground acceleration 0,13g. VATESI performed review and approved this report.			
7.	Natural hazards	**Measure:** To consider the possibility of the seismic warning and monitoring system application for formalization of the emergency preparedness announcement criterion and to include this criterion in the operational manual of the seismic warning and monitoring system. **Comments:** Ignalina NPP has performed assessment of the data, which generates the seismic warning and monitoring system and determined the new criterion for formalization of the emergency preparedness announcement. The new criterion have been included in the operational manual of the seismic warning and monitoring system of Ignalina NPP. VATESI carried out the review of documents submitted by the Ignalina NPP, which are related with implementation of this action, and has approved them.	National final report on "stress tests"	Implemented/ 2012	Ignalina NPP
8.	Natural hazards	**Measure:** To provide data transfer of the seismic warning and monitoring system to the computer information system of organization of emergency preparednness, i.e. to the accident management centre, technical support organization and emergency control room and to update corresponding procedures of organization of emergency preparednness. **Comments:** Ignalina NPP has installed necessary hardware options, which ensure data transfer of the seismic warning and monitoring system to the computer information system of organization of emergency preparednness. Relevant emergency preparedness procedures have been updated by Ignalina	National final report on "stress tests"	Implemented/ 2013	Ignalina NPP

No.	Topic	Measure/Comments	Basis	Status/ Deadline	Responsibility
		NPP and approved by VATESI.			
9.	Natural hazards	**Measure:** To assess the possibilities of the emergency removal and repair works by organization of emergency preparednness for beyond design-basis emergency scenarios related to the level of earthquake above maximal calculated earthquake and resulting in the cracks or collapse of the construction structures of the operating spent fuel interim storage facility and new spent fuel interim storage facility, including casks blockage by debris, as well as cracks or collapse of the construction structures of the "hot cell" of the new spent fuel interim storage facility during the works with spent nuclear fuel in the "hot cell". **Comments:** Ignalina NPP has performed the assessment of the issues specified in this action and has prepared the report. In the light of this report's findings, relevant emergency preparedness procedures of Ignalina NPP have been updated and approved by VATESI.	National final report on "stress tests"	Implemented/ 2013	Ignalina NPP
10.	Design issues	**Measure:** To provide the power supply of water temperature and level instrumentation in the storage pools of both units from diesiel generator No. 7 of unit 2 or from the mobile diesel generator connected to Unit 2. **Comments:** Ignalina NPP has implemented the modification of the emergency power supply sistem, including installation of special power sockets for mobile diesel generator in different places of Unit 2 building. The relevatnt operation documentation and emergency preparedness procedures of Ignalina NPP have been updated and approved by VATESI	National final report on "stress tests"	Implemented/ 2011	Ignalina NPP

No.	Topic	Measure/Comments	Basis	Status/ Deadline	Responsibility
11.	Design issues	**Measure:** To provide the diesel fuel supply for assuring long-term operation of emergency diesel generators. **Comments:** Ignalina NPP has assessed the time of operation of the emergency diesel generators. According to the results of the assesment demand for extra fuel will occure after more than 5 days of nonstop emergency diesel generator operation. Ignalina NPP signed a contract with a fuel supply company for supply of additional fuel in January 2012.	National final report on "stress tests"	Implemented/ 2012	Ignalina NPP
12.	Design issues	**Measure:** To evaluate the capacity for work of water temperature and level instrumentation in the spent fuel storage pools as well as radiation detectors in the spent fuel storage pools halls of both units in conditions of beyond design-basis accident. If needed, to develop the appropriate improvement measures. **Comments:** Ignalina NPP has performed the evaluation of the equipment performance in conditions of beyond design-basis accident and prepared the corresponding report. Taking into account results of this evaluation, relevant severe accidents management guidelines of Ignalina NPP have been updated and approved by VATESI.	National final report on "stress tests"	Implemented/ 2013	Ignalina NPP
13.	Design issues	**Measure:** The special sub-module of the plant computer information system will be developed to provide information about the water temperature and level measurements in spent fuel storage pools as well as radiation level in the spent fuel storage pools halls from both units during and after beyond design-basis accident. The data of water temperature and level measurements in the spent fuel storage pools, radiation level measurements in the spent fuel storage pools	National final report on "stress tests"	In progress/ 2015 (initial deadline 2013)	Ignalina NPP

No.	Topic	Measure/Comments	Basis	Status/ Deadline	Responsibility
		halls will be transferred to the computer information system of organization of emergency preparednness, i.e. to the accident management centre and technical support organization. The data of water temperature and level measurements in the spent fuel storage pools will be transferred to the VATESI. **Comments:** Ignalina NPP has implemented the modification of the plant main computer information system and developed special algoritm, which is dedicated to display data of water temperature and level in the spent fuel storage pools measurements as well as radiation level measurements in the spent fuel storage pools halls in case of beyond design-basis accident. The necessary hardware options (for design basis accidents only) have been installed as well, which allows the transmission of the data of water temperature and level in the spent fuel storage pools measurements as well as radiation level measurements in the spent fuel storage pools halls to the computer information system of organization of emergency preparednness. The implemented modification inludes the transmission of data of water temperature in the accident management centre of VATESI as well. Works related to installation of the new water level measuring equipment for beyond design-basis accident conditions, are in progress.			
14.	General	**Measure:** To examine existing documents concerning the spent fuel storage pools safety. To review management procedures and manuals of beyond design-basis accidents in the spent fuel storage pools. To evaluate planned and implemented modifications related with the spent fuel storage pools safety. To determine additional measures if needed.	ENSREG Country Peer Review Report	Implemented/ 2013	Ignalina NPP

No.	Topic	Measure/Comments	Basis	Status/ Deadline	Responsibility
		Comments: Ignalina NPP carried out the assessment of the existing documents, planned and implemented modifications, emergency preparedness exercises results and plans and other aspects related to the spent fuel storage pools safety. The results of performed assessment concluded that current and implemented technical and organizational measures of the Ignalina NPP ensure the high nuclear safety level of the spent fuel storage pools in stage of final shutdown of Ignalina NPP. VATESI carried out review and assessment of the documents submitted by Ignalina NPP relating to the implementation of the action and approved them.			

References

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3. Action plan: Follow-up of the peer review of the stress tests performed on European nuclear power plants, ENSREG, 25 July 2012.
4. National Action Plans Workshop: Summary Report, ENSREG, 10 June 2013.
5. Branduolinės saugos gerinimo, įvertinus įgytą patirtį po avarijos Fukušima Daiči branduolinėje elektrinėje, planas, VATESI, 8 January 2013.
6. 2nd National Action Plan Workshop 2015 ToR – Final, HLG_p(2014-28)_141, ENSREG, 5 December 2014.
7. 2nd National Action Plan Workshop 2015 - Information Pack Final, HLG_p(2014-28)_140, ENSREG, 5 December 2014.
8. WENRA safety reference levels for existing reactors updated in relation to lessons learned from TEPCO Fukushima Dai-ichi accident, WENRA, 24 September 2014.
9. WENRA Statement regarding the revision of the Safety Reference Levels for existing reactors taking into account the lessons learned from the TEPCO Fukushima Dai-ichi Nuclear Accident, WENRA, 27 October 2014.