

Regulatory Updates

Nuclear safety...

ASN issues its opinion on the safety options for the EPR new model reactor and its EPR 2 upgrade

July 2019

ASN issues its opinion on the safety options file for the EPR new model (NM) reactor project, for which the new technical configuration is called EPR 2: ASN considers that the general safety objectives, the safety baseline requirements and the main design options are on the whole satisfactory. It takes account of the recommendations of ASN guide n° 22 relative to the design of pressurised water reactors.

The ASN opinion identifies the subjects requiring further examination with a view to a possible reactor creation authorisation application. Additional demonstrations are more specifically required with regard to the break preclusion approach for the main primary and secondary system piping, the approach for dealing with hazards, notably fire and explosion, and the design choices for certain safety systems. In any reactor creation authorisation application, EDF will therefore have to specify the additional studies and demonstrations provided in response to this opinion, along with any resulting changes to the safety options.

The EPR 2 reactor is a pressurised water nuclear reactor project being developed by EDF and Framatome. It meets the general safety objectives of the third generation of reactors; its aim is to incorporate design, construction and commissioning experience feedback from the EPR^[1] reactors as well as operating experience feedback from the nuclear reactors currently in service.

To date, EDF has not identified a site for this reactor project. For the design of the reactor, EDF has adopted hypothesis chosen in order to cover a range of sites liable to host such a reactor in France. ASN reviewed the safety options dossier with the help of the Institute for Radiation Protection and Nuclear Safety (IRSN). The opinion of the Advisory Committee for reactors (GPR) on this project was obtained in January 2018, and ASN also got observations from the public on the EDF dossier and on a draft opinion between 13th May and 2nd June 2019.

[1] EPR reactors are currently under construction or in service at Flamanville (France), Olkiluoto (Finland), Taishan (China) and Hinkley Point (United Kingdom).

ASN publishes the English version of its report on the state of nuclear safety and radiation protection in France in 2018

July 2019

The report is now available on ASN's website <http://www.french-nuclear-safety.fr/Information/Publications/ASN-s-annual-reports>

ASN requires additional reinforcement of the embankment protecting the Tricastin NPP

July 2019

In a resolution dated 25th June 2019, ASN requires that EDF carry out additional reinforcements on a portion of the Donzère-Mondragon canal embankment protecting the Tricastin nuclear power plant (NPP) and ensure that this portion of the embankment is monitored.

On 27th September 2017, ASN ordered temporary shutdown of the four reactors of the NPP owing to the risk of failure of a 400-metre long portion of the canal embankment, in the event of an earthquake, that could lead to a nuclear fuel melt accident in the reactors, while at the same time making it particularly difficult to deploy the on-site and off-site emergency management resources.

After the reinforcement of the portion concerned by EDF, to ensure that it could withstand the safe shutdown earthquake^[1] (SSE), [ASN approved restart of the reactors in December 2017](#).

EDF plans to carry out additional work on this embankment so that it can withstand the extreme earthquake^[2] defined after the Fukushima accident. The resolution adopted by ASN on 25th June 2019 requires that this reinforcement work be completed no later than the end of 2022. In the meantime, it also regulates some of the actions to be carried out by EDF, more particularly:

- tightened monitoring of the embankment;
- the steps to be taken in the event of a rise in the piezometric level^[3];
- retaining the human and material resources (backfill, construction machinery, etc.) so that the necessary work could be carried out to repair any damage resulting from an earthquake.

[1] The SSE is the earthquake considered in the nuclear safety case of basic nuclear installations. It is calculated using a deterministic approach detailed in basic safety rule n° 2001/01 of 31st May 2001.

[2] ASN asked EDF to check the resistance of the existing equipment in the "hardened safety core" to an extreme earthquake. The intensity of this earthquake is greater than that of the SSE.

[3] Water level inside the body of the embankment.

ASN and ASND issue a joint position statement on CEA's decommissioning and materials and waste management strategy

July 2019

Thirty-nine CEA nuclear facilities have been finally shut down or are being decommissioned. This number has been constantly rising for the past few years. Since the 2000s, ASN and ASND – the Defence Nuclear Safety Authority – have observed significant delays in the decommissioning and waste retrieval and conditioning (RCD) projects.

Given the number and complexity of the operations to be performed for all the nuclear facilities concerned, CEA defined priorities based primarily on analysis of the potential hazards, in order to reduce the risks presented by these facilities.

However, in the light of the planned timetables presented, even if there are no unforeseen events and delays in the projects, risk reduction will not be effective before a decade at best. Numerous RCD projects, classified as high-priority, require the creation or prior refurbishment of the retrieval, conditioning and storage resources for radioactive waste and materials, along with the corresponding transport operations.

Following the analysis of the CEA's file on this topic, ASN and ASND observe several weak points in CEA's strategy, notably owing to the envisaged pooling between centres, for example for managing aqueous radioactive effluents or solid radioactive waste which means that, for certain operations, there would only be a single facility. This strategy leads on the one hand to a significant rise in the number of shipments and, on the other, to considerable uncertainties regarding the availability of the radioactive materials and waste treatment, conditioning and storage facilities, as well as of transport packagings. They also note uncertainties regarding the management of spent fuels or irradiated materials, which will need to be clarified.

ASN and ASND thus submitted a number of requests to CEA with a view to remedying these weak points, consolidating its strategy and clarifying the performance schedule.

In this framework, they also ask that CEA regularly report on the progress of the decommissioning and waste management projects and that regular communication with the public be instituted, in accordance with procedures appropriate to the nature of the facilities, whether civil or defence.

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www.french-nuclear-safety.fr

Deviations on the Flamanville EPR steam lines: the eight penetration welds will have to be repaired

June 2019

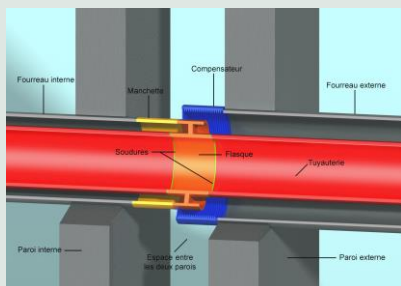


In a letter of 19 June 2019, ASN informed EDF that, in the light of the numerous deviations in the production of the Flamanville EPR penetration welds, they would have to be repaired.

In 2018, EDF had proposed an approach aiming to justify maintaining these welds as they were. ASN then considered that the outcome of such an approach was uncertain and had asked EDF to begin preparatory operations prior to repair of the welds located between the two walls of the reactor containment.

EDF's approach was reviewed by ASN, with technical support from IRSN, including consultation of the Advisory Committee for Nuclear Pressure Equipment (GP ESPN).

In its opinion of 11 April 2019, the GP ESPN notably considered that the nature and particularly high number of deviations in the design and production of these welds were major obstacles to the application of a break preclusion approach.



In a letter dated 7 June 2019, EDF asked ASN for its opinion on the possibility of repairing these welds in about 2024, after commissioning of the reactor. In its letter of 19 June, ASN notes that the repair of the penetration welds prior to commissioning of the reactor is technically feasible. Postponement of the repair operations until after reactor commissioning would pose a number of problems, notably with regard to demonstrating the safety of the reactor during the interim period. ASN therefore considers that repair of the welds concerned before commissioning of the reactor is the baseline solution.

 [For more information
www.french-nuclear-safety.fr](http://www.french-nuclear-safety.fr)

ASN defines the new methods for evaluating ionising radiation doses delivered to patients for medical imaging procedures and updates the corresponding diagnostic reference levels

June 2019

In a resolution dated 18 April 2019, ASN updates and clarifies the methods for evaluating the ionising radiation doses delivered to patients during medical imaging procedures, in order to help control these doses.

In France, exposure for medical purposes is the leading source of artificial exposure of the population to ionising radiation. This exposure is increasing, mainly due to the greater number of examinations using computed tomography (CT) scanners. In addition, the number of fluoroscopy-guided procedures and their complexity have increased significantly in recent years. These procedures can entail high levels of exposure for the patient.

Diagnostic reference levels (DRL) are used by professionals to optimise the ionising radiation doses delivered to the patients, in order to reduce exposure, while preserving the quality of the images obtained in order to achieve the desired clinical objective. The DRL are not dose limit values: they enable the professionals to evaluate their practices by comparison with these reference values. These values, set out in an ASN regulation, need to be regularly updated to take account of changing practices and technologies. These levels are defined for the most common practices, but also for those entailing the highest level of exposure. The ASN resolution 2019-DC-0667 of 18 April 2019 updates the DRL for dental and conventional radiology, computed tomography and nuclear medicine procedures. For the first time, DRL have also been defined for certain fluoroscopy-guided interventional practices.

This resolution requires that the party responsible for the nuclear activity carry out dosimetric evaluations in paediatrics in addition to those hitherto performed on adults. It specifies how the data are collected, confirms the need to analyse the dosimetry values collected, in order to optimise the doses delivered to the patients and recalls the obligation to send the data thus collected and analysed to IRSN.

Overexposure of the hands of personnel in the nuclear medicine department of the Réunion Island University Hospital

June 2019

On 6 May 2019, the Réunion Island University Hospital in Saint-Denis notified ASN of a significant event that occurred in its nuclear medicine department. Further to malfunctions affecting an automated injector for radiopharmaceutical, several workers suffered radiation exposure to the hands in an unusual manner.

In nuclear medicine departments, examinations are carried out by injecting patients with a radioactive drug solution called "FDG" containing fluorine-18, in order to obtain images by positron emission tomography (PET scan). This liquid can be injected manually or using an automatic injection device.

On 2 May 2019 at the Réunion Island University Hospital, a series of malfunctions affecting an injection device of this type caused the bottle containing the drug to overflow inside the injector. To remedy this problem, the device was opened and several people proceeded to remove the surplus radioactive liquid. During this operation the workers were exposed to a radiation dose that is likely to have exceeded the annual limit for exposure to the extremities (hands) set by the Labour Code.

In view of this exceedance, ASN is provisionally rating this event level 2 on the INES scale (international scale of nuclear and radiological events, graded from 0 to 7 in increasing order of severity).

An initial analysis of the event by a multidisciplinary team within the hospital revealed that several internal procedures were not duly followed. Corrective actions were implemented immediately to ensure that such an event could not occur again, pending a more detailed analysis and the implementation of lasting corrective actions. The workers concerned were examined by occupational medicine and are now subject to medical monitoring.

 [For more information
www.french-nuclear-safety.fr](http://www.french-nuclear-safety.fr)

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