

# **Convention on Nuclear Safety**

## **5<sup>th</sup> Review Meeting**

**Vienna 4-14 April 2011**

### **France's answers**

**to questions and comments received from other Contracting Parties  
on its 5<sup>th</sup> national report for the CNS**

**April 2011**

## Convention on Nuclear Safety

### Questions Posted To France in 2011

Q.No 1	Country Brazil	Article	Ref. in National General Report All Report
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**Question/ Comment** The French report is very comprehensive, although very voluminous. Sometimes there is an impression of been two reports, one by ANS and one by the operators (EDF), with some contradiction between the two views. Unfortunately France has not follow the new Guidelines (INFCIRC/572/ Rev3), since there is no clear response to recommendation from previous meeting in general or to France in particular, as recommended by item 30 of the Guidelines.

**Answer** "ASN do agrees that the report is voluminous. This fact is mainly due to the large number of NPPs in operation in France and to the will to include the measures taken to ensure the safety of research reactors. As it has been done for the previous report, the French report is using a a three-fold structure for technical chapters, starting with a description of the requirements prescribed by the regulatory authority, followed by an overview presented by the operators of their measures for complying with regulations and requirements, and ending with an analysis of operator measures by the regulatory body. This structure was considered as a good practice at the previous review meeting in 2008. In order to comply with new recommendations of the guidelines you mentioned, a new chapter, n°3, "summary" has been added presenting the main changes in comparison with the previous reports as well as the major events occurred since the fourth review meeting. The answers to questions raised during this meeting are included in the paragraphs concerned."

Q.No 2	Country Brazil	Article	Ref. in National General Report Item 3.1.1. Also Art.7 item 7.2.1 7.3.
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**Question/ Comment** According to the report, the Act on Transparency and Security in the Nuclear Field (TSN) introduce a sanction regime. Does this sanction regime include monetary penalties? What has been the experience with the use of sanctions?

**Answer** "Article 48 of the TSN Act contains a penal sanction regime with financial penalties.

Such penalties range from a 7,500 EUR fine imposed on the licensee for failing to draw up an annual document (on the provisions adopted as regards nuclear safety and radiation protection) to 2-year imprisonment and a 150,000 EUR fine for operating a basic nuclear installation without authorisation.

Pursuant to Article 46 of the TSN Act, nuclear safety inspectors are empowered to seek and record breaches of the provisions of the TSN Act. Such records are sent to the public prosecutor who may decide to open proceedings.

8 records were made by ASN in 2009 and 5 in 2010 (these data do not include records made for transport, industrial or medical use of radioactive sources). Most of these records concerned labor inspections in nuclear power plants.

An English version of the TSN Act is available on the ASN Web site:  
<http://www.french-nuclear-safety.fr/index.php/English-version/References>."

Q.No 3	Country Brazil	Article	Ref. in National General Report Summary Item 3.2.6
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Question/  
Comment Please clarify who is going to be responsible for the operation of Penly reactor.

Answer Mid-2010, the French government stated that EDF will be the licensee of Penly 3 reactor.

Q.No 4	Country Canada	Article	Ref. in National General Report 133
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Question/  
Comment Please elaborate on the requirements and considerations, used in plant siting of multi-units. that ASN expect its applicants to demonstrate such as the determination of an exclusion area, effect of population density and total radioactive effluent releases from the simultaneous operation of multiple reactors at the site?

Answer In the case of a site with multiple facilities, impact and hazards- studies are performed at each facility to determine the potential impact of releases or accidents that may require action to protect people in situations under emergency plans. In France, there is currently no exclusion zones around nuclear plants. The impact of a new facility (including the radiological impact) must take into account the initial state of the site and thus releases of existing facilities on site.

Q.No 5	Country Canada	Article	Ref. in National General Report 133
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Question/  
Comment Please elaborate further on the expectations on Applicants regarding ASN's Siting policies?

Answer "From a regulatory point of view, the applicant for a nuclear facility has to identify its location in its license application for an autorisation decree. The prospective operator may also specify this location :

- if, pursuant to article 6 of Decree 2007-1557, he chooses to request ASN's opinion, even before undertaking the licensing procedure, on the sitting options he has selected to ensure the safety of the future installation;
- if a national public debate on this facility is performed (this is for example mandatory for a new power reactor). The potential site(s) for this facility will then

have to be mentioned.

From a practical point of view, before a formal application is submitted or before a public debate is performed, the prospective operator informs ASN of its intended location for the facility proposed. Afterwards, safety options will need to be included in the preliminary safety report of the license application ASN normally calls upon a competent advisory committee to review the project. The advisory committee's opinion is then sent to the prospective operator in order to let him know which questions to take into account in the creation authorisation application."

Q.No 6	Country Ireland	Article General	Ref. in National Report N/A
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**Question/ Comment** Ireland would like to thank France for preparing a comprehensive national report on the implementation of its obligations under the CNS.  
A substantial amount of safety reviews, assessments and verifications mentioned and described throughout the report include aspects related to earthquake events. Are there specific concerns in relation to earthquake events?

**Answer** First at all, thank you for this positive comment.  
"According to TSN act (Article 29) The operator of a BNI carries out periodic safety reviews of his installation. This periodic review must improve the state of the installation with regard to the experience learned from operation feedback, the evolution of knowledge and the rules applied to similar installations.  
France is characterized by a low to moderate seismicity. No earthquake data that could impact the nuclear installations has been recorded over the last 30 years. Nevertheless ASN take into account the international event experience (for example KK in July 07) in order to produce guides and safety rules related to seismic risk to account the scientific improvements in the field of earthquakes and seismic design. This guides and safety rules are the basis for the safety reassessments."

Q.No 7	Country Japan	Article General	Ref. in National Report Sec.3.1.3.2; p14 l41
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**Question/ Comment** The report says that "it required EDF to carry out."  
How does ASN confirm EDF appropriately executes it?

**Answer** " Several meetings will be held with EDF to present the result of the SG Review. EDF already sent ASN the list of all documents which will be provided when this review is completed. It concerns for exemple a synthesis of known degradation mechanisms and a modification of in service inspection program but other subjects will be taken into account: NDE, international experience feedback, flow induced vibrations, ageing management, etc... ASN and its technical support IRSN plan to analyse the results of the review."

Q.No 8	Country Japan	Article General	Ref. in National Report Sec.3.1.3.4; p16 l36
Question/ Comment	The report says that “dosimetric results throughout the nuclear fleet remain at satisfactory levels after many years of reduction.” What content did ASN direct to EDF because it obtained such a result?		
Answer	"Even if the dosimetric results remains at satisfactory results, in 2009 the doses rose again due to various technical and organisational contingencies. Referring to these observations, ASN encouraged EDF to maintain vigilance, especially as regards activities optimisation. ASN stated in its annual report of 2009 (see p. 387 : <a href="http://annual-report2009.asn.fr/download/annual-report-2009.html">http://annual-report2009.asn.fr/download/annual-report-2009.html</a> ) the following paragraphs: ASN considers that has led to significant results over the past ten years. It does however believe that the momentum apparent so far is beginning to fade, by an increase of the average collective dose per reactor for two years in succession, which cannot only be explained by the nature of the outages. ASN considers that efforts must be continued in order to improve the way in which the radiation protection culture is shared among the departments, to make the radiation protection organisation more robust and to reinforce the skills and checks in the field."		

Q.No 9	Country Japan	Article General	Ref. in National Report Sec.3.2.6; p19 18
Question/ Comment	The report says that “The organisational structure between actors must also be robust.” How did ASN confirm it was robust?		
Answer	The application for the creation authorization for Penly 3 has been submitted by EDF early in December 2010. This application is currently reviewed. As of today, ASN has not yet established whether the organisational structure between Penly 3 project actors is robust enough or not.		

Q.No 10	Country Korea, Republic of	Article General	Ref. in National Report Appendix 2
Question/ Comment	In Appendix 2 "2.2.1 PWR rules", “RFS-I.2.a. Inclusion of risks related to aircraft crashes (5 August 1980)” is only included in the Basic Safety Rules and Guides as design requirements for aircraft crashes. Does this mean that there is no new regulatory requirements considering the intentional aircraft impact to NPPs after the 9/11 attack? If not, what is the detailed regulatory requirements for the intentional aircraft impact?		
Answer	The intentional crash of an aircraft on a NPP is not covered by RFS. As it is considered a malevolent act, this issue is dealt with, as the other malevolent acts, under the regulations issued by French Government - and not by ASN. The		

malevolent acts to be taken into account, including airplane crash, are listed mainly in documents named "Directives nationales de s curit " which are classified documents.

Q.No 11	Country Netherlands	Article	Ref. in National General Report pg.19, 3.2.6.
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Question/  
Comment Which criteria ASN uses for the assessment of the operator as manager of a full scale new build project and the robustness of the organisation with the subcontractors?

Answer "In the frame of Penly3 project, it was initially presented by the Government in 2009 that EDF, GDF-Suez and other companies (E.ON, Total) would create a joint venture for Penly 3 project so that this joint venture would be the owner of the facility. Nevertheless, it was unclear who would be the licensee (i.e. the joint venture or EDF). ASN has emphasised how important it is to specify the governance of the project and to identify clearly the licensee as it is required by the TSN act. Among the main points which need to be assessed are the following :

- if the licensee has enough in-house capacities/competencies to understand the design of the NPP and its operation;
- if the licensee has enough in-house capacities/competencies to specify the works to be performed by contractors (including design studies) and to supervise these works ;
- if the interfaces, especially the decision making process, between the operator and the facility owner are clear. They must enable the operator to perform its duties in due time according to the law, including in case of emergencies situations;
- should the licensee wish to discontinue operating the plant following to a modification of the joint venture, in this case, an in-depth review should be performed to establish whether such practice is acceptable."

Q.No 12	Country Netherlands	Article	Ref. in National General Report pg.20, 3.2.9
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Question/  
Comment What are the main changes in French regulation because of the EU-directive?

Answer "The applicable regulatory framework has already transposed almost of the whole requirements of the Council Directive 2009/71/Euratom of 25 June 2009.

Nevertheless, two improvements of the existing practices have been added in the rules of procedure in order to reinforce this transposition.

- Expertise and skills in nuclear safety : « Member States shall ensure that the national framework in place requires arrangements for education and training to be made by all parties for their staff having responsibilities relating to the nuclear safety of nuclear installations in order to maintain and to further develop expertise

and skills in nuclear safety.

- Member States shall at least every 10 years arrange for periodic self-assessments of their national framework and competent regulatory authorities and invite an international peer review of relevant segments of their national framework and/or authorities with the aim of continuously improving nuclear safety. Outcomes of any peer review shall be reported to the Member States and the Commission, when available."

Q.No 13	Country Netherlands	Article	Ref. in National General Report 7.3.2.4.1, pg.42
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Question/  
Comment Does ASN also carry out audits as part of their own inspection methods?

Answer "ASN develops a quality control system and makes audits of its organization. The ASN inspection methods have been evaluated by its peers during IAEA IRRS missions."

Q.No 14	Country Poland	Article	Ref. in National General Report n/a
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Question/  
Comment To what extent do you require detailed technical design documentation at the moment of application for the construction licence (i.e. civil engineering and mechanical erection drawings)?  
How do you cope with design changes proposed by licensee during the construction?

Answer "The application of the operator to get the creation authorisation decree must be accompanied by a case consisting of several documents, including the detailed plan of the installation, the impact study, the preliminary safety report, a risk prevention study and the decommissioning plan. Article 10 of the 2007 Procedure Decree gives a description of the preliminary safety analysis report. Detailed design documentation (civil engineering drawings, mechanical/erection drawings) are not included in such documents.  
The construction of any nuclear installation is subject to a building permit issued by the competent prefect according to the procedures referred to in Articles R. 421-1 sqq. of the Urban Planning Code. ASN is not involved in this procedure. As for design changes proposed by licensee during the construction, they are assessed on a case by case basis."

Q.No 15	Country South Africa	Article	Ref. in National General Report Chapter 20
Question/ Comment	<p>One of the Planned Measures to Improve Safety highlighted during the 4th CNS Review Meeting was “For domestic reactors, ASN will work to define conditions to be met should EDF propose to continue operation beyond 40-year lifetime with the aim to have them established ten years in advance”</p> <p>One of the stated EDF objectives is to “securing and extending the operating lifetime of the reactors under optimal safety conditions, .....</p> <p>Although it is understood that no request may have been made by EDF in this regard it is one of their objectives to secure and extend the operating lifetime of their reactors.</p> <p>Within that context can ASN provide some information on the work made towards defining conditions to be met should EDF propose to continue operation beyond 40-year lifetime?</p>		
Answer	<p>" - In terms of safety goals, according to WENRA STATEMENT ON SAFETY OBJECTIVES FOR NEW NUCLEAR POWER PLANTS, in November 2010, ASN asks EDF to identify reasonably practicable safety improvements for existing plants, in reference with those used for new reactors. This have to be done during periodic safety reviews.</p> <p>- In terms of organisation, ASN will call upon the advisory committee for reactor to review the improvements and the new safety levels proposed by EDF regarding new reactors' objectives, and advice if these objectives are acceptable. First meeting on this issue to be held at the end of 2011. Nevertheless, the objectives beyond 40-year operating time are not defined yet."</p>		
Q.No 16	Country Spain	Article	Ref. in National General Report Art. 3Section 3.1.1Page 13,
Question/ Comment	<p>Section 3.1.1 (Main changes since the Fourth French Report, Changes in nuclear-safety regulations in 2010), Page 13, third paragraph</p> <p>Could you provide examples of the transparency reinforcement consisting on publishing information related to ASN’s decision-making process together with the opinions of the French Radiation Protection and Nuclear Safety Institute (IRSN)?</p>		
Answer	<p>For example : please, see press release, the EPR computerised control and instrumentation systems, from 2 November 2009 <a href="http://www.asn.fr/index.php/S-informer/Actualites/2009/Systeme-de-controle-commande-du-reacteur-EPR">http://www.asn.fr/index.php/S-informer/Actualites/2009/Systeme-de-controle-commande-du-reacteur-EPR</a> and press release from 2 August 2010 <a href="http://www.asn.fr/index.php/S-informer/Actualites/2010/Systeme-de-controle-commande-du-reacteur-EPR-Flamanville-3">http://www.asn.fr/index.php/S-informer/Actualites/2010/Systeme-de-controle-commande-du-reacteur-EPR-Flamanville-3</a></p>		



Q.No 17	Country Spain	Article General	Ref. in National Report Section 3.2.11 Page 20, last bullet
Question/ Comment	<p>Safety perspectives for the next three years, Promotion of ASN's responsibilities and roles</p> <p>Could you provide further information on how ASN nurtures public exchanges and debates on topics involving the organization?</p>		
Answer	<p>" ASN wants to encourage and contribute to stakeholder discussion and debate on subjects in which it is involved, with the goal to enrich and develop its positions, to better inform the stakeholders and to improve its decision-making after discussions.</p> <p>For many years ASN already contributes to the development of dialogue with a wide range of stakeholders (citizens, local information commissions, professionals, operators!) concerned by nuclear installations or by any activity that makes use of ionising radiation (such as a medical centre, gammagraphy) or by a radiological risk (such as radon). ASN organises or takes part (in partnership with other local bodies and authorities) to national and regional meetings. (For more information: ASN annual report, chapter 6).</p> <p>ASN endeavours to increase involvement of the public in its decision-making process and to explain all decisions taken. For example, in 2008, ASN gave web users the opportunity to express themselves on its nuclear installations decommissioning policy. 260 comments were received, 4,000 pages visited, 1,500 documents downloaded. All the comments have been placed on-line. After that, ASN produced a new version of the draft document presenting its policy for the decommissioning and delicensing of nuclear installations in France. This new draft took account of the contributions by the members of the public.</p> <p>For example, the aspects relating to the financing of nuclear installation decommissioning were developed in the document.</p> <p>Other example: the National radioactive material and waste management plan (PNGMDR) chaired by ASN and the Minister for Ecology.</p> <p>In 2009, a pluralistic working group was tasked with drafting the 2010/2012 PNGMDR. The waste producers, the waste disposal organisations, the departments of the ministries concerned, environmental protection associations and representatives of elected officials are invited to take part in these working group meetings.</p> <p>ASN implements initiatives to inform the public and to promote transparency, as required by law. For example, in 2010, ASN organised a broad national consultation on a draft of new regulation concerning the nuclear facilities. A lot of stakeholders (IRSN, other state department, operators, local information commissions, associations of environmental protection, trade associations and trade unions, public) were consulted.</p> <p>Consulting the public on the website of the ASN, lasted three months. Hundreds of comments on the text reached the ASN. They are useful and allow ASN to improve accuracy and readability of its expectations for nuclear safety. For the next years, ASN aims to organise national public debates on broad topics related to nuclear safety and radiation protection (such as nuclear waste, operating extension of operation, radiation protection for patients, etc.)."</p>		

Q.No 18	Country United Arab Emirates	Article General	Ref. in National Report 72
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Question/  
Comment The ASN analysis highlighted a number of defects in the nuclear-safety and HR developments issues, the main ones are:  
An observed lack of training of the interveners on the site, notably of contractors, which need to be enhanced in the field of radiation protection and the environment.

Answer Lack of competencies is sometimes considered as one of the causes in events occurred. In particular, during some inspections on site, It has been observed by ASN inspectors that some contractors need to improve the knowledge and the good practices regarding radiation protection.

Q.No 19	Country Canada	Article Article 6	Ref. in National Report 23
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Question/  
Comment The Report addresses the main safety improvement for the French reactor fleet. Instrumentation and Control is not listed as a notable issue for license renewal and upgrades. Did EDF or ANS review the adequacy of the design including architecture of the I and C when compared to the recent developments in this aspect of design and operation? Please describe the impact, if any, of the EPR design and implementation of I and C on backfitting elements of the current nuclear fleets' Instrumentation and Control?

Answer Indeed, the I&C architecture was not a topic of the conformity check phase within the third decennial outage of 900-MWe reactors. Nevertheless, design upgrades could be considered for long term operation (beyond 40 years).

Q.No 20	Country Canada	Article Article 6	Ref. in National Report 33
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Question/  
Comment How does France ensure that all the elements of governance for licensing and regulating NPPS are consistent and cohesive to achieve a high degree of safety? Is there a hierarchy/cross-referenced table that addresses, for example, each of the IAEA fundamental safety goals?

Answer "The TSN act and associated decrees are not specifically dedicated to NPPs (i.e. they are applicable to all nuclear facilities). The TSN act and the decree N°2007-1557 state that the requirements are mainly focussing on the licensing procedures.

One ministerial order and several ASN' s decisions are being drafted to supplement the TSN act and decrees. One major input for this order and ASN decisions is WENRA safety reference levels for existing reactors (January 2008 version). These levels were established by taking D106 into account the main following points:

- WENRA countries regulations and regulatory practices;
- IAEA safety standards"

Q.No 21	Country Finland	Article Article 6	Ref. in National Report 6.3
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Question/  
Comment Under item 6.3 you discuss safety improvements to nuclear power reactors and in specific improvements made to 900-MWe reactors after safety reviews relating to their third decennial outage. In the national report provided by China, they indicate that they have made 15 significant design improvements in the NPP type that is originally based on the Framatome 900 MW reference plant. Have you been in contact with the Chinese to compare and assess these changes with the results of your own review? Have you conducted similar improvements as the Chinese?

Answer " For the improvements made by China on their PWR 900-MWe reactors, based on the EDF's PWR 900 MWe programme, the main improvements made during their first decennial outage were in link with French second decennial outages. The complementary improvements are specific to the Chinese. The discussions between the Chinese and French nuclear operators stay over for the following decennial outages on these reactors. "

Q.No 22	Country Hungary	Article Article 6	Ref. in National Report 6.3.1.1 p.24
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Question/  
Comment "In July 2009, ASN made a statement on the generic aspects relating to the extension of operation duration of 900-MWe reactors and did not identify any generic issue questioning EDF's capability to maintain the operational safety of those reactors up to 40 years."

Q: Please explain in more details, what these generic aspects are!

Answer "In France, the reactors operated by EDF are very similar since they are all PWR-type reactors, This standardization thus enables the single operator to carry out generic studies on one series which will benefit all the reactors in the series involved (PWRs are split into three standardized plant series: 900, 1300 et 1450 MWe). In July 2009, ASN made a statement on the generic aspects based on:

- conformity studies check that plant design, dimensioning and operating provisions satisfy the adopted safety objectives and requirements;
- a reassessment of the safety requirements that apply to the reactor series considered.

The periodic safety review is an opportunity for an indepth examination of the condition of the NPPs, to check that they comply with all the safety requirements and the applicable safety provisions. Its objective is also to improve the level of safety of the installations, particularly by:

- considering the changes in safety requirements applied to the most recent or

planned installations,  
 - using experience feedback or technical progress  
 - defining the VD3 900 batch of modifications to reach the new safety requirements"

Q.No 23	Country India	Article Article 6	Ref. in National Report 6.3.2, Page 25, 26
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Question/  
Comment With reference to revised flood level determination, could France clarify-  
 i) In general what was the difference in maximum design flood level following re-assessment ?  
 ii) It is indicated that for revised estimates the millennial flood rates for river sites, with a 15% mark-up and a tide coefficient of 120 coupled with 120-km/h winds for coastal sites were used. What were the corresponding parameters in the original estimations and what is the basis of new parameters?

Answer "i) the flood level has been revised for all sites with a NPP following the safety rule RFS 1.2.E (published in 1981) but also taking into account new data and the feedback experience related to the partial flooding of Le Blayais in December 1999. The main value between design and new value is 68 centimetres and the median value is 52 centimetres.  
 ii) The flood level is defined by RFS 1.2.e ; the hypothesis considered in the question is specific to the river's estuary. "

Q.No 24	Country India	Article Article 6	Ref. in National Report 6.3.2, Page 26 (Para 7)
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Question/  
Comment The description in the report points to climatic changes. In view of this whether France has  
 i) Made any specific provisions to assess impact of climatic change in 10 yearly periodic safety review?  
 ii) Is there any quantified guidance to take care of major climatic changes expected in the life time of NPP at the time of siting of new NPPs

Answer The climatic change is taken into account in the new guide dedicated to protection of nuclear installations against external floodings. This guide will be published in the next 2 years. Anyhow, ten yearly periodic safety reviews give the opportunity of verifying the hypothesis for design including those for flooding.

Q.No 25	Country India	Article Article 6	Ref. in National Report 6.3.2, Page 26-27
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Question/  
Comment It is mentioned that "During the transient period preceding the enforcement of those complementary measures, other provisions are made to reinforce the

robustness of installations against heat waves during the summer". What are the other provisions referred here?

Answer " The other provisions made to reinforce the robustness of installations against heat waves are the following ones:

- i) every year from May to September,
  - mobile water chiller units for air conditioning rooms with critical equipment (electrical);
  - specific operating rules for heat waves: periodic tests scheduling, effluent management, alert procedures, reduction of thermal charge by turning off non-essential devices;
- ii) anticipated modifications implemented before the batch of modifications associated to the new referential:
  - Anticipated replacement of chilled water DEG;
  - new calculation of RRI/SEC heat exchangers fouling limit;
  - enhanced monitoring of RRI / SEC heat exchangers performances;
  - more efficient SEC pumps for some NPP;
  - increased exchange performances of plate heat exchangers in some NPP - temporary operating procedures: fallback on RHR with high RRI temperature;
  - dispositions to ensure ventilation efficiency during plant shutdown."

Q.No 26	Country Russian Federation	Article Article 6	Ref. in National Report p. 24, Articles 18, 19 (pp. 147, 165, 17
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Question/  
Comment Some results of the activities aimed at the assessment of severe accidents progression in different reactor types are mentioned in the Report. Were such assessments performed for fast reactor PHOENIX?

Answer No. Such assessments were not performed for PHOENIX . Nevertheless, some experiments have been performed in the PHOENIX reactor, in connection with general aspects of the safety of fast reactors. The operation of the PHOENIX reactor ceased in 2009.

Q.No 27	Country Slovenia	Article Article 6	Ref. in National Report 6.3.1.1
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Question/  
Comment Could you explain how the seismic resistance was or will be enhanced in practice by the modifications resulting from the integration of the VD3 900 safety reference system?

Answer " For VD3 900, modifications have been decided in compliance with RFS 2001-01 seismic revaluation (rule fixed by the French Nuclear Safety Authority), they are linked to elemental system reinforcement or to their neighborhood which could be aggressive for them. The resistance of these elements were enhanced after implementing reinforcements on:

- foundations (concrete injections made on EFWS water tank foundations or steel

structure anchorage modifications for example),

- elemental system itself (IRWST tank reinforcement or reinforcement on tanks for Boric acid or water make up),
- building structure (turbine building reinforcement for example),
- piping lines with addition of new supports (RRI, RRA lines for example),
- manutention system modification (Reactor polar crane runway),
- ventilation systems (more supports, installation of flexible houses).

Also, some elements needed new qualification in order to achieve the new safety reference system."

Q.No 28	Country South Africa	Article Article 6	Ref. in National Report Pg 27:Environmental Protection
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Question/  
Comment Internationally it has been the philosophy that adequate protection of humans will (almost always) ensure adequate protection of other species. International consensus however is that it is necessary to consider a wider range of situations, irrespective of any human connection in terms of protecting the environment and that it is necessary to demonstrate, directly and explicitly, that the environment is being protected.

What requirements and measures have been implemented to ensure the protection of non-human species from ionizing radiation?

Answer "The impact study must assess the impact of the projected installation on the environment and the operators can use any relevant methodology to evaluate the risks associated. In the case of the radiological impact, some operators use the ERICA tool, which is a Euratom-funded project."

Q.No 29	Country United States of America	Article Article 6	Ref. in National Report 6.3.1.2 p 25
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Question/  
Comment Modifications were made to the fuel handling and storage system for the 1300 MWe reactors. Please clarify the reason for temporarily stopping these modifications, and discuss the actions taken.

Answer " Fuel handling and storage system modification allows overhangs in term of safety, obsolescence treatment and operational performance. During operation, after implementation of the modifications, some incidents were noticed and EDF decided to suspend this modification programme. The difficulties encountered, which are essentially linked to the technical development extent, are the following ones:

- operators were confronted to a more complicated machine, which could generate inappropriate reactions and so malfunctions. Checking and adjustment on equipments and complete studies reworking were necessary in order to eliminate these problems;
- The new fully automated system and the important evolution between the old and the new one require more assistance to the operators than originally expected,

new simulators will be supplied.

This evolution interest was confirmed and a moratorium was decided. Action plan has been settled to treat the previous points before implementing again the modification.

This new set of modifications has been implemented since 2010 without any problem now."

Q.No 30	Country Japan	Article Article 7.1	Ref. in National Report Sec.7.1.4; p32 143
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Question/  
Comment The report says that "Labour inspections in NPPs."  
Which law do you carry out this inspection based on?

Answer "It is stated in Sec. 7.1.4 of the report that ""labour inspections in NPPs are undertaken by ASN personnel, under the authority of the minister for labour." Such power arises from the Act of 13 June 2006 on Transparency and Security in the Nuclear Field which modified the Labor Code. Article 57-II-2° of the Act reads as follows :  
"[...] In electricity power stations comprising one or several basic nuclear installations [...] the duties of labour inspectors are exercised by engineers or technicians precisely appointed for this purpose by the Nuclear Safety Authority among the agents placed under its authority."

Q.No 31	Country Russian Federation	Article Article 7.1	Ref. in National Report pp. 31-33
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Question/  
Comment It follows from the Report that legislative and regulatory basis in France was updated and currently is governed by the Law of June 13, 2006, briefly identified as "TSN act". This law declares prime responsibility of the operating organization and establishes an independent (it is underlined in the Report many times) regulatory body in the area of nuclear safety and radiation protection ASN, reporting to the Parliament of France. However, as follows from the Report, the obligatory regulatory provisions are issued by the Ministers responsible for nuclear safety and radiation protection. Even the documents of ASN detailing the aforementioned provisions are to be approved by these ministers. This fact, in our view, significantly decreases the independence of ASN as a regulatory body. The nuclear industry of France works in accordance with its own rules, which are beyond ASN area of responsibility. This also decreases the role of ASN as a regulatory authority keeping with it mainly the functions of oversight. The issue of main permits for large-scale nuclear installations is also kept with the Government of France. However, in accordance with the new law "TSN act" ASN received wider authorities, and nowadays within the scope of the main license for installation and decree on decommissioning issuing by the Government it makes the decisions on the intermediate stages, such as commissioning, transport of radioactive materials, use of radiation sources etc. On these decisions ASN shall notify the minister responsible for nuclear safety. Regarding the issue of the main licenses ASN reviews the documents,



justifications and gives its proposals to the ministers.

It follows from the above that ASN only partially complies with the definition of a regulatory body in terms of the Convention on Nuclear Safety and the requirements of IAEA document (GS-R-1), because its main activities are focused on the licensing system, while the normative regulation is absolutely out of its area of responsibilities.

Please provide your comments to the issues raised.

Answer "Normative regulation is one of the main tasks the TSN Act assigned to ASN (see Article 3 of the Act).  
While major decisions are made at the Government level (such as decisions on the creation of a basic nuclear installation or its definitive shut-down and decommissioning), such decisions are taken upon advice of the ASN, which are made public by the law.  
Other mandatory decisions, notably on the commissioning of an installation and prescriptions applied during its lifetime (including prescriptions on releases in the environment), are taken by ASN.  
Moreover, when conditions prescribed to the licensee of an installation are not met, ASN can suspend operation of the installation . In case of emergency, this can be done without prior approval by the ministers.  
An English version of the TSN Act can be accessed at <http://www.french-nuclear-safety.fr/index.php/English-version/References>."

Q.No 32	Country Spain	Article Article 7.1	Ref. in National Report Section 7.1.3. Page 32, fourth paragraph
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Question/  
Comment Could you give information on the periodicity of HCTISN meetings and agenda (who sets it and types of topics)?

Answer "The HCTISN holds 4 to 5 plenary meetings each year. In addition, there are several working group meetings.

The HCTISN is an information and debate body on the risks related to nuclear activities and the impact of these activities on personal health, on the environment and on nuclear security.

Pursuant to Article 24 of the Act of 13 June 2006 on Transparency and Security in the Nuclear Field, the HCTISN gives an opinion on any matter in these fields, as well as on surveillance and information related to them. It also deals with any matter relative to the accessibility of information as regards nuclear security and proposes any measure likely to ensure or improve transparency in the nuclear field.

Any matter related to information on nuclear security and the surveillance thereof can be brought before the HCTISN by the ministers tasked with nuclear safety, the chairman of the competent committees at the National Assembly and Senate, the chairman of the Parliamentary Office for Science and Technology Assessment, the chairmen of local information committees or the licensees of basic nuclear installations."



Q.No 33	Country Hungary	Article Article 7.2.1	Ref. in National Report 7.2.1 p.33
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Question/  
Comment "The unlicensed operation of a nuclear installation is prohibited by French legislation and regulations. BNIs are currently regulated by the act of 13 June 2006. Section IV of the act stipulates an authorization procedure, followed by a series of licenses issued at the main stages marking the life of a BNI: construction, commissioning, any modification of the installation, final shutdown and dismantling."  
Q: Which step of the authorization process relates to the site approval of the NPP?  
Is it before the construction license?

Answer "Before applying for a nuclear installation authorisation decree, the licensee informs the administration of the site(s) on which it plans to build this installation. In particular, the review concerns the socio-economic and safety aspects.  
ASN analyses the safety-related characteristics of the sites: seismicity, hydrogeology, industrial environment, cold water sources, etc.  
Construction of a nuclear installation requires a building permit by the préfet (State local representative), according to procedures specified in Articles R. 421-1 and following and Article R.422-2 of the Town Planning Code."

Q.No 34	Country South Africa	Article Article 7.2.2	Ref. in National Report 7.2.2.2
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Question/  
Comment This chapter states" Following the adoption of the TSN Act and the 2007 Procedure Decree, ASN initiated the recasting of the above-mentioned orders in 2008 and the procedure will continue at least until mid-2011. Hence, the orders currently in force should be abrogated and superseded by a series of documents including an interministerial order and approximately 20 regulatory decisions by ASN forming a much more comprehensive and modernised regulatory mechanism."  
The list of Orders/Regulatory Decisions etc.. to be "recasted" is indicated in Appendix 2  
The question is as follow:  
"Will the recasting of these documents be limited to cover existing nuclear installations or will it be extended to cover new nuclear installations such as the EPR currently under construction?"

Answer "These new regulations will cover existing and future installations. However, they will contain specific transitional provisions for existing installations, to enable them to comply with the new rules within a limited period."

Q.No 35	Country United States of America	Article Article 7.2.2	Ref. in National Report 7.2.2.4 p 36
Question/ Comment	ASN reviews industrial codes for acceptability. (1) How often are the industrial codes updated? (2) Does ASN participate in the development of these codes?		
Answer	Each industrial code is updated with a specific frequency : RCC-M is updated annually, RCC-E and RCC-G are updated less frequently ; ASN does not participate in the development of these codes but members of its technical support organisation, IRSN, take part in the development of some of them as invited experts.		
Q.No 36	Country Hungary	Article Article 7.2.3	Ref. in National Report 7.3, p.37
Question/ Comment	"Like foreign safety authorities, ASN has defined a system of qualification for its inspectors, based on recognition of their technical competence. This system is now regulated by decree and was identified as a good practice in the report of the IRRS mission" Q: Is this system of qualification used also for the newcomers of the ASN? If so, how does this system work?		
Answer	"Yes, this system is also used for newcomers of ASN. They are appointed as inspectors only after a comprehensive training. The programme of training is designed to teach candidates the required core of competencies required for specific missions. This system of qualification leans on a strong programme of training and the sharing of the professional experiences"		
Q.No 37	Country Japan	Article Article 7.2.3	Ref. in National Report Sec.7.3; p37 l25
Question/ Comment	The report says in Article 7 that "gASN has not opted for the system of inspectors resident on the nuclear sites." ASN says that the main reason for this is to provide them with opportunities to share experiences. Many of them, however, are posted to regional offices while taking charge of respective plants. In these environment, How are they sharing experiences specifically?		
Answer	"Each ASN regional offices is in charge of several nuclear sites, which allows the inspectors to share their experience with each operator. Each NPP has a dedicated inspector, whose missions are supervising the plant, reviewing the incidents, and preparing authorisations. However, inspections and control of unit outages can be carried out by any inspector at the regional office. Central services also participate in the coordination of the inspectors in NPP and organize experience feedback sharing."		

Q.No 38	Country Japan	Article Article 7.2.3	Ref. in National Report Sec.7.3; p37 139
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Question/  
Comment The report says that “oversight now encompasses a broader dimension taking in human and organisational factors.”  
Why did you include the human factor and the organization factor in the oversight ?  
Moreover, how are these inspections done?

Answer "Because man and organisation play a fundamental role in safety and radioprotection, regulatory bodies must verify that these aspects are taken into account in an appropriate way by the licence holders. ASN expects the operator to determine an explicit policy for taking into account organisational and human factors,  
to ensure that adapted means and resources exist to act efficiently and to implement actions that are not only consistent with relevant approaches, but also led and followed up in accordance with a continuous-improvement perspective"

Q.No 39	Country Japan	Article Article 7.2.3	Ref. in National Report Sec.7.3.1.2; p38 119
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Question/  
Comment The report says that “by examining specific cases and by dedicated inspections.”  
What does ASN do in “examining specific cases” and “dedicated inspections”?

Answer At least once a year, ASN carries out on each plant an inspection which is entirely dedicated to the organisation of the operator for the radiation protection of workers against ionising radiation. ASN also reviews organisational provisions set up for the most exposing operations.

Q.No 40	Country Japan	Article Article 7.2.3	Ref. in National Report Sec.7.3.2.2; p40 129
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Question/  
Comment The report says that “operating agents that he has duly certified.”  
What qualification does “operating agents” have?

Answer "The persons who will have the responsibility to make decisions regarding internal authorization must justify their position in the organizational structure of the operator. This is performed in a consistent manner depending on the importance of decisions that they have to make. Further, they may delegate this responsibility. The qualification of the persons involved must comply with the ministerial of Order of 10 August 1984 concerning the quality of design, construction and operation of nuclear installations."

Q.No 41	Country Japan	Article Article 7.2.3	Ref. in National Report Sec.7.3.2.3; p41 114
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Question/  
Comment The report says that “EDF detects and analyses between 100 and 300 anomalies”.  
What do you obtain as the result this analysis?  
Please show us exemplify it.

Answer The analysis of an anomaly leads to define appropriate measures to correct the situation and prevent its reoccurrence, while disseminating the experience feedback among other nuclear operators. For example, if the operator detects a non-compliance on a component, the analysis must give details about the treatment (replacement of the component...), describing when the treatment will occur, and if other nuclear reactors may be affected by the anomaly.

Q.No 42	Country Netherlands	Article Article 7.2.3	Ref. in National Report pg.42, par. 7.3.2.4.1
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Question/  
Comment Does ASN also carry out audits as part of their own inspection methods?

Answer "ASN develops a quality control system and makes audits of its organization. The ASN inspection methods have been evaluated by its peers during IAEA IRRS missions."

Q.No 43	Country Netherlands	Article Article 7.2.3	Ref. in National Report pg.43, par. 7.3.3.2
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Question/  
Comment During refuelling-maintenance outages, what is the extent of the presence on site by ASN inspectors? What is the support of IRSN?

Answer "During outages, ASN performs 2 or 3 day inspections. Inspectors visit the sites where the works are located to verify that the work done is carried out correctly. For this, they analyze the list of applicable documents, response procedures, and the consistency between the measures taken and procedures. They also check that the workers use appropriate tools (including metrology), and that working conditions are acceptable and comply to the regulation (including radiation safety). They do also oversight of control room activities to check compliance with technical specifications. IRSN experts are accompanying ASN inspectors, and participate in the technical assesment of the work done on site and also in the selection of sites to inspect."

Q.No 44	Country Russian Federation	Article Article 7.2.3	Ref. in National Report pp. 31-45
Question/ Comment	The provisions of Article 7 twice mention the licensing terms. However, there is no information on this issue in the Report.		
Answer	<p>"Before the application, ASN gives an opinion on the project if the intended operator chooses to apply for it. The BNI-decree, issued in November 2007, stipulates:</p> <p>""Any person intending to operate a Basic Nuclear Installation may, prior to initiating the authorisation decree procedure specified in Article 29 of the Act of 13 June 2006, ask the Nuclear Safety Authority for its opinion concerning all or some of the options it has chosen to ensure the safety of this installation. In its opinion, issued and published in conditions to be determined by itself, the Nuclear Safety Authority specifies the extent to which the safety options presented by the applicant are such as to prevent or limit the risks to the interests mentioned in I of Article 28 of the Act of 13 June 2006, in the light of the current technical and economic conditions. It may stipulate any additional studies and justifications as necessary for a possible authorisation decree application. It may set a validity period for its opinion. The applicant is notified of this opinion, which is forwarded to the ministers responsible for nuclear safety."" Furthermore, ASN carries out the review of the licence application in conjunction with the Ministers in charge of nuclear safety, starting with a concurrent period of consultations with the public and technical experts.</p> <p>The following documents have to be submitted in the authorization application by the person intending to opera BNI:</p> <ul style="list-style-type: none"> <li>- the names, forenames and status of the applicant and his domicile;</li> <li>- a document describing the nature of the installation, its technical characteristics, the operating principles, the activities to be performed in it and the various phases involved in its construction;</li> <li>- a 1/25,000 scale map locating the planned installation;</li> <li>- a 1/10,000 scale site plan indicating the proposed perimeter of the installation and, within a one-kilometre strip around this perimeter, the buildings with their current uses, the railways, public highways, water supply points, canals and watercourses and gas and electricity transmission networks;</li> <li>- a detailed drawing of the installation at a minimum scale of 1/2500;</li> <li>- the assessment of the foreseeable impact on the environment;</li> <li>- the preliminary safety analysis report (for more detail on the content of this document, see article 10 of the BNI-decree);</li> <li>- the risk management study;</li> <li>- the decommissioning plan;</li> <li>- the report and results of the public debate.</li> </ul> <p>The review and assessment of the application file consists in :</p> <ul style="list-style-type: none"> <li>- An administrative technical review and assessment procedure,</li> <li>- ASN and IRSN have to perform the safety assessment of the installation, mainly on the basis of the preliminary safety analysis report, and the assessment of the foreseeable impact of this facility on the environment. During this procedure, at the request of ASN, the applicant may have to provide some more detailed technical documentation.</li> <li>- This procedure can include some Experts Advisory Committee meetings.</li> </ul>		

- A public review procedure named public inquiry (article 13 of BNI-decree)  
 After conducting its review and noting the results of its consultations, ASN proposes to the Ministers in charge of nuclear safety the terms of a draft decree authorising or denying the creation of the installation. The draft decree is sent to the applicant who has a period of two months to submit its observations. The operator and the local information committees can be heard by ASN Commission upon request. ASN gives a public advice to the government on the decree.  
 The creation authorisation for a BNI is issued by a decree signed by the Prime Minister and countersigned by the Ministers in charge of nuclear safety."

Q.No 45	Country Russian Federation	Article Article 7.2.3	Ref. in National Report Section 7.3, pp. 31-45
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Question/  
Comment The Report says that ASN prefers to use the form of review inspections rather than the services of resident inspectors. However, it is not quite clear from the report, does it mean that there are no resident inspectors at French NPPs? How in this case the oversight continuity and promptness are ensured?

Answer "They are no resident inspectors at the French NPPs, but most of the inspectors are posted in regional offices. They are 11 regional offices in charge of the national territory. They supervise plants located on a limited geographical area. This way, they can go very quickly to a NPP if needed, for example to carry out an inspection after a specific event (3 hours for the farthest NPP). The regional offices carry out most of the direct inspections on their respective NPPs, and review most of the authorisation applications filed with ASN by the licensees within their region. It ensures that they have a good knowledge of their installations and that they can detect any negative change in safety, environment or radioprotection management of the NPP.  
 The inspectors in regional offices are also in contact with each other, and with the central services of ASN to share experience."

Q.No 46	Country Russian Federation	Article Article 7.2.3	Ref. in National Report Section 7.3.2.1.2, p. 40
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Question/  
Comment The Report says that the program of the works to be performed during the reactor outage is to be approved by ASN. This practice seems to be leading to imposing on the regulatory body the functions of the operating organization. In our opinion, all the necessary requirements to any operation stage shall be stipulated in the corresponding regulatory documents and licensing terms, and specific work programs should be submitted to the regulatory body only for the purpose of notification and oversight of their compliance with the stipulated requirements.

Answer "To clarify about the term 'approved'" : EDF sends and presents, during a meeting, the program of the works planned during the outage. ASN checks the

program, including ensuring the inclusion of feedback from other similar plants. ASN also ensures that the actions announced by the operator during past inspections or during the processing of significant events are planned in the program. A letter is then sent to the operator asking him to complete his program, or indicating him ASN has no objection to the program."

Q.No 47	Country Brazil	Article Article 8.1	Ref. in National Report Item 8.1.3.1
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Question/  
Comment How was the Institute for Radiation Protection and Nuclear Safety (IRSN) created? Where did the initial staff come from? How was the training of additional staff accomplished?

Answer May be, it is necessary to clarify that IRSN was not created from scratch in 2002. In the past, there were two organisations : IPSN created in the 70's dealt only with the nuclear safety and OPRI was in charge of radiation protection and medical aspects. By law, IPSN and OPRI have been merged in a new organisation so called IRSN in 2002. The staff of each organisation has continued to ensure their tasks but they now depend on the same institute and the name of their common organisation has changed to IRSN, consequently, there was neither recruitment problem nor any need of specific training,

Q.No 48	Country Hungary	Article Article 8.1	Ref. in National Report 8.1.2.1 p.49
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Question/  
Comment How is it ensured, that the knowledge transmission is carried out in an effective way?  
Was it necessary to enlarge the ASN staff because of the new NPP licensing?

Answer Training coordinators have been assigned to perform the transmission of knowledge. For each training session an evaluation is carried out using sheet page which is fulfilled by each learner. The results are evaluated and analysed at the end of the session by the training coordinator and human resources department. The experience feedback is shared between the coordinators. Since 2006, ASN's staff increased of about 20%.

Q.No 49	Country Japan	Article Article 8.1	Ref. in National Report Sec.8.1; p47 117
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Question/  
Comment The report says that "ASN issues all individual licenses, except in the case of major BNI authorization, such as creation and decommissioning, which are delivered directly by the government."  
Is there any clear allotment responsibility for licensing roles between the government and ASN?



Answer Responsibilities are clearly established by the law issued on June 13, 2006. In addition, the texts which derives from this law, and in particular the decree of November 2007, specifies the role of all entities for each type of procedure. In particular the Government deliver BNI creation and decommissioning authorizations on the basis of ASN' opinions

Q.No 50	Country Japan	Article Article 8.1	Ref. in National Report Sec.8.1.2.3; p50 l5
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Question/  
Comment The report says that “performance indicators designed to measure the effectiveness of ASN’s action.”  
What “performance indicators” does ASN set?

Answer " The indicators help to assess the performance of ASN, to identify its strengths and weaknesses and, consequently, enhance its efficiency to better perform its duties. Where appropriate, the indicators used to communicate and report on the action of ASN to Parliament and the public. They are set annually by ASN Commission.  
For each indicator are specified responsibilities, scope and methods of calculation. Topics covered include: international relations, the general regulations, individual authorizations, the events reported, emergency situations, public information and human resources."

Q.No 51	Country Korea, Republic of	Article Article 8.1	Ref. in National Report p.47
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Question/  
Comment Does ASN have a plan to participate in the French nuclear export process taking into account the assertion of the report, entitled “Future of the French Civilian Nuclear Sector” that was commissioned by your president and submitted to him, that "ASN does not accompany the export drive of French nuclear industry, in a neutral role, to inform about the characteristics of reactors it has certified"? If yes, how would you as a regulator accomplish the globally acceptable level of nuclear safety which is the common challenge to the contracting parties of CNS?

Answer

1. ASN was not addressee of this report.
2. The western European Nuclear Regulators' Association (WENRA) published on 25 November 2010 a common position on safety objectives for new nuclear power reactors built in Europe. This position was preceded by the technical guidelines on the design and construction of the next generation of PWRs issued following to the plenary meeting from 19 and 26 October 2000 of the ASN Advisory Committee for reactors (GPR).
3. ASN would not accept reactors not complying with the above mentioned safety objectives and will not hesitate to declare that such reactors could not be built in France.
4. In its statement of July 07 2010, ASN commission took position on this issue : One of the major ASN concerns is to achieve harmonization based on the best nuclear safety and radiation protection levels worldwide. We do not want a two-



speed safety and we continue to promote at European and international levels safety objectives that take into account the lessons learnt from Three Mile Island, Chernobyl and September 11, 2001 events. In the event of proposals to export nuclear reactors which do not meet these safety objectives, ASN will not hesitate to declare that such reactors could not be built in France.”

Q.No 52	Country Netherlands	Article Article 8.1	Ref. in National Report pg.49, par. 8.1.2.1
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Question/  
Comment The amount of direct spending on training of ASN people would be less than 1000 per year (443 employees/405000) which seems to be quite low. Please explain what kind of trainings are carried out with this money? What is the role of IRSN or other institutions?

Answer "The amount of direct spending on training of the ASN staff does not represent an extra economic effort for the ASN because the staff of ASN itself performs the majority of its training sessions. The global cost of training sessions is estimated at 1,8 millions ,-.  
Among the training providers, the INSTN ( Institut National des Sciences et Techniques Nucléaires) is performing about 27% of the global training sessions and the IRSN 3.7% of it."

Q.No 53	Country Netherlands	Article Article 8.1	Ref. in National Report pg.49, par. 8.1.2.2
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Question/  
Comment How much money do the operators contribute to the State budget for the ASN and IRSN?

Answer "ASN is in charge of the tax calculation applied to major nuclear installations. This tax is paid to the government and it contributes to the State general budget. This major nuclear installations Tax represents about 580 millions ,- in 2010. Since 2000, all the personnel and operating resources involved in the performance of the tasks entrusted to ASN have been covered by the State general budget. The full-cost budget of ASN for 2010 is approximately ,-67 million.  
As stipulated in the Act of 13 June 2006, ASN relies on IRSN for technical expertise, backed up whenever necessary by research. The budget for this work amounts to ,-78 million in 2010."

Q.No 54	Country South Africa	Article Article 8.1	Ref. in National Report General
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Question/  
Comment Can the ASN provide some more information on the delineation of accountability /responsibilities between the Director General and the Commission in terms of regulatory decision making?

Answer " ASN consists of a commission and staff. The organization and functioning of

ASN are described into the document entitled ""Rules of Procedure of Nuclear Safety Authority"" adopted by the Commission and approved by Ministers in charge of nuclear safety and radiation protection. This document, issued in 2006, is available in, English on ASN website "<http://www.french-nuclear-safety.fr/>".

Regarding regulatory decision-making; pursuant to the article 12 of the TSN Act, the Nuclear Safety Authority draws up its rules of procedure which lay down the rules on its organisation and operation. The rules of procedure set forth the conditions under which the college of members can delegate authority to its chairman or, in his absence, to another member of the college. They also lay down the conditions under which the chairman can delegate his signature to agents of the Authority departments; however, neither the opinions mentioned in 1° of Article 4 (draft decrees and draft ministerial orders of a regulatory nature relating to nuclear safety), nor decisions of a regulatory nature can be delegated."

Q.No 55	Country South Africa	Article Article 8.1	Ref. in National Report 8.1.3.2 Advisory Committee groups
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Question/  
Comment Can the ASN provide additional information related to the Advisory Committee groups e.g by whom are they constituted , how is their work managed, who do they report to in ASN, who appoints the members etc..?

Answer "When preparing its decisions, ASN asks for opinions and recommendations from Advisory Committees (GPE).  
Seven Advisory Committees (GPE) have been created and report to the ASN Director-General : the GPE for reactors, the GPE for laboratories and plants, the GPE for medical exposure, the GPE for radiation protection (non-medical), the GPE for waste, the GPE for transport end the GPE for nuclear pressure equipment.  
The GPEs are consulted by ASN concerning the safety and radiation protection of installations and activities within their particular field of competence. They, in particular, review the preliminary, provisional and final safety analysis reports for each of the major nuclear facilities. They can also be consulted about changes in regulations or doctrine.  
For each of the subjects covered, the GPEs examine the reports produced by IRSN, by a special working group or by one of the ASN departments. They issue an opinion backed up by recommendations.  
The GPEs comprise experts nominated for their individual competence. They come from university and associative backgrounds, as well as from the licensees concerned by the subjects being dealt with. Each GPE may call on any person recognised for his or her particular competence.  
It may hold a hearing of licensee representatives. Participation by foreign experts can help diversify the approach to problems and take advantage of experience acquired internationally.  
With the aim of improving nuclear safety and radiation protection transparency, ASN publishes the documents relating to the meetings of these GPEs:  
ASN referral of a particular subject to the GPE, summary of the IRSN report,

GPE opinion and ASN stance."

Q.No 56	Country Czech Republic	Article Article 8.2	Ref. in National Report Page 48
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Question/  
Comment Could you publish a more detailed organizational chart of the regulatory body ASN to clarify the roles and responsibilities within the organization? How is the inspection work organized and coordinated between the central office and the regional offices?

Answer "A detailed organizational chart of ASN is available on the English version of the website : <http://www.french-nuclear-safety.fr/>  
The map attached to the chart shows territorial competencies of ASN regional offices.  
Central offices (6 technical departments) elaborate inspection programmes and deal with inspection policy and generic issues. On-site inspections are carried out mainly by regional offices which send inspection reports to central offices."

Q.No 57	Country Russian Federation	Article Article 8.2	Ref. in National Report Sections 8.1, 8.3, pp. 47-53
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Question/  
Comment According to the French legislation, the authorities of the regulatory body stipulated in the Convention on Nuclear Safety are separated between the Government and ASN. In the Government the issues concerning nuclear safety are under jurisdiction of the Ministry of Economy, Industry and Employment while radiation protection is the sphere of the Ministry of Health and Sports. To what extent these Ministries are contributing to the use of atomic energy?

Answer "The cabinet reshuffle of November 2010 led to a change in ministerial portfolios. The Minister for Ecology, Sustainable development, Transport and Housing and the Minister for the Economy, Finance and Industry are jointly responsible for developing and implementing the nuclear safety policy.  
The Minister for the Economy, Finance and Industry is specifically in charge of industry, energy and raw materials.  
The Minister for Labour, Employment and Health is, inter alia, responsible for radiation protection.  
Ministers are in charge of planning out policies and taking major decisions.  
Nuclear installation supervision is performed by ASN."

Q.No 58	Country South Africa	Article Article 8.2	Ref. in National Report 8.3.1
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Question/  
Comment In this Article it is stated “If, following an ASN opinion, an installation involves severe risks, the above-mentioned ministers may suspend its operation.

Article 7.3.4 states “ The law provides also for preventive measures to be taken for the protection of security, health and community sanitation or the protection of the environment. Hence, ASN is entitled:

- to suspend the operation of any BNI on a temporary basis, after prompt notification to the Ministers in charge of nuclear safety, in case of severe and imminent risks”

These two statements are somewhat not complementary to each others and the question is:

“Can the ASN explain in more details the procedure for suspension of a BNI (especially who is legally mandated to do so) in case of for example an emergency situation where severe risks could be encountered that would require an immediate suspension of operation (in terms of minimization of the timescales of the decision making process).

Answer "Pursuant to Article 29-IV of the Act of 13 June 2006 on Transparency and Security in the Nuclear Field (TSN Act), the power given to ASN to suspend provisionally operation of a BNI is strictly limited to cases of serious and imminent risks.

Such a suspension would be decided by the ASN Commission.

In the event of an emergency, the chairman of ASN or, in his absence, the member he has appointed, takes the measures required by the situation in the fields within the competence of the Commission (Article 11 of the TSN Act). "

Q.No 59	Country Germany	Article Article 9	Ref. in National Report page 55, last paragraph
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Question/  
Comment The respective roles of ASN and the operator are listed in article 9. The roles listed are related to technical measures, rules and procedures. Does ASN also rule and check the staffing as well as competence of the personnel of the license holders?

Answer " Article 7 of the 1984 Quality Order provides notably that only people with the required skills may be assigned to a quality-related activity. ASN check that licence holders have a satisfying management system for the skills and qualification of staff and that it is applied on site. Regarding certification of personnel, ASN verifies during inspections on site the process for certifying personnel and that this process is implemented correctly in individual cases. Inspectors on site may ask questions to people on the field about their knowledge, tasks and understanding of what they are doing. But ASN is not involved in the

process of certification delivering.

As for the situation in France, ASN expectations are that EDF should have a suitable and sufficient organisational structures, staffing and competences in place to effectively and reliably carry out those activities which could impact nuclear safety. It is also the operator and its service providers responsibility to hire the qualified personnel they need. For this purpose, ASN 2011-12 action plan includes :

1. to assess EDF make or buy policy. Depending on the result of this assessment, ASN could introduce additional controls about organizational changes such as the LC 36 regulation in the United Kingdom
2. implementing new kind of inspections as part of an integrated approach, considering simultaneously issues such as the purchasing process (market oversight), the impact on safety, quality, health & safety, application of social laws.
3. to start discussions with EDF about a new safety accreditation system for any company wishing to supply services within a nuclear facility ; this certification system will not replace the existing qualification requirements from EDF. This new accreditation system will be required in particular for EDF contractors in charge of the oversight of contracted activities."

Q.No 60	Country Germany	Article Article 10	Ref. in National Report page 58, end of chapter. 10.3.1
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Question/  
Comment It is stated "In addition, the CEA continues to strengthen and develop some areas, including:  
- improvements to the organisation of radiation protection;  
- enhancements to installations' technical-support organisation for some areas of expertise, such as earthquakes, civil engineering, criticality and human factors." Apparently CEA has not implemented a management system according to IAEA GS-R-3. With the areas of improvement listed in the report, why does CEA not plan to implement a management system?

Answer CEA has implemented a management system according to IAEA GS -R-3

Q.No 61	Country Korea, Republic of	Article Article 10	Ref. in National Report p.57
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Question/  
Comment Does ASN have a plan to consider both costs and benefits in making safety decisions, taking into account the recent assertion of former CEO of EDF and also now the adviser of your president that "a continual increase in safety requirements ... cannot be the only reasonable logic in a world in which nuclear power's competitiveness may be threatened and safety rules vary between countries, and ASN has repeatedly said the French regulators are responsible only for safety, not economic considerations"? If yes, how would you put priority on safety over economy in your safety regulation?

- Answer
1. ASN was not addressee of this report.
  2. ASN fundamental role is and will always remain the control of nuclear safety. However, through its integrated vision of the control of safety, ASN may also challenge EDF about economical issues such as make or buy policy, management of organisational changes, retention of nuclear expertise, evolution of maintenance or R&D expenditures,
  3. According to art. 6.5 of the COUNCIL DIRECTIVE 2009/71/EURATOM of 25 June 2009 establishing a community framework for the nuclear safety of nuclear installations, Member States shall ensure that the national framework in place requires licence holders to provide for and maintain adequate financial and human resources to fulfil their obligations with respect to nuclear safety of a nuclear installation, laid down in paragraphs 1 to 4.
  4. According to art.2 II2° of the 2006 TSN Act, those responsible for these [nuclear] activities bear the cost of the prevention measures, and especially of analyses, as well as of the measures reducing risks and discharges of effluents, which the administrative authority lays down pursuant to this Act.
  5. According to art.29-III of TSN, The licensee of a basic nuclear installation carries out periodic safety reviews of his installation by taking account of the best international practices.
  6. According to art. 10 of the decree 2007-1557 of 2 November 2007, the preliminary safety case confirms that in view of the current state of knowledge, current practices and the vulnerability of the installation environment, the project is able to achieve a risk level that is as low as possible in economically acceptable conditions.
  7. On 25 November 2010, the members of the Western European Nuclear Regulators Association (WENRA) took position on the safety goals for new nuclear reactors. WENRA made a commitment to the implementation of these goals, which are presented in the declaration adopted on 10th November ,in any nuclear reactors built in Europe in the years to come. ASN is actively involved in efforts to harmonise the principles and standards that apply to nuclear safety and radiation protection. ASN considers that this position is likely to favour harmonisation and to bolster nuclear safety in Europe at a time when several reactor construction projects have been announced."

Q.No 62	Country Netherlands	Article Article 10	Ref. in National Report pg.58, par. 10.2
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Question/  
Comment What are the main attributes of the OSRDE? How is it used and what are the weighting methods and values?

Answer " OSRDE, in English : SAREO (Safety, Availability, Radiation Protection and Environment Observatory) is a management tool for optimising nuclear safety in terms of major decision, by performing a post-analysis of the decision-making process. It must be deployed wherever necessary, at site as well as at corporate level. The aim of SAREO is to guarantee the primacy of nuclear safety and to ensure the quality of our making-decision processes.  
The means is to perform post-analysis of the decision-making process, leading up to an important decision with a view to improving the professionalism of

decision-makers, especially in situations where safety, availability, radiation protection and the environment have to be taken into account. OSRDE is a process to be used mainly at the level of executive management and operational management.

(nb: see also answer to question 74)"

Q.No 63	Country Netherlands	Article Article 10	Ref. in National Report pg.58, par.10.2
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Question/  
Comment The CAP sets performance goals for safety and competitiveness: are these goals equivalent and separate and/or interrelated?

Answer Each process defines its own performance indicators. The CAP sets different performance goals between safety and competitiveness but they are sometimes complementary, for example there is a safety goal for automatic reactor scrams /7000 hours critical, and a competitiveness indicator for availability factor. All the performance goals are examined at the same moment during specific national and local meetings.

Q.No 64	Country Romania	Article Article 10	Ref. in National Report art. 10, art. 12 - section 12.4.1
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Question/  
Comment Some of the findings resulting from ASN reviews and inspections related to organisational and human factors in power-reactor operation are presented in section 12.4.1 of the report. What measures have been taken by the licensees to address the concerns expressed by ASN?

Please provide also some information on any specific guidelines and / or training provided to ASN inspectors in order to assist them in recognising issues relevant to safety culture in the licensees' organisations, including signs of declining safety performance.

Answer "After each inspection on site, ASN sends the follow-up letter to EDF regarding the elements observed during the inspection. It is also the case after each assessment made under the request of ASN. Then, EDF is asked by ASN to improve the situation concerning the requirements articulated in paragraph 12.4.1. For instance, EDF was asked to improve the organisation of the staff in charge of human and organisational factors in NPP and to improve the training provided. Concerning guidelines, an ASN inspection guide concerns inspecting how human and organisational factors are taken into account on site in BNI. A specific one is on progress for EDF nuclear power plants. Another inspection guide concerns management of safety on site. It includes in an appendix a list of signs of declining safety performance which is extracted from the NEA document on ""The role of the nuclear regulator in promoting and evaluating safety culture"".



Q.No 65	Country Russian Federation	Article Article 10	Ref. in National Report Section 10.1
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Question/  
Comment

As follows from the Report, the requirements of safety priority or establishment and maintaining high safety culture as a tool of maintaining safety priority are not set out directly in the legislation or in obligatory regulations, although such a priority is actually ensured on the basis of ASN requirements or recommendations. What is the opinion of the French Party: is the absence of the corresponding requirements in the legislative or regulatory basis a weakness of the national system of regulation in the area of nuclear safety and radiation protection?

Answer

"Currently applicable regulations does not explicitly mention the ""safety culture"". As part of the transposition of WENRA safety reference levels for existing reactors (including RL A1.2, B2.2, C1.1 which are especially relevant to safety culture and maintaining safety as a priority), France is drafting a ministerial order and several regulatory decisions ; the provisions related to safety culture have been submitted in 2010 to stakeholders' comment and final version of the draft are being prepared. The concept of safety culture and the priority to safety will therefore be more apparent.

Nevertheless, during its day to day oversight, ASN ensures that the licensees do actually demonstrate an adequate safety culture. As an example, several events reported to ASN are rated as INES level 1 due to an additional factor related to lack of safety culture...."

Q.No 66	Country United Kingdom	Article Article 10	Ref. in National Report Page 58 Section 10.2
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Question/  
Comment

The fourth bullet on this page refers to "developing different monitoring and verification systems both in real time and in differed time...." Does the use of the term "differed time" refer to the monitoring of the safety management system in the past, or to searching for predictive indicators that might give advance warning of how it might perform in the future? Could France please provide more detail about its use of lagging and leading indicators for measuring the effectiveness of safety management systems?

Answer

" This paragraph does not deal with indicators. In fact, we explain in this text that we have different lines of control (rather than ""monitoring"" ) and verification system (ie independent control) in real time and in differed time :

- control : in real time, managers make a hierarchical control of an activity in the field. In differed time, managers also make hierarchical control, for example on authorizations, independently of activities on the field.
- independent control: it can also be performed in real or differed time."



Q.No 67	Country Brazil	Article Article 11.1	Ref. in National Report Item 11.1
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Question/  
Comment How long is the “monitoring” period established for the calculation of cost estimate after dismantling of an installation?

Answer ASN strategy for the dismantling of the facilities considers there is no residual contamination after dismantling and remediation of the sites. Therefore there is no "monitoring period" set for dismantled facilities. As for surface disposals, the monitoring period will depend on the results of the periodic safety review of the facility once under surveillance and adjusted with respect to these results.

Q.No 68	Country Japan	Article Article 11.1	Ref. in National Report Sec.11.4.1; p68 118
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Question/  
Comment Concerning pressure and complexity, how does ASN consider and use it to balance cost-oriented matters with safety-oriented matters in regulatory framework?

Answer " Pressure, complexity and changes raise new challenges for the operator related to the retention of nuclear expertise. Those subjects have been addressed in 2010 during an OEDC/NEA/CNRA Senior-level Expert Task Group formed to produce a report on The Regulator’s Role in Assessing the Licensee’s Oversight of Vendor and Other Contracted Services. The issue of licensee’s oversight of contracted services has been the subject of previous work by CNRA and by IAEA. The Senior Task Group considered their published proceedings and reports and ASN actively contributed to the new report.

As for the situation in France, ASN’s expectations are that EDF should have a suitable and sufficient organisational structures, staffing and competences in place to effectively and reliably carry out those activities which could impact nuclear safety. It is also the operator and its service providers responsibility to hire the qualified personnel they need. For this purpose, ASN 2011-12 action plan includes :

1. to assess EDF make or buy policy. Depending on the result of this assessment, ASN could introduce additional controls about organizational changes such as the LC 36 regulation in the United Kingdom
2. implementing new kind of inspections as part of an integrated approach, considering simultaneously issues such as the purchasing process (market oversight), the impact on safety, quality, health & safety, application of social laws.
3. to start discussions with EDF about a new safety accreditation system for any company wishing to supply services within a nuclear facility ;  
this certification system  
will not replace the existing qualification requirements from EDF. This new accreditation system will be required in particular for EDF contractors in charge of the oversight of contracted activities."

Q.No 69	Country Japan	Article Article 11.1	Ref. in National Report Sec.11.4.2; p68 137
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Question/  
Comment The decommissioning of two reactors, Rapsodie and Phenix, was delayed for a budgetary reason.  
How did ASN cope with this problem.

Answer ASN has noted that the decommissioning files were delayed for some major nuclear installations, especially Rapsodie and Phenix. It appears that decommissioning of some facilities will end later than initially scheduled. CEA was told to update its decommissioning strategy and to give ASN further information about the reasons, either technical or for other reasons. CEA has provided ASN with this document at the very beginning of January and ASN is reviewing this document.

Q.No 70	Country Netherlands	Article Article 11.1	Ref. in National Report pg.63, par.11.1
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Question/  
Comment The human and financial resources shall be adequate and sufficient. What has the operator to show to ASN (safety case?) and how does ASN assess this?

Answer The French regulation (e.g decree n°2007-1557) requires that the applicant describes its financial and technical capabilities in a dedicated document, enclosed in the application file. The applicant should demonstrate that its organization provide all the necessary skills to ensure the safety of the planned installation from conception to dismantling. Regarding the financial capabilities, the applicant has to demonstrate that its own funds are sufficient to obtain a high level of quality for the planned installation. If the operator and the owner of the planned installation are different, the operator should demonstrate that, according to the contract with the owner, he will be able to take all necessary decisions regarding the safety of the installation.

Q.No 71	Country United Arab Emirates	Article Article 11.1	Ref. in National Report 63
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Question/  
Comment Please provide details on how persons are assessed for their competence to carry out a given activity?

Answer This assessment of competence of licensee personnel is carried out internally by the license holder. In EDF nuclear power plants, people are qualified for activities they have to do. Qualification is renewed each year on the basis of training, experience and also observation of by managers of people achieving activities on the field.

Q.No 72	Country United Kingdom	Article Article 11.1	Ref. in National Report Page 63 Section 11.2.1
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**Question/ Comment** The penultimate paragraph says that “In 2009, the net generation of electricity in France amounted to 518.8 TWh, all generators being taken into account.” Does the phrase “all generators” mean “all sources of electrical generation?” If so, how does the 518.8 TWh relate to the figure of 440.9 TWh given in the table on page 64 of the report?

**Answer** As mentioned, the figure of 518.8 TWh represents the net generation of electricity in France by all the electricity producers. As mentioned, the figure of 440.9 TWh is the net electricity production by EDF in France.

Q.No 73	Country Belgium	Article Article 11.2	Ref. in National Report Chapter C, Article 11.2.2 and 11.4 (page
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**Question/ Comment** ASN receives or will receive information on both financial and human resources that are used by EDF. Can ASN already indicate some preliminary conclusions, for instance on the effect of the competitive market on resources?

**Answer** ASN is paying more and more attention to organisational changes. The staffing changes are differentiated between the resources devoted to recurrent operating units and resources related to development and new constructions. Since 2006, the evolution of EDF global resources remained almost stable. In recent years additional resources were allocated related to Flamanville 3 EPR and international projects, the requirements for the implementation of the AP 913 new maintenance methodology and Operating Centre for Continuous Management of Unit Outages (COPAT). New employees were hired also overall, to prepare for the renewal of generations planned in future years, whose pace is accelerating, and the time needed to bring new employees from the level of professionalism expected.

Q.No 74	Country Brazil	Article Article 11.2	Ref. in National Report Item 11.4.1
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**Question/ Comment** How does the Observatory for Safety, Radiation Protection, Availability and Environment (OSRDE) operate? Who takes part on it? To whom does it report?

**Answer** " OSRDE consists in a post-analyse of the decision-making process in the arbitration of safety, availability, radiation protection, and the environment to improve decision making and ensure permanent safety. This involves experience feedback on the way decisions have been made, not on the results of the decisions. In this effort to improve, OSRDE involves all participants in decision making as a whole and promotes communication with staff members on the

process which leads to decision and the identified pathways towards improvement.

Every staff member, through their management line, can ask for the OSRDE process to be implemented in the event of a high-priority decision where the process does not seem to have been fully understood, or in the event of a decision where the process has been fully mastered. However, it is the duty of senior management to approve the request or explain why the request has not been granted. Site senior management or senior management of the Nuclear Operations Division approves the initiation of a OSRDE for a given decision. Workers having contributed to the decision-making process analyse the implemented process and submit areas for improvement to site senior management for approval and deployment.

(nb: see also answer to question n° 62)''

Q.No 75	Country China	Article Article 11.2	Ref. in National Report 11
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Question/  
Comment In EDF, many of the experienced persons will retire in the nearly future, what is the strategy of EDF to deal with it? How is the experience transferred to the new person?

Answer "This situation led to start a project to effectively adapt and renew workforce competences in the 19 EDF NPPs in France. This project, called ""to Adapt and Renew Competences"" (ARC) is one of the top ten EDF Nuclear Projects. The project organization is based on a Corporate Project Manager with 4 Advisors, and one Local Project manager in each plant with his own team. The project started in 2006. It is expected to achieve four main goals:

- the management is at the heart to lead the skill improvement process;
- EDF internal functional mobility program is a consistent, safe and successful way to address workforce renewal;
- acting in the field since their initial training, new recruits are more readily able to perform;
- competences renewal are developed with our contractors, within this dynamic.

Managing the change was an important project issue. It was vital to plan each stage of organizational developments very carefully. We implicated NPP staff in the change and specifically to build our programs and implement standardization. The programs were tried out in some plants and the results were checked and shared before building a standardized system and implementation it in each plant. In 2008, this standard was dealt out in every NPP.

Internal workforce moving and rotation becomes a consistent, safe and successful opportunity to renew competences. To ensure that each nuclear newcomer from internal workforce meets the nuclear requirements (as external hired people), a consistent program was developed in 2007 to adapt our non-technical internal workforce for nuclear competences and skills needed. This program guaranties that internal people recruited get potential to work in nuclear plants, develop nuclear skills, behaviors, and capacity for the job.

Acting in the field from their initial training, recruits are more readily able to

perform. In each French region, a reliable Nuclear Educational and Training Program called Nuclear Academy was created for nuclear hired workforce based on Team Building and Sister Plants association, new training techniques and field training regarding behaviour and craft. All the newcomers in Nuclear Power Station (external hiring and internal moving) are led by an experienced technical mentor and trained one third in classroom, one third by experienced NPP staff and management and one third in the field. To allow new workers to be in charge of a task without delay, the qualification start in a small area and then the qualification area could be extended regarding experiences and skills needed as a team."

Q.No 76	Country Netherlands	Article Article 11.2	Ref. in National Report pg.67-68, par.11.4.1
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Question/  
Comment On which aspects has the OSRDE method to be improved?

Answer The OSRDE is a way for taking lessons from how a decision has been make. It is considered that the OSRDE analysis of decision-making process should better take into account elements on the basis of which the decision were make.

Q.No 77	Country Netherlands	Article Article 11.2	Ref. in National Report pg.67-68, par.11.4.1
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Question/  
Comment ASN receives operators financial information, but has not yet recruited a financial analyst. Will ASN do so or will it be a new competency of IRSN? Or both?

Answer Regarding the current nature of financial information received by ASN from EDF, ended, operating and maintenance expenses (O&M costs) etc, ASN is not planning to hire a financial analyst. For other specific studies, ASN or IRSN may contract with a consultant if necessary.

Q.No 78	Country South Africa	Article Article 11.2	Ref. in National Report 11.4.1 Page 67
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Question/  
Comment The report states "Following that review, ASN requested EDF not only to improve the OSRDE mechanism, but also to make better use of it in order to ensure an effective organizational experience feedback."  
Can the ASN provide information on the measures taken by EDF to improve the OSRDE mechanism as a result of the review which was performed in April 2008 and subsequent request from ASN?

Answer "Main objectives of OSRDE are to analyse, after the decision has been taken, how safety is taken into account during the decision-making process, in order to improve quality of this process and to reinforce safety culture at all levels of the staff.

The questions of ASN concerned the importance given in analysing, during the OSRDE, not only the decision-making process but also the elements on the basis of which the decision had been taken. Measures taken by EDF concerned mainly with the reinforcement of this kind of elements in the analysis of experience feedback, in particular in events root causes analysis and also in annual safety performance analysis performed by each nuclear power plant."

Q.No 79	Country Belgium	Article Article 12	Ref. in National Report Chapter C, Article 12 (pages 69-73)
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Question/  
Comment ASN has produced an interesting analysis of the status of the human factors in the French NPPs and Research Reactors. To what degree is each site and also the EDF headquarter performing a follow-up of the occurring events and deciding on preventive or corrective actions?

Answer Regarding human and organisational factors, a review is performed at a national level by EDF headquarter. In particular, reports done by sites are assessed and ranked at the national level. One of the assesment criteria is adequation of corrective actions. Regarding human and organisational factors, root cause of events are collected in a database in NPPs and gathered at the national level of EDF for trending.

Q.No 80	Country Brazil	Article Article 12	Ref. in National Report Item 12.4.1
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Question/  
Comment What is ASN requiring from the operators to improve the situation regarding organization and human factor described in item 12.4.1?

Answer ""After each inspection on site, ASN sends the follow-up letter to EDF regarding the elements observed during the inspection. It is also the case after each assessment made under the request of ASN. Then, EDF is asked by ASN to improve the situation concerning the requirements articulated in paragraph 12.4.1. For instance, EDF was asked to improve the organisation of the staff in charge of human and organisational factors in NPP and to improve the training provided. Other questions were related to the improvement of the analysis performed by managers on finding made and the lesson learns from the experience feedback. Other questions are related to the tools used to evaluate the human performance and in particular in the case of subcontractors. Some requirements for modification process concern the involvement of human factor approach, in particular the use of socio organisational approach. There are also issues concerning the assessment of human and organisational factors of events occurred on site. Answers provided by EDF include generally measures for improvement the situation. These measures can be verified during further inspections"

Q.No 81	Country Germany	Article Article 12	Ref. in National Report page 72, chap. 12.4.1, last paragraph
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**Question/ Comment** It is stated that “ASN considers that the management system for the skills and certification of NPP operating staff is enforced satisfactorily, while the implementation of apprentice workshops and trade academies for newly-hired employees constitute positive items to be emphasized. However, ASN feels that the training of interveners, and notably of contractors, ought to be enhanced in the field of radiation protection and the environment.  
The statement uses the terms “considers” and “feels”. How is the regulatory overview on the staff number and competence of the licensee’s personnel ensured? Does ASN require minimum standards? How are these verified?

**Answer** "There is no regulatory requirement on minimum standards for staff number and competence. The only requirement is a general one stated in the article 7 of the 1984 Quality Order provides notably that only people with the required skills may be assigned to a quality-related activity. During ASN review and inspection, ASN verifies EDF process for ensuring staff number and competence and how this process is implemented on site.  
As for the situation in France, ASN expectations are that EDF should have a suitable and sufficient organisational structures, staffing and competences in place to effectively and reliably carry out those activities which could impact nuclear safety. It is also the operator and its service providers responsibility for continuing to recruit the qualified personnel they need. For this purpose, ASN’s 2011-12 action plan includes :

1. to assess EDF’s make or buy policy. Depending on the result of this assessment, ASN could introduce additional controls about organizational changes such as the LC 36 regulation in the United Kingdom
2. implementing new kind of inspections as part of an integrated approach, considering simultaneously issues such as the purchasing process (market oversight), the impact on safety, quality, health & safety, application of social laws.
3. to start discussions with EDF about a new safety accreditation system for any company wishing to supply services within a nuclear facility ; this certification system will not replace the existing qualification requirements from EDF. This new accreditation system will be required in particular for EDF contractors in charge of the oversight of contracted activities"

Q.No 82	Country Germany	Article Article 12	Ref. in National Report page 74, chap. 12.4.2, last paragraph
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**Question/ Comment** It is stated “All aspects relating to the management of safety in the services being performed will be reviewed more thoroughly.”  
Which criteria will ASN use to assess the safety management of research reactor operators?



Answer ASN will publish a legal decision regarding safety and policy management. The scope will concern all types of major nuclear installations, including research facilities. This decision will specify requirements relating to contractors and survey of contractors, as far as safety is concerned. This survey may require accreditation processus if the operator doesn't achieve it by himself.

Q.No 83	Country Japan	Article Article 12	Ref. in National Report Sec.12.4.2; p73 l32
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Question/  
Comment CEA created a pole of excellence" to analyze human factors behind troubles at R&D reactors.  
How is the beget and persons in the pole of excellence, and what system CEA wants to create?

Answer It is a "pole of competence". The pole gathers the CEA professionnals in charge of human factors inside the teams operating the nuclear facilities, reactors or laboratories. The purpose is not to create a system, but to improve the integration of human factors in the activities

Q.No 84	Country Japan	Article Article 12	Ref. in National Report Sec.12.4.1; p73 l13
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Question/  
Comment The report says that "the analyses of significant events fail to show their actual causes associated with the ergonomics of the working place or do not draw sufficient consequences in terms of corrective actions."  
Do you carry out the root cause analysis for a safety oriented event?  
Even if you do so, you do not get the effect?  
Do you think what are the problems?

Answer EDF carries out a root cause analysis for all events reported to ASN. ASN and IRSN perform an assessment of root cause analysis carried out by EDF for safety oriented events. If Whether ASN considers that the corresponding corrective actions are not sufficient, ASN asks to EDF for improving the analysis carried out.

Q.No 85	Country Korea, Republic of	Article Article 12	Ref. in National Report Section 12.1
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Question/  
Comment Relating to the descriptions of section 12.1 "ANS regulatory requests," please explain briefly how many operators are working per one crew and what the regulatory requirements for staffing levels including the working system (i.e. shifting schedules and rules) of the reactor operators' crew are. And please explain briefly the main contents of the requirements to judge the appropriateness of the qualifications and physical and psychological status of the reactor operators.



Answer "In normal situation, two operators are in the main control room. An operating team in normal situation for one reactor includes shift manager, 2 operators in the main control room, and several field operators. There is no regulatory requirement on minimum standards for staff number and competence.  
As for the situation in France, ASN's expectations are that EDF should have a suitable and sufficient organisational structures, staffing and competences in place to effectively and reliably carry out those activities which could impact nuclear safety. It is also the operator and its service providers responsibility for continuing to recruit the qualified personnel they need."

Q.No 86	Country Korea, Republic of	Article Article 12	Ref. in National Report Section 12.1
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Question/  
Comment According the description of paragraph 12.1, ASN performs supervision with regard to organizational and human factors on inspecting nuclear installation. Please explain briefly the main contents of the inspection for a nuclear installation in terms of the organizational and human factors. Is that inspection performed in a fixed term?

Answer " An ASN inspection guide concerns inspecting how human and organisational factors are taken into account on site in nuclear installations. A specific one is on progress for EDF nuclear power plants. The purpose of such inspections is to review the operator's organisational policy regarding organisational and human factors, notably in terms of specific skills, the actions undertaken to improve the integration of such factors within his operation and to assess their implementation and their results on site. It concerns also the human and organisational factors in analysis of events. Inspection on human and organisational factors is part of the general inspection program, each plant must be inspected on that topic at least once every three-years period."

Q.No 87	Country Netherlands	Article Article 12	Ref. in National Report pg.71, par.12.2
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Question/  
Comment With the stepped up measures what is the structural increase of the number of employees per NPP and at headquarters? Are only managers carrying out the field visits?

Answer These measures are managerial and organisational. They do not need more employees. One of the objectives of the human performance project is to develop the field presence of managers but on-site visits can also be carried out by NPP engineers.

Q.No 88	Country Russian Federation	Article Article 12	Ref. in National Report Sections 12.2, 12.4
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Question/  
Comment There is no mentioning of the term “safety culture” as a tool of human factor management in the description of this issue in the Fifth Report; this is a big difference in comparison with the previous report. The separate elements of this integral concept are highlighted to some extent, however, it remains on the whole unclear how this fundamental safety concept is implemented, maintained and controlled. The attitude of ASN to this concept is also unclear. In the same way, it is also not quite clear how this concept is implemented in the subcontracting organizations. Because it is not reflected in the legislation, it is hard to say of its implementation on the highest state administration level, where the human factor may also impact the safety of nuclear installations.

Answer Safety culture is a concept which underlies all the field of human and organisational factors as well as management of safety. Evaluation is done mainly through main reviews carried out by IRSN and advisory committee, such as the one on safety management in the context of competitiveness. It is also done during inspections, the aim of those inspections is mainly to ensure that EDF fulfils its responsibility for safety, including by the supervision of all subcontracted work. Safety culture concerns reactors in operation, but also new reactors in construction where inspections are also done on management of safety in the construction work.

Q.No 89	Country Slovenia	Article Article 12	Ref. in National Report 12.4.1
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Question/  
Comment Which actions have already been performed or will be in the future to improve the availability of NPP equipment at the contractors’ disposal which is described as very unsatisfactory in your report?

Answer Concerning the availability of NPP equipment at the contractors disposal, good practice is being extended on NPPs. It aims to make available to all contractors tools and individual or group protective equipment necessary in controlled zone (ZC). Apart from ZC, each contractor is fully accountable and provides its staff with individual and collective protective equipment as well as tools necessary to carry out operation activities.

Q.No 90	Country South Africa	Article Article 12	Ref. in National Report 12.4.1
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Question/  
Comment Although the ASN regulatory requirements related to human factors are clearly articulated in article 12.1, it seems that, judging from paragraph 12.4.1, the ASN is not entirely satisfied with many facets of the EDF organisational and human factors in power-reactor operation.  
Can ASN provide some information as to what has been/is being done both from ASN (e.g directives) and EDF to improve the situation?

Answer "After each inspection on site, ASN sends the follow-up letter to EDF regarding the elements observed during the inspection. It is also the case after each assessment made under the request of ASN. Then, EDF is asked by ASN to improve the situation concerning the requirements articulated in paragraph 12.4.1. For instance, EDF was asked to improve the organisation of the staff in charge of human and organisational factors in NPP and to improve the training provided. Other questions were related to the improvement of the analysis performed by managers on finding made and the lesson learns from the experience feedback. Other questions are related to the tools used to evaluate the human performance and in particular in the case of subcontractors. Some requirements for modification process concern the involvement of human factor approach, in particular the use of socio organisational approach. There are also issues concerning the assessment of human and organisational factors of events occurred on site. Answers provided by EDF include generally measures for improvement the situation. These measures can be verified during further inspections"

Q.No 91	Country Brazil	Article Article 13	Ref. in National Report Item 13.4.1.2.1. And Art 19. It 19.4.1.2
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Question/  
Comment What is ASN requiring from the operators to improve the situation regarding supervision of contractors described in item 13.4.1.2.1 and 19.4.1.2?

Answer "ASN clearly stated its expectation concerning the operators to improve the situation regarding supervision of contractors, in particular, according to the "quality" ministerial order of 10.8.1984 and to the draft "BNI" ministerial order, EDF should have a suitable and sufficient organisational structure, staffing and competences available to effectively and reliably carry out those activities which could impact nuclear safety, including supervision of contractors. It is also the operator and its service providers responsibility for continuing to recruit the necessary qualified personnel. For this purpose, ASN's 2011-12 action plan includes :

1. to assess EDF's make or buy policy. Depending on the result of this assessment, ASN could introduce additional controls about organizational changes such as the LC 36 regulation in the United Kingdom
2. implementing new kind of inspections as part of an integrated approach, considering simultaneously issues such as the purchasing process (market oversight), the impact on safety, quality, health & safety, application of social laws.
3. to start discussions with EDF about a new safety accreditation system for any company wishing to supply services within a nuclear facility ; this certification system will not replace the existing qualification requirements from EDF. This new accreditation system will be required in particular for EDF contractors in charge of the oversight of contracted activities."

Q.No 92	Country Canada	Article Article 13	Ref. in National Report 79
Question/ Comment	Please describe the safety culture evaluation at Flamanville and other projects for licensees, vendors and contractors? How frequently does ANS review safety culture at the projects, operating units and its own (ANS)?		
Answer	<p>"Safety culture evaluation in Flamanville 3 project (EPR project) is performed mainly through inspections : the aim of those inspections is essentially to ensure that EDF fulfils its responsibility for safety objectives, including the supervision of all subcontractor involved. Indeed, in 2010, ASN performed 24 inspections on site Flamanville 3, 4 inspections in engineering departments, 5 inspections in supplier workshops and 1 inspection of the future operating team.</p> <p>One of ASN requirements for Flamanville 3 is stated in the following words: ""EDF shall describe its safety policy concerning the design and construction of the basic nuclear installation (BNI), called Flamanville-3, and agree to its implementation. Such policy shall include the priority level to be given to the protection of the interests referred to in I of Article 28 of Law No. 2006-686 of 13 June 2006 on Transparency and Security in the Nuclear Field. EDF shall ensure that any person involved in the design and construction of the installation is aware of and implement the aforementioned safety policy.</p> <p>EDF shall submit the above-mentioned document to the French Nuclear Safety Authority (ASN) within three months after the publication of this requirement, and subsequently, after every further revision.""</p> <p>The implementation of this safety policy within the project organization is checked by ASN during inspections."</p>		

Q.No 93	Country China	Article Article 13	Ref. in National Report 3.1.3.3,15
Question/ Comment	What are the main requirements from ASN on FA3 first core loading safety assessment? What is the main change of the safety assessment comparing to the France CPY series NPP? What are the requirements on FA3 GOR (general operating rules) safety assessment?		
Answer	<p>" To perform fuel loading, the licensee has to obtain a commissioning/operation authorization from ASN. Article 20 of Decree 2007-1557 describes the required documentation which must be provided by the operator to get that authorization. Some of those elements are the safety assessment report to prove that the installation complies with the requirements of the authorisation decree and the ASN licence requirements conditions, and the general operating rules. The whole application file will be reviewed by ASN.</p> <p>In comparison with CPY series NPP, regulation has changed: all the safety demonstration, except the results of the commissioning tests performed with fuel, shall be provided for the 1st fuel loading : the installation ""industrial commissioning"" step does not exist anymore.</p>		

In addition, Flamanville 3 General operating rules scope will have to be extended to cover topics (environmental protection, maintenance, hazard protection...) which were previously dealt with separated documents"

Q.No 94	Country Germany	Article Article 13	Ref. in National Report page 80, chap. 13.4.1.2.2, 4th paragraph
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**Question/ Comment** It is stated that "ASN recognized some problems in the application of a shared radiation-protection approach among all stakeholders on one site and noted the lack of improvement in the behavior of interveners, a situation that might have led to incidents."  
Please describe the criteria used by ASN to assess the "problems in application" of the shared radiation-protection approach.

**Answer** "Each year, the inspectors posted in regional offices have to answer several pre-defined questions about the organisation of the radioprotection on their respective nuclear power plants. One of these questions is related to the shared radiation-protection approach, but ASN does not specify an objective criterion for assessing it. Inspectors' appraisal is carried out from their inspections but also from the observation of recurrent radiation protection events. In the case stated (shared radiation-protection approach), these events have in common that they could be avoided by a better knowledge and a better respect of procedures and basic rules."

Q.No 95	Country India	Article Article 13	Ref. in National Report 13.4.1.2.1 Para 4, Page no. 79
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**Question/ Comment** ASN has noted that there is deterioration in the on-site supervision of the activities conducted by contractors and hence it has recommended EDF to verify the relevance of its monitoring resources in terms of both quality and quantity with regard to the sub contracted activities. What are the changes brought out by EDF to carry out effective supervision of the contractors in the light of the findings?

**Answer** "This work also aims to reduce the heterogeneity identified on nuclear plants and is based on four actions:  
- to anticipate and identify the resources dedicated to supervision of contractors by the use, for example, of NPPs inter-comparison of supervision resources specifying different segments of maintenance and types of outage;  
- to increase the quality of supervision programs written by maintenance departments: specific tools are built to focus on feedback;  
- to track and increase skills of people in charge of supervision of contractors : common requirements of tracking and evaluation are defined. Specific training for supervision of logistics nuclear works or valves maintenance is also experimented;

- to increase maintenance managers knowledge of supervision. A specific training dedicated to this population is designed."

Q.No 96	Country Japan	Article Article 13	Ref. in National Report Sec.13.4.1.2.2; p80 112
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Question/  
Comment What specifically is the "EVEREST approach" taken by EDF for radiation protection management?

Answer " In all EDF NPPs, except Golfech, Civaux and Cattenom, before entering the radiologically controlled area (RCA) and whatever the level of contamination of the places to go through or to work in will be, personal clothes or working gear have to be removed so as to wear special white protective clothes (coveralls, shoes, cotton gloves..).  
In 2005, Golfech, and a few years later Civaux and Cattenom, decided to adopt a new approach. An extensive cleaning campaign of all the RCA outside the containment building was performed in order to decrease loose contamination levels below 0.4 Bq/cm<sup>2</sup>. Then the personal contamination monitors (PCM) at the exit of the RCA were changed for more performing ones, special procedures were also implemented for tools, wastes or other items in order to be more stringent about cleaning management of people and materials. After implementation of these measures, workers were allowed to enter the RCA with their regular working gear. The results of this new approach are :  
- an increase in the culture of workers who take a greater care to cleaning; this can be confirmed by the large decrease of Personal Contamination Events (PCE) at the exit either of RCAs or of the site;  
- reduced costs due to a large decrease of protective cloths and washings costs;  
- time gained when entering or leaving the RCA (no more need for dressing/undressing). "

Q.No 97	Country Japan	Article Article 13	Ref. in National Report Sec.13.2.7; p77 127
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Question/  
Comment The report says that "a small number of indicators should be used."  
How does EDF set this "a small number of indicators"?

Answer In order to identify trends, categories are defined to classify low-levels precursors. These categories are based on deviations from a list of about fifteen "lines of defence" (normal procedures, planning, man-machine interface, training process, modification management, organization, operating experience feedback....).

Q.No 98	Country Japan	Article Article 13	Ref. in National Report Sec.13.4.1.2.1; p79 129
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Question/  
Comment The report says that "ASN also proceeds with such inspections on that topic within the different engineering services in charge of design studies."  
Is this inspection "gdirect vendor inspection"?  
Moreover, what inspection does ASN do?

Answer "The main purpose of the construction inspection programme is to ensure that the licensee fully endorses its primary responsibility toward safety. For this reason, the construction inspection programme mainly consists in QA management system of the licensee, except for nuclear pressure vessels, because of a specific regulation. A French order requires that the licensee settles a management system to ensure the quality of the safety related activities. The licensee is responsible for these activities, even if they are performed by suppliers, so ASN doesn't perform any direct vendor inspection (except for nuclear pressure equipments). Pursuant to this order the licensee must control the compliance of its suppliers with this order. The second purpose is to verify, by sampling, that the as-built NPP complies with: safety requirements, authorisation decree and French regulations in general. According to French regulation, ASN is in charge of controlling the whole NPP construction site (including conventional island), the compliance with the environmental requirements and the compliance with the Labour code. "

Q.No 99	Country Japan	Article Article 13	Ref. in National Report Sec.13.4.1.2.1; p79 141
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Question/  
Comment The report says that "the relevancy of its monitoring resources in terms of both quantity and quality."  
Please explain what this means.

Answer It has been observed that sometimes not sufficient staff is devoted for supervision of contractors activities, and in other cases was observed staff with inadequate competencies for supervision of contractors.

Q.No 100	Country Russian Federation	Article Article 13	Ref. in National Report Sections 13.1, 13.2
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Question/  
Comment The issues of quality assurance and their compliance with the regulatory provisions adopted in 1984 are described in the Report to a rather good extent. However, the Convention Article 13 describes the establishment and maintaining the quality assurance programs. There is a number of IAEA standards devoted to this issue. Nothing of these programs is said in the Report, and the term "Quality Assurance Program" is used only in several subtitles. Along with that, it is important to know whether these programs are developed for each NPP and for



the works to be performed by subcontractors. How the check points are set and verified and who does it? Are these programs reviewed by the regulatory authority?

Answer "Quality order, issued in 1984, is the main regulatory tool used by ASN on the issue of quality assurance. All operators have to comply with this order, included their sub-contractors. The correct implementation of this order within the operator organization, and its sub-contractors, is checked by ASN during inspections. see 7.2.2.3 : ASN is issuing decisions in order to complete the enforcement modalities of existing decrees and orders related to the nuclear safety and radiation protection. One of the decisions (Draft ""BNI order"" which will replace the 1984 Quality order) focuses on quality management: the requirements of this draft decision come from WENRA requirements, which take into account the IAEA standards. "

Q.No 101	Country Belgium	Article Article 14.1	Ref. in National Report Chapter 14.3.1.2 and 14.3.2 (page 89)
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Question/  
Comment It is indicated that for the research reactors of CEA and for the HFR of ILL evaluations have been performed in relation to the protection against earthquake. Was earthquake taken into account in the original design of these reactors? Is the methodology for defining the reference earthquake different from the methodology of the power reactors? Some measures are mentioned about strengthening the seismic resistance of building. Have any problem areas been identified in the seismic qualification of systems and components? If yes, have any improvement measures been undertaken?

Answer Earthquake was taken into account in the original design of these reactors. The methodology for defining the reference earthquake is the same. No problem has been identified with regard to seismic qualification of systems or components The original design of HFR of ILL took into account the earthquake hazard. In 2003, on the basis of the new 2001 nuclear regulation, the seismic levels (SHPE AND SSE) have been reassessed as for a power reactor. These levels are two time higher than initially. The office building has been reinforced by adding and doubling walls. This building is beside the reactor confinement and in consequence must be stable. We haven't met major problem to achieve these reinforcements. When seismic qualification is not available, we are used to make test on seismic simulation tables.

Q.No 102	Country China	Article Article 14.1	Ref. in National Report 14.1.4, 86
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Question/  
Comment In paragraph 14.1.4,P86 : "In the case of existing reactors, the practice consists in performing a PSA for every series of similar reactors and to update it upon every safety review. ASN has requested EDF to develop each probabilistic safety

analysis in accordance with that RFS.” What are main approaches that EDF hold to fulfill this request? By the probabilistic safety analysis, for example, the quantity of NDT (non destructive test) for QSR equipments will be decreased by 50%, will ASN accept this decrease?

Answer "In the case of existing reactors, the PSA is updated taking into account both the evolution of data used in the PSA (safety references, reliability data, feedback, material modifications from the safety review...), and the improvements in methodology and modelling of the PSA using the best international practices. The assessment of the updated PSA is made step by step between experts from EDF, IRSN, and ASN. This work is based on the RFS and the state of the art.

The definition of non-destructive-test programme for QSR equipments and the inspection programme of those equipments are not based on a probabilistic approach. Nevertheless, some works, like a risk informed approach, are using PSA to define the inspections program."

Q.No 103	Country China	Article Article 14.1	Ref. in National Report 14.2.2, 87
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Question/  
Comment After VD2, do the NPPS have any suggestion or feed-back? Do the EDF or ASN .....etc have any evaluation reports about VD2? If you have, what is the conclusion?

Answer In 2002, ASN made a statement on the generic aspects in order to conclude that safety requirements contained in the safety report of the 900 MWE edition VD2 are acceptable and consistent with changes from previous instructions.

Q.No 104	Country Germany	Article Article 14.1	Ref. in National Report page 91
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Question/  
Comment It is stated that with regard to EDF's objective the operating duration of its nuclear fleet is possible to extend over and beyond 40 years. "This programme shall allow to improve the safety of the installations to an extent that goes far beyond the continuous improvements described in the safety objectives for new reactors."  
Can you explain this approach by providing concrete examples?

Answer For instance, ASN asks EDF to study how decrease radiological consequences of a major accident as low as they are defined for new reactors. Opportunities for avoiding the basemat's drilling will have to be studied. Improvements on U5 filters, according to the world best practices and the international feedback, will have to be implemented.

Q.No 105	Country Netherlands	Article Article 14.1	Ref. in National Report pg.83, par.14.1.1
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Question/  
Comment Why is there no certification of reactor type in France?

Answer "French regulatory framework is based on two major concepts : ""a licensee"" and a ""basic nuclear installation"". As a result, only a licensee or a licensee to be company can be involved or can initiate a regulatory process.  
The closest process in France for ""reactor type certification"" would be the ""safety options"" assesement (art 6 of decree 2007-1557). Three differences with the certification process should be highlighted :

- the safety option process is not mandatory. It is up to a company willing to build a reactor in France to request such process;
- the scope of the safety option process is up to the licensee to be. It may be on the overall reactor concept or only on some specific parts of the prospective design. It is usually based on the basic design of a reactor ;
- the output of the safety option assessment process is an ASN opinion, valid for a limited timeperiod. However, it does not guarantee that the reactor will actually get an authorization as a more in depth review will then have to be performed (and also takes into account the intended location of the plant) when a license application is submitted."

Q.No 106	Country Netherlands	Article Article 14.1	Ref. in National Report pg.84, par.14.1.1
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Question/  
Comment Between the creation license and the commissioning license: is there a requirement for safety improvements if there is a significant research finding or lesson learned?

Answer There is not such an explicitly written requirement. However, in practice, some improvements can be introduced due to the experience feedback of main events which can occur during this period of time (for instance : Forsmark lessons in the detailed design of electrical distribution). Some improvements can be required in the commissioning/operating authorization. The next step is the periodic review (decennial outages) (see §6.3 of French report).

Q.No 107	Country Netherlands	Article Article 14.1	Ref. in National Report pg.84, par.14.1.3.1
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Question/  
Comment Apart from the 10 year reviews are there also other periodic reviews?

Answer As stated by the act on Transparency and Security in the Nuclear Field (2006), "safety reviews take place every ten years. However, the authorisation decree can lay down a different periodicity if this is justified by the specificities of the installations."

Q.No 108	Country Slovenia	Article Article 14.1	Ref. in National Report 14.4.1.1
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Question/  
Comment Which elements should such an ambitious safety programme have or what needs to be done to go far beyond the continuous improvements described in the safety objectives for new reactors?

Answer New safety levels will have to be defined, in comparison with those applied for new reactors. The ageing and obsolescence of materials will have to be taken into account. The resistance of the nuclear tank, taking into account its age, will have to be demonstrated. And material improvements will have to be defined : for instance, ASN asks EDF to study how decrease radiological consequences of a major accident as low as they are defined for new reactors. Opportunities for avoiding the basemat's drilling will have to be studied. Improvements on U5 filters, according to the world best practices and the international feedback, will have to be implemented.

Q.No 109	Country Ukraine	Article Article 14.1	Ref. in National Report Para 14.1.4 page 86
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Question/  
Comment PSA is performed for every series of similar reactors in France. How is the specific of each of one series reactors taken into account?

Answer The specificities of each individual reactor in series of similar reactors are generally not taken into account in the reference series internal events PSAs, since the majority of them are not significant and would not alter the hypotheses, models or data used in the generic study. For those which are significant, limited complementary studies are performed to assess their influence.

Q.No 110	Country United States of America	Article Article 14.1	Ref. in National Report 14.4.1.1 p 91
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Question/  
Comment ASN is starting to assess the methodology proposed by EdF to justify operation of its reactors beyond 40 years. Please discuss what issues/concerns are being considered that are not addressed by periodic safety reviews.

Answer First, all compliance gaps will have to be identified, characterized, and fixed at latest during the safety review. Secondly, ASN asks EDF for defining new safety levels, regarding those applied for new reactors, on the existing plants. Finally, safety improvements to achieve these new goals, taking into account the world best practices and national and international feedback, will have to be implemented. These actions will be done during the periodic safety reviews, but objectives will be more ambitious for improvements and definition of new safety levels. Contrary to the periodic safety reviews done so far, discussions about the long term operations will cover all the standardized plant series (900, 1300 and 1450 MWe) at the same time.

Q.No 111	Country Germany	Article Article 14.2	Ref. in National Report page 172, chap. 19.4.1.2
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Question/  
Comment Could you describe how the ageing management of the French NPPs is implemented by the operators and how it is monitored by the regulator?

Answer " Aging effects will be adequately managed so that intended functions will be maintained consistently with the current licensing basis for the approved period of operation. To fulfil this requirement, EDF has set up a program of ageing management demonstrating the ability to follow the operation of certain sensitive components for the 30 - 40 years period.

This programme identifies the systems, structures and components (SCCs) subject to an aging process and evaluates the sufficiency of the operation+D505, maintenance or monitoring dispositions applied. If insufficiencies are detected, EDF should take actions to ensure that the ageing effects will be maintained under control through the reactor or SCC operation. This will typically be a verification of existing programs and practices, existing programs that need enhancement and new programs to be created.

It is EDF's responsibility to maintain and operate the facility safely. The French nuclear safety authority assesses by inspections the technical adequacy and completeness of the aging management program used by EDF to manage aging."

Q.No 112	Country Ireland	Article Article 14.2	Ref. in National Report 14.4.1.1., p. 91
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Question/  
Comment With regards to EDF's objective to extend the operating duration of its nuclear fleet over and beyond 40 years, how will ASN ensure it is satisfied with an improvement in the quality of the use of contractors before lifetime extension is granted, as the report mentions (see Section 13.4.1.2 page 79) that some maintenance operations may have been marred with quality inadequacies that EDF must endeavour to prevent in the future and that ASN feels that EDF has stopped progressing in the supervision of contractors?

Answer "The question about contracted activities in the prospect of continued operation beyond 40 years of existing reactors is a very important issue. Added to this, one also have to consider in France the retirement within 5 years of ~ 40% of EDF's nuclear engineers and technicians , the evolution of the maintenance policy (adoption of new AP 913 methodology), the expansion of international supply market (services and goods), and the construction of new reactors.

These important changes raise new challenges for EDF related to the retention of nuclear expertise. Those subjects have been addressed in 2010 during an OECD/NEA/CNRA Senior-level Expert Task Group formed to produce a report on The Regulator's Role in Assessing the Licensee's Oversight of Vendor and Other Contracted Services. The issue of licensee's oversight of contracted

services has been the subject of previous work by CNRA and by IAEA. The Senior Task Group considered their published proceedings and reports and ASN actively contributed to the new report.

As for the situation in France, ASN's expectations are that EDF should have suitable and sufficient organisational structure, staffing and competences in place to effectively and reliably carry out those activities which could impact nuclear safety. It is also the operator and its service providers responsibility to hire the qualified personnel they need. For this purpose, ASN's 2011-12 action plan includes :

1. to assess EDF's make or buy policy. Depending on the result of this assessment, ASN could introduce additional controls about organizational changes such as the LC 36 regulation in the United Kingdom
2. implementing new kind of inspections as part of an integrated approach, considering simultaneously issues such as the purchasing process (market oversight), the impact on safety, quality, health & safety, application of social laws.
3. to start discussions with EDF about a new safety accreditation system for any company wishing to supply services within a nuclear facility ; this certification system will not replace the existing qualification requirements from EDF. This new accreditation system will be required in particular for EDF contractors in charge of the oversight of contracted activities."

Q.No 113	Country Brazil	Article Article 15	Ref. in National Report Item 15.1.2.1
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Question/  
Comment Does ANS conduct examination of "Competent radiation protection officers"?  
Does ANS take part in the French Accreditation Committee (COFRAC)?

Answer "No, ASN conducts neither examination of Competent radiation protection officers, nor does it take part in the French Accreditation Committee. Nevertheless, IRSN, ASN's technical support, conducts exams for the Competent radiation protection officers and ASN checks items linked to the Competent radiation protection person (training, engagement letter, available means, etc.) through the inspections."

Q.No 114	Country China	Article Article 15	Ref. in National Report 15
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Question/  
Comment In some of EDF NPPS, the reloading is implemented without secondary neutron source. In this case, the quantity of tritium discharged from NPP would be reduced. Could you provide the contrastable data of the quantity of tritium discharged in such one NPP?

Answer "The contribution of secondary neutron source to the quantity of tritium in the primary water system is fonction of the irradiation time. On 1300 MWe and 1450

MWe NPPs, this contribution is assessed around 10 to 30 GBq/JEPP, which is equivalent to 4 to 12 TBq/Y depending on the irradiation time.  
EDF is studying the feasibility of removing these sources on some reactors."

Q.No 115	Country Czech Republic	Article Article 15	Ref. in National Report Page 95
Question/ Comment	Please provide further details of justification of a new build as a principle derived from the recommendations of the international Commission on Radiological Protection (the justification of a practice). Which part of the new build licensing could be identified as justification and who could be regarded as the supreme justification authority?		
Answer	<p>"The overall administrative process to build a new power reactor includes 3 major processes:</p> <ul style="list-style-type: none"> <li>- the first one is related to the energy policy. As a result of its assessment, the French government, through a ministerial order, (PPI - "programmation pluriannuel des investissements de production d'électricité") expresses France needs for new generating units. For example, the need for Penly 3 reactor is stated in an order dated December 15, 2009;</li> <li>- a national public debate, based on the licensee to be filed, involving the stakeholders (both the general public, local councils, pro or anti-nuclear association.....) on the intended project. This national public debate relies on both public meetings and internet/mail questions and answers;</li> <li>- the last one is the licensing process for the creation of the nuclear installation and the related administrative procedures. The "justification" principle is mainly dealt with in the first two processes. The "supreme justification authority" is, as a consequence, the Government as it signs both the PPI order and the Decree authorizing the creation of a new nuclear reactor.</li> </ul> <p>Regarding the justification principle, ASN states that decisions introducing or altering a radiation source, an exposure pathway or actual exposures shall be justified: the decision shall be taken with the intent to ensure that the individual or societal net benefit resulting from that decision shall be positive (which is almost the statement of the ICRP 103).</p> <p>Regulation, in its article L. 1333-1 of the Public Health Code (CSP) states that: A nuclear activity or an intervention can only be undertaken or carried out if its health, social, economic or scientific benefits so justify, given the risks inherent in human exposure to ionising radiation which it is likely to entail.</p> <p>In France, the regulation of nuclear safety and radiation protection concerns all State structures :</p> <ul style="list-style-type: none"> <li>- Parliament, in particular the OPECST (Office Parlementaire d'Evaluation des Choix Scientifiques et Technologiques), definition of the main long-term options;</li> <li>- the Government, in particular the ministers responsible for nuclear safety and radiation protection, who are given general regulatory and decision-making powers concerning the creation of a Basic Nuclear Installation;</li> <li>- ASN, which in particular contributes to drafting technical regulations and to monitoring and regulation of activities;</li> <li>- the consultative bodies, which provide an outside view of the important</li> </ul>		



decisions concerning nuclear safety and radiation protection;

- the *prÃ©fets*, who are in charge of protecting the population.

Depending on the type of activity, the justification decision is taken at various levels of authority:

- it is the responsibility of the Government for questions of general interest, such as the decision to resort to the use of nuclear power, in particular the creation or decommissioning of a BNI ;

- it is the responsibility of ASN for transport operations or sources of radiation used for medical or non-medical purposes, except with regard to the introduction of radionuclides into consumer goods or building materials, for which responsibility lies with the Government.

- it is the responsibility of AFSSAPS (French health products safety agency) with regard to release onto the market of a new irradiating medical device and of the physicians when prescribing and performing a diagnostic or therapeutic procedure.

Assessment of the expected benefit of a nuclear activity and the corresponding health drawbacks may lead to prohibition of an activity for which the benefit would not seem to outweigh the health risk. This prohibition is either generic (for example, a ban on voluntary irradiation of individuals for non-medical purposes), or the radiation protection license required will be refused or not renewed. For existing activities, justification may be reassessed if the state of know-how and technology so warrants."

Q.No 116	Country Germany	Article Article 15	Ref. in National Report page 96, section 15.1.1.1
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Question/  
Comment Are there also dose-limits for single units at a site or is only the site-specific dose-limit of 1 mSv applicable?

Answer "No, dose-limits are not set for single units. The 1 mSv limit (introduced by the article R. 1333-8 of the Public Health Code) aims to protect the public against the hazards of ionising radiation from nuclear activities. So, when setting limits for radioactive discharge, ASN makes sure that the impact is as low as possible, given technologies in use, and in any case lower than this limit. Moreover, ASN has undertaken a revision of the discharge limits in recent year, taking into account the best available technologies (BAT) to reduce associated emissions. ASN hopes that setting discharge limit values will encourage the licensees to maintain their discharge optimisation and management efforts, in a more general approach aimed at minimising the overall impact of the installation."

Q.No 117	Country Germany	Article Article 15	Ref. in National Report page 96, section 15.1.2.1
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Question/ Are dose limits defined for the occupational exposure of trainees and students?

## Comment

Answer "For trainees or students (between 16 and 18 years old) exposed to ionising radiation during their training, it is stated in article D.4153-34 of the Labour Code that :

- the annual effective dose limit is 6 mSv over 12 consecutive months ;
- the equivalent doses for individual organs or tissues are defined as follows : 150 mSv for hands, feet, ankles and skin (in which case limit applies to the average dose over a total surface of 1 cm<sup>2</sup>, irrespective of the exposed surface) and 45 mSv for the crystalline lens."

Q.No 118	Country Hungary	Article Article 15	Ref. in National Report 15.1.2.3 p.101
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Question/ "Reference and intervention levels"

Comment Are these intervention levels in correlation with the new ICRP provisions?

Answer "French regulation deals with reference (for persons intervening in a radiological emergency situation) and intervention levels (for public in a radiological emergency situation). As far as intervention levels are concerned, they are in correlation with ICRP 103 provisions.  
ICRP recommends a range of doses between 20 and 100 mSv per year (or acute) for a radiological emergency situation. But ICRP does not give guidance on how to split this range of doses into values for sheltering and evacuation or on how to obtain a value of dose to the organ to manage iodine prophylaxis, what French regulation does.  
This way, taking into account ICRP 2007, the protection measures of the public to be taken in emergency situations are based upon intervention levels (sheltering if the predicted effective dose exceeds 10 mSv ; evacuation if the predicted effective dose exceeds 50 mSv ; administration of stable iodine when the predicted thyroid dose is liable to exceed 50 mSv)."

Q.No 119	Country India	Article Article 15	Ref. in National Report 13.4.1.2.2, Para 4, Page no. 80
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Question/ What is shared radiation protection approach? What were the problems observed  
Comment in this approach in one site and how those were overcome?

Answer "The aim of shared radioprotection approach consists to involve every stakeholder in the organization of the radioprotection.  
But the sharing out of the missions of radioprotection among stakeholders must be clear (thanks to clear procedures and the involvement of hierarchy) and the communication between them is very important. Otherwise, the risk is that they shift responsibility onto each other. "

Q.No 120	Country India	Article Article 15	Ref. in National Report 15.1.2.1 Page 96, 97
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Question/  
Comment From the report we interpret that exceeding the limit of 20 mSv in 12 consecutive months will lead to application of criminal penalties. Is this interpretation correct? If yes what are the penalties?

Answer " Indeed, in application of the article L4741-1 of the Labour Code, exceeding the limit of one of the exposure-limit values specified in the Labour Code (the efficient dose or one of the equivalent dose in 12 consecutive months) could lead to the application of a financial penalty, if the responsibility of the operator is involved. Regarding to the gravity of the fault and its consequences, the penalty could lead to a prison term"

Q.No 121	Country India	Article Article 15	Ref. in National Report 15.1.2.3, Page 101
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Question/  
Comment Is it considered safe and secure to distribute the stable iodine tablets to households beforehand instead of distributing it when the need arise.

Answer Four campaigns of pre-distribution of stable iodine have been made in France around the nuclear installations. The latest one was made in 2010. A comprehensive communication campaign was made at the same time to put more emphasis on the information on the use and conservation of the tablets. In the first phase, families have to go to the Pharmacy to obtain tablets. If they don't, the tablets are sent by Post mail. It is considered that this method is safe and secure and adapted particularly in case of a rapidly evolving emergency like a Steam Generator Tube Rupture (SGTR). Families are informed they would have to ingest the tablets only when the authority (prefect) would give them the order.

Q.No 122	Country Ireland	Article Article 15	Ref. in National Report p. 17 and p. 101
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Question/  
Comment Section 3.2.2 mentions "reference levels". What type of reference levels are these referring to (i.e. what do they apply to)? Is this in relation to the new ICRP recommendations with regards to emergency situations (dealt with in Section 15.1.2.3)?

Answer "Yes, reference levels are in correlation with ICRP 103 & 109 provisions. ICRP recommends a range of doses of 20mSv to 100 mSv per year (or acute) for a radiological emergency.  
According to French regulation, some practical values of doses are called reference exposure levels. They are used as reference levels for persons intervening in a radiological emergency situation:  
- the effective dose which may be received by personnel of the special technical or medical response teams is 100 mSv (it is set at 300 mSv when the intervention

measure is aimed at protecting other persons);  
 - the effective dose which may be received by personnel who are not members of the special response teams is 10 mSv (in exceptional circumstances, volunteers informed of the risks involved by their acts may exceed the reference levels, in order to save human life)."

Q.No 123	Country Ireland	Article Article 15	Ref. in National Report 15.1.4, p. 104
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Question/  
Comment We note that with respect to radioactive discharges limits were also increased by a factor 1.25 for liquid-tritium discharges in the prospect of future fuel-management methods known as "high burnup rate. Will tritium be the only radionuclide discharged by the future EPR for which an increase of the discharge limit will be applied?

Answer The fuel-management method of EPR will be "high burn-up rate". But, regardless the fuel-management method, discharge limits of liquid tritium and gaseous Carbon 14 will be higher than the limits of the other French NPP due to a higher electrical output (1600 MWe for EPR compared to 900, 1300 or 1450 MWe for the other NPPs in France). For the other radionuclides, limits applied are the same (or lower) than the ones applied for 1300 MWe NPPs.

Q.No 124	Country Korea, Republic of	Article Article 15	Ref. in National Report p.106
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Question/  
Comment We are interested in the PREVAIR used in your country. Please provide more information on the process of PREVAIR, on how the expected dose assessment is implemented and what the intervention level is.

Answer " In 1998, a new requirement was implemented in french regulation which asked the operator to achieve an assessment of individual and collective doses before any activity in a RCA (Radiologically Controlled Area). In order to comply with this requirement and considering the large number of activities to be addressed, EDF decided to develop a specific software (PREVAIR) to calculate collective and average individual doses, and perform an optimization approach (ALARA) in any case. This software is connected to the survey map information system and the RCA access system. Doses are assessed using the foreseen work duration from the work orders and from dose rates in the survey maps information system. Then an optimization approach can be done by answering questions in specific ALARA screens. Depending on the answers to these questions, it leads to optimization provisions to be implemented; the final collective and individual doses are then calculated again and alarm set points are implemented in electronic alarming dosimeters(EAD). A Radiation Work Permit (RWP) is also issued for the working staff and every activity. Throughout the operation and when it is completed, the real doses are recorded and can be compared to what was foreseen. "

Q.No 125	Country Luxembourg	Article Article 15	Ref. in National Report page 101
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Question/  
Comment In 2009 France reduced the intervention levels for the administration of stable-iodine and enlarged the radius of its preventive distribution following a harmonization of practices with neighbouring states. Does France also envisage setting up an availability of stable iodine over longer distances by stockpiling or any other means, to further enhance the protection of the most sensitive populations (foetus and children up to 18 years old)?

Answer The French regulation demands to have stockpiles in all the French administrative departments and also a national stockpile. The ministry of Health is in charge of maintaining the list of these stockpiles and to be sure the tablets are valid and available at any time. They would be used in case of long distances releases. At that time, the radius of the pre-distribution has not be enlarged.

Q.No 126	Country Pakistan	Article Article 15	Ref. in National Report Section 15.1.1, Page 96
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Question/  
Comment According to the Public Health Code the Annual Effective Dose limit for General public is set at 1 mSv/year:  
a. Is this limit the same for single unit plants and multi unit plant sites?  
b. Is there any consideration by the nuclear installations of establishing voluntary dose constraints less than the regulatory dose limit?

Answer "For question a., No, dose-limits are not set for single units. The 1 mSv limit (introduced by the article R. 1333-8 of the Public Health Code) aims to protect the public against the hazards of ionising radiation from nuclear activities. So, when setting limits for radioactive discharge, ASN makes sure that the impact is as low as possible, given technologies in use, and in any case lower than this limit. For question b. : Today, the regulation does not require that licensees establish dose constraints. Nevertheless, the operator must include in the licensee application file :

- the justification of the use of BAT (best available techniques) ;
- the description of the measures envisaged to prevent, limit and if possible compensate for the inconveniences created by the installations.

Furthermore, radioactive discharges limits set in individual orders licensing liquid and gaseous effluent release and water intake of BNIs lead to doses that are much less than the regulatory dose-limit.

These principles participate in the more general optimisation principle or ALARA principle, introduced by the article L.1333-1 of the Public Health Code that states that Human exposure to ionising radiations as a result of a nuclear activity or medical procedure must be kept as low as reasonably achievable, given current technology, economic and social factors and, as applicable, the medical purpose involved."

Q.No 127	Country Pakistan	Article Article 15	Ref. in National Report Section 15.1.2.2, Page 100
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Question/  
Comment What is the basis for 100 Bq/ liter limit of tritium activity in drinking water? Is there enough public health data to support this limit?

Answer "France adopted a reference level for tritium in drinking water (100 Bq/L). This level is indicative of a potential pollution due to anthropogenic activities and considered as a trigger. If tritium is detected, it means pollution of drinking water due to human activities and/or a vulnerable catchment. This reference level is not based on health concerns (for health concerns, see the WHO limit for tritium: 10 000 Bq/L). If a result of a drinking water periodic monitoring exceeds this reference level of tritium, the French local authorities in charge of the drinking water control have to analyse artificial radionuclides in drinking water (in compliance with ASN recommendations) then they carry out the investigations and ensure that the corrective actions are taken, depending on the results and the presence or not of artificial radionuclides"

Q.No 128	Country Slovenia	Article Article 15	Ref. in National Report p.104
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Question/  
Comment Can you specify approximate dose shares that belong to gamma external exposure, to neutrons and to internal exposure (very generally, for a typical NPP)?

Answer "Approximately 99% of the dose is due to gamma external exposure. For example, in 2008 :

- the annual collective dose was 38.28 H.mSv,
- the annual collective dose due to neutrons was 0.371 H.mSv,
- only 3 workers have been exposed between 0.5 mSv and 1 mSv (dose over 50 years) because of internal contamination."

Q.No 129	Country South Africa	Article Article 15	Ref. in National Report General
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Question/  
Comment The creation of the National Network for Radioactivity Measurements in the Environment and the availability of data on an Internet Website to the general public is considered a very good practice.

Answer Thank you for this positive comment.

Q.No 130	Country South Africa	Article Article 15	Ref. in National Report 15.2.2.2 Environmental monitoring
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Question/  
Comment Can ASN provide additional information related to the yearly radioecological follow up on all nuclear NPPs in service?

Answer The yearly radioecological follow up includes analysis for the terrestrial ecosystem in the soil, in the main agricultural products, milk and grass, and for the aquatic ecosystem in the sediments, aquatic flora and fauna (fish, algae, shellfish ...). Analyses are performed mainly by gamma spectrometry measurements, or measurements of specific radionuclides (tritium, carbon-14). If any measured value from the yearly radioecological follow up is outside the expected range, further studies are done.

Q.No 131	Country South Africa	Article Article 15	Ref. in National Report Page 97, 15.1.2.1
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Question/  
Comment What is the basis for the 25%, what are the timeframes involved and what action is taken by ASN when such exposures are reported to it? Are exposures below 25% investigated?

Answer "French regulation defines significant events, i.e. events which must be declared to the nuclear safety authority but it does not specify different criteria for these declarations. ASN issued a guide in 2005 which specifies those criteria. One section of this guide is dedicated to radiological events, with 10 different notification criteria. Criteria 2 is related to the exceeding of one fourth of the annual dose limit.

In addition to the declaration of events, the French regulation requires that the employer leads an analysis of the significant events to avoid their repetition (see Labour Code, article R4455-7). The guide of ASN specifies also the procedure to declare this kind of event. This procedure is the following :

- the licensee has to declare the event within 2 days and to send the report to ASN within the two next months.
- the next updated versions of this report, particularly the final report which takes into account the implementation of preventive and corrective actions, are sent to ASN without delay.

In case there is a specific significant event, for example, when there is a suspicion of an event of level 2 on the INES scale, a control on-site is done by ASN (followed by an investigation).

Exposures below 25% are generally investigated by the operator."



Q.No 132	Country South Africa	Article Article 15	Ref. in National Report Page 111, 15.4.2
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Question/  
Comment What are reporting or investigation levels for fission products such as Cs137, Sr90 and I131 should these be detected in the vicinity of the plant in excess of pre-operational levels?

Answer "There are no such levels because :  
- Sr90 is not discharged by the NPPs; the absence of Sr90 is verified once a year in the liquid discharge.  
- Cs137 and I131 are measured in liquid and gas discharges. In the environment, Sr90 and Cs137 are a legacy and are sometimes detectable, and I131 is sometimes detected in rivers (medical origin). The environmental studies around the NPPs do not show any increase of these legacy levels.  
Any abnormal variation of the radioactivity in the environnement must be reported to ASN. "

Q.No 133	Country Ukraine	Article Article 15	Ref. in National Report Page 100
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Question/  
Comment What analytical and computational methods are deployed for RAW characterization as related to the "difficult-to-measure" radionuclides?

Answer A radionuclide reference spectrum is defined for each NPP, including all the radionuclides produced by the NPP which are of interest for the dose impact. Until now, no such "difficult-to-measure" radionuclide has been identified.

Q.No 134	Country United Kingdom	Article Article 15	Ref. in National Report Page 105 Section 15.2.1
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Question/  
Comment The report refers to the use of zinc injection in the primary circuits of French PWRs, and mentions trials at Le Bugey started in 2004. Could France please clarify whether the experience at Le Bugey has encouraged EDF to extend the use of zinc treatment to other reactors in the French fleet, and what are the future plans for the use of zinc at other reactors? Have the radiation doses from other components in the primary circuits at Le Bugey, for example the steam generators, pumps and valves, increased or decreased as the result of using zinc to treat the primary water system?

Answer In the experience at NPP Le Bugey, the radiation doses seem to have slightly decreased but it is difficult to be sure that it is only the result of using zinc to treat the primary water system. Nevertheless, the experience at Le Bugey NPP and foreign experience feedback have encouraged EDF to extend the use of zinc treatment to 16 reactors in the French fleet (reactors delivering high doses or reactors with a change of steam generators planned) in order to reduce surface

contaminations with cobalt (cobalt 58 and 60) from primary water system and to limit new surface contamination of the systems after the change of steam generators.

Q.No 135	Country United Kingdom	Article Article 15	Ref. in National Report Page 112 Section 15.5.3
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**Question/ Comment** This Section of the report, together with the chart on page 224 in Appendix 4.4, shows a steady increase in the liquid discharges of tritium and carbon 14 per unit of electricity generated. Accepting that the total doses from effluent discharges to the reference group are extremely low – page 107 quotes “between 1 and a few microsievarts per year” – could France give a reason for the increases in tritium and carbon 14 discharges per unit of electricity generated, and indicate whether there are any techniques under consideration that might be used to reverse this trend in the future?

**Answer** The carbon 14 discharge is evaluated from the raw electrical power; the tritium is measured. As the rivers are not always within a state allowing the discharges, the tritium is not discharged as it is produced; tritium discharges in current year contain tritium produced not only in that year but also in the previous years. No technique has been identified for NPPs to lower the tritium discharges.

Q.No 136	Country Hungary	Article Article 16.1	Ref. in National Report 16.4.1 p.127
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**Question/ Comment** "The number and scope of the national exercises are considered to be greater than is the case abroad. They enable ASN staff and national stakeholders to accumulate a wealth of knowledge and experience in managing emergency situations. These exercises are also an opportunity to train field personnel, with about 300 persons being involved in each exercise."

Q:Does ASN approve the scenario of these national exercises?

**Answer** Exercises are indeed very important to train the different actors and the staff. General objectives for the exercises are defined each year by the Prime minister, the Ministry of Interior, ASN and DSND (nuclear safety authority for defense installations). Before each exercise, the participants define their objectives and specifications for the exercise. Based on these specifications, the IRSN (TSO) or the operator prepares the exercise scenario. As ASN is also playing in the exercise, ASN doesn't approve it. The scenario is kept secret for everybody.

Q.No 137	Country Hungary	Article Article 16.1	Ref. in National Report 16.5.2 p.131
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Question/  
Comment "The selected method consisted in launching an initial phase involving the distribution of boxes of tablets around NPPs operated by EDF."  
Q: How is it ensured, that the public will take these tablets as it is ordered (not to take without reason)?

Answer Families living around NPP are regularly informed. Also, in 2010, the distribution campaign was linked to a comprehensive communication campaign to recall families how and when to intake iodine. We never had bad experience of inappropriate intake. It is considered the pre-distribution of iodine tablets has more benefits than disadvantages and studies show very rare risks for the health in case of inappropriate intake.

Q.No 138	Country Luxembourg	Article Article 16.1	Ref. in National Report page 116
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Question/  
Comment It is stated that the off-site emergency plans do not preclude steps that might be taken over longer distances. Could France provide us with some examples of protective measures that might be decided over longer distances above 10 km from a NPP during the accidental phase? Do you feel that France is prepared on a satisfactory level for executing a counter measure over a longer distance?

Answer The 10km distance is used for planification, but that does not preclude to shelter population farther if the need arises. For major accidents, it is admitted that protective actions like food restrictions would be taken on much larger distances. Departmental stockpiles of iodine tablets are also available to have a full coverage of the population in France in case of a major accident. Then, a large work was initiated 5 years ago on the post accident phase (Codirpa), in which many actors and stakeholders participate. Some neighbouring countries have also been invited to participate in the work. A doctrine is being prepared and tested during exercises and is improved little by little.

Q.No 139	Country South Africa	Article Article 16.1	Ref. in National Report 16.4.1
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Question/  
Comment Do the national emergency exercises scenarios targeting "civil defence" test the evacuation/partial evacuation of the population living in the close proximity of NPPs (e.g in the 5kms radius)?

Answer Testing a real evacuation of population was a national objective in 2010 and 2011. A partial evacuation was tested for the Penly exercise in 2010 (2 villages participated; 700 persons) and for the Gravelines exercise in January 2011 where 4500 persons, 1000 children at school and 130 teachers participated in the evacuation and were evacuated to another school for the rest of the day.

Q.No 140	Country Switzerland	Article Article 16.1	Ref. in National Report 16.1.3.2
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Question/  
Comment Switzerland would like to ask the following additional questions to chapter “Technical bases and countermeasures for emergency plans”:

Please describe the criteria applied for selecting accident scenarios for emergency planning and to what extent probabilistic safety analyses level 2 are used in the selection process.

What are the frequencies of occurrence of the accident scenarios considered for emergency planning and what are the associated source terms (NGs, Iodines, arerosols released to the environment)?

What is the probability of an accident source term leading to health consequences to the public larger than those associated with the scenario used for emergency planning?

How are the sizes of the emergency planning zones in the vicinity of the plant related to the expected radiological consequences of the scenarios used for emergency planning?

Answer The current French emergency planning around NPPs is based on a scenario with S3-type releases from the Rasmussen report. The process is not based on a probabilistic analysis but on a deterministic analysis. The planning zones (2-5-10 km for an NPP) are based on the estimation of the radiological consequences for the population. The capabilities of the emergency services that would be necessary in case of an emergency in these perimeters have been verified.

Q.No 141	Country Switzerland	Article Article 16.1	Ref. in National Report 16.1.3.2
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Question/  
Comment Switzerland would like to ask an additional question to chapter “Technical bases and countermeasures for emergency plans”:

How is the building of a new nuclear plant with improved safety features impacting the definition of a technical basis for emergency planning?

Answer In the specifications for the construction of new reactors, they have to be built with the best technologies available at a reasonable cost, they have to take into account the latest safety options and, in case of an accident, the protective actions have to be reduced compared to accidents from existing NPPs.

Q.No 142	Country United Arab Emirates	Article Article 16.1	Ref. in National Report 113
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Question/  
Comment How do you know that the public is prepared?

Answer Families living around NPPs receive information regularly. Sometimes, a partial evacuation is tested during an exercise (See below for a comprehensive answer). During the latest pre-distribution of iodine tablets, populations were interviewed about their feeling regarding the emergency planning and protective actions. It is a way to know their level of knowledge and preparation. Their feedback will be used in order to adapt the next communication and information actions.

Q.No 143	Country United Arab Emirates	Article Article 16.1	Ref. in National Report 113
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Question/  
Comment Is there a targeted public education program for offsite Emergency Planning?

Answer The preparation of an exercise is an occasion for the families living around the NPPs to receive information on the exercise and the off-site emergency plan (PPI). Testing a real (partial) evacuation during exercises is also an objective. During the latest (and 4th) campaign of pre-distribution of stable iodine around the NPP, a comprehensive communication campaign was also made in order to inform the population. For a sound information, there are CLI (local information commissions) around each nuclear installation, in charge of informing the public on the risks related to the installation and the emergency planning. Then, for a comprehensive coverage of the French population, a website was created : [www.distribution-iodine.org](http://www.distribution-iodine.org). This site informs on iodine tablets and also on the other protective actions in case of an emergency. The ASN site [www.asn.fr](http://www.asn.fr) also gives information on the risks and protective actions in case of a nuclear emergency.

Q.No 144	Country United Arab Emirates	Article Article 16.1	Ref. in National Report 113
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Question/  
Comment May NCEMA review their Off-site Plan?

Answer We do not know what is NCEMA but, in France, the prefect is responsible for the preparation and the review of the off-site plan so he can decide to review it at any moment.

Q.No 145	Country Brazil	Article Article 16.2	Ref. in National Report Item 16.5.2.
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Question/  
Comment How is the process of replacement of Iodine tablets once their validity time is expired? How is the replacement in individual homes controlled?

Answer In 2010, a 4th campaign of pre-distribution of iodine tablets was made in order to replace the older tablets for the families living around the NPP. In the 1st step, families received a letter asking them to go to the Pharmacy to obtain new tablets against a voucher kept by the Pharmacy. Then, for the families who did not get

the tablets, an information notice related to the tablet distribution at home was sent to private homes by Post mail.

Q.No 146	Country Ireland	Article Article 16.2	Ref. in National Report 16.1.3.2., p.116
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Question/  
Comment Are accident scenarios (including source term estimations) with possible health consequences publicly available and where can information be found?

Answer Accident scenarios are described in the safety report of each installation, and in off-site plans. ASN has published the accident scenarios used for the post accidental phase. They are available in the website:  
[http://www.asn.fr/index.php/content/download/14656/98162/NT-Scenarios\\_CODIRPA\\_Vfinale.pdf](http://www.asn.fr/index.php/content/download/14656/98162/NT-Scenarios_CODIRPA_Vfinale.pdf)

Q.No 147	Country Luxembourg	Article Article 16.2	Ref. in National Report page 127
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Question/  
Comment The report gives some figures of announced national emergency exercises. These are prepared in advance and mostly have a specific exercises target? The value of these exercises is highly recognized by Luxembourg. Would France see an added value in organizing additionally non-announced exercises?

Answer Specific goals are defined for each exercise, announced or unannounced. Organizing a non-announced exercise is a good training to test the mobilization of the actors and the first hours of the response. It was done on December 2008 on the Cadarache site. It was also planned in december 2010 but had to be postponed because of bad weather conditions.

Q.No 148	Country Slovenia	Article Article 16.2	Ref. in National Report 16.4.3,p.129
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Question/  
Comment Can you explain, please, what is the basis for this “highly conservative estimates and calculations”?

Answer In exercises, the first protective actions are taken based on very conservative estimations and calculations. As there is a lack of information on the real duration of the exposition, the modelisations are based on projected doses. The calculations are made for a 1 year child durably exposed to the releases during 48h so the calculations are conservatives most of the time.

Q.No 149	Country Ireland	Article Article 16.3	Ref. in National Report p. 116 and p. 123
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Question/  
Comment In relation to the technical assessment of the consequences of an accident, are IRSN and EDF expert assessment teams using the same or different assessment tools (i.e. models) and how are they cross-validated?

Answer "There are many aspects relating to the consequences of an accident :

- Releases produced by the installation: tools used by EdF and IRSN are different. Nevertheless, assessment methods are the same and technical differences between assumptions, models and their consequences on the assessments are well identified and discussed during periodic meeting between both organisations. In the frame of an agreement, the data of the reactor damaged are automatically transmitted to IRSN by phone link. Moreover, in an accident condition IRSN regularly receives the data concerning the installation by mail link.
- Releases in the environment : IRSN has developed their own tools some of which EdF can use in the frame of a specific agreement. EDF use one tool for term-source assessment (in Bq) and a different one for its dosimetric consequences (in mSv). At EDF we intend to replace within 2 years our current dosimetric consequences assessment tool by the tool of IRSN (more up-to-date and performant).
- Radiological measures in the environment: EdF has a network of measurements within 10 km around the sites. IRSN has also a network of measurements spread out all over the country, this including the surrounding of the nuclear sites. In the event of an accident, IRSN teams staff are ready to intervene in the vicinity of a nuclear installation. In any case, an agreement stipulates that data would be exchanged between EdF and IRSN in order to implement appropriate measures. In particular, IRSN and EDF talk together in order to be able to understand better each other in case of an emergency. They have to be in close contact to exchange about the situation and cross-validate the results. Sometimes, the results are quite different. The regular use of audio conferences between IRSN, EDF, prefecture and ASN enables to reach a common assessment and, if not, the most conservative estimation will be preferred. After several years of feedback experience, the differences between EDF and IRSN concerning the consequences of the accident are now limited."

Q.No 150	Country South Africa	Article Article 16.3	Ref. in National Report Page 128, 16.4.1
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Question/  
Comment In addition to review meetings what follow up process is used in France to ensure that all findings/observations from emergency exercises are closed out?

Answer One month after the exercise, there is a debriefing at ASN premise with all participants and twice a year a general debriefing on the past six-months exercises is also chaired by ASN where the lessons learnt are shared, the best practices identified and the implementation of the observation analysed.



Q.No 151	Country South Africa	Article Article 16.3	Ref. in National Report Page 128, 16.4.1
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Question/  
Comment Are independent evaluators used to assess the performances of all role players during national emergency exercises and who is responsible for an overall report and its implementation?

Answer There is no independent evaluators but several observers from ASN or other bodies and also from other countries. Their observations are very useful for the improvement of our organization. ASN organizes a debriefing with all participating bodies one month after each exercise and general debriefing each 6 months. ASN prepares the report.

Q.No 152	Country South Africa	Article Article 16.3	Ref. in National Report Page 129, 16.4.3
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Question/  
Comment How does the directive dated 29 November 2005 allow for prompt radiological measurement results to the decision makers?

Answer The directive demands that all the PPI (off-site emergency plan) have a "plan directeur de mesures" which is a complementary document, prepared by the prefect, related to the measurement capabilities, actors and measurements points around the NPP. During an emergency, a measurement cell is chaired by IRSN (French TSO of ASN) on field. The cell prepares the strategy for the measurement and coordinates all the measurement results obtained. The cell is located at the PCO (the prefect command post on field). Based on the results obtained by the measurement cell, ASN gives recommendations to the prefect.

Q.No 153	Country Canada	Article Article 17.1	Ref. in National Report 133
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Question/  
Comment Please elaborate on the role played by ASN regarding the Public Debate Procedure of the National Public Debate Commission (CNDP) and the process used for determining which environmental aspects of a project may be chosen for public debate?

Answer Pursuant to Articles L.121-1 and following of the Environment Code, creation of a BNI must be preceded by a national public debate when dealing with a new nuclear power plant site or a new site with a cost in excess of , -300 million. Publics debates are organized by a independant commission. Publics debates had been organized for Flamanville 3 and Penly 3. For the nuclear installations, ASN participate to public meetings to answer questions related to safety and radioprotection.

Q.No 154	Country Germany	Article Article 17.1	Ref. in National Report page 134/135
Question/ Comment	Which external hazards are considered for the EPR sites at Flamanville and Penly?		
Answer	<p>" For EPR Flamanville, except the malevolent events which are dealt with in classified documents, the following external hazards induced by the environment shall be included the safety analysis report :</p> <ul style="list-style-type: none"> <li>- earthquakes;</li> <li>- any risk induced by industrial activities and traffic pathways, including external explosions and accidental aircraft crashes;</li> <li>- lightning and electromagnetic interferences;</li> <li>- extreme weather conditions (temperature, snow, wind, rain, etc.);</li> <li>- external floods;</li> <li>- the lowest security low-water level, and</li> <li>- the clogging of the main heat sink with regard to the marine environment.</li> </ul> <p>For EPR Penly, EDF's application was submitted in December 2010. The assessment of this application is in progress and those topics are under analysis."</p>		

Q.No 155	Country Germany	Article Article 17.1	Ref. in National Report page 134/135
Question/ Comment	Which intensity levels (earthquakes: ground motion; floods: design basis flood level; etc.) were / will be chosen as design basis for the EPRs?		
Answer	<p>"The flood level taken into account at design level is calculated on the basis of the safety rule RFS 1.2.e wich corresponds to maximal calculated tide cumulated with millenal overflow (flood) level. The platform is 4 meter higher than the calculated flood level. The pumphouse is at 8,54 meter (flood level + 75 cm). The earthquake intensity level has been calculated on the basis of the safety rule RFS 2001-01 ; the design spectra (EUR) are scaled at 0,25 g (high frequencies) for nuclear island basemate. For the other buildings (pumphouse, turbine hall...), the first design spectra (EUR) have been scaled at 0,15 g (high frequencies). In order to have design margins in case of reassessment of sismicity in the future, ASN has requested to EDF that the level be revised at 0,2g."</p>		

Q.No 156	Country Japan	Article Article 17.1	Ref. in National Report Sec.17.1; p133
Question/ Comment	<p>It is reported that "ASN analyses the safety-related characteristics of the sites: seismicity, hydrogeology, industrial environment, cold-water sources, etc." How do you consider the accompanying incidents by seismic such as slope failure around a site and tsunami?</p>		

Answer Seismic risk is taken into account at the design level ; moreover, the soil settings are followed up during the lifetime of NPP. The RFS 1.2.e related to flooding risk for NPP's indicates that tsunamis can be excluded from studies.

Q.No 157	Country South Africa	Article Article 17.1	Ref. in National Report Pg. 131: 17.1 Regulatory procedure
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Question/  
Comment What return periods were considered in the determination of the site parameter envelop for the various natural phenomena such as seismic, flooding, extreme temperatures, etc. and what is the basis for the selected return periods?

Answer " The seismicity knowledge is given by both historical catalogue (SisFrance database) and instrumental records. Nevertheless, the period covered by these two sources (around 1000 years) may not be sufficient with respect to the return period of great earthquakes. Information provided by paleoseismological studies thus increases the observation period of the seismicity record.  
Regarding flooding risk, the RFS 1.2.e distinguish river sites, sea sites and river estuary sites. The considered return period is around 103."

Q.No 158	Country Canada	Article Article 17.2	Ref. in National Report 134
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Question/  
Comment Please provide further details on which licensing and public debate procedure steps are required, and in which order, in order for an Applicant to receive a Creation Authorization Decree (DAC).

Answer "Pursuant to Articles L.121-1 and following of the Environment Code, creation of a BNI must be preceded by a national public debate when dealing with a new nuclear power plant site or a new site with a cost in excess of ,-300 million. Publics debates are organized by an independant commission. Publics debates were held in 2006 to discuss the building of EPR at Flamanville and for the siting of the ITER research reactor in Cadarache. Public debate is also organised for Penly 3 project. ASN is involved in the public debate meetings and may express its opinion about safety issues raised during the discussions.

At the end of this public debate, the president of the commission gives a synthesis of the debate within two months. Then the applicant has to confirm its intention to build the installation.

The process to receive an creation authorization decree for a basic nuclear installation is described in a French ministerial decree (2007-1557). Licensing is a part of this procedure. The application for this decree is filed with the ministers responsible for nuclear safety by the person in charge of operating the installation. A copy of this application is sent by applicant to the Nuclear Safety Authority.

The ministers responsible for nuclear safety transmit the authorisation application

and the corresponding file to the Prefet (representative of the State appointed by the President) in the department where installation will be built.

The Prefet submits the authorisation application and the corresponding file to a public inquiry. Such an inquiry is opened at least in each city which is situated less than five kilometers from the perimeter of the installation.

The public inquiry file doesn't include the preliminary safety case which can be consulted by the public throughout the duration of the public inquiry, in accordance with procedures set by the order organising the inquiry.

In each department and city concerned by the public enquiry, the PrÃ©fet also consults the General Council of the department and the municipal councils on the date of opening of the public inquiry at the latest.

The ministers responsible for nuclear safety send the operator a preliminary draft decree. Then the operator has a period of two months to submit its observations. The ministers responsible for nuclear safety send to the Nuclear Safety Authority the draft decree taking into account opinion of the consultative committee for basic nuclear installations.

The authorisation decree is issued further to the report from the ministers responsible for nuclear safety. At the same time in parallel to the public debate process,

ASN is also involved in the technical assesment of the application."

Q.No	Country	Article	Ref. in National
159	China	Article 18.1	Report 18.1.2.7, 139

Question/ Comment In this paragraph 18.1.2.7, P139 : "The operator must notify any change to the installation that requires an update of general operating rules (RGEs) or PUI." But in fact, RGEs and PUI cover so many equipment, even some are not safety related equipment, do all of the changes must notify ASN?

Answer

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Concerning change of the installation that requires an update of the general operating rules (GOR - REG in french), EDF must only notify modification on chapter 3, 6, 9 or 10 of GOR (for more information see page 160 of the report) which are related to the safety.

The GOR structure will evolve soon in accordance with the 2006 TSN act and the decree of 2 November 2007. As for PUIs, the minor modifications (internal contact details...) have to be simply declared to ASN. For the other types of modifications, an instruction is made by ASN."

Q.No 160	Country Germany	Article Article 18.1	Ref. in National Report page 142, chap. 18.2.1
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**Question/ Comment** It is mentioned that advisory committees met and dealt with different interesting topics. Could you comment on new insights about 1) the sump clogging risk and 2) the protection approach against external hazards.  
Concerning these two issues, what are the strategies and planed measures for existing NPPs?

**Answer** " Concerning the sump clogging risk:  
EDF has implemented different modifications in order to increase the filtration surface of safety sumps of all NPPs. After the implementation of these modifications, the flow speed of the refrigerant is lower than before. Other potentially factors playing out on sump clogging risk, as chemistry effects, are still being studied".

Concerning the EPR, from the starting point of the technical studies, a slow circulation speed of the liquid flow in the sump was chosen. In this way, comfortable margins are guaranteed, also confirmed by the tests of the safety injection system which were performed at Erlangen Areva facilities.

Concerning the protection approach against external hazards: In the design of French NPPs, the main idea consists in seeking the decoupling, as far as possible, between the study of the external hazards and the study of nuclear steam supply system incidents and accidents. For this purpose, decoupling is sought through limiting the consequences of the external hazards on the safety functions necessary in accident analysis.

Concerning Flamanville 3 EPR, all external hazards have been taken into account since basic design. Moreover, load cases have been defined and updated in order to cover most requirements throughout Europe. Examples are the following:

- Earthquake : EUR seismic spectra at 0.25 g are used;
- Aircraft crash: design basis load case is a military aircraft, in consistency with German regulations. Moreover, resistance of EPR to a commercial aircraft is checked;
- Industrial and transportation risks: incident pressure wave is 100 hPa. Other industrial and transportation risks are assessed on a site basis;
- External flooding: EPR design takes into account feedback from Blayais flooding in 1999;
- Extreme weather conditions: EPR design takes into account snow and wind, wind generated missiles, low and high ambient temperatures, icing and frazilice, drought;
- Lightning and EMI.

Concerning EDF existing NPPs, external hazards are part of basic design. Risk associated with external hazards is reassessed each 10 years during periodic safety reviews. Consequences of the past PSRs on external hazards have been the following:

- Extension of the list of external hazards, in consistency with evolution of national rules and international practice and feedback (e.g. extreme weather

conditions);

- Reassessment of load cases considered for each external hazard, in consistency with domestic and international feedback (e.g. Blayais flooding in 1999), or evolution of design rules (e.g. reassessment of seismic spectra);
- Updating of statistical data used as inputs for assessment of risk (e.g. aircraft crash, industrial risks);
- If necessary, implementation of induced modifications."

Q.No 161	Country Japan	Article Article 18.1	Ref. in National Report Sec.18.3.1.1; p147 110
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Question/  
Comment French report says, "The safety of the EPR was implemented at the design stage and relies on a defence-in-depth system covering five levels."  
How is applied this principle to the existing reactors, export EPRs and export LWRs ?

Answer "The principle of defense in depth is applied to existing reactors and adress the same lines of defense. For EPR the implementation of these provisions has been considered and build in at the design stage, especially concerning the fith level, and including for EPR build abroad.  
For existing reactors, the periodic safety reassessment process enables to review these issues and to check the robustness of these lines of defense, using adapted means and procedures. Possible additional improvements can be defined, according to experience feedback or new knowledge, if it proves to be both efficient for safety and industrially feasible, without hampering the design."

Q.No 162	Country Japan	Article Article 18.1	Ref. in National Report Sec.18.2.1; p143 115
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Question/  
Comment The report says that "For ASN's review of control and instrumentation systems, EDF will have to present the detailed elements of that evolution in the design and the impact on the demonstration of the reactor's safety by the end of 2010."  
As for this issue, will you be able to solve this issue?

Answer The technical instruction of this issue is not finished yet

Q.No 163	Country Japan	Article Article 18.1	Ref. in National Report Sec.18.2.1; p143 122
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Question/  
Comment The report says that "As for ASN, it carries out inspections on the worksite on an average of twice every month."  
Is the purpose of this inspection a procurement management of EDF or it of the activity of the vender?

Answer According to the French law and regulations, EDF (and not the vendor) is responsible for Flamanville 3 safety. The purpose of those inspections performed on Flamanville 3 site is to ensure the correct implementation of Quality Order (order of 10 August 1984 concerning the quality of the design, construction and operation of BNIs) by the operator (EDF) and to check the consistency between what is done on site with the preliminary safety analysis report and ASN requirements. Those inspections can deal with EDF's contractors or providers : nevertheless, EDF remains the main responsible for safety.

Q.No 164	Country South Africa	Article Article 18.1	Ref. in National Report Page 138 18.1.2.2 Public consultation
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Question/  
Comment Can the ASN provide some additional information related to the content of the risk-prevention study which replaces the “bulky” safety report in the public-inquiry case and which organization(s) compile/review it before being made available to the public?  
Where can this public document be accessed (e.g Website)?

Answer "The content of the risk management study is described in a French ministerial decree (n°2007-1557). This study gives an inventory of the risks presented by the planned installation, an analysis of the steps taken to prevent these risks and measures designed to limit the probability of accidents and their effects, as they appear in the preliminary safety case, in a form appropriate to the local consultations and public inquiry mentioned in article 13. Its content must be commensurate with the scale of the hazards from the installation and, in the case of an incident, their foreseeable effects on the interests mentioned in I of article 28 of the Act of 13 June 2006. The risk management study therefore includes:

- a) An inventory of the risks presented by the installation, whether their origin is on-site or offsite;
- b) An analysis of operating feedback from comparable installations;
- c) A presentation of the methods adopted for analysis of the risks;
- d) An analysis of the consequences of any accidents for man and the environment;
- e) A presentation of the steps envisaged for risk control, including prevention of accidents and mitigation of their effects;
- f) A summary presentation of the supervision systems and the emergency arrangements and resources ;
- g) a non-technical summary of the study, such as to ensure easier understanding by the public of the information contained therein.

The risk management study confirms that in view of the current state of knowledge, current practices and the vulnerability of the installation environment, the project is able to achieve a risk level that is as low as possible in economically acceptable conditions.

This document is available in town halls where the public inquiry for the authorization of creation takes place. It is also accessible on the website of the ASN.

Even if the ASN verifies the file to ensure it is consistent and complete, the operator is responsible for its content. Taking into account that the operator



is submitted to public inquiry, it becomes binding for him. During the public inquiry, the operator answered all of the questions raised within its scope and received in the minutes report sent by the inquiry commission."

Q.No 165	Country Brazil	Article Article 18.2	Ref. in National Report Item 18.3.1.7.
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Question/  
Comment Who certifies the "control organizations" for nuclear pressurized equipment (ESPN)?

Answer "Article 15 of the nuclear pressure equipments order

Acceptance, by the Ministers responsible for nuclear safety, of inspection bodies shall be declared in view of:

- a) their competence for the activities they wish to undertake;
  - b) their competence in radiation protection;
  - c) their organisation, which must allow efficient accounting of experience gained.
- Inspection bodies shall send an acceptance request to the Ministers responsible for nuclear safety, accompanied by a file presenting the appropriate proof with regard to points a), b) and c) of the previous paragraph.

II. - ASN shall undertake the inspection of inspection bodies, with regard to their activity concerning nuclear pressure equipment. The report referred to in the last paragraph of this Article shall be sent to the Ministers responsible for nuclear safety. In case of failure to meet the acceptance conditions, the Ministers responsible for nuclear safety may suspend or withdraw this acceptance after the interested party has issued his comments."

Q.No 166	Country Canada	Article Article 18.2	Ref. in National Report 140
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Question/  
Comment Does ANS consider "First of a Kind" features for a new build project to be a greater licensing risk therefore requiring a greater degree of design and analysis completion as part of the preliminary design and safety analysis submissions?

Answer In the case of a "first of a kind", the cost of detailed design would be too high for the industry to finance without the confirmation of having at least one launch order. Moreover, some new structures, systems or components are introduced in comparison with the operating NPP. So, for instance, for Flamanville 3 EPR, the preliminary safety report is sometimes not enough detailed. The licensing risk is consequently greater for a first of a kind. Nevertheless, technical assessment (scope and depth) performed to deliver commissioning authorization is the same for all NPP: it will take more time for a first of a kind.

Q.No 167	Country Germany	Article Article 18.2	Ref. in National Report page 142, chap. 18.2.1
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**Question/** The EPRs computerised control and instrumentation systems are mentioned. How  
**Comment** is the reliability of these systems assessed?  
Could you please comment on the diversity of the two implemented systems (Teleperm XS and SPPA T2000)?

**Answer** ASN's assessment of these systems relies on the opinion of the advisory committee for reactors, and on a technical instruction by IRSN. With regard to the diversity issue, ASN wrote in a letter in 2009 that the technological diversity of both systems, which represents a significant component for the robustness of the architecture and the reliability of the control and instrumentation systems, was satisfactory.

Q.No 168	Country Poland	Article Article 18.2	Ref. in National Report 18.2.1, p. 141
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**Question/** Was there any ASN oversight of preparatory works performed at FA3 site before  
**Comment** publication of DAC? If not – is there any definition of “preparatory works” that can be performed without any ASN approval?  
Will there be any difference in ASN attitude in case of new site and first unit?

**Answer** "Before the delivery of the creation authorization decree (DAC), ASN is not in charge of the control of the site. Nevertheless, in the case of the construction of a new NPP in the vicinity of an operating NPP, some inspections can be performed on the operating NPP to ensure that preparatory works do not generate hazards on operating NPP (hazards due to dust, blasting activities...).  
Moreover, article 15 of the Quality Order (order of 10 August 1984 concerning the quality of the design, construction and operation of BNIs), specifies: ""The provision of the present Order must have been applied to activities which were initiated prior to filing of the Basic Nuclear Installation authorisation application and which, when the said application is filed, are identified as quality related activities"". It is a way to ensure quality of all safety related actions performed during this period of time. Technical dialogue is also ensured between regulator and future licensee."

Q.No 169	Country China	Article Article 18.3	Ref. in National Report 18.3.1.4, 150
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**Question/** In paragraph 18.1.14, P150, It is mentioned that ASN requested the advisory  
**Comment** committee for reactor's opinion on the design of the digital control and instrumentation system and of the physics platforms for the corresponding software. Please give more detailed information on digital control and instrumentation system, including the safety of the digital control and instrumentation system, the qualification test of the relative equipment, and how

to simulate the characteristics of the relative equipment at the end of lifetime in qualification test.

Answer "The EPR's system includes two independent and complementary systems designed to run the reactor under all circumstances, as follows:  
 - the first system (TÄ©IÄ©perm XS platform) is dedicated to the reactor's automated protective and shutdown functions in the event of an incident and to its return to safe operating conditions, in support of the highest safety-classification functions,  
 - the second system (SPPA T2000 platform), which acts as a complement , is designed to run the reactor directly from the control room under safe conditions during normal operation and for management purposes over the long term in the event of an accident."

Q.No 170	Country Netherlands	Article Article 18.3	Ref. in National Report pg.149, par.18.3.1.3
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Question/  
Comment Please explain about the way prescriptions are connected or related with the DAC.

Answer "Article 29 of TSN Act defines ASN prescriptions (or licence conditions) and the link with creation authorization decree (DAC). DAC determines the major characteristics and boundary of the installation. To implement this authorization decree, ASN enacts prescriptions relative to the :  
 - Design  
 - Construction  
 - Operation  
 The aim of the prescriptions is to regulate the reactor's detailed design, construction period, commissioning and operating conditions, including the water intake and effluent discharges limits and conditions."

Q.No 171	Country Netherlands	Article Article 18.3	Ref. in National Report pg.150, par.18.3.1.5
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Question/  
Comment Is ASN using site inspectors? What is the size of the inspection team and the number of days per inspection?

Answer "ASN does not have site inspectors (see question 37 and 45). Each site is inspected several times a year. Most inspections are one day long and involve 2 inspectors and one expert for IRSN (TSO).  
 Two to three times a year, ASN carries out in-depth inspections, which last about one week and involve about 10 inspectors."

Q.No 172	Country Netherlands	Article Article 18.3	Ref. in National Report pg. 152, par.18.3.1.7
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Question/  
Comment When did these inspections start? Can ASN give a table of the number of inspections per year from 2006?

Answer "Regarding nuclear pressure equipments, the design and manufacturing inspections started in 2005. In accordance with the nuclear pressure equipment order, the ASN has been appointing since 2006 third party bodies to perform these inspections. The number of these inspections during the last three years is about the following: 800 in 2008, 1600 in 2009 and 900 in 2010."

Q.No 173	Country Slovenia	Article Article 18.3	Ref. in National Report 18.3.1.3
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Question/  
Comment Could you give an example of prescriptions relating to the design and construction of the Flamanville-3 reactor?

Answer "Please, find below some examples describing how ASN performs control on-site activities:  
 ""Except for the cases referred to in Articles 34 and 35 of Decree No. 2007-1557 of 2 November 2007 and upon a decision by ASN following any severe or repeated malfunction of the quality management system or a non compliance or a significant incident relating to safety with regard to the design or construction of the installation, EDF shall suspend any safety-related activity within the meaning assigned by the Order of 10 August 1984.  
 Without ASN's express approval, EDF shall not resume any suspended activity within two weeks after having submitted to ASN a report describing the implemented corrective and preventive measures. ASN may extend that period if it deems necessary to proceed with a new review.""  
 An example relating to the design:  
 ""The reactor containment shall be designed and implemented in order to withstand:  
 - a temperature of 170°C and a gas pressure of 5.5 bars absolute in the reactor building for 12 hours without inducing any functional or structural impact.  
 At that temperature and pressure, the maximum leakage rate of the inner wall shall be 0.3%/day of the gaseous mass contained in the reactor building.  
 An initial acceptance containment building pressure test shall be carried out at a pressure of 6 bars absolute. After this initial pressure test, compliance with such leakage-rate criterion shall be the subject of a containment building pressure test performed at ambient temperature and at a pressure of 5.5 bars absolute at least every 10 years, except if ASN authorises a maximum respite of one year in light of valid arguments, and  
 - a temperature of 170°C and a gas pressure of 6.5 bars absolute in the reactor building for 12 hours without inducing any functional impact on its leaktightness.""

All ASN prescriptions relating to design and construction of EPR Flamanville 3 are available on ASN website :

<http://www.french-nuclear-safety.fr/index.php/English-version/Supervision-of-the-epr-reactor/Ressources>"

Q.No 174	Country Russian Federation	Article Article 19.1	Ref. in National Report Section 19.1.4, p. 158
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**Question/ Comment** It is said in subsection 19.1.4 of the Report that some of the chapters of the General Operation Rules (RGE) are approved by the regulatory body ASN. It is also stated that this document along with safety case is included in the set of documents, which is reviewed by ASN as a basis for commissioning license. It is unclear, how these two statements agree with each other.

**Answer** "Prior to commissioning, the licensee must send ASN a file comprising, inter alia, General Operating Rules (RGE). After checking that the installation complies with the objectives and rules defined by the TSN Act and its implementing texts, ASN authorises commissioning of the installation. Modifications to RGE must be validated by ASN (Article 26 of Decree of 2 November 2007 on Basic Nuclear Installations and the supervision of the transport of radioactive materials with respect to nuclear safety). ASN pays special attention to RGE chapters concerning technical specifications, procedures in case of incident or accident, periodic and physical tests."

Q.No 175	Country United States of America	Article Article 19.1	Ref. in National Report 19.2.4 p 165
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**Question/ Comment** For severe accidents, the control actions are specified in severe accident response guides. Discuss to what extent these procedures/guides reflect plant-specific conditions.

**Answer** "The severe accident management guideline takes into account the means of control available according to the design of the installation. For example, the means to depressurize the primary circuit, to avoid the risk of direct containment heating, can be different according to the design from the installation. Indeed, there can be specific means designed and dedicated to the control of the severe accidents, or means which are not specifically dedicated to the control of these accidents, but which can be used. The management of severe accidents can also take into account the initial states of the plant in order to determine the need or not for the implementation of actions. For example, for the initial states of unit outage, when the primary circuit is sufficiently open, the opening of the pressurizer discharge valves is not necessary: there is no risk of direct containment heating."

Q.No 176	Country China	Article Article 19.2	Ref. in National Report 19.2.2
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Question/  
Comment At different stages of commissioning and after commercial operation of the unit, is the same specification used for the units in EDF? If it is the same specification, it is apparent unreasonable, if it is not the same specification, how to control safety relevance for the operator?

Answer "Within EDF, the operation of existing NPPs is organized on a standardized basis: it means that the same structure and organization are applied for the documentation and rules, and especially for the technical operating specifications; but of course, the technical content of the documentation is adapted to each series, and, where necessary, to each plant.  
For a new unit like EPR, the organization will be adapted to the specificity of the plant, while integrating experience feedback. It can include evolutions regarding management and organizations, while being consistent with the whole EDF approach and experience, and with the same level of control."

Q.No 177	Country Netherlands	Article Article 19.2	Ref. in National Report pg. 160, par. 19.2.1
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Question/  
Comment What is the involvement of IRSN in the site testing committee? What is the meeting frequency of the testing committee?

Answer IRSN staff are not currently involved in testing committee. They were involved in the past and their participation at meetings related to EPR Flamanville 3 is under discussion. The testing committee is held each time an hold point has to be discussed (an hold point can be either established by the licensee or required by ASN). These meetings are required to conclude about the possibility to move or not to the next test phase. ASN gives this authorisation according to results presented to the committee.

Q.No 178	Country United States of America	Article Article 19.2	Ref. in National Report 19.2.5 p 166
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Question/  
Comment Efforts to improve the communication between the corporate engineering group and the nuclear power plants were undertaken including the development of an operational engineering guide. For every series of plants, the guides specify a site as a pilot series. Please clarify the role of these pilot series plants.

Answer " The role of the pilot series plants is the following:  
- During the early design phase of a modification (modification of a system or modification of the operating documentation), the pilot series plant is responsible to collect operating experience in order to express, for the plant series, the optimised need of evolution. During this phase, it works closely with the other plants of the series and also with the Nuclear Engineering Division (DIN).

- When the modification is ready to be implemented (detailed studies completed), the pilot series plant gives the final approval before implementation of the modification on his own site.
- Then, the pilot series plant collects operating feedback in order to give, if necessary, design elements for the optimisation of the modification to the Engineering Division. Then, implementation on the others plants of the series can be done.
- Concerning changes of the operating documentation, site documents are written by the sites themselves, on the basis of design requirements provided by the Engineering Division. The objective is to have most of the documentation identical for all the plants of a serie, the only differences being due to plant specificity. The pilot series plant is responsible for the validation of the operational documentation, especially regarding its applicability on site and the correct implementation of the safety criteria to be respected.
- As a conclusion, the pilot series plant has an important role during all the phases of the modification processes and the associate documentation processes. The plant series engineer is a permanent member of the project steering committee."

Q.No 179	Country United States of America	Article Article 19.2	Ref. in National Report 19.2.7 p 167
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Question/  
Comment

It was mentioned that the buildup of deposits have led to the chemical cleaning of a number of steam generators and that other actions are being under taken to understand the significance of the deposits and to limit their presence in the steam generators.

(1) Please discuss the extent to which the buildup of deposits is being monitored on an on-going basis (regardless of whether chemical cleaning has been performed).

(2) Is deposit buildup monitored at every unit?

Answer

" Build-up of deposits within steam generators (SG) is being monitored on an on-going basis:

- during outages, through TV examination and/or EC tests at Tube Support Plate level;
- during operation, through monitoring of blockage and fouling indicators, such as SG wide-range water level and SG dome steam pressure.

This monitoring is implemented at every unit."

Q.No 180	Country Netherlands	Article Article 19.3	Ref. in National Report pg. 172, par. 19.4.1.2
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Question/  
Comment

What pieces of equipment have to be supported by periodic and systematic inspections?

Answer

"All safety-related systems, structures and components (SCCs), as well as non safety-related SCCs whose failure could prevent other systems, structures, and components from accomplishing a safety function."



Q.No 181	Country Canada	Article Article 19.4	Ref. in National Report 172
Question/ Comment	<p>The Report notes in Section 19.4.1.2 that EDF has initiated Reliability Centered Maintenance programs. There are many programs that have been developed in the industry to address the technical basis of maintenance programs such as “proactive maintenance, predictive, preventative programs” and others. Please explain how EDF evaluated the applicability of these industry programs and how EDF established performance metrics to determine the effectiveness of its Reliability Centered Maintenance?</p>		
Answer	<p>" In the year 1994, the maintenance organization for Reliability Centered Maintenance (OMF) was developed. OMF is based on the evaluation of the reliability of 50 elementary systems considered as most important to safety and availability. In 1997, the use of conditional maintenance was started with the first "health assessments" of equipments, primarily on rotating machines and valves. In 2001, the OMF "second generation" was developed, using a simplified method and study conducted within a smaller timespan, so as to extend the optimisation of maintenance tasks to other equipments.</p> <p>In 2003, a project aimed to master the amount of maintenance while ensuring a high level of safety and availability was developed, using monitoring equipment in operation and based upon an evaluation of past experience (REX). As a complement, an approach based on the choice of representative samples taken among identical equipment within the same NPPs series was developed. This process enables to sample the equipment, to perform maintenance on some specimens and to deduce not to expand the sample when nothing special found, or to extend the sample on other similar equipments.</p> <p>The project was accompanied by the implementation of increased surveillance equipment in operation, followed by trend and health checks to ensure a high level of safety and availability, heralding the approach AP 913. The result was 169 optimisation studies based on six levers: OMF, conditional maintenance, equipment maintenance by samples, END (non destructive methods), good practices and controls on SG tubes.</p> <p>In 2008, in order to increase the overall availability, the DPN performed a benchmark study of the methods used by other operators, including US, and decided to adopt the AP913 approach (Advanced Program 913) from INPO. The earlier preventive maintenance programs were revised by the new AP913, as a result of work on the classification of components and the resulting creation of templates. The dedicated computer system is identical to that of U.S. NPP.</p> <p>At each NPP and at the Central Engineering Unit, AP 913 organizations, with a "system sector" and a "components sector", were deployed. The skills for the AP913 are those of the industry "expert engineering methods" and most of current methods of maintenance were not challenged. The AP913 is now applied to 150 elementary systems that are responsible for 98% of current fortuitous unavailability. The elaboration of technical reference AP 913 will last until March 2011.</p> <p>The AP913 work improves the reliability of equipment (target: 0 equipment failure on "critical" materiel) and should contribute both to availability and safety of the NPPs.</p> <p>In parallel, the information system for nuclear technology used at DPN is being</p>		

replaced and the entire AP913 program will be deployed with the new information system This will be integrated by during the preparation of outages in 2011.

In addition to the AP913, an ongoing development of an e-monitoring center is pursued, which is tested since late 2009 in industrial conditions, and on a small number of equipments and systems, with a software for early detection of deviations on-line. Based upon learning methods for surveillance, the software makes process data available on the NPPs network.

The interest lies in the continuous detection, before reaching alarm levels, of slow kinetic phenomena not easily visible by the operators. Early detection of a deviation from an expected behavior enables to anticipate the diagnosis and take appropriate action to prevent or avoid consequences on the component and on the availability of the unit.

The aim is to industrialize the development on all NPPs and provide information at two levels: on NPP for a local analysis by engineering teams and also for a consolidated analysis at the Corporate Engineering unit."

Q.No 182	Country China	Article Article 19.4	Ref. in National Report 19.4.1.5, 178
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Question/  
Comment In paragraph 19.4.1.5.1,P178: "In accordance with the rules for declaring events relating to nuclear safety, radiation protection and the environment, EDF has declared an average of close to 700 significant events on INES every year(from 2008 up to 2010), 90% of which were rated as Level 0." Are those events information available to the public? If yes, what is the criterion for ASN to make those events information available to the public? For example, what is the channel of declaration, what is the criterion on selecting the content, how to control the event depth and what is the principle of screening?

Answer "All nuclear safety-significant events are reported by the licensees to ASN within 24 hours. This declaration comprises a proposed rating on the INES scale, to be approved by ASN, which has sole responsibility for the final rating decision. Using the INES scale enables ASN to select significant events and incidents which will be made public: all incidents rated level 1 and above are systematically published on the ASN's www.asn.fr website. Journalists are informed of incidents rated level 2 and above by press releases and telephone calls, these incidents are also declared to the IAEA data base ""News"", incidents rated level 0 are not necessarily made public by ASN. They may be published if of particular interest to the media or the public."

Q.No 183	Country India	Article Article 19.4	Ref. in National Report 19.4.1.4, Page 176, 177
Question/ Comment	Please clarify basis on which it was decided to replace event based procedures with state based procedures, particularly when it is also indicated in the report that some of the incidents were not managed according to optimum methods through state oriented approach?		
Answer	<p>"The state based procedures are a result of the feedback from the TMI accident. As real incidents or real accidents are not always the same than the scenario considered in the design studies, it was considered that it is impossible to have emergency operating procedures for all different combinations of several failures and that the diagnostic of the accident and the choice of the procedures would be too difficult. The state based procedures were built to solve these problems. Contrary to the infinity of events combinations, possible physical states of the reactor are limited. It can be identified according to a few representative physical parameters. Moreover, actions to control safety can generally be deduced from the knowledge of this state, without necessarily having identified the sequence of events which led to it.</p> <p>Some events can be treated before the degradation of state functions occurs. It is the case of specific natural hazards like external flooding or the lost of support systems such as electrical supplies, cooling and instrument supplies which will be required to ensure that a safety function is achieved. These events are covered by specific operating procedures which have a similar approach to the event-based procedures."</p>		
Q.No 184	Country Japan	Article Article 19.4	Ref. in National Report Sec.19.2.7; p167 11,5,9
Question/ Comment	<p>In providing feedback related to operating experiences, EDF established three levels of priority for appropriate handling in terms of safety as follows:</p> <ul style="list-style-type: none"> <li>- "Safety-related events"</li> <li>- "Significant safety-related events"</li> <li>- "Certain significant events that have the greatest impact on safety"</li> </ul> <p>Please tell us the criteria for these three levels.</p>		
Answer	<p>" - Safety related events are events that are of lower importance to safety and do not justify an individual analysis, but could be interesting in case of deviation repetition. For example, the unavailability of an equipment in the limits of time allowed by Operating Technical Specification (OTS) is a safety related event.</p> <p>- Significant safety related events are events which are more important to safety and justify rapid notification to the regulator (within 2 days), according to criteria defined by ASN, followed by a subsequent analysis and more complete report. This report indicates the operators' conclusions concerning analysis of the events and the steps to improve safety. For example, reactor trip, OTS deviation, fallback of the Unit in application of OTS are significant safety related events.</p>		

- The third category of event is a part of significant safety related events which are identified on the base of their consequences on safety. For example, in case of common mode failure, an event will be classified in this third category."

Q.No 185	Country Ukraine	Article Article 19.4	Ref. in National Report Para 19.4.1.5 page 178
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Question/  
Comment How defines the isotopic structure of nuclear material in fresh or spends fuel (method of measurements)?

Answer " The isotopic composition of the nuclear materials that are used for manufacturing fuel assemblies is measured before entering the manufacturing plant and the final composition of fresh fuel assemblies is guaranteed by very stringent manufacturing procedures.  
For each fresh fuel assembly, a global measurement is performed on each fresh fuel pin so as to verify the conformity of its nuclear characteristics (ex: the uranium enrichment is verified by gamma scanning during fuel rod manufacturing, in the fuel assembly manufacturing plant).  
The isotopic composition of the spent fuel assemblies is thoroughly calculated by means of certified computer codes, considering precisely the history of their in-core irradiation and the decay time. The isotopic composition of each spent fuel assembly delivered to the reprocessing plant is measured by an appropriate device at the reprocessing plant.  
For each spent fuel assembly irradiated in EDF PWRs, the isotopic composition of heavy metals (uranium and plutonium) is calculated by neutronic codes. These calculations are based on JEF2 microscopic cross-sections Library and on APOLLO 2 neutron transport code (from CEA). These calculations are qualified on experimental data, mainly based on measurements of nuclear fuel pellet isotopic composition performed by AREVA in La Hague reprocessing plant chemical measurement after pellet dissolution, and gamma spectrometry)."

Q.No 186	Country United States of America	Article Article 19.4	Ref. in National Report 19.4.1.2 p 173
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Question/  
Comment Please clarify and provide more details regarding the following statement: "The quality of risk analyses in the preparation of maintenance interventions and their appropriation by interveners remains unsatisfactory and must be drastically improved on practically all sites."

Answer For each maintenance work on equipment or system important for safety, the operator has to make a specific risk analysis. ASN observed, from event analysis, but also during inspections on site, that this risk analysis is sometimes not complete, or erroneous, inadequate, or has not been used by maintenance workers, or even in some cases does not exist. In other cases, people used the risk analysis in a wrong way because they did not succeed to make this risk analysis their own.

Q.No 187	Country United States of America	Article Article 19.4	Ref. in National Report 19.4.1.2 p 174
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Question/  
Comment The non-destructive test techniques used for inservice monitoring of equipment is qualified by the Qualification Commission. Can you provide a list of techniques that have been qualified for specific applications?

Answer Several types of qualification exist. The conventional qualification consists in describing and demonstrating the performance achieved with a procedure which technical details are imposed and only concerns areas where no specific flaw could occur. For example, concerning a radiography testing the sensitivity of performance is described with "height, length and opening of a rectangular slot oriented in the radiation axis». For others types of qualification, performance shall be described with more precision. For example, concerning a penetrating testing: "the application detects any stress corrosion cracks with an opening on surface less or equal to 400 microns and which can contain a parallelepiped 5mm long, 2mm deep and 10 microns opening". Qualification concerns Ultrasonic testing, radiographic testing, Eddy current, penetrating testing, magnetoscopy, Leak testing, acoustic listening, indirect visual testing, with manual or robotic implementation.  
(see table below),

Support Documents » The non-destructive test techniques used for inservice monitoring of equipment is qualified by the Qualification Commission.

Q.No 188	Country Brazil	Article Article 19.7	Ref. in National Report Item 19.4.1.5.1.
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Question/  
Comment What is ASN requiring from the operators to improve the situation incident reporting and analysis described in item 19.4.1.5.1?

Answer "The operator has to report an incident according to a document entitled Guide on declaration procedures and the codification of criteria for significant events involving safety, radiation protection and the environment applicable to BNIs and the transport of radioactive materials', which sets specific criteria concerning declarations to public authorities. This document is currently under assessment and is going to be updated.  
Moreover, regarding the legal framework, ASN also started to consolidate the general technical regulations in 2008. This new regulation may be more precise regarding the situation incident reporting and analysis.  
Finally, on a case by case basis, when ASN considers that the situation incident reporting and analysis aren't sufficient, ASN directly asks to the operator to improve the situation. The operator is also requested to give answers to a set of questions submitted during periodical meetings (every 3 months). "

Q.No 189	Country Germany	Article Article 19.7	Ref. in National Report page 166-167, chap. 19.2.7
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**Question/ Comment** In the German NPP Krümmel due to a fire of a transformer fire gases entered the control room. Connected to this event several measures were performed in German power plants. Was this event discussed as part of the external OEF? Were measures taken to prevent such an event?

**Answer** "France knew some events similar to the transformer's fire of Krümmel NPP and used this operating experience feedback to take measures to prevent them to happen and to mitigate their consequences. A transformer fire can generate a lot of smoke with several consequences so that ASN is surveying in particularly the integrity of fire sectors and at the smoke proofness. The overpressure of the control room can be affected by leaks or losses of seal (a review of all sheathed cables of the control rooms is under way).  
In 1998, after several transformer's fires, EDF performed a review of the technical fire protections of the transformers and issued some guidelines to improve the fire-fighting organisation and to enhance the prevention of fire's risk and,  
In addition, in 2008, regarding specifically the control room, ASN also ensures that EDF draws lessons from significant events that occurred in foreign countries in order to improve the control room habitability."

Q.No 190	Country Romania	Article Article 19.7	Ref. in National Report section 19.5.2
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**Question/ Comment** With reference to section 19.5.2 of the report, could you please provide some examples of improvement programmes initiated by the licensees as a result of recommendations arising from the WANO peer reviews? (in section 6.3.6 there is such an example mentioned)

**Answer** " Here are two examples of improvement programmes initiated as a result of recommendations arising from WANO Peer Reviews :

- The first example is related to Human Performances. Several Peer Reviews identified weaknesses in Human Performances leading to Area For Improvement (AFI). One action identified was to reinforce the use of human error reduction tools by Control Room operators during reactor operations. As a result, in 2010 there were only two automatic scrams due to Human Performance instead of 8 in 2009. 29 Units did not have any automatic scrams in 2010.
- The second example is related to Housekeeping. Several Peer Reviews identified weaknesses in Housekeeping leading to Area For Improvement (AFI). In order to solve this long standing issue, the Nuclear Operation Division launched a specific Action Plan to improve the conditions of the installations of the Fleet. By the end of 2010, 5 nuclear sites have reached the level 2 (Good), 10 the level 3 (Satisfactory) and 4 the level 4 (Average)."



Q.No 191	Country Russian Federation	Article Article 19.7	Ref. in National Report section 19.2.7, p. 167
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Question/  
Comment Subsection 19.2.7 of the Report briefly describes the project of reorganizing operating experience feedback process started in 2010. Could you please describe the essence of this project in greater detail? Besides, do the Operator and Regulator apply any criteria/indicators for assessing the effectiveness of the feedback of operating experience of French and foreign NPPs?

Answer " Five focus areas were defined for improving Operating Experience (OE) feedback process:

1. Development of a local OE program built into day-to-day operationally focused activities, and driven by management. This has been done through benchmarking with international standards (Corrective Action Program), and by adapting these methods to the specifics of a standardized fleet, such as the process-based and performance area-based modus operandi,
2. Development of tools, in the broader sense of the term, for making OE available to shop-floor personnel, in order to help make their work successful,
3. Improvements to the corporate program, based on improvements resulting from the first two items,
4. Identification and development of the necessary means, skills, methods and tools,
5. Implementation of the necessary changes in terms of practices, behaviors, culture and leadership.

After an initial phase comprising an in-depth assessment, the 2nd phase was conducted in 2010, comprising a trial of the new OE program on a few lead stations, in parallel with other projects, some of which are very closely linked to the OE project: human performance, standardized practices and methods, AP913 and the technical information system. The 3rd rollout phase will be decided on in early 2011 for the entire fleet.

Indicators will be used in this framework, but they will initially assess the progressive implementation of the OE program throughout the fleet. Indicators to assess the effectiveness of the OE program will be then developed, comprising the reduction of the number of significant events thanks to a better anticipation and the non-recurrence of similar events from one site to the other."

Q.No 192	Country Switzerland	Article Article 19.8	Ref. in National Report 157 /19.1.2.4
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Question/  
Comment In the context of Chapter 19.1.2.4 "Decommissioning funding and radioactive-wast management" Switzerland has the following question:

How will the spent fuel be treated in general? How much spent fuel will be reprocessed? Will spent fuel be disposed in a deep geological repository?

How will the spent fuel be treated in general? How much spent fuel will be reprocessed? Will spent fuel be disposed in a deep geological repository?



Answer "France has known some events similar to the transformer's fire of Krümmel NPP and used this operating experience feedback to take measures to prevent them to happen and to mitigate their consequences. A transformer fire can generate a lot of smoke so that ASN is surveying particularly the integrity of fire sectors and at the smoke proofness. The overpressure of the control room can be affected by leaks or losses of seals (a review of all the sheathed cable of the control rooms is under way).

In 1998, after several transformer's fires, EDF performed a review of the technical fire protections of the transformers and issued some guidelines to improve the prevention of fire's risk and the fire-fighting organisation,

In addition, in 2008, regarding specifically the control room, ASN also ensures that EDF draws lessons from significant events that occurred in foreign countries, to provide propositions to improve the control room habitability.

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