

# The Questions and Answers to the Updated Slovenian Post-Fukushima Action Plan

Slovenian Nuclear Safety Administration, April 2015

Questioner	Topic	NACp page	Question / Comment	Answer / Comment
Austria	1	7	Safety Upgrade Program (SUP / DEC analysis): The seismic hazard for Krško was determined with PGA=0.56g for a non-exceedence probability 10 <sup>-4</sup> per year (2004). The NAcP explains that a set of DEC (Design Extension Conditions) has been derived that includes an extended design condition seismic value of PGA=0.6g for earthquake. This value is extremely close to the updated design basis event (0.56g). What is the reason to select the extremely small safety margin of 0.04g for DEC analysis?	The value of PGA=0,56 g by itself conservatively takes into account number of uncertainties inherent to different phases of its development. The main DEC criteria used to determine PGA=0.6g was 10000 y return period. The actual design value was arbitrarily rounded to 0.6 g. This slight increase could be considered as an additional safety margin or only as a slight numerical rounding. Any additional increase of it would indeed represent additional conservativity, but on another hand would also mean large increase of cost or even make implementation impossible. In another extreme the question could also be: Why didn't you double, triple or even quadruple the PGA!
Austria	1	A-6	Periodic Safety Reviews / Re-assessment of external hazards (ENSREG recommendation 2.2; No. 102; No. 409): The latest seismic hazard review for the Krško site was apparently completed in 2004, completion of the latest assessments of meteorological hazards are not mentioned. ENSREG suggests to re-evaluate natural hazards at least every 10 years. Has a re-assessment of external hazards (seismic, extreme weather) been performed since 2004? If no, what are the plans for such assessments?	GEN Energija, the owner of the Slovenian half of the Krško NPP, has contracted a new seismic hazard analysis for the Krško 2 of the area, so we will get new insights from the consortium of distinguished world experts.
Austria	1	A-36	Confirmation of seismic hazards every 10 years / Address any new and significant information (NRC Tier 3; No 419): Recent geological and paleoseismological investigations of the near-site area (Krsko II siting) revealed significant new seismotectonic data and evidence for a capable fault (Libna fault) in the site vicinity. Did these data trigger a re-assessment of seismic hazard? If yes, what are the results of the assessment? If no, what is the schedule for preparing a novel hazard assessment?	After number of discussions and exchanges of views of different experts it can not be claimed with high confidence that the Libna fault is indeed capable. All the experts involved in relevant discussions in 2012, however, agreed that even if that fault was capable, this would not represent change of the conservative seismic spectra used for the seismic design analysis of the plant.  GEN Energija, the owner of the Slovenian half of the Krško NPP, has contracted a new seismic hazard analysis for the Krško 2 of the area, so we will get new insights from the consortium of distinguished world experts.  All the documents related to this issue are publicly available from the site <a href="http://www.ursjv.gov.si/si/info/posamezne_zadeve/o_potresni_varnosti_nek/">http://www.ursjv.gov.si/si/info/posamezne_zadeve/o_potresni_varnosti_nek/</a> NEK performed analysis, which has shown that the fault displacement hazard estimated in the PFDHA [1] does not have a significant impact on seismic and nuclear safety of the NEK.  [1] Probabilistic Fault Displacement Hazard Analysis, Krsko East and West sites proposed Krsko 2 Nuclear Power Plant, Krsko Slovenia, revision 1, Paul C. Rizzo Associates, Inc., May
Austria	1	A-15	Peer reviews of external hazards (KJV-Topic #1: No. 204): Does SNSA intend to invite a peer review mission to reassess seismic hazard? If yes, what could be the framework of the reassessment?	No, SNSA does not intend to invite a dedicated Peer Review mission to reassess seismic hazard. Any reassessment of seismic hazard is kind of Peer Review anyway, where a number of experts discuss about their opinion and explanations of known data. The result is always very uncertain. We see no added value in inviting yet another group of people to Peer Review as for sure the result will not reduce uncertainties.  However, GEN Energija, the owner of the Slovenian half of the Krško NPP has contracted a new seismic hazard study of the area, so we will get new insights from the consortium of distinguished world experts.

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Austria	2	14	Have compensatory measures for coping with design extension conditions been required considering the delay in the implementation of SUP (new deadline (2018) approved by SNSA, previous deadline being 2016)?	No. The Krško NPP operates in accordance with the valid design basis requirements, while the SUP represents the improvements covering beyond design basis events (or Design Extension Conditions). Thus the compensatory measures are not required by the SNSA. In addition the Krško NPP already implemented SUP Phase I modifications, which includes Passive Containment Filtering Vent System and Passive Autocatalytic Recombiners installation in addition to implementation of SAMGs, which were developed in the late 90's and were substantially improved after the Fukushima accident and also additionally supported by acquiring large number of different mobile equipment. This equipment is regularly tested and used during regular drills/exercises (supported with the full scope BDBA simulator) for managing BDBA scenarios.
Austria	2	15	What will happen if, after the financial viability study, a decision is taken not to implement the "BB2 project"?	The results of the financial viability study were positive. It showed that the continuity of operation of the Krško NPP is the best economical solution for electrical energy production in Slovenia and Croatia with implementation of the SUP's 3rd phase, taking into account several uncertainties and sensitivity cases.
Austria	3	15	Phase 3 of the Safety Upgrade Program (SUP) for Krško NPP includes the installation of hardware very important for safety (e.g. installation of an alternative ultimate heat sink, installation of additional pumps for injecting into steam generators, reactor coolant system and spent fuel pool). So far, there is no agreement with the licensee, concerning the implementation of these measures; and hence, no deadline. Does SNSA consider the measures of phase 3 of the SUP as indispensable? What is the further procedure, regarding these measures?	As answered in previous question, the results of the financial viability study were positive and the owners decided to continue with the implementation of the SUP. The SNSA is now awaiting the NPP's application for the extension of the SUP's 3rd phase final deadline.  Regarding the indispensability of SUP Phase III, at this point in time it is not possible to answer with simple yes or no. The SUP is evolving gradually from 2011 depending on the number of conditions influencing its pace of implementation. For the time being it is foreseen that the phase 3 will be implemented. However due to its extent the implementation will be finished later than previously planned, probably until 2021. If any there would be any changes, the SNSA will carefully reconsider and react if necessary.
Austria	General	18/19	Nuclear safety infrastructure needs more political support. In particular, the NACp mentions the difficult situation regarding financing. Does this concern mainly SNSA and their technical support; or also the licensee? There are delays in the implementation of the Safety Upgrade Program (SUP) for Krško NPP. Is the situation of the nuclear safety infrastructure one of the reasons for the delays?	The licensee is not impacted by the reduction of the state budget expenditures. Their financial situation is favourable. The mostly hit are state administrations like the SNSA. No, reasons for the delays on SUP project are not in the State financial situation, there are reasons in finding proper technical solutions for complex nuclear design.
Bulgaria	Topic 3	Page 5	Reference: Table 1: Implemented short-term improvements in the Krško NPP – accelerated B.5.b requirements: ....Procurement of Tractor "Arion 630C" 103 kW, with additional equipment, e.g. air compressor, fork lift, equipment for ploughing (removing debris, etc.) - to be used as means of transportation of different equipment (e.g. portable diesel generators, pumps, barrels of oil, etc.), for transferring the fuel between tanks/barrels and equipment, for ploughing/clearing way at the site, etc. Questions: 1) Where is/will be located this Tractor ? 2) Are there any specially trained drivers? 3) How is organized the drivers availability round the clock?	The tractor is located in the special building designed for storing of mobile equipment. This building is designed for 2xSSE earthquakes (0.6g) and protected against PMF flood. The tractor would be driven by the members of the Krško NPP's fire brigade and also local operators. The drivers are regularly trained for the use of tractor's multiple functions. Members of the Krško NPP's fire brigade are present at the site 24/7.
Bulgaria	Topic 2	Page 10	Reference: Table 4, item 1.3 says: "Installation of alternative ultimate heat sink". in progress, finalization after 2018;  Question: What equipment is considered to be installed as alternative ultimate heat sink ?	The preparation of concept for alternative ultimate heat sink is still not completed and therefore SNSA does not have any information on the equipment that would be installed. The concept of the AUHS is part of SUP phase 3. Detailed technical solutions are under development by Krško NPP.

France	2.3	p23	It is written in the conclusion of the updated NAcP: "In 2013 the Krško NPP applied for the extension of deadline for the implementation of the SUP due to several different reasons. The SNSA approved the extension of the deadline until the end of 2018. Yet even today the future of one part of the SUP (Safety Upgrade Program) is still uncertain due to the owners' doubts about financial sustainability of the project". For instance, for action 1.2 of the SUP "New pump for supplying SGs; in a bunkered building with a dedicated water supply", the initial target was 2015 but now in the updated version the finalization is foreseen after 2018. Even if there is an important shift in the delay how to explain why this delay is not limited?	The deadline for the 3rd phase of the SUP in the NAcP update isn't limited because at the time of writing the NAcP report the results of the financial viability study were not known, and it was not known whether the 3rd phase would be implemented and whether the plant would continue its operation after the end of its design lifetime. Today it is known that the results of the financial viability study were positive and that the owners decided to continue with the implementation of the 3rd phase of the SUP. Krško NPP is developing updated version of SUP and SNSA is waiting for the application.
France	2.2	p13	§5.1.1: The revision of the 2004 Seismic PSA: "Taking into account the results of investigations carried up to now it was concluded that the assumptions considered in 2004 seismic hazard analysis for the Krško site are defensible even against these new seismological assessments. Thus no immediate measures are planned to implement the recent findings into an existing seismic hazard assessment for the Krško NPP. Further revision of seismic hazard assessment as well as seismic probabilistic safety assessment will be considered when all ongoing investigations are complete." As the Krško NPP is located in a seismically active region (as reminded in the Slovenian National Report), these investigations are important. So is it possible to give a deadline for the completeness of these ongoing geological and seismological investigations?	GEN Energija, the owner of the Slovenian half of the Krško NPP, has contracted a new seismic analysis project for the Krško 2 of the area, so we will get new insights from the consortium of distinguished World experts. The investigations will be divided into three phases (about two years): <ul style="list-style-type: none"> <li>• Phase 1: Field investigations – include: Tectonic geomorphic characterization (Lineament analysis, Channel profile analysis, Drainage basin morphology, Basin-averaged denudation), Geophysical investigation (Shallow high-resolution seismic reflection profiles), Drilling (Seismic downhole, fully cored), Paleoseismological investigation (Three sites will be trenced if appropriate conditions are encountered) and Age dating (to obtain Plio-Quaternary geochronology for the 25-km site vicinity)</li> <li>• Phase 2: Fault capability and Seismic source characterization (Assess tectonic deformation (fault displacement and surface deformation) within a minimum of 5 km from the proposed JEK 2 sites)</li> <li>• Phase 3: Ground motion characterization, probabilistic seismic hazard analysis, and control point ground motion</li> </ul> More detailed information is available on the SNSA website: <a href="http://www.ursjv.gov.si/si/info/pos">http://www.ursjv.gov.si/si/info/pos</a> Under date 16.1.2015: Work Plan Seismic Hazard Analysis for New Nuclear Plant Krško, Krško, Slovenia
Netherlands	topic 3	P IV / CH 1 / p 4	On page 4 in the NAcP you state that by June 2011 the accelerated B.5.b requirements were implemented 'to a large extend'. It is not entirely clear if and when the remaining improvements were implemented, could you elaborate on the nature and cause of the delay on these improvements?	The majority of mobile equipment was supplied in 2011. After that Krsko NPP purchased high pressure mobile pump for injection of water in to the steam generators. Please note, that there are no major delays on B.5.b safety upgrades comaped to international nuclear industry, since NEK was the only plant in EU which complied with B.5.b requirements during stress tests.
Netherlands	topic 2, topic 3	P IV / p.14	Several delays are mentioned on page 14 and others regarding the implementation of SUP as well as the associated risks involved for the continuation of the operation of the Krsko plant. How was the prioritization and planning of the measures decided on? And can further delays jeopardize the continued operation of the NPP?	The deadline for the 3rd phase of the SUP in the NAcP update isn't limited because at the time of writing of the NAcP report the results of the financial viability study were not known, and it was not known whether the 3rd phase would be implemented and whether the plant would continue its operation after the end of its design lifetime. Today it is known that the results of the financial viability study were positive and that the owners decided to continue with the implementation of the 3rd phase of the SUP. Krško NPP is developing updated version of SUP and SNSA is waiting for the application.
Netherlands	topic 4	Ch4, page 13	Could you elaborate on how action 11 is executed, especially concerning safety culture (required actions, evaluation and detection)?	Action 11 is taken from the Convention on Nuclear Safety. SNSA is committed to open and proactive communication with all stakeholders. SNSA works well with media. Also meetings with non-governmental organizations (Greenpeace, Focus, ...) take place twice a year. At the end of December 2012 SNSA adopted guideline "Collection of information, monitoring and assessment of safety culture in nuclear facilities" in order to increase awareness of the existing safety culture, to suggest possibilities for improvement and monitor the effects of changes and improvements over a longer period of time. In 2014 the guideline was revised. As a part of the guideline there is an appendix "Information on safety culture", which is designed to gather information and review of safety culture during visits in the NPP Krško nuclear facilities and other activities related to the licensing and supervision of safety. All the gathered information is sorted in accordance with IAEA SCART guidelines into 37 safety culture attributes. After that a report about safety culture in the NPP Krško is written and sent to the operator. The findings are also discussed annually in the management meeting between SNSA and NPP Krško.

Netherlands	topic 2	P IV / Ch 5 / p 16	It is mentioned in Action #2 on top of page 16 that the SNSA will examine the need to draw new requirements concerning LOOP, SBO and loss of UHS. Has this been finalized yet? What was the result from that investigation? Was it necessary to add additional requirements concerning these topics?	The legislation will be amended in line with the new WENRA RL, which among others revised the requirements for DEC for existing reactors. These include requirements such as maintaining critical safety functions, which also implicitly include support systems, e.g. emergency power and UHS.
Netherlands	topic 6, international cooperation	P IV / Ch 5 / p 17	On multiple occasions in your report you explain the alignment of Croatia and Slovenia concerning the National Radiation Emergency Plans. This kind of international alignment is often a very difficult process. At a previous Review Meeting this was recognized as a challenge. Could you elaborate some on the difficulties you experienced in this process and the steps both parties needed to take before a close alignment became a reality?	At the time of writing of the NAcP report the special commission with members also from the neighbouring Croatia was developing the renewed strategy for off-site emergency arrangements. One of the goals of the work is harmonisation of such arrangements in both countries. The planning zones should have equal dimensions and planned emergency measures, the activities of the response organisations will be co-ordinated during the accident progression. The major difficulty was reaching the agreement of the size of emergency zones, especially of the Urgent Protection Zone. At the time of writing this answer the final report of the commission is almost finished.
Netherlands	topic 3	P IV / Ch 5 / p 18	According to the NAcP the SNSA is still considering whether to require additional analysis concerning certain issues. Can you estimate when the SNSA will make a decision about these studies and if deemed necessary when discussed studies can be finished, is that before 2018? Will this evaluation be finished timely enough to allow its conclusions to be implemented in Phase III?	Currently one study (accident timing, including core melt, RPV failure, basement melt-through, etc., using different computer codes) is underway. It was supposed to be completed in 2014, but due to some technical difficulties with the code the deadline was postponed until the end of 2015. Regarding studies in other three areas (see the last three bullets in the NAcP action 5) the final decision has still not been made, but also these studies are not explicitly connected with the implementation of the SUP (or SUP phase III) so their timing is not critical. Nevertheless, the SNSA believes that if any of these additional studies would be required, they can be completed by the end of 2017.
Netherlands	topic 4, national organization	P IV / Ch 5 / p 19	In action #7 you mention for example prioritizing your international involvement as a way to mitigate the difficulties you have as a small regulatory body. Are there any other ways you use to mitigate these difficulties and which could be beneficial to other countries having small or understaffed regulatory bodies?	There is no simple answer to that question! The SNSA is indeed carefully judging which international involvements are relevant for the organization and which could simply be skipped. It is not possible to set a simple rule for that.
Netherlands	topic 2	P IV / Ch 5 / p 20	Concerning the use of an PSA, does the Krško plant use a so-called living PSA to continuously analyse the effect of small plant modifications or maintenance jobs? What level PSA applies to Krško?	Krško NPP has a living PSA of Level 1 and 2. The Krško NPP PSA is regularly updated, taking into account new upgrades and also changes of plant specific data (reliability and availability of SSCs).
Greenpeace	general	N/A	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 such flaws in the Krško reactor vessel. Such flaws, however, by themselves would not influence emergency core cooling measures, but would introduce a challenge of the fracture of the reactor vessel. The emergency cooling systems are designed to cope with such situations (LOCA) and there is no need for them to be redesigned.
Greenpeace	general	N/A	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?	SNSA believes that all of the recommendations/suggestions/findings that were somehow formulated after the Fukushima accident have been followed up in one way or another, some with greater pace, some in longer time, depending on the necessity, added value or financial constraints.
Greenpeace	general	N/A	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?	For none.
Greenpeace	general	N/A	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?	In principle the EIA is required for any changes to the facility that might change the impact of that facility to the environment. So far there were no modifications implemented in the scope of Krško NPP stress test actions that would in any way deteriorate the impact of that facility to the environment, therefore there was no need for EIA.

Greenpeace	1	N/A	The Krško NPP is located in a seismically active region. The national stress tests report refers to several active faults which were identified in the immediate region of Krško. In line with US NRC nuclear regulation and standards the peak ground acceleration (PGA) of 0.3 g was used for the safe shutdown earthquake (SSE). Seismic hazard assessments in 1994 and 2004 led to raising the PGA values for the SSE: In 1994 to PGA= 0.42g and in 2004 to a PGA= 0.56g, which is nearly twice the original PGA. Question 1: Has a new seismic hazard assessment been conducted? Does SNSA have knowledge of any investigation which indicates that ground motion acceleration higher than 0.6 g is possible? Are any new seismic hazard assessment envisaged by SNSA? Are all the assumptions and results of the previous PSHA also today justified in the opinion of SNSA?	Response on question 1 is "Yes". New seismic hazard assesment is conducted by GEN energija and is to be implemented in next two years. The particular questions are the following Response to Q2: - No. Response to Q3: - No, new seismic hazard assesment is conducted by GEN energija. Response to Q4: - Yes, the assumptions and results of previous PSHA are defendable agains the ground motions recorded in the area around Krško (there is nothing new which disproves the results of previous PSHA study from 2004).
Greenpeace	1	N/A	Today Krško NPP complies only with the current requirements for the original design basis of 0.3g. But the additional systems, structures and components (SSCs) which will be implemented within the SUP (Safety Upgrade Project), will be designed and structured in accordance with the design extension conditions (DEC) requirements specific for the Krško NPP design and site location. However the extended design condition seismic value is 0.6 g PGA. This value offers nearly no seismic safety margin (0.04g) regarding the current value of the SSE. Question 2: Why do the design extension conditions (DEC) requirements obtain so little seismic margins? Are there any new requirements in the pipeline?	The value of PGA=0,56 g by itself conservatively takes into account number of uncertainties inherent to different phases of its development. The main DEC criteria used to determine PGA=0.6g was 10000 y return period. The actual design value was arbitrarily rounded to 0.6 g This slight increase could be considered as an additional safety margin or only as a slight numerical rounding. Any additional increase of it would indeed represent additional conservativity, but on another hand would also mean large increase of cost or even make implementation imposible. In another extreme the question could also be: Why didn't you double, triple or even quadrouple the PGA!
Greenpeace	1	N/A	SNSA claims that in case of an earthquake with a PGA over 0.6 g, core cooling can be assured by alternative means, but pointed out that implementation of alternative means requires that manual actions are performed in relatively short time. Question 3: Is SNSA convinced that it is possible to prevent a core melt accident with alternative means after an earthquake with a PGA over 0.6g taking into account the destruction of the NPP and the infrastructure? What is this conviction based upon?	Yes, SNSA is convinced that without reasonable doubt this can be achieved! This conviction is based on multiple levels of defence in depth, on the fact that all the equipment is subject to surveillance requirements, that the staff is regularly trained and well motivated. As pointed in National stress test report, fragility analyses provided results, that no severe damage to the plant is expected at earthquake levels 0.6g PGA.
Greenpeace	1	N/A	An earthquake with a PGA in the range of 0.8 g or higher would be likely to cause core damage. Mechanical damage could disturb the reactor core geometry and thus the insertion of the control rods. Radioactive releases cannot be excluded. A recurrence period of 50,000 years was estimated for seismic events with a PGA of 0.8g. Question 4: What are the uncertainties in the calculated recurrence period of 50,000 years for the seismic events with a PGA of 0.8 g?	15th and 85th percentiles represent the dispersion in seismic hazard. The 15th, 50th and 85th percentiles for annual frequency of exceedance of peak ground acceleration of 0.8g are, respectively, 7.52E-06, 1.65E-05 and 3.30E-05.
Greenpeace	1	N/A	The plant is located in an area prone to flooding. The average altitude of the surrounding area is about 154.5 meters above sea level. The plant itself is located at 155.20 m on a plain, which is 0.69 m below the water level of the probable maximum flood (155.89 m). Thus, flood protection has to be assured by dikes around the site. Increasing the dike height upstream from the plant is in progress. The improved flood protection dikes are designed with very limited safety margins against extreme flooding or earthquake events. Question 5: Which safety margins are attributed to the new flood protections dike against natural hazards (earthquake and flooding) with a return frequency of 10,000 per year? When will the reinforcement project of the dyke be completed?	There is no need for additional flooding protection for design bases flood levels with return periods up to 10.000 years, since flood protective dikes are built to sustain flooding with greater than PMF floods. The dike upgrades were completed in 2012 and are designed to protect against floods of up to 11.000m3/s which is even greater than PMF flood (7080m3/s). The dikes are also seismically designed to SSE PGA.
Greenpeace	1	10	The flood protection of the nuclear island and the bunkered building are to be enhanced by 2015. According to the updated NAcP, this measure is still in progress. Question 6: What is the current status of the flood protection upgrade?	Flood protection improvements of the nuclear island and the BB1 will be implemented in 2015 Please note, that this is for Design Extended Conditions, where we assume flooding with PMF river flow (return period of 10E-6) and coincidence with SSE earthquake (greater than 0.3 g PGA), which could cause failure of river dikes at the presence of PMF flooding level of Sava river.

Greenpeace	1	10	<p>SNSA plans to include in its legislation requirements regarding both the use of advanced deteriorating weather warning systems and the use of seismic monitoring systems by 2014. (No. 2.1). According to the updated NAcP, the activity is in progress. The SNSA is in the process of amending / revising its legislation based on the above stated commitments and/or considerations. The drafts of the amendments have already been prepared, which also consist of the last WENRA Reference Level updates (adopted in September 2014). Final internal revisions are needed before the amended rules can be submitted to public hearing and then to the Government for approval. The new deadline for adopting the revised legislation is the end of 2015.</p> <p>Question 7: Which time schedule will be set for the implementation of the necessary back-fitting measures after the legislation requirements were issued?</p>	<p>After the legislation is changed it usually takes couple of years before back-fitting measures are implemented.</p>
Greenpeace	1	14	<p>To prevent total station-black out (SBO), the SUP includes a comprehensive safety upgrade of AC power to be acquired by 2015 (SUP, 1.1). Regarding DC power supplies, the plant has in place several mobile diesel generators for recharging the batteries; improvement for the connection between diesel generators and charging buses is planned, as well as installation of additional train of batteries. According to the updated NAcP, the action is in progress. However the finalisation is postponed until 2018. In September 2013 the Krško NPP applied for the extension of the final SUP deadline. The main reasons for the delay were the size of the project, complexity of design documentation, delivery times of some of the main components, as well as inclusion of the Krško NPP into the Public Procurement in Water Management, Energy, Transport and Postal Services Area Act, which further complicated, delayed, and finally failed the bidding of the project. The SNSA approved the extension of the deadline until the end of 2018.</p> <p>Question 8: Is the safety upgrade project (SUP) proceeding in accordance with the postponed time schedule?</p>	<p>As described in the NAcP report (page 14-15) the first phase of the SUP was implemented, while the second phase is on schedule and will be completed by the end of 2018. The exception is the third phase, which is late due to several reasons. The SNSA is waiting the plant's application for extension of the 3rd phase final deadline.</p>
Greenpeace	1	14	<p>To prevent the loss of ultimate heat sink (UHS), an alternate UHS need be installed by 2015. The alternate UHS is to be seismically qualified and independent from the ultimate heat sink (Sava River). (SUP, No 1.3). To assure core cooling in case of SBO and/or UHS, the installation of additional high pressure pump for feeding steam generators (SGs) installed in the separated bunkered building with dedicated source of water is scheduled by 2015 (SUP, No. 1.2). Furthermore additional pumps (low and high pressure, as well as a special pump for seal injection) are to be implemented by 2015 (SUP, No. 1.4). The pumps will be installed in the separated bunkered building with a dedicated source of water for 8 hours and with provisions to refill with the help of mobile equipment from different water sources.</p> <p>According to the updated NAcP, these activities are in progress. However the finalisation is postponed "after 2018". In the beginning of 2014 the Krško NPP notified the SNSA that the implementation of the SUP until the end of 2018 is going to be challenged due to financial constraints. Namely, the two owners of the Krško NPP (the</p> <p>Question 9: When will the financial viability study be completed? When is the decision about the implementation of this measure expected to be taken? What is the consequence for the safety, if the BB2 project will be cancelled? How will SNSA react to the BB2 project being abandoned?</p>	<p>At the time of writing of the NAcP report the results of the financial viability study were not known.</p> <p>In the mean time the financial viability study was completed and the results were positive - the owners decided to continue with the implementation of the 3rd phase of the SUP. Currently the SNSA is still waiting for the NPP to apply for extension of the SUP's 3rd phase final deadline.</p>
Greenpeace	1	14	<p>To assure containment integrity during a severe accident, the safety upgrades program (SUP) includes the implementation of containment filtered venting systems and passive auto-catalytic re-combiners (PARs) to avoid hydrogen explosion (SUP, No. 1.5).</p> <p>According to the updated NAcP, these activities are completed.</p> <p>Question 10: What is the size of seismic margins of the filtered venting systems and the PARs?</p>	<p>The filtered venting system (PCFVS) and the PARs were designed for Design Extension Conditions seismic event of 0.6g PGA. The components of PCFVS are seismic I category. Since these systems were designed per nuclear codes and standards and based on fragility analyses of similar systems already performed, we can claim that significant safety margins exist and that system will be able to cope with much higher accelerations/earthquakes.</p>

Greenpeace	1	14	The installation of a fixed spray system around the spent fuel pool with provisions for quick connection from different sources of water (deadline 2015, SUP, No. 1.7). According to the updated NAcP, the activity is in progress. However, the action is postponed to 2016. Question 11: Is the implementation of the necessary back-fitting in accordance to the postponed deadline?	Yes
Greenpeace	1	14	Mobile heat exchanger with provisions to quickly connect to SFP, containment sump or reactor coolant system are to be provided by 2015, (SUP, No. 1.8). According to the updated NAcP, the activity is in progress. However, the action is postponed to 2018. Question 12: Is the implementation of the necessary back-fitting in accordance to the postponed deadline?	Yes
Greenpeace	1	14	A new emergency control room (including expansion of existing remote shutdown panels) in the above mentioned separate bunkered building is to be installed by 2016. (SUP, No. 1.6) According to the updated NAcP, this activity is in progress. However, the action is postponed to 2018. Question 13: Is the implementation of the necessary back-fitting in accordance to the postponed deadline?	Yes
Public: Harald Tschabuschnigg, Austria Carinthia	1	N/A	The Carinthian government has to mark the following comments to the follow up action plan:  Tests for the validation and verification of modernization measures must be taken.  A new - the state of the science and technology adequate assessment of seismic hazard for the location Krško, which identifies the seismic potential of active faults in the vicinity of nuclear power plants and assesses these paläoseismic based methods is highly recommended.  With the result of the analysis the probabilistic hazard analysis (PSHA) should be updated.  With regard to the interpretation earthquake is recommended that the Slovenian Authority takes up the proposal of ENSREG and may require an update of a design basis for future modifications to the powerplant Krško.  Assessing the quality and reliability of the analysis of seismic activity, indicating the value of the SSE with PGA = 0.56g.  The analyzes have to be completed and mainstreaming climate change and therefore those expected in the future extreme weather situations of extreme rainfall in the analysis of possibility of flooding the location Krško and thus to monitor the relevant m It is recommended to complete the analysis and to include in addition to the occurred The Krško stress test considers only the event of external flooding by the river Sava. H A sufficiently transparent approach requires the notification and disclosure of relevant The operator NEK and the approval authority SNSA is recommended to recalculate w The assumptions and calculation methods for the assessment of steam explosions in Simulation calculations to underpin the concept of in-Vessel or in containment retentio The consequences of a delayed containment failure in a serious accident with core me It is proposed to carry out repeated tests for the seismically qualified emergency diese The discharge of the battery blocks of the NPP Krško should again be reviewed and,	No concrete question posed. Several analyses and modifications were performed regarding severe weather situations and global climate changes. All applicable combinations of severe weather are accounted in design extened conditions boundary conditions like: flooding due to Sava River after river dike failure, flooding due to extreme local precipitation, high and low temperatures, drought and other situations and also their applicable coincidences.

JRC - IET	1	10, 14-15	The Action 1.1 (see Table 4) for «Safety upgrade of AC power supply» has a new deadline in 2018. However, it is not mentioned in the paragraph 5.2.1 (pp. 14-15). Could you indicate in which phase (1, 2 or 3) of the new schedule for the Safety Upgrade Program will Action 1.1 be included?	Phase II - it is the "Upgrade of bunkered build 1 (BB1) electrical power supply". The name has changed a bit, because this project now only contains the improvements in the BB1, all other have been implemented already.
JRC - IET	1	Table 1	The same question applies to Action 1.7 in Table 1 («Installation of a fixed spray system around the SFP with provisions for quick connection from different sources of water»)	Phase II (under the name "Spent fuel pool (SFP) alternative cooling")
JRC - IET		10	Table 4 indicates for all actions in the Safety Upgrade Program (except 1.5), that status is «in progress». However, from the clarifications given in paragraph 5.2.1, it is not clear if some progress has been achieved. Could you indicate which of these actions have been started, if any, and what specific progress has been achieved so far?	Most of these actions were started in 2012, first as preparing conceptual design packages, and later, depending on the pace of implementation, the project design documentation was developed, bidding took place, contracts were signed, etc. Phase 1 of the SUP was implemented in outage 2013, phase 2 is planned from 2015 until the end of 2018, while the phase 3 will be implemented until 2021.