NATIONAL ACTION PLAN of

ARMENIA

On Strengthening Nuclear Safety of Armenian Nuclear Power Plant decided upon lessons learnt from Fukushima Daiichi accident

Armenian Nuclear Regulatory Authority

2017

CONTENT

1. INTRODUCTION

Following the nuclear accident at the Fukushima nuclear power plant on 11 March 2011, the

Armenian Government emphasized the need for urgent actions to reassess the preparedness of Armenian Nuclear Power Plant (ANPP) to respond emergencies.

Similar to the EU the Armenian Government requested a re-assessment of the safety of ANPP, to cope with extreme challenges. In June 2011, the Armenian Nuclear Regulatory Authority (ANRA) issued a request to the ANPP to conduct an in-depth reassessment of the safety of ANPP in the light of the Fukushima accident (stress-tests). It was a clear request from ANRA to the ANPP to comply, as closely as possible with the European stress-tests process.

Post Fukushima National Action Plan (NAcP) on Strengthening of Nuclear Safety of Armenian Nuclear Power Plant follows the National Report on the stress tests of ANPP [1].

The stress test consisted of three main steps: a self-assessment by ANPP, followed by an independent review of the results and preparation of a national report by the ANRA, and by a third phase of international peer review.

Detailed analyses of the behavior of nuclear power plant in these extreme conditions implemented in the framework of self-assessment allowed to propose a number of specific technical and administrative measures to further enhance ANPP robustness and delaying the onset of irreversible damage of the nuclear fuel and barriers preventing release of fission products into the plant and then into the environment.

National Report of Armenia along with national reports of other countries were subject to a detailed assessment by an independent group of international experts organized by the European Commission and the ENSREG, initially with desktop followed with country visit in June 2016.

Conclusions of this evaluation were summarized in the final "EU Peer Review Report of Armenian Stress Tests" [2], containing in addition to the general summary evaluation a list of recommendations for further improvement of nuclear safety of ANPP.

Recommendations from the Extraordinary meeting of the Contracting Parties to the Convention on Nuclear Safety, along with recommendations to enhance robustness of Armenian NPP identified in the National Stress Tests Report and Peer Review Report form a set of measures, which represent the basis of the present National Action Plan (NAcP) on Strengthening Nuclear Safety of Armenian NPP.

National Action Plan on Strengthening Nuclear Safety of ANPP contains a compilation of all the major conclusions and recommendations contained in the National Stress Tests Report of Armenia [1], the report from the peer review process by the ENSREG group [2], the Final

Summary Report of the 2nd Extraordinary Meeting of the Contracting Parties to the Convention on Nuclear safety [3]. The National Action Plan is structured, in accordance with the structure suggested by ENSREG [4], into four parts. Part I is devoted to the issues of external hazards (earthquakes, floods, extreme weather conditions), the loss of safety systems and severe accident management. Part II deals with the national organization, the organization of emergency preparedness and emergency response, and international cooperation, as were evaluated at an extraordinary meeting of the Convention on Nuclear Safety. Part III gives the list of measures aimed in implementing all the recommendations contained in parts I – II. The set of these measures is the sum of findings identified in the stress tests after the Fukushima nuclear power plant disaster.

Proposed measures relating to the enhancement of nuclear safety of ANPP will be implemented by ANPP. Measures of general nature, such as the amendment of the nuclear legislation, off-site emergency preparedness, international cooperation, etc. will be implemented by the state administration, including ANRA and other ministries.

National Action Plan on Strengthening Nuclear Safety of in Armenia is a living document which will be regularly reviewed and based on new knowledge continuously updated.

ANRA, during the implementation of actions decided based on the lessons learned from the Fukushima accident, performed and performs the following tasks:

a) Review of the Action plan prepared by the licensee, its extension and harmonization, as well as ordering its execution.
b) Authority supervision of the execution of the ordered action plan; oversight of the fulfilment of the action plan.
c) Revision of the nuclear safety legal requirements, with the consideration of the compulsory requirements of the IAEA Safety Standards, and of the reviewed WENRA references levels as well as the results of the national review process of the legal background.
d) Participation in the international processing and utilization of operational experience feed-back.
e) Public information.

In the next chapters summary tables of recommendations and planed and implemented actions are presented.

Summary table of actions

PART I

2. Topic 1 – Natural hazards

No.	Recommendations (with references to NR)	Activity no.	Topic
2.1. Recommendations from the National Stress Test Report			
Seismic			
2.1.1	Assessment of ANPP seismic margins is based primarily on the deterministic CDFM analyses performed in the framework of SMA procedure. Application of combination of deterministic and probabilistic safety assessment will help to continue further seismic enhancement and identify systems and components that may require further seismic improvement (see 7.2.1 point 1)	6.1.1	Seismic
2.1.2	Installation of additional fuel tank with capacity of 50÷100 tons to provide an emergency power supply for period of 72 hours (see 7.2.1 point 2)	6.1.2	Seismic
2.1.3	Seismic margin evaluation of fire extinguishing system and implementation of measures to reinforce the system (see 7.2.1 point 3)	6.1.3	Seismic
2.1.4	Analysis of impact of explosion of nitrogen recipients and hydrogen storage tanks (see7.2.1point 4)	6.1.4	Seismic
2.1.5	Investigation of possible consequences in case of seismic induced flooding in Turbine Hall (TH), impact of safety-related systems in TH, interaction with adjacent compartments (see 7.2.1 point 5)	6.1.5	Seismic
2.1.6	Completion of the program for seismic upgrading of I&C equipment and seismic monitoring system (see 7.2.1 point 6)	6.1.6	Seismic

Flood			
2.1.7	In order to resolve the issue related to possible water penetration to DGS it is recommended to (see 7.2.2 point 1): • Equip the emergency doors of the staircases of DGS basement areas with a border in such a way that the penetration of water to the basement area can be excluded, • Foresee mobile equipment devoted to water pumping out from DGS and its basement, • Equip DGS with alarms indicating occurrence of water level in basement area with output of light signals in MCR, central control panel and DGS operator room, Develop a procedure for operators for the case of water inflow in the DGS basement area.	6.1.13, 6.1.14, 6.1.15, 6.1.16	Flood
2.1.8	In order to resolve the issue related to possible water penetration to turbine hall it is recommended to seal the penetrations to the turbine hall from surrounding area and develop and implement measures with the purpose of building barriers on the way of water flow to the turbine hall gates (see 7.2.2 point 2).	6.1.17	Flood
2.1.9	In order to resolve the issue related to water penetration from TH to boron units, it is recommended to assure leak-tightness of the doors located between TH and boron unit or to replace them with waterproof doors (see 7.2.2 point 3).	6.1.18	Flood
2.1.10	In order to prevent water penetration from TH to cable tunnels, it is recommended to enhance the reliability of drainage system elements (e.g. dedicated check valve) (see 7.2.2 point 4).	6.1.19	Flood
2.1.11	Perform detailed safety margin assessment in terms of rainfall flooding of ANPP site and calculations aimed to prove that protection measures are enough to prevent mudflows impact on ANPP systems (see 7.2.2 point 5).	6.1.20	Flood
External Hazards			
2.1.12	In order to resolve the issue related to dust hazard it is recommended to develop and implement measures aimed to protect DG from dust. Those measures could include improvement of DG compartments leaktighness and/or installation of special air filtering at DG air intake system (see 7.2.3 point 1).	6.1.21	External hazards
2.1.13	In order to resolve the issue related to snow accumulation on turbine building roof it is recommended to foresee measures aimed to remove snow from TH building roof in case of snow accumulation (see 7.2.3 point 2)	6.1.22	External hazards

2.1.14	In order to reduce conservatism in decision-making it is recommended to implement realistic re-evaluation of air temperature which could lead to freezing of outlet pipes of demineralized water tanks (BZOV). Depending on the results of realistic calculations the additional measures could be necessary for protection of BZOV pipes against extremely low temperatures (see 7.2.3 point 3)	6.1.23	External hazards
2.1.15	In order to resolve the issue related to diesel driven SG feedwater pump it is recommended to check adequacy of diesel pump exhaust pipe protection against external hazards. Particularly it is recommended to re-analyse diesel pump exhaust pipe protection against high winds and dust (see 7.2.3 point 4)	6.1.24	External hazards
2.1.16	In order to resolve the issue related to DG auxiliary systems (e.g. HVAC) it is recommended to implement measures aimed to protect DG auxiliary systems (e.g. HVAC) against external hazards (e.g. combination of seismic and low temperatures hazards) (see 7.2.3 point 5)	6.1.25	External hazards
2.1.17	It is recommended to implement detailed analysis for lightning impact on ANPP (see 7.2.3 point 6)	6.1.26	External hazards
2.1.18	In order to assure completeness and quality of plant specific PSA model for external hazards it is recommended (see 7.2.3 point 7): • to re-visit external hazards screening process taking into account information reflected in stress-test report, • to complement PSA by critical combinations of external hazards identified within FSA-ANPP project, to revisit hazard curves for different hazards taking into account updated meteorological data.	6.1.27, 6.1.28, 61.29	External hazards
2.2. Compilation of Recommendations and Suggestions from the Review of the European Stress Tests			
Seismic			
2.2.1	The PRT suggests that ANRA should consider adopting the hazard value of 0.42 g derived from the PSHA 2011 as an updated DBE for the existing ANPP. In case of its acceptance the safety demonstration shall be updated accordingly.	6.1.7	Seismic
2.2.2	ANPP should verify that seismic protection of the EDG building is sufficient and that computational analyses account for the current status.	6.1.8	Seismic

2.2.3	Review the seismic robustness of all SSCs, mobile equipment, and buildings housing such SSCs or used as storages for mobile equipment required for crisis management for DB and BDB evens.	6.1.9	Seismic
2.2.4	Establish design bases for volcanic hazard and develop response plan.	6.1.10, 6.1.11, 6.1.12	Volcanic
2.2.5	Upgrade the fire extinguishing system which is currently not seismically resistant.	6.1.3	Seismic
2.2.6	Continue seismic walkdowns as a regular conformity check including the inspection of SSCs that may damage other equipment upon their failure during a seismic event.	6.1.9	Seismic
Flood			
2.2.7	To consider improving the volumetric protection of the DGS basement against flooding.	6.1.13	Flood
2.2.8	The PRT also recommends considering improving the DGS basement drainage system to ensure it can function adequately in all scenarios for which the EDGs or the DAR are needed (LOOP, earthquake…).	6.1.19	Flood
2.2.9	Areas for potential improvements also include the provision of adequate mobile devices.	6.1.14	Flood
2.2.10	Recent calculations showed that the drainage system capacity could cope with a rainfall corresponding to a frequency 10-4 per year, as recommended by the EU Stress Tests conclusions.	6.1.19	Flood
External Hazards			
2.2.11	Improving the robustness of BZOV against low temperature up to the DB.	6.1.23	External hazards
2.2.12	Winds with an expected frequency of 1.7x10-4 per year would lead to SBO and corrective actions are needed to solve this.	6.1.24	External hazards
2.3. Compilation of Recommendations and Suggestions from the Review of the European Stress Tests			
Seismic			

2.3.1	The possible secondary effects of seismic events, such as flood or fire arising as a result of the event, in future assessments (3.1.2)	6.1.3	Seismic
2.3.2	The installation of seismic monitoring systems with related procedures and	6.1.6	Seismic
	training (3.1.5).		
Flood			
2.3.3	The use a protected volume approach to demonstrate flood protection for identified rooms or spaces (3.1.3).	6.1.13, 6.1.18	Flood
2.3.4	The analysis of incrementally increased flood levels beyond the design basis and identification of potential improvements, as required by the initial ENSREG specification for the stress tests (3.1.7).	6.1.20	Flood
External Hazards			
2.3.5	In conjunction with recommendation 2.1 and 3.1.7, the formal assessment of margins for all external hazards including, seismic, flooding and severe weather, and identification of potential improvements (3.1.8).	6.1.28	External hazards
2.4. Final Summary Report of the 2nd Extraordinary Meeting of the Contracting Parties to the CNS			
	N/A		

3. Topic 2 - Loss of safety systems

No.	Recommendations (with references to NR)	Activity no.	Topic
3.1. Recommendations from the National Stress Test Report			

3.1.1	Implement additional measures to assure longer operation time of batteries during SBO (5.1.3.2, 5.1.4, 5.1.5).	6.2.1, 6.2.2, 6.2.3, 6.2.4	Loss of safety systems
3.1.2	Assure long term heat removal from unit 1 and 2 SFPs in case of SBO (5.1.3.2, 5.1.4, 5.1.).	6.2.5	Loss of safety systems
3.1.3	The emergency diesel fuel tank holds enough fuel for operation of alternate emergency power supply system during 27.7 days. However, emergency diesel fuel tank is not seismically verified and the refilling pump is not powered from reliable power supply. Increase the reliability of the refueling process or to foresee measures to install additional fuel capacity in terms of seismically qualified and reliable fuel tank (5.1.3.2, 5.1.4, 5.1.5).	6.2.6	Loss of safety systems
3.1.4	During "cold" shutdown and refueling it is not foreseen DGLS program. Implement DGLS program for "cold" shutdown and refueling modes (5.1.4, 6.1, 6.2.1.1, 6.1.1.5).	6.2.7	Loss of safety systems
3.1.5	Existing EOPs do not contain appropriate procedures for all emergency states, which may arise in case of loss of the primary ultimate heat sink, combined with station black out (5.1.4, 6.1, 6.2.1.1, 6.1.1.5).	6.2.8	Loss of safety systems
3.1.6	Provision of mobile DGs for power supply of safety system (ANPP action plane).	6.2.9	Loss of safety systems
3.1.7	In case of station blackout, cooling of MCPs seals is not ensured due to loss of the MCP seal cooling water flow, which, in long lasting situations, may evoke the RCS coolant leakage through the MCP seal. Assure MCP seals long-term (more than 24 hours) operation in case of cooling failure (5.1.3.2, 5.1.4 ,5.1.5).	6.2.10	Loss of safety systems
3.1.8	Provide for mobile pumps for ESWS make-up from Circulation Water Channel (5.2.5).	6.2.11	Loss of safety systems
3.1.9	Develop and implement additional measures to use a large reserve of service water in the inlet and outlet channels, as an alternative heat sink (5.2.5).	6.2.12	Loss of safety systems
3.1.10	Perform additional calculations in order to demonstrate sufficient effectiveness of the SGs emergency feedwater diesel pump for modes of reactor (cold shutdown, refueling, closed reactor, open reactor). Implement autonomous alternative means for makeup of SGs 1-6 of the unit 2 (5.2.5).	6.2.13, 6. 2. 8	Loss of safety systems
3.1.11	Installation of an additional tank for diesel fuel in the DG stations (for each train) in order to provide emergency power supply to trains I and II during 72 hours at full load, independently on the fuel inventory in the oil-fuel facilities of the plant (5.2.5).	6.2.6	Loss of safety systems

3.1.12	For activation of Alternate emergency power supply system (DAR) manual actions are needed and activation can take up to 1 hour. Implement analysis of circuit diagram for consumers power supply (from DAR). Develop and implement activities aimed at minimizing personnel manual actions to activate the DAR system.	6.2.14, 6.1.15	Loss of safety systems

3.2. EU Peer Review Report of the Armenia Stress Tests			
3.2.1	Strengthening the fuel supply for the EDGs.	6.2.6	Loss of safety systems
3.2.2	Addressing the lack of diversity of the EDGs and DAR DG (same type, same building, same age).	6.2.1	Loss of safety systems
3.2.3	Improve ability for recharging the batteries.	6.2.2, 6.2.3	Loss of safety systems
3.2.4	Assurance for cooling the SFP of unit 2.	6.2.5	Loss of safety systems
3.3. Compilation of Recommendations and Suggestions from the Review of the European Stress Tests			
3.3.1	Recommendations 3.2.1. Alternative cooling and heat sink. The provision of alternative means of cooling including alternate heat sinks. Examples include steam generator (SG) gravity alternative feeding, alternate tanks or wells on the site, air-cooled cooling towers or water sources in the vicinity (reservoir, lakes, etc.) as an additional way of enabling core cooling.	6.2.11, 6.2.12, 6.2.13	Loss of safety systems

3.3.2	Recommendations 3.2.2. AC Power Supplies. The enhancement of the on-site and off-site power supplies. Examples include adding layers of emergency power, adding independent and dedicated backup sources, the enhancement of the grid through agreements with the grid operator on rapid restoration of off-site power, additional and/or reinforced off-site power connections, arrangements for black start of colocated or nearby gas or hydro plants, replacing standard ceramic based items with plastic or other material that are more resistant to a seismic event. Another example is the possible utilization of generator load shedding and house load operation for increased robustness, however, before introducing such arrangements the risks need to be properly understood.	See Stress test chapters 5.1.2	Loss of safety systems
3.3.3	Recommendations 3.2.3. DC Power Supplies. The enhancement of the DC power supply. Examples include improving the battery discharge time by upgrading the existing battery, changing/diversifying battery type (increasing resistance to common-mode failures), providing spare/replacement batteries, implementing well-prepared load shedding/staggering strategies, performing real load testing	6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.2.9	Loss of safety systems

	and on-line monitoring of the status of the batteries and preparing dedicated recharging options (e. g. using portable generators).		
3.3.4	Recommendations 3.2.4. Operational and Preparatory Actions. Implementation of operational or preparatory actions with respect to the availability of operational consumables. Examples include, ensuring the supply of consumables such as fuel, lubrication oil, and water and ensuring adequate equipment, procedures, surveillance, drills and arrangements for the resupply from off-site are in place.	6.2.6, 6.2.12	Loss of safety systems
3.3.5	Recommendations 3.2.5. Instrumentation and Monitoring. The enhancement of instrumentation and monitoring. Examples include separate instrumentation and/or power sources to enable monitoring of essential parameters under any circumstances for accident management and the ability to measure specific important parameters based on passive and simple principles.	6.2.16	Loss of safety systems
3.3.6	Recommendations 3.2.6. Shutdown Improvements. Improvements include, reducing or prohibiting mid-loop operation, adding dedicated hardware, procedures and drills, the use of other available water sources (e. g. from hydroaccumulators), requiring the availability of SGs during shutdown operations and the availability of feedwater in all modes.	6.2.7, 6.2.8, 6.2.11, 6.2.12, 6.2.13	Loss of safety systems

3.3.7	Recommendations 3.2.7. Reactor Coolant Pump Seals. The use of temperature-resistant (leak-proof) primary pump seals.	6.2.10	Loss of safety systems
3.3.8	Recommendations 3.2.8. Ventilation. The enhancement of ventilation capacity during SBO to ensure equipment operability.	6.2.19	Loss of safety systems
3.3.9	Recommendations 3.2.9. Main and Emergency Control Rooms. The enhancement of the main control room (MCR), the emergency control room (ECR) and emergency control center (ECC) to ensure continued operability and adequate habitability conditions in the event of a station black-out (SBO) and in the event of the loss of DC (this also applies to Topic 3 recommendations).	See Chapter 6.1 of NSTR	Loss of safety systems
3.3.10	Recommendations 3.2.10. Spent Fuel Pool. The improvement of the robustness of the spent fuel pool (SFP).	6.2.5	Loss of safety systems
3.3.11	Recommendations 3.2.11. Separation and Independence. The enhancement of the functional separation and independence of safety systems. Examples include the elimination of full dependence of important safety functions on auxiliary systems such as service water and the introduction of an alternate source of cooling.	6.2.2, 6.2.6, 6.2.9, 6.2.11, 6.2.12,	Loss of safety systems
		6.2.13, 6.2.14	
3.3.12	Recommendations 3.2.12. Flow Path and Access Availability. The verification of assured flow paths and access under SBO conditions. Ensure that the state in which isolation valves fail and remain, when motive and control power is lost, is carefully considered to maximize safety. Enhance and extend the availability of DC power and instrument air (e. g. by installing additional or larger accumulators on the valves). Ensure access to critical equipment in all circumstances, specifically when electrically operated turnstiles are interlocked.	6.2.20	Loss of safety systems
3.3.13	Recommendations. 3.2.13. Mobile Devices.	6.2.1, 6.2.5, 6.2.9, 6.2.13	Loss of safety systems

3.3.14	Recommendations. 3.2.14 Bunkered/Hardened Systems.	See NSTR Chapter 6.1	Loss of safety systems
3.3.15	Recommendations. 3.2.15. Multiple Accidents. The enhancement of the capability for addressing accidents occurring simultaneously on all plants of the site.	Not relevant to ANPP.	Loss of safety systems
3.3.16	Recommendations. 3.2.16. Equipment Inspection and Training Programs. The establishment of regular programs for inspections to ensure that a variety of additional equipment and mobile devices are properly installed and maintained, particularly for temporary and mobile equipment and tools used for mitigation of BDB external events.	6.2.17	Loss of safety systems
3.3.17	Recommendations. 3.2.17. Further Studies to Address Uncertainties. The performance of further studies in areas where there are uncertainties.	6.2.18	Loss of safety systems
3.4. Final Summary Report of the 2nd Extraordinary Meeting of the Contracting Parties to the CNS			
3.4.1	Upgrading safety systems or installing additional equipment and instrumentation to enhance the ability of each nuclear power plant to withstand an unexpected natural event without access to the electrical power grid for an extended period of time, including for an external event affecting multiple units (p21.2 page 6).	6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.2.6, 6.2.7, 6.2.9, 6.2.10, 6.2.11,	Loss of safety systems
		6.2.12, 6.2.13, 6.2.14	
3.4.2	Installing additional equipment and instrumentation in spent fuel pools to ensure cooling can be maintained or restored in all circumstances, or performing additional technical evaluations to determine if additional equipment and instrumentation are needed.	6.2.5	Loss of safety systems

4. Topic 3 - Severe accident management

No.	Recommendations (with references to NR)	Activity no.	Topic

4.1. Recommendations from the National Stress Test Report			
4.1.1	Development of a full set of severe accidents management guidelines covering also SFP. (6.1.4, 6.2.3, 6.2.4, 6.4.4).	6.3.1	accident management
4.1.2	Modernization of Emergency Core Cooling System to ensure long time operation and reliable compensation of higher leak rate. Introduction of alternative low-pressure core cooling system with independent power supply and water sources (6.2.3).	6.3.2	accident management
4.1.3	Comprehensive analysis of hydrogen generation and implementation of measures to reduce hydrogen exposure probability. Implementation of measurement of hydrogen concentration in containment (6.3.1.2).	6.3.3	accident management
4.1.4	Modernization of the Spray System including implementation of interlocks to reduce the risk of depth sub atmospheric pressure and reduce oxygen inflow from outside. It is recommended to implement measures to supply electricity to spray system using mobile DG equipment. It is also recommended to implement feasibility study for adding alternative sprays with independent source of energy (using a diesel driven spray pump) and water (borated water storage tank of Unit 1) (6.4.1.3, 6.4.3).	6.3.4	accident management
4.1.5	Feasibility study and development of measures aimed at maintaining melting fuel inside RPV via external cooling of the reactor vessel (6.3.1.5, 6.4.4).	6.3.5	accident management
4.1.6	Further improvement of containment tightness. A detailed analysis of possibility of hydrogen accumulation in rooms outside the containment should be planned and implemented. (6.2.6, 6.3.1, 6.3.5, 6.3.6).	6.3.6	accident management
4.2. EU Peer Review Report of the Armenia Stress Tests			
4.2.1	Enhancement of the Emergency Core Cooling System.	6.3.2	accident management
4.2.2	Containment tightness improvement.	6.3.6	accident management
4.2.3	Hydrogen monitoring and control.	6.3.3,6.3.13	accident management

4.2.4	Improvement of the containment spray system reliability.	6.3.4	accident management

4.3. Compilation of Recommendations and Suggestions from the Review of the European Stress Tests			
4.3.1.	Recommendations 3.3.1. WENRA Reference Levels. The incorporation of the WENRA reference levels related to severe accident management (SAM) into national legal frameworks, and ensure their implementation in the installations as soon as possible.	6.3.14	accident management
4.3.2.	Recommendations 3.3.2. SAM Hardware Provisions. Adequate hardware provisions that will survive external hazards (e.g. by means of qualification against extreme external hazards, storage in a safe location) and the severe accident environment (e.g. engineering substantiation and/or qualification against high pressures, temperatures, radiation levels, etc.), in place, to perform the selected strategies.	6.3.7, 6.3.10, 6.3.4	accident management
4.3.3.	Recommendations 3.3.3. Review of SAM Provisions Following Severe External Events. The systematic review of SAM provisions focusing on the availability and appropriate operation of plant equipment in the relevant circumstances, taking account of accident initiating events, in particular extreme external hazards and the potential harsh working environment.	6.3.1	accident management
4.3.4.	Recommendations 3.3.4. Enhancement of Severe Accident Management Guidelines (SAMG). In conjunction with the recommendation 2.4, the enhancement of SAMGs taking into account additional scenarios, including, a significantly damaged infrastructure, including the disruption of plant level, corporate-level and national-level communication, long-duration accidents (several days) and accidents affecting multiple units and nearby industrial facilities at the same time.	6.3.1	accident management
4.3.5.	Recommendations 3.3.5. SAMG Validation. The validation of the enhanced SAMGs.	6.3.1	accident management
4.3.6.	Recommendations 3.3.6. SAM Exercises. Exercises aimed at checking the adequacy of SAM procedures and organizational measures, including extended aspects such as the need for corporate and nation level coordinated arrangements and long-duration events.	6.3.1	accident management

4.3.7.	Recommendations 3.3.7. SAM Training. Regular and realistic SAM training exercises aimed at training staff. Training exercises should include the use of equipment and the consideration of multi-unit accidents and longduration events. The use of the existing NPP simulators is considered as being a useful tool but needs to be enhanced to cover all possible accident scenarios.	6.3.1	accident management
4.3.8.	Recommendations 3.3.8. Extension of SAMGs to All Plant States. The extension of existing SAMGs to all plant states (full and low-power, shutdown), including accidents initiated in SFPs.	6.3.1	accident management
4.3.9.	Recommendations 3.3.9. Improved Communications. The improvement of communication systems, both internal and external, including transfer of severe accident related plant parameters and radiological data to all emergency and technical support center and regulatory premises.	6.3.12	accident management
4.3.10.	Recommendations 3.3.10. Presence of Hydrogen in Unexpected Places. The preparation for the potential for migration of hydrogen, with adequate countermeasures, into spaces beyond where it is produced in the primary containment, as well as hydrogen production in SFPs.	6.3.3	accident management
4.3.11.	Recommendations 3.3.11. Large Volumes of Contaminated Water. The conceptual preparations of solutions for post-accident contamination and the treatment of potentially large volumes of contaminated water.	6.3.1	accident management
4.3.12.	Recommendations 3.3.12. Radiation Protection. The provision for radiation protection of operators and all other staff involved in the SAM and emergency arrangements.	6.3.1, 6.3.12	accident management
4.3.13.	Recommendations 3.3.13. On Site Emergency Center. The provision of an on-site emergency center protected against severe natural hazards and radioactive releases, allowing operators to stay onsite to manage severe accident.	Not relevant to ANPP see STR. Chapter 6.1	accident management
4.3.14.	Recommendations 3.3.14. Support to Local Operators. Rescue teams and adequate equipment to be quickly brought on site in order to provide support to local operators in case of a severe situation.	6.3.15	accident management

4.3.15.	Recommendations 3.3.15. Level 2 Probabilistic Safety Assessments (PSAs). A comprehensive Level 2 PSA as a tool for the identification of plant vulnerabilities, quantification of potential releases, determination of candidate high-level actions and their effects and prioritizing the order of proposed safety improvements. Although PSA is an essential tool for screening and prioritizing improvements and for assessing the completeness of SAM implementation, low numerical risk estimates should not be used as the basis for excluding scenarios from consideration of SAM especially if the consequences are very high.	6.3.16	accident management
4.3.16.	Recommendations 3.3.16. Severe Accident Studies. The performance of further studies to improve SAMGs.	6.3.1	accident management
4.4. Final Summary Report of the 2nd Extraordinary Meeting of the Contracting Parties to the CNS			
4.4.1.	Upgrading safety systems or installing additional equipment and instrumentation to enhance the ability of each nuclear power plant to withstand an unexpected natural event without access to the electrical power grid for an extended period of time, including for an external event affecting multiple units (page 6).	6.3.1, 6.3.2 6.3.7,6.3.10, 6.3.11, 6.3.12	accident management
4.4.2.	Installing additional equipment and instrumentation in spent fuel pools to ensure cooling can be maintained or restored in all circumstances, or performing additional technical evaluations to determine if additional equipment and instrumentation are needed (page 6).	6.3.8	accident management

4.4.3.	Performing or planning an evaluation of the guidance that is to be used by the operator to manage emergency situations resulting from severe accidents caused by extreme natural phenomena at nuclear power plants, including for low power and shutdown states. These documents include emergency operating procedures to prevent core damage, severe accident management guidelines to prevent containment failure, and extensive damage mitigation guidelines to address accidents that result in fires or explosions that affect a large portion of a nuclear power plant (page 6).	6.3.1,6.3.9	accident management

PART II

5. Issues from CNS EOM

5.1. Topic 4 - National organizations

No.	Recommendations	Activity no.	Topic
5.1.1.	Include information in its report under the Convention on Nuclear Safety (National Report) about how it has taken or intends to take the IAEA Safety Standards (including, in particular, the Safety Fundamentals and Requirements) into account in implementing its obligations under the Convention on Nuclear Safety.	6.4.1	National organization
5.1.2.	Ensure that the regulatory body is effectively independent in making regulatory judgments based on scientific and technological grounds and taking enforcement actions and that it has functional separation from entities having responsibilities or interests, such as the promotion or utilization of nuclear energy that could conflict with safety or other important regulatory objectives.	Considerable achievements. Further actions - 6.4.2	National organization
5.1.3.	Ensure the effectiveness of the regulatory body by providing for adequate legal authority, sufficient human and financial resources, staff competence, access to necessary external expertise for its decision-making based on adequate scientific and technical knowledge, access to international cooperation, and other matters needed for fulfilling its responsibilities for the safety of nuclear installations.	Considerable achievements. Further actions - 6.4.2,	National organization
5.1.4.	Ensure that its regulatory body operates in a transparent and open manner, taking into account legitimate concerns over security and other sensitive interests that might be adversely affected by the public disclosure of particular information.	6.4.3	National organization
5.1.5.	Make its National Report and any written questions and responses relating to that report publicly available, with the exception of any particular item of information that would adversely affect security or other sensitive interests if publicly disclosed and request the IAEA to maintain this information, other than any information covered by the above exception, on a website open to the public.	6.4.4	National organization

5.1.6.	Include information in its National Report on its efforts to enhance openness and transparency in the implementation of its obligations under the Convention on Nuclear Safety.	6.4.5	National organization
5.1.7.	Enhance the robustness of the peer review of national reports submitted under the CNS through the preparation and submission of thorough reports that present successes and challenges and the frank discussion of these reports.	6.4.6	National organization

5.2. Topic 5 - Emergency Preparedness and Response

No.	Recommendations	Activity no.	Topic
5.2.1.	Increasing the scope of off-site exercise programs to reflect NPP plus external infrastructure simultaneous problems and blending mobile resources into planning and drill programs.	6.5.1	EPR
5.2.2.	Enhancing radiation monitoring and communication systems by additional diversification / redundancy.	6.5.3	EPR
5.2.3.	Hardening of support infrastructure (Emergency Response Centers, Sheltering facilities, essential support facilities (like Corporate Offices) with back-up power, environmental radiological filtering, etc.	6.5.4, 6.5.5	EPR
5.2.4.	Reviewing and updating national, regional, provincial, municipal and local emergency plans and conducting exercises to encourage greater coordination among the different organizations.	6.5.6	EPR

5.3. Topic 6 - International Cooperation

No.	Recommendations	Activity no.	Topic
5.3.1.	Host, as appropriate, an international peer review mission of its regulatory framework governing the safety of nuclear installations, if the Contracting Party has an operating nuclear installation.	6.6.1	
5.3.2.	Host regularly, as appropriate for the size and number of the nuclear installations within that Contracting Party, international peer review missions of the operational safety of its nuclear installations, if the Contracting Party has an operating nuclear installation.	6.6.2	

5.3.3.	Include information in its National Report on any international peer review missions under paragraph 1, 2 or 3 of this section that the Contracting Party has hosted in the period between two review meetings of the Contracting Parties including a summary of the findings, recommendations and other results of the missions, actions taken to address these results, and plans for follow-up missions.	6.6.3	

PART III

6. Implementation of Activities

6.1. Natural hazards

Action no.	Topic	Activity	Recommendation no.	Status	Completion
Seismic					
6.1.1.	Seismic	Application of a combination of deterministic and probabilistic safety assessment to continue further seismic enhancement and identification of systems and components that may require further seismic improvement.	2.1.1	Ongoing, See sesmic upgrade program for 0.42g	2018 program 2022 implementation
6.1.2.	Seismic	Installation of additional fuel tank with capacity of 50÷100 tons or upgrading existing tank to meet relevant seismic requirements to provide an emergency power supply for a period of 72 hours.	2.1.2	Ongoing (Upgrade)	2018
6.1.3.	Seismic	Seismic margin evaluation of the fire extinguishing system and implementation of measures to reinforce the system.	2.1.3, 2.3.1, 2.2.5	Ongoing	2019-2020
6.1.4.	Seismic	Analysis of impact of explosion of the nitrogen recipients and the hydrogen storage tanks.	2.1.4	Planned	2018

6.1.5.	Seismic	Investigation of possible consequences in case of seismicinduced flooding in Turbine Hall (TH), impact of safety-related systems in TH and their interaction with adjacent compartments.	2.1.5	Planned	2018
6.1.6.	Seismic	Completion of the program for seismic upgrading of I&C equipment and seismic monitoring system.	2.1.6, 2.3.2	Planned	2019
6.1.7.	Seismic	Safety demonstration of adopted hazard value of 0.42 g derived from the PSHA 2011 as an updated DBE for the existing ANPP shall be updated accordingly.	2.2.1	Planned	2022
6.1.8.	Seismic	Verification of seismic protection of the EDG building and computational analyses account for the current status.	2.2.2	Planned	2018
6.1.9.	Seismic	Review the seismic robustness of all SSCs, mobile equipment, and buildings housing such SSCs or used as storages for mobile equipment required for crisis management for DB and BDB events.	2.2.3, 2.2.6	Planned	2022
6.1.10.	Volcanic	Establish design bases for ballistic projectiles and tephra fallout, i.e., those volcanic phenomena for which protection is possible. Some effects of tephra fallout (loading of structures, effects on ventilation) may be enveloped by protection against other hazards (snow load, protection against dust storms)	2.2.4, 2.2.8, 2.2.10	Planned	2019
6.1.11.	Volcanic	ANPP to develop response plans/procedures to respond to potential volcanic activity at Ararat, Aragats, and the Shamiram plateau.	2.2.4	Planned	2020
6.1.12.	Volcanic	Develop a monitoring of these capable volcanoes in the framework of the national civil protection programs.	2.2.4	Planned	2020
Flood					

6.1.13.	Flood	Equip the emergency doors of the staircases of DGS basement areas with a border in such a way that the penetration of water to the basement area can be excluded.	2.1.7, 2.3.3	completed	2016

6.1.14.	Flood	Foresee mobile equipment devoted to water pumping out from DGS and its basement.	2.1.7	completed	2016
6.1.15.	Flood	Equip DGS with alarms indicating occurrence of water level in basement area with output of light signals in MCR, central control panel and DGS operator room.	2.1.7	completed	2016
6.1.16.	Flood	Develop a procedure for operators for the case of water inflow in the DGS basement area.	2.1.7	completed	2016
6.1.17.	Flood	Seal the gaps to the turbine hall from the surrounding area and barriers on the way of water flow to the turbine hall gates.	2.1.8	completed	2016
6.1.18.	Flood	Replaced with waterproof doors located between TH and boron unit in order to resolve the issue related to water penetration from TH to boron units.	2.1.9, 2.3.3	completed	2016
6.1.19.	Flood	Enhancement of reliability of drainage system in order to prevent water penetration from TH to cable tunnels.	2.1.10	completed	2016
6.1.20.	Flood	Safety margin assessment in terms of rainfall flooding of ANPP site and calculations aimed to prove that protection measures are enough to prevent impact of mudflows on ANPP systems.	2.1.11, 2.3.4	Planned	2019
External Hazards					
6.1.21.	External Hazards	Develop and implement measures aimed to protect DG from dust, include improvement of DG compartments leak-tightness and/or installation of special air filtering at DG air intake system.	2.1.12	Planned	2019
6.1.22.	External Hazards	Implement measures aimed to remove snow from TH building roof in case of snow accumulation were implemented.	2.1.13	completed	2016

6.1.23.	External Hazards	Realistic re-evaluation of air temperature which could lead to freezing of outlet pipes of demineralized water tanks (BZOV). Depending on the results of realistic calculations the additional measures could be necessary for protection of BZOV pipes against extremely low temperatures.	2.1.14, 2.2.11	Planned	2019
6.1.24.	External Hazards	Check adequacy of SG emergency feed diesel pump exhaust pipe protection against external hazards. Re-analyse diesel pump exhaust pipe protection against high winds and dust.	2.1.15, 2.2.12	completed	2017
6.1.25.	External Hazards	Implement measures aimed to protect DG auxiliary systems (e.g. HVAC) against external hazards (e.g. combination of seismic and low temperatures hazards).	2.1.16	Ongoing	2019
6.1.26.	External Hazards	Implement detailed analysis for lightning impact on ANPP.	2.1.17	Planned	2019
6.1.27.	External Hazards	Re-visit external hazards screening process taking into account information reflected in stress-test report PSA model for external hazards.	2.1.18	Planned	2019
6.1.28.	External Hazards	To complement PSA by critical combinations of external hazards identified within FSA-ANPP project.	2.1.18 2.3.5	Planned	2019
6.1.29.	External Hazards	To revisit hazard curves for different hazards taking into account updated meteorological data.	2.1.18, 2.3.5	Planned	2019

6.2. Loss of Safety Systems

Action no.	Topic	Activity	Recommendation no.	Status	Completion
6.2.1.	Loss of safety systems	Provision of mobile DGs for charging batteries during SBO.	3.1.1, 3.2.2, 3.3.3, 3.3.13, 3.4.1	In process. Analysis aimed to select mobile DGs was done.	2020

6.2.2.	Loss of safety systems	Implement a new electrical scheme for charging batteries from DAR (Reserve diesel generator) system and/or the portable diesel generator.	3.1.1, 3.2.3, 3.3.3, 3.3.11, 3.4.1	Completed	2016
6.2.3.	Loss of safety systems	Replace all reversible motor generators (ODGs) with modern inverters with less energy losses.	3.1.1, 3.2.3, 3.3.3, 3.4.1	Ongoing	2019

6.2.4.	Loss of safety systems	Develop and implement additional measures to extend the operating time of reversible motor generators (ODGs) in an inverter mode that will lead to increase the time to provide I&C AC power supply.	3.1.1, 3.3.3, 3.4.1	In progress. Ongoing	2019

6.2.5.	Loss of safety systems	Implement two new separate lines for make-up of the coolant inventory in SFP from a mobile source (e.g. fire pumps or diesel pumps) and external water sources for SFPs emergency cooling.	3.1.2, 3.2.3, 3.3.10, 3.3.13, 3.4.2	Ongoing	2020
6.2.6.	Loss of safety systems	Increase the reliability of the refueling process from emergency diesel fuel tank or to foresee measures to install additional fuel capacity in terms of seismically qualified and reliable fuel tank.	3.1.3, 3.2.1, 3.1.11, 3.3.4, 3.3.11, 3.4.1	In progress	2017

6.2.7.	Loss of safety systems	Implement DGLS program for "cold" shutdown and refueling modes.	3.1.4, 3.3.1, 3.3.6, 3.3.8, 3.4.1, 3. 1. 10	Planned	2019
6.2.8.	Loss of safety systems	Perform new analysis and implement appropriate operator action for all emergency states, which may arise in case of loss of the primary ultimate heat sink, combined with station black out.	3.1.5, 3.3.4, 3.3.6	Ongoing	2019
6.2.9.	Loss of safety systems	Provision of mobile DGs for power supply of safety system.	3.1.6, 3.3.3, 3.3.11, 3.3.13, 3.4.1	Ongoing	2020

6.2.10.	Loss of safety systems	Assure MCP seals long-term (more than 24 hours) operation in case of cooling failure.	3.1.7, 3.3.7, 3.4.1	Planned	2019
6.2.11.	Loss of safety systems	Provide for mobile pumps for ESWS make-up from Circulation Water Channel.	3.1.8, 3.3.6, 3.3.11, 3.4.1	Completed	2017

6.2.12.	Loss of safety systems	Develop and implement additional measures to use a large reserve of service water in the inlet and outlet channels, as an alternative heat sink.	3.1.9, 3.3.4, 3.3.6, 3.3.11, 3.4.1	Completed	2017
6.2.13.	Loss of safety systems	Implement autonomous alternative means for make-up of SGs 1-6 of the Unit 2.	3.1.10, 3.3.6, 3.3.11, 3.3.13, 3.4.1	In progress	2020
6.2.14.	Loss of safety systems	Implement analysis of circuit diagram for consumers power supply (from DAR).	3.1.12, 3.3.11, 3.4.1	In progress	2019
6.2.15.	Loss of safety systems	Develop and implement activities aimed at minimizing personnel manual actions to activate the DAR system.	3.1.12	In progress	2019

6.2.16.	Loss of safety systems	The enhancement of instrumentation and monitoring. Examples include separate instrumentation and/or power sources to enable monitoring of essential parameters under any circumstances for accident management and the ability to measure specific important parameters based on passive and simple principles.	3.3.5	Planned	2020

6.2.17.	Loss of safety systems	The establishment of regular programs for inspections to ensure that a variety of exisiting and additional equipment and mobile devices are properly installed and maintained, particularly for temporary and mobile equipment and tools used for mitigation of BDB external events.	3.3.16	Will be implemented after installation of additional equipment and mobile devices	2020
6.2.18.	Loss of safety systems	The performance of further studies in areas where there are uncertainties. Uncertainties may exist in the following areas: • The integrity of the SFP and its liner in the event of boiling or external impact. • The functionality of control equipment (feedwater control valves and SG relief valves, main steam safety valves, isolation condenser flow path, containment isolation valves as well as depressurization valves) during the SBO to ensure that cooling using natural circulation would not be interrupted in a SBO (this is partially addressed in recommendation 3.2.10). The performance of additional studies to assess operation in the event of widespread damage, for example, the need different equipment (e.g. bulldozers) to clear the route to the most critical locations or equipment. This includes the logistics of the external support and related arrangements (storage of equipment, use of national defense resources, etc.).	3.3.17	-	2022
6.2.19.	Loss of safety systems	The enhancement of ventilation capacity during SBO to ensure equipment operability.	3.3.8	Planned	2020

6.2.20.	Loss of safety systems	The verification of assured flow paths and access under SBO conditions. Ensure that the state in which isolation valves fail and remain, when motive and control power is lost, is carefully considered to maximize safety. Enhance and extend the availability of DC power and instrument air (e. g. by installing additional or larger accumulators on the valves). Ensure access to critical equipment in all circumstances, specifically when electrically operated turnstiles are interlocked.	3.3.12	Planned	2020

6.3. Severe accident management

Action No.	Topic	Action / Activity	Recommendation No.	Status	Completion
6.3.1.	Accident management	Development of a full set of severe accidents management guidelines covering also SFP	4.1.1, 4.4.3, 4.3.8	In progress	2019
6.3.2.	Accident management	Modernization of Emergency Core Cooling System to ensure long time operation and reliable compensation of higher leak rate. Introduction of alternative low-pressure core cooling system with independent power supply and water sources	4.1.2, 4.2.1, 4.4.1	In progress	2020
6.3.3.	Accident management	Comprehensive analysis of hydrogen generation and implementation of measures to reduce hydrogen exposure probability. Implementation of measurement of hydrogen concentration in containment	4.1.3, 4.2.3, 4.3.10	Ongoing	2020

6.3.4.	Accident management	Modernization of the Spray System including implementation of interlocks to reduce the risk of depth sub atmospheric pressure and reduce oxygen inflow from outside. It is recommended to foresee measures to supply spray system components using mobile DG equipment. It is also recommended to implement feasibility study for adding alternative sprays with independent source of energy (using a diesel driven spray pump) and water (borated water storage tank of Unit 1) should be done	4.1.4, 4.2.4	In progress Ongoing	2019

6.3.5.	Accident management	Feasibility study and development of measures aimed at maintaining melting fuel inside RPV via external cooling of the reactor vessel	4.1.5	Planned	2019
6.3.6.	Accident management	Further improvement of containment tightness. A detailed analysis of possibility of hydrogen accumulation in rooms outside the containment	4.1.6, 4.2.2	Ongoing	2022
6.3.7.	Accident management	Implement possibility to feed primary circuit from additional means (diesel pumps).	4.4.1, 4.3.2, 3.1.10	Planned	2020

6.3.8.	Accident management	Perform analysis of SFP 1 and 2 cooldown and based on results implement additional measures. The aim of calculations is the time frame for fuel in case of loss of cooling and possibility of DGSL to ensure startup of 1NRB-1 and NZB pumps.	4.4.2, 3.1.2	Ongoing	2018
6.3.9.	Accident management	Develop full set of the Emergency Operating Procedures (EOP).	4.4.3, 3.1.5	Ongoing	2019
6.3.10.	Accident management	Implement additional independent means for make-up of SGs 1-6 by diesel pumps.	4.4.1, 4.3.2	Ongoing	2019
6.3.11.	Accident management	Develop and implement measures to prevent window damage of EDG building in case of extreme wind load.	4.4.1	Completed	2017
6.3.12.	Accident management	Implement measures to increase habitability of the Post accident monitoring system and Emergency Shutdown Panel	3.1.3.1, 3.1.4.9, 3.1.4.12	Ongoing	2019

6.3.13.	Accident management	Implement system for gas removal from reactor head.	3.1.2.3, 3.1.4.2	Ongoing	2019
6.3.14.	Accident management	The incorporation of the WENRA reference levels related to severe accident management (SAM) into national legal frameworks, and ensure their implementation in the installations as soon as possible.	4.3.1	ANRA's plans to harmonize nuclear legislation with EU directives	2022
6.3.15.	Accident management	Rescue teams and adequate equipment to be quickly brought on site in order to provide support to local operators in case of a severe situation.	4.3.14	Planned to solve by Ministry of Emergency Situations.	2020
6.3.16.	Accident management	Development of Level 2 PSA as a tool for the identification of plant vulnerabilities, quantification of potential releases, determination of candidate high-level actions and their effects and prioritizing the order of proposed safety improvements.	4.3.15	In progress	2019

6.4. National Organization

Action no.	Topic	Activity	Recommend.no.	Status	Completion
6.4.1.	National Organization	Include information the report under the Convention on Nuclear Safety about how it has taken or planned to take the IAEA Safety Standards (including, in particular, the Safety Fundamentals and Requirements) into account in implementing its obligations under the Convention on Nuclear Safety.	5.1.1	In process. Description of already revised safety requirements provided in the last version of National Report.	constantly
6.4.2.	National Organization	Development of the new version of Atomic Law.	5.1.2	In process.	2019

6.4.3.	National Organization	Providing of transparency and open communication with the public/stakeholders	5.1.4	In process.	constantly
6.4.4.	National Organization	Publishing Corresponding reports in the web site.	5.1.5	Implemented.	constantly
6.4.5.	National Organization	Include in the national report under CNS information about efforts to enhance openness and transparency in the implementation of its obligations.	5.1.6	In process.	constantly
6.4.6.	National Organization	Preparation and submission of thorough reports that present successes and challenges and the frank discussion of these reports.	5.1.7	In process.	constantly

6.5. Emergency Preparedness and Response

Action no.	Topic	Activity	Recommend. no.	Status	Completion
6.5.1.	EPR	Revision of off-site exercise programs to increase the scope and reflect NPP plus external infrastructure simultaneous problems and blending mobile resources into planning and drill programs.	5.2.1	Planned	2019
6.5.2.	EPR	Performing of longer term exercises to reflect the challenges of extreme events.	5.2.1	Planned	2019
6.5.3.	EPR	Deployment of early warning system with 20 detectors around ANPP and JRODOS software.	5.2.2	In process	2018-2019
6.5.4.	EPR	Establishment of new back-up Emergency Response Centers for ANRA with back-up power, communication lines.	5.2.3	Planned	2018-2019
6.5.5.	EPR	Establishment of new back-up Emergency Response Centers for ANPP, with back-up power, environmental radiological filtering, etc.	5.2.3	Planned	2019-2020
6.5.6.	EPR EPR	Reviewing and updating national, regional, provincial, municipal and local emergency plans and conducting exercises to encourage greater coordination among the different organizations.	5.2.4	Planned	2019

6.6. International Cooperation

Action no.	Topic	Activity	Recommen.no.	Status	Completion
6.6.1.	International Cooperation	Invite periodically international experts team within framework of IAEA review services and peer review missions	5.3.1	In process	constantly
6.6.2.	International Cooperation	International cooperation – participation of Armenian experts in international programs and activities IAEA, OECD/NEA, WANO, EC-ENSREG, WENRA and bilateral cooperation	5.3.2	In process	constantly
6.6.3.	International Cooperation	Include information in National Report on any international peer review missions under paragraph 1, 2, including a summary of the findings, recommendations and other results of the missions, actions taken to address these results, and plans for follow-up missions	5.3.3	In process	constantly

References

[1] National Report on Stress Tests of Armenia, August 2015
[2] ENREG Country Peer Review, June 2016
[3] Extraordinary National Report under the Convention on Nuclear Safety, May 2012
[4] Compilation of recommendations and suggestions, ENSREG, July 2012