Country	Article	Reference	Question	Comment	Answer
Argentina	Article 14.1	Loviisa NPP units 1 and 2, page 17	As mentioned in the report, “the operating licenses of Loviisa NPP units 1 and 2 are valid until the end of 2027 (unit 1) and 2030 (unit 2)”, corresponding to the current goal for the plant's lifetime, which is at least 50 years, although the plants “reached its original design age in 2007–2010”. Is it considered that the plants enter a long term operation period after 2007-2010? Which types of assessments were made in order to conclude the acceptance of 50 years lifetime? Please provide additional information.		Yes. The PSR requirements follow IAEA safety guide SSG-25 and the long term operation is included. The PSR documentation which is sent to authority is described in YVL Guide A.1., see http://plus.edilex.fi/stuklex/en/lainsaadanto/saannosto/YVLA-1, Annex A, chapter A.4. LTO related documents are for example the licensing documents (§36 of the Nuclear Energy Decree) which are including a programme for the management of ageing and a summary programme for periodic inspections AND description demonstrating compliance with the requirements of STUK Decrees and YVL Guides (e.g. YVL A.8 Ageing Management), summary of the previous periodic safety review, description of the facility’s ageing and ageing management, description of the environmental qualification of equipment, summary of the plant’s operating experience feedback and research activities and plant improvements, and summary of the periodic safety review and action plan for improving plant safety (e.g for Loviisa the Automation reneval project and other modification projects and needed analyses). Licencees summaries are based on the updated probabilistic, deterministic and strenght analyses and other studies which are assessed by STUK. Key issues in Loviisa's 2007 license renewal were ageing management, deterministic and probabilitic safety analyses (especially PSA level 2) and organisational issues.
Argentina	Article 14.1	Oilkiluoto NPP units 1 and 2, pag. 19	For Olkiluoto NPP units 1 and 2, “the next periodic safety review will be carried out in 2016-2017 in connection with the renewal of operating license” and “extension of the original design lifetime which was 40 years”. It seems that the content of the PSR corresponds with the extended content as IAEA recommend for LTO. Was the same approach taken for Loviisa license renewal in 2007-2010? Please provide additional information.		Yes. The PSR requirements are in Regulatory guide YVL A.1 see http://plus.edilex.fi/stuklex/en/lainsaadanto/saannosto/YVLA-1, Chapter 3.9 and Annex A, chapter A.4. And the PSR requirements follow IAEA safety guide SSG-25. In 2007 was the previous Regulatory guide YVL 1.1 requirement used for the Loviisa NPP operating licence renewal and in this Guide YVL 1.1 the requirements followed the IAEA Safety Guide NS-G-2.10 (2003). PSR is always including the ageing management aspects. Key issues in Loviisa's 2007 license renewal were ageing management, deterministic and probabilitic safety analyses (especially PSA level 2) and organisational issues.
Argentina	Article 10	Pag. 39	The report mentions an update to the STUK´s management system to include self-assessment of safety culture into the annual self-assessment programme, and to training on safety culture to its personnel, as a consequence of the suggestions of an IRRS mission held in 2012. Further details on both activities would be appreciated.		STUK has an annual self assessement programme, and safety culture is assessed within this programme regularly. In addition to IAEA’s safety culture model a Finnish modification (DISC-model by VTT, DISC=Design for Integrated Safety Culture) has been used widely in Finland (also in STUK’s self-assessment in 2013). The DISC framework proposes that an organisation has a good potential for safety when the following criteria are met in organisational activity: 1. Safety is a genuine value in the organisation and that is reflected in decision-making and daily activities, 2. Safety is understood to be a complex and systemic phenomenon, 3. Hazards and core task requirements are thoroughly understood, 4. The organisation is mindful in its practices. 5. Responsibility is taken for the safe functioning of the whole system and 6. Activities are organised in a manageable way. In 2013 Self assessments were carried out at all levels of organization as open discussions about the status of the safety culture and how to enforce it in all STUK’s activities. After self assessments a panel discussion was arranged for all directors about the safety culture in STUK. The discussions were taken into account when updating STUK's safety and quality policy. An intranet site that can be used in the future for training and assessments was established, containing training material, videos and self assessment questionnaire. In prior training of safety culture was provided to all staff members.
Argentina	Article 14.2	Verification of safety, pag. 54	“STUK Regulation (STUK Y/1/2016) includes several requirements which concern the verification of the physical state of a nuclear power plant”. Have it been implemented Ageing Management Programme besides the main programs listed, as		Physical state of a nuclear power plant is verified by inspections, tests, on-line monitoring, surveillance programmes or any other actions which produce information on the SSC's intergrity or functional capability or will predict that. All these actions have to be specified in the licensees' ageing management programmes. STUK's position is to assess the adequacy of the mentioned actions.

Country	Article	Reference	Question	Comment	Answer
			the IAEA promotes (IAEA Safety Report No. 82)? Please provide additional information.		
Argentina	Article 14.2	-	Is it implemented or is going to be implemented an Equipment Qualification Programme? Or maybe, is it already considered into other plant programme? The same question might be done for the Obsolescence programme. Please provide additional information.		Equipment qualification is performed all the time at many levels. Qualification work is done during manufacturing of all safety classified equipment. For instance valve bodies are pressure and tightness tested during manufacturing. The operability of a valve, pump or electrical equipment is verified during manufacturing and assembling. Before a component is shipped to the site a comprehensive FAT (= factory acceptance test) is performed. Same kind of measures are performed for the safety classified equipment also during the annual outages of the NPPs. The operating NPPs do have ageing management programs for the spare parts at the stock.
Argentina	Article 15	15, pag. 61	The report says that "the goal is that the annual effluents will cause an annual dose for an individual in the population" "which is less than 1% of the limits value of 0.1 mSv" (normal operation). Is this goal applicable to tritium discharges? Please provide additional information.		According to the report this goal is applicable to tritium discharges of Olkiluoto NPP which so far has two operating BWR units. The estimated annual dose to the representative person due to tritium discharges of Olkiluoto NPP was 1.2 nanoSv in 2015 for example.
Argentina	Article 15	Figure 17, page 63	The report shows Figure 17, "Calculated annual radiation exposures to the individual of the critical group living in the environment of the nuclear power plants". Could you provide detailed information about: 1) the model used to calculate the radiation exposure to the individual of the critical group, 2) criteria used in selection of the critical group, and 3) criteria used to calculate authorised limits of discharges?		The following information can be provided: 1) The model is a simple screening model. The atmospheric dispersion factor is calculated with a Gaussian plume model using annual meteorological measurement data. The discharges are averaged over the year to be examined (constant discharge rate). 2) The critical group is a hypothetical group consisting of adults (too few infants to become a critical group). The living habits have been chosen conservatively. The living place is on the ground there where the dispersion factor is the highest one. See Guide YVL C.4 Chapter 5.2. 3) The authorized limits of discharges are based on the annual dose limit (or constraint) of 0.1 mSv for the member of the public so that the dose limit is not exceeded if the discharge limits are not exceeded. In addition to discharge limits the the licensee shall determine, representing continuous improvement of operations and good operation of the plant and its personnel, target values which the licensee aims not to exceed for the annual discharges. See Guide YVL C.3 Chapter 3.3.
Argentina	Article 15	15 – Figure 17, pag. 63	Lower doses are observed since 1993 in Loviisa and since 1988 in Olkiluoto, respectively. What factors have influenced the decrease in dose? Please provide additional information.		Both in Loviisa NPP and in Olkiluoto NPP operational radiation protection measures have been successful. The annual outages have been well-planned and short. In Loviisa 2 the whole primary circuit decontamination was performed in 1994. After that dose rates in areas near primary circuit have been on a much lower level. Also a major decrease in dose rates are to be expected in years to come because in both NPP units in Loviisa the source causing antimony activation products in primary circuit was found. The source turned out to be the seals in the primary circuit pumps. Those seals were replaced with antimony-free seals. In Olkiluoto recent reduction in doses is result of replacement of steam dryers in 2006 and 2007. The dose rates in turbine building have decreased steadily during the last years.
Belgium	Article 10	pag. 38 - "Means used.."	It is highlighted to STUK performes a yearly self-assessment of its own safety culture. Are results of this self-assessment communicated outside of STUK (for example to the licensees in case this might be beneficial for the?		STUK has an annual self assessement programme, and safety culture is assessed within this programme regularly. In addition to IAEA's safety culture model a Finnish modification (DISC-model by VTT, DISC=Design for Integrated Safety Culture) has been used widely in Finland (also in STUK's self-assessment in 2013). The results of self-assessment in 2013 were not reported outside of STUK.

Country	Article	Reference	Question	Comment	Answer
Belgium	Article 13	Management system of the RB (p. 47)	In this section of your National Report the use of a "graded approach" is mentioned in relation to oversight activities. Reference is made to more formalised principles for using a graded approach. Are any criteria (quantitative?) in use to support this graded approach? Is this "graded approach" used to optimise the effort (e.g. in manpower) that the regulatory body attributes in review and assessment or is it more oriented towards grading requirements to the Licensees and its installations by considering risk aspects?		In 2013, the Nuclear Energy Act which was amended with the following statement: "The safety requirements and the measures to ensure safety shall be scaled and allocated according to the risks related to the use of nuclear energy." The statement is generally considered as a principle for graded approach. After the explicit amendment graded approach principle was introduced into STUK's Management System to cover all regulatory activities in order to target and allocate the regulatory resources. STUK has gained a lot of experience on the use of combining deterministic and probabilistic insights in regulatory decision making. The experience has shown that utilization of risk insights has been valuable and therefore STUK has initiated the implementation of risk informed graded approach in STUK's Management System. It is expected that graded approach process will further enhance regulatory efficiency and effectiveness by proactive identification of potential safety issues, by reaction in timely manner, by more efficient allocation of resources, and by increasing the transparency and consistency in the decision making. **Risk informed graded approach in regulatory review process:** In risk informed graded approach, the STUK's regulatory attention is graded based on the following factors: 1. Safety classification 2. Potential consequence of the failure or finding a. Deterministic criteria b. Probabilistic criteria c. INES classification 3. Other factors that may increase or decrease the regulatory attention (FOAK, coxplexity, quality of the licensee's safety assessment, possible deviations from the regulatory guidance etc.) **Risk informed graded approach in regulatory inspections:** STUK's Management System provides some guidance on how to apply graded approach in the regulatory inspections on nuclear facilities. Inspection areas and frequency is based on experience and knowledge of the experts responsible for inspection activities and programmes. In practice graded approach is applied by using the following principles: Inspections on facilities and activities with highest risks are prioritised both in terms of inspection frequency and number, and resources allocated to the inspections Inspections on structures and components in highest safety classes are prioritised in terms of scope and content of inspections For the reasons mentioned above, most nuclear facility inspection activities are focused on the operating reactors and reactor under construction in Finland. Less inspection activities are focused on the underground spent fuel final repository (ONKALO) and FiR research reactor (under decommissioning).
Belgium	Article 15	Fig. 17	What are the hypotheses taken into account to calculate the doses to the population based of annual emissions from the Finnish NPPs ?		The following information can be provided: 1) The calculation model is a simple screening model. The atmospheric dispersion factor is calculated with a Gaussian plume model using annual meteorological measurement data. The discharges are averaged over the year to be examined (constant discharge rate). See Guide YVL C.4. 2) The critical group is a hypothetical group consisting of adults (too few infants to become a critical group). The living habits have been chosen conservatively. The living place is on the ground there where the dispersion factor is the highest one. See Guide YVL C.4 Chapter 5.2.
Belgium	Article 15	pp. 60-61	What are the measures foreseen/undertaken by the STUK or the licensee to ensure that from the first operation year of the new NPP "Olkiluoto unit 3" the collective dose is expected to be below 0.05 manSv ? What about the following years ?		According to regulatory guide YVL C.1 the design of a NPP shall be such that the strict target values will be reached: In designing and constructing a nuclear power plant, calculations must be performed to ensure that the collective annual dose during planned and anticipated regular work tasks does not exceed the value of 0.5 manSv per net electric power of 1 GW during normal operation averaged over the plant's design service life. Collective dose calculation shall be justified with operating experiences from similar types of operating nuclear power plant units. Hence, the average annual value for a 1600 MW NPP-unit is 0,8 manSv. During the first year of its operation it is estimated that the annual dose will be very low mainly due to the fact that the contamination levels in new components in primary circuit will be low.
Brazil	Article 12	12.1	In addition to the standard already developed, is there any specific regulatory guide for the area of human factor engineering and human machine interface?		Finland has not developed a standard concerning human factors engineering. Human factors are treated in Section 6 of the STUK Regulation (STUK Y/1/2016) and CR related issues in Section 16 of the STUK Regulation (STUK Y/1/2016). In addition YVL Guide B1 requirement 5303 concerns HFE program for new-builds and control room modifications. YVL Guide B1 section 5.3 deals with control room issues and HMI within control rooms.
Brazil	Article 12	12	Was NUREG-0711 used as a reference?		NUREG-0711 was used as one reference in YVL B1 requirement 5303.

Country	Article	Reference	Question	Comment	Answer
Brazil	Article 12	12	Is there any simulator that helps in the studies on human factors engineering and human machine interface? If it exists, does this simulator deal with severe accidents?		STUK does not have a simulator. Both licensees have full scope training simulators which can be used for human factors engineering studies. Loviisa nuclear power plant hosts an engineerings simulator as does also OL3 plant of Olkiluoto nuclear power plant. Severe accidents are not modelled to the full extent.
Brazil	Article 12	12	Are post Fukushima actions considered on the standard relating to human factor engineering and human machine interface?		Post Fukushima actions are not considered in the Finnish regulation concerning HFE and HMI.
Brazil	Article 7.1	Page 23 - Provision of regulatory guidan	How much time takes usually a Safety Guide revision process and is there any expiration date for the Guides or Codes?		Revision of a single Safety Guide takes about one year if all the preparation phases (drafts 1-4) are needed. This is the case when there are new reguirements in the guide, or such changes in the reuirements afffecting on the safety level. Also a lighter process is possible if there are only changes in references or small changes in reguirements or the changes are making the reguirement more clear not affecting on the safety level. YVL Guides are updated at regular intervals in order to develop the content of the Guides. A YVL guide can always be updated when there is reason to do so. For example, the reason for updating can be new research information or operating experience (national or international) that is significant enough to assume that the safety level or control procedures specified in the valid Guide can no longer be considered sufficient. The currency of a YVL Guide is also assessed at regular intervals. A Guide is assessed for the first time when four years has passed since its enactment. After this, the currency of a Guide is assessed every two years. The Senior Advisor, Rule making schedules these assessments as part of the annual action plan for YVL Guides. Updating of a Guide is initiated when eight years have passed since its enactment. The aim is to avoid having YVL Guides that are more than 10 years old. If the updating need only applies to some individual requirements, it is sufficient to simply bring them up to date. In such cases, the preparation procedure corresponds to a situation in which the entire guide is updated.
Brazil	Article 7.1	Page 29 – Oversight during construction	What is the relationship between STUK and AIO? Who paid for the AIO Services? Does the STUK audit the AIO?		AIO's are independent Inspection Organisations authorised by STUK. They shall have accreditation for their duties from national Accreditation Body (in Finland: FINAS) and subsequent approval (authorisation) from STUK, as stipulated by Requlatory Guide YVL E.1. STUK audits the AIO's on annual basis. In addition STUK organises common meetings annually with the AIO's. The AIO services are paid by the licensees to whom the AIO's perform inspections.
Brazil	Article 7.2.2	Page 46 - Management system of the regul	Does STUK has an independent structure for internal audits? Does STUK have an Integrated Corrective Action Plan for the finding arising from internal or external reviews?		The general objective of the audits is to determine whether activities correspond to the plans and guidelines. At the same time, the objective is to find areas for improvement and good practices in the activities. In addition to the annual plan of internal audits, the Quality Group prepares an audit plan framework for several years; it is used to ensure that all of the important core processes and sub-processes are systematically audited. The initiative for an audit target may arrive from the units in question, the Quality Manager or the Director General, for example. The basis for the selection and prioritization of the function to be audited may be, for example, the need to assess areas for improvement, any development activities under consideration, the financial significance of the target or another related risk. As needed and at the specific request of the Director General, the Quality Manager performs other internal audits in addition to those presented in the audit plan. The manager of the unit or a representative named by the Director General (for large issues concerning all of STUK) is responsible for the further processing, implementation and follow-up of the findings, development projects, deviations and good practices recorded in the follow-up register. Based on the findings, the required actions are recorded in the follow-up register and a responsible individual and deadline is appointed for each action. The implementation of the planned actions (development project or processing of deviation) must be recorded in the register together with their deadlines. The follow-up register is also used for other reviews as external audist (audit performed by an external party, such as a supplier audit or an audit performed by a certification organization), self assessments and management reviews. The register can be used to browse for the final results of the audit, open development projects or unprocessed deviations.

Country	Article	Reference	Question	Comment	Answer
Brazil	Article 14.2	Page 56 – In service inspecti	Could you provide detailed information on the main results obtained with the implementation of this program?	The report says that a risk-informed inspection programme has been introduced and approved by STUK at the Loviisa units 1 and 2 for the in-service inspections of safety-critical pipelines. The objective of risk-in¬formed in-service inspection programmes is to al¬locate inspection resources to the targets that are most critical from the point of view of risk.	• Inspections shall be performed on pressure equipment belonging to safety classes 1 and 2, other pressure equipment that is considered significant in terms of nuclear safety, and for the flywheels of the main circulation pumps. This inservice inspection program is deterministic. • The piping in-service inspection programme shall be prepared in a risk-informed manner, analysing all of the nuclear facility's systems in safety classes 1, 2, 3, and EYT (non-nuclear) as a single complex independently of the safety classifications and nominal dimensions of the piping. For example the total amount of objects of main coolant piping (DN500) (a) in the old ISI program and (b) in the new RI-ISI program are as follows: • (a) 12 circular butt welds to RPV in the old ISI program and (b) three butt welds in the new RI-ISI program • (a) 86 circular butt welds and (b) nine circular butt welds • (a) 24 longitudinal welds of elbow and (b) six longitudinal welds • (a) 34 nozzle welds and (b) 10 nozzle welds • (a) 55 small size pressure measurement piping and (b) seven lines • (a) 48 small size temperature measurement nozzles and (b) eight nozzles.
Brazil	Article 16.1	Page 65	Could you provide detailed information about: 1) which organizations were involved in this exercise? 2) This exercise involved displacement of people, equipment, etc?	The report says that an unannounced emergency exercise was organized in 2015, starting outside the normal work¬ing hours.	The unannounced emergency exercises of 2015 were arranged by the powerplants. The key organizations which took part were licensees (NPPs), STUK, regional rescue services and regional police departments. No displacement of people or equipment was done.
Bulgaria	Article 9	page 36, para 3;	The decision of Finland to amend the law regulating liabilities for nuclear damage in extending the claiming period up to 30 years and implementing the provision on unlimited liability of the operator and requirement of insurance coverage for a minimum amount of EUR 700 million demonstrates a responsible approach to third parties. However such unlimited liability may cause financial embarrassment for the operators as well as for the insurers. May you comment how the amendment of the temporary law on the liability is implemented by the operators?		Nuclear liability issues are under Ministry of Economic Affairs and Employment: http://tem.fi/en/nuclear-liability .
Bulgaria	Article 17	page 71	The report states that the emergency diesel generators (DGs) at Olkiluoto 1, 2 will be replaced within the next few years. Please, provide more information whether they will be relocated at a higher elevation, considering the lessons learned from the Fukushima Dai-ichi accident. What is the current time schedule		New EDGs will be located in the existing auxiliary buildings. Therefore, the floor level and the elevation will be the same as before. In the Olkiluoto region the probability of sea level rising above this elevation and flooding the power plant premises is considered very low. However, for the new additional 9th EDG, which will be located in a completely new building, the floor level will be slightly higher. Regarding the Fukushima accident, the new diesel generators can be cooled with seawater and air (current DG cooling is only seawater). Commissioning of the first new EDG is scheduled to take place in the spring of 2018 and the last EDG in 2022.

Country	Article	Reference	Question	Comment	Answer
			for their replacement?		
Bulgaria	Article 18	page 113 - 114, Annex 3,	The report states that renewal of two old mobile SAM diesel generators is planned at Olkiluoto 1, 2, where four new mobile SAM diesel generators are available. Please, explain in more details the need for maintaining 6 mobile DGs on the site for units 1 and 2.		DGs can also be used for other purposes than handling of the severe accident. The report says: "The licensee has investigated the possibilities for fixed connection points for recharging of all safety important batteries and other important consumers (e.g. weather tower) using transportable power generators, and the decision to install fixed connection points has been made".
Canada	General	p.104	With respect to battery depletion time at Loviisa NPP, please elaborate further on the ongoing automation renewal project which would extend the depletion time of batteries substantially? Does the process involve load shedding as in Canada?		The batteries of the I&C systems are changed during 2017-2018. The discharge time is going to be 2 h with nominal load.
Canada	Article 6	p.21	The report indicates that there are additional safety improvement measures for the Olkiluoto NPP Unit 3 such as the possibility to move diesel from the emergency diesel generator storage tanks to the station blackout diesel storage tanks. Can you please elaborate: Are these tanks interchangeable? What are the fuel requirements (i.e., for what mission time)?		Tanks are not interchangeable but it is possible to transfer fuel from EDG storage tank to SBO storage tank with temporary transfer equipment. SBO fuel storage tank is designed for 24 hours of use. In initial conditions EDG fuel storage tanks must contain fuel amount that is enough for about 2 weeks of use of SBO:s. The EDG fuel is suitable also for SBOs.
Canada	Article 6	pp.18 (Article 6), 57- 58 (Article 14),	As noted in the report, the Loviisa plants are at risk of reactor pressure vessel brittle fracture. What additional measures have been undertaken to ensure that the plants are safe to operate over the course of their extended 50-year lifetimes?		Reannealing has been done for Loviisa 1 in 1996, but not for Loviisa 2. Margins has been analysed (with the deterministic and propabilistic embrittlement analyses) and LTO was approved in 2007. In the recent deterministic analyses (used in PSR 2015) the deterministic embrittlement temperature margin was decrased some degrees because of the changes in Loviisa I&C renewal project (affecting to assumption of the possible loads). The embrittlement temperature margins were enough for the Loviisa 1 but for Loviisa 2 very close to the aproval limit. STUK required as a part of the PRS inspection the licencee to send at the end of the 2016 the report how to increase the embrittlement margins at Loviisa 2. The low margins at the Loviisa 2 are especially involved to the event where RPV's core area weld seam outer surface is cooling while unexpected start of the sprinkler system of the reactor building occurs. Concerning the licencees report the one corrective action is to modify the sprinkler system's cooling unit function to increase the initial temperature of the sprinkled water (planned to implement in 2019). The licensee continues also the investigation of the opportunities to isolate the RPV's core area weld seam outer surface. Licensee will update the propabilistic and the deterministic embrittlement analyses before the next PSR 2023 so the influence of the corrective actions can be identified then.

Country	Article	Reference	Question	Comment	Answer
Canada	Article 6	pp.16 (Article 6), 20, 46 (Article 13),	Given the construction issues Olkiluoto 3 has faced, are there any lingering concerns from a regulatory standpoint that might prevent the NPP from entering service in late 2018/early 2019?		No, at the moment STUK does not have any safety concerns that would prevent granting the operating license to Olkiluoto 3. But the review of operating license application is still going on, STUK will complete the review during 2017. STUK will also witness the pre-operational commissioning tests to see that the equipment, systems and the plant as a whole function as expected before finalizing the safety assessment for operating license. The different issues during the construction have been solved, the only remaining issue is to ensure the authenticity of the manufacturing documentation of the components manufactured e.g. at Creusot-Forge in France.
Canada	Article 7	p.27, 28, 29	Canada would like to understand the depth of review of structures, systems and components in the assessment of the construction licence application, as compared to what is inspected during facility construction. Please describe the type of information that is reviewed during the detailed design of structures and equipment, as compared to the regulatory assessment and inspection that is carried out while the facility is being constructed.		STUK's oversight during the construction of a nuclear facility is explained in details in regulatory guide A.1 "Regulatory oversight of safety in the use of nuclear energy". STUK issues a statement on the construction licence application for a nuclear facility to the Ministry of the Economic Affairs and Employment, attaching to the statement its safety assessment, evaluation of the documents required under Section 35 of the Nuclear Energy Decree. The most essential documents (from a tecnical point of view) to be submitted and reviewed are 1) the preliminary safety analysis report, which shall include the general design and safety principles of the nuclear facility, a detailed description of the site and the nuclear facility, a description of the operation of the facility, a description of the behaviour of the facility during accidents, a detailed description of the effects that the operation of the facility has on the environment, and any other information considered necessary by the authorities; 2) a probabilistic risk assessment of the design stage and 3) a proposal for a classification document, which shows the classification of structures, systems and components important to the safety of the nuclear facility on the basis of their significance with respect to safety. The guide B.1 "Safety design of a nuclear power plant" gives more details for the content of PSAR. Information shall be provided on the safety functions and the systems performing safety functions to such a level of accuracy that the operation of the plant in anticipated operational occurrences and accidents in all operational states can be analysed and the PRA can be reviewed. PSAR shall provide an overview of the plant-wide design principles and the technical implementation of each safety-classified system and its relationship with the overall plant complex on a level that the requirement specifications can be made for the purpose of procuring components and structures. According to Section 108 of the Nuclear Energy Decree, the various phases in the construction of a nuclear facility cannot be commenced until STUK has, on the basis of the documents mentioned in Section 35 and other detailed plans and documents, ascertained for each phase that all safety-related factors and safety regulations have been given sufficient consideration. The purpose of regulatory control is to ensure that the conditions stated in the construction licence, the regulations pertaining to pressure equipment and other components and structures, and the approved plans and designs are complied with, and that the nuclear facility concerned is constructed in compliance with the regulations issued under the Nuclear Energy Act. The detailed safety requirements as well as regulatory approvals for safety classified structures and components are given in YVL guidance (E-series). As a basic rule, a construction plan shall be prepared presenting the design bases, design following (example from YVL E.3 "Pressure vessels and piping of a nuclear facility"): - the YVL Guides and standards applied, and justification for any deviations, - safety classification and identification marking of component, - a summary by the design organisation of how the design bases are met, - general design, - calculations, - type test results and operating experience data, - construction materials, welding consumables and coatings used, - construction drawings and manufacturing drawings, - information on the organisations related to manufacture, - information on manufacture and its control and inspections.
Canada	Article 8	p.34,	Can you please elaborate on the interaction between the Radiation and Nuclear Safety Authority (STUK) and STUK VTT Technical Research Centre? Are there any official agreements?		VTT Technical Research Centre is the main TSO for STUK. There is a generic agreement in between STUK and VTT on the co-operation. However all the TSO support tasks are ordered acceding the national procurement act. There is call for tenders and framework agreements are made for three years period with relevant TSO organizations. There is a tendering/order made for each task given to VTT. The national nuclear safety research programmes SAFIR – and KYT are aiming in the ensuring the national competence The funding of these research programme is provided mainly by the State Nuclear Waste Management Fund (VYR). The framework for the programme, annual selection of the funded projects in the call for tenders and steering of the programmes is made through the management boards, relevant steering and reference groups of the research programmes. STUK has an important role in SAFIR- and KYT organizations and in the steering of the safety research.

Country	Article	Reference	Question	Comment	Answer
Canada	Article 8	pp.6, 33-34	Are there concerns regarding STUK's ability to regulate an increasing number of reactors in the coming years given their decreased operating budgets, and loss of skilled labour due to retirement? How is STUK working to maintain capacity over the long-term?		STUK's oversight costs for nuclear energy are charged from the licensees and therefore governments budget does not affect it. For to get prepared for retirement of labour long term HR-planning and national training programmes have been developed and implemented. In order to maintain the nuclear competencies and knowledge needed to regulate an increased number of reactors, STUK has implemented various development actions and measures in recent years. As an example of these actions: In some discipline areas senior professionals were paired with younger talents to form working pairs and to support knowledge transfer between generations - in everyday working context. STUK started to prepare for the transition period during the early stages of OL3 project by recruiting new professionals, by focusing on training activities and by capturing & transferring the key knowledge. As another practical example, STUK has further developed its inspector qualification process and training programs. In addition, STUK has carried out (and continues to do so) internal development projects where the aim was to make tacit knowledge more tangible. As practical examples: interviews, storytelling workshops, topical seminars and mentoring/tutoring arrangements have been conducted. Furthermore, development of the organization and its structure has helped STUK to spread out the responsibilities more evenly - and to manage competencies accordingly. In 2014 STUK recruited a designated HRD specialist to specifically support the capacity building of its nuclear regulatory departments. STUK continues to develop its capacity and capacity building system as a continuous activity. As STUK has recruited new staff due to increased workload and retirement of senior professionals, it has also focused on developing various methods to retain its staff. STUK has identified its strengths and opportunities in the labour market and when compared to its 'competitors'. Well-being at work, balance between working and personal life, career opportunities, opportunities to develop personal competence, basic benefit package are some examples of the areas that STUK has investigated and developed in order to retain its talent. Besides the STUK's internal development actions, there has been national level efforts to secure the adequate nuclear competence in Finland. For example Finland created an extensive report on Nuclear Enegy Competence in Finland. The report was a product of a specific committee appointed by the Ministry of Employment and Economy (MEE) and it started its work in 2010.The main tasks of the committee were: to define the status of the human resources (existing and needed) of the active parties in the nuclear energy sector, to survey the needs for basic education, post-graduate studies and further education, to discover the potential for Finnish participation in the large new build nuclear projects in the future, to map the existing research infrastructures available to the nuclear energy sector, to survey participation in international research and to chart the utilisation of VTT's research reactor. In addition, the Committee was asked to give recommendations for actions to be implemented in Finland. The committee members were invited from the ministries, STUK, VTT (National research institute), universities, nuclear power companies and Posiva. The work was mainly carried out in six sub sections involving more than 150 experts. The final report was utilized e.g. to steer and develop national training system. The individual nuclear organizations benefitted from the report by gaining input as they planned their actions to overcome the retirement of senior professionals.
Canada	Article 10	p.36	The 2012 IRRS mission has recommended that "STUK should consider explicitly addressing safety culture in its management system in order to ensure a common understanding of key safety culture characteristics to support individuals and groups to: • Reinforce a learning and questioning attitude at all levels of the organization; • Continuously develop, assess and improve the safety culture; and • Prevent regulatory capture" and "STUK should consider the development and		Safety culture is addressed in STUK's Management System. STUK's safety and quality policy was updated in 2014 and sets outs some general factors and expectations for good safety culture. Guidance also encourages personnel for continuous improvement and personnel responsibility on the quality of the work. Safety culture self assessments were carried out at all levels of organization during fall 2013 and in prior training of safety culture was provided to all staff members. The procedure to collect indications of and assessing the licensee's safety culture has been developed and implemented and the HAKE-Polarion tool is used for collecting observations and findings. Safety culture specialist analyses the findings, the analyses are validated by cross specialist meetings and the analyses are given as input to the process for overall safety evaluation of licencees and NPPs. The procedures introduced are under continuous development.

Country	Article	Reference	Question	Comment	Answer
			implementation of a more systematic method to collect indications of and assess the licensee's safety culture." The Finland national report speaks of a new regulation (STUK Y/1/2016), guide (YVL A.5), and a database (HAKE-Polarion) but it is difficult to assess if the concerns of the IRRS team have been addressed by these activities. How has STUK responded to the concerns of the IRRS regarding the oversight of safety culture?		
Canada	Article 10	Regulatory requirements regarding safety	The report states: "Licensee has to ensure that these requirements are applied in all organisations that participate in safety significant activities." Why do safety requirements apply only to safety significant activities and not to all work activities?		This is one way to implement the Graded Approach.
Canada	Article 11	p.40	The report states "The training activities and procedures at the Loviisa NPP are constantly developing. Much responsibility is given to the line manager and the individual defining the qualification and training needs. The training unit can support the line organization with their expertise, but the responsibility for developing the specialist competence lies on the line organisation. The training unit's main responsibility is to develop the human resource management procedures and organise the general training sessions." Is the training system developed and implemented in NPPs based on Systematic Approach to Training (SAT)?		YES, mainly.

Country	Article	Reference	Question	Comment	Answer
Canada	Article 12	p.44	The Olkiluoto power plant reported that "Fatigue has been identified as an important factor to be managed." Please describe your fatigue management program. How has this affected the scheduling of staff to avoid fatigue-related human errors?		The Olkiluoto power plant has a fatigue management practice according to which the control room personnel in night shift are allowed to have maximum one controlled rest period during shift. The maximum duration of one controlled rest is 30 minutes. Person can take the rest only when it does not disturb conducting the operating work. The minimum staffing level in main control room specified in Operational Limits and Conditions (OLC) must not be violated. Shift Superviser is in charge of administration of controlled rests during the shifts. Since adopting the practice of "controlled rest" the Olkiluoto NPP units 1&2 have started utilizing 12h shifts for operating personnel.
Canada	Article 13	Under the title: Measures taken by licen	During the independent evaluation of purchasing conducted at Loviisa NPP, did Fortum Power and Heat Oy assess their Counterfeit, Fraudulent and Suspect Items (CFSIs) process?		No, that was done during implementation of new YVL guides.
Canada	Article 15	pp.63-64 (all from last para)	a. Does STUK now conduct independent monitoring following IRRS recommendation? b. Does STUK review/monitor/inspect for non-radiological substances? c. Did public/industry participate in review of Guide YVL C.7?		a) Yes, STUK conducts today independent environmental monitoring b) STUK conducts only radiological monitoring. c) The up-dating process of YVL guides contains also the possibility for the public to comment. This is done by using the platform of open net-pages of STUK. Comment from the public can be given to the revisions 4 of the YVL guides. Comments from licensee holders are asked already to the revision 2 of the YVL guides in the up-dating process.
Canada	Article 16	p.67	A full-scale offsite nuclear emergency and rescue exercise "LOVIISA 2016" was conducted in April, 2016. What were the lessons learned and areas for improvement?		51 organizatios participated in the Loviisa-16 -exercise. It is not possible to list all the lessons learnt or actions here. At the power plant examples of identified areas for improvement were that awareness of the contamination level, required PPE and access restrictions should be more clear and communication should be more effective between the organizations. In the state administration the most important lesson learnt is that an effective common system for situational awareness shall be developed. Investigation/discussion is going on. Also some visual material used by STUK should be more clear to be understood correctly in the other organizations.
Canada	Article 17	pp.9, 70-72 (Articles 17-18), 124 (Annex	What other actions still need to be completed as part of the Finnish National Action Plan pertaining to Fukushima Daiichi related safety improvements?		At Olkiluoto 1 & 2 the steam turbine pump and the low pressure fire water injection is under implementation, as well as the improvement of independency from sea water cooling at Olkiluoto 2. At Loviisa 1 & 2 some flooding protection improvements are still underway.

Country	Article	Reference	Question	Comment	Answer
Canada	Article 17	p.68	Regarding: “an assessment report in accordance with the Act on the Environmental Impact Assessment Procedure (468/1994) as well as a description of the design criteria which the applicant will observe in order to avoid environmental damage and to restrict the burden to the environment. “ Please provide information on the level of detail on the design that is to be provided to support the EIA and the Decision-in-Principle.		The required level of detail on the design to be provided can be described in the following way: According to Nuclear Energy Decree Section 23, the application for a decision-in-principle shall be supplemented with the following documents: - - - (a) an outline of the technical principles of the planned nuclear facility; (b) a description of the safety principles that will be observed; - - - According to Guide YVL A.1 Annex A, the following information shall be submitted to STUK when an application for a decision-in-principle is filed for a nuclear facility: • the design principles and description of operation of the nuclear facility and its safety systems, and where a nuclear power plant in concerned, also those of its reactor, primary circuit and containment (see YVL B.1); • preliminary principles for the siting and layout of the facility, buildings and structures of the facility, and preliminary plans for provisions for internal and external threats (see YVL B.7); • preliminary principles for the provisions for aircraft crash (see YVL A.11); • summary of the safety analyses pertaining to the facility option concerned, including an environmental impact analysis of the worst-case accident scenario and principles according to which offsite radiation doses and releases are limited and monitored (see YVL B.3 and YVL C.3); • general plans pertaining to the organisation implementing the plant, the suppliers of the plant and its major components, and quality management of the implementation (see YVL A.3, YVL A.5); • preliminary personnel plan (see YVL A.4) • references to the nuclear facilities that have served as models, and a summary of the most significant modifications made compared to them; • the licence applicant’s own assessment of the feasibility of the implementation of the nuclear facility project concerned in compliance with the Finnish safety regulations. According to Decree on Environmental Impact Assessment Procedure Section 10, the assessment report shall contain, on a sufficient scale: - - - • the main characteristics and technical solutions of the project, a description of operations, such as products, outputs, raw materials, transport, other materials, and an estimate of the types and amounts of waste, discharges and emissions, taking into account the planning, construction and operational stages of the project, including possible dismantling; - - - • an account of the environment, and an assessment of the environmental impact of the project and its alternatives, any deficiencies in the data used, and the main uncertainty factors, including an assessment of the possibility of environmental accidents and their consequences; - - - • a proposal for action to prevent and mitigate adverse environmental impact; - - -

Country	Article	Reference	Question	Comment	Answer
Canada	Article 17	p.69	Regarding: “Efficient co-oper¬ation between the utility and responsible authori-ties is emphasised, e.g., for: maintaining the land use planning in the plant environment during the plant operational life time in line with the safety goal “ Is the distance for which permanent residences cannot be built in the vicinity of the facility specified in regulations, and if so, what is this distance?		The distance for which permanent residences shall not be built in the vicinity of a nuclear power plant is specified in Guide YVL A.2 Requirement 411. The distance is approximately 5 km. 411. Government Decree (717/2013) stipulates that a precautionary action zone shall surround the site area and extend to a distance of approximately 5 kilometres from the plant, and that land use restrictions are in force in this area. The precautionary action zone shall include in their entirety any villages and settlements that are located inside the area. The following aspects supplement requirement 402: 1. The precautionary action zone shall not contain facilities inhabited or visited by a considerable number of people, such as schools, hospitals, care facilities, shops, or significant places of employment or accommodation that are not related to the nuclear power plant. 2. The precautionary action zone shall not contain socially significant functions that could be affected by an accident at the nuclear power plant. 3. The number of permanent inhabitants, recreational housing, and recreational activities shall be limited inside the precautionary action zone of a nuclear power plant, so that a rescue plan that allows for effective evacuation of the population may be drawn up and implemented for the area [25]. Special attention shall be paid to the characteristics of the site’s immediate surroundings, such as archipelagos that are difficult to travel and recreational settlements, for example, as well as other rescue activities that may be required under exceptional conditions. 4. Primarily, land use and construction decisions shall aim at maintaining the number of permanent and leisure-time inhabitants inside the precautionary action zone at a level where it will not substantially increase during the construction and operation of a nuclear power plant from the time when the decision-in-principle was made under the Nuclear Energy Act.
Canada	Article 18	p.73	Regarding: “Design of the Olkiluoto unit 3 has been assessed for the con-struction licence (2005) and during the construc¬tion phase. It will be reassessed when reviewing the plant’s operating licence application.” Please describe the scope of the re-assessment of the design during the review of the plant’s operating licence application.		The Final Safety Analysis Report and other documents submitted for the operating license application shall describe the plant as built. Hence the review covers plant design and the related updated safety analyses (both determinstic and probabilistic). The emphasis however is on the features developed after the construction license phase including Technical Specifications, procedures and operational organisation.
Canada	Article 18	General	Are there any specific requirements and guidance for the design and performance of passive systems and components?		The requirements concerning design do not depend on the type of the system i.e. apply on both active and passive systems. Failure criterion may be relaxed for a passive system in certain circumstances.
China	Article 11.1	8.2 /P33	In the Executive Summary, it is mentioned that: The Government has been decreasing STUK’s budget during the past years and the main impact is that STUK has to reduce their radiation safety research activities. So that STUK has established a national radiation safety research programme in co-operation with all universities in Finland to ensure that radiation safety research will be continued in Finland. But in Article 8 section Finance and resources of STUK, there is no such description for		The national radiation research safety programme describes national needs for radiation safety research in Finland in the areas of health, environment and emergency. National funding for the programme and for participating in EU-programmes in the same areas has been inquired from the governmental quarter (Ministries, Academy of Finland) without any success. Funding is still unsolved.

Country	Article	Reference	Question	Comment	Answer
			national radiation safety research programme. Question: Please explain about the radiation safety research programme and how to ensure the continuity of the radiation safety research in the case of decrease of the government budget?		
China	Article 11.2	11.2/P40	In the report, it is mentioned that TVO has updated the personnel plan regularly according to the phases of Olkiluoto NPP unit 3 construction. TVO made a big organizational change during 2015. And STUK also participates in examinations of shift personnel, where the operators working in the control rooms show that they are conversant with all salient matters related to plant operation and safety. Question: Please explain how TVO ensure that their operating staffs especially the shift team are well prepared to take over the new plant in operation. How to train the operation personnel to ensure the competence for PWR units operation?		Most of the operating staff was hired early in the project, and have been involved in the project in many different ways. The operating staff has e.g. participated in review of documents (especially operation related) and in the validation of operating procedures and the operator interface. At the moment they are involved in the commissioning activities. They have also received training (provided both by the vendor and by TVO) concerning the plant and the systems, as well as different aspects of operation (OLCs, EOPs etc). They have also practiced the operation with the plant simulator. Before start of operation, there will be a 9-week simulator training period.
China	Article 18.1	18.1/P71-P72	Description in section 18.1"Due to the TEPCO Fukushima Daiichi accident, the Finnish requirements have been supplemented by requiring that the plants must have equipment and procedures to ensure that decay heat from nuclear fuel in the reactor and in spent fuel pools can be removed for a period of three days independent of external electricity and external water supplies in situations which are caused by rare external events or by a malfunction in the plant's internal electricity distribution system." And in others sections, there are some explanation of the modifications taken in 5 NPPs, but there is no description about the development or modifications of procedures after these modifications. Question: What factors are considered in the development and modification of procedures to ensure the rationality of the		Procedures are required to be updated concurrently with making plant modifications. All operating procedures intented for use in the main control room go through extensive verification and validtion process to ensure appropriateness.

Country	Article	Reference	Question	Comment	Answer
			procedures?		
China	Article 19.1	19.1/P79	Question: As the first EPR unit, what principles are used to determine the tests for Olkiluoto unit 3? And how does the STUK review these tests?		The method for determing the commissioning tests consists of • identifying the (safety) functions of different equipment and systems and the required operation modes • identification of the FOAK tests • identification of tests of abnormal operating condition and test of different transients • defining the possible conditions of performance of the tests on site • defining acceptance criteria Different kind of safety assessments are used to support the development of the testing program, for example: • Completeness check of nuclear safety related system functions • Evaluation of the deviations from Technical Specifications • Nuclear Commissioning is subject of a review by application of PRA • safety assessment is performed for each identified FOAK test STUK has reviewed the method for determining the tests, and STUK also reviews the individual testing programs for systems and plant tests. STUK witnesses chosen tests on site, and will review test results. In STUK's review, the focus is in the coverage of the testing and the definition of the acceptance criteria.
China	Article 19.7	19.7/P86	Question: Please explain how Olkiluoto unit 3 share their experience during construction phase.		STUK shares the experiences for example by • reporting in CONEX database • participating in the OECD/NEA MDEP –program (Multinational Design Evaluation Program) • bilateral cooperation with the regulatory bodies of different countries (e.g. ASN in France) • publishing in its website the most important decisions and results of inspections (in Finnish) • publishing annual report of the performed supervision, including performed inspections and their results (translated into English, available on STUK's web site).

Country	Article	Reference	Question	Comment	Answer
Czech Republic	Article 14.1	p. 50	„Probabilistic risk assessment Regulatory requirements on PRA Guide YVL A.7 includes the following probabilistic safety goals: ▪ Core damage frequency less than 1∙10-5/year ▪ Large radioactive release (> 100 TBq Cs-137) frequency less than 5∙10-7/year.“ The quoted text from the Finnish National Report states that the STUK has set (in its regulatory guide YVL A.7) a requirement that the frequency of a large radioactive release from the NPP has to be less than 5∙10-7 per year. Though this is not a new requirement it seems to be in agreement with the new requirements of EURATOM and WENRA, which have been transposed into the new amended Finnish nuclear legislation (as mentioned on page 22 of the Finnish National Report at the part addressing the Article 7 of the Convention on Nuclear Safety). These international requirements generally require that the accident sequences with a large or early release of radioactive substances from the NPP should be "practically eliminated" for new NPP designs, i.e. they should be either physically impossible to occur or with a high degree of confidence extremely unlikely to arise. 1. Is it correct to assume that the STUK considers the quoted part of the Finnish nuclear legislation as fully adopting the above mentioned international requirement regarding the practical elimination of large or early release of radioactive substances from new NPPs? 2. If that is the case, did the STUK designate the given frequency of 5∙10-7 per year as adequate to a sufficiently "extremely unlikely" event in the		1. This can be considered to practically eliminate large radioactive releases. It should be noted, though that the same meaning for practical elimination cannot be used for a wide range of sequences, e.g. when considering the whole PSA, and for separate sequence or set of sequences, e.g. prevention of high pressure core melt sequences. 2. The LRF set in Guide YVL A.7 is not to be considered to be extremely unlikely when talking about a single sequence, but it is the integral result from a comprehensive PSA, which includes internal and external hazards, also natural, and all plant states. The limit value set is the mean of the results. 3. The overall limit for the mean value of LRF is not the same as to be considered when "practically eliminating" separate sequences. High degree of confidence does not always need conservative assumptions. High degree of confidence may be considered in the frequency itself, if adequate uncertainty analyses are included.

Country	Article	Reference	Question	Comment	Answer
			given sense? 3. And, if that is the case, how is the STUK planning to pursue the other requirement to demonstrate this frequency with a "high degree of confidence", especially when considering the common requirement that accident analyses for accident scenarios exceeding design basis accident conditions are to be done using realistic best-estimate methods and assumptions, i.e. not using the conservative ones providing the required "high degree of confidence"?		
Czech Republic	Article 14.1	p. 56	On page 56, in-service inspections are described: regular inspections and risk-informed based inspections. What is the relationship between the scope of SSCs with regular inspections and the scope of SSCs within the RI ISI program? What is the regulatory body position in the process of a component incorporation into the RI ISI program?		Guide YVL E.5 presents the requirements for the planning, qualification, implementation, reporting and supervision of the in-service inspections performed on the pressure equipment of nuclear power plants using non-destructive testing methods: • Inspections shall be performed on pressure equipment belonging to safety classes 1 and 2, other pressure equipment that is considered significant in terms of nuclear safety, and for the flywheels of the main circulation pumps. • The piping in-service inspection programme shall be prepared in a risk-informed manner, analysing all of the nuclear facility's systems in safety classes 1, 2, 3, and EYT (non-nucle¬ar) as a single complex independently of the safety classifications and nominal dimensions of the piping. STUK will assess the risk-informed selection process methodology description for piping submitted for approval during the construction of a nuclear power plant, and which is supplied for the purpose of the pre-service inspection plan. STUK will evaluate the results of the risk-informed selection process submitted for information when the pre-service inspection plan and programme for an inspection interval are being processed.
Czech Republic	Article 16.1	p. 67	How many Organizations participated in the LOVIISA16 Exercise?		About 300 people from 51 different organizations participated in the Loviisa 16 -excercise.
France	General	Summary, 8	Nordic countries have arrangements in place to ensure harmonization of emergency plans and protection of the public. How these arrangements are harmonized with other Europeans systems?		The arrangements are broadly in line of arrangements in other European countries. However, with no European-wide consensus on harmonization and common arrangements, closer hamonization is impossible. Any further work is pending on common European-wide consesus on the approaches to take for the harmonization.

Country	Article	Reference	Question	Comment	Answer
France	General	Summary, 9 to 10	Finland indicated that it participates to international peer review and that it is a way to exchange information on safety issues, operating events and regulatory experience. Could Finland clarify which types of good practices and lessons Finland learned from those international peer reviews?		When participating IRRS missions as reviewers, we have gained general understanding of different regulatory frameworks and whether there are some differences when comparing them to the Finnish regulatory approach. We gain understanding of reasons behind and possible benefits and challenges related to different approaches. Examples of some more detailed lessons learnt include inspection practices (also how resident inspectors are used in different countries), how the graded approach is applied in the oversight functions, how the regulatory safety culture has been assessed and developed, what kind of management systems regulators have, and have they developed some specific useful tools to support the oversight work. Also the structure of radiation and nuclear safety regulations might be different and the level of details in the regulations. In the topical peer reviews (e.g. stress tests carried out in the European countries after the Fukushima accident) we received good information on the safety improvements and their justifications planned and under implementation in different countries which helped us to assess whether the actions carried out in Finland were considered appropriate. Participating peer reviews is however sometimes quite resource demanding, so similar types of good practices and lessons learnt can be achieved also in international workshops or working groups or bilateral cooperation.
France	General	Summary (Annex 6), 127	Finland mentions that, in its activities, "STUK emphasizes the licensee's commitment to the strong safety culture. The obvious elements of licensee's actions to meet these responsibilities are strict adherence of regulations, prompt, timely and open actions towards the regulator in unusual situations, active role in developing the safety based on improvements of technology and science as well as effective exploitation of experience feedback". How Finland takes into account the Human Factors contribution in the safety culture evaluation?		The Finnish regulatory reguirements set demands for the licensees to pay attention to the interplay between human, technology and organisational factors. The licensees need to train their personnel to understand the basics of phenomena affecting the work performance of individuals and work groups. Human factors are considered e.g. in the event investigations and control room design. Furthermore, we have reguirements for leadership, and good work conditions and open work climate are expected. The licensees are required to utilize safety culture experitise when necessary. Similarily STUK utilises both its inhouse and external (TSO VTT) safety culture expertise (behavioral science expertise) in its safety culture oversight activities. STUK's approach to safety culture is systemic. Human and organisational factors are considered in their technical context.
France	General	Summary, 10	What is Finland's feedback and the key issues in supporting KACARE development of regulatory infrastructure?		Finland (STUK) provides technical support and management advisory services for developing the essential atomic energy regulatory infrastructure associated with the planning, establishment, and operation of a Saudi Arabian atomic energy regulatory body for the benefit of the peaceful, safe and secure implementation of the atomic energy technology in the Kingdom of Saudi Arabia. Generically the technical support services will cover the areas of Radiation and Nuclear Safety, Regulatory Inspection programs, Commissioning & Operation, Radiation Protection for Nuclear Workers, Public and the Environment, Safeguarding of Nuclear Materials, aspects of Nuclear Security, Transportation of Nuclear and Radioactive Materials, Use of Radiation, Emergency Preparedness, Environmental Radiation Monitoring, regulatory aspects of Radioactive Waste Management, and Decommissioning. The support programme between STUK and Saudi Arabian regulatory body is still in progress and thus the feedback has not yet been evaluated in a detailed way.

Country	Article	Reference	Question	Comment	Answer
France	General	Summary, 6	Finland explained that the retirement of large age groups has been affecting public administration and industry throughout, including STUK, utilities and the spent fuel management company Posiva. Which measures/actions (formation, tutoring, etc.) did Finland implement to maintain the competences and knowledge?		In order to maintain the nuclear competencies and knowledge, Finland has implemented various actions and measures in recent years. Some of the measures have been conducted on a national level whereas many of them are organization specific actions. On the national level, Finland created an extensive report on Nuclear Enegy Competence in Finland. The report was a product of a specific committee appointed by the Ministry of Employment and Economy (MEE) and it started its work in 2010.The main tasks of the committee were: to define the status of the human resources (existing and needed) of the active parties in the nuclear energy sector, to survey the needs for basic education, post-graduate studies and further education, to discover the potential for Finnish participation in the large new build nuclear projects in the future, to map the existing research infrastructures available to the nuclear energy sector, to survey participation in international research and to chart the utilisation of VTT's research reactor. In addition, the Committee was asked to give recommendations for actions to be implemented in Finland. The committee members were invited from the ministries, STUK, VTT (National research institute), universities, nuclear power companies and Posiva. The work was mainly carried out in six sub sections involving more than 150 experts. A working group set up by the MEE prepared a research strategy for nuclear energy field through 2030 and the activity is an example of actions based on the recommendations in the Committee's competence report. The key organizations of Finnish Nuclear Sector run an annual training program as a cooperative effort. 2016 is the 14th year when 'the Nuclear Safety Course' is carried out. The Course brings together employees from all disciplines, organizations and professional backgrounds. The contents of the course cover thorougly the topic areas of entire nuclear industry. The lecturers of the course are specialists, managers, researchers etc. of the participative organizations. In addition, the six-week course takes its pupils to visit e.g. nuclear installation sites and research facilities. Besides the country-level efforts, individual organizations took various actions in order to meet the challenges arising from the retirements. Here are some basic examples: In numerous organizations senior professionals were paired with young talents to form working pairs and to support knowledge transfer between generations. Different organizations have implemented variety solutions to serve the purpose of maintenance and further development of their competencies and knowledge. STUK started to prepare for the transition period during the early stages of OL3 project by recruiting new professionals and by focusing on training activities and capturing & transferring of key knowledge. As a practical example, STUK has developed its inspector qualification process by enhancing systematicality of actions. In addition STUK has carried out (and continues to do so) internal development projects where the aim was to make tacit knowledge more tangible and documented. As practical examples: interviews, storytelling workshops, topical seminars and mentoring/tutoring arrangements have been used. Furthermore, development of the organization and its structure has helped STUK to spread out the responsibilities more evenly - and manage competencies accordingly. In 2014 STUK recruited a designated HRD specialist to specifically support the capacity building of its nuclear regulatory departments. STUK continues to develop its capacity and capacity building activities as a continuous process.
France	Article 10	36	STUK has updated its management system and included self-assessment of safety culture into annual self-assessment program. Could Finland explain on what leans this self-assessment?		STUK has an annual self assessement programme, and safety culture is assessed within this programme regularly. In addition to IAEA's safety culture model a Finnish modification (DISC-model by VTT, DISC=Design for Integrated Safety Culture) has been used widely in Finland (also in STUK's self-assessment in 2013). The DISC framework proposes that an organisation has a good potential for safety when the following criteria are met in organisational activity: 1. Safety is a genuine value in the organisation and that is reflected in decision-making and daily activities, 2. Safety is understood to be a complex and systemic phenomenon, 3. Hazards and core task requirements are thoroughly understood, 4. The organisation is mindful in its practices. 5. Responsibility is taken for the safe functioning of the whole system and 6. Activities are organised in a manageable way. In 2016 SAFEX (Expert work in safety critical environment) survey was carried out at all levels of organization.
France	Article 10	39	STUK has provided training of safety culture to its personnel. Could Finland explain on what consists this training?		The safety culture training consists of class room lectures and discussions. The lecturers have been experts with a long experienece in both scientific and practical safety culture work. The topics cover e.g. a brief introduction to the history of human and organisational factors discipline, the concept of culture and safety culture, lessons learned from accidents in other domains, what is "good" safety culture, how does STUK conduct oversight on safety culture, what is expected from all "technical" inspectors, and what is good safety culture in a regulatory body.

Country	Article	Reference	Question	Comment	Answer
France	Article 12	43	For preventing human errors, Finland points out that it is important that the operating events are carefully evaluated and, if necessary, procedures of the nuclear power plant are developed to prevent similar mistakes. Could Finland provide information on the other ways used to prevent human errors, including organizational arrangements?		The NPP:s have in use Human Performance - tools. Additionally if there is organizational or process changes implemented, the changes are evaluated from safety point of view.
France	Article 14.1	§ 14, 57	Concerning ageing management, can Finland give more details on the ageing management plan chosen? What are the types of controls? What were the first results? Are there modifications implemented deriving from the controls? How does the program interact with the safety assessment?		Ageing management programmes of Finnish licensees define coordination and duties of the organization in terms of ageing management. Programmes are also to describe all relevant condition monitoring and maintenance procedures for safety related SSCs. Guidelines of Ageing Management for Nuclear Power Plants, Safety Guide No. NS-G-2.12 are referred in the programmes. For more details, see regulatory guide YVL A.8 "Ageing Management of a Nuclear Faciluty" available on STUK's website. Based on the fact that annual load factors have been rated among the best in the world, one could conclude that adverse effects of ageing are minimized and so far have been taken good care of at Finnish NPPs, too. As far as safety assessment is concerned, the ageing management programmes (and their revisions) are an integral part of both periodic safety reviews and license renewals, and are reviewed along with other related documents.
France	Article 16.1	§ 16, 65 to 67	Finland describes in detail on-site emergency plans established by the licensees and off-site emergency plans required by the rescue legislation. During the last period, several exercises were organized in Loviisa NPP and Olkiluoto NPP, as well as full scale off-site emergency and rescue exercises. Could Finland present the lessons learned from these recent exercises?		51 organizatios participated in the Loviisa-16 -exercise. It is not possible to list all the lessons learnt or actions here. At the power plant examples of identified areas for improvement were that awareness of the contamination level, required PPE and access restrictions should be more clear and communication should be more effective between the organizations. In the state administration the most important lesson learnt is that an effective common system for situational awareness shall be developed. Investigation/discussion is going on. Also some visual material used by STUK should be more clear to be understood correctly in the other organizations.

Country	Article	Reference	Question	Comment	Answer
France	Article 18.1	§ 18, 74	Following the Fukushima event, what is the approach to define the external hazards beyond design basis? Have the seismic risks been reassessed?		Requirements concerning rare external events have been implemented as part of the regulations and for new plants they are to be applied as is. Generally it is required that external events considered shall include exceptional weather conditions, seismic events, man-made hazards etc. The licensee/applicant shall justify the conditions or events and their frequencies in detail. External events and conditions with an estimated frequency of occurrence less than 10-5/year shall be considered as DEC C. A large commercial airplane crash is to be considered as DEC C as well. The assessment of DEC C may be based on realistic analyses and the plant is to manage without severe fuel damage. Regarding the existing plants, in Loviisa case the analyses and design improvements are ongoing (p.49, p.74). At the operating units the external hazards are treated mainly in the PSA framework and hazard up to estimated frequency of about 10-8/year are considered. Regarding Olkiluoto, modifications have been made at unit 1 to enable operation of the auxiliary feed water system in case of loss of sea water systems due to external or internal reason and the same modifications will be made at unit 2. In the renewal of emergency diesel generators (decided before the Fukushima accident) the new diesels will have both sea water and air cooling to reduce dependence on sea water systems. Regarding seismic risk, the seismic hazard studies have been updated for the Olkiluoto and Loviisa sites; only minor changes compared to the old hazard estimates. In Loviisa new dynamic analyses have been carried out to update seismic fragilities of some key items (steam generators, feed water tank, fire water pumping station) and a new seismic walkdown will be carried out in 2017. The Olkiluoto 1 and 2 seismic PSA will be upadated in 2017/2018, some additional seismic walkdowns have been carried out, e.g. fire water pumping stations and piping. New dynamic analyses have been carried out for the spent fuel pools. At Olkiluoto 3 modifications in protection against external hazard were not found necessary after the Fukushima accident.
Germany	General	p. 6/Summary	Finland states in the Summary that the retirement of large number of staff in Finland concerns also STUK, the utilities and the spent fuel management company Posiva as well as organisations providing technical support and education to them. Could Finland elaborate how this challenge will be treated?		In order to maintain the nuclear competencies and knowledge, Finland has implemented various actions and measures in recent years. Some of the measures have been conducted on a national level whereas many of them are organization specific actions. On the national level, Finland created an extensive report on Nuclear Enegy Competence in Finland. The report was a product of a specific committee appointed by the Ministry of Employment and Economy (MEE) and it started its work in 2010.The main tasks of the committee were: to define the status of the human resources (existing and needed) of the active parties in the nuclear energy sector, to survey the needs for basic education, post-graduate studies and further education, to discover the potential for Finnish participation in the large new build nuclear projects in the future, to map the existing research infrastructures available to the nuclear energy sector, to survey participation in international research and to chart the utilisation of VTT's research reactor. In addition, the Committee was asked to give recommendations for actions to be implemented in Finland. The committee members were invited from the ministries, STUK, VTT (National research institute), universities, nuclear power companies and Posiva. The work was mainly carried out in six sub sections involving more than 150 experts. A working group set up by the MEE prepared a research strategy for nuclear energy field through 2030 and the activity is an example of actions based on the recommendations in the Committee's competence report. The key organizations of Finnish Nuclear Sector run an annual training program as a cooperative effort. 2016 is the 14th year when 'the Nuclear Safety Course' is carried out. The Course brings together employees from all disciplines, organizations and professional backgrounds. The contents of the course cover thorougly the topic areas of entire nuclear industry. The lecturers of the course are specialists, managers, researchers etc. of the participative organizations. In addition, the six-week course takes its pupils to visit e.g. nuclear installation sites and research facilities. Besides the country-level efforts, individual organizations took various actions in order to meet the challenges arising from the retirements. Here are some basic examples: In numerous organizations senior professionals were paired with young talents to form working pairs and to support knowledge transfer between generations. Different organizations have implemented variety solutions to serve the purpose of maintenance and further development of their competencies and knowledge. STUK started to prepare for the transition period during the early stages of OL3 project by recruiting new professionals and by focusing on training activities and capturing & transferring of key knowledge. As a practical example, STUK has developed its inspector qualification process by enhancing systematicality of actions. In addition STUK has carried out (and continues to do so) internal development projects where the aim was to

Country	Article	Reference	Question	Comment	Answer
					make tacit knowledge more tangible and documented. As practical examples: interviews, storytelling workshops, topical seminars and mentoring/tutoring arrangements have been used. Furthermore, development of the organization and its structure has helped STUK to spread out the responsibilities more evenly - and manage competencies accordingly. In 2014 STUK recruited a designated HRD specialist to specifically support the capacity building of its nuclear regulatory departments. STUK continues to develop its capacity and capacity building activities as a continuous process.
Germany	Article 19	p. 78/ch. 18	Concerning the licensing of the I&C modernisation project of the Loviisa units 1 and 2 or the Olkiluoto unit 3, are there unresolved issues and if so, how will STUK proceed with these?		Currently there are no unresolved issues. Some detailed qualification documents are still in preparation but there are no “show stoppers”.
Hungary	Article 6	p.18	"Finland observes the principles of the Convention, when applicable, also in other uses of nuclear energy than nuclear power plants, e.g. in the use of a research reactor. In Finland, there is one TRIGA Mark II research reactor (250 kW), FiR 1, situated in Espoo. The research reactor was taken into operation in 1962, and it is operated by VTT Technical Research Centre of Finland Ltd (VTT). In 2012, VTT decided to commence the activities related to the planning of the decommissioning of the research reactor due to economical reasons." Do you plan to build a new research reactor in the future? In what areas can you support the decommissioning with training programs?		There are no known plans to build a new research reactor in Finland in the future.

Country	Article	Reference	Question	Comment	Answer
Hungary	Article 8	p.34	"STUK has adequate resources to fulfil its responsibilities. The net-budgeting model makes it possible to increase for example personnel resources based on needs in a flexible way." How will the necessary training programs be defined for new employees? Who organises the courses? Are the training courses qualified by an independent organisation?		STUK has developed its capabilities to manage and develop its competence and knowledge management by implementing various development activities and by recruiting a designated HRD professional to support the capacity building of the nuclear regulatory departments. In the first phase of development the main focus has been in enhancement of inspector qualification, basic training structures and revision of regulatory competence model. While developing the capacity building infrastructure - regulatory departments and their technical discipline areas analyze and identify competences to be developed and secured. Based on these analyzes and identifications, applicable methods of knowledge management are applied (e.g. shadowing, working in pairs, topical workshops, storytelling, collaborative training etc.). Additionally, the qualification and basic training of new employees focus on developing these fundamental competence areas. The revised inspector qualification process consist of various elements of training ranging from basic STUK and regulatory information to discipline specific inspector training. The formal training activities are only a part of the qualification of new inspectors. The most effective element of the qualification process is the structrured on-the-job learning. Newcomers are introduced to their tasks, roles and professional competence areas in the everyday working context e.g. by their senior colleaques. The newcomers participate actively in the oversight activities and observe and gain experience from real regulatory cases. As the level of professional competence increases, the level of participation and challenges are gradually increased. Training programs are defined and developed in close co-operation of techical and training professionals. Content and targeted expertise levels of training modules are based on the identified key competence areas AND the views of senior professionals and management of the topic areas to be trained. The majority of fundamental and basic courses are organized in-house but external courses are also utilized. The target is to provide the best training as reasonably possible. Sometimes this requires appointing external trainers to in-house training or enrolling external training programs. As the level of targeted expertise increases, the use of external courses OR the use of other (than classroom training) development methods increases. Whether the course is organized in-house or externally, its contents, methods and trainers are evaluated beforehand by STUK's senior experts of the very discipline/topic area. At the moment the training courses are not qualified by an independent organizations. This kind of qualification is considered as a future action as the development work on STUK's nuclear training system has progressed further.
India	Article 12	Second column, First paragraph, Page 43	While describing measures taken for Loviisa NPP, it is mentioned that – 'For severe accidents, there is a separate dedicated control room shared by both units'. The preceding paragraphs also mention that these NPPs have main control room and emergency control post. Could Finland share purpose, scope, location and design requirements of the 'dedicated control room for severe accident'?		The SAM control room is located at the plant yard at level +3.00 m and is common to both Loviisa plant units. Severe accident radiation conditions have been taken into account in the design. The design basis of the shielding of the walls and the roof and ventilation is high external outdoor exposure rate caused by potential radioactive release plume, deposition, and skyshine radiation around the SAM building. The operator has all necessary information available so the SAM safety functions can be successfully executed and monitored. Severe accident measurements are safety classified and qualified for severe accident conditions. The conditions in the SAM control room make also extended stays possible. SAM diesels feed the SAM control room electricity.
India	Article 16.1	Section 16, Page 64	For Emergency Preparedness, report mentions that 'In the new Regulation, design basis for emergency planning is a simultaneous accident at site's all reactor units'. While it is clear that this consideration is for emergency planning, can it be clarified if the radiological acceptance criteria for event categories given on Page		The acceptance criterion (doses) has been applied for one reactor. The probability of simultanous and similar accident at multiple reactor is very low and the frequencies presented in Table 1 would not be applicable for simultaneous accidents. Simultaneous accidents at multiple reactors could be caused by extreme external events but their contribution to the total accident frequency is relatively small.

Country	Article	Reference	Question	Comment	Answer
			49 (Table-1) are for accident in one reactor unit or simultaneous accidnet at multiple reactors?		
India	Article 16.1	Section 16, Page 65	On Page 65, second para, it is mentioned that 'multi-unit accident as design basis for emergency planning has prompted licensee to analyze some new accident scenario'. Could these new accident scenarios be elaborated?		Loviisa NPP has indicated a need to carry out further analysis concerning the duration of the release, the deley of release, the height of the release, weather conditions and protection measures in case of multi unit accident. Analysis shall be done before the end of the year 2017. Olkiluoto NPP shall update the FSAR concerning the admission/access to rooms/places essential for the memergency response in the case of multi unit accident.
India	Article 17.1	Page 69	It is stated "Site characterisation is performed based on geological, seismic, hydrological and meteorological factors as well as on transport routes and risks, industrial activities, agriculture, nature and population. Extreme meteorological conditions and consequences (e.g. frazil ice formation) have to be taken into consideration in the site evaluation and plant design". During siting stage, are considerations given to combination of external events (natural as well as human induced) and external events capable of inducing common-cause-failures? If yes, can the details such as type of events, specific technical considerations and methodology adopted be shared?		At the site selection stage, the main focus is on identifying the natural and human induced hazards possibly affecting the safety of the plant, evaluating their maximum intensities or hazard curves, and assessing if the hazards can be taken adequately into consideration the plant design. In the Finnish conditions, external hazards can usually be taken care of with normal designg solutions and they are not decisive in site selection. Combinations of external events are evaluated for the construction licence application and taken into consiuderation in pland design. The general approach is described in international guidance and reports published by, e.g., IAEA, OECD/NEA, WENRA and the detailed methods are developed by the licensees and vendors based on the local conditions and the plant design. Some information of the consideration related to external events and their combinations has been shared in international work groups, conferences and scientific journals.
India	Article 14.1	Page 49	The analyses cover comprehensively different operating states and include accident analyses for the storages of spent fuel and reactor operational wastes. Fortum will supplemented the deterministic safety analyses by analyses of type A and B design extension conditions, as required by YVL B.3, in association with the plant I&C renewal project by the end of 2018. Deterministic DEC C analyses will be submitted to STUK in 2019. Extreme external events have already been included in the plant PRA analyses. It is understood that the consideration of DEC-C are already covered in		PRA covers as a starting point all conceivable external hazards at the site, except intentional damaging of the plant, including those listed in international guidance. Most of the hazads can be screened out from PRA modelling because they are irrelevant at the site or have low frequency (< 1E-8/year) or no safety impact. The external hazards modelled in the PRAs include high sea water level, frazil ice formation in cooling water system, high sea water temperature, impurities in sea water (algae, oil slick), harsh weather conditions (extreme wind, tornadoes, temperatures, snowfall, lightnings), earthquakes and their relevant combinations.

Country	Article	Reference	Question	Comment	Answer
			the PRA. Can Finland explain what types of extreme external events are included in the PRA?		
India	Article 14.1	Page 49	Which external Events will be considered for DEC-C Deterministic analysis and what are the margins considered over Design Basis External Events?		Generally it is required that external events considered shall include exceptional weather conditions, seismic events, man-made hazards etc. Many types of severe external hazards are not relevant at the Finnish sites, e.g., dam breaks, tidal surges, landslides, soil instability. The licensee/applicant shall justify the conditions or events and their frequencies in detail. External events and conditions with an estimated frequency of occurrence less than 10-5/year shall be considered as DEC C. A large commercial airplane crash is to be considered as DEC C as well. The assessment of DEC C may be based on realistic analyses and no further conservatisms are required.
India	Article 14.1	Page 51	Figure 11, The core damage frequency is decreased from 1.1E-4 in 2004 to 2.0E-5 in 2015. Is the decrease in frequency attributed to plant modifications/reliability of equipment/calculation methods?		Plant modifications, changes in precedures guides, refinement of PSA modelling and updated analyses of plant response all make an important contribution to the reduction in core damage frequency during the past decade. In addition updates of initiating event frequencies, equipment reliability data, human error probabilities and external and internal hazard frequencies affect the PSA results to lesser extent, sometimes in opposite directions. All these factors are implemented simultaneously in PSA updates and afterwards it is difficult to give quantitative estimates on the contribution of each factor over the years.
India	Article 18.1	Annex 2 Page 94	What accident sequence is the design basis for the hydrogen management system? Whether ex-vessel scenario is considered? In this context, could it be clarified whether the training simulator includes the simulation of design extension conditions/severe accidents?		The design of the hydrogen management system at Loviisa NPP is based on the assumption that all hydrogen resulting from the oxidation of easily oxidized materials in the core is released into the containment. Scenarios in which the hydrogen production rate increases, e.g. during reflooding of a partly degraded core, have also been taken into account in the system design. These assumptions are directly included in the Finnish regulatory requirements, in which it is stated that the containment has to maintain its integrity even in the case of 100% oxidation, and that the analysis justifying the hydrogen management strategy shall evaluate cases in which the hydrogen generation rate increases (separately from the 100% oxidation cases). Whether ex-vessel scenario is considered? The severe accident management strategy relies on in-vessel melt retention at Loviisa NPP. It is not considered necessary to show by analyses that the containment is resistant to phenomena that would occur in an ex-vessel scenario, since this might be difficult due to the large volume and low design pressure of the containment (as explained in Annex 2, page 96). In general, the requirements concerning 100% oxidation and the increased release rates of hydrogen are conservative and do not distinguish between in-vessel and ex-vessel scenarios. In this context, could it be clarified whether the training simulator includes the simulation of design extension conditions/severe accidents? In Loviisa, the training simulator does not include the accident phase in which the core is degraded or molten. Design extension conditions are generally included.
India	Article 18.1	Annex 2 Page 94	Can Finland elaborate on the need for including recombination system in addition to the glow plug ignitors?		The decision to include both recombiners and glow plug igniters at Loviisa NPP was based on the different functionality of these two methods for hydrogen removal, as well as on a set of simulations of hydrogen behavior. Igniters are suitable for relatively high concentrations of hydrogen, in which case they start a controlled combustion. Recombiners start to operate at lower hydrogen concentrations and may prevent any mode of combustion or flame acceleration. Glow plug igniters are installed in the lower compartment of the Loviisa containments in case the hydrogen concentration there, due to the location of the steam supply systems, increases so fast that recombiners are not adequate to maintain an acceptably low concentration (i.e. one that would rule out fast combustion modes).

Country	Article	Reference	Question	Comment	Answer
India	Article 18.1	Annex 2 Page 94	Can Finland elaborate on the need for including recombination system in addition to the glow plug ignitors?		Duplicate question. The decision to include both recombiners and glow plug igniters at Loviisa NPP was based on the different functionality of these two methods for hydrogen removal, as well as on a set of simulations of hydrogen behavior. Igniters are suitable for relatively high concentrations of hydrogen, in which case they start a controlled combustion. Recombiners start to operate at lower hydrogen concentrations and may prevent any mode of combustion or flame acceleration. Glow plug igniters are installed in the lower compartment of the Loviisa containments in case the hydrogen concentration there, due to the location of the steam supply systems, increases so fast that recombiners are not adequate to maintain an acceptably low concentration (i.e. one that would rule out fast combustion modes).
Japan	Article 6	P20	Regarding license application, nuclear operators submit license application to the ministry of employment and the economy, and STUK reviews the documents and safety assessments. Please explain whether STUK directly have hearing to plant operator for license application?		Nuclear Enenrgy Degree sections 35 (construction license) and 36 (operating license) set the documents that the applicant shall submit to STUK when the license application is submitted to STUK. The required documentation is submitted directly from the license applicant to STUK. During the review of the documention STUK's regular review&assessment procedures are followed including discussions with the license applicant (and vendor/designer if needed) and clarification request letters are prepared if document supplements are needed. When the review of the documents are completed STUK prepares a decision letter to the license applicant where the regulatory possission to the document reviewed is given (so the are several letters given as the sections of the decree ask several documents to be submitted). Decisions conserning PSAR/FSAR and PRA are supported by comprehensive inspection reports as well. If the decision included requirements or conditions a formal hearing process is started and the license applicants opinion is asked prior decision-making.
Japan	Article 7	P29	Regarding inspection programme, STUK has "performance indicator system". Please provide us details of "performance indicator system", is it kind of a Web application database? If it is an application database, what kind of function does the "performance indicator system" has?		The whole STUK's Safety Performance indicator system with the descriptions and analyses has been published in our websites as a part of the Annual report (appendix 2), here is the link for the english version of the Annual report 2015 "Regulatory oversight of nuclear safety in Finland": http://www.julkari.fi/handle/10024/130731. Indicators include i.a. number of failures, average repair times and volume of annual maintenance of OLC components, number of deviations from the OLC, radiation doses for workers, radioactive releases, number of operational events, risk-significance of events, fuel, and primary system and containment integrity. STUK is currently evaluating the indicator system and might do some slight changes during year 2017.
Korea, Republic of	General	9	With reference to the executive summary, page 9 of the Finnish national report, it is described that public participation is made possible through the website of STUK. However, Korea would like to address that STUK's efforts to strengthen the openness seems to be one-sided, i.e., information is delivered from STUK to the public. With respect to the provided information in the page in question and Korea's comments, Korea would like to inquire the following question: How is public opinion is collected and incorporated into Finland's regulatory decision making process?		Public participation in the environmental impact assessment (EIA) process: EIA is conducted in two steps; in the first step utility has to establish a programme for the EIA, which is submitted to the Ministry of Economic Affairs and Employment (MEE), which in turn opens it for public comments for a limited period of time. After receiving statements and opinions on the programme, MEE issues Contact Authority's statement which has to be taken into account by the utility. After conducting the EIA according to the programme, utility submits the report to the MEE, which again opens the report for public statements and opinions for a limited period of time. After receiving statements and opinions, MEE issues its statement on the EIA report. To ensure adequate public participation, also a public hearing is organized normally in the municipality where the NPP is planned to be constructed. Simultaneously Finland has conducted the process for international participation within the Espoo Convention which is normally focused on its neighboring countries (the Baltic Ring) and for example has translated the material into 8 languages allowing public to gain information on their own languages. Finland has also asked a formal statement from its neighbors. Public participation in the Decision in Principle (DiP) process: After utility has submitted an application for DiP, MEE makes a public announcement (e.g. press release, information notice) in the area of the facility and requests statements and opinions from the public within a limited period of time, an announcement will also be made when a public hearing is organized in the municipality. Utility has to provide a general report on the project for informing public. MEE publishes all relevant information on their website, and provides links to the information in press releases, and information notices. Public hearing is organized by the MEE, and participants include the utility, STUK, Municipality representatives and other relevant authorities. Normally the hearing is organized in the form of a panel discussions, and after presentations by the panelists, public is given opportunity to raise questions and give comments. Public Participation in the Construction and Operating License phases: After utility has submitted an application for either Construction or Operating License, MEE makes a public announcement on the application (e.g. press release, information notice) in the area of the facility and provides information on the application on their website, and requests statements and opinions from the public within a limited period of time. Normally a public hearing is not organized in these phases, however exceptions exists. Other means of communication with the

Country	Article	Reference	Question	Comment	Answer
					public: STUK has arranged a regular meetings with the public living nearby the site annually. In the meetings STUK gives presentations on status of the regulatory reviews and results of it's safety evaluations, answers questions etc. Similar (but separate) meetings are arranged with the local media. STUK also offers expert support when needed / asked to municipal board meetings and non-governmental organizations. An important tool for the commucation with the public are STUK's web pages where triannual oversight reports, notices and the most signifigant regulatory decisions are published.
Korea, Republic of	Article 10	36	With reference to article 10, page 36 of the Finnish national report, it is stated that the appointment of responsible director for the construction and operation of NPP is subject to approval by STUK, and in page 38, it is stated that STUK conducts specific inspections focusing on leadership and safety culture. With respect to the provided information in the article in question, Korea would like to inquire the following question: 1) During inspection and approval of leadership, are there items or criteria in place for the regulatory authority to use in the assessment and confirmation of the adequacy of the leadership for safety displayed by licensees' management? 2) Are there instances of criteria not being met? In cases when criteria was not met, how were follow-up measures carried out?		1) In YVL A.4 there is e.g. following requirement **A05**. *The approval criteria for a responsible manager of a nuclear facility are defined in Section 125 of the Nuclear Energy Decree. These approval criteria mean, among other things, that* *•the individual concerned is known to be honest and dependable and his or her personal characteristics make him or her suitable for the position;* *•has good management and communication skills;* *•is familiar with the principles of emergency arrangements and security arrangements, nuclear safeguards, and the fundamental legislation related to supervisory and managerial duties and is capable of applying the legislation to the practical duties and various problem situations arising at the nuclear facility;* *•has the expertise in the field of nuclear energy required for the position and, in particular, expertise in the safe use of nuclear energy;* *•is sufficiently familiar with nuclear legislation and the regulations issued thereunder;* *•has sufficient managerial experience;* *•sets an example of good safety culture through his or her own conduct.* ***350.** Managers and supervisors shall possess administrative and people management competence, management and leadership skills as well as communication and interpersonal skills. They shall have the skills to manage and support their subordinates, develop their skills, and solve problems and conflicts. Supervisors shall be familiar with the requirements and special characteristics of their subordinates' work.* ***351**. Managers and supervisors shall, through their own actions, promote the safe way of working and reinforce good practices. Managers shall develop the values and behavioral expectations of the organization while setting an example themselves in order to promote these values and encourage the expected behavior.* *2) When criteria are not met STUK sets conditional/additional requirements or do not approve the application*

Country	Article	Reference	Question	Comment	Answer
Korea, Republic of	Article 10	39	With reference to article 10, page 39 of the Finnish national report, it is stated that the IRRS mission was carried out in fall 2012 and the reviewers suggested that STUK could emphasize safety culture also in its quality manual in a more detailed way as well as to assure the safety consciousness of the staff. To meet this suggestion, STUK decided to update its management system and to include self-assessment of safety culture into annual self-assessment programme. In addition STUK has provided training of safety culture to its personnel. With respect to the provided information in the article in question, Korea would like to inquire the following questions: 1) Taking into consideration that the STUK management system was revised to include self-assessment of safety culture in the annual self-assessment program, how are assessments on safety culture and management system conducted? What is the criteria for the assessment of safety culture? 2) What are contents of safety culture education and how are the staff educated?		1) STUK has an annual self assessement programme, and safety culture is assessed within this programme regularly. In addition to IAEA's safety culture model a Finnish modification (DISC-model by VTT, DISC=Design for Integrated Safety Culture) has been used widely in Finland (also in STUK's self-assessment in 2013). The DISC framework proposes that an organisation has a good potential for safety when the following criteria are met in organisational activity: 1. Safety is a genuine value in the organisation and that is reflected in decision-making and daily activities, 2. Safety is understood to be a complex and systemic phenomenon, 3. Hazards and core task requirements are thoroughly understood, 4. The organisation is mindful in its practices. 5. Responsibility is taken for the safe functioning of the whole system and 6. Activities are organised in a manageable way. In 2013 Self assessments were carried out at all levels of organization as open discussions about the status of the safety culture and how to enforce it in all STUK's activities. After self assessments a panel discussion was arranged for all directors about the safety culture in STUK. An intranet site that can be used in the future for training and assessments was established, containing training material, videos and self assessment questionnaire. STUK's Management system is assessed once a year on the top level. At some organizational levels, this assessment is done twice a year. 2) In prior training of safety culture was provided to all staff members. A lecuture on the topics i.a.: a brief introduction to the history of human and organisational factors discipline, the concept of culture and safety culture, lessons learned from accidents in other domains, what is "good" safety culture and DISC-model. Supporting training material on safety culture was delivered and questionnaire based on IAEA Safety Guide GS-G-3.1 was discussed in groups before self-assessment.
Korea, Republic of	General	8	With reference to the executive summary, page 8 of the Finnish national report, it is stated that licensees conducted an evaluation on the number and the suitability of emergency response personnel in the process of updating emergency plans to reflect lessons learned from Fukushima. With respect to the provided information in the executive summary section, Korea would like to inquire the following questions: 1) How does the evaluation on emergency response organization staffing take place? 2) How is the level of on-site staffing for accident management		For both NPP's in operation, the suitability of personnel to the emergency response organisation is assessed by the qualified company doctor (this is a new practise). The licensees, STUK and invited evaluators assess the size and structure and function of the emergency response organization during exercises. Scenarios based on multi unit accident have been performed both in Loviisa and in Olkiluoto. Based on the experience from the exercises only a few positions in the licensees emergency response organisations have been identified for duplication in case of a multi unit accident, an example is the operation manager's position. Another example on changes based on the Fukushima accident is that the number of radiation measurement patrol members has been slightly increased. Since the licensees´ organisations have already been practically "fully nominated" to the emergency response organisation, no major reform is expected.

Country	Article	Reference	Question	Comment	Answer
			expected to change In comparison with the level of existing on-site staffing for accident management through the application of lessons learned from Fukushima?		
Korea, Republic of	Article 12	42	With reference to article 12, page 42 of the Finnish national report, it is discussed that Loviisa NPP made a big investment in "human performance training" in 2015. With respect to the provided information in the article in question, Korea would like to inquire the following question: What is the background (e.g., human-related accident, performance trend, findings by regulatory inspectors, etc.) behind the licensee of Loviisa NPP in establishing its policy regarding human performance?		The background is both in operational experience, where human performance has been the one of the causes for the events, and promoting continuous performance improvement.
Korea, Republic of	Article 12	44	With reference to article 12, page 44 of the Finnish national report, it is stated that Olkiluoto NPPs have main control room, emergency control room, and in the case of Olkiluoto unit 3, it has a remote shutdown station. With respect to the provided information in the article in question, Korea would like to inquire the following question: In comparison with the main control room and remote shutdown station, what are the major functions and design characteristics of the emergency control room?		Severe accident radiation conditions have been taken into account in the design. The design basis of the shielding of the walls and the roof and ventilation is high external outdoor exposure rate caused by potential radioactive release plume, deposition, and skyshine radiation. The operator has all necessary information available so the SAM safety functions can be successfully executed and monitored. Severe accident measurements are safety classified and qualified for severe accident conditions.

Country	Article	Reference	Question	Comment	Answer
Korea, Republic of	Article 15	64	With reference to article 15, page 64 of the Finnish national report, Korea would like to preface its questions with the following information: According to EUR 2.1B.2, in case of DBC4 radiological consequces analysis, design target doses are divided into 24 hrs at 800m, 4 days at 3,000m, and whole duration at 800m after accidents. In addition, YVL(VNA 733/2008) requirements are 20 mSv for DEC and 50 mSv for severe accidents. 1) With regard to the mentioned requirements, what are the detailed exposure pathways(ex, cloudshine, groundshine, dietary) considered in Finland? Is there a difference in exposure pathway depending on time(24 hrs, 4 days, whole duration)? 2) In the case of groundshine, dietary exposure pathways, and resuspension, it seems public exposure dose will be effected beyond the given time frame of 24 hrs and 4 days. For these exposure pathways, is an extension of the dose assessment period taken into consideration?		At first we would like to inform you that Government Decree VNA 733/2008 is not anymore valid. The corresponding requirements are now given in Nuclear Energy Decree (161/1988) Section 22 b and STUK's regulation STUK Y/1/2016. See also Guide YVL C.3 Chapter 3.2.2. 1) Requirements for exposure pathways are given in Guide YVL C.4. There is no pathway dependence on the duration of the release. When considering need for short term protection measures (sheltering, iodine prophylaxis, evacuation) only cloudshine, groundshine and inhalation may be necessary to take into account. 2) No delay in the dose assessment period is allowed. The doses shall be assessed from the beginning of a radioactive release.

Country	Article	Reference	Question	Comment	Answer
Lithuania	Article 17	Page 68	Could you please provide more information on how the society is involved in process of siting and construction of nuclear installations in Finland?		Public participation in the environmental impact assessment (EIA) process: EIA is conducted in two steps; in the first step utility has to establish a programme for the EIA, which is submitted to the Ministry of Economic Affairs and Employment (MEE), which in turn opens it for public comments for a limited period of time. After receiving statements and opinions on the programme, MEE issues Contact Authority's statement which has to be taken into account by the utility. After conducting the EIA according to the programme, utility submits the report to the MEE, which again opens the report for public statements and opinions for a limited period of time. After receiving statements and opinions, MEE issues its statement on the EIA report. To ensure adequate public participation, also a public hearing is organized normally in the municipality where the NPP is planned to be constructed. Simultaneously Finland has conducted the process for international participation within the Espoo Convention which is normally focused on its neighboring countries (the Baltic Ring) and for example has translated the material into 8 languages allowing public to gain information on their own languages. Finland has also asked a formal statement from its neighbors. Public participation in the Decision in Principle (DiP) process: After utility has submitted an application for DiP, MEE makes a public announcement (e.g. press release, information notice) in the area of the facility and requests statements and opinions from the public within a limited period of time, an announcement will also be made when a public hearing is organized in the municipality. Utility has to provide a general report on the project for informing public. MEE publishes all relevant information on their website, and provides links to the information in press releases, and information notices. Public hearing is organized by the MEE, and participants include the utility, STUK, Municipality representatives and other relevant authorities. Normally the hearing is organized in the form of a panel discussions, and after presentations by the panelists, public is given opportunity to raise questions and give comments. Public Participation in the Construction and Operating License phases: After utility has submitted an application for either Construction or Operating License, MEE makes a public announcement on the application (e.g. press release, information notice) in the area of the facility and provides information on the application on their website, and requests statements and opinions from the public within a limited period of time. Normally a public hearing is not organized in these phases, however exceptions exists. Other means of communication with the public: STUK has arranged a regular meetings with the public living nearby the site annually. In the meetings STUK gives presentations on status of the regulatory reviews and results of it's safety evaluations, answers questions etc. Similar (but separate) meetings are arranged with the local media. STUK also offers expert support when needed / asked to municipal board meetings and non-governmental organizations. An important tool for the commucation with the public are STUK's web pages where triannual oversight reports, notices and the most signifigant regulatory decisions are published.
Pakistan	Article 12	12, Page 44	Reference section 12 of report, it is mentioned that main control rooms of Olkiluoto units 1 and 2 are now hybrid control rooms. Finland may like to share any HFE issues observed during design and operation of Hybrid control room.		PaS: 1) In the reported incidents there are no cases where the root cause is hybrid nature of the control room. 2) Hybrid control rooms and their design have been investigated in research projects in Finland by VTT (see work by e.g. Laarni et al 2011, Savioja et al 2012).
Pakistan	Article 15	Radioactive effluents, Page 61 , Para3	Finland may please elaborate the mechanism of the "Cesium removal technology".		After long storage period Cs-137 is typically the only radioactive nuclide evenly divided into storage tank containing evaporation concentrates. Other corrosion products including cobalt will settle at the lowest levels of the storage tank. Hence, the upper part of the storage tank can be treated separately. In order to remove Cs-137 a highly selective ion exchange material CsTreat® was developed by Fortum. It contains hexacyanoferrate. After removal of cesium and after strict nuclide specific measurements the purified liquid can be released into the sea.
Pakistan	Article 16	Page 66	It is mentioned that in 2015, the annual emergency exercise was based on an unlawful action scenario and the exercise was executed unannounced at the same time in both Olkiluoto NPP and Loviisa NPP. Finland may like to share any lessons learnt from this exercise.		The findings from the 2015 exercise include the following: Unannounced exercises are useful in testing the real response times and availability of staff. Good planning and informing certain key positions in the information exchange mechanism ensure that unannounced exercises do not cause unwanted reactions. The findings underlined the importance of maintaining a joint situation assessment between involved organizations and of coordinating the emergency response plans and nuclear security response plans as well as the related training. It also underlined the fact that communication is one of the key-elements, when involving many different organizations.

Country	Article	Reference	Question	Comment	Answer
Poland	Article 8.1	Page 32	It is not clear -what is the role of the Advisory Committee. When is it asked for an opinion? Is the opinion obligatory? Does the Committee have any responsibility?		The role of STUK's Advisory Committee is to help STUK to develop its functions as a regulatory, research and expert organisation in such a way that the activities are in balance with the society's expectations and the needs of the citizens. Both STUK and the Committee can decide on issues to discuss about. Asking opinions of the Committee is not obligatory, however, STUK sees this as an opportunity. The Committee has its duties and responsibilities (described above) but it is not responsible for STUK's actions.
Poland	Article 8.1	Pages 34 and 35	Large amounts of money are spent on research projects. Who and how decides about the topics that should be elaborated and which organization should work on the project?		The total volume of the research is 75 million euro per year. The two thirds of the money is used for the nuclear waste management research and organized by the waste management company Posiva. The operating nuclear power plants have their own research programmes. The decisions on the programmes is made by the organizations. STUK reviews the waste management programme periodically. For the national nuclear safety research (SAFIR) and waste management (KYT) there are separate programmes. A framework plan is made for four year period of the programme. STUK is leading the development of the framework planes. All the essential stakeholders licensee, TSO organisations, universities and other relevant research organizations are involved. The project are selected based on annual calls for tenders. The SAFIR and KYT organizations make the proposal of the funding and the funding decisions are made by the State Nuclear Waste Management Fund (VYR) based on the proposal and STUK statement on the proposal. STUK has an important role in the SAFIR and KYT organizations. Universities and The Finnish Academy fund also scientific research on radiation and nuclear safety. Those organisations are independent and make their own decisions. The research aiming to technology development is funded by TEKES and the decisions are made accordingly. For the national nuclear safety research (SAFIR) and waste management (KYT) there are separate programmes. A framework plan is made for four year period of the programme. STUK is leading the development of the framework planes. All the essential stakeholders licensee, TSO organisations, universities and other relevant research organizations are involved. The project are selected based on annual calls for tenders. The SAFIR and KYT organizations make the proposal of the funding and the funding decisions are made by the State Nuclear Waste Management Fund (VYR) based on the proposal and STUK statement on the proposal. STUK has an important role in the SAFIR and KYT organizations. Universities and The Finnish Academy fund also scientific research on radiation and nu-clear safety. Those organisations are independent and make their own decisions. The research aiming to technology development is funded by TEKES and the decisions are made accordingly.
Poland	Article 14.1	Page 47	The applicant must submit a preliminary SAR and PRA and later a Final SAR and also a PRA. Usually a probabilistic safety analysis is part of the Safety Analysis Report. Does the SAR include a PSA? If yes - what is the difference between the independent PRA and PSA included in the SAR?		In Finland PSA (PRA) is an independent licensing document. The preliminary and final SAR include a chapter giving a summary of the PSA and its results.
Poland	Article 14.2	Page 53	It is stated that the large release frequency has decreased due to the decrease of CDF but the severity of the release has decreased significantly mainly due to modifications in procedures. How is that possible?		If the CDF is reduced the large release frequency is also reduced if other things are unchanged. When the procedures for severe accident management are changed so that the amount of radioactive substances released in some accident chains is reduced but the release still remains over the large release limit, the severity of the release is reduced but the large release frequency is not affected. The modifications have resulted in larger fraction of low-pressure sequences which have smaller consequences.

Country	Article	Reference	Question	Comment	Answer
Romania	Article 19.4	page 83	Do the licensees perform periodic plant drills simulating the response to transients and accidents and exercising the emergency operating procedures and severe accident guidelines? If yes, what is the periodicity of such exercises and how are they conducted? Do such exercises include the simulation of actions in the installations and on site?		Every third year the NPP's emergency exercise is a national large scale exercise (so called co-operative exercise) in which a large number of operator organisations are invited. The exercise is headed by the regional rescue service. In addition, there are annual excercises at each plant site (in addition to the licensee, typically also STUK and rescue service participate these excercises). Principle is that during the emergencies every operator (ministry, agency etc.) takes care of the same area of responsibility as it has normally. Ministry of Interior has e.g. the responsibility of police, rescue services, border control and emergency response centre administration. Ministry of social Affairs and Health has the responsibility of health services including e.g. the guidance concerning the iodine prophylaxis. Plant simulator is typically used in the excercises and the organisations follow there procedures. Sometimes on-site actions are simulated but sometimes e.g. repair/measuring teams are sent to the site and actual locations to practice the locating of different places and moving in protective clothing.
Romania	Article 19.4	page 83	How does the regulator review and inspect the verification and validation of emergency operating procedures and severe accident management guidelines?		STUK oversees by means of documentary reviews; the licensee's reporting; inspections specified in the periodic inspection programme; oversight exercised by resident inspectors; and the steps taken based on operating experience and safety research results. The emergency and abnormal operating procedures and the severe accident management guidelines shall be verified and validated for ensuring that they are administratively and technically correct for the nuclear power plant unit concerned and compatible with the environment in which they are to be used. The procedures and guidelines shall be systematically validated and verified. Validation shall also address the role of human factors in the procedures. The validation of the procedures and guidelines shall be based on simulations or other suitable methods, primarily by using a training simulator.
Russian Federation	General	Annex 2, annex 4	It is mentioned in para 'Periodic safety reviews at the Loviisa NPP' in Annex 2 'Loviisa NPP units 1 and 2 under operation' of the National Report that considering lessons learnt from the accident at the Fukushima-Daiichi NPP, improvements were made to ensure safety system operability during 72 hrs. At the same time, para 'Safety assessments based on the lessons learnt from TEPCO Fukushima Daiichi accident' in Annex 4 'Olkiluoto NPP unit 3 under construction' points out that the NPP under construction is designed to have water inventory of the emergency feed water tanks sufficient for 24 hrs. Do Finnish regulations specify time during which safety systems shall retain their operability following initiating event (i.e. shall have power supply, water supply, fuel supply, etc.)? Are any design improvements planned for Olkiluoto 3 to increase time of emergency water availability to 72 hrs? Is there any specified time during which plant shall be able to pursue accident management		Finnish regulations specify a self-sufficiency period of 24+48 hrs for the safety functions. Systems shall function the first 24 hours from the onset of the event without material replenishments, that is without refilling e.g. the systems water tank. In addition there shall be inventory for further 48 hours of operation on the site. The emergency feedwater system of OL3 fulfills this principle as well as tanks are sufficient for the 24 hours and there is the required additional water volume available on the site.

Country	Article	Reference	Question	Comment	Answer
			and mitigation on its own, without external assistance (i.e. use equipment and human resources available on the site)?		
Russian Federation	Article 7.1	p. 21	As stated in Article 7 "Legislative and Regulatory Framework" of the National Report, according to the IRRS (IAEA Integrated Regulatory Review Service) recommendations, some amendments were made to the legislation aimed to increase the independence of STUK and to extend its authorities. Could you please clarify what are these recommendations, and how they increase the independence and extend the authorities of Finnish regulator.		The intention of the recommendation was that the government should embed, in law, STUK as an independent regulatory body separated from other entities having responsibilities or interests that could unduly influence its decision making. According to the IRRS recommendations, some amendments were made to the legislation aimed to increase the independence of STUK and to extend its authorities. The Nuclear Energy Act was amended in 2015 giving STUK a mandate to issue binding STUK Regulations concerning the areas of previous Government Decrees, and a new area concerning mining and milling operations aimed to produce uranium or thorium. Other changes in the Nuclear Energy Act state now more clearly that the Government has to take into account the proposals included in the STUK's statements when considering the conditions of the Decision-in-Principle and licences for nuclear facilities.
Russian Federation	Article 7.2.2	p. 25-26	As follows from Figure 5 and the information given in section "System of Licensing" in Article 7 of the National Report, Finland does not issue licences for site selection and preparation, and for decommissioning (licence is granted for NPP construction and operation). This points to incomplete fulfilment of the Convention Article 7, because following the definition given in para iii) of Article 2 of the Convention, "licence" means any permit issued by regulator to applicant, according to which the latter bears responsibility for site selection, design, construction, commissioning, operation or decommissioning of nuclear facility. Could you please comment on this opinion.		The suitability of proposed site(s) is comprehensively evaluated in the various phases of the licensing - land use planning, environmental impact assessment, decision-in-principle, construction license phase and finally operating license phase. The impacts of land use and construction shall be evaluated to the extent deemed necessary when performing zoning under the Land Use and Building Act (132/1999). The Land Use and Building Act and the Decree (895/1999) contain the provisions for planning, use, and construction of areas. According to Section 58 of the Nuclear Energy Act, before a local detailed plan is drawn up for the area intended for the site of a nuclear facility, and prior to the approval of such a plan where a site is reserved for the construction of a nuclear facility, a statement shall be obtained from STUK. The environmental effects of a nuclear power plant project shall be studied and evaluated in the environmental impact assessment (EIA) that precedes the processing of the decision-in-principle application under the Nuclear Energy Act. STUK shall issue statements to the Ministry of Employment and the Economy concerning the EIA programme and assessment report drawn up to assess the environmental impact. When applying for a decision-in-principle from the Government, particular attention shall be paid to the suitability of the intended site of the nuclear facility and its effects on the environment, in accordance with Section 14 of the Nuclear Energy Act. Section 8 of Radiation and Nuclear Safety Authority Regulation on the Safety of a Nuclear Power Plant stipulates that the impact of local conditions on safety and on the implementation of the security and emergency arrangements shall be considered when selecting the site of a nuclear power plant. The site shall be such that the impediments and threats posed by the plant to its vicinity remain extremely small and heat removal from the plant to the environment can be reliably implemented. During the decision-in-principle stage, STUK shall review that the applicant has submitted illustrative and comprehensive estimates on the radiation effects of various accident scenarios, including severe accidents, on the environment, and that the applicant has presented environmental descriptions and assessments of external hazards that are based on the best information available. When applying for a construction licence, STUK reviews that the report includes comprehensive and clear descriptions of geography in the vicinity as well as prevailing and predicted distributions of population, use of land and water areas as well as sources of livelihood (including agriculture and fishing) and traffic in the vicinity, site climate and meteorological dispersion conditions, hydrological factors within the site and its vicinity, geology and

Country	Article	Reference	Question	Comment	Answer
					seismology within the site and its vicinity, plans for the intake and discharge of cooling water and plans for the intake of raw water. When reviewing the operating licence application for a nuclear power plant unit and the periodic safety review, it shall be verified that all of the documents and information presented pertaining to the nuclear power plant unit, its site, and the radiation safety of the surrounding areas are up-to-date, and that the nuclear security plans and emergency plans submitted are acceptable. Decommissioning phase is currently covered by applying for a renewed operating licence. Decommissioning of the research reactor in Finland (first nuclear facility to be decommissioned) will be licenced using this procedure. The Finnish nuclear energy act is currently under revision and will introduce a new licensing phase for decommissioning (decommissioning licence). This was also discussed in the IRRS mission in Finland 2012 and the recommendation was kept open in the follow-up mission in 2015.
Russian Federation	Article 7.2.2	p. 25	According to para "System of Licensing" in Article 7 of the National Report, the construction and operation licences are prepared by the Ministry of Employment and the Economy. However, as follows from Figure 7 in Article 7 of the National Report, the Ministry of Employment and the Economy is an administrative body for use of nuclear energy, therefore, its execution of the license issue function contradicts part 2 of the Convention Article 8 pertaining to necessity of separating these functions. What is Finland's position on this?		Recommendation of IRRS mission in 2012 was that the Finnish Government should seek to modify the Nuclear Energy Act so that the law clearly and unambiguously stipulates STUKs legal authorities in the authorization process for safety. In particular, the changes should ensure that STUK has the legal authority to specify any licence conditions necessary for safety and specify all regulations necessary for safety. The Parliament of Finland approved the changes of the Nuclear Energy Act and Radiation Act on the 10th of March, 2015 in such a way that the independence of STUK is increased. Based on the changes STUK has the authority to issue mandatory technical safety regulations. Further, based on the changes of the Nuclear Energy Act the Government has to take into account the proposals included in the STUK's statements when considering the conditions of the Decision in Principles and licenses for nuclear facilities. In addition, STUK's authority is widened to environmental surveillance of mining and milling facilities and nuclear facilities. The change was reviewed by the follow-up IRRS mission in 2015.
Russian Federation	Article 7.2.1	p. 23	According to section "Provision of regulatory guidance" in Article 7 of the National Report, when evaluating the compliance with the new guide, the Regulator (STUK) can approve exemptions from new requirements if it is not technically or economically reasonable to implement respective modifications and if safety justification is considered adequate. Doesn't this practice compromise safety culture when economic considerations override safety requirements? If non-compliances with		In general, STUK does not take into account economcal impact of the implementation. However, the more significant the efforts for improvements are needed the more expensive the change will become. The safety significance of the improvement is considered, whether the exemption is approved or not. It is not reasonble to require major changes in order to achieve only minor improvement.

Country	Article	Reference	Question	Comment	Answer
			the new requirements are found and exemptions are approved, will relevant licence conditions include a demand to implement administrative compensatory measures to offset the non-compliances? How is it proved that safety justification provided in case of a non-compliance with the new guide is adequate?		
Russian Federation	Article 6	p. 19	Ensuring of operation of the auxiliary feed water system pumps independently of availability of the sea water cooling systems was implemented at the Olkiluoto NPP units 1 and 2 within the frames of safety improvements due to the Fukushima Daiichi accident. This modification was implemented at Olkiluoto 1 in 2014. Unacceptable vibration and pressure oscillations have been observed during the testing of one subsystem. What is the progress in resolving this problem? Have you evaluated how the lack of this modification influences NPP safety?		As a conclusion from the test runs performed at the plant, the vibration problem of the auxiliary feed water system recycling line does not inhibit operation at least for 24 hours. Vibration levels are under the acceptance criteria but significant enough to question long term operation (24 h - 72 h). The hydraulic pulsation is probably a result of the long recycling pipeline geometry of this one subsystem. STUK has required TVO (the licensee) to send report concerning the issue and possible modifications. Report is now (2/2017) under STUK's review including possible corrective actions and modifications for supplementary support, improving of hydraulic damping (hydraulic accumulator) OR valve modifications.
Russian Federation	Article 14.2	p. 48	Are there formal requirements for the verification and certification of computational codes used to perform safety analysis in Finland?		There are requirements for validation and verification of computational codes in the Finnish regulations, notably YVL B.3. Certification or licensing of the computational codes for accident analysis is not a Finnish practice.
Russian Federation	Article 14.2	p. 48	According to the Guide YVL Â.3, the Best Estimate plus Uncertainty analysis method is allowed to be utilized in safety analyses (the BEPU methodology). Is the requirement to select conservative initial conditions still valid (power, flow rate, etc.)?		An uncertainty analysis justifiable by statistical method is to be performed for design basis accident analyses, and it replaces the conservatism of the initial conditions. In DEC analyses the statistical analysis is not required. Failure criteria according to the accident class apply in any case.
Russian Federation	Article 18.2	p. 75	Safety improvements related to the Fukushima Daiichi accident implemented at the Olkiluoto Units 1 and 2 within preparation for life extension (after the year 2018) include installation of two additional emergency cooling subsystems. The low pressure subsystem will be connected with the fire fighting system. Will these be stationary		The Olkiluoto 1 and 2 systems referred to are fixed/stationary systems one of which indeed is fed by the firewater system. If necessary water may be injected to the firewater system by mobile pumps as well. Regarding Loviisa, the improvements are currently on-going. Due to the different plant design (BWR/VVER) the solution will not be identical. There already is e.g. an emergency feedwater system independent from electricity supply in place at the Loviisa NPP, but a new system removing decay heat from spent fuel pool will be added.

Country	Article	Reference	Question	Comment	Answer
			systems or portable water sources? In case of the stationary systems, do you consider the additional possibility of using portable sources? Do you intend to do the same at Loviisa NPP units in future?		
Slovakia	General	Executive Summary, p. 4	1. „In the end of 2014 the licensees of operating NPPs submitted to STUK assessments on the fulfilment of the revised regulatory guides. In 2015, STUK evaluated the assessments and made decisions on how to further improve safety. Regular update and implementation of regulatory guides, particularly with regard to nuclear power plants in operation, are unique measures on the international perspective“. What is the extent of such assessment in comparison with the extent of periodic safety review? 2. Regular update of relevant legal framework and its implementation is a usual practice in Slovakia (and in other countries as well). In addition UJD regularly reviews and updates safety guides which are not mandatory but assisting the implementation of legal documents (Atomic Act and Decrees). Please explain why this is considered as unique measure by Finland?		STUK carried out the evaluation of fulfilment of updated regulatory guides (YVL guodes) requirement by requirement when making the enforcement decisions to the existing NPPs. In many countries this is practise when carrying out PSRs. In Finland, the enforcement decisions for existing plants are made shortly after the publication of a new regulatory guide, and the decisions are based on licensees' evaluations and applications for exemptions. Moreover, the new regulatory guides in Finland are written for new reactors, but the same requirements are applied to existing reactors, as well. Thus enforcement decisions are made for existing plants, which may have had a different design basis than that for new reactors.
Slovakia	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)?		The page reference is probably a mistake.Probably p.35. The approaches for ensuring is contract ("intelligent client") with opportunities for supplier surveillance, supplier oversight (audits, follow up - audits, milestone inspections ("go-no go")), collaboration and contractor training.

Country	Article	Reference	Question	Comment	Answer
Slovakia	General	Executive Summary, p. 6	„The retirement of large age groups in Finland has been affecting public administration and industry throughout, including STUK, utilities ...“ „For the moment, STUK has adequate resources to fulfil its oversight responsibilities. However, resources used for developing STUK's own activities may be considered to be occasionally insufficient“. Is the problem with knowledge management solved systematically or ad hoc?		STUK has developed its capabilities to manage and develop its competence and knowledge management by implementing various development activities and by recruiting a designated HRD professional to support the capacity building of the nuclear regulatory departments. In the first phase of development the main focus has been in enhancement of inspector qualification, basic training structures and revision of regulatory competence model. While developing the capacity building infrastructure - regulatory departments and their technical discipline areas analyze and identify knowledge needs to be secured. Based on these analyzes and identifications, applicable methods of knowledge management are applied (e.g. shadowing, working in pairs, topical workshops, storytelling, collaborative training etc.). Additionally the development project targeted to grow broad-scale competence (comptence and knowledge areas of multiple disciplines) has been lauched. Besides the concrete (topical) development actions and targets, the general mission of current development activities is to develop STUK's regulatory capacity building into more systemic and systematic direction. Even though development actions have taken place and some of them are still in progress, further development needs are constantly identified. Competence and knowledge management will remain as one of the areas of continous development in STUK. This approach will gradually develop the systematic nature of capacity building. However, even with a strong systematic structure, some project type development actions will take place in the future. By supplementing systematic activities by conducting temporary development projects with specific scope (in selected areas), it is easier to highlight the key development areas - and gain results / evaluate success of development actions in selected areas. In other words, the foundation and the long-term development of regulatory capacity is based on systematic activities and development projects are used to achieve 'development leaps' in selected development areas. However, the outcome of the development projects are integrated into systematical activities. The schedules of development activities in the nuclear regulatory departments are sometimes forced to yield the high workload of oversight tasks. Therefore some development activities have taken more time than initially planned. However, the quality of development actions is prioritized.
Slovakia	General	Executive Summary, p. 7	Safety assessments and improvements based on the lessons learnt from TEPCO Fukushima Dai-ichi accident. „Based on the results of assessments conducted af¬ter the TEPCO Fukushima Dai-ichi accident on 11 March 2011, it is concluded that no such hazards or deficiencies have been found as would require immediate actions at the Loviisa NPP. However, the areas where safety can be further enhanced have been identified and there are plans on how to address these areas“. Are these improvements part of the national action plan after Fukushima accident and what kind of enhancement are identified?		Improvements are part of the national action plan, and both the "Stress Test National Action plan" and the last "Status report of activities presented in the Finnish action plan (May 2016)" are available in our websites: http://www.stuk.fi/stuk-valvoo/ydinturvallisuus/fukushima-selvitykset . In the action plan there are actions related to natural hazards, design and severe accident management. In progress are still at Loviisa NPP unit 1&2 the improving preparedness for high seawater level (protection against the flooding for the safety systems needed and including acquiring mobile power supply and mobile pumps too) and the ensuring the water injection into the spent fuel pools and monitoring the conditions of the pools. At the Olkiluoto NPP units 1 & 2 in progress are Implementation of independent way of pumping water into the RPV, monitoring the conditions of the the spent fuel pools and reactor building top venting for steam escape (hydrogen possibly formed could be exhausted throug this route as well).
Slovakia	Article 18.1	p. 71	SSR2/1 Rev.1 contains specific requirements for the design basis. For example the design basis for each item important to safety shall be systematically justified and documented. Does these information (design bases) contained in a		In general, design of the plant could be considered to consist of layers (plant level, system level and component level) such that design of each level draws its design basis from the previous level. Following from that, also documentation will be 'layered', e.g. plant architecture and overall design basis, system descriptions (of SAR), equipment specifications, etc. The designer, whether it be the utility or a plant vendor, shall have competent requirement management and configuration management processes to control documentation and correct implementation of design bases in different phases of the design. Design bases shall be updated during the plant life time if there is new information, e.g. operating experience, research or other developments irrespective of who has defined the original information.

Country	Article	Reference	Question	Comment	Answer
			document prepared originally by the vendor of the NPP and subsequently updated by the operator or this information is contained in different documents like SAR, QA documentation, etc?		
Slovenia	Article 10	p. 36	The number of inspections was increased but the focus shifted from high safety classes to lower safety classes. This shift is due to the fact that some lower safety class pipings have relatively large risk sig-nificance as they belong to vital support systems, or leaks in lower class pipelines may lead to conse-quential damage to safety systems. Q.: The quoted text seems to be in contradiction with the article 313 of Guide YVL A.7 which says: »The PRA shall be applied to determine the safety classification of structures, systems and components. It shall be ensured by the PRA that the safety classification of every structure, system and component corresponds to its safety signifi¬cance. The PRA application regarding safety clas-sification shall be submitted to STUK for informa¬tion with the safety classification document.« How can lower safety class component have larger risk significance? Does not the safety classification follows the PRA?		There are several reasons why a lower safety class component may have larger risk significance than a higher safety class component. The safety classification is done mainly based on deterministic criteria and it is checked with PRA/PSA. The safety classification takes into consideration structural integrity and funtional safety significance of SSC. The direct consecuences are emphasized rather than secondary effects of a pipe breaks, e.g. the effects of stam on surrounding equipment. Consequently, the risk significance of systems, structures and components in different safety classess have overlapping. In addition, the safety classification is typically done for the whole system whereas in RI-ISI individual pipe segments are considered.

Country	Article	Reference	Question	Comment	Answer
Slovenia	Article 14.1	p.52	According to the Nuclear Energy Act, a responsible director has to be ap¬pointed for the construction and operation of a nuclear power plant. The appointment is subject to approval by STUK. Q.: Which qualities does STUK require from a candidate for a responsible director? How can a candidate prove to have required qualities?		In YVL A.4 requirement A05. *The approval criteria for a responsible manager of a nuclear facility are defined in Section 125 of the Nuclear Energy Decree. These approval criteria mean, among other things, that* *•the individual concerned is known to be honest and dependable and his or her personal characteristics make him or her suitable for the position;* *•has good management and communication skills;* *•is familiar with the principles of emergency arrangements and security arrangements, nuclear safeguards, and the fundamental legislation related to supervisory and managerial duties and is capable of applying the legislation to the practical duties and various problem situations arising at the nuclear facility;* *•has the expertise in the field of nuclear energy required for the position and, in particular, expertise in the safe use of nuclear energy;* *•is sufficiently familiar with nuclear legislation and the regulations issued thereunder;* *•has sufficient managerial experience;* *•sets an example of good safety culture through his or her own conduct. 350. Managers and supervisors shall possess administrative and people management competence, management and leadership skills as well as communication and interpersonal skills. They shall have the skills to manage and support their subordinates, develop their skills, and solve problems and conflicts. Supervisors shall be familiar with the requirements and special characteristics of their subordinates' work.* The competence verification is done by STUK documentation review and a meeting *for the purpose of competence verification, assessing the candidate's performance. The topics to be addressed at such a meeting for responsible managers of nuclear facilities include safety management and safety culture, nuclear safety, radiation safety, emergency response, nuclear safeguards (including transports of nuclear materials), security arrangements, and nuclear safety regulations*
Slovenia	Article 14.2	p. 67	This was more relevant to Loviisa unit 1 whose girth weld at the level of the reactor core has a higher content of impurities. Q.: Was a content of impurities in girth weld obtained from manufacturer or it was a result of an analysis in Loviisa?		The higher impurity level of the beltline girth weld of LO1 RPV was noticed from the material certificate of the vendor. Later additional analysis taken from weld test coupons of the licensee confirmed the situation. The importance of the harmful elements (Cu, P, S, C) became evident in further investigations and mitigation measures implemented by the licensee.
Spain	Article 16	page 67	Regarding the use of the Nordic Flag Book and Nordic Manual that have a broad consensus among Nordic countries, how would they be used in case of an emergency within the Russian territory that would be able to affect Finnish territory, given that Russia has not taken part in developing the above mentioned documents?		The documents would be used to decide and implement protective actions in Finnish (and other Nordic countries') territory based on the expected impact on the those areas, similarly to accident within Nordic Countries. The documents apply whether the accident happens in a Nordic country or outside it. In this kind of case, the Russian authorities would of course follow their protection strategy and communication between the countries would rely on bilateral agreements, but else the documents would be just a usable.
Spain	Article 15	page 63, table 4	Please, could you inform if the activity of tritium and C-14 is also measured in the liquid and gaseous effluents? If yes, could you provide information on the activity values?	Information on the activity of the radioactive effluent is provided in the report: noble gases, iodines and aerosols (airborne effluents) and liquid effluents excluding tritium	The nuclear power plants in Finland have a regulatory requirement to measure tritium from liquid and gaseous effluents and C-14 from gaseous effluents. In 2015 the total amount of tritium released to the air was 1,47E11 Bq from Loviisa NPP and 1,04E12 Bq from Olkiluoto NPP. The amount of tritium released to the sea was 1,64E13 Bq from Loviisa NPP and 2,05E12 Bq from Olkiluoto NPP. The total amount of C-14 released to the air was 4,15E11 Bq from Loviisa NPP and 1,07E12 Bq from Olkiluoto NPP.
Spain	Article 7	page 25	In 2014 an assessment of the applicability of new safety guides to the operating plants was done. • Do the guides contain guidance for this exercise?		There is no guidance to the exercise for comparison. The judgement of reasonable practicable improvements is based on licensees' evaluations and regulatory review of the possible improvements. Among other things, the safety significance, and the complexity of the improvement and the possible drawbacks of the implementation are taken into account when making the judgement.

Country	Article	Reference	Question	Comment	Answer
			• How is it decided when an improvement to an operating unit is reasonably practicable?		
Spain	Article 14	page 59	Knowledge Management is identified as a challenge for licensees. • Is there in Finland any regulatory guidance on this issue?	Assessment and verification of safety	There is no specific guidance in how to implement the Knowledge Management but there are YVL requirements concerning Knowledge Management. E.g. YVL A.4 requirement 319. *The licensee shall ensure that knowledge and competence are duly shared; the atmosphere prevailing in the organisation shall promote such sharing and effective procedures are in place to support sharing.*
Spain	Article 14	page 6 and 50	• How has PSA been used during PSR to decide on the modernization projects to be undertaken? • Do STUK Guides provide criteria to decide on this regard? • Is there any definition by the regulator of PSR evaluation criteria in STUK Guides or elsewhere?		•PSA has been used to identify needs for plant modification and in the comparison of possible alternative modifications and their effectiveness. In general,decisions on modifications are not associated only with the PSRs but they are rather implemented when needs are identified. In modernization projects not related to safety improvements, eg. power uprates, PSA is used to ensure that there is no significant increase of risk. • STUK's YVL Guides include the general requirement tht PSA shall be used in the identification of needs for safety improvemnnets and evaluation of plant modification but do not provide detailed criteria on this issue. • The evaluation criteria in PSR are the same as for the renewal of the operating licence application. Guidance on the operating licence application and PSR is given in the Guide YVL A.1 issued by STUK.
Spain	Article 7	page 24	The report states: The regulatory guides are continuously re-evaluated for updating. If there is not any immediate need for corrections or updates of YVL guides (e.g. new international requirements or update of pertinent national legislation) there are criteria for the review and updating of the regulations Could you, please, provide additional information on the stablished criteria for the review and updating of the YVL guides, or regualtions in general		Some needs for improvement come from the updated safety reference levels (including WENRA RLs and IAEA safety standards). Some of the requirements were seen not so well formulated during the enforcement how the new requirements should be implemented in existing plants. European directives may have some effects, as well as taking into account some changes in other areas of Finnish legislation. Most of the current needs are due to clarification of the requirements. There are, of course, needs for improvement in future, as well, but these are not urgent changes. The update needs come from experience in regulatory activities, from international requirements and from feedback from the licensees and other interested parties. It is said in the internal STUK instructions that the need for update shall be checked regularly.
Spain	Article 6	page 19	Regarding the extension of the original design lifetime for Olkiluoto NPP that was 40 years, which is the new lifetime period considered for both units?		TVO (the licencee of the Olkiluoto 1&2) left in 26.1.2017 the application of the renewal of the operating licence to the Finnish Ministry of Economic Affairs and Employment concerning the 20 years lifetime extention. Current operating licence is valid to the end of 2018.
Spain	Article 9	page 35-36	Please provide some information on whether the licensing process and the terms and conditions of the license are used in Finland as a way to ensure that the license holder complies with its obligations regarding safety.		Nuclear Energy Act Section 7 f states that construction and operation safety shall take priority during the construction and operation of a nuclear facility. The holder of a construction licence shall be responsible for the nuclear facility's construction in accordance with safety requirements.The holder of an operating licence shall be responsible for the nuclear facility's operation in accordance with safety requirements. The requirements for the license application files submitted to STUK for the safety review are given in Nuclear Energy Degree (section 35 for the construction license and 36 for the operating license). Prior submitting the files to STUK the conformance and acceptability of the documents pertaining to safety-significant products submitted to STUK shall first be duly reviewed by the licensee's in-house organisation. The same principle is followed during the whole licensing process of structures, systems and component - license applicant's / licensee's own safety assessment is mandatory part of documentation when approvals from STUK are asked. Principles for the safety assessment required are given in the YVL guides B.1 (safety assessment independent of the designer drawn up by the licensee) and A.1 (summary of justifications).

Country	Article	Reference	Question	Comment	Answer
Spain	Article 6	page 18	Regarding the Loviisa reactor pressure vessels, which modifications have been made at both units to reduce the brittle fracture risk?		Reannealing has been done for Loviisa 1 in 1996, but not for Loviisa 2. Margins has been analysed (with the deterministic and propabilistic embrittlement analyses) and LTO was approved in 2007. In the recent deterministic analyses (used in PSR 2015) the deterministic embrittlement temperature margin was decrased some degrees because of the changes in Loviisa I&C renewal project (affecting to assumption of the possible loads). The embrittlement temperature margins were enough for the Loviisa 1 but for Loviisa 2 very close to the aproval limit. STUK required as a part of the PRS inspection the licencee to send at the end of the 2016 the report how to increase the embrittlement margins at Loviisa 2. The low margins at the Loviisa 2 are especially involved to the event where RPV's core area weld seam outer surface is cooling while unexpected start of the sprinkler system of the reactor building occurs. Concerning the licencees report the one corrective action is to modify the sprinkler system's cooling unit function to increase the initial temperature of the sprinkled water (planned to implement in 2019). The licensee continues also the investigation of the opportunities to isolate the RPV's core area weld seam outer surface. Licensee will update the propabilistic and the deterministic embrittlement analyses before the next PSR 2023 so the influence of the corrective actions can be identified then.
Spain	Article 19	page 82	Regarding the Loviisa monitoring programs for the carbon steel piping , which are the main results of these programs in relation to the piping lifetime?		The Loviisa monitoring program is established to control the operability of the secondary pipe lines. Thickness measurements are conducted to find erosion corrosion in the piping and surface inspections are used to detect fatigue cracks. In addition, digital radiography is used to detect corrosion in small pipes (D < 200 mm). Thickness measurements and surface measurements are conducted during annual outage and digital radiography in normal operation phase. The main target of the monitoring program is to prevent adverse effects of ageing mechanisms (erosion corrosion, fatigue and corrosion) on the operability. In addition, these results determine the interval for the repair, modifications and replacement of the secondary pipe components.
Spain	Article 14	page 54	Which are the conditions under which licensees may make changes to the facility or procedures and conduct tests or experiments without prior Regulatory Body approval for have reasonable assurance that plants continue to conform to the licensing basis?.	Verification of safety STUK Regulation (STUK Y/1/2016) includes several requirements which concern the verification of the physical state of a nuclear power plant. ……. Main programmes used for verification of the state of a nuclear power plant are • periodic testing according to the Operational Limits and Conditions • maintenance programme • in-service inspection programmes for pressure retaining components • surveillance programme of reactor pressure vessel material • research programmes for evaluating the ageing of	Licensees may make changes without prior approval to SSCs' routine maintenance programmes based on their gathered field experience. However, even such programmes are to be provided at STUK's disposal and reviewed by STUK when necessary. Changes of inspections and tests within Operational Limits and Conditions or in-service inspections of pressure retaining components may be proposed but changes are subject to STUK's approval before they can be implemented.

Country	Article	Reference	Question	Comment	Answer
				components and materials.	
Sweden	Article 16.1	p. 65, Emergency preparedness on-site of	The text describes that a person responsible for emergency response arrangements at Loviisa and Olkiluoto nuclear power plants has been appointed. Are there sufficient back-up for this person, such as a list of available personnel with the correct knowledge to take this position if the appointed person is not available, etc.?		According to the nuclear energy act the licensee shall nominate the responsible person and his/her deputy. This person is in charge of emergency preparedness arrangements e.g. emegency plan, nomination of emergency organization, training and exercises. Nomination of the responsible person respective one to two deputies is appropriate. Note that this responsible person is not an operative role (he/she is not necessarily the emergency manager of the plant in real emergency situation, there is a separate list for duties in emergency situations).
Sweden	Article 16.1	p. 67, Off-site preparedness arrangement	Regarding the established permanent coordination groups: Are there representatives from both Loviisa and Olkiluoto NPP´s included in both of these two coordination groups?		The groups contain representatives from the NPP in the area, so Loviisa NPP representatives do not take part in the Olkiluoto area coordination group and vice versa. However, the issues discussed in one coordination group are also reported in the other group and the NPP representatives also meet each other, so the organizations are aware of discussions in both of the coordination groups.
Sweden	Article 16.1	General question, Off-site preparedness	Is there any agreement between the two NPP´s (Loviisa and Olkiluoto) to assist each other and cooperate during an emergency situation at any of the power plants?		There is mutual understanding that assistance from other NPP is likely needed in case of emergency and companies are ready and willing to help each other in case of an emergency. At the moment, however, there is not any formal agreement between the companies.
Sweden	Article 16.1	General question	How are the on-site activites at the nuclear power plants coordinated with the off-site activities during a radiological emergency?		In the prepareddnes phase powerplant's emergency plan and the outside resque plan prepared by the regional rescue servise are co-ordined and the functionality of these plans are tested in the exercises. During an emergency it is planned that liaison officers are send to the command posts in order to improve the situational awareness. A practical example is that there is a dedicated TETRA-phone group for the NPP's emergency manager, director of the rescue operations and STUK's situation director.
Sweden	Article 7.1	page 29	Is it really so that all inspections focusing on the conduct of operations are always carried out unannounced?		Mainly so. The unannounced inspections are most effective to assess routine functions. In this point of view the area applied has been the operation routines for example simulator training, the plant visiting rounds or tests or other activities done by operating personnel.
Sweden	Article 8.1	page 30	What is exactly STUKs' task regarding maintaining national metrological standards?		As a National Metrology Laboratory for ionizing radiation STUK maintains calibration and measurement capabilities (CMC) to provide internationally comparable, and reliable calibrations of dose/doserate meters and irradiations of passive targets. Laboratory equipment includes variety of reference measurement instruments (reference standards) and irradiation equipment for X-rays, 137C and 60Co gamma photon radiation and beeta-rays, neutrons, and alfa/beeta (plane sources). Calibrations/irradiations cover the needs from environmental survey measurements, to the high dose rates and high accuracy required for calibrations of dosemeters used in radiation therapy. Expertise required for radiation metrology/dosimetry is part of STUK expertise for regulatory activities, emergency tasks and other issues requiring knowledge of radiation measurements. One task as a National Metrology Laboratory is to assure knowledge, and proper use SI-quantities and units in field of ionizing radiation in Finland. STUK maintains and runs the metrology laboratory as a Secondary Standard Dosimetry Laboratory (SSDL), with reference instruments having direct, metrologically traceable links to Primary Laboratories. STUK is a member of European national metrology institutes (EURAMET) and IAEA/WHO network of SSDL laboratories.

Country	Article	Reference	Question	Comment	Answer
Sweden	Article 9	page 38	Based on the inspections,there is still need for development actions to fulfil the requirements concerning both the process based management system and supply chain management. What improvements have been accomplished in the supply chain management?		The licensee have updated the instructions and practices concerning supplier management so that they will fulfill the YVL requirements.
Sweden	Article 12	page 43	In addition to the main control room, the shutdown of the reactor as well as the control and monitoring actions necessary for safety can be performed by means of a so-called emergency control post. For severe accidents there is a separate dedicated control room shared by both units. A shared control room by two units? How does it fit with experience from Fukushima with several units in trouble?		The SAM control room is located at the plant yard at level +3.00 m and is common to both Loviisa plant units. The conditions in the SAM control room make also extended stays possible. The SAM control room has been designed for a severe accident in one reactor, but there are no technical reasons, why severe accidents couldn't be managed from SAM control room for both units simultaneously.
Sweden	General	page 102, Annex 2	STUK has had some concerns about the embrittlement margins of LO2 reactor pressure vessel before the expected end of life in 2030. What are the concerns coming from, the RPV surveillance program? What actions are expected could be taken to increase the embrittlement margins at LO2?		Reannealing has been done for Loviisa 1 in 1996, but not for Loviisa 2. Margins has been analysed (with the deterministic and propabilistic embrittlement analyses) and LTO was approved in 2007. In the recent deterministic analyses (used in PSR 2015) the deterministic embrittlement temperature margin was decrased some degrees because of the changes in Loviisa I&C renewal project (affecting to assumption of the possible loads). The embrittlement temperature margins were enough for the Loviisa 1 but for Loviisa 2 very close to the aproval limit. STUK required as a part of the PRS inspection the licencee to send at the end of the 2016 the report how to increase the embrittlement margins at Loviisa 2. The low margins at the Loviisa 2 are especially involved to the event where RPV's core area weld seam outer surface is cooling while unexpected start of the sprinkler system of the reactor building occurs. Concerning the licencees report the one corrective action is to modify the sprinkler system's cooling unit function to increase the initial temperature of the sprinkled water (planned to implement in 2019). The licensee continues also the investigation of the opportunities to isolate the RPV's core area weld seam outer surface. Licensee will update the propabilistic and the deterministic embrittlement analyses before the next PSR 2023 so the influence of the corrective actions can be identified then.
Switzerland	General	Vienna Declaration on Nuclear Safety	Principle 1 1.1 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?		In Finland regulatory requirements are written and applied as such for new nuclear facilities. After granting a construction licence, a nuclear facility is not considered "new". After having heard the parties concerned STUK will issue a separate decision as to how a new or revised YVL Guide is to be applied to operating nuclear facilities or those under construction, and to licensees’ operational activities. When considering how the new safety requirements presented in the YVL Guides shall be applied to the operating nuclear facilities, or to those under construction, STUK will take due account of the principles laid down in Section 7 a of the Nuclear Energy Act (990/1987): The safety of nuclear energy use shall be maintained at as high a level as practically possible. For the further development of safety, measures shall be implemented that can be considered justified considering operating experience, safety research and advances in science and technology.

Country	Article	Reference	Question	Comment	Answer
Switzerland	General	Vienna Declaration on Nuclear Safety	Prevention 1.2 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		In Finnish requirements the usual five levels of DiD are specifically mentioned, and adequate independence between the levels has to be achieved. In general, the systems for controlling AOOs have to be functionally separated from those meant for DBAs. CCFs have to be taken into account, also for I&C systems. For example, at Olkiluoto 3, a hard wired backup system is required for managing the situation of CCF of the software based protection system. Primary depressurisation has to be reliable and independent of the systems used in DBAs, in order to prevent high pressure core melt sequences. Severe accident management systems have been required in Finnish regulatory framework already since 1982, and the systems have to be independent of other the systems needed in other levels of DiD. Naturally there are exemptions to the very strict independence, e.g. the RPV, control rods, containment, etc. are needed in various levels of DiD. In Finland, natural events have been a part of PSA studies for a long time, and thus they have been included in the analyses. The overall CDF, including all plant sates and all internal and external hazards, has to be below 1E-5/yr, which is applied to new reactors as such.
Switzerland	General	Vienna Declaration on Nuclear Safety	Mitigation 1.3 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. 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;		The Finnish regulatory regquirements do not state technical means how to achieve the objectives mentioned in the question. It is the licensees' resposibility to select appropriate means, implement adequate measurtes and show the efectiveness of their approach. In severe accidents the main goal is to protect the containment integrity, and the licensee has to demonstrate the availbility of the means in those conditions. There are regulatory requirements for severe accident management systems that they need to be safety classified, independent, single failure tolerant, and qualified for SA conditions.

Country	Article	Reference	Question	Comment	Answer
			• severe accident management, protection of staff during the accident. • Provision and resilience of Emergency Mitigation Equipment (EME)		
Switzerland	General	Vienna Declaration on Nuclear Safety	Principle 2 2.1 How do your national requirements and regulations address the application of the principles and safety objectives of the Vienna Declaration to existing NPPs?		In Finland, the implementation decisions for existing plants are made shortly after the publication of a new regulatory guide, and the decisions are based on licensees' evaluations and applications for exemptions. Moreover, the new regulatory guides in Finland are written for new reactors, but the same requirements are applied to existing reactors, as well. Thus implementation decisions are made for existing plants, which may have had a different design basis than that for new reactors. The requirements for severe accident management were introduced already in 1982, and the measures were required for existing reactors. The severe accident management systems were implemented in existing reactors in 1980's and 1990's.
Switzerland	General	Vienna Declaration on Nuclear Safety	2.2 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?		Yes. According to the Nuclear Energy Act, the overall safety of the facility shall be assessed at regular intervals. Regulatory guide specifies the interval being approximately 10 years and the PSR requirements follow IAEA safety guide SSG-25. Regulatory requirements used as criteria in the PSR are the Finnish regulatory guides (YVL Guides). YVL Guides are written for new nuclear facilities and the international safety standards (e.g. IAEA safety standards and WENRA reference levels), operating experience, safety research and advances in science and technology are taken into account when updating them. In Finland there is a separate process for issueing regulatory decision how a new or revised YVL Guide is to be applied operating nuclear facilities or those under construction. In PSR licensee and the regulatory body check the implementation status of the agreed improvement measures and can agree on additional measures if seen necessary based on the overall safety assessment.
Switzerland	General	Vienna Declaration on Nuclear Safety	2.3 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?		Principle for continuous improvement is laid down in Section 7 a of the Nuclear Energy Act (990/1987): "The safety of nuclear energy use shall be maintained at as high a level as practically possible. For the further development of safety, measures shall be implemented that can be considered justified considering operating experience, safety research and advances in science and technology." When making a decision how new or revised regulatory guide is applied for operating nuclear facility or facility under construction, STUK approves improvement measures proposed by the licensee or STUK can require additional improvement measures or STUK can approve an exemption if the safety improvement is considered not reasonably practicable. Time schedule for improvement measures is agreed in the decisions. Implementation of the improvement measures are followed in STUK's continuous oversight. There are no certain risk limits used in the assessment, assessment is mainly based in "engineering judgement". The strength of indivual levels of DiD and independence of the levels from each other is the overall target. For example, severe accident management systems were implemented in 1990's at the Finnish operating NPPs. Probabilistic risk assessment can be used when looking relative contribution of different initiating event types and how much risk estimates can be improved with certain plant improvements. For example, there are several plant improvements carried out at the Finnish operating plants which reduce the risk related to fire and seismic hazard. Also some recent plant improvements at the Loviisa NPP improve the preparedness against possible oil spills in the Gulf of Finland. Improvements considered not reasonably practicable at the Finnish operating NPPs include e.g. protection measures against large civil aircraft crash or layout changes. However, when enlargening the spent fuel storage at the Olkiluoto site, protection against large airplane crash was set as a new regulatory requirement. So improvement measures can be considered also in major plant modifications.

Country	Article	Reference	Question	Comment	Answer
Switzerland	General	Vienna Declaration on Nuclear Safety	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.		Regulatory guides are regularly updated by STUK and when updating the guide also IAEA safety standards are taken into account (especially requirement document level, safety guide level is often too detailed but they are typically mentioned in the references of the YVL Guide).
Switzerland	General	Vienna Declaration on Nuclear Safety	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 contents of the Vienna Declararion can also be found from the WENRA safety objectives for new reactors and the updated nuclear safety directive of European Union (2014/87/Euratom Art. 8). Finland is currently preparing the implementation of the nuclear safety directive. No changes are currently foreseen in the Finnish nuclear safety regulations based on the Article 8, so current Finnish regulations and practices are consired to fulfil also the Vienna Declaration.
Ukraine	Article 6	annex 5, page 122 para 2, page 17	As regards Fennovoima Hanhikivi unit 1 construction license phase, it is mentioned that Fennovoima was not able to submit complete licensing documentation for the regulatory review and assessment at the same time. Could you please clarify the reason for that? Has the basic Design AES-2006 been updated to be in compliance with the Finish regulations?		Originally Fennovoima had made feasibility studies for EPR, ABWR and KERENA designs (2009) for Governments Decision in Principle (DIP). After new technology selection (AES-2006) a supplementary DIP-process was taken place. STUK gave a new preliminary safety assessment of AES-2006 in 2014. The Government gave positive complementary DIP for Fennovoima in 2010 and the Government gave Fennovoima five years' time to apply construction license. You can find English translation of STUK preliminary safety assessment in STUK www-pages (http://www.stuk.fi/web/en/topics/nuclear-facility-projects/the-nuclear-facility-project-of-fennovoima). Finnish safety regulations & guide requirements and license applicants requirements shall be applied for Fennovoima AES-2006. The Reference plant such (LNPP-2) do not fulfill all Finnish safety regulations and requirements and also the Hanhikivi site conditions shall be taken into account. Therefore re-engineering is needed for AES-2006 design. It was accepted by the Goverment licensing authority (Ministry of the Economic Affairs and Employment, MEE) that Construction License Application (STUK-part of documentation) could be supplemented during License Application review and assessment phase. The Licensee shall draw up a license plan according to YVL Guide A.5 section 3.3. requirements. The Re-engineering and licensing process is ongoing to establish basic design of AES-2006, which fulfills the Finnish safety, security and safeguards regulations and requirements.
Ukraine	Article 6	annex 5, page 123	It is mentioned that STUK has started inspection programme on Fennovoima, Plant Vendor, and its main sub-suppliers. Could you provide some details on the available inspection findings? How does STUK deal with differences of the codes/standards for safety-related equipment applied in EU/Finland (ASME, RTM, ...) and Plant Vendor?		STUK RKT-inspection programme has covered so far six inspections during 2015 and fifteen inspections during 2016 to Fennovoima and Vendor RAOS Projekt Oy and princple desing organisations. The details of the inspections are reported three times per year in STUK web-pages. Unfortunately those are not translated to english. However our annual report presents the outcome of the inspections and general findings. Please see results in appendix 6. in our 2015 annual report https://www.julkari.fi/bitstream/handle/10024/130731/stuk-b203.pdf?sequence=1. Now the annual report 2016 is under preparation and it will be also published. STUK has YVL-requirements how to apply other standards e.g. in area of pressurised equipment. Main principle is that the licensee shall present that the same level of safety can be achieved if other than YVL-guide reference standards (SFS-EN-ISO, ASME, RCC-M..) are going to applied.
Ukraine	Article 6	para 2, page 18	It is mentioned that STUK's assessment of the first periodic safety review has been completed during the year 2016. Based on the assessment, STUK considered that the Loviisa Nuclear Power Plant meets the set safety requirements for operational nuclear power plants. At the same time, some of the post-Fukushima safety upgrades are ongoing (e.g. flooding measures). Has STUK established a link or		In Finnish legislation the Nuclear Energy Act Section 7 a prescribes that for further safety enhancement, measures shall be taken which can be regarded as justified considering operating experience, results of safety research and advacement of science and technology. Meaning all safety related modification's needed for example post -Fukushima are not connected only for PSR - the safety improvement is an continuous process. STUK ensures in PSR that all relevant modifications (on-going projects and foundings in PSR) and their schedules are relevant concerning the next PSR and operating licence: PSR documentation which is sent to authority is described in YVL Guide A.1., see http://plus.edilex.fi/stuklex/en/lainsaadanto/saannosto/YVLA-1, Annex A, chapter A.4. There the document A51, which is approved by STUK in PSR, includes the action plan for plant improvements carried out pursuant to Section 7 a of the Nuclear Energy Act, complete with timetables. Action plan shall be provided as a summary of the periodic safety review. And it will be the pre-condition for the next operating period too.

Country	Article	Reference	Question	Comment	Answer
			pre-conditions between the post-Fukushima safety upgrades and LTO (PSR) process?		
Ukraine	General	para 2, page 25	The new set of YVL guides was published on 1 December 2013. Systematic training on application of new YVL Guides has been provided to the licensees by STUK's personnel involved in preparation of guides. The implementation decisions were given by the 1st of October 2015 for operating plants and by the 1st of January 2016 for the research reactor. Please provide more details on the measures to be implemented to ensure compliance with the new YVL guides for operating NPPs and research reactor. Has STUK approved some exemptions from new requirements for operating facilities?		Most of the new requirements included in the new guides resulting in plant modifications were started at the plants already after the Fukushima Daiichi accident. Thus the implementation did not need major effort to this kind of new requirements. Most of the new issues in the regulatory guides were related to practises or documentation, for which the licensees have their work underway. The exemptions are related to approaches that have not been applied when constructing the plants. For example, there were no seismic design requirements in Finland when the existing plants were constructed. However, the plants have undergone significant improvements throughout the years to reduce the risk from seismic events. Still this does not mean that the original design of structures would fulfil the current requirements. The usual exemptions are related to major structural differences between the practises used during the contruction of the plants and the current requirements.
Ukraine	Article 14.1	Probabilistic risk assessment, page 50	It is mentioned that PRA computer models shall be submitted to STUK. PRA is routinely used by STUK to support its decision making. Does STUK rely on the PRA models provided by the utility? Does STUK have its own independent models for alternative codes?		STUK uses the PSA models submitted by the licensees. A prerequisite for this practice is a thorough review of the PSAs by STUK and its consultants. The advantages of using the same models have been considered larger than than the problems with the lack of independence.
United Arab Emirates	General	3	Triga Mark II research reactor is scheduled for decommissioning in the near future. Please summarize the regulator preparations for the decommissioning.		The licensee is required to apply for a new license from the government, that for decommissioning. The requirements for the decommissioning are given in Guide YVL D.4, see at least the requirements 704–706, 708–714. Nuclear Energy Law will updated in the near future, and there will be some changes concerning licensing the decommissioning.

Country	Article	Reference	Question	Comment	Answer
United Arab Emirates	Article 6	19	Safety improvements were implemented in Olkiluoto NPP unit 1 &2 after Fukushima Dai-ichi accident to ensure safety of the plant against events such AC power loss, please summarize the improvements selected and the role of the regulator in selection of improvements.		Improvements are part of the national action plan, and both the "Stress Test National Action plan" and the last "Statusreport of activities presented in the Finnish action plan (May 2016)" are available in our websites: http://www.stuk.fi/stuk-valvoo/ydinturvallisuus/fukushima-selvitykset. In the action plan there are all actions selected related to natural hazards, design and Severe accident management. STUK requested from the licencees in 2011 the reports for approval including how they are prepared to the natural hazards and loss of AC / DC suply at the NPP sites and based on that report STUK request detailed information and the action plan for the needed corrective actions. Assessment was based mostly on Probabilistic Safety Analyses (PSA) but taking account the deterministic view too.The severe accident management backfitting measures were implemented already in 1990's at the Finnish NPPs so the bigger questions were related to an independency of AC/DC powersupply systems, decay heat of the fuel pools and the long term operation (24 h-72 h) without any external help in hazard situations.
United Arab Emirates	Article 7	28	Please elaborate more on the purpose of the unannounced inspections program, what are the areas usually covered in such inspections? Do you perform an unannounced vendor/ supplier inspections? Was there a significant improvement in the effectiveness of STUK inspection program after implementing the unannounced inspections, what are the area of improvements?		The unannounced inspections are most effective to assess routine functions. In this point of view the area applied has been the operation routines for example simulator training, the plant visiting rounds or tests or other activities done by operating personnel or for example for the fuel loading or fuel transfer. For the areas including planning or analyses (aging management, safetyfuctions..) the unannounced inspections are not used (only few basic routines). STUK has also so-called reactive inspections in response to events and deviations too. And the resident inspectors who are doing the daily assessment (concerning operation and maintanance). Some unannounced vendor/ supplier inspections has been made as a part of plant site inspection (under the construction inspection programme). And if needed it's possible to use the reactive inspections (in response to deviations) to the vendors too.
United Arab Emirates	Article 16	66	In 2015, an annual emergency exercise was conducted based on an unlawful action scenario and was not announced, please provide more details regarding; 1) What were the challenges? 2) Scenarios during the exercise? 3) What program was utilized to simulate time jumps? 4) What assumptions were made during the exercise? 5) On-site and off-site arrangement? Involvement of workers on-site and public off-site? 6) Lesson learned?		The challenge of an unannounced exercise is to inform some key positions in the information exchange mechanism in order to prevent unwanted (over) reactions and yet preserve the possibility for the intended participants to respond from "normal conditions", to test the real response times and availability of staff. The exercise started with a communication of a threat message related to both NPPs and concentrated on the early information exchanges and situation assessment within and between the NPPs, police and STUK - parts of the response (organizations) were simulated to guard the unannounced status and involvement of staff other than the key response organization was minimal. The exercise was real-time, without time jumps and also without engagement of members of the public. The findings underlined the importance of maintaining a joint situation assessment between involved organizations and of coordinating the emergency response plans and nuclear security response plans as well as the related training.
United Arab Emirates	Article 16	66	“The off-site emergency plans include provisions to inform the population in the case of an accident. Written instructions on radiological emergencies, emergency planning and response arrangements have been provided to the population living within the 20 km Emergency Planning Zone. These in-structions are regularly updated and distributed.” What are the difficulties faced to communicate with the public and what strategies are used to overcome these difficulties?		Main difficulty is the ability to timely reach all of the population in EPZ in case of an accident. The EPZs are largely rural areas, so population live relatively sparsely and the zones also include sizeable areas of habited archipelago. The main ways of communicating in these cases are emergency bulletins that are broadcasted in all television and radio channels. Also, information is provided via Internet and social media as much as possible. Finally, techonologies for taking advantage of widespread smartphone ownership are being investigated currently.

Country	Article	Reference	Question	Comment	Answer
United States of America	General	General		Finland's 7th National Report is a very comprehensive and informative report. The United States commends Finland on a well written and constructed Report.	We appreciate your comment, thank you.
United States of America	Article 8	Article 8, Page 32	Based on the 2015 follow-up IRRS mission, the team found that 7 out of 8 recommendations had been effectively addressed and considered closed. The remaining recommendation that is still being addressed deals with STUK's position in the government. Can STUK elaborate on the recommendation and the expected closure of the issue?		The remaining recommendation deals with STUK's position in the governmental administration. STUK prepeared a memorandum in which it compared alternative positions within governmental administration. It was given to STUK's Advisory Committee and delivered after that to Ministry of Social Affairs and Health in 2016 for further considerations. Decision has not been done yet.
United States of America	Article 8	Article 8, page 33	STUK has actively been recruiting staff, specifically for the review and assessment of inspection activities related to Olkiluoto Unit 3. There is a plan to recruit almost 20 new staff during 2016 due to the new Hanhikivi Unit 1 construction project. Maintaining an adequate supply of experts in the nuclear field has been a recognized challenge for Finland. (1) Does STUK anticipate that it will have any difficulty recruiting new staff? (2) If yes, what measures does STUK plan to take to recruit the staff necessary to support the inspection of the construction of Hanhikivi?		1) STUK has been able to recruit needed competence as planned. However, it is recognized that the overall size of the Finnish nuclear labour market is moderately small and it shall be considered when planning recruiting. Being a public sector organization, STUK cannot compete with the salaries of private companies of the nuclear sector. Consequently, STUK shall actively and continuosly work on its employer image and work on the factors that make it stand out from the other organizations in the labour market. It is important to identify and to provide the kinds of (possibly unique) features that differ STUK from the competitors in the nuclear labour market. STUK must be able to communicate these unique features and positive features effectively. The other dimension of the solution is to retain the existing staff and to create a working environment, culture and working climate that everyone wants to have - and be part of. Therefore STUK needs to continue the work of developing its methods for retaining of staff. This work includes various task areas each with their specific targets, methods, contributors - and challenges. The success and strong position in recruitment market require continuous work and presence- even when STUK is not actively recruiting. 2) See above. Supporting recruitment activities is an ongoing task area. Development and maintenance of a great employer image is a continous process.
United States of America	Article 16	16, Emergency preparedness on-site of NP	The Report states that there were some further requirements for licensees regarding site autonomy in the case of external hazards, and that this work continues. Can you elaborate on what the new requirements are?		Both Olkiluoto NPP and Loviisa NPP shall prepare for ability to identify the relevant radionuclides in the environment during an emenrgency. In practice this means that the external measurement patrol shall be equipped with a portable spectrometer. In Loviisa NPP further analyses for multiple unit accident were required (e.g. regarding the delay and duration of releases, release height). In Olkiluoto NPP the licensee is further developing the management of personnel protective equipment (storage, delivery). Electrical connections and procedures for dedicated (movable) SAM-aggregats were underway (aggregats enabbles the rerquired 72 h autonomy).

Country	Article	Reference	Question	Comment	Answer
United States of America	Article 16	16, Off-site preparedness arrangements	In April 2016, a full-scale off-site emergency and rescue exercise (LOVIISA16) was held (page 67). (1) Were there any areas for improvement identified? (2) If yes, could you briefly list them and what plans for improvement are being sought?		51 organizatios participated in the Loviisa-16 -exercise. It is not possible to list all the lessons learnt or actions here. At the power plant examples of identified areas for improvement were that awareness of the contamination level, required PPE and access restrictions should be more clear and communication should be more effective between the organizations. In the state administration the most important lesson learnt is that an effective common system for situational awareness shall be developed. Investigation/discussion is going on. Also some visual material used by STUK should be more clear to be understood correctly in the other organizations.