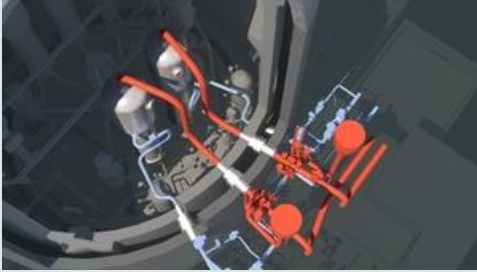


Regulatory Updates

Nuclear safety...

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

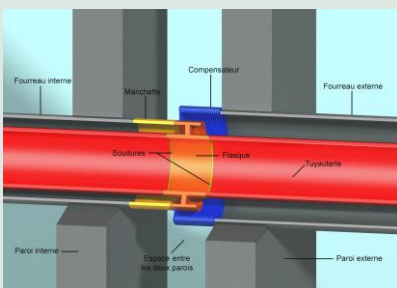
June 2019




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)

Flamanville EPR project monitoring May 2019

ASN published the [Information Letter No. 21](#) reporting on its actions for monitoring the Flamanville 3 EPR reactor construction site and the various manufactured items intended for it.

The significant points in 2018 and early 2019 are in particular about:

- Deviations detected during performance and inspection of welds on the main secondary systems (see the left column on this page);
- Authorisation for commissioning and operation of the reactor vessel. On 9 October 2018, ASN authorised the commissioning and operation of the Flamanville EPR reactor pressure vessel, subject to the performance of a test programme to monitor thermal ageing, in addition to specific inspections during operation of the facility. As the current state of knowledge does not enable the feasibility of these inspections to be confirmed for the vessel closure head, ASN set a service life limit at end of 2024 for the existing vessel closure head;
- Monitoring of the reactor engineering activities. The inspection performed on 5 December 2018, concerning equipment qualification, revealed shortcomings in the processing and lifting of the qualification reservations^[1] identified by EDF and its suppliers. These shortcomings, already observed during a previous inspection, led ASN to serve EDF with formal notice to produce and keep proof of qualification of the Flamanville EPR reactor equipment. EDF undertook to comply with the provisions of the "[BNI order](#)" and its proposed measures are considered by ASN to be satisfactory. ASN will periodically check the progress of the action plan implemented by EDF.

[1] *Technical points to be resolved before being able to declare qualification of the equipment.*



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

ASN report on the state of nuclear safety and radiation protection in France in 2018

May 2019



On 16 May, ASN presented its report on the state of nuclear safety and radiation protection in France in 2018 to the Parliamentary Office for the Evaluation of Scientific and Technological Choices (OPECST). This report was handed over to the Presidents of the Senate and the National Assembly, and to the President of the Republic and the Prime Minister. It is today published on www.asn.fr (French version only^[1]).

In this new edition, ASN wishes to highlight the assessment of the state of nuclear safety and radiation protection per licensee and per main field of activity. It proposes a review of regulatory news and concise summaries of "notable events":

- Welds on main secondary systems of the Flamanville 3 EPR reactor,
- 4th periodic safety review of the 900 MWe nuclear power reactors,
- Consistency of the nuclear fuel cycle, and
- National Radioactive Materials and Waste Management plan.

In addition, a "regional overview" of nuclear safety and radiation protection is the core of the report, and allows an easier consultation by geographical entry.

When this ASN report was presented to the OPECST, the exchanges with the members of Parliament more specifically concerned:

- The deviations detected in the production of certain welds on the main steam transfer pipes of the Flamanville EPR (see the news at the back of this page);
- ASN's financial resources, which are today under pressure. ASN asks for the creation of a specific budget programme for the regulation and oversight of nuclear safety and radiation protection, placed directly under the responsibility of the ASN Chairman.
- Changing regulation and oversight. With a constant volume of 1,800 inspections per year, ASN is focusing its inspections on those activities for which the risks are greatest. It is also strengthening its presence in the field. Finally, it is adapting its inspection methods, notably to take account of possible fraud situations.

[1] *English version to be published soon on 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.



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

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.

A worker exceeds the regulatory annual radiation exposure limit

May 2019

On 24 April 2019, ASN was informed by the company Eiffage Énergie Système - Clevia Ouest, of a significant radiation protection event involving a worker who exceeded the regulatory annual ionizing radiation exposure limit.

The worker concerned carries out climatic control and energy maintenance services on the sites of customers of Eiffage Énergie Système. Some of these sites perform nuclear activities that can expose the workers (internal or external) to ionising radiation. As a prevention measure, this worker was subject to individual dosimetric monitoring.

The individual dosimetry results indicated that the worker apparently received an effective dose of 156 millisieverts (mSv) between October 2018 and January 2019. As a "non-classified" worker, by virtue of the regulations this person was not authorized to receive an annual dose exceeding 1 mSv. The effective dose measured is to be compared with the regulatory annual exposure limit for "classified" workers which is set by the Labour Code at 20 mSv. Such a dose is not likely to cause an immediate health effect (burn, necrosis, cataract, etc.); it can however, should it be confirmed, lead to a slight probability of increase in the risk of cancer in the long term.

Eiffage Énergie Système conducted initial investigations into this event, but to date these investigations have not identified the origin of the overexposure. It is possible that the recorded dose is due to incorrect use of the dosimeter and does not correspond to the actual exposure of the worker. The company has nevertheless highlighted malfunctions in the management of the dosimetry devices and in the analysis of results, as well as a lack of radiation protection culture.

In view of the exceeding of the annual exposure limit and considering the information currently available, ASN provisionally rates 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).

ASN will shortly conduct an inspection into this event to check the investigative measures and the actions taken by Eiffage Énergie Système. ASN will try to ensure that the dose effectively received by the worker is established.

Furthermore, ASN wishes to underline that the heads of "ordering customer" companies are obliged to ensure the overall coordination of the risk prevention actions implemented for their employees and for the workers of outside companies performing work on their site.

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