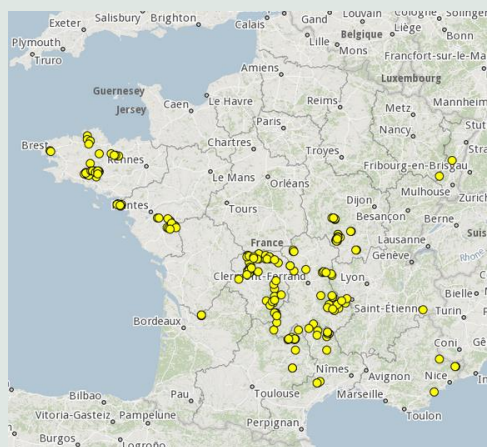


# Regulatory Updates

## Nuclear safety...

### ASN issues its opinion on the management of the former uranium mining sites

March 2021



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At the request of the Ministry responsible for energy, within the framework of the French National Radioactive Material and Waste Management Plan (PNGMDR), and following analysis of the studies received, ASN has issued its opinion on the management of the former uranium mining sites. The working of the uranium mines in France, between 1948 and 2001, led to the production of 76,000 tonnes of uranium. The exploration, extraction and processing activities concerned about 250 sites, which differed considerably in size. All the uranium mining sites have now been rehabilitated. A variety of materials or waste are liable to have been disposed of on the former mining sites. The previous editions of the PNGMDR initiated an approach to improve the management of the former uranium mines and the repositories for their tailings, in particular in the light of their long-term environmental and health impacts. For the PNGMDR 2016-2018, the studies submitted by Orano Mining enable this approach to be taken a step further. The public debate carried out in 2019 underlined the fact that the classification of the uranium mine tailings disposal sites as installations classified for protection of the environment (ICPE) and the retrieval of mining waste rock previously disseminated around the public domain, represent a step in the right direction. It however underlined the importance of developing high-quality local dialogue, notably to take account of the long-term impact of these sites.

### Radon, a naturally occurring radioactive gas, is a public health issue: ASN publishes the 2020-2024 national action plan to manage this risk

March 2021

ASN publishes the 2020-2024 radon risk national action plan (PAR 4). Building on the National Health-Environment Plan 4 (PNSE), "My environment, my health" (2020-2024), this fourth edition is the fruit of collaboration between ASN, the Ministries for Health, Ecology, Construction and Labour, national experts, regional actors, radon measurement professionals and associations active in this area.

Radon is a naturally occurring radioactive gas, recognised as being carcinogenic, and is present everywhere on the surface of the Earth. In France, radon is the second cause of lung cancer (about 3,000 fatalities per year), behind smoking. Joint exposure to radon and tobacco substantially increases the risk of developing lung cancer.

In the outside air, radon is rapidly diluted and its average concentration usually remains very low. In enclosed spaces, it can build up and sometimes reach high concentrations, which then represent a health risk.

Granite soils give off more radon than sedimentary soils, owing to the higher concentrations of uranium that they naturally contain. Municipalities in France are divided into 3 types of radon potential zones, based on geological criteria.

Information and prevention are thus essential in managing this risk, so that exposure can be reduced or kept as low as reasonably achievable, given the current state of technical knowledge and economic and societal factors. This underpinned the production of the PAR 4, taking account of all the exposure locations (home, workplace and facilities open to the public) and all those potentially exposed (population and workers).

Since 2005, successive action plans have helped improve our understanding of radon and prevention nationwide, while contributing to regulatory changes on this subject.



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The radon concentration in buildings can be easily measured with a detector that is installed for a period of two months in the home, areas open to the public or the workplace. If concentration is moderate, simple measures are sufficient to reduce exposure. If the concentration is higher, a building professional must be called in. In any case, ventilation of the premises for at least 10 minutes per day is considered to be good practice, both in winter and in summer.

This plan follows through on the momentum developed under the PAR 3, for which ASN also publishes the results. These results show significant regulatory changes. Since 2016, radon has been considered to be an indoor air pollutant and management of this risk is part of a broader policy to improve indoor air quality. In addition, an obligation to inform buyers and tenants of the radon risk was introduced in those municipalities with a significant radon potential in 2018.

Although virtually all of the PAR 3 actions have been completed, the efforts made must be continued:

- the actors governed by the new regulatory provisions must be informed and assisted with their implementation;
- public awareness of the radon risk needs to be improved;
- improved understanding of the exposure of the population must be sought;
- evaluation of the effectiveness of preventive measures in new constructions and corrective measures in existing constructions must be continued.

A system of specific indicators will enable the effectiveness of the national strategy implemented under the national action plan to be evaluated as of 2021.

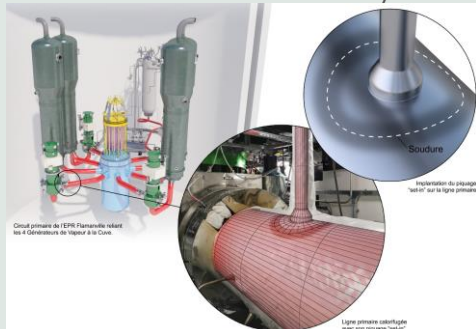
## Flamanville EPR reactor: design anomaly on three main primary system nozzles

March 2021

On 3 March 2021, EDF notified ASN of a significant event concerning a design anomaly on three nozzles of the main primary system of the EPR reactor under construction on the Flamanville site. The main primary system contains water used to cool the reactor core and transfer energy from the nuclear reaction to the steam generators. This system consists of four piping loops installed in the reactor building. Several auxiliary systems are connected to the main primary system, via nozzles. The largest nozzles are integral forgings made during manufacture of the main pipe. The small diameter nozzles (less than 150 mm) are connected to the main primary system piping by a "set-in" weld to the main pipe. Three of these nozzles are concerned by the reported anomaly.

In 2006, to make it easier to inspect the "set-in" weld on the main pipe, EDF and Framatome changed the design of these three nozzles, increasing the diameter of this weld. At the time, they did not identify the fact that the break size to be considered in the event of rupture of this weld now exceeded that considered in the safety studies.

This design anomaly was identified by EDF and Framatome in 2013, once the pipes concerned had been manufactured. In 2014, EDF decided to process this anomaly by extending to these welds the break preclusion approach applied to the main primary system pipes. This approach implemented by EDF on certain pipes of the Flamanville EPR reactor consists in reinforcing the design, manufacturing and in-service monitoring requirements, in order to ensure the highly improbable nature of any break in this equipment, thus obviating the need to study all the consequences of a break in the installation's safety case.



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At the beginning of 2017, following anomalies detected on the welds of the VVP pipes, ASN asked EDF to examine the conformity of the main primary system pipes with the "break preclusion" baseline requirements. The subsequent ASN examination of the answers provided by EDF regarding these nozzles, at the end of 2020, revealed that the welds of these three nozzles did not comply with all the break preclusion requirements.

Before issuing a position statement, ASN asked EDF for its strategy to deal with this anomaly. ASN also asked EDF to identify its root causes and the reasons for its belated detection and to take corrective measures, notably to ensure that there are no other anomalies on the main primary system.

## ASN issues a position statement on the conditions for continued operation of the 900 MWe reactors beyond 40 years

February 2021

On 23 February 2021, ASN ruled on the conditions for the continued operation of the 900 MWe reactors beyond their fourth periodic safety review. ASN considers that the measures planned by EDF combined with those prescribed by ASN open the prospect of continued operation of these reactors for a further ten years following their fourth periodic safety review.

In France, the authorisation to create a nuclear facility is issued by the Government, after consulting ASN. This authorisation is issued for an unlimited duration, and the facility undergoes an in-depth "periodic safety review" every ten years to assess the conditions for continued operation of the facility for the following ten years.

EDF's thirty-two 900 MWe reactors are the oldest reactors in operation in France. Their fourth periodic safety review is of particular importance because the service life hypothesis adopted at the design stage was 40 years.

Continuing operation beyond 40 years necessitates the updating of the design studies or equipment replacements. In its resolution 2021-DC-0706, ASN prescribed the implementation of the major safety improvements planned by EDF, along with additional measures it considers necessary to achieve the objectives of the safety review.

This resolution closes the "generic" phase of the safety review, which concerns the studies and modifications of the installations common to all the 900 MWe reactors, as they all have a similar design model.



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These improvements and measures shall then be applied to each reactor individually during their fourth periodic safety reviews, scheduled to run until 2031. These reviews shall take the particularities of each facility into account. The measures planned by EDF for each reactor shall be subject to a public inquiry.

A public consultation on the measures planned by EDF for the generic phase of the fourth periodic safety review of the 900 MWe reactors was held between September 2018 and March 2019 under the auspices of the HCTISN (French High Committee for Transparency and Information on Nuclear Security). ASN also posted its draft resolution on its website for public consultation between 3 December 2020 and 22 January 2021. This consultation led ASN to change or clarify some of the requirements of its resolution. This is the case, for example, with certain studies prescribed by ASN, for which the completion deadlines have been brought forward. ASN has also pushed back some deadlines on account of specific industrial and operating constraints when this was acceptable from the safety aspect. ASN also explained its position regarding the deployment schedule for the modifications resulting from the periodic safety review and its expectations with regard to deviations detected during the 10-yearly outage.

ASN requires EDF to report annually on the actions implemented to meet the requirements and their deadlines, and also on the industrial capacity of both EDF and its outside contractors to complete the modifications of the facilities within the set time frames. ASN requires that this information be made public.

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