Convention on Nuclear Safety

Questions Posted To Czech Republic in 2017

No.	Article	Ref. in National Report	Question	Answer	Support Documents
1	General	Summary, p11	Could you clarify the design concept for the diverse make-up system for spent fuel pools in both NPPs?	Dukovany - modification No 6834 The spent fuel pool can be cooled using gravity filling from bubbler condenser system trays – drives of bubbler condenser system drain valves were replaced by seismically resistant ones, and their power supply is ensured even during station black out. Valves can be opened under any conditions, and water flows into spent fuel pool by gravity. The second option for spent fuel pool cooling is filling the pool using pumps of special water treatment of spent fuel storage (TM pumps) from low pressure safety injection tanks – for this possibility, the original TM pumps were replaced by seismically resistant pumps and closing manual valves were implemented on the seismic interface of lines, which can separate the line of emergency cooling systems if needed. Temelín - Modification No D338 The system uses water supplies in tanks TB10 (emergency supply of boric acid), TB30 (primary coolant drainage tank) and TB40 (clean condensate tank). For these purposes, a new system TB50 was implemented - 2 pumps powered by SBO DG. Solutions from the tanks TB10, TB30, and TB40 are pumped into the spent fuel pool through the lines of the emergency sprinkler system.	
2	General	VDNS	VDNS Principle 1: How do you define ‘a new nuclear power plant’? For example: do you consider a power plant to cease being a ‘new nuclear power plant’ once operation begins?	The Nuclear Safety Directive (Council Directive 2009/71/Euratom as amended by Council Directive 2014/87/Euratom) sets out in its Article 8a, a nuclear safety objective which has similar aims to Principle 1 of the VDNS. The nuclear safety objective for nuclear installations applies to nuclear installations for which a construction licence is granted for the first time after 14 August 2014. The new Czech nuclear legislation coming into force on 1	

				January 2017 does not distinguish between "existing" and "new" nuclear installations.	
3	General	VDNS	VDNS Principle 1: How does your national requirements and regulations incorporate appropriate technical criteria and standards to address the objective of preventing accidents in the commissioning and operation of new nuclear power plants? For example: can you describe the basic design objectives and the measures you have in place to ensure the robustness and independence of defense in depth measures? Consider for instance inclusion of implementation of Regulatory requirements for: • Robustness of DiD and independency of the levels of DiD; • Design Extension Conditions (DEC); • practical elimination of high pressure core melt scenarios; • achieving a very low core melt frequency; • protecting digital safety equipment against Common Cause Failure (CCF). • External events analysis	Specific question 1.2- Prevention The appropriate technical criteria to address the objective of preventing accidents in the commissioning and operation of new nuclear power plants are directly contained in the new nuclear SUJB Decree " on Requirements for Nuclear Installation Design" in the form corresponding to IAEA SSR2-1 Safety Requirements and to WENRA Reference Levels for existing reactors (2014), also taking into account WENRA Report "Safety of new NPP designs" (March 2013). These documents are followed in the above-mentioned SUJB Decree by requirements for robustness of DiD and independency of the levels of DiD, for implementation of measures for coping with Design Extension Conditions (DEC) scenarios; for measures leading to practical elimination of high pressure core melt scenarios, for requirements leading to balanced design leading to achieving a very low core melt frequency, and for design measures providing protection of digital safety equipment against Common Cause Failure (CCF) in software. The SUJB Decree on "Requirements for Nuclear Installation Design" together with the SUJB Decree No. 378/2016 Coll. on "Siting of nuclear installation" defines requirements for evaluation characteristics and events of the site for nuclear installation, included all possible external natural (also internal and man caused) hazards. The decree determines methods and scope of hazard assessments and the system of nuclear installation resistance against them.	
4	General	VDNS	VDNS Principle 1: How do your national requirements and regulations incorporate appropriate technical criteria and standards to address the objective of mitigating	Specific question 1.3- Mitigation The nuclear legislation coming in force on January 2017 also generally covers most of the principles and safety objectives of the Vienna Declaration. The appropriate technical criteria	

			against possible releases of radionuclides causing long-term offsite contamination and avoiding early radioactive releases or radioactive releases large enough to require long-term protective measures and actions? For example: can you describe the measures you have in place to protect against severe accidents and your accident management arrangements - how do you protect staff during accident management? Consider for instance inclusion of implementation of Regulatory requirements for: • Engineered systems to protect the containment; • engineered systems to cool the molten core; • severe accident management, protection of staff during the accident. • Provision and resilience of Emergency Mitigation Equipment (EME)	to address the objective of mitigating possible releases of radionuclides that cause long term offsite contamination and avoiding early and large radioactive releases are directly contained in the new SUJB Decree "Requirements for Nuclear Installation Design" in a form reflecting the requirements of the COUNCIL DIRECTIVE 2009/71/ amended by Council Directive 2014/87/Euratom of 8 July 2014. This SUJB Decree also contains requirements for engineered systems that protect the containment in several levels of defence in depth, for evaluation of molten core formation risk, for implementation of molten core cooling and handling where necessary, and for creating and exercising severe accident management system according to validated guidelines. Requirements for designing and providing resilient diverse and mobile equipment for these function (EME) are also part of this SUJB Decree. The protection of the acting staff is an integral part of the accident management system.	
5	General	VDNS	VDNS Principle 2: How do your national requirements and regulations address the application of the principles and safety objectives of the Vienna Declaration to existing NPPs?	Specific question 2.1 In spite of the fact that still existing nuclear legislation generally covers the principles and safety objectives of the Vienna Declaration applicable to existing NPPs, the new set of the legislation introduced by the new Atomic Act No. 263/2016 Coll. fully covers all principles and safety objectives of the Vienna Declaration. The new legislation does not formally differentiate existing and new NPPs and applies the requirements contained in principles to all nuclear installation using a graded approach	

				based on principles of practical elimination and reasonable practicability. The legislation has interim provisions that also establish limited periods for the implementation of adequate necessary measures.	
6	General	VDNS	VDNS Principle 2: Do your national requirements and regulatory framework require the performance of periodic comprehensive and systematic safety assessments of existing NPPs – if so, against what criteria/benchmarks are these assessments completed and how do you ensure the findings of such assessments are implemented?	The periodic comprehensive and systematic safety assessment of existing NPPs is required in the scope set by "Periodic Safety Review of Nuclear Power Plants: Safety Guide IAEA Safety Standards Series No. NS-G-2.10, IAEA, Vienna, 2003" (PSR). Until 2016, the requirement was included as a condition of the "Regulatory operations permit", which shall be fulfilled by the licensee. The time limit date was set in a SÚJB decision. The IAEA NS-G-2.10 has been adopted in the Czech regulatory body scope of safety requirements – SUJB Safety Guide, which is the additional document to existing legislation. The new Atomic Act No.263/2016 Coll. defines the use of PSR results – "Safety assessment must be used for the evaluation of important information about the potential risk of exploitation of nuclear energy and to adopt measures to avoid compromising the level of nuclear safety, radiation protection, technical safety, monitoring of radiation situation, radiological events management and security." The new Atomic Act is implemented by the new SÚJB Decree on "Safety Assessment" that contains also the demand to perform PSR. The PSR shall compare the state of safety achieved at the nuclear facility with the requirements of the legislation and the requirements arising from the current level of science and technical standards. The Decree describes more detailed content of safety factors, stages of assessment, and documentation content. The period of PSR is set to a 10-year period for NPPs, research reactors, and radioactive waste repositories. The first PSR on the new NPP/reactor unit shall be made until 6 years from the commencement of operation. The Czech version is published on the website. The scope of PSR includes 14 factors: Plant design, Actual condition of SSCs, Equipment qualification, Ageing, Deterministic and Probabilistic safety analysis, Hazard	

				analysis, Safety performance, Use of experience from other plants and research findings, Organization and administration, Procedures, The human factor, Emergency planning, and Radiological impact on the environment. Every factor has a set of sub factors, which are split into a set of criterions. Strategy and methodologies are evaluated by SÚJB prior to full execution of the PSR (note: the total amount of PSR criteria is 1200). The reports on the review of each of the safety factors are submitted to the regulatory body and should include a safety findings evaluation and, if necessary, proposals of corrective actions and safety improvements. The final report on PSR contains an approved list of corrective actions and safety improvements and a schedule of implementation. The course of implementation of corrective actions and safety improvements is annually reported to SÚJB.	
7	General	VDNS	VDNS Principle 2: Do your national requirements and regulations require reasonably practicable/achievable safety improvements to be implemented in a timely manner – if so, against what risk/engineering objective or limit are these judged and can you give practical examples?	The new Atomic Act No. 263/2016 Coll., entered into force on 1 January 2017, stipulates, as does the previous "old" Atomic Act No. 18/1997 Coll., the obligation: "based on safety assessment (note: established by special Decree) reasonably and practically achievable improvements of safety level". Such an obligation is integrated in the implemented SUJB Decrees: on "Requirements for Nuclear Installation Design", "Siting of nuclear installation", "Nuclear Safety", and "Safety Assessment". The periodic safety review is performed over a 10-year period; Czech NPPs exploit "external event feedback" by using WANO & IAEA exchange of information and have PSA study level 2. Any new findings from PSA and evaluation of the Accident Management which measures efficiency could lead to the proposal of modification. Example: In 2000, the licensee analyzed the resistance of NPP Dukovany constructions/buildings to external hazards. The analysis concluded that cooling towers of type ITTERSON can be destroyed by extreme wind velocity	

				higher than 60,6m/s. The later performed PSA evaluation of external events of CDF<1E-04/year. The analysis was based on IAEA 50-SG-S11A – "Extreme Meteorological Events in Nuclear Power Plant Siting, Excluding Tropical Cyclons" (IAEA 1981) and IAEA Safety Standards Series NS-G-3.4 "Meteorological Events in Site Evaluation for Nuclear Power Plants". The new construction of cooling towers has been proposed. The construction of two new buildings with forced air circulation of service water cooling has been built between 2015 and 2016. The old cooling towers are planned to be redundancy in the future in comparison to fully operated new ones.	
8	General	VDNS	VDNS Principle 3: How do your national requirements and regulations take into account the relevant IAEA Safety Standards throughout the life-time of a Nuclear Power Plant?	The main safety principles that were created by the international community under the umbrella of U.N. IAEA together with OECD NEA have been implemented into the Czech atomic law since the end of the 1980's. The IAEA safety standards have been adopted by the Czech regulatory body as additional documents to existing legislation. Historically the IAEA safety guides, which include safety requirements not covered by legislation, were translated and published as recommendations, meaning not obligatory but recommendable. Recently published/updated new documents also cover the scope of WENRA Reference Levels. The Czech versions are published on the website. The most important safety standards requirements are implemented in the new Atomic Act (No. 263/2016 Coll.) and SÚJB Decrees as a legal claim.	
9	General	VDNS	VDNS general question: What issues have you faced or expect to face in applying the Vienna Declaration principles and objectives to your existing fleet or new build of Nuclear Power Plants?	The Czech Republic is obliged, as a member state of the European Union, to follow the European Directives and, among others, to fulfil the agreements made in this field within the framework of WENRA. This is reflected in updated new Nuclear legislation. The Czech NPPs passed the process of Stress tests, organised by ENSREG after the Fukushima accident, and each plant has its own Action Plan for the resolution of findings. These	

				plans were covered by the National Action Plan from 2012 and all these plans are continuously upgraded and oversighted by SUJB. Due to these facts it is possible to state that most of the duties of the member state of the Vienna Declaration are fulfilled. Nevertheless, there are some problematic fields which need more time and effort, such as the actualisation of the site parameters and threads survey and some aspects of severe accident management; generally these are focused on molten core retention in the containment. For the planned construction of new plants, the issue could be how the designs of new units offered on the market will be able to fulfil the requirements of new Czech legislation.	
10	General	p.12	"The age structure of the SÚJB's employees remains virtually the same. In 2015, the average age of employees was 50.17 years, of that 48.12 was attributed to women and 52.33 to men. The long-term comparison shows that staffing of SÚJB is relatively stabilised but 12 employees retired and other 13 employees terminated their employment with the SÚJB (of which two during the probationary period) at the year end. Such retirements and departures exercised a pressure on the recruitment of the relatively high number of new employees, which can be, particularly in technical positions, resolved only over a long period of time." Does the present education system in the Czech Republic produce the necessary number of possible	The nuclear industry faces a lack of qualified employees not only in the Czech Republic but also within Europe. The statistics show that less and less students are graduating in technology, engineering, and mathematics subjects. The National Action Plan for the Development of Nuclear Energy Sector in the Czech Republic was created at the public policy level. The document follows the updated State Energy Policy. Implementation steps and the roles of the state are described in areas such as regulation in the field of nuclear safety; ensuring a long-term sustainable infrastructure necessary for construction; the long-term safe operation of nuclear installations and their decommissioning; the disposal of nuclear waste of all categories, both from nuclear power and from nuclear research, medicine and industry; RESEARCH IN THE FIELD OF NUCLEAR POWER OR LEARNING AND EDUCATION. SÚJB is aware of higher staff turnover and updated internal procedures on staff qualification to cope with the higher number of retired employees. The goal is to arrange for the mentoring of newcomers provided by senior specialists to the maximum possible extent. Newcomers continue their training based on their Individual Personal Development Plans (IPOR). Training activities of the individual SÚJB employees are specified based on the achieved level of their education,	

			employees with the proper nuclear study background?	duration, and level of experience and professional specialization.	
11	General	Section B	were there any political problem occur when the first NPP built in mid of - 1985?. And what does government and/or public pressure recommendations in order to accomodate lesson learned fron Fukushima accident 2011. Could you elaborate more on political view in the country, beside that for technical aspects point of view	The first NPP in former Czechoslovakia was built in the 1960s as a domestic design with soviet support. The Dukovany and Temelín NPPs were based on soviet designs, but most components (including RPVs) were manufactured in Czechoslovakia. In that time, there were no political problems with Construction Permits, but after the revolution in 1989 and after the split of Czechoslovakia to Czech Republic and Slovakia, the positive public opinion about the peaceful utilisation of nuclear energy did not change in general. After the accidents in Chernobyl and in Fukushima, the public opinion in the Czech Republic evaluated the information relatively prudently, and the positive attitude to the nuclear energy utilisation is stable, independently of the reactive change of public opinion in other European countries.	
12	General	Section B	There are three research reactor in Czech Rep, has Regulatory Body already considered about radiological consequences to the public and environment rather than the four operating NPP. Please explain the radiological consequences to the public and environment on three research reactors	The LVR-15 research reactor in NRI Øež has a maximal thermal power of 10 MWt. The State Office for Nuclear Safety determined the authorized limit for aerial and liquid effluents in the term of annual effective dose of an individual from a critical group of population as 30 μSv/y. The annual effective dose is usually far less than 1 μSv/y. The LR-0 research reactor in NRI Øež and the VR-1 school reactor are zero-power pool-type reactors. Their radiological consequences to the public and environment are negligible.	
13	General	VDNS	Please elaborate on the following aspects related to the VDNS: • How do you define ‘a new nuclear power plant’? • How does your national requirements and regulations	VDNS Principle 1.1 The Nuclear Safety Directive (Council Directive 2009/71/Euratom as amended by Council Directive 2014/87/Euratom) sets out in its Article 8a, a nuclear safety objective which has similar aims to Principle 1 of the VDNS. The nuclear safety objective for nuclear installations applies	

			incorporate appropriate technical criteria and standards to address the objective of preventing accidents in the commissioning and operation of new nuclear power plants? • How do your national requirements and regulations incorporate appropriate technical criteria and standards to address the objective of mitigating against possible releases of radionuclides causing long-term offsite contamination and avoiding early radioactive releases or radioactive releases large enough to require long-term protective measures and actions? • How do your national requirements and regulations address the application of the principles and safety objectives of the Vienna Declaration to existing NPPs? • Do your national requirements and regulatory framework require the performance of periodic comprehensive and systematic safety assessments of existing NPPs – if so, against what risk/engineering objective or limit are these judged and can you give practical examples? • How do your national requirements and regulations take into account the relevant IAEA Safety Standards throughout the life-time of a Nuclear Power Plant?	to nuclear installations for which a construction licence is granted for the first time after 14 August 2014. The new Czech nuclear legislation coming into force on 1 January 2017 does not distinguish between "existing" and "new" nuclear installations. VDNS Principle 1.2- Prevention The appropriate technical criteria to address the objective of preventing accidents in the commissioning and operation of new nuclear power plants are directly contained in the new nuclear SUJB Decree " on Requirements for Nuclear Installation Design" in the form corresponding to IAEA SSR2-1 Safety Requirements and to WENRA Reference Levels for existing reactors (2014), also taking into account WENRA Report "Safety of new NPP designs" (March 2013). These documents are followed in the above-mentioned SUJB Decree by requirements for robustness of DiD and independency of the levels of DiD, for implementation of measures for coping with Design Extension Conditions (DEC) scenarios; for measures leading to practical elimination of high pressure core melt scenarios, for requirements leading to balanced design leading to achieving a very low core melt frequency, and for design measures providing protection of digital safety equipment against Common Cause Failure (CCF) in software. The SUJB Decree on "Requirements for Nuclear Installation Design" together with the SUJB Decree No. 378/2016 Coll. on "Siting of nuclear installation" defines requirements for evaluation characteristics and events of the site for nuclear installation, included all possible external natural (also internal and man caused) hazards. The decree determines methods and scope of hazard assessments and the system of nuclear installation resistance against them. VDNS Principle 1.3 - Mitigation	

			• What issues have you faced or expect to face in applying the Vienna Declaration principles and objectives to your existing fleet or new build of Nuclear Power Plants?	The nuclear legislation coming in force on January 2017 also generally covers most of the principles and safety objectives of the Vienna Declaration. The appropriate technical criteria to address the objective of mitigating possible releases of radionuclides that cause long term offsite contamination and avoiding early and large radioactive releases are directly contained in the new SUJB Decree "Requirements for Nuclear Installation Design" in a form reflecting the requirements of the COUNCIL DIRECTIVE 2009/71/ amended by Council Directive 2014/87/Euratom of 8 July 2014. This SUJB Decree also contains requirements for engineered systems that protect the containment in several levels of defence in depth, for evaluation of molten core formation risk, for implementation of molten core cooling and handling where necessary, and for creating and exercising severe accident management system according to validated guidelines. Requirements for designing and providing resilient diverse and mobile equipment for these function (EME) are also part of this SUJB Decree. The protection of the acting staff is an integral part of the accident management system. VDNS Principle 2.1 In spite of the fact that still existing nuclear legislation generally covers the principles and safety objectives of the Vienna Declaration applicable to existing NPPs, the new set of the legislation introduced by the new Atomic Act No. 263/2016 Coll. fully covers all principles and safety objectives of the Vienna Declaration. The new legislation does not formally differentiate existing and new NPPs and applies the requirements contained in principles to all nuclear installation using a graded approach based on principles of practical elimination and reasonable	

				practicability. The legislation has interim provisions that also establish limited periods for the implementation of adequate necessary measures VDNS Principle 2.2 The periodic comprehensive and systematic safety assessment of existing NPPs is required in the scope set by “Periodic Safety Review of Nuclear Power Plants: Safety Guide IAEA Safety Standards Series No. NS-G-2.10, IAEA, Vienna, 2003” (PSR). Until 2016, the requirement was included as a condition of the “Regulatory operations permit”, which shall be fulfilled by the licensee. The time limit date was set in a SÚJB decision. The IAEA NS-G-2.10 has been adopted in the Czech regulatory body scope of safety requirements – SUJB Safety Guide, which is the additional document to existing legislation. The new Atomic Act No.263/2016 Coll. defines the use of PSR results – “Safety assessment must be used for the evaluation of important information about the potential risk of exploitation of nuclear energy and to adopt measures to avoid compromising the level of nuclear safety, radiation protection, technical safety, monitoring of radiation situation, radiological events management and security.” The new Atomic Act is implemented by the new SÚJB Decree on “Safety Assessment” that contains also the demand to perform PSR. The PSR shall compare the state of safety achieved at the nuclear facility with the requirements of the legislation and the requirements arising from the current level of science and technical standards. The Decree describes more detailed content of safety factors, stages of assessment, and documentation content. The period of PSR is set to a 10-year period for NPPs, research reactors, and radioactive waste repositories. The first PSR on the new NPP/reactor unit shall be made until 6 years from the commencement of operation. The Czech version is published on the website. The scope of PSR includes 14 factors: Plant design, Actual	

				condition of SSCs, Equipment qualification, Ageing, Deterministic and Probabilistic safety analysis, Hazard analysis, Safety performance, Use of experience from other plants and research findings, Organization and administration, Procedures, The human factor, Emergency planning, and Radiological impact on the environment. Every factor has a set of sub factors, which are split into a set of criterions. Strategy and methodologies are evaluated by SÚJB prior to full execution of the PSR (note: the total amount of PSR criteria is 1200). The reports on the review of each of the safety factors are submitted to the regulatory body and should include a safety findings evaluation and, if necessary, proposals of corrective actions and safety improvements. The final report on PSR contains an approved list of corrective actions and safety improvements and a schedule of implementation. The course of implementation of corrective actions and safety improvements is annually reported to SÚJB. VDNS Principle 2.3 The new Atomic Act No. 263/2016 Coll., entered into force on 1 January 2017, stipulates, as does the previous "old" Atomic Act No. 18/1997 Coll., the obligation: "based on safety assessment (note: established by special Decree) reasonably and practically achievable improvements of safety level". Such an obligation is integrated in the implemented SUJB Decrees: on "Requirements for Nuclear Installation Design", "Siting of nuclear installation", "Nuclear Safety", and "Safety Assessment". The periodic safety review is performed over a 10-year period; Czech NPPs exploit "external event feedback" by using WANO & IAEA exchange of information and have PSA study level 2. Any new findings from PSA and evaluation of the Accident Management which measures efficiency could lead to the proposal of modification. Example: In 2000, the licensee analyzed the resistance of	

				NPP Dukovany constructions/buildings to external hazards. The analysis concluded that cooling towers of type ITTERSON can be destroyed by extreme wind velocity higher than 60,6m/s. The later performed PSA evaluation of external events of CDF<1E-04/year. The analysis was based on IAEA 50-SG-S11A – "Extreme Meteorological Events in Nuclear Power Plant Siting, Excluding Tropical Cyclons" (IAEA 1981) and IAEA Safety Standards Series NS-G-3.4 "Meteorological Events in Site Evaluation for Nuclear Power Plants". The new construction of cooling towers has been proposed. The construction of two new buildings with forced air circulation of service water cooling has been built between 2015 and 2016. The old cooling towers are planned to be redundancy in the future in comparison to fully operated new ones. VDNS Principle 3 The main safety principles that were created by the international community under the umbrella of U.N. IAEA together with OECD NEA have been implemented into the Czech atomic law since the end of the 1980's. The IAEA safety standards have been adopted by the Czech regulatory body as additional documents to existing legislation. Historically the IAEA safety guides, which include safety requirements not covered by legislation, were translated and published as recommendations, meaning not obligatory but recommendable. Recently published/updated new documents also cover the scope of WENRA Reference Levels. The Czech versions are published on the website. The most important safety standards requirements are implemented in the new Atomic Act (No. 263/2016 Coll.) and SÚJB Decrees as a legal claim. VDNS General The Czech Republic is obliged, as a member state of the European Union, to follow the European Directives and,	

				among others, to fulfil the agreements made in this field within the framework of WENRA. This is reflected in updated new Nuclear legislation. The Czech NPPs passed the process of Stress tests, organised by ENSREG after the Fukushima accident, and each plant has its own Action Plan for the resolution of findings. These plans were covered by the National Action Plan from 2012 and all these plans are continuously upgraded and oversighted by SUJB. Due to these facts it is possible to state that most of the duties of the member state of the Vienna Declaration are fulfilled. Nevertheless, there are some problematic fields which need more time and effort, such as the actualisation of the site parameters and threads survey and some aspects of severe accident management; generally these are focused on molten core retention in the containment. For the planned construction of new plants, the issue could be how the designs of new units offered on the market will be able to fulfil the requirements of new Czech legislation.	
14	General	Summary	What is the position of the Czech Republic on the special rapporteur challenges of the CNS6, as far as they are applicable to the situation in Czech Republic?	A very important step in the modernisation of the legal framework and regulatory approach and its harmonisation with other countries (Contracting Parties to the CNS) was the issue of completely new nuclear legislation, influenced also strongly by international activities after the Fukushima Accident. This legislation introduces new approaches like safety culture, transparency, and openness to SUJB regulatory practice. The Czech Republic is also involved in many other international activities. The most important of these, for the reduction of inconsistencies between objectives, priorities, and implementation of schedules for safety improvements between countries, are actually the activities of WENRA in Europe in the harmonisation of safety requirements and its implementation on existing and new reactors in European countries and the activities of ENSREG in common Peer-review of the National Action Plans.	

				As written in Annex 9 of the National Report, the update of the Action Plan of the Czech Republic has been prepared and reflects the results of the peer reviews of the Action Plans organized by the ENSREG in April 2013 as well as the outcomes of the negotiations between ÈEZ, a. s. and SÚJB. The Action Plan of the Czech Republic is a living document which will be revised and continuously updated, taking into account the latest state of knowledge. The ENSREG also organises common activities according the European Union's Nuclear Safety Directive 2014/87/EURATOM (NSD) requiring the member states to undertake topical peer reviews (TPR) every 6 years with the first starting in 2017. For each review, the directive requires the following: (a) a national assessment to be performed, based on a specific topic related to nuclear safety of the relevant nuclear installations on their territory; (b) all other Member States, and the Commission as observer, to be invited to peer review the national assessment referred to in point (a); (c) appropriate follow-up measures to be taken of relevant findings resulting from the peer review process; (d) relevant reports to be published on the above mentioned process and its main outcome when results are available.	
86	General	general	Could you please explain what you consider to be the most important actions that Czech Republic will take based on the IAEA Fukushima summary report?	If the IAEA Fukushima Summary Report means the "THE FUKUSHIMA DAIICHI ACCIDENT REPORT BY THE DIRECTOR GENERAL", it is possible to confirm that the Czech Republic follows the published "IAEA Action Plan on Nuclear Safety" actively in all basic points: • SAFETY ASSESSMENTS IN THE LIGHT OF THE ACCIDENT AT TEPCO'S FUKUSHIMA DAIICHI NUCLEAR POWER STATION (realised as part of the ENSREG Stress Tests and continues in the Periodic Safety Review activities). • IAEA PEER REVIEWS (realised through the IAEA Review	

				Missions, currently by the Follow-up IRRS Mission). • EMERGENCY PREPAREDNESS AND RESPONSE (the system was reviewed and necessary corrective measures are implemented in the National Action Plan (NAcP). • NATIONAL REGULATORY BODIES (personnel alteration, education of personnel, building of independent TSO). • OPERATING ORGANIZATIONS (new legislation implements the adequate duties of the Licensee to have adequate personal resources for fulfilling its duties according the new nuclear legislation). • IAEA SAFETY STANDARDS (SUJB is involved in development of the IAEA Safety standards and in its implementation into Czech nuclear legislation). • INTERNATIONAL LEGAL FRAMEWORK (SUJB is involved in activities connected with Conventions between Member states and in its implementation to Czech nuclear legislation). • MEMBER STATES PLANNING TO EMBARK ON A NUCLEAR POWER PROGRAMME (SUJB, as a state utilising nuclear energy since the 1950s, is involved in support of states embarking on a nuclear power program, not only on activities organised by IAEA, European Commission or OECD, but also on a bilateral basis. • CAPACITY BUILDING (SUJB supports the IAEA activities on this field). • PROTECTION OF PEOPLE AND THE ENVIRONMENT FROM IONIZING RADIATION (the system of radiation protection in Czech Republic follows proven international standards, and the infrastructure of radiation protection in the country is stabilised). • COMMUNICATION AND INFORMATION DISSEMINATION (the Czech Republic, with the assistance of the IAEA Secretariat, cooperates on strengthening the emergency notification system, reporting information, and sharing arrangements and capabilities, including transparent communication to the public.	

				• RESEARCH AND DEVELOPMENT (important stakeholders have their own or contracted research and development support. Also, the independent research and development support of the SUJB is also finally resolved for the Section for Nuclear Safery (the Radiation Protection Section historically has its own research and development support organisation). All the measures identified during assessment after the Fukushima Accident were implemented under the National Action Plan, since thez were considered to be very important for safety reasons. We consider all the measures that were implemented after Fukushima under the National Action Plan to be very important.	
15	General	Summary, Page 12	Czech Republic mentioned about retirement of 12 SUJB employees. How was it ensured that the knowledge and experience of these workers were transferred to other SUJB employees and still remained in SUJB?	SÚJB is aware of the higher staff turnover and updated internal procedures on staff qualification to cope with the higher number of retired employees. The goal was to arrange for the mentoring of newcomers provided by senior specialists to the maximum possible extent. There have been several cases of unforeseen early retirements; in such cases, complex formal training of newcomers was arranged. Further improvements of knowledge management activities are in progress.	
16	General	General	The President's report from the 6th CNS meeting indicates that the Fukushima Special Rapporteur's first challenge is trying to reduce inconsistencies between objectives, priorities and implementation of schedules for safety improvements between countries. There is no explicit statement in the report submitted by the Czech Republic to address this challenge. Please	A very important step in the modernisation of the legal framework and regulatory approach and its harmonisation with other countries (Contracting Parties to the CNS) was the issue of completely new nuclear legislation, influenced also strongly by international activities after the Fukushima Accident. This legislation introduces new approaches like safety culture, transparency, and openness to SUJB regulatory practice. The Czech Republic is also involved in many other international activities. The most important of these, for the reduction of inconsistencies between objectives, priorities, and implementation of schedules for safety improvements	

			explain how this challenge has been addressed.	between countries, are actually the activities of WENRA in Europe in the harmonisation of safety requirements and its implementation on existing and new reactors in European countries and the activities of ENSREG in common Peer-review of the National Action Plans. As written in Annex 9 of the National Report, the update of the Action Plan of the Czech Republic has been prepared and reflects the results of the peer reviews of the Action Plans organized by the ENSREG in April 2013 as well as the outcomes of the negotiations between ÈEZ, a. s. and SÚJB. The Action Plan of the Czech Republic is a living document which will be revised and continuously updated, taking into account the latest state of knowledge. The ENSREG also organises common activities according the European Union's Nuclear Safety Directive 2014/87/EURATOM (NSD) requiring the member states to undertake topical peer reviews (TPR) every 6 years with the first starting in 2017. For each review, the directive requires the following: (a) a national assessment to be performed, based on a specific topic related to nuclear safety of the relevant nuclear installations on their territory; (b) all other Member States, and the Commission as observer, to be invited to peer review the national assessment referred to in point (a); (c) appropriate follow-up measures to be taken of relevant findings resulting from the peer review process; (d) relevant reports to be published on the above mentioned process and its main outcome when results are available.	
17	General	Pages 11,, 171 - 188	Summary and Annex 1 According to the Summary (page 11) a "diverse make-up system of the depressurized primary circuit and spent fuel pool with connection to the boron concentrate tanks and the tanks of low-pressure	In the case of Temelín, in Annex 1 it is item 171, modification No. D338 Diverse system for feeding the depressurised primary circuit, spent fuel storage pool and GA201. In the case of Dukovany, in Annex 1 it is Changes implemented within the "Modernization of Dukovany NPP"	

			emergency system pumps" has been implemented on all units both at the Dukovany NPP and Temelin NPP. However, such a system is not described in the Report or in Annex1 "Description of the Dukovany and Temelín NPPs, and schedule of the performed safety improvements". Please clarify which positions in Annex 1 "Modernisation changes" reflect the Summary's statement that a "diverse make-up system of the depressurized primary circuit and spent fuel pool with connection to the boron concentrate tanks and the tanks of low-pressure emergency system pumps" has been implemented at both Dukovany NPP and Temelin NPP.	only, "Modernization of Dukovany NPP" was a program completed in 2011. Since that time, the modifications have been done in the work order. So this is an opportunity to change the style of Annex 1. The modification you are looking for is 6834 Replenishment of reactor and spent fuel storage pool during station black out, which was implemented in 2015 as an item of the National Action Plan after Fukushima.	
18	General	Pg 12	The report stated that in 2015 there were departures of 25 staff. Was SÚJB able to retain sufficient resources to effectively implement the nine (9) priorities for 2016 that are listed in the CNS report summary?	Yes, SÚJB was able to retain sufficient resources and implement all priorities for 2016. SÚJB managed to constantly increase the total number of employees, and a further increase is planned. SÚJB is aware of the higher staff turnover and updated internal procedures on staff qualification to cope with the higher number of retired employees. The goal is to arrange for the mentoring of newcomers provided by senior specialists to the maximum possible extent.	
19	General	Annex 3	(1) For Temelin NPP, are any of the 14 areas for improvement identified in the 2015 WANO peer review mission in similar areas as the 17 proposals for improvement from the 2013 WANO peer review follow-	(1) The 2013 WANO Peer Review follow-up identified some "open" AFI (level B – substantial performance improvement in this area for improvement has been achieved, however, the plant management shall maintain coordination and control of the efforts aimed at improvements in this area) and they were still in the phase of resolving even in 2015.	

			up? (2) If yes, what actions is the regulator taking to avoid re-occurrences?	(2) It is not question of re-occurrences, some improvements simply take time. Explanatory note: the SUJB is generally empowered to impose corrective measures and enforce their adoption, including sanctions in case of failure to observe the measures, by the Atomic Act. The procedure is determined by the Code of Administrative Procedure. Internal procedures of the SUJB VDS029 “Guideline on the administrative procedure of imposing penalties” and VDS038 “Administrative procedure describing procedures of imposing of penalties” provide internal guidance.	
20	General	Annex 3	One of the items from the 2013 corporate OSART was "the corporate organization should reinforce its plant modifications process to ensure that management of temporary modifications is conducted in a safe, reliable and effective manner." What has been done to address this item?	The rules for the Management of Modifications, including Temporary Modifications, are set in the Corporate Management level Documentation (ÈEZ_PP_325). This procedure defines requirements for the evaluation and management of the modifications as well as requirements for the evaluation of the processes base on the performance indicators. These all are valid for both NPPs according to international requirements (IAEA, NS-G-2.3, WANO). These rules are adjusted through specific procedures to each NPP - Temelín NPP manages the Temporary Modifications according to the ÈEZ_ME_ETE_0036. The Temporary Modifications process was verified by the Mission of WANO Peer Review 2016 in the Temelín NPP. - Dukovany NPP manages the Temporary Modifications according to the ÈEZ_ME_EDU_0036. Detailed analyses of the Assessment and Management System were done in 2016. The system for Temporary Modification management is adjusted to reflect the findings of the international missions (WANO, OSART, Corporate OSART) and the internal audit (1506 - BP), as well as experience from ETE. The ongoing (01/2017) Revision of the ÈEZ_ME_EDU_0036	

				clearly defines responsibility for the activities associated to the Temporary Modification as well as ETE and adjusts the assessment of these changes.	
21	Article 6	Annex 3	Reference is made throughout the report on the results of various peer reviews, including the recently completed 2015 follow-up OSART. To what degree are the full peer review results published on the State Office for Nuclear Safety (SUJB) website or elsewhere?	The regulatory website shows only information about OSART Corporate: https://www.sujb.cz/aktualne/detail/clanek/maae-proverila-jadernou-bezpecnost-cez-na-korporatni-urovni-vubec-poprve/ Basic information about ongoing missions (not only OSART) are usually published by the nuclear plant in newspapers and other media, especially in the vicinity of the power plants.	
22	Article 6	p. 7	There is no information about the two interim spent fuel storage facilities and the radioactive waste repository. Has there been any significant safety upgrading of these facilities? Can you give an overview of programmes and measures for the safety upgrading of those nuclear installations?	We have no information about programmes or measures for the safety upgrading of those nuclear installations now. Additional information is available in the "National Report under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management" – for example Chapters: 4.1.1.2 (Interim Spent Fuel Storage Facility /ISFSF/ Dukovany and Interim Spent Fuel Storage Facility /ISFSF/ Dukovany, 4.1.2.2 (SFSF Temelín), 8.2.3.3 (RAW Disposal Facility Dukovany) etc.	
23	Article 6	Corporate OSART mission 2013, Cez (annex	What are the key factors of the Nuclear Knowledge Transfer and Retention Programme?	1) Knowledge identification and prioritization Within each knowledge area, critical knowledge is identified and captured. This is essential for the successful and safe operation of the unit. Both positive and negative experiences are considered. 2) Assessment Uniqueness and specificity of the knowledge in terms of the degree of risk of loss is the main assessment output. The first priority is to identify, capture and retain critical knowledge held by employees nearing retirement. First, the Knowledge@Risk List and Expert@Risk List with the following structure is created: - Knowledge description (definition) - Knowledge area (relation to processes and units as:	

				maintenance, operations, physics etc.) - Knowledge uniqueness (scale 1-5) - Applicability for future (scale 1-5) - Knowledge holder (expert name) - Risk of loss (scale 1-5, i.e. due to retirement) - Recommended tool for knowledge capture 3) Preservation, Sharing and Use the following tools are used: - Debriefing - Experience Reports - Succession plans - Expert profiles - Exit meetings - KM Portals & KM Databases	
24	Article 6	page 18 and 1/1	The report refers to the national action plan of 2002 for LTO ans Stress Test. According to annex 9 it will be revised continuously and updated taking into account the latess state of knowledge. Please indicate how the transposition of directive 2014/87/EURATOM and the implementation of the VDNS will be incorporated into an updated action plan? Could you elaborate on possible new back-fitting measures that may become necessary?	All requirements of the directive 2014/87/EURATOM and the implementation of the VDNS are incorporated in new Czech legislation. The licensee is obliged to fulfil its requirements in terms of interim provisions done by the new Atomic Act No. 263/2016 Coll. coming in force on January 2017. Generally in these terms, the action plans and backfitting measures shall be implemented. It is very difficult to predict the approaches and technical measures the licensee will use to fulfil the new legislation requirements.	
25	Article 6	pages 18, 23	This section indicates that numerous measures have been implemented to modernize and improve the safety of nuclear power plants. One of the measures is the replacement of nuclear fuel, including new core design. Could you provide more detailed	Originally, Westinghouse fuel VVANTAGE-6 was used (2000-2011). TVSA-T fuel (TVEL) is used at NPP Temelín now. It is modified TVSA fuel (9 grid only). In 2016 we loaded 42 FAs of TVSA-T, mod.1 on both Units. TVSA-T, mod. 1 has different springs in top nozzles (wire diameter is 5.1 mm instead of 5.6 mm), modified anti-debris filter (ADF thickness is 5 mm instead of 8 mm) and modified support plate in bottom nozzle. We are going to load TVSA-T, mod.2	

			information on this? What fuel is used now and what changes were made to the core design?	in 2018. TVSA-T, mod.2 will have 12 grids, fuel pellets without the hole, thinner cladding, modified bottom nozzle and 3 intermediate flow mixers (IFM). Core design and reload safety evaluation is performed by a utility (with support and verification by Czech organization) based on our own methodology, adapted from the vendor's methodology. The core design is typical L4P (low low-leakage loading pattern) – in standard cycles.	
26	Article 6	6.3 and 6.4	The report states that the Dukovany nuclear power plant (NPP) and Temelin NPP have been subjected to an extensive international safety assessment programme. However, the results of the safety assessment programme have not been discussed in the report. Please provide further information on the key findings from the safety assessments, concerning the ageing management of safety related systems which constitute a pressure boundary, in general terms this would include components such as pipework and vessels.	From the beginning, the Dukovany NPP has actively participated in international programmes organised by IAEA in the field of Ageing Management and LTO (in the past, SALTO [Safety Aspects of LTO] Programme, now ongoing IGALL [International Generic Ageing Lessons Learned] Programme) and participates continuously therein. In order to determine whether the preparation of LTO in the Dukovany NPP takes place according to the world's best practice and IAEA safety standards, the so-called IAEA Pre SALTO Peer Review mission was invited in 2009, followed by the so-called IAEA Follow-Up SALTO PR mission in 2011. At the same time, a full-scope SALTO PR mission was invited in 2014 before proceeding to the LTO, which confirmed that all findings of the SALTO 2008 mission were resolved, also defining six proposals and two recommendations for improvement in the final report. On this basis, the Dukovany NPP prepared 24 corrective measures and implemented those measures by September 2016. An IAEA Follow-Up SALTO PR mission took place in the Dukovany NPP between 30 October and 4 November 2016. This mission evaluated the status of corrective measures for Dukovany NPP LTO. The mission concluded 21 of 24 corrective measures as completed, and found satisfactory progress and recommended continuing the solution for three corrective measures. One corrective measure concerns the LTO Strategy while the other two measures concern the construction field. A time schedule is prepared for tzhe	

				gradual implementation of the remaining corrective measures. The Ageing Management (AM) system for safety relevant systems, structures, and component in the Dukovany NPP is set according to the IAEA recommendations, requirements of the State Office for Nuclear Safety, and with the use of the world's good practice (EPRI). The mission stated the following for RPV (quote from the final report): The RPV extended surveillance programme, implemented since 2010, is assumed to meet, with defined margins, the requirements for providing the necessary data for lifetime extension of individual reactor pressure vessels of the plant to at least 60 years. This programme was developed on the basis of up-to-date knowledge about neutron fluence on the wall of the reactor pressure vessel and to the surveillance specimens of individual units, which the team considers to be a good performance. The Component Specific Ageing Management Programmes are prepared for questioned passive systems in the primary circuit pressure boundary, which are evaluated on an annual basis, and the results are presented in the Safety Analysis Report and the System Health Reports. The programmes listed below are currently implemented in the Dukovany NPP: Component Specific Ageing Management Programme for Reactor, ÈEZ_TST_0033 Component Specific Ageing Management Programme for Pressurizer (KO), ÈEZ_TST_0006 Component Specific Ageing Management Programme for Steam Generator (SG), ÈEZ_TST_0015 Component Specific Ageing Management Programme for Reactor Coolant Pump (RCP), ÈEZ_TST_0004 Component Specific Ageing Management Programme for Loop Isolating Valve (HUA), ÈEZ_TST_0021 Component Specific Ageing Management Programme for	

				Pipelines and Sections BT1, ÈEZ_TST_0023 Component Specific Ageing Management Programme for Boundary ValvesBT1 JE, ÈEZ_TST_0034	
27	Article 7	p.26	To what degree has or will the public be consulted with regarding the draft Atomic Act and associated regulations and its subsequent implementation?	The draft of the Atomic Act went through two independent rounds of intragovernmental discussions and consultations. During these consultations, not only were the official state authorities asked for their opinion, but also stakeholders in the area, including the most important operators of the nuclear facilities, expert and scientific associations, and chambers and universities. Moreover, the drafts were freely (publicly) accessible on the governmental website, and the general public was informed about its preparation through media channels. Through these means, anybody could send her/his comments and recommendations. Regarding the secondary (implementing) legislation, the process of preparation involved analogical steps – drafts of the regulations were sent for comments to the stakeholders and were made publicly accessible through a governmental webpage (https://apps.odok.cz/veklep).	
28	Article 7.1	p.25	"In the area of radioactive waste management, the Act entrusted responsibility for final disposal of all radioactive wastes to the state and ordered to the Ministry of Industry and Trade of the Czech Republic to establish a new governmental organization for the purpose – the Radioactive Waste Repository Authority (SÚRAO)." Which nuclear installations are in the scope of the Radioactive Waste Repository Authority (SÚRAO)? Why was it necessary to establish a Radioactive Waste Repository	SÚJB, as an independent regulatory body, cannot operate any installation which it regulates (see Requirements 3 and 4 of GSR Part 1). Therefore a waste disposal organisation – SÚRAO was established by the Ministry of Industry and Trade in 1997. SURAO operates radioactive waste repositories (medium and low-level radioacitve near surface and undergroud) and is responsible for the preparation of a deep geological repository for high level radioacitve waste. He holds a permit to operate the stores, as well as eg. CEZ group holds a license to operate ITO. The role of SÚRAO is established in the Atomic Act (paragraph 113).	

			Authority separated from SÚJB? On the organization chart of the SÚJB we may see that there exists a "Spent fuel and radioactive waste management unit". Where is the borderline between the activities of SÚJB and SÚRAO referring to the radioactive waste repositories?		
29	Article 7.1	Section B	How does SÚJB elaborate the lessons learned from Fukushima Dai-Ichi nuclear accident in further developing its regulatory framework?	SUJB developed a completely new set of nuclear legislation (see chapter 6.2 of the National Report) which entered into force in January 2017. It incorporates Council Directive 2009/71/EURATOM of 25 June 2009 as amended by Council Directive 2014/87/EURATOM, establishing a community framework for the nuclear safety of nuclear installations and other principles corresponding to global good practice. The new legislation contains the requirement for the practical elimination of early and large radiation release that will not allow for local or time restrictions for the immediate measures imposed. This requirement will be also applied to currently operated units to a reasonably practicable extent. The requirements for safety of nuclear installations are based on the last version of IAEA SSR2-1 and on WENRA Reference Levels 2014 (particularly WENRA Guidance Document Issue T: Natural Hazards Head Document, 2015) which reflect the lessons learned from the Fukushima Daiichi nuclear accident.	
30	Article 7.1	p. 25	How the licensee (operator) ensures its responsibility for the activities of contractors and sub-contractors whose activities might affect nuclear safety (qualified staff)?	Control and supervision of suppliers For safety-relevant items, execution of the outsourced activities is subject to control and supervision by a licensee. The inspection system of ÈEZ, a. s. includes, in all stages of the implementation of supply activities, the following barriers so as to identify weaknesses to the maximum extent and minimise their negative consequences:	

				• Technical surveillance of the quality of supply activities; • Customer audits; • Supervision of compliance with safety requirements; • Customer audits of suppliers. Technical surveillance of the quality of supply activities during implementation of the care of assets The technical surveillance during the execution of supply activities on the equipment owned including controls of compliance with the requirements for specified qualification, as well as customer audits of the quality of supplies and services, including verification and evaluation of the outputs of special processes, are primarily ensured by the Equipment Manager (Care of Assets Department) – as the final customer responsible for the status of the equipment. The Equipment Management Departments (Care of Assets Department – Dukovany NPP Quality Control and Temelín NPP Quality Control) are organisationally set and provided with powers to enable the System Manager, on the basis of the knowledge of the current status of the equipment, to make qualified decisions and actively influence equipment reliability. At the same time, he/she is assigned unique roles and responsibilities, with emphasis on system approach and strengthening the monitoring of suppliers. Technical surveillance of the quality of supply activities during projects/specific actions of NPP The actual implementation is checked within the individual actions (planned action outside the preventive maintenance programme) and the assessment of design changes (analyses, expertises, etc.). The checks are ensured by the supplier under the contract concluded and under the supervision by an employee of ÈEZ, a. s. The technical surveillance by the investor during projects/specific actions of NPP (equipment configuration change) is ensured by the Project Preparation and Implementation Department. Its staff shall carry out the technical surveillance of the supplier throughout the course of	

				the work. Customer audits Customer audits are assigned to workers and departments not directly executing the activity to the audited (production, delivery, repair, assembly), in the form of presence at the inspection, test, revision, etc.). The customer audits are aimed at compliance with the approved technical documentation, in particular the fulfilment of specified requirements for ensuring technical safety in the implementation of production, maintenance, specific actions or at the input checks of a supplier. The audits are conducted on the basis of witness and hold points in the Inspection and Test Programme. The customer audit of the input check of a supplier involves the controls of supplier's activity in carrying out the input check and the checks of storage of the technical equipment ordered and purchased directly by the supplier. Supervision of compliance with safety requirements • Field of technical safety The Technical Safety Department is responsible for technical supervision and assessment of compliance with the safety requirements. Its role is in ensuring independent verification of the effective setting of roles and performance of the necessary activities in ensuring the technical safety of technical equipment and special processes in terms of compliance with the requirements of external legislation and binding codes and standards, internal regulations of ÈEZ and the corrective measures taken. • Field of management inspections Inspection activities aimed at verifying safety in all areas, system functionality, state of equipment and premises, safe behaviour of supplier personnel, and compliance with safety culture in the Dukovany NPP and the Temelín NPP. • Field of radiation protection	

				The staff of the Radiation Protection Department shall carry out the control of compliance with the principles of Radiation Protection, which includes the control of the activities of supplier's workers in terms of radiation protection principles and requirements (compliance with the control documentation, compliance with the use of specified PPE, compliance with the measures ordered under the R order and PZRO, compliance with the regime of changing rooms and contamination checkpoint, etc.). Customer audits of suppliers The customer audits of suppliers shall be carried out before entering into a contractual relationship with a supplier as well as after entering into a contractual relationship with a supplier. The objective of the customer audits of suppliers of ÈEZ, a. s. is to verify compliance with the requirements for the quality control system pursuant to the Atomic Act No. 236/2016 Coll., and the related Decrees, professional competence and qualification of existing and potential suppliers of safety relevant items for the field of NPP, the so-called classified equipment and the services provided on classified equipment in accordance with statutory regulations, harmonised technical codes and standards as well as specifications of customer requirements.	
31	Article 7.2.1	p. 30	There is no information about the process of establishing and revising regulatory requirements. Can you give an overview of this process?	The process of Regulatory requirements is described basically in Chapter 7 of the National Report, nevertheless some specific aspects are missing. The legislative process has changed during the 19 years of the validity of Atomic Act No.18/1997. The sources for modernised nuclear legislation were generally the EURATOM Directives, international recommendations issued by the IAEA, the European Union legislative framework, recommendations of WENRA for regulation of new and existing Nuclear Power plants safety, and the feedback from experience with existing legislation and from the experience of the international nuclear community.	

				The SUJB created a team of its own experts (led by SUJB lawyers) for planning works. The concept of a new legislative framework was prepared and agreed upon by management and specific working groups established for individual documents. Completed drafts, prepared by SUJB experts, were reviewed internally by appropriate experts and SUJB lawyers. These documents were peer-reviewed by experts from the regulated industry, and their remarks and recommendations were adequately implemented. Finalised documents were opened for public reading and for review on other relevant state institutions and offices. The results of this process were implemented into final versions before being read in the Governmental Legislative Board and in Parliament. The Atomic Act afterwards passed the legal procedure described in chapter 7.1.1 of the National Report, and the SUJB Decrees were finalised for issue by SUJB. Some of the Decrees which could have specific economic consequences due to the regulation of industry were translated into English and put to the European Commission for investigation of influence on competition.	
32	Article 7.2.2	page 30-32	This section of the national report indicates that SÚJB issues licenses in case of reconstruction or any changes that influence nuclear safety of the power unit. It is indicated also that equipment of the power units was subjected to numerous modernizations, such as I&C, cable routes, radiation monitoring equipment. Does SÚJB issues separate licenses for each of the planned modernization measures and what is the general procedure for issuing such a license? Are on-site	Any modification and change of the nuclear installation design/project or operation is subject to Atomic Act regulation. The atomic act defines a change as: 1. A change affecting nuclear safety, technical safety and physical protection of the nuclear facility with an impact on the range of performance of safety functions, or the replacement of a safety significant device or media in systems of selected equipment classified as safety class 1 or 2 in the List of Selected Equipment, 2. A change in the use of nuclear energy: realized on selected equipment with no impact on safety, organizational change, or change of licensee. The first bullet type of change is subject to SÚJB permit according to art. 9 of the Atomic Act. Nevertheless, any change shall be assessed according to the requirements of the Decree on Safety Assessment, and	

			inspectorates in the Czech Republic authorized to issue such licenses?	changes defined in bullet 2 shall be reported to SÚJB for evaluation. The general procedure of the SÚJB decision-making process is stipulated by the Administrative Act, the internal process is based on internal procedure containing basic criteria. The decision-making process is executed in headquarters. The site inspectors' role is to perform inspections and support the decision-making process as members of the evaluating team.	
33	Article 7.2.3	Page 22	Are inspectors entitled to perform inspections at the producers or vendors of important safety equipment for NPP's, if conclusions of such an inspection may have an impact on nuclear safety?	The new Czech Atomic Act defines the range and subject of regulatory body activities administered by SUJB for nuclear regulation. These regulatory activities are described in detail in paragraph 2 of the Act No. 255/2012 Coll., on surveillance, regarding the peaceful exploitation of nuclear energy and ionizing radiation. The subject of this inspection is to verify that the requirements appointed to the producer or vendor by regulatory body decisions according to and/or within the scope of atomic law are met. Paragraph 200, item 2, of the new Czech Atomic Act sets up the complete list of the licensees who are subject of the regulation. These subjects, according to atomic law, have rights to utilize all that the law permits, while on the other side they have responsibilities to enable the regulatory body to perform surveillance on how the licensee adheres to the relevant rules and regulations. Within this list of licensees which are the subject of the regulation under letter c), item 2, paragraph 200 of the Atomic Act, there are also persons performing activities within the exploitation of nuclear energy and ionizing radiation which needn't be regulated according to this atomic law. Inspections, according to paragraph 201, item 1 of the new Atomic Act, are executed by SUJB inspectors who are designated and dismissed by SUJB chairmen who are the owners of paramount position within the framework of the EU Council. These inspectors are entitled to perform inspections all of licensees, including their producers and vendors of safety equipment important for NPP's.	

34	Article 7.2.4	7.2.4, Page 34	In terms of violation of license conditions, SUJB is authorized to impose some obligation or penalties. Whether an event of this kind took place in the last few years in any nuclear power plant in Czech Republic and SUJB impose penalty? If yes, how big were this penalties and what violations concerned?		
35	Article 8	p.39	A challenge identified for the Czech Republic at the 6th Review Meeting was the development of a long-term strategy for human resources. The Czech National Report flags this as a priority for 2016 but provides very little information. To what degree has a long-term strategy been developed to address human resources at SUJB?	A long-term strategy for human resources still remains a priority for the State Office for Nuclear Safety; its preparation is currently in the final stage. Preparation of the Strategy has been impacted by the necessity of implementation of a new state service act. Within the preparation of the Strategy, the internal regulation VDS 039 - the system of training, education and assessment of employees of the State office for nuclear safety has been updated. Competency profiles have also been created, and the competency maps are being newly processed.	
36	Article 8	P40	It is indicated that Integrated Management System is a rule of management of all SUJB staff. To clarify the element of continuous improvement of enhancing effectiveness of diverse regulatory activities, please elaborate following questions; -Is the management system to enhance effectiveness of regulatory system by analyzing practical work of safety reviews or regulatory inspections established? -Is there a division which comprehensively administrates the management system and has power	A) The management system is established to enhance effectiveness by the thorough analysis of the activities of inspectors. Each section regularly evaluates performances and activities of inspectors. Annual settings of goals and objectives always reflect these results of evaluation. Priorities of the State Office for Nuclear Safety are based on these settings of goals and objectives, and the achievement of these goals and objectives is evaluated every year. B) The management system is comprehensively administrated by the Department of Strategy which is directly subordinated to the director of the Section of Management and Technical Support. The required qualification for employees of the department is a university education (a master's degree in law or nuclear physics is currently required).	

			for taking initiative of improvement? If it exists, what qualification required for the staff of such division?		
37	Article 8	P18	Past back-fitting is mentioned in Article 6. Is this a mandatory procedure to comply revised regulatory requirements? Is the back-fitting existing as effective regulatory system in current regulation? In case of back-fitting is an effective regulatory system, and renovation of Dukovany NPP units 1to 4 are performed under the back-fitting system, please elaborate outline of regulatory procedure of this renovation.	The legal requirements for past backfitting, mentioned in Article 6, were part of the former Atomic Act No. 18/1997, Coll. These requirements were only very general, requiring the licensee to follow the current state of science and technology. Nevertheless, the SUJB was able to negotiate a very serious modification program with the Licensee (partly on a voluntary basis) based on the Periodic Safety Review and independent reviews and mission findings as described in Article 6. Currently issued new nuclear legislation gives a strict legal basis for the safety review and for backfitting the system; it follows the process established in the past and extends its scope, generally in coping with Design Extension Conditions.	
38	Article 8	Pages 42- 43	The Czech regulatory authority (SUJB) makes effective use of an external website to provide information to the public and other stakeholders on an extensive range of topics associated with its role. The website outlines at a high level the approach to nuclear safety inspections and assessments but does not at this stage provide information on findings from these activities. In order to further improve openness and transparency, please clarify if SUJB plan to publish any summary findings from their	The external website of the State Office for Nuclear Safety provides information, for example, on planned inspections and on issued licences/permits. Summary information on inspections, significant findings, and the penalties imposed is provided in the Annual Report of the State Office for Nuclear Safety. Information on these topics is continuously published on the external website under “Aktuálnì” or under the English equivalent “News” – for example, information on issuing serious decisions (for example, recent licence for further operation of Dukovany NPP Unit 1) or serious findings and issues (for example, information on issues concerning weld joints in both nuclear power plants).	

			nuclear regulatory inspection and assessment activities.		
39	Article 8	Page 35, 164 - 165	Articles 8 and 19 Within Articles 8 and 19 of the report, it states the requirement for operators to report selected events to the regulator and describes how operating experience is collected by and shared between the operators of nuclear facilities. However, it is not clear from the report how much, if any, of this wider operating experience is shared with the regulatory body SUJB. Also, there is no statement in the report about the any learning from international events by the regulator. Please explain what other operational experience is available to, and used by, the regulatory body (SUJB), in addition to the information on selected events reported by operators?	SÚJB experts regularly review and examine information from IAEA IRS and EU Clearinghouse, and thoroughly discuss relevant events with other regulatory authorities (within OECD/NEA, WENRA, WWER Forum as well as bilaterally with other regulators). These findings are used during regular inspections of external operating experience feedback (carried out in a one-year period), a part of which are NPPs operator reports including WANO analyses. In addition, SÚJB and licensee actively participate in conferences and seminars focused on events in other fields (namely aviation/airborne industry).	
40	Article 8.1	p. 37	In the text it is written that “SUJB may modify conditions set out in the licence in the event of a change in the circumstances important to nuclear safety, radiation protection, physical protection or emergency preparedness under which the licence is issued as, or as a response to an application by the licensee.” How do you ensure that the modification of the conditions leads	Corresponding provisions in Nuclear legislation (in both existing and new) open the possibility for SUJB to also require from the licensee measures not directly required by the legislation, if it is reasonably practicable. The opposite situation is excluded by provision of article 4, §4, Section 2 of the still-existing Atomic Act No. 18/1997 Coll. and Appendix of the Act, Section C, Article b), I.1, stating that: I. Pre-operational Safety Report which shall include 1. Description of changes to original design assessed in the Preliminary Safety Report and evidence that there has been no decrease in the level of nuclear safety of the nuclear installation.	

			to an increase or maintenance of the safety of a nuclear power plant?	The same or slightly modified requirements are also applied to Preoperational Safety Analysis Reports for NPPs and for other Nuclear installations. In the new Atomic Act No. 263/2016 Coll. this situation is resolved in general by requirements to the Safety Management in §29 - §30 and specifically for example and not only by §48, art. (4): (4) Safety assessment shall be used to evaluate relevant information about the risks associated with the use of nuclear energy and to adopt measures to prevent compromising the level of nuclear safety, radiation protection, technical safety, radiation situation monitoring, radiological emergency management and security.	
41	Article 8.1	p. 42	In the section “Openness and transparency communication with the public” it’s written that the public is informed via website of the SUJB and Facebook. How do you inform the people who have no access to the internet?	The State Office for Nuclear Safety communicates with the public not only via the internet and its website, but also through the use of other means of communication. For this purpose, the State Office for Nuclear Safety regularly collaborates with the media, such as press, radio, and television. Furthermore, the Office uses its official board for presenting information and publishes printed information materials (including the magazine Nuclear Energy Safety). Office experts are ready to answer questions from the public personally, by telephone or by letters.	
42	Article 8.1	p.43	"External technical support to regulatory activities" How many contracts do you sign averagely with external technical support organizations per year? Which department or departments mentioned in the organization chart of SÚJB deals with the coordination of this activity? Is there a specific system in SÚJB to ensure that each work – made by technical support	The system of external technical support for regulatory activities (as outlined in Article 8.1.11) is organised on both a budgetary and contracting basis. It permits the use not only of SÚJCHBO and SÚRO budgetary organisations, but also of other organisations on the basis of direct contracts. During the period of SUJB’s existence, the rules for technical support financing has changed several times. For technical support for the Section of Nuclear Safety (of NPP oversight), the number of contracts was up to twenty per year without any support from budgetary organisations, while the Section of Radiation Protection was generally supported by budgetary organisations. From the beginning of 2017, the specific	

			organizations - was utilized after completion?	Nuclear Safety supporting section is created in the SURO budgetary organisation with an adequate increase of its budget, generally with the goal of stabilising the knowledge and personnel for independent support of SUJB in the field of Nuclear Safety. The Section of Management and Technical Support of SUJB is responsible for financial planning and formal administration of contracts for technical support, formulation of needs and responsibility for professional issues of contract management and for evaluation of result quality, while the utilisation and possible implementation of the results are the responsibility of the management of the Radiation Protection of Nuclear Safety Sections and its specialists for the corresponding field. The system for documented management of independent technical support is a part of the SUJB Management System.	
87	Article 8.1	p.39, section 8.1.5	The report states "...the SÚJB has established 214 posts attributed, of which 187 are service posts…". What is the difference between 'posts' and 'service posts'?	The report differs between "posts" in the general meaning and "service posts" according to Act no. 234/2014 Coll., on Civil Service. The "posts" in general meaning include "employment post" according to Act no. 262/2006 Coll., Labour Code, and "service posts". While the "service posts" may be occupied exclusively by civil servants, serving as state officers under a special regime (regarding their selection, designation, qualification, education and training, conflict of interests, term of service and salary; based on decision on the acceptance of the civil servant), the "employment posts" may be occupied by ordinary employees under a normal labour regime (based on an ordinary labour contract between the employer – SUJB – and an employee). This means that according to the report, there are 214 posts at the office, with 27 of them under the labour regime and 187 of them under the service regime.	
114	Article 8.1	p.39,40 sect 8.1.6	Section 8.1.6 describes comprehensive measures to develop and maintain competence and the accompanying internal guideline VDS 039. Does this guideline	Continual training includes both expertise and soft skills, including learning languages. The form and focus of continual training is specified by the direct manager of each employee, in cooperation with the SÚJB Bureau, in the Individual Personal Development Plan, based on the needs of	

			prescribe the amount and periodicity of training / retraining needed? What is the percentage of working time devoted to training and education?	the respective workplace and assignment of the employee to a particular job, i.e. in accordance with the Competence Profile of the job and the Catalogue of development activities, and with regard to the required number of credits. The training can be conducted in various forms – self-study, internal trainings and workshops, workshops and conferences organized by external entities, postgraduate studies, etc. Individual educational activities are selected by the direct manager, using the Catalogue of development activities, or based on an agreement with the respective guarantor of the training. Educational activities are specified in the respective IPOR, as a rule for a period of 3 years. Evaluation of participation of the employee in such activities is performed continuously, at least once a year. IPOR may be then adjusted based on the evaluation. Final evaluation must be subsequently completed after three years and is associated with the adoption of a new Individual Personal Development Plan.	
146	Article 8.1	p.12, p.39	In the Summary, the pressure caused by retirements and other departures of staff from the SÚJB is mentioned. Sections 8.1.5 and 8.1.6 mention the maintenance of HR and the efforts on training, but not specifically the problem mentioned in the Summary. However, many regulatory bodies in the world, face the challenge to transfer knowledge of retiring or senior staff to younger and/or new staff. Since this seems to be also the case in the Czech Republic, do you have a dedicated program for knowledge transfer and do you provide trainings to senior staff to improve their skills in knowledge transfer?	The SUJB has a complex system of education and training of staff, and within this system there are also rules for the transfer of experience and knowledge to junior staff. Junior staff must go through a set of lectures provided by the senior staff members in all areas of the SUJB's activities (an initial education). Moreover, each member of the junior staff has an appointed instructor (senior staff member) for a set period of time, who, among others, transfers her/his experience and knowledge to this junior staff member. The senior staff members also provide information on their area of activity, including information on knowledge and experience, to other staff members (even younger) via regular special lectures. Regarding improving the skills of the senior staff in transferring their knowledge, all staff members of the SUJB are obliged to have a 3-year plan on educating and knowledge management. This plan contains, among others, a part dedicated to general information and soft knowledge, including presenting, lecturing, communication and knowledge transfer. The plan must be implemented, and its	

				implementation is regularly evaluated by superiors and a special HR division of the SUJB. The senior staff members should also improve their skills in the area of knowledge transfer.	
194	Article 8.1	p.40, sect 8.1.7	the SÚJB's budget is part of the State budget, which appears to make it financially independent from the licensees. In section 8.1.7 fees for activities to be carried out by SÚJB are mentioned, that aid to finance activities of the SÚJB to a considerable degree (as stated in sect 7.1.1). What governmental body collects these fees? In section 8.1.3 (p.38) it is stated: "The SÚJB also administrates fees for SÚJB's professional activity that shall be paid by an applicant for...[..]" This suggests some direct involvement of SÚJB with collecting fees. Can you expand a bit on how this is organised and how independence of the regulatory body is guaranteed?	The SUJB, in accordance to § 3g/3 of Act no. 18/1997 Coll., is responsible for administration of the fees. "Administration" means performing any necessary administrative steps requested for paying the fees and their provision to the state budget. The fees (amounts) are explicitly set by governmental Decree no. 399/2011 Coll., and applicants for the license or the license holders are obliged to pay them based on a legal requirement on a special account of the state budget without any further activity of the SUJB. The SUJB keeps accountancy related to the fees and checks that they are paid on time. Only in the event of delay of payment does the SUJB issue a special decision reminding of the legal obligation to pay the fee. Even in such cases, the amounts are strictly established by the act and the governmental decree, and the decision plays the role of reminder. If the fees are not paid, even though the SUJB has reminded the applicant or license holder of the obligation, the case is submitted to another authority (customs office) for levying. The SUJB ensures purely administrative (formal) activities and does not set the fees. The fees' level is enacted by Czech legislation, as are the consequences of improper payment/unpaying. Therefore, there is no interest of the SUJB on proper payment of the fees.	
43	Article 8.1	Para 8.1.6	Does Regulator staff undergo performance appraisal (examinations)? If "Yes", then how often do exams take place? Do you use graded approach to compile examination questions? In other words, is there any categorisation of exams in terms of	In connection with the implementation of the new state service act, every incoming inspector as a newly employed state servant must pass a general exam for state servants as well as a specialized exam concerning nuclear safety, radiation protection, and management in matters of chemical and biological weapons. After gaining sufficient work experience, the inspectors/candidates must pass the inspector exams, which are always tailored to each inspector's work position individually.	

			their difficulty for regulator staff of different levels?		
44	Article 8.1	p. 39	In section 8.1.6 the approach to training of Regulatory body inspectors is described. Please describe in more detail how the experience of older inspectors is passed on to their younger counterparts?	An arrangement is established for cooperation between junior employees and their more experienced colleagues. We practise on-the-job training, in which work experience is transferred to junior employees directly during the work performance. No inspector/candidate (meaning before he or she passes the final inspector exams) can perform inspections by himself but is permitted to perform inspections only with an experienced colleague. After passing the inspector exams, the process of transferring experience still continues, most often in the form of regular briefings and evaluating the inspector's activities. A new state service act has ensured the certainty and stability of work positions for experienced experts. This has a positive impact on their will to provide their experience and knowledge to younger colleagues with no fear of losing their job position.	
45	Article 8.2	p. 44	Considering the section "System of licensing", other Ministries (Ministry of Regional Department, Ministry of Industry and Trade…) also have requirements concerning nuclear power plants. How do you avoid an overlap with other state authorities?	The powers of different state authorities are strictly, and in a prescribed manner, set in special laws. These laws are formulated in a way that excludes the mutual overlap of spheres of activity. During the process of requesting any statement or advice of another state authority, the SUJB formulates the request clearly and with respect to its own area of activity and to the fields of activities of the other (responding) authority. Nevertheless, in the event of a disagreement concerning the responsibility for a particular issue between the SUJB and another state authority, there are clear rules for resolving such a situation in the act regulating administrative proceedings, and even administrative courts have the power to decide on such a matter. There has been no such case in past years, and all complicated situations related to the possible overlap of responsibilities were solved by mutual agreement.	
46	Article 8.2	Section 8.1.3	It is noted in para 8.1.3 that Czech regulator is "the guarantor of the safe utilization of nuclear energy	The Czech regulatory body SÚJB has the role of representative of the Czech Republic, which is a Contracting Party. SÚJB is the central administrative authority which	

			and ionizing radiation". This approach does not comply with Part 2 of Article 8 of the Convention on Nuclear Safety, according to which "each Contracting Party shall take the appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy". Could you please comment on this opinion.	regulates and supervises the use of nuclear energy and ionizing radiation. The scope of SÚJB's competency is described in article 208 of Atomic Act No. 263/2016 Coll. SÚJB has its own budget and is not subordinated to any ministry. SÚJB is the only regulator in the decision-making process related to the utilization of nuclear energy, so it guarantees the peaceful utilization of nuclear energy by supervision of any nuclear installation. The NPP operator is responsible for nuclear safety as defined in Atomic Act requirements, and SÚJB has the power to stop operation when a violation of safety principles is revealed.	
47	Article 9	page 49	"A holder of the licence to operate Dukovany NPP and Temelin NPP is the CEZ, a.s., which has, as the licensee, the primary responsibility for nuclear safety of its nuclear installations". What is the responsibility of Dukovany NPP and Temelin NPP that actually operate the plants? Is the correspondence between the regulator and the NPPs carried on always through CEZ? Are events important to safety reported to the SUJB directly from the plant or through CEZ, a.s.?	The legal entity ÈEZ, a. s. is a holder of a licence to operate nuclear installations. In accordance with Act No.263/2016 Coll., Atomic Act, ÈEZ, a. s. is externally the only entity responsible for nuclear safety. Internally, the responsibility for nuclear safety is delegated to corresponding organizational units and structures by managing/controlling documentation of ÈEZ, a. s. The internal delegation of responsibility for nuclear safety does not change the overall responsibility of ÈEZ, a. s. for nuclear safety. All correspondence and communication between the NPP (Dukovany/Temelín) and external environment (bodies of state administration, state surveillance/regulatory authorities, etc.) is correspondence of ÈEZ, a. s. (since NPPs are part of ÈEZ, a. s., and not self-governing legal entities, it is impossible to communicate "via" ÈEZ, a. s.). Clear rules for correspondence and communication between ÈEZ, a. s. and the regulatory authority have been set via managing/controlling documentation.	

48	Article 9	p.51	Was the immediate foreign-country-oriented cooperation with Lower Austria reduced based on a mutual agreement or by one party only? What would be required to follow-up with past activities?	The concerns of Austria regarding the situation in the Dukovany NPP may be currently considered as low. The reason is long-term open communication and the provision of information by the Dukovany NPP towards domestic media as well as foreign intelligence agencies. Long-term safe and reliable operation of the power plant is crucial, which is reflected in the evaluation by international experts as part of WANO and OSART missions. Open communication and cooperation concerning power plant operation are set on a long-term basis. In the past, for example, this was information for Austrian intelligence agencies or visits by Austrian citizens in the Information Centre. The information above is about communication on the regional level. Communication on the national level takes place in accordance with bilateral intergovernmental agreements concluded with Austria. The Czech Republic submits information on its nuclear installations in border regions to the state bodies of Austria. Information is transferred regularly at periodic bilateral meetings (annual meetings), and irregularly within agreed meetings, or in writing.	
49	Article 9	p. 53	Can you specify the mechanism by which SUJB ensures that the licence holder of the nuclear installations has appropriate resources (technical, human, financial) and powers for the effective on-site management of an accident and mitigation of its consequences?	Appropriate resources for effective management of an accident and mitigation of its consequences are a key part of old and new nuclear law (general obligations in the new Atomic Act for holders of a licence: for an activity related to the use of nuclear energy, it shall provide for and maintain the financial and human resources necessary to fulfil the obligations related to nuclear safety, radiation protection, technical safety, radiation situation monitoring, radiological emergency management, and security; In other part: the holder to respond to radiological emergencies is obliged to provide organizational, technical, material, and personnel measures in the likely course of a radiological emergency, to prevent or minimize its impact, processed in the form of emergency instructions, internal emergency plan, emergency rule, and plan to carry out rescue and relief work). For this	

				reason, fulfilment of this requirement is part of the many activities of oversight. The most powerful activity is probably the oversight of demonstrations of these comprehensive capabilities during emergency exercises.	
50	Article 9	Section 9.2, Pagee 50	It is stated that a Civil Safety Commission (OBK) of the Dukovany NPP, made up of qualified and trained mayors, representatives and citizens, and representatives of local associations of municipalities is authorized to independently inspect the nuclear power plant and inform the public and has its own website. This is a good initiative to engage with the general public on nuclear safety. Further it is mentioned that four training seasons are held educate the members of OB. Could Czech Republic clarify whether constitution of such a Commission is a statutory requirement?	The Dukovany NPP respects the existence of the Civil Safety Commission (OBK), which is the authority for the public from the region of the 20 km zone around the Dukovany NPP. The members of the Civil Safety Commission are provided with daily updates on power plant operation, exercises, events, and planned activities. The members of the Civil Safety Commission carry out random personal visits and inspections of operation, and meetings are held with representatives of the Dukovany NPP four times a year. The members are provided with vocational education and training. Once a year, they are given the opportunity to participate in a specialised tour to foreign power plants and operations. All questions and comments raised by the Civil Safety Commission are continuously addressed and dealt with.	
51	Article 9	Section 9.2, Page 50	It is mentioned that four training seasons are held every year to systematically educate the members of the Civil Safety Commission in nuclear area and discuss the current situation at Dukovany NPP and in nuclear area. Could Czech Republic share the	The members of the Civil Safety Commission undergo all periodic examinations and training required to obtain an independent permit of entry to the power plant. They are periodically trained in the field of occupational safety and health protection, fire protection, controlled area, etc. Each of the members supervise a certain field (Nuclear and Radiation Safety; Production; Measurement and Regulation; Electrical Part; Ecology and Safety; Emergency Preparedness and	

			aspects covered in this training / education programme and the extent of technical content?	Personnel), to which that member gives his/her attention as priority and in which that member is trained in cooperation with the Dukovany NPP or independently as part of domestic and foreign activities of the Civil Safety Commission.	
52	Article 9	Section 9.2, Page 51	Could Czech Republic share the content of (i) its weekly & monthly communication to Representatives (mayors) of all municipalities within the 20 km protection zone of NPP? (ii) its periodical publication "Zpravodaj", which is distributed to every household within 20 km from the power plant?	Daily information shall include the overview of all planned activities for that day as well as the overview of events for the previous period. Furthermore, the members of the Civil Safety Commission are provided with information on the current situation in the Dukovany NPP or in connection therewith. The seminar of the Civil Safety Commission on the assessment of the safety and reliability of operation and environmental impact is held on an annual basis. The publication "Zpravodaj" is issued on a quarterly basis and is intended for all citizens and institutions within the 20 km zone. It primarily includes information on the situation in the power plant, operation and planned activities.	
10	Article 9	p.51	It is mentioned that "The immediate foreign-country-oriented cooperation with crisis units of the country of Lower Austria neighbouring to the region of Dukovany NPP is reduced…". Can you explain this development?	Because there are no longer such concerns by Austria. The level of concerns of Austria regarding the situation in the Dukovany NPP may be currently considered as low. The reason is long-term open communication and the provision of information by the Dukovany NPP towards domestic media as well as foreign intelligence agencies. Long-term safe and reliable operation of the power plant is crucial, which is reflected in the evaluation by international experts under WANO and OSART missions. The information above is about communication on the regional level. Communication on the national level takes place in accordance with bilateral intergovernmental agreements concluded with Austria. The Czech Republic submits information on its nuclear installations in border regions to the state bodies of Austria. Information is transferred regularly at periodic bilateral meetings (annual meetings), and irregularly within the agreed meetings, or in writing.	
53	Article 9	9, Page 49	Czech Republic may like to share the mechanism to ensure	To ensure an adequate response to an emergency event, an Emergency Response Organization (ERO) is set up at CEZ	

			appropriate resources and powers for effective on-site management of an accident and mitigation of it's consequences.	nuclear power plants. This organization consists of two parts: • Internal ERO – staff working shifts – performs an immediate response to an emergency event, until the responsibility for management intervention is overtaken by the On-call Duty ERO • On-call Duty ERO – Standby ERO is activated after classifying the extraordinary event by the shift supervisor. The On-call Duty ERO consists of four shifts while each shift holds duty continuously throughout the week (24/7). Overall, each On-call Duty shift has 19 members. After activation and arrival to the Emergency Control Centre (ECC) of the current shift by the On-call Duty ERO, the commander of the ECC overtakes responsibility for the management of emergency response to an emergency.	
54	Article 9	Section 9.2 Pg 51	One of the items listed for Dukovany NPP public communication is "The immediate foreign-country-oriented cooperation with crisis units of the country of Lower Austria neighbouring to the region of Dukovany NPP is reduced, but it is possible to follow-up the past activities at any time." Please expand. (1) Why has the communication / cooperation decreased? (2) Is SUJB taking any actions to address the concern?	1/ Because there are no longer such concerns from Austria. The level of concerns of Austria regarding the situation in the Dukovany NPP may be currently considered as low. The reason is long-term open communication and the provision of information by the Dukovany NPP towards domestic media as well as foreign intelligence agencies. Long-term safe and reliable operation of the power plant is crucial, which is reflected in the evaluation by international experts under WANO and OSART missions. 2/ The information above is about communication on the regional level. Communication on the national level takes place in accordance with bilateral intergovernmental agreements concluded with Austria. The Czech Republic submits information on its nuclear installations in border regions to the state bodies of Austria. Information is transferred regularly at periodic bilateral meetings (annual meetings), and irregularly within the agreed meetings, or in writing.	
55	Article 10	p. 54, 55	In this section you refer to measures establishing the safety priority in	The safety policies of the SUJB are managing nuclear safety and radiation protection, nuclear non-proliferation, and	

			the SUJB. What are the safety policies of the SUJB?	monitoring the prohibition of chemical and biological weapons.	
56	Article 10	p. 54, 55	The continuous improvement of safety culture is mentioned. How do you monitor the arrangement for safety? Is there a self-assessment and an independent assessment?	In this case, we mentioned continuous improvement as a principle in a proper culture. So we do not monitor that.	
57	Article 10	Para 10.2	Does Regulator conduct self-assessments of safety culture?	Not yet – pilot activities in this area are in preparation.	
58	Article 10	pages 54-56	This section indicates that the regulatory body establishes requirements on the type of operational events that are reportable to the regulatory body and determines the period for development of relevant reports. Is it possible to provide categories of events to be reported to the regulatory body and indicate the period for development of the event investigation report?	Depending on the severity of operational events, the periods for reporting to the Office are determined as follows: Immediately (without undue delay) in case of radiological emergency Not later than 4 hours following the occurrence of operational event in case of radiation accident Not later than 8 hours following the occurrence of operational event in case of any of the events listed below: - Violation of L&C; - Unplanned Reactor Shut Down; - Unplanned activation of safety systems; - Event is pre-rated with INES 2 or higher; - Loss of heat sink with the unit in shutdown condition and failure to restore it within 30 minutes; - Unplanned exceeding of the determined level of discharges; - Uncontrolled presence of radioactive substance (except for natural radionuclides) outside the controlled area to the extent causing the dose equivalent rate to be higher than 0.25 ìSv/h at a distance of 0.1 m from the surface; - Fire in the guarded area of NPP (Decree No. 246/2001 Coll.); - Fatal injury; - Violation of the conditions to ensure the function of the equipment installed in a nuclear installation by the International Atomic Energy Agency;	

				- Event reducing the effectiveness of NPP Physical Protection System; - Exceeding of the effective dose of 20 mSv as a result of of unplanned single external exposure; - Exceeding of the committed effective dose of 6 mSv as a result of of internal contamination; Not later than 24 hours following the occurrence of operational event in case of any of the events listed below: - Radiological emergency of first degree; - Event pre-rated with INES 1; - Loss or theft of a radionuclide source; - Uncontrolled coolant leakage from the primary circuit or any other process liquids contaminated with radionuclides outside the controlled area or within the controlled area having a volume greater than 1 m3; - Unplanned drop in reactor power by more than 50% of nominal capacity with the expected duration of more than 72 hours; - Loss of control over a ionising radiation source; Not later than the next working day following the occurrence of operational event in case of any of the events listed below: - Drawing of L&C; - Automatic Power Reduction / Limitation; - Fall of foreign object into the primary circuit; - Unplanned failure of the dose rate monitor of the teledosimetric system	
59	Article 11	p. 60	Are the provisions for radioactive waste and decommissioning only paid for by the licensee or is there also a governmental subsidy? How can the licensee get access to the provisions?	The Czech Republic follows the principle of "polluter pays". Therefore no governmental subsidies are provided to licensees. Only in the case of remediation of past activities and facilities, and the management of orphan sources, can the government provide a funding mechanism to deal with these issues.	
60	Article 11	p. 66	It is written that the “Results of such evaluations provide a feedback	Yes, national and international operating experience feedback demonstrated its connection to the periodic and professional	

			through which the contents and scope of the professional training are modified, aimed at improving its effectiveness". Are there any improvements to the training programme as a result of new insights from safety analyses or national and international operating experience?	training of personnel. For instance, the IRS report 8476 (Hanbit3 – leak of steam generator) was part of periodic training for the operational staff in the 3rd cycle training days in 2015 on NPP Temelín and the 1st cycle training days in 2016 on NPP Dukovany.	
61	Article 11	p. 66, 67	It is written that "the process model of the Integrated Management System ensures personnel sufficiency at a nuclear installation". Are there any regulations defined in the Integrated Management System stipulating how many people are needed to safely operate a nuclear power plant?	Strict requirement "how many people" is not written in the law – there are just clear requirements on appropriate resources for safety operation and effective management of an accident and mitigation of its consequences (for instance the new Atomic Act, effective from 1 January 2017 – Act No. 263/2016 Coll. in §49 General obligations of holders of a licence for an activity related to the use of nuclear energy (1) Holders of a licence for an activity related to the use of nuclear energy shall a) provide for and maintain the financial and human resources necessary to fulfil the obligations related nuclear safety, radiation protection, technical safety, radiation situation monitoring, radiological emergency management and security). It is the licensee's responsibility to fulfil this requirement within his project documentation and to convince on oversight about sufficiency.	
62	Article 11	11.2	Czech Republic may share the methods used for the analysis of competence, availability and sufficiency of additional staff required for severe accident management.	The education and training of shift personnel and additional staff required for coping with design extension conditions, including severe accident, is a specific part of the system for Personnel Qualification and Training required by the new SUJB Decree No. 409/2016. The activities according to Emergency Operation Procedures and Severe Accident Management Guidelines are realised only by shift operating personnel (main control room personnel and shift personnel on the site) and personnel of Technical Support Centre and Emergency Response Board (as is described in section 16.2 of the Report). Some Severe Accident Management activities are realised by members of the NPP fire brigade. All these	

				people are educated and drilled by participation in practical exercises, and they take part in the procedure validation processes. Additional personnel for coping with the consequences of a severe accident is organised within the framework of Emergency Preparedness (see Section 16.2). Employees involved in the emergency response organization are obliged to participate in special theoretical and practical preparation aimed at acquiring activities determined by the on-site emergency plans and relevant intervention instructions. The responsible party for coordination of these activities is the National emergency preparedness and response system. The government of the Czech Republic is the highest body, responsible for crisis situation preparedness and, in the event of a crisis situation, their solution within the territory of the Czech Republic. The National Safety Council is established by Constitutional Act No. 110/1998 Coll., on the security of the Czech Republic, as amended by Constitutional Act No. 300/2000 Coll., as a standing working body of the government to coordinate the safety-related problems of the Czech Republic and to prepare draft measures to ensure it. Particular to the question, the information can be refined as follows: In 2013, an assessment was made of staffing contingency measures in the "Emergency Response Organization", based on which personnel changes were made in terms of the specialisation of individual members. The "Emergency Response Organization" was strengthened as part of additional organizational measures by 2 dosimetry workers. For accidents on multi-unit sites the "Technical Support Centre" was expanded by a second technologist. Some selected functions are strengthened in the "Technical Support Centre" by 5 members of its personnel for better substitutability and for the possibility of increasing operatively the staff of the "Technical Support Centre" during the multi-unit accidents.	

				In the structure of the "Security Services", teams of security personnel functioning as the Rescue Group (called the "Delta Team") were established on the locations of the Dukovany NPP and Temelín NPP. These teams are reserved for the operative tasks as subordinated directly to the commanders of intervention or to the commander of the Emergency Staff. Each shift for the Dukovany NPP and Temelín NPP operation has been strengthened by one position of chartered electrician. Each shift of the "Fire Brigade" on Dukovany NPP has been strengthened by 3 positions on each shift, a total of 12 positions at the Dukovany NPP. Each shift of the "Fire Brigade" on Temelín NPP has been strengthened by 6 positions on each shift, meaning a total of 24 positions on Temelín NPP. These fire brigade workers will perform, in the case of emergencies, the activities focused on the tasks of the mitigation of consequences of the accident or for the possible aversion of imminent exposure danger. The Fire Brigade is managed by the decisions of the commander of the Emergency Staff. On both NPP sites, key employees have been identified for the Technical Support Centre which have unique knowledge of the technical systems and equipment of the NPP and who are not included in other functions of the "Emergency Response Organization".	
63	Article 11.1	page 60, Insurance;	"The Vienna Convention orders the introduction of obligatory insurance for operators of nuclear installations. The amount for nuclear power installations was determined depending on the number of nuclear installations in the Czech Republic, competence of the national nuclear insurance pool and potentials of the insurance market in this area". Is the national	The operators of nuclear installations in the Czech Republic are obliged to insure their civil liability for nuclear damage in accordance with Act no. 18/1997. Insurance for incurred nuclear damage, the holder of underwritten only by the insurer that meets the requirements of Act no. 277/2009 Coll., On Insurance. Supervision of compliance with the Act is executed by the Czech National Bank. In the Czech Republic, in this area there now operates a free association of ten insurance companies established for the purpose of insurance and reinsurance of nuclear risks – the	

			nuclear insurance pool established by a law or it is a trade organization of insurers? Is the insurance for operators concluded based on a tender procedure or it is fixed in a law or regulation?	Czech Nuclear Pool. Currently, the Czech Nuclear Insurance Pool participates in the insurance and reinsurance of more than 386 nuclear power plants worldwide, including two Czech nuclear power plants – Dukovany and Temelín. The Czech Nuclear Insurance Pool operates within the global community of national nuclear pools. Within the trade there operates an active (i.e. retransmission) and passive (i.e. surrendered) pool, provided with more than twenty foreign national pools.	
11	Article 11.2	art. 11.2	In section 11.2.1 several interesting guides are mentioned regarding training and qualification of NPP staff. Does SÚJB also provide guidance on the amount of required staff (possibly for certain positions), and if so, how did you arrrive at such guidance?	SUJB does not provide guidance on the number of required staff. There are only general requirements of nuclear law. For instance, the new Atomic Act (effective from 1 January 2017) Act No. 263/2016 Coll. in §49: "General obligations of holders of a licence for an activity related to the use of nuclear energy (1) Holders of a licence for an activity related to the use of nuclear energy shall a) provide for and maintain the financial and human resources necessary to fulfil the obligations related nuclear safety, radiation protection, technical safety, radiation situation monitoring, radiological emergency management and security". It is up to the licensee to fulfil this requirement within its project documentation and convince oversight about sufficiency.	
30	Article 11.2	p.64, 65	The presence of the important training tools, the full scope simulators are mentioned. It is mentioned they can simulate emergency situations. Are these able to simulate all design base accident situations (not only SBO), to aid training for emergency management?	The full scope simulator current used in Temelín NPP enables us to simulate emergency conditions up to an outlet core temperature of 350 ° C. It does not simulate severe accidents at all. Currently a complex upgrade of the models used in the ETE simulator is being performed. The upgrade is coupled with the extension of the simulation, which allows for training activities of the control room staff for design extension scenarios which do not lead to severe accidents and during the transition to SAMG. The scope of the simulation is limited by the core outlet temperature of about 900 ° C. The upgrade will be completed in 2017. The further development of severe accident simulation is not possible even after this treatment.	

				The full scope simulator current used in Dukovany NPP enables the training of all Design Basis Events (DBE), most design extension scenarios which do not lead to severe accident, and the training of transition from EOPs to SAMG for use by the control room staff. The scope of the simulation is limited by the core outlet temperature of about 1200 ° C. The further development of severe accident simulation is not possible even after this treatment. For completion of the staff training (especially TPS – "Technical Advisory Group") the tool for visualization severe accidents called "Atlas" is currently used, which displays previously counted severe accident scenario courses with varied personnel interventions. A project was started to create specialized software for visualization for staff training (Visualization of NPP Severe Accident Progress for Training on SAM), which will be completed in 2017.	
64	Article 11.2	page 65	According to this section, full-scale simulators for nuclear power plants in the Czech Republic are used to train personnel for actions in case of accidents. Are full-scale simulators used for training of personnel in the event of severe accidents? If not, is it planned to upgrade the simulators to ensure training for severe accidents?	The full scope simulator current used in Temelín NPP enables the simulation of emergency conditions up to an outlet core temperature of 350° C. It does not simulate severe accidents at all. Currently, a complex upgrade of the models used in the ETE simulator is being performed. The upgrade is coupled with the extension of the simulation, which allows the training activities of the control room staff for design extension scenarios which do not lead to severe accident and during the transition to SAMG. The scope of the simulation is limited by the core outlet temperature of about 900° C. The upgrade will be completed in 2017. Further development of severe accident simulation is not possible even after this treatment. The full scope simulator current used in Dukovany NPP enables the training of all Design Basis Events (DBE), most of design extension scenarios which do not lead to severe accident, and training of transition from EOPs to SAMG for use by the control room staff. The scope of the simulation is limited by the core outlet temperature of about 1200° C. Further development of severe accident simulation is not possible even after this treatment.	

				For completion of the staff training (especially TPS – “Technical Advisory Group”) the tool for visualization severe accidents called "Atlas" is currently used, which displays a previously counted severe accident scenario course with varied personnel interventions. A project was started to create specialized software for visualization for staff training (Visualization of NPP Severe Accident Progress for Training on SAM), which will be completed in 2017.	
65	Article 12	p.68 section 12.1	The “purpose [of the human impact analysis] is not to punish the staff for unwilling mistakes; detected causes of inappropriate behaviour of the staff are understood as the benefit for further improvement of NPP operation reliability and safety.” What mechanisms are in place to ensure that there are no reprisals with respect to the impact of human error in events? Do you encourage self-reporting? If so, can you determine that it has made a difference both in the number of events reported and in the way that issues are resolved?	In the end, ensuring the no-blame policy is up to the supervisors of internal operation experience departments and other senior staff and their ethics. Yes, licensees encourage self-reporting as a part of safety culture improvement program, but have no data to evaluate the impact of those activities.	
66	Article 12	p.69	In comparing the approaches from the different NPPs, it appears that Dukovany has a specific program in place to deal with human performance, whereas, Temelin has a team that oversees human performance aspects in various programs, processes, etc. Given the apparent differences in approach at each NPP, how does SUJC	Dukovany has a specific program due to its license renewal and specific SUJB requirement. Temelín will have a requirement for a similar program at the earliest opportunity. In the meantime, overseeing differs between the two NPP and is thus more dependent on a dialogue approach.	

			approach its regulatory oversight in this area?		
67	Article 12	p. 69	Can you describe in more detail the “Dukovany NPP Human Factor Reliability Management Program”? How does the licensee promote good behaviour of the staff? How does the licensee manage human errors? Do you also plan to implement a similar programme at the Temelin NPP?	The program is based on document WANO GL 2002-02, “Principles for Excellence in Human Performance”, which means that it is based on five basic principles of human reliability factors: • Even the best people make mistakes. • Error-likely situations are predictable, manageable, and preventable. • Individual behaviour is influenced by organisational processes and values. • People achieve high levels of performance based largely on the encouragement and reinforcement received from leaders, peers, and subordinates. • Events can be avoided by understanding the reasons why mistakes occur and applying the lessons learned from past events and not from asking “who made the mistake?” The basic purpose and objective of the Human Factor Reliability Management Program is to minimize the number of events with serious consequences. This requires the continuous application of two basic approaches: - Minimize the active and latent human errors that lead to the occurrence of events; - Minimize the severity of events by identifying and eliminating gaps in the barriers. Reducing of the number of human errors is based primarily on the use of appropriate tools to prevent human errors by all employees of CEZ and contractors working at Dukovany NPP: - Learning up on the situation - Preparing for work - Reviewing the workplace - Question / Doubt attitude - Pre-job briefing (PJB) - Self-control - Use and follow instructions	

				- Effective communication And yes, we plan to implement the same programm at Temelín NPP.	
68	Article 12	Section B	Does the SÚJB have any requirements pertaining to the fitness for duty of nuclear power plants workers, including requirements regarding drug and alcohol testing, behavioral observation, and management of worker fatigue? Please explain.	Alcohol and other addictive substances are items threatening nuclear safety and security by law. The method for preventing and testing a sampling staff is up to the licensee – he has to fulfil and convince oversight about sufficiency. Currently the main instrument is personnel checks at all entry gates. Behavioral observation and management of worker fatigue are not required by SUJB at the moment.	
69	Article 12	68	With reference to article 12, page 68 of the Czech Republic national report, it is stated that human-related events are evaluated based on the INES scale. With respect to the provided information in the article in question, Korea would like to inquire the following question: 1) Taking into consideration that the occurrence of most human-related events at operating NPPs are Level 0 (i.e., below scale) or out of scale, how is the importance of human-related events assessed based on the INES scale? 2) In addition to the question above, how are near-misses (or low level events) collected, analyzed, and used for the purpose of safety management?	1) Yes, most human-related events at operating NPPs are Level 0 or below/out of scale. Assessment of event based on the INES scale is part of overall assessment which also deeply considers human and cultural aspects. 2) Near-misses or low level events are collected in a database. The topics of depth of analysis, classification of events and potential consequences, trending, and search for indirect indicators are still subject to regulatory activities in the field of operating experience and overall safety management.	
70	Article 12	Section 12.2 Pg 70	The CNS report describes that SÚJB special inspections related to	1/ Between 0 to 2 inspections per year.	

			certain events with significant contribution of human and organizational factors can be carried out. (1) Approximately how many of these inspections are conducted each year? (2) Has SÚJB noted any adverse trends in human or organizational performance? (3) Does the nuclear power plant operator have protections against retaliation for workers who raise safety concerns?	2/ SÚJB noted some indicators of adverse trends in human or organizational performance – these are topics for dialogue with the licensee and other oversight activities. 3/ The Licensee has a stated no-blame policy. In the end, ensuring this policy is up to the senior staff and their ethics.	
71	Article 13	7.1.1 p26 + 13.5 p78	Relevant Articles 7 and 13 The discussion on the Quality Assurance (Section 13.5) states that the new update of the Atomic Law, that is in the process of being adopted, will "...help State administration to direct more efficiently the steps in siting… operation of new NPP". The discussion on the changes in the Law in Section 7 indicates that the update will encompass the experience in last 20 years of application. The question is which specific changes are envisaged in the new Law that would increase the efficiency and how it is assured that the efficiency does not undermine due focus on safety?	Newly issued regulation No. 408/2016 Coll., on Quality Assurance System requirements enables the establishment and maintainance of a qualitatively higher and more complex licensee and registrant regulation according to Act No. 263/2016 Coll., para 29, item 1. The main aim of this law is to ensure the higher level of nuclear safety, radiation protection, technical safety, radiation monitoring, emergency preparedness, and emergency response when performing activities within the exploitation of nuclear energy and ionizing radiation within planned, emergency, and existing exposure situations. The new regulation No. 408/2016 Coll., on Quality Assurance System requirements replaces older legislative document regulation No. 132/2008 Coll., on Quality Assurance System in carrying out activities connected with the utilization of nuclear energy and radiation protection and on Quality assurance of selected equipment as regards their assignment to classes of nuclear safety. Requirements were changed in areas of documentation content, processes performing, possibilities in quality assurance planning, quality assurance efficiency evaluation, and continuous safety culture development.	

				The new regulation No. 408/2016 Coll., is based on IAEA recommendations especially on the IAEA documents Safety Standards Management system for facilities and activities No GS-R-3 and IAEA Safety Standards Leadership and management for safety GSR Part 2, DS456. A system of regulatory inspections in adhering to the requirements established in this regulation No. 408/2016 Coll., is fully within the competence of SUJB.	
72	Article 13	Section 13.4 Under the title: Special pr	Since Maintenance and most of the Special Processes are performed by contractors, the questions regarding CEZ, a. s. are: a. Who does the purchasing of replacement parts and equipment? b. Who is responsible for supplier selection and monitoring? c. Who is responsible for investigating and follow-up for CFSIs (Counterfeit, Fraudulent and Suspect Items)?	A. The purchasing of spare parts is ensured according to the requirements of the requesting party by the Purchasing for Production Department. B. The Purchasing for Production Department is responsible for supplier selection procedure; special departments and the department of the requesting party are responsible for supplier monitoring. C. The suppliers of externally supplied items are selected on the basis of necessary references and information on the overall competence of the business partner, in particular in the field of quality, reliability and safety of items, on the management system and the overall financial, asset and commercial situation. The highest priority is to ensure nuclear safety and high quality in the field of nuclear power, compliance with the required quality class and the required quality level of items. Where required, references shall be obtained in the field of the environment and safety and health protection at work. The suppliers are included in the Database of Business Partners. The condition for selection and use of a supplier of safety relevant supplies/items for NPP is its inclusion in the database of qualified suppliers within the application JE AUDIS 2010 – Supplier Evaluation. The method of input assessment of a supplier for NPP, which supplies or will	

				supply in particular safety relevant supplies (items with regard to their relevance in terms of nuclear safety, technical safety and radiation protection), is described in licensee's internal documents, of the Purchasing for Production Department. The minimum requirement for using a supplier of safety-relevant supply is its input assessment or accomplishment of supply under special quality surveillance by the Purchasing for Production Department. Using any supplier for the nuclear power plant, which is not included in the database of qualified suppliers or whose input assessment for the supply is not carried out or no conditions for special quality surveillance are defined, is not permitted.	
73	Article 13	Section B	Please elaborate the quality assurance system addressing the counterfeit, fraudulent, and suspect items?	By acceptance at the supplier, the supply is taken over by a representative of the supplier or its authorised organisation at the supplier, in the manner agreed upon in the relevant trade agreement. The supplier shall demonstrate the quality of the product in the agreed manner. The customer audit in the production at the supplier determines whether the approved technical documentation for production is followed, in particular the fulfilment of specified requirements for technical safety. The principles for customer audits of the production of the items relevant to nuclear safety, radiation protection, and technical safety are defined so as to be able to objectively demonstrate that the quality level and scope of the Work defined by the contract have been achieved. The audits are conducted at random and on the basis of added witness and hold points in the Inspection and Test Plan for production. This activity is carried out in accordance with the licensee's documents, of the Purchasing for Production Department.	
74	Article 14	14.4, Page 98	Czech Republic mentioned about new ultimate heat sink at the Dukovany NPP. What is the impact on the PSA using forced-draught cooling tower instead of natural	The new UHS introduced in the design recently had only a limited impact on the PSA results as far as SBO conditions concerned. The installation of cooling towers with a forced draught had a large impact on external events risk contribution, decreasing it about two orders of magnitude.	

			convection cooling tower in case of total loss of power?	The impact of UHS instalation on LOSP/SBO condition sequences contribution to the total CDF was found much smaller, leading to a 1.2% decrease.	
75	Article 14	Section 14.1.2 Pg 85	An IAEA IPSART inspection mission was scheduled for 2016 at Dukavany. What were the main outcomes of this mission?	The main Dukovany NPP IAEA TRS-PSA (IPSART) mission outcomes are summarized in the Final Report from the IAEA mission (IAEA-NS-TSRPSA-2016-01). The mission was conducted in June/July 2016. There were 8 PSA experts participating in the mission on the IAEA side. In general, the mission found that the PSA for Dukovany NPP is developed on a very high standard. In total, there were 127 issues raised by the mission, from which 30 were explained and fully resolved (N/A), 21 were focused on PSA documentation improvement, 43 issues were ranked of "LOW" importance, 22 issues were ranked having "MEDIUM" impact, i.e. affecting the models as presumed, 17 issues were ranked of LOW/MEDIUM, and none of the issues were raised as "HIGH" being identified as having impact on the model structure and/or PSA results' integrity. Note: The sum of the issues listed here is higher than 127. This is due to the fact that some of the issues include dual ranking (for example, LOW for base case PSA/MEDIUM for applications, etc.).	
76	Article 14.1	14.1.2, p84	What does it mean that the external initiators re "pre-modelled" in Dukovany PSA (the term used on the top of page 85)? Could you provide a list of all external initiators that are currently modelled in Dukovany PSA?	This chapter describes the history of the PSA development as well as the current status of the PSA for Dukovany NPP. The paragraph mentioned in your question refers to the time when external events caused by natural influences began to be included into the PSA; then they were tentatively (roughly) modelled in the PSA for NPP Dukovany. The final version of the PSA models for external events caused by natural influences were included into PSA for NPP Dukovany in 2015. Current status: In the Dukovany NPP PSA all applicable external initiating events are considered for initial listing. The full list is given in, and is identical with, the list of external events required to be analysed in EPRI 1022997, Identification of External	

				Hazards for Analysis in Probabilistic Risk Assessment, Technical Update, December 2011. The following initiators were not screened out during the screening process, thus analysed in detail within the framework of external events PSA. Aircraft impact, Extreme winds and tornadoes, Frost, High air temperature, Internal fire spreading from another plant, Low air temperature, Sandstorm, Snow, Solar storms, Turbine generated missiles.	
77	Article 14.1	p. 86, 87	In the text it is written that "the seismic PSA is so far prepared only for the Dukovany NPP Unit 1 but its contribution to the risk is insignificant". Is it planned to carry out a seismic PSA for the other units as well? Does the licensee perform the PSA analyses for each unit of the Temelin NPP or for both units combined?	Yes, the Dukovany NPP seismic PSA is planned to be extended also involving other units at the Dukovany site. It is not expected that much different results will be obtained for a seismic event risk compared to Unit 1 seismic PSA. The licensee performed PSA for Unit 1 at Temelín NPP. The reason for this is that there are no substantial differences between Units 1 and 2 at Temelín NPP, therefore there is no reason to develop a second identical model, just having replaced component IDs. Therefore the same PSA based but more expanded model is used for both units' configuration risk monitoring with unit cross-ties and common interfaces (electric power, ESW, etc.) appropriately modelled.	
86	Article 14.1	Art 14.1	In chapter 14 the national report mentions PSA-1 and PSA-2 conducted and periodically updated for all NPPs. Is it anticipated to further develop PSAs including PSA-3?	So far we have no plan to develop PSAs on the PSA-3 for NPPs in the Czech Republic.	
78	Article 14.1	p. 81	Page 81 of the Report gives a list of IAEA documents applied by Czech Regulator in NPP safety assessment. This list does not mention IAEA documents SSR-2.1 and SSR-2.2. What is the reason for not using these documents in NPP safety assessment? Would you please comment on this.	This paragraph does not contain the full list of IAEA and WENRA standards which were used by SUJB for the safety assessment. Only some of them are addressed here. The aim was to refer to those used as key sources for elaboration of safety guides mentioned in the previous paragraph.	

79	Article 14.1	para 14.1.2	Are there requirements to consider in deterministic and probabilistic safety analyses all operating conditions of NPP and all plant locations with presence of nuclear / radioactive materials and radioactive waste where abnormal conditions can occur?	Yes, such requirements are in the newly issued national "Atomic Law" (Act no. 263/2016 Coll., coming into force 1 January 2017) and associated decrees. The SUJB (regulatory body) Safety Guideline BN-JB-1.6 also calls for PSA Level 1 and 2 development for both at power and shutdown conditions, for both internal and external initiating events (both man-induced and natural phenomena caused) as well as for both fuel in the core and in SFP. Furthermore, other sources of radioactivity found in the site, such as spent fuel in the interim storage or nuclear waste, must be mapped in terms of risk. In addition, the SUJB operating license given for each unit requires PSA to be maintained, regularly updated, and used for unit risk profiles calculations. Deterministic safety analyses are implicitly required by the new SUJB Decree “On Requirements for Nuclear Installations Design” to be performed for all abnormal operation conditions and accident conditions initiated in all operating modes of nuclear reactor, spent fuel pool, and all storages and systems for handling radioactive materials. The design should provide a selection of initiating events and scenarios for analyses of events initiated in relevant systems in these modes.	
80	Article 14.1	para 14.1.2	What are Czech Regulator requirements for frequency of periodic safety assessment of NPP?	The Atomic Act is implemented by the new Decree on “Safety Assessment” that also contains the requirement to perform PSR. The PSR must compare the state of safety achieved at the nuclear facility with the requirements of legislation and the requirements arising from the current level of science and technical standards. The Decree describes a more detailed content of safety factors, stages of assessment, and documentation content. The period of PSR is set to a 10-year period for NPPs, research reactors, and radioactive waste repositories.	
81	Article 14.1	para 14.1.2	Has Czech Regulator established national requirements for conduct	Yes, such requirements are in the newly issued national "Atomic Law" (Act no. 263/2016 Coll., coming into force 1 January 2017) and associated decrees, especially the Decree	

			of PSA Level 1 and PSA Level 2 for Czech NPPs?	on requirements for safety assessment. The SÚJB (regulatory body) Safety Guideline BN-JB-1.6 provides detailed recommendations for the implementation of PSA Level 1. The document containing the detailed recommendations for the implementation of PSA Level 2 are developed. This document will be added into this Guideline in 2017. SÚJB has also developed documents for the implementation of several PSA applications, for example a Methodology for use of PSA in RIDM for evaluation of NPP configuration changes submitted to SÚJB, Methodology for use of PSA in RIDM for evaluation of TS changes submitted to SÚJB, and Methodological guideline for application of PSA model for assessment of operational events in NPP. In addition, the SUJB operating license given for each unit requires the PSA to be maintained, regularly updated, and used for unit risk profiles calculation.	
82	Article 14.1	para 14.1.3	What criteria are applied by Czech Regulator to evaluate implementation of latest scientific knowledge and technology outcomes? What information sources are used by Regulator itself to develop its own understanding of the state-of-the-art scientific knowledge and technology outcomes? What is the form of such monitoring (if any)?	The legal requirements for the evaluation of implementation of the latest scientific knowledge and technology outcomes as mentioned in Article 14.1.3, were in the former Atomic Act No. 18/1997 Coll and also remained in the new Atomic Act No. 263/2016 Coll. coming into force on January 2017. This requirement is only very general, requiring from the licensee to follow the current state of science and technology. Nevertheless, on its basis the Regulatory Authority was able to negotiate a very serious modification program with the Licensee (partly on a voluntary basis) based on the Periodic Safety Review and independent reviews and missions findings as described in Article 6. Currently issued new nuclear legislation provides a strict legal basis for the safety review and for backfitting the system, which follows the process established in the past and extends its scope, generally in the field of coping with Design Extension Conditions. The evaluation of compliance with this requirement is based on the deep safety assessment of justification, submitted by the Licensee, including an independent evaluation made by SUJB and its TSO experts.	

				The corresponding situation in other countries operating the NPPs is also taken into account.	
83	Article 14.1	pages 80-88	Does the regulatory body of the Czech Republic uses indicators of safe operation as an element of the oversight activity?	The SÚJB, as the regulatory body of the Czech Republic, worked out the principles of set safety indicators in the 1990s, and the first comprehensively assessed year of safety indicators was the year 1991. In the following years and with acquired experience, the set of operational – safety indicators underwent many changes (name, structure and responsibilities). Currently, a set of operational – safety indicators processed by the VDS098 (internal regulation of SÚJB) was approved in 2016. All safety indicators are monitored throughout the year, and if it turns out that some of the indicators stray from expected state, the SÚJB analyses the reasons for this shift and eventually accepts and applies corrective measures. The SÚJB uses indicators of safe operation as part of the oversight activities.	
84	Article 14.2	14.2.3, p91	On which basis has CEZ declared its strategic objectives as extending the “life span for NPP by 20 to 30 years as a minimum”? Are there any established activities or considerations (e.g. monitoring the status and predicting the lifetime of SSCs, feasibility studies, etc.) for extending the lifetime of Dukovany units beyond currently-authorised life time extension?	The specification for the preparation for Dukovany NPP LTO was prepared on the basis of the international programme of the IAEA SALTO mission between 2004 and 2006. According to the recommendations of the IAEA SALTO mission, the preparation for LTO is composed of three stages: 1. Preparatory period – preparation of the LTO Programme and assessment of the assumptions for LTO (2004–2008) 2. Implementation of the LTO Programme and evaluation part (2009–2015) 3. Approval of the applications for LTO in the State Office for Nuclear Safety for individual units (2015–2017) and start of the fulfilment of defined conditions Stage 1 included preparation of the Technical-economic Study (TES) for Dukovany NPP, Risk Analysis and the Strategy for Dukovany NPP LTO. On 19 January 2009, those documents were discussed by the Board of Directors of ÈEZ,	

				a. s. and approved. The Technical-economic Study was prepared with the support provided by ÚJV ØEŽ, which incorporated the predictions of the lifetime of the major components of NPP on the basis of the documents received from the Dukovany NPP. The conclusions of the study show that it is technically feasible and economically advantageous to extend Dukovany NPP operation by 20 to 30 years. The economic conclusions were updated in the following years and reflected in the Long-term Concept of Dukovany NPP Site. The new Technical-economic Study for the Dukovany NPP is currently being finalised on the basis of current data on the status of SSCs of the Dukovany NPP.	
85	Article 14.2	14.4, p98	In relation with Dukovany safety improvement programme, could you clarify what were the design bases of the new ventilator cooling towers at Dukovany NPP (alternate heat sink)? What is the currently envisaged schedule for construction of ventilator cooling towers for Units 3 and 4?	Fan cooling tower: 2 separate cooling towers, 6 separate parts – cells. Two cells must be able to ensure the removal of thermal energy at: • Normal operation of the main production unit (twin unit): 17,612 MWt at extreme temperatures of air max 46 °C (relative humidity 30%), resp. min -46.7 °C. • Cooling mode Unit 1 and Unit 2 (30 °C per hour): 88.4 MWt (project) at extreme air temperatures max 46.2 ° C (relative humidity 24%) resp. min -46.7 ° C. During both modes, the new system UHS must provide max temperature of chilled water at 33 °C resp. minimum temperature of the chilled water at the inlet to HVB not be lower than 5 °C. Earthquake-proof SL2 - acceleration 0.1 g in the horizontal direction. Implementation of ventilator cooling towers for unit 3 and unit 4 is done; the latest part – technical system of physical protection of fan tower – Is being implemented now.	

86	Article 14.2	14.2., p91	The concept of periodic evaluation of SSC state, the integration of ageing management into the regular plant's processes, as well as the application of the Ageing Management Program since the beginning of operation for both Czech NPPs can be seen as good performance for Czech Republic.	Thank you for your statement. All you have mentioned represents a large amount of work with high requirements on its quality, but when carried out the NPP safety is improved – and this is our (as regulators) aim.	
87	Article 14.2	p. 95	The licensee submitted an application for the licence for operation of the Dukovany NPP Unit 1 to SUJB in September 2015. Has this licence been granted already, considering the prolongation of the lifetime of this NPP?	A new operating licence for Unit 1 was issued on 30. 3. 2016 (and is valid from 1. 4. 2016) for an indefinite period. The issue of a licence was pretended by deep assessment of application dossier providing safety demonstration that the installation and personnel is prepared for next operation beyond the originally designed lifetime. A decision was amended by a set (almost 100) of strictly time-limited conditions that, if not ´t fulfilled, could be the reason for withdrawal of the licence (as well as violating the Atomic Act). The SUJB has just received the Application for operating licence of Dukovany NPP Unit 2. Applications for Unit 3 and 4 will probably be received in June of this year.	
88	Article 14.2	Article 14, para 14.3	According to Article 14 of the Convention on Nuclear Safety, verification of nuclear safety of a nuclear installation is carried out in particular by way of testing. However, the National Report of Czech Republic does not give information about requirements for scope and frequency of testing safety-siginificant equipment at NPPs.	The scope and frequency of in-service inspections of safety classified SSC´s are given in the In-service Inspection Programme. Generally – the requirement on frequency is given by the rule that the inspection must be performed as often as the technical safety, reliability and functionality of these safety related SSCs are ensured, operation is in line with the project requirements, and that the operation is carried out in accordance with the limits and conditions of safe operation. The ISI Programme is prepared by the licensee and is	

			Would you please provide this information.	approved by the State Office for Nuclear Safety (SUJB). SUJB does not determine the scope and frequency of inspections, but evaluates the justification of the scope, frequency, and prescribed inspection methods. The ISI Programme is a living document that was established on recommendations of manufacturers, SSC´s technical conditions, manuals for equipment operation, etc. and its changes are induced by internal and external operational experience, the results of previous inspections, the development of new inspection methods, and new possibilities for their use, by modifications of methods related to higher sensitivity of testing, etc.	
89	Article 14.2	page 93/94	page 93/94 Within the National Report, Article 14 section 14.2.3 covers Ageing Management in considerable detail, however the report does not appear to cover obsolescence issues and specifically obsolescence of Instrumentation and Control (I&C) equipment. Please provide further information on the obsolescence management process of I&C equipment throughout the design, manufacture & procurement, installation and commissioning lifecycle	The Instrumentation and Control systems are not mentioned in the list on page 94, nevertheless the obsolescence of these systems was and is resolved in the LTO Program. The situation of these systems on Czech NPPs is relatively specific – on all units the I&C systems of original design were completely replaced by modernised (in most cases digital) I&C systems in a process fully controlled by the Licensee and SUJB. The main reasons for this action were moral obsolescence and loss of the original supplier basis. The new suppliers for the I&C systems refurbishments were the Westinghouse Electric Company (WEC) on Temelín NPP units (2003) and AREVA/DSS (Rolls-Royce), Skoda JS, and ZAT Pribram on Dukovany NPP units (2000 -2015). There was difference between these activities; the modification on Temelín NPP was realised before the first start-up of the plant, on Dukovany NPP all construction and testing activities were realised during refuelling outages. The problem of moral and technical obsolescence is resolved continuously through maintenance, planning of spare parts resources and procurement, and redesign of components, chips and units. The obsolescence management at the plants	

				is based on experience with the I&C system refurbishment and is on a very good level.	
90	Article 14.2	page 93/94	The National Report, section 14.2, Verification of Safety, and in particular section 14.2.3 on Ageing management and specifically the ageing management process involving ageing management reviews and ageing management programmes, was considered by the UK to be thorough and comprehensive. Although the current list of ageing management programmes is extensive, there is not specific reference to Instrumentation and Control (I&C) equipment. Please provide further information on the methodology used in assessing the ageing aspects of I&C equipment?	The Instrumentation and Control systems are not mentioned in the list on page 94, nevertheless these systems are also covered by the Ageing Management Program and /or others processed within the framework of LTO. The situation of these systems on Czech NPPs is relatively specific – on all units the I&C systems of original design were completely replaced by modernised (in most cases digital) I&C systems in processes fully controlled by the Licensee and SUJB. For all I&C systems, the licensee carried out the scoping of SSCs and screening for passive functions; for all subsystems, structures and components, the Specific Synoptic Evaluation Reports were elaborated on basis of a methodology approved by SUJB. Each I&C system has its own Health Report containing the results of the functionality, performance, reliability, and residual lifetime actualised parameters. The resulting documents from this process are: list of critical components (respecting their time ageing), results of failure analysis for systems (based on operational reliability, results of periodic tests, and visual controls). Comparing the frequency and extent of preventive maintenance with methodology recommended by EPRI, the frequency of preventive maintenance activities on Dukovany and Temelín NPP units is higher than EPRI recommendations.	
91	Article 14.2	14.2.2	The report states that the scope of the in-service inspection programmes are prepared by the licensees and approved by the state office for nuclear safety (SÚJB). The inspections are then conducted according to the approved programme. The report does not provide any information on the	The ISI Programme is a living document that was established on the recommendations of manufacturers, SSC´s technical conditions, manuals for equipment operation, etc. and its changes are induced by internal and external operational experience, the results of previous inspections, the development of new inspection methods, etc. Standard NDT inspections that can be carried out fully in compliance with ČSN (EN) (ISO) standards are carried out	

			codes and standards utilised in developing the inspection programmes or how ageing management is incorporated within the inspection programme. Please provide further information on; • The choice of codes and standards utilised in establishing the in-service inspection programmes concerned with the structural integrity of all reactor safety related systems which constitute a pressure boundary, • How does the in-service inspection programme take cognisance of ageing of pressure boundary components?	according to them. Inspections of the main primary circuit components are qualified according to the ENIQ methodology. Criterions for evaluation of indications are given by the requirements in technical conditions as well as in normative-technical documentation issued by the Association of Mechanical Engineers (NTD A.S.I.). This NTD A.S.I. creates the link between the former standards and harmonized international standards. Ageing management programmes include the link to the ISI Programme, so the results of periodical inspections are of course taken into account as the input data for evaluation of the current status of the components. Feedback from the AMPs to the ISI programme is realized through the requests for corrective measures. For example, the AMP is connected to the fatigue monitoring AMP, and results from this programme can initiate changes in the ISI Programme. Both ISI programmes and AMP programmes are reviewed for the effectiveness in detecting relevant degradation.	
92	Article 15	pp.102-103	How was the ratio between atmospheric (200 μSv) and water (50 μSv) derived for the effective dose limit? Further, why were the maximum annual effective doses greater for discharges to the watercourse compared to atmospheric discharges at both NPPs?	The discharge ratio is based on the Russian standard §³§Ñ§ß§Ú§ä§Ñ§â§ß§í§Ö§á§â§Ñ§Ó§Ú§Ý§Ñ §Ú §Ô§Ú§Ô§Ú§Ö§ß§Ú§é§Ö§ã§Ü§Ú§Ö §ß§à§â§Þ§Ñ§ä§Ú§Ó§í, §³§Ñ§ß§±§Ú§ß 2.6.1.24-03 "§³§Ñ§ß§Ú§ä§Ñ§â§ß§í§Ö§á§â§Ñ§Ó§Ú§Ý§Ñ §á§â§à§Ö§Ü§ä§Ú§â§à§Ó§Ñ§ß§Ú§ñ §Ú §ï§Ü§ã§á§Ý§å§Ñ§ä§Ñ§è§Ú§Ú §Ñ§ä§à§Þ§ß§í§ç §ã§ä§Ñ§ß§è§Ú§Û (§³§± §¡§³-03)" (see http://www.tehdoc.ru/files.1729.html, Tab 5.2) for public dose limits in the vicinity of Russian PWR which are installed on both Czech NPPs. Concerning the difference in maximum annual effective doses, the installed gas purification system can delay short-lived noble gases and thus significantly reduce the public dose due to atmospheric discharges. The doses from liquid discharges are mainly caused by tritium, which is not removable. The actual value depends on the annual flow rate of the particular river, which is around 3-5m3/s for the	

				Jihlava River (Dukovany NPP watercourse) and 30-50m3/s for the Vltava River (Temel¨ªn NPP watercourse).	
93	Article 15	Article 15.2, p.102	"The effective dose limits […] are 100 mSv for the period of five consecutive calendar years." When is it planned to comply with the dose limit requirements of the EU BSS? In the Article 9 it says "The limit on the effective dose for occupational exposure shall be 20 mSv in any single year."	The new nuclear law (Atomic Act No. 263/2016 Coll. and SÚJB Decree No. 422/2016 Coll.), which has recently been brought into force (from 1 January 2017), complies with the Basic safety standard Directive requirements.	
94	Article 15	Article 15.2, p.103	"In the last 10 years, the annual collective dose fluctuated about 600 mSv at the Dukovany NPP and was less than 300 mSv at the Temelín NPP." How many people does it mean?	The number of persons entering the radiation control area is 2300 for Dukovany and 2200 for Temelín NPP.	
95	Article 15	15.2 Implementation, Optimization	How and how often is the internal effective dose measured? Are there any nuclide specific measurements used in order to measure the possible radionuclide without measurable gamma-lines?	To monitor the internal contamination, a whole-body counter is used. The standard is a Fastscan with NaI(Tl) detectors; in the case of positive response, a more accurate measurement using WBC with HPGe detector is applied. In addition, we use a liquid scintillation counter to monitor tritium. Each person permanently assigned to the site (our own employees as well as contractors) has to undergo an internal contamination measurement annually. The contractors coming for outages only are monitored before and upon leaving the site. In addition, a portal monitor signalization is the reason for the internal contamination measurement as well.	
96	Article 15	102	Reviewing the Czech Republic national report, it was found that cyber security was not discussed in 'Article 18. Design and Construction', pages 141 to 148. With respect to cyber security, Korea would like to inquire the	1) There were no specific criteria in the Czech legal framework for Cyber security. Currently, the new Atomic Act No. 263/2016 Coll. (in force from 1 January 2017) and its implementing decrees contain the requirement for cyber security. The review on cyber security is performed through the regulatory practice performed by the SÚJB. For more information concerning the SÚJB inspection activities in this	

			following questions: In Korea, cyber security has been applied from the beginning of design and construction level to reinforce the nuclear safety against cyber attack. 1) Are there requirements applicable to cyber security in the design and construction of nuclear facilities? If there are such requirements, how is the review on cyber security performed? 2) What does the regulatory authority demand of NPP licensees in terms of cyber security?	area, see Chapter 14.2.5. 2) According to Section 163 of the new Atomic Act, the licensee is obliged to secure computer systems necessary for the management of nuclear safety, evidence of nuclear materials, physical protection, and management of radiation incidents against their unauthorized use. The regulatory authority demand is defined in the new SÚJB Decree No. 361/2016 Coll. According to Section19 of the implementing decree: • Computer systems necessary for the management of nuclear safety and control of nuclear materials, physical protection, and management of radiation emergency shall be secured against unauthorized use defence-in-depth philosophy considering the possible consequences in case of fulfilment of the Design Basic Threat. • For a nuclear facility with defined internal area or live vital area, a professionally competent person must be addressed to ensure the security of computer systems of nuclear facilities. • The licensee shall adopt the administrative and technical measures to prevent the intentional abuse of computer systems so that no single failure of administrative and technical measures will lead to a threat included in the Design Basic Threat. • The licensee shall periodically assess the level of security of computer systems, including their regular testing.	
97	Article 15	p. 103	Regarding monitoring of radioactive discharges, what are the methods you use to convert actual measurements of activity to doses for the appropriate critical group?	For gaseous effluents, we use calculation methods based on the Gaussian model. We consider inhalation, ingestion, and external irradiation from cloud and deposit. For liquid discharges, we use a calculation model considering dilution in the river. We take into account ingestion and external irradiation during boating and sunbathing on the river bank.	
98	Article 16	p.121	Please describe if and how social media would be used in the event of	The timely provision of information during radiological emergencies is an essential task of the State Office for Nuclear Safety (SÚJB).	

			incident that warranted a warning to the public?	The special media team is dedicated to informing the public in the event of radiological emergencies. For SUJB' own need, a Strategy for informing the public is prepared. For international communication, SÚJB provides notification to EC and IAEA. In the event of radiological emergencies, SÚJB uses official web sites and social networks as well, and in case of need could provide press conferences and publish press releases for more information and for answering public questions.	
99	Article 16.2	page 115	Emergency events are classified into 3 different degrees. Do exist underlying scenarios for those emergencies?	Since 1 January 2017, the new Atomic Act No. 236/2016 Coll. is in force in the Czech Republic. The new Atomic Act contains 3 types of radiological emergencies (RE). Each permit holder is obliged to provide a response to the RE that may arise at the its workplace. RE response procedures are described in the intervention instructions (II), in on-site emergency plans (EP) and emergency rules (ER). Requirements II, on-site EP, and ER are described in SÚJB Decree No. 359/2016 Coll.	
100	Article 17	Page 133	The report states that the probability of a train accident involving trains carrying dangerous freight, both in the present and in the future "is practically zero". Please provide additional information on the type of assessment undertaken to underpin the claim that the likelihood of such accidents occurring is so low that they do not need to be considered further?	We carried out a detailed assessment of this external hazards in the technical report (VYMAZAL, P.; VALOÈÍK, J.: Zpracování a vyhodnocení potøebných dat z oblasti externích zdrojù lokality EDU (blízké prùmyslové, dopravní a vojenské objekty) a interních zdrojù lokality EDU (rizikové èinnosti v areálu EDU)) in 2015. The conclusions of the report are in FSAR chapter 2.2.2.2. The statement practically eliminated is based on the frequency and the consequences of the event/hazard.	
101	Article 17	Pag e129	The report refers to SÚJB Decree No. 215/1997 Coll., which contains the exclusion and conditioning criteria that apply when considering the suitability of sites for nuclear	The new Atomic Act No. 263/2016 Coll., entered into force on 1 January 2017, stipulates, as does the previous "old" Atomic Act No. 18/1997 Coll., the obligation related to the distribution and density of population around the site.	

			power plant (NPP). Please clarify: • What exclusions and/or conditions apply with regard to the distribution and density of population around sites that are being assessed with regard to their suitability for siting nuclear installations? • What regulatory or other administrative arrangements are in place to ensure that such criteria are not exceeded during the life cycle of nuclear installations and that emergency arrangements (including the off-site plan) continue to provide protection of the population?	The site for nuclear installation shall be evaluated (according to its section 47) in terms of: a) Its characteristics that can affect nuclear safety, radiation protection, technical safety, radiation situation monitoring, radiological emergency management, and security during the life cycle of the nuclear installation, b) the impact of the nuclear installation on individuals, the general public, society, and the environment, and Holders of a licence for an activity related to the use of nuclear energy is (according to its Section 49) obliged to: “continuously evaluate the facts relevant to the assessment of the acceptability of the site for a nuclear installation and their effect on nuclear safety, radiation protection, technical safety, radiation situation monitoring, radiological emergency management, and security,” and “estimate developments in the facts relevant to the assessment of the acceptability of the site for a nuclear installation with a view to the expected length of the nuclear installation’s life cycle” The provisions of Decree No. 378/2016 Coll. on “Siting of a Nuclear Installation” define the following obligations for population distribution and density, and its development (Section 17): “The assessment of the site for a nuclear installation in terms of population distribution and density, and development shall: c) Evaluate, with regard to population distribution and density, and development, the possibility of introducing urgent protective measures; d) Be carried out up to a distance of 30 km; and e) Make use of 1. The results of the last population and housing census carried out; 2. Details of the population density in individual settlements; 3. Details of the change in population from the last population	

				and housing census, in particular of the number of individuals and their economic activity; and 4. Details of the existence and use of buildings with public access.”	
102	Article 17.1	17.1.2, p129	In relation with the natural phenomena, and as a part of the modification of the Atomic law, were the requirements in relation with the seismic characteristics (i.e. reflection of the IAEA standards - the return frequency of 10-4 /year for 0.1 g minimum PGA) been included?	The modification of the Atomic law includes the requirement on 0.1g minimum PGA (return frequency of 10-4 /year). The seismic hazard assessment of the Dukovany NPP and Temelín NPP region was elaborated in compliance with the IAEA NS-R-3 and SSG-9 standards, under use of the probability approach (PSHA - Probabilistic Seismic Hazard Assessment). The SL-2 value (for Temelín – 0.03g and for Dukovany – 0.047g) was expressed in compliance with the provision of the IAEA NS-G-1.6 instructions as the value of acceleration of ground vibrations that will be exceeded within 10,000 years with a 50% probability.	
103	Article 17.1	17.1.4 Temelín NPP, Seismicity p130	In relation with the seismotectonic model used in the new Seismic Hazard Assessment (SHA) for Dukovany, what is it based on, and which methodology was used for it? What were the selected source zone models and ground motion prediction equations for the SHA?	We used PSHA methodology described in the technical report MÁLEK, J., PRACHAØ, I., KOLÍNSKÝ, P., 2015. Probabilistic seismic hazard assessment of the Dukovany nuclear power plant. MS, Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, v.v.i, 2015. The main sources of input data for source zone settings are the updated catalogues of historical earthquakes. In the case of EDU we used two catalogues. The first of them is the compiled regional catalo IP2015 and the second one is the near region catalogue EDU. For predictions of earthquakes on EDU site was used 8 GMPEs: CAMPBELL (2003), ZHAO ET AL. (2006), ABRAHAMSON AND SILVA (2008), BOORE AND ATKINSON (2008), CAMPBELL AND BOZORGNIA (2008), COTTON ET AL. (2008), CAUZZI AND FACCIOLI	

				(2008), BINDI AT AL. (2010)). We selected the GMPEs according to their ability to described needed epicentral distances and magnitude ranges and according to their coverage of regions comparable with Central Europe. The methodology will be published in a science journal/literature next year.	
104	Article 17.1	17.1.4 Temelín NPP, Seismicity, p134	What is the schedule for the implemenation of the IAEA's recommendations resulting from the 2013 mission "Follow-up review mission on seismic hazard issues at Temelin NPP"? Are IAEA's recommendations integrated into an updated seismic hazard assessment or in sensitivity studies to ensure the validity of the existing PSA?	Methodical recommendations from the IAEA follow-up mission have already been included in the technical reports (MÁLEK, J., PRACHAØ, I., KOLÍNSKÝ, P., 2015. Probabilistic seismic hazard assessment of the Dukovany nuclear power plant. MS, Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, v.v.i, 2015) for EDU NPP as well as for ETE NPP (MÁLEK, J., PRACHAØ, I., KOLÍNSKÝ, P. A KOL., 2014). Seismic Hazard Assessment of the Temelín NPP (Reevaluation 2013). MS, Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, v.v.i, 2014). In 2019, the PSHA EDU will be updated by the same methodology based on new data from ongoing geological survey of the EDU site and the near region.	
105	Article 17.1	Section B	Please elaborate the aspect on external human induced events and computer security views	Starting in 1993, the Probabilistic Safety Assessment studies (PSA1, PSA2) were developed for both NPP (Dukovany and Temelín). During the development of the level PSA model, the analysis was extended to include other initiating events, also including external human induced events. In subsequent years, the PSA analysis was extended to the full range of internal events, while external events caused by human activities, of which only "plane crash" event has a certain contribution to risk, were incorporated therein. These requirements were implemented in the new Atomic Act. As we stated in our National Report, the nuclear power plant design also takes into account protection against hazards of	

				the third parties. Safety systems are redundant and spatially distant, and the same applies for their power supply. This engineered safety is supplemented with a technical, organizational, and regime system of measures which will prevent the inadmissible hazards of third parties. Concerning Computer security views, there were no specific criteria in the Czech legal framework for Cyber security. Currently, the new Atomic Act (in force from 1 January 2017) and its implementing decrees contain the requirement for cyber security. According to Section 163 of the new Atomic Act, the licensee is obliged to secure computer systems necessary for the management of nuclear safety, evidence of nuclear materials, physical protection, and management of radiation incidents against their unauthorized use. This is elaborated more detail in the new SÚJB Decree No. 361/2016 Coll. According to Section 19 of the implementing decree: • Computer systems necessary for the management of nuclear safety and control of nuclear materials, physical protection, and management of radiation emergency shall be secured against unauthorized use defence-in-depth philosophy considering the possible consequences in case of fulfilment of the Design Basic Threat. • For a nuclear facility with defined internal area or live vital area, a professionally competent person must be addressed to ensure the security of computer systems of nuclear facilities. • The licensee shall adopt the administrative and technical measures to prevent the intentional abuse of computer systems so that no single failure of administrative and technical measures will lead to a threat included in the Design Basic Threat. • The licensee shall periodically assess the level of security of computer systems, including their regular testing.	
106	Article 17.1	ðages 133, 136. aircraft crash	Paras. 17.1.3 and 17.1.4 provide information on NPP calculations for aircraft crash. Could you please	Based on data from Czech air navigation services (number of movements, air crashes, etc.) and no fly zones around NPPs, we established a design plane for EDU weight: 2 tons, impact	

			indicate parameters (aircraft weight, speed, etc.) used in the analysis.	velocity: 100 m.s-1 and for ETE weight:7 tons, impact velocity:100 m.s-1.	
107	Article 17.1	pages 131, 134	Paras. 17.1.3 and 17.1.4 indicate that based on seismotectonic surveys at Temelín NPP and Dukovany NPPs, new peak ground accelerations (PGA) were established in 2015. They are 0.03 g for Temelín NPP and 0.047 g for Dukovany NPP. In accordance with IAEA NS-G-1.6 recommendations, peak ground accelerations in seismic assessment must not be lower 0.1 g. May be, it is missprint. Please indicate PGA used in seismic resistance assessment of NPP structures and components.	The value of SL-2 for both sites EDU and ETE was calculated at less than 0.1g, even though the design of both NPPs (SSCs in seismic category I) was hardened to 0.1 g according to IAEA recommendations.	
108	Article 17.2	p. 139	In the text it is written that “at Temelin NPP the environment components are monitored in compliance with the requirements of the legislation and, besides, according to a special Program of Environmental Impact Monitoring and Assessment already for many years”. Has a similar programme been implemented at the Dukovany NPP? Can you summarise the main advantages of this system?	Yes, it is. At Dukovany NPP, selected environment components are monitored as well, in accordance with the requirements of the legislation and under the "Monitoring of the influence of operation of Dukovany NPP on the Jihlava River." Advantages: Independent verification that the impact of nuclear power plant on the environment is minimal or zero.	
109	Article 17.3	17.1.5, p138	In relation with the issuance of the site permit for Temelin 3-4 in 2014, are there any specific conditions stipulated by that permit (e.g. revaluation/update of the site characteristic on regular intervals	1. The site permit for Temelín 3-4 contains 29 conditions; 15 of them are focused on continuous or periodical evaluation of the site characteristics not only before the construction commences, but also during the whole life cycle of the NPP. The permit text is accessible on the SUJB websites, but the current situation in resolution of new NPP unit construction	

			before the construction commences)? What is the validity of the site permit, and how many times/for how long could such a permit be renewed?	probably could lead to changes in planned activities of the licensee, and this permit should not be utilised. Nevertheless, the permit wording shows the priorities of SUJB in regulation of siting. 2. The validity of the site permit was originally limited to 31 December 2020. According to Act no. 263/2016 Coll., Atomic Act, all permits issued before entry into force of this act are valid for the original period of time or for a maximum of 10 years after the entry into force of this act. Czech legislation does not limit the number of consecutive decisions on renewal of the site permit or term of renewed validity of such permits. Nevertheless, each such decision on renewal must be justified in detail and based on serious reasons not compromising safety of the activity and facility.	
110	Article 18	p.143	How will existing NPPs, and any approved new units, meet this requirement in the new Atomic Act regarding practical elimination of an early and large radiation release such that it will not allow for local or time limitation of implemented emergency measures in time for 2017?	The still existing nuclear legislation generally covers the principles and safety objectives of the Vienna Declaration applicable to existing NPPs, while the new set of legislation introduced by the new Atomic Act No. 263/2016 Coll. fully covers all Principles and Safety Objectives of the Declaration. The new legislation does not formally differentiate existing and new NPPs and applies the requirements contained in the Principles to all nuclear installations using a graded approach based on principles of practical elimination and reasonable practicability. Of course, the justification of fulfilling the Principles requires additional deep analysis, including risk assessment and a balanced application of effective measures. Much work was done during the preparation and realisation of the National Action Plan, but new findings from PSA and evaluation of the Accident Management measures efficiency could lead to modification of the current strategy. The new legislation has interim provisions establishing some limited periods for the implementation of adequate necessary measures after the beginning of 2017.	

111	Article 18	141~148	Reviewing the Czech Republic national report, it was found that cyber security was not discussed in 'Article 18. Design and Construction', pages 141 to 148. With respect to cyber security, Korea would like to inquire the following questions: In Korea, cyber security has been applied from the beginning of design and construction level to reinforce the nuclear safety against cyber attack. 1) Are there requirements applicable to cyber security in the design and construction of nuclear facilities? If there are such requirements, how is the review on cyber security performed? 2) What does the regulatory authority demand of NPP licensees in terms of cyber security?	1) There were no specific criteria in the Czech legal framework for Cyber security. Currently, the new Atomic Act (in force from 1 January 2017) and its implementing decrees contain the requirement for cyber security. The review on cyber security is performed through the regulatory practice as performed by the SÚJB. For more information concerning the SÚJB inspection activities in this area, see Chapter 14.2.5. 2) According to Section 163 of the new Atomic Act, the licensee is obliged to secure computer systems necessary for the management of nuclear safety, evidence of nuclear materials, physical protection, and management of radiation incidents against their unauthorized use. The regulatory authority requirement is defined in the new SÚJB Decree No. 361/2016 Coll. According to Section 19 of the implementing decree: • Computer systems necessary for the management of nuclear safety and control of nuclear materials, physical protection, and management of radiation emergency shall be secured against unauthorized use of defence-in-depth philosophy, considering the possible consequences in case of fulfilment of the Design Basic Threat. • For a nuclear facility with a defined internal area or live vital area, a professionally competent person must be addressed to ensure the security of computer systems of nuclear facilities. • The licensee shall adopt the administrative and technical measures to prevent the intentional abuse of computer systems so that no single failure of administrative and technical measures will lead to a threat included in the Design Basic Threat. • The licensee shall periodically assess the level of security of computer systems, including their regular testing.	
112	Article 18	art. 18	Strengthening of the application of Defense in Depth was an important lesson of Fukushima, also in the regulatory context of supervision. It	This is a tough question indeed. As always, we should take lessons from the past and utilize the experience gained. Let us split up the issue. In general, there are two pillars of the DiD concept: prevention of accident initiation and progress, and	

			is noticed that the national report mentions IAEA document INSAG 10 including its update by RHWG document: Safety of New NPP Designs Study by WENRA RHWG March 2013 (section 18.2.1). What, in the opinion of the Czech Republic could or should be changed/added to the supervision programmes of regulatory authorities to increase the confidence in the application of DiD at the NPP's?	mitigation of accident consequences, when an accident does happen. As for the prevention, we do not think there is a real necessity to seek new approaches. But it is indeed a problem to maintain effectivity and quality of the preventive measures over a long time. We have had recently an issue in the Czech Republic with rather widespread cases of insufficient quality of the non-destructive testing of welded joints, which have exposed a problem within the management system overseeing this process. This case has drawn attention to the well-known issues of management systems and safety culture, and as a feedback we see a need to strengthen our efforts along these lines. Another area which needs attention is the problem of ageing management, but this is currently being addressed throughout Europe under direction of the ENSREG. As for the mitigation, we believe that the bottom line of the Fukushima lesson is a need for genuine implementation of the DiD concept. We believe there is no need to introduce new requirements, but we should remember and enforce the original principle. While the DiD is fundamentally a deterministic concept, a probabilistic reasoning seemed to be slowly gaining acceptance at the expense of the deterministic approach. It seems it is time to return to the original principle. The regulators should not only require practical elimination of the large and early releases of radioactivity out of the NPP (which is indeed partly based on probabilistic reasoning), but they should be also asking for an effort to mitigate – at least to some extent – the consequences of even the events considered to be "eliminated". Yet again, this is not really a new idea, as it is the objective set by the WENRA Safety of New NPP Designs study and the WENRA Safety Reference Levels (F1); also, the EU nuclear-stress-tests requirements are specific examples of application of this approach.	
113	Article 18.3	p. 147	Can you summarise the regulatory requirements for reliable, stable and	There are regulatory requirements for HMI in SUJB decree No. 195/1999 Coll. (Section 20) and furthermore in the norms	

			easily manageable operation, with specific consideration of human factors and the man-machine interface? Are there any new insights that lead to additional measures by the licensee?	ÈSN IEC 964 and ÈSN IEC 965. There is no change nor additional requirement in this issue.	
114	Article 19.2	p. 153	Regarding INFCIRC572, how do you achieve that all the plant personnel engaged in safety-related work has access to the documentation concerning the operational limits and conditions? Is there any training of the personnel concerning the operational limits and conditions?	Documentation concerning the operational limits and conditions is available for ÈEZ staff (ÈEZ employees). Control room staff is regularly trained of LCOs during full scope simulator trainings and training days.	
115	Article 19.4	Aection 19.4, Page 161	The report mentions that a study of the human factor response in the application of the procedures has been prepared and the emergency procedures are regularly validated at a full-scope simulator. Could Czech Republic share details on frequency of this validation exercise and duration? Also, does the scope of this validation exercise include emergency conditions arising out of severe accidents?	The EOPs' validation at full scope simulator (FSS) has been part of the EOP implementation process, since all significant modifications in EOPs were validated before implementation. In 2013, the systematic program for procedures validation was implemented. This program includes the validation of AOPs, EOPs, shutdown of EOPs, and transition from EOPs to SAMG. Every year, at least a one-week validation session is conducted at FSS. The goal of these sessions is the validation of both the significant modifications in procedures and systematic revalidation of all procedures, since the FSS models are permanently upgraded and FSS capabilities are improving. It is necessary to point out that findings from regular training of personnel at FSS are also used in the procedure validation processes. The validation scope is limited by FSS capabilities and is different at Czech NPPs. At both plants, the implemented FSS models provide full capabilities for validation of AOPs and at power EOPs.	

				The FSS at Dukovany NPP also provides sufficient capabilities for validation of Shutdown EOPs, and transitions from EOPs to SAMG can be trained and validated for different scenarios. However, simulation is limited by the core exit temperature 1200°C, and the next phases of severe accident progress are out of FSS scope. At Temelín NPP, the modifications of the FSS model are currently in progress to improve capabilities for shutdown conditions and transitions from EOPs to SAMG.	
116	Article 19.4	159	With reference to article 19.4, page 159 of the Czech Republic national report, Korea would like to inquire the following questions: 1) Is there an automatic reactor trip system in place for earthquakes? 2) If so, would it possible to provide an explanation on the system (ex: system configuration, and safety or non-safety system) and criteria including setpoints for automatic reactor trip? 3) What is the criteria(including setpoints) for a manual reactor trip due to earthquakes? 4) Is there any guidelines for NPP response to earthquakes? If so, what are the specific guidelines?	Temelín NPP: the NPP design includes seismic monitoring system (SMS). The SMS is always actuated if the threshold set value for ground acceleration is exceeded (0.005 g in horizontal and vertical direction for sensors in open ground and basement, 0.015 g in horizontal direction and 0.045 g in vertical direction for sensor inside containment). Alongside this, the corresponding alarms are activated in the MCR. No automatic actions of control or protection systems are derived from SMS actuation or the seismic alarm. After every seismic event, an overall plant status evaluation is required according to AOPs. A control plant shutdown is required every time that the MDE value is exceeded, or if the MDE value is not exceeded but seismic damage is observed. Dukovany NPP: NPP design was improved with the addition of a seismic monitoring system (SMS) in 2014. The SMS is actuated if the threshold is exceeded, and there are two levels of alarm ("earthquake" and "DBE") signalising at MCRs of all units. However, no automatic actions of control or protection systems are initiated by the SMS. In the event of an earthquake alarm signal, the MCR crew activities are governed by the AOPs or EOPs, and local operators control buildings and device status as per special procedure for seismic events. A control plant shutdown is required if the MDE value is exceeded or if real seismic damages are	

				observed. Answers for Dukovany NPP: 1. The reactor trip system is not automatically actuated due to earthquake. 2. --- 3. The reactor is shut down manually using RTS bottom if during an earthquake there occurs: • unexpected changes in the main parameters of the technology (power, pressure, level) • mass failure or drop-out of technology • destruction of the building's walls, putting the unit operation in danger • threats to staff 4. The operating instruction "Extraordinary natural events" exists, which contains a chapter on earthquakes. Outside the instructions in paragraph 3 above, this instruction includes the instruction to shut down the unit by higher trend (2 ÷ 3) % per minute if the diagnostic system evaluates the achievement of the project value of earthquakes. Furthermore, this instruction provides directions for monitoring the device status after the earthquake and directions for possible solutions of the effects of earthquakes in particular with regard to ensuring the cooling of the units.	
117	Article 19.4	pages 159-162	The section provides information on the development and implementation of symptom-oriented EOPs for reactor at full power. Have symptom-oriented EOPs been developed and implemented for reactor shutdown state?	Page 161 mentions that shutdown of EOPs were developed and implemented for both plants. Both EOPs and SAMG were enhanced by the implementation of shutdown states (including open reactor) and SFP accidents. Currently, the EOPs and SAMG address all plant operating states of emergencies and severe accidents in both the core and the SFP.	
118	Article 19.6	19.6, Page 164	In terms of reporting of incidents significant to safety, could Czech Republic provide criteria for reporting events to SUJB?	The licensee shall report the following events: • Events of exceeding limits and conditions of safe operation; • Events of abnormal conditions that cause serious damage of safety barriers;	

				• Events during which a single failure or related circumstances caused significant loss of operability of a safety system; • Liquid or gaseous releases of radioactive materials to a service room exceeding set criteria or exposure of personnel beyond limits; • Event, natural phenomenon, or other external conditions which caused real danger to the safety of a nuclear installation or which made it substantially more difficult to the personnel to fulfil their duties necessary for safe operation, including fires, release of poisonous gases, and radioactive substances; • Declaration of emergency conditions according to the emergency plan on site; • Problems or failings/deficiencies in safety assessment, design, manufacturing and operation that caused or could have caused the development of operational conditions which were not analysed or which could cause an excess in design parameters; • Event involving death or severe injury of personnel on site. In the case of nuclear power plants and as appropriate for research facilities with nuclear reactor, the following shall also be reported: • Forced shutdown of a unit in accordance with the Limits and Conditions, • Event or abnormal state that caused manual or automatic initiation of a reactor safety system or safety systems of a nuclear power plant, • Safety-significant event during outage or refuelling (e.g. fuel rod drop). Overview of events which shall be reported to SÚJB by ÈEZ: Emergency event 1-3; breach of Limits and Conditions; unplanned reactor shutdown; unplanned initiation of a signal of a unit safety system from technology conditions; event preliminarily evaluated as INES 1 and higher; loss of core	

				heat removal at outage and impossibility of its renewal within 30 minutes (NPP Temelín) and 60 minutes (NPP Dukovany); unplanned exceeding of intervention level of a parameter/quantity the announcement of which is required by the programme for monitoring of releases; non-controlled appearance of radioactive substance (except for natural radionuclides) outside of a controlled area (> 0.25 μSv/h at 0.1 m from surface); fire in a guarded area of NPP Dukovany or NPP Temelín (Decree No. 246/2001 Coll.); fatal injury; breach of the IAEA seal and prescribed conditions for ensuring functionality of IAEA equipment (e.g. loss of a reactor hall lighting longer than 10 minutes); events reducing effectiveness of a physical protection system and failures of technology of physical protection with the need of an alternative guarding of the isolation zone; use of enforcement/coercive means by the NPP security guards or police intervention at the NPP site; attempt to bring a weapon, ammunition, explosives or paralysing substances into the NPP site; threat of a terrorist attack or an explosion at the NPP site; false initiation of sirens at the NPP site; violation of the NPP no-flight zone confirmed by the Ministry of Defence; exceeding effective dose of 20 mSv as a result of unplanned one-time external exposure; exceeding committed effective dose of 6 mSv as a result of internal contamination; loss or theft of a radionuclide source held by ÈEZ; carrying out activities as per Limits and Conditions; action of a limitation system; fall of an object into the primary circuit; unplanned outage of a dose rate monitor of the first circuit TDS1 or a second circuit TDS2 at NPP Dukovany, and of the system of radiation control at Temelín NPP; uncontrolled leak of primary circuit coolant or other media of technology contaminated by radionuclides outside of a controlled area larger than 1 m3 ; unplanned drop in power by more than 50% Nnom lasting longer than 72 hours; uncontrolled leak of primary circuit coolant or other media of technology contaminated by radionuclides within the controlled area.	

119	Article 19.7	165~167	In accordance with article 19 section (vii) of CNS, contracting parties are required to collect, analyze operating experience and reflect them in their respective operations. With reference to article 19.7, pages 165 to 167 of the Czech Republic national report, regulations, systems and procedures regarding the Czech Republic's reflection on operating experience is well discussed. With respect to the Czech Republic's reflection on operating experience, Korea would like to inquire the following question: Are there any recent examples of the Czech Republic analyzing domestic or foreign operating experiences and reflecting them on Czech NPPs?	The system of internal and external operating experience is implemented in both NPPs. All internal events are under investigation based on their real or possible impact on the plant. The most important events (including corrective measures) are shared in IAEA IRS and WANO OPEX databases. We think that a couple of examples from our external OPEX system would be interesting for you. Only a brief selection of corrective measures executed in Dukovany NPP with origin from external operating experience is introduced below. Similar corrective actions were also implemented in the Temelín plant. The total number of actions based on external OPEX is fairly high, so a provision of the complete list would be exhausting. SOER 2015-1 Rec 3b: Corrective action – The addition of high-current protection for signalisation of line wire break without ground connection is in the stage of preparation. This protection will be supplemented by the change of setpoint of other house load protections. SOER 2010-1 Rec 11: The Shutdown – SAM Guidelines were prepared with collaboration with supplier and implemented in 2014 on the basis of Recommendation 11. SOER 2010-1 Rec 6a The procedure B152j – Protected equipment was implemented on the basis of Recommendation 6a. WER PAR 16-0003 Change of procedure P001j – demand for manual action of operator during the transition event. WER PAR 16-0045	

				Fire protection supplier training was enhanced by the addition of warning about danger of ignition of some metals. These metals can cause an inception and spread of fire in buildings.	
120	Article 19.8	P168	Czech's Report says waste waters containing radionuclides are processed into the form of liquid radwaste concentrate. Subsequently, the concentrate is bituminised into a form suitable for deposition. Please elaborate how SUJB verify the long term integrity of the bituminised waste.	The properties of bituminised waste have been the subject of extensive research in the past and present. Based on the results of an R&D project, the bituminised matrix must comply with WAC – particularly with limits of leachability and mechanical strength. These parameters are controlled based on samples taken during waste conditioning.	