



# Review of Implementation of the Plan of Strengthening Nuclear Safety in Lithuania

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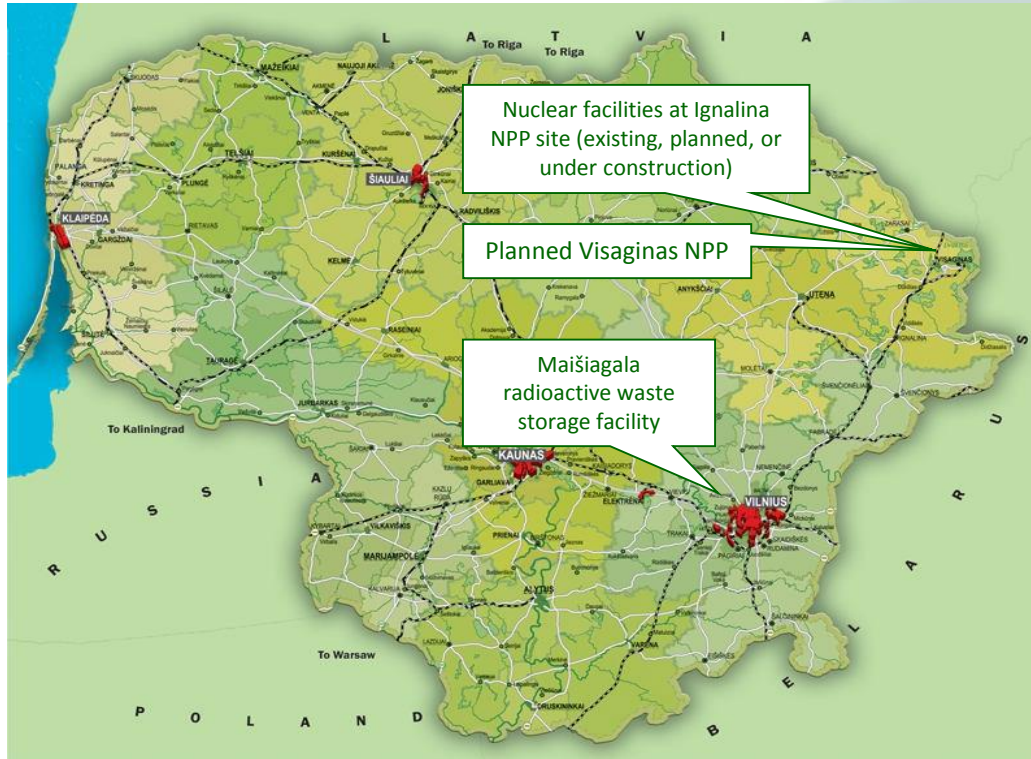
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- ❖ **General information about nuclear facilities in Lithuania**
- ❖ **Current state of Ignalina NPP units**
- ❖ **Approval of the updated NAcP and transparency**
- ❖ **Implementation of the NAcP measures**
- ❖ **Status of the NAcP since the 2013 NAcP workshop**
- ❖ **Conclusions on implementation of NAcP**
- ❖ **Answers to the questions to the updated NAcP**

# SOME FACTS ABOUT LITHUANIA AND NUCLEAR INSTALLATIONS



**Area - 65 300 km<sup>2</sup>**



**Population - 2 950 684 (2013)**



**Small nuclear power program:**

- Existing NPP – Ignalina NPP (2 RBMK-1500 units) – under decommissioning
- Planned NPP – Visaginas NPP (1 ABWR unit) – the final decision is not taken yet
- Other nuclear facilities – spent fuel storage and radioactive waste treatment facilities

# NUCLEAR FACILITIES AT IGNALINA NPP SITE



## Ignalina Nuclear Power Plant

- Unit 1 (RBMK-1500) operation 1983-2004
- Unit 2 (RBMK-1500) operation 1987-2009
  - The units were shutdown in compliance with the protocol of Lithuania's accession to EU
- Unit 3 (RBMK-1500) construction was cancelled in 1989, completely demolished
- Unit 4 (RBMK-1500) was planned, construction was never started



## SNF and other radioactive waste treatment and storage facilities on INPP site:

- Existing spent nuclear fuel storage facility (~1/4 of INPP inventory)
- Liquid radioactive waste management facilities
- Cemented and solid radioactive waste storage facilities
- Buffer very low level radioactive waste storage facility



## Nuclear facilities at Ignalina NPP site what are planned or under construction:

- Construction of new spent nuclear fuel storage facility (project B1; ~3/4 of INPP inventory)
- Construction of new solid radioactive waste treatment and storage facilities (project B3/4)
- Preparatory activities for construction of Landfill repository for short lived very low activity radioactive waste
- Preparatory activities for construction of Near surface repository for short lived low and intermediate activity radioactive waste



<http://www.iae.lt/en/>

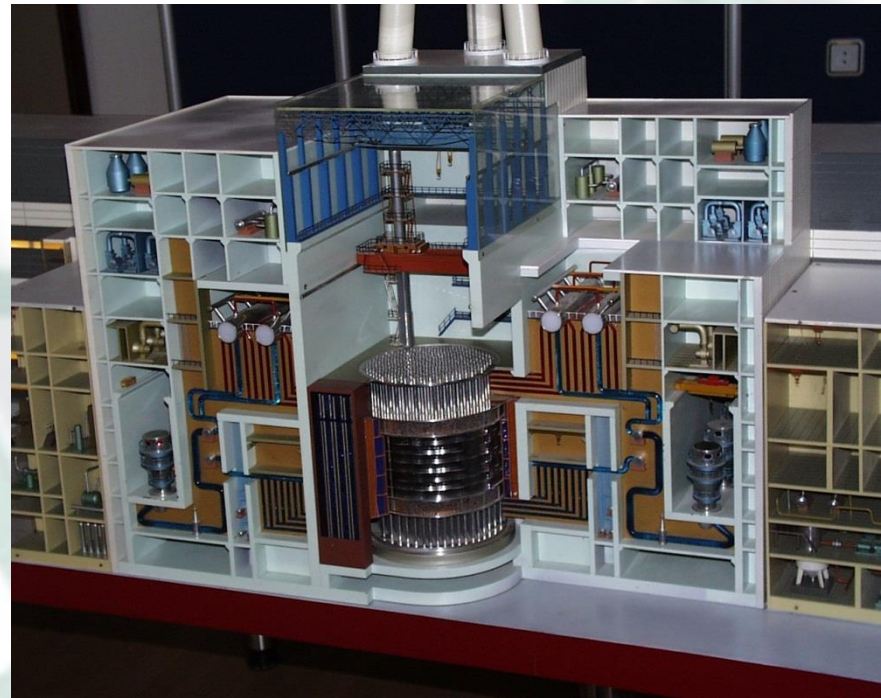


# REACTOR RBMK-1500



## RBMK-1500:

- Channel type graphite moderated boiling light water nuclear reactor
- Design power – 4800 MW(th), authorized power – 4200 MW (th)
- The only two units were built (both at Ignalina site)



- ✧ **Visaginas Nuclear Power Plant project**
- ✧ **ABWR technology is proposed by selected strategic investor HITACHI-GE**
- ✧ **EIA completed in 2009**
- ✧ **Site evaluation report is approved by VATESI in 2014**
- ✧ **Negotiations with project's partners is going on**
- ✧ **No final decision on build yet**



<http://www.vae.lt/>

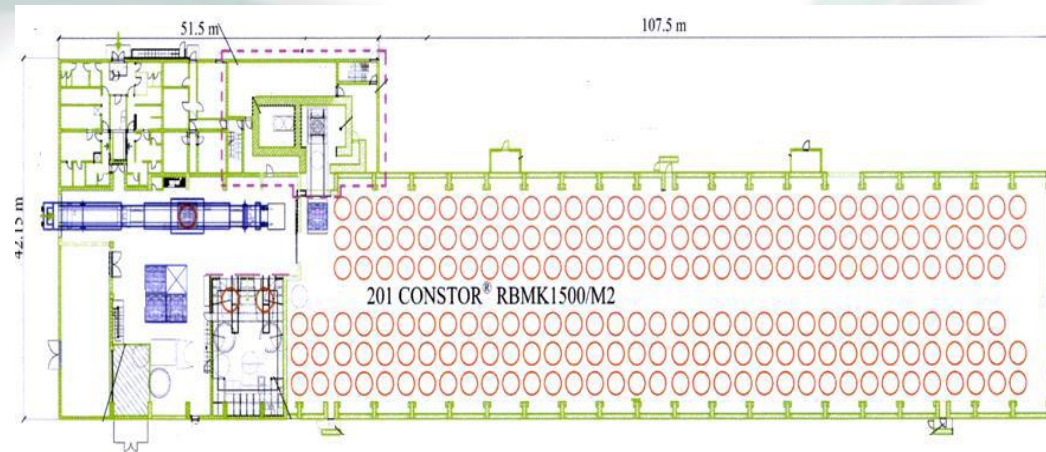


# CONSTRUCTION OF NEW INTERIM SPENT FUEL STORAGE FACILITY

✱ The most important issue concerning decommissioning of Ignalina NPP – New Interim Spent Fuel Storage Facility (project B1, contractor NUKEM Technologies GmbH / GNS)

✱ In accordance with the Final Decommissioning Plan of Ignalina NPP (revision 7, approved in 2014):

- Commissioning – 2017
- Defueling of reactor of Unit 2 – 2018
- Removal of spent nuclear fuel from both Units – 2021



<http://www.iae.it/en/b1/>

## **No major changes since 2013:**

- Unit 1
  - Reactor is fully defueled in 2009
  - Spent nuclear fuel is located in the spent nuclear fuel pools (contains 7175 fuel assemblies on state of 1 April 2013).
- Unit 2
  - Reactor is partly defueled – 1134 out of 1661 fuel assemblies are still in reactor core (on state of 31 December 2012)
  - The rest spent nuclear fuel is located in the spent nuclear fuel pools (contains 8381 fuel assemblies on state of 1 April 2013)
- As far as spent nuclear fuel still remains in the Units maintenance of relevant structures, systems and components is ongoing to ensure safety.
- In parallel isolation, decontamination and dismantling of not safety-related unnecessary equipment are ongoing.



## CURRENT STATE OF IGNALINA NPP (2)

### In 2014:

- Cooling of Unit 2 reactor was ensured mainly by natural circulation
- Cooling of SFP's of Unit 2 was ensured mainly by heat exchange with air and structures as well as by water exchange due to clean-up process (no active cooling was needed, heat exchangers and pumps were switched on only for tests and maintenance)
- Cooling of SFP's of Unit 2 was ensured mainly by heat exchange with air and structures as well as by water exchange due to clean-up process, heat exchangers and pumps were switched on for two periods for 4 and 20 days
- Temperatures (during 2014):
  - Water temperature in the circuit and graphite temperature of Unit 2: 20°C – 50°C (limit is set for graphite temperature – 150°C)
  - Water temperature of SFP's of Unit 1: 36°C – 42°C (safety limit – 60°C)
  - Water temperature of SFP's of Unit 2: 30°C – 45°C (safety limit – 60°C)

# APPROVAL OF THE UPDATED NAcP AND TRANSPARENCE

## ❖ **English version of the updated NAcP was presented to ENSREG on 31 of December, 2014**

- publicly available from VATESI and ENSREG homepages:
  - <http://www.ensreg.eu/node/3770>

## ❖ **Updated "Plan of Strengthening Nuclear Safety taking into account lessons learned from Fukushima Daichi accident in Japan" was approved on 24 of March, 2015, by order of Head of VATESI:**

- holds the same issues as in English version
- have form of legal act in accordance with national requirements
- agreed with governmental institutions, which are participating in implementation of the Plan
- publicly available from VATESI homepage and public register of legal acts:
  - [http://www.vatesi.lt/fileadmin/documents/leidiniai/lt/BSGP\\_PATVIRTINTAS\\_2015-03-24.pdf](http://www.vatesi.lt/fileadmin/documents/leidiniai/lt/BSGP_PATVIRTINTAS_2015-03-24.pdf)
  - <https://www.e-tar.lt/portal/lt/legalAct/801a6e40d22b11e4bcd1a882e9a189f1>

## **Response/clarification on issues identified after the 2013 NAcP workshop**

- With regard to the conclusions related with Lithuanian NAcP from 2013 workshop, no additional response or clarification needed in updated NAcP.

## **Progress on implementation and update of the NAcP**

- There are 14 measures were foreseen in the 2013 NAcP:
  - 7 measures were implemented before NAcP Workshop in 2013 (4 of them were implemented in 2013 just before the workshop)
  - 1 measure was implemented after NAcP Workshop in 2013
  - 1 measure was implemented partly
  - Implementation of 3 measures is still within deadlines

## **Main changes in the NAcP since the 2013 NAcP workshop**

- No additional measures were added in the updated NAcP
- The text for 3 measures are revised
- The deadlines for 3 measures are changed





## **MEASURES THAT WERE IMPLEMENTED SINCE BEGINNING OF 2013**

## MEASURE NR. 9 – ASSESSMENT OF EMERGENCY REMOVAL AND REPAIR WORK AT DRY TYPE SPENT NUCLEAR FUEL STORAGE FACILITIES (1)

- ✿ Finished just before NAcP Workshop in 2013
- ✿ Reviewed postulated collapses of structures of interim dry type spent nuclear fuel storage facilities (of old and new one) due to beyond design earthquake



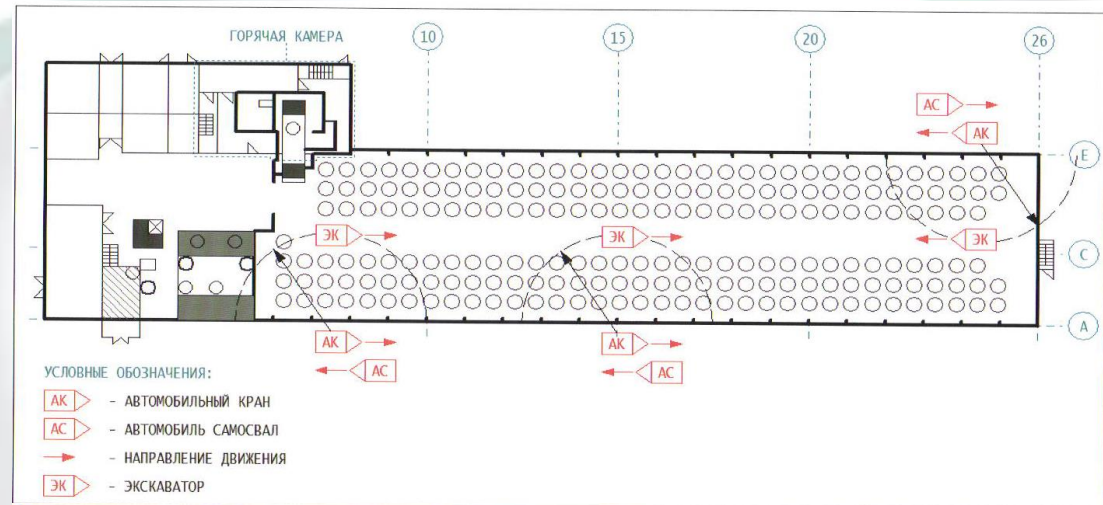
## MEASURE NR. 9 – ASSESSMENT OF EMERGENCY REMOVAL AND REPAIR WORK AT DRY TYPE SPENT NUCLEAR FUEL STORAGE FACILITIES (2)

✱ Analysis demonstrated that the collapse of structures at old spent nuclear fuel storage facility would not impact fulfillment of safety functions

✱ Concerning new storage facility:

- The possible doses of workers and timescale for removal of debris were assessed
- The organizational issues of removal work were analyzed
- Necessary machinery and possibilities to possess it are reviewed

✱ The plan of emergency preparedness of Ignalina NPP was updated accordingly





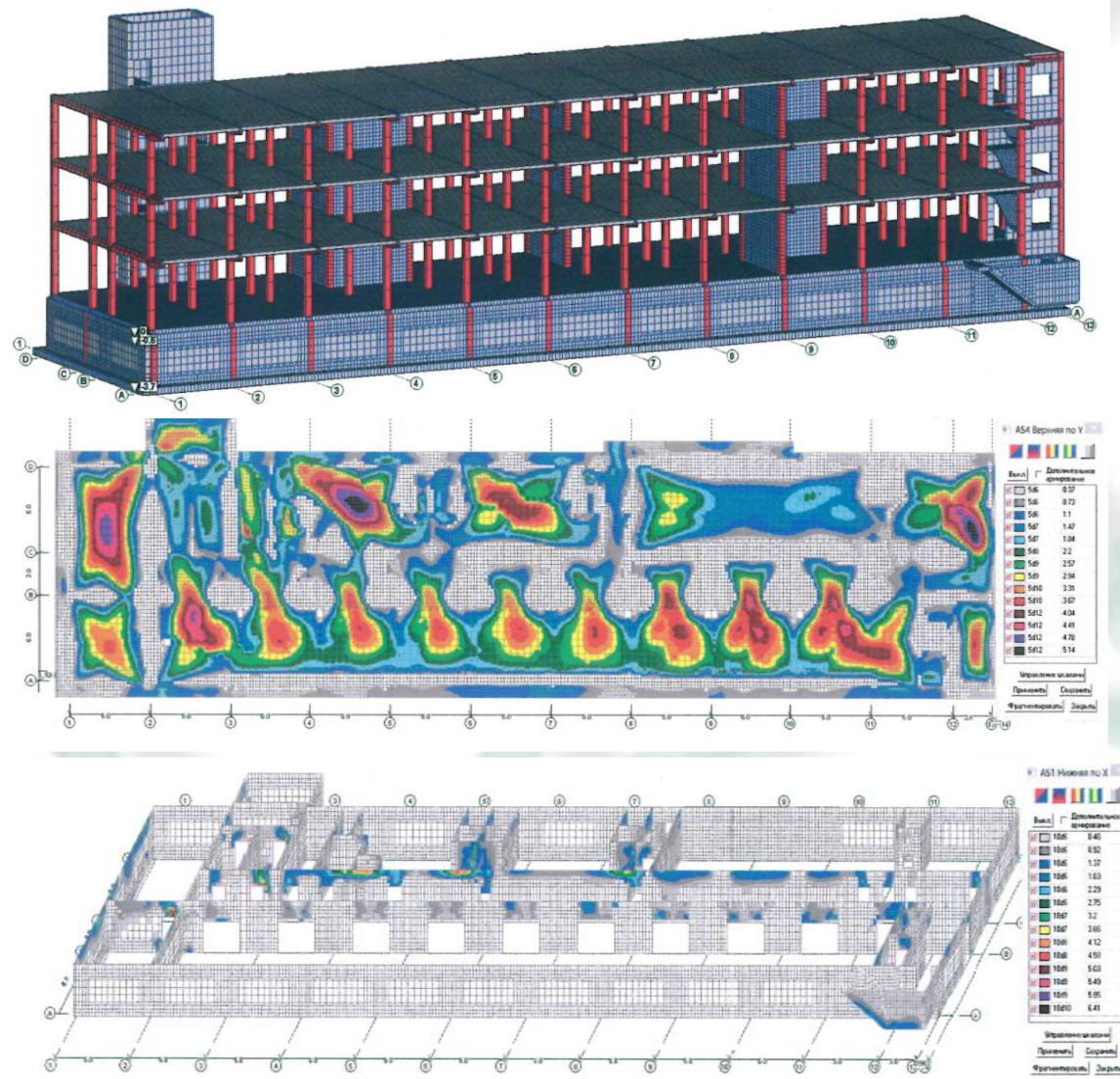
# MEASURE NR. 6 – ASSESSMENT OF ROBUSTNESS OF AMC AGAINST AN EARTHQUAKE (1)

✱ Analysis was performed for building structures, related to Accident Management Centre of Ignalina NPP (AMC)

✱ Additional assessment for robustness of top plate of AMC against falling structures, possibility and possible clogging of AMC emergency exit by debris of the near buildings was done as well

✱ Main results of analyses:

- AMC will withstand seismic event with  $PGA=0,13g$
- AMC will not withstand seismic event with  $PGA=0,2g$
- No clogging of AMC emergency exit by debris



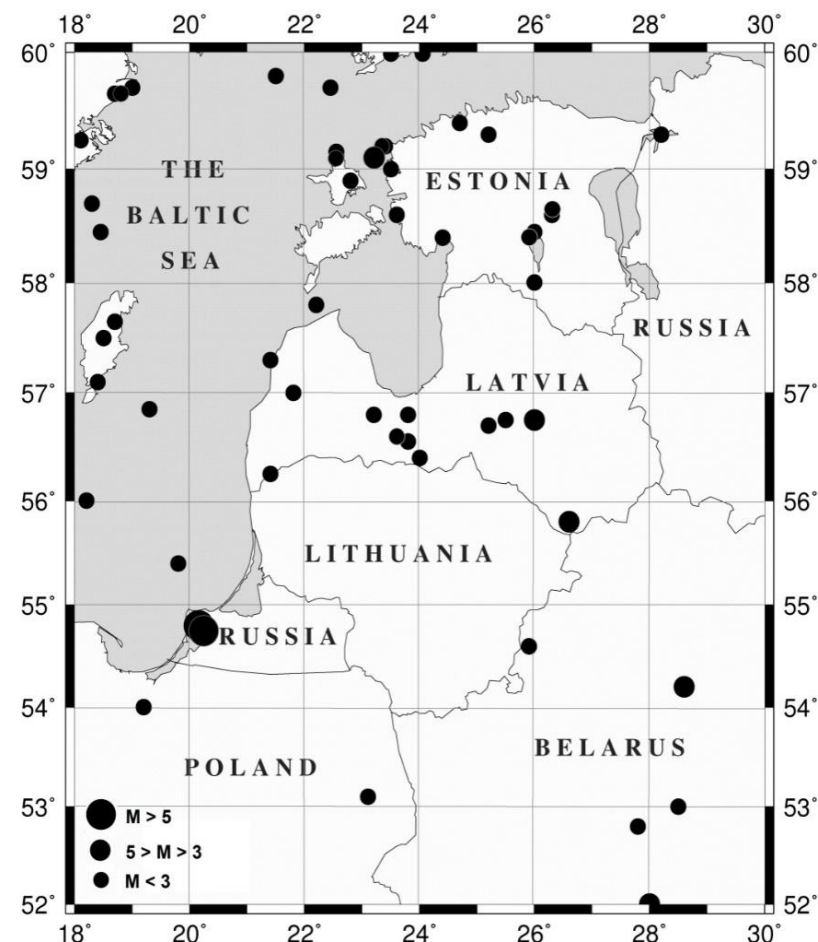
## MEASURE NR. 6 – ASSESSMENT OF ROBUSTNESS OF AMC AGAINST AN EARTHQUAKE (2)

### ⚛ Some facts concerning the analysis:

- $PGA=0,1g$  for Ignalina NPP AMC site corresponds to M 7 (MSK-64)
- $PGA=0,2g$  for Ignalina NPP AMC site corresponds to M 8 (MSK-64)
- According to previous investigations the recommended for DBE event for Ignalina Unit 1  $PGA=0,075g$ , for Unit 2 –  $0,06g$  (corresponds to M 6,5 and M 6)
- For the current analysis was assumed that DBE shall correspond to  $PGA=0,1g$

### ⚛ The performed analysis shows sufficient robustness of AMC structures against beyond-design basis earthquake

- The task of NAcP measure Nr. 6 is finished



Places of historical earthquakes (since 1616)  
Source: Lithuanian Geological Survey



## MEASURE NR. 6 – ASSESSMENT OF ROBUSTNESS OF AMC AGAINST AN EARTHQUAKE (3)

✿ A few additional recommendations for new analysis were provided by contractor. The recommendations were analyzed by Ignalina NPP and plan of additional measures was issued in accordance with them (not included in NAcP). The plan includes:

- visual inspection of structures of AMC (already done);
- decisions on detailed (instrumental) investigation of structures of AMC and further supervision of the AMC structures;
- further investigation of AMC emergency exit reliability and decision on possible strengthening of AMC emergency exit (against explosion blast wave)
- evaluation of technical documentation, inspections and further decisions on equipment of AMC in order to ensure the habitability of AMC in case of beyond design earthquake (term for implementation of the measure – 2015-07-30).



**The implementation of the Ignalina NPP plan is controlled by VATESI**



**The further safety improvements concerning the AMC are reasonable as far as this centrum will remain needful during period of decommissioning of Ignalina NPP and operation of radioactive waste storage facilities**



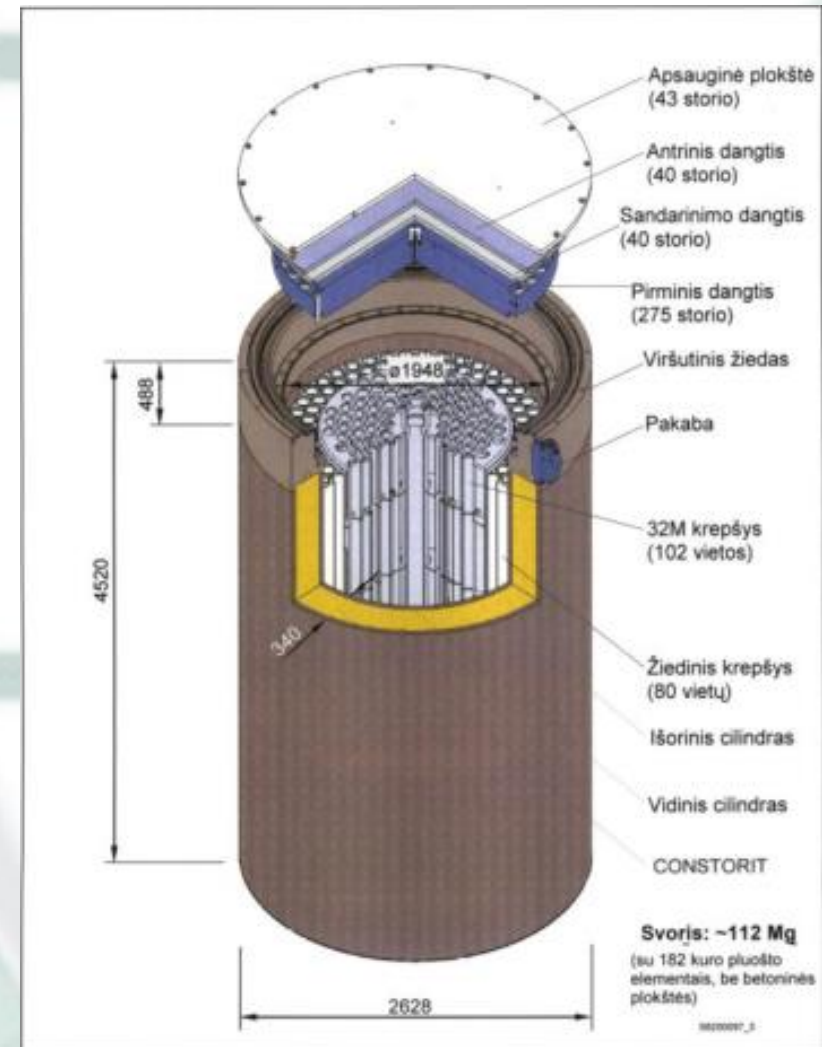


## **MEASURES THAT WERE POSTPONED**

# MEASURES NR. 4 & 5 – EVALUATION OF THE SF CASK TIP OVER

## ❖ New deadline for implementation – 2017

- initial deadline for implementation – 2013
- commissioning of new interim spent fuel storage facility foreseen in 2017
  - still not of high importance concerning safety



## MEASURE NR. 13 – ENHANCEMENT OF MONITORING AND DISPLAY CAPABILITIES IN CASE OF ACCIDENTS (1)

### **The measure is implemented partly**

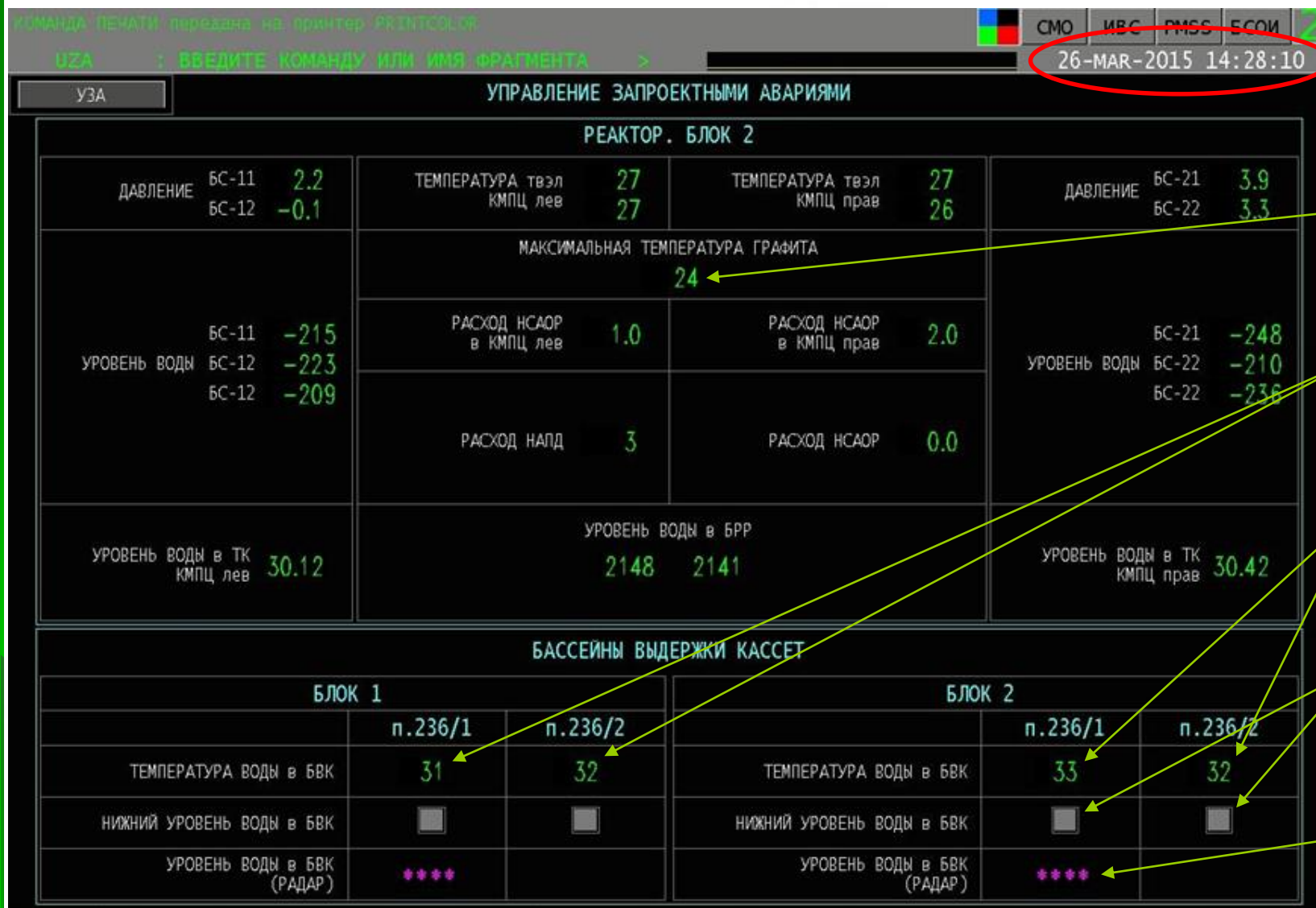
- The tab view „Beyond design accident management“ was created in information system TITAN used in Ignalina NPP
  - The parameters important for accident management are presented on-line in convenient form
  - Place for water level reading in case of beyond design accident is reserved
- Tab views concerning radiation levels readings in SFP were upgraded as well
- Deadline for final implementation was changed two times (initially was 2013)

### **Problems with installation of water level meter for beyond design accidents in SFP**

- The delay of installation of new water level meter for beyond design accidents conditions in SFP's is mainly due to selection of proper contractor in accordance with public procurement procedure
- The questions on progress of implementation of the action were raised not a single time during regulatory inspections
- Ignalina NPP top management confirmed that selection of new contractor is ongoing and all works related to this measure would be implemented in 2015. The question on implementation of the measure is put on controlled list for quarter meetings of VATESI and Ignalina NPP top management



# MEASURE NR. 13 – ENHANCEMENT OF MONITORING AND DISPLAY CAPABILITIES IN CASE OF ACCIDENTS (2)



NACP Measure  
Nr. 13

Temperature in  
the reactor core

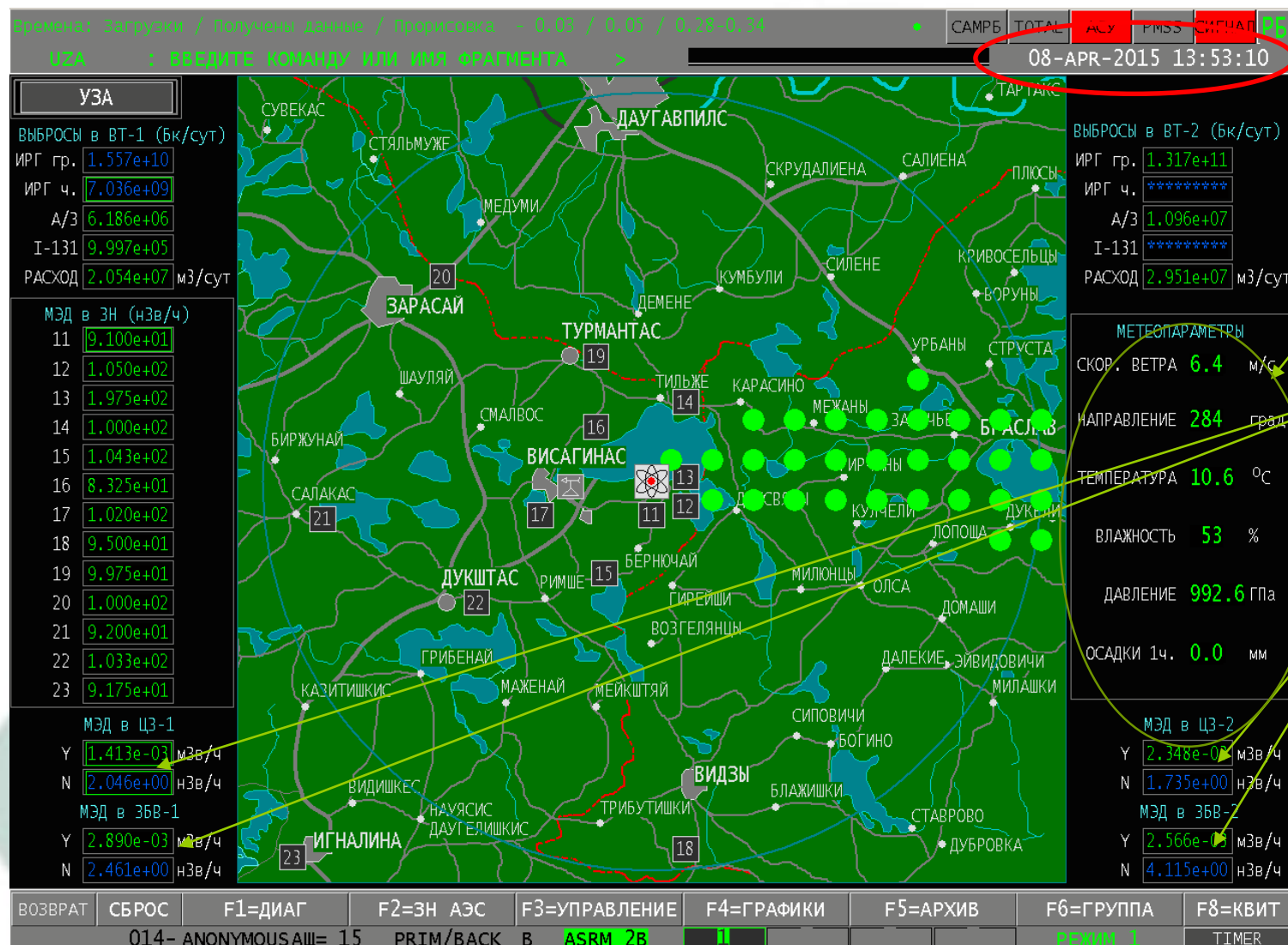
Temperature in  
the SFP-1

Temperature in  
the SFP-2

DB water level  
warnings

Beyond DB  
water level  
(planned)

# MEASURE NR. 13 – ENHANCEMENT OF MONITORING AND DISPLAY CAPABILITIES IN CASE OF ACCIDENTS (3)



NACp Measure  
Nr. 13

Temperature in  
the reactor core

Temperature in  
the SFP-1

Temperature in  
the SFP-2



## **MEASURES THAT WERE REVISED**

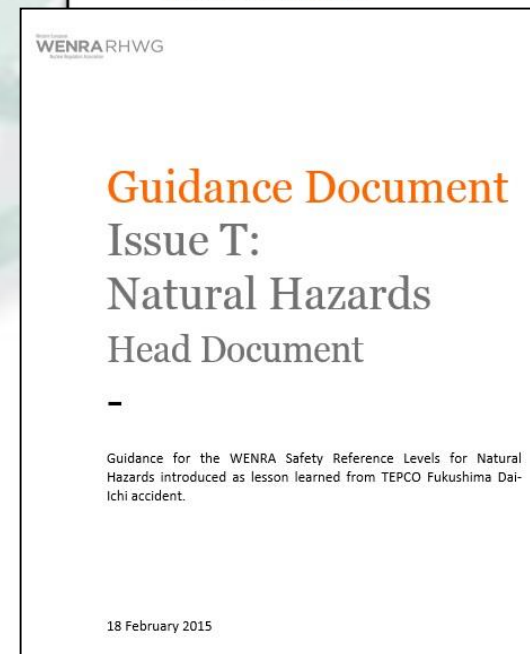
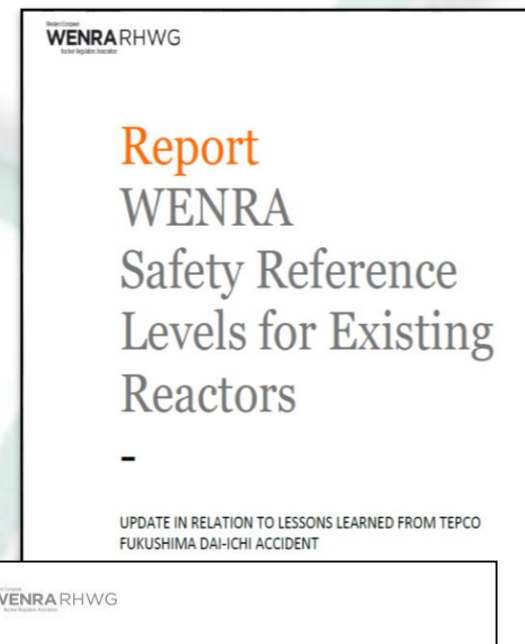


# MEASURES NR. 1 & 2 – REVISION OF THE NATIONAL NUCLEAR SAFETY REGULATIONS



## Linked to implementation of WENRA issues:

- slightly changed descriptions and status of the measures
- The analysis of WENRA SRL are going on
- VATESI is participating in the WENRA activities (working group T1 Natural hazards) related to preparation of the WENRA guidance document Issue T: Natural Hazards
- deadline – 2017 (according to WENRA statement)
- short description of measures:
  - revision of the national regulations applied to the identification of natural hazards, their assessment and the corresponding assessment for “cliff-edge” (margins) effects
  - 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



# MEASURE NR. 3 – IMPLEMENTATION OF THE IAEA EPREV MISSION RECOMMENDATIONS



## Revision of NAcP after approving of the IAEA EPREV mission recommendations:

- The IAEA EPREV (International Atomic Energy Agency service on Emergency Preparedness Review) mission was working in Lithuania 1-11 of October, 2012
- The recommendations on implementation of EPREV outcomes were approved by Government on 18 of February, 2013
- As result the NAcP was updated supplementing it by 3 sub-measures, that are going to be implemented together with Ministry of Health, Radiation Protection Centre, Fire and Rescue Department, Environmental Protection Agency and Ignalina NPP
- All 3 sub-measures are related to emergency preparedness for responding to a nuclear or radiological accident
- Short description of measures:
  - Revision of “State residents protection plan in case of nuclear accident” (deadline – 2017)
  - Two table top exercises (deadlines – 2015 and 2016)



## CONCLUSIONS ON IMPLEMENTATION OF NAcP

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- ✱ 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 ongoing. All measures are planned to be implemented by 2017
- ✱ The NAcP measures related to regulations and emergency preparedness are ongoing and will be implemented by 2017





# **ANSWERS TO THE QUESTIONS TO THE UPDATED NAcP**

# ANSWERS TO THE QUESTIONS TO THE UPDATED NACP (1)

No.	Country/ Organization/ Person asking question	Question	Answer
1.	Green peace	If the same flaws as in Doel 3/Tihange 2 were to be found at one of the reactor pressure vessels, could these flaws pose a risk to the emergency core cooling measures?	There are no vessel-type nuclear reactors in Lithuania.
2.	Green peace	Which recommendation/suggestion by the EC working document, ENSREG, the peer review team, the fact finding team or formulated by the National Action Plan Workshop are not followed up and what is the justification for this decision?	The NAcP was worked out by the end of 2012 taking into account results of “stress tests” and conclusions and recommendations of “stress tests” peer review as well as taking into account other outcomes of activities related to Ignalina NPP safety. The explanations of the measures foreseen in the NAcP were presented during the NAcP workshop in 2013. All NAcP measures are implemented or are planned to be implemented in near future.
3.	Green peace	For which reactor and which measures did the regulator grant exemptions from the requirements with the argument of the reactor’s limited remaining operating lifetime?	Regulatory requirements were applied only for the Ignalina NPP, which is in permanent shutdown.

## ANSWERS TO THE QUESTIONS TO THE UPDATED NACP (2)

No.	Country/ Organization/ Person asking question	Question	Answer
4.	Green peace	In a letter of 20 Feb 2013 to the permanent representatives to the EU, the European Commission warned the member states that the implementation of the stress test action plans likely fall under the scope of Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the EIA Directive). Which of the so far implemented stress test actions have been subject to an Environmental Impact Assessment?	There are no NAcP actions subject to EIA.



## ANSWERS TO THE QUESTIONS TO THE UPDATED NACP (3)

No.	Country/ Organization/ Person asking question	Question	Answer
5.	Belgium	<p>Some recommendations were related to the potential construction of a new NPP at Visaginas, Reference to this new plan has been deleted ( version 2012 of action 2: "All other requirements dedicated to Visaginas NPP that encompass other fields should be checked in the light of post-Fukushima lessons learned and proposal of update if necessary").</p> <p>Is there still a project of a new NPP?</p> <p>Are the checks done?</p> <p>If yes, what are the results and eventually foreseen adaptations of the requirements?</p>	<p>The reference to new build remains in NAcP. The measures 1 and 2 of the NAcP version 2012 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 (WENRA SRL).</p> <p>The final decision on Visaginas NPP project is not taken yet.</p> <p>The checks are going on. The draft requirements for new NPP design are based on IAEA safety standard SSR2/1 (including the recent amendment) and principal variances from updated WENRA SRL are not expected.</p>

## ANSWERS TO THE QUESTIONS TO THE UPDATED NACP (4)

No.	Country/ Organization/ Person asking question	Question	Answer
6.	France	<p>It is a commendable aspect that all the technical measures on design issues have already been completed except action 13. This action is related to the sub-module of the plant computer information system which will 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. From the comment in the table it appears that some works are completed (hardware options for DBAs and data transmissions both to the computer information system of organization of emergency preparedness and to the accident management centre of VATESI) and other works related to installation of the new water level measuring equipment for BDBAs conditions are still in progress. Could Lithuania specified why this remaining work postpones the deadline from 2013 to 2015?</p>	<p>The delay of installation of new water level meter for beyond design accidents conditions in SFP's is mainly due to selection of proper contractor. Ignalina NPP top management confirmed that selection of new contractor is ongoing and all works related to this measure would be implemented in this year.</p>

# ANSWERS TO THE QUESTIONS TO THE UPDATED NACP (5)

No.	Country/ Organization/ Person asking question	Question	Answer
7.	France	Concerning natural hazards (actions 4 and 5 related to the study of the spent fuel cask tip over in case of earthquake during transportation) the deadlines are revised from 2013 to 2017 taking into account updated schedule of the Ignalina NPP Interim Spent Fuel Storage Facility (ISFSF designed to withstand an intensity of 7 on the MSK 64 scale with a PGA of 0.1g) construction project. Could Lithuania clarify why the new project of ISFSF is delayed for 4 years in so far as the seismic assumptions for its construction have not change since 2013 ?	<p>The construction of new ISFSF is delaying mainly due to commercial disputes among construction owner (Ignalina NPP) and contractor. VATESI has approved the project in 2009, however several modifications were submitted by Ignalina NPP to VATESI for review and assessment, which are related to changes in material used for components and modification of equipment specified in design documentation.</p> <p>The assumptions for seismic event for ISFSF are valid and sufficient. The measure is related to one technological process – transportation of the loaded cask from unit to ISFSF. According to design documentation, the cask is covered during transportation by one lid and top plate that not welded (the plate is bolted only). The casks are going to be fully prepared for storage inside the ISFSF.</p>



# ANSWERS TO THE QUESTIONS TO THE UPDATED NACP (5)

No.	Country/ Organization/ Person asking question	Question	Answer
8.	Ukraine	Please provide information on which methodology was used (SMA, SPSA) for seismic margin estimation of Ignalina NPP accident management centre (according to ID 6 of Table 1, the results of the calculations confirmed the robustness and availability of the AMC in case of an earthquake with peak ground acceleration of 0,13g).	<p>VATESI requirement was to keep <math>PGA=0,1g</math> value as “design-basis” value, which should correspond at least 10000 year return period.</p> <p>Response spectrum analysis (RSA) was performed to evaluate the seismic resistance of the building, where the Accident Management Centre (AMC) is located.</p> <p>Beyond design margin was checked for earthquake resisting structure of the basement where the AMC is located. In accordance with the Eurocode 8, elastic response spectrum, type 1 for subsoil class D is used. Ductility class DCM (medium ductility) was assumed for reinforced concrete calculation with rather conservative ductile behavior factor <math>q = 2.25</math>.</p> <p>In the course of analysis, the required amount of reinforcement was calculated and was compared with the existing reinforcement. The calculations with the beyond design <math>PGA = 0.13g</math> across the building showed that the required reinforcement of the basement slab, longitudinal walls and floor (ceiling) slab is less than or equal to existing one.</p>

# ANSWERS TO THE QUESTIONS TO THE UPDATED NACP (6)

No.	Country/ Organization/ Person asking question	Question	Answer
9.	Ukraine	Could you please explain, whether it means that seismic analysis is performed directly for the AMC building? Does the analysis include assessments of seismic resistance of equipment and communications of AMC or only of the building?	<p>The current analysis was performed only for building structures, as it was planned in the NAcP. Additional assessment for possible clogging of AMC emergency exit by debris of the near buildings was done as well. A few additional recommendations for new analysis were provided by contractor, they were analyzed by Ignalina NPP. The plan of measures is issued in accordance with the recommendations (not included in NAcP). The plan includes:</p> <ul style="list-style-type: none"> <li>- visual inspection of structures of AMC (already done);</li> <li>- decisions on detailed (instrumental) investigation of structures of AMC and further supervision of the AMC structures;</li> <li>- further investigation of AMC emergency exit reliability and decision on possible strengthening of AMC emergency exit;</li> <li>- <u>evaluation of technical documentation, inspections and further decisions on equipment of AMC in order to ensure the habitability of AMC in case of beyond design earthquake (term for implementation of the measure – 2015-07-30).</u></li> </ul>

# ANSWERS TO THE QUESTIONS TO THE UPDATED NACP (7)

No.	Country/ Organization/ Person asking question	Question	Answer
10.	Ukraine	<p>It is mentioned that "...relevant severe accident management guidelines of Ignalina NPP have been updated and approved by VATESI".</p> <p><b>What is the scope of the SAMG for Ignalina NPP?</b></p> <p>Which main modifications have been introduced in SAMG upon assessment of the equipment performance in conditions of beyond design-basis accident?</p> <p>What technical provisions are in place to manage severe accidents in the spent fuel pools? Is it enough just to update SAMG to solve the issue, or appropriate replacement of equipment is required?</p>	<p>In 2010 the Ignalina NPP SAMG's were revised and adopted for permanent shutdown state. The SAMG's are included in the package of Emergency Preparedness documents of Ignalina NPP. The SAMG's consist of 5 guidelines:</p> <ul style="list-style-type: none"> <li>- SAMG User's Manual;</li> <li>- RUZA-R1 "Heat removal from the reactor of Unit 2";</li> <li>- RUZA-RB "Fission products release mitigation at Unit 1 and Unit 2";</li> <li>- RUZA-B "Spent fuel storage pools conditions management at Unit 1 and Unit 2";</li> <li>- Procedure "Heat Removal from Reactor of Ignalina NPP Unit 2 in the case of total loss of power supply".</li> </ul>

# ANSWERS TO THE QUESTIONS TO THE UPDATED NACP (8)

No.	Country/ Organization/ Person asking question	Question	Answer
10.	Ukraine	<p>It is mentioned that "...relevant severe accident management guidelines of Ignalina NPP have been updated and approved by VATESI".</p> <p>What is the scope of the SAMG for Ignalina NPP?</p> <p><b>Which main modifications have been introduced in SAMG upon assessment of the equipment performance in conditions of beyond design-basis accident?</b></p> <p>What technical provisions are in place to manage severe accidents in the spent fuel pools? Is it enough just to update SAMG to solve the issue, or appropriate replacement of equipment is required?</p>	<p>The evaluation of the equipment performance installed in the spent fuel storage pools and the spent fuel storage pools halls of units in conditions of beyond design accident was performed by Ignalina NPP in 2012.</p> <p>The evaluation of the technical specifications of the water temperature and water level meters installed in the spent fuel storage pools confirms that this equipment should be able to perform their functions in conditions of beyond design accident.</p> <p>The evaluation of the technical specifications of the gamma and neutrons' detectors reveal potential lacks of measurements data accuracy in conditions of heavy humidity that may occur when the water temperature in the spent fuel storage pools increase higher than 60 °C. The limits for operation of the gamma and neutrons' detectors are: for the relative humidity - 95% and air temperature - 50 °C.</p> <p>Taking into account the results of evaluation, SAMG "RUZA-RB "Fission products release mitigation of Unit 1 and Unit 2" have been updated. No additional technical provisions were proposed. In accordance with update, the use of the portable detectors for radiation level measurement in the spent fuel storage pools halls are foreseen in conditions when the temperature in the spent fuel storage halls is higher than 50 °C and relative humidity higher than 95%. All organizational actions for radiation level measurements in case of accidents are going to be performed in accordance with established emergency procedures for radiation safety.</p>



# ANSWERS TO THE QUESTIONS TO THE UPDATED NACP (9)

No.	Country/ Organization/ Person asking question	Question	Answer
10.	Ukraine	<p>It is mentioned that "...relevant severe accident management guidelines of Ignalina NPP have been updated and approved by VATESI".</p> <p>What is the scope of the SAMG for Ignalina NPP?</p> <p>Which main modifications have been introduced in SAMG upon assessment of the equipment performance in conditions of beyond design-basis accident?</p> <p><b>What technical provisions are in place to manage severe accidents in the spent fuel pools? Is it enough just to update SAMG to solve the issue, or appropriate replacement of equipment is required?</b></p>	<p>The strategies and provisions intended for manage severe accidents in the spent fuel pools at Ignalina NPP (SFP's) are described in the SAMG "RUZA-B" "Spent fuel storage pools conditions management of Unit 1 and Unit 2". The SAMG "RUZA-B" includes 6 strategies:</p> <ul style="list-style-type: none"> <li>- S15 - supply of domestic potable water via fire hydrants;</li> <li>- S16 - restore of spent fuel cooling (actuation of operation of heat exchangers of SFP's);</li> <li>- S17 - water supply to SFP: <ul style="list-style-type: none"> <li>- S17.1 - supply of low salted water and chemically purified water to SFP's;</li> <li>- S17.2 - supply of service water to SFP's;</li> <li>- S17.3 - supply of water from lake Drūkšiai via fire hoses (use of fire-engine equipment (mobile pump));</li> </ul> </li> <li>- S18 - isolation of SFP leakage; <ul style="list-style-type: none"> <li>- S18.1 - installation of the plug on the bottom of SFP;</li> <li>- S18.2 - isolation of drainage system of SFP;</li> </ul> </li> <li>- S19 - supply of neutron absorber into SFP;</li> <li>- S20 - isolation of damaged SFP from other pools</li> </ul> <p>It is necessary to carry out specific technical works (temporal modifications) for implementation of some strategies. For these purposes, preassembled the technical means are in place and emergency staff is trained to use them.</p> <p>Taking into account current conditions of spent fuel in the SFP's (the "hottest" fuel is irradiated 6,5 y ago), no additional measures beyond current organizational and technical measures are needed for SFP's safety.</p>

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11.	Slovenia	In the table 1 "Summary of measures of the Plan of Strengthening Nuclear Safety in Lithuania" it is mentioned that topics 1 "natural hazards" and 2 "general" are in progress due to waiting for the updated Wenra RL. Which changes of the new Wenra RL will be taken into consideration in topics 1 and 2?	<p>The new WENRA SRLs are going to be reviewed in order to determine the changes, which would be still reasonable to be implemented in regulations applied for Ignalina NPP, and to check the implementation of SRLs in regulations applied for new build, if particular SRLs could be applied for new NPPs.</p> <p>The measures are not implemented yet.</p>



**Thank You for Your attention!**