Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

Questions Posted To France in 2018

QuestionID	Country	Sequence	Article	Reference	Question	Comment	Answer
19593	Belgium	1	Article 10	page 162	It is mentioned that spent fuel is not at present intended for direct final disposal, except for a few experimental spent fuels. Please clarify why a few experimental spent fuels are intended for direct final disposal? How will this spent fuel be disposed of ? Is the long term safety guaranteed in this particular case (e.g. due to hydrogen formation)?		The report is incorrect. At this stage, all spent fuel are intended to be reprocessed. Nonetheless, there are questions concerning the industrial feasibility on the reprocessing of some experimental spent fuel. For more detail about SNF, see answer to question 17076.
19594	Belgium	2	Article 12	H2.2 p 172	It is understood that EDF decided to retrieve the graphite waste contained in the Saint-Laurent silos "without waiting for the graphite waste disposal route to become available". It is also understood later in the text that EDF is considering building a new storage facility. Please Could France describe the type of storage waste facility EDF would like to commission for this type of waste (site ? projected commissioning date ? ...).		EDF plan is to build a graphite interim storage facility on the Saint-Laurent-des-Eaux site, nearby the silos. Preliminary design studies are on-going. The plan is to submit the application file by the end of 2019, with an authorization expected by 2023-24 and a projected commissioning date of the storage facility by 2028. The recovery of graphite sleeves in the silos would start once the storage facility is commissioned.
19595	Belgium	3	Article 11	D3.2.1 p63	What impact did the CENTRACO accident and the delay in the commissioning of ICEDA facility have on the waste management strategy of the different licensees (storage capacity ? delay in other projects ?)		After the accident of Centraco in September 2011 in the fusion unit, EDF used temporary solutions in order to manage its incinerable radioactive waste. About 60% of theses solid radwastes were sent to the Cires very-low-level waste disposal. At the same time, boron liquid radwastes were reduced to the maximum by increasing their concentration.The incineration unit restarted less than 2 years afterwards (august 2013). Concerning Iceda, so far, the delay in the commissioning does not have any impact on EDF's decommissioning projects since these projects also have some delays.
19621	Belgium	4	Article 23	Section F, § 3.1, page 105	Does the supervision by the operator of his suppliers also covers the materials for waste processing and packaging ?		Yes
19622	Belgium	5	Article 11	Section H, §1.2.3, page 165	Are there also criteria defined for the containment capacity of the matrices used for waste conditioning ?		As indicated in the Section H, § 6.1.: "Waste packaging is an essential aspect of radioactive waste management, because the package is the first of the three containment barriers in a disposal facility and, in the case of storage, plays an important role in both containment and possible retrieval. ". To achieve that objective, the technical specifications defined by Andra (or Waste Acceptance criteria) include high-performance containment capacity of any matrix used to immobilize the waste.
19373	Bulgaria	1	Article 24	F.4.1.4.	Resolution 2016-DC-0569 of 29th September 2016 of ASN, which notably clarifies various provisions concerning the environmental monitoring programme to be implemented by the licensees around their facilities is mentioned. Could you give more information about the new requirements of the Resolution concerning the environmental monitoring programme?		The environmental monitoring programme to be implemented by the operators is fixed in annex II of ASN resolution 2013-DC-0360. This resolution has been modified by ASN resolution 2016-DC-0569 of 29th September 2016. This was not a major modification but some points have been clarified. For instance, concerning the monitoring of biological matrixes, aquatic flora and fauna are now distinguished. A few new requirements have also been added. For instance, as concerns tritium analysis, analysis of both OBT and HTO in plants is now required, whereas only HTO was measured previously.
18318	Canada	1	Article 32	4.1.2	Most spent fuel is considered recoverable material because it may be recovered over the very long term in Generation-IV fast neutron reactors. If France does not acquire such reactors, spent fuel will then be considered as waste. Has France set a deadline for the spent fuel to be considered as waste and when the solution for the long term disposal will need to be developed?		French legislation demands that spent fuel be reprocessed. There is no plan to change this provision. No dedicated long term disposal facility for SF is considered. nevertheless, as a precaution, if reprocessing would be questionned in the future, spent fuel are included in the reserve inventory of Cigéo, in case of a change in the energy policy.

18319	Canada	2	Article 21	2.2.1	Within ANDRA, the organization responsible for overseeing long-term management of all radioactive waste, there does not seem to be representatives from the main producers of radioactive wastes. Considering the polluter-pays principle, please clarify whether waste producers are involved in long-term management solutions.		Waste producers are involved in the national strategy for radioactive waste and spent fuel management through the national Plan for Radioactive Materials and Waste Management (PNGMDR). PNGMDR is defined in the article L. 542-1-2 of the Environment Code (Programme Act 2006-739 of 28th June 2006 concerning the sustainable management of radioactive materials and waste). The Plan reviews existing management routes for radioactive material and waste and organises the implementation of research and studies into the management of materials and waste. The plan is updated and reviewed every 3 years since 2007. The plan is a strategic roadmap for the overall management of the radioactive material and waste. PNGMDR is co-directed by the ministry in charge of energy and ASN and involved all stakeholders gathered in a group, particularly waste producers. Prescriptions of the plan are published in regulation with a ministerial decree and a ministerial order. The cost and financing of materials and waste management are provided by the nuclear licensees, under State oversight, in accordance with the “polluter-pays” principle. A system to secure the financing of long-term nuclear costs was thus set up in the 28th June 2006 Act codified in the Environment Code. The licensees are required to evaluate the longterm costs, including the cost of decommissioning and the cost of managing spent fuels and radioactive waste (dedicated assets offering a high degree of security). These operations are closely monitored by the State (Ministries in charge of Energy and Economy).
18320	Canada	3	Article 24	4.2.4	« Since most doses are due to external exposures, EDF is focusing its efforts on reducing them. That policy and its results form a whole and it is impossible to isolate what is strictly associated with spent-fuel management or waste management. Consequently, the following paragraphs will address the overall operation of nuclear-power reactors. » This paragraph suggests that EDF is not in control of its radiation protection program. To be in control, each dose received by a worker is normally associated with an activity or work order and this activity or work order should be related to waste management or spent fuel. It’s a long task, but certainly not impossible.		All the integrated doses by the workers of each EDF nuclear power plant are associated and gathered per type of activities as codified in the radiation protection information system exploited by EDF (MICADO). This distribution by type of activities is done for each project, according to whether the intervention is done during production phase or during an outage reactor scheduled. Concerning the activities of fuel management, sorting and conditioning of Waste, these types of activities allow to establish their estimated annual collective dose, and the general balance-sheet of the doses integrated each year on a EDF nuclear power plant.
18321	Canada	4	Article 15	2.3.2.3	« ASN considers that the deadlines must no longer be pushed back because the buildings in which this legacy waste is stored are of an old design and do not comply with current safety standards. » Has AREVA NC carried out an exploitability analysis of these facilities? Are there environmental or other impacts of storing this legacy waste in these facilities that do not meet the current safety standards?		Currently, there is no environmental impact of these facilities. However, it is necessary to empty them as soon as possible, as, for example, they couldn't withtsand a strong earthquake without radiological consequences. Orano (Areva) has several projects for the recovery of this legacy waste, some of which are performed in accordance to the planning prescribed by ASN.

16113	China	1	Article 32.1.4	EXECUTIVE SUMMARY 5.1, Para 5, P9;B.4.1.	Has the reversibility requirement led to any delay and cost increase of the development of CIGEO? Has the influence of reversibility requirement been considered in the “25 billion euros” budget? Please clarify the concept of reversibility and its impact on cost and time needed for construction.		The reversibility has been defined by the law of the 26th of July 2016 as the capacity for the successive generations either to follow with the building and the operation of the successive extensions of the disposal facility, or to reevaluate previous choices and change waste management solutions. Reversibility implies progressivity of the construction, adaptability of design and flexibility of operations in order to adapt to potential inventory changes and technological improvements. It includes the possibility of retrieval of waste packages. The cost of the technical dispositions linked with reversibility is integrated in the overall budget of the project. Doing so, the present generations facilitate future possibilities and actions. However, if future generations decide to engage in such operations, they will have to finance their own cost. Reversibility requirements have been integrated in the design specifications right from the start of the project and have not led to any delay nor significant cost increase. The impact of the Law of 26th of July 2016 in the cost of Cigeo will be assessed more throughly when the licensing file is submitted.
16114	China	2	Article 32.1.4	EXECUTIVE SUMMARY 5.5.4.2, last Para 1 &	According to the national report, difficultities were encountered in the initial siting process for a LLW-LL disposal repository, a new process was restarted in 2012 and the preliminary site selected by Andra was considered to be too small. What difficulties were encountered during the initial siting process for a LLW-LL disposal repository? Which type (near surface, intermediate depth or deep geological disposal) does the disposal facility in Soulaines area belong to? And what is the progress after the restarted process from 2012?		Following the 2009 failure of the siting phase, the State requested from Andra to pursue discussions with the territories and municipalities having expressed their interest. In parallel the HCTISN (High Committee for Transparency and Information on Nuclear Security – HCTISN) established a working group to make a feed-back on the siting process for the LL-LL Disposal project.This working group stated recommandations for the continuation of the project (Report of the HCTISN 2011). The HCTISN reminded that the safety is the driving factor for the siting choice. The Committee recommends the State to select a limited number of territories on the basis of Andra's proposal determined by the results of the call for applications of 2008. The Committee also considers the local representative should be at the intermunicipalities level, with the support of the State and the regional administration representatives. It has proposed that nuclearized area should be priviliged for siting. It recommended to inform the public and implement an active dialogue. The disposal project will be inducing real economical advantages and local developpment. On the basis of the new process, the intermunicipalities of Vendeuvre and Soulaines gave their approval for the geological investigations on their territories in the view of a LL-LLW disposal project. The project is based on shallow-depth concept disposal (20 to 30 m deep). A first safety assessment of this concept was done in 2015, and the national programme asks for further studies in 2018 in order to follow-up
16115	China	3	Article 32.1.3	B.1.7.1, P33	The French funding system for decommissioning BNIs and managing the resulting radioactive waste rests on the full financial liability of industrial operators. How to collect, utilize and manage the financial funds on decommissioning BNIs and managing the resulting radioactive waste?How to regulate the fund?		The nuclear operators are in charge of estimating future costs, financing these costs and paying them when they occur, under the control of an administrative authority (with sanctions powers). Financial risk on assets is also supported by the operator. The funds are in the operator’s accounts, but protected by law and separated from the rest of the operator’s balance sheet: they cannot be used for any other purposes than payment of nuclear charges, even in case of operator’s bankruptcy. If funds are not sufficient (e.g. in case of increase in estimated or effective costs, or in case of losses in the assets portfolio), the operator has to add cash in the segregated fund. In addition, operators cannot withdraw funds so long as the coverage ratio is lower than 110% (margin for financial risk). The administrative authority can impose the operator’s parent company to finance these costs, should the operator fail to do so.

16116	China	4	Article 32.1.5	B.4.2.1, P40	“very-low-level waste (VLL) is mostly due to dismantling of NPPs, fuel-cycle facilities, research establishments and, to a lesser extent, from the operation and maintenance of this type of nuclear installations. The activity level of this waste is generally below one hundred Bq per gram. Its activity level is generally lower than 100 Bq/g,” Can it be interpreted that the RW with activity concentration lower than 100 Bq/g is very-low-level waste (VLL)?		Yes, most of the time. The French classification of waste is first of all based on disposal routes and disposal solutions, so that the value of 100 Bq/g shall be considered as an order of magnitude.
16117	China	5	Article 32.1.4	B.6.1.1, P47	It is mentioned that EDF uses the MERCURE process (encapsulation in an epoxy matrix) with two identical mobile machines for the packaging of ion-exchange resins.” Whether all EDF NPPs ues the MERCURE process to deal with the ion-exchange resin?What interface needs to be modified for NPPs which already have a cement solidification process line and want to use the MERCURE process to deal with the ion-exchange resin?In the reply of the Fourth Joint Convention,it was answered that “A concrete container contains an average of 400 L of resins (capacity of three hoppers)” by France,does the 400 L of resins mean origin wet resins or dried resins?Does MERCURE process require pretreatment of resin?		1) All the EDF NPPs use MERCURE for the conditioning of LL and IL resins. 2) For using Mercure unit instead of cement solidification treatment, you need to ensure the transfer between storage tank of resins and Mercure unit. 3) The underwater IER are transferred from the EDF tank to a metering hopper where they are dewatered by extracting the water through a system of baskets. The dewatering water is sent back to the EDF storage tank. The limit value of the rate of humidity of IER allowed by the MERCURE process is set at 63%. No measurement has been envisaged to assess this parameter as the dewatering system installed on the MERCURE mobile unit systematically leads to a rate of humidity for the IER below the limit value. The operator controls the rate of humidity of the IER by displaying the weight reduction curve in the metering hopper. 4) MERCURE process doesn’t require pretreatment of resin except dewatering.
16118	China	6	Article 32.1.4	B.6.1.1, P47 & F.6.3.2, P140	It is mentioned that “packages produced by both machines are intended for the CSA. The steel biological shields inserted into the containers may be manufactured using the low-contaminated steel recycled in the CENTRACO facility.” What kind of container needs the steel biological shields for EDF?Whether the use of lead is forbidden as the biological shields and only steel or metal recycling? It is mentioned that the melting of VLL metal materials would enable them to be decontaminated to radioactivity levels removing all risk and enabling reutilisation within the nuclear sector, among others, to be envisaged” What are the acceptance criteria for the melting of VLL metal materials? What kinds of radioactive metal materials can be melted except VLL materials? Please give more information about the corresponding acceptance criteria for the metal materials before and after melting. Please describe the regulatory approach and practice for this facility and operator, including licensing procedure and reviewing.		Concerning biological shields, they are inserted in containers in which waste is subject to present a significant dose rate. It is the case of ion exchange resins conditioned by the machines Mercure. Biological protections are manufactured from different materials : in particular steel -recycled or not- or lead. The 2nd point refers to the ongoing project dedicated to the treatment and recovery of low level activity metal, in particular from the dismantling of the plant Georges Besse (cf. Chapter F6.3.2). Those metal materials have been selected because of their characteristics : large homogeneous volumes of very low level activity metal.The preconditions for this projet (technical, regulatory, economic) are under study.
16119	China	7	Article 32.1.4	B.6.1.1, P48	It is mentioned that NPP maintenance may require the replacement of large components, such as reactor-vessel heads, steam generators, racks (fuel-storage modules in pools), etc. Those special residues are either stored on site or in the BCOT (Base chaude opérationnelle du Tricastin) at Tricastin or disposed of at the CSA or the CIRES.” What is the treatment and disposal strategy for the replaced large components? What is the specific treatment requirement of the racks (fuel-storage modules in pools)?		NB : a mistake appeared in the English version of the report: "Those special residues are either stored on site or in the BCOT at Tricastin AND disposed of at the CSA or the CIRES." First, steam generators are currently stored on site. A treatment is under study which may lead to the recovery of a part of the low level activity metal. This is currently not possible accordingly to French regulation without a derogation from the Ministry. Concerning reactor-vessel heads, after possible temporary storage, they are disposed of at the CSA. Finally, as for racks, they are being cut and treated at Centraco. Ultimate waste is finally disposed of at surface disposal facilities.

17972	Croatia	1	Article 32.1.3	B, 41	Could you please outline the benefits of waste zoning plan without clearance levels as radioactive waste management strategy?		The French management mode, primarily based on the origin of the waste, guarantees that all potentially radioactive waste from the BNIs is managed in dedicated routes and traced from waste production up to disposal. It is particularly easy to use in the field, which means that it has been taken on board by the entire chain, thus guaranteeing its robustness. France also have a disposal facility for very low level waste that allows the easy disposal of this kind of waste. The zoning principle adds a barrier to a strategy with a clearance level, as an error in mesure could lead the clearance of waste above the threshold defined. It is particularly adapted to a large fleet of NPP in operation.
17973	Croatia	2	Article 19	E, 78	Does the local community have any legal instrument to reject a decision or proposal for license application to create a BNI?		Local authorities do not have the power to reject a request for the creation of a BNI or to oppose an authorization to create BNI. On the other hand, the recent French environmental assessment provisions for projects with an impact on the environment provide for prior consultation on the project of the local interested authorities. Moreover, in the departments and communes nearby, in which the public inquiry must then take place, the prefect must consult the departmental and municipal councils before the beginning of this inquiry.
17974	Croatia	3	Article 13	H, 177	What will be the influence on CIGEO project time schedule of the integration of part of the LLW-LL waste and possibly spent fuel, in case of change of energy policy, in the CIGEO reserve inventory, which at present are out of scope? Will it require new request for creation authorization?		For the spent fuels, the law asks for reprocessing and there is currently no plan to question this principle. For the LLW-LL, the law asks for a sub-surface repository and there is currently no plan to question this principle. The LLW-LL waste and spent fuel are included in the reserve inventory, which means that the design of Cigeo should not present incompatibility with this kind of waste. There is no study on schedule. In case of change of energy policy, which would imply the repository of spent fuel, the authorization decree would have to be modified significantly in accordance of art 31 of decree 2007-1557 (implying a public inquiry and a ministerial decree).
17975	Croatia	4	Article 12	H, 171	What is the final solution for the management of the concrete blocks filled with sodium hydroxide from the Creys-Malville NPP after 30 years of storing?		According to EDF decommissioning file and as stated in the decommisioning decree of the facility, the concrete blocks filled with sodium hydroxide are aimed to be sent to the French Low Level RadWaste (LLRW) repository at the end of the storing period. Regarding the whole aspects of the management solution for the concrete blocks filled with sodium hydroxide, including radiation protection and possible transport, EDF strategy consists also in studying the feasibility to requalify those blocks as conventional waste after a period of storing on site.

17976	Croatia	5	Article 13	H, 178	Which are the most important lessons learned from the unsuccessful siting process for a LLW-LL repository in 2008 which will enable success for the continuation of the project?		The principal lessons learnt are : - a too wide call for applications - a weak State involvment, at the national level and the local level. The responbility of the siting process was basically transferred to Andra and the canditating municipalities. - the 2 selected municipalities announcement was political, the information leaked before being announced to the public and the involved municipalities. - the municipality representatives were not experienced and prepared to this type of process and stakes. They were subject to important pressure : influences from the political landscape at the local and national levels. - the threatened municipality mayors did not feel sufficiently protected. - the territory and local context were unsufficiently understood. In particular the economical issues (land and agriculture financial stakes) were under-estimated. - the information to the public was not sufficient, on the technical aspect of the disposal project (inventory of waste, nature, quantities, induced risks, etc.) and on the siting agenda/milestones. It was difficult for Andra to communicate with the population. Andra has nevertheless participated to all public debates and hearings when invited to . - the LL-LL waste producers were only informed about the siting process evolution and poorly consulted about it. They were not invited to participate to the siting process.
17977	Croatia	6	Planned Activities	K, 198	Regarding the LLW-LL waste (graphite waste from the gas-cooled reactors, radium-bearing waste and bituminised waste from the treatment of radioactive liquid effluents on the Marcoule site) the Report states that the analysis of the file submitted by ANDRA in 2015 has shown that it will be difficult to demonstrate the feasibility - in the investigated area on the land of the community of Soulaines - of a disposal facility for all the LLW-LL waste. What was identified as the problem to demonstrate feasibility? Is it connected with particular waste types or with quantities?		The assessment of the study submitted by Andra in 2015 shown that a small area could meet nearly all the main criteria (depth and thickness of the clay layer, distance to houses, etc) but seems to be too narrow, regarding the area required to store all the waste identified at this time.
16035	Czech Republic	1	Article 18	E, 82	The waste disposal facilities are supervised by ASN. Do the inspectors of ASN control the compliance of the waste acceptance criteria by facility operator?	This question is mainly focused on operator´s declaration the disposed waste does not contain liquid waste.	The Cires, for VLLW, is supervised by the Prefete. For waste of higher activity, the disposal facilities are supervised by ASN. The authorization safety case is validated by ASN in the frame of the licensing application dossier. Afterwards, it is the responsability of the licensee to define waste acceptance criteria (WAC) that comply with the hypothesis aof the authorization safety case. Licensees can modify their WAC without validation by ASN as long as it is covered by the authorized safety case. However, inspectors can check the technical organization put in place by Andra, for example to control if the agreement defined for each type of waste package is sufficient or to verify the packages conformity. For example, Andra do some internal and external controls on waste package they reiceved and some inspections on productors sites in order to check the organization put in place to comply the agreement they contract with Andra. Regarding the liquid waste contained in waste package, Andra has withdrawn some agreements to producers until the producers demonstrate that their new organization is able to prevent any forbidden wastes into the packages.
16036	Czech Republic	2	Article 21	F, 105	Could you please to shortly describe the system of management of such sources?	From this section it is not very clear who is responsible for orphan source management.	Please refer to the 2016 annual report of the ASN (available in English on the asn website), section 1.5.1 of the chapter 16 (page 519)
19804	Finland	1	Article 20	p.87-88	ASN if the regulator for safety of BNIs. Does the field of ASN's regulatory supervision cover also security arrangements of BNIs?		The field of ASN's regulatory supervision does not cover arrangements of BNIs against malevolant acts, but the one concerning radioactive sources in irradiators.

19805	Finland	2	Article 6.1.2	p.133	France policy not to use clearance in the nuclear waste management is exceptional and interesting. If understood correctly the waste zoning principle defines whether the material is considered to be radioactive or not based on its origin. How do you consider that waste minimization principle is implemented in the French system? With the waste zoning large volumes of non-radioactive materials may be defined to be radioactive waste and has to be disposed of in VLLW disposal facility.		Waste minimization is a principle for the environment code. The National Plan asks the lincensees to continue their work on waste minimization, based on an optimisation of the zoning principle. The licensees have to perform a study on the waste management. They are tasked to describe how they minimize the waste they produce.
19806	Finland	3	General	Section K, p.197-198	ANDRA submitted safety option file for the CIGÉO in 2016. What was the reference inventory used for the high level waste in the analysis?		The Operational Master of Cigéo has been published by Andra in 2016 and has been one of the documents subject to the IRRS Review Mission by IAEA. This document presents the reference inventory of Cigéo as an input data for the development of the Safety Options Files. The purpose of Cigeo is to dispose of waste that has already been and will be generated by existing nuclear facilities as well as nuclear facilities that have been granted a building licence, including up to their expected date of decommissioning and dismantling. The typical useful service life of all nuclear reactors, including the Flamanville EPR under construction, is 50 years. It is assumed that all spent fuel will have been reprocessed. The longevity of the fuel cycle facilities is commensurate with that of the nuclear power plant fleet. The research facilities (CEA reactors and laboratories) currently in operation, as well as the Jules Horowitz reactor currently under construction, have an expected service life of 50 years. The ITER reactor is expected to operate for only 20 years. The waste intended for disposal at Cigeo is intermediate-level long-lived waste (ILW-LL) and high-level waste (HLW). Cigeo has a reference inventory of 73,600 m3 for ILW-LL and 10,100 m3 for HLW. HLW : about 10,100 m3 composed by 10,050 m3 of vitrified of waste and 50 m3 of other HLW (spent sealed sources, technological waste, etc.). ILW-LL : 73,600 m3 composed by 13,600 m3 of spent waste from structural fuel assemblies, 60,000 m3 of Waste from operations and dismantling.
19807	Finland	4	Planned Activities	Section K, p. 198	Has ASN and ASND given the resolution on AREVA's and CEA's waste management strategies? Could you present a short overview of the resolutions in the review meeting if they are published before the meeting.		The opinion of ASN and ASND will be given after the summer 2018.
16805	Germany	1	Article 32.1.1	p. 29, Section B	It is reported that the National Management Plan for Radioactive Materials and Waste (PNGMDR) demands, inter alia, the extension of the CIGÉO inventory by partly adding low-level long-lived waste (LLW-LL) to it. It is also reported that this is outside the recent scope of the initial authorisation. Could France please add some information on the amount of additional waste to be dedicated for the CIGÉO repository, the impact this will have on repository operation and the measures that will have to be taken in order to include this additional waste in the future authorisation process?		The LLW-LL is included in the reserve inventory of Cigeo, if they could not be disposed of in subsurface facility as required by the law. That means that the design of Cigeo design should not present incompatibility with this kind of waste. The amount of LLW-LL to be included in the reserve inventory is about 100 000 m3 once they are packaged. It might imply to build new cells if this option were taken. The main measure would be to change the decree of creation autorisation in accordance of art 31 of decree 2007-1557 (public enquiry and a ministerial decree).
16806	Germany	2	Article 32.1.1	p. 32, Section B	It is reported that the National Management Plan for Radioactive Materials and Waste (PNGMDR), which is currently published for the planning period 2016-2018, “forms the subject of a strategic environmental assessment, an opinion from the Environmental Authority and a public consultation”. Will, in this context, the strategic environmental assessment be subject to a repeated actualisation for each future PNGMDR, e.g. the PNGMDR 2019-2021?		Yes

16807	Germany	3	Article 10	p. 162, Section G	It is reported that the current National Management Plan for Radioactive Materials and Waste (PNGMDR) 2016-2018 requires ANDRA to present a proposal on the types and quantities of waste to be included in the CIGEO reserve inventory by 2017. Could France please comment on how and with what result this requirement has been fulfilled?		Andra has transmitted in June 2017 a « Proposition of type and quantities of waste to be included in the provisional inventory of Cigéo ». This proposition indicates that the radioactive waste and materials to be included are : • Vitrified High Level Waste et Compacted and Technological Intermediate Level Long Lived Waste corresponding to lifetime increase of the nuclear installations taken into account for the scenarios on the basis of which the Natioanl Inventory is built (Edition 2018), • The entire Spent Fuel of Research Reactors and Metallic Spent fuel used in the nuclear propulsion systems of certain ships and submarines, • All the Spent Fuel from the operation of Nuclear Reactors (electricity production) that would not have been recycled in the existing dedicated facilties. The maximum values are defined by the non-renewal electro-nuclear reactor fleet scenario presented in the edition 2018 of the National Inventory, • The Bituminous Waste packages (stored by CEA) considered at the moment to be disposed of in the future Low Level long lived Waste dedicated disposal site (undergoing studies), • The «UNGG - La Hague » waste packages , today considered to be disposed of in the future Low Level long lived Waste dedicated disposal site (undergoing studies), • The graphite waste produced by CEA and EDF.
16981	Ireland	1	General	n/a		Ireland thanks France for its comprehensive national report.	France thanks Ireland for this comment
16982	Ireland	2	Article 28	J 3.2; pg 194-195	The PNGMDR 2016-2018 recommends that ADNRA (i) examines the possibility of reassessing the acceptance criteria for the CIRES and the CSA (ii) develops-as part of the project for a disposal facility for LLW-LL waste currently under design- preliminary acceptance criteria for disused sealed sources (iii) integrates, for the HWL and ILW-LL waste, the case of disused sealed sources in the preparation of preliminary acceptance specifications for the CIGEO project transmitted as part of the project safety options and (iv) presents at the end of 2017 a track record for the deployment of the management routes for disused sealed sources considered as waste in order to assess the implementation of the preceding recommendations. Can France provide additional information on the current status of these recommendations?		The disused radioactive sources (DSRS) LL-LL, ILW or HLW have been integrated in the inventory of the LL-LL and HLW disposal projects at the very early stage of their development. The preliminary waste acceptance criteria for the waste packages of the CIGEO project have been presented in the safety options files (reviewed by the ASN 2015-2017). These criteria cover all the waste packages envisaged in the initial inventory and thus answers to the recommandation n°25 of the PNGMDR. For the LL-LL inventory and consequently the design of the LL-LL disposal project, the intended DSRS to be part of the inventory will be subject logically along with the repository safety assessment developpment to a precise definition of the preliminary acceptance criteria. This approach answers to the recommandation n°24 of the PNGMDR.
16983	Ireland	3	Article 12	H 2.3.2.2; pg 172	Sludges resulting from treatment of the UP2-400 Effluents in La Hague. At the end of 2016, AREVA NC informed ASN that the process adopted for the treatment of the sludge in STE3 renders the conditions of operation and maintenance of the Facilities more complex. Can France provide additional information on any alternative strategy developed by AREVA NC for the treatment of such sludges?		A new process, potentially based on centrifugation and drying, is currently under study to provide the future waste disposal package.

16984	Ireland	4	Article 12	H 2.3.2.2; pg 173-174	Other AREVA NC Legacy Waste. The initially - planned calendar for the retrieval of this waste has drifted off target in the last few years and ASN considers that the deadlines must no longer be pushed back because the building in which this legacy waste is stored, are of an old design and do not comply with current safety standards. Can France provide additional information on whether AREVA NC has started the retrieval of the legacy waste produced by the UP2-400 Facility, in particular the waste form the HAO, the 130 silos and the Fission-Product Solutions stored in the SPF2 Unit?		Regarding the HAO waste, a specific hot cell to retreive and sort out waste before packaging is under construction, with a commissioning scheduled mid 2021. The waste retrieval from silo 130 is scheduled to start before the summer 2018. All the fission products solutions stored in SPF2 will be vitrified before end 2020 (more than 50% vitrifed today).
16985	Ireland	5	Article 26	F 6.3.1.3; pg 139	In March 2016, EDF informed ASN of a complete change in its strategy for the GCR reactors, entailing a decommissioning postponement of several decades. This change in strategy is linked to major technical difficulties in decommissioning of the reactors “under water” as had been initially planned. Can France provide additional information on the ASN assessment of this new EDF strategy in the context of the safety requirements applicable to the GCR Installations and of the regulatory requirements for decommissioning as rapidly as possible?		ASN have asked EDF to submit two files to explain its new strategy and how it complies with the law. These files are currently being examined by ASN. ASN performed an inspection in December 2017 in order to understand the process that led EDF to change its strategy and intends to set legally binding conditions for the operations of the next 15 years.
16986	Ireland	6	Article 26	F 6.3.2; pg 140	PNGMDR 2016-2018 recommends that ANDRA and the Licensees continue their efforts to reduce the quantities of VLL waste material waste by examining the possibility of recycling certain VLL waste. Can France provide additional information on any conclusions reached by ANDRA in relation to the possible recycling of certain VLL waste?		ORANO is now in charge of the most advanced contaminated steel recycling project. The contimated steel originates from the former Georges Besse I plant. The identification of use out of the nuclear industry is an important issue on which ORANO is working, in accordance with our authorities. The use of VLL crushed contaminated concret, under gravel form, to fill the void/empty space between the disposed of waste packages at the CIRES repository is being studied by Andra. The identified volume of such material to be produced are not yet sufficient to invest in an industrial grinder/crusher. New R&D projects have been initiated : electrical cables recycling and recycled concrete fabrication.
16987	Ireland	7	General	n/a		Areas of Good Performance/ Good Practice: • France has a requirement in its Public Health Code whereby the holders of sealed sources are required to have their sources retrieved after 10 years of possession, unless a holding extension authorisation is issued. (Article 28; J 3.3, page 195) • In accordance with Article L. 542-1-3 of the French Environment Code, the owners of intermediate level, long-lived waste produced before 2015 must package it no later than 2030 (Executive Summary 5.5.3.1, page 12).	France thanks Ireland for this comment
16988	Ireland	8	General	n/a		Challenges: In 2016, some thirty nuclear installations of all types (power and research reactors, laboratories, fuel reprocessing plants, waste treatment facilities, etc.) were shut down or undergoing decommissioning in France, which corresponds to about one third of the BNIs in operation other than the power reactors. The decommissioning operations are most often long and costly, involving the removal of massive amounts of waste and represent major challenges for both the Industry and the Regulatory Authorities.	France thanks Ireland for this comment

16958	Italy	1	Article 19	E, 78	Could France describe with more details the procedure for periodic safety review?	It is mentioned that safety re-assessments must be held every 10 years.	Article L593-18 of the Environment Code: "The operator of a basic nuclear installation shall periodically review his installation taking into account international best practices. This review must make it possible to assess the situation of the installation with regard to the applicable rules and to update the assessment of the risks or drawbacks that the installation presents for the interests mentioned in Article L. 593-1. , taking into account in particular the state of the installation, the experience gained during the operation, the evolution of knowledge and the rules applicable to similar installations. These reviews take place every ten years. However, the authorisation decree may set a different periodicity if the particularities of the installation justify it. For installations falling under Council Directive 2009/71 /Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations, the frequency of periodic reviews shall not be less than once every 10 years. Where applicable, the operator may provide, in the form of a separate report, items that he considers may be of such a nature as to affect one of the interests referred to in Article L. 124-4. Subject to this reservation, the periodic review report may be communicated to any person pursuant to Articles L. 125-10 and L. 125-11."
17017	Italy	2	Article 32	B, 48	Which are the acceptance criteria for bitumen packages at the CSA?	Radioactive waste management practices. Liquid radioactive waste. Para 6.1.2.1: For beta-gamma emitting effluents produced by the CEA, evaporation is applied in the AGATE facility in Cadarache. Then the concentrates are transferred to Marcoule to be treated and conditioned in the liquid effluents treatment station (STEL). Finally resulting sludges are embedded in bitumen matrices to form packages intended for disposal at the Aube disposal centre (CSA) or for storage pending the final disposal.	The bituminization process implemented at STEL treatment facility of CEA, will terminate operation by 2018 to be replaced by a cementation process. The waste acceptance criteria for bitumen packages to be disposed of at CSA are not differenciated to the cemented waste packages. They cover : - the containment properties of the waste form (waste + matrix) and especially the containment performance - the mechanical resistance (packages are stacked within a disposal vault) of the final packe (container + waste form) - the fire resistance technical test of the final package (container + waste form), - the irradiation resistance of the matrix in case of highly irradiating waste.

17020	Italy	3	Article 32	B, 48	1.Which are the acceptance criteria for bitumen packages storage in EIP? 2. Are there any differences with acceptance criteria for CSA? 3. Which is the experience of long term storage of bituminized waste, with reference to matrix or container degradation?	Solid radioactive waste. Para 6.1.2.2: On the Marcoule site, the multi-purpose interim storage facility (EIP) can be used to store LLW-LL and ILW-LL bitumen packages resulting from treatment of site effluents in the STEL.	1. Bitumen packages, because of their radiological and physicochemical characteristics, cannot be disposed of at the CSA. They are intended mainly for a future disposal centre dedicated to LL-LL waste and in some cases for an IL-LL disposal centre. 2. EIP's package acceptance criteria include long-lived radionuclides from bitumen packages and therefore differ from those of the CSA. These criteria must therefore be compatible with those of future LL-LL (sub-surface) or IL-LL (deep geological) storage centers. 3. Bitumen packages, from a safety point of view, are first checked at their arrival at EIP (surface contamination, X-ray, package condition, ...). During storage, some parameters of the installation are monitored in order to keep the packages in the best storage conditions and avoid their degradation. For instance, hygrometry is monitored and regulated according to the temperature of the incoming air to ensure the absence of condensation. In winter, the temperature is maintained by heating above 17 ° C. In summer, the air is dehumidified and maintained at outdoor air temperature. Temperature, relative humidity and pressure of the ventilation air are recorded continuously. In addition, a monitoring programme for packages in storage has been implemented for the first years of operation. It is based on X-ray imaging of some reference packages on a yearly basis to control the swelling of bituminous mixtures under the influence of radiolysis. Moreover, removals of bitumen packages stored at EIP are performed. These packages are brought back to a dedicated facility for opening, removal of the primary cask and examination of the inner surface of the overpack. All of these elements provide information on long-term storage behaviour
17302	Italy	4	Article 28	J, 93	1. Could France provide information on what kind of orphan sources have been found in France? 2. How orphan sources are managed according to art. 28 paragraph 1 in term of management and financial provisions responsibility?		1. In France, an orphan source is defined as a radioactive source whose activity is above the exemption threshold and which is not under the control of the declared or authorized owner (because it has been lost, abandoned or stolen, or because it has never been declared). Examples of orphan sources are very various. For example, very old sources in high schools or universities previously used for experiences, which have never been declared because the registration was not biding at this time. 2. Because the owners of such sources are not aware of their status by definition, they cannot provide the funds in advance for the recovery. Nevertheless, the owner is still responsible for the recovery (and to finance it). The conditions of the recovery are similar to other sources (article R1333-52 of the public health code), that means the recovery must be performed by an authorized sources' provider or, in last recourse, by the Andra.
17311	Italy	5	Article 25	F.5.1.2.2, 128	Could France specify if the dose levels triggering implementation of protective action have been revised within the EU BSS transposition process? In this context which is the protection strategy defined?	It is mentioned that the dose levels triggering implementation of population protection measures in a radiological emergency situation are defined by ASN resolution 2009-DC-0153 of 18th August 2009.	The EU BSS transposition process leads to introducing in the national regulation the reference level for emergency situation(100 mSv/y) and to maintain the interventionnal level (dose levels triggering implementation of protective action) stated by ASN. These dose levels will be set in a decree (and no more by an ASN resolution).
17312	Italy	6	Article 25	F.5.1.2.2, 128	Have the population protective zone (ZPP) and the heightened territorial surveillance zone (ZST) a predefined extension?		The delineation of ZPP and ZST depends on the circumstances of the nuclear accident (scenario). In real conditions, the ZPP and ZST should be proposed by IRSN, on the basis of modelisation and measurements.
17313	Italy	7	Article 25	F.5.2.4.3, 130	Have post-accident situations been included in the emergency exercises, and has CODIRPA played these exercises?		Post-accidents situations are regularly tested in exercices. Some CODIRPA members (ASN, IRSN, civil secrurity services, health department ….) attend these exercices at local and national levels.

17314	Italy	8	Article 25	F.5.2.4.4, 130	Are neighbouring countries invited to take part in French national exercises?		At least once a year, ASN organises a working group for neighbouring countries representatives related to one national exercice. In case of a nationale exercice on a BNI site close to the border, liaison officers from the neighbouring countries are invited and may be involved.
17315	Italy	9	Article 25	F.5.1.2.1, 127	Is PUI approved by ASN?		Yes
17331	Italy	10	Article 27	I, 191	Is this enforcement measure agreed between those authorities and ASN or is the consequence of joint inspection?	Regulatory authorities, other than ASN, may prohibit a shipment after detecting non-conformity with regulations.	Each one of the responsible authority take their enforcement measure, accorging to the powers they have been granted by law. They may follow joint or separate inspections.
17332	Italy	11	Article 27	I, 191	Is the annual inspection program on transport of radioactive material agreed by the different regulatory authorities?		ASN is an indepedant authority. However, if an other authority is interested in an inspection, ASN takes care of exchanging information with it.
17348	Italy	12	Article 24	F.4, 111	Does the operator provide, in the licensing documentation, an analysis of the possible accident scenarios involving unplanned or uncontrolled releases and the assessment of the relevant consequences in terms of radiological impact on critical groups of people concerned, with the aim of establishing ad hoc corrective measures?		Yes, this is required by articles 9 and 10 of November 2, 2007 decree, and precised in article 3.1 of the February 7, 2012 Order.
17358	Italy	13	Article 4	G, 118	Is it in place in France a Counterfeit, Fraudulent and Suspect Items (CFSI) program with regard to construction of casks for spent fuel storage?		ASN carries out yearly inspections of fabrication for all packages dedicated to nuclear materials. Concerning CFSI in a more generic way, ASN is working on establishing a dedicated action plan with some dedicated inspections, a whistleblowing system, reinforcement of the operator's duty related to supervision of its supply chain.
17359	Italy	14	Article 32	B, 37	Due to the recent decision of France Government to reduce the installed power by nuclear in the national energy mix, with the prevision of reduction of recycled material coming from nuclear activities to be reused in nuclear industry, is France considering, also in the light of the principle of reduction of waste, to introduce any practices for clearance of material?		There is no clearance level in France for VLLW. This kind of waste coming from nuclear installations are disposed of in Cires. The management of VLLW coming from decommissioning and the issue of clearance level will probably be part of the discussions within the national debate that is scheduled in the second half of 2018 for the futur national plan for waste management.The optimisation of the management of VLLW is also an issue to be discussed.
19237	Japan	1	Article 32.1.1	35	The report states that France generates a yearly output in the order of 400 TWhe of nuclear power (384 TWhe in 2016), which, in turn, produce an average of approximately 1,150 t of spent fuel every year in the Chapter B.2.1,page34. And it says that a nuclear fleet of 58 reactors, 22 of which are licensed to run with MOX fuel (up to one-third of assemblies) in the chapter B.2.3,page 35. From your experience, is there any significant differences between uranium fuel and MOX fuel in terms of reprocessing safety?		The specificity of MOX fuel (for example, the Pu content - close to 5% - in a spent MOX fuel is several times higher than that in a spent UOX fuel, only 1%.) and the related impacts notably in terms of criticality, thermal dissipation, and dosimetry are taken into account in the safety assessment when applying for MOX treatment authorization. There aren't additionnal risks to reprocess MOX fuel, only process parameters are to be modified.
19238	Japan	2	Article 32	68	The report states that the average annual waste production of HL Waste is 150m3 in Chapter 5.1. Annual production of radioactive waste. Since there is no HLW disposal facility in France, those HLW will be storage in the temporary facilities. Can you provide time frame from transition of temprary storage to final repository in French RW management policy?		During the instruction of the options safety cases (DOS) of Cigeo, Andra has provided a reference chronicle for delivery of ILW and HLW. Cigeo would be commissioned in 2030 and the delivery of HLW would start on 2075 till 2145. One or several storage pool should be commissionned by 2030 to prevent saturation of current storage capacities.
19239	Japan	3	Article 32	49	Pleas elaborate the developing status of a technologically innovative process known as the “cold crucible” to treat “UMo” spent fuels used in the gas cooled reactors (GCR). (p49,B.6.1.3)		2005 to 2007 : Launch of project and preliminary studies. 2008: Start of the full scale prototype in the research facility. 2009: August: setting-up of the cold crucible in a dedicated cell of the vitrification facility. December - Production of 3 inactive containers of solutions simulating Fission Products. 2010 : April : first production of a vitrified high level waste canister End 2017 : 420 canisters produced

19294	Japan	4	Article 20.1	89	Is the PSR periodically reviewed to ensure continuous improvement? Please provide concrete example of revised items in PSR in this review period?		The periodic review of each basic nuclear installation is conducted every 10 years. After the submittal of the periodic review file, ASN carries out an on-site review inspection to verify various regulatory and technical aspects indicated in this file. Then, a Resolution is drafted by the ASN setting the conditions for the operation of the installation and requesting organisational and technical improvements. ASN then checks the progress of these improvements.
19295	Japan	5	Article 20.1	89	How is the rate of BNI Tax decided? Please indicate whether nuclear operators can be involved in the process deciding it so that it isn't too heavy for them. And, if they can be involved in the process, please indicate measures taken by your government in terms of independency of the regulatory organization.		The taxes on basic nuclear installations (INB) are fixed in the annual state finance law. It is recalled that the Finance Act distinguishes between State revenue and expenditure and prohibits any allocation of revenue to a particular category of expenditure or service of the State; As a result, INB taxes are in no way linked to the expenditure of the Nuclear Safety Authority, whose expenditure is only identified and classified in the expenditure of the State as a whole. INB fees are set according to the category of basic nuclear facilities: reactor, processing plant, storage centre, research laboratory, etc. (10 categories). The annual amount of the taxes and their evolution from one year to the next is fixed in the finance law without formal consultation of the operators of the installations. This does not, of course, prevent informal consultations in order to prevent errors, omissions or misunderstandings. The independence of the Nuclear Safety Authority results essentially from its status (appointment of the president and members of the college for a fixed period of 6 years). It is not linked to the setting of taxes on BNIs in which ASN is no more involved than operators.
19347	Japan	6	Article 10	page 162	On page 162, it says “For UOX reprocessing and in accordance with the plutonium traffic balancing principle applied by EDF, the annual reprocessing flow is calculated so as to obtain no more than the precise quantity of plutonium necessary for fabrication of the MOX fuel.” What is the “plutonium traffic balancing principle,” and how is this principle checked by the administration? Also, how is the reprocessing amount, MOX fuel fabrication amount, and utilization amount planned, when there is a time lag between the separation of plutonium and the utilization of that plutonium?		The "plutonium traffic balancing principle" consists in avoiding to increase EDF's stockpile of plutonium. In consequence, a balance is seeked among the EDF's NPP fuel so that all the plutonium produced by reprocessing is used as MOX. The ministry in charge of energy is responsible for this nuclear matter accounting.
17073	Korea, Republic of	1	Article 26	F.6.1.3.5, p.135	(1) Is there the guidelines or regulations for the inspection of decommissioning completion conducted by ASN for delicensing? (2) Is EURSSEM used for radiation survey and site investigation after decommissioning? If not, is there any manual for that instead of EURSSEM? (3) How can regulatory body carry out the verification of site investigation result submitted by decommissioning licensee? Is there the guideline or regulation for the verification?		The operator must send a delicensing file to ASN on the basis of ASN guide n° 6, which precises the rules set in Article 40 of Decree 2007-1557. This file includes all controls made by the operator proving that there are no dangerous substances left. IRSN is mandated to do on-site second level expertise and measures. If dangerous materials remain, this must be in accordance with the file prepared by the operator in order to release the site with restrictions. That is also checked by IRSN. The file is submitted to the ASN college for authorization, possibly after official publication of the restrictions of use.
17074	Korea, Republic of	2	Article 26	F.6.1.4, p.135	(1) What are the main contents of ASN guide no. 14 and no. 24 revised in 2016? (2) What is the radiological criteria to decontaminate structures and soil? (3) Is there any process on making a decision for decontamination objectives and scope between ASN and licensee?		The content of Guide n ° 14 relates to the methodologies for the cleaning of civil engineering structures in BNIs, that of Guide No. 24 to the remediation of polluted soils in BNIs. This documents are available on the webpage of the French nuclear safety authroity. There is no radiological criteria to release structure and soil from the regulatory control. The licensee must apply the ASN reference procedure (see answer to the question 18004) .

17075	Korea, Republic of	3	Article 26	F.6.3.2, p.140	(1) What is the radiological criteria for reuse of VLLW? (2) If the radiological criteria for reuse of VLLW is same with material release criteria, 0.01 mSv per year, how can the derived standards for each radionuclide be calculated (for example, by using the different scinario)?		There is no clearance level in France for VLLW. This kind of waste coming from nuclear installations are disposed of in Cires. Some materials can be recycled if the licensee asks the Ministry in charge of nuclear safety for a derogation. In that case, the licensee has to submit a file explaining its project and the criteria to guarantee safety and radiation protection.
17076	Korea, Republic of	4	Article 6	G.3, p.158	Regarding the last paragraph of page 158 of section G.3, mentioning that there is currently no siting project for SNF management facility in France, (1) Does it mean any decision or detailed plan on when and how to select the site for SNF is deferred? (2) What is the plan for developing the disposal option and designing the disposal cask for SNF, which are closely related to the charateristics of disposal site?		In France, SNF are reprocessed, in consequence no siting process is ongoing for a disposal facility dedicated to SNF. Nevertheless, in case of a change in the energy policy that might lead to consider SNF as waste, the amount of SNF that could be directly disposed of in Cigéo is quantified in the reserve inventory of Cigéo. The technical feasibility of the direct SNF disposal is evaluated in the safety option file of Cigéo.
17077	Korea, Republic of	5	Article 24	F.4	F.4 describes the radiation protection for operating facility. (1) In general, sampling and analysis should be implemented before the gaseous radioactive effluents are discharged to environment. Please explain the sampling method, sampling time(duration), analysis frequency, and radionuclides to be analyzed, for particulates, noble gas, iodine, C-14 and H-3 in the gaseous effluents. (2) Sampling and analysis should be implemented before the liquid radioactive effluents are discharged to environment. Please explain the sampling method, sampling time(duration) and analysis frequency for difficult-to- measure radionuclides such as C-14, Ni, Fe, Sr-89, Sr-90 in the liquid effuents.		In general, sampling and analysis are implemented before the radioactive effluents are discharged to environment. Nevertheless, for a few radionuclides (e.g. carbon 14 or nickel 63), discharges can be realized without knowing analysis results (due to analysis delay). The sampling and analysis frequencies are fixed for each type of radionuclides. Some parameters may be monitored continuously (e.g. total beta activity of gaseous discharges), some parameters are measured on samples (e.g. tritium, carbon 14 and other fission or activation products in liquid discharges (after liquid homogenization by mixing) ; iodine, rare gases, tritium, carbon 14 and other fission or activation products in gaseous effluents). Samples may be taken daily (e.g. sampling of liquid discharges for some chemical parameters), weekly (e.g. sampling of gaseous discharges for H3 analysis), monthly (e.g. sampling of liquid discharges for total a analysis) or quaterly (e.g. sampling of gaseous discharges of C14 analysis). Details of the monitoring programm of the discharged effluents for each site is given in a site specific ASN resolution.
17078	Korea, Republic of	6	Article 32	F.4.2.1	Accoring to the section 4.2.1(classification of radioactive waste), radioactive half-life(100 days, 31 years) is used as a basis for the radioactive waste classification. Is there any technical basis for the half-life of 100 days and 31 years?		31 years is based ont the half-life of cesium-137, 100 days is based on approximately 10 times the half-life of iodine-131, which is abundant in the medical sector.
17079	Korea, Republic of	7	Article 25	F.5.1.2.1	It is stated that PPI(off-site emergency plan) is required by the regulations for certain BNIs, such as NPPs or research reactors in Section 5.1.2.1. What facilities do not require the PPI, and what is legal or technical basis for that exemption?		A list of kind of facilities needing a PPI can be found in the Article R741-18 of the Homeland security code. Such a plan is not required when the study of danger (mainly the FSAR) demonstrates the absence, in any event, of danger for the people or for the environment outside of the establishment.

17080	Korea, Republic of	8	Article 4	G.1.2.3	It is stated that each level of the company calls on the services for an Independent Safety Team(FIS) providing an independent opinion of how the nuclear licensee performs its duties in Section 1.2.3(EDF's safety policy). Couly you explain details of FIS's activities such as organization of FIS, legal position and reporting frequency of FIS' report and whether the FIS's report is open to the public?		The role of the independent safety oversight function (FIS) can be described as follows : each level of management shall implement an independent oversight system, the purpose of which is to independently assess the way the nuclear licensee fulfills its role ; the primary rule is to ensure that safety remains the overriding priority, while at the same time performing verification and providing management with support and advice. Each level within the company incorporates the independent oversight function into its adhoc organization in order to provide independent oversight at the appropriate level. At each management level, the independent oversight function reports to the leader of the respective level. In the event of a serious breach of serious nuclear safety rules, the independent oversight function shall raise the alert, reporting when appropriate to the upper management level within the organization. Established in 1982, EDF General Inspectorate of Nuclear Safety and Radiation Protection (IGSNR) is the most senior authority with an independent view of safety status and of actions taken to continuously improve nuclear safety throughout EDF group. The Inspector General is appointed from outside the company by EDF Chiel Executive Officer. The IGSNR covers the entire life cycle of the reactors operated by the EDF Group, from design and operation through decommissioning. The IGSNR focuses largely on in-field observations in the form of meetings and interviews, with the majority of its time devoted to discussions with personnel directly involved with safety matters. Every power station and engineering centre is inspected at least once every 3 years. The IGSNR provides an annual report presenting its safety assessment available on the company website (https://www.edf.fr/sites/default/files/contrib/groupe-edf/producteur-
17081	Korea, Republic of	9	Article 26	F.2.3.1, p.103, F.2.3.2, p.104	To be compliant with Article 20 of the Waste Act, operators must submit every three years to the DGEC a report describing an assessment of their long-term charges for waste management and decommissioning. (1) How does the regulator assess or review the decommissioning costs? (2) What kind of methodogy or criteria is applied to each category of cost structure or cost items?		Operators must submit every three years a report describing their assessment of their long-term charges for decommissioning as well as spent fuel and radioactive waste management. They also have to submit yearly an update of this report. This report and its updates include detailed annual cost estimates. (1) To ensure that the assessment is comprehensive and prudent, the regulator reviews the report. When appropriate, the regulator conducts sampling checks to focus on specific projects, on specific cost items or on specific categories of underlying assumptions. Common methods are utilized: examinations of procedures, records and documentation, discussions... The regulator also requests yearly the opinion of ASN to ensure that this report is consistent with the decommissioning strategy as well as the spent fuel and radioactive waste management strategy. The regulator regularly mandates external audits to have a detailed analysis of operators' hypothesis. Results of day-to-day supervision as well as results of external audits are officially reported to operators through follow-up letters to improve their assessment of long-term charges. (2) Specific methodologies are developed by each operator. These methodologies depend on the maturity of decommissioning projects and legacy waste management projects. To ensure that the assessment is prudent, the decree of 23rd February 2007 requires these methodologies to be based on: - An analysis of the different reasonably possible options to conduct operations; - On this basis, the prudent choice of a reference strategy;

17082	Korea, Republic of	10	Article 24	P.115 (F.4) P.237 (L.7.2)	Sections F.4 and L.7.2 describe the discharge limits of liquid and gaseous radioactive materials released during normal operation of a nuclear facility. (1) How did you set the discharge limit? Are the facilities and site-specific characteristics taken into account? (2) Are there any regulations regarding the periodic review of the discharge limit? (3) What are the sampling and analysis frequencies for each radionuclides to confirm the discharge limits are met?		1/ The French regulation (ministerial order of 7th February 2012 setting the general rules relative to basic nuclear installations) imposes that the limit values for emissions and effluent discharges are set on the basis of the best available techniques under technically and economically acceptable conditions, considering the characteristics of the installation, its geographical location and the local environment conditions. Consequently, these limit values are not fixed on basis of a dose constraint as it can be done in other countries. To fix the limit values, ASN takes account of the proposal made by the operator, based on the provisional discharges resulting from the operation of the installation under normal and degraded mode operations and taking account of the experience feedback for existing facilities. By doing this way, the discharge limits fixed by ASN are generally far below compared to what there would have been if based on a dose constraint. This way of processing applies for all nuclear installations in France, i.e. reactors and other installations. To fix the values, the local conditions of the environment are also taken into account. 2/ According to the regulation, the limit values are regularly reviewed, typically every ten years, at the same time as periodic safety review. They are updated as necessary, for instance to take account of evolution of regulation or technics. 3/ see above
17083	Korea, Republic of	11	Article 28	J. p.195	Sealed sources are described as returning to suppliers or exporting countries after ten years of possession. In some cases, France may have to return sealed sources to the exporting country or accept sealed sources that returned to France as the exporting country. In this regard, it is likely that the supplier of the sealed source is necessary to maintain design approval for the relevant sealed source package. Is there a national system or policy to support such practice in France?		The IAEA SSR-6 requirements are fully applicable. So a package must have a valid certificat or a valid conformity assesment.
17084	Korea, Republic of	12	Article 15	H, p.182	As described in section H.5.3, ANDRA sent ASN the periodic safety review file for the CSA in August 2016. (1) What are the major changes related to the long-term safety assessment (or uncertainty management) compared to the initial or previous safety assessment? (2) Are there any new issues that have been identified through the recent periodic safety assessment?		The licensee proposes a new (lower) seismic alea in order to define (reduced) strengthening works for the building structures of processing facilities : assesment on going Andra has proposed a technical approach for the long term stability for final cover slopes of the repository : assesment on going Some discussions have been held to precise the long term chemical risk assesment : inventory of chemical waste contained in the repository and exposition model hypothesis have to be refined

17085	Korea, Republic of	13	Article 16	H, p.184	As described in section H.5.1, ANDRA is in charge of drafting specifications for disposal of radioactive waste and for giving the competent administrative authorities an opinion on the waste packaging specifications. Each producer designs and develops the processing and packaging projects per type of final package and submits them to ANDRA for a check on conformity with the specification issued by ANDRA and to obtain final approval. (1) Should the specification developed by ANDRA be reviewed and approved by the regulatory body prior to its actual application? (2) Is there a procedure for the regulatory body to separately check whether the waste received and disposed at the disposal facility operated by ANDRA meets the specification?		1) The specification for disposal of RW developped by ANDRA is included in the autorisation files submitted to government. The safety nuclear authority will give an opinion based on an instruction of this files including the specification for disposal. The commisionning of the facility means acceptance of the specifications for disposal of RW. In fact, the safety authority approves the operational general rules of the licensee, and the main caracterisitics of these specifications are included in these rules. 2) Article 44 of the decree of 23 february 2017 relating to the national plan of waste management indicates that the waste producers must make an analyze of the acceptability in Cigeo of their RW processed. ASN gives an opinion on these studies. Chapter 3.3 and 3.4 of resolution 2017-DC-0587 of 23 mars 2017 relating to RW processing defines the procedure for a repository facility to receive RW. The regulatory body can check these provisions
17086	Korea, Republic of	14	Article 17	H, p.186	As described in section H.7.1.2, before the CSM facility enters the monitoring phase administratively, ANDRA has continued its efforts to address the durability issues of the repository cover. In the licensing process for the construction and operation permit, how detailed analysis is performed on the durability of the repository cover for the monitoring phase and how detailed is the closure and mornitoring plan of the operator required by the regulator?		The decommissioning plan submitted within the licensing application dossier has to precise methodological principles and the scheduled technical phases for the decommissioning.This decommissioning plan is updated during the operation of the facility. For example, for the CSM facility, Andra has to submit in the frame of the next periodic safety review dossier (2019) an updated decommissiong plan that precise the operations until the closure (implementation of the final cover of the repository, foreseen at 2060) and that set the differents monitoring phases during 300 years after closure. ASN expect a high level of description of the technical characterics of the final cover (taking into account all long term scenario and justifying long term stability of the cover).
17087	Korea, Republic of	15	Article 12	H	In Page 47, it is said that large component wastes such as reactor-vessel heads, steam generators and spent fuel pool racks were disposed of at the CSA or the CIRES. Please explain followings in detail; 1) how were radionuclide inventory evaluated for such wastes? Is Scaling Factor applied to evaluation? 2) how and by whom(Andra or regulatory body) were inventory evaluation results verified? 3) disposal methods (i.e., in disposal trench?, grouted after placement in trench?, etc.) 4) regulatory requirements for disposal of large components? 5) types of transportation container.		1) There are no standardized methodologies. The objective is to reach a realistic but conservative estimate of the associated inventory. From this objective, the method differs from a type of package to another (reactor-vessel vs. steam generator). In general the method involves sampling for radiochemical analysis, which will allow the determine the contamination ratios (scaling factor). This will lead to better estimate the contribution of the RN known to have soft/weak ray intensities, in the case their quantification is defined by calculus, from the literature or using a dose measurement and associated transfer function. For example, for the vessel-head: There is a gamma spectrometry measurement implemented on the underpart of the vessel and a transfer function is used to determine the non-measurable radionuclides, using the scaling factor. the activation contribution within the vessel-head is determined by activation modelling considering the history of the reactor in terms of neutronic flux. In a nutshell, the methods are various and their objective to adapt to the object and its specificities. 2) The waste producer uses a methodology which is reviewed by an Andra a Waste Acceptance Specialist. This specialist can rely on a measurement specialist working in the same team. In general, the acceptance of such non-standard waste packages is conditioned to an Authorization given by the Nuclear Safety Authority (ASN) through an administrative « letter of compliance: Article 26 ». In this particular framework, the Institut de Radioprotection et Sureté Nucléaire (IRSN, the ASN TSO) 26) support the ASN review by asking questions / requesting precisions.
17088	Korea, Republic of	16	Article 32	D.1.1, p.59	(1) How do you manage or regulate the spent fuel generated from nuclear powered fleet of Marine Nationale? (2) If Marine Nationale operates separate spent fuel facilities, how do you regulate them from a perspective of safety? How does regulator participate in safety regulation of these facilities?		The Marine Nationale spent fuel are outside the scope of the joint convention. We may nevertheless say that that the nuclear regulatory body for defense activities (ASND) regulates the storage of those spent fuel, pursuant a more precise program for their reprocessing.

17089	Korea, Republic of	17	Article 32	D.6, p.70	(1) For the reactors of which capacity is over 1,000MWth, or units BNI number 45, 46, 91 and 7, how much of radioactive waste is anticipated to be generated from decommissioning by type and level? (2) What is the plan for the processing and disposal of large waste products, such as reactor vessel or steam generator?		(1) For BNI 46 (two UNGG, 1,650 MWth and 1,700MWth) : 47,000 t very-low level waste ; 12,000 t low and intermediate level short-lived waste ; 8,500 low-level long-lived waste ; 15 t intermediate-level long-lived waste For BNI 45 (one UNGG, 1,920 MWth) : 14,000 t very-low-level waste ; 10,000 t low and intermediate level short-lived waste ; 2,600 low-level long-lived waste ; 8 t intermediate-level long-lived waste For BNI 71 (563 MWth) : 4,600 t very-low-level waste ; 2,300 t low and intermediate level short-lived waste ; 200 t intermediate-level long-lived waste (2) First, steam generators (from Chooz) were disposed of at the Cires in 2012 and 2014. Concerning reactor-vessel heads, after possible temporary storage, they are disposed of at the CSA.
17090	Korea, Republic of	18	Article 32	Figure 1, p.62	When spent fuel or radioactive waste is transported from the generation to the processing, storage or disposal facility, which specific regulations are applied to the transportation and which safety measures and process are required?		The European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), the Regulations concerning the International Carriage of Dangerous Goods by Rail (RID), the International Maritime Dangerous Goods (IMDG) code and also the technical instructions of the ICAO (International Civil Aviation Organisation) are integrally transposed into French law. Moreover, all packages must fulfil the safety functions of containment, radiation protection, prevention of thermal risks and criticality described in the IAEA document Regulations for the Safe Transport of Radioactive Material (SSR-6 and SSG-26). The Defence Code also applies for security aspects.
17417	Luxembourg	1	Article 32.2.3	D.3.2.1.2, p.63	According to para D.3.2.1.2. bitumen drums have been produced in the past, and it is stated that current capacities are sufficient to store all bitumen drums that already exist. Which repository are these drums supposed to go to? How are other risks related to bituminized waste (such as chemical risks and fire risks) addressed? What is the current amount of bitumen drums that need to go to a final depository		Two types of bitumen drums exist reagrding their activity: ILLLW and LLLLW bitumen drums. The ILW-LL bitumen drums are dedicated to Cigéo, they are in the inventory. The LLW-LL bitumen drums are dedicated to the LLW-LL repository. in case there is a problem with the project, as required by the environment code, these waste are also in the reserve inventory of Cigéo. They are adressed through the chemical caracterisation of these bitumen drums and through a robust conception of the ILW-LL cells to manage the fire risk. (LLW-LL + ILW-LL) bitumen drums : 60000 (stored by CEA) and 12000 (stored by Orano) Notional inventory 2015 belongs mainly to EDF, CEA and Orano.
17418	Luxembourg	2	Article 32.2.4	D.3.1.4, p. 61	Who is financially responsible for contaminated sites and soils linked to the Radium industry (for which the former owner probably does not exist anymore)? What is the estimated quantity of radioactive legacy waste that still needs to be retrieved?		The state (Ministry of Environnement) is financially responsible for contaminated sites and soils linked to the Radium industry, and there is a public fund for it atributed to ANDRA . More than one hundred sites are to be decontaminated. The amount of radioactive waste of this type is currently not yet evaluated precisely.
17419	Luxembourg	3	Article 12.2	H.2.4, p. 175	Are there defined periods within which known contaminated sites should be freed from contamination?		Contaminated sites must be cleaned up as soon as possible once contamination is known

17420	Luxembourg	4	Article 28.1	J.3.2, p. 194	Is our understanding correct that there is currently no strategy of handling disused radioactive sources that do not meet the acceptance criteria of CSA and CIRES, hence many “old” radioactive sources such as Am-241 or Ra-226? Is there an update on the PNGMDR 2016-2018 request to ANDRA to present (by 2017) a track record for the deployment of the management routes for disused sealed sources considered as waste?		Depending on the criteria, certain DSRS can be disposed of at the CSA or the CIRES. They concern lowactive/short lived or very low active/short lived sources. The current optimization scheme aims at extending the DSRS diposal capacity at the CSA by : - reassessing the maximum activity limit criteria per package - taking into account the specific caracteristic of certain DSRS with large dimensions for the definition of maximum activity limit - extending the acceptance to multi-radionuclides sources - accepting neutronic DSRS - accepting the simultaneous conditionning of DSRS and radioactive waste in the same package - studying the feasibility of direct disposal of specific ordinary sources having intrinsically no physical barrier The disused radioactive sources (DSRS) LL-LL, ILW or HLW have been integrated in the inventory of the LL-LL and HLW disposal projects at the very early stage of their development. The preliminary waste acceptance criteria for the waste packages of the CIGEO project have been presented in the safety options files (reviewed by the ASN 2015-2017). These criteria cover all the waste packages envisaged in the initial inventory and thus answers to the recommandation n°25 of the PNGMDR. For the LL-LL inventory and consequently the design of the LL-LL disposal project, the intended DSRS to be part of the inventory will be subject logically along with the repositopry safety assessment developpment to a precise definition of the preliminary acceptance criteria. This approach answers to the recommandation n°24 of the PNGMDR.
17421	Luxembourg	5	Article 28.1	J.3.3, p. 195	Are there related conditions that need to be satisfied to be granted a “holding extension authorization” after the first 10 years of possession of a radioactive source? How often can such an authorization be renewed?		The conditions required to the granting of a holding authorisation extension are specified in ASN Resolution 2009-DC-150 published on ASN’s website. The application must include in particular a recent control report on the source’s integrity performed by a certified organisation or IRSN, an opinion from the source supplier and the supplier’s commitment in retrieving the source at the end of the extension period and in keeping the financial responsibility for this retrieval. A maximum of two 5-years extensions is allowed.
17422	Luxembourg	6	Article 32	B.1.5.2, p. 32	What is the degree of humidity of the clay in the Soulaines and in the Bure region?		In Soulaines, the Aptian Clay has a humidity level of 19 % (extreme values 13- X - 23). In Bure, the Callovo-Oxfordian clay has a humidity level of approximately 6,5 % (± 1,2 %).

16526	Romania	1	Article 17	Section 7.1.2, Page 186	Regarding the tritium contamination of the water table at the CSM repository: a) Have you identified the causes of groundwater contamination? b) How were the lessons learned from this experience taken into account in designing and construction of L'Aube repository? c) Had this incident an impact in the public perception/acceptance of radioactive waste repositories? The communication programmes have been changed following this event?		The aquifer located at the hydraulic back-end of the Centtre de stockage de la Manche shows indeed Tritium contamination traces. These have been linked to an operational incident of one of the vaults, in 1976. This vault contains relatively high activity of tritium bearing waste. The vault was operated in open-air condition (no temporary protection against climate). During the diposing operation, the rain-water could infiltrate inside and beneath the vault. This incident was identified, as some tritium has been measured in the nearby stream "ruisseau de la Sainte Helene". The vault has then been treated: the most active waste packages have been reconditioned and sent for temporary storage in another facility. The stagnant water at the surface of the vault has been pumped and sent for treatment/conditioning to be then disposed of later in the CSM. Following the incident, the waste acceptance criteria for the Tritium bearing waste were updated in a conservative way. A water collection system was designed and installed in the newly build vaults, to manage the water in contact with waste packages separately from rain water. The lessons learnt taken into account for the design of Centre de Stockage de l'Aube were : - Conservative Tritium acceptance criteria for the waste packages, - a definition of radiological capacity for Tritium (at the disposal site scale) - the disposing operations in the CSA will be made under rain protection (mobile roof system), plus a concrete closure system - an underground water collection system (RSGE) to be installed for all vaults prior to their construction Following the incident at CSM, the surveillance and monitoring of surface and underground water have been drastically increased.
16527	Romania	2	Article 32	Section D.4. Page. 67	Will the Bure Underground Research Laboratory become a part of the Deep Geological Repository? Could you please elaborate on this issue? Is there cost estimation for design, construction and operation of this URL?		Bure Underground Research Laboratory will not be part of the potential future Deep Geological Repository Cigéo. The research carried out by Andra at this Laboratory is mainly based on setting up scientific experiments, in collaboration with many partners, and on conducting technological tests, directly inside the rock formation. The studies undertaken by Andra, particularly those performed from the surface or in the drifts of the Underground Research Laboratory, have enabled it to demonstrate the feasibility and safety of deep geological disposal in the sector assessed. The results, submitted to the French government in a report entitled Dossier 2005, identified an area of 250 km², known as the "transposition zone", surrounding the the Underground Research Laboratory, within which the geological formation liable to be used for disposal of the waste packages has similar properties as those observed at the Laboratory. The National Assessment Board (CNE) and the French Nuclear Safety Authority (ASN) assessed this Dossier and confirmed Andra's results. Following a public inquiry, Andra was granted authorisation to continue operating the Underground Research Laboratory until 2030. Since the end of 1998, when the French government announced that the site in the Meuse/Haute-Marne department had been selected to be the host of an underground research laboratory, 900 million euros have been spent in design, construction and operation of the URL.

16330	Russian Federation	1	General	3.2 p. 23	The Report says that “ASN will continue to monitor the implementation of the additional safety measures required following the stress tests and more specifically the AREVA proposals concerning the definition of systems, structures and components robust to extreme hazards and the management of emergency situations, in particular the degree of compliance with the new prescriptions. More specifically, for the La Hague site, the work done following the stress tests should be completed in the first quarter of 2017”. Stress tests were also performed for the Cadarache nuclear fuel cycle facilities. What are the results of these stress tests?		Stress tests led on Cadarache Site revealed that a fusion with severe consequences could happen in case of extreme natural conditions on Jules Horowitz reactor. This reactor is under construction and has not started yet. Therefore, ASN has required reinforcements to be implemented before the reactor is put on service. Key equipment participating in hard refrigeration and confinement so as electric equipment associated must resist extreme natural conditions. Automatic shutdown system has to be implemented on seismic detection. Moreover, a crisis center resisting extreme natural conditions has to be built, with automatic report of essential key parameters. There is no more fueld cycle facilities in operation in the Cadarache Center
16331	Russian Federation	2	Article 32	B.6	What kind of criteria are being evaluated (risks, costs, etc.) to choose the preferred and most feasible option regarding legacy RW disposal – whether to retrieve the waste and to dispose it of in a centralized repository or to perform necessary activities to enable its in situ disposal?		The criteria evaluated are notably the followings : environnemental risks for the in situ disposal, the economical and environnemental costs of a retrieval solution, possible actions to mitigate the risk of an in situ disposal. The question of long terms risk is also raised and has to be taken into account.
16332	Russian Federation	3	Article 32	2.2 p. 32	Vitrified high-level waste is currently being considered as a stable form suitable for HLW disposal. Have packages containing real glass (not mock up packages) been ever opened to demonstrate their stability?		Yes, in the eighties, during process qualification, CEA (Commissariat à l'Energie Atomique) performed analysis on high level activity waste glass samples contributing to the long term behavior assessment. The vitrified HLW canister has been approved by the French Safety Authority
16333	Russian Federation	4	General	A	The Report says that MOX-fuel is being reprocessed in France. Please, specify what are the reprocessing cycles for MOX-fuel as regards uranium and plutonium?		MOX-Fuel are considered as retreated in the reference inventory of Cigeo. Few dozens of tonnes of MOX fuel have been reprocessed. Spent MOX-fueld are disposed in La Hague pools, awaiting for reprocessing. However, most of the French MOX fuel is not reprocessed today.
16334	Russian Federation	5	Article 32	B.2	What kind of models are being used to calculate the authorized limits for discharges to the coastal area?		Dose impact is estimated every year from real discharges and from model of evaluation of dose impact, code named ACADIE, developed in collaboration with IRSN (Institut of radioprotection and nuclear safety).
16335	Russian Federation	6	Article 32	B.3.1, p. 36	The Report says that “recycling of uranium from spent fuel processing has been stopped in 2013 and its restart is under study”. What were the reasons for this? What is the current practice for managing the recycled uranium?		The recycling of uranium from spent fuel processing was suspended in 2013, given the lack of economic incentive in light of the significant oversupply of natural uranium and pending the availability of a new industrial scheme. The recycled uranium is currently stored in a stable form at Pierrelatte, Orano’s facility. EDF is studying the conditions for restarting reprocessing.
16336	Russian Federation	7	Article 32	Â.5.2.2	What is approximately the annual amount of VLL-LL and LL-LL waste generated due to operations not associated with nuclear power?		The non electronuclear waste generation does not follow a linear trend. The generation amount are linked to dismantlement or remediation activities. Considering this aspect, we have given below the average annual volume of generation over the last 13 years, from the latest updated data inventory (dec. 2015). Since 2003, the average annual volume of VLL Waste generated by non electronuclear industry is 17 700 m3. Since 2003, the average annual volume of LL LL Waste generated by non electronuclear industry is 3 850 m3
16337	Russian Federation	8	Article 32	Â.5.4	Where exactly the waste generated from decommissioning of uranium mining productions and facilities (contaminated equipment, debris and etc.) were disposed of: at relevant sites as tailings or in purposely designed disposal facilities?		The place where the uranium mining productions and facilities stood were remediated after decommissioning. The waste generated from decommissioning of uranium mining productions and facilities were disposed of on dedicated areas within the tailings disposal facilities.

16338	Russian Federation	9	Article 32	Â.6.1.3.2	What are the characteristics of the packages (material, wall thickness, life time) used for structural waste?		The structural waste are placed in cases, to be compacted. After this operation, they are stacked in a container of the same shape and dimensions as the container used for vitrified waste. Matrice: none Container: - dimension : h = 1 335 mm ; d = 430 mm - material: stainless steel - masse : 92,5 kg - biological protection: none Volume: 183 l Average mass of the waste packages: 700 kg
16339	Russian Federation	10	Article 32	Â.6.1.1	Please, indicate the amount of low-level or VLL annually recycled in the form of biological shielding for packaging? What are the activity limits for metals subject to melting in CENTRACO?		The amount of low-level or VLL annually recycled in the form of biological shielding for packaging is not public. The limits of activity for Centraco are listed in the ASN's resolution no 2008-DC-0126 (available on the ASN's website in French). Currently, for the metallic waste the limits are : 370Bq/g for the alphas, 20 000Bq/g for beta-gamma.
16340	Russian Federation	11	Article 32	Â.6.3	What exactly are the materials of solid covers placed at former uranium mines over the residues to act as a geo-mechanical and radiological protective barrier? Please, indicated whether such cover requires some periodic renewal? If so, what is the estimated lifetime of such covers?		The covers placed over the tailings consist of a layer of waste rocks (with a thickness that can be as much as 2 meters, depending on the disposal) and a upper layer of top soil allowing revegetation. In some case, the waste rock layer is compacted. To date, i.e. since its implementation over more than 20 years ago, no significant degradation of the cover has been observed. The operator is responsible for the periodic monitoring of the effectiveness and mechanical robustness of the cover under the supervision of the Authorities. He carries out maintenance operations to guarantee the performance of the cover.
16341	Russian Federation	12	Article 32	D.3.2.2.1	What is the radionuclide inventory of waste disposed of in CSM (average and maximum specific activities for major radionuclides)?		A total of 18,5 PBq in beta-gamma radionuclides have been disposed of, as well as 637 TBq of alpha radionuclides, for a total volume of 527 225 m3.
16342	Russian Federation	13	Article 32	D.3.2.2.2	What are the values of the estimated CSA radiological capacity for the following radionuclides: chlorine-36, niobium-94, technetium-99, silver-108m and iodine-129? What are the radiological capacity ratios corresponding to C-14 and Cl-36?		The order of magnitude of the licensed CSA Radiological capacity for the following radionuclides are : - Cl 36: 400 GBq - Nb 94 : 20 TBq - Tc 99: 10 TBq - Ag108m: 20 TBq - I 129 : 300 GBq - C 14 : 800 TBq The volumic consumption capacity of CSA (1 Million m3) versus the radiological capacity consumption do not follow the same path. Volumic capacity consumption is about 35 %. The average radiological capacity consumtion is 10 % except for Cl36, about 90 %.
16343	Russian Federation	14	Article 32	D.3.2.2.2	What are the methods used to monitor the radionuclide inventory including the identification of chlorine-36 content?		The scaling factor methodlogy is used by the waste producers. At the CSA, most the of Cl36 inventory is originated from Bugey NPP graphite waste. The Cl36 inventory previously determined for these waste, will probably be reassessed as new scaling factors will be defined.
16344	Russian Federation	15	Article 32	D.3.2.2.2	Please, indicate whether the list of radionuclides monitored during RW control procedure is dependent on the origin of waste?		Prior to authorizing the Waste producer to produce or deliver waste packages, Andra reviews the conditionning process, along with the methodology used for the RN qualitative and quantitative determination. The type of RN for a family of waste is logically linked to the industrial process implemented in the dedicated facility.

16345	Russian Federation	16	Article 32	D.3.2.2.2	Please, indicate, what kind of tritium bearing waste is disposed of in CSA?		At the end of 2017, 350 000 m3 of Low and Intermediate Short Lived Waste have been disposed of at the CSA. Approximately 90 000 m3 are tritium bearing waste. The major contributor in the tritium activity disposed of at the CSA are graphite waste and immobilized resins (used for water decontamination). Historical waste, such as objects (clocks or gauges meters) highly contaminated with tritum based paint with luminescent characteristics compose the second contributor of the trititum activity in the CSA radiological inventory.
16346	Russian Federation	17	Article 24	F 4, D 1.2.1	The Report states that “pursuant to the three Decrees of 12 May 1981, AREVA NC was licensed to build the UP3-A and the UP2-800 treatment facilities with the same capacity to treat spent fuel from light-water reactors (LWR) and an STE3 facility designed to treat effluents from both units before discharge into the sea.” Could you, please, indicate what are the clearance levels for such discharges into the sea?		The discharge limits are now fixed by ASN resolution n° 2015-DC-0536 of 22nd December 2015. The discharge of the most active effluent shall comply with the following limits : Beta and Gamma activity < 100 MBq/lit and Alpha activity < 100 kBq/lit. The authorized annual discharges don't exceed the values noted in chapter 7.2.2.2. of Annex L of the joint convention report.
16347	Russian Federation	18	Article 28	F, p. 114	Paragraph 4.1.2.4 Section F of the Report discusses the general rules relating to the management of radioactive sources. What are the current plans of France regarding the development of radioactive source production used in medicine and other purposes, for example, molybdenum, ruthenium and etc.?		The development of radioactive source production used in medicine is not in the scope of the ASN mission. ASN only controls the production, the transportation and the use of these sources.
16348	Russian Federation	19	Article 32	D.6	What amount of RW is expected to be generated from decommissioning of different types of nuclear facilities?		For Bugey 1 (UNGG reactor 1,920 MWth) : 14,000 t very-low-level waste ; 10,000 t low and intermediate level short-lived waste ; 2,600 low-level long-lived waste ; 8 t intermediate-level long-lived waste For Eurodif (gaseous diffusion enrichment facility) : 210,000 t very-low-level waste For Phenix (fast breeder sodium cooled reactor, 563 MWth) : 4,600 t very-low-level waste ; 2,300 t low and intermediate level short-lived waste ; 200 t intermediate-level long-lived waste
16349	Russian Federation	20	General	L 7.2.1.2 p. 238	Could you, please, provide some information on the currently performed actions to reduce the amount of tritium discharges into the ocean resulting from operations of the La Hague reprocessing plant?		Tritium is a pure β-emitter of low energy and of very low radio-toxicity. The "Best Available Technology" for tritium consists in favouring sea discharges because the related impact is very low (<0,1 µSv/year) and 1000 times as low as that discharge to an air emission for the same rejected quantity. It is therefore considered that tritium shall, as a first choice, be discharged among the liquid effluents; the result is that more than 99% of theTritium discharges from the La Hague plant are liquid (cf. Tables 38 & 40). No action is currently performed to further reduce the amount of tritium discharges into the sea. Potential evolution of treatment technics is regularly assessed in the reports "Best Available Technics" issued in the framework of the OSPAR Convention (last report issued by France : 2014)
18718	Slovakia	1	Article 20	Section E, part 3.1.3.2 / p. 91	What were the main results of the follow-up IRRS mission that took place in October 2017 taking into account especially human and financial resources in the area of nuclear safety and radiation protection?		From 1st to 9th October 2017, ASN received an international delegation of experts responsible for follow-up to the Integrated Regulatory Review Service (IRRS) international audit mission carried out in 2014, concerning all of the activities regulated by ASN. The IAEA report on this mission, published by ASN in 2015, issued 46 recommendations and suggestions. With 40 recommendations and suggestions applied, the 2017 mission, chaired by Bill Dean (NRC – American Nuclear Regulatory Commission), concluded that France had significantly reinforced the framework of its regulation and oversight of nuclear safety and radiation protection. Concerning human and financial resources in the area of nuclear safety and radiation protection, the report (published on ASN website www.asn.fr) states: “Since the 2014 IRRS mission some additional financial and personnel resources have been added and ASN has introduced efficiencies across its activities and improved its resource planning. ASN needs to continue to focus on resource management to assure it is able to meet upcoming work such as periodic safety reviews, the life extension of nuclear power plants and new responsibilities such as supply chain oversight and radioactive source security.”

18720	Slovakia	2	Article 25	Section K, part 2.1.1.5 / p. 203	In General Summary and in section K (part 2.1.1.5.) is indicated that the ARTEMIS mission is scheduled for January 2018. Did this mission take place? If yes, what were the main findings of the ARTEMIS mission? How many recommendations, suggestions and good practices were identified?		Yes, the ARTEMIS mission has been achieved. It was observed that France has established a framework for managing radioactive waste that covers all the issues and displays many strong points, particularly in terms of skills and its commitment to continuous progress. The report should be issued on IAEA's website by april 2018. No recommandation, 9 suggestions and 7 good practices were identied.
18781	Slovakia	3	General	General	Are there any legal provisions for the treatment of foreign radioactive waste (particularly in case of incineration of RAW)? If any, more detailed information on these provisions would be welcome (e. g. limits and conditions for effluents, the methodology of declaring the activity and nuclide composition of the imported and re-exported RAW, chemical composition of RAW and of the final product, etc.).		Article L. 542-2-1 of the French Environment Code provides that: “Radioactive waste may be brought into the national territory only for the purposes of processing or transfer between States. The entry of radioactive waste or spent fuel for processing or reprocessing purposes may only be authorized in the framework of intergovernmental Agreements and provided that the radioactive waste resulting from the processing of those substances is not stored in France beyond a date set by those Agreements. The Agreement shall specify the times at which thoses substances are expected to be received and processed and, where appropriate, the prospects for future use of the radioactive material that has been separated during processing. The text of the intergovernmental Agreements shall be published in the French Government Gazette.” Besides these generic conditions, there is no specific regulation applicable to the treatment of imported radioactive waste material.
19054	Spain	1	Article 4	SECTION G 1.1	Please develop the way that "decommissioning as rapidly as possible" principle is effectively implemented.		Law 2015-992 (TECV) : utilities have to declare their shutdown at least two years ahead. Then they have to submit a decommissioning file at most two years after the shutdown declaration. Then the file is processed for three years at most to set in a decree the conditions for decommissioning operations and the date the decommissioning has to be completed. According to article 8.3.1 of the BNI Order of February 7th, 2012, the duration of decommissionning should be justified.
19055	Spain	2	Article 5	SECTION G 2.3.1	For the case of La Hague reprocessing plants, please develop how is interfacing between the different units, as well as the "Domino Effect" taken into consideration during periodic safety review.		Risks involved by dangerous substances are assessed through European Seveso regulation, the methodology applied is the same as the methodolgy used in the chemical industry. On sites encompassing several BNI such as La Hague, methodologies and lessons learned from one periodic safety review (PSR) are taken into account straight in the next PSR performed on another BNI of the site.
19056	Spain	3	Article 9	SECTION G 6.3	Licensee's integrated management system includes provisions "to define appropriate effectiveness and performance indicators with regard the targeted objectives". Please develop the scope and characteristics of these indicators an provide an example for a given target.		Currently most of the indicator chosen by Licensee are linked to : - number of events, or ratio of gravity between events, - time to answer to ASN requirement, - collective dosimetry. Regarding licensee of facilities in decommssing, ASN opinion is that the indicators should be more driven by waste management process or on time taken for decommissining.

19057	Spain	4	Article 10	SECTION G 7.	Please describe how is the adaptability requirement of CIGEO facility taken into consideration during the design and future operation of the facility.		The adaptability of the Cigeo facility is defined as its capacity to be modified in the future in order to take into account new design hypotheses. The principal design hypothesis that could evolve with time is the waste inventory. National policy decisions may lead to send to the geological disposal (a) new waste streams or (b) materials previously considered as valuable (e.g. irradiated fuel currently treated for MOX production). Andra has carried out studies in order to insure the compatibility of the design of Cigeo with the necessary adaptations to accommodate new wastes: namely, the dimensions of the infrastructures (for the handling and transfer) and the modular organization of the disposal zones (substitution or addition of new disposal vaults). In any case, given the necessary cooling time before the disposal of irradiated fuel, disposal operations may not start before at least sixty years, giving enough time for the study of the detailed design modifications.
19058	Spain	5	General	SECTION K 1.1.2.2	Please describe the R&D activities targeting the management routes envisaged for graphite wastes disposal		The on-going R&D studies related to the Graphite waste in the view of their disopsal are : - Evaluation of the 14C release kinetics, especially the organic fraction, and determination of the organic molecules bearing 14C radionuclides ; - Characterisation of 36Cl and organic 14C retention in the cementary and natural materials. - Analysis of the graphite microstructure to better understand its evolution when disposed of ;
19059	Spain	6	General	SECTION K 1.1.4.1	Please describe the way in which ASN supervises AREVA split-up in order to preserve competencies and resources		Areva has been split in three branches (Orano, Technicatome, Framatome). Only Framatome and Orano are licensed for activities which safety is controled by ASN. Responding to a request from ASN to preserve at least equivalent the competencies and resources in these structures, Orano and Framatome signed several conventions (a total of 6) in which Orano precises the provisions adopted to maintain the competencies and resources at Framatome (expertise, engineering requirements, task force Orano to respond to major emergencies and crisis situations where the Framatome’s own resources and competencies means would not be sufficient to do so at the present time). Inspections in the Orano's and Framatome’s central services will be carried out in 2018 to monitor the practical application of conventions, in order to evaluate their efficiency and assess if dedicated means should be constituted by one the both entities. Consecutive measures will be assessed regarding the conclusions of these first inspections.

16664	Sweden	1	Article 22	Section F	The French funding system for decommissioning nuclear installations and managing their spent fuel and the resulting radioactive waste rests on the full financial liability of the producers of the waste. The funds remain with the industrial operators, rather than in an external fund, and they must set aside specific provisions in their accounts and constitute specific financial assets to cover the provisions. In 2016 the minister of energy set the reference cost of the CIGEO repository project at €25 billion (in 2011 Euro). • Is this cost fully covered by the NPP operators provisions? If not, how is the financing secured? • Is the reference cost subject to updates as design and construction of the repository project proceeds? What is the procedure and what is the role of ASN?		Under the control of the State, costs associated with nuclear decommissioning and radioactive waste and spent fuel management are financed by the nuclear licensees, in accordance with the polluter-pays principle. A system to secure the financing of long-term nuclear costs was thus set up by the 28th June 2006 Act. The licensees are required to assess these costs and must be able, today, to guarantee coverage of future cost by a portfolio of dedicated assets. • Yes, this reference cost is covered by nuclear operators' current provisions (EDF, Orano, CEA) and by their portfolios of dedicated assets, as required by Article L.594-1 of the Environment Code. To be precise, due to the use of a discount rate (in coherence with accounting rules), current provisions dedicated to CIGEO are estimated at €9.7 billion (in 2017 euro). • The ministerial order of 15th January 2016 specifies that this evaluation will need to be regularly updated and at least at the key steps in the development of the project (creation authorisation, commissioning, end of pilot industrial phase, periodic safety reviews). The procedure and the role of ASN are specified in Article L.542-12 of the Environment Code: "the agency [Andra] proposes an evaluation to the Minister in charge of Energy of the costs relating to the implementation of long-term management solutions for high and intermediate level, long-lived radioactive waste, depending on its nature. After receiving the comments from those liable to pay the additional taxes mentioned in V of Article 43 of the 2000 Budget Act (n° 99-1172 of 30th December 1999) and the opinion of ASN, the Minister responsible for Energy finalises and publishes the evaluation of these costs".
16665	Sweden	2	Article 22	Section F	ANDRA is a government-funded institution tasked with finding, deploying and guaranteeing safe management solutions for all French radioactive waste. ANDRA is financed through commercial contracts with the operators. The costs for research and design studies on the storage and deep geological disposal of high-level and intermediate-level long-lived radioactive waste are financed by different taxes and contributions levied on the radioactive waste producers. ANDRA for this receives more than 200 M€ every year. • What are the mechanisms for the funding of ANDRA's activities in construction and operation of a repository over the medium and long term? In terms of utilization of provisions NPP operators have set aside, revision of the use of funds, handling of increased costs over time and ensured long term financial stability of the NPP operator?		In relation withsurfacedisposal repositories, Andra signs a 5-years contract with the 3 main producers CEA/EDF/ORANO. Within this contract and on the basis of forecast inventory to be disposed of in the short term (3 years), the construction/disposal operations are financed by direct commercial channel. The long term activities (final cover of the surface disposal) are financed today as an item composing the price paid by the producers for the current disposal of each waste package. In relation with deep geological repository, a "research fund" has been created in 2007 and a "design fund" has been created in 2014. The "research fund" receives a tax (capped at 70 M€/year from 2017 on) according the following repartition rule: 78% EDF, 17% CEA, 5% Orano. The "design fund" receives a special contribution according to the same repartition rule. A "construction fund" will be created when the project is licensed and it will finance the construction, the operations, the closure, the maintenance and surveillance. Ressources allocated to the three funds come from the dedicated assets that producers must set aside in application of the regulation on financing of long term nuclear charges. Operators are fully responsible for all costs. Then, risk of increased costs are supported by operators.
16666	Sweden	3	Article 22	Section H	EDF considers (p. 103) that it has enough financial resources to meet the safety needs of each nuclear facility throughout its entire lifetime, including spent-fuel management, waste treatment and facility deconstruction. To what extent are uncertainties in decommissioning methodology and time frames accounted for with respect to the projecting of cost?		Concerning decommissioning, EDF takes advantage of its technical-economic model: centralized organization, with an integrated engineering, and standardized power plants (58 pressurized water reactors with the same design) for which EDF is both the conceptor and the operator. Thus, EDF benefits from an important experience return. For instance, the decommissioning of Chooz A (PWR) has started in 2007 and is planned to achieve in 2022. All the electro-mechanical elements have already been dismantled and EDF is currently carrying out the last step, i.e. the dismantling of the reactor-vessel. The progress of the work is conform with the planning and budget. However, in its last evaluation, ASN stated that the overall cost estimation by EDF was not sufficently detailed and justified.

16667	Sweden	4	Article 10	Section G		The Act 2016-1015 of 25th July 2016 provides a definition of reversibility applicable to CIGÉO deep geological disposal facility for high-level and intermediate-level long-lived radioactive waste and indicates its implementation conditions. Please elaborate on these conditions in the national presentation. • What is the main rational for reversibility? Additional assurance of operational safety, keeping the options open, public and political consent…?	The reversibility requirement stems from the public debate prior to the 2006 waste Act. The Act of July 2016 provides further details on this concept : "Reversibility is implemented through progressive construction, through the adaptability of the design and the flexibility of operation of a radioactive waste deep geological disposal facility, making it possible to incorporate technological progress and adapt to any changes in the waste inventory, more particularly as a result of a change in energy policy. It includes the possibility of recovering packages of waste already emplaced in the disposal facility, in accordance with procedures and over a time-frame consistent with the operating and closure strategy of the disposal facility."
16668	Sweden	5	Article 10	Section G	It is understood from the report that the period during which reversibility of disposal must be ensured cannot be less than one hundred years. • What is the starting point for this requirement? • To what extent does the 100 year requirement include provisions for the retrieval of waste packages after closure of (or part of) the repository. • Please elaborate on the implications (if any) on the long-term safety case and demonstration of passive post closure safety features.		1) The environment code demands that the decree for authorization of creation defines the period during which reversibility of disposal must be ensured. The code also states that this period has to be at least one hundred years. The starting point is not defined at this stage 2) The reversibility includes the possibility to retrieve waste packages still disposed of, under certain conditions and during a period that is consistent with the strategy in terms of operational phase and closure of the disposal. The main provision for the retrieval of waste packages during the operationnal phase is that the closure relies on a progressive closure. Reviews should be conducted on the implementation of the reversibility principle, at least every five years, in relation with periodic safety assessments 3) Provisions taken for reversibility during conception must ensure that the long term safety features won't worsen. The operator has to preserve the arrangements to meet the objectives and the functions to be maintained for the post-closure safety.
16669	Sweden	6	Article 32	Section B		FR is commended for its systematic and transparent process for planning its national programme for management of radioactive materials and waste. (The 4th national management plan PNGMDR for the period 2016-2018 was drawn up and transmitted to Parliament in early 2017, subject of an environmental assessment and a public consultation and based on a national inventory of radioactive materials and waste.)	France thanks Sweden for this comment
19185	Switzerland	1	Article 25	5.1.2.1, 127	Amongst others, one purpose of the PUI is to alert the public authorities. Do these authorities have a 24 hours on-call duty?		Yes
19186	Switzerland	2	Article 25	5.1.2.2, 128	For evacuation an effective dose of 50 mSv is defined. In case of emergencies close to the border and with respect on the HERCA-WENRA-Approach, what arrangements are made to prevent different protective actions on both sides of the border and what is the basis for this value?		France has developped close relationship with neighbouring countries nuclear autorities and public safety authorities. In such a case, French gouvernment would do his best to harmonise measures on both sides of the border. The value of 50 mSv comes from the optimised level defined in ICPR 63
19187	Switzerland	3	Article 25	5.2.4.4, 130	In the last section of the paragraph concerning emergency exercises it is mentioned that the exercises are the subject of an annual interministerial review. Are these exercises exclusively large-scale-exercises and if yes, how many of them are being proceeded per year? Are the licensees obliged to conduct smaller exercises supervised by the regulatory body and if so what kind of exercises are that?		Yes, these exercices are national large scale and are around 10 a year (12 in 2018) In addition, licencees shall conduct at least one smaller exercice a year on each site but some of then do even more. Those are not supervised by ASN but ASN checks their conclusions and lesson learnt during its on site inspections

19188	Switzerland	4	Article 32	3.2.2.1, 64-65	The Manche Disposal Facility (CSM) contains low-level and intermediate-level radioactive waste. We did not find detailed information about the waste at this facility and on how long-lived this waste is. The report states that the bituminous membrane covering the facility will be capable of protecting the disposal over a time frame of several hundred years. Other intermediate-level radioactive waste will be disposed of in a deep geological repository. Question: Is this disposal regarded as the final solution for this site? Or are there long-term plans to retrieve the intermediate-level radioactive waste from the CSM facility and to include it in the deep geological repository?		Andra has a detailed inventory of the disposed of waste in CSM. Taking into account the technical progress made along the year in terms of waste characterization, this inventory initially incomplete for the oldest waste packages has been rebuilt using conservative assumption. In 1996, the TURPIN Commission, mandated by the supervising ministries (Industry and Environment) to assess the closure and conditional use of the site, has appoved the rebuilt inventory. This inventory is used for dose impact calculation of the site and in the frame of the safety reassessment. This inventory is integrated in the, publicly released by Andra, National Inventory. On the basis of the studies performed by Andra in the safety (re) assessment reports, and additionnal assessments performed by the Turpin Commission and the French Safety Authority (ASN), it has been concluded that a potential retrieval of designated packages as "hot spots", even if technically feasible, is not considered valuable. All measures taken within the frame of the Surveillance regulatory plan, showw that the impact of CSM on human and environment is very low and below the natural radioactivity levels. Moreover, Andra has taken all measures (specific final cover adapted to the site specificities) to limit the long-term impact.
19189	Switzerland	5	Article 20	3.1.4.3, 92	ASN also relies on the opinions and recommendations from advisory expert groups (GPEs). The GPEs originate not only from universities and associations, but also from operators. How can a GPE coming from an operator avoid conflicts of interest when advising the regulator ASN? Why are representatives of operators not precluded from becoming members of GPEs?		GPE members are appointed for their competence, whether cross-disciplinary in nuclear safety and radiation protection fields, concerning certain types of facilities or activities, or specialising in a particular technical field. They come from civil society, industry, technical support organisations, university research laboratories, foreign safety regulators, etc., are appointed individually and do not represent the structure from which they come. In this respect, the GPE are not pluralistic groups. The selection and appointment process used by ASN for the GPE members aims at ensuring that not only are their skills complementary, but that the expert assessment on which ASN relies is transparent and that the decision-making process is independent. With a view to preventing any conflict of interest, ASN also asks those interested in becoming a GPE member to produce a declaration of interests. The ethical rules applicable to external expert assessments produced at ASN's request are defined in a document to be incorporated into the ASN internal regulations. The identification of a conflict of interest, with regard to a subject on the agenda of a meeting of an GPE, leads to the exclusion of the member concerned from this item on the agenda.
19190	Switzerland	6	Article 26	6.3.1.3, 139	The six gas-cooled reactors (GCR) of EDF shut down between 1973 and 1994 have not been dismantled, despite the fact that French policy requires operators to adopt a strategy for decommissioning in as short a time as possible and to evacuate all hazardous substances. In March 2016, EDF informed ASN of a complete change in its strategy for the decommissioning of the GCR reactors, entailing a further decommissioning postponement of several decades. ASN asked EDF to send it a number of files to demonstrate that this change still meets the regulatory requirements for decommissioning as rapidly as possible and for examination of this new strategy in the light of the safety requirements applicable to these installations. These files were expected for the end of March 2017 and the end of December 2017. Has EDF submitted these files? What is the new strategy of EDF, and does it still comply with the above-mentioned requirement?		EDF has submitted the files asked by ASN in March and December 2017. Those files bring information on how EDF fulfills the different requirements for the overall GCR programme (continuity of reactors dismantling operations) regarding safety options, risk mitigation for all reactors and all the decommissioning works that need to be done within the next 15 years. ASN has performed an inspection in December 2017 in order to get the reasons that lead to EDF new strategy, and will take a decision in 2018. ASN will regulate the following 15 years by a legally binding resolution.

18003	United Kingdom	1	Article 4	Section G Sub-Section 1.1 p.148-149	The National Report identifies a French legal requirement (via the TECV Act and the Decree of 28 June 2016) that shutdown facilities are decommissioned as rapidly as possible. In contrast it is widely recognised (see e.g. IAEA Safety Guide WS-G-2.1) that deferral of decommissioning may reduce the quantities of radioactive waste produced and radiation exposure, and may also permit technological improvements, although it does identify several disadvantages. Article 24 parts 1(i) and 2(i) of the Convention contains commitments to ensuring that radiation exposures and discharges are kept as low as reasonably achievable (ALARA). The principle of ALARA is also embodied in France's Public Health Code. Please explain how ALARA is achieved whilst also achieving the French legal requirement for prompt decommissioning following shutdown. To note, this also relates to Article 11 & 24.		The disadvantages of deferred decommissioning are:no dismantling by the disappearance of the operator and dedicated assets, obsolescence and aging of the installation, loss of knowledge and skills, deferral to future generations. Moreover, the decay of radioactivity is only true for power reactors and in particular in the early years. In the front end and back end facilitiess of the cycle, which contains majoritarly long-lived radioactive elements (U and Pu), the radioprotection advantage obtained by the decay of shor-lived elements is balanced by the risk increases over the years. In view of the major environmental hazards, it is important to dismantle as soon as possible and this does not exclude the application of the ALARA principle; the optimization of the process is based on a set of criteria for which immediate dismantling prevails. For this reason, the law in France request decommissionning as rapidly as possible.
18004	United Kingdom	2	Article 19	Exec. Summary Sub-Section 5.4.2 / p.11	The National Report Executive Summary briefly notes that "…licensees will need to continue to devote the resources necessary for rapid dismantling and to ensure a final state in which the entirety of the potential source term (dangerous substances, including those that are radioactive) has been removed". In contrast, Section F explains that delicensing ends when the operator is either able to demonstrate "no risk" (enabling free future use of the site) or, alternatively, that the operator "is not able to demonstrate the absence of any residual radioactive or chemical pollution" (enabling restricted future use). Neither outcome appears to require the removal of the "entirety of the potential source term". The different parts of the report appear to be inconsistent. Please clarify the radiological end-state. To note, this also relates to Article 19, section F sub-section 6.1.3.5 / p.135		ASN reference process for delicensing without land use restrictions is to remove all the dangerous substances from the site. If this process is not possible, the operator must justify it (technicaly and economically, or by a multi-criterion analysis for instance). If the remaining dangerous substance have an impact in case of change of use, the operator proposes restrictions for public use. These restriction are submitted to a public enquiry. At the end of the process, the site is delicensed with restrictions. So far, most of the sites that have been declassified are unrestricted delicensed. Only one was delicensed with use restriction.

18005	United Kingdom	3	Article 12	Exec. Summary Sub-Section 5.5.3 / p.12	The National Report notes that safety improvements have been required at the graphite storage silos at Saint-Laurent-des-Eaux. Some work to install a containment barrier is reported to have begun in 2007 (page 171 of the report) but it is not clear what the current status of this work. Also, the report notes that ASN is waiting for the completion of "additional studies" following the periodic safety review (page 172) and it is explained that the stress test file is currently being examined. Noting Article 12 part (i), to ensure that all reasonably practicable improvements are made to upgrade the safety of facilities, please clarify: (a) Whether the planned safety improvements at Saint-Laurent-des-Eaux that commenced in 2007 have been completed; (b) When the regulatory assessments of the "additional studies" and stress tests are expected to be completed; (c) Whether or not further safety improvements are foreseen. To note, this reference is also repeated Section H Sub-Section 2.1 / Page 168 & Sub-Section 2.3.2 / Page 171-172.	Ex-reactor graphite sleeves from gas-cooled reactors A1 and A2 are stored in two partially-underground silos at Saint-Laurent-des-Eaux. EDF is reported to be taking steps to improve safety but there are no specific details and it is not clear whether or not the work is complete. P. 171 notes that in response to requests for improved safety from ASN, EDF presented a solution in July 2007 to installing a containment barrier. This work was approved by ASN and work to start commenced in 2010. In 2015, ASN is reported to have completed its review of the commitments made in the PSR but it is stated that it is "waiting for the additional studies requested", which suggests there are outstanding areas and/or concerns that the regulator is not yet satisfied with. This is supported by comments on p. 168 that note that "the time frames of [recovery] operations are such ASN is obliged to demand that the safety of the installation be reinforced", citing the storage silos as an example. Stress tests were carried out on the storage silos and the results were supplied to ASN in December 2015. The review is stated to be ongoing. EDF is intending to build a new graphite storage facility to be ready by 2030 (p. 63) but the capability is not yet available. Nonetheless, it is reported that EDF is intending to start the recovery of graphite waste from the silo, although it is not clear where it is to be stored in the interim.	The planned safety improvements at Saint-Laurent-des-Eaux that started in 2007 have been completed, including the containment barrier of the graphite storage silos. Stress tests were carried out on the storage silos and the results were supplied to ASN in December 2015. The review is over. ASN gave its conclusions in November 2017 : the current level of robustness provides a satisfactory margin beyond the level of the reference solicitations of the safety demonstration. The next periodic safety review will be held in 2019.
18006	United Kingdom	4	Article 11	p.63 Section D Sub-Section 3.2.1.3	The National Report states that EDF plans to create a new facility by 2030 to store the waste graphite from the dismantling of the graphite storage silos at Saint-Laurent-des-Eaux; however, it also states that EDF has decided to start graphite removal without waiting for the waste disposal route to become available. Please provide more justification for the approach that is being taken and explain where the removed graphite wasted is going to be stored in the interim period following removal from the storage silo but prior to the availability of the new facility. To note, this reference is als repeated: Section H Sub-Section 2.3.2 / p.171-172	Ex-reactor graphite sleeves from gas-cooled reactors A1 and A2 are stored in two partially-underground silos at Saint-Laurent-des-Eaux. EDF is reported to be taking steps to improve safety but there are no specific details and it is not clear whether or not the work is complete. EDF is intending to build a new graphite storage facility to be ready by 2030 (p. 63) but the capability is not yet available. This appears to be to aim to meet a 2030 goal set by Article L. 524-1-3 of the French Environmental Code for ILW-WW waste packaging for waste produced prior to 2015 (p. 171). Nonetheless, it is reported (p. 172) that EDF is intending to start the recovery of graphite waste from the silo, although it is not clear where it is to be stored in the interim.	The commissioning by ANDRA of a waste disposal facility for graphite waste is planned by 2035 at earliest. But this schedule remains highly uncertain as shown by the implementation process for the graphite disposal over the past 15 years (the initial schedule as planned in the 2006 waste act was 2013). Therefore EDF considers that it might not be appropriate to keep the graphite sleeves in the Saint-Laurent-des-Eaux silos for additional decades. Consequently EDF decided to build a new storage facility located on the Saint-Laurent-des-Eaux site. The plan is to submit the application file by the end of 2019, with an authorization expected by 2023-24 and a projected commissioning date of the storage facility by 2028. The recovery of graphite sleeves in the silos would start once the storage facility is commissioned.
18011	United Kingdom	5	Article 11	Section H Sub-section 2.4 / p.175-176	The National Report outlines the process by which France manages the remediation of radiologically contaminated land from historical non-BNI sites. It explains that remediation is performed with the aim of reducing the exposure of individuals as far as is reasonably achievable. In cases where there is residual pollution after the work, the report explains that it is the decision of the Prefect of the department or region in which the site is located. This is informed by "the opinions of ASN and the classified installations inspectorate". Please provide details of guidance that is available to ensure consistency of decision making by Prefects and experience of its application. To note, this also relates to Article 12.	Much of French nuclear regulation is carried-out by national bodies (principally ASN and ASND); however, seemingly a little unusually, safety decisions (in choosing if/what land use restrictions to apply) for contaminated land with incomplete remediation are the responsibility of individual Prefects. This question is trying to ascertain if France has had any issues with consistency given the independence between different regions, and, regardless of that, whether anything is in place to try to ensure consistency in future.	The prefects ask ASN (regional offices) for its opinion. The local regional office work in close cooperation with the national level of ASN, that coordinates the regulation and the guidelines in the field of remediation of polluted soils. Consequently, the consistency of the decision making by the prefects is ensured through this process that allows sharing of information.
18012	United Kingdom	6	Article 24	Section F Sub-section 4.1.2.2 / p.113	The National Report notes that the national network for radioactivity monitoring (collating data from a number of monitoring bodies) is accessible to the public and has been since 2010. What has been the public response to the availability of these data, how regularly is it accessed and how?		The statistics for twelve months (from october 2016 to october 2017) show that : there are 26 % of returning visitors and 74% of new visitors ; the mean time of the sessions is 3min 8 s, for 15398 sessions, 11556 users, 52978 open pages.

18013	United Kingdom	7	Article 19	Section E Sub-Section 2.2.4.2 / p.79	The National Report states that “noteworthy” modifications to a basic nuclear installation are subject to either notification to ASN or to authorisation by ASN. A recent ASN resolution is due to be issued specifying the list of modifications that can be carried-out subject only to notification subject to the licensee’s in-house oversight system, with all other modifications requiring authorisation. How will ASN assure itself that the resolution is being implemented appropriately to ensure that safety significant modifications receive the appropriate level of scrutiny by the regulator? Please include in the response the regulators’ experience of any cumulative effects, in which individually safety significant modification are sub-divided into a number of individually less significant modifications that attract less scrutiny.	This sounds very similar to the UK regulatory approach and it seems pertinent to ask about the extent of regulatory reliance on licensees’ own modification categorisation systems and the scope for salami slicing.	The ASN Resolution n° 2017-DC-0616 relating to the BNIs' significant modifications was published on November 30, 2017. The classification of a modification in non-significant, significant (declaration or authorization) is carried out by checking the criteria indicated in this Resolution: general criteria (8 in number) and specific criteria (64 such as organisational, documentary, material, transport, etc.). As a result, it is not possible for the operator to downgrade a significant change by splitting it into several non-significant changes. Operators have until July 2019 to integrate the prescriptions of this Resolution in their management system. Subsequently, ASN will carry out inspections to verify its correct application.
18031	United Kingdom	8	Article 27	Section I p.189 - 190	Reference is made to the European Council Directive on the supervision and control of shipments of radioactive waste and spent fuel (Council Directive 2006/117/Euratom). Are any shipments also subject to an agreement under the European Council Directive on the safe management of spent fuel and radioactive waste (Article 4(4) of Council Directive 2011/70/Euratom)? If so, please provide details.	The French report states “With regard to the organisation of transboundary movements, France applies all international, European and national safety, transport, security, physical-protection and public-order regulations, including the prescriptions of 2006/117/Euratom Council directive of 20 November 2006 concerning the monitoring and control of radioactive-waste and spent-fuel transfers, as transposed in internal law by Decree No. 2008-1380 of 19 December 2008 and codified in Articles R. 542-34 to 66 of the Environment Code.”	The article 4.4 of Council Directive 2011/70 Euratom provides that "Radioactive waste shall be disposed of in the Member State in which it was generated, unless at the time of shipment an agreement, taking into account the criteria established by the Commission in accordance with Article 16(2) of Directive 2006/117/Euratom, has entered into force between the Member State concerned and another Member State or a third country to use a disposal facility in one of them".France has not transposed this provision into its national legislation and no agreement for a shipment of radioactive waste or spent fuel has been concluded on this basis. The single existing international agreement is a Franco-Monegasque agreement of 9 November 2010, which provides for the possibility of authorizing, under certain conditions, the management of radiocative waste from the Principality of Monaco on the French territory. This agreement has been signed before the adoption of the EU Euratom Directive 2011/70 and therefore not pursuant to the provisions of its Article 4.4.
17719	United States of America	1	Article 32	Executive Summary pg. 11		The U.S. commends France for the recent decree (23 February 2017) setting forth the requirements for the current National Management Plan for Radioactive Materials and Waste (PNGMDR) and specifically the provision of the PNGMDR that promotes informing and actively involving citizens in the process of setting and implementing policy for management of radioactive waste.	France thanks the United States of America for this comment
17720	United States of America	2	Article 10	Section Executive Summary pg. 13	Please provide a summary of the findings of the Nuclear safety authority on the safety options report (DOS) submitted for the Cigeo project.		ASN has published its opinion of 11th january on the safety options report (DOS). The document is available on asn 's website : http://www.french-nuclear-safety.fr/Information/News-releases/ASN-considers-that-the-Cigeo-safety-options-constitute-a-significant-step-forwards
17721	United States of America	3	Article 28	Section Executive Summary pg. 14	Please provide a summary of the report provided by the National Agency for Radioactive Waste Management (ANDRA) on the optimized scheme for management of disused sealed sources.		Depending on the criteria, certain DSRS can be disposed of at the CSA or the CIRES. They concern lowactive/short lived or very low active/short lived sources. The current optimization scheme aims at extending the DSRS diposal capacity at the CSA by : - reassessing the maximum activity limit criteria per package - taking into account the specific caracteristic of certain DSRS with large dimensions for the definition of maximum activity limit - extending the acceptance to multi-radionuclides sources - accepting neutronic DSRS - accepting the simultaneous conditionning of DSRS and radioactive waste in the same package - studying the feasibility of direct disposal of specific ordinary sources having intrinsically no physical barrier

17722	United States of America	4	Article 32	Section D pg. 67	Please provide additional details on what regulatory modifications would need to be made to increase the capacity of the CIRES site. What other options are currently being explored to increase the capacity of the site?		The increase of volumic capacity - established on the engineering aspect - would be implemented at constant licensed disposal area surface. The capacity increase is due 3-dimensional optimization of disposal cells. An administrative Order from the regional authorityt "Arreté Préfectoral" has fixed the surface and associated volumic capacity to be disposed of. The evolution of the capacity would request a modification of this administrative Order (Authorization).
17723	United States of America	5	Article 18	Section E pg. 72	The report notes "the consistency of safety control is ensured by a constant interaction between regulatory authorities whose high officials meet frequently. General regulations applicable to several types of facilities are being developed by joint working groups. Although informal, those contacts are very effective." Please elaborate on how France maintains a consistent approach for safety controls without a formal structure for these interactions.		For general regulation about nuclear safety and radiological protection, main principles are set in legal documents such as laws, decrees and ministerial orders, that are proposed or taken by the governement. Thus, consistency is achieved accross the different agencies and authorities, refering to the same regulatory framework. On the operational level, ASN (safety authority for civil activities), ASND (safety authority for defense activities), and the ministry of environment (security authority and supervising body for other industrial activities) have mutual agreements and formal conventions that set the rules for frequent technical exchanges, joint inspections, sharing of documents and information and periodic meetings of the directors general. This allows for effective and quality interaction, aiming at a consistent approach accross the various type of installations.