Convention on Nuclear Safety – Questions Posted To France in 2008

Q. n°		Article	Ref. in National report
1		Planned Activities	Sect. 20.1.1 & 20.1.2.1.2.
Question/ Comment	It is an ASN objective, as mentioned on P. 161, Sect. 20.1.1, to anticipate ageing problems. Also, it can be seen on P. 162, Sect. 20.1.2.1.2, that one of the EDF's objectives is securing and extending unit lifetimes under optimum safety conditions (in particular, successful planning and execution of safety reassessments, and control of equipment ageing …). **Please describe how licensees and ASN participate in the NPP ageing management system process.**		
Answer	In France, a NPP operating licence is not limited in time as long as safety requirements are met. However, the June 13th, 2006 Act, related to Transparency and Security in the Nuclear Field (TSN Act), requests operators to perform Periodic Safety Reviews (PSR) of their installations every ten years. A PSR, which, above all, aims at increasing the safety level of the installation, is also an opportunity to perform an in-depth examination of the effects of ageing. At the end of each PSR, ASN takes position on the abiity of the plant to be safely operated till the next PSR (or for a shorter period, if appropriate).		
*		Planned Activities	Sect. 20, P. 161
Question/ Comment	**Please specify whether safety culture assessment on NPPs are conducted at specified time periods and who is responsible for conducting the assessment?**		
Answer	Safety culture is systematically reviewed on the occasion of EGS safety reviews conducted on plants by the EDF nuclear inspection department, and also within the corporate entities every 3 years.		
2		General	2.3.3/7.3.2.2/19. 4.1.1/19.4.2.1
Question/ Comment	**Internal authorisations** ASN has introduced a system of "internal authorisations": some prior authorisations are now done by the utilities them-selves. For the NPP, two examples are given on p 151. **Q1. Are there other domains where this process is used? Will this approach be extended to other domains (approval of modifications...)?** **Q2. Have the utilities modified their organisation with an additional independent control for these internal authorisations?** **Q3. For the second domain (restart of the reactor), is this system in application after a non-programmed stop (for example: scram after untimely safety injection, stop to repair some component...)?**		
Answer	**Q1** **Operations presently covered** The operations covered by an internal authorization system are those on which ASN wants a reinforced internal supervision of the licensee. It is the case for EDF since 2004 for "mid-loop operation" and reactor restart after programmed outages longer than two weeks without significant maintenance. For research reactors of the CEA, the internal authorization system can be applied to the modifications of the installations that do not compromise their safety demonstration. ASN has provided a clear list of conditions that the operators must respect to prove that intended operations stay within the overall safety demonstration.		

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New possible fields for an internal authorization system :
Since 2005, ASN and EDF have discussed the opportunity to extend the range of operations covered by "internal authorisation" to the following operations:

- criticality authorisation when the reactor restarts after a programmed simple refueling outage ;
- waivers to the OTS allowing not to comply with the required conduct in case of non essential material unavailability event.

These projects have not been finalized yet.

Q2
General Principles
ASN requested the licensees to reinforce their internal supervision on some operations. Under appropriate supervisory organization, the operator is solely responsible for the operations, providing a system named "internal authorisation" including enhanced and systematic internal control showing guarantee of good quality, autonomy and transparency.
In such a system, the decision for the operation is a matter for the operator, not for ASN.

There is now a legal framework for this system, based on the articles 18 and 27 of the decree n° 2007-1557 November 2nd 2007.

How does it work ?
The licensee establishes a commission internally. This commission is independent, meaning that its members are independent of people directly in charge of operations.

For all operations covered by "internal authorization" systems, authorized people at the operator's take the decision to do it or not in the light of a mandatory notice of the independent commission. These specific systems are authorized and assessed through inspections by the ASN which can withdraw this internal authorization system if is reliability is challenged.

Q3 :
As part of its nuclear installations safety regulating role, ASN can submit some reactor operations to its prior approval.

For example, prior authorizations were imposed to EDF in 1990 at the aftermath of significant incidents that had occurred earlier. That is the case for reactor restart after programmed outages longer than two weeks. Authorizations are required only for programmed outages longer than two weeks when significant maintenance occurred. Among them, the ones without any significant maintenance are now under internal authorizations. Restarts after scrams and other non-programmed outage can be out any ASN authorization procedure as soon as they are shorter than two weeks or without significant maintenance.

3		General	Entire report

Question/ Comment **The report does not appear to contain any indication as to whether France followed up on actions assigned to it from the third Review Meeting.**

Q. n°		Article	Ref. in National report

Answer

At the third review meeting, three main items were identified for the 2008 review meeting as regards France:

1. IRRT mission findings and France responses: the IRRS mission was conducted in November 2006; the main findings and actions taken (as of July 2007 when the report was finalized) are described in the report at chapter 8.1.3; further information on the developments will be given in the presentation at the review meeting.

2. Progress in European safety harmonization work: this item is mentioned several time in the report. At chapter 2.3.1, it is described as one way to address the market deregulation issue; § 7.2.2.1.2 mentions the WENRA reference levels transcription process and the working groups set up at the beginning of 2006; at last, at § 20.2.1.2.2, the 2010 deadline for the harmonization of safety practices is recalled.

3. Safety management inside EDF in a deregulated electricity market: the safety management system of EDF is described a chapter 10.2 and further details are given in other chapters, as relevant. As stated in the report at chapter 11.4.1, P. 64 and 65, in 2006, ASN requested its Technical Support Organization, IRSN, to review the EDF safety management system in the context of competitiveness and to present the results to the Advisory Committee who will meet on this topic in April 2008.
Based on the advice of the Advisory Committee, ASN will decide on actions to be taken if needed; as any ASN decision, it will be made public.

4		General	Entire report

Question/ Comment

Throughout the report the advisory committee of nuclear reactors (GPR) is mentioned, in instances where ASN requests a review from the GPR.

What is the role of this committee, what is its composition and how does it integrate into ASN framework?

To prepare its decisions, ASN relies on opinions and recommendations from four Advisory Committees of experts (GPEs), and the standing nuclear Sect. of the Central Committee for Pressure Vessels. These committees were created in 1973 to assist the Director General for Nuclear Safety and Radiation Protection. Creation of ASN as an independent administrative authority led the ASN President to established four GPEs beside the Director General, by decision of 9 March 2007. 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 greater advantage of experience acquired internationally.

Answer

The advisory committee of nuclear reactors (GPR) is one of the GPEs. Chaired by Mr. Pierre Govaerts (from Belgium), it comprises experts from the French administration, from the IRSN, from the industry (nuclear or non nuclear industry) and from foreign regulators (for instance, Germany, Finland, Switzerland, Belgium and Spain).

The GPEs are consulted by the ASN Director General concerning the safety and radiation protection of installations and activities within their particular field of competence. They analyse the safety related technical problems raised by the construction, commissioning, operation and shutdown of nuclear facilities and their auxiliaries and the transport of radioactive materials. In particular, they review the preliminary, provisional and final safety cases for each of the BNIs. They are in possession of reports presenting the results of the analyses conducted by IRSN and issue an opinion plus recommendations.

Q. n°		Article	Ref. in National report
5		**General**	**Entire report**
Question/ Comment	The second bullet in Sect. 2.3.4, on P. 11 states that "… compare the safety of the installations with the most recent standards in order to … establish a new "safety reference system" ..." The report also mentions this "safety reference system" in other places; for example on P. 22, Sect. 6.3.2, last paragraph, as well as on P. 23, Sect. 6.3.5, second paragraph. **Please explain what is meant by "new safety reference system". To what extent would ASN ensure conformance with the most recent standards? Who determines if the "new safety reference system" is acceptable and on what bases?**		
Answer	By "safety reference system, we mean the main documents related to the safety demonstration (SAR, general operating rules, emergency plan...). Safety improvements are studied during PSR by the licensee, selected mainly on the basis of expert judgement, and implemented on the fleet of reactors under reassessment. These improvements of safety objectives or the new rules in the safety analyses take into account, as much as possible, the most recent safety standards. EDF makes a proposal about those improvements, then ASN makes the final decision, on the basis of an analysis done by IRSN, and after consultation of the GPR (Advisory Committee of Experts on Reactors).		
6		**General**	2.1, P.9
Question/ Comment	"Since the last review meeting, the act of 13 June 2006 on transparency and security in the nuclear field has provided a legislative basis for the regulation of nuclear safety and radiation protection in France: it introduced an appropriate penalty system and transformed ASN into an administrative authority independent of the government." **What are the experiences regarding the new penalty system in France?**		
Answer	"The new penalty system requires setting up a policy of enforcement actions and decisions justified and appropriate to the level of risk presented by the situation. Their importance is proportionate to the health and environmental issues of benchmarks standards deviations and also takes into account the endogenous factors relating to the conduct of the duty holder and exogenous ones relating to the context of the deviation. The tools needed for the implementation of this policy are being prepared."		
7		**General**	**P. 13, Sect. 2.3.9**
Question/ Comment	The issue of steam generator clogging has been summarized in the report. **We would appreciate if some more information on this issue can be provided for better understanding.**		
Answer	Since the discovery of this problem in 2006, EDF has continued its investigations. For 900-MW units, EDF defined a strategy in order to characterize the steam generators clogging level (by visual examination and eddy current test) and to determine which steam generators need a chemical cleaning (3 units in 2007 and 3 in 2008). For 1300-MW units steam generators, EDF has not managed yet to do the same characterization because of the design of the steam generators, which makes the visual examination more difficult. However, no high level of clogging was observed for the		

examined steam generators. Therefore, EDF is still working on the explanation of the phenomenon. A thermal hydraulics parameter has risen during the operation of several 1300-MW units. EDF supposed this parameter could be an indirect indicator of the tube support plate clogging level. But, this parameter did not come back to its original value after the first chemical cleaning of 1300 MW unit steam generators (for 900-MW units, the derived parameter became normal after the chemical cleaning of steam generators with high level of clogging). Consequently, the origin of the increase of this parameter still has to be identified.

In parallel, EDF is still carrying out some studies to identify the origin of this deposit buildup phenomenon.

Further details:

Q1. Please confirm that Cruas-4 is one of the first thirty four 900 MWe reactor where steam generators are still equipped with Inconel 600 tube bundle and carbon steel tube support plate and these steam generators are due for replacement.

Answer:
The steam generators of Cruas 4 are equipped with a tube bundle in Inconel 600TT and their tube support plates are made in stainless steel (Z10 C13). Consequently, their replacement is not planned at present. Only the SG with 600MA tube bundle are due for replacement before the 3rd ten-yearly outage of the reactor: ten 900 MWe reactors are concerned (including one whose SG should be replaced in 2008).

Q2. Among 58 nos. of tubes plugged, how many were plugged due to clogging and how many were plugged due to cracking/ initiation of crack

Answer: 58 tubes (not supported by the anti-vibratory bars) were plugged preventively in a zone that EDF had identified as sensitive to vibration fatigue according to their thermohydraulic calculations with different rates of clogging, in particular for the upper tube support plates. Except for the 2 tubes, which leaked in 2005 and 2006, no indication of cracks was found by the NDE performed on the tubes of this zone (such as eddy current or televisual tests).

Q3. Please let us know whether the tube which cracked was having clogging or it was free from clogging and failed only on account of vibrations?

Answer: The tube cracked because of an overall mean clogging rate higher than a threshold and combined with the specific design of the tube support plates of the 51B SG (holes in plates without tubes), inducing high speed of the secondary fluid around the tubes, and thus causing possible instability and vibrations. According to the visual examinations made on the higher tube support plates, it seems that clogging was distributed all over the tube support plates, not specifically near the cracked tubes.

Q4. Any change in the operating conditions envisaged or implemented on account of this?

Answer: EDF is envisaging some changes in operating conditions. In particular, the pH in the secondary circuits should be chosen higher for the reactors with a low pH in this

Q. n°		Article	Ref. in National report

circuit and some chemical parameters or components of the secondary circuit could be modified. Tests are being conducted by EDF in order to estimate the most appropriate solutions.

8		General	

Question/ Comment

Ireland commends France on its report. It has produced a well laid out, clear and comprehensive report for the 4th Review Meeting.

Answer

France is thankful for this comment.

9		General	Sect. 2.3.3 P. 10 & 7.3.2.2 P. 3

It is noted that 'certain operations' will be subject to 'internal authorisations'.

Question/ Comment

What authorisations does this currently include and how will the scope be extended?

Operations presently covered

The operations covered by an internal authorization system can be some of those that had been previously submitted to ASN prior approval. It is the case for EDF since 2004 for "mid-loop operation" and reactor restart after programmed outages longer than two weeks without significant maintenance. For research reactors of the CEA, the internal authorization system can be applied to the modifications of the installations that do not compromise their safety demonstration.

ASN has provided a clear list of conditions that the operators must respect to prove that intended operations stay within the overall safety demonstration.

Answer

New possible fields for an internal authorization system :

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10		General	

Question/ Comment

Are there plans to increase the time spent fuel is stored on the reactor site as a result of planned increases in fuel burn up?

Are there plans to increase the initial uranium enrichment levels in fresh fuel to allow longer burn-ups?

As a result of increases in fuel burn-up, the time spent fuel is stored on the reactor site indeed increases. This is necessary to comply with requirements regarding activity of the fuel before it can be carried away.

Answer

The short term aim of EDF on this item is to join the international mainstream concerning enrichment and discharge burn-up. These concerns are taken into account through macroscopic features of some EDF current fuel management projects. Right

Q. n°		Article	Ref. in National report
	now, a project of increasing the discharge burn-up of class 1300 MWe reactors up to 62,000 MWd/t is under examination by ASN. This project entails an increase to 4,5% of the initial enrichment in uranium 235.		
11		**General**	**Sect. 2.3.6 P. 12**
Question/ Comment	**What design aspects of the EPR are unique to the French case i.e. how will the EPR being built in France differ from the Finnish, German and US EPR designs?**		
Answer	If some differences remain due either to specific operator's requirements or to national regulations, the EDF objective is that the differences in the EPR in which he is at least partially owner in different countries are as reduced as possible. As the licensing process and the detailed design are in progress, it is not currently possible to indicate a list of such differences.		
12		**General**	**Sect. 20.2.1.2.2 P. 163**
Question/ Comment	The IRRS Review Team recommended noted the 'ASN has many orders and guides under review and in preparation to further incorporate IAEA standards and WENRA reference levels. This work should be completed as soon as practical as part of the renovation of the French nuclear and radiation safety regulation. This should also create a single, comprehensive set of orders and guidance that are clear and useful to all parties involved. **Can ASN report on its efforts to achieve the WENRA (2010) harmonization of national safety practices?**		
Answer	In 2006 a first comprehensive structure of Ministerial orders and ASN's guidance to incorporate WENRA's reference levels had already been defined. In 2006, writing of draft regulatory texts by ASN started. However, due to the law that created the new ASN in June 2006, a third level of regulatory text has been introduced : ASN's regulatory decisions to precise Ministerial orders. To be able to achieve the objective of 2010 despite the necessary revision of its framework, parallels activities have been implemented : several groups have been tasked to go on drafting requirements and guidance by issues while a coordination group has been created to organize a new comprehensive structure of texts taking into account the borderline between Ministerial orders, ASN's regulatory decision and ASN's guidance.		
13		**General**	**P. 11 Sec.2.3.5**
Question/ Comment	ASN aims in particular to prevent the saturation of NPP interim storage capabilities as observed in other countries, and to avoid the licensees using older installations, for which the regulatory and technical framework for authorization is less stringent, as a palliative measure. **What are older installations? I'm wondering if they are used fuel storage pool or a nuclear reprocessing plant.**		
Answer	As a matter of fact, ASN's main concern is with some storage facilities for experimental reactors irradiated fuels, for which the regulatory and technical framework was less stringent when they were built.		
14		**6**	**6.3.1.3**
Question/ Comment	Modifications specific to N4 plants - Completion of equipment upgrades associated with qualification for post-accident environmental conditions.		

Q. n°		Article	Ref. in National report
	These plants are relatively recent: what sort of post-accident environmental conditions was not taken into account for the qualification of equipment in the design of this series?		
Answer	Some sensors and electric parts of valves located in the safety and nuclear buildings has not been fully qualified regarding to their post accident ambiant conditions (temperature, humidity, radiation). Upgrading or moving electric parts are the modifications which will be set at the first N4 decennal shutdown.		
15		**6**	**6.3.6**
	Control of criticality risks		
Question/ Comment	**What are the two events that occurred in the second half of 2006? Was there no precursor before for this issue – or are these events related to new exploitation procedures?**		
Answer	The two events occurring in the second half of 2006 are "unperceived sub-criticality events" that occurred at Cruas in September 2006 and at Civaux in December 2006.Two similar events had occurred at the end of 2003 at Gravelines and in March 2005 at Dampierre. OE actions taken in response to the first two events were expanded upon after the events occurring in 2006, in line with the SOER (reference 2007-1) recently issued by WANO.		
16		**6**	**P. 21, Sect. 6.3.1.2**
Question/ Comment	In this Sect. of the report, there is a concise summary of the results of the third ten-yearly outage of the 900 MWe units and of the first ten-yearly outages of the 1450 MWe (N4) units. However, the summary of the second ten-yearly outages of the 1300 MWe units appears not to be as detailed.		
	What is the main feedback and what are major modifications proposed following the second ten-yearly outages review of the 1300 MWe?		
Answer	PSR realized for second decennial visit of 1300 MWe reactors fleet was achieved in 2005 and conclusions of this PSR will be incorporated on 1300 MWe plants until 2014. Examples of modifications introduced following this PSR is given hereafter : improvements of Reactor Vessel Level Instrumentation System used for Emergency Operating Procedures, improvement on manual actuation of safeguard systems when they are fed by emergency electrical switchboards, improvements of Station Black Out means used to ensure flow to seals of reactor coolant pumps, modification of I&C on CVCS valves, modification of start-up sequence of EFWS after Steam Generator Tube Rupture.		
17		**6**	**P. 21, Sect. 6.3.1.3.1**
Question/ Comment	**Referring to the last bullet of this Sect., what actions were taken to lead to the reduction of fuel damage probability of the N4 series with respect to the sequences highlighted by the probabilistic safety analysis?**		
Answer	Examples of modifications of the N4 series induced by PSA are: • design of new diversifed reactor trip signals to cope with ATWS situations identified in PSA (e.g. RCP trip, small LOCA or steam line break), • better separation of electrical supply of I&C cabinets associated, on one side, to plant control and, on the other side, to reactor trip by ATWS signal.		

Q. n°		Article	Ref. in National report
18		**6**	**Chap. 6.3.1.1 &6.3.1.3 P. 20**
Question/ Comment	Problems in Sect. 2.3, such as 2.3.7(The recirculation sump filter clogging risk) and 2.3.9 (Steam generator clogging), have been starting to solve. As well as fire protection for 900MWe have been solved in 2006.But some problems (such as listed in Sect.6.3.1.1 and 6.3.1.3) are put into ten-yearly outages(VD3 900 or VD1 1450). **How does ASN or EDF make the choices?**		
Answer	Decisions regarding problem solving deadlines are taken by ASN on a case by case basis. They integrate various factors, such as : (1) impact of the anomaly on the safety demonstration (which transients are affected by the anomaly ? How does the anomaly affect these transients ?), (2) estimated frequency of affected transients, (3) strength of the remaining defence in depth levels, (4) possibility of implementing palliative measures, (5) complexity of the solution.		
19		**6**	**6.3.6, P. 24**
Question/ Comment	"An event that occurred in an individual reactor on reaching criticality for plant restart in October 2004 led EDF to rewrite operations procedures for achieving criticality. The associated training programme was also revised. Since September 2006, all EDF sites have used the same procedures, founded on best practice." **How does EDF ensure, that the lessons learned and best practices explored at one NPP will be applied for the other NPPs ? Do they have a procedure for that, or does it depend on the case?**		
Answer	Following the event that occurred in October 2004, criticality procedures were jointly revised with plant representatives from each plant series. All plants were instructed to apply the new procedures and monitoring actions were carried out to ensure their implementation. While this may not be a routine practice, it is applied when there are significant safety issues at stake. Depending on the level of significance, best practices may be enforced, recommended or disseminated for information purposes		
20		**6**	**P. 20, Sect. 6.3.1.1**
Question/ Comment	**Please indicate the measures that were adopted to enhance the seismic resistance for the Le Bugey plant.**		
Answer	In 2001, ASN published the new basic safety rule 2001-01, that is the official text dealing with the seismic risk for surface BNIs. This text replaced a rule dating back to 1981. According to the 2001-01 rule, it appeared that the level of the earthquake to be taken into account for the Le Bugey plant was bigger than the design basis level. As a consequence, EDF reviewed the seismic design of the nuclear island buildings and the turbine hall and proposed some modifications, which impact both equipment (for example the seismic resistance of some pipes would be reinforced) and structures (i.e. the civil engineering of the Auxiliary Nuclear Buildings would be modified - reinforcement of certain column supports)"		
21		**6**	**P. 20, Sect. 6.3.1.1**
Question/ Comment	**How the enhancement of the long-term reliability of emergency diesel generators was achieved?** **Which external hazards get addressed by these improvements ?**		

Q. n°		Article	Ref. in National report

Answer	The main safety function of a Diesel generator (DG) is to ensure the internal electrical power supply during 7 days (in accidental situations and in case of loss of offsite power), in order to maintain the three following safety functions: residual core power extraction, neutron reactivity control and radioactive material containment control. EDF defined a specific I&C protection system for diesel generators covering the following envelope case: loss of offsite power during 15 days due to an earthquake without alert phase activation. The main DG protection system modifications result in providing DG with the capacity to be in service in a safety mode for a longer time (15 days instead of 7 days), but only for primary coolant stabilized thermohydraulic situations. They consist in restoring some DG non priority protections (such as: very low oil pressure, very low high temperature water pressure, casing overpressure) in order to prevent its total loss... During this period of time of 15 days, if a non priority protection is actuated, the operator can choose to stop the DG and to repair it in a short time, rather than losing it. These modifications will be installed on 900 MWe reactors during the third decennial outages. All external hazards, such as flooding, earthquake, etc., which present a risk of common cause failure for plant external power supply or essential service water pumping station are addressed by DG improvements.

22		6	P. 21, Sect. 6.3.1.3.1

Question/ Comment	We understand that it is planned to reduce the fuel damage probability by taking action in respect of sequences highlighted by PSA. **Please indicate the relevant event sequences and the modifications planned in N4 plants.**
Answer	Examples of modifications of the N4 series induced by PSA are: • design of new diversifed reactor trip signals to cope with ATWS situations identified in PSA (e.g. RCP trip, small LOCA or steam line break), • better separation of electrical supply of I&C cabinets associated, on one side, to plant control and, on the other side, to reactor trip by ATWS signal.

23		6	P. 24, Sect. 6.3.6

Question/ Comment	It is mentioned in the report that an in-depth analysis was initiated in early 2007 in respect of the events concerning difficulties in controlling very low power level during operating transients. **Please provide the findings of these investigations, if they are now available.**
Answer	Investigations performed on these events have highlighted the importance of clearly defining each individual's roles and responsibilities (control room operators, supervisors, safety engineers) within the crew, and of ensuring that OE is comprehensively captured in operating procedures. They have also confirmed the benefits of implementing tools and methods made available to operations crews, such as error reduction techniques. In addition, they have prompted investigations into the creation of a specific alarm enabling control room operators to detect abnormally low nuclear flux more easily.

24		6	6.3.1.1 P. 20

Question/ Comment	The 'possibility, as a precaution, of extending the unit lifetimes beyond 40 years' is stated in the report.

Q. n°		Article	Ref. in National report
	Can you state the circumstances that would require a reactor to operate beyond 40 years?		
Answer	In France there is no licensing limit for Nuclear Power Plant but EDF carries out a Periodic Safety review (PSR) every ten years. On the basis of this PSR, the French Safety authority (ASN) allows EDF to operate the Nuclear plants for the next 10 year – period (cf § 14.1.3). The 4th PSR corresponding to the40 year-limit should not be much different of the previous ones, including a conformity and safety level enhancement as described. However, as most of the components have been designed on a 40 year – basis, .the French Safety Authority (ASN) was worried about the possible failure of those components around 40-years. Therefore, ASN asked EDF to develop a specific ageing management procedure in order to demonstrate that there is no risk of failure of the main structures and components during the 30 to 40 year period, in agreement with the AIEA guidelines. Besides, it is to be mentioned there is no special regulation for ageing management in France.		
25		**6**	**Sect. 6.3.5**
Question/ Comment	EDF embarked on an overall re-assessment of fire protection, as part of the investigations carried out in 1992 for changes to the fire protection process at operating PWR units. **Q1. What is the motivation of re-assessment? (Voluntary or upon request of regulatory body)** **Q2. What are the major improvements requested by the Fire action plan?** **Q3. What are the major differences between Fire action plan and Fire PSA results?**		
Answer	The fire Action Plan was initiated at EDF in 1990 within the framework of a revaluation of the installations of the park compared to the reference frame in force (RCCI-1987). The conclusions presented to safety authority in 1994 were considered satisfactory realising certain complementary evolutions. The total revaluation was formally accepted by the safety authority at the end of 1997.The main reasons which led EDF to engage this evolution were : • The operating feed back which highlighted failures and especially insufficiencies of the protective systems installed at the origin (valves, sprinklings...) and of the procedures for the fight badly adapted. • The design practices which were gradually codified during the construction of the various stages to lead to a reference frame, the "RCCI" adapted to each stage by "Directive Set fire to" clean, and fixed in theory for 10 years • The absence of procedures for the functional control of the installations fixing the procedure to follow in the event of fire.		
26		**6**	**Sect. 6.3.2, P. 22**
Question/ Comment	It is stated that an assessment involving a compilation of a safety Reference system on the basis of classification of hazards in the light of changes in the climatic conditions was conducted which was followed by a study of the additional protection measures required to enable installations to withstand these hazards. This assessment is scheduled to be completed and it's implementation started by the end of 2010. **How does ASN conclude that the Short term Measures would be adequate to cope with a Hazard situation if such a scenario occurs before 2010?**		

Q. n°		Article	Ref. in National report

Answer

ASN has examined and approved the short term measures. They are sufficient to cope with the risk level assessed. The long term measures will add some new safety margins which will allow to limit the occurrence of situations in which it is needed to shut down the plant in order to ensure safety.

27		6	P. 20

Enhanced seismic resistance (mainly concerns the Le Bugey plant)

Question/ Comment

Can you explain the scope of the enhancement (complete requalification of design basis to a new reference requirement or only a limited upgrade)?
What has been the basis for the requirement for enhancement (Also, how large is typically quantitative difference between previous and new basis)?

In 2001, ASN published the new basic safety rule 2001-01, that is the official text dealing with the seismic risk for surface BNIs. This text replaced a rule dating back to 1981. According to the 2001-01 rule, it appeared that the level of the earthquake to be taken into account for the Le Bugey plant was bigger than the design basis level (increase of 45% of the ground acceleration from 0,1g to 0,145g).

Answer

As a consequence, EDF reviewed the seismic design of the nuclear island buildings and the turbine hall and proposed some modifications, which impact both equipment (for example the seismic resistance of some pipes would be reinforced) and structures (i.e. the civil engineering of the Auxiliary Nuclear Buildings would be modified - reinforcement of certain column supports).

28		6	Chap. 6.3.1.1 P. 20

It is indicated that the scope of the 3rd safety review for 900MWe units was defined on the basis of national and international experience feedback, and comparison with the most recent reactors designs, including the EPR project.

Question/ Comment

It is our understanding that there are some significant differences between the designs of the 900 MWe units and those of the most recent reactors such as the EPR (especially related to severe accidents).

How are these differences treated within the scope of these safety reviews?

Answer

Some areas of PSR are chosen in order to appreciate margins of existing reactors to N4 or EPR design improvements. It is for example the case of passive failure on safety injection sytem or internal flooding VD3 studies. Some modifications of VD3 900 MWe plants can come from solutions coming from EPR or N4 plants design. That is the case of limitation of EFWS flow to ruptured steam generator during SGTR (EPR) or automatic stop of fuel pool cooling and purification system pumps (N4) to limit drainage of the fuel pool in case of leak on a connected system.

However, some EPR features cannot reasonably be implemented on already existing plants. For instance, due to design layout and radioprotection considerations, it is not foreseen to provide existing plants with an EPR-type core catcher for severe accidents mitigation.

29		7.1	§ 7.1

Question/ Comment

The French report states that the new TSN act contains advances with regard to transparency and draws on lessons learnt with regard to the review of foreign legislation.

Could you expand on the advances that have been made and the nature of the

Q. n°		Article	Ref. in National report

lessons learnt from foreign legislation in relation to regulatory transparency?

Answer

The advances made by the TSN Act in terms of transparency in the field of nuclear safety and radiation protection are described in paragraph 7.1.3 of the report.
As regards the lessons learnt from foreign legislations, the organization of nuclear safety control of the following countries was looked at : Canada, Spain, United States. Special attention was paid to the detailed organization of the regulatory body, in particular the independence of commissioners with respect to their appointment and the relations between the commission and the various departments of the body.

30		7.1	P. 28-29, Sect. 7.1.4, § 3

Question/ Comment

The report states that "[The act] provides a legal basis for the periodic safety reviews and for the control of urban development around nuclear sites."

How will urban development around nuclear sites be controlled using the provisions of the act (for examples, will the ASN issue authorizations for any new urban development)?

Answer

The administrative authority (the representative of the Government in the district - the Préfet) can prescribe around BNIs, including existing installations, public utility easements related to use of the ground and the execution of work subject to a notification or an administrative authorization. This is a way of controling urban development in the vicinity of BNIs. These easements may also relate to use of the ground on the footprint of the installation and around said footprint, after the basic nuclear installation has been declassified or has disappeared. They are prescribed upon technical advice of the ASN, under the conditions set forth in the Environmental Code. They must be brought to the knowledge of people who, for example, would intend to construct on the site.

31		7.1	P. 36, Sect. 7.3.2.2, §3

Question/ Comment

The report states that "ASN is developing an approach in which certain decisions are devolved to the licensee…".

Please provide some examples of decisions that would be assumed by the licensee.
Will these devolved licensee's decisions be subject to ASN oversight?
What will be the mechanism to achieve this oversight?

Answer

General Principles
ASN requested the licensees to reinforce their internal supervision on some operations. Under appropriate supervisory organization, the operator is solely responsible for the operations, providing a system named "internal authorisation" including enhanced and systematic internal control showing guarantee of good quality, autonomy and transparency.

In such a system, the decision for the operation is a matter for the operator, not for ASN.

There is now a legal framework for this system, based on article 18 and 27 of the decree n° 2007-1557 November 2nd 2007.

Operations Covered
The operations covered by an internal authorization system are those on which ASN wants a reinforced internal control of the licensee. It is the case for EDF since 2004 for "mid-loop operation" and reactor restart after programmed outages longer than two weeks without significant maintenance. For research reactors of the CEA, the internal authorization system can

Q. n°		Article	Ref. in National report

be applied to the modifications of the installations that do not compromise their safety demonstration.
ASN has provided a clear list of conditions that the operators must respect to prove that intended operations stay within the overall safety demonstration.

How does it work ?
The licensee establishes a commission internally. This commission is independent, meaning that its members are independent of people directly in charge of operations.
For all operations covered by "internal authorization" systems, authorized people at the operator's take the decision to do it or not in the light of a mandatory notice of the independent commission.

ASN's oversight
This system (nature of the operations under internal authorization system, licensee's process for internal authorisation, independence of the commission) has to be approved by ASN. ASN also decides the terms of its periodical information about the system and the granted authorisations.

ASN supervises and assesses the reliability of "internal authorisations" systems through various means: on-site inspections, headquarter inspections, sample analysis by IRSN, yearly statements of the licensee, etc. In 2006, ASN conducted a review in each NPP on this subject. These reviews were an opportunity to check compliance with the new requirements.

ASN can interrupt or cancel at any time this kind of system, if there is any sign that its reliability and efficiency are challenged.

32		7.1	Sect. 7.3 P. 33

ASN has opted not to have inspectors resident on a particular site, rather it requires them to take part in inspections of different licensees and installations.

Question/ Comment

While there are merits in this approach, have there been any issues identified at a particular plant that would/could have been recognised earlier had the inspector been resident and more familiar with the plant?

Answer

Prime responsibility for the plant safety rests on the licensee. The licensee has to report any non-compliance (and more generally speaking safety issues) to ASN, even if ASN was not performing any inspection (more than 700 are performed on BNIs, including more than 400 related to the 59 nuclear power reactors). Furthermore, inspection is only one of the tools used by ASN to perform its oversight. As today, no delay in identifying a major safety issue can be based on not having resident inspectors.

33		7.1	Sect. 7.3.3.4 P. 40

Question/ Comment

The report notes the 'analysis of significant events', 'review of feedback' etc.

Does ASN have a specified timeframe within which to perform this work?

Q. n°		Article	Ref. in National report

Timeframe for the operating experience feedback (OEF) process at ASN and IRSN

A. After the receipt of the safety significant event (SSE) early notification, within a week:
- ASN checks the content of the fax notification (is the information provided complete and correct?) ;
- ASN and IRSN ask for more information to the operator, if needed ;
- ASN can perform a reactive inspection on the site when more information is required ;
- if the event has been rated at level 1 or above on the INES scale, ASN publishes a press release and unveils more information on its website ;
- ASN and IRSN update their databases used to collect the SSE.

B. After the receipt of the SSE report (within 2 months) :
- ASN and IRSN carry out an analysis to examine how the event took place, which safety functions were implicated, how operators and equipment behaved, what the consequences were, together with knowledge of any similar incidents which have occurred. In addition, it is examined if, in other circumstances, the same accident would have had far more severe consequences,
- ASN and IRSN identify the root causes of the event and examine if the same root causes applied to other equipment or systems can induce different sequences which consequences could be potentially serious,
- ASN and IRSN look for additional information for the most significant events. Despite the quality of the SSE report, the information supplied usually has to be supplemented by direct contacts with the plant or the relevant EDF head office departments,

Answer

- IRSN holds a weekly meeting, attended by all the engineers in charge of site safety assessment, for reviewing all the SSE reports received during the previous week. The purpose of this meeting is to 1) inform all engineers responsible for assessing site safety of events occurring in the reactors and incite a debate on the issues raised by these events, 2) decide on the next steps in terms of in-depth analyses and IRS declarations.

C. On a three-month basis :
- ASN and IRSN hold a meeting to identify outstanding or precursor events. The most important of these events are the subject of a probabilistic quantification of IRSN to estimate the conditional probability of core damage ;
- ASN, IRSN and EDF hold a follow-up meeting of the outstanding events.

D. On a three-year basis :
- ASN organizes a meeting of the advisory committee of experts for nuclear reactors (GPR) in order to examine the significant incidents of this period. The objectives of this meeting are to put forward operating measures or modifications of materials which result from complex studies resulting from in depth analysis of events (safety studies…). The preparation of this meeting requires a technical instruction of the topics between EDF and IRSN. At the end of this instruction, IRSN issues a report that is used to support the GPR meting. This report carries out an in-depth analysis of significant events. It analyzes the files transmitted by the licensee and evaluates acceptability, with respect to safety, of the position of the licensee and the corrective and preventive actions proposed. It generally concludes with recommendations that are frequently adopted by GPR and reformulated by the ASN as requests to the licensee.

Q. n°		Article	Ref. in National report
34		**7.1**	**P27, L19, Sect. 7.1**
Question/ Comment	It is said in the report that it draws on lessons learnt from the review of foreign legislations. **Please clarify the lessons learnt from foreign legislations?**		
Answer	The organization of nuclear safety control of the following countries was looked at : Canada, Spain, United States. Special attention was paid to the detailed organization of the regulatory body, in particular the independence of commissioners with respect to their appointment and the relations between the commission and the various departments of the body.		
35		**7.1**	**P27, L3 from Btm**
Question/ Comment	It is said under the Sect. 7.1.2 that it takes the "limited number" of major individual decisions concerning large nuclear installations, including authorization and dismantling decrees. **Why are the decisions by the government limited?** **Please clarify how major individual decisions are limited.**		
Answer	As explained in Sect. 7.1.2, the Government retains the power to take major individual decisions concerning BNIs, notably authorization and dismantling decrees. Such decisions govern the main stages of the life of installations. Their number is relatively small compared with individual decisions issued by the ASN, which govern the numerous operations made during the lifetime of the installation, for example the use of radioactive material transport packaging. On average, Ministers take about 10 decisions annually and the ASN take about 500 decisions annually.		
36		**7.1**	**P28, L13, Sect. 7.1.3**
Question/ Comment	The first paragraph under the Sect. 7.1.3 says as follows: The right of access to the information on nuclear safety and radiation protection held by the public authorities existed already in the French environment code. The act extends the requirement, introducing a right of access by the public to the information held by BNI licensees, by radioactive material transport managers and by holders of radioactive materials. This major innovation distinguishes nuclear activities from other industrial activities, which are not subject to such an obligation of transparency. This is to require the operators to disclose information. It is a new idea, and surely major innovation. **Q1. Does this mean that they can require information unlimitedly?** **Q2. Can operators reject their request for the reason of corporate security?** **Q3. Does this apply to only the operators who run business in France?** **Q4. Is it only French citizens that can require information?**		
Answer	**Q1.** Article 19 of the act of 13 June 2006 on transparency and security in the nuclear field stipulates that the right of access by the public to the information held by BNI licensees is exercised under the conditions defined in the Environmental Code. **Q2.** The Environmental Code specified, inter alia, that a request can be rejected on the ground that the delivery of information would jeopardize commercial or industrial security. Delivery of documents can be refused to protect, for example, information linked to National security or individual security. Delivery of draft documents can also be denied. **Q3.** As any national law, the act of 13 June 2006 on transparency and security in the nuclear field, applies only to operators who run business in France.		

Q. n°		Article	Ref. in National report
	Q4. There is no condition of citizenship to exercise such a right, neither in the act of 13 June 2006, nor in the Environmental Code. However, the person who requests information must be concerned with the matter.		
37		**7.1**	**P28, L24, Sect. 7.1.3**
Question/ Comment	The 3rd paragraph under the Sect. 7.1.3 says as follows: By giving them a legal basis, the act strengthens the local information committees (LICs) which have been established over the years for large nuclear installations, in application of a 1981 circular from the Prime Minister. LICs are given a legal basis. **What kind of authorities or powers can they hold in terms of nuclear safety by the act?** It is said that one of their general roles is consultation in the Sect. 18.1.2.3. **How is the legal force of consultation stated?**		
Answer	Under the act of 13 June 2006 on transparency and security in the nuclear field, local information committees are tasked with a general follow-up, information and consultation mission in the field of nuclear safety, radiation protection and the impact of nuclear activities on persons and the environment. Article 22-V of the act stipulates, inter alia that the ASN and the ministers tasked with nuclear safety or radiation protection can consult the local information committee regarding any project related to the boundary of a BNI. This consultation is mandatory for any project that is the subject of a public enquiry. The committee can refer to the ASN and the ministers tasked with nuclear safety or radiation protection any matter related to nuclear safety and radiation protection concerning the site.		
38		**7.1**	**P29, L9, Sect. 7.1.4**
Question/ Comment	It is said in the Sect. 7.1.4 that several decrees implementing the 13 June 2006 act must be published. **Have they been already published?**		
Answer	The following major decrees have been published to implement the act of 13 June 2006 in the field of nuclear safety : • Decree of 2 November 2007on procedures applicable to BNIs and transport of radioactive substances ; • Decree of 11 October 2007 on the nomenclature of BNIs (specifying the criteria of a BNI) ; • Decree of 11 May 2007 related to the designation of nuclear safety inspectors ; • Decree of 28 February 2008 nominating the members of the High Committee for Transparency and Information on Nuclear Security. A few more implementing decrees are being prepared, notably on local information committees.		
39		**7.1**	
Question/ Comment	The legislative and regulatory framework in France was updated and is currently defined by the Act of 13 June 2006 briefly titled as "TSN act" - "Transparency and Security in Nuclear Field". This act declares the major responsibility of the operating		

Q. n°		Article	Ref. in National report

organization and establishes an independent regulatory body for nuclear safety and radiation protection - ASN - subordinate to the Parliament of France. However, as one can understand from the Report, the mandatory regulatory provisions are adopted by the ministries responsible for nuclear safety and radiation protection. Even the ASN documents describing in detail these provisions are to be approved by these ministries. It seems that such a situation reduces the extent of ASN independence as a regulatory body.

French nuclear industry works to its own rules, the development of which is not the responsibility of ASN. This also reduces the role of ASN as a regulator, rather leaving for ASN the supervisory functions.

The issuing of major licenses for large (basic) nuclear installations also rests with the Government of France. As follows from the text given in Chap. 19 of the Report, the responsible ministries issue licenses for intermediate stages of plant commissioning such as reactor core fuelling, bringing to criticality etc. ASN meanwhile reviews the documents in support of applications and gives his proposals to the ministries. For smaller installations ASN issues licenses himself.

Do we understand it correctly that ASN is only partially a regulatory body in the context of the Convention?

Answer

Major regulatory texts of a general nature such as decrees and ministerial orders, as well as major individual decisions including creation and dismantling authorisations are indeed taken by the Government. However, ASN :

- issues opinions to the Government on the above-mentioned major individual decisions (ASN consultation being compulsory) ;
- takes the general regulatory decisions of a technical nature (which needs Ministers' approval) ;
- authorises the start-up of a basic nuclear installation ;
- imposes individual prescriptions to nuclear operators ;
- delivers transport authorizations ;
- decides administrative sanctions ;
- grants and withdraw authorisations for equipment using ionising radiations, and the authorisations to hold and import radioactive sources ;
- monitors compliance with authorizations.

Concerning the rules developed by the operators, they must fit in the regulatory framework set by the ASN and need be approved by it.

40		7.2.1	P. 133

Question/ Comment

In the report, the “technical guidelines for the design and construction of the next generation of NPPs with PWR” are mentioned as a basis for the safety assessment of the Flamanville-3 NPP.

To what extent will these guidelines be integrated in the new French regulation?

Q. n°		Article	Ref. in National report
Answer	Some parts of the guidance of the "technical guidelines" have already been enforced as regulatory requirements in the authorization decree of Flamanville 3. As a next step within the 2010 regulatory development work, ASN is drafting a generic regulatory decision on the design of PWR mainly based on the content of the "technical guidelines".		
41		**7.2.1**	**P. 30, Table**
Question/ Comment	Decree of 2 April 1926 is listed under Construction as the applicable regulations in the table in the Sect. 7.2.2.1.1. It is amazing that the Decree of 1926 is still effective. Technological innovation has progressed for 80 years until now. **What is stated in the Decree?**		
Answer	The decree of 1926 has been regularly modified since its creation to take in account the evolutions of technology. The last modification took place in December 2003. However, in France, even when it is modified, a decree is still designated by its first date of issue.		
42		**7.2.1**	**P. 31, Sect. 7.2.2.1.3**
Question/ Comment	In the Sect. 7.2.2.1.3 on P. 31, it cannot be seen if there are legislations regarding radioactive releases. **Please explain the legislations about them.**		
Answer	Radioactive releases legislation is described in chapter 15 of the report. In particular, discharges must not exceed limits set on case by case basis, according to the best available technology. Discharge licence orders set these limits, discharge conditions and practical details of environment surveillance programme.		
43		**7.2.1**	**P. 32, L1**
Question/ Comment	In the first paragraph on P. 32, it is said that the decisions require approval by the ministers responsible for nuclear safety when they concern nuclear safety or by the ministers responsible for radiation protection. It is suggested that there are multiple ministers who are responsible for nuclear safety. **Which ministers are involved?** **Please clarify this for nuclear safety and radiation protection, respectively.** **Also please explain what will happen when they don't reach an agreement.**		
Answer	Pursuant to the Article 4-1° of the act of 13 June 2006 on transparency and security in the nuclear field, ASN regulatory decisions of a technical nature relative to nuclear safety are subject to the approval of the ministers tasked with nuclear safety and decisions relative to radiation protection are subject to the approval of the ministers tasked with radiation protection. Under the current governmental structure, the ministers tasked with nuclear safety are the Minister for Ecology and Sustainable Planning and Development and the Minister for the Economy, Finance and Employment. Currently, there is one ministers tasked with radiation protection, who is the Minister for Health, Youth and Sport. In case of disagreement between two ministers, the issue would be submitted to the arbitration of the Prime Minister.		
44		**7.2.2**	

Q. n°		Article	Ref. in National report

Flamanville 3 construction project has started.

Question/ Comment

Have there been any changes in the licensing, oversight and inspection philosophy for a new construction project compared to N4 licensing and construction oversight?
If yes, what are they and what have been the driving forces for the changes?

Answer

The licensing and inspection philosophy was not finalized for N4 plants whereas, now, the ASN commissioners have defined the strategy of inspection and control : the strategy for the construction oversight of the Flamanville 3 (EPR) reactor was endorsed by the ASN commissioners at the end of 2007. This strategy formalizes some main principles which have already been used for the construction of the existing reactors : the aim of the control performed by ASN is to check if the operator ensures its primary responsibility. Consequently, the ASN control is made by sampling, taking into account the safety significance of the topics.

45	Japan	7.2.2	P. 32, L24

The 3rd paragraph under 7.2.2.3 on P. 32 says as follows:

Question/ Comment

Production of these documents is the responsibility of industry and not ASN, which nonetheless reviews them to ensure their conformity with the general technical regulations, in most cases leading to the drafting of a RFS, a guide or a decision recognizing their overall acceptability on the date of the edition concerned.

Please give us more details about the review procedures for ensuring the conformity.

Answer

Each modification must be explained by AFCEN in a specific document. This explanation is examined by the technical services of ASN and the experts of IRSN. The examination is a comparison with the previous version, the industrial practice and the requirements of regulation. The conclusions of the examination are often submitted to the experts of the Central commission for pressure equipment.

46		7.2.2	P. 32, L8 from Btm

In the 5th paragraph under 7.2.2.3 on P. 32 it is said as follows:

Question/ Comment

With regard to the most important changes, this analysis concluded that the 2005 version of this code is currently applicable. However, the analysis will continue in 2007 in order to issue a comprehensive ruling on all the changes presented.

In the 3rd paragraph under 7.2.2.3 on P. 32, it is said that in most cases leading to the drafting of a RFS, a guide or a decision recognizing their overall acceptability on the date of the edition concerned.

For RSE-M, what takes the analysis so long in order to issue a comprehensive ruling?

Answer

The RSE-M code (In Service Inspection Rules For the Mechanical components of PWR nuclear power islands) is a set of rules, established by the operator, which concern the in-service inspections program of mechanical components of the PWR.

It includes, among other, the practices proposed by the operator to respect the regulations, which is monitored by the ASN. ASN doesn't approve the whole code, but gives its opinion periodically on the items requiring a special attention.

47		7.2.2	P. 36, L7 from Btm

Question/ Comment

In the 7th line from the bottom on P. 36 (Sect. 7.3.2.2), it is said as follows:

Q. n°		Article	Ref. in National report

ASN is developing an approach in which certain decisions are devolved to the licensee. The licensees may, on the basis of an opinion from an internal commission independent of the operators concerned, themselves take decisions, previously the preserve of ASN, provided they do not compromise the safety assumptions adopted for operation or dismantling of the installations.

Please show us some examples about licensee empowerment/ devolvement by ASN. Also please tell us where "an internal commission independent of the operators concerned" stands. Who is responsible for this? The head of the worksite or CEO of the licensee?

Answer

A. Prior Approval

As part of its nuclear installations safety regulating role, ASN can submit some reactor operations to its prior approval.

For example, prior authorisations were imposed to EDF in 1990 at the aftermath of significant incidents that had occurred earlier or because PSA showed a significant risk during these specific operations:

- lowering the primary system water level to the ¡§low operating range¡¨ of the RHR system with core loaded (transient commonly called ¡§mid-loop operation;
- reactor restart after programmed outages longer than two weeks.

B. General Principles

ASN requested the licensees to reinforce their internal supervision on some operations. Under appropriate supervisory organization, the operator is solely responsible for the operations, providing a system named "internal authorisation" including enhanced and systematic internal control showing guarantee of good quality, autonomy and transparency.

In such a system, the decision for the operation is a matter for the operator, not for ASN.

There is now a legal framework for this system, based on article 18 and 27 of the decree n¢X 2007-1557 November 2nd 2007.

C. Operations Covered

The operations covered by an internal authorization system are those on which ASN wants a reinforced internal supervision of the licensee. It is the case for EDF since 2004 for "mid-loop operation" and reactor restart after programmed outages longer than two weeks without significant maintenance. For research reactors of the CEA, the internal authorization system can be applied to the modifications of the installations that do not compromise their safety demonstration. ASN has provided a clear list of conditions that the operators must respect to prove that intended operations stay within the overall safety demonstration.

D. How does it work ?

The licensee establishes a commission internally. This commission is independent, meaning that its members are independent of people directly in charge of operations.

For all operations covered by "internal authorization" systems, authorized people at the operator's take the decision to do it or not in the light of a mandatory notice of the independent commission.

E. ASN's oversight

This system (nature of the operations under internal authorization system, licensee's process for internal authorisation, independence of the commission) has to be approved by ASN. ASN also decides the terms of its periodical information about the system and the granted authorisations.

Q. n°		Article	Ref. in National report

ASN supervises and assesses the reliability of ¡§internal authorisations¡¨ systems through various means: on-site inspections, headquarter inspections, sample analysis by IRSN, yearly statements of the licensee, etc. In 2006, ASN conducted a review in each NPP on this subject. These reviews were an opportunity to check compliance with the new requirements.

ASN can interrupt or cancel at any time this kind of system, if there is any sign that its reliability and efficiency are challenged.

48		7.2.2	

Question/ Comment

The provisions of Article 7 of the Convention on Nuclear Safety mention the terms of the licenses issued.

Why the presented Report has no information on the terms of license action?

Answer

Article 16-II of the decree of 2 November 2007on BNIs and the transport of radioactive substances (implementing the act of 13 June 2006 on transparency and security in the nuclear field) mentions the necessary content of a licence. Such content is specified by decisions of the ASN, for example as regards limits of radioactive releases.

Article 16-II of the decree of 2 November 2007 reads as follows :
The authorisation decree for a Basic Nuclear Installation:

1. Mentions the identity of the licensee, the nature of the installation and its maximum capacity;
2. Defines the perimeter of the installation, which in particular includes:
   a. The installations, structures and equipment placed under the responsibility of the licensee and necessary for operation of the Basic Nuclear Installation;
   b. The installations or structures placed under the responsibility of the licensee, which are covered by the regime applicable to Basic Nuclear Installations or to Installations Classified on Environmental Protection Grounds (ICPE) or by that created by Sect. 1 of Chap. IV of part I of book II of the Environment Code and which, owing to their proximity to the installation that is the subject of the licence, are liable to modify its risks to or detrimental effects on the interests mentioned in I of Article 28 of the above-mentioned Act of 13 June 2006.The perimeter may however exclude some of these installations, structures or equipment if already situated within the perimeter of another Basic Nuclear Installation or, with regard to the equipment and installations mentioned in a above, they are not used solely for the operation of the Basic Nuclear Installation that is the subject of the licence;
3. Sets the duration of the licence, if granted for a limited period;
4. Sets the installation commissioning period mentioned in X of Article 29 of the Act of 13 June 2006;
5. Stipulates the essential elements required for protection of the interests mentioned in I of Article 28 of the Act of 13 June 2006; it may require the approval of the ministers responsible for nuclear safety or of the Nuclear Safety Authority for performance of certain particular operations in the light of their impact on these interests;
6. Sets the frequency of the periodic safety reviews mentioned in III of Article 29 of the Act of 13 June 2006 if the particular characteristics of the installation warrant a frequency other than every ten years, and may require that the first safety review be held within a particular time to take account of the tests and checks carried out when operation of the installation begins.

   The text of the decree of 2 November 2007 is available at the following address :

Q. n°		Article	Ref. in National report
	http://www.legifrance.gouv.fr/./affichTexte.do?cidTexte=JORFTEXT000000469544&dateTexte=&fastPos=1&fastReqId=1901432195&oldAction=rechTexte		
49	**Canada**	**7.2.3**	**Sect. 2.3.3**
Question/ Comment	The report states that "This procedure enables the licensee to carry out operations that do not compromise the safety demonstration without requesting prior authorisation from ASN. ASN has conducted inspections to confirm that these systems work properly. Their scope is still limited, but could be extended in 2007." **What factors would be considered to extend, in 2007, the scope of the procedure and the ASN inspections?** **New possible fields for an internal authorization system :**		
Answer	Since 2005, ASN and EDF have discussed the opportunity to extend the range of operations covered by "internal authorisation" to the following operations: • criticality authorisation when the reactor restarts after a programmed simple refuelling outage ; • waivers to the OTS allowing not to comply with the required conduct in case of non essential material unavailability event. These projects have not been finalized yet.		
50		**7.2.3**	**P. 33, L12 from Btm**
Question/ Comment	The 12th line from the bottom on P. 33, it is said as follows: ASN encourages its inspectors to be open-minded about other regulatory practices. It promotes professional careers encompassing other regulatory authorities (classified installations, SEVESO installations, AFSSAPS (French Health Products Safety Agency), etc.) and proposes the organization of joint inspections with these authorities (labor inspectorate, inspectorate for installations classified on environmental protection grounds (ICPE)) of activities within the remit of ASN. In order to identify other methods of risk management by the licensees, ASN inspectors may also take part in inspections on specialized topics in installations which do not fall within its remit. Exchanges with regulatory authorities in other fields are interesting. **Please show us some practices, if there are. It would be better to shown what effects through exchanges could be seen.** **Has ASN accepted inspectors of the regulatory authorities in other fields?**		
Answer	"The ASN recruited inspectors from other supervisory authorities (inspectorate for installations classified on environmental protection grounds (ICPE), French Health Products Safety Agency (AFSSAPS), Health Ministry …). Upon arrival at ASN, these inspectors were trained according to the program defined by the qualification system of ASN. This is a way to ensure some consistency between regulation of nuclear facilities and regulation of other hazardous facilities (chemical plants, etc....). Agreements or protocols signed between the ASN and the other supervisory authorities (factory inspectorate and ICPE) allow joint inspections to be organized on activities within their field of competence. Regarding the participation of ASN inspectors on specialised subjects in installations outside their field of competence, during 2006, for example, a nuclear safety inspector was called in by the ICPE inspectorate to investigate fire hazards during the inspection of a paint		

Q. n°		Article	Ref. in National report

manufacturing plant and a hydrocarbons depot."

51		7.2.3	P. 40 (7.3.3.1)

Question/ Comment **What was the reason for increasing the number of inspections conducted by ASN on power reactors from 374 in 2004 to 417 in 2006?**

Answer For the past years, inspections related to nuclear power plants have been close to 400. The difference from year to another is not really significant. Although the number of inspectors as slightly increased, the main reasons for different inspection numbers each year are:

- the unplanned inspections, typically motivated by event reported by the licensee,
- the actual number of plant outages and
- inspections performed at EDF corporate/engineering services or contractors.

52		7.2.3	

Question/ Comment More details would be welcome to understand to what extend the utility is practically allowed "self regulations" in some cases.

In this chapter it is indicated that "….ASN is developing an approach in which certain decisions are devolved to the licensee. The licensees may, on the basis of an opinion from an internal commission independent of the operators concerned, themselves take decision…"

Q1. Is there a formal regulatory process in place between ASN and the licensees to trigger/manage these internal authorizations especially with respect to the criteria applied that these decisions do not compromise the safety assumptions adopted for operation or dismantling of the installations

Q2. Has there been any instances that the ASN did not agree with the licensees that the envisaged decisions do indeed correspond to internal authorizations? And if yes can the ASN provide some examples of such disagreement and hoaw such instances were resolved?

Q3. How will the effectiveness of internal authorisations be monitored by both the operator (EDF) and ASN?

Q4. What structure must EdF has to have in place for this process (oversight committee?, independent review/verification on corporate level?

Answer **Q1, Q2 and Q4 :**

General Principles

ASN requested the licensees to reinforce their internal supervision on some operations. Under appropriate supervisory organization, the operator is solely responsible for the operations, providing a system named "internal authorisation" including enhanced and systematic internal control showing guarantee of good quality, autonomy and transparency.

In such a system, the decision for the operation is a matter for the operator, not for ASN.

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Q. n°		Article	Ref. in National report

For research reactors of the CEA, the internal authorization system can be applied to the modifications of the installations that do not compromise their safety demonstration.
ASN has provided a clear list of conditions that the operators must respect to prove that intended operations stay within the overall safety demonstration.

How does it work ?
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This system (nature of the operations under internal authorization system, licensee's process for internal authorisation, independence of the commission) has to be approved by ASN. ASN also decides the terms of its periodical information about the system and the granted authorisations.

ASN supervises and assesses the reliability of "internal authorisations" systems through various means: on-site inspections, headquarter inspections, sample analysis by IRSN, yearly statements of the licensee, etc. In 2006, ASN conducted a review in each NPP on this subject. These reviews were an opportunity to check compliance with the new requirements.

ASN can interrupt or cancel at any time this kind of system, if there is any sign that its reliability and efficiency are challenged.

Q2 :
The scope of these internal authorizations is still very limited, so there hasn't been any case of disagreement on this topic yet.

53	South Africa	7.2.3	P. 37 Chap. 7.3.2.3

Question/ Comment

More information in the presentation of the French National Report in April 2008 will be appreciated for the following:

- reporting criteria of significant events in comparison to INES scale
- An average of about 10 significant events per unit are declared every year for an EDF reactor and reported to ASN (58 units X10 = 580)

How is the ASN is using/analysing those events?
Does ASN perform own investigations of those events?
Is the experience feedback analysed by ASN from those events transmitted to the Licensee?

Answer

A. Significant Events Declaration Criteria
In its "Guide to the declaration procedure and coding system for criteria concerning significant events", published in October 2005 and available on its website , ASN defines criteria for declaring events deemed significant.

Given the different fields likely to be impacted, ASN distinguishes events in terms of the following:

- safety criteria associated with the prevention of nuclear accidents and the limitation of their consequences;
- radiation protection criteria associated with the observance of radiation protection rules for workers and the public, as defined in the Labour Code and the Public Health Code;
- environmental protection criteria associated with the observance of environmental protection rules as defined in the Environmental Charter, the Environmental Protection Code and the Public Health Code.

Q. n°		Article	Ref. in National report

These criteria may concern BNIs or the transport of radioactive materials.

The criteria associated to safety significant events (SSE) are :

- emergency shutdown, except in the context of a deliberate scheduled action,
- actuation of an engineered safeguard system, except in the context of a deliberate scheduled action,
- non compliance with the Operating Technical Specifications (OTS) or any incident that could have led to a non compliance of the OTS, had the plant been in a different state,
- external hazard: earthquake or plane crash, for example,
- real or assumed malevolent act,
- fallback of the unit according to the OTS or accidental procedures following an unforeseen behaviour of the plant,
- event resulting or possibly resulting in multiple failures or affecting redundant trains,
- event or anomaly affecting main primary or secondary circuit,
- design manufacturing, on site assembly anomalies related to not above mentioned equipment that could lead to operation conditions not taken into account nor by design nor by operating procedures,
- any other event deemed sufficiently important by the operating or safety authority.

In 2007, 644 "SSE" satisfying one of these criteria have been reported to ASN.
"Safety significant" means that they have to be reported and analyzed by the operator, but it does not mean that the safety of the reactor was actually seriously at stake. In fact, most of these events are rated beyond the INES scale (INES-level 0).

INES rating in France very much based on the AEIA guide, with a very strong emphasis on OTS compliance.

B. ASN and IRSN Operating Experience Feedback process
After the receipt of the SSE early notification, within a week:

- ASN checks the content of the fax report (is the information provided complete and correct?);
- ASN and IRSN ask for more information to the operator, if needed;
- ASN can perform a reactive inspection on the site when more information is required;
- if the event has been rated at level 1 or above on the INES scale, ASN publishes a press release and unveils more information on its website;
- ASN and IRSN update their databases used to collect the SSE,

After the receipt of the SSE report (within 2 months) :

- ASN and IRSN carry out an analysis to examine how the event took place, which safety functions were implicated, how operators and equipment behaved, what the consequences were, together with knowledge of any similar incidents which have occurred. In addition, it is examined if, in other circumstances, the same accident would have had far more severe consequences,
- ASN and IRSN identify the root causes of the event and examine if the same root causes applied to other equipment or systems can induce different sequences which consequences could be potentially serious,
- ASN and IRSN look for additional information for the most significant events. Despite the quality of the SSE report, the information supplied usually has to be supplemented by direct contacts with the plant or the relevant EDF head office departments,

Q. n°		Article	Ref. in National report

- IRSN holds a weekly meeting, attended by all the engineers in charge of site safety assessment, for reviewing all the SSE reports received during the previous week. The purpose of this meeting is to:
    1. inform all engineers responsible for assessing site safety of events occurring in the reactors and incite a debate on the issues raised by these events,
    2. decide on the next steps in terms of in-depth analyses and IRS declarations.

On a three-month basis :

1. ASN and IRSN hold a meeting to identify outstanding or precursor events. The most important of these events are the subject of a probabilistic quantification of IRSN to estimate the conditional probability of core damage ;
2. ASN, IRSN and EDF hold a follow-up meeting of the outstanding events.

On a three-year basis :

- ASN organizes a meeting of the advisory committee of experts for nuclear reactors (GPR) in order to examine the significant incidents of this period. The objectives of this meeting are to put forward operating measures or modifications of materials which result from complex studies resulting from in depth analysis of events (safety studies¡K). The preparation of this meeting requires a technical instruction of the topics between EDF and IRSN. At the end of this instruction, IRSN issues a report that is used to support the GPR meting. This report carries out an in-depth analysis of significant events. It analyzes the files transmitted by the licensee and evaluates acceptability, with respect to safety, of the position of the licensee and the corrective and preventive actions proposed. It generally concludes with recommendations that are frequently adopted by GPR and reformulated by the ASN as requests to the licensee.

C. International OEF

EDF examines the events reported by other operators and gathered in the WANO database as well as the IRS reports.

Besides, ASN and IRSN also exploit other international feedback sources such as:

- IRS reports,
- Information Notices and Regulatory Guides produced by the American Nuclear Regulatory Commission (NRC),
- events declared in the International Atomic Energy Agency (IAEA) NEWS database,
- information exchanged in the context of international co-operation

IRSN systematically analyses all the documents in its possession as a way of exploiting international feedback. The conclusions of this survey are gathered in a document submitted to the ASN, outlining briefly the main points to be noted from events occurring outside France. This document is succinct but does highlight in particular events that may be transposed to the EDF PWRs. These events are discussed during the quarterly meetings devoted to the operating experience. If it is considered that an event may be transposed directly or when the mechanism causing the event is likely to affect the French PWRs, an investigation into whether or not EDF should perform an in-depth analysis and possibly implement preventive measures is carried out.

Moreover, during the GPR meeting devoted to the examination of OEF, the international operating experience is taken into account.

54		7.2.4	S 7.3.4
Question/	It is indicated that ASN has established an infringement system based on a scale of administrative		

Q. n°		Article	Ref. in National report

Comment penalties defined in articles 41-44 of the act. It is then noted that ASN must define the procedure for the application of these new instruments.

Can you describe the status of the development of these new instruments and whether ASN is developing policy guidance for the implementation of its infringement system and the key elements of this guidance?

Answer On the basis of the penalty system defined in the TSN Act, the ASN has issued an internal policy document setting up an enforcement procedure which indicates the type of actions to be taken given the level of risk. Such actions are proportionate to the deviation from benchmarks standards in the fields of health and environment. They take into account endogenous factors relating to the conduct of the duty-holder as well as exogenous factors relating to the context of the deviation.

An internal guide providing the tools needed for the implementation of this policy has been issued in the field of radioactive sources and another one related to BNIs is being prepared. Such internal guides are being issued for the 1st time and will need to be improved with experience feedback.

55		8.1	S. 8.1.2.4

Question/ Comment **Indicators that the ASN might use to measure the effectiveness and performance of its nuclear safety regulatory framework. In particular, indicators used to measure:**

- **the effectiveness of outcomes and processes;**
- **efficiency of processes in terms of timeliness, cost and resource utilisation;**
- **effectiveness of enforcement and compliance activities; and**
- **stakeholder satisfaction.**

Answer ASN has several performance indicators in place which are to evaluate the effectiveness of the ASN. About 20 indicators established through the mid-term strategic plan allow ASN to measure global ASN performance. these one are completed with internal indicators which provides further information about the ASN process performances.

Mid-term strategic plan indicators for example cover:

- the number of ASN opinions issued on draft decrees and orders published by the government;
- national inspection programme implementation;
- national emergency exercice programme implementation;
- number of technical decisions published;
- human resources devoted to the meeting with the licensees;
- time efficiency to issue authorisations or licences;
- human investment in European and international actions.

Regarding the public information and communication, ASN traces, among others, the following indicators:

- ASN website connexions;
- number of press meetings and press releases;
- public awareness of ASN via a yearly opinion poll ;
- satisfaction rate for stakeholders

56		8.1	8.1

Question/ Comment "...approvals to the organisations participating in the verifications and monitoring concerning nuclear safety or radiation protection"

Does this sentence mean that ASN delegates some parts of its control activities?

Q. n°		Article	Ref. in National report

Can you give some cases where this delegation is used?

Answer

ASN calls in other expert organizations to control activities and to monitor the environment. To work for ASN as accepted organization, an organization has to go through an acceptance process which ensure it has the capacity to carry out properly the controls expected by the delegation. In addition, ASN inspects regularly these organizations by implementing an annual inspection programme.

For instance, this delegation can be used for:

- radon monitoring in environment;
- technical controls of apparatus and equipments against the radiation protection requirements;
- transport-related technical controls;
- pressure equipment control.

57		8.1	Chap. 8(1) P44

Question/ Comment

How many IAEA audits has ASN accepted ?
What is the main issue in the IRRS audit in 2006?
And for the main issue what kind of corrective action has been taken by ASN?

ASN received an IAEA audit (IRRS) on November 2006. The IRRS mission was full-scope covering all activities done by ASN. The IRRS Team identifies: 40 good practices, 49 suggestions and 35 recommendations.

To take account of the recommendations and suggestions highlighted by the IRRS mission, ASN has developed and been implementing an action plan to guarantee full conformity of its practices and organisation with the best international standards. A follow-up mission will be organised by the IAEA at the beginning of 2009 to review the action plan implementation.

Answer

The areas for improvement identified in the mission report include drafting of procedures for application of the new sanctions stipulated in the law of 13 June 2006 on transparency and security in the nuclear field (fines, formal notices, installation shutdown decisions, etc.), more strictly formalised internal practices within ASN or continued work into managing the consequences of nuclear accidents.

ASN has already addressed these issues including by:

- issuing new regulations, for example, the new decree about the licensing processes was issued last November;
- the reinforcement of its quality management system by using the ISO 9000 tools with the objective to comply with the IAEA standard GSR 3;
- the continuation of the intensive work regarding the consequence management of nuclear accidents.

A Transas mission regarding transport has also been conducted in 2004. Issues raised during this mission have been dealt with.

58		8.1	

Question/ Comment

What kind of systematic training and development programmes you have for your new regulatory staff members?
How do you ensure that they are ready to conduct their duties as regulatory staff members in the tasks assigned to them?

Answer

Before being nominated as inspectors, new ASN staff members have to attend a specific training program defined by the qualification system of ASN.

59		8.1	

Question/

Do you have currently in your regulatory staff, or in a technical support organization (TSO)

Q. n°		Article	Ref. in National report

Comment **working for the regulatory body, an adequate number of technical experts (e.g., in the areas of reactor physics, thermo-hydraulics, and materials engineering) who can conduct an in-depth safety assessment of nuclear power plant, as would be needed for evaluation of operating events, large power upgrade, lifetime extension, or new build?**

Do these experts have tools and ability to conduct independent safety analysis, including both deterministic analysis and PRA?
What is the number of such experts in various technical areas within the regulatory body and within the TSO?
What is the outlook concerning the number of experts in a few years ahead?

Answer As a general rule, technical experts performing the safety analyses are mainly within IRSN, ASN's principal TSO. In the field of pressure equipment, ASN has its own team of experts, but relies also on IRSN's teams. Altogether IRSN and ASN have experts in the various fields necessary to conduct safety assessment of nuclear power plants : reactor physics (including criticality), thermo-hydraulics, materials science, structural mechanics, human and organisational factors, software reliability, electrical equipment and systems, operating rules, etc. With the exception of certain specialities during limited periods of time, these experts are in sufficient number to conduct the various analyses requested by ASN : safety assessment of a new type of reactor or fuel, periodic safety re-assessment of existing reactors, examination of various safety cases related to equipment or operating rules modifications, evaluation of operating events, new regulations, etc.. IRSN and ASN teams of experts have the appropriate tools and skills to perform their own technical and safety analyses, including both deterministic and probabilistic analyses. Since ASN's and IRSN's safety assessment activities are funded by a specific line of the State's budget, the numbers of experts will continue to follow directly the evolution of this line.

60		8.1	

Question/ Comment **Is there any particular training programme provided to the new regulatory staff members intended to act as inspectors?**

Answer Specific training programs according to the task future inspectors will be assigned (nuclear plants, waste, transport…) are defined in the qualification system of ASN.

61		8.1	Sect. 8.1.2.1 P. 45

The ASN has a total workforce of 412 persons.

Question/ Comment **Is ASN satisfied that this level of staffing is commensurate with its regulatory responsibilities?**
What impact is anticipated from the expected resurgence of nuclear power internationally and associated increasing demands for experienced staff in this area?
What steps are being taken to ensure that experienced staff are retained in France?

In order to comply with its regulatory responsibilities, ASN plans to hire 20 persons in 2008 and 65 persons in the next three years. On the 1st of March 2008, the ASN total workforce was 436. This number is likely to reach 500 by 2011.

Answer At the end of 2007, the ASN had 202 inspectors, selected for their qualification and professional experience. To become ASN inspectors, all of them get tailored trainings during several months.
In 2007, the ASN conducted 675 inspections in nuclear installations, 161 of which were unexpected.

To attract experienced staff, the ASN has decided to widen its recruitment. Since 2002, staff comes from more various schools and with different qualifications.

Training, qualifications and career within the ASN are the main elements to retain experienced staff.

Q. n°		Article	Ref. in National report

According the legislation, the ASN can also deliver agreement to other entities tasked with inspection. This enables the ASN to partly rely on external inspection to comply with its regulatory responsibilities.

62		8.1	Sect. 8.1.3 P. 47

The IRRS Review Team recommended that the ASN consider its human resources strategy, in particular in maintaining the regulatory competence levels of ASN in light of the current wider French policy of staff rotation.

Question/ Comment **Has this been considered and what changes have been made?**

What impact is anticipated from the expected resurgence of nuclear power internationally and associated increasing demands for experienced staff in this area?
What steps are being taken to ensure that experienced staffs are retained in France?

Answer

Following the IRRS Review Team, the ASN has adapted its human resources strategy.

Facing the staff rotation, the ASN has decided to widen its recruitment. Staff is increasingly coming from a wider range of schools and qualifications. The ASN mainly recruits staff from the State graduate school for engineers. Nevertheless, ASN staff also comes from specialized universities which deliver PhD in nuclear security and almost 10% of staff comes from the private sector. The ASN expects to keep going in this direction and to diversify its staff's professional experience and qualifications.

For retaining experienced staff, the ASN has suggested to adapt HR rules in order to restrain staff rotation.

Then, under new rules, inspectors have to work four years in a job and not only three years as previously.

Moreover, new HR policies, especially in terms of career and remuneration for experienced staff, are likely to ensure that staffs are retained in France.

63		8.1	Sect. 8.1.3 P. 122

Question/ Comment **Can you provide some detail on how the November 2005 government directive aims to ensure the timely provision of measurement results to experts and decision makers?**

Answer

The November 2005 Directive aims at precisely define the actors involved, the places where measurements would be performed as well as associated methods for any event that could affect concerned sites. It provides for a synthesis of results to be sent, especially, to the ASN and to the Prefect. A detailed organisation, established in advance, should contribute to reduce the time needed to transmit the information to the authorities.

64		8.1	P. 46, Table, 8.1.2.2

Tax on EDF has almost doubled to 320,748,000 euros, while 174,191,000 in the previous report.

Question/ Comment **Is this the total tax imposed on EDF?**
Is the tax rise due to the privatization? What kind of tax is this?
Is this something like business tax or tax imposed on services related to nuclear energy?

Answer

The amount of the tax on the BNIs paid by EDF has increased significantly between 2002 and 2006. It is due to a rebalancing of the fiscal framework of electricity production modes for the benefit of hydropower.

According to the pollutant-payer principle, EDF pays, since the institution of taxes on the hydropower,

Q. n°		Article	Ref. in National report

taxes on hydroelectric installations on non-navigable ways and a tax on BNIs, pursuant to Article 43 of the Finance Law for 2000. The purpose of the Government was to rebalance the tax system by increasing the BNI tax weight in the total amount of taxes paid by EDF, while keeping this total amount unchanged :this increase has been compensated with a decrease of taxes on hydroelectric installations.

This rebalancing measure was introduced by Article 39 of the rectified Finance Law for 2003 which modified Article 43 of the Finance Law for 2000, doubling the taxe's base rate, applied on the nuclear reactors for energy production category (N.R.E.P. - research excepted). This rebalancing measure of the tax system on electricity production modes concerned NREP category only. Thus, this system impacted EDF mainly.

This measure explains, first, the increase of the amount of taxes paid by EDF from 174 191 755,20 € to 307 667 755,20 €, for an unchanged nuclear reactors fleet. Then the changes in the EDF nuclear fleet added to the adjustment of taxation's packages established by Article 77 of the Finance Law for 2005, explain the amount reached by EDF in 2006 of 320 748 190,90€.

This tax on BNI is applied to all operators of BNIs.

65		8.1	P. 49

Question/ Comment: The report refers to "…rapporteurs, tasked with investigating how safety and radiation protection are organised both in the civil service and by licensees, comparing their characteristics with those of other countries and checking that the authorities have the resources to carry out their tasks."

Are the findings of these rapporteurs publicly available on the internet, and if so, could France provide the internet reference?

Answer: The findings of the rapporteurs of the Office are available at the following address. Summaries of findings are available in English.
http://www.senat.fr/opecst/rapports.html

66		8.2	

Question/ Comment: **Is the principle of effective separation (as given in Art. 8 Para 2) laid down explicitly in any binding national law or is this principle met by a sum of state organisational measures?**

Answer: The act of 13 June 2006 on transparency and security in the nuclear field has established the ASN as "an independent administrative authority". By listing the respective duties of the government and ASN, Article 3 of the act ensures the effective separation between these entities. Moreover, the fact that the regulatory body is headed by a non-dismissible commission which is not appointed by the Government and does not report to it, as mentioned in Sect. 8.1.1.1 of the report, guarantees the independence of the ASN.

67		8.2	

Question/ Comment: **Is there any difference to your point of view between "effective separation" and "independence" as referred to in your report?**

Answer: Effective separation, which is guaranteed by the fact that the regulatory body is headed by a non-dismissible commission which is not appointed by the Government and does not report to it, constitutes the way of achieving independence. As stated in the ASN Midterm strategic plan, independence does not mean isolation.

68		8.2	

Question / Comment: According to French legislation, the authorities of the Regulatory Body envisaged by the Convention on Nuclear Safety are divided between the Government and ASN. Within the Government, nuclear safety responsibility rests with the Ministry of Economy, Finance and Employment, and the

Q. n°		Article	Ref. in National report

responsibility for radiation protection rests with the Ministry of Ecology and Stable Development.

To what extent do these ministries contribute to the use of atomic energy?

Answer Under the current governmental structure, the ministers tasked with nuclear safety are the Minister for Ecology and Sustainable Planning and Development and the Minister for the Economy, Finance and Employment. The minister tasked with radiation protection is the Minister for Health, Youth and Sport.

The competence of the Minister for Ecology and Sustainable Planning and Development is due to the impact on environment of nuclear industry. The role of the Minister for the Economy, Finance and Employment comes from the relation between the nuclear business and the energy and industry policy of the country.

69		8.2	

Question / Comment The chapter clearly outlines the roles of the nuclear safety authority ASN, the government and the parliament in the regulation and oversight of nuclear safety and radiation protection according to the new act of 13 June 2006. In the introduction (chapter 2.3.1) the issue of safety and economic competitiveness is addressed.

Although the French NPP operator EDF was transformed into a public limited company, the state remains the majority shareholder (86 %) and is at the same time the supervising authority.

How does the state ensure the independence of decisions in the regulatory and oversight process in the case these decisions would impede the economic competitiveness of EDF?

Answer While the Government may be concerned with various issues such as nuclear safety, economic competitiveness and energy supplies, the ASN only makes decisions on safety and radiation protection grounds, pursuant to the strict mandate conferred to it by the act of 13 June 2006 on transparency and security in the nuclear field. The independence of the ASN is guaranteed by the fact that it is headed by a non-dismissible commission which is not appointed by the Government and does not report to it.

Final decision on major issues would be made by the Government. For example, pursuant to Article 41 of the act of 13 June 2006 on transparency and security in the nuclear field, ASN can order the suspension of the operation of the installation. ASN decision is however subject to approval by the ministers tasked with nuclear safety. This approval is deemed to be given for want of objection within a period of fifteen days or, if the ministers so request, a month. Such objection is reasoned and publicly disclosed.

70		9	

Question / Comment **Is the principle, that prime responsibility for the safety of nuclear installations rests with the holder of the relevant license laid down explicitly in any binding national law or is this principle met by a sum of regulatory requirements?**

Answer As mentioned several times in the report, notably in the 2nd paragraph of Sect. 9, the principle of prime responsibility of the licensee is laid down in the act of 13 June 2006 on transparency and security in the nuclear field. Article 28 of the act stipulates that "the licensee of a BNI is responsible for the safety of his installation".

71		10	10.2

Question / Comment "right to inform": it is not clear whether the "right to inform" is a right or a duty (cf. footnote: "individuals must adopt a questioning attitude in the performance of activities, and must alert line management if an order or instruction is such as to negatively impact the quality of the activity").

Q. n°		Article	Ref. in National report

Could you clarify if this "right" is used as a right (protecting the people using it) or as a duty (obligation to inform)?

Answer The right to "raise the alert" is indeed a right, meaning that those who exercise it cannot be challenged.
However, as mentioned in the footnote to no. 4, anyone ascribing an event a higher level of severity than has been ascribed by their first-line management is duty-bound to raise this to an EDF entity responsible for nuclear safety.

72		10	

Question / Comment **Q1. Is a safety management system (SMS) planned or implemented?**

Q2. What is the basis of the SMS (IAEA Requirements, other criteria)?

Q3. Is the implementation of a SMS voluntary or obligatory? (Does the regulator require the implementation of the SMS? If yes, how detailed are the requirements for the contents of the SMS?)

Q4. How is the SMS assessed and approved? (Does the regulatory body check whether the appropriate processes are implemented or available in the SMS? Does the regulatory body check whether and to which extent the applicable criteria for a safety management system are fulfilled? Is the authority entitled to inspect the results of the SMS assessment and if so, to which extent?)

Q5. How is an external review process performed?

Q6. What are the key elements of an SMS? (Indicators, Integrated or stand alone system, Continuous improvement and treatment of deviations (Are there regulations how to handle deviations from the specified process?); Participation on benchmarks exercises of licensees.

Answer The CEA safety management system is now based mainly on the quality order of 10th August 1984. This requires for instance that all the activities described as "of monitored quality activities" are subject to special procedure requiring a two level check: a first level check carried out by the installation and a second level check carried out by specific safety units attached to Centre directors. The second level check results in that Centre directors are directly informed of all safety deviations on installations. The article 10 of this order specifies also the required control actions and the way to realize continuous improvement process.

The Sect. 10.3.1 of the French report specifies the CEA safety policy which is based on continuous improvement. CEA safety organization and the rules of each are described in this Sect.. It has to be mentioned that since January 2008 the CEA safety organization has been modified to adopt a simplified decision-making line for safety.

The CEA safety management system is described in one recommendation of the CEA safety instruction manual. This recommendation is based on the quality order of 10th August 1984 but also on requirements issued from ISO 9001. Some founding elements are safety culture, rigorous operation and field manager for the installations.

In line with its process and project-based methodology, the EDF Nuclear Operations Division has set up an operational safety process which is periodically reviewed. Areas for improvement, biennial action plans and trending indicators are produced.

The EDF Nuclear Operations Division has established a management policy, a safety & radiation protection policy and an oversight policy. Safety management has a special position within performance management. Playing a pivotal role in overall management, it must set the example and

Q. n°		Article	Ref. in National report

drive other types of performance management forward

Each of the corresponding principles is clearly described in a specific guideline ("*guide Sûreté Nucléaire en exploitation – guide d'application de la politique du management de la DPN*") which also factors in INSAG documents produced by the IAEA. This guideline is not of a prescriptive nature, it is used as a reference by power plants which is responsible for implementing it.

In addition, EDF has performed a self-assessment on topic C (management system) of WENRA reference standards updated in 2008, which show that the reference standards falling within the scope of this topic are being properly applied.

The SMS is voluntary, planned and implemented by the licensees. ASN doesn't presently require the implementation of a SMS. ASN controls, during inspections, how the SMS is implemented by the licensee and the results of the assessment of the SMS in order to meet the requirements of the quality order of the 10 august 1984.

73		10	

Question / Comment **Is the principle of priority to safety laid down explicitly in any binding national law or is this principle met by a sum of regulatory requirements?**

Answer The principle of priority to safety is met by a sum of regulatory requirements, notably those issued by the ASN which requests license holders to adopt an organization guaranteeing that top priority is given to safety. This principle governs the decision making process of the ASN.

74		10	

Question / Comment **How ASN does perform its own evaluation?**
Are there any specific indicators used?

ASN has implemented a continuous improvement process based on :

- internal audits based on an mid-term audit programme. These audits are organised and implemented by the quality management system manager;
- improving sheet which can be used by any ASN staff member to identify areas for improvement;
- performance indicators to measure the effectiveness and the efficiency of ASN process performances; and
- self assessments against ASN quality manual requirements. This self assessments has to be carried out periodically by each ASN departments.

Answer In addition, every year, ASN calls in an independent Expert to carried out a series of external audits of several ASN departments.

ASN has several performance indicators in place which are to evaluate the effectiveness of the ASN. About 20 indicators established through the mid-term strategic plan allow ASN to measure global ASN performance. these one are completed with internal indicators which provides further information about the ASN process performances.

Mid-term strategic plan indicators are for example about:

- the number of ASN opinions issued on draft decrees and orders published by the government;
- national inspection programme implementation;
- national emergency exercice programme implementation;
- number of technical decisions published;

Q. n°		Article	Ref. in National report

- human resources devoted to the meeting with the licensees;
- time efficiency to issue authorisations or licences;
- human investment in European and international actions.

Regarding the public information and communication, ASN traces, among others, the following indicators:

- ASN website connexions;
- number of press meetings and press releases;
- public awareness of ASN via a yearly opinion poll ;
- satisfaction rate for stakeholders

75		10	

Question / Comment

The new IAEA Safety Fundamentals emphasize the importance of establishing and sustaining effective leadership and management for safety. The last Review Meeting also pointed out the future challenges to nuclear safety arising from leadership issues at the panel discussion of the opening plenary. The panel suggested, as one of possible measures, development of regulatory expectations and guidelines on leadership indicators.

Concerning these, do you have any progress? If so, please provide it.

Answer

ASN controls, during inspections, how safety is actually integrated as the primary objective of the management of the plant. ASN controls the plant's general policy and organisation, resources, staff, organisation and actions of safety departments, verification and audits made and corrective actions, follow-up of corrective actions. Leadership issues can be examined through the involvement of managers for safety on various aspects : communication and explanation by managers of information and requirements concerning safety, presence of managers on the field, analysis of data collected by managers on the field in terms of good practices or low-level precursors, monitoring and control of safety related activities. Currently, some guidelines deal with the management of safety but they are not yet developed on leadership indicators.

75		10	

Question / Comment

The summary report of the last Review Meeting indicated that efforts had been made to address safety culture in regulatory body in some Contracting Parties (paragraph 42).

What do you think to be included into the safety culture in regulatory body?
In your opinion, what should be different in safety culture between in regulatory body and in operator?

Answer

There should be no differences in safety culture principles at the operators' and at regulatory bodies', both are mainly based on INSAG 4 statements. In both organisations, safety culture should be disseminated to the whole staff. But they are developed and applied in a different way because activities are different. The operator implements safety culture principles during operating and maintenance activities, the regulatory body controls that these principles are implemented in a satisfactory way by the operator.

77		10	P. 72

Question / Comment

Shortcomings persist in some NPPs, for example in the implementation of risk analysis, which is one of the tools whose use is required by DPN as part of its safety management policy.

Please can you explain in more detail the required use of risk analysis as a part of EDF safety management policy?

Q. n°		Article	Ref. in National report
Answer	Risk assessment is an essential mean of disseminating safety culture for workers, supervisors, and senior managers. This mean is defined in a DPN reference document, which demonstrates the benefits of performing cross-functional risk assessments. Risk assessment is a requirement and each manager must define the exact standards to be applied.		
78		**11.1**	**11.4**
Question / Comment	"ASN is developing instruments for early detection of any drift: the economic situation, changes in expenditure...": **Has ASN recruited new specialists (economists, accountants...) for these new tasks?** **What is the reaction of EDF with regard to this new type of control?**		

Answer	EDF sends every year to ASN a summary balance sheet that includes financial data on the following topics:
	• Operation
	  o Purchasing and subcontracting
	  o Employees' wages and salaries
	• Assets maintenance
	• Research and development
	• Outage programs
	
	The licensee is somehow reluctant to unveil these financial data, but ASN's control is not really intrusive on this matter. ASN focuses more on the analysis made by EDF on its strategies to improve production and reduce operating costs, analysis that is enclosed to that document. It highlights the relevance and impact of these figures and strategies to the safety of its reactors.
	
	EDF also includes some safety indicators trends over the past ten years, such as individual and collective radioactivity dose for workers.
	
	ASN hasn't recruited any accountant specialist yet to analyze this information.
	
	Actually, ASN and IRSN staff include sociology and human factor experts who complete the engineers' technical views on EDF activities, and ensure that all safety aspects are taken into account.
	
	The opinion developed by ASN on EDF regarding its safety-competitiveness arbitration is also based on several other tools of equal importance, including inspections, thorough investigations by group of experts, maintenance controls, yearly evaluation of the operator (published in ASN's annual report) on this particular topic, etc.		

79		**11.1**	**Sect. 11.4.1**
Question / Comment	In 2004, EDF became a public limited company. At the end of 2005 the company was partially privatised. **Is there any change on the availability factor for NPPs after privatization?**		
Answer	The analysis of changes in our "availability factor" has shown that there is no correlation between the latter's results and partial privatisation of the company. Every year, the plant submits to the regulator a safety analysis taking into account market competition.		
80		**11.1**	**P. 64**
Question /	It was interesting to read that "Concern with cost control is now given more emphasis by the licensee in its discussions with ASN" and that "Technical discussions with EDF have clearly become		

Q. n°		Article	Ref. in National report

Comment tougher…." Later, under Article 12, the report says that ASN has asked IRSN "…to review the EDF safety management system in a context of competitiveness" and that the Advisory Committee for Nuclear Reactors (GPR) has also been consulted (P. 72). One often sees the argument made that competition in the supply of electricity leads the producers to strive for greater cost efficiency, and that this leads in turn to higher levels of nuclear safety.

Could ASN please indicate whether it sees such a clear correlation between cost efficiency and nuclear safety, and can it be generally inferred that greater cost efficiency leads to greater safety?

The existence of a clear correlation between cost efficiency, driven by competition in the supply of electricity, and nuclear safety is an interesting but complex issue that should need in-depth studies.

There is a link between economical difficulties and lack of safety (cf. NUREG-6735 and INSAG 18). But it does not mean that a greater cost efficiency leads to higher safety. It only means that some solutions for improving an economical situation which was not good may have positive side effects on safety. In an opposite way, reducing costs does not systematically lead to a degradation of safety.

Answer However, studies show that in some cases higher competitiveness may put more pressure on people for achieving their tasks, and it can also lead to a more complex environment because of more constraints to be taken into account. The levels of pressure and complexity have to be taken into account because they may weaken lines of defence that could have negative effects on safety. Then, if some response could be given to this issue, it should be situated somewhere between these two opposite sides. ASN asked in 2006 its technical support organisation IRSN to review the EDF safety management system in a context of competitiveness. Results are not yet available but they will be presented and debated during a meeting of the advisory committee for nuclear reactors (GPR) planned in April 2008.

81		11.2	Chap. 11.2.2 P. 62

Question/ Comment In 2006, EDF implemented an in-depth program designed to secure skills and career paths, in order to start preparing for the process of generational handover and succession planning. Please give more information on the program.

Answer To secure the skills and the staffing plans in the framework of the renewing of the generations a process has been developed since 2005. This process takes in consideration the nuclear safety requirement in a pluriannual perspective. This process is based on homogeneous principles for all the EDF'nuclear plants and is developed on a very analytic manner on the base of the reality of the field by successive iterations. This process permitted to secure the volume of the "seed backs" of staff necessary to the renewal of skills. This process is under a specific control of the management of EDF's Nuclear Power Generation Division.

The "seedbeeds" represented an anticipation, variable according to the type of skills (longest being for the skills of operation and maintenance of the automatisms) according to the departure of the concerned population. The flow of staffing are also secured by a process of internal redeployment.

82		11.2	P. 62, Sect. 11.2.2

Question/ Comment The report provides information on the availability of human resources in EDF.
We would like to know the minimum educational qualification specified for shift supervisors and the role of ASN in the licensing of these personnel.

Answer The minimum educational qualification for shift supervisor is at least two years qualification at a technical college after baccalaureate (university degree). More than 50% of the shift supervisors are educated with College of engineering degree or post graduate technical diploma.

Q. n°		Article	Ref. in National report

The licensing process is an EDF internal process. As a regulator ASN monitors the performance of the process.

83		11.2	P. 62

Question/ Comment

Could you please provide more information on the programme implemented by EDF to secure skills and career paths.
What categories of personnel are included in this programme?

Answer

To secure the skills and the staffing plans in the framework of the renewing of the generations a process has been developed since 2005. This process takes in consideration the nuclear safety requirement in a pluriannual perspective. This process is based on homogeneous principles for all the EDF's nuclear plants and is developed on a very analytic manner on the base of the reality of the field by successive iterations. This process permitted to secure the volume of the "seed backs" of staff necessary to the renewal of skills. This process is under a specific control of the management of EDF's Nuclear Power Generation Division.

The "seedbeeds" represented an anticipation, variable according to the type of skills (longest being for the skills of operation and maintenance of the automatisms) according to the departure of the concerned population. The flow of staffing are also secured by a process of internal redeployment.

All the skills are concerned with this approach.

84		11.2	P. 64 Chap. 11.4.1

Cost cutting impact is not easy to monitor as the effects of these initiatives are long term and not apparent at the implementation.

Question/ Comment

What measure does the ASN take to ensure that cost-cutting initiatives implemented by the operator will not adversely affect nuclear safety in the long term?

Can an issue with impact on nuclear safety be compromised by the economic or cost benefit principles?

Answer

The existence of a clear correlation between cost efficiency, driven by competition in the supply of electricity, and nuclear safety is an interesting but complex issue that should need in-depth studies.

There is a link between economical difficulties and lack of safety (cf. NUREG-6735 and INSAG 18). But it does not mean that a greater cost efficiency leads to higher safety. It only means that some solutions for improving an economical situation which was not good may have positive side effects on safety. In an opposite way, reducing costs does not systematically lead to a degradation of safety. However, studies show that in some cases higher competitiveness may put more pressure on people for achieving their tasks, and it can also lead to a more complex environment because of more constraints to be taken into account. The levels of pressure and complexity have to be taken into account because they may weaken lines of defence that could have negative effects on safety. Then, if some response could be given to this issue, it should be situated somewhere between these two opposite sides. ASN asked in 2006 its technical support organisation IRSN to review the EDF safety management system in a context of competitiveness. Results are not yet available but they will be presented and debated during a meeting of the advisory committee for nuclear reactors (GPR) planned in April 2008.

85		11.2	

Question/ Comment

With the resurgence of nuclear power worldwide, which could result in competition for experienced human resources (both locally within your country and internationally) what strategies/steps are being taken in your country by both the regulatory body and the operators to ensure that sufficient numbers of qualified staff remain available for all safety-related activities in

Q. n°		Article	Ref. in National report

or for each nuclear installation, throughout its life ?

CEA has generalized since now more than two years a process for managing critical skills of all the experiences required for CEA activities, including safety ones.

The aim of this process is to anticipate actions for maintaining the skills necessary for leading the programmes and answering to requirements needed for CEA works. So the skills are collectively and periodically evaluated regarding their practice level and their risk for CEA's activities. The question concerns the current situation and the long range forecast situation (5 years). Two categories are defined: the key skills (strictly necessary but no problem of management) and critical skills (strictly necessary and requiring corrective actions).

For safety important professions, the last review identified three ones for which specific profession sheets have been written for specifying, among others, the necessary knowledge, the required capability and the vocational training. That concerns:

- safety engineers of BNI's or Centre safety units,
- criticality experts,
- quality engineers of BNIs' or Centres.

For these professions, specific « breeding grounds » have been established.

EDF's Nuclear Power Generation Division is conducting two evolutions in parallel, the renewal of the skills which conducts to predict staff in "seed backs" to prepare the replacement and actions to reinforce external recruitement.

Answer

As of 2008 and for several years to come, EDF will need to recruit a large number of nuclear professionals.

- To secure the skills and the staffing plans in the framework of the renewing of the generations a process has been developed since 2005. This process takes in consideration the nuclear safety requirement in a pluriannual perspective. This process is based on homogeneous principles for all the EDF's nuclear plants and is developed on a very analytic manner on the base of the reality of the field by successive iterations. This process permitted to secure the volume of the "seed backs" of staff necessary to the renewal of skills. This process is under a specific control of the management of EDF's Nuclear Power Generation Division.
- The "seedbeds" represented an anticipation, variable according to the type of skills (longest being for the skills of operation and maintenance of the automatisms) according to the departure of the concerned population. The flow of staffing are also secured by a process of internal redeployment. All the skills are concerned with this approach.
- As things currently stand in France, there is not enough training capacity to fully satisfy needs, particularly where engineers are concerned.

That is why EDF, in liaison with France's top engineering colleges and universities, is encouraging and supporting a number of initiatives, which will be getting underway in 2008 :

- Greater capacity provided to engineering schools for tuition in "energy" and "nuclear engineering", development of new tuition subjects.
- Development of an International Masters in Nuclear Energy offering French and international undergraduates (bachelor's degree) comprehensive high-level tutoring in the field of nuclear energy
- Development of specialised masters degrees (post masters degree certificate) in certain specialised areas such as nuclear safety.

Q. n°		Article	Ref. in National report

Once up and running, these initiatives will enable EDF's needs to be met, as well as those of the nuclear energy sector as a whole. These initiatives will also include arrangements for the hosting of students coming from other countries.

At the same time, EDF is improving existing systems designed to integrate and gain the loyalty of new recruits in order to help these people develop their careers.

86		**11.2**	**P. 62**

Question/ Comment

The opening paragraph of this Sect. of the report indicates that 5% of EDF's workforce consists of 'operating staff', 68% are 'supervisory staff' and 27% are 'management staff'. These percentages seem very heavily weighted towards the supervisory and Management grades.

Could this Sect. be expanded to clarify what kinds of employees are included in each group? Is the category of 'operating staff' restricted simply to those persons in the organisation structure who have nobody reporting to them?

Answer

The percentage figures of 5%, 68% and 27% represent the respective ratios of our workforce categories, i.e. operatives, supervisors and managers. The commonly used English translation does not reflect the same meaning. Within EDF, workforce categories represent employment grades which include staff in charge of various activities, managerial or otherwise:. The percentage figures of 5%, 68% and 27% represent the respective ratios of our workforce categories, i.e. operatives, supervisors and managers. The commonly used English translation does not reflect the same meaning.

Within EDF, workforce categories represent employment grades which include staff in charge of various activities, managerial or otherwise:

- 5% "*collège execution*" : in fact only operating staff
- 68% "*collège maîtrise*" : in fact operating staff and some supervisory staff
- 27% "*collège cadres*" : in fact supervisory staff, engineering, and management staff

For management and supervisory staff the figures are :

- 3% for Management staff in charge of a department or a plant (deputy managers included),
- 5 to 6 % for Supervisory staff in charge of a team (from 10 people to 30 people) like team leader or shift supervisor (deputy team leaders included).

87		**11.2**	**11.2.2**

Question/ Comment

According to the report, staff at EDF has decreased from 20,615 in 2003 to 19,161 in 2006.

What is the reason for this reduction and what are future staffing plans.
Also, is EDF having any difficulties attracting and retaining knowledgeable nuclear professionals ?

Answer

The reason of the evolution of staff of EDF's Nuclear Power Generation Division between 2003 and 2006 is essentially coming from reorganisation in the field of the tertiary sector and of transfer of activity inside EDF.

EDF's Nuclear Power Generation Division is conducting two evolutions in parallel, the renewal of the skills which conducts to predict staff in "seed backs" to prepare the replacement and a step of improvement of organisations and process which conducts to optimise the manpower outwards "seed backs

As of 2008 and for several years to come, EDF will need to recruit a large number of nuclear professionals.
As things currently stand in France, there is not enough training capacity to fully satisfy needs, particularly

Q. n°		Article	Ref. in National report

where engineers are concerned.

That is why EDF, in liaison with France's top engineering colleges and universities, is encouraging and supporting a number of initiatives, which will be getting underway in 2008 :

- Greater capacity provided to engineering schools for tuition in "energy" and "nuclear engineering", development of new tuition subjects.
- Development of an International Masters in Nuclear Energy offering French and international undergraduates (bachelor's degree) comprehensive high-level tutoring in the field of nuclear energy
- Development of specialised masters degrees (post masters degree certificate) in certain specialised areas such as nuclear safety.

Once up and running, these initiatives will enable EDF's needs to be met, as well as those of the nuclear energy sector as a whole. These initiatives will also include arrangements for the hosting of students coming from other countries.

At the same time, EDF is improving existing systems designed to integrate and gain the loyalty of new recruits in order to help these people develop their careers by enhancing their skills.

88	China	12	Chap. 12.4.1 P.71
Question/ Comment	**How do you control the human factor failure of operators to an acceptable level, in the course of incident or accident response when the operators are experiencing unit transients and heavy workload?**		
Answer	Adequate measures have to be taken by the operator for considering human factors in operation, in particular during activities that are important for safety, such as transients. Some of these measures concern human and organisational lines of defence that have to be applied and reinforced if needed, such as the use of error prevention techniques described by EDF in § 12.2.1 of the report (P. 69). ASN controls that these measures are in place and that they are applied in an appropriate way. Control can be made through during events feed back experience, during inspections, as well as during safety assessments in particular concerning human factors issues.		

89		12	
Question/ Comment	**What methods have been used in your regulatory inspections on management system?**		
Answer	Inspections are made not on management systems but on the safety management. It concerns mainly issues such as general policy and organisation of the plant for managing safety, resources, staff, organisation and actions of safety quality departments, verification and audits made and corrective actions, follow-up of corrective actions, etc.		

90		12	12.4.1, P. 72 & 73
Question/ Comment	**ASN (together with GPR and IRSN) has performed several reviews of the safety management system of EDF (2004, 2005 and 2006). What was the basis for these assessments?** **Please provide more information about experiences and main results of these assessments.**		
Answer	Regarding safety management, ASN asked in 2006 its technical support organisation IRSN to review the management of safety by EDF in a context of competitiveness. The analysis made by IRSN in 2007 is now ready to be presented during a meeting of the advisory committee of experts for nuclear reactors (GPR) planned in April 2008. Results of this assessment will be available after this meeting.		

91		12	P. 10 Sect. 2.3.2
Question/	Similarly, at the request of ASN, the studies for the periodic safety review of CEA's Masurca critical		

Q. n°		Article	Ref. in National report

Comment: mock-up take HOFs into account.

Answer:

Could you explain what CEA's Masurca critical mock-up is and what relationship with HOF?

The critical mock-up Masurca (5 KW) is a research reactor dedicated to the neutronic studies of fast reactor lattices .The core cooling is provided by air. The adaptability of the Masurca core allows the validation of innovative core design. That means that each new experiment leads to a total change of the core configuration. The new core is a hand- built one (rod by rod) following the researchers indications. As required by the ASN for the periodic safety review of Masurca that occurred in 2006, a HOF analysis was made by the CEA in order to prove that, in particular, the hand-building of the rods was safe and sure for the reactor and for the workers. The operation stages , fuel handling operations and I&C refurbishment were also addressed. It was assessed as a valuable analysis by the TSO (IRSN) and the experts had no important observation nor recommendation on that work. It must be noticed that, as required by the ASN guide for the content of safety reports, a HOF analysis is a required part of the safety demonstration of a nuclear facility for the French operators. For the CEA operator, HOFs analysis is an integral part of periodic safety review which is defined in one recommendation of the CEA safety instruction manual.

92		12	

Question/ Comment: **What is the important difference in human-system interface design of between existing NPPs and new NPPs?**

The design process of EPR FA3 has integrated Human Factors principles since an early stage of the Project. Amongst all new features, the design of the operation interface (main control room) is one of the main evolutions that are described here after.

Moreover, the design of other human-system interfaces (for example polar crane) takes benefit of Human Factors Engineering program and feed back of experience.

Answer:

A. Human factors engineering programme

Sources of improvement in terms of safety and reliability do not depend only on the sophistication of the technical devices but also on the early allowance for the human activity they involve.

FA3 EPR Project includes a Human Factor Engineering (HFE) Program, which contributes:

- To provide operating staff with all the necessary tools needed to achieve the performance targets in terms of nuclear safety, quality, reliability, and availability for operation, maintenance and tests activities.
- To secure working conditions from physical risks.

In order to achieve those targets, the HFE team works with the designers to improve the main areas where plant staff shall interact with the plant:

- Design of the main control room
- Layout of the plant buildings (accessibility of plant systems for maintenance; required space for plant outage)
- Design of components related to safety and radioprotection
- Design and optimisation of maintenance tools.

The HFE completes the design activities in the following fields:

- Definition of the topics that have or could have a major impact on plant performance,
- Definition of the operating principles in compliance with the organization of operating staff,
- Preparation, implementation and analysis of the Verification and Validation tests (V&V) of

operating Interfaces at the different design stages.

B. Main differences in human system interface design

1. Operating control room

The control room takes benefit of the last NPP (N4 series) feed back experience regarding computerized operation. The main new features, compare to existing NPPs with computerized control room are the following:

- TECHNOLOGY SUPPORTING OPERATION
  The FA3 EPR control room has been designed using a Commercial Off The Shelf (COTS) I&C system, consisting in a computerized Man-machine Interface combined with a Digital Control System (DCS) for the standard automation part (i.e. beside Reactor and Turbine protection). A case-by-case analysis of the chosen I&C system standard features has been made in order to verify that such solution complies with the operator needs.
  The control room has 4 operating stations; each station contains 5 similar screens.

- IMAGERY ORGANIZATION
  The solution adopted for imagery is the "task oriented" approach.

  The work performed for FA3 EPR design and the analysis of EDF operating plant experience feedback leads to the notion of ¡§task-analysis¡¨ oriented display organization.

  The EPR imagery is based on four categories (three displays categories and one document category-see figure 1):

  a. The status displays: they contain the information to get an overview of operating activity ("overall vision" of the task, objectives to reach, effectiveness of operating actuations). Those overview displays help in detecting abnormal trends. They are fully dependent of the activities they support.

  b. The command displays: they are the only place where operator's actuations are done. They contain the immediate feedback to determine whether an actuation has successfully been applied (command check-back, direct measure of associated physical values). Those displays are common to all activities and situations (not dedicated to one activity or one situation).

  c. The operator aid displays ("Instructions sheet"): They contain all the instructions to perform an elementary operating sequence. This category includes the alarm sheet and the operating guide.

  d. The "Operating Method" provides the operator with the main objectives of the operating strategy: the state is coming from, the state is going to and the strategy to adopt. Each "Method" document is linked to a status display.

- PROCEDURES
  Operating guidelines are made of operating methods and computerized instructions sheet.
  The operating method (¡§strategy based¡¨) is presented on paper documents. For a strategy, operators can select computerized operating documents (aid displays) that describe all actuations to be performed thanks to the command displays.

- AUTOMATIC DIAGNOSIS
  On FA3 EPR an automatic diagnosis system has been developed to help operators to select the right operating strategy to manage incidents and accidents scenarios. The automatic diagnosis functions are presented on one display, guiding the operators to the correct strategy to apply. If more information is needed, the parameters and logical diagrams could be displayed.

2. Activities "on the field"

Q. n°		Article	Ref. in National report

The scope of HFE program concerns as well maintenance activities. To improve working conditions and the capability of operators to perform their maintenance tasks, three types of HF activities are developed:

- Layout of the plant buildings: accessibility, required space for maintenance and plant outage activities of components; security and radiological conditions of these activities are checked.
- Design and optimisation of maintenance tools: to improve efficiency and working conditions (to reduce radiological doses, staff accident risks), some maintenance or layout tools are improved (for example handling devices, tools for pumps maintenance).
- Design of components related to safety and reliability: Polar crane is a representative example of HF improvements: the polar crane command cabin of FA3 EPR is no longer in the beam of polar crane. A mobile device with all information and controls will be used closed to components to be handled.

93		12	Sect. 12.4.1

Question/ Comment: The report states that "In 2005 EDF submitted to ASN its new management policy for nuclear safety in operation and the application guide for this policy." (P.. 72).

In this sentence, what is the major contents of new management policy in the view of human factors?

Answer: Please see the 12.2.1.
In 2004, the Safety Management Guide was the first step in the integration of HF inside management. The major content was that managers must develop HF skills to more taking into account these aspects in their behaviour: they need to be more attentive to the conditions of work, more present in the field, and more close to their team to reinforce their good practices, or help to avoid others.

94		12	Sect. 12.4.1

Question/ Comment: The report states that "ASN considers that EDF has introduced a genuine skills management policy, "

In this sentence, please provide more explanation on genuine skills management policy.

Answer: EDF adopted a skills management system based on local skills development systems and full-scale training simulators. This system promotes a professional approach and scenarios that most accurately reflect the requirements identified by the team managers. This system was assessed by IRSN in 2005 and presented during a meeting of the advisory committee for nuclear reactors (GPR) in March 2006. Following this assessment, ASN considered that this skills management system was satisfactory in regard to regulatory requirements stated in the Ministerial order of August 10th 1984, called "Quality order" dealing with competence of staff for performing tasks related to safety.

95		12	Sect. 12.4.1, P. 72

Question/ Comment: In Sect. 12.4.1 , it is stated that ASN asked IRSN to review the EDF Safety Management System with respect to Human Factors considerations.

What were the result of this Review and have any changes been proposed / incorporated as a result of this review? Please elaborate.

Answer: Regarding safety management, ASN asked in 2006 its technical support organisation IRSN to review the management of safety by EDF in a context of competitiveness. The analysis made by IRSN in 2007 is now ready to be presented during a meeting of the advisory committee of experts for nuclear reactors (GPR) planned in April 2008. Results of this assessment will be available after this meeting.

96		12	P. 68

Question/ **What performance indicators are used by EDF to monitor the effectiveness of the Human**

Q. n°		Article	Ref. in National report
Comment	**Performance Project?**		
Answer	The corporate indicator used by EDF plants is the number of safety-significant events which could have been averted through the use of one or more error reduction techniques. This will gradually be extended to include RP-significant events and industrial accidents.		
97		**12**	
Question/ Comment	When describing the issue of human factor the concept "safety culture" is mentioned only twice: in the title of subSect. 12.2.1 and in the text of this subSect.. Certain elements of this integral concept are to some extent addressed in the Report. However, it remains unclear, how is this fundamental safety concept implemented, maintained and monitored. **What is the attitude of ASN to this concept and is it being introduced among the subcontractors?**		
Answer	Safety culture is considered as a fundamental concept in safety. Subcontractors have to take into account safety culture principles in the same way as operator staff. As safety culture is not directly observable, the regulatory body does not measure a level of safety culture achievement. However, safety management practices can be identified in regulatory activities such as inspections, safety assessments and events feedback experience concerning operator as subcontractors activities.		
98		**12**	**Sect. 12.1 P. 67**
Question/ Comment	**What are the Human Factors/Ergonomic requirements and standards applicable to the design and construction stages of new NPP from a regulatory perspective?** The Ministerial order of August 10th 1984, called "Quality order" is applicable at all stages of the life cycle of BNIs including the design and construction stages. In particular, it applies to organisation, competences and skills, subcontractors, documentation, control and monitoring of activities important for safety, feedback of experience during the construction phase of a new plant.		
Answer	Also, the "technical guidelines for the design and construction of the next generation of nuclear power plants with pressurized water reactors" endorsed by ASN in 2004 includes requirements concerning man-machine interface and human factors. ASN also refers to standards such as ISO ergonomics standards (for instance ISO 9241, ISO 11064, ISO 13407, ISO 16982), IAEA guides and NRC reports such as NUREG 0711 and NUREG 0700.		
99		**12**	**Sect. 12.1 P. 69**
Question/ Comment	The concept of 'One-minute time-outs' is good practice in principle		
Answer	Indeed, this is one of the 6 error reduction techniques applied by the EDF nuclear operations division (DPN). However, while it may initially seem simple to implement, it is still apparent that the technique is still not sufficiently used.		
100		**12**	**Sect. 12.2.1 P. 69**
Question/ Comment	**Are 'One-minute time-outs' followed even during periods of high production pressure such as outages?**		
Answer	In principle, error reduction techniques must be applied in all situations. They should be at their most effective in difficult periods, when people are liable to make mistakes. Special care is taken to ensure that they are implemented during these periods, as people could be tempted not to apply these principles if they are not convinced of their benefits.		
101		**12**	**Sect. 12.2.1, P. 68**
Question/ Comment	**Please describe what the key performance safety indicators are?**		

Q. n°		Article	Ref. in National report
Answer	Key nuclear safety indicators are result-based indicators for which plant targets are set on an annual basis. These indicators are: the number of automatic reactor scrams per 7000 hours of criticality, the number of tech. spec. violations, the number of safety-significant line-up events, the number of incipient fire outbreaks. Other safety indicators have been established: status of improvement actions, e.g. fire alarms, human performance-related events, plant & material condition and more generally, trending indicators used to monitor overall safety status (e.g. trending of barrier status).		
102		**12**	**Sect. 12.3.1 P. 71**
Question/ Comment	Good Practice: Human Factors are taken into account in subcontracting and monitoring service providers		
Answer	France is thankful for this comment.		
103		**12**	**Sect. 12.3.1 P. 71**
Question/ Comment	**Are Human Factors considerations taken into account in subcontracting and monitoring service providers in the case of power reactors?**		
Answer	Contractors working on qualified equipment will all be trained in the use of error reduction techniques by 2010. Expectations governing the use of error reduction techniques are the same for EDF staff and contractors alike.		
104		**12**	**P. 68, 12.2.1**
Question/ Comment	**What is the role of the regulatory body in dealing with safety culture? Are there any regulatory requirements in dealing with this issue?**		
Answer	French regulatory requirements dealing with this issue are contained in the Ministerial order of August 10th 1984, called "Quality order", that concerns quality related activities that are important for safety. Safety culture is considered as a fundamental concept in safety, but it is not directly observable. The regulatory body does not measure a level of safety culture achievement. However, safety management practices can be evaluated in regulatory activities such as inspections, safety assessments and events feedback experience.		
105		**12**	**P. 72, 12.4.1**
Question/ Comment	**Does the regulatory framework put any requirements to the duration of simulator training (a) for initial training (b) for periodic retraining?**		
Answer	The French regulatory framework does not put any requirements on the duration of simulator training for initial or periodic training. Regulatory requirements are stated in the Ministerial order of August 10th 1984, called "Quality order": "In particular, only adequately skilled staff may be assigned to quality related tasks. Appraisal of the competence of such staff shall notably be based on their training and experience." The operator has to prove to ASN that simulator training is sufficient for the staff to be adequately skilled. In case skills are considered as not adequate, for instance as a result of event analysis, ASN could ask EDF to take measures for improving staff skills, including simulator training if needed.		
106		**12**	**P. 71**
Question/ Comment	**What oversight activities is ASN performing concerning the human factors engineering during construction of the new EPR reactor?**		
Answer	Regarding the construction of the new EPR reactor, ASN has inspected in 2007 the supervision of subcontractors by the operator. In 2008, ASN plans to inspect topics such as the organisation and management of safety in the construction, interfaces between safety requirements and the construction project, safety culture dissemination and integration into construction activities, the safety in the training of project staff including subcontractors. In parallel, ASN asked IRSN to assess the integration of human factors engineering in the design of the man machine interfaces in the main control room as well as in other places where man interacts with equipments. For instance, an assessment has been made of how EDF validated with a mock-up the design of operating tools in the main control room.		

Q. n°		Article	Ref. in National report
107		**12**	**P. 73**
Question/ Comment	The report says that "ASN has nevertheless asked EDF to strengthen corporate guidance of local development of skills management for the post of contractor oversight manager.". **Could ASN say a little more about the background to this request?**		
Answer	The term "contractor oversight manager" refers to people in the NPP who are in charge of supervising subcontractors in maintenance activities. They are technical people in technical departments of the plant. During an outage, they are appointed in the "Outage project" for supervising outsourced activities. The task of supervising requires specific supervision skills which are different from the technical skills people already have, and they need to be trained specifically. After the assessment made by IRSN and presented during a meeting of the advisory committee of experts for nuclear reactors (GPR) in March 2006, ASN considered that EDF should improve its support to the plants for managing and evaluating these specific skills during the outage projects.		
108		**13**	
Question/ Comment	The implementation of ISO standards within ASN is an excellent idea. **Could France report about the main findings of this procedure?** **Is there any intention to proceed to the implementation of the ISO/IEC 17020, 2004 "General criteria for the operation of various types of bodies performing inspection"?**		
Answer	The implementation of ISO standards that are mentioned at the 13th article does not concern ASN but CEA. The organisation of all the nuclear activities of CEA has been certified to the ISO 9001-2000 standard, and this includes operating the research reactors as mentioned in Sect. 13.3.1 of the French report. It should be noted that nearly a third of audits performed on Centres within this frame concerns the 10th August 1984 quality order subjects. By the way, ASN is implementing quality management system which shall comply with the IAEA standard GSR 3 by using ISO 9001-2000 principles. This quality approach implementation should ensure consistency of its main processes across ASN and should promote continuous improvement.		
109		**13**	**13.2, P. 75**
Question/ Comment	On P. 70, first paragraph, reference was made to the introduction of total quality management. **Is the quality management system of EDF an integrated management system in line with the principles of IAEA GS-R-3?** **Are there any changes needed/planned to take account of GS-R-3 requirements in further developing the quality management system of EDF?**		
Answer	The quality management system of EDF is not an integrated management in line with the principles of IAEA GS -R-3. But, its integrates the fundamental concepts of Excellence from the European Foundation for Quality Management.		
110		**13**	
Question/ Comment	The issues of quality assurance and their conformance to the regulatory provisions of 1984 are sufficiently fully described in the Report. However, there is no information on the development and implementation of the quality assurance programs and on their conformance to IAEA standards. **Do you have quality assurance programs and what is their role in the operation of French NPPs?**		

Q. n°		Article	Ref. in National report
Answer	The quality system is independently checked by means of audits: compliance with quality rules and requirements, adherence to reference standards in the area being audited, effectiveness of organisational structures (and TQM processes). These audits are carried out by the plants' safety quality departments (auditors and safety engineers). They focus on all areas covered by the plant quality manual and are conducted at a frequency determined by risks and challenges. Periodic review meetings of the quality assurance system are arranged by the safety quality department and led by plant senior management. Conclusions are captured in the safety report for reporting purposes.		
111		**13**	
Question/ Comment	**Could France summarise the main results/experiences in implementing its management program at ASN according to ISO 9001-2000.** **How this reorganisation was/is recognised by ASN staff (was there an assessment)?**		
Answer	The implementation of ISO standards that are mentioned at the 13th article does not concern ASN but CEA. The organisation of all the nuclear activities of CEA has been certified to the ISO 9001-2000 standard, and this includes operating the research reactors as mentioned in Sect. 13.3.1 of the French report. It should be noted that nearly a third of audits performed on Centres within this frame concerns the 10th August 1984 quality order subjects. By the way, ASN is implementing quality management system which shall comply with the IAEA standard GSR 3 by using ISO 9001-2000 principles. This quality approach implementation should ensure consistency of its main processes accross ASN and should promote continuous improvement.		
112		**13**	**P. 75, 13.1**
Question/ Comment	**How are the new IAEA Requirements GS-R-3 considered in the regulatory framework?**		
Answer	A new regulation is under development as regards the safety management systems. This regulation will comply with the reference level established by the association WENRA from the GSR 3. This regulation will replace the current regulatory requirements spelling out in the order concerning the quality assurance.		
113		**14.1**	**P. 83**
Question/ Comment	**What is the orientation of the preliminary safety assessment of a nuclear facility – is it a general one or a strictly defined, reflecting the specific site characteristics?** **Please provide reference to a document if existing.**		
Answer	The preliminary safety case of Flamanville 3 reflects the specific site characteristics (for instance : weather, hydrogeology, population density around the NPP, earthquake,…). In France, the ASN does not certify a specific design which could be used, after certification, for several NPP. Each individual project is assessed by the ASN before the signature of the authorization decree by the Prime Minister. The content of the preliminary safety case is specified by the regulation (see article 10 - decree n°2007-1557 published on the 2nd November of 2007). A public version of the safety case of Flamanville 3 is available in French on the EDF web site : http://www.edf.fr/html/epr/rps/index.pdf		
114		**14.1**	**P. 84**
Question/ Comment	**How is the periodic safety review organized from a regulatory perspective?** **What is the role of the regulator in the process as well as in the planning of activities?** **Which are the required documents that the licensee shall submit in support of nuclear facilities safety substantiation?** **Please provide reference to a document if existing.**		

Q. n°		Article	Ref. in National report
Answer	Article 29 - III included in Act 2006-386 of 13 June 2006 on transparency and security in the nuclear field gives the main features of PSR which shall take place every ten years. In particular, the licensee must send to the ASN and the ministers tasked with nuclear safety a report including the conclusions of the review and, where applicable, the provisions it envisages taking to remedy the observed anomalies or to improve the safety of its installation. After analysing the report, the ASN can impose new technical prescriptions. ASN sends its analysis of the report to the ministers tasked with nuclear safety .		
115		**14.1**	**P.11, Sect. 2.3.4, last §**
Question/ Comment	**For the 1300 MWe reactors, what are the changes that had been identified by the safety reviews and that will continue to be incorporated until 2014?** **Are theses changes necessitated by obsolescence, ageing, or by new insights from safety analysis?** PSR realized for second decennial visit of 1300 MWe reactors fleet was achieved in 2005 and conclusions of this PSR will be incorporated on 1300 MWe plants until 2014. Examples of modifications introduced following this PSR is given hereafter : improvements of Reactor Vessel Level Instrumentation System used for Emergency Operating Procedures, improvement on manual actuation of safeguard systems when they are fed by emergency electrical switchboards, improvements of Station Black Out means used to ensure flow to seals of reactor coolant pumps, modification of I&C on CVCS valves, modification of start-up sequence of EFWS after Steam Generator Tube Rupture.		
Answer	The above modifications were identified by the safety analysis as appropriate safety improvements, but were not linked to ageing. Nevertheless, some anomalies due to accelerated corrosion phenomena have been observed on specific components during conformity checks realized on the plants before the second decennial visits. For example, some anchors of safety related components were discovered to be in degraded conditions, particularly on seaside plants like Flamanville 1300 MWe reactors. Moreover, some components are checked during decennial visits in a specific program, so-called "complementary investigation program", in order to check some components which could be affected by ageing phenomena not taken into account in maintenance program of NPPs.		
116		**14.1**	**Sect. 14.1.1, §1**
Question/ Comment	The report states that "When a licensee intends to build a new type of reactor, ASN asks the advisory committee for nuclear reactors to review the proposal and informs the licensee of the issues to be included in its licence application." **Please indicate whether there are regulatory documents that would provide guidance and/or requirements to specify what must be included in the licence application.** Article 8 of the decree of 2 November 2007on BNIs and the transport of radioactive substances (implementing the act of 13 June 2006 on transparency and security in the nuclear field) mentions the documents which need to be included in a license application.		
Answer	The ASN may issue documents to specify the content of these documents, as needed. The text of the decree of 2 November 2007 is available, in French, at the following address : http://www.legifrance.gouv.fr/./affichTexte.do?cidTexte=JORFTEXT000000469544&dateTexte=&fastPos=1&fastReqId=1901432195&oldAction=rechTexte		
117	**Finland**	**14.1**	
Question/ Comment	**Do you have access to the results of large nuclear safety related experimental test programmes to study physical phenomena and to validate analysis models used in safety analysis?** **Does this access adequately cover your needs for experimental data in different areas, taking**		

Q. n°		Article	Ref. in National report
	into account the current state of your nu-clear programme?		
Answer	EDF has a fairly good access to the most important safety related experimental test programmes. Those experiments are extensively used to validate our analysis models.		
118	**Finland**	**14.1**	
Question/ Comment	**Is there a requirement in your country to apply PRA methods to support periodic safety review, licensing of plant life extension or power upgrade, or licensing of new build?** There is no legal requirement to apply PRA methods to support safety review or licensing. The decree of November 2nd, 2007 regulating the nuclear installations, only states that, for the licensing of a new plant : • the preliminary safety report must outline every measures considered to prevent accidents or to limit their probability or consequences, • the preliminary safety report guarantees that, considering the state of actual knowledge, common practices and plant environment vulnerability, the level of risks for the project is as low as achievable, within acceptable financial conditions. However, the "technical guidelines for the design and construction of the next generation nuclear power plants with pressurized water reactors" (not legally binding) requests that a PSA be conducted, beginning at the design stage. This has been applied for the EPR project.		
Answer	PSAs are developed and used in accordance with the (non legally binding) basic safety rule 2002-01 "Development and Use of Probabilistic Safety Assessments". (available in English at : http://nuclear-safety.asn.fr/). The rule covers the following items : • French PSA Doctrine, • scope of PSAs, • acceptable methods for PSA level 1 - Internal events, • acceptable PSA applications. The acceptable applications given by this basic safety rule are safety reassessment, probabilistic analysis of events, future plants, determination of the importance of safety systems, and operating technical specifications. For the existing reactors, the practice is that a PSA is developed for each series of NPPs and updated during the periodic safety reassessment. ASN has requested the licensee to develop each PSA in compliance with the basic safety rule.		
119		**14.1**	**14.2.2, P. 86**
Question/ Comment	The ten yearly safety reviews are mainly based on a deterministic approach. To which extent do results from PSAs or precursor studies serve as input for the programme of the "*visites décennales*"?		
Answer	PSAs are also used in the framework of Periodic Safety Reviews and their results can lead ASN to ask EDF to modify the plants. Precursors are analysed in a specific experience feedback analyses for all EDF plants every three years through analyses of INES classified events. Some events can be the source of theme for PSR : hydrogen release due to wrong maintenance operation in the Nuclear Auxiliary Building of Chinon B plant in 1998 was taken into account for the explosion risk VD3 theme, 1999 Blayais NPP's flooding events and 2003 extreme weather conditions were taken into account for examination of NPPs autonomy during external hazards.		
120		**14.1**	**P. 84, L2 from Btm**
Question/	In the 2nd line from the bottom on P. 84 (14.1.3.2), it is said that ASN asks the licensee to examine the		

Q. n°		Article	Ref. in National report

Comment: consequences of implementing stricter safety requirements and, whenever feasible, to propose modifications to the plants.

Who decides on the feasibility? Has the criteria been established and published?

Answer: The feasibility of modifications is mainly assessed by the licensee and is checked by ASN with technical support of IRSN when a modification asked by ASN is not considered as feasible by the licensee. For instance, radioprotection constraints are taken into account and can make some modifications very difficult in areas where the realization of modifications needs human intervention. If ASN thinks that the licensee's position concerning the modification feasibility is not relevant, ASN can oblige the licensee to implement the modification.

121		14.1	P. 85, L11

Question/ Comment: It is said on P. 85 that to this must be added measures which strictly speaking in France are not within the remit of the periodic safety review, but which are guided by the same determination to verify conformity and bolster requirements.

Does this mean that the safety reassessment must be carried out, not by a ten-yearly review, but every time the legislation and regulations are amended or implemented?

Answer: Usually, each new regulation states that utilities must comply with the new rules before the end of a certain delay, specified in the regulation itself. Licensees must comply with the new regulation before the end of this delay, independently of the safety review mechanism.

122		14.1	P. 86, L18, Sect. 14.2.1

Question/ Comment: It is said in the Sect. 14.2.1 on P. 86 that after a period of time set by the plant authorization decree (usually ten years), EDF submits the final safety analysis report and the general operating rules, together with a license application for normal commissioning.

What does this "ten years" indicate? Please clarify this.

Answer: Each authorization decree is delivered for a period of time (for Flamanville 3 : 10 years). Indeed, the creation authorization is delivered taking into account the state of the regulation, the nuclear and environmental knowledge at the moment of the decision : without this constraint of time, the operating license could be delivered whereas the NPP project is not anymore in adequacy with the current requirements. Because of this time constraint, each authorization decree must be linked to an actual project of NPP. The period of time of 10 years was specified on the basis of the past projects of NPP construction, taking into account the construction schedule and margins.

The final safety analysis report and the general operating rules will have to be submitted and assessed by ASN for the commissioning authorization that will be delivered by ASN.

123		14.1	P. 90, L8 from Btm

Question/ Comment: The 2nd paragraph under the Sect. 14.4.1.2 on P. 90 says as follows:
On completion of these consultations, ASN issued its requests for changes and additional studies likely to lead to design or operation modifications. Incorporation of changes resulting from this review is scheduled during the third ten-yearly outages of the 900 MWe reactors, from 2009 until 2020.

What kind of changes and additional studies were requested?
Please give us more details, as this might be useful for other Contracting Parties.

Answer: Additional studies have been asked to the licensee on draining of fuel pool accidents, severe accident

Q. n°		Article	Ref. in National report
	monitoring, behaviour of containment hatch and penetration in accidental conditions, hypotheses for H2 accidental release calculations in Nuclear Auxiliary Building, improvements for PSA containment bypass sequences, modifications to cope with fire in electrical rooms, etc...		
124		**14.1**	**P. 11, Sect. 2.3.4**
Question/ Comment	Incorporation of changes identified by the 20-years safety review of the 900 Mwe reactors, which began in 1990, continued in 2006 and will be completed in 2010. **Q1. Could you specify the changed points after remodeling, which are from the 20-years safety review of the 900 Mwe reactors?** **Q2. Does this change include strengthening earthquake resistance and sump filter replacement on P. 12?**		
Answer	Periodic safety reviews performed for the second decennial visit of 900 MWe reactors have covered a complete range of themas and lead to very significant amount of modifications, the list of which would be too long to mention there. For example, mechanical part of safety injection system has been improved to take experience feedback of Farley-Tihange effects, emergency feedwater sytem and reactor scram reliability have been improved, SBO PSA results sequences were reduced with modifications of support systems to reactor coolant pump seals integrity. A significant part of these modifications has improved PSA level 1 results. For VD3 of 900 MWe plants, modifications related to severe accidents and internal / external hazards take a greater part than for VD2. Sump filters replacement was decided at the beginning of VD3 PSR 900 MWe. As this was a generic and serious issue for all EDF plants, this modification will be implemented for all plants (900 MWe, 1300 MWe and N4) by 2009 without waiting for the decennial outages and will be ended before the start-up of third decennial outages of 900 MWe fleet plants. Some modifications due to earthquake studies have been or will be implemented both during 2nd and 3rd decennial visits, mainly on first built 900 MWe plants (Fessenheim and Bugey NPPs).		
125		**14.1**	**2.3.6., P. 12, L.22**
Question/ Comment	**Would you give detailed information about activities concerning "Multinational Design Approval Program"?**		
Answer	The Multinational Design Evaluation Programme (MDEP) is a multinational initiative to develop innovative approaches to leverage the resources and knowledge of the national regulatory authorities which will be tasked with the review of new reactor power plant designs. Within this framework, a subgroup is dedicated to cooperation on EPR projects. Activities of this subgroup deal with : status of each project, basis for mutual understanding on various technical topics (national requirements, differences in the design, assessment already performed etc.) and advanced cooperation on specific technical topics (eg digital I&C, severe accident, inspection in service for pressurized equipments etc.)		
126		**14.1**	**P. 86-88**
Question/ Comment	France is to be commended on its exemplary procedures for periodic safety review, (PSR) and in particular for the way in which the safety requirements reference system is regularly examined to check whether it is up-to-date in the light of operational experience feedback. It is clear from the report that ASN places this responsibility firmly on the licensee, EDF, and that the 10 yearly PSR process has identified areas where safety has been enhanced. **Could ASN say more about the procedures used for determining the safety significance, and hence the urgency, of any modifications, the need for which might be identified through the PSR programme?**		
Answer	Periodic safety review is the occasion to perform both conformity check of NPPs and safety improvement. Conformity check is performed through on-site inspections (realized by the licensee)		

Q. n°		Article	Ref. in National report

and generic studies. For instance, safety injection system 900 MWe plants performances have been reassessed together with periodic test procedures and accident analyses through generic studies. Anchors of passive accumulators have been controlled through conformity check of components realized on NPPs.

Decisions regarding problem solving deadlines are taken by ASN on a case by case basis. They integrate various factors, such as :

1. Impact of the anomaly on the safety demonstration (which transients are affected by the anomaly ? How does the anomaly affect these transients ?),
2. estimated frequency of affected transients,
3. strength of the remaining defence in depth levels,
4. possibility of implementing palliative measures,
5. complexity of the solution

127		14.1	14.1.3 &19.4.1.2.1

Question/ Comment **What regulations or licensee programs are in place or planned to encourage licensees to address ageing issues and/or maintenance practices at older nuclear installations in the context of the competitive electric market place?**

Answer ASN controls EDF maintenance policy and verifies that the maintenance operations and controls necessary to maintain and improve the safety level of the plants (including the older ones) are duly performed.

For instance, the French Authority considers that the 3rd ten yearly outages are absolutely essential for obtaining knowledge on the conditions of the components, systems and structures (SSCs) of the 900MWe plants and in the demonstration of the ability of the licensee to follow their exploitation. In this context, ASN asked the operator to provide reports to demonstrate the continuing ability of SSCs to provide their safety function through the application of appropriate operating, maintenance and monitoring activities which specifically address the ageing phenomena. For example, for components with an estimated lifetime higher than 20 years, ASN asked the operator to test some samples to verify that their conditions meet the qualification requirements.

128		14.2	P. 83, Annex 2

Question/ Comment **What is the place of the probabilistic safety analyses (levels 1,2 and 3) in the overall review of the nuclear facility safety assessment?**

Answer PSAs are considered as supplementing the safety demonstration of power reactors, provided basically by the deterministic approach.

However, the "technical guidelines for the design and construction of the next generation nuclear power plants with pressurized water reactors" (not legally binding) requests that a PSA be conducted, beginning at the design stage. This has been applied for the Flamanville 3 EPR project.

Level 1 PSAs are used in the course of the periodic safety review of power reactors. No level 2 or 3 PSA is being used yet, neither by the licensee nor by the regulatory authority. The first complete level 2 PSA will be performed for the third safety reassessment of the 1300 MW NPPs.

PSAs are performed and used in accordance with the basic safety rule 2002-01 "Development and Utilisation of Probabilistic Safety Assessments" (not legally binding), available in English at : http://nuclear-safety.asn.fr/ (in “references”).The rule covers the following items :

- French PSA Doctrine,
- scope of PSAs,
- acceptable methods for PSA level 1

Q. n°		Article	Ref. in National report

- Internal events,
- acceptable PSA applications

The acceptable applications given by this basic safety rule are :
- safety reassessment,
- probabilistic analysis of events,
- future plants,
- determination of the importance of safety systems,
- operating technical specifications.

paragraph II.4.1 is dedicated to the applications of PSAs during the periodic safety review.

129		14.2	P. 86
Question/ Comment	**When implementing measures to reduce or even eliminate the impact of external hazards, what are the priority measures (depending on the type of hazard) administrative or technical?** **How is the safety of a certain site substantiated having in mind that some of the hazards are postulated in the analyses?**		
Answer	With respect to the reduction or elimination of the impact of external hazards, ASN favours technical measures rather than purely administrative ones. In the safety demonstration, the utilities must explain how their design and operation rules make them able to cope with a certain threat level of external hazards. For each kind of hazards, this threat level is fixed using methods described in general safety rules (RFS) issued by ASN and taking into account the characteristics of the site.		

130		14.2	P. 83, Sect.14.1.1§2
Question/ Comment	The report states that "In practice each NPP undergoes an average of about twenty inspections a year…". **What types of inspections are conducted (for example, audit, systems inspection, component inspection, etc.)?**		
Answer	For nuclear power plants, ASN performs various types of inspections which range from a two inspectors team half a day (typically an unannounced inspection to check status in the control room and conformance with the technical specification) to a dozen inspectors team for a full week. The types of inspections performed by ASN are stated in chapter 7.3.2.5.1.		

131		14.2	14.2.2.1
Question/ Comment	**There is a safety reference system for every assessment and verification of safety, whether does EDF reassess and verify the reference system?** **How to avoid the deviation of the reference system?**		
Answer	In a first step of each 10 yearly safety review, the safety reference system is clarified, taking into account the previous safety reference system, completed by possible additional safety requirements. The safety reference system is then reassessed, with possible evolutions, leading to the last safety reference system. Avoidance of the deviation of the safety reference system is then ensured by this reassessment.		

132		14.2	Chap. 14.2.2.2 P. 87
Question/ Comment	**What does further analysis comprise in respect of the safety demonstration for the reference installation?**		
Answer	Further analysis in respect of the safety demonstration for the reference installation can be mainly		

Q. n°		Article	Ref. in National report
	related to : - Weak points identified through the safety demonstration, which need deepened analysis, - Correction of deviations from the reference state, identified through the compliance review, - Consideration of new safety items in the frame of the safety reassessment, - Margins assessment analysis…		
133		**14.2**	**Sect. 14.4.1.1 & 14.4.1.2 , P. 90**
Question/ Comment	**Please provide any examples of the measures taken for Ageing Management of components during the 20 & 30 year Safety Review of the 1300 MW and 900 MW Reactors?**		
Answer	The French Authority considers that the 3rd ten yearly outages are absolutely essential for obtaining knowledge on the conditions of the components, systems and structures (SSCs) of the 900MWe plants and in the demonstration of the ability of the licensee to follow their exploitation. In this context, ASN asked the operator to provide reports to demonstrate the continuing ability of SSCs to provide their safety function through the application of appropriate operating , maintenance and monitoring activities which specifically address the ageing phenomena. For example, for components with an estimated lifetime higher than 20 years, ASN asked the operator to test some samples to verify that their conditions meet the qualification requirements.		
134		**14.2**	**P. 90, 14.4.1.1 & 14.4.1.2**
Question/ Comment	**How did the results of the 20-year safety review of the 1300 MWe reactors influence the inspections performed by ASN?** **Which topics were included due to those results?** **How will the results from the 30-year safety review of the 900 MWe reactors influence the inspections planned by ASN?**		
Answer	Inspections at NPP are performed according to a "core inspection lists" which cover 8 themas (organizational & human factors, operation, confinement barriers, pressurized equipments, systems and structure status, internal & external hazards and emergency preparedness, radiation safety, environment & transport). This list identifies several topics that have to be inspected each year or within a few years at every NPP. The periodic safety review did not result in a change in this list. However, for a specified topic, outcome of the periodic safety review was used on a case by case basis to focus the scope of some specific inspections.		
135		**15**	**15.5.1**
Question/ Comment	Two workers received doses exceeding the regulatory limit of 20 mSv in 2005. **In what type of INB were these persons working? (§15.2.1 (NPPs) and 15.3.1, 15.3.2 (research reactors) do not mention these doses)**		
Answer	These two workers, whose exposure exceed 20 mSv but not 50 mSv, were subcontractors (i.e. not employees of a nuclear installation licensee). As a consequence, their exposure may relate to several nuclear installations (including fuel cycle or research facilities) and even non nuclear installation (for example industrial radiographers). One of them did work at a NPP. By the way, 2005 was a transient year where the 20 mSv dose limit was not in force all year long.		
136		**15**	**P. 189-190, Annex 4.1**
Question/ Comment	General data on the types of measurements and analyses of the gaseous and liquid discharges from NPP carried out by the licensees are included in the report.		

Q. n°		Article	Ref. in National report
Answer	**Is this monitoring in conformity with the requirements of the EC recommendation 2004/2/EURATOM regarding the standardised information on NPP liquid and gaseous discharges into the environment?** "The rules which are applied in France for accountancy of radioactive releases have been defined in 2002 and are slightly more severe than the requirements of the 2004/2/EURATOM Recommendation. Reference spectra are defined for g-emitters : - liquid discharges : 54Mn, 58Co, 60Co, 110mAg, 123mTe, 124Sb, 125Sb, 131I, 134Cs, 137Cs ; - gaseous discharges : 41A, 85Kr, 131mXe, 133Xe, 135Xe. If the volume activity of these radionuclides is lower than the "decision threshold" (as meant in the above mentioned Recommendation), released activity is the product of decision threshold by released volume. If the volume activity is above the "decision threshold", released activity is the product of measured activity by released volume. Other radionuclides are taken into account as soon as volume activity is above "decision threshold".		
137		**15**	**Chap. 15.2.1.1 P. 98**
Question/ Comment	In Sect. 15.2.1.1, it is described that 2 nuclear power units had taken the measures of injection of zinc into the primary system to reduce the contamination and dose received by workers. **Has France made a schedule to extend the technique in other NPPs?**		
Answer	The zinc injection trial conducted at Bugey 2 and Bugey 4 was scheduled to run for 3 cycles. It is soon due for completion. It is expected that in 2008, a decision will be made as to the possible extension of this trial to other reactors in the fleet. Main results obtained as at mid-2007 were reported back to the EPRI at the International Zinc Injection User's meeting held in September 2007 at Vandellos in Spain. In conclusion to this report, it appears that an overview of EDF and international operating experience has highlighted the confirmation of a certain number of theories pertaining to the beneficial effects of zinc on contamination and radiation exposure in PWR plants. Differences found in the results obtained have prompted investigations into additional hypotheses that could help to improve the understanding of phenomena and optimise implementation of this practice on working reactors. More in-depth investigations should be carried out on the mechanism behind the beneficial effects of zinc and zinc kinetics.		
138		**15**	
Question/ Comment	**In relation to the unannounced inspections: do you apply the same inspection protocol when performing a regular inspection or an unannounced one?** **In general, do you apply unannounced inspections to others inspection activities (e.g. medical uses of radiation)? If yes, could you please comment on the issue?**		
Answer	Most of the inspections are announced inspections to enable the licensee to make the appropriate personnel (i.e. personnel with the expertise or responsibility related to the topic inspected) available for the inspection. For unannounced inspections, the only difference in the inspection protocol is that the licensee won't be notified in advance of the inspection. The other items of the protocol (i.e. inspection preparation, follow-up letter to the licensee, review of licensee answers to the follow-up letter...) are applicable to unannounced inspections. For inspections performed at medical facilities, it is very unusual to performed unannounced inspection as due consideration is taken to avoid disruption in taking care of patients. Unannounced inspections are however sometimes performed on the transportation of radioactive material (for example at airports) or at industrial facilities (for		

Q. n°		Article	Ref. in National report
	example at radiographer field jobs).		
139		**15**	
Question/ Comment	**How France does apply clearance levels to effluent and solid waste?**		
Answer	France does not apply clearance levels.		
140		**15**	**15.2.2.2, P.101**
Question/ Comment	"Environmental monitoring by the licensee performs three technical functions: - alert function; - monitoring function; - tracking and study function. In addition to these technical functions, the communication function encompasses communications with the authorities and the general public." **What is the process to inform the public about the monitoring data?** **Who is responsible to make these data public?**		
Answer	Pursuant to article 26 of the decree of November 26, 1999, the licensee of a nuclear installation shall establish each year a report intended to be made public. This report should characterize the operation of the installation, the annual discharges and their monthly distribution in activity for radionuclides and in flow for chemical substances as well as the results of the measurements and monitoring of the environment. This information, together with comments for their understanding, is supplemented by an estimate of the doses received by the population due to the installation operation. In addition to its transmission to the authority ASN, the report is sent to the local authorities (in particular prefecture, DRIRE) and to the local information commissions or equivalent organizations. This obligation to inform the public is set by title III of the law n°2006-686 relating to transparency and nuclear security which develops this right to information. The obligation to inform the public concerns the nuclear power plant operator as well as the nuclear safety authority. Information by the site operator on the control of discharges and the monitoring of the environment of the installations is available to the public through its own Internet site. The information system set up by the authorities is the national network of measurements of the radioactivity in the environment. This national network, instituted by the articles R. 1333-11 and R.1333-11-1 of the code of public health, meets the obligations set by articles 1 and 2 of directive 2003/4/CE of January 28, 2003 concerning the public access to information as regards environment held by public authorities. The ASN lays down the orientations of this national network whose development and management are entrusted to the IRSN. This network is under development. It can already be accessed though the ASN and IRSN Internet sites. By 2010, this network will allow access to the environment monitoring data of all nuclear sites (self-monitoring of the operator and monitoring by the IRSN) and to the radiological monitoring of all the French territory.		
141		**15**	**(P.104) 15.4.1**
Question/ Comment	General monitoring of the environment **Could you present terrestrial samples too?**		

Q. n°		Article	Ref. in National report
Answer	"Reference stations" provide terrestrial samples taken in various compartments of the environment : aerosols, rainwater, vegetable, milk, soil, ...		
142		**1.5**	**Sect. 15.4.2**
Question/ Comment	In relation to Sect. 15.4.2 Monitoring the environment of nuclear reactors, ASN has a system of unannounced inspections and carried out 17 inspections in 2006. **Did you have findings through unannounced inspection in 2006? If any, please explain the results.** **What are the corrective actions for the findings?**		
Answer	"Through the unannounced inspection in 2006, there was no particular "finding". The remarks pertain mainly to the general organisation, availability of people in the laboratories, and proper maintenance of equipment. The letters sent to the licensees as a conclusion of these inspections are made public by ASN."		
143		**1.5**	**P. 94 (15.1.2.1)**
Question/ Comment	It is described that the dose limitation for a person of the public is on an annual basis whereas it is on a 12 consecutive months period for professionals. **Q1. What is the rational for having a 12 consecutive month period?** **Q2. How is it organized in practise in terms of notification to ASN and early detection of a potential dose exceeding?** **Q3. Are there mechanisms in place to help avoiding dose exceeding?** **Q4. What are the legal steps if a dose limit is exceeded?**		
Answer	**Q1.** The 12 consecutive months period for the occupational exposure limit was already in force before France transposed EU Directive 96/29/Euratom and adopted a more stringent dose limit. One basis for this choice was to encourage avoiding high dose to be received on two consecutive months (19 mSv in December and 19 mSv in January), especially for short term contractors. **Q2.** Notification of potential (or actual) over-exposure is required by the Labour code (R.231-93 to R.231-96) : occupational health physicist and labour inspectors have to be immediately informed by IRSN or the licensed dosimetry service or the qualified expert (PCR). In addition, as allowed by the Labour code (R.231-105-1), ASN has required the licensees to notify ASN of any unplanned exposure exceeding (in one shot) 1/4 of the annual dose limit (and of course any actual overexposure). **Q3**. As part of its oversight process, ASN ensure that licensees implement ALARA programs. Most of the licensees have put in place trigger levels (16 mSv and 18 mSv for example at EDF) to ensure that any worker (including subcontractors) exceeding these levels benefits from a very close follow-up to avoid exceeding the dose limit. **Q4.** Following an over-exposure, actions to be taken by the employer, the occupational health physicist, the qualified expert (PCR) and IRSN are stated in the Labour code (R.231-96 and R. 231-97). Fines and jail time are possible consequences for an employer in case of an over-exposure (Public health code L.1337-5 and L.1337-7).		
144		**15**	**Sect. 15.4, P. 103**
Question/ Comment	It is stated that ASN is working to define guidelines on environmental monitoring. **Please provide information on what International Standards are being used at present for**		

Q. n°		Article	Ref. in National report
	regulatory oversight of Environmental Monitoring in the absence of the National Guidelines. (IAEA, EUR etc?)		
Answer	At present, there is no international standard used for regulatory oversight of environmental monitoring. The discharge licence sets the environmental monitoring to be performed by each BNI. The general monitoring of the French territory is performed by IRSN. Nevertheless, environmental monitoring in France complies with AIEA and European guidelines		
145		**15**	**Chap. 15.1.1.2 P. 96**
Question/ Comment	**Please clarify whether in France clearance applies to both effluent and solid radioactive waste.**		
Answer	Although French regulations do include exemption levels (Public health code R. 1333-18), they do not include any clearance levels, either for solid radioactive waste or for effluent. For effluent however, there are discharge licences that stipulate in particular limits that must not be exceeded, discharge conditions and procedures of the environmental monitoring programme.		
146		**15**	**Chap. 15.1.1.2 P. 96**
Question/ Comment	The Report states "…below which no radiation protection action is felt to be necessary.". **Does this statement have relevance to Exclusion and/or Clearance (levels)? Please clarify the statement.**		
Answer	Although French regulations do include exemption levels (Public health code R. 1333-18), they do not include any clearance levels.		
148		**15**	**Chap. 15.2.1.2 P. 98**
Question/ Comment	An extensive description of ALARA measures in the workplace and operation has been given in the Report which is highly commendable. **Does the French Plant Operators have a formal dose reduction program for the future to complement the present success (in terms of occupational and public exposures) and what strategies are included in this programme?**		
Answer	Initiatives driven by EDF corporate offices for the fleet's 58 working reactors over the period spanning 2006-2010 have been developed along the following 4 lines: - Acting on the source term - Minimising radiation exposure - Driving performance - Promoting ALARA behaviours Key initiatives include: - an overhaul of the RP information system, including the development of a planning tool (dose prediction and optimisation), as well as supervision of worksites - efforts to reduce the highest individual doses, with 2 specific focus areas: installation/removal of heat insulation and installation/removal of radiation shields. The optimisation is a continuous improvement process during the installations' life. For instance, maintenance works or modification actions are subject to studies related to dose optimisation as soon as the forecast dose appears worthy of note. The level of detail varies according to the potential dose.		

Q. n°		Article	Ref. in National report

Another important stage lies in the frame of periodic safety review for which analysis are performed to determine the main potential ways to improve individual and collective dosimetry on installations. Then, the activities with most significant or high dosimetry are studied phase by phase and worker by worker to define the best adapted protective equipment, tools and working methods. For important refurbishment, global ALARA study is performed for all facility's work places on the base of dosimetry forecasts.

149		15	Chap. 15.2.1.2, P. 99

Question/ Comment

Can the ASN please provide more information as to the initiative to enhance "sealed source" safety.

Answer

As far as the risk related to gamma radiography is concerned, organizational improvements have been implemented at all French plants (for instance through the setting up of a "gamma radiography team" in charge of coordinating and supervising gamma radiography activities during outages).

Simultaneously, a project looking at reducing the number of such activities to decrease related risks accordingly has been launched. This approach is based both on a reduced volume of non destructive testing and replacement of gamma radiography by other techniques.

150		15	Chap. 15.2.2.1 P. 100

Question/ Comment

It is not clear whether Regulatory limits pertaining to effluent discharges are expressed in total activity (Bq) and/or activity concentration. Please clarify with subsequent reason.

Answer

"There are two types of limits :

- limits pertaining to total amounts of activty added to environment, expressed in Bq. These values allow calculation of the dose impact of radioactive releases ;
- limits of activity concentration measured in the environment, which allow to verify environment is undamaged. "

151		15	Chap. 15.2.2.1 P. 100

Question/ Comment

The French CNS Report states that a rigorous ALARA/optimization program has been implemented encompassing design aspects such as effluent treatment facilities (engineering). This seems to be successful.

Could more specific detail (summary) as regards to possible modification (s) as to equipment and effluent management processes implemented be provided?

Answer

Radioactive liquid discharges have been reduced by the fitting, in the eighties, of modifications designed for the selective recovery of liquid effluents, as well as by improving the effluent management system.

Design: recovery and treatment

Liquid effluents are recovered selectively according to 4 categories (floor drains, effluents emanating from support facilities, chemical effluents, residual drains) so that they can be channelled toward the most appropriate treatment system, depending on their characteristics (filtration, evaporation, demineralisation).

Effluent management

On nuclear power plants, effluent management practicalities are set out in operating procedures

which describe how to go about:
- Monitoring the quality and quantity of radioactive and chemical effluents,
- Keeping discharged quantities and activity levels under control

As such, actions have been taken to reduce effluent production at the source, as well as to optimise their recovery and treatment. This has been achieved by setting up a dedicated effluent management system.

Reduction at source
The following arrangements have helped to reduce effluent production:
- During field operator patrol rounds, main sump drains are inspected in order to detect any significant effluent discharge,
- Sump drains have been fitted with level gauges wired up to the control room in order to detect any abnormal trends in filling rate,
- Plexiglass lids have been fitted to sump intake manifolds in order to see where effluents are coming from,
- Leak detection procedures are being applied.

Plant-specific effluent management systems
Effluent management systems set up at plant level are designed to:
- Prevent pollution,
- Keep effluent discharge under control,
- Keep the effects of these discharges as low as reasonably possible.

This requires a high level of staff commitment (raising of awareness, training, motivation). It relies heavily on the use of experience acquired on the site and across the entire fleet, and encourages the implementation of good practices gleaned from this operating experience.

The system is reinforced during outage periods where more effluents are produced due to the large number of maintenance activities requiring systems to be drained. By monitoring effluents on a daily basis, discharges can be effectively reduced during this phase.

Lastly, each nuclear power plant has set up an environment management system (EMS), as defined by ISO 140001. This requires strict adherence to regulations and a commitment to constantly improving practices and performance in the areas of environmental protection and public health.

Corporate effluent management systems
Nuclear power plants are supported by the corporate structure, particularly when it comes to the reviewing of operating experience.

In concrete terms, this support takes the form of:
- Exchange meetings,
- Written guidelines and instructions providing information needed to solve problems of a technical, regulatory or environmental nature,
- A high level of support with renewal procedures and amendment of discharge regulations,
- Provision of environmental skills.

All these activities have been documented in a Guide of Good Practices aimed at helping nuclear power plants to improve their effluent management systems and keep all types of discharge under control.

Q. n°		Article	Ref. in National report
152		**15**	**Chap. 15.2.2.1 P. 100**
Question/ Comment	**Taking cognizance of significant effluent reduction, how is the generation of solid radwaste in the plants affected?** **What is the situation in France as to the minimization or optimization of solid radwaste generation?**		
Answer	The reduction of effluents at source, as well as the channelling of these effluents towards the most appropriate form of treatment depending on their radiological and chemical characteristics (boron content, etc.), have helped to reduce radioactive liquid discharges as well as the amount of solid waste produced through effluent treatment (filters, resins, concentrates). The annual volume of encapsulated solid waste (in drums and concrete shells) dropped from approx. 230 m3 per unit in 1985 to approx. 55 m3 per unit in 2006.		
153		**15**	**Chap. 15.2.2.1 P. 100**
Question/ Comment	**It seems that effluent discharges (and subsequent dose) are now dominated by Carbon14 and Tritium. Is there any foreseen plan/strategy to alleviate the present status quo?**		
Answer	Fission products and activation products, radionuclides that emit beta and gamma rays, can be partially eliminated through treatment. Over the past ten years and more, we have seen a sharp decrease in these discharges, which were at the time the dominant factor in terms of dose (activity divided by more than 100 over the period of 1985 to 2004 on the 1300-MW series, and divided by more than 40 on the 900-MW series, over the same period). This result was achieved through: - The introduction of a rigorous effluent management system, aimed at reducing the production of spent effluents at source and at recycling spent effluents, - The improvement of effluent recovery and treatment systems. Effects on the environment and public health produced by radioactive liquid effluents discharged by nuclear power plants are now only due to carbon 14 and tritium: these effects are extremely minor and are totally absorbed into the natural radioactivity fluctuations in France. For this reason, no actions have been taken to reduce tritium and carbon 14 discharges.		
154		**15**	**Chap. 15.4.2 P. 104**
Question/ Comment	The activities provided in this Chap. constitute a good practice.		
Answer	France is thankful for this comment.		
155		**15**	**General**
Question/ Comment	It would appear that solid radwaste generation and management at the plants are not addressed in detail. **Please provide condensed detail in this regard, especially regulatory requirements both in design and operation.**		
Answer	Radioactive waste management in BNIs is regulated principally by the order of 31 December 1999. In application of this order, each BNI licensee must submit a waste study to ASN, in which the risk		

Q. n°		Article	Ref. in National report
	of producing radioactive or non-radioactive contaminated waste is described. Zoning of the installation, submitted to ASN for approval, distinguishes two types of zone. The zones likely to produce radioactive waste are identified as nuclear waste zones. Waste from nuclear waste zones must be managed in separate processes from other waste. Waste from the other zones, after checking the absence of radioactivity, are processed as conventional waste (standard or special industrial waste). ASN has published a guide to the production of BNI waste studies, available on its website; the guide was revised in September 2002.		
156	**United Kingdom**	**15**	**P. 98**
Question/ Comment	It would be helpful to provide separate pictures for doses to workers in nuclear power plants in the form of histograms showing the numbers of EDF workers and contractors falling into each 5mSv dose band, for example, 0 – 4.9mSv, 5 – 9.9mSv, 10 – 14.9mSv, and 15 – 19.9mSv. **Although the report provides aggregated data on the number of workers receiving doses in the highest range between 16 and 20 mSv, it does not indicate how many of the remaining workers fall into each of the dose bands below this.**		
Answer	The 38 597 relevant personnel are EDF and non EDF staff members (contractors) who worked inside the RCA at EDF reactors in 2007. - 79.05 % of the relevant staff received a dose between 0 and 1 mSV - 15.64 % between 1 and 5 mSv - 4.2 % between 5 and 10 mSv - 65 % between 10 and 12 mSv - 34 % between 12 and 14 mSv - 12 % between 14 and 16 mSv and .01 % with a dose in excess of 16 mSv.		
157	**Canada**	**16.1**	**P. 122, Sect. 16.4.2**
Question/ Comment	The report states that "ASN took part in IAEA's work to implement an action plan … to improve international exchanges of information ... ASN is also working with NEA to define a strategy for carrying out international exercises". **Please provide an update on the status of aforementioned two initiatives with the IAEA and NEA, including future publications of the work output.**		
Answer	These are international initiatives. The first one is aimed at the creation of an International Plateform for Incidents and Emergencies (Unified System) which is following the requirements of the IAEA General Conference Resolution GC(51)/RES/11 and the work done by the WG-A (International Communication) under the IAEA Action Plan approved in 2004, As for the second one, France has participated to the definition in 2007 of a strategy for international exercises led by NEA. More details can be found on the Internet sites of IAEA and NEA.		
158		**16.1**	**16.1.1, P.108**
Question/ Comment	"In an emergency situation, only two participants are empowered to take operational decisions: … the *prefet* of the *department* where the installation is located, who is responsible for deciding on the measures required to ensure the protection of both the population and property at risk owing to the accident." **How is it ensured, that the Prefect owns the necessary basic knowledge about radiation protection to take the decisions?** **Do they have a special training plan for that purpose?**		
Answer	Prefects do not need to have specific knowledge about radiation protection. The organisation set up in case of a radiological emergency provides for this (IRSN as an expert, ASN as an advisor). Then, many prefectures near NPPs have a nuclear specialist and Prefects do have initial and regular		

Q. n°		Article	Ref. in National report
	trainings for crisis management.		
159		**16.1**	**Sect. 16.1.3.2 P. 110**
Question/ Comment	It states in the report that a decision on whether or not to initiate sheltering and organise iodine prophylaxis could be taken within 12 to 24 hours. **From what point of time will the decision take 12-14 hours (from the first indication that there may be a problem, from the time of a release occurring, etc.)? Clarification is requested**		
Answer	It is just an example. In our plans some actions can be implemented without any delay. Usually, time "T0 " corresponds to the time when the operator decides to activate its internal emergency plan, which could be done in some cases, several hours before a possible release.		
160		**16.1**	**Sect. 16.1.3.2 P. 110**
Question/ Comment	It is noted in the report that it is important that provision of information to the media and public should be done with close collaboration between ASN and other organisations. **What mechanisms have been proposed to try to ensure that this collaboration occurs in an emergency?**		
Answer	In our plans we have set up an organisation which describes in details how communication actions would be coordinated between ASN and other actors. This organisation is regularly tested during drills or real situations and evaluated.		
161		**16.1**	**Sect. 16.4.2 P. 122**
Question/ Comment	France's strong programme of national nuclear emergency exercises is noted. **As part of its programme of national exercises, how frequently are exercises held to test the response to a nuclear accident abroad and what aspects of the emergency plans are tested in these exercises?**		
Answer	About twice a year with neighbouring countries. Mainly the alert process and exchange of information are tested. France also participates in international exercises such as CONVEX, INEX, ECURIE exercises.		
162		**16.1**	**Sect. 16.5.2 P. 123**
Question/ Comment	**Are schools, hospitals and other large institutional bodies included in pre-distribution of stable iodine tablets and by what mechanism has this been achieved?**		
Answer	The pre-distribution is done by chemists and only in areas covered by an emergency plan (that is a radius of 10 km around the NPP for example). In these areas, there are no large institutional bodies. Anyway, all public buildings in these areas have the opportunity to ask for a stock of iodine tablets and to keep it according to the advises given by the chemists who deliver the tablets.		
*****		**16.1**	**Sect. 16.1.3.1, P. 109**
Question/ Comment	**Kindly provide information on the classification of emergency conditions.**		
Answer	There is no such classification. There are some criteria to decide if there is a need to activate an emergency plan on or outside the site and levels of reference to guide the action of the public authority.		
163		**16.1**	**Chap. 16.1.3.1, P. 109**

Q. n°		Article	Ref. in National report
Question/ Comment	**What requirements/restrictions are in place for population developments in the close vicinity of NPPs?**		
Answer	Presently, there is no specific regulation except an information of the public and decision makers about the risks around a nuclear installation. The 2006 TSN law and its decree of 2007 will change this situation.		
164		**16.1**	**Chap. 16.5.1, P. 123**
Question/ Comment	**What is the basis for and the predetermined distance for longer term protective actions like foodstuffs restrictions and clean-up of contaminated areas?**		
Answer	1) So far, there is no predetermined distance for clean-up of contaminated areas. 2) In exercises concerning the post-accidental phase of a nuclear accident, risk prevention measures relating to contaminated foods generally involve ""cordoning off"" areas where the consumption and sale of such food are prohibited. To be banned, the concerned food must exceed the European Food Intervention Levels (CFILs) of radioactive contamination in foodstuffs defined by the Council following the Chernobyl accident (Euratom 3954/87). Generally, the perimeter of this area is based on the result of modeling for the most penalizing foodstuffs (usually milk), which tend to maximize risk."		
165		**16.1**	**Chap. 16.5.3, P. 124**
Question/ Comment	The lead role by the ASN in establishing post accident management strategies is regarded as a best practice.		
Answer	France is thankful for this comment.		
166		**16.1**	**Chap. 16.5.4, P. 124**
Question/ Comment	**What intervention level for prophylaxis is applied in France for children and neonates during a nuclear accident?**		
Answer	In France, the level of 100 mSv thyroid is the same for anybody (children and adults). The dose is calculated for a child under one year old.		
167		**16.1**	
Question/ Comment	In the report doesn't talk about the control access measurement, although we suppose it's carried out. **In this topic we would like to know:** - **How much time requires establishing the access control area?** - **What it's the average radium in which access control area it's established?**		
Answer	A control access area can be set up within half an hour (results of drills and real situations). The radius of the control area is decided by the Prefect. Its range can go from 100 meters to 10 km.		
168		**16.1**	
Question/ Comment	**Could you explain who is responsible to manage the emergency worker's radiological dose control?** **Where is made the management of this radiological dose control?** **Are they different emergency workers taking into account the level of doses received?**		
Answer	The operator has the obligation to plan the necessary actions in order to protect the workers in his nuclear installation (information, training, equipment, medical follow up). Outside the plant, the Prefect, who is the local authority, is in charge of planning the information, training, equipment and follow up of emergency workers (rescue services, police...). Then, rescue teams set the limits of the contaminated area (according to the decision of the Prefect), establishing check points for anyone		

Q. n°		Article	Ref. in National report

entering or leaving this area. According to the results of the controls performed at the check points, appropriate actions and follow-up are implemented.

169		16.1	

Question/ Comment

It is mentioned that the technical analysis equipment from IRSN located in the CTC (Centre Technique de Crise) makes their forecast in a close collaboration with the technical analysis equipment from EDF, in order to get more or less the same result.

Do in routine drills appear significant differences (for instance: different radios in which measured must be taken, different time in which the reject could happen and so on?
If so, how are they solved ?

Answer

No, the drills as well as real situations, did not show significant differences. Anyway, our emergency organisation imposes a close and regular coordination between experts before and during a crisis to avoid such problems.

170		16.1	§ 16.4.3, P. 122

Question/ Comment

Does the ASN apply regulatory requirements on duration of active phase of national emergency training?

The "active phase" mean the period of time from emergency notification by NPP of external organizations until interruption of the emission and renewal of control over emergency object.

Answer

There are no regulatory requirement from ASN. It is a participative process at the national, as well as at the local level, with the main stakeholders who decide what are the most appropriate time frame and duration for exercises.

*		17.1	Sect. 17.2.2, P. 126

Question/ Comment

Kindly indicate the magnitude of Safe Shutdown Earthquake (SSE) for new sites as per RFS 2001-01?

Answer

The French metropolitan territory is characterized by moderate seismicity . In France, Seismic hazard assessment for nuclear facilities is guided by a regulation based on a deterministic approach. This regulation (RFS2001-01) has been recently revised mainly to account for scientific improvements in the field of paleo-seismology and site effects. According to the regulation, seismic hazard assessment at a site requires to identify the characteristics in terms of seismic intensity according to MSK scale of the "Maximum Historically Probable Earthquake" (MHPE), selected from the historical and instrumental seismic catalogues (covering 1000 years). The MHPE is obtained by considering the worst position of the each earthquake inside its geo-tectonic area. The Safe Shutdown earthquake is obtained by increasing the intensity of the MHPE by 1 unit on the MSK scale.

Thus the magnitude of the SSE is different for each site, depending on :
(1) the historical and instrumental data available in the vicinity (on a large scale) of the site
(2) the geophysical characteristics of the site.

171		Article 17.2	Sect. 17.2

The population-related siting criteria are described very briefly in the Sect. 17.2 of the Article 17.

Question/ Comment

Are there any NPP sites that have experienced an abrupt increase of the population near the site?
Do you have any regulatory requirement for the control on the population density within a certain distance from the NPP site after the operation permission?

Answer

" In nuclear power plants safety reports, a descriptive chapter presents the distribution of the population around the plant (up to 50 km). This chapter is updated from data furnished by administration (INSEE : french national organisation for population census). The population census

Q. n°		Article	Ref. in National report

is carried out at irregular periods.

After having analysed this chapters, we noticed mainly within a radius of 10 km, a growth of population during construction and specially when it starts.

Afterwards, the evolution of the population follows the tendency of the country's plant.
We don't have any regulatory requirement for the control of the population density.

However, in case of emergency, authorities are responsible to manage the intervention plan for all measures to be taken outside the site, particularly the protection of the populations. The person in charge is the prefect of the department where is set the power plant. He can take all necessary measures for the protection of populations : to have them remain indoors, to take iodine tablets, or to initiate evacuation."

Regarding urban development, CEA is used to adopt an active policy consisting of buying areas neighbouring its Centres in accordance with its budget capacities. Moreover, CEA intends to systematically participate in regional or local jurisdictions debates related to development likely to get closer of its Centres. It is the opportunity to remind or inform everyone about the constraints related to operation of BNI's, and to result in a managed urban development policy.

172		Article 17.2	Appendices 4, Sect. 4.2

Question/ Comment

With respect to the activities for the environmental monitoring (4.2 of the ApP. 4, 191p), are the 5 underground water sampling points located within the NPP site?
What else, like ground water levels etc., do you get from the monthly measurements, apart from the total potassium and tritium?

Answer

"The 5 underground water sampling points are generally located within the NPP site ; they are chosen by the control authority to monitor the radiological levels.

Required monthly measurements for the radiological environmental monitoring are :
- a gross beta, potassium 40 and tritium of the filtrated water ;
- a gross beta on suspended matter.

Other measurements may be required twice a year :
- pH, conductivity ;
- TOC, sulphates, polyacrylates, chlorides, hydrocarbons, metals (Fe, Mn, Ni).

Other parameters may be measured by the site operator for their monitoring of the underlying water table, as needed."

173		18.1	

Question/ Comment

What is your national policy concerning need for Severe Accident Management (SAM) procedures or back-fitting measures at operating facilities, aiming to protect the reactor containment integrity after a possible severe core damage?

Are SAM procedures in place at the operating nuclear power plants?

Has back-fitting been completed that addresses all physical phenomena, which might endanger containment integrity?

Answer

The policy in France is that the licensee has to develop severe accident management guides (SAMG) including procedures and aids to face severe accident situations, and to propose back-fitting measures.

Q. n°		Article	Ref. in National report

SAMG are analysed by ASN and its technical support organisation and the resulting remarks and requests for improvement are transmitted to the licensee, who then has to take them into account when preparing the next version of the procedures. Formal approval of the procedures is not required. Presently, Severe Accident Management Guides do exist for each fleet of reactors (900 MWe, 1300 MWe and 1450 MWe). They have been translated into operating procedures which are in place at the power plants. Phenomena which might endanger containment integrity have been assessed and back-fitting measures have been examined by the advisory committee of experts for nuclear reactors (GPR). As a result, the following technical measures have been taken : passive autocatalytic recombiners will be installed on every NPP (they have already been installed on 900 MWe plants) ; detection means of corium ingress in case of vessel breaking will be installed ; more resistant bolts have to be installed on the closure system of the equipment hatch to remedy possible weaknesses of the containment in case of severe accident.

*	Pakistan	18.1	Sect. 18.1, P. 129

Question/ Comment **Please elaborate how the 3rd level of defense in depth (preventive & mitigative features against BDBD) is demonstrated at the stage of design & construction?**

The EPR safety procedure, implemented at the design stage, is based on a defence in depth over five levels:

- The first level is a combination of specific design margins, quality assurance and inspection activities to prevent the occurrence of abnormal operating conditions or failures,
- The second level consists of implementing protection provisions that allow the effects of deviations to the normal operation or the effects of system failures to be detected. This level of defence is intended to ensure the integrity of the fuel cladding and that of the primary cooling system in order to prevent accidents,
- The third level is assured by backup systems, protections and control procedures which allow the consequences of accidents that are likely to occur to be controlled, by containing the radioactive substances and preventing them from developing into severe accidents,
- The fourth level includes the measures intended to preserve the integrity of the containment and to allow severe accidents to be controlled,
- The fifth level includes, in the event of failure or ineffectiveness of the previous measures, all of the protection measures for populations in the event of large discharges.

Answer A very high level of safety is reached for the EPR reactor by firstly facilitating the reactor's operation and maintenance and secondly by reducing the potential immediate or deferred consequences of its operation in relation to its close environment (in particular in relation to the surrounding population) and the staff which operate it. In addition, the research and development actions carried out in particular in the field of hypothetical severe accidents contributes to understand the phenomena called into play and therefore to improve the level of safety.

At the stage of design, the approach to verify the consistency of the design with regard to different levels of defence in depth is presented in the Preliminary Safety Analysis Report (PSAR) which has been transmitted to the safety Authorities as a support to the application for authorization to create a 3rd nuclear power unit on the Flamanville site :

Controlling simple initiating events :
The safety demonstration is based on a limited number of representative events and situation scenarios to be taken into account at the reactor's design stage, which may potentially be encountered during its operation and the various physical states of the reactor (power, various shutdown situations). As transient initiators, these events are grouped into several categories based on an estimation of their frequency of occurrence and their consequences to the environment.

Q. n°		Article	Ref. in National report

On this basis, four events categories (Plant Conditions Categories) are identified:
• Category 1 "PCC1" including all of the normal operating conditions,
• Category 2 "PCC2" groups the transients with a probability of occurrence ranges between 1 out of 100 and once a year per unit;
• Category 3 "PCC3" groups the incidents with a probability of occurrence ranges between 1 out of 10,000 and 1 out of 100 per year per unit;
• Category 4 "PCC4" groups the accidents with a probability of occurrence rangesbetween 1 out 1 million and 1 out of 10,000 per unit and per year;

The identification of these events and their grouping into categories is used to design the primary and secondary reactor coolant pressure boundary and the protection and backup systems that allow these situations to be controlled and thus prevents them from producing unacceptable consequences for the installation and for its environment.

Using the installation's design and the control principles, the analysis of the main accidental operating conditions management (up to the assessment of the associated radiological consequences) is carried out in the PSAR.

Reducing the risk and preventing core meltdown situations :
Apart from controlling simple initiator events, an analysis of the core meltdown situations based on results from the design Probablistic Safety Assessment (PSA) completes the prevention procedure for core meltdown situations.

Risk reduction category A (RRC-A) contains the combination of events overriding (from a probablistic point of view, called sequences) that are likely to result in core meltdown situations via the multiple failures that they initiate. The list of conditions with multiple failures proposed in this analysis may possibly be reviewed during detailed analyses when the PSAs (Probabilistic Safety Evaluation) are being updated.

On the technical level, additional backup are designed and installed to prevent core meltdown in these sequences. The analysis of the RRC-A sequences is carried out in the PSAR (Preliminary Safety Analysis Report).

Reducing the risk and controlling core meltdown situations :
Controlling core meltdown situations constitutes the second stage of reducing the risk and is based on the safety analysis of the low pressure core meltdown sequence scenarios, the other core meltdown scenarios being the subject of specific provisions making it possible to exclude or "practically eliminate" their occurrence.

The analysis of these various scenarios is carried out in the PSAR (Preliminary Safety Analysis Report) up to the assessment of the associated radiological consequences. It enables to define the means to ensure and protect the confinement function (retention and cooling of the molten core outside of the vessel to avoid basemat penetration, heat removal from the containment building, hydrogen risk management, etc.). It is also used to define the instrumentation required by the operator and the emergency team to manage this type of situation and to define the qualification conditions for the equipment needed to demonstrate that the safety objectives have been achieved.

All the analysis presented in the PSAR at the design stage (performed with several representative fuel management) will be readdressed in the Safety Analysis Report associated to the operating licence application. This Safety Analysis Report will take into account the detailed design and in particular, the fuel management that will be defined for the beginning of operation and the general operating rules.

Q. n°		Article	Ref. in National report
174	**Finland**	**18.2**	
Question/ Comment	Have you met specific problems to find spare parts or replace-ment components properly qualified to a high safety class, as needed for plant lifetime management? If yes, how have you addressed the problem?		
Answer	In order to keep a tight rein over the management of spare parts needed for its 58 reactors, EDF initiated a spare part logistics project in early 2008. As a matter of fact, obsolescence will continue to be a high-priority issue in 2008, with a certain number of sensitive cases and occasionally long processing times (qualification studies and tests; start-up of new production chains).		

Q. n°		Article	Ref. in National report
175	**Japan**	**18.2**	**P. 130, L4 from Btm**
Question/ Comment	It is said under the Sect. 18.1.2.5 that the ministers with responsibility for nuclear safety send the licensee a draft decree granting or refusing the plant authorization. It says there are multiple ministers who are responsible for nuclear safety. Does this mean that multiple ministers jointly prepare for a draft decree?		
Answer	The draft decree is sent by a unique office placed under the joint supervision of the ministers responsible for nuclear safety and for radiation protection. This office is the "Mission of nuclear safety and radiation protection". It is responsible for the instruction of requests on behalf of the 3 above-mentioned ministers.		
*****	**Pakistan**	**18.2**	**Sect. 18.3.1, P. 133**
Question/ Comment	As requirement of Article 18, item (ii), Kindly indicate whether the technologies incorporated in the design and construction of EPRs are proven by experience or qualified by testing / analysis?		
Answer	A) The EPR (European Pressurized Reactor) belongs to the third generation of pressurized water system reactors whose objective is to obtain a very high level of safety. This increase in level of safety is based on the integration, in an evolutionary design and in a permanent progress approach, of all of the expertise and experience acquired with several thousands of reactor-years. Within the framework of the safety procedure, national and international nuclear feedback is subjected to a systematic analysis formalised to locate the positive elements and the weaknesses to be improved on the EDF nuclear units. The results of these analyses have resulted in design and operational modifications being defined on the existing EDF units and design developments for EPR. B) All EPR equipment required to perform a safety function are safety classified and all safety classified equipment have to be qualified. The purpose of qualification is to prove that the equipment is suitable for its function subject to the stresses which arise following accidents in which it must function. Depending on their safety role and the conditions for which the equipment is required to operate, qualification requirements are drawn up and incorporated into the equipment design using the technical specifications. As well as the operating conditions, the qualification procedure takes account of : the effects of ageing (i.e. the cumulative effects of the environmental conditions corresponding to normal operating conditions before the occurrence of the accident) and the effects of seismic stresses for the equipment required to be seismically qualified due to their use in accidental conditions. Several methods are used in the qualification procedure : - Qualification by testing : this consists of subjecting equipment which is the same as representing the equipment installed in the plant, to loads representative of the operating conditions in which it must fulfil its safety function. - Qualification by calculation consists of demonstrating that the loads undergone by the equipment have consequences on the equipment that are acceptable. - Qualification by operating experience consists of deducing the equipment's ability to carry out its safety functions, by analysing past history of equipment in industrial operation (Practically, this method is rarely used in isolation. It is usually used to complete and confirm the behaviour of a component, whose equipment qualification is demonstrated using other methods). - Qualification by analogy consists of comparing, based on logical rules, the equipment to be qualified with "similar" equipment, already qualified. Combinations of the methods presented above can sometimes be used. These combinations vary according to the equipment under consideration. C) Concerning innovative features related to severe accident management, the design of the core catcher has been justified on the basis of a large amount of experimental results.		

Q. n°		Article	Ref. in National report
176	**South Africa**	**18.2**	**P. 131 Sect. 18.2.1**
Question/ Comment	The safety objectives for the design and construction of new generation of PWR's are based on improvement of the previous generation of PWR's. • Does the same approach apply for research reactors? • On what principles and safety objectives will the licensing of new type of reactors (other than PWRs) be based?		
Answer	Safety requirements for reasearch reactors have changed over time; requirements relating to internal and external hazards, to redundancy and separation of protection system channels, to containement building leaktightness have been gradually established , applied, improved. Some rules established for the design of NPP are applied to research reactors with adaptation (graded approach) due to specific features of certain reactors (short operating time, low radioactive product inventory...). Mechanical resistance and tightness of the pool and reactor containement building shall be ensured in normal operation and accident conditions. For the licensing of a new type of power reactors, to be built in the short term (3rd generation), ASN would require the safety objectives imposed to the EPR project : ASN would have to ensure the compliance of the project proposed by the operator with these objectives. Concerning the reactors to be built in the long term (4th generation), ASN has not yet defined safety objectives. Concerning this next generation, the ASN aims are : (i) to be involved in the R&D and to check orientations of R&D ; (ii) to get at least the same safety objectives that the 3rd generation, and, if possible, to improve them.		
177	**Belgium**	**19.1**	**19.3.4**
Question/ Comment	Status and use of PSA for research reactors: § 19.2.7 (p147) mentions the use of a probabilistic approach to assess the potential risk of core damage for some events at NPPs. Does a similar approach exist for research reactors?		
Answer	PSA are not used in research reactors because, due to the lack of validated reliability data for such unique facilities, the PSA results would not be credible. The safety approach is a deterministic approach : some incidents and accidents are assumed and the barrier analysis method is used ; the analysis concerns the provisions relating to prevention, surveillance and security actions associated wirth each barrier. Requirements for neutronic and thermal-hydraulic core design and consideration of a BORAX type reactivity accident (explosive accident) are applied at the outset to all French pool type research reactor. Total core melting is assumed during the accident. The safety requirements are to keep the core fuel flooded and not to damage the containement.		
178	**Belgium**	**19.1**	**19.4.1.4**
Question/ Comment	Does this new project mean that there is some trend to reintroduce incidental and/or accidental procedures, in addition to the APE procedures? What are the incidents which were not managed optimally by state-oriented operation?		
Answer	Experience feedback has shown that for some operating events, the state-based approach was not optimized, for instance, total power losses were factored in but not partial power losses. The target of this new project is to obtain optimized state-based operating procedures for this type of event. However, it should be pointed out that EDF is not considering complementing the current state-based approach with an event-based approach.		

Q. n°		Article	Ref. in National report
179	**Belgium**	**19.1**	**19.2.7 - 19.4.1.5 20.2.1.2.4**
Question/ Comment	What about the use of the IRS databank (filling of the databank and use of data from other countries)?		
Answer	A. International OEF at ASN and IRSN After the receipt of the SSE report (within 2 months) : „X ASN and IRSN carry out an analysis to examine how the event took place, which safety functions were implicated, how operators and equipment behaved, what the consequences were, together with knowledge of any similar incidents which have occurred. In addition, it is examined if, in other circumstances, the same accident would have had far more severe consequences, „X ASN and IRSN identify the root causes of the event and examine if the same root causes applied to other equipment or systems can induce different sequences which consequences could be potentially serious, „X ASN and IRSN look for additional information for the most significant events. Despite the quality of the SSE report, the information supplied usually has to be supplemented by direct contacts with the plant or the relevant EDF head office departments, „X IRSN holds a weekly meeting, attended by all the engineers in charge of site safety assessment, for reviewing all the SSE reports received during the previous week. The purpose of this meeting is to 1) inform all engineers responsible for assessing site safety of events occurring in the reactors and incite a debate on the issues raised by these events, 2) decide on the next steps in terms of in-depth analyses and IRS declarations. Besides, ASN and IRSN also exploit other international feedback sources such as: „X IRS reports, „X Information Notices and Regulatory Guides produced by the American Nuclear Regulatory Commission (NRC), „X events declared in the International Atomic Energy Agency (IAEA) NEWS database, „X information exchanged in the context of international co-operation. „X EDF examines the events reported by other operators and gathered in the WANO database as well as the IRS reports. IRSN systematically analyses all the documents in its possession as a way of exploiting international feedback. The conclusions of this survey are gathered in a document submitted to the ASN, outlining briefly the main points to be noted from events occurring outside France. This document highlights in particular events that may be transposed to the EDF PWRs. For such events, an investigation into whether or not EDF should perform an in-depth analysis and possibly implement preventive measures is carried out. **On a three-month basis :** „X ASN and IRSN hold a meeting to identify outstanding or precursor events. The most important of these events are the subject of a probabilistic quantification of IRSN to estimate the conditional probability of core damage ; „X ASN, IRSN and EDF hold a follow-up meeting of the outstanding events. **On a three-year basis :** „X ASN organizes a meeting of the advisory committee of experts for nuclear reactors (GPR) in order to examine the significant incidents of this period. The objectives of this meeting are to put forward operating measures or modifications of materials which result from complex studies resulting from in depth analysis of events (safety studies¡K). The preparation of this meeting requires a technical instruction of the topics between EDF and IRSN. At the end of this instruction, IRSN issues a report that is used to support the GPR meting. This report carries out an in-depth analysis of significant events. It analyzes the files transmitted by the licensee and evaluates acceptability, with respect to		

Q. n°		Article	Ref. in National report
	safety, of the position of the licensee and the corrective and preventive actions proposed. It generally concludes with recommendations that are frequently adopted by GPR and reformulated by the ASN as requests to the licensee. During the GPR meeting devoted to the examination of OEF, the international operating experience is taken into account.		
180	**Turkey**	**19.1**	**2.3.6., P. 12, L.3**
Question/ Comment	Q-2 What is the current status of the license application for the construction of the Jules Horowitz reactor (RJH) submitted in March 2006?		
Answer	The safety options of the Jules Horowitz Reactor (RJH) were assessed in 2003 ; the ASN informed CEA that there was no objection to carry on the project, provided that additional requests were taken into account. The Preliminary Safety Report was transmitted in support of the authorisation decree application at the end of March 2006. The Advisory Committee already met 5 times in 2007 and will meet 3 other times in 2008 to assess it and give its opinion to ASN. The public inquiry has already been conducted and has given a positive opinion. ASN will then prepare its advice on the draft authorisation decree.		
181	**Ukraine**	**19.1**	**§ 19.2.3.2, P. 143**
Question/ Comment	Does the EDF program for optimization of maintenance and repair using the risk-oriented approach exist?		
Answer	EDF has not initiated the "risk-oriented" approach. As explained in this report, EDF has set up a reliability-centered maintenance (RCM) programme. In 2007, EDF decided to implement a programme aimed at the continuous improvement of equipment reliability, based on the INPO AP 913 process, which supports expansion of the RCM approach.		
182	**United Kingdom**	**19.1**	**P. 135**
Question/ Comment	The report states "A revision of these [licensing] processes is under way in the form of a draft decree implementing the Act of 13 June 2006. ASN emphasises that the processes applicable to the EPR project, for example, will probably not be the same as those described below" [in Article 19 of the report]. Could France describe what the steps in the licensing process might look like after this revision (i) for the remaining stages of Flamanville, and (ii) for any other new power reactor which might be started after the draft decree has come into force? It would be helpful to see a flow diagram of the revised process, together with an indication of the expected timescale.		
Answer	In comparison with the process described in part 19.1, the new operating licensing process for a NPP (including Flamanville 3) is based on two steps : (1) a partial operating license to allow the fuel arrival and storage on site : 6 months before the fuel arrival on site, the operator has to submit parts of the complete operating license application file relevant for the safety of fuel storage, notably parts of the the safety case, of the general operating rules and the on-site emergency plans ; (2) the operating license (first fuel loading authorization) : one year before the fuel loading, the operator has to submit the complete operating license application file (see article 20 of the decree n°2007-1557). The operating license is delivered by an ASN's decision. In this decision, ASN can define complementary authorization steps to control the start-up phase and testing of the plant. A period of time is also to be specified by ASN for the submission by the licensee of : a synthesis of the commissioning testing, a synthesis of the feedback from the reactor operations and an updated version of the operating license application file.		

Q. n°		**Article**	**Ref. in National report**

183	**China**	**19.2**	**Chap. 19.2.3.2 P. 143**
Question/ Comment	Modification is an important approach to improving the safety and benefit of nuclear power plant, and how do the French power stations control the nuclear safety risks incurred from modifications? Especially, how do you implement the Verification and Validation (V&V) to avoid the risks incurred from software?		
Answer	The overall safety objectives for classified software are defined in the basic safety rule ref. II.4.1.a, called "Safety classified software of electrical systems". In order to fulfill these objectives, software modifications are conducted following the requirements of the RCC-E, "Design and Construction Rules for Electrical components of nuclear islands", and specifically the chapter C5600, namely "Maintenance - Modifications". This chapter states that "Modifications shall be carried out in compliance with the same requirements as for the initial development work". Applied to sofware belonging to the A class, as defined in IEC 61226, this means a V&V process fully compliant with RCC-E C5000 and IEC 60880. This implies that the V&V activities performed after a modification of a class A software are exactly identical to the ones performed for a new system".		

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184	**Czech Republic**	**19.2**	
Question/ Comment	There are around 20,000 events per year in a database. Are they all events or only safety-related events? What are evaluative criteria to classify events as safety-related?		
Answer	Significant Events Declaration Criteria ASN has defined a category of events known as “significant events”. These are events that are sufficiently important in terms of safety to justify rapid notification, followed by a subsequent and more comprehensive report. The licensee, considered to be the in charge of the safety of the plants, is required to report these events. In its “Guide to the Declaration Procedure and Coding System for Criteria Concerning Significant Events”, published in October 2005 and available on its website , ASN defines criteria for declaring events deemed significant. The criteria associated to safety significant events (SSE) are : 1. Emergency shutdown, except in the context of a deliberate scheduled action, 2. Actuation of an engineered safeguard system, except in the context of a deliberate scheduled action, 3. Non compliance with the Operating Technical Specifications (OTS) or any incident that could have led to a non compliance of the OTS, had the plant been in a different state, 4. External hazard: earthquake or plane crash, for example,		

Q. n°		Article	Ref. in National report
	5. Real or assumed malevolent act, 6. Fallback of the unit according to the OTS or accidental procedures following an unforeseen behaviour of the plant, 7. Event resulting or possibly resulting in multiple failures or affecting redundant trains, 8. Event or anomaly affecting main primary or secondary circuit, 9. Design manufacturing, on site assembly anomalies related to not above mentioned equipment that could lead to operation conditions not taken into account nor by design nor by operating procedures, 10. Any other event deemed sufficiently important by the operating or safety authority. In 2007, 644 "SSE" satisfying one of these criteria have been reported to ASN, most of which are rated beyond the INES scale (INES-level 0). ASN analyses all of these situations. Other Interesting Events Other events not falling within the scope of these declaration criteria are identified by the operator for subsequent analysis of experience feedback. These events, referred to as interesting events for safety (SIE), are events whose immediate importance does not justify an individual analysis but whose repetitive aspect may be indicative of a problem calling for a detailed analysis. The criteria permitting to classify an event as an SIE were established by the operator in agreement with ASN. EDF reports all operating situations in its database called SAPHIR. Information concerning these events is available to ASN and its technical support IRSN. The number of screened SIE is about 12,000 a year. The access to the SIE data basis constitutes an important contribution to the safety assessment of nuclear installations. It makes it possible to perform trends analysis, to detect the persistence of operational difficulties or the emergence of new issues.		
185	**Japan**	**19.2**	**P. 154, L7**
Question/ Comment	It is said in the Sect. 19.4.1.3.2 on P. 154 that the number of waivers examined each year is of the order of one hundred, with 148 in 2005 and 120 in 2006, giving an average of 2 to 2.5 waivers per reactor per year. There are lots of cases of waivers. Doesn't this suggest that the STE as the base lacks versatility?		
Answer	The number of granted waivers to the OTS (155 in 2007 - that number is basically stable over the years) does not seem very important to us, OTS are able to deal most of the encountered situations. Waivers are the result of several factors, such as : - very strict compliance with OTS is a basic foundation for operation, since it ensures compliance with the safety demonstration. Any non-compliance with the OTS is regarded as having a potential impact on safety. Many waivers are also granted to allow an unavailability of a system during activities unexpected in normal operation like plant modifications or curative maintenance. - severity of rules that govern the modifications of OTS : any change to the OTS, whether they are temporary (waivers) or permanent must be reported to ASN and investigated by its TSO (IRSN). As a result, a modification of the operating rules may take several weeks, during which a waiver may be granted if needed and justified. However, changes in this area may be possible in the future by the implementation of internal authorization systems by the operators.		
186	**Bulgaria**	**19.3**	
Question/	What criteria are used to determine the lifetime of the plant.		

Q. n°		Article	Ref. in National report
Comment			
Answer	The safety report, the reference files or the basic systems files introduce all the demonstrations allowing to justify the conformity to the fixed safety objectives. These demonstrations are founded on propositions or hypotheses among which some make assumptions about the lifetime of components. These can concern a lifetime limit as such or a cumulative parameter which should not exceed a given value (by exemple: the fluence accepted by the vessel).		
187	**Bulgaria**	**19.3**	
Question/ Comment	Do you have long term operation strategy or plans to operate the NPPs beyond design lifetime.		
Answer	In France, a NPP operating licence is not limited in time as long as safety requirements are met. However, the June 13th, 2006 Act, related to Transparency and Security in the Nuclear Field (TSN Act), requests operators to perform Periodic Safety Reviews (PSR) of their installations every ten years. A PSR, which, above all, aims at increasing the safety level of the installation, is also an opportunity to perform an in-depth examination of the effects of ageing. At the end of each PSR, ASN takes position on the abiity of the plant to be safely operated till the next PSR (or for a shorter period, if appropriate).		
188	**Bulgaria**	**19.3**	
Question/ Comment	Do you have a re-qualification program for components to be used beyond their design lifetime.		
Answer	In France, a NPP operating licence is not limited in time as long as safety requirements are met. However, the June 13th, 2006 Act, related to Transparency and Security in the Nuclear Field (TSN Act), requests operators to perform Periodic Safety Reviews (PSR) of their installations every ten years. A PSR, which, above all, aims at increasing the safety level of the installation, is also an opportunity to perform an in-depth examination of the effects of ageing. In this context, ASN asked the operator, for all safety related equipments, to check that maintenance was appropriate to ensure further compliance with the qualification requirements. For equipments having an estimated lifetime higher than 20 years, ASN asked EDF to prove the qualification by taking samples for the purpose of qualification testing under accidental conditions.		

Q. n°		Article	Ref. in National report

189	Korea, Republic of	19.3	Sect. 19.4.1.1
Question/ Comment	(Article 19-3, Sect. 19.4.1.1) In Sect. 19.4.1.1, it is mentioned about the prior authorization system. - Please explain this system in detail ? - What is the legal basis for this system ?		
Answer	A. Prior Approval As part of its nuclear installations safety regulating role, ASN can submit some reactor operations to its prior approval. For example, prior authorisations were imposed to EDF in 1990 at the aftermath of significant incidents that had occurred earlier or because PSA showed a significant risk during these specific operations: „Ï lowering the primary system water level to the ¡§low operating range¡¨ of the RHR system with core loaded (transient commonly called ¡§mid-loop operation¡¨); „Ï reactor restart after programmed outages longer than two weeks. B. General Principles ASN requested the licensees to reinforce their internal supervision on some operations. Under appropriate supervisory organization, the operator is solely responsible for the operations, providing a system named ¡§internal authorisation¡¨ including enhanced and systematic internal control showing guarantee of good quality, autonomy and transparency. In such a system, the decision for the operation is a matter for the operator, not for ASN. There is now a legal framework for this system, based on articles 18 and 27 of the decree n¢X 2007-1557 November 2nd, 2007. C. Operations Covered The operations covered by an internal authorization system are those on which ASN wants a reinforced internal supervision of the licensee. It is the case for EDF since 2004 for ¡§mid-loop operation¡¨ and reactor restart after programmed outages longer than two weeks without significant maintenance. For research reactors of the CEA, the internal authorization system can be applied to the modifications of the installations that do not compromise their safety demonstration. ASN has provided a clear list of conditions that the operators must respect to prove that intended operations stay within the overall safety demonstration. D. How does it work ? The licensee establishes a commission internally. This commission is independent, meaning that its members are independent of people directly in charge of operations. For all operations covered by ¡§internal authorization¡¨ systems, authorized people at the operator¡¦s take the decision to do it or not in the light of a mandatory notice of the independent commission. E. ASN¡¦s oversight This system (nature of the operations under internal authorization system, licensee¡¦s process for internal authorisation, independence of the commission) has to be approved by ASN. ASN also decides the terms of its periodical information about the system and the granted authorisations. ASN supervises and assesses the reliability of ¡§internal authorisations¡¨ systems through various means: on-site inspections, headquarter inspections, sample analysis by IRSN, yearly statements of the licensee, etc. In 2006, ASN conducted a review in each NPP on this subject. These reviews were an opportunity to check compliance with the new requirements.		

Q. n°		Article	Ref. in National report
	ASN can interrupt or cancel at any time this kind of system, if there is any sign that its reliability and efficiency are challenged.		
*	**Pakistan**	**19.3**	**Sect. 19.1.1, P. 135**
Question/ Comment	Please elaborate the significance of 90% and 100% of nominal power to be licensed separately?		
Answer	The operating license (first fuel loading) is delivered by an ASN's decision. The new French regulation (decree n° 2007-1557 November 2nd 2007) grants ASN the possibility, in this operating license decision, to define complementary authorization steps to control the start-up phase and testing of the plant. In the past, ASN used to define authorization steps based on several level of power increase.		
190	**South Africa**	**19.3**	**P. 143 Chap. 19.2.3.2**
Question/ Comment	This maintenance practice can be seen as another example of cost cutting exercise (related to maintenance practices)– careful considerations have to be given for such practices which can (and will) in this case affect components reliability and in consequences may adversely compromise nuclear safety. With reference to the "reference equipment" concept applied to maintenance practices and described in this chapter a concern can be raised about the long term effect of such a practice. What measures/processes will be/have been put in place by the ASN to monitor the long term effect of implementation of the "sample-based" maintenance practices?		
Answer	Work planners having an expertise in a given reactor series monitor equipment behaviour within the same series over a period of time. These planners are in charge of drawing up maintenance programs for that particular series and assess their effectiveness. Depending on the results of the assessment, they can challenge the adopted maintenance strategy and adjust it accordingly (size of sample, action plans for all components equipment on a given series, etc). Regarding maintenance practice (Sample-based maintenance practice, Reliability-Centred Maintenance (RCM) practice and conditional (criteria-based) maintenance practice), ASN required in 2006 its technical support organisation IRSN to review EDF practices. The analysis performed by IRSN in 2007 was presented to the advisory committee of experts for nuclear reactors (GPR) during a meeting in March 2008. The GPR considered that the maintenance methods, as used by EDF, are globally acceptable. However, these methods emphasize equipment monitoring rather than intrusive maintenance. They reduce the dosimetric cost of maintenance. However they might prove ineffective should an anomaly of an unknown kind occur. Thus, for some equipments, these methods must be complemented by thorough inspections of the equipment, either systematic or by sampling. The topic of maintenance is regularly (every few years) reviewed by the GPR.		

Q. n°		Article	Ref. in National report
191	**China**	**19.4**	**Chap. 19.4.1.2.1 P. 152**
Question/ Comment	How does ASN evaluate the impact of Reliability-Centred Maintenance (RCM) method on safety-related equipment implemented by EDF?		
Answer	In order to improve efficiency of its maintenance practices, EDF had developped in the 90's a method, as known as "OMF or Optimisation de la Maintenance par la Fiabilité", to improve maintenance programs. This method stems from the US Reliability Centered Maintenance. ASN considers that in its principles the OMF method and its evolutions, as used by EDF, are acceptable.		
*****	**Pakistan**	**19.4**	**Sect. 19.2.4, P. 144**
Question/ Comment	Please elaborate the criterion for transition from EOPs to GIAG.		
Answer	SAMGs are applied on the basis of two monitoring criteria: - core outlet temperature exceeding 1100 °C, - dose rate limit exceeded inside the containment structure (depending on time having lapsed since shutdown).		
192	**Switzerland**	**19.4**	**P. 154, 19.4.1.4.1**
Question/ Comment	Is the state-oriented approach (APE) followed under all circumstances during the whole incident/accident or ist there the possibility to switch over to an event-oriented approach after identifying the exact kind of the incident/accident?		
Answer	The incidental and accidental operating procedures defined by EDF aim to have a broader coverage in using the state-oriented approach (APE) rather than the event-oriented approach. Historically, the state-oriented approach (APE) was created as the result of the TMI accident. It was implemented gradually in France to replace the procedures based on the event-oriented approach. Nowadays, some of the procedures based on the event-oriented approach are still used by EDF, they are defined in the " H " rules which manage the events not considered in the design basis, in the " U " rules which cover the severe accident situations and in the " I14" rule which is used to control the reactor from the emergency control room. In an incidental or accidental situation, the EDF teams first use a state-oriented approach documents to make a diagnostic of the different state functions. Later, they may be directed by these documents to a residual event procedure or an " APE " procedure. Moreover, some incidents are handled in particular rules, called "RPC", regarded as the normal operating procedures for two reasons : firstly, the safety of the installation remains unaffected, and secondly, an "APE" procedure would not optimise the delay of the incident treatment. These particular procedures are founded on a similar logic as the event based procedures, the event or the incident is clearly identified and the strategy is focused on the initiator.		

Q. n°		Article	Ref. in National report
193	**Switzerland**	**19.4**	**P. 155**
Question/ Comment	Which kind of severe accidents are covered by the new severe accident management guide (GIAG)?		
Answer	All known kind of severe accidents are adressed by the severe accident set of requirements developed by EDF. Dedicaded devices (recombiners, filtered venting, …) or procedures are implemented to mitigate these accidents or avoid corresponding phenomena.		
194	**Japan**	**19.5**	**P. 153, L12**
Question/ Comment	It is said in the Sect. 19.4.1.2.2.3 on P. 153 that Article 8 of the order of 10 November 1999 specifies that non-destructive testing procedures used on equipment in operation must be qualified prior to use by an entity, chosen by the licensee, whose competence and independence must be proven. Please clarify "independence" required for an entity chosen by the licensee.		
Answer	A qualification committee has been set uP. Its role is to validate the qualification of non-destructive examination/testing (NDE/NDT) methods by assessing whether the method's performance complies with the functional requirements defined by the licensee. In order for it to retain its independent status, the committee is attached to an entity within the EDF engineering division. Its chairman is a member of this entity's senior management team. It comprises 10 experts, 5 of which come from outside EDF. Members are appointed by the Director of the Engineering Division and comply with standards governing competency and independence (Individual competency standards).		
195	**Turkey**	**19.5**	**2.3.3., P.10, L.40**
Question/ Comment	Q-3 Would you give detailed information about "internal authorization" systems in utilities?		
Answer	A. Prior Approval As part of its nuclear installations safety regulating role, ASN can submit some reactor operations to its prior approval. For example, prior authorisations were imposed to EDF in 1990 at the aftermath of significant incidents that had occurred earlier or because PSA showed a significant risk during these specific operations: - lowering the primary system water level to the "low operating range" of the RHR system with core loaded (transient commonly called "mid-loop operation"); - reactor restart after programmed outages longer than two weeks. B. General Principles ASN requested the licensees to reinforce their internal supervision on some operations. Under appropriate supervisory organization, the operator is solely responsible for the operations, providing a system named "internal authorisation" including enhanced and systematic internal control showing guarantee of good quality, autonomy and transparency. In such a system, the decision for the operation is a matter for the operator, not for ASN. There is now a legal framework for this system, based on articles 18 and 27 of the decree n° 2007-1557 November 2nd, 2007. C. Operations Covered The operations covered by an internal authorization system are those on which ASN wants a reinforced internal supervision of the licensee. It is the case for EDF since 2004 for "mid-loop operation" and reactor restart after programmed outages longer than two weeks without significant maintenance. For research reactors of the CEA, the internal authorization system can be applied to the		

Q. n°		Article	Ref. in National report
	modifications of the installations that do not compromise their safety demonstration. ASN has provided a clear list of conditions that the operators must respect to prove that intended operations stay within the overall safety demonstration. D. How does it work ? The licensee establishes a commission internally. This commission is independent, meaning that its members are independent of people directly in charge of operations. For all operations covered by "internal authorization" systems, authorized people at the operator's take the decision to do it or not in the light of a mandatory notice of the independent commission. E. ASN's oversight This system (nature of the operations under internal authorization system, licensee's process for internal authorisation, independence of the commission) has to be approved by ASN. ASN also decides the terms of its periodical information about the system and the granted authorisations. ASN supervises and assesses the reliability of "internal authorisations" systems through various means: on-site inspections, headquarter inspections, sample analysis by IRSN, yearly statements of the licensee, etc. In 2006, ASN conducted a review in each NPP on this subject. These reviews were an opportunity to check compliance with the new requirements. ASN can interrupt or cancel at any time this kind of system, if there is any sign that its reliability and efficiency are challenged. F. New projects Since 2005, ASN and EDF have discussed the opportunity to extend the range of operations covered by "internal authorisation" to the following operations: - criticality authorisation when the reactor restarts after a programmed simple refueling outage ; - waivers to the OTS allowing not to comply with the required conduct in case of non essential material unavailability event. These projects have not been finalized yet.		
196	**Canada**	**19.6**	**P. 147, Sect. 19.2.7, 1st bullet**
Question/ Comment	How and on what bases would the 20,000 safety-related events per year be categorized/sorted by the cross-functional group? Please provide examples of any recurring problems and potentially generic issues that were identified over the reporting period.		
Answer	General and specific criteria are established in order to enable specialists forming part of the cross-function committee to screen events of corporate significance. These criteria have been compared with those already established by INPO and no major discrepancies have been found. As an example, corporate investigations have been conducted into recurrent events involving loss of isolation on electrical switchgear, as well as into recurrent events involving lubrication.		

Q. n°		Article	Ref. in National report
197	**Korea, Republic of**	**19.6**	**Sect. 19.4.1.5**
Question/ Comment	(Article 19-6, Sect. 19.4.1.5) In relation to Sect. 19.4.1.5, it is stated that the EDF notified almost 700 significant events rated on the INES scale, and 10% of the events were rated at level 1, almost concerning nuclear safety. - When those events are evaluated as level 1, does that result from 'the basic rating' or from 'the additional factor' ? - Did EDF or regulatory body have implemented any measures to reduce the probability or number of level 1 events ?		
Answer	Safety-significant events are given a level-1 rating either directly ("basic" level 1) or by applying an additional factor after a "basic" level-zero rating has been assigned. It is primarily the "basic" rating which is representative of the safety concern. It can be observed that the number of level-1 safety-significant events is stable and has been low for the past 5 years. The additional factor is preponderant.		
198	**Canada**	**19.7**	**P. 147, Sect. 19.2.7, § 5**
Question/ Comment	At an IAEA follow-up review mission to EDF in April 2006, the report indicates that 80 percent of the EDF's experience feedback process had been resolved. What issues are associated with the incomplete 20 percent; and why were they not completed during the period from Dec. '03 to Apr'06?		
Answer	Indeed, progress has been found to be satisfactory and 80% of problems have been solved. However, among the initial recommendations, two had not made sufficient progress according to the review team: - One related to how low-level events were being addressed. A method approved by the Operational Safety Review Committee in late 2006 is currently being rolled out across the fleet. The second focused on how events were prioritised for action. - A review of the corporate event screening system has been carried out. Improvement initiatives will be rolled out and others will be implemented for an OE system covering 58 reactors.		
199	**Finland**	**19.7**	
Question/ Comment	Please explain the principles or criteria applied by the regulator and operator for screening other experience than incidents (e.g., management issues, unexpected degradation, design weak-nesses, external hazards not considered earlier), for the purpose of ensuring adequate sharing of important experience with in-ternational interested parties (regulatory bodies, operators, de-signers, international bodies). Identify the relevant guide docu-ments, if any, used for the screening.		
Answer	Significant Events Declaration Criteria ASN has defined a category of events known as "significant events". These are events that are sufficiently important in terms of safety to justify rapid notification, followed by a subsequent and more comprehensive report. The licensee, considered to be the in charge of the safety of the plants, is required to notify these events. The licensee issues a report for each of this events, analysing the origin and identifying corrective and preventive actions. These reports are sent ot ASN. In its "Guide to the Declaration Procedure and Coding System for Criteria Concerning Significant Events", published in October 2005 and available on its website, ASN defines criteria for declaring events deemed significant. The criteria associated to safety significant events (SSE) are : 1. emergency shutdown, except in the context of a deliberate scheduled action, 2. actuation of an engineered safeguard system, except in the context of a deliberate scheduled action, 3. non compliance with the Operating Technical Specifications (OTS) or any incident that could have		

Q. n°		Article	Ref. in National report
	led to a non compliance of the OTS, had the plant been in a different state, 4. external hazard: earthquake or plane crash, for example, 5. real or assumed malevolent act, 6. fallback of the unit according to the OTS or accidental procedures following an unforeseen behaviour of the plant, 7. event resulting or possibly resulting in multiple failures or affecting redundant trains, 8. event or anomaly affecting main primary or secondary circuit, 9. design manufacturing, on site assembly anomalies related to not above mentioned equipment that could lead to operation conditions not taken into account nor by design nor by operating procedures, 10. any other event deemed sufficiently important by the operating or safety authority. In 2007, 644 "SSE" events satisfying one of these criteria have been notified to ASN, most of which are rated beyond the INES scale (INES-0). ASN analyses all of these situations. Root Causes Analysis ASN requires its analysts to identify the root causes of the events, among the following items: § external hazard § human factor § organizational factor § technical factor It is also required to be more specific, among the following items: § Malevolent act; § Lack of competence § Lack of surveillance § Lack of preparation § Lack of maintenance § Documentation failure § Periodic testing failure § Material failure § … All the reported events are screened on both technical and not-technical point of views. Other Interesting Events Other events not falling within the scope of these declaration criteria are identified by the operator for subsequent analysis of experience feedback. These events, referred to as interesting events for safety (SIE), are events whose immediate importance does not justify an individual analysis but whose repetitive aspect may be indicative of a problem calling for a detailed analysis. The criteria permitting to classify an event as an SIE were established by the operator in agreement with ASN. EDF reports all operating situations in its database called SAPHIR. Information concerning these events is available to ASN and its technical support IRSN. The number of screened SIE is about 12,000 a year. The access to the SIE data basis constitutes an important contribution to the safety assessment of nuclear installations. It makes it possible to perform trends analysis, to detect the persistence of operational difficulties or the emergence of new issues.		
200	**Finland**	**19.7**	
Question/ Comment	Please explain how the regulatory body ensures or verifies that the operators are informed and properly analyse the operating experiences reported through the well established international channels (e.g., WANO, IRS), and that they address the lessons learned by taking proper actions.		

Q. n°		Article	Ref. in National report
Answer	A. International OEF at ASN and IRSN After the receipt of the SSE report (within 2 months) : „X ASN and IRSN carry out an analysis to examine how the event took place, which safety functions were implicated, how operators and equipment behaved, what the consequences were, together with knowledge of any similar incidents which have occurred. In addition, it is examined if, in other circumstances, the same accident would have had far more severe consequences, „X ASN and IRSN identify the root causes of the event and examine if the same root causes applied to other equipment or systems can induce different sequences which consequences could be potentially serious, „X ASN and IRSN look for additional information for the most significant events. Despite the quality of the SSE report, the information supplied usually has to be supplemented by direct contacts with the plant or the relevant EDF head office departments, „X IRSN holds a weekly meeting, attended by all the engineers in charge of site safety assessment, for reviewing all the SSE reports received during the previous week. The purpose of this meeting is to 1) inform all engineers responsible for assessing site safety of events occurring in the reactors and incite a debate on the issues raised by these events, 2) decide on the next steps in terms of in-depth analyses and IRS declarations. Besides, ASN and IRSN also exploit other international feedback sources such as: „X IRS reports, „X Information Notices and Regulatory Guides produced by the American Nuclear Regulatory Commission (NRC), „X events declared in the International Atomic Energy Agency (IAEA) NEWS database, „X information exchanged in the context of international co-operation. „X EDF examines the events reported by other operators and gathered in the WANO database as well as the IRS reports. IRSN systematically analyses all the documents in its possession as a way of exploiting international feedback. The conclusions of this survey are gathered in a document submitted to the ASN, outlining briefly the main points to be noted from events occurring outside France. This document highlights in particular events that may be transposed to the EDF PWRs. For such events, an investigation into whether or not EDF should perform an in-depth analysis and possibly implement preventive measures is carried out. On a three-month basis : „X ASN and IRSN hold a meeting to identify outstanding or precursor events. The most important of these events are the subject of a probabilistic quantification of IRSN to estimate the conditional probability of core damage ; „X ASN, IRSN and EDF hold a follow-up meeting of the outstanding events. On a three-year basis : „X ASN organizes a meeting of the advisory committee of experts for nuclear reactors (GPR) in order to examine the significant incidents of this period. The objectives of this meeting are to put forward operating measures or modifications of materials which result from complex studies resulting from in depth analysis of events (safety studies¡K). The preparation of this meeting requires a technical instruction of the topics between EDF and IRSN. At the end of this instruction, IRSN issues a report that is used to support the GPR meting. This report carries out an in-depth analysis of significant events. It analyzes the files transmitted by the licensee and evaluates acceptability, with respect to safety, of the position of the licensee and the corrective and preventive actions proposed. It generally concludes with recommendations that are frequently adopted by GPR and reformulated by the ASN as requests to the licensee. During the GPR meeting devoted to the examination of OEF, the international operating experience is		

Q. n°		Article	Ref. in National report
	taken into account.		
200	**Finland**	**19.7**	
Question/ Comment	Please explain how the regulatory body ensures or verifies that the operators are informed and properly analyse the operating experiences reported through the well established international channels (e.g., WANO, IRS), and that they address the lessons learned by taking proper actions.		
Answer	A. International OEF at ASN and IRSN After the receipt of the SSE report (within 2 months) : „X ASN and IRSN carry out an analysis to examine how the event took place, which safety functions were implicated, how operators and equipment behaved, what the consequences were, together with knowledge of any similar incidents which have occurred. In addition, it is examined if, in other circumstances, the same accident would have had far more severe consequences, „X ASN and IRSN identify the root causes of the event and examine if the same root causes applied to other equipment or systems can induce different sequences which consequences could be potentially serious, „X ASN and IRSN look for additional information for the most significant events. Despite the quality of the SSE report, the information supplied usually has to be supplemented by direct contacts with the plant or the relevant EDF head office departments, „X IRSN holds a weekly meeting, attended by all the engineers in charge of site safety assessment, for reviewing all the SSE reports received during the previous week. The purpose of this meeting is to 1) inform all engineers responsible for assessing site safety of events occurring in the reactors and incite a debate on the issues raised by these events, 2) decide on the next steps in terms of in-depth analyses and IRS declarations. Besides, ASN and IRSN also exploit other international feedback sources such as: „X IRS reports, „X Information Notices and Regulatory Guides produced by the American Nuclear Regulatory Commission (NRC), „X events declared in the International Atomic Energy Agency (IAEA) NEWS database, „X information exchanged in the context of international co-operation. „X EDF examines the events reported by other operators and gathered in the WANO database as well as the IRS reports. IRSN systematically analyses all the documents in its possession as a way of exploiting international feedback. The conclusions of this survey are gathered in a document submitted to the ASN, outlining briefly the main points to be noted from events occurring outside France. This document highlights in particular events that may be transposed to the EDF PWRs. For such events, an investigation into whether or not EDF should perform an in-depth analysis and possibly implement preventive measures is carried out. On a three-month basis : „X ASN and IRSN hold a meeting to identify outstanding or precursor events. The most important of these events are the subject of a probabilistic quantification of IRSN to estimate the conditional probability of core damage ; „X ASN, IRSN and EDF hold a follow-up meeting of the outstanding events. On a three-year basis : „X ASN organizes a meeting of the advisory committee of experts for nuclear reactors (GPR) in order to examine the significant incidents of this period. The objectives of this meeting are to put forward operating measures or modifications of materials which result from complex studies resulting from in depth analysis of events (safety studies¡K). The preparation of this meeting requires a technical instruction of the topics between EDF and IRSN. At the end of this instruction, IRSN issues a report		

Q. n°		Article	Ref. in National report
	that is used to support the GPR meting. This report carries out an in-depth analysis of significant events. It analyzes the files transmitted by the licensee and evaluates acceptability, with respect to safety, of the position of the licensee and the corrective and preventive actions proposed. It generally concludes with recommendations that are frequently adopted by GPR and reformulated by the ASN as requests to the licensee. During the GPR meeting devoted to the examination of OEF, the international operating experience is taken into account.		
201	**Finland**	**19.7**	
Question/ Comment	Please explain your national policy and practice of sending feedback reports to the international interested parties on actions that have been taken in your country as response to significant events reported through international channels (e.g., WANO, IRS).		
Answer	A. International OEF at ASN and IRSN After the receipt of the SSE report (within 2 months) : „X ASN and IRSN carry out an analysis to examine how the event took place, which safety functions were implicated, how operators and equipment behaved, what the consequences were, together with knowledge of any similar incidents which have occurred. In addition, it is examined if, in other circumstances, the same accident would have had far more severe consequences, „X ASN and IRSN identify the root causes of the event and examine if the same root causes applied to other equipment or systems can induce different sequences which consequences could be potentially serious, „X ASN and IRSN look for additional information for the most significant events. Despite the quality of the SSE report, the information supplied usually has to be supplemented by direct contacts with the plant or the relevant EDF head office departments, „X IRSN holds a weekly meeting, attended by all the engineers in charge of site safety assessment, for reviewing all the SSE reports received during the previous week. The purpose of this meeting is to 1) inform all engineers responsible for assessing site safety of events occurring in the reactors and incite a debate on the issues raised by these events, 2) decide on the next steps in terms of in-depth analyses and IRS declarations. Besides, ASN and IRSN also exploit other international feedback sources such as: „X IRS reports, „X Information Notices and Regulatory Guides produced by the American Nuclear Regulatory Commission (NRC), „X events declared in the International Atomic Energy Agency (IAEA) NEWS database, „X information exchanged in the context of international co-operation. „X EDF examines the events reported by other operators and gathered in the WANO database as well as the IRS reports. IRSN systematically analyses all the documents in its possession as a way of exploiting international feedback. The conclusions of this survey are gathered in a document submitted to the ASN, outlining briefly the main points to be noted from events occurring outside France. This document highlights in particular events that may be transposed to the EDF PWRs. For such events, an investigation into whether or not EDF should perform an in-depth analysis and possibly implement preventive measures is carried out. On a three-month basis : „X ASN and IRSN hold a meeting to identify outstanding or precursor events. The most important of these events are the subject of a probabilistic quantification of IRSN to estimate the conditional probability of core damage ; „X ASN, IRSN and EDF hold a follow-up meeting of the outstanding events.		

Q. n°		Article	Ref. in National report
	On a three-year basis : „X ASN organizes a meeting of the advisory committee of experts for nuclear reactors (GPR) in order to examine the significant incidents of this period. The objectives of this meeting are to put forward operating measures or modifications of materials which result from complex studies resulting from in depth analysis of events (safety studies¡K). The preparation of this meeting requires a technical instruction of the topics between EDF and IRSN. At the end of this instruction, IRSN issues a report that is used to support the GPR meting. This report carries out an in-depth analysis of significant events. It analyzes the files transmitted by the licensee and evaluates acceptability, with respect to safety, of the position of the licensee and the corrective and preventive actions proposed. It generally concludes with recommendations that are frequently adopted by GPR and reformulated by the ASN as requests to the licensee. During the GPR meeting devoted to the examination of OEF, the international operating experience is taken into account. Within EDF, all events occurring across the French fleet are reviewed on a monthly basis by the WANO Interface Officer and by the corporate team in charge of OE coordination, in order to determine which events should be reported to WANO. Screening criteria have been defined: serious or unusual plant transients, malfunctioning of safety systems, inappropriate conduct of operations, damage to important components, excessive radiation exposure, industrial accidents, unplanned or unmonitored radioactive releases, fuel handling events, discovery of design anomalies or construction anomalies. In 2007, EDF provided the WANO database with 82 events having occurred on the French fleet. Significant event reports are screened by the regulator on the basis of event reports submitted by the plant.		

Q. n°		Article	Ref. in National report

202	Germany	19.7	P. 147, § 9
Question/ Comment	In IAEA PROSPER missions of 2003 (December) and 2006 (April) the experience feedback process of EDF was evaluated. Satisfactory progress has been made and 80 % of the problems wereresolved. What are the remaining issues and how will they be resolved?		
Answer	Indeed, progress has been found to be satisfactory and 80% of problems have been solved. However, among the initial recommendations, two had not made sufficient progress according to the review team: - One related to how low-level events were being addressed. A method approved by the Operational Safety Review Committee in late 2006 is currently being rolled out across the fleet. The second focused on how events were prioritised for action. - A review of the corporate event screening system has been carried out. Improvement initiatives will be rolled out and others will be implemented for an OE system covering 58 reactors.		
203	**Germany**	**19.7**	
Question/ Comment	Reference to the Summary Report of the 3rd Review Meeting, item 36, 38, 42 and 43 The following set of questions is of special interest for Germany for the further development in this field. As some of these items may already be covered by your report or by other questions posted by Germany, we do not expect repetitions of information already delivered. Please just give additional information as appropriate. It was decided at the Third Review Meeting to discuss this topic at the Fourth Review Meeting. 1. Which are the screening criteria for the internal and external experiences to be considered? (Are audits and reviews performed by external experts for controlling the effectiveness of OEF? Which procedures, committees etc. are established for the review and exchange of operating experience at the plant operator level and the supervisory level?) 2. How is the implementation of lessons learned from operational experience monitored? 3. How are operating experiences handled that are below the statutory reporting threshold?		
Answer	ASN answer A. Screening criteria for reporting Classification of the events must ensure that the more important ones are given priority treatment. For this purpose and for all the BNIs, the ASN has defined a category of events known as ¡§significant events¡¨. These are events that are sufficiently important in terms of safety to justify rapid notification, followed by a subsequent and more comprehensive report. The licensee, considered to be the in charge of the safety of the plants, is required to report these events. Significant Events Declaration Criteria In its ¡§Guide to the declaration procedure and coding system for criteria concerning significant events¡¨, published in October 2005 and available on its website , ASN defines criteria for declaring events deemed significant. Given the different fields likely to be impacted, ASN distinguishes events in terms of the following: „X safety criteria associated with the prevention of nuclear accidents and the limitation of their consequences; „X radiation protection criteria associated with the observance of radiation protection rules for workers and the public, as defined in the Labour Code and the Public Health Code; „X environmental protection criteria associated with the observance of environmental protection rules as defined in the Environmental Charter, the Environmental Protection Code and the Public Health Code. These criteria may concern BNIs or the transport of radioactive materials.		

Q. n°		Article	Ref. in National report
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203	**Germany**	**19.7**	
Question/ Comment	Reference to the Summary Report of the 3rd Review Meeting, item 36, 38, 42 and 43 The following set of questions is of special interest for Germany for the further development in this		

Q. n°		Article	Ref. in National report
	field. As some of these items may already be covered by your report or by other questions posted by Germany, we do not expect repetitions of information already delivered. Please just give additional information as appropriate. It was decided at the Third Review Meeting to discuss this topic at the Fourth Review Meeting. 1. Which are the screening criteria for the internal and external experiences to be considered? (Are audits and reviews performed by external experts for controlling the effectiveness of OEF? Which procedures, committees etc. are established for the review and exchange of operating experience at the plant operator level and the supervisory level?) 2. How is the implementation of lessons learned from operational experience monitored? 3. How are operating experiences handled that are below the statutory reporting threshold?		
Answer	A. Screening criteria for reporting Classification of the events must ensure that the more important ones are given priority treatment. For this purpose and for all the BNIs, the ASN has defined a category of events known as ¡§significant events¡¨. These are events that are sufficiently important in terms of safety to justify rapid notification, followed by a subsequent and more comprehensive report. The licensee, considered to be the in charge of the safety of the plants, is required to report these events. Significant Events Declaration Criteria In its ¡§Guide to the declaration procedure and coding system for criteria concerning significant events¡¨, published in October 2005 and available on its website , ASN defines criteria for declaring events deemed significant. Given the different fields likely to be impacted, ASN distinguishes events in terms of the following: „X safety criteria associated with the prevention of nuclear accidents and the limitation of their consequences; „X radiation protection criteria associated with the observance of radiation protection rules for workers and the public, as defined in the Labour Code and the Public Health Code; „X environmental protection criteria associated with the observance of environmental protection rules as defined in the Environmental Charter, the Environmental Protection Code and the Public Health Code. These criteria may concern BNIs or the transport of radioactive materials. The criteria associated to safety significant events (SSE) are : 1. emergency shutdown, except in the context of a deliberate scheduled action, 2. actuation of an engineered safeguard system, except in the context of a deliberate scheduled action, 3. non compliance with the Operating Technical Specifications (OTS) or any incident that could have led to a non compliance of the OTS, had the plant been in a different state, 4. external hazard: earthquake or plane crash, for example, 5. real or assumed malevolent act, 6. fallback of the unit according to the OTS or accidental procedures following an unforeseen behaviour of the plant, 7. event resulting or possibly resulting in multiple failures or affecting redundant trains, 8. event or anomaly affecting main primary or secondary circuit, 9. design manufacturing, on site assembly anomalies related to not above mentioned equipment that could lead to operation conditions not taken into account nor by design nor by operating procedures, 10. any other event deemed sufficiently important by the operating or safety authority. In 2007, 644 ¡§SSE¡¨ satisfying one of these criteria have been reported to ASN, most of which are rated beyond the INES scale (INES-level 0). ASN and IRSN conduct an analysis all of these situations. Other Interesting Events		

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204	**Russian Federation**	**19.7**	**Sect. 19.2.7**
Question/ Comment	It is not quite clear from the Sect. 19.2.7 who is responsible for assessing operating experience feedback effectiveness and how this assessment is performed. Do the operating organization and regulatory body assess the operating experience feedback effectiveness? Who, in particular, performs this assessment and in what way?		
Answer	The Sect. 19.3.4 of the French report describes the processing of anomalies and events for research reactors. The written guidance from ASN on how to declare and code criteria relating to significant events requires research reactors to declare to ASN any event causing a protective and/or safeguard system to be activated. Moreover, DPSN (protection and nuclear safety directorate) of the "risk control" division has set up an experience feedback network in collaboration with the safety units of CEA Centres. The information held in the network is passed on to installations at meetings attended by installation managers and safety engineers on each Centre.		

Q. n°		Article	Ref. in National report
	A specific computing data file has been also implemented by DPSN to allow all the installation managers or safety engineers to access directly and continuously the program with all event descriptions and the taken corrective actions. CEA has set up a specific nuclear general inspectorate (IGN) which is commissioned to control, among others, the efficiency of the system. Moreover, the regulatory body has the possibility at any time to inspectorate the operator at any level ("risk control" division, Centre and installation) to assess the OEFs effectiveness. Efficiency of the EDF's OE system is monitored at two levels (plant and corporate). There are two parallel time frames, one annual and the other intermediary. As far as the annual time frame is concerned, safety-related event-based OE is reviewed by each plant and at corporate level. Once the annual analysis has been reviewed, actions (some specifically directed at certain plants) are decided upon. As far as intermediary monitoring is concerned, this is done at corporate level via the Corporate Operational Safety Review Committee (CSNE). The corporate entity analyses and observes trends in order to alert the plants, thereby enabling them to play their role. Furthermore, OE is systematically reviewed on the occasion of EGS safety reviews conducted on plants by the EDF nuclear inspection department, and also within the corporate entities every 3 years. Timeframe for the OEF process at ASN and IRSN is as follows : a) After the receipt of the significant event (ESS) early notification, within a week, ASN and its TSO (IRSN) check the content of the fax report, to analyse inter alia the description of the event, its consequences and the immediate actions implemented by the operator. b) After the receipt of the ESS report (within 2 months), ASN and IRSN carry out an analysis of the report to examine the reasons and roots of the event, its consequences, the safety functions implicated and the behavior of operators and equipment, together with knowledge of any similar incidents which have occurred. They consider the actions implemented by the operator to prevent the recurrence of this event on the site and on other sites. c) On a three-month basis, ASN and IRSN hold a meeting to identify outstanding or precursor events. The most important of these events are the subject of a probabilistic quantification of IRSN to estimate the conditional probability of core damage. Then ASN, IRSN and EDF hold a follow-up meeting of the outstanding events. d) On a three-year basis, ASN organises a meeting of experts from the Advisory Group for Reactor Safety (GPR) in order to examine the significant incidents of this period. The objectives of this meeting are to put forward operating measures or modifications of materials which result from complex studies resulting from in depth analysis of incidents (safety studies…). The preparation of this meeting requires a technical instruction of the topics between EDF and the IRSN. At the end of this instruction, IRSN issues a report that is used to support the GPR meeting. This report carries out an in-depth analysis of significant events. It analyzes the files transmitted by the licensee and evaluates acceptability, with respect to safety, of the position of the owner and the possible provisions which it proposes. It generally concludes with recommendations that are frequently adopted by GPR and reformulated by the ASN as requests to the operator.		
205	**Switzerland**	**19.7**	**P. 139**
Question/ Comment	How is adequate depth of licencees event analyses ensured? Are there pocedures for root cause analyses in use? Does the authority carry out it's own event analyses with the licencees? How is the threshold level defined for such root cause or authority analyses?		
Answer	A. Screening criteria for reporting Classification of the events must ensure that the more important ones are given priority treatment. For this purpose and for all the BNIs, the ASN has defined a category of events known as ¡§significant events¡¨. These are events that are sufficiently important in terms of safety to justify rapid notification, followed by a subsequent and more comprehensive report. The licensee, considered to be the in charge of the safety of the plants, is required to report these		

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205	**Switzerland**	**19.7**	**P. 139**
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206	**Japan**	**19.8**	**P. 136, L15 from Btm**
Question/ Comment	The 1st paragraph under the Sect. 19.1.3 says that Article 29 of the act of 13 June 2006 states that the final shutdown and dismantling of a BNI is subject to an authorization delivered by decree after an ASN opinion. In the previous report, regarding the shutdown issue, it is said as follows: The implementation of these various provisions is subject to their approval by decree, countersigned by the Ministers for the Environment and for Industry, after assent of the Minister for Health and prior consultation of the Interministerial Commission for Basic Nuclear Installations (CIINB). As above, in the 4th report Ministers' involvement is not mentioned. Does this mean that the authority has been delegated to the ASN Chairman?		
Answer	After the consultative commission for basic nuclear installations and the ASN have issued their opinion, the decree authorizing the final shutdown and dismantling of a BNI is signed by the ministers tasked with nuclear safety : the Minister for Ecology and Sustainable Planning and Development and the Minister for the Economy, Finance and Employment.		