

Country	Question	Answer
Belgium	<p>On pages 82 to 84, one reads in the sections related to the different licenses (for example EdF, CEA) that they generally have a strong commitment to safety culture and try to develop and reinforce it. In the section on ASN analysis &amp; oversight nothing is mentioned regarding the oversight by ASN on the specific topic of safety culture. Can a description of the approach used by ASN be given?</p>	<p>Regarding the licensee, the assessment of ASN focuses on safety management practices instead of measuring safety culture. The topics of the safety management inspections performed by ASN are for example :</p> <ol style="list-style-type: none"> <li>1. The competencies management system : ASN asks the licensee to have a rigorous competencies management system, including determination of needs, both in respect of manpower qualification and numbers, and a program of specialized training and qualification through experience. ASN monitors the competencies management system for all operators working on the facilities (internal and external workers).</li> <li>2. The organization of the licensee to operate experience feedback: ASN monitors how NPPs are organized to analyze deviations and significant events, the methodology used, the depth of analyzes, and the development and implementation of the outcomes of these analyzes.</li> <li>3. The treatment of deviations from specifications: ASN checks, especially during outages of NPP, that the licensee gives priority to correction of deviation instead of justifying their acceptability.</li> <li>4. The decision made when there are competing goals related to safety and production: ASN picks some decision making proceedings during outages to assess the questioning attitude of the licensee and in-depth analysis of doubtful situations.</li> </ol>

Belgium	Please elaborate how ASN maintains or develops a strong safety culture in its own organisation. Please also describe how this strong ASN safety culture influences/promotes the licensee's safety culture.	<p>Safety culture determines the ways in which an organisation and individuals perform their duties and accept responsibility, with safety in mind. It is one of the key fundamentals in maintaining and improving safety. It commits organisations and individuals to paying particular and appropriate attention to safety. At the individual level it is given expression by a rigorous and cautious approach and a questioning attitude making it possible to both obey rules and take initiative. In operational terms, the concept underpins daily decisions and actions relating to activities. ASN has started to think about the way of building its safety and radiation protection culture policy document around its four values which are already well known and experienced in the daily core activities.</p> <p>ASN expects its staff to show exemplary behaviour in its interaction with licencees, so as to be a model for safety culture.</p>
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Belgium	<p>In table 1, the dates of all French periodic safety reviews (PSR) are given. If we consider, as written in the national report, 34 years (average value) of operation for the 900 MWe reactors, 28 years for the 1300 MWe and 18 years for the 1500 MWe, It is expected that the number of completed PSRs should be respectively three, three and two. In the national report, these numbers are respectively two, two and one. For-example, if we apply the Belgium scheme to Fessenheim-1 reactor commissioned in 1978, the first PSR should take place between begin 1984 (preliminary phase) and end 1992 (end of implementation phase). The evaluation phase must end in 1988 (10 year anniversary date). The second PSR should take place between 1994 and 2002, the third one between 2004 and 2012 and finally the fourth one between 2014 and 2022. Could you please explain more in detail the PSR deadlines for French reactors.</p>	<p>Table 1 does not give the dates of all French periodic safety reviews (PSR), but the dates of the 10-yearly outage of plant series. Thus the third 10-yearly outage for the 900 Mwe serie has started in 2009 (Fessenheim 1) and will be completed in 2020 (Chinon B4). The PSR usually starts about 7 years before the first power plant outage of the serie.</p>
Belgium	<p>In § 6.1.2 (p. 34) of your National Report the use of a "graded approach" is mentioned in relation to the application of regulations to research reactors. Further, for instance concerning Article 14 on "Assessment and verification of safety", we did not find any reference towards a graded approach. Has ASN (and/or its technical support IRSN) any formalised method or practices to apply a graded approach in review and assessment of different projects and topics? If an approach is being used, is it supported by some decision criteria? Is it oriented towards an optimum use of manpower resources ?</p>	<p>ASN has formalised the application of a graded approach in the autorisation, review and assessment and inspection processes in its internal guides and procedures. This graded approach is based on the categorisation of the nuclear facilities described in the ASN Resolution n° 2015-DC-0523 of 29 September 2015. Regarding the nuclear reactors, there are three categories of nuclear reactors related to the thermal power : <math>P_n &gt; 30\text{MWth}</math> ; <math>30\text{MWth} &gt; P_n &gt; 1\text{MWth}</math> ; <math>P_n &lt; 1\text{MWth}</math>.</p> <p>This approach was endorsed by the ASN commission and participate to demonstrate the effectiveness and the efficiency of the regulatory regime.</p>

<p>Belgium</p>	<p>The ASN mentions that 14 French reactors use the controlled injection of zinc into the primary system in order to reduce the contamination of the systems. But so far there are no effect of those measures. Could the ASN explain since how long is this system operational ?</p>	<p>The zinc injection has been implemented since 2009 on selected reactors. This procedure has been authorized by ASN after two experimentations led in 2004 et 2006 (Bugey 2 and 4). In 2016, an extended program has been be authorized by ASN on 8 additional units. It should provide a broader panel and a better experience feedback.</p>
<p>Belgium</p>	<p>The ASN observes that the collective doses have reached a plateau of about 0.65 man.Sv per reactor. Without more information (for example max. individual dose or average dose with standard deviation or number of workers, ...), this unit alone does not allow to draw any conclusions on the performance of the Licensee on the radioprotection. Could the ASN provide those complementary values ?</p>	<p>According to the data transmitted by EDF, the individual average dose registered for the workers in all NPP operated by EDF in 2015 is 0,92 mSv. The repartition of the dose is described in the graph below:</p> <p style="text-align: center;">No worker has received an equivalent dose exceeding the regulatory limit of 20 mSv/year</p>

<p>Bulgaria</p>	<p>It is stated in the report that: "Lastly, the ordinance of 10th February 2016 enhances the effectiveness of nuclear safety and radiation protection oversight by ... .. and by extending ASN's powers of oversight and sanction to certain activities performed outside the BNI perimeter (central services of the licensees, subcontractors, etc.),..."</p> <p>To which activities performed outside the nuclear installations perimeter the ASN's powers of oversight and sanction were extended and what is the scope of oversight and the regulation?</p>	<p>Activities outside the BNI perimeter, to which control is extended, are activities which are important for the protection of protected interests (health, environment..), whether these activities are carried out by the operator or by his suppliers, service provider or subcontractors.</p> <p>AIPs are defined as those activities participating in the technical or organizational arrangements that are sufficient to prevent or mimic the risks or drawbacks of the installation.</p> <p>ASN and its inspectors exercise control over these activities under the same conditions as BNIs (Article L. 596-14 of the Environmental Code).</p> <p>However, ASN may only adopt requirements relating to these activities to the operator but not directly to the supplier, service provider or subcontractor of the operator (III of Article L. 593-33 of the Environmental Code).</p>
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Bulgaria	<p>It is stated in the report that: “This act of 17th August 2015 and the ordinance of 10th February 2016 bring substantial modifications to the legislative framework governing nuclear activities and their oversight.</p> <p>Main provisions of the act of 17th August 2015 concerning the nuclear field:</p> <ul style="list-style-type: none"> <li>• ...</li> <li>• reinforcement of the BNI system with regulation on the use of subcontracting, the change of the BNI authorization system and ...</li> <li>• ...”</li> </ul> <p>What change was introduced in the BNI authorization system with the Act of 17th August 2015 and the ordinance of 10th February 2016?</p>	<p>Before the intervention of the act of 17th August 2015 and the ordinance of 10th February 2016, a distinction was made between two types of modifications :</p> <ul style="list-style-type: none"> <li>- modifications giving rise to a procedure similar to that of an creation authorization, with an environmental assessment, in particular for any change in the nature of the facility or any increase in its maximum capacity, or for any modification of the key elements of the authorization (Government orders),</li> <li>- the other modifications, subject to notification to ASN.</li> </ul> <p>The new system introduced a new procedure of authorization by ASN. A distinction is now made between :</p> <ul style="list-style-type: none"> <li>- substantial modifications giving rise to a procedure similar to that of an creation authorization (Government orders),</li> <li>- significant modifications :</li> </ul> <ul style="list-style-type: none"> <li>* the modifications affecting the safety report or the impact assessment, subject to authorization by ASN</li> <li>* the modifications affecting the safety report or the impact assessment, whose list must be set by decree: they remain subject to notification to ASN.</li> </ul> <p>There is a public participation in the authorization decision-making, when this decision may have a significant and direct effect on the environment. The authorization shall be published.</p>
Bulgaria	<p>ASN draws up an annual programme of inspections. It defines priorities for reinforced controls on topics or activities with the most significant implications.</p> <p>How many areas of regulatory responsibility are identified in the system of regulatory inspection control and are all of them covered by the annual inspection programme ?</p>	<p>All areas within the regulatory oversight of ASN are included in the inspection programme. Each ASN department (NPP, nuclear pressure equipment, transport and sources, waste, Research Facilities and Fuel Cycle Facilities, Ionising Radiation and Health, and Environment and Emergency) issues a notice detailing annual inspection priorities focusing on certain areas within its field of activities. Some of those areas are periodic, some depend on the context (events from the previous year, etc.).</p>

Bulgaria	<p>The Act gives ASN competence to issue regulatory resolutions to clarify the decrees and orders related to nuclear safety and radiation protection, which are subject to approval by the Minister in charge of nuclear safety or radiation protection.</p> <p>Are all regulatory resolutions subject to approval by the Minister responsible for nuclear safety or radiation protection?</p> <p>“The Minister responsible for nuclear safety or radiation protection” is referred to in many texts in the report. Which Ministries are concerned and what are their safety responsibilities, functions and authority? In principal what are the interrelations between the Ministries and ASN in the area of safety and how are the functions and separated?</p>	<p>The Minister responsible for Nuclear Safety, who is currently the Minister of the Environment, is in charge of laying down the general regulations concerning nuclear safety.</p> <p>The Minister responsible for Radiation Protection, who are currently the Minister of Health and the Minister of the Environment, define the general regulations applicable to radiation protection.</p> <p>Besides, ASN is an independent administrative authority which takes part in regulating nuclear safety, radiation protection and the nuclear activities.</p> <p>In this respect, it takes technical statutory resolutions to clarify the decrees and orders related to safety and radiation protection. These technical statutory resolutions are always subject to an approval by the Minister concerned. On the other hand, it takes also a lot of individual decisions that are not subject to such an approval, excepted for some of them such as those setting the discharge limits for example.</p> <p>The specific role of ASN is to verify compliance with the general rules and specific requirements for nuclear safety and radiation protection applicable to BNIs, to the pressure equipment designed specifically for such facilities and to the transport of radioactive substances. It may impose sanctions on the basis of inspections carried out by its inspectors.</p>
Bulgaria	<p>The licensee is notified of the visit a few weeks beforehand, although some inspections (about 20%) are unannounced. They mainly take place on the nuclear sites.</p> <p>Table 3: Number of inspections performed by ASN in the BNIs.</p> <p>What is the criteria for planning unannounced scheduled inspections? and</p>	<p>There is no criteria for planning unannounced inspections. Usually, at least the following inspections are unannounced : worksite inspections, inspections of certified bodies for radiation protection measurements and inspections carried out further to a significant event.</p> <p>There is no criteria for initiating reactive inspections. However, this is being discussed at the present time, as a follow-up to the IRRS mission of 2014. ASN will come up with such criteria in the coming year.</p>
Bulgaria	<p>One of the most significant modifications integrated to the 1300 MW (VD 2) reactors is “start-up of the safety injection and containment spray systems by means of a secure command”.</p> <p>Would you please explain what means of a secure command were implemented?</p>	<p>During tests with simulators, it has been found that start-up of the safety injection and containment spray systems was impossible from the control room if the pumps were powered by generators. A secure command in the control room (and a change in load restoration of the generator) enables the start-up in all conditions.</p>

Bulgaria	<p>In 2014, ASN authorised EDF to put in place an internal authorisation system enabling it to examine completely independently the temporary modifications to the STEs which have a minor impact on safety. The implementation of temporary modifications to the STEs which do not lie within the scope of the internal authorisation system remain subject to the prior agreement of ASN.</p> <p>Temporary modifications to the operating technical specifications (STEs) are widely discussed in these sections.</p> <p>What is the reason for the significant number and recurrence of temporary changes in the operating technical specifications? Are the procedures of an agreement by ASN of a temporary change and of a permanent change different?</p>	<p>Temporary Modifications of the Operating Technical Specifications (STE DMT) that do not meet the Internal Authorization System eligibility criteria can not be further processed within EDF. The concernnd unit operator may, if he wants to persist, request an explicit authorization by the ASN for implementation of such temporary modification.</p> <p>The experience feedback from the instruction of the STE DMTs by the IAS (70%) and by the ASN (30%) is performed twice a year in between EDF and the ASN, in order to identify potential amendments to the Operating technical specifications so that recurring STE DMTs are adequately adressed. The approval process of an amendment to the STE (i.e. a permanent modification as opposed to a temporary one) is cumbersome and time consuming: on average, an amendment file may take several years to be processed. This is one of the reasons why EDF may be required to internally authorize recurring temporary modifications to the STE for a certain period of time. In such a case, EDF tries to rationalize its effort by merging recurrent STE DMTs into generic STE DMTs (applicable, for instance, to a given serie of similar units...).</p>
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Bulgaria	<p>France's Energy policy foresees rapid deployment of renewable energies by 2020, in accordance with France's undertakings to Europe, which implies a reduction in the nuclear share in order to reach a target of 50% nuclear power production by 2025 (currently 76%). Any new authorisation to operate a nuclear electricity production installation will need to comply with the current nuclear production capacity ceiling (63.2 GW). as stipulated in the TECV Act. The commissioning of the Flamanville EPR will require that EDF close a plant or two reactors with total equivalent power.</p> <p>To comply with this Energy policy how many reactors must be closed by 2025?</p>	<p>It is the responsibility of the Government to define, in a pragmatic way, the path to reduce progressively the nuclear share in the French energy mix so as to guarantee the supply security and achieve our objectives of reduction of greenhouse gas emissions. It requires a careful approach in several steps, with first the deployment of renewable energies and the control of the consumption.</p> <p>This is the way the multiannual programming of the energy ( PPE) plans to increase before 2023 of more than 70 % the capacity of installed electric renewable energies and more than 35 % the renewable heat production ompared with 2014. The final consumption of fossil energy will be reduced of 12 % and the total energy consumption of 22 %. The decisions concerning certain nuclear reactors will be taken after 2018, on the basis of the evolutions actually noticed of the consumption and the renewable production.</p>
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<p>Bulgaria</p>	<p>It is stated that the “Licensees must notify all events that are significant for nuclear safety to ASN within 48 hours, with a proposed classification on the INES scale (ASN has sole responsibility for the final classification decision). ASN analyses this initial notification to verify the implementation of immediate corrective measures, to decide whether to perform an on-site inspection to analyse the event in depth and, if necessary, to prepare the communication of information to the public”.</p> <p>Is the time limit for notification to ASN within 48 hours applicable to incidents in accordance with the INES scale? Who is responsible for the notification to ASN - the NPP Manager or a Director at the EDF headquarters?</p>	<p>The legal basis for the notification of significant events which occurred on a BNI is the order of 7 February 2012 setting the general rules relative to basic nuclear installations. Article 2.6.4 states that "the licensee notifies ASN of each significant event as soon as possible." This requirement has been specified in an ASN guide as :  "except in an emergency situation, two days is an acceptable delay."  However, these requirements are subordinated to the article of the law which states that : "In the event of an incident or accident, whether nuclear or not, that has or is likely to have significant consequences on the safety of the installation or of the transport or endanger, by significant exposure to ionising radiations, persons, goods or the environment, the licensee of a basic nuclear installation or the person responsible for the transport of radioactive substances is obliged to declare it without delay.". That means that an INES level 2 event, described as an "incident", should be reported immediately. This is regularly tested during emergency drills.  The NPP director is responsible for the notification. Legally, the responsibility lies within EDF as a company authorised to operate the NPP, but this responsibility has been delegated by EDF to the sites.</p>
<p>Bulgaria</p>	<p>France undertook a large program for the replacement of the steam generators of the reactors in operation. In October 2016, Le Figaro published an article on the temporary stop of 21 reactors for expertise because of high carbon concentration in the steam generators material. May you elaborate on the results of the tests conducted?</p>	<p>The tests requested by ASN concerned 18 reactors equipped with steam generators having channel head with carbon segregations.  The objectives of the tests were to determine carbon levels, the extent of segregation and to ensure that there were no detrimental defect in the channel head.  On the surface of the tests carried out, the carbon levels in the maximum segregation zones are between 0.3% and 0.4%.  In addition, no detrimental defect was detected in the primary channel heads.</p>

Canada	<p>“Following the IRRS mission held in France in 2014, ASN initiated international benchmarking work on safety culture, in order to draft a policy document specifying how ASN deals with this question in its practices and how safety culture is an integral part of ASN’s four core values (competence, rigour, independence and transparency).”</p> <p>Is the policy document complete?</p>	<p>Regarding the international benchmarking work, ASN took part in the elaboration of the NEA "Green Booklet on Safety Culture of an Effective Nuclear Regulatory Body" and of the GSR Part 2 about "Leadership and Management for Safety", both published in 2016.</p> <p>ASN also stated an internal reflexion about the integration of both nuclear safety and radiation protection in the same frame about cultural aspects of its own organisation, which could rely on the four values of ASN : independence, competence, rigor and transparency. ASN started to think about the way of building its safety and radiation protection culture policy document around its four values which are already well known and experienced in the daily core activities.</p> <p>For the time being the policy document is not available yet and ASN has not decided the ways of finalizing it. However, as usual for ASN, there will be a public consultation before approval.</p>
Canada	<p>The report notes “the development of work error-reduction practices (pre-job briefing, one-minute pause, self check/cross-check, secure communication, debriefing).”</p> <p>Can the Contracting Party elaborate on what cross-check and secure communication involves?</p>	<p>Concerning "secure communication", EDF has adopted, in fact, the "3 ways communication" based on:</p> <ol style="list-style-type: none"> <li>1. Message transmission: the transmitter transmits a clear, complete and targeted message (he indicates the recipient and uses the full equipment nomenclature);</li> <li>2. Repeat message: the recipient repeats to the transmitter the message identically and in its completeness (collation);</li> <li>3. Confirmation: the transmitter confirms that the message received was properly understood by the recipient ("this is correct").</li> </ol> <p>Concerning "cross check", it means a check of the work or action prior to action by an independent colleague, in order to secure the performance of intended work:</p> <ul style="list-style-type: none"> <li>• The performer indicates, by talking and pointing to both the concerned equipment and the written intervention instructions, which actions he intends to perform and the different steps they are composed of;</li> <li>• The cross-checking agent checks the action (identified equipment and position), and agrees;</li> <li>• The performer performs the action.</li> </ul>

<p>Canada</p>	<p>“In particular to cover the costs of decommissioning of the installation and rehabilitation, monitoring and maintenance of its site or, for radioactive waste disposal facilities, to cover the costs of final shutdown, upkeep and surveillance.”</p> <p>Will radioactive waste disposal facilities always be maintained and monitored? Or will they eventually be abandoned? If they will eventually be abandoned, is this taken into consideration when calculating the required costs?</p>	<p>The long-term strategy to ensure the safety of the radioactive waste disposal facilities is based on passive arrangements. A monitoring phase is taken into account when calculating the cost of final shutdown, upkeep and surveillance. As an example, this phase is about 300 years for the CSM operated by ANDRA. However, the closure of the disposal facilities is taken into account in the regulation with a specific administrative procedure.</p>
<p>Canada</p>	<p>The report emphasizes two aspects: 1. Implementation of organisational and human factors (OHF) impacts analysis in modifications, and 2. Support for operational improvements by human factors (HF) experts. On this basis conformity to Article 12 of the Convention is concluded. Can the Contracting Party explain how these two aspects by themselves can “ensure that the capabilities and limitations of human performance are taken into account throughout the life of a nuclear installation”? (Some human factors areas which are not emphasized include: use of human performance event free tools; low level event trending; human actions in safety analysis, minimum shift/fitness for duty; safety culture; and procedures.)</p>	<p>In short, the OHF approach implemented during conception/modification and in operation is based on a knowledge of the reality of the activities in the field. Taking into account this fine and precise knowledge of the reality and ensuring the involvement of the future operating staffs in the design allow to complete in an essential way what would be achieved if only standards or data from operating experience feedback are used.</p>

Canada	<p>One of the priorities of the stress tests was “the organisation of subcontracting, which is a major and difficult issue”. Do you have a program to supervise contractors? Is this program working effectively?</p>	<p>The regulatory framework for subcontracting was strengthened by the decree of 28 June 2016. This decree now limits the number of subcontracting levels to 3, with the objective of guaranteeing the mastery of the subcontracted activities by the licensee. The French nuclear regulation makes the licensee responsible for controlling their contractors. Therefore, ASN does not directly inspect contractors but regularly inspects the conditions governing the use of subcontracting, both at EDF's suppliers and at nuclear power plants.</p>
Canada	<p>France maintains oversight on the work performed by external contractors and the NPP fleet to ensure the quality of the work is maintained. Organizations that ensure the quality assurance (QA) program is well applied at Électricité de France (EDF) and Nuclear Safety Authority (ASN). However, the report lack any mention of the Codes and Standards that help to achieve these goals. The lack of mention of these Codes and Standards leaves a gap for the reviewer to compare it with the industry practices.</p> <p>Can the Contracting Party comment on their QA structure, particularly with regard to the basis of codes and standards which indicate the degree of agreement of the QA structure is for the industry?</p>	<p>There are probably two parts to answer this question. Code and standards are imposed to contractors in order to make sure that they have at least the minimum level in QA, eventhough there is a gap between QA and the performance provided by contractors. For EDF Nuclear Operations, we used to refer to the ISO 9001 norm in the past, but EDF decided to implement its own system because of the lack of evidence between ISO certification and contractors performance. The requirements of EDF Integrated Management System are actually higher than the ones required under the ISO certification.</p>

<p>Canada</p>	<p>The overall safety assessment program of NPPs in France coincides with industry best practices (internationally). This includes oversight from the regulator, performing PSA work, aging management, periodic safety reviews (performed also post every modification), inspections by the regulator (ASN), etc. The same rigor is applied to the research reactors as it is to NPPs. Post-Fukushima accident modifications are also included in the safety assessment.</p>	<p>This is just a comment that does not require an answer.</p>
<p>Canada</p>	<p>Section 15.2.1 describes the doses received by workers and EDF's "radiological cleanness" policy and the systematic use of breathing apparatus in the event of a suspected risk of internal contamination. It is stated that virtually all the doses received are attributed to external radiation exposure.</p> <p>Given that the use of personal protective equipment may in some cases, slow and impede work in radiological environments, has any investigation been done to determine whether the potential additional time to execute the work in a high dose rate environment offsets the potential dose savings gained from wearing a respirator?</p> <p>Has this been determined to be ALARA/optimized?</p>	<p>According to EDF "manual of prescriptions for workers", the non air adducted equipment has been forbidden in the contaminated areas of nuclear power plants up until 2011. Strating from the 2011 revision, masks equipped with filters are no longer forbidden for some works in contaminated areas (less than 24000 Bq/m3 and without presence of alphas). Some power plants begin to extend the use of these PPE to some workplaces, however reactor cavity decontamination is always carried out with air adducted coveralls due to the presence of moisture. No generic analysis has been carried out at the fleet level to set expectations to the sites. Each site develops its own analysis and experience regarding this topic.</p>

Canada	Which kind of resources/support does the General Directorate for Civil Security and Emergency Management provide to the public in the event of a severe accident?	In case of a severe accident, as in case of any other types of severe accidents (floods, earthquake, etc.), the Civil Protection provides a departemental support in terms of means for evacuation, places to take the casualties in charge (gymnasium, congress house, etc.), rescue to people who are not in capacity to be independant. This support is enhanced by a "zonal" capability (each security and defense zone includes several departments) which can be deployed very quickly.
Canada	Is the Nuclear Rapid Intervention Force physically based at a specific EDF location?	Yes, the Nuclear Rapid Intervention Force (FARN) is located in specific locations distributed over the French territory. To be more explicit, FARN is constituted of five teams. One at a national/corporate level, to perform site reconnaissance (using specific aeriean projection means, in relation with the national Civil protection forces), and four regional teams located on four different sites (70 persons per site, in order to be ready at any time to mobilise a 14 persons team with trucks and intervention devices). Please refer to specific FARN presentation given at the IAEA for more information.
Canada	As a consequence of flood events, is blockage of the intake channel due to bio-fouling or other debris considered?	As a consequence of flood events, the issue of blockage of the intake channel due to debris is indeed considered. This requirement has been added following the action plan for events affecting the heat sinks (section 6.3.1.2.1)

<p>Canada</p>	<p>The report suggests that changes in the potential human risk, and impact on changing environment (including on population), are reassessed in the periodic safety reviews conducted every 10 years. Are there provisions to assess and limit potential changes arising from human activity that could impact the safety case between periodic safety reviews? Considerations could include the changing of population distribution, density, composition (e.g. industrial vs residential), or new hazards arising from human activity (e.g. new transportation routes, flooding, new industries)</p>	<p>As mentioned in the Article 3.10 of the Order of 7 February 2012 setting the general rules relative to basic nuclear installations : “The licensee keeps itself informed of any changes made or planned in the vicinity of its installation that could alter the nature, the extent or the probability of an external hazard. If necessary it updates the demonstration of the nuclear safety of its installation in the framework of the appropriate regulatory procedures.”</p>
<p>Canada</p>	<p>Section 18.2.4.2 suggests that application of new regulatory requirements revealed a defect in nuclear pressure equipment (Flamanville 3 EPR vessel closure head and bottom head). Would such a defect have been identified under the previous rule, and if not, are there considerations for evaluation of extent of condition on existing plants design, constructed and inspected under the old rule?</p>	<p>The previous rule did not make it possible to highlight this kind of anomaly.</p> <p>According to the Order of 10 November 1999,ASN asked the licensee to evaluate the risk of a high carbon concentration on all the components of the reactors in operation.</p> <p>For components presenting risks of a high carbon concentration, ASN has requested the implementation of carbon measurements. So far 46 steam generator channel head are concerned by this phenomenon of carbon segregation.</p>



Canada	<p>In response to the Fukushima accident a significant safety analysis appears to have been completed to determine the required mitigating actions, subdividing actions between short-, medium- and long-term plans.</p> <p>However, much of the corrective actions are to be implemented as part of the long-term plan. Can the Contracting Party provide the plan timelines showing when facilities are to have their long-term actions completed?</p>	<p>The hardened safety core is going to be implemented in 3 phases. The description of phases content and instructions by ASN are provided on page 44 to 46 of the French report. All the phase 1 temporary or mobiles measures have been implemented on the plants. The construction of the main phase 2 definitive elements and organizational means are ongoing (ultimate diesel generators will be built by the end of 2018, ultimate water supplies will be implemented by 2020. Concerning the site emergency management center, the first construction will be achieved by the end of 2017). Phase 3 modifications have been presented to ASN standing advisory group of experts in 2016. The end of implementation of phase 3 on the whole fleet is still under discussion between EDF and ASN.</p>
Canada	<p>Are there any current practices or expectations in place for waste minimization at the source?</p>	<p>The environmental code (article L541-1) requires the Licensees to reduce and minimize the waste at the source. The Licensees should send its procedure to manage waste in the framework of the ASN authorisations for commissioning and decommissioning and the periodic safety review .</p>
Canada	<p>“The management strategy for the spent fuel produced in research reactors is developed according to the characteristics of the fuel and depending on the case may involve reprocessing or direct disposal.” Is this a future plan, or has any spent fuel been disposed of to date? If no spent fuel has been disposed of to date, what is the current strategy for spent fuel that cannot or is not reprocessed?</p>	<p>There is no disposal at this stage. The Licensees assume that all the spent fuel produced in RRs would be reprocessed.</p>

Canada	<p>Does ASN have a practice of imposing regulatory hold points during commissioning of a new reactor requiring confirmation of completion of design work, construction work, and confirming adequacy of commissioning results, including at the system level and integrated testing, before the operator can proceed further (e.g. at higher power levels)?</p>	<p>There are few hold points imposed by ASN. ASN functions more with witness points.</p> <p>For Flamanville 3 (FLA3), already defined hold-points are:</p> <ul style="list-style-type: none"> <li>- Inner Containment Pressure Test, see license-conditions [INB167-2-1] of ASN decision 2013-DC-0347 -7th May 2013 which is available in English</li> <li>- Fuel arrival on site, see Article 20-VI of French BNI procedures decree and license-condition [INB-167-50-1] defining this as “partial commissioning”, see Article 20 of French BNI procedures decree and license-condition [INB-167-50-1].</li> <li>- Fuel loading, see Article 20 of French BNI procedures decree and license-condition [INB-167-50-1].</li> </ul> <p>If ASN authorizes operation, new license conditions (including new HPs for first criticality, power levels...) will be fixed.</p>
China	<p>Description in section 6.2.1 “Significant event for general safety notified on 28th March 2014 concerning a temperature deviation in the premises housing the emergency turbine generator set (TAS LLS). The heat produced by the emergency turbine generator set (TAS LLS) leads within less than one hour to temperatures in the room in question exceeding the maximum permissible temperatures for some of the equipment items necessary for operation of the TAS LLS”.</p> <p>Question: Why the temperature control measure is invalid?</p>	<p>The LLS system being a safeguard system, it is not used for a long time during normal operation so there is no direct temperature measurement. Additional analysis showed that the thermic assessment carried out to design the LLS room underestimated the energy evacuation system in case the LLS would be used for a few hours.</p>
China	<p>Description in section 6.3.1.1 “It is based on an examination of operating experience feedback, advances in knowledge and changes in safety standards.”</p> <p>Question: How to consider the particular issues that can't meet the latest safety standards in the periodic safety reviews process?</p>	<p>Particular issues that can not meet the latest safety standards, applicable for operating power plants, in the periodic safety reviews process can be consider either at the next PSR (if the latest safety standard is very recent) or identified in the periodic safety review reports (submitted after the ten-yearly outage) with a later deadline for its implementation. Some new standards can also be taken into account independantly from the normal periodic safety review processes (for ex. section 19.7.2).</p>

<p>China</p>	<p>Description in section 6.3.1.1“maintain or install heating of the safety injection system on the Tricastin 1, Fessenheim 2 and St Laurent B 1 reactors in order to limit vessel loadings in the event of an accident situation.” Question: Why just this few plants are required to maintain or install heating of the safety injection system?</p>	<p>Just the mentioned few plants require a heating system of the safety injection tank, because there are the only units where there are defects detected under the vessel liner which could lead to a risk of vessel rupture in case of thermal shock during an accident.</p>
<p>China</p>	<p>Description in section 6.3.2.1“the clogging and partial loss events affecting the heat sinks at Cruas and at Fessenheim in December 2009 led EDF to initiate an action plan to increase their robustness.” Question: Could you provide more detailed information about the action plan?</p>	<p>The mentioned action plan includes two steps. The first one, which is short-term, is related to clogging (more inspections and maintenance on devices, operating instructions). The second one, which is mid and long-term, is related to several type of events affecting the heat sinks (new safety requirements, water level sensor added in the intake line of pumps, anti-frazil devices...).</p>
<p>China</p>	<p>Description in section 16.5.2“this requires the licensee to implement a reliable system for detection of the deviations which could occur, such as equipment failures or operating rules application errors. This system should allow early detection of any deviation from normal operations.” Question: Please provide more information about the system. How to early detect any deviation from normal operations?</p>	<p>ASN expects the licensee to detect deviations as early as possible through daily checks and internal independent monitoring of the safety of the plant.</p>

<p>China</p>	<p>Description in section 8.1.2.1 “Competence is one of ASN’s four key values. A tutoring system, allied with initial and ongoing training, whether general, associated with nuclear techniques, or in the legal or communication field, constitute essential aspects of the professionalism of ASN staff. The management of its staff’s’ skills is based notably on a formalized series of technical training sessions.”  Question: What are the principles to set the technical training sessions for the new staff?</p>	<p>The training programme is directly related to the different fields controlled by ASN :</p> <ul style="list-style-type: none"> <li>- Basic nuclear installations (BNIs);</li> <li>- Construction and operation of pressure equipments in BNIs;</li> <li>- Radioactive material transport ;</li> <li>- Activities entailing a risk of exposure of individuals and workers to ionising radiation;</li> </ul> <p>- Laboratories that ASN “qualifies”, to enable them to participate in safety or radiation protection control and monitoring</p> <p>The programme is structured according to the following terms :</p> <p>Compulsory programme to acquire the necessary skills to be qualified as inspector (within 12 months after the arrival)</p> <ul style="list-style-type: none"> <li>- Basic training sessions</li> <li>- Technical specific training</li> <li>- Professional experience</li> </ul> <p>Compulsory courses and technical training to complete the skills after being qualified</p> <p>Optional sessions for specific topics</p>
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<p>China</p>	<p>Description in section 10.2 “On the basis of international practices and its convictions on this subject – culture cannot be imposed, it is the result of managing change, with culture coming from the organisation, but also from the cultures originating in the various disciplines – EDF set up a national/sites working group”</p> <p>Question: Could you give more information about the national/sites working group? How does it form and operate? What are the responsibilities and achievements?</p>	<p>The working group was composed by national and sites Human Factors and nuclear safety experts, also including sites managers.</p> <p>The group met for about 6 months, working from international documents and the EDF internal experience feedback. The objective was to develop a common safety culture model. Following this phase, all the work, as well as the way to implement the model, was submitted to the national safety committee of EDF Nuclear Production Division (DPN), which validated the approach for implementation on sites and the role dedicated to the corporate level. The committee identified 4 main actions for further development in 2016 and recommended that each site develops a specific road map for 3 years. At the end of 2016, in the context of the annual safety diagnosis, the nuclear safety vice president has reviewed the progress made by each site in this domain.</p>
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<p>China</p>	<p>Description in section 10.4.2“ASN sees the presence of an internal safety check body, independent of the operational side and structured at several levels, as a strong point. This independent channel benefits from significant resources as well as clear support from the management of the NPPs. However, problems with filling certain safety engineer positions and a trend towards these positions being occupied mainly by young safety engineers from the operations sections have been observed. This trend could lead to the independent safety function experiencing problems in the complete performance of its duties with respect to the operations side.”</p> <p>Question: This trend could lead to the independent safety function experiencing problems in the complete performance of its duties with respect to the operations side. What kind of problems may be appeared? Could you please provide some examples? How to solve the problem? What are the principles for setting the internal safety check body?</p>	<p>The objective of the internal safety check body is to assess the level of safety of the installation in real time and to inform the site management of situations that are not covered by the safety demonstration. Wrong assessment or insufficient credit given to their opinion by the management may lead the operator to keep the reactor in operation while its shut down appears necessary.</p> <p>ASN oversees the correct authority of this ISN inside the licensee through inspections.</p>
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<p>China</p>	<p>Description in section 12.4.1 "With regard to the engineering activities during the design of a new facility or the modification of an existing one, ASN checks that the licensee correctly deploys the SOH approach enabling it to take account of people and organisations in the development of systems and in the changes to equipment and organisations."</p> <p>Question: Would you please introduce SOH approach? How to check whether the licensee correctly deploys the SOH approach? What is key point in ASN checks?</p>	<p>The licensee has developed a methodology (SOH approach) to transform the engineering practices, in order to take into account the people needs in the development of systems and modification of materials and organizations. ASN considers the philosophy of this methodology relevant and important to ensure the safety of installations and safety of workers. ASN requires that the scope of the HOF evaluation and the amount of effort dedicated to it would be graded, depending on the characteristics of the design of modification and its impact on human activities. ASN requirements related to Organizational and Human factors (OHF) in Engineering activities, during the design of a new facility or the modification of an existing one, are/will be propose in: (1) A "Technical guidelines for the design and construction of the next generation of nuclear power plants with pressurized water reactors" which is currently being developed. It gives directions for the design and safety analysis of PWRs and will ask the early implementation of an OHF analysis in any design, modification and decommissioning project with safety implications. Specifically, OHF analyses must produce inputs to engineering analyses in order to orient the decisions taken. (2) The n° 2014-DC-0420 resolution of the February 13, 2014 related to the physical modifications in BNIs incorporates the following requirement: The design of the modification takes into account the interactions, during its implementation and its operation, between, on the one hand, the modified or newly installed equipment and, on the other hand, the user and his needs. ASN performs inspections and IRSN, as TSO, performs evaluations on the effectiveness of the SOH approach. The key points checked are : Tools, methods and practices supporting the analyses of OHF, decision making process to deal with the integration of OHF inputs and constraints, OHF competencies of people involved in the design or modification projects, etc.</p>
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China	<p>Description in section 14.2.1.2 “This analysis more specifically concerns the root causes of the events, most of which reveal problems with the EDF organisations and with the interfaces between EDF and its contractors.”</p> <p>Question: Could you please provide examples for the problems with the EDF organisations and with the interfaces between EDF and its contractors? And what corrective actions have been developed?</p>	<p>One of the most recent examples is the modifications to the lifting equipment required for the replacement of the steam generators on the Paluel reactor 2. The design choices chosen by the EDF supplier have proved inadequate since they are the cause of the fall of a steam generator. Although the design weaknesses were identified by EDF, the supplier justified and maintained its choice. EDF's organization, particularly in terms of monitoring its facilities, proved inadequate since the equipment was used and was at the origin of the incident. The corrective actions implemented include strengthening surveillance of the contractor. And an in-depth review of the internal management system within the engineering services of EDF.</p>
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<p>China</p>	<p>Description in section 14.2.1.4 “ASN observed that ageing is an important cause of equipment failure in the significant events notified in 2013. As in previous years, the ageing mechanisms (corrosion, wear, fatigue, etc.) behind these events vary widely in nature.” “EDF has implemented an ageing control strategy based on three lines of defence: anticipation of ageing in the design, monitoring of the actual condition of the facilities and the repair, renovation or replacement of equipment actually or potentially affected.”</p> <p>Question: Does it prove that the aging control strategy developed by EDF is not sufficient? How to further improve the aging control strategy?</p>	<p>The objectives of the ageing management process implemented by EDF are to:</p> <ul style="list-style-type: none"> <li>* Demonstrate effective management of the ageing of the systems, structures and components whose potential ageing could have an impact on the nuclear safety of the reactor and play a key role in its lifespan.</li> <li>* Confirm that SSCs sensitive to ageing mechanisms remain within their design criteria and can continue to fulfil their safety functions over the intended period of operation.</li> <li>* For each reactor, supply, at a minimum, a unit ageing analysis report (UAAR) for the period from the third (VD3) to the fourth (VD4) ten-year outage, supported by an ageing management programme that goes beyond the VD3.</li> </ul> <p>This ageing management process relies on two levels (generic and local) and is regularly revised to factor in the operating experience feedback.</p> <p>ASN considers that the EDF's propositions in the framework of the periodic safety review associated with the fourth ten-year outage, in order to control the ageing and obsolescence of the 900 MWe reactors until their next periodic safety review, are satisfactory in principle. However, ASN requires additional steps, more particularly to evaluate the need for exceptional maintenance operations and the robustness of industrial. Moreover, due to the two-level approach used in EDF's process, ASN estimates that EDF needs to improve the interactions between the national and the reactor levels, especially to reinforce its capacity of diagnosis, anticipation and industrial action.</p>
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<p>China</p>	<p>Description in section 14.2.1.5 "The BNI procedures decree defines the requirements concerning the implementation of changes by the licensees and their review by ASN. The procedures for managing and notifying hardware modifications were specified in ASN resolution 2014-DC-420 of 13/02/2014."</p> <p>Question: What are the principles for managing and notifying hardware modifications?</p>	<p>First of all, the licensees shall initiate provisions to ensure that modifications are designed, validated and implemented in compliance with national regulations and ASN's specifications.</p> <p>The process implemented depends on the impact's significance of the change on the protected interests, including safety, defined by the BNI decree.</p> <ul style="list-style-type: none"> <li>- The first type of process is related to "substantial" modifications and is already describe in Section 7.2.9 of the ASN report.</li> <li>- The second type of process is related to "significant" modifications when they affect the facility's safety report or impact assessment content.</li> </ul> <p>Depending on their relevance, the significant modifications are submitted either to notification to ASN or to authorization by this authority. The criteria for selecting between notification and authorization procedures are due to be defined by an ASN decision by the end of 2017. In the meantime, all significant modification are submitted to authorization.</p> <ul style="list-style-type: none"> <li>- The third type of process includes the other modifications than those aforementioned. Their management is defined in the licensees' internal process, and are not subject to administrative procedure.</li> </ul>
<p>China</p>	<p>Description in section 14.2.1.6 "Following this review, ASN adopted 32 resolutions, each one setting some thirty complementary prescriptions." And "These national action plans underwent an initial European peer review in April 2013 and were then updated in December 2014, for a further review in April 2015."</p> <p>Question: What are the main contents of the 32 resolutions? Why do ASN take the 32 resolutions? Has the review been completed in April 2015? Is there any requirement for new safety improvements after the review?</p>	<p>ASN issued a series of resolutions (one per NPP and major non-NPP BNI) dated 26 June 2012 requiring EDF to set up firstly :</p> <ul style="list-style-type: none"> <li>* a hardened safety core of material and organizational provisions aiming at preventing an accident with fuel melt, or limiting its progression, limiting large-scale radioactive releases, and enabling the licensee to perform its emergency management duties,</li> <li>* a local emergency center allowing emergency management of the nuclear site as a whole in the event of an extreme external hazard, * a nuclear rapid intervention force (FARN) which, using mobile means external to site, can intervene on a nuclear site in a pre-accident or accident situation.</li> </ul> <p>And secondly a set of corrective actions or improvements and studies of modifications and additional means enabling ASN to take a stance on future safety options. ASN has supplemented its demands with a set of resolutions dated 21 January 2014 aiming to clarify certain design provisions of the hardened safety core.</p>

<p>China</p>	<p>Description in section 16.3.1 "In the event of total loss of the electrical power supply, the required actions in the facilities will have to be rendered secure, particularly if building lighting is lost. Specific intervention means are currently being acquired by the sites".</p> <p>Question: Why don't EDF develop the intervention means? What are the principles to make intervention means and what factors are considered? Could you provide the brief introduction for the intervention means?</p>	<p>This sentence may have been incorrectly phrased.</p> <p>This part of 16.3.1 refers indeed to national (i.e. corporate) emergency preparedness and response resources which are obviously not acquired by sites.</p> <p>As mentioned in the report, the Nuclear Rapid Intervention Force (FARN) is fully operational and intervention means are available, including mobile diesel generators. These are standard 100 kVA DGs, which can be operated in different parts of the plant.</p> <p>Please refer to specific FARN presentations given at the IAEA for more information.</p>
<p>China</p>	<p>Description in section 16.6 "In conjunction with the experience feedback from the Fukushima Daiichi NPP accident, a new working group was set up in 2015 on waste management in a post-accident situation, involving members of the CODIRPA and of the National Radioactive Materials and Waste Management Plan (PNGMDR). Furthermore, subjects for which more detailed doctrine will be envisaged in 2016 have already been identified. These mainly concern the management of manufactured products, management of water and marine environments, and radiological measurements in a post-accident situation. The report from the pluralistic seminar on the economic assessment of the nuclear accident risk organised by ASN in October 2014 was released in 2015.</p> <p>ASN initiated the necessary steps to promote the development of research on this subject, nationally and internationally."</p> <p>Question: 1) Could you provide this report released in 2015? 2) Could you please introduce the necessary steps to</p>	<p>The report is available on the website of ASN :</p> <p><a href="https://www.asn.fr/Informer/Actualites/Seminaire-pluraliste-sur-l-evaluation-economique-du-risque-d-accident-nucleaire">https://www.asn.fr/Informer/Actualites/Seminaire-pluraliste-sur-l-evaluation-economique-du-risque-d-accident-nucleaire</a></p> <p><a href="https://www.asn.fr/Media/Files/Seminaire-ASN_document-final">https://www.asn.fr/Media/Files/Seminaire-ASN_document-final</a></p> <p>So far, no further action was conducted in order to promote the development of research on this subject.</p>

<p>China</p>	<p>Description in section 17.1.5. "In application of articles L. 121-1 and following of the Environment Code, the creation of a BNI is subject to the public debate procedure when it involves a new nuclear power production site or if the new site (excluding nuclear power production) involves an investment cost exceeding € 300 million. The public debate focuses on the appropriateness, the objectives and the characteristics of the project. Furthermore, as indicated in § 7.2.3, the BNI creation authorisations and the decommissioning decree are issued following a public inquiry."</p> <p>Question: Does the public have enough knowledge to discuss about the characteristics and the objectives of the</p>	<p>As regards the public debate procedure, its organization is entrusted to a dedicated committee which must ensure that the information given to the public on the project is clear, precise and accessible.</p> <p>The public inquiry file includes an impact assessment and a risk management study that includes itself a synthetic presentation of the monitoring system and emergency response, and a non-technical summary of the study, intended to facilitate the public's understanding of the information contained in the study.</p> <p>The investigating commissioner, who conducts the public inquiry, may hold public meetings on specific issues. This makes it possible to make accessible the complex subjects of the creation or dismantling files of an INB.</p>
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<p>China</p>	<p>Description in section 17.1.5 “A public debate was held in 2010 before taking the decision to build an EPR nuclear reactor at Penly.”</p> <p>Question: How many people are invited to participate in the public debate? And what's the background of them? Which way are used to open the content of the debate to public? If the public debate cannot pass, how to deal with it?</p>	<p>All citizens can participate in public debates, share their opinions and ask questions, either at public meetings or on the Internet. Public debate can also take place in public places (markets, festivals, occasional events) or invite oneself to colleges and high schools. It is then an opportunity for all to understand the project debated, to learn about it and to give its opinion.</p> <p>As regards the public debate that took place in 2010 on the Penly 3 project, there were 12 public meetings with a total of 3000 participants.</p> <p>In case of blockage and if the public meetings cannot be held, other means can be implemented: contradictory debates on the Internet, citizens’ conferences. Citizens’ conferences are a structured mechanism for training, debate and deliberation open to a small group of people. This panel typically comprises between fifteen and fifty participants chosen by a steering committee from a pre-established list, usually by random drawing on electoral rolls or by a survey institute. Participants must be voluntary. All costs are covered but they do not receive remuneration, voluntarily giving their time for a matter of general interest. The citizens' conference usually takes place over three non-consecutive weekends. Two of them are devoted to a training course designed by the steering committee, the third allowing the citizens' panel to determine the themes that it wants to deepen, to choose the speakers, and to organize itself the debate. Then, it adopts an opinion that will be presented to decision-makers and to the general public.</p> <p>The device of the Citizen's Conference was implemented for public debate about the deep reversible storage center of radioactive waste in Meuse / Haute-Marne (Cigéo)</p>
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<p>China</p>	<p>Description in section 17.2.1 "The EDF management guide of the "seismic interaction" hazard on the nuclear power plants is applicable. It defines the organisational measures to put in place on the sites and details the roles and responsibilities of the players and the prevention measures to implement." Question: Could you provide the EDF management guide of the "seismic interaction"?"</p>	<p>The EDF 'seismic interaction' management guide is based on the following principles:</p> <ul style="list-style-type: none"> <li>- Designation, on each nuclear power plant, of a 'seismic interaction' expert to help the management in implementing the policy for 'seismic interaction' hazard prevention;</li> <li>- Designation for each discipline and on each site, of an employee in charge of taking into account "seismic interaction" hazard within her/his technical domain;</li> <li>- Each expert and each discipline employee in charge of 'seismic interaction' is provided with specific training;</li> <li>- Development and updating, on each nuclear power plant, of an exhaustive list of 'aggressors/target' pairs;</li> <li>- Development, before each improvement / modification work, of a risk analysis in order to take into account "seismic interaction" hazard;</li> <li>- Organization, once a year, of a meeting on each nuclear power plant, in order to develop a good understanding of the remaining residual 'seismic interaction' hazards, to set objectives for reduction of this risk and to maintain awareness;</li> <li>- Organization, once a year, of a meeting of all seismic interaction experts from the 19 EDF nuclear power sites to share experience.</li> </ul> <p>The EDF 'seismic interaction' management guide is a proprietary document and cannot be provided in this context.</p>
<p>China</p>	<p>Description in section 17.2.1 "minimum autonomy of oil of 15 days for the 1300 MWe and 1450 MWe plant series, and of 4.5 days for the 900 MWe plant series. In addition, an oil supply contract with a reserve stock of 32 m3 is intended to cover the needs of a nuclear power plant in case of "long term" (15 days) operation of the emergency diesel generator sets." Question: What are the basis and principles to determine the minimum autonomy of oil?"</p>	<p>The duration required for long term management of an emergency situation has been determined after post-Fukushima specific safety assessments (stress tests). It was considered that 15 days is an appropriate autonomy duration for an operator (by itself or thanks to its specific dedicated means), and that after such a period, public or general services and facilities are available again.</p>

<p>China</p>	<p>Description in section 18.3.2.2 “If the heat sink loss affects all of a site's reactors simultaneously, the targeted autonomy is 24 hours for coastal sites and 60 hours for riverside sites in the case of an unpredictable hazard.”  Question: What events will lead to the heat sink loss for all of a site's reactors? What are the basis to determine the targeted autonomy for coastal sites and riverside sites?</p>	<p>EDF is presently developing the integration of site loss of heat sink (loss of heat sink simultaneously for all units of a given site) in the safety report. The considered initiating events are those leading to the unavailability of the site pumping station (frazil, massive quantity of plugging agents...).</p> <p>The targeted autonomy of sites is based on the analysis of the external hazards that can lead to a loss of heat sink (especially massive quantity of plugging agents which is different for costal and river site).</p>
<p>China</p>	<p>Description in section 18.3.2.2 “On each site, EDF has undertaken the construction of a new local emergency management centre (CCL) that is robust to extreme hazard levels. The CCLs will enable the emergency response teams to ensure long-term management of a serious emergency such as that encountered with the Fukushima Daiichi NPP accident, particularly where several reactors are affected simultaneously”  Question: What extreme hazards are considered for CCL, how to withstand the extreme hazards? How to coordinate between the CCL and EDF?</p>	<p>The new local emergency management centre (CCL) belongs to the 'hardened safety core'. It is designed to withstand the extreme natural hazards of the safety core ('safety core' seismic event, 'safety core' flooding, 'safety core' tornado, 'safety core' lightning...). The CCL is connected by information and phone networks to the national emergency management center. It replaces the former local crisis management building and will host the site crisis management teams (local management center for on-site emergency plan).</p>
<p>China</p>	<p>Question: Have ASN released the regulatory requirements on cyber security? How do the operators response these requirements?</p>	<p>This question on Cyber-security is out of the CNS scope.</p>

<p>Czech Republic</p>	<p>The article says that it is guaranteed that the network will not be overloaded, but, nevertheless, does the one who performs the mobilization of those numbers of people have any spare means of communication (e.g. A satellite phone, radio, etc.)?</p>	<p>There are several communication tools used to trigger an emergency response and communicate during the response.</p> <p>Preferentially, wired ground networks will be used. These networks can be commercial open networks or emergency dedicated networks (therefore with dedicated bands).</p> <p>Furthermore, satellite networks are available: one, for each main control room, using geo-stationary satellite (including dedicated band), and one for extreme rescue, using satellite constellation technology.</p>
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<p>Czech Republic</p>	<p>The report states that "For new installations, for example the Flamanville 3 EPR, PSA 2 is used to verify that the safety objectives are reached, in particular the significant reduction in radioactive releases that could result from all conceivable accident situations, including accidents with core melt. For each type of accident, the technical directives set the following objectives:</p> <p>• the accidents with core melt which would lead to large-scale, early releases must be practically precluded. " The quoted text of the French National Report (together with other texts, e.g. on pages 27 and 55) states that the French nuclear safety authority ASN (Autorité de Sûreté Nucléaire) will require for new NPPs (including the Flamanville 3 EPR) some sort of demonstration (e.g. by probabilistic safety assessment) that severe accidents, which could lead to large-scale or early radioactive releases, have to be "practically precluded". This requirement seems to be in agreement with the new requirements of EURATOM and WENRA, which have been transposed into the French nuclear legislation (as mentioned on page 52 of the French National Report at the part addressing 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.</p> <p>1. Is there a specific numerical target set by the ASN for deciding if severe accidents are "extremely unlikely" for the given NPP, i.e. is there a maximum frequency tagged as</p>	<p>1. There is no specific numerical target set by the ASN for deciding if severe accidents are "extremely unlikely" for EPR FLA3.</p> <p>2. The BNI Order specifies that the demonstration of nuclear safety has to be based on:</p> <ul style="list-style-type: none"> <li>— up-to-date and referenced data;</li> <li>— appropriate, clearly explained and validated methods, integrating assumptions and rules adapted to the uncertainties and limits of knowledge of the phenomena in play;</li> <li>— calculation and modelling tools qualified for the areas in which they are used.</li> </ul> <p>It also explains that the licensee specifies and justifies its criteria for validating the methods, for qualifying the calculation and modelling tools and for assessing the results of the studies carried out to demonstrate nuclear safety.</p> <p>So the regulation does not assume these accident sequences to be studied with low conservative methods. The licensee has to justify its approaches.</p>
<p>Czech Republic</p>	<p>Is there any regulatory document that describes in detail the scope of the periodic review (e.g. based on IAEA NS-G-2.10)?</p>	<p>The law gives general requirements (art. L. 593-18 an L.593-19 of environmental code). A specific regulatory document will be issued in 2017 to precise the requirements.</p>

Czech Republic	The methodology for PSR shall be established and approved by responsible licensee management. Is a regulatory approval required?	At the beginning of the process, the safety authority takes a position on the content of PSR. Then, a position is taken during the process on specific subjects (ageing, deterministic safety analysis, PSA, hazard analysis, ...). Finally, the safety authority makes a statement to conclude. By law, after the PSR, the safety authority issues a document for the minister and gives its position concerning the capability of the plant to continue its operation safely.
Czech Republic	Is the licensee required to periodically report the current state of the implementation of safety provisions arising from PSR?	<p>The Law (environment code art. L. 593-18 and L. 593-19) requires the operator to submit to the Nuclear Safety Authority and the Minister responsible for nuclear safety a report on the conclusions of the PSR review of each reactor. In this report, the operator states, when appropriate, what measures he intends to take to cope with the anomalies detected or to improve safety, environment impact, ...</p> <p>For the power plant, the operator deploys the vast majority of changes over ten-year outage. For the remaining provisions to be implemented after the ten-year-outage, the safety authority periodically asks the licensee to give a statement on the implementation of safety provisions arising from PSR.</p> <p>In addition, the Environment Code requires, after the thirty-fifth year of operation of a nuclear power reactor, that the operator, between two reviews, submits an interim report on the state of its equipment ; this review may lead to additional requirements by the Nuclear Safety Authority.</p>

Czech Republic	Has the regulatory body developed internal procedure for assessing PSR results?	<p>A regulatory document regarding PSR is currently under developpement and will be available in 2017. Nevertheless, an internal procedure for assessing PSR results exists. It is worth noting a particular evaluation approach in France. As explained above (line 15756), due to the plant being in series, in France, the periodic safety review includes a phase call "generic phase", which takes place few years before the achievement of periodic safety review during the ten-yearly inspections. At the beginning of the process, the safety authority takes a position on the content, methods and objectives of PSR. Then, a position is taken during the process on specific subjects (ageing, deterministic safety analysis, PSA, hazard analysis, ...). Finally, the safety authority makes a statement to conclude on the generic approach for a given type of plant. By law, after the PSR of each individual reactor (based on this generic assessment), the safety authority issues a document for the ministry and gives its position concerning the capability of the plant to continue its operation safely.</p>
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<p>Czech Republic</p>	<p>What are the relations (context) between technical specifications and the program's operational controls?</p>	<p>CEIDRE (EDF Expertise and Inspection Department for Manufacturing and Operation) is dedicated to manufacturing and in-service inspection, with expertise in Mechanics, Metallurgy and Electricity, for other EDF entities such as NPPs (ISO/CEI 17020 accreditation type C related to manufacturing inspections).</p> <p>It implements surveillance processes based on the following principles :</p> <ul style="list-style-type: none"> <li>* Graded approach surveillance based on component safety class,</li> <li>* Definition of adequate Technical and Quality requirements applicable to Contracts,</li> <li>* Contract also based on nuclear oriented Construction codes (RCC-E and RCC-M or ASME) where suppliers demonstrate adequate knowledge,</li> <li>* Adaptable and modulated surveillance depending on manufacturing events (Non Conformance Report, Manufacturing Experience, benchmark...),</li> <li>* Perform regular inspections and also unexpected / unadvertised inspections,</li> <li>* Check of traceability transfer throughout complete process of manufacturing, <ul style="list-style-type: none"> <li>* Professional inspection methods (soundproof check lists),</li> <li>* Skilled inspectors and adequate training (initial and renewal),</li> </ul> </li> <li>* Triggered inspection: 1st of a kind implementation (new method, innovative process, newcomer, NDT, Hydro test, performance tests), <ul style="list-style-type: none"> <li>* Develop an independent team to be able to re-perform specific NDT,</li> </ul> </li> <li>* Perform on request destructive tests on foolproof material coupons (be sure of traceability).</li> </ul>
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<p>Finland</p>	<p>It is stated that the IRRS mission (2014) showed that "new means must be examined in order to guarantee that ASN has the human and financial resources it needs for effective oversight of nuclear safety and radiation protection in the future". Have such new means been identified and taken into use, and what activities do they include?</p>	<p>In its opinion of 6th May 2014 concerning preparations for the Budget Bill for the period 2015-2017, ASN considered that 125 positions would need to be created by the end of 2017 in order to address the unprecedented safety challenges with which it is faced. At the end of 2014, following budget discussions and decisions, 30 additional positions (10 per year) had been granted to it for this same period.</p> <p>In 2015, French ministries of finance and of environment asked three of their departments to reexamine the modalities of financing the control of nuclear safety and radiation protection in France. In the meantime, ASN kept working on identifying and explaining its needs, taking into account the evolutions of the legal framework and the delays of some technical instructions, and improving its own organization to be more efficient. This update was used to prepare ASN demands for the Budget Bill for 2017. With the support of the Government, ASN and IRSN obtained from the Parliament other additional human resources in 2017, with 20 other positions created for ASN. These means are used to reinforce ASN staff, mainly in the fields of the possible continued operation of reactors and other other main nuclear installations, the improvements to the installations required following the Fukushima Daiichi accident, the projects or construction sites for new installations, EPR, Cigéo, RJH..., the decommissioning of nuclear installations.</p>
<p>Finland</p>	<p>As one of the issues raised by the Fukushima accident, it is stated that off-site emergency preparedness measures require extension beyond the 10 km civil protection zone from the plant site. What is the maximum distance (or distances) which is currently being considered in the plans for extending the emergency preparedness zone?</p>	<p>The current consideration for extending the emergency preparedness zone is 20 km for NPPs, which implies dedicated actions and training for the local emergency responders, as well as information to the public. Beyond that zone, the National Emergency response plan of the Civil Protection Directorate is implemented : this plan covers the whole national territory.</p>

Finland	<p>France is undertaking a large effort in order to install a system for corium management in dry cavity for the NPP fleet in operation. What are the principal differences between these backfitted systems compared to the new-build core catcher designs, such as the one in EPR? What level of confidence can be reached with the backfitted systems, e.g. in terms of long-term corium cooling and preventing basemat melt-through?</p>	<p>Please see attached document 'Answer to question 18902 on EVR.pdf'.</p>
Germany	<p>A public consultation of rather short duration (from 26th January to 1st February 2016) is mentioned in section 6.3.1.1.7 (p.42). How many public comments were received? Is this the usual timeframe for public consultations and which national law stipulates respective timeframes for public consultations?</p>	<p>The consultation took place from January 26th to February 16th (3 weeks). The consultation resulted in:</p> <ul style="list-style-type: none"> <li>- 253 public comments made on the ASN website,</li> <li>- a document drawn up by the National Association of Local Committees and Commissions,</li> <li>- comments from EDF.</li> </ul> <p>For information, public consultations are governed by Articles L. 120-1 and L. 120-1-1 of the Environment Code.</p> <p>Duration of consultations:</p> <ul style="list-style-type: none"> <li>- 60 days for regulatory decisions;</li> <li>- minimum 15 days for individual decisions, except in exceptional cases.</li> </ul>
Germany	<p>In section 6.1.3.1.2 (p. 55), it is mentioned that the order of 7th February 2012 allows the application of several of the WENRA reference levels. The application/implementation of the 2014 WENRA RLs is not addressed in this context. Could you please comment on the status of the implementation of the 2014 WENRA RLs?</p>	<p>The number of RLs already transposed into published national requirements is 133. The number of RLs not yet transposed into published national requirements is 209.</p> <p>ASN deems a priority the transposition of the WENRA RLs into the French regulation framework. Thus, with the publication within the next months of the guide on design of pressurized water reactors, about a hundred of WENRA RLs will be transposed into the French regulation framework.</p>
Germany	<p>In 2015, the number of unannounced ASN inspections dropped by 25% (sec. 7.3.3.1, p.68). Is there any particular reason for this reduction?</p>	<p>This reduction is in the same order as the general reduction of the total number of inspections at the same time. This was due to an unusual turn over within inspectors as well as the time necessary to train new inspectors.</p>

Germany	In the report, the financial resources for 2015 are given (sec. 8.1.2.2, p. 74). Please provide additional information on the development of the budget over the past three years. Please provide an indication of how this budget is determined and give a statement on the adequacy of the resources.	<p>Financial resources for 2012 : 75,6 M€  Financial resources for 2013 : 79,05 M€  Financial resources for 2014 : 79,95 M€  Financial resources for 2015 : 80,1 M€</p> <p>The ASN's annual budget is allocated by the State after being voted by Parliament</p>
Germany	Could France provide a quotation of the formulation in the legislation assigning the prime responsibility for safety to the license holder (sec. 9.1, p. 79)?	<p>Article L. 593-6 of the Code of the Environment provides: " The license holder of a nuclear basic installation is responsible for the control of the risks and the inconveniences which his installation can present for the interests mentioned in the article L. 593-1 [security, health, public safety, nature and environment protection]. It gives priority to the protection of the aforementioned interests and to its permanent improvement, first and foremost by the prevention of accidents and the limitation of their consequences as regards nuclear safety. It formalizes this policy in a document explicitly affirming this priority.</p> <p>It shall have the technical, financial and human resources described in a notice and shall use the means necessary to exercise that responsibility. "</p>
Germany	Please provide in sec. 11.1 (p. 88) information on the arrangements for ensuring that the necessary financial resources are available in the event of a radiological emergency.	<p>Since 2015, new arrangements included in the code of environment (book V, title 9, chapter VII, section 1) define the responsibility of the licensee and the State in terms of compensation for the population impacted by a nuclear or radiological crisis. They also define the amount of funds the licensee must save for these circumstances.</p>

Germany	<p>Could you please provide information on the regulatory requirement related to Organisational and Human Factors (sec. 12.1, p.95)?</p>	<p>ASN requirements related to Organizational and Human factors (OHF), in the following fields of activity, are : (1) Engineering activities, during the design of a new facility or the modification of an existing one : A "Technical guidelines for the design and construction of the next generation of nuclear power plants with pressurized water reactors" is currently being developed. It will give directions for the design and safety analysis of PWRs and will ask the early implementation of an OHF analysis in any design, modification and decommissioning project with safety implications. Specifically, OHF analyses must produce inputs to engineering analyses in order to orient the decisions taken ; (2) The activities carried out for operation of existing installations, throughout their service life : The ministerial order of 7th February 2012 incorporates requirements to specify, in the integrated management system of the licensee, the implemented provisions in terms of organization and resources to assure the risks and inconveniences prevention. It also includes measures to identify safety important elements and safety important activities with the defined requirements for this elements or activities, to define performance efficiency indicators. The licensee shall also regularly review its integrated management system to assess its performance, identify the potential improvements and implement approved improvements. These provisions will be completed by an ASN guidance on safety policy and integrated management system, Therefore, ASN asks in particular the licensee to have a rigorous competencies management system, including determination of needs, both in respect of manpower qualification and numbers, and a program of specialized training and qualification through experience. Moreover, ASN expect that the licensees improve working conditions in order to, particularly, allow the workers to use their competencies. (3) The compilation of experience feedback concerning reactor design, construction and operation. The ministerial order of 7th February 2012 incorporates requirements to identify and solve gaps and significant events and to collect and take advantage of experience feedback during reactor operation. Therefore, ASN monitored the organization of the licensee to operate experience feedback, the methodology used, the depth of analyzes, and the development and implementation of the outcomes of these analyzes.</p>
Germany	<p>Could you please provide more information on whether ILL has an integrated management system implemented (sec. 13.3.2, p. 102)?</p>	<p>The ILL had a Quality Organisation Manuel. It has been recently (august 2015) replaced by an Integrated Management System (IMS) to comply with the French INB decree. All the documents called by the IMS will have been revised before end of 2017 if necessary.</p>



Germany	<p>France reports on the INES events for research reactors. There were 3 events of level 1 reported within the last 3 years. All of these events occurred on the RHF installation at the Laue-Langevin Institute (ILL). The causes of the reported events might reveal safety deficits at the technical, organisational and/or human level. Which actions were taken to improve the safety status of the ILL facility and to prevent similar events in the future?</p>	<p>The consequence of the first event, in 2013, led to the irradiation below 15 µSv of a two scientists. It appears the beam stop of the concerned scientific instrument was not visible (it is the exception at ILL) and presented defects. The attached detector was equipped with a radiological protection. As exceptionally its position was changed with its maximum displacement so the beam was no more stopped by the detector but by the defective beam stop. As soon as it has been detected, the beam has been shut down and the beam stop completed. All the other beam stops have been controlled in good shape, the radiological control procedure has been modified, the beam stop is now visible and inspected before each start of the reactor as all the other beam stops. And finally the procedure for elaborating the safety document has been revised by a working group involving representative of the ILL safety and health commission, in order to avoid the reproduction of such an event.</p> <p>The consequence of the second event, in 2015, resulted for a few hours by a 1 mbar overpressure in the part of the reactor hall dedicated to the instrument, with a very low risk of contamination. All the other zones of the reactor, dedicated to the operation and the circuits were maintained in depression. The depression regime is obtain with the common ventilation system which is stopped and replaced by the gaseous effluent system as soon as a radiological contamination is detected, and this last system was totally operational. The reason of this defect was due a complex regulation system, and as a door between two zones was not shut the cascade of depression was displaced and one zone reached a slight overpressure (1 mbar). Now the regulation has been modified and for each zone the reference of pressure is the external atmosphere pressure. Indication has been added on such doors to make clear they must be shut (even if now it cannot lead to an overpressure). Depression is now very stable without apparition of pre-alarm.</p> <p>The third event, in 2015, led to an irradiation of the hand of an heath operator. The radioactive calibration source was placed at the extremity of an holder, it has been used for decades like that, but the operator took the source holder by the wrong extremity. The design of the stick has been modified with an handle for gripping for taking the source holder with the hand and the position of the source is clearly indicated. An awareness against routine attitude has been provided to the team.</p> <p>Following each event classified at a level equal or upper 1 on the INES scale, ASN issues an information notice to the public on its website :</p> <p><a href="https://www.asn.fr/Controler/Actualites-du-controle/Avis-d-incident-des-installations-nucleaires/Presence-d-un-faisceau-de-rayonnements-ionisants-a-l-exterieur-du-batiment-reacteur-de-l-Institut-Laue-Langevin-Isere">https://www.asn.fr/Controler/Actualites-du-controle/Avis-d-incident-des-installations-nucleaires/Presence-d-un-faisceau-de-rayonnements-ionisants-a-l-exterieur-du-batiment-reacteur-de-l-Institut-Laue-Langevin-Isere</a>  <a href="https://www.asn.fr/Controler/Actualites-du-controle/Avis-d-incident-des-installations-nucleaires/Absence-temporaire-de-depression-dans-l-enceinte-du-batiment-reacteur">https://www.asn.fr/Controler/Actualites-du-controle/Avis-d-incident-des-installations-nucleaires/Absence-temporaire-de-depression-dans-l-enceinte-du-batiment-reacteur</a></p>
Germany	<p>France reports with regard to the research reactors: "As of 2002, ASN had informed the licensees that it considered that a safety review of the old facilities was required every 10 years." What about newer research reactors, are they not requested to conduct the periodic safety review (PSR), or is the PSR frequency different for these?</p>	<p>The periodic safety review is required every 10 years for each nuclear installation by the environmental code (article L 593-18). The scope includes, among other things, nuclear safety, radiation protection, chemical safety, environmental protection and the waste management.</p>

Germany	<p>France reports: "With regard to research reactors, the performance of probabilistic safety assessments (PSA) is not required by the regulations. Moreover, the specificity of each of these facilities makes it harder to conduct such assessments, so for the time being they are not carried out." Indeed, the research reactors are usually very unique and it may be difficult to give some generic requirements for the safety assessment. Nevertheless, has France considered extending the PSA obligation at least for research reactors with higher risk potential? This could have a valuable input for a further improvement of nuclear safety.</p>	<p>The article 3.3 of the Order of 7 February 2012 requires "The nuclear safety demonstration shall also include probabilistic analyses of accidents and their consequences, unless the licensee demonstrates that this is irrelevant. Unless otherwise specified by ASN, these analyses can be carried out in accordance with methods applied to the installations mentioned in article L. 512-1 of the environment code. They integrate the technical, organisational and human dimensions."</p> <p>It applies to all the BNIs. The article 9.4 of this Order defines the conditions of the application of the regulatory requirements set in the Order. And, the requirements of the article 3.3 are applicable as from the first of the following events to arise after 1 July 2015: periodic safety review, commissioning or decommissioning.</p> <p>ASN has issued in 2002 a guide for the PSA "RFS 2002-01". It currently applies only to NPPs.</p>
Germany	<p>France reports on the role and organisation of the CEA regarding emergency preparedness; for the two centers (Marcoule and Cadarache) some complementary measures are planned, e.g.: fire-fighting water reserves, fuel reserves and means of preventing the flood risk. When does France plan to implement these measures?</p>	<p>These complementary measures were not identified as requirements resulting from the stress tests performed for the emergency response resources of Marcoule and Cadarache Centers.</p>
Germany	<p>France reports that "Research reactors, which have much lower power levels than in power reactors, are also very resistant to power supply and heat sink losses." Is this statement valid for all French research reactors, also including facilities with higher power levels, e.g. RJH with 100 MW?</p>	<p>This statement is valid. As an example, following the complementary safety assessment (post-Fukushima stress test), it was requested to Licensees to implement for the RJH, RHF and Orphée reactors a hardened safety core with the same safety requirement than for NPPs.</p>
Germany	<p>France reports that for the commissioning of nuclear installations, the on-site emergency plan is requested. What about the off-site emergency plan? Are severe accident scenarios and design extensions conditions also considered in the commissioning process for the new facilities?</p>	<p>All accident scenarios (including DEC scenarios and SA) are described in the SAR. They are assessed by ASN with IRSN technical support. This accident studies allow to defining important equipment for safety and environment and their precise role and requirements. The licensee uses these requirements to define the commissioning tests procedures (CTP). The licensee transmits the CTP to ASN. ASN and its TSO assess the sufficiency of tests in the CTP, compliance of the criteria with safety and finally compliance of tests results. In this way severe accident scenarios and design extensions conditions are taken into account to control commissioning process for the new facilities. Besides, licensee has to identify scenarios that could have an impact on workers and population inside and outside of the plant. Then, licensee defines organization and means needed for facing such scenarios. This demonstration is documented in SAR and implementation of this organization and means is described in on-site emergency plan supplied for licensee application.</p>

Hungary	<p>the French nuclear power reactors within the scope of the Convention were built and are today operated by a single licensee, Électricité de France (EDF). All the reactors except one, the high-flux reactor (RHF), operated by the Laue-Langevin Institute (ILL), were built and are operated by CEA."</p> <p>It is not clear what type of reactors are operated by CEA,</p>	<p>The reactors operated by CEA are Critical mock-up (Masurca, Eole-Minerve), neutron beam supplier reactor (RHF, Orphée), safety test reactor (CABRI), severe accident studies reactor (Phebus), Sodium-cooled fast reactor (Phenix, Rapsodie) prototype or technological irradiation reactor (RJH, Osiris), teaching reactor (ISIS). They are only RRs.</p>
Hungary	<p>"The ILL is continuing the consolidation of its defence in depth by carrying out the work defined following the post-Fukushima stress tests and is thus setting up a "hardened safety core" of backup equipment. More specifically:</p> <ul style="list-style-type: none"> <li>- the seismic depressurisation system guaranteeing the absence of direct leaks and therefore unfiltered discharges, is installed;</li> <li>- [...]"</li> </ul> <p>It is not clear what the role of the depressurisation system is. Only the depressurisation or e.g. emptying pipes, too? Please explain the change in the possible discharge pathways and in the system parameters which provide the isolation or safe emission of the contaminated liquids after the initialisation of the depressurisation system.</p>	<p>The depressurisation system is a redundant emergency filtered ventilation circuit. It maintains depression inside the containment. The exhaust is done, after filtering, through a chimney which is placed at the top of the reactor containment. Contamination liquid are kept tightly inside the facility.</p>
Hungary	<p>"The CLIs of nuclear sites situated in départements bordering other countries are open to the members of the neighbouring countries."</p> <p>In the last period of time the regulation of CLIs has changed, and the circle was widened to parties of neighbouring countries. Do you have a co-operation procedure with the authorities of the neighbouring countries concerning the role of CLIs? What kind of role do these foreign members have in the procedures? How are these foreign members selected or can they apply for a CLI membership?</p>	<p>The Act of 17th August 2015 provided that the CLIs had to include members from foreign states if the site were located in a border department. In fact, before this Act, a participation of these states was already organized without being compulsory.</p> <p>Enforcement texts of the Act of 17th August 2015 are being drafted, and should include the appointment, as members of the CLIs, of representatives of border states. The modalities should allow border states to choose their representatives in CLIs. They will have the same rights as other CLI members.</p>

Hungary	<p>"ASN also carried out an in-depth inspection in September 2015 which confirmed that the site was moving in the right direction: the licensee has initiated a number of fundamental safety management measures to ensure progress in the satisfactory configuration of systems and the monitoring of maintenance activities.</p> <p>The partial inspection of reactor 5 began in the summer of 2015 and confirmed that the reactor building containment was suffering from a loss of tightness."</p> <p>Between 2012 and 2014 ASN approved the continued operation of Bugey reactor No. 2, 4 and 5. Bugey reactor No. 3 is currently under examination for the continued operation. Who has made the partial inspection of reactor 5, the licensee or ASN?</p> <p>How can the safety of the Bugey site be evaluated? Is there a lesson learned about the safety problems found in 2015 at</p>	<p>One of the objective of PSR is to detect any deviation which could jeopardize the containment tightness . After the analysis of the results of the third review of the 5 of the Bugey nuclear power reactor safety, which was held from June 11 to 20 December 2011, ASN asked EDF additional requirements including an anticipated test of the confinement "The results of this test must respect the leakage rate criteria defined in the General operating rules"</p> <p>A stop for maintenance of the reactor started August 27, 2015. EDF undertook during this shutdown containment tightness tests which showed a new increase in its rate of leakage.</p> <p>EDF has accordingly proposed in April 7, 2016 a solution to deal with this problem. This technically complex issue is being reviewed by the ASN and its technical support, IRSN.</p> <p>The Bugey nuclear power plant reactor n° 5 currently remains shut down. Its fuel is unloaded and stored in the reactor's storage pool.</p> <p>Periodic tests conducted on the other reactors of Bugey do not show any problem concerning the leakage rate of their containment.</p>
Hungary	<p>"The nuclear reactors covered by this report are managed by the Nuclear Energy Division (formerly the Nuclear Energy Centre) which defines the programmes and ensures their through-life support. This organisation changed in January 2016 with term "pôle" (centre) being replaced by "directions" (Divisions)."</p> <p>The change in the organisation of the CEA has significant effect on the performance of the organisation and as a consequence on the safety of the facilities. It would be interesting to know how this change was planned and how (with what methodology) can the management measure the</p>	<p>For the operational sectors, including the Nuclear Energy Division (DEN), this modification is only a vocabulary change.</p> <p>The change has no effect on the effective organisation of this division and consequently absolutely no effect on the safety of the facilities.</p>
India	<p>In this section, as also elsewhere in the report, one scenario mentioned is 'risk of rapid drainage of spent fuel storage pools'.</p> <p>What kind of mitigating measures are considered for this postulated situation regarding rapid drainage of spent fuel storage pools?</p>	<p>The main scenario of rapid drainage of spent fuel storage pools could occur when pool pumps were operating. An automatic shutdown of these pumps at very low level has been implemented to increase the time available for the operator to return the fuel assemblies into a safe position during handling (at least 30 mn is now available).</p>

<p>India</p>	<p>the report includes: 'Assuming an event leading to simultaneous loss of all electrical power supplies and the primary cooling system means for all the reactors of a site, the feasibility of all the immediate actions provided for in the SAMG must be guaranteed for each reactor, in particular, depressurization of the primary system, with the operating and emergency response teams present on the site.'</p> <p>Can France elaborate which accident scenario call for immediate actions as provided for in SAMGs? For such governing scenario, typically what are the available times for 'immediate actions'?</p> <p>Since such immediate actions need to be guaranteed for each reactor, Can France share if any mock exercises are/being done to verify that with available personnel resources and infrastructure at site, immediate actions as envisaged in SAMGs can be accomplished.</p>	<p>The 'hardened safety core' decided by EDF for installation on each reactor unit under operation is a set of equipment and organizational resources allowing to manage the situation resulting from an extreme external hazard (seism, flooding, tornado) significantly beyond the design basis and which lead to a station black out and the loss of the heat sink for all reactors of the site and on a long period of time. The hardened safety core is designed to allow the proper management of the prevailing situation by only the on-shift team present on site at time of the initiating event without any external assistance for the first 24 hours. Additionally, the 'hardened safety core' and its I&amp;C are designed so that actions required to be taken during the very first hours (2h) can be taken from the control room. The Nuclear Rapid Intervention Force (FARN) can intervene on site starting from 24 hours after the initiating event. To that end, the on-shift operating staff will be reinforced. A series of tests with simulators has been initiated to check the feasibility and operability of actions to be implemented, within the required timeframe, by the on-shift operating staff taking into account the status of the facility after an extreme external hazard (debris...).</p>
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<p>India</p>	<p>Though it is brought out in the report that EDF still has to carry out feasibility studies on the following points:</p> <ul style="list-style-type: none"> <li>• Installation of a reactor containment ultimate cooling system</li> <li>• Implementation of a solution of dry spreading then passive flooding of the corium with water to prevent basemat melt through by the corium in the event of partial or total meltdown.</li> </ul> <p>Is it possible to share design concepts or design philosophy, as being considered for above measures?</p>	<p>All EDF operating units are equipped with filtered venting of the containment (U5) since the late 80's. Following the experience feedback of the Fukushima accident, EDF has decided to implement a hardened safety core including equipment and organizational means to prevent or mitigate a severe accident in case of extreme external hazard. As such, the hardened safety core will include a system allowing to remove the residual heat stored in the containment in case of a severe accident without opening the filtered venting system. This new system, called EAS-u (ultimate emergency containment spray system) will include, as stationary equipment, a pump qualified to operate under severe accident conditions and a heat exchanger allowing for operation of the system in the recirculation mode of the containment sumps. This system will be cooled down by a mobile ultimate heat sink, independent from the site heat sink.</p> <p>Additionally, EDF has decided to implement on each reactor a hardened safety core system to prevent the basemat melt-through of the containment in order to avoid releases in liquid phase in case of a severe accident with core damage leading to reactor vessel melt-through. This system will belong to the hardened safety core. The system allows for a dry spreading of the corium followed by a reflooding with water from the containment sumps thanks to a passive connecting mean (fusible gate). The spreading area will be reinforced or extended to a neighbouring room depending on the site specific concrete composition. This system allows to limit the concrete ablation by the corium and reduces the corium progress therefore preventing the risk of a reactor building basemat melt-through in case of severe accident.</p>
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<p>India</p>	<p>It is written that: "optimization of the filtered containment venting system (sand filter) in the event of a loss of heat sink and steam generators feed water supply".</p> <p>Filtered containment venting system is required to be operated to relieve pressure built inside containment. Does the event of loss of heat sink and steam generators feed water supply imply multiple system failure/ unavailability; leading to the total loss of heat removal capability and thereby heating up of the core?</p> <p>Can France clarify meaning of 'optimization of filtered containment venting system'?</p> <p>Typically what parameters are required to be evaluated before putting this system in service?</p>	<p>The event of loss of heat sink and steam generators feed water supply leads to the total loss of heat removal capability and thereby heating up of the core, but some means can be available to feed the core with water. In this case, heat can be evacuated by the filtered containment venting system</p> <p>The optimization of filtered containment venting system consists in the design of a diaphragm to avoid a blockage of the sand filter by condensation. In the situation of loss of heat sink (and loss of Residual Heat Removal system and Main Primary system open), this system is activated on the basis of a pressure criterion.</p>
<p>India</p>	<p>sample of the equipment needed to operate the reactor in the event of total loss of off-site and on-site power supplies, whether seismic-classified or not, for all the plant units in service. For some of these equipment items EDF has defined additional improvement measures for a hazard beyond the design-basis earthquake (DBE).</p> <p>It is also mentioned that EDF concluded that seismic capacity of the containment and of the structures and equipment enable them to withstand an earthquake with a spectrum 1.5 times greater than that of the SSE. Could France elaborate whether the aforementioned additional improvement measures would enhance the seismic capacity beyond 1.5 times of SSE? Further, these enhancements will lead to how much margin over DBE?</p>	<p>The level of the seismic hazard spectrum considered for the 'hardened safety core' (SND) is greater, for each site, than the envelope value of 1.5 x SMS (the Increased Safety Seism, defined by a deterministic approach) and a 'probabilistic' seism with a return period of 20,000 years. The definition of the hazard level takes into account specific site effects, such as the nature of soils.</p> <p>New buildings of the 'hardened safety core' (ultimate emergency diesel generator, local crisis management centre...) are designed with decoupling envelop values. New equipment installed in existing buildings of the nuclear island are designed at the levels associated with the hardened safety core floor spectrum. Existing equipment resistance is checked for the hardened safety core level (SND) are equipment are reinforced if required. As a conclusion, the hardened safety core is designed to prevent a core melt (and the dewatering of fuel assemblies stored in the fuel pool) and to mitigate a severe accident following an earthquake significantly more severe than the design basis (hardened safety core level SND).</p>
<p>Indonesia</p>	<p>Please provide brief information on exemption regulations dedicated for safety of research reactors or nuclear power reactors, respectively?</p>	<p>There is no exemption regulation for reactors in France. The French approach is based on general regulations, applied to all BNIs. The installations are especially supervised by resolutions of the ASN, which, with regard to the specificities of each of them, prescribe appropriate safety requirements. These ASN resolutions are available on the ASN website</p>

Indonesia	<p>On the basis of the conclusions of the stress tests carried out both in Europe and nationally, ASN issued a range of resolutions on 26th June 2012 (EDF and CEA) and 10th July 2012 (ILL), requiring that EDF, CEA and ILL create:</p> <ol style="list-style-type: none"> <li>1. a “hardened safety core” of material and organisational provisions aimed at: <ul style="list-style-type: none"> <li>- preventing a severe accident or limiting its progression;</li> <li>- limiting large-scale radioactive releases;</li> <li>- enabling the licensee to perform its emergency management duties.</li> </ul> </li> <li>2. a local emergency centre allowing emergency management of the nuclear site as a whole in the event of an extreme external hazard;</li> </ol> <p>Please provide further explanation on the concrete actions regarding points 1 and 2?</p>	<p>Further details on the post-Fukushima regulatory programme are available on the ASN website (English version),</p> <p>ASN has also presented an overview of the implementation on the French RRs in september 2016 in the framework of the IAEA Workshop on Safety Reassessment of Research Reactors following the Feedback from the Accident at the Fukushima Daiichi Nuclear Power Plant. All the attendees at this workshop, as BATAN, National Nuclear Energy Agency Of Indonesia, have an access to the presentations on the IAEA website (<a href="https://gnssn.iaea.org/sites/auth/NSNI/ExtPRJ/RRSS/RRIN/J7-TR-52538/SitePages/Home.aspx">https://gnssn.iaea.org/sites/auth/NSNI/ExtPRJ/RRSS/RRIN/J7-TR-52538/SitePages/Home.aspx</a>).</p> <p><a href="http://www.french-nuclear-safety.fr/Information/News-releases/ASN-s-2011-report-there-is-a-before-and-an-after-Fukushima">http://www.french-nuclear-safety.fr/Information/News-releases/ASN-s-2011-report-there-is-a-before-and-an-after-Fukushima</a>. <a href="http://www.french-nuclear-safety.fr/Information/News-releases/ASN-sets-additional-prescriptions-for-AREVA-and-CEA-facilities-and-sites">http://www.french-nuclear-safety.fr/Information/News-releases/ASN-sets-additional-prescriptions-for-AREVA-and-CEA-facilities-and-sites</a></p>
Indonesia	Please describe outline of review on observation results of grouping the power as outage periods factor?	Table 1 gives the dates of the 10-yearly outage of plant series. Thus the third 10-yearly outage for the 900 Mwe serie has started in 2009 (Fesseinheim 1) and will be completed in 2020 (Chinon B4). The PSR usually starts about 7 years before the first power plant outage of the serie.
Ireland		France Thanks Ireland for its comments.
Ireland	<p>It is noted that ASN’s inspections may “also concern ... the workshops or design offices of the subcontractors, the construction sites, the plants or workshops manufacturing various components that are important for safety”. How often are such inspections of subcontractors and suppliers to the licensees carried out?</p> <p>What are the obligations on the licensees in terms of oversight of the quality of its supply chain?</p>	<p>The regulatory framework for subcontracting was strengthened by the decree of 28 June 2016. This decree now limits the number of subcontracting levels to 3, with the objective of guaranteeing the mastery of the activities that have been subtracted by the authorized operator. The French nuclear regulation makes the licensee responsible for controlling their contractors. Therefore, ASN does not inspect directly contractors but regularly inspects the conditions governing the use of subcontracting, both at EDF's suppliers and at nuclear power plants.</p> <p>With regard to nuclear pressure equipment, a total of about 4000 inspections have been conducted, the majority by the entitled bodies. This includes inspection in the workshops and design offices of the subcontractors and the construction sites. The majority of these inspections are related the EPR Flamanville 3 and to the replacement steam generators programm by EDF on its operated reactors.</p>



Ireland	<p>It is noted that EDF underwent significant turnover in human resources. Is this level of turnover expected to continue into the future? How is EDF ensuring it has access to the necessary expertise and level of human resource needed for operation of the existing fleet of NPPs in France while also building new reactors in France and overseas?</p>	<p>EDF does not expect the significant turnover it underwent recently in human resources to continue in the coming years. On the contrary, based on its forward-looking jobs and skills management approach, EDF anticipates an overall slight decrease of its human resources in the nuclear business. The significant recruitment level which took place in the previous years, together with a strong investment in training, allows to timely compensate for a peak of retiring employees. This level of recruitment is now expected to decrease. EDF works closely with CEA and AREVA on human resources issues in the nuclear sector. A concerted approach towards the educational system, consistent with consolidated anticipations of recruitment, has been developed. Special care is also given to the management of sensitive competences and expertise in between these three major nuclear players.</p>
Ireland	<p>It is noted that ASN has observed some deficiencies in planning for future resourcing at certain sites. What actions have been taken to address this?</p>	<p>ASN asks the licensee to have a rigorous competencies management system, including determination of needs, both in respect of manpower qualification and numbers, and a program of specialized training and qualification through experience. ASN monitors the competencies management system for all operators working on the facilities (internal and external workers) by performing inspections and by asking comprehensive evaluations to its TSO.</p>
Ireland	<p>It is noted in the Report that planning for multi-faceted emergencies must be improved. What actions have been taken in France in this regard?</p>	<p>The elaboration of the National Response Plan to a major Nuclear or Radiological accident, which is regularly assessed through different types of exercises, takes into account a multi-events emergency. In this case, an Interministerial Crisis Center is activated by the Ministry for home affairs with the participation of ASN, where all ministerial departments involved in the crisis are represented, to give the Government all the information to make the decisions. In addition, France performs national, bilateral and international exercises including a radiological emergency combined with a natural disaster.</p>
Ireland	<p>It is noted that the Fukushima Daiichi accident demonstrated that public protective actions must be taken in an area of 10s of kilometres around an accident site, and that the PPI planning in France makes provision for protection of the population within 10 km of the plant. What arrangements are in plan beyond the 10 km or are there plans to extend the area for PPI planning?</p>	<p>In Autumn 2016, the Government decided to extend the emergency planing zones around NPPs from 10 km to 20 km. The Ministry for home affairs announced the decision by a letter addressed to all prefects of the departments containing a NPP on October the 3rd. Beyond 20 km, there is a National emergency plan (ORSEC) covering the whole French territory.</p>
Ireland		<p>France Thanks Ireland for its comments.</p>
Ireland		<p>France Thanks Ireland for its comments.</p>

Japan	<p>The report says that the purpose of qualification under accident environmental conditions is to prove through tests or analyses that the materials are capable of fulfilling their functions, and that it is important to be able to check the sustainability of these qualifications. How are reliability and uncertainty of the tests or analyses assessed and considered in the qualification?</p>	<p>Regarding reliability of tests, a case by case analysis is performed to define the number of tests to be performed for each equipment.</p> <p>Uncertainties are taken into account to define the conditions under which equipment have to be qualified. Laboratories are certified and measurement uncertainties taken into account for results analysis.</p>
Japan	<p>Who perform the internal and external audit? What kind of processes are contained the audits? Are the audit manuals opened to public?</p>	<p>Internal audits are carried out by ASN inspectors. There are two types of internal audits: those in which all quality processes are assessed (every 4 to 5 years) and those in which progress in improvement actions is verified (intermediate audits).</p> <p>There are 12 quality management system processes. These are management processes, business processes and support processes. These documents are not made available to the public.</p> <p>The external audits are the IRSS audits, which make it possible to verify the taking into account of the recommendations of the IAEA in the quality management.</p>
Japan	<p>French Report says the CPY plant reactor containment comprises a double concrete wall instead of a single wall with a steel leak tightness liner. Please elaborate the regulatory requirements for design of double concrete containment, such as airplane crash.</p>	<p>The reactor buildings of the 900MW serie (CP0 and CPY) is a simple wall concrete containment with an internal metallic liner to ensure leaktightness. The reactor building of the 1300 and 1450 MW series (4 RCC loops) is a double wall containment. The design requirements in relation with risks of incidental fall of an airplane are identical for these two types of containment systems.</p>
Korea, Republic of	<p>With reference to section B.3.1, page 21 of the French national report, it is stated that ASN initiated in 2014 international benchmarking work on safety culture in order to draft a policy document. With respect to the provided information in the section in question, Korea would like to inquire the following question:</p> <p>What are the key results of the international benchmarking work on safety culture, as well as the contents of the policy document and future plans?</p>	<p>Regarding the international benchmarking work, ASN took part in the elaboration of the NEA "Green Booklet on Safety Culture of an Effective Nuclear Regulatory Body" and of the GSR Part 2 about "Leadership and Management for Safety", both published in 2016.</p> <p>ASN also stated an internal reflexion about the integration of both nuclear safety and radiation protection in the same frame about cultural aspects of its own organisation, which could rely on the four values of ASN : independence, competence, rigor and transparency. ASN started to think about the way of building its safety and radiation protection culture policy document around its four values which are already well known and experienced in the daily core activities.</p> <p>For the time being the policy document is not available yet and ASN has not decided the ways of finalizing it.</p>

<p>Korea, Republic of</p>	<p>With reference to article 8.1.2.3, page 75 of the French national report, it is stated that to guarantee and improve the quality and effectiveness of its action, ASN defines and implements a quality management system derived from the ISO and IAEA international standards and built around: a multi-year strategic plan and shared annual objectives; an organization manual containing organizational notes and procedures providing ASN internal rules for the sound conduct of each of missions; internal and external audits concerning implementation of the measures contained in ASN's quality management system; performance indicators for measuring the effectiveness of ASN's actions; listening to the stakeholders (public, elected officials, associations, media, trade unions, industry); annual reviews of the management system with the aim of continuous improvement of its operation. With respect to the provided information in the article in question, Korea would like to inquire the following questions:</p> <ol style="list-style-type: none"> <li>1) Who, when, and how are external audits carried out and what are the recent audit results?</li> <li>2) What are the types of performance indicators that measure the effectiveness of ASN activities?</li> <li>3) Is there a specific regulation which links the quality management systems of the ASN and IRSN? Does the ASN conduct inspections on the quality management of IRSN?</li> </ol>	<ol style="list-style-type: none"> <li>1. External audits are IRRS audits carried out by IAEA auditors. The last mission was carried out in 2014 by a team of 29 international experts under the aegis of the IAEA. Previously, ASN had hosted in 2006 the first IRRS review mission covering all the activities of a Safety Authority and in 2009 a follow-up mission. The findings of this review are available on the IAEA website. In 2017, the ASN will host a new follow-up mission.</li> <li>2. Several indicators have been defined for each of the quality system processes. For example: <ul style="list-style-type: none"> <li>Concerning the process "Authorise": <ul style="list-style-type: none"> <li>Decrees (commissioning, decommissioning, ...) : 2/3 &lt; 33 months (quarterly indicator)</li> <li>Individual authorizations (nuclear facilities, transport) : 2/3 &lt; 12 months (quarterly indicator)</li> <li>Industrial and medical individual authorizations : 95% &lt; 6 months (quarterly indicator)</li> <li>Accredited bodies authorisations : 95 % &lt; 6 months (quarterly indicator)</li> </ul> </li> </ul> </li> </ol> <p>Quarterly monitoring without target of prescriptions in nuclear installations, instruction deadlines for periodic safety reviews and the commissioning and business closures in areas outside nuclear installations</p> <p>Concerning the process Process "Monitor" - Sub process "Inspect": Respect of the initial annual program : (monthly)</p> <p>Recognition of the number of days of on-site inspections with a minimum of 250 days in the case of labor inspection : (quarterly indicator)</p> <p>Letters to operators and inspection reports : 100% &lt; 3 weeks (monthly)</p> <p>Quarterly monitoring without target of the number of unclosed inspection for more than 6 months Biannual monitoring of the number of over 5 years inspection guides or whose writing is necessary</p> <ol style="list-style-type: none"> <li>3. No, the two quality systems are independent. In 2016, a first audit limited to certain subjects concerning the quality of the expertises carried out on the NPP's safety was carried out.</li> </ol>
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<p>Korea, Republic of</p>	<p>With reference to article 8.1.3, pages 75 and 76 of the French national report, it is stated that the government consults ASN on the share of the State's subsidy to IRSN for its technical support mission for ASN. A five-year agreement signed by ASN and IRSN determines the technical support procedures, involving some 400 staff. It is described every year in a protocol which fine-tunes priorities according to the nuclear safety and radiation protection issues. With respect to the provided information in the article in question, Korea would like to inquire the following questions:</p> <ol style="list-style-type: none"> <li>1) How does the ASN manage IRSN output? Does the IRSN disclose the output of the work entrusted by the ASN?</li> <li>2) How is the difference in opinions between ASN and IRSN mediated?</li> <li>3) Does the IRSN have a channel in which it can deliver its</li> </ol>	<p>The protocol between the ASN and the IRSN is reviewed annually, in order to define the expertise priorities.</p> <p>This expert work results in one or more reports that IRSN provides to the ASN so that the ASN can take a position. This decision of the ASN may differ from the recommendations given by the IRSN or take only a part of it. The IRSN reports are published on the IRSN website and ASN decisions or positions are published on the ASN website.</p>
<p>Korea, Republic of</p>	<p>With reference to article 10.2, page 82 of the French national report, Korea would like to inquire the following question:</p> <p>In Korea, Safety culture assessments have been periodically implemented based on the safety culture assessments guideline developed by NPP licensees incorporating the assessment methodologies such as survey with questionnaire, interview.</p> <p>What is the methodology (i.e., survey with questionnaire, interview or field observation) used to assess the nuclear</p>	<p>The assesment of safety culture is a difficult task, because it is not matter of compliance. EDF has adopted the IAEA "Iceberg model" as a frame, it means that a qualitative assessment approach that combines different types of data (field observation, interviews, events analysis and survey) is used. EDF is trying to implement its current approach by using the principles suggested in the recent IAEA document - safety reports series n°83.</p>

<p>Korea, Republic of</p>	<p>With reference to article 12, page 97 of the French national report, it is discussed that ASN checks that the licensee correctly deploys the Socio-Organizational and Human (SOH) approach during the design of new nuclear power plants or the modification of operating nuclear power plants. With respect to the provided information in the article in question, Korea would like to inquire the following question:</p> <ol style="list-style-type: none"> <li>1) Would it be possible to provide an overview on the specific activities of licensees relevant to SOH approach, as well as the relevant regulatory documents and technical standards?</li> <li>2) How does the ASN check the suitability of licensees' activities?</li> </ol>	<p>The licensee has developed a methodology (SOH approach) to transform the engineering practices, in order to take into account the people needs in the development of systems and modification of materials and organizations. ASN considers the philosophy of this methodology relevant and important to ensure the safety of installations and safety of workers. ASN requires that the scope of the HOF evaluation and the amount of effort dedicated to it would be graded, depending on the characteristics of the design of modification and its impact on human activities. ASN requirements related to Organizational and Human factors (OHF) in Engineering activities, during the design of a new facility or the modification of an existing one, are/will be propose in: (1) A "Technical guidelines for the design and construction of the next generation of nuclear power plants with pressurized water reactors" which is currently being developed. It gives directions for the design and safety analysis of PWRs and will ask the early implementation of an OHF analysis in any design, modification and decommissioning project with safety implications. Specifically, OHF analyses must produce inputs to engineering analyses in order to orient the decisions taken. (2) The n° 2014-DC-0420 resolution of the February 13, 2014 related to the physical modifications in BNIs incorporates the following requirement: The design of the modification takes into account the interactions, during its implementation and its operation, between, on the one hand, the modified or newly installed equipment and, on the other hand, the user and his needs. ASN performs inspections and IRSN, as TSO, performs evaluations on the effectiveness of the SOH approach. The key points checked are : Tools, methods and practices supporting the analyses of OHF, decision making process to deal with the integration of OHF inputs and constraints, OHF competencies of people involved in the design or modification projects, etc.</p>
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<p>Korea, Republic of</p>	<p>With reference to article 12, page 98 of the French national report, it is discussed that licensees conducted assessments on the human actions required for extreme situation management, and ASN reviewed the results as well as additional. With respect to the provided information in the article in question, Korea would like to inquire the following question:</p> <p>How are human actions related to accident management analyzed or assessed considering the following elements: a) the scope of facilities, personnel, procedures or guidelines, b) the process and methods of the human action analysis or assessment, c) regulatory documents used by ASN</p>	<p>Following the stress tests and regarding the feasibility of emergency management actions in extreme situations, ASN required in 2012 that the licensee shall define the human actions required for management of the extreme situations studied in the CSAs. It shall check that these actions can effectively be carried out given the intervention conditions likely to be encountered in such scenarios. It shall for instance take account of the relief of the emergency teams and the logistics necessary for the interventions. It shall specify any material or organizational adaptations envisioned. The licensee have transmit to ASN the summary of this work and the envisaged measures. Moreover, the licensee shall send ASN a list of the necessary emergency management skills, specifying whether these skills are liable to be held by outside contractors. The licensee shall provide proof that its organization ensures the availability of the necessary skills in an emergency situation, including if outside contractors are used. IRSN, ASN's TSO, is currently partially evaluating the licensee's responses. The subject will be totally examined by the Standing Advisory Committee of ASN in 2019 when the hardened safety core management procedures become available.</p>
<p>Korea, Republic of</p>	<p>With reference to section 3.3.4 and article 19.4.4 in the French national report, it is stated that an integrated accident management strategy was established based on the concept of "hardened safety core" after the Fukushima accident. With respect to the provided information in the referred section and article, Korea would like to inquire the following question:</p> <p>Would it be possible to provide an overview on the human factors approach and activities used to systematically address human performance issues when developing and implementing accident management strategy?</p>	<p>ASN do not systematically used the human factors approach to address human performance issues when developing and implementing accident management strategy. Nevertheless, following the stress tests and regarding the feasibility of emergency management actions in extreme situations, ASN required in 2012 that the licensee shall define the human actions required for management of the extreme situations studied in the CSAs. It shall check that these actions can effectively be carried out given the intervention conditions likely to be encountered in such scenarios. It shall for instance take account of the relief of the emergency teams and the logistics necessary for the interventions. It shall specify any material or organizational adaptations envisaged. The licensee have transmitted to ASN the summary of this work and the envisaged measures. Moreover, the licensee shall send ASN a list of the necessary emergency management skills, specifying whether these skills are liable to be held by outside contractors. The licensee shall provide proof that its organization ensures the availability of the necessary skills in an emergency situation, including if outside contractors are used. This work is currently partially evaluated by IRSN, ASN's TSO. The subject will be totally examined by the Standing Advisory Committee in 2019 when the hardened safety core management procedures become available.</p>

<p>Korea, Republic of</p>	<p>With reference to article 19.4, the fifth paragraph of page 212 of the French national report, it is stated that EDF submitted an reassessment regarding on-site staffing level to cope with extreme situations and ASN is reviewing the results by 2017 or 2018. With regards to the provided information in the article in question, Korea would like to inquire the following questions:</p> <p>What is the process and method used to assess on-site staffing level to cope with extreme situations? Moreover, how will the changed plan for on-site staffing level reflecting lessons learned from Fukushima be different from the existing on-site staffing level for accident management?</p>	<p>Concerning on-site staffing level, the main feedback from Fukushima accident is that, even considering it was not actually the case, a site could be isolated for a long period of time without support from local emergency resources. Therefore, it was decided to simultaneously create an outside human resources capability, with specific clearing and transportation means, to intervene rapidly on site (FARN : Nuclear Rapid Intervention Force) and to evaluate the need to consolidate the on-site operating teams in order to give them the capacity to operate solely for 24 hours.</p> <p>The method to assess the needed staffing level is based on multi-units full scope emergency simulations and specific "sandbox" exercises.</p>
<p>Korea, Republic of</p>	<p>With reference to article 15, page 124 of the French national report, Korea would like to preface its questions with the following information: According to EUR 2.1B.2, in case of DBC4 radiological consequences analysis, design target doses are divided into 24 hrs at 800m, 4 days at 3,000m, and whole duration at 800m after accidents.</p> <p>1) With regards to the mentioned information, what are the detailed requirements and exposure pathways (e.g., cloudshine, groundshine, dietary) considered in France? 2) In case of groundshine and dietary exposure pathways, it seems they may have long-term impact on the public post-accidents. What is the regulatory position on the dose assessment period regarding groundshine and dietary exposure pathways?</p>	<p>In case of emergency, the projected dose are assessed through models considering the cloudshine exposition. For the long term, all ways of exposition are considered, for the first year at least. According to the policy elements for post-accident management in the event of nuclear accident released in 2012 (available on ASN website), a public protection zone is defined considering a projected effective dose of 10 mSv over the first month received during the end of release, regardless of pathways of exposure, including ingestion of contaminated local foodstuffs ; for the year following the first month, a dose of 10 msv is considered. In the framework of the transposition of the BSS european directive (2013/59/Euratom), a reference level of 20 mSv will be implemented in the public health code (post-accident exposure situation).</p>
<p>Korea, Republic of</p>	<p>With reference to article 16.4.1, page 159 of the French national report, Korea would like to inquire the following questions:</p> <p>1) What is the role of FARN during nuclear emergencies? 2) Is the dose rate evaluation for radiation sources from NPPs included in FARN's responsibility?</p>	<p>As said in article 16.3.1.2 the FARN belongs to the EDF crisis management organisation and can be deployed within 24 hours to any NPP to bring material and human resources and prevent the situation from escalating, if needed. In particular, it can be deployed to bring energy or water in case of core desinking. The dose rate evaluation of radiation sources is already made by technicians and experts on site, and verified by the IRSN based on its own detection network. The FARN can use these data in order to be deployed more safely once on site.</p>

<p>Korea, Republic of</p>	<p>Reviewing the French national report, it was found that cyber security was not discussed in 'Article 18. Design and Construction', pages 179 to 193. With respect to cyber security, Korea would like to inquire the following questions:</p> <p>In Korea, cyber security has been applied from the beginning of design and construction level to reinforce the nuclear safety against cyber attack.</p> <p>1) Are there requirements applicable to cyber security in the design and construction of nuclear facilities? If there are such requirements, how is the review on cyber security performed?</p> <p>2) What does the regulatory authority demand of NPP</p>	<p>Cyber security is out of the CNS scope.</p>
<p>Korea, Republic of</p>	<p>With reference to article 19.4, page 208 of the French national report, Korea would like to inquire the following questions:</p> <p>1) Is there an automatic reactor trip system in place for earthquakes?</p> <p>2) If so, would it possible to provide an explanation on the system (ex: system configuration, and safety or non-safety system) and criteria including setpoints for automatic reactor trip?</p> <p>3) What is the criteria(including setpoints) for a manual reactor trip due to earthquakes?</p> <p>4) Is there any guidelines for NPP response to earthquakes? If so, what are the specific guidelines?</p>	<ol style="list-style-type: none"> <li>1. EDF has decided the implementation of an automatic reactor shutdown (AAR) triggered by a seismic event for all of operating reactor units following the Fukushima accident experience feedback.</li> <li>2. The system is composed of several sensors located at the reactor building of each unit which trigger the automatic reactor shutdown (opening of the AAR circuit breakers) in case of detection by several sensors of a seismic event higher than a predefined level.</li> <li>3. EDF does not foresee a reactor trip by manual action of the operator during a seismic event.</li> <li>4. There is no specific operating instruction based on a seismic criterion only. The 'state-oriented approach' operating instructions considers the status of the installation and not the causes. However, even if a seismic event has not lead to any consequence on the facility, it is foreseen that EDF will initiate inspections of its facilities above a given seismic level (inspection seismic level - see § 17.2.1 : external events - earthquake).</li> </ol>



Luxembourg	<p>Please elaborate on the remaining aspects related to the VDNS:</p> <ul style="list-style-type: none"> <li>• How do you define ‘a new nuclear power plant’?</li> <li>• 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?</li> <li>• 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?</li> <li>• How do your national requirements and regulations address the application of the principles and safety objectives of the Vienna Declaration to existing NPPs?</li> <li>• Do your national requirements and regulatory framework require the performance of periodic comprehensive and systematic safety assessments of existing NPPs – if so, against what risk/engineering objective or limit are these judged and can you give practical examples?</li> <li>• How do your national requirements and regulations take into account the relevant IAEA Safety Standards throughout the life-time of a Nuclear Power Plant?</li> <li>• 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?</li> </ul>	<p>The implementation of the principles of the Vienna declaration is detailed on : § 3.5 ; § 6.3; §7.1 ; § 14.2.1; § 18.3.2 ; § 19.4.2</p>
Montenegro	<p>Are all the funds for training provided through the budget of ASN or it is partly provided by donations (such as cooperation with IAEA trough organizing workshops, scientific visits, training courses etc)?</p>	<p>The training of ASN agents is fully covered by the ASN operating budget. Some technical training is provided by external training organizations or by industry where there is no other solution. The ASN then pays the cost of these external trainings.</p>

<p>Montenegro</p>	<p>Does the licensee, who is the operator of such nuclear installation, is obliged to periodically provide independent monitoring of radioactivity around the facility, which would be conducted by some other, outer, independent institution?</p> <p>Could France explain how the implementation of the monitoring of radioactivity by the operator can be supervised, and from time to time properly controlled?</p>	<p>The radiologic control of the environment is performed within the BNI surroundings and also at the France scale. Two surveillance networks are continuously updated with new analysis results:</p> <ul style="list-style-type: none"> <li>- a network which gathers the results of air, water, soil and food analyses performed in laboratories either by the licensee or by any other entity ;</li> <li>- a network with continuous remote transmission of the measurement of radioactivity of the air.</li> </ul> <p>The monitoring of liquid and gaseous discharges from an installation is essentially performed by the licensee. It is regulated both by a general regulation which applies to all BNIs (ASN resolution 2013-DC-0360) and by specific regulations which only apply to a particular BNI. These two regulation levels are complementary. They both set up the minimum monitoring plan that have to be implemented by the licensee. The samples are analyzed by an accredited laboratory. The results are sent on regular basis to ASN and to the French Institute for Radiological Protection and Nuclear Safety (IRSN) which is in charge of updating a national database (RNM, <a href="http://www.mesure-radioactivite.fr">www.mesure-radioactivite.fr</a>). Besides, each BNI is compelled to publish an annual environmental report which contains the results of these analyses throughout the year.</p> <p>ASN is regularly conducting dedicated inspections in order to ensure the proper implementation of the monitoring plan. These controls notably deal with analyses cross checking by a third party expert, sampling methodology, equipment condition and laboratories accreditations.</p> <p>In parallel, IRSN also performs its own regular monitoring with its network system. It is notably used for cross-checking the results of the licensee's analyses and for monitoring the radioactivity in the environment at a larger scale.</p> <p>Other organizations, such as NGO, may make additional analyses. Every result of a radiological analysis in the environment is made in France is made publicly available on the French online database (RNM).</p>
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Montenegro	<p>If there is no clearance level in French national regulations, does it mean that also all practices with ionizing radiation sources are under the regulatory control? Does it mean that in this case the process of issuing licenses, inspection controls and other relevant activities have to be conducted continuously, which cause the burden of national budget funds? Does France consider changing this approach in the future?</p>	<p>here is no plan to change the regulation related to the absence of clearance levels for radioactive waste in France.</p> <p>The ionizing radiation sources, over exemption criteria, belong to the activities under the ASN control. Then, the public health code (article L. 1333-52) states that, at the end of life, the ionizing radiation sources are managed as radioactive waste and should get back to a supplier. In the case that the supplier does not exist no more, ANDRA manage the old sources and the costs were borne by the users.</p>
Netherlands	<p>Do licence holders of NPPs also contribute to this training programme of ASN, for instance regarding very technical aspects of their plants?</p>	<p>During the initial training of inspectors, they are expected to undertake a one- to two-week internship with operators in order to learn the working methods of the licensees and the operating rules. This training at the operator is adapted to the technical field in which the future inspector will work (NPP, medical, industrial ...)</p>
Netherlands	<p>Many regulatory bodies in the world, face the challenge to transfer knowledge of retiring or senior staff to younger and/or new staff. Is this also the case in your country? Do you have a dedicated program for knowledge transfer and do you provide trainings to senior staff to improve their skills in knowledge transfer?</p>	<p>Nearly 53 % of the sessions are provided by ASN inspectors. The rest is provided by external structures</p> <p>Internal trainings are operational oriented. They are based on theory, practice and experience feedback. It is a strong means of knowledge transfer from experienced inspectors to young recruits.</p> <p>At the same time, each entity develops measures to accompany new inspectors through tutoring, among other things.</p>
Netherlands	<p>How does the regulatory body assess the sufficiency of human and financial resources at the nuclear installations?</p>	<p>In its opinion of 6th May 2014 concerning preparations for the Budget Bill for the period 2015-2017, ASN considered that 125 positions would need to be created by the end of 2017 in order to address the unprecedented safety challenges with which it is faced. At the end of 2014, following budget discussions and decisions, 30 additional positions (10 per year) had been granted to it for this same period.</p> <p>In 2015, French ministries of finance and of environment asked three of their departments to reexamine the modalities of financing the control of nuclear safety and radiation protection in France. In the meantime, ASN kept working on identifying and explaining its needs, taking into account the evolutions of the legal framework and the delays of some technical instructions, and improving its own organization to be more efficient. This update was used to prepare ASN demands for the Budget Bill for 2017. With the support of the Government, ASN and IRSN obtained from the Parliament other additional human resources in 2017, with 20 other positions created for ASN. These means are used to reinforce ASN staff, mainly in the fields of the possible continued operation of reactors and other other main nuclear installations, the improvements to the installations required following the Fukushima Daiichi accident, the projects or construction sites for new installations, EPR, Cigéo, RJH..., the decommissioning of nuclear installations.</p>

Netherlands	<p>section 14.3.2 shows a comprehensive overview of the PSAs developed for the various NPP series. Are PSAs past level PSA-2 considered for the future?</p>	<p>In 2015, French ministries of finance and of environment asked three of their departments to reexamine the modalities of financing the control of nuclear safety and radiation protection in France. In the meantime, ASN kept working on identifying and explaining its needs, taking into account the evolutions of the legal framework and the delays of some technical instructions, and improving its own organization to be more efficient. This update was used to prepare ASN demands for the Budget Bill for 2017. With the support of the Government, ASN and IRSN obtained from the Parliament other additional human resources in 2017, with 20 other positions created for ASN. These means are used to reinforce ASN staff, mainly in the fields of the possible continued operation of reactors and other other main nuclear installations, the improvements to the installations required following the Fukushima Daiichi accident, the projects or construction sites for new installations, EPR, Cigéo, RJH..., the decommissioning of nuclear installations.</p>
Netherlands	<p>In this section, snow is mentioned as an extreme climatic condition, which does not contribute to flooding. Has the potential effect of accumulation of wind-transported snow on roofs been accounted for?</p>	<p>The potential effect of accumulation of wind-transported snow on roofs has been taken into account, in accordance with the applicable Eurocodes.</p>
Netherlands	<p>In 2015, the national emergency centre was activated for six national exercises. They are detailed further in section 16.4 where is stated: "enable the highest-level decision-making circles to be tested". 16.4 suggests the local exercises are the ones which have hundreds of people mobilised in the field. Does this imply that national exercises are table top</p>	<p>National exercises can be performed on various formats, depending on the goals to achieve and on the constraints given by the prefect of "département". In the facility, there are always responders on the ground. The off-site response by the civil protection and medical teams is often performed but can sometimes be simulated.</p>
Netherlands	<p>Could you please explain what you consider to be the most important actions that France will take based on the IAEA Fukushima summary report?</p>	<p>The most important actions that France will take based on the IAEA Fukushima summary report is the implementation of the elements of the hardened safety core of material and organizational measures to control the fundamental safety functions in extreme situations. The safety core will include an additional ultimate electricity generating set for each reactor, a diverse emergency cool-down water supply for each reactor, new crisis management premises for each site.</p>

Pakistan	France may share some details about the main elements of the large scale skill renewal program.	ASN asks the licensee to have a rigorous competencies management system, including determination of needs, both in respect of manpower qualification and numbers, and a program of specialized training and qualification through experience. ASN monitors the competencies management system for all operators working on the facilities (internal and external workers) by performing inspections and by asking comprehensive evaluations to its TSO.
Poland	Does the ordinance provide examples of effective protection of nuclear materials against the risks of theft and malicious use? How MEEM will provide the inspection of the nuclear material, independently or with help of the ASN and IAEA?	<p>The protection of nuclear materials against the risks of theft and malicious use is covered by the French Code of Defense, in compliance with the international Convention on the Physical Protection of Nuclear Material and its 2005 amendment. The MEEM is the authority in charge of implementing these provisions for non military nuclear sites, in particular for licensing and inspections. About one hundred inspections are performed each year.</p> <p>The MEEM works closely with other relevant authorities, in particular the nuclear safety Authority ASN, the ministry of interior and the French cybersecurity authorities... regarding matters needing coordination. The MEEM is also committed to international cooperation. It chaired in 2016 the ENSRA (European Nuclear Security Regulators Association) association (the Polish security authority is also a member). It actively contributes to IAEA work, providing expertise in particular for international guidance writing and IPPAS (International Physical Protection Advisaroy Service) missions. The authority asked the IAEA in 2011 to provide an IPPAS mission. This mission concluded that French regulations are compliant with international recommandations. A new IPPAS mission (follow up) has been asked to the IAEA.</p>
Poland	It is stated that "creating a portfolio of specific assets able to cover the anticipated costs [...] is done under the direct control of the State". Is this direct control performed by ASN, Ministry of Finance or other State's body?	This control is performed by the Ministry of Energy. ASN provide its support through the assessment of the technical assumptions.
Portugal	What percentage of your NPP's already have containment venting-filtration systems installed.	All French NPPs are already equipped with a filtered containment venting system.

Romania	How does the regulator review and inspect the verification and validation of emergency operating procedures and severe accident management guidelines?	ASN assesses the strategies and rules of conduct in the event of an incident and an accident insofar as these documents belong to the general operating rules. Concerning the operating procedures declining these rules of conduct, ASN verifies, during on site inspection, the presence of the emergency operating procedures and severe accident management guidelines on the sites. ASN also performs situational tests in order to check the operators' ability to control the damaged NPP.
Romania	How does the regulator review the adequacy of the financial resources of the licensees? Does the regulatory verify the absolute amount of financial resources and how are these allocated and spent of the trends for various areas (e.g. maintenance, training, safety improvements, etc.)? What legal mechanisms does the regulator have to intervene in case it judges that the funding for certain safety-related activities is not up to expectations?	<p>The scope of the ASN review related to the Licensees' financial resources is limited by the Environment code to the provisions for the decommissioning and the radioactive waste storage (Article L594-1). The Licensees have to present a revaluation of these cost each 3 years (Article L594-4). The review and assessment of these reports are carried out by an independent body or by the Ministry of the Environment, Energy and the Sea. This topic is taken in account in the ASN authorisation process for a new build, in the case of a change of operator or a major modification of an installation.</p> <p>Regarding the other safety-related activities, the scope of the ASN review and assessment and inspection does not include the financial resources. ASN verifies the adequacy of the licensees arrangements to comply with safety, environmental, radioprotection and other regulatory requirements. If a licensee is not able to perform its duties and functions appropriately according to the regulations, ASN will initiate an enforcement action. As an example, ASN could require the Licensee to limit its operations or the quantity of radioactive material in the facilities. Finally, ASN maintains continuous discussions with the licensees to prioritize theirs actions and allocate their resources in order to improve continuously the safety.</p>
Romania	Has the ASN required a re-assessment of the human resources needed on shift / on site or to be available on-call to respond to accident situations that may be caused by extreme external events? If yes, what were the overall results of such an analysis and the measures taken by the licensees?	After the Stress tests, ASN defined requirements. In particular, the licensee is expected to: 1) define the human actions required for management of the extreme situations studied in the complementary safety assessments (CSAs). It shall check that these actions can effectively be carried out given the intervention conditions likely to be encountered in such scenarios. It shall for instance take into account the relief of the emergency teams and the logistics necessary for the interventions. It shall specify any material or organizational adaptations envisaged; 2) send ASN a list of the necessary emergency management skills, specifying whether these skills rely on external contractors. The licensee shall provide proof that its organization ensures the availability of the necessary skills in an emergency situation, including if external contractors are used. Moreover, ASN's TSO (IRSN) is currently assessing the methodology deployed by EDF to determine the number of operators necessary to manage an extreme external event.

Romania	How does the ASN review and monitor the organizational changes (e.g. changes to the organizational structure, processes, staffing, etc.) proposed or implemented by the licensees to determine their impact on safety?	ASN do not systematically and directly review and monitor the organizational changes proposed or implemented by the licensees to determine their impact on safety. Nevertheless as safety demonstration relies on organizations, the principles and modalities of operation of these organizations are described in the operator's integrated management system. This system is regularly inspected by the ASN.
Russian Federation	Is France planning to sell EPRs on a "turnkey basis" to other countries?	This question is out of the CNS scope.
Russian Federation	Have any engineering studies been performed on the heaters that ASN recommends to install in the safety injection system at the Tricastin 1, Fessenheim 2 and St Laurent B 1 reactors? Are these heaters intended to operate in accident conditions?	The heaters are implemented on the safety injection system tank. They run continuously during full power operation. In accident conditions, the tank is empty by the pumps of the safety injection system, thus the heaters on the tank became useless.
Russian Federation	This section mentions that to reduce the deposition of iron contained in the reactors' secondary system feedwater system on the tubes and the surface internals, remedial or preventive chemical cleaning is performed for each reactor concerned by such phenomenon. How this cleaning has been performed? What is its outcome?	Build-up of deposits is being monitored on an on-going basis through : - CCTV examination and/or Eddy Current tests at Tube Support Plate level during refueling outages, - Monitoring during operation of blockage and fouling indicators, such as Steam Generator wide-range water level and steam pressure in the Steam Generator dome. The chemical cleaning is performed to avoid a high level of clogging or if the SG dome steam pressure is too low.
Russian Federation	As stated in this section, in 2015, the campaign was completed to replace the steam generators of the 900 MWe plant series equipped with tube bundles in non-heat-treated Inconel 600 alloy susceptible to some corrosion phenomena leading to tube degradation. This is followed by the RGV for the 900 and 1300 MWe reactors for which the tube bundle is made of heat-treated inconel, which is less susceptible but nonetheless remains vulnerable to cracking at the base of the tubes related to the primary area. What material was selected to replace Inconel? What is SG condition at N4 plant series?	The selected material is Inconel 690 for 900 and 1300 plant series. N4 plant series is already equipped with Inconel 690.

<p>Russian Federation</p>	<p>Para11.1.2 discusses significant investments into major overhaul of reactors in service to enhance their safety level. Could you please list key activities of this kind implemented at each unit in service over the reported period.</p>	<p>The following units of the 900 MW serie underwent their third 10-yearly outage during the reporting period (2013-2015): Bugey unit 3, Gravelines units 2 &amp; 4, Dampierre units 3 &amp; 4, Saint-Laurent units 1 &amp; 2, Tricastin unit 4, Blayais units 2, 3 &amp; 4, Chinon unit 1, Cruas units 1 &amp; 3. The outline of modifications made during these outages is given in paragraph 6.3.1.1.2 of the report.</p> <p>The following units of the 1300 MW serie underwent their second 10-yearly outage during the reporting period: Cattenom unit 4, Penly unit 2 and Golfech unit 2. The outline of modifications made during these outages is given in paragraph 6.3.1.1.3 of the report. Paluel unit 2 has started its third 10-yearly outage in 2015 (cf. paragraph 6.3.1.1.5).</p> <p>Additional modifications to operating reactors have been implemented during the period as described in paragraphs 6.3.1.2 (protection against external climatic hazards and replacement of steam generators) and paragraph 6.3.1.3 (steps taken following the stress tests).</p>
<p>Russian Federation</p>	<p>Article 13 in 'F' does not discuss development and implementation of quality assurance programme for NPP construction, as demanded by CNS.</p>	<p>The Ministerial Order of February 7, 2012 (BNI Order) sets the general rules applicable to the design, construction, operation, final shutdown, dismantling, maintenance and monitoring of basic nuclear installations, to protect the interests mentioned in article L. 593-1 of the environment code. Their application is based on an approach that is proportional to the extent of the risks or drawbacks inherent to the installation. It takes into consideration all the technical aspects and relevant organizational and human factors.</p> <p>The BNI order explains that the license has to define and to implement an integrated management system that ensures that the requirements relative to protection of the interests mentioned in article L. 593-1 of the environment code are always taken into account in any decision concerning the installation. This system aims primarily at ensuring compliance with the requirements of the acts and regulations, the authorization decree, and the prescriptions and decisions of ASN, and conformity to the policy mentioned in article 2.3.1.</p> <p>There is no need to specify specific rules concerning the construction phase of a NPP for the development and implementation of quality assurance program. The rules are the same for the life cycle of the reactor as mentioned in §13.2.</p>



<p>Russian Federation</p>	<p>Could you please tell what principle governs selection of material / equipment suppliers to undergo inspection.</p>	<p>There is a specific regulation for nuclear pressure equipments in France based on the EU Directive 2014/68/EU :</p> <ul style="list-style-type: none"> <li>- the conformity assessment of equipments with the highest level of safety consequences in case of failure is performed by ASN. The assessment is based on Module G of the EU Directive which includes conformity assessment of materials. These equipments are classified as level N1. This is typically the equipment of the main primary and secondary systems in a PWR. The QA/QM system of the manufacturers of these equipments is assessed under the Module H of the EU Directive by Notified bodies entitled by ASN.</li> <li>- for other equipments of level N2 and N3, the assessment of their conformity is performed by Notified Bodies which have been entitled by ASN.</li> </ul> <p>The regulatory framework for subcontracting was strengthened by the decree of 28 June 2016. This decree now limits the number of subcontracting levels to 3, with the objective of guaranteeing the mastery of the activities that have been subtracted by the authorized operator. The French nuclear regulation makes the licensee responsible for controlling their contractors. Therefore, ASN does not inspect directly contractors but regularly inspects the conditions governing the use of subcontracting, both at EDF's suppliers and at nuclear power plants.</p>
<p>Russian Federation</p>	<p>The Report points out that the Labour Code prohibits employment of temporary contract staff for performance of work in areas where hourly dose rate is liable to exceed 2 mSv. Could you please clarify what was the rationale behind this dose rate limit?</p>	<p>The labor code generally forbids employment of temporary contract staff for any dangerous activities involving the hazardous materials listed in the article D 4154-1. This list contains 27 different activities involving hazardous materials and includes ionizing radiation.</p> <p>To ensure that the specific medical and dosimetry surveillance for the agents working in areas where hourly dose rate is liable to exceed 2 mSv/h, the labor code forbids the employments of temporary contractors. Employers may be tempted to use first temporary contracts staff to work under ionizing radiation and lay them off when reaching a dose limit. This regulation prevents them to do so.</p>

<p>Russian Federation</p>	<p>The section discusses probabilistic risk assessment of nuclear power reactors.          Could you please give results of probabilistic risk assessments (quantitative risk assessment).</p>	<p>The probabilistic objective for PSA level 1 is 10<sup>-5</sup> for reactors internal events. All French NPP comply with this requirement.          Regarding PSA level 2, results depend on releases category. Every reactor complies with ASN requirements.</p> <p>The French NPP fleet is made of different same of the kind types of PWRs reactors (series).          PSA assessment occurs during 10 yearly periodic safety reviews for each series of reactors.          Nonetheless, PSR for every series of reactor do not occur at the same period of time. There is usually a 5 year delay between the 2 main series of reactors. Thus, due to the delay between PSR of the main series of reactors, comparison of PSA numerical results between different series of reactors is not used by ASN. ASN appreciates results according to PSA revision, accuracy of models, etc.</p>
<p>Russian Federation</p>	<p>ASN required EDF to take a lot of safety enhancement actions after post-Fukushima stress tests. Why?</p>	<p>After analyzing the Complementary Safety Assesments (ECS) performed by EDF, ASN confirmed that the safety levels at EDF nuclear power plants are satisfactory and that they could withstand extreme conditions.          Nevethless, ASN asked EDF to apply the continuous improvement principle, constantly factoring in international operating experience, especially given the magnitude of the events which took place at Fukushima Daiichi NPP. EDF was requested to further increase existing plant safety level, so that they could deal with the most unimaginable situations. The resulting Action Plan was defined with regards to the targets set for the 3rd generation reactors and with a view to ensure a sustainable operating lifetime of the French nuclear power plants.          ASN and EDF conducted two seminars, in July 2013 and July 2014, with Rostekhnadzor and Rosenergoatom to share experience about the development of Complementary Safety Assessments and the definition of resulting 'post-Fukushima' Action Plans.</p>
<p>Russian Federation</p>	<p>What are the loose parts in the primary system at Saint-Laurent-des-Eaux that led to cladding defect (para 14.2.4.1.2), and what is the nature of this defect?</p>	<p>During the former outage, in 2013, a "helicoflex" seal of approximately 20 mm of diameter (a helicoflex seal is a close-wound helical spring inside a ductile jacket) has been forgotten in a circuit connected to the primary circuit during a maintenance operation. The reactor restarted without EDF knowing about this seal, that eventually reached the primary circuit. While the reactor was operating, this seal broke out in several pieces, which caused a small hole in the fuel cladding.</p>

Russian Federation	Why PSA Level 2 for fire is performed for 1450 MWe plants only?	PSA for fire events are only Level 1 PSAs (see section 6.3.1). The text in section 14.3.2, about 1450MWe plants for fire, refers to analysis of a few scenarios that has been performed at the level 2 (this is not a complete PSA level 2). Level 2 PSAs are available for internal events.
Russian Federation	How does full requalification of main primary and secondary systems relate to periodic safety reviews?	<p>The full requalification of main primary and secondary systems are realized during the ten-yearly outage inspection.</p> <p>There is no regulatory obligation to link the periodic safety review to the ten-yearly outage inspections, but in practice, the licensee implements the modifications that were defined in the framework of the periodic safety review during the ten-yearly outage inspection: in fact, because of the design similarities between the reactors of a same plant series, the licensee initiated an advance “generic” review of all the reactors in the series, several years before the ten-yearly outage inspections of these reactors.</p> <p>The results of these generic studies (i.e. material and organizational modifications) are then applied by EDF to each of the reactors plant series during the course of the ten-yearly outage inspections.</p> <p>After this generic phase and six months after each ten-yearly outage inspection, the licensee submits a report to ASN and the Minister responsible for nuclear safety, in accordance with Article L. 593-19 of the Environment Code, presenting:</p> <ul style="list-style-type: none"> <li>- the conclusions of the periodic safety review of the concerned reactor and the modifications implemented or envisaged in order to correct the detected non-compliances and improve the level of safety;</li> <li>- the results of the realized inspections (requalification of main primary and secondary circuits, containment tests, ten-yearly tests);</li> <li>- the ageing management check.</li> </ul> <p>After analyzing the report, ASN sends the minister in charge with nuclear safety its analysis on the continued operation of the facility concerned up until the following periodic safety review and can impose new technical prescriptions.</p>
Russian Federation	<p>Could you please clarify whether you consider damages and related safety consequences of an earthquake 1.5 times greater than SSE to plan actions to bring reactor in a safe shutdown condition.</p> <p>Is possibility of further NPP operation a success criterion for these actions?</p>	EDF takes into account the drop and insertion into the core of all control rods in case of extreme external hazard. Therefore, the scram and insertion of control rods will be checked for all units in case of a seismic event at the 'Hardened Safety Core' (SND) level in order to ensure sufficient criticality margin.

<p>Russian Federation</p>	<p>The Report states that potential source of flooding hazard was assessed following an earthquake with the intensity exceeding the SSE. EDF has defined the extreme levels of flooding hazard based on the assessment of the increased water levels resulting from flooding.</p> <p>Have you assessed safety margin for flooding relative to earthquake intensity (relative to SSE)? This may impact scenario selection.</p>	<p>Two types of external flooding phenomena have been considered: on one hand, flooding resulting from an increase of the water level in the heat sink; on the other hand, flooding by direct water flow on the site platform. This last category of phenomena includes, inter alia, heavy rains ou damages to site water facilities as a consequence of an earthquake.</p> <p>Water levels considered for the protection, against flooding, of the hardened safety core equipment were defined on the basis of flooding scenarios significantly more severe than those which are considered in the design basis:</p> <p>For external floodings in relation with the increase of the heat sink water level:</p> <ul style="list-style-type: none"> <li>- river flood which flow is 30% larger than the Increased Millennial Flood,</li> <li>- a fixed increase of the reference sea level as defined per the recommendations included in ASN Guide n°13, taking additionnaly into account the impacts of a centennial swell propagated on the resulting static level,</li> <li>- induced effects from a 'hardened safety core' (SND level) seismic event on the canal dikes in the site vicinity,</li> <li>- multiple failures of water dams located upstream the site due to an earthquake.</li> </ul> <p>For floodings by direct water flows on the site platform:</p> <ul style="list-style-type: none"> <li>- rains of heavy intensity which intensity is twice the centennial heavy rain intensity, as considered in the design basis applicable on Jan 1st 2012,</li> <li>- rains of heavy intensity associated with the total obturation of the rain water drainage manholes,</li> <li>- flooding induced by an earthquake beyond the design basis resulting in the ruin of water facilities located on the platform.</li> </ul>
<p>Russian Federation</p>	<p>The effectiveness of additional stationary power sources can be evaluated in the framework of particular scenarios. Portable power sources may be needed in case of extremely unlikely earthquakes (with magnitude greater than 1.5. SSE). Portable power sources of this kind give much more room for application, depending on site conditions. Do you intend to do anything of this kind?</p>	<p>The level of the seismic hazard spectrum considered for the 'hardened safety core' (SND) is greater, for each site, as the envelope value of 1.5 x SMS (the Increased Safety Seism, defined by a deterministic approach) and a 'probabilistic' seism with a return period of 20,000 years. The definition of the hazard level takes into account specific site effects, such as the nature of soils.</p> <p>EDF considers that it is extremely unlikely to have an earthquake higher than the SND and so that the hardened safety core and especially the stationary ultimate emergency diesel generator (DUS) is sufficient to deal with earthquakes.</p>
<p>Russian Federation</p>	<p>What difficulties were encountered during implementation of the sole EPR project in France?</p>	<p>The main difficulties encountered during the construction of the Flamanville 3 reactor are recorded in the NEA/CNRA/WGRNR CONEX database. They relate to civil work, welding, lifting equipment, damage to high power electrical cable, manufacturing of heavy equipment, etc.</p>

Russian Federation	Has the EPR design taken into account containment problems revealed during the tests at the 1300 MWe and 1450 MWe plants?	<p>The containment building of EPR consisting of two walls:</p> <ul style="list-style-type: none"><li>- an inner wall made of pre-stressed concrete (concrete containing steel cables tensioned to ensure compression of the structure). A metallic liner covers the entire inner face of the concrete wall.</li><li>- an outer wall made of reinforced concrete.</li></ul> <p>The main design evolutions in comparison with the 1300 MWe and 1450 MWe reactor containments are:</p> <ul style="list-style-type: none"><li>- the presence of the metallic liner,</li><li>- the use of higher performance concrete,</li><li>- the use of more powerful restressing cables.</li></ul>
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<p>Russian Federation</p>	<p>How do you fulfil the CNS requirement that technologies incorporated in the design and construction of a nuclear installation are to be proven by experience or qualified by testing or analysis?</p>	<p>In the ASN decision 2013-DC-0347 -7th May 2013, the license condition [INB 167-A] establishes the necessity for the licensee to perform inspections and tests to check compliance for each safety systems and components (SSCs) with requirements specified in the licensing basis, including the PSAR (or FSAR), the environmental impact assessment and all others documents submitted in the license application. This license condition defines the commissioning tests (CTs) carried out within the perimeter of FLA3 once SSCs have been built or installed on site. ASN requested, with the license condition [INB 167-B], that the operator shall document, implement and made implemented a process to identify the tests and controls inspections to be carried out to meet the requirement [INB167-A] and to justify their combination or sequence.</p> <p>The Licensee elaborates analysis Notes of CTs Sufficiency (NAS) to be compliant with the requirement [INB 167-B]. The aim of these notes is to check the systematic existence of a control or a test for each requirement specified in the licensing basis.</p> <p>ASN oversees the compliance of the licensee with the two previous license conditions. After checking design, ASN controls for SSCs the different steps from the manufacture to the construction or settling of SSCs on site that together finally warranty the capacity of the equipment to accomplish its role for safety. To oversee this several steps, ASN assesses licensee documentation and performs inspections in manufacturers' workshop, in engineering services and on site. NAS information could be used by ASN to identify control or test to be inspected.</p> <p>The qualification of SSCs to accidental condition (i.e. demonstration that SSCs works under severe accidental environment –temperature, pressure, radiation, earthquake...) is an independent process with no link with the definition of CT. To oversee qualification of SSCs, ASN assesses licensee documentation and performs inspections manufacturers' workshop, in engineering services and on site.</p>
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<p>Russian Federation</p>	<p>According to the National Report, ASN faces numerous challenges in overseeing the construction, start-up tests and preparation for operation of the Flamanville 3 reactor. Examples of such challenges include checking the quality of the equipment manufacturing and installation as well as the construction work in a manner commensurate with the safety, radiation protection and environmental protection issues.</p> <p>Would you please discuss in greater detail the methods used to address these challenges?</p>	<p>A set of technical prescriptions of the ASN require the operator of Flamanville 3 to perform or have performed the appropriate inspections and tests on the elements important for protection (EIP) whether these EIP are structures, systems or components.</p> <p>These tests and inspections shall include, as necessary, tests and inspections on EIP performed at the manufacturer, tests and inspections performed within the perimeter of Flamanville-3 during the installation, erection or setting-up of EIP, tests carried out within the perimeter of Flamanville-3 once EIP have been erected or installed on site.</p> <p>The operator shall document, implement and made implemented a process to identify the tests and inspections to be carried out and to justify their combination or sequence.</p> <p>The operator shall establish a document justifying the adequacy of the tests and inspections and shall justify the complementarity of the commissioning tests with the other tests and inspections or, where appropriate, of the tests performed on other reactors of the same type.</p> <p>The operator shall submit a monthly list of the deviation detected at the Flamanville-3 construction site. During the first month of each quarter, the operator shall submit ASN a progress report on the Flamanville-3 project, covering the previous quarter. This quarterly report shall include:</p> <ul style="list-style-type: none"> <li>• the updated master schedules of activities related to procurement, construction, manufacturing and installation, of qualification tests of EIP relevant to the demonstration of nuclear safety, of erection/construction activities per building, of commissioning test activities;</li> <li>• a list of the main deviation, including significant events, relating to EIP design, construction, manufacturing and assembly activities as well as EIP qualification and commissioning tests.</li> </ul> <p>All these requirements allow the ASN to establish an inspection program, including verification of the manufacture and installation of equipment and construction work.</p>
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<p>Russian Federation</p>	<p>According to the National Report, in the year 2015 ASN paid particular attention to the following subjects: maintaining a strategy to preserve the equipment and structures present on the construction site until the Flamanville 3 reactor is commissioned.</p> <p>In view of postponed reactor commissioning announced by EDF, ASN is taking measures to ensure that EDF continues to pay particular attention to defining and complying with requirements associated with the preservation of the equipment already installed and the structures already built. ASN regularly examines this point during its inspections, in particular ensuring that the risks associated with concomitant activities being carried out in the buildings simultaneously by several trades are taken into account. Would you please tell how principal contractor is motivated to carry out activities to preserve the installation during forced idle periods?</p>	<p>With regard to management of the quality of the design and manufacturing activities (excluding NPE) in the shops of suppliers of structures, systems and components for the Flamanville 3 EPR reactor, ASN has observed during its inspections that the organisation put in place in the various EDF departments, whether for engineering or for the teams in charge of monitoring its contractors' activities, was on the whole satisfactory and showed signs of improvement with respect to previous years. ASN regularly examines this point during its inspections, in particular ensuring that the risks associated with concomitant activities being carried out in the buildings simultaneously by several trades are taken into account.</p>
<p>Russian Federation</p>	<p>Could you please give more detailed information about the distribution of stable iodine tablets to the populations situated in the zone covered by the PPIs around the NPPs operated by EDF through the network of pharmacies? Is this done in advance, or during a radiological emergency?</p>	<p>Within the emergency planning zone (10 km around NPPs for the moment, but will be 20 km next year) distribution of ITB is made in advance of emergencies and for all the population. This distribution is accompanied by a communication campaign on the nuclear risk and the protection measures. In case some people don't go to the pharmacy to take their ITB, the licensee will directly send the tablets to them through posting.</p>
<p>Russian Federation</p>	<p>What is the link between installation of sodium tetraborate baskets for trapping organic iodine in the containment and the absorbing SIC (Silver-Indium-Cadmium alloy) clusters?</p>	<p>Control rods of the 900MW serial contain an 'AIC' alloy (Silver Indium Cadmium). In case of severe accident with total or partial core melt, these elements trapp the organic iodines, rendering useless the implementation of tetraborate sodium baskets. Tetraborate sodium baskets are implemented in 1300 and 1450MW reactors buildings, as their control rods do not contain this AIC alloy.</p>



<p>Russian Federation</p>	<p>According to para 19.4.2 ("Re-criticality risk") under the prescriptions relative to the "hardened safety core", EDF will install on each reactor a system for preventing basemat melt-through in the event of reactor meltdown and reactor vessel melt-through and this system is based on dry spreading of the corium followed by passive flooding of the corium. Meanwhile, it is stated in para 6.3.1.3 "Phase 3" that EDF still has to carry out feasibility studies of this system. What is the real situation today?</p>	<p>Feasibility studies are now finalized. EDF has decided the implementation on each reactor of a hardened safety core (phase 3) system preventing containment basemat melt-through (in order to avoid releases in liquid phase) in case of a severe accident with core melt leading to reactor vessel melt-through. This system will belong to the hardened safety core and will be designed to withstand corresponding extreme external hazards ('hardened safety core' seismic event). The system allows for a dry spreading of the corium followed by a reflooding with water from the containment sumps thanks to a passive connecting mean (fusible gate). The spreading area will be reinforced or extended to a neighbouring room depending on the specific concrete composition. A device to allow vessel melt-through detection is included.</p>
<p>Russian Federation</p>	<p>What are the ASN requirements for determination of safe operation limits and list of parameters for which the limits shall be established? What is the justification for safe operation limits; in particular, the justification for the safe operation limit for reactor thermal power?</p>	<p>Operating limits and conditions are determined to insure the respect of the safety demonstration. The general operating rules (GOR) are put forward by the operator and approved by ASN. They insure the respect of the functioning limits of the reactor to guarantee the validity of the design and sizing hypotheses, by defining key parameters, availability of equipment, and safety thresholds including safety margins. Any modification of the GOR are subjected to an authorization request to ASN or to an information to ASN, according to the importance of the modification .</p>

<p>Russian Federation</p>	<p>EDF's maintenance policy for the nuclear fleet in operation is structured to enhance the reliability of the equipment and systems, increase competitiveness in the future, to guarantee throughout the installation's life cycle that the EIPs are capable of fulfilling their assigned functions with respect to stresses and ambient conditions that can prevail in the situations for which they are required, in accordance with the installation's Creation Authorization File.</p> <p>Question: Does this maintenance policy include implementation of activities related to modification (modernization) of NPPs systems and components?</p> <p>If 'Yes', Question:</p> <p>How planning is made for modification (modernization) of NPPs systems and components?</p> <p>Who (what division) acts as customer for modification (modernization) of NPPs systems and components?</p> <p>How operating experience is taken into account in planning modification (modernization) of NPPs systems and components?</p> <p>If 'No', Question:</p> <p>How technical characteristics of system / component are made to meet the prescribed parameters in case of amendment of nuclear regulation requirements and /or in case of regulator demand?</p>	<p>EDF maintenance policy does include significant modernisation of its nuclear power plants. The main processes to define these modernisations are described in section 6.3.1 of the report (periodic safety reviews, modifications made in the light of operating experience feedback...).</p> <p>EDF Nuclear Production Department (DPN) acts as owner of the NPPs and, therefore, as customer for these modifications programmes. A clear decision-making process has been defined, involving in different instances all required EDF departments, under the overall supervision of the ICT (decision committee involving DPN and EDF nuclear engineering division):</p> <ul style="list-style-type: none"> <li>- ensuring supervision, coordination and arbitration of the management boards and committees;</li> <li>- responsible for compliance of the technical, cost and delivery aspects with the fleet industrial programme;</li> <li>- responsible for budgets definition, in a consistent manner with EDF Group and EDF Production and Engineering division budgetary frameworks.</li> </ul> <p>There are 2 management boards for asset projects:</p> <ul style="list-style-type: none"> <li>- Ten-yearly outage, periodic change in the safety baselines: operating lifetime (DDF), third ten-yearly outage for the 1300 MW plant series, fourth ten-yearly outage for the 900 MW plant series, second ten-yearly outage for the N4 plant series, etc</li> <li>- Changes in baselines to factor in operating experience on external hazards and fire (DAE)</li> </ul> <p>There 2 management boards coordinated by the Nuclear Production Department:</p> <ul style="list-style-type: none"> <li>- DMAT: equipment management board (routine and one-off maintenance programmes)</li> <li>- DTE: operating technical management board (fleet OE, technical issues, fleet performance, etc)</li> </ul> <p>1 management board with joint coordination by the Nuclear Production Department, the Engineering Department and the Nuclear Fuel Department (DCC) dedicated to core and fuel issues.</p> <p>1 management board with joint coordination by the Nuclear Production Department and the Engineering Department dedicated to environment and releases issues (DER).</p> <p>2 integration committees:</p> <ul style="list-style-type: none"> <li>- operating baseline development management board (DERE) dealing with documentation development and major renovation works integration on sites;</li> <li>- Design safety committee (CSNC): strategy committee in charge of safety policy and changes in safety baselines.</li> </ul>
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<p>Russian Federation</p>	<p>ASN authorized EDF to put in place the Internal Authorisation System for Temporary Modifications to the STEs; their impact to safety is not significant. Are criteria on this system application agreed with ASN and do you perform monitoring to ensure criteria observance?</p>	<p>There are 6 criteria used to determine the eligibility of a Temporary Modification of the Operating Technical Specifications (STE DMT) to the internal authorization system (these criteria have been agreed by the ASN prior to the implementation of this framework). The proposal developed by the plant operator requesting a STE DMT for instruction by the Internal Authorization System is analyzed to ensure the applicability of the proper criterion, otherwise the eligibility of the proposed STE DMT is denied for further instruction. A special body called the Validation Committee is responsible for challenging this point (the eligibility of an STE DMT). It is an integral part of the IAS and intervenes before the Internal Control Instance, which is the decision body authorizing, or denying, the operator of the concerned unit to temporarily modify its Operating Technical Specifications.</p>
<p>Russian Federation</p>	<p>Could you provide more detailed information about the goals and methods of testing international interfacing during national-level exercises conducted to verify preparedness for an accident at a nuclear plant?</p>	<p>From an international perspective, France is involved in the implementation of the International Convention on the Notification and on Assistance. Moreover, France is concerned by bilateral interfaces in case of an emergency on an NPP located close to a border. Hence, France engaged a cooperation with all its partners in order to exchange information, identify relevant point of contact and determine how to make our counterparts aware of the situation in case of an accident and all the protective measures decided. These provisions are described in bilateral protocols, and are regularly tested during exercises. The protocols are regularly revised if necessary.</p>
<p>Russian Federation</p>	<p>This section mentions that EDF has implemented an ageing control strategy based on three lines of defence: anticipation of ageing in the design, monitoring of the actual condition of the facilities and the repair, renovation or replacement of equipment actually or potentially affected. It is also mentioned that ageing mechanisms (corrosion, wear, fatigue, etc.) vary widely in nature. How ageing mechanism variety is taken into account during assessment of the residual service life of process</p>	<p>Ageing mechanism variety is taken into account in compliance with IAEA-TECDOC-1736. For all the relevant couple's SSC/ageing mechanism, a specific AAS (Ageing Analysis Sheets) is provided.</p>
<p>Slovakia</p>	<p>In this chapter and appendix 2 of national report set of legal instruments described. Please explain if all pieces of legislation went through European comments procedure according to Articles 30 – 33 Euratom Treaty and also according to EU Directive 1535/2015 (previous EU Directive 98/34 and 98/48).</p>	<p>Unfortunately, this question is out of the scope of the CNS.</p>

<p>Slovakia</p>	<p>This part provides for a creation authorisation procedure followed by a commissioning authorisation and authorisations for substantial or significant modifications to the installation.</p> <p>Please explain who has the right to decide what modifications are substantial or significant to the installation and on the basis of what? Are these cases subject to EIA procedure?</p>	<p>The decree n° 2007-830 of 2nd November 2007, as amended in 2016, defines substantial modifications. According to Article 31 of this decree, a substantial change is “a change in the nature of the facility or an increase in its maximum capacity; a modification of the key elements for protection of the interests mentioned in the first paragraph of Article L.593-1 of the Environment Code, which are included in the authorization decree; or the addition, within the perimeter of the facility, of a new BNI, the operation of which is linked to that of the facility in question”.</p> <p>The modifications that are not "substantial" are "significant". They are subject to authorization of ASN, with the exception of those which do not significantly affect the impact assessment or the safety report and which are subject to declaration. A decision of ASN must set out the list of the significant modifications subject to declaration.</p> <p>The substantial modifications give rise to a procedure similar to that of a creation authorization, and are, therefore, subject to an environmental assessment, with impact assessment and public inquiry.</p> <p>The significant modifications are subject to a public participation procedure (publication of the project in electronic format and a possibility for the public to make comments within a period of at least 15 days), provided that they are Likely to have a significant and direct effect on the environment.</p> <p>In addition, for the significant modifications which are likely to generate significant adverse environmental effects, a public authority dedicated to this purpose (the environmental authority or “AE”) shall consider the advisability of an environmental assessment on a case-by-case basis.</p>
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Slovakia	<p>In this chapter the public inquiry is described usually the safety analysis report is a bulky document and difficult for non-specialists to understand.</p> <p>Does the public expressed interest to be involved in co decision process and if yes to which extent? Is the SAR accessible to the public in full scope without limitation? If not, who is responsible for elimination of confidential and sensitive information from SAR and what is the legal basis for such elimination?</p>	<p>The safety report is indeed a complex document. This document has not to put in the file subject to a public inquiry, as opposed to the risk management study, which includes a synthetic presentation of the monitoring system and emergency response, and a non-technical summary of the study, intended to facilitate the public's understanding of the information contained in the study.</p> <p>The safety report is nevertheless made available for the public alongside the investigation file. The public can therefore consult it throughout the investigation.</p> <p>Confidential and sensitive information contained in all the documents in the file or in the safety report may be overshadowed by the Minister responsible for nuclear safety, on their own initiative or on a proposal from the licensee or from ASN, each time their disclosure would be likely to infringe protected interests, including industrial and commercial secrecy, public security and State security (Article 12 of Decree No 2007-1557 of 2nd November 2007).</p>
Slovakia	<p>The report mentioning that “the management of its staff’s skill is based notably on a formalised series of training session”.</p> <p>Does ASN developed a knowledge management system for its staff?</p>	<p>Nearly 53 % of the sessions are provided by ASN inspectors.</p> <p>The rest is provided by external structures</p> <p>Internal trainings are operational oriented. They are based on theory, practice and experience feedback. It is a strong means of knowledge transfer from experienced inspectors to young recruits.</p> <p>At the same time, each entity develops measures to accompany new inspectors through tutoring, among other things.</p>

Slovakia	<p>One of the main provision of the 17th August 2015 is to clarify the oversight of nuclear safety and radiation protection by ASN and IRSN.</p> <p>Does this provision provides powers to IRSN to execute “inspections” at BNI? What is the relation between IRSN and ASN in this regard?</p>	<p>The Act of 17th August 2015 created a section in the Environment Code devoted to the Institute of Radiation Protection and Nuclear Safety, which clarified the role of the Institute and relationship between ASN and IRSN.</p> <p>While the ASN's mission is to participate in the control of nuclear safety and radiation protection, the IRSN carries out expertise and research missions in the nuclear field.</p> <p>In this respect, the IRSN provides technical support to ASN and proposes, in the event of an accident, technical, health or medical measures to restore the safety of the facility.</p> <p>IRSN is also responsible for taking part in the continuous monitoring of radiation protection, in particular by managing the dosimetric data concerning exposed workers and ensuring the management of the inventory of sources (Article R 592-1 of the Environment Code).</p> <p>On the other hand, the law did not confer any power on the IRSN agents to carry out inspections, only the ASN inspectors having powers in this area. When sampling is to be carried out during inspections, however, ASN inspectors use laboratories or the IRSN to carry out these samplings.</p>
Slovakia	<p>It is reported that the earthquake PSA applied to the Saint-Alban NPP is worthwhile and needs to be continued and extended to the other NPPs.</p> <p>Can France provide details on the reasons. Was this a “model” exercise?</p>	<p>For the existing reactors, the PSAs are carried out and updated during the periodic safety reviews. in the framework of the 3rd general review of the 1300 MWe reactors, a study was conducted to verify the possibility of extending the level-1 PSAs to earthquakes (it was the first time that this type of PSA was conducted in France).</p> <p>This PSA was reviewed by IRSN and were the subject of a consultation of the Standing Advisory Committee in May 2012. Following this meeting, ASN made a globally positive assessment of the changes made by EDF to the level 1 PSAs performed, but identified a certain number of additions and improvements necessary for seismic PSA.</p> <p>This working program will continue in the frame of the next Periodic Safety Reviews (PSR) (i.e. 4th PSR of the 900 MWe NPPs, 4th PSR of the 1300 MWe NPPs, 3rd PSR of the N4 NPPs, 1rst PSR of EPR).</p>
Slovakia	<p>Please confirm that PSA1 and 2 for failures inside the reactor is for full power and shut down conditions. Does these PSA 1 and 2 assessments regularly updated (e.g. reflecting the most recent status of the NPP)?</p>	<p>Level 1 and 2 PSAs include indeed other plant states than full power operation. These level 1 and 2 PSAs are updated during Periodic Safety Reviews (see section 6.3).</p>

Slovakia	<p>General question, concerning Article 16:          What value for reference levels for radiological emergencies (emergency exposure situations) according to 2013/59/Euratom will be proposed?</p>	<p>The value of reference levels for radiological emergency is still under discussions at the national level. It will probably be 50 mSv.</p>
Slovakia	<p>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 contained in a 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?</p>	<p>The technical specifications are mentioned in the contract of the technical clauses which the operator imposes contractually to his suppliers, eg the vendor of the NPP, As the holder of the operating license, the licensee is responsible for compliance with these requirements. For example, the chemistry of the primary circuit is an input data for the NPP manufacture, the chemical specifications are therefore mentioned in the specifications for the boiler manufacture and are also given in the general operating rules.</p>
Slovakia	<p>In section 19.6.4 you described that ASN might ask IRSN to carry out more detailed analysis of a significant event and subsequently it might be shared with the international community. Please describe how the information on operational events is shared among ASN personnel?</p>	<p>Reporting of an event is carried out both to ASN headquarters and ASN concerned regional offices. The information on a specific event is not shared directly to all of ASN staff. Upon reporting, an event notification is dispatched to the concerned targeted competent staff in the concerned department for assessment. Moreover, all events of level 1 or more are subject to publication of an incident report on ASN website.</p>

Slovenia	<p>Significant safety event notified on 12th November 2015 concerning the seismic resistance of the RRI (component cooling system) standardised train of the CPY plant unit.</p> <p>Q.: Could you give some more details on what are the temporary measures to counter loss of RRI, and how will EDF permanently improve the RRI systems so they comply with the SSE? Are there some PSA assessments on the conditional CDP due to this deficiency?</p>	<p>The measures which have been temporarily implemented aim at mitigating the impacts resulting from a loss of this standardised portion of the circuit as a consequence of a seism:</p> <ul style="list-style-type: none"> <li>- pre-existing make-up means to the spent fuel pool (autonomous heat engine driven pumps) are explicitly called for in the emergency operating instructions (EOPs), and their impact is valued to justify the acceptability of the situation;</li> <li>- modification of the EOPs in order to prioritize the manual isolation of the return line of the reactor coolant pumps (RCPs) seals injection so as to maintain the availability of Chemical and Volume Control/HP Safety Injection pumps and to ensure at all times the availability of RCPs seals injection (the heat exchanger of the RCPs seal water being no longer cooled down by the Component Cooling System);</li> <li>- in case of depletion of secondary water reserves by end of fall back, the preservation of the three CVC/HPSI pumps has rendered more reliable the continuation of the fall back thanks to a 'feed and bleed' operating mode.</li> </ul> <p>No PSA assessment has been made in relation with this deviation. A deterministic analysis has been developed and shows acceptable consequences before systems modifications are introduced to solve the deviation, thanks to the temporary means . These systems modifications consist in a proper seizing of the water lines supports (number, type and localisation) in order to ensure the seismic resistance of the standardized portion of the CCS, as required by applicable design rules.</p>
Slovenia	<p>...improved severe accident management, notably by increasing the reliability of the reactor coolant system depressurisation device with the pressuriser valves, even in the event of severe accidents generated by a station black-out situation;</p> <p>Q.: Could you explain how was the reliability of RCS depressurization valves improved, with what kind of measures?</p>	<ul style="list-style-type: none"> <li>- pre-existing make-up means to the spent fuel pool (autonomous heat engine driven pumps) are explicitly called for in the emergency operating instructions (EOPs), and their impact is valued to justify the acceptability of the situation;</li> </ul>
Slovenia	<p>In 2009, ASN issued an initial opinion concerning the "extreme heat" baseline requirements proposed by EDF for the 900 MWe reactors. In 2012, for the 900 MWe reactors, ASN approved the implementation of the necessary material modifications. ASN also issued a new opinion on EDF's answers in 2013.</p> <p>Q.: Could you give more details about the extreme heat requirements and necessary material modifications? How about the P4 and N4 reactors? Were any reassessments</p>	<ul style="list-style-type: none"> <li>- modification of the EOPs in order to prioritize the manual isolation of the return line of the reactor coolant pumps (RCPs) seals injection so as to maintain the availability of Chemical and Volume Control/HP Safety Injection pumps and to ensure at all</li> </ul>



Slovenia	<p>on the Phase 2 of the post-Fukushima improvements</p> <p>Q.: Does the »setting up of a dedicated ultimate water source« in most cases mean pumping the water from the underground water wells? Will there be any cases where the ultimate water source would be comprised of large reservoirs? If yes, what would be the required capacity of reservoirs (in providing cooling for how many hours/days</p>	<p>- in case of depletion of secondary water reserves by end of fall back, the preservation of the three CVC/HPSI pumps has rendered more reliable the continuation of the fall back thanks to a 'feed and bleed' operating mode.</p>
Slovenia	<p>installation of redundant means for detecting reactor vessel melt-through or the presence of hydrogen in the containment</p> <p>Q.: Do French NPPs have passive autocatalytic recombiners (PARs)? If yes, are means for detecting H2 also required even if there are PARs in the containment?</p>	<p>No PSA assessment has been made in relation with this deviation. A deterministic analysis has been developed and shows acceptable consequences before systems modifications are introduced to solve the deviation, thanks to the temporary means . These systems modifications consist in a proper seizing of the water lines supports (number, type and localisation) in order to ensure the seismic resistance of the standardized portion of the CCS, as required by applicable design rules.</p>
Slovenia	<p>installation of a reactor containment ultimate cooling system (to avoid opening the containment venting-filtration system)</p> <p>Q.: Could you please give more details about this system? What is the concept and what are the requirements?</p>	<p>Following the experience feedback of the Fukushima accident, EDF has decided to implement a 'hardened safety core' including equipment and organizationnal means to prevent or mitigate a severe accident in case of extreme external hazard. As such, the hardened safety core will include a system allowing to remove the residual heat stored in the containment in case of a severe accident without opening the filtered venting system. This new system, called EAS-u (ultimate emergency containment spray system) will include, as stationary equipment, a pump qualified to operate under severe accident conditions and a heat exchanger allowing for operation of the system in the recirculation mode of the containment sumps. This system will be cooled down by a mobile ultimate heat sink, independant from the site heat sink.</p>
Slovenia	<p>on the ASN's assessment of EDF as a whole</p> <p>Q.: It seems that quite a lot of sites fall short with the general assessment of EDF. Could you give some more details about this assessment? What areas are taken into account, what is the criteria, and what is the average performance of the plants in these areas?</p>	<p>ASN has selected different indicators into ten families (8 for safety, 1 for environment, 1 for radioprotection). These indicators are filled by regional offices inspectors and the qualitative conclusions of their analysis are useful to plan inspections. A very low rated indicator is a clue for future inspection.</p>

Slovenia	<p>The table below shows the PSAs developed for each series of similar reactors</p> <p>Q.: It seems that external hazards (earthquakes, ext. flooding, extreme winds, aircraft crashes, etc.) are not developed for most of reactors. What is the reason for that? Lack of legislation requirements, non-relevance, or something else? Are low power and shutdown modes covered? What standards are used for developing the PSAs in France?</p>	<p>In France, the development of PSAs is required by the BNI Order (Arrêté INB - 2012-02-073) and especially by its article 3.3 "The safety demonstration includes probabilistic analyses of accidents and related consequences, unless the operator demonstrates it is not relevant to do so. These analyses may be performed [...] according to methods applied to installations classified for the protection of the environment". For many years, EDF is committed to developing external hazards PSAs. EDF's work program on this issue aims at giving top priority to the external hazards which represent a nuclear safety issue, while taking into account the feasibility of these probabilistic analyses within a given industrial timeframe. The scope of the external hazards that can be subject to PSAs is questioned at safety reviews every ten years (as per the Fundamental Safety Rule RFS 2002-1). In this way, EDF has developed a detailed screening methodology for external hazards. This methodology, consistent with international best practices and inspired by the EPRI Screening Guidance (# 3002005287), aims at identifying which external hazards are eligible to PSAs. The 900 MWe NPP fleet and the 1450 MWe NPP fleet have already gone through this screening process; post-screening analyses (which take into account the international state of the art) are underway. The screening process will be applied to the 1300 MWe fleet and to Flamanville 3 EPR in the next few years. French PSAs are mainly developed based on EPRI methods if existing. Low Power, shutdown states and fuel building are covered in French PSAs.</p>
Slovenia	<p>The reactors in service and EPR are designed to have an autonomy of at least 100 hours after a heat sink loss. If the heat sink loss affects all of a site's reactors simultaneously, the targeted autonomy is 24 hours for coastal sites and 60 hours for riverside sites in the case of an unpredictable hazard, and 72 hours in the case of a predictable hazard, in which case the tanks can be filled to maximum level as a preventive measure.</p> <p>Q.: Could you give some more details on the autonomy of the sites in case of loss of heat sink? As understood from the report, in case of loss of heat sink, the reactors are cooled via steam generators. Could you give an example of concrete water reserves on a typical site and for each reactor on that site (in m3, hours of cooling via SGs)?</p>	<p>For example, in case of loss heat sink on 900 MWe NPP, each reactor is cooled via steam generators via the auxiliary feedwater system (ASG) tank for 9 hours. After, the ASG tank is resupplied by manual means via the demineralized water distribution by gravitational movement. This one is sized to work during 100 hours. In the case of heat sink loss at a multi-reactors site, the time to return on service of the cold source taken into account in the safety demonstration is 24 hours for a seaside site and 60 hours for the sites by the river.</p>

<p>Spain</p>	<ul style="list-style-type: none"> <li>• Which are the most important lines of work for addressing the obsolescence of the I&amp;C hardware through the renovation of certain equipment which would be unable to reach a 40-year service life?</li> <li>• Is it planned to participate in international existing programs regarding this issue or promoting new ones?</li> </ul>	<p>Obsolescence and ageing are important issues, the Periodic Safety Review (PSR) is a particular opportunity for an in-depth examination (see 14.2.1.4), especially starting from the third PSR for French NPPs.</p> <p>Very few equipments would be unable to reach a 40-year service life. The issue is more for long-term service life, beyond 40 years. For I&amp;C hardware which would be unable to reach a 40 year service life, the main topics and the strategy are the following :</p> <ul style="list-style-type: none"> <li>- ageing of connections (survey, tests of samples...);</li> <li>- ability to provide for additional capacity, i.e. capability of I&amp;C systems to embed new functions : is it possible to add new Input/output, to perform new functions (CPU load) ? It could be a reason to retrofit;</li> <li>- availability of spare parts : relationship with our suppliers to get spares part (last buy order) for repair and replacement of hardware (EDF tries to implement long term maintenance contracts for I&amp;C hardware);</li> <li>- efforts to redesign using the installed technology in order to avoid important retrofit.</li> </ul> <p>EDF/R&amp;D works with EPRI (USA), participates to IEC committees, EXERA commission , AFCEN and to a working group involving the main French industrial companies facing the same technical issue (I&amp;C hardware ageing) : Department of Defense, Airbus, French Railways...</p>
<p>Spain</p>	<ul style="list-style-type: none"> <li>• To what extent is being used the OIEA SSG-25 guide for the periodic safety reviews in France?</li> </ul>	<p>In France, the scope of the PSR is similar to the scope described in section 2.9 of the guide SSG-25 (required by the environment code - article L. 593-18 and L.593-19). Moreover, the periodic safety review in France takes into account the recommendations of WENRA (for example, the recommendations of WENRA 2014 will take into account for VD4-900 PSR) and includes the assessment of environmental consequences due to non radiological risks and the drawbacks resulting from normal operation of the facility.</p>

<p>Spain</p>	<p>Could you explain how ASN controls the prior contractor qualification implemented by EDF? There is a standard that specifies for each element or activity its importance to safety and the required quality?</p> <p>How do you verify the effectiveness of the supply chains?</p> <p>Have you implemented tools to address counterfeit and fraudulent items in nuclear facilities? Just in case, please describe them.</p>	<p>The QA/QM system of manufacturers of nuclear pressure equipment of level N1 is assessed under the Module H of the EU Directive 2014/68/EU. This Module enable to evaluate how the manufacturer controls its supply chain and how efficient is this control.</p> <p>The regulatory framework for subcontracting was strengthened by the decree of 28 June 2016. This decree now limits the number of subcontracting levels to 3, with the objective of guaranteeing the mastery of the activities that have been subtracted by the authorized operator. The French nuclear regulation makes the licensee responsible for controlling their contractors. Therefore, ASN does not inspect directly contractors but regularly inspects the conditions governing the use of subcontracting, both at EDF's suppliers and at nuclear power plants.</p> <p>ASN is currently initiating a reflection to adapt inspection practices by the authority, by the licensee and by the manufacturer in order to adress quality issues and to detect CFSI.</p>
<p>Spain</p>	<p>Please provide some information on how Civil Liability for Nuclear Damage is applied and the position of your country in relation to the Vienna convention. Are there national regulations on this matter?.</p>	<p>The provisions applicable to civil liability in the field of nuclear energy are the subject of a special chapter in the Environment Code (Article L. 597-1 to Article L. 597-46).</p> <p>A common protocol for the application of the Vienna Convention and the Paris Convention was adopted in 1988. It makes it possible to extend the compensation regime of a Convention to the victims of the Contracting Parties to the other Convention. This protocol, ratified by France, entered into force on 30 July 2014.</p>

<p>Spain</p>	<p>In the report it is mentioned that: "Following the assessments conducted during the stress tests...ASN has set up a pluralistic working group on these subjects called CoFSOH (Social, organizational and human factors steering committee).... Since 2012 ....work is done by thematic working groups: .... the interface between "managed safety" and "regulated safety"".</p> <p>Please, could you elaborate on this issue, with some additional information: 1) Rationality behind, and objectives of, the working group on the interface between "managed safety" and "regulated safety", 2) Links to publicly available documents produced by this thematic working group, and 3) Changes in regulatory practices as a consequence of the work conducted by the CoFSOH steering committee.</p>	<p>ASN considers that there is a need to move forward with regard to the reflections and work being done on the human contribution and organizations to the safety of nuclear facilities and in 2012 it therefore decided to set up the Steering Committee for Social, Organizational and Human Factors (COFSOH), chaired by Pierre-Franck Chevet, ASN's President. It is a pluralistic working group, which includes ASN members, representatives of institutions and environmental protection associations, personalities chosen for their scientific, technical, economic, social expertise, persons in charge of nuclear activities, representative of nuclear industry professional federations and representative employees' unions. Since the beginning of 2013 and in parallel with the plenary meetings, the work of the COFSOH has been continuing through four working groups. The forty meetings held to date have addressed the following subjects: (1) subcontracting in normal operating situations, (2) management of emergency situations, (3) interaction between managed safety and regulated safety and (4) legal questions raised in connection with the subjects. The aim of the COFSOH is (i) to allow exchanges between the stakeholders on this difficult topic which are the human and organizational factors and (ii) to write some documents offering common propositions of the different COFSOH members on a given subject. At this time, one document of the GT 1 is public and available on the ASN website. It concern the "positive contribution of the sub-contracted maintenance activities to the safety". The GT 3 deals with the two fundamental means for enhancing system safety have been described by researchers : The first, called "normative safety", relies on anticipation and compliance and is based on the setting of "barriers" and rules. The second, called "adaptive safety", relies on the initiatives, local tricks, and strategies made by individuals and teams in real situations. This distinction between "normative safety" and "adaptive safety" questions the possible combination of these two modes for achieving safety. The GT 3 is currently writing a document, witch will be probably available end of 2017. ASN will use this document to improve its practices of regulation and licensees oversight.</p>
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Spain	<p>Explain assessment process that holders have to carry out to determine if a change in design or in operating rule modify the criteria, standards and conditions in which the authorization is based (may affect safety) and in which cases these changes require approval of the ASN</p>	<p>The process implemented depends on the impact's significance of the change on the protected interests, including safety, defined by the BNI decree.</p> <p>The first type of process is related to "substantial" modifications and is already describe in Section 7.2.9 of the ASN report.</p> <p>The second type of process is related to "significant" modifications when they affect the facility's safety report or impact assessment content.</p> <p>Depending on their relevance, the significant modifications are submitted either to notification to ASN or to authorization by this authority. The criteria for selecting between notification and authorization procedures are due to be defined by an ASN decision by the end of 2017. In the meantime, all significant modification are submitted to authorization.</p> <p>The third type of process includes the other modifications than those aforementioned. Their management is defined in the licensees' internal process, and are not subject to administrative procedure.</p>
Spain	<p>Does the periodic safety review of its installation every 10 years, follow the recommendations (scope and criteria) of IAEA Safety Guide SSG-25 (2013)?</p> <p>If the scope or criteria of the RPS are different to SSG-25, explain the differences</p>	<p>In France, the scope of the PSR is similar to the scope described in section 2.9 of the guide SSG-25 (required by the environment code - article L. 593-18 an L.593-19). Moreover, the periodic safety review in France takes into account the recommendations of WENRA (for example, the recommendations of WENRA 2014 will take into account for VD4-900 PSR) and includes the assessment of environmental consequences due to non radiological risks and the drawbacks resulting from normal operation of the facility.</p>
Spain	<p>Explain briefly some examples of improvements most important implemented in nuclear power plants derivatives from Periodic safety review</p>	<p>Please refer to section 6.3.1.1 and its subsections of the Report (p. 37-43).</p>
Sweden	<p>How often is the inventory of the intervention capabilities of each ministry up-dated? How often does it have to be communicated to ASN?</p>	<p>Regarding international assistance, France is registered on the RANET base for which different ministries, organisations and licensees contribute in terms of technical and expertise capabilities. There is no up-dating of the database on a frequency given base but all the contributors have to inform ASN at any update of the database.</p>

Sweden	For those nuclear power plants that are situated near boarders of other countries, are there today established the functional forms for cross-border cooperation and emergency preparedness? If yes, how often are these cooperations praticed?	France has engaged cross-border cooperation with neighbouring countries since several years to enhance and facilitate the coordination in case of a nuclear or radiological accident in an NPP located close to a border. This cooperation is performed through regular meetings (once or twice a year), some of them being dedicated to the radiological emergencies. There are also protocols describing exchanges of information during a nuclear emergency which are tested every 4 years. Specific inter governmental agreements exist with EP&R provisions.
Sweden	For the coordination of response teams of the Prefect or Mayor, are these situations specifically trained/praticed?	Actually, the main purpose of the national exercises is to train the reactions and the coordination of the Prefect's response teams during a radiological emergency as well as the interfaces with the licensee.
Sweden	One of the objectives for the national nuclear or radiological emergency exercises (2015) is to promote greater anticipation of civil protection measures to ensure protection of the population. Which strategies have been used to accomplish this goal?	The topic of the implementation of protective measures is always adressed during the national exercises. It seems actually quite difficult to promote effciently a greater anticipation of protection of the population since each accident has to be managed on a case by case approach. However, the recently approved (in October 2016) reform of the off-site emergency plans (PPI) around NPPs introduces in these plans the preparation of a "5 km immediate evacuation", in order to ensure a greater anticipation in case of a necessary evacuation.
Sweden	As presented in the diagram Fig 9, it seems that the number of real emergency situations has increased since the beginning of the 21th century. Is that a correct interpretation? If yes, what is the explanation to this?	Since 2005, the number of real emergency situations has been between 1 and 5 each year. It seems to reflects the statistical variability that cannot really be interpreted as a tendency.
Sweden	What measures has been taken in France since the accident in Fukushima Daiichi 2011 to furhter improve the ability, as a host nation, to support incomming international assistance teams in working together with national teams, responding to a nuclear accident in your country?	Due to the burden of work in taking into account the lessons learned from the Fukushima Daiichi accident, France has decided to postpone the training of the different stake-holders involved in asking and managing international assistance. In this regard, France will be host nation for further ConvEx 3 which will be organized by the IAEA in 2020. However, for civil protection issues, the support of international assistance teams is possible as for any non nuclear disaster.
Sweden	I-tablets are distributed to dwellers within the zone defined by the PPI. What is the frequence of the distribution campaigns and how do you follow up people moving in and out of the zone between the campaigns?	ITB is distributed every 7 years in order to replace the expired tablets. People leaving the zone can keep their tablets but when new comers arrive, they are made aware of the process to follow to take ITB in pharmacies. ASN intends to reinforce the information given to the population between the campaigns.
Sweden	Flamanville 3 -EDF submitted the commissioning authorisation application for this installation in spring 2015; this application includes, among other things, the safety analysis report (update of the preliminary safety analysis report). ASN and its technical support agency are currently examining this application. Are they any legal time limitations regarding assessment of the aplication?	The legal assessment time is one year but this delay has been suspended by a letter of June 2015, waiting for complementary documents, additional test results and technical clarifications. It will resume when these complementary documents are received by ASN.

Sweden	<p>The ASN-approved organisations assessing conformity of the level N2 and N3 nuclear pressure equipment with the regulatory requirements, and ASN can be assisted in this task by an approved body in case of "level N1" equipment "level N1" equipment. Please describe shortly process and basic condition/criteria for approval of such organization.</p>	<p>These organizations also called "notified bodies" according to the European pressure equipment directive (2014/68/UE), can be approved by ASN when they insure that they have enough competence and independence to carry out inspections in the field of nuclear pressure equipment. In order to assess these organizations, ASN carries out audits by using regulatory requirements (Resolution n° 2007-DC-0058. 8th June 2007) based on the ISO 17 020 standard. These organizations are approved for a period of 3 or 4 years and regularly inspected between two audits</p>
Sweden	<p>Table 12 is stating that inspections were performed by ASN of Flamanville 3 EPR; first start-up tests in 2014 and performance of start-up tests in 2015. Start-up tests are normally part of a commissioning process. At page 184 is stated that EDF submitted the commissioning authorisation application for this installation in spring 2015 and that ASN and its technical support agency are currently examining this application. Please explain on which permission/decision are the start-up tests performed until now.</p>	<p>So called « commissioning authorization application » submitted by licensee in spring 2015 is required for fuel loading. In France, no specific authorization is required to perform preliminary start-up tests. Such tests are currently performed in Flamanville 3 and ASN controls implementation of these tests by sampling according to general BNIs regulation (TSN Act, BNI procedure decree, order on general safety expectations...) and specific site authorization and associated license conditions (creation decree, license authorization, license-conditions for construction and design – commissioning tests – Post-Fukushima issues). Early before commissioning tests start and as ASN considers that commissioning tests contribute to the demonstration that SSCs meet the requirements, ASN engaged discussions with licensee (from 2008) and performed inspections on the organizational readiness of the licensee and its contractor organizations to start commissioning (from 2011). Thus, ASN decided to establish license conditions specific for commissioning activities (ASN decision 2013-DC-0347 -7th May 2013 which is available in English) to set specific requirements on these activities. Note that these license conditions establish hold-point for pressure test of containment (in addition to fuel arrival on site and fuel loading when ASN authorization is required) and requirements for the licensee to go to the next step of its own commissioning program (i.e. cold tests, hot tests, first criticality...). ASN can establish new hold-points with new license-conditions (see answer question 21597 for more information).</p>
Sweden	<p>Preparation for operation of the Flamanville 3 EPR reactor. An independent safety organisation is in place. It oversees the quality of the activities carried out on the Unit and implements an annual programme of audits and verifications. Is this function an internal part of operational organization or a kind of "a third part independent review" for authority supervision support?</p>	<p>The independent safety organization is a part of the licensee organization, it is imposed by article 2.4 of the BNI order of 7th February 2012. The persons of this independent safety organization should be different than the ones who perform and control operational activities and have to report directly to the director of the operational activities. For example, when a safety analysis is needed, operational organization performs this analysis and safety organization performs its independent analysis. At the end, if conclusions are different, each analysis is presented to the director that makes decision. All this process should be tracked and documented and is controlled by ASN.</p>



Sweden	<p>Operating technical specifications (STE) that delimit the normal operating range of the reactor are understood as Limits and Conditions for Safe Operation. They are normally strictly followed by regulatory body and all deviations are subject of an approval. In 2014, ASN authorised EDF to put in place an internal authorisation system enabling it to examine completely independently the temporary modifications to the STEs which have a minor impact on safety. Please, can you give some examples of temporary modifications with "minor impact on safety"?</p>	<p>The applicable regulations allows to determine if the considered modifications are of minor importance. The ASN decision approving the deployment of the mentioned internal authorization system (SAI MT STE) stipulates that temporary modifications to the Operating technical specifications can be considered of minor importance if :</p> <ul style="list-style-type: none"> <li>- the nuclear safety demonstration of the proposed modifications is based on already validated methods, study rules and safety criteria, without modifying them or introducing new ones;</li> <li>- the changes envisaged do not introduce a material change in the elements which are important for the protection of interests within the meaning of the regulation;</li> <li>- the modifications envisaged do not induce any modification of the conclusions of the safety report (ie of the safety case and of the impact assesment);</li> <li>- the proposed amendments do not require any update of the safety report, the impact assessment, the waste management study or of the on-site emergency plan;</li> <li>- the modifications fall into one of the 6 criteria adopted for Operating Technical Specifications such as: voluntary creation of a group 1 event, or of a group 1 accumulation of events, for which the resulting time to initiate the unit fall back is greater than 1 h, or use of a limit condition or special prescription outside the conditions foreseen for its implementation, or failure to comply with the repair time of a material which unavailability belongs to a group 2 event.</li> </ul>
Sweden		France thanks Sweden for its comments.

Sweden	<p>Metallic liner is a vital part of the third safety barrier. Bugey 5 suffering from degradation and partial loss of confinement tightness. Even in this case thightness is still witin the limits, such safety and ageing related event should be reported. Can you explain what reason is to not report it in Art 6.2. significant events? Can you describe closely the defect itself and expected repair procedure?</p>	<p>The metallic liner of the 900 MWe reactor containments covers the entire inner face of the concrete and also the containment floor. On the containment floor, the metallic liner is covered by a concrete layer from the internal structures of the reactor building, with a peripheral seal between the liner and the concrete layer. In 2011, the containment test of the third ten-yearly outage of Bugey 5 showed an unfavorable trend in the tightness of the containment, even though the test results met the test criteria. Several containment tests have been carried out since then. The results led to the hypothesis of a leak located in the metallic liner at the peripheral part of the containment floor, but not precisely identified. Inspections with endoscopic video and additional examinations on specific degradations of the metallic liner have been carried out. However, no generalized corrosion was observed. The corrosion degradations identified are localized, small in size and do not cross the metallic liner. The solution proposed by EDF consists in improving the tightness of the peripheral seal by :</p> <ul style="list-style-type: none"> <li>- replacing the top silicone part of the seal and its metallic protective cover with a more robust system</li> <li>- replacing the bottom part of the seal with a more fluid material than the petroleum wax currently in place.</li> </ul> <p>The adequacy of the investigations carried out by EDF and the acceptability solution proposed to fix the problem are being investigated by ASN.</p> <p>Among several containment tests carried out during the partial inspection outage of Bugey 5 in 2015, those with the flooded containment floor have given satisfactory results, thus ASN considered that degradations of the tightness of the containment did not need to be reported in §6.2 significant events.</p>
Sweden	<p>VD4 will include, among others, PSA level 1 studies associated with internal fire. This can be a considerable risk for older reactors with less redundancy. How do you defend to wait ; for some Units, up to 13 years (2030 , see Table 1 and 6) to have these studies done?VD4 will include, among others, PSA level 1 studies associated with internal fire. This can be a considerable risk for older reactors with less redundancy. How do you defend to wait ; for some Units, up to 13 years (2030 , see Table 1) to have these studies done?</p>	<p>Internal fire studies are conducted for decades in French NPPs with deterministic assessment, and led to modifications implemented on site. VD4 will include, among others, PSA level 1 studies associated with internal fire. This will give new knowledge in addition to the deterministic assessment, which is the real aim of a PSR. PSAs for French NPPs are usually conducted for a plant serie; they are therefore available before the 10-year outage of the first unit of the plant serie.</p>

Sweden	Does PSA level 1 and 2 include other plant states than full power operation? If not, how are the risks during other plant states evaluated?	PSA level 1 and 2 include indeed other plant states than full power operation.
Sweden	The assets for decom and back-end of fuel cycle is 23.5 billion Euro. It corresponds to approximately 0.5 billion per unit. Is that the estimated cost for decommissioning?	<p>23.5 billion Euro is the amount, as of Dec 31st 2015, secured by EDF to meet its long term nuclear duties in France. These duties include, but are not limited to, the decommissioning of nuclear power plants under operation. In compliance with a specific French regulation, they are secured within EDF through a portfolio of dedicated assets. They include funds dedicated to the following operations:</p> <ul style="list-style-type: none"> <li>• Decommissioning of EDF's nuclear power plants, for both the 58 units in operation and for the 9 first generation units shut down some years ago and already under decommissioning;</li> <li>• Long term management of radioactive waste. These radioactive waste result from the decommissioning of EDF units, from the spent fuel reprocessing at La Hague or direct storage for a small part of it. It takes into account the removal and packaging of such waste, as well as the storage in specific facilities.</li> </ul> <p>The amount secured by these dedicated assets is the present value of all these financial long-term nuclear duties. It is fitted and updated every year to take into account the progress made in the different decommissioning projects. The estimated cost of decommissioning per unit cannot therefore be deducted from this overall figure.</p>
Sweden	Is the communication scheme (Fig. 8) and processes different for security related events?	In case of a security related event, the communication scheme and process will not be exactly the same, mainly because of the momentum of the evolution and of the response. In addition, information related to the protection of the site cannot be disclosed.
Sweden	In light of the irregularities and anomalies in manufacturing what measures (if any) and changes in the supplier oversight are planned to avoid such events in the future?	<p>There are no requirement specific to detection of irregularities during the supplier oversight in the French regulation to date.</p> <p>Following the irregularities at Creusot Forge, ASN has required AREVA NP and EDF to develop oversight practices specifically to detect CFSI. Current exchanges with ASN aims to evaluate if these new oversight practices are appropriate to the objective.</p>
Sweden	In August 2015 a worker was irradiated during outage at Blayais NPP, it was an INES-2. Please, can you explain why is this not mentioned among the events described in the Article.	This event was reported to the ASN and was the subject of a communication via the ASN website. This event is also reported in ASN's annual report for the year 2015. Given its similarity to the event on 24th April 2013 on the same site, ASN did not find it useful to mention it in this report.
Sweden		France thanks Sweden for its comments.

Switzerland	<p>"The final shutdown of a BNI is carried out under the conditions prescribed in the decommissioning decree." Does the decommissioning decree substitute the commissioning authorisation?</p>	<p>No, the decommissioning decree can't be defined as a decree that could replace or annul the commissioning authorization.</p> <p>The shutdown is the subject of a notification by the licensee. Then the decommissioning decree lay down requirements for the dismantling of the installation, it's to say the requirements to be met by the licensee to carry out the dismantling operations. This decree amends the creation authorization.</p>
Switzerland	<p>"The licensee may obtain an opinion from ASN on all or some of the options it has adopted to ensure the safety of its facility before initiating the authorisation procedure." Is the unbiasedness of ASN an issue in the subsequent review process of the authorisation if ASN has already assessed all or some of the licensee's proposed options?</p>	<p>No, the prior notice procedure, provided for in article 6 of the decree n° 2007-1557 of 2nd November 2007, does not call into question the impartiality of ASN. The opinion is given on security options of a file, in view of the applicable law. Then, ASN carries out its examination only with regard to the final draft, subject of the application, and to the existing security requirements.</p>
Switzerland	<p>The report states that the EDF Group adopted a Nuclear Safety Policy in 2012. The responsibility for implementing this policy in each professional sector and each company lies with the corresponding managerial line. This policy is disseminated to each member of staff and to each contractor and subcontractor. Question: The report does, however, not outline how it is guaranteed and who is guaranteeing, respectively that the Nuclear Safety Policy is implemented into the integrated management system mentioned in Chapter 10.1. Please comment on this issue.</p>	<p>NPPs and Nuclear Production Division (DPN) management is responsible for guaranteeing that the Nuclear Safety Policy is properly implemented. On NPPs sites, the Safety Engineers have to check this implementation and the Nuclear Inspectorate (the DPN's auditing entity) ensures a second level of control. Additionally, the inspections performed by the National Safety Authority (ASN) can also address the implementation of the corporate Nuclear Safety Policy.</p>
Switzerland	<p>The report mentions the measures implemented to audit the nuclear power plants, i.e. the assessments by the nuclear inspectorate (the DPN's auditing entity) as well as the WANO peer reviews. Both review are conducted in a four years' interval. How is it guaranteed that the NPPs have enough time to implement suggestions and recommendation that arise from one review before the next inspection?</p>	<p>The improvement or corrective actions resulting from a review are included into the action plan of the NPP and the departments. They are then controled within the framework of the Integrated Management System, which allows to ensure their effective implementation. After two years, a follow-up review will allow to assess the improvements made and the difficulties which persist.</p>

Switzerland	The report states that an SOH coordinator is present in each engineering unit, providing expertise for the management and project heads. What are the skills and qualification of a SOH coordinator? What are their competence, tasks, and assignment within the NPP? To whom does he/she report in the organization?	<p>SOH coordinators are in charge of implementing Socio-Organisational and Human Factor approaches in their respective engineering department. Her or his task involves providing support and expertise to the design engineers, project managers and to the management of the engineering department, developing tools, communication and co-animating training sessions in their domain. Generally, she/he reports to the safety manager of the engineering department. SOH coordinators share their experience and good practices by networking in between counterparts of the various engineering departments.</p> <p>Two types of background can lead to this position: Human and Organisational Factors expert (particularly ergonomist) with an additional training to nuclear technology, or engineers with a high-level additional training in HF. EDF, in relation with other industries managing similar risks, has been actively involved in developing a specific professional Master's degree to that end.</p>
Switzerland	Are the indicators used to measure the achievement of the defined objectives or are they rather used as an early-warning system for degradation?	The right answer to this question is "both". Indicators are used to evaluate results, monitor trends, define preventive actions based on trends analysis and forecast performance for the future.
Switzerland	What is meant by "prior consideration before each step in the process" - consideration of what and whom? How does this work in practice?	Acquired experience and lessons learnt are used to give the right level of information and to develop competencies. It is one of the cornerstones of our integrated management system which includes the quality system.
Switzerland	Has the number of tier limitation to three turned out to be sufficient for ASN?	<p>Limiting levels of subcontracting at three must allow the licensee to maintain control of all the activities he entrusts to a third party. The decree of June 28, 2016 nevertheless authorizes the licensee to resort to punctual use of a greater number of subcontractors, especially for operations requiring rare skills. These specific remedies are submitted to the prior agreement of the ASN.</p> <p>Besides the limitation of subcontracting level, ASN puts a strong emphasis on the licensee overseeing its contractors and any "external worker" performing safety important actions. ASN regularly inspects the surveillance of the contractors by the licensee.</p>
Switzerland	What is the experience with the CCS so far and how the compliance is controlled?	<p>Since 2013, the Social Specifications are listed in EDF's tender dossiers and are systematically part of the purchase contracts.</p> <p>In addition, an operational self-assessment is produced each year by all units where interventions are located. These assessments have the same structure in order to check the conformity with the Social Specifications and to follow their deployment and implementation. They show that most of the requirements have been achieved and the implementation is nearing completion.</p>

Switzerland	How is the PSA involved/considered in the system modification processes?	<p>The need of modifications is the result of different processes that are related to obsolescence, design optimization, operating experience or the increase of safety requirements during periodic safety reviews... They can be proposed either by the operator or requested by the Safety Authority.</p> <p>The main source of modifications request by the Safety Authority is operating experience, periodic safety review results or the increase or safety requirements.</p> <p>Modifications can be either related to design changes of components that do not modify safety system functions, thus, there are mainly evaluated according to design improvement or margin recovery or either modification that embed systems function improvements or safety improvements. If so, different modification design can be challenged according to PSA results.</p> <p>In addition, PSA is regularly used during periodic safety review to verify that they do not contain prevalent failure sequences. If so, system modification can be required.</p>
Switzerland	What is the typical exceedance frequency of an SSE?	SSE is determine for each site (in compliance with RFS 2001.01), thus it is difficult to give a typical exceedance frequency of an SSE.
Switzerland	In Section 17.2.3, the following extreme climatic conditions are mentioned: wind, hail, lightning and snow. Are there any requirements regarding the capability of French NPPs to withstand the effects of extreme air temperatures? How are the effects of climate change considered?	The requirements regarding the capability of French NPPs to withstand the effects of air temperatures are part of the design basis. Additional external climatic hazards have been taken into account following operating experience feedback (see section 6.3.1.2.1 : Heatwave and drought). The reassessment of the risks of external natural hazards associated with the climate (including heatwave and drought) are conducted at each Periodic Safety Review.

Switzerland	<p>In case of loss of off-site power and on-site backup sources of reactors in service, one measure for managing this situation is the provision of one ultimate electrical power source provided by a turbine generator driven by steam from the steam generators. Please elaborate on the pressure range for operation of this turbine and the time span of power generation that can be achieved by this means. How many safety trains can be supplied by this turbine generator? Are those steam driven turbine generators already installed?</p>	<p>EDF operating NPPs include as part of their initial design (design basis):</p> <ul style="list-style-type: none"> <li>- for the 900MW serie: a steam driven turbopump for the emergency feed water of the steam generators (the steam to drive the pump being produced by the steam generators themselves);</li> <li>- for the 1300 and 1450MW series (4 RCC loops): two steam driven turbopumps (train A and train B), each turbopump feeding emergency feedwater to two steam generators.</li> </ul> <p>These steam driven turbopumps operate without any external power source (thanks to a Woodward mechanical controller) and can operate with a SG steam pressure as low as 15 bars.</p> <p>Additionally, the units include (one for a pair of 900MW units and one for each 1300/1450MW unit) an emergency steam driven power generator (TAS-LLS) powering a test pump to ensure an emergency injection to the Main Coolant Pumps seals in case of station black out. This emergency steam driven power generator also ensures powering of the emergency lighting in the control room as well as minimum information means required to manage a station black out event.</p> <p>This device can operate with a SG steam pressure as low as 15 bars. These systems are qualified for an operating duration of 24 hours.</p>
Switzerland	<p>Regarding loss of cooling systems or heat sink, ASN is stating that no nuclear power reactor in service has an alternate heat sink. Instead, the reactors are designed to have an autonomy of at least 100 hours after a heat sink loss. By which means is it assured that the corresponding cooling water inventory can be transferred to the relevant cooling points, assuming that the loss of the sink was triggered by a SBO?</p>	<p>The design basis does not foresee the combination of loss of heat sink (100h) and station black out (24h). In case of loss of heat sink, power sources remain available (units diesel generators are cooled by cooling towers independent from the site heat sink). In case of a unit black out, a site power source (a gas turbine or ultimate emergency diesel generator) allows to recover a power source and to feed power to the means necessary to control the unit. An additional ultimate emergency diesel generator 'DUS' will complete the set up of all units by the end of 2018.</p> <p>Additionally, as lessons learnt from the Fukushima accident, all EDF sites will be equipped with additional ultimate water make-up (boreholes with groundwater, ponds or additional tanks). In the meantime, EDF has procured mobile means (pumps, hoses, filters) allowing to feed the different water users (spent fuel pool, secondary SG feedwater tank) in particular in case of loss of heat sink for more than 100 hours.</p>

Switzerland	<p>In phase 2 (2015-2020) of the post-Fukushima measures, one important measure is the implementation of the elements of the hardened safety core of material and organisational measures to control the fundamental safety functions in extreme situations. Perusing the Seventh National Report of France regarding hardened safety core, very little information was found about the concrete elements that constitute the hardened core. Could you please elaborate on the material and organisational measures to be taken and on the extreme hazards to be considered in the</p>	<p>The approach of the hardened safety core is focused on beyond design basis event. Its objectives are prevention of an accident with fuel melt or limiting its progression, limiting large-scale radioactive releases and enabling the licensee to fulfill its emergency management duties. The safety core will include an additional ultimate electricity generating set for each reactor, a diverse emergency cool-down water supply for each reactor, new crisis management premises for each site, mobile devices and means of communication essential to emergency management, as well as technical and environmental instrumentation. They will be designed to withstand extreme natural hazards with references that are well beyond current design basis.</p>
Switzerland	<p>ASN performs specific inspections to investigate the circumstances, causes and consequences of certain incidents. When are the inspections conducted, after receiving and studying the event report or immediately after the occurrence of the event?</p>	<p>Depending on the event importance on the safety, different strategies can be conducted. When an important event occurs, ASN perform reactive investigation right after the occurrence. These investigations can continue after the reception of the event report.</p>
Switzerland	<p>Has France planned to host a follow-up IRRS mission to the one held in 2014?</p>	<p>Yes. A follow-up mission is being scheduled for October 2017.</p>
Switzerland		<p>France thanks Switzerland for its comments.</p>



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Switzerland	<p>“ASN benefits from the expertise of technical support organisations in preparing its resolutions. The main organisation is IRSN. For several years, ASN has been making efforts to diversify its experts.”</p> <p>Question: Could you elaborate on the progress ASN has been making to diversify its experts?</p>	<p>In order to diversify its sources of expertise, ASN has identified a list of experts to which it can draw on various technical subjects. Administrative procedures have been initiated to facilitate the access of services to these experts.</p> <p>On the other hand, permanent expert groups constitute another source of expertise. Nevertheless, the IRSN remains the main source of expertise for the ASN, and the use of other sources of expertise is occasional (usually because of skillsets not available at IRSN).</p>
Tunisia	<p>1-Could you please explain how the license holders manage the right of the public to be informed specially in all safety aspects of the nuclear energy without compromising the security of nuclear energy</p> <p>2- Based on your experience, transparency may be limited in some cases by nuclear security needs?</p>	<p>In France the Nuclear safety and transparency Act (“loi TSN”) enacted, in 2006, sets the framework for transparency by nuclear operators. This law was incorporated in the French Environment Code (Code de l’environnement) few years later. The main dispositions of this law are :</p> <ul style="list-style-type: none"> <li>- Creation of a “Local Information committee” for every nuclear power plant. In this stakeholder group the operator gives an overview of its activity, several times a year. This committee is composed of elected representatives, trade unions, environmental non governmental organisations...</li> <li>- Release of a public annual report published for each NPP and issued on the internet website of the plant.</li> <li>- Obligation to answer any inquiry regarding safety and environment within a month.</li> </ul> <p>Based on our experience, transparency obligation can be tempered for security reasons and to protect industrial know-how. Those limitations are already taken into account by the law. Consequently, the operator has the right to blank out certain information from its internal documents before making them public.</p>
Turkey	<p>It is stated in your report that “Special measures have been taken for sites with seismic characteristics outside the envelope of the standardised plant series (due to local particularities, especially geological)”. Could you explain these special measures and give more detail?</p>	<p>The level of the seismic hazard spectrum considered for the 'hardened safety core' (SND) is greater, for each site, as the envelope value of 1.5 x SMS (the Increased Safety Seism, defined by a deterministic approach) and a 'probabilistic' seism with a return period of 20,000 years. The definition of the hazard level takes into account specific site effects, such as the nature of soils.</p>

Turkey	<p>There are news regarding accrual of majority share of AREVA's nuclear reactor unit by the EDF. This move will make the vendor a subsidiary of the operating organization. Is there a plan to take measures for keeping the vendor's business plan and operator's safety supervision separate enough to assure the nuclear safety will not be affected by the overall financial decisions of the EDF?</p>	<p>AREVA and EDF signed on 15 November 2016 binding agreements setting the terms of the sale of an interest conferring exclusive control by EDF of an entity ("NEW NP"), a subsidiary of AREVA, that will combine AREVA Group's activities relating to design and equipments' manufacturing of nuclear reactor and, fuel design and assemblies manufacturing and services to the nuclear installed base. The transaction, expected to be concluded over the second half of 2017, remains subject to, inter alia, the approval from the relevant merger control authorities.</p> <p>As required by the BNI Order, EDF has to enforce a surveillance of activities performed by its supplier. As "New NP" will remain a legal entity separate from EDF, still involving AREVA as a minority shareholder, EDF will continue to enforce a surveillance of "New NP" activities. ASN will also continue to implement an oversight of "New NP" activities (cf. § 18.2.4.1 of the Seventh National Report for the 2017 Review Meeting).</p>
Turkey	<p>It is stated that:          "the ordinance of 10th February 2016 enhances the effectiveness of nuclear safety and radiation protection oversight by giving ASN power to impose daily penalty payments and pecuniary sanctions, and by extending ASN's powers of oversight and sanction to certain activities performed outside the BNI perimeter (central services of the licensees, subcontractors, etc.), by instituting a sanctions committee within ASN."          Under which conditions it is necessary to sanction the subcontractors while the operator has the primary responsibility for safety?</p>	<p>The law strengthened ASN's powers of control and sanctions.</p> <p>As regards controls, the ASN can now monitor activities that are important for the protection of interests outside the BNI perimeter or by subcontractors. There is no question of calling into question the responsibility for the operator. On the contrary, control of these activities by the subcontractors of the operator makes it possible to reinforce the control of the latter and thus to ensure that the operator assumes responsibility for his BNI.</p>
Turkey	<p>"Pursuant to Article 37 of the treaty instituting the European atomic energy community and the "BNI procedures" decree, it is only possible to authorise the creation of a facility liable to discharge radioactive effluent into the environment after consulting the European Commission."          Is the consultation with EC a political or technical process? What are the possible results of it? Do you expect or seek consensus with EC members?</p>	<p>Article 37 of the Euratom Treaty provides: 'Each Member State shall provide the Commission with such general data relating to any plan for the disposal of radioactive waste in whatever form will make it possible to determine whether the implementation of such plan is likely to result in radioactive contamination of the water, soil or space of another Member State. ". The Commission's consultation is therefore an obligation and meets the objective of protecting environment and population at European level.</p> <p>The opinion of the Commission shall be published in the OJEU. France respects the opinions issued by the Commission.</p>

Turkey	Does the ASN Commission have any role in the issuance of the authorizations?	Some (the most important ones, such as a shutdown imposed or a decision to extend operations) authorizations are presented to the commission, which analyzes and makes its decision. The others can be taken without consulting the commission. In this case, the instruction is carried out by the competent department and the signature of the authorization is subject to a delegation.
Turkey	Is there a plan to evolve the quality management system of ASN to integrated management system?	ASN currently does not plan to develop an environmental management system, nor to extend its quality management system to an integrated management system.
Turkey	<p>“IRSN is placed under the joint tutelage of the Ministry of the Environment, Energy and the Sea, the Ministry of National Education, Higher Education and Research, the Ministry of Social Affairs and Health, and the Ministry of Defence.”</p> <p>It is interesting for an organization to have so many dependencies. Is there a priority of the ministries of which IRSN is dependent?</p>	<p>For public organizations in France like IRSN, the relevant ministries are chosen in accordance with their domains of activities. Since its creation in 2002, IRSN has been placed under the supervision of several ministries. All of these ministries have a representative at IRSN’s Board of Directors (art. R592-10 of the decree from March 10th, 2016). There is no priority among the ministries upon which IRSN is dependent. This dependency has to be understood as global management and supervision process that has – in particular - no interference in the technical positions taken by IRSN. A typical outcome of the global management process is the responsibility of these ministries in setting the targets and global objectives to IRSN, defined through a five-year “Contract of objectives and performance” (current version: 2014-2018).</p> <p>IRSN is a public institution with industrial and commercial activities (EPIC) whose missions have been confirmed by the Act No. 2015-992 of August 17th, 2015 on Energy Transition and Green Growth (TECV). The issue of this law has also led to a revision of IRSN’s constitutive decree, taken on March 10th, 2016. In the current French governmental organization, IRSN is placed under the joint authority of the Ministry of Environment, Energy and Marine Affairs, the Ministry of Education, Higher Education and Research, the Ministry of Social Affairs and Health and the Ministry of Defense.</p> <p>As IRSN is the national public expert on nuclear and radiological risks, the Ministries of the Environment and of Health supervise IRSN contribution to public policies in the fields of nuclear safety and ionizing radiation protection for public health and the environment. As IRSN provides technical advices for both civilian and defense safety authorities and also addresses security issues, IRSN is also placed under supervision of the Ministry of Defense. Taken into account the place of nuclear energy in the French energy mix and the mission of IRSN in terms of safeguards, there is a supervision of the Ministry of Energy (currently the same as Environment). Finally, as a research and scientific institution, IRSN is dependent upon the Ministry of Research and Higher Education. IRSN acts in interaction with all stakeholders concerned by these policies, while preserving its independence of judgment.</p> <p>In December 2014, the third “Contract of objectives and performance” (“Contrat d’objectifs et de performance 2014-2018”) has been signed by the responsible Ministers and the Chairman and DG of IRSN. This document defines strategic axis of progress for the Institute, identifies key operational issues and sets objectives to optimize its governance and efficiency. Therefore, the Contract defines global commitments for the Institute by setting three strategic axis of progress:</p> <ul style="list-style-type: none"> <li>- A world-class policy of research and scientific excellence;</li> <li>- An efficient expertise and know-how to prevent nuclear and radiological risks;</li> <li>- A policy of openness and transparency to the benefit of society.</li> </ul> <p>The progress toward the different objectives is monitored by 50 indicators. Thus, a yearly follow-up report on the progress of IRSN is provided to the representatives of the Ministries.</p>

Ukraine	<p>According to para 2.2 "Energy policy", it is envisaged to reduce the nuclear share in order to reach a target of 50% nuclear power production by 2025. This means that older plant(s) will need to be closed to allow Flamanville 3 to come on line in 2017.</p> <p>Could you please describe the action plan to reach the mentioned political decision from both the EDF and ASN side? Have the activities relevant to decommissioning been speeded up? How the regulatory infrastructure is going to be adjusted?</p>	<p>The regulatory framework has been enhanced with a decree on decommissioning in June 2016. The ASN has received 50 new positions in the last 3 years, and some of them will be devoted to decommissioning. The ASN has also requested the elaboration of a decommissioning strategy from all the operators and EDF in particular.</p>
Ukraine	<p>It is mentioned that following the IRRS mission held in France in 2014, ASN initiated international benchmarking work on safety culture, in order to draft a policy document specifying how ASN deals with this question in its practices and how safety culture is an integral part of ASN's four core values...</p> <p>Could you please share your experience and achievements on integration of safety culture in the daily core activities? Has a policy document been prepared for the time being?</p>	<p>Regarding the international benchmarking work, ASN took part in the elaboration of the NEA "Green Booklet on Safety Culture of an Effective Nuclear Regulatory Body" and of the GSR Part 2 about "Leadership and Management for Safety", both published in 2016.</p> <p>ASN also stated an internal reflexion about the integration of both nuclear safety and radiation protection in the same frame about cultural aspects of its own organisation, which could rely on the four values of ASN : independence, competence, rigor and transparency. ASN started to think about the way of building its safety and radiation protection culture policy document around its four values which are already well known and experienced in the daily core activities.</p> <p>For the time being the policy document is not available yet and ASN has not decided the ways of finalizing it.</p>

Ukraine	<p>Seven Advisory Committees (GPE) have been constituted to assist the ASN Director General. For each of the subjects covered, the Advisory Committees study reports prepared by IRSN or other duly mandated experts, by an ad hoc working group created for the occasion or by one of the ASN entities. They issue an opinion together with recommendations.</p> <p>Could you please clarify the status of the decisions/recommendations produced by the Advisory Committees? How the independence of the Advisory Committees is ensured since the reports/subjects for discussion are prepared by the experts (e.g. IRSN) that support the ASN in daily regulatory review activities.</p>	<p>The opinions and recommendations issued by the Advisory Committees of Experts, or “GPE”, are not binding on ASN, which may depart from them. These opinions and recommendations are aids to ASN’s decision-making.</p> <p>The GPEs comprise experts nominated for their individual competence. They are open to civil society, to people from university and association backgrounds and from appraisal and research organizations. They can also be licensees of nuclear facilities or come from other sectors (industrial, medical, etc.).</p> <p>For each of the subjects covered, the Advisory Committee members examine the reports produced by IRSN, by a special working group or by one of ASN departments. Their skills, by virtue of which they are appointed, allow them to have the necessary hindsight.</p> <p>Moreover, the desire to prevent any conflict of interest also led to Advisory Committee members being required to submit a declaration of interest and to the reinforcement of the internal operating rules of the Advisory Committees to ensure that experts with a direct interest in the subject being addressed do not take part in establishing the position of the Advisory Committee.</p>
Ukraine	<p>Para 6.3.1.3 provides a comprehensive and detailed overview of three implementation phases for the post-Fukushima safety upgrades identified upon the results of the stress-tests.</p> <p>Could you please share information about the implementation status of the Phase 1 upgrades (2012-2015)? Have the Phase 1 measures been implemented in full scope for all operating units and reflected in the emergency operating procedures (EOPs) and severe accident management guidelines (SAMGs)?</p> <p>Has ASN estimated the safety level achieved after Phase 1 (e.g. using the PSA values)?</p>	<p>As mentioned in the report, the deployment of the measures associated with phase 1 of the post-Fukushima action plan is finished for all the reactors. The safety level achieved after the implementation of the temporary or mobile measures included in phase 1 (2012-2015) has been qualitatively assessed by EDF. ASN will request a more quantitative estimation, using the PSA, at the end of the implementation of the elements of the hardened safety core of material and organizational measures.</p>

Ukraine	<p>Concerning Phase 3 (as from 2019), it is mentioned that "EDF indicates that these means have also been defined with a view to continuing operation of the reactors beyond forty years".</p> <p>Does ASN require the implementation of all post-Fukushima measures (Phases 1-3) as a necessary condition for long-term operation?</p>	<p>Phase 1 has been and phase 2 is being implemented. Phase 3 modifications have been presented to ASN standing Group of experts in 2016. The end of implementation of phase 3 on the whole fleet and the conditions for a long-term operation are still under discussion between EDF and ASN. ASN considers that they are part of the 4th PSR of 900 MW reactors batch of safety improvements.</p>
Ukraine	<p>Continuation of the work in the field of probabilistic safety assessments was highlighted as a challenge for France following the 6th CNS Review Meeting. The table in para 14.3.2 shows the PSAs developed for each series of similar reactors.</p> <p>The scope of PSA does not include PSA for external hazards (external flooding, fire, other external events) at operating units.</p> <p>Could you please clarify whether the PSA for external hazards is going to be developed? Have the shutdown modes been covered in PSA as well as rated power operation?</p> <p>Does ASN develop the plant-specific or only generic reactor-type PSA?</p>	<p>In France, the development of PSAs is required by the BNI Order (Arrêté INB - 2012-02-073) and especially by its article 3.3 "The safety demonstration includes probabilistic analyses of accidents and related consequences, unless the operator demonstrates it is not relevant to do so. These analyses may be performed [...] according to methods applied to installations classified for the protection of the environment". For many years, EDF is committed to developing external hazards PSAs. EDF's work program on this issue aims at giving top priority to the externals hazards wich represent a nuclear safety issue, while taking into account the feasibility of these probabilistic analyses within a given industrial timeframe. The scope of the external hazards that can be subject to PSAs is questionned at safety reviews every ten years (as per the Fundamental Safety Rule RFS 2002-1). In this way, EDF has developed a detailed screening methodology for external hazards. This methodology, consistent with international best practices and inspired by the EPRI Screening Guidance (# 3002005287), aims at identifying which external hazards are eligible to PSAs. The 900 MWe NPP fleet and the 1450 MWe NPP fleet have already gone through this screening process; post-screening analyses (which take into account the international state of the art) are underway. The screening process will be applied to the 1300 MWe fleet and to Flamanville 3 EPR in the next few years. French PSAs are mainly developed based on EPRI methods if existing. Low Power, shutdown states and fuel building are covered in French PSAs. PSAs in France are mainly generic reactor-type.</p>

Ukraine	<p>The results of the ASN analysis and oversight are presented in detail.</p> <p>ASN assessment is based on the results of regulatory activities carried out by ASN during the year, in particular, inspections, oversight of reactor outages and analyses of processing of significant events by EDF, as well as based on the inspectors' familiarity with the sites they supervise.</p> <p>Has the ASN established and does it apply the safety performance indicators for oversight in different safety areas? Is the significance from the risk point of view taken into account for oversight/regulatory inspection?</p>	<p>ASN considers that safety indicators are useful tools but that qualitative assessments are essential for assessing the safety of a plant. ASN has selected different indicators into ten families (8 for safety, 1 for environment, 1 for radiation protection). This indicators are sent to the national level of ASN by regional offices inspectors. The national level of ASN then performs a national analysis of indicators and a qualitative assessment. limited tool for evaluating safety.</p>
United Arab Emirates	<p>It is reported that ASN relies in the state of art scientific and technical knowledge, does that mean that licensees are required prescriptively to cope with the latest technology to enhance their nuclear facilities?</p>	<p>The licensee can use any technology as far as he can demonstrate that it is sufficiently reliable. There is no prescription to use latest technologies but PSR can be the opportunity to upgrade some equipment in order to enhance safety.</p>
United Arab Emirates	<p>After the discovery of the an anomaly in the composition of the steel in the center of the Flamanville 3 EPR vessel closure head and bottom head, has ASN requested an extent of condition to verify that no similar anomalies occur in other safety installations.</p>	<p>After the discovery of the anomaly in the composition of the steel in the center of the Flamanville 3, ASN asked the licensee to evaluate the risk of a high carbon concentration on all the components of the reactors in operation.</p> <p>For components presenting risks of a high carbon concentration, ASN has requested the implementation of carbon measurements. So far 46 steam generator channel head are concerned by this phenomenon of carbon segregation.</p>



United Arab Emirates	Are there any hold points on the power commissioning tests once they increase the power level	<p>A reactor first divergence is to be explicitly authorized by the ASN. Then, the following hold points are planned during power level increase in the course of commissioning tests:</p> <ul style="list-style-type: none"> <li>- 10% of nominal power, to perform a flux map,</li> <li>- 25% of nominal power for instrumentation calibration,</li> <li>- 60% of nominal power for instrumentation calibration,</li> <li>- 80% of nominal power for instrumentation calibration.</li> </ul> <p>These hold points are under control of the licensee, who makes the decision to continue the commissioning tests after a recommendation has been issued by the 'site commission'. This 'site commission' includes, amongst others, representatives from the ASN and from its technical support body IRSN. Furthermore, the ASN has to explicitly authorize the final step to increase power up to 100%.</p>
United Arab Emirates	Are there any regulatory requirements in load follow operations that are different than those for base-load operations?	<p>ASN has not developed any specific regulatory requirement in relation with load follow mode of operation. However, the 'General Operating Rules' developed by the Operator and approved by ASN define the domain allowed for operation of a reactor and the associated operating rules. These GOR include some prescriptions relating with load follow operation mode such as maximum rate of load change, allowable duration for operation at reduced power, limits in terms of control rods insertion etc.</p>
United Arab Emirates	In section 6.3.1.1.1 "Aging control: demonstration of in service resistance of reactor vessels" two steps were mentioned which were taken as of start-up to prevent any risk of rupture. What is the basis in which these two steps were decided to be taken?	<p>The basis, on which these two steps were adopted, can be explained by the will to anticipate the overall ageing of the metal (for each vessel) and to check the defects of the vessel (specific weaknesses). This knowledge is used to confirm the generic file provided for each plant serie, required by ASN.</p>
United Arab Emirates	Point # 7 In section 7.1.3.1.2 mentioning that "It introduces the possibility of the on-site emergency plan being shared by several BNIs, or even with ICPEs operated by the same licensee". Please explain what kind of sharing of the on-site emergency plan between them.	<p>The decree 2007-1557 of the 2nd of November 2007, article 20, states that, at the initiative of the operator or at the request of the Nuclear Safety Authority, the on-site emergency plan can be common to several neighboring nuclear facilities with the same operator. Where appropriate, it serves as the internal operating plan provided for by Article R. 512-29 of the Environmental Code for ICPE included in the perimeter of the BNI. In other words, instead of having different on site emergency plans for each neighboring facility of the same licensee, the licensee can be allowed to elaborate one single plan for those facilities. It can also cover non nuclear installations requiring an internal emergency plan.</p>

<p>United Arab Emirates</p>	<p>French regulations do not include the notion of a clearance level, neither for effluents, nor for solid waste": is this going to change, given the reiterated approach on clearance both for in IAEA GSR part 3 and in the EC Directive 59-2013?</p>	<p>There is no plan to introduce the clearance level in the French regs which could apply to radioactive waste. Regarding the effluents and waste, French regs require to reduce their volume as much as possible and to keep the waste in an inert state for disposal. So, effluents are usually reduced and filtered and, the filters are managed as solid waste.</p> <p>Also, the discharges of liquid and gaseous effluents in the environment are monitored, controlled and authorised under environmental permits (ASN resolutions).</p>
<p>United Kingdom</p>	<p>Within the National Report - Article 19 'Operation', paragraph 19.3.2.2 Maintenance, the section identified as 'Control of ageing' states that 'as part of the defence in depth approach, a programme for analysing the ageing modes of certain Equipment Important for Protection (EIP) is put in place as from the preparation for the 3rd 10 -yearly outages, integrating in particular operating experience feedback and the current state of knowledge.</p> <p>Please provide further information on how is the output of this analysis is used to inform or influence the Instrumentation and Control (I&amp;C) In-Service inspection to identify ageing effects and ageing mechanisms?</p>	<p>The objectives of the ageing management process are to:</p> <ul style="list-style-type: none"> <li>* Demonstrate an effective management of the ageing of those components and structures whose ageing could have an impact on the nuclear safety of the reactor and play a key role in its lifespan.</li> <li>* Confirm that components subject to ageing mechanisms remain within their design criteria and can continue to fulfil their safety functions over the long term.</li> <li>* For each reactor, supply, at a minimum, an unit ageing analysis report (UAAR) for the period from the third (VD3) to the fourth (VD4) ten-year outage, supported by an ageing management programme that goes beyond the VD3.</li> </ul> <p>I&amp;C operating experience :</p> <p>For most of I&amp;C components, the preventive maintenance programme implementation allows to detect an ageing phenomena at an early stage. Preventive maintenance programs are periodically revised to factor in experience feedback.</p> <p>Some visual inspection, electric testing and destructive testing are implemented for lifetime estimation (ie : operating coil stack assembly, reactor protection system ULS modules,...).</p>

<p>United Kingdom</p>	<p>The National Report Article 14 ‘Safety Assessment and Verification’ paragraph 14.2.1.4 on Ageing phenomena in relation to research reactors states that Controlling the obsolescence of equipment, including Instrumentation &amp; Control (I&amp;C) and PLCs, is a key challenge for the safe operation of research reactors, more specifically owing to the fact that they are all different.</p> <p>Recognising that this is the approach has been adopted for research reactors within France, please provide more information on the I&amp;C obsolescence management process throughout the design, manufacture &amp; procurement, installation and commissioning lifecycle for nuclear power plants (NPPs).</p>	<p>EDF has implemented a generic process for managing obsolescence of SSCs for their operating reactors. Regarding especially I&amp;C components, the licensee has developed a national approach in order to maintain such components in operational conditions, which is afterwards applied by each unit. This approach is based on the availability of electronic components or other components necessary for I&amp;C repair, and on the presence of the repairer.</p> <p>But electronic technologies and industrial resources evolve, with a tendency to shorten the components lifecycle. Therefore EDF has started to address the obsolescence since the early 90’s. Subsequently, they have developed several projects in order to ensure that the problem of I&amp;C obsolescence is adequately managed (e.g. anticipation of potential obsolete components, constitution of strategic stocks, taking into account evolution of regulation and codes, interactions/protocols with suppliers...). For future constructions and evolutions, EDF will take some provisions for replacement as soon as the main components are acquired.</p>
<p>United Kingdom</p>	<p>Section 14.2.3.1 of the national report outlines the process for periodic safety reviews (PSR), but does not provide much detail, nor evidence on how the process complies with international standards. Please explain how PSRs in France address the following from IAEA Specific Safety Guide SSG-25 on PSR:</p> <ul style="list-style-type: none"> <li>• The four main objectives of a PSR in paragraph 2.9.</li> <li>• The 14 safety factors in paragraph 2.13.</li> </ul> <p>Also please explain how the requirements from these guides are placed on the licensee.</p>	<p>In France, the scope of the PSR is similar to the scope described in section 2.9 of the guide SSG-25 (required by the environment code - article L. 593-18 an L.593-19). Moreover, the periodic safety review in France takes into account the recommendations of WENRA (for example, the recommendations of WENRA 2014 will take into account for VD4-900 PSR) and includes the assessment of environmental consequences due to non radiological risks and the drawbacks resulting from normal operation of the facility.</p>
<p>United Kingdom</p>	<p>The national report states that ASN reviews the periodic safety review (PSR), including the results of the ten-yearly outage inspections, and issues a position statement. Please clarify the regulatory significance of this position statement and what the implications are for operation if it is not issued.</p>	<p>At the beginning of the process, the safety authority takes a position on the content of PSR. Then, a position is taken during the process on specific subjects (ageing, deterministic safety analysis, PSA, hazard analysis, ...). Finally, the safety authority makes a statement to conclude. By law, after the PSR, the safety authority issues a document for the minister and gives its position concerning the capability of the plant to continue its operation safely.</p>

<p>United Kingdom</p>	<p>The report gives the level of financial and human resources as of 2015 for the regulatory body. The report acknowledges the finding (within the 2015 final IRRS Mission report) to identify means to ensure that ASN has adequate financial and human resources to fulfil its role with forecast increased demand. However, the report does not currently provide information on what has been done to tackle this issue.</p> <p>Please explain what has been done to ensure that adequate financial and human resources will be available to ASN, in particular to address the forecast increase in ASN workload.</p>	<p>Each year, the ASN carries out an analysis of the adequacy between the missions it must fulfill and the means at its disposal, both in terms of human resources and financially. When it lacks sufficient resources to adequately carry out the tasks entrusted to it, it makes its requests for additional resources to the Parliament and the Ministers in charge of nuclear safety and radiation protection. This was the case for carrying out the additional actions resulting from the feedback from the Fukushima accident. Thus, the number of staff has increased from 456 to 483 between the beginning of 2012 and the end of 2015 and around 30 additional posts are expected by the end of 2017. The same applies to its annual budget, which is From € 75.6 million in 2012 to € 80.1 million in 2015.</p>
<p>United Kingdom</p>	<p>The National Report states that modifications made by the licensee that could affect safety (amongst other things) are either notified to the regulator or subject to authorisation.</p> <p>Please provide more information on the regulator's arrangements for maintaining proportionate oversight of modifications.</p>	<p>The process implemented depends on the impact's significance of the change on the protected interests, including safety, defined by the BNI decree.</p> <p>The first type of process is related to "substantial" modifications and is already describe in Section 7.2.9 of the ASN report.</p> <p>The second type of process is related to "significant" modifications when they affect the facility's safety report or impact assessment content.</p> <p>Depending on their relevance, the significant modifications are submitted either to notification to ASN or to authorization by this authority. The criteria for selecting between notification and authorization procedures are due to be defined by a an ASN decision by the end of 2018. In the meantime, all significant modification are submitted to authorization.</p> <p>The third type of process includes the other modifications than those aforementioned. Their management is defined in the licensees' internal process, and are not subject to administrative procedure.</p>

<p>United Kingdom</p>	<p>The National Report states that in 2009 the regulator issued an initial opinion concerning the “extreme heat” baseline requirements proposed by EDF for the 900 MWe reactors.</p> <p>Please can France:</p> <ul style="list-style-type: none"> <li>• Provide further information on the nature of the engineering changes that are being implemented?</li> <li>• Confirm whether any analysis or modification concerning “extreme heat” baselines has been carried out for the higher power reactors?</li> <li>• Describe how the associated modifications have been regulated.</li> </ul>	<p>There are several types of modifications : new operating instructions, replacement of devices (with a higher temperature qualification), improvements in venting systems. For the 1300 and N4 plant series, studies are being conducted during the present Periodic Safety Review (VD3 1300 and VD2 N4). The reassessment of the risks of external natural hazards associated with the climate (including heatwave and drought) are conducted at each PSR.</p>
<p>United Kingdom</p>	<p>The report states that “the characterisation of the risks associated with the site and the design of the installations to counter these risks form the subject of basic safety rules (see Appendix 2, Section 2.3).”</p> <p>In assessing the suitability of a site to support safe nuclear operations what eliminating criteria are applied that would result in the site being judged to be unsuitable regardless of the proposed design?</p>	<p>There is no direct eliminating criteria that would result in the site being judged to be unsuitable. The decision to create a NPP is only given after an analysis of several technical documents, including the interim safety report and the impact assessment, which take account of the site's specifications.</p>
<p>United Kingdom</p>	<p>Section 18.2.4.2.1 of the National Report summarises the regulator’s position on the steel composition anomalies affecting the Flamanville 3 vessel closure head and bottom head.</p> <p>Please can you briefly explain whether the learning from the Flamanville 3 steel anomalies has led to any changes into the design, quality control or regulation of pressure vessel components in future French nuclear power plants (NPPs).</p>	<p>Learning from Flamanville 3 RPV heads steel anomalies led ASN to :</p> <ul style="list-style-type: none"> <li>- require the licensee to review the manufacturing techniques used by its suppliers to produce large forgings and to identify those potentially leading to the same kind of anomalies. This review led ASN to identify the recent macrosegregation issues on several operated SG channel heads.</li> <li>- require AREVA NP to conduct a comprehensive quality audit in its threee owned factories : Creusot Forge, Saint-Marcel and Jeumont</li> <li>- initiate reflexions to adapt inspection practices by the authority, by the licensee and by the manufacturer in order to adress quality issues and to detect CFSI.</li> </ul>

<p>United Kingdom</p>	<p>Section 18.2.4.2.1 of the National Report summarises the regulator’s position on the steel composition anomalies affecting the Flamanville 3 vessel closure head and bottom head. The report explains that Areva has presented an approach to demonstrate the mechanical properties of the components used in at Flamanville 3.</p> <p>If this programme of substantiation is different to, or in addition to, the original safety case basis, please can you explain whether the additional tests will now be required for future NPPs in France?</p>	<p>This demonstration approach and the related testing programme is a technical expertise specific to the case of the Flamanville 3 RPV heads being manufactured already.</p> <p>French regulation for nuclear pressure equipments to be manufactured requires a technical qualification for the majority of large forgings including all large forgings to be installed on the main primary system. Prior to the manufacturing of these components, the technical qualification requires the manufacturer to identify if the manufacturing process to be used can lead to heterogeneities into the material ((such as residual macrosegregations). By this means ASN is able to assess, prior to the manufacturing of the component, how the manufacturer controls the risks of heterogeneities in the material.</p>
<p>United Kingdom</p>	<p>The report states that “population” is a theme covered in the “Site and Environment” chapter of the safety analysis reports and the impact of the installation on individuals and society can be assessed. An increase in population around nuclear sites has the potential to affect the safety of both individuals (by potentially decreasing the effectiveness of the protection that is provided by the provisions within the off-site plan) and society (by increasing the collective effective dose that the public would receive in the event of an off-site release of radioactive material).</p> <p>Please clarify what regulatory or other administrative controls are in place to limit the population density and population distribution within specific zones around a nuclear facility over the period of operation.</p>	<p>The possibility to implement institutional controls limiting or prohibiting new constructions in the vicinity of these facilities exists in the law (article L. 593-5 of the Environment Code) but has not yet been implemented so far.</p> <p>A non binding guide (guide n° 15 on the control of activities around BNIs), accessible on ASN website, was published in 2016 concerning the control of activities around BNIs, based on the following principles :</p> <ul style="list-style-type: none"> <li>• to preserve the operability of the contingency plans;</li> <li>• to favour urban development outside the rapiddevelopment hazard zone;</li> <li>• to allow controlled development that meets the needs of the resident population.</li> </ul> <p>Based on these principles, ASN issues opinions on urban documents or building permits. The safety analysis reports are also updated at every 10 year periodic safet review.</p>

<p>United Kingdom</p>	<p>The report states that “EDF considers that the design of the buildings for the off-site explosion risk guarantees their robustness to extreme winds. EDF has evaluated the existing margin by comparison with this event and concludes that for all its sites, all the buildings designed for the "off-site explosion" risk are robust to extreme winds with significant margins.”</p> <p>Please clarify the arguments that support the conclusion by EDF that “the design of the buildings for the off-site explosion risk guarantees their robustness to extreme winds”.</p>	<p>Off-site explosion risks have been studied based on experience feedback on civil works. Pressure waves related to extreme winds are likely to be lower than pressure waves related to off-site explosion.</p>
<p>United States of America</p>	<p>The U.S. applauds ASN’s efforts to continually address safety culture issues. Following the 2014 IRRS mission to France, ASN embarked on an international benchmarking effort related to safety culture with the intention of drafting a policy document on safety culture.</p> <p>(1) What is ASN’s timeframe for issuing and implementing this policy document?</p> <p>(2) How will the public be involved in its development/finalization?</p>	<p>Regarding the international benchmarking work, ASN took part in the elaboration of the NEA "Green Booklet on Safety Culture of an Effective Nuclear Regulatory Body" and of the GSR Part 2 about "Leadership and Management for Safety", both published in 2016.</p> <p>ASN also stated an internal reflexion about the integration of both nuclear safety and radiation protection in the same frame about cultural aspects of its own organisation, which could rely on the four values of ASN : independence, competence, rigor and transparency. ASN started to think about the way of building its safety and radiation protection culture policy document around its four values which are already well known and experienced in the daily core activities.</p> <p>For the time being the policy document is not available yet and ASN has not decided the ways of finalizing it. Moreover, one Human factors expert is working at ASN.</p>

<p>United States of America</p>	<p>Sections 3.3.5 and 12.4.3 highlight efforts taken by the ASN in collaboration with other organizations to address human and organizational factors for nuclear facilities.</p> <p>(1) How does ASN intend to use the information gathered from the working group discussions to make improvements?</p> <p>(2) Does ASN intend to publish a public report with recommendations or consider potential changes to its regulations?</p>	<p>ASN considers that there is a need to move forward with regard to the reflections and work being done on the human contribution and organizations to the safety of nuclear facilities and in 2012 it therefore decided to set up the Steering Committee for Social, Organizational and Human Factors (COFSOH), chaired by Pierre-Franck Chevet, ASN's President. It is a pluralistic working group, which includes ASN members, representatives of institutions and environmental protection associations, personalities chosen for their scientific, technical, economic, social expertise, persons in charge of nuclear activities, representative of nuclear industry professional federations and representative employees' unions. Since the beginning of 2013 and in parallel with the plenary meetings, the work of the COFSOH has been continuing through four working groups. The forty meetings held to date have addressed the following subjects: (1) subcontracting in normal operating situations, (2) management of emergency situations, (3) interaction between managed safety and regulated safety and (4) legal questions raised in connection with the subjects. The aim of the COFSOH is (i) to allow exchanges between the stakeholders on this difficult topic which are the human and organizational factors and (ii) to write some documents offering common propositions of the different COFSOH members on a given subject. At this time, one document of the GT 1 is public and available on the ASN website. It concern the "positive contribution of the sub-contracted maintenance activities to the safety".</p>
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<p>United States of America</p>	<p>France currently has 34 reactors that are an average age of 34 years old.</p> <p>(1) As these reactors approach the 40-year license term, how is ASN preparing for the potential licensing of existing plants beyond the 40-year term and what progress has ASN made in updating its regulatory framework to accommodate the potential for license renewal in a short period of time?</p> <p>(2) In addition, How is ASN prepared to deal with the potential for multiple decommissioning/shutdown requests in a short period of time to respond to the State's plans to decrease its reliance on nuclear power to 50% by 2025 and potentially support the commissioning of a new reactor at Flamanville 3 without increasing the overall capacity?</p>	<p>(1) In France, there is no license renewal as licences are usually granted without a time limit. The ability of a facility to operate and the adequacy of the provisions proposed by the operator are assessed every ten years, during its periodic safety review (PSR).</p> <p>The 4th PSR of the 900 MW reactors includes conformity verifications in the facilities with the current baseline safety requirements safety documents as well as a safety reassessment. The fourth PSR entails a strengthening of safety objectives and an increase in the number of studies to be carried out, in particular regarding aging. Due to the fact that 900 MW reactors are similar, the PSR is mostly done in a generic (i.e. fleet wide) way.</p> <p>(2) ASN and IRSN have issued a common position in April 2014 dealing with their resource plans in the context of the policy of the energy transition. ASN and IRSN explained in this document that they would face major issues in the next years as, among other things, the multiple decommissioning/shutdowns of NPPs, the commissioning of the EPR and the post-Fukushima experience feedback programme. And, they established its needs of additional resources for the next years on these basis. This position was published in the public domain and addressed to the government and the parliament. (<a href="https://www.asn.fr/Informer/Actualites/Renforcement-du-dispositif-de-controle-constitue-de-l-ASN-et-de-l-IRSN">https://www.asn.fr/Informer/Actualites/Renforcement-du-dispositif-de-controle-constitue-de-l-ASN-et-de-l-IRSN</a>).</p> <p>It has already led to new staff within ASN teams : 10 in 2015, 10 in 2016 and 30 in 2017. Regarding the next shutdown of NPPs to comply with the policy of the energy transition, the government has defined a multi-annual programming : Décret n° 2016-1442 du 27 octobre 2016 relatif à la programmation pluriannuelle de l'énergie.</p> <p>The decree sets the requirement that EDF would define in the next six months a plan to reach the objective to reduce the nuclear part of electrical energy at 50% around 2025.</p>
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<p>United States of America</p>	<p>The report refers to an earthquake probabilistic safety assessment that the licensee conducted for the Saint-Alban nuclear power plant (NPP). The report states that ASN found the study worthwhile and considered the need for a similar approach for other NPPs.</p> <p>(1) Has ASN implemented a requirement for other NPPs in France to complete a similar earthquake PSA?  (2) What are ASN's plans for implementation and the timeframe to complete?</p>	<p>A first seismic PSA was performed on a 1300 MWe NPP as part of the third safety reassessment on this type of reactor.</p> <p>This working program will continue in the frame of the next Periodic Safety Reviews (PSR) (i.e. 4th PSR of the 900 MWe NPPs, 4th PSR of the 1300 MWe NPPs, 3rd PSR of the N4 NPPs, 1st PSR of EPR): different external events (including earthquake) will be considered and modelled from a probabilistic perspective when relevant, and considering: level L1&amp;L2 PSA, all reactor operation modes and the spent fuel pool safety assessment.</p> <p>For each PSR, the relevance of the scope of the probabilistic safety analyses will be justified.</p> <p>Probabilistic safety assessments will be build on international state of the art approaches and will be adapted to the safety significance of the related risks.</p>
<p>United States of America</p>	<p>Following the 2014 full IRRS mission in France,</p> <p>(1) how is France addressing the areas for improvement that were identified by the peer review team?  (2) What is ASN's timeframe for addressing the items?</p>	<p>The final version of the IRRS report was passed to ASN in March 2015. Between April and September 2015, ASN led internal talks about the best ways to follow suggestions and recommendations. A project of action plan was presented to the Executive Committee and the directors in May and discussed in July. An action plan identifying leading offices in ASN departments, milestones and other stakeholders involved in each suggestion or recommendation was approved in September. It was part of the inputs of the annual action plans of ASN and of each department for 2016. The timeframe was adapted to prepare a follow-up mission in 2017, so a majority of actions were planned to be dealt with or at least initiated before the end of 2016.</p>