

The Slovenian National Action Plan; December 2016

No.	Future action / activity	Area	Status	Finalization	Level
1	SUP SUP comprises of a set of modifications/ improvements (see numbers 1.1 to 1.10) that will be implemented in steps until the end of 2021. Some of the discussed recommendations (see related recommendations) are to be verified within the licensing and implementation of the SUP. (for SUP details see chapter 2 in Part IV)	SUP	in progress	2021	site
1.1	Safety upgrade of AC power supply	SUP, Phase II	in progress	2018	site
1.2	New pump for supplying SGs; in a bunkered building, with a dedicated water supply	SUP, Phase III	in progress	2021	site
1.3	Installation of alternative ultimate heat sink – revised into alternate long-term heat sink through using SGs and underground well water	SUP, Phase III	in progress	2021	site
1.4	Additional pump for injecting into the reactor primary system, in a bunkered building, with a dedicated (borated) water supply	SUP, Phase III	in progress	2021	site
1.5	Containment integrity safety upgrades including containment filtered vent systems and PARs	SUP, Phase I	implemented	2013	site
1.6	Establishment of emergency control room	SUP, Phase II	in progress	2018	site
1.7	Installation of fixed spray system around the SFP with provisions for quick connection from different sources of water.	SUP, Phase II	in progress	2018	site
1.8	Mobile heat exchanger with provisions to quick connect to SFP	SUP, Phase II	in progress	2018	site
1.9	Flood protection upgrade (additional protection of nuclear island and bunkered buildings)	SUP, Phase II	implemented	2015	site
1.10	Establishment of new technical support center and upgrade of existing operational support center (emergency operating facilities)	SUP, Phase II	in progress	2018	site
2.1	SNSA shall amend its legislation to include: <ul style="list-style-type: none"> • requirements regarding the use of advanced deteriorating weather warning systems • requirements regarding the use of seismic monitoring systems • PSA Level 3 requirements (at least for new NPPs) • requirements for Beyond Design Basis Accidents I&C for Spent Fuel Pool • emergency planning requirements for prolonged SBO in the areas of communications capability (onsite, e.g., radios for response teams and between facilities, and offsite, e.g., cellular telephones, satellite telephones), ERDS capability, training and exercises, and equipment and facilities 	legislation	implemented	2016	national
2.2	The SNSA shall consider amending its regulation for the design basis by more stringent safety objectives for: <ul style="list-style-type: none"> • Prevention and mitigation of core-melt accident in reactor and in spent fuel storage to avoid off-site long term contamination • Large or early release to be practically eliminated (for new NPPs) • Increase robustness of NPPs to be able to face natural hazards more severe than the ones considered in the design basis (DEC); this should also include requirements for test and maintenance of equipment, training,... This will be done mainly by following WENRA/ENSREG new initiatives, updated RL...	legislation	implemented	2016	national

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	The SNSA shall also examine whether more detailed requirements are needed regarding LOOP, SBO and loss of UHS				
3	<p>In January 2012 SNSA issued the third decision regarding the Fukushima event requiring from the Krško NPP to review the basis and assumptions for the Radiological Emergency Response Plan. This is to be finished by March 2013. The results of the review, possible proposals for improvements of the Radiological Emergency Response Plan, shall be implemented as appropriate.</p> <p>In addition the SNSA (together with other appropriate stakeholders) shall give further consideration to:</p> <ul style="list-style-type: none"> • supplementing the national radiological emergency response plan with provisions for off-site support regarding to the long-term fuel supply and also some additional pieces of mobile equipment in case of widespread disruption of plant's infrastructure • within the supplementing of national radiological emergency response plan further consideration shall be given to: <ul style="list-style-type: none"> - Reference levels for importing food, - Trans-boundary processing of goods and services such as container transport - Approach / philosophy and associated limits and criterion to govern the 'remediation' phase of the event - Return to evacuated area criteria and criteria for return to normal from the emergency state - Establishing contamination monitoring protocols and locations during the recovery phase • preparing national strategy (also amending legislation if needed) regarding solutions for post-accident contamination and the treatment of potentially large volumes of contaminated water • enhancement of intervention personnel training, trans-boundary arrangements and education of the public and media • enhancing cooperation with neighboring countries (especially Croatia), including mutual exercises • enhancing exercises by including all interface points (National, Regional, Municipal...), performing longer term exercises for better reflection of the extreme events challenges, and incorporating failure of communication systems and radiation data availability into drill programs • enhancement of national radiological monitoring system 	emergency response	in progress (this action is divided into 8 activities, of which 5 have been implemented in 2013)	2017	national
4	<p>SNSA shall assign dedicated inspections to:</p> <ul style="list-style-type: none"> • verify the external hazard protection equipment; • systematically review and inspect SAME equipment, SAMGs, test and maintenance procedures, as well as full scale training events at the Krško NPP with the emphasis on how the limited number of staff are able to cope with equipment deployment and transfer of additional fuel to the users, what are the available and needed times, are there enough resources (human and equipment) available,... • check what are plant's capabilities to power communications equipment needed to communicate onsite (e.g., radios for response teams and between facilities) and offsite (e.g., cellular telephones, satellite telephones) during a prolonged SBO; • additional inspection on radiological protection equipment, procedures for radiological mapping in case of an accident, staff training (added from action #5, additional studies) 	Inspection	in progress partly implemented; three inspections that cover these issues were performed in 2013	2017	site
5	<p>The SNSA shall consider requiring the plant to perform additional studies regarding:</p> <ul style="list-style-type: none"> • accident timing, including core melt, reactor pressure vessel (RPV) failure, basemat melt-through, SFP fuel uncover, etc., using different computer codes • radiological protection equipment for SA response • analysis and identification of situations that would prevent performance of work for radiological reasons; 	additional studies	complete one analysis was completed in 2015 (bullet 1). The other	2017	site

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	<ul style="list-style-type: none"> the question of stress on staff behavior including emotional, psychological and cultural aspects associated with emergency response and associated training and support 		three have been considered, and based on the results no additional analyses were required. Instead additional special inspections are planned for 2016 (see action #4, 4th bullet)		
6	Nuclear safety infrastructure in Slovenia needs more political support. Only in such environment the human resource capacity and competence across all organizations in the field of nuclear safety can be further developed. SNSA shall organize a meeting, where this topic shall be brainstormed by all involved parties (the utility, the regulatory body, TSOs...). Special action plan shall be prepared and executed to enhance political support to nuclear safety infrastructure.	nuclear safety infrastructure	complete	2016	national
7	<p>To enhance its processes SNSA shall:</p> <ul style="list-style-type: none"> reconsider, which of the international meetings/groups are of outmost importance, since the decreasing number of staff and increasing number of international activities the quality of regular work may start to suffer review its capability for evaluating defense-in-depth to see whether and how it could be further enhanced enhance its staff training on severe accidents and SAMGs 	SNSA processes	in progress partly complete (bullets 1 & 3), bullet 2 in progress	2017	national
8	<p>The SNSA shall consider inviting the following peer review missions</p> <ul style="list-style-type: none"> additional RAMP mission (best after completion of SUP) to again properly and independently validate the SAMGs. Likewise consideration shall be given to inviting peer review missions to reassess the external hazards a follow-up IRRS mission in 2014, and next IRRS mission in the next 5-6 years OSART mission to review plant design safety features and related modifications (in next 3 years) EPREV (Emergency Preparedness Review) mission 	peer reviews	in progress partly complete: - IRRS mission implemented - OSART and EPREV missions invited for 2017	2021	site
9	SA plant parameters are being transferred to regulator premises. Still, this system needs a revision to include all needed SA parameters, increase reliability of the system...	ERDS	complete	2015	site

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10	<p>A full scope PSA (including Level 2) for low power and shutdown modes shall be implemented for the Krško NPP by the end of 2015.</p> <p>SNSA shall consider requiring a PSA for the Krško's Spent Fuel Pool.</p>	PSA	in progress (Level 1 for low power and shutdown complete)	2016	site
11	<p>SNSA shall (together with the operator) analyze how the following topics are taken into account, maintained and improved:</p> <ul style="list-style-type: none"> • Transparency; public discussion of safety issues • An open and trustful relationship between regulators, operators and the public with keeping in mind their respective roles and functions • Define appropriate actions to ensure that the desired safety culture characteristics are achieved in the regulatory and operational organizations • Methods to evaluate and detect degraded safety culture 	safety culture	complete	2014	national
12	<p>Within the reassessment of its severe accident management strategy, existing design measures and procedures, the operator has also reassessed its possibilities for alternative spent fuel strategy [16]. The results showed that best strategy would be storing the spent fuel in dry cask storage with a possibility to combine it with later reprocessing.</p> <p>In accordance with the latest study further actions shall be implemented on the national level to change the national strategy and to enable licensing of the modification.</p>	reviews and NPP improvements	in progress	2018	national