ASNR
Autorité de
sûreté nucléaire
et de radioprotection

Abstracts

ASNR REPORT
on the state of nuclear safety and radiation protection in France
in 2025

The French Authority for Nuclear Safety and Radiation Protection presents its Report on the state of nuclear safety and radiation protection in France in 2025.

This Report is required by Article L. 592-31 of the Environment Code.

It was submitted to the President of the Republic, the Prime Minister and the Presidents of the Senate and the National Assembly and transmitted to the Parliamentary Office for the Evaluation of Scientific and Technological Choices, pursuant to the above-mentioned Article.

Abstracts

ASNR Report on the state of nuclear safety and radiation protection in France in 2025

Contents

ADVICE TO THE READER

Find the **full ASNR report** on the state of nuclear safety and radiation protection in France in 2025 on *asnr.fr*

Only regulatory news for the year 2025 is presented in this report.
The regulations as a whole can be consulted on *asnr.fr*

Editorial by the Commission

From left to right:
Stéphanie GUÉNOT BRESSON, Commissioner; **Olivier DUBOIS**, Commissioner; **Géraldine PINA**, Commissioner; **Jean-Luc LACHAUME**, Commissioner; **Pierre-Marie ABADIE**, Chairman.

Adapting to a changing environment

Montrouge, 1 March 2026

This annual *Report on the state of nuclear safety and radiation protection in France* is the first to be published by the new French Authority for Nuclear Safety and Radiation Protection (ASNR) since the merger of ASN and IRSN on 1 January 2025. ASNR is fully operational to carry out its missions, and can rely on its in-house expertise and access to top-level scientific knowledge to regulate and oversight, which form the basis of its technical autonomy. It also has the operational capacity to monitor and manage emergency situations, including mobile resources that can be deployed in the field. Lastly, it adopts an innovative approach on a technical and scientific level, as well as in the arrangements for the actions it takes, particularly inspections. This new edition of the annual *Report on the state of nuclear safety and radiation protection* uses a number of text boxes to illustrate these aspects of ASNR's duties.

Nuclear safety and radiation protection are a national and international "common good". In a complex world facing geopolitical, economic and climate challenges, safety is inextricably linked to the overall performance of the nuclear sector, both in the operation of existing facilities and in new projects. It requires action that is proportionate to the issues at stake, as well as attentiveness to early warning signs, and careful management of complexity at a collective level, to ensure that the right issues are addressed at the right time.

For existing facilities, the primary challenge is to maintain the highest levels of safety and to plan ahead for major milestones: this is the objective of the ongoing generic review of reactor operating lifetimes up to 60 years, and of Orano's "Continuity – Resilience" programme, which concerns the operating prospects of fuel facilities beyond 2050. These actions must be associated with a methodical reflection on the renewal of facilities in the medium to long term, to avoid ever having to arbitrate between safety and production.

France has embarked on a programme of construction of reactors and fuel facilities. This raises its own challenges for licensees, industry and ASNR. "Replication" and standardisation should create a virtuous circle that also benefits nuclear safety. To achieve this, it is necessary, once again, to plan ahead in order to "de-risk" project assessment, stabilise the technical baseline requirements to enable standardisation, and guarantee manufacturing control and quality. The report illustrates this through the actions carried out in 2025.

French regulations, which mainly require compliance with safety and radiation protection objectives rather than detailed technical standards, have demonstrated their ability to respond to a wide variety of issues and implications. They are therefore well suited to responding to innovation and addressing new facilities in a proportionate manner, such as Small Modular Reactors (SMRs), fusion facilities (the ITER project), and research facilities. This is a message that ASNR also promotes at an international level, particularly in discussions on the regulatory framework for fusion facilities.

INTERNATIONAL ACTION

ASNR is now well established and recognised in Europe and around the world, and has made its international activities a key part of its strategy, in full continuity with those previously carried out by ASN and IRSN.

At a multilateral level, ASNR stepped up to its role as a leading independent Authority by chairing the 8th international review meeting of the Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management. At European level, ASNR is particularly active within the ENSREG group and the WENRA, ETSON and HERCA associations, the latter being chaired by one of its Commissioners. These groups aim to promote a high standard of nuclear safety and radiation protection in Europe.

ASNR is also a major player in research within its field. Its involvement in the PIANOFORTE research partnership, which it coordinates and which aims to build a European framework for radiation protection, is a good example of this.

The current international context remains marked by strong interest in nuclear projects of the full range of different types, many of them innovative in nature. This impetus is reflected in a demand for standardisation, harmonisation and even simplification of regulatory approaches, particularly for Small Modular Reactors (SMRs). ASNR actively participates in international work in this area, notably by promoting cooperation between safety authorities. Beyond the initiatives led by the IAEA and the European Union, ASNR considers that the harmonisation of licensing processes on an international scale, often highlighted by project developers as a prerequisite for

SMR deployment, is unrealistic given the specific context of each country. On the other hand, ASNR considers that joint review of the design options for a single project by several safety authorities, upstream of licensing processes, can facilitate project development. This is the case for the joint assessment by six European safety authorities, at the initiative of ASNR, of the NUWARD reactor project led by EDF.

The conflict in Ukraine remains a source of concern and vigilance. Firstly, there are constant threats to all Ukrainian nuclear power plants, whether they are in operation, shut down (Zaporizhzhia) or being decommissioned (Chernobyl). As a result, ASNR continuously monitors radioactivity levels in Ukraine and neighbouring countries, and assesses the risks posed by Ukrainian facilities in the event of an accident resulting in radioactive releases. Secondly, at European level, ASNR is heavily involved in WENRA, HERCA and ENSREG initiatives to support the Ukrainian Safety Authority. Finally, at IAEA level, this conflict has considerable significance on a day-to-day basis, and makes multilateral discussions on many subjects challenging, as shown by the difficulties encountered in reaching an international consensus on the concluding document of the 8th Joint Convention review meeting.

A POLICY OF DIALOGUE WITH STAKEHOLDERS

ASNR attaches great importance to technical dialogue, consultation and engagement with all stakeholders within the scope of its research and expert assessment activities, and in preparing its decision-making activities. Following its creation on 1 January 2025, ASNR reaffirmed its commitment to this approach and launched a strategic review aimed at developing its "dialogue roadmap". In addition to its own review, ASNR has asked the High Committee for Transparency and Information on Nuclear Safety (HCTISN) to submit recommendations in early 2026. Life extension of the nuclear fleet, new nuclear projects, continued operation of "fuel cycle" facilities, new back-end facilities, decommissioning, nuclear waste management, SMRs, new uses of ionising radiation for medical applications, the use of artificial intelligence in nuclear activities, and climate change are all areas where discussions with stakeholders are essential. In this particular area, it is important to address local issues; ASNR will rely on its network of regional divisions to achieve this. In 2026, ASNR will set up a Scientific Council. Collecting stakeholders' expectations regarding research and maintaining regular exchanges with HCTISN will enable it to identify priority areas for dialogue.

RADIATION PROTECTION IN THE MEDICAL FIELD

In 2025, the level of radiation protection in the medical field was satisfactory, but the persistence of weaknesses and the occurrence of significant radiation protection events reflecting a lack of radiation protection culture led to a more nuanced assessment.

This sector continues to face significant resource and staffing constraints, in a context of increasing activities and growing complexity of working organisations, which may lead to a dilution of responsibilities. Insufficient understanding and uptake of radiation protection issues and inadequate resources dedicated to quality and risk management were noted during inspections or identified as contributing to the occurrence of significant radiation protection events. ASNR stresses that the increasing use of external services since 2023 for the functions of radiation protection advisor or medical physicist must not be to the detriment of in-house skills or the focus on radiation protection issues, at the risk of a lasting decline in radiation protection culture.

The teleradiology study confirms the importance of human and organisational factors in risk management. In brachytherapy, maintaining the activity itself represents a major challenge due to a shortage of qualified professionals.

In the field of fluoroscopy-guided interventional practices, although the situation is improving slightly in operating theatres, failings that compromise patient radiation protection, combined with inadequate management of medical physics, which is often outsourced, have led to enforcement actions.

In radiotherapy, despite the profession's growing awareness of the importance of maintaining a radiation protection culture, target errors remained at the same level as in previous years. With the increase in the number of patients receiving multiple radiotherapy treatments, these target errors can occur in the context of re-irradiation, which exposes patients to greater risks of secondary side-effects. In nuclear medicine, the development of targeted internal radiotherapy is a source of risks specific to unsealed sources, such as those linked to extravasation[1] or the management of radioactively contaminated waste. In its opinion on the 6th French National Radioactive Material and Waste Management Plan, ASNR stressed the importance of a specific reflection, as part of the public debate, on developments in the management of waste and effluent from medical activities.

1. *Extravasation is the accidental passage of an intravenously injected product, in this case a radiopharmaceutical, into the surrounding subcutaneous tissue.*

UNPRECEDENTED RECURRENCE OF COHORT EVENTS IN CONVENTIONAL RADIOLOGY

2025 was marked by an unprecedented recurrence, in conventional radiology, of significant radiation protection events involving cohorts of patients, including children. A common factor in these events was incorrect setting of equipment parameters on commissioning, leading to systematic errors that were detected only at a late stage. The events point to shortcomings in radiation protection culture, particularly in the dose optimisation approach.

ASNR stresses the importance of staff training and qualification, and of formalising practices when commissioning any new equipment or introducing new practices. It draws attention to the importance of dosimetry assessment for optimisation purposes starting from the time of installation and throughout the entire period of use.

On the ground, ASNR will step up its oversight in 2026 with a conventional radiology inspection campaign in centres that carry out paediatric examinations. To promote awareness throughout the profession, a self-assessment tool will be provided to support professionals to comply with regulatory requirements and implement best practices. Lastly, an "Operational Experience Feedback" fact sheet will be distributed to raise awareness of these incidents, make them easier to detect and prevent their recurrence. Furthermore, the deployment of peer review focused on clinical practices, providing a critical viewpoint and legitimacy from professionals engaged in comparable activities, would be a significant asset in assessing the justification of procedures, and optimising them.

In addition to the information provided to patients, information for the public needs to be clearer, making it easier to distinguish a minor incident from a more serious event. In radiotherapy and brachytherapy, the ASN-SFRO (French Society of Radiation Oncology) scale is used to distinguish between the importance of the failure that caused the event and the medical seriousness of the exposure. ASNR calls on professional organisations to consider developing appropriate scales for diagnostic radiology and nuclear medicine procedures as well as for targeted internal radiotherapy.

ANTICIPATING AND SUPPORTING INNOVATION IN THE MEDICAL FIELD

For ASNR, anticipating innovation means ensuring that radiation protection issues are considered right from the design stage, and help to guide choices and practices. To support innovation, within the scope of clinical trials, regulatory oversight arrangements need to be adapted, while ensuring that radiation protection levels are maintained. In response to the boom in clinical trials using new radionuclides for targeted internal radiotherapy, ASNR has issued an advance authorisation for possession and use of these radionuclides. This makes it possible to plan ahead for certain measures relevant to radiation protection – such as the calibration of activity meters and cameras – and facilitates the implementation of test protocols. More broadly, the challenges raised by the emergence of new radiopharmaceuticals concern not only patients, but also professionals, the public and the environment. ASNR will adopt a position in 2026 on improving radiation protection in clinical trials involving new radionuclides.

Artificial Intelligence (AI) is increasingly being used in innovative techniques. ASNR will be organising a seminar on AI in medical applications in 2026. In this area, AI is already widely deployed and mature, but with a lack of transparency about the evaluation criteria used. Furthermore, its development calls for reflection on changes in responsibilities, skills and professions.

Generally speaking, ASNR's monitoring of new techniques and practices is based on its skills in research and expert assessment, as well as its various expert groups and committees. Reinforcing links and sharing knowledge among all institutional stakeholders in the healthcare sector and professional organisations would improve monitoring and promote the deployment of innovation within a secure framework, for the benefit of patients.

LEARNING FROM THE EXPERIENCE OF THE FLAMANVILLE EPR TO GUARANTEE NUCLEAR SAFETY OVER THE DURATION OF THE EPR 2 INDUSTRIAL PROGRAMME

In 2025, ASNR teams were mobilised for the review of the application authorisations to construct two EPR 2-type reactors at the Penly site (Seine-Maritime *département*). Following on from the review of the safety options for the new EPRs carried out in 2019, the technical expert assessment (concerning the design of key systems, consideration of internal and external hazards, accident studies without core meltdown, etc.) was completed in early 2026 without revealing any critical issues that would pose a barrier. This efficient mobilisation will enable ASNR to adopt a position in 2026.

Following operational experience feedback from the construction of the EPR reactor at Flamanville and with a view to the construction of a series of EPR 2 reactors, ASNR updated its oversight of the design and manufacture of Nuclear Pressure Equipment (NPE). Following the work carried out by industry to update the RCC-M code (the French standard that sets out the design and construction rules for mechanical equipment in the nuclear islands of Pressurised Water Reactors), ASNR has stated its position on the code's suitability for ensuring and demonstrating compliance with regulatory requirements. This major development, which has been under way for several years, provides stabilised technical baseline requirements for the EPR 2 programme. At the same time, discussions are continuing on ASNR's guide to NPE conformity

assessment, with the aim of revisiting the guide in 2026. ASNR aims to implement earlier and more progressive oversight of the design and manufacture of NPE, to avoid deviations emerging or being dealt with too late, and by specifying oversight requirements sufficiently far in advance to enable those involved to plan ahead for them and incorporate them within a stable framework.

ASNR also reviewed the design of the major components for the main primary system and the main secondary systems of the first EPR 2 reactors up to the beginning of 2026, enabling manufacturers to begin production.

In the light of operating experience feedback from the construction of the Flamanville EPR, ASNR reiterates the importance of guaranteeing the quality of components for future EPR 2 reactors, and continued its inspections of the supply chain for safety-important equipment. These inspections enabled oversight of the manufacturing processes that the suppliers used, their organisational provisions, the implementation of the licensee's requirements within the subcontracting chain, and the supervision that EDF is required to carry out. ASNR considers that the support work carried out by EDF must be continued so that the entire sector, which still has weaknesses, reaches the level of quality and rigour required by the issues at stake.

Finally, as part of an early-stage review specific to the project to build a pair of EPR 2 reactors at Gravelines (Nord *département*), where the ground is relatively soft over a significant depth, ASNR identified points requiring particular attention regarding the foundation design. Based on new information provided by EDF concerning detailed geotechnical knowledge of the site's subsoil and the design of the foundations, the investigation of this issue will continue in 2026.

ENSURING THE LONG-TERM SAFETY OVERSIGHT OF THE NUCLEAR POWER PLANT FLEET IN OPERATION

2025 was marked by the startup and power increase of the Flamanville EPR, which were subject to specific oversight by ASNR teams. The transition from managing a construction worksite to operation of a reactor was characterised by numerous events, none of which had a major impact on nuclear safety. For the first refuelling outage, EDF plans an ambitious programme of inspection and equipment replacement activities, starting in autumn 2026. ASNR is currently considering the corresponding modification requests.

Regarding the Stress Corrosion Cracking (SCC) affecting some auxiliary piping systems in reactors currently in operation, EDF's inspections continued, and have so far detected more than 80 significant cracks, some of which call into question the mechanical strength of the piping. ASNR currently considers the situation to be under control, as EDF has identified sensitive piping, and has at its disposal effective non-destructive testing capabilities, as well as, where necessary, techniques for replacement of the affected sections of piping. Against this backdrop, EDF has proposed a long-term monitoring strategy for the piping concerned, on which ASNR will state its position in 2026. ASNR considers that EDF must, in parallel, further improve its understanding of the conditions under which stress corrosion cracking occurs.

As of 1 January 2026, 25 of the 56 nuclear power reactors currently in operation (excluding the Flamanville EPR) have exceeded 40 years of operation, which was the design lifetime for certain of their components. Continuing to operate them means managing the ageing of their components, adapting to changes in operating conditions (due to climate change, etc.), and making improvements to bring their safety level closer to that of the most recent reactors. This safety level has been defined based on experience feedback from major nuclear accidents.

The experience acquired during the assessment of the fourth Periodic Safety Reviews of the 900 MWe reactors, the oldest in the fleet, enabled ASNR to state an opinion on the conditions for continued operation of the 20 1,300 MWe reactors up to a 50-year lifetime in July 2025, *i.e.* sufficiently in advance of the first associated ten-yearly outage, which began at the Paluel nuclear power plant in January 2026.

The oldest 900 MWe reactor will undergo its fifth ten-yearly outage in 2029. As part of the stabilised safety objectives, the fifth Periodic Safety Review of the 900 MWe reactors will focus, according to the guidelines defined in 2025, on maintaining the compliance of facilities and addressing climate change.

Finally, in an energy context that suggests interest in the long-term life extension of reactors, ASNR has, since 2023, favoured the adoption of a generic approach, together with EDF, to anticipate the effects of ageing, mainly in non-replaceable components, likely to affect the possibility of operating reactors over 60 years of age in complete safety, and to identify possible levers for remediation. Following a review of the documents that EDF provided and a technical dialogue with the stakeholders, ASNR will issue an opinion at the end of 2026.

In addition, the inspections carried out by ASNR in 2025 show that EDF still needs to make progress in a number of areas, such as preparation of maintenance activities, management of spare parts and the quality of supervision of subcontracted activities, to ensure the long-term operation of the fleet.

ENSURING THE LONG-TERM VIABILITY OF FUEL FACILITIES

From the extraction of uranium ore to the reprocessing of spent fuel and the storage of radioactive waste, the industrial fuel chain is made up of numerous nuclear facilities, each of which is often unique. The failure of one link can considerably disrupt this chain. The French Government's decision to continue the reprocessing policy as part of the new nuclear programme means, on the one hand, undertaking a comprehensive programme to strengthen the resilience of existing plants and extend their operation and, on the other hand, preparing for the renewal of production assets to meet long-term needs.

After several years of difficulties, 2025 saw a recovery in production at the Melox plant, France's only MOX (Mixed OXide Fuel) production plant, which helps manage the risk of saturation of reprocessing plants' storage pools. Based on current flows, these pools are expected to reach saturation by around 2040, with storage capacity margins remaining limited until the commissioning of the new pools planned at the La Hague site, which will ultimately serve the reprocessing plant as part of Orano's "Future Back-End" project.

The "Future Back-End" project is crucial to the robustness of the French industrial fuel chain. Orano has set up a project organisation with ASNR, to ensure the smooth review of future files, starting with the first safety options dossiers expected from 2026, as well as the design standards that will support them and which need to serve as a reference for the entire programme.

At the same time, the examination of the Periodic Safety Reviews, and of operations to refurbish and ensure the long-term future of existing plants – known as the "Continuity – Resilience" project – is ramping up.

SECURING HUMAN AND FINANCIAL RESOURCES TO MEET LEGACY LIABILITIES

At a time when nuclear power is being "renewed", attention to older facilities, whether still in operation or shut down, must not waver, particularly during the decommissioning phase.

Decommissioning is a lengthy process, and the preparation itself also takes a great deal of time, involving the design of operations that were not considered when the oldest facilities were originally designed, or the definition of solutions to address liabilities identified during site surveys, such as retrieval of waste, contamination or pollution. Ultimately, therefore, decommissioning requires substantial financial means, significant engineering resources, and sometimes heavy equipment. Despite efforts by the licensees concerned to rank and prioritise projects, ASNR observes that, due to insufficient resources, numerous decommissioning projects are delayed. This increases both the associated legacy burden and the risks to the environment and to people, including those responsible for monitoring the shutdown facilities.

The French Alternative Energies and Atomic Energy Commission (CEA) is currently the most exposed licensee, as its assets include a large proportion of facilities that have been definitively shut down or are being decommissioned. The decommissioning programme, drawn up by CEA and approved by the civil and military safety authorities in 2019, was based on prioritisation according to the source term and the risks posed by the facilities. It has suffered major delays and needs to be thoroughly revised. In this context, it appears necessary to ring-fence the needed financial and human resources to enable it to meet reasonable decommissioning schedules. ASNR expects CEA to submit an updated decommissioning and waste management strategy by 2026, drawing on experience feedback from the difficulties encountered and accompanied by a consolidated schedule.

THE ONGOING CIGÉO PROJECT

During 2025, ASNR's departments completed the technical review of the creation authorisation application for the Cigéo deep geological repository for radioactive waste, and concluded the associated cycle of technical dialogue with all of the project stakeholders. ASNR issued its opinion on the Cigéo authorisation application at the end of 2025 and presented it to the French Parliamentary Office for the Evaluation of Scientific and Technological Choices (OPECST). Without disregarding the additional information still to be provided by the French National Radioactive Waste Management Agency (Andra) and the strong expectations of the public, ASNR considered that the preliminary safety case had reached a sufficient level of maturity at this stage of the project, and that the reference inventory used as a basis by Andra constituted a robust foundation for defining the waste inventory authorised for disposal at Cigéo. Finally, ASNR considered that the project's development schedule appeared realistic in light of the available information. ■

Editorial by the Director General

Olivier GUPTA, Director General

2025, a decisive first year of operation in the performance of our duties

Montrouge, 1 March 2026

The French Authority for Nuclear Safety and Radiation Protection (ASNR) was created on 1 January 2025, as part of the reform of the governance of nuclear safety and radiation protection oversight mandated by the Act of 21 May 2024.

With just over a year's hindsight, I can see how far we have already come in setting up this new institution, while carrying out our missions across all our areas of activity: research, expert assessment and review, and oversight. This was made possible by the commitment and dedication of ASNR staff, particularly those working in cross-functional and support areas. I would like to thank them warmly.

The work of setting up ASNR, initiated on a preparatory basis in 2024, was stepped up considerably in 2025 in the areas of finance, logistics, legal affairs, digital technology, human resources, management and communications. Continuity of operations between ASNR and the two entities that preceded it was thus ensured.

The year 2025 also provided the opportunity to initiate transformations that will continue in 2026. Beyond the necessary organisational changes, the aim is to enable ASNR, guided by its strategic orientations, to fully play its role in the current context of nuclear renewal and innovation in the sector.

2025: THE YEAR ASNR WAS ESTABLISHED

Ensuring the day-to-day running of ASNR

On 2 January 2025, an initial set of resolutions was adopted to define roles and responsibilities within ASNR. The Commission thus approved the initial organisation of the departments as well as delegated powers, enabling the institution to begin operating and to integrate its first teams while ensuring continuity of service. These resolutions were supplemented by the adoption of ASNR's internal rules of procedure in January. As far as budgetary and financial aspects are concerned, budget programme 235, "Nuclear Safety and Radiation Protection", now provides Parliament with a clear and unified view of the resources dedicated to this subject. The foundations have been laid for the proper functioning of the budgetary and accounting chain, and an initial framework for procurement management has been defined. A number of measures have been taken to bring the two pre-existing information systems closer together. ASNR's single Emergency Response Centre has been set up. The arrangements for publishing expert opinions have been defined. A Scientific Director has been recruited.

In terms of human resources and social dialogue, a joint ASNR body bringing together the employee representative bodies of ASN and IRSN was established in the first half of 2025. Initial steps have also been taken to define an attractive employment and skills framework for ASNR: a unified recruitment policy has been established, and a method agreement covering the timetable for renegotiating collective agreements has been signed.

Finally, the Ethics and Professional Conduct Committee was set up in December. In particular, it is responsible for issuing an opinion on general matters relating to the application of the rules of professional conduct in ASNR's departments and for answering questions relating to individual cases, in particular on the crucial issue of professional mobility. It is necessary to reconcile compliance with ethical rules, in particular the impartial exercise of the oversight mission entrusted to ASNR by the legislator, with the need to promote the attractiveness of ASNR. In a sector where specialised profiles are scarce, it is also essential to encourage mobility between ASNR and the organisations it oversees, in order to disseminate and enrich technical knowledge and safety culture across the nuclear sector as a whole.

Establishing ASNR within its ecosystem

ASNR has undertaken several actions to maintain and strengthen, in continuity with its two predecessor organisations, its relationships with stakeholders: licensees, government departments and public bodies, Parliament, research organisations, the academic community, civil society stakeholders, foreign counterparts and international organisations, among others. Numerous partnerships and agreements covering a wide range of areas have been signed. An initial strategy for dialogue with civil society has been established, and the associated roadmap is currently being drawn up. It will be presented to the HCTISN and then to the OPECST in spring 2026.

Adapting the internal organisation

The ASNR's first year of existence was also marked by the continuation of reorganisation work, both for the "cross-functional and support" teams and for the "core activities" teams.

Most of the cross-functional and support departments, which were merged on 1 January, quickly began work on a more precise definition of a new internal organisation, to be implemented from the second half of 2025. It should be noted that this work was carried out in a context of significantly increased workload, as these departments were heavily involved in setting up ASNR.

As regards the "core activities" departments, the first half of the year was mainly devoted to setting up a working method to identify possible reorganisation options, and to preliminary discussions involving the directors concerned. As a result, in June 2025 organisational principles were defined that were compatible with the provisions of the act of 21 May 2024. Coordinators were then appointed to translate these principles into a more complete organisation, which is due to be presented to employee representative bodies in spring 2026.

2026: CONTINUING THE TRANSFORMATION OF ASNR IN SUPPORT OF ITS MISSIONS

Work on setting up ASNR will continue throughout 2026.

The coming months will be marked by the reorganisation of our "core activities" departments, which will draw on the strengths of a united team and the diversity of our skills.

Staff elections will take place in the second half of March, enabling the establishment of new social dialogue bodies.

A significant effort will be made to strengthen cohesion through the identification and definition of ASNR's values and its "employer brand".

Work on harmonising our operations will continue, with further advances in the convergence of information systems and the introduction of an integrated management system.

A Scientific Council will be set up in accordance with the provisions of Article L. 592-28-3 of the Environment Code. The composition of this Council will reflect the diversity of scientific fields. In particular, it will be consulted on ASNR's scientific strategy and research programmes, and will contribute to scientific assessment.

The Advisory Committees of Experts (GPEs) will continue to carry out their tasks until the end of their members' terms of office at the end of 2026, and at the same time preparations will be made to renew their membership, with a view to the new term of office taking effect on 1 January 2027.

ASNR will submit its second report to OPECST assessing its creation and the implementation of the reform introduced by Act 2024-450 of 21 May 2024 relative to the organisation of nuclear safety and radiation protection governance, in order to address the challenges of the nuclear industry's renewal.

Finally, 2026 will be used to prepare a new IRRS peer review mission (which involves ASNR being audited by a team of counterparts from other countries), to be conducted in 2027. For ASNR, an independent administrative Authority, undergoing regular external peer review is essential.

STRATEGIC ORIENTATIONS GUIDING ASNR'S ACTION

During the first year of its existence, ASNR staff have been reflecting on the strategic challenges facing ASNR and the changes that need to be made. Four main orientations have been identified in the current context of nuclear renewal and innovation. They will guide ASNR's actions over the coming years.

Nuclear safety and radiation protection must be proportionate to the issues at stake

ASNR operates in a constrained environment, where time and resources are limited, both for itself and for the organisations it oversees. In the context of nuclear renewal, ASNR will strengthen its ability to prioritise and rank issues across all its activities and to apply a clear graded approach.

The renewal of the nuclear industry presents collective challenges distinct from the operation of existing facilities

There is a need to ensure that nuclear safety is taken into account as far upstream as possible in new projects, to stabilise baseline requirements, and to provide visibility on regulatory deadlines and dovetail them with project milestones. ASNR will develop its ability to plan ahead, by monitoring early warning signs, and to mobilise knowledge and expertise. It will pay particular attention to managing assessments, ensuring both rigour and efficiency while controlling timelines. Where necessary, it will continue to develop new practices and approaches, as it has done in recent years with innovative reactor project developers.

The challenge of innovation: medical applications, Small Modular Reactors and artificial intelligence

A number of areas are characterised by strong innovation. ASNR is positioning itself to respond to new challenges, whether technical, organisational or oversight-related, and to adapt appropriately. To this end, it will continue to deploy innovative working methods during the preparatory stages of the instruction. It will develop its own expertise through a proactive and forward-looking research policy. Finally, it will take on board the opportunities and risks of artificial intelligence

in a controlled manner across all its missions, both in terms of its use by those responsible for nuclear activities and its internal use.

Managing complexity

Nuclear safety is a key component of performance in industrial projects and must be considered at every stage, from design to implementation. However, measures taken during design and construction must not make the operation of nuclear installations overly complex, as this would be detrimental to both nuclear safety and radiation protection. In its role, ASNR will contribute to managing the complexity of the baseline requirements used in nuclear facilities. It also intends to improve the integration into expert assessments, reviews and inspections of the practical factors that have an impact on nuclear safety.

***

There is still a great deal of work to be done in 2026 to stabilise ASNR's internal operations and establish a fully mature organisational structure, and to enable it to fully play its role in the context of nuclear renewal. The guidelines adopted by ASNR will guide its action over the next few years. I know I can count on the commitment of all staff to successfully implementing these changes, while fully carrying out all our tasks, to benefit the protection of people and the environment. ■

NOTABLE EVENTS 2025

NOTABLE EVENTS 2025

Significant radiation protection events in conventional radiology

Radiation protection culture needs to be improved after several significant events affecting patient cohorts

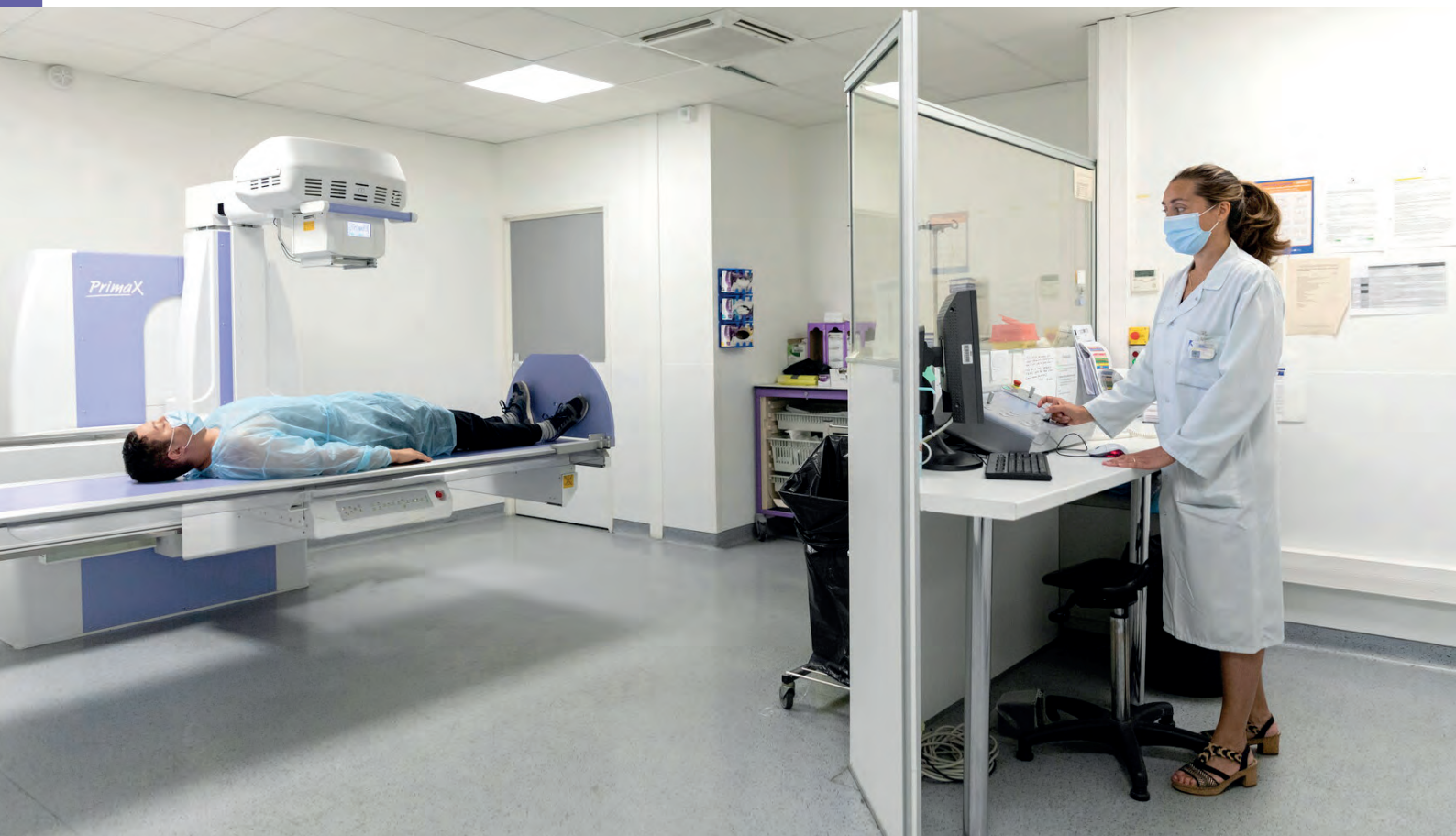
The year 2025 was marked by the occurrence of several significant events in conventional radiology. These situations involving cohorts of patients[1] and in particular paediatric patients[2] during radiological examinations are rare events, although not exceptional in view of the Significant Radiation Protection Events (ESRs) reported to ASNR since 2008. In 2025, several significant events relating to overexposure beyond Diagnostic Reference Levels (DRLs) were notified to ASNR in the field of conventional radiology *(see box).*

Three of these events concerned a large number of patients, with overexposure that, in some cases, went unrecognised for several years. Patients affected by exposure to doses higher than those normally used for the examinations carried out were informed by the healthcare facilities.

Analysis of these events systematically reveals multifactorial causes, although there are some common elements:
• a fault in the parameter settings of the X-ray equipment used, often occurring on commissioning of the equipment concerned, or on return to service after maintenance;
• inadequate training of healthcare professionals in the use of equipment;
• shortcomings in the approach to optimising patient doses, in terms of setting up examination protocols, collecting delivered doses, and utilising dosimetry data (leading to late detection of exceedances).

ASNR analyses and inspections have also revealed a lack of radiation protection culture, evidenced in particular by:
• a lack of critical analysis of the doses delivered during examinations;
• a lack of suitable resources and tools for analysing and archiving doses delivered;
• shortcomings in retrospective assessments of the doses delivered to patients, with a lack of data collection for the completion of DRLs, particularly with regard to paediatric DRLs;
• failure to systematically record the dose delivered to the patient in procedure reports.

1. Cohort: group of individuals considered as a whole and participating in a statistical study of the circumstances of occurrence of diseases.
2. The paediatric population includes children and adolescents from birth up to and including the age of 17.



Equipment installation and commissioning: a critical stage in optimisation

The installation and commissioning of new radiology equipment is a critical stage. A medical device must be *"properly supplied, correctly installed, maintained and used in accordance with its intended purpose"* according to Article R. 5211-17 of the Public Health Code, and *"accompanied by the information necessary to ensure it can be used correctly and safely, taking into account the training and knowledge of potential users".*

In several cases, users[3] were trained in the use of the device when the equipment was installed, but the high turnover in radiology teams meant that users' knowledge of the machines' functions (collimation, filtration, etc.) could not be maintained over time. The lack of formally established protocols for the equipment in question contributed to this loss of knowledge, since the basic documents needed to build the skills of new arrivals and implement best practice were non-existent. ASNR points out that training – including qualification of personnel in the use of medical devices – and the establishment of formalised practices are essential safety barriers.

In addition, optimisation of the doses delivered by the equipment at the time of its installation, taking into account the various procedures for which it is intended, must be carried out in consultation with the various professionals involved: doctors, radiographers, medical physicists and the supplier's application engineer. The involvement of the medical physicist and the doctors at this stage is not always observed, even though the optimisation process must be implemented on a collaborative basis in order to achieve the best compromise between the doses delivered and the desired image quality.

ASNR calls for a stronger radiation protection culture in the field of conventional radiology

Optimisation on commissioning of equipment must be supplemented by a regular optimisation process based on analysis of quality controls, regular collection of doses delivered to patients, implementation of regular dosimetry assessments, analysis of the results of these assessments, and comparison of the latter with the DRLs, where they exist. All these elements constitute barriers enabling teams to be rapidly alerted with respect to any malfunctions or misuse.

The significant events that occurred in 2025 highlight the importance of connecting radiology equipment to a Dose Archiving and Communication System (DACS) to facilitate analysis of the doses delivered. In this respect, ASNR considers that it would be appropriate to strengthen the regulatory obligations for activities for which these systems are not currently required. In addition, key information for patient monitoring, including the dose received, must be recorded in the procedure report by the person carrying out the imaging procedure.

Diagnostic Reference Levels (DRLs), a tool for optimisation

The principle of optimising exposure to ionising radiation, established by Article L. 1333-2 of the Public Health Code and specified in R. 1333-61 of the same Code, has led to the introduction of the concept of "Diagnostic Reference Levels" (DRLs) in the area of medical imaging using ionising radiation.

These DRLs, which must not be considered "dose limits", are established according to the type of examination, and differ between adults and children. DRLs are thus dosimetric indicators used to assess the quality of practices. They are only meaningful when assessing average practice (based on groups of patients) and should not be compared with an individual patient's exposure. Therefore, the comparison of a DRL value with a dose received during an individual examination is not relevant for a given individual, because in certain situations the conditions of the examination can justify a higher value (to take into account the patient's morphology for example, or other factors that do not call into question the benefit/risk ratio of the procedure).

ASNR points out that the primary guarantee of a high level of radiation protection lies in a robust radiation protection culture, fostered by trained professionals equipped with appropriate resources and tools.

Based on Operating Experience Feedback (OEF) from significant events, ASNR will undertake several initiatives over the coming months and years:

- It will step up its controls by carrying out a campaign of paediatric radiology inspections in 2026, during which it will provide professionals with a self-assessment tool so that they can assess their regulatory compliance with radiation protection requirements and ensure that good radiation protection practices are implemented.
- As these events have highlighted the difficulties in communicating with both the general public and patients, ASNR will begin work on these subjects in collaboration with the Professional Radiology Council (G4) in particular. To date, there is no communication scale for radiology and nuclear medicine activities similar to the ASN-SFRO scale, developed for radiotherapy, which facilities understanding of the severity of notified events.
- As part of the ongoing revision of ASN resolution 2019-DC-0667 of 18 April 2019 setting DRL values, OEF from these significant events will be used to encourage analysis and feedback for paediatric procedures.

3. *See the guide entitled* 'Recommendations on training in the use of medical devices emitting ionising radiation' *on the ASNR website.*

Cigéo

ASNR has issued its opinion on the creation authorisation application

In November 2025, on completion of the technical review of the creation authorisation application for Cigéo, ASNR issued its opinion[1] on this application, called for by Article L. 542-10-1 of the Environment Code.

After several decades of research and development, in January 2023 Andra submitted a Creation Authorisation Application (DAC) for a deep geological waste disposal repository. This facility, called "Cigéo", is intended for the disposal of high and intermediate-level long-lived radioactive waste.

Following the referral from the Ministry for Energy Transition received in March 2023, ASNR carried out a technical review of the dossier and issued its opinion on it. This opinion was issued at the end of a conventional expert assessment and review process, accompanied by steps to gather the expectations and concerns of stakeholders (in particular the Local Information and Monitoring Committee (CLIS) for the Bure laboratory, the National Association of Local Information Committees and Commissions (Anccli), representatives of associations and civil society in general, etc.) in the form of consultations on referrals issued by ASN (and subsequently ASNR) to IRSN and the Advisory Committee of Experts for Waste (GPD), a technical dialogue during the expert assessment of the dossier, and a consultation on ASNR's draft opinion with stakeholders.

The expert assessment of DAC submitted by Andra was organised along three thematic lines: the basic data adopted for the Cigéo safety assessment, the safety of the surface and underground facilities during the operational phase, and long-term safety. At the end of each phase, IRSN, and subsequently ASNR's Environmental Research and Expert Assessment Department, together with the GPD, submitted their expert assessment reports on the dossier submitted by Andra.

The opinion issued by ASNR, as required under Article L. 542-10-1 of the Environment Code, will accompany the creation authorisation application file during the public inquiry into the project, in order to inform the public about the technical issues relating to the safety of the facility as presented in the file.

Cigéo is the project for the reversible disposal of ultimate radioactive waste. It will be established in Bure (Meuse *département*).

The waste that will be stored in Cigéo is known as high-level long-lived waste (HLW-LL) and intermediate-level long-lived waste (ILW-LL). It originates mainly from the operation and decommissioning of French nuclear facilities, and in particular from the recycling of spent nuclear fuel.

The waste will be inserted into disposal containers and lowered by robotic devices to a depth of around 500 m, in the middle of a layer of clay more than 140 m thick and 160 million years old.

Cigéo is scheduled to be fully commissioned in 2055, and to operate for around 100 years. Its cost, which is currently being reassessed, was set at €25 billion in 2016.

In its opinion, ASNR considers that Andra has acquired a sufficient knowledge base concerning the basic data adopted for the safety assessment and that the safety case for the operating and post-closure phases, established on this knowledge base, is satisfactory at the DAC stage. This safety case must be supplemented with a view to commissioning (limited to the pilot industrial phase).

The pilot industrial phase was legally introduced in Article L. 542-10-1 of the Environment Code, following the public debate on the Cigéo project in 2013. The objective of this initial phase in the development of the Cigéo project will be to progressively test Cigéo's technical and operational functionalities under real conditions. It aims to confirm the reversibility of the facility, and to confirm its safety case, in particular through a programme of *in situ* tests.

The opinion also sets out the elements that ASNR considers necessary for the update of the file, scheduled before the public inquiry, as well as the elements expected at later stages of the project's development, particularly during the pilot industrial phase. ASNR considers that the commitments made by Andra to update the creation authorisation application file prior to the public inquiry meet the expectations raised during the technical review. This additional information relates to the adaptability of Cigéo, uncertainties regarding the volume of primary packages, the inventory of toxic chemical substances and their long-term impact on health, the contribution of carbon-14 (^{14}C) to the dose at outlets from the facility[2], and sealing.

1. https://www.asnr.fr/actualites/lasnr-publie-son-avis-sur-la-demande-dautorisation-de-creation-de-cigeo
2. Estimated radiological dose (in Sieverts) at a facility's liquid or gaseous release points, calculated on the basis of the characteristics of the effluents released, in order to assess the potential radiological impact on the environment and populations.

Reversibility

Reversibility is the ability, for successive generations, to either continue the construction and then the operation of successive sections of a disposal facility, or to reassess previous choices and change the management solutions.
It is materialised by the progressive nature of the construction, the adaptability of the design and the operational flexibility of Cigéo, enabling technological progress to be integrated and allowing adaptation to possible changes in waste inventory following a change in energy policy. It includes the possibility of retrieving waste packages from the repository under conditions and over a time frame that are consistent with the strategy for operation and closure of the repository.

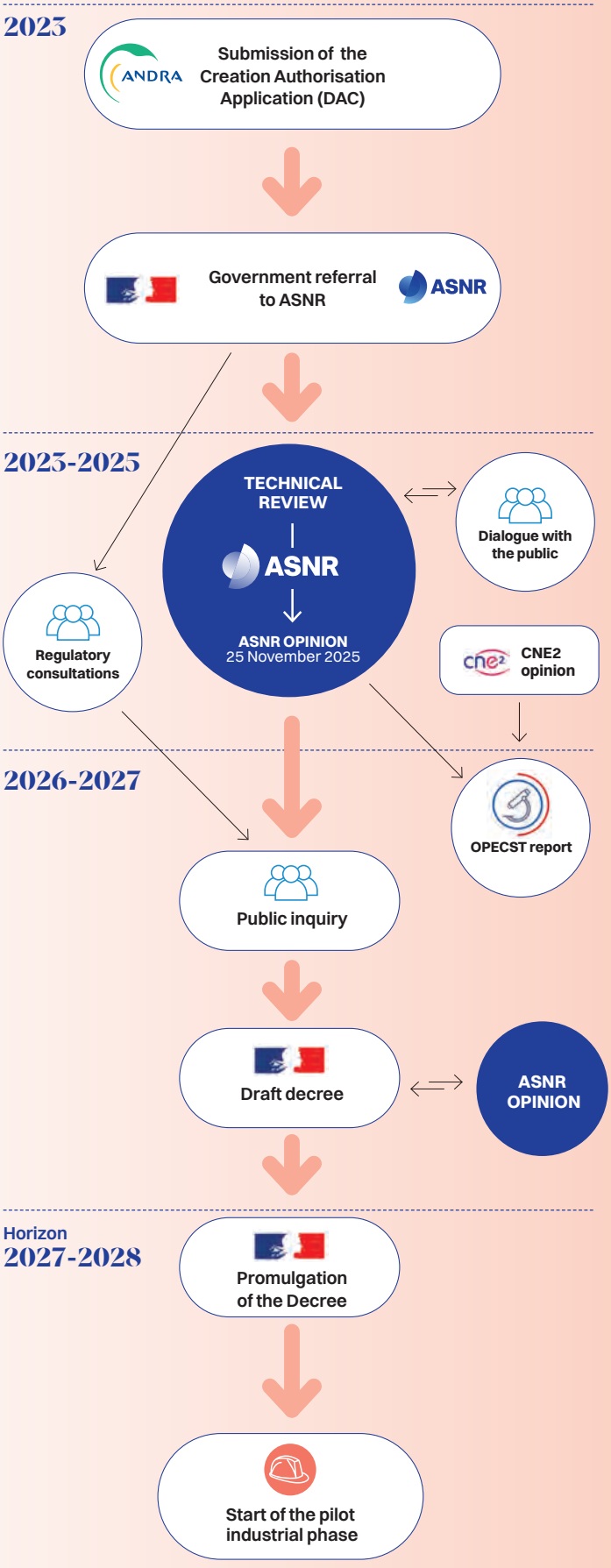
The additional information and consolidating elements expected during the pilot industrial phase are important for nuclear safety in operation and in the long term, but are not required at the DAC stage. ASNR considers that the commitments made by Andra, some of which require the implementation of the pilot industrial phase, will make it possible to provide these elements when they are required. ASNR therefore considers that the dossier, completed by Andra in accordance with the commitments made during the review, can be taken forward as the basis for the public inquiry. ASNR's opinion was presented to Parliamentary Office for the Evaluation of Scientific and Technological Choices (OPECST) and High Committee for Transparency and Information on Nuclear Safety (HCTISN) in December 2025.

Following publication of ASNR's opinion and that of the National Review Board (CNE2), OPECST will issue its report assessing the DAC file.

The opinions of ASNR, CNE2, regional authorities, and the competent environmental authority (in the case of Cigéo, the Inspectorate General for the Environment and Sustainable Development), will be appended to the DAC dossier for the public inquiry phase, which will take place in 2026.

Once the public inquiry has been completed, authorisation for creation of the new facility may be granted by a decree issued by the *Conseil d'État* (Council of State). This decree would mark the start of the first phase in the life of Cigéo: the pilot industrial phase. The results of the pilot industrial phase will be the subject of a report by Andra, and will be subject to assessment by ASNR, CNE2 and the OPECST. Once these results have been analysed, the Government will submit a bill to Parliament to provide a framework for the full operation of the facility and to adapt the conditions for its reversibility.

REVIEW PROCESS FOR THE CIGÉO CREATION AUTHORISATION APPLICATION



Ageing management of France's nuclear fleet

Outlook for continued operation of EDF's nuclear reactors

As it had done for the 900 MWe reactors in 2021, ASNR set out, on 1 July 2025, the conditions for continued operation of EDF's 1,300 MWe reactors up to 50 years.

In parallel with the ten-yearly periodic safety reviews, ASNR is currently examining the hypothesis of continued operation of the reactors up to 60 years and beyond, in order to inform energy policy stakeholders.

A periodic safety review every ten years

In France, the authorisation to create a nuclear facility is issued by the government after consulting ASNR. This authorisation is issued for an unlimited period. An in-depth examination of the facility, known as a "periodic safety review", is carried out every ten years in order to assess the conditions for its continued operation for a further ten years.

During this periodic safety review, the licensee must ensure that the facility is operated in compliance with the applicable safety requirements, and that equipment ageing phenomena are managed appropriately. The licensee must also improve the safety of the facility, taking into account developments in knowledge and bringing it closer to the levels achieved by the most recent facilities.

The fourth periodic safety review: significant improvements in reactor safety

The fourth periodic safety review, which takes place around 40 years after the reactors were commissioned, will result in significant improvements in safety, bringing their safety level closer to that of so-called "third-generation" reactors. It also completes the deployment of the "hardened safety core" defined following the Fukushima Daiichi nuclear power plant accident in Japan.

As it had done for the 900 MWe reactors in 2021, ASNR set out, on 1 July 2025, the conditions for continued operation of the 1,300 MWe reactors up to 50 years[1]. All the measures planned by EDF combined with those prescribed by ASNR open up the prospect of continued operation of these reactors for the ten years following their fourth periodic safety review.

To analyse the studies carried out by EDF for the fourth periodic safety review of the 1,300 MWe reactors, ASNR relied on a tried and tested expert assessment process, the conclusions of which appear in 40 opinions issued by IRSN between 2019 and 2024. Over a period of five years, this expert assessment phase will have involved nearly 160 IRSN experts and researchers at its peak, who will have spent a total of more than 180,000 hours on it ***(see spotlight No. 13 in chapter 8 of the full ASNR Report)***.

The safety improvements to the facilities planned during this review will be implemented reactor by reactor during the fourth periodic safety review. Substantial work will therefore be carried out, until 2040 in the case of the final reactors, to improve accident control and make the reactors more resilient to hazards. New safety systems will be installed, including an ultimate containment cooling system, which will be used to remove heat from the reactor building in the event of an accident with core melt, and a system for distributing water from the ultimate water source, which will supply the steam generators and the spent fuel pool.

The fifth periodic safety review: taking greater account of the effects of climate change

ASN set out its position on the objectives of the fifth periodic safety review of the 900 MWe reactors in December 2024. This review will take place around 50 years after the reactors were commissioned.

In the light of the major modifications made as a result of the fourth periodic safety review, not all the hazards and environmental impacts will be reassessed during the fifth periodic safety review. This will primarily focus on:
- verifying the conformity of the installations with their applicable requirements, maintaining equipment qualification and ageing management, for operation up to 60 years;
- the effects of climate change, both in terms of managing the risks of accidents caused by external hazards (rise in sea level, heatwaves, etc.), and the impact on the environment (water intake and consumption).

Outlook for continued operation beyond 60 years

French nuclear power reactors were commissioned on a tight schedule, mainly in the 1980s. Despite the specific characteristics of each reactor, this situation could lead to their final shutdown over a relatively short period.

1. The four 1,450 MWe reactors will receive the same safety improvements within the scope of their third periodic safety reviews, starting in 2029.

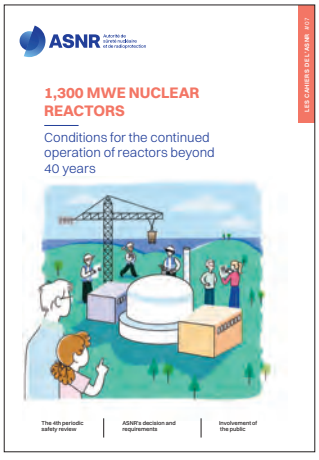
CATTENOM NUCLEAR POWER PLANT

Given the time needed to build new electricity generating capacity, the prospects for the continued operation of EDF's current reactors must be taken into account sufficiently in advance when defining energy policy.

In particular, it is essential to have sufficient margins in the electrical system to cope with a serious generic flaw[2] leading to the simultaneous suspension in operation of several reactors, as was the case recently with the discovery of stress corrosion cracks in the piping of several reactors.

The periodic safety review process, which only covers the subsequent ten years, and whose generic phase concludes shortly before the first ten-yearly outages of the reactors, does not enable this need to be met. ASNR has additionally put in place a complementary approach so that it can rapidly obtain information that will enable it to construct, from a nuclear safety point of view, hypotheses for reactor operating lifetimes for use by energy policy stakeholders.

ASNR has therefore asked EDF to study in advance the possibility of continuing to operate the current reactors up to 60 years and beyond, to enable an in-depth review to be carried out. Between now and the end of 2026, this review will enable ASNR to identify any obstacles to continued operation beyond 60 years, as well as the major technical issues that EDF will need to address as a priority.



Find out more

Les cahiers de l'ASNR No. 7

1,300 MWe nuclear reactors

Conditions for the continued operation of reactors beyond 40 years

2. The French reactors are technically very similar and thus form a standardised fleet operated by EDF. Although this uniformity means that the licensee and ASNR have extensive experience of their operation, it also means that there is a higher risk if a generic design, manufacturing or maintenance flaw (i.e. a flaw applicable to all reactors) is detected in one of these installations, as it could then affect all the reactors.

ASNR ASSESSMENTS

The French Authority for Nuclear Safety and Radiation Protection (ASNR) carries out its oversight role by using the regulatory framework and individual resolutions, inspections, and if necessary, enforcement measures and penalties, in a way that is complementary and tailored to each situation, to ensure optimal control of the risks nuclear activities represent for people and the environment. ASNR reports on its duties and produces an assessment of the actions of each licensee, in each activity sector.

ASNR assessments per licensee

EDF

The nuclear power plants in operation

The quality of operation of the Nuclear Power Plants (NPPs) remained satisfactory in 2025. In addition, the figures for 2025 confirm that EDF has improved its management of maintenance outages for its reactors, which is beneficial for plant safety.

OPERATION

ASNR considers that the quality of reactor operation and control improved in 2025. In particular, ASNR noted fewer situations where installations were operated outside their planned limits, and improvements in the reliability of operations likely to have an impact on reactivity control. ASNR also takes a positive view of the gradual rollout, in the immediate vicinity of control rooms, of operation simulators designed to prepare staff for operational activities. On the other hand, after noting positive results in 2024 concerning control of system configuration, ASNR again identified shortcomings in this area.

Fire risk management remains a sensitive issue, as it is one of the main risks present in a nuclear power plant. In 2025, four fire outbreaks outside the nuclear zone led to activation of the on-site emergency plan on the sites concerned, but had no impact on safety.

ASNR noted improvements in fire detection management, response resources and staff training. In particular, EDF has implemented changes to its fire-fighting organisation in order to improve response conditions and to enable a fully-fledged fire to be tackled more quickly.

The new organisation is designed to ensure that the fire-fighting resources deployed by EDF and by Fire and Emergency Services complement each other more effectively. At some sites, professional firefighters are on standby during the day. However, as in previous years, ASNR considers it necessary for EDF to improve the management of temporary storage of combustible materials during construction work and maintenance operations.

ASNR considers that the measures put in place to guard against the risks of mixing of incompatible chemical substances, and their application on the sites, are not satisfactory. The inspectors' findings show that the issues at stake have not been fully taken on board by the workers involved. ASNR expects EDF to take the necessary steps to ensure the effective implementation of the procedures currently in place to prevent such risks, and to accelerate the rollout of the planned new measures.

The situations requiring the implementation of a crisis organisation in 2025 and the inspections carried out in this area confirm the high standard observed in recent years. In particular, ASNR notes that the principles of organisation, preparedness and management of emergency situations had been well assimilated. Nevertheless, as in previous years, ASNR considers that EDF must improve through-life support for the resources that could be mobilised in an emergency situation, as well as training and situational exercises for the personnel concerned.

MAINTENANCE

Maintenance of NPPs remains at a satisfactory level. The nuclear reactor outage campaign was well managed in 2025, thanks in particular to improvements in the scheduling of maintenance activities and the "Start" programme introduced by EDF. ASNR also noted the improvement in the general condition of the installations, and that the measures taken by EDF to improve the detection and resolution of deviations are continuing to bear fruit.

However, ASNR considers that EDF must continue to improve the preparation of maintenance activities. Several significant events and inspections highlighted shortcomings in the preparation or execution of activities.

REACTOR IMPROVEMENTS AND CONTINUED OPERATION

The modifications made to the facilities and operational methods by EDF within the framework of the fourth periodic safety reviews of the 900 MWe and 1,300 MWe nuclear reactors are significantly improving the safety of the facilities, making it possible to aim for the same safety objectives as those of the third-generation reactors. These periodic safety reviews mobilise significant resources within EDF. By the end of 2025, 25 out of the 32-strong fleet of 900 MWe nuclear reactors had started or completed their fourth ten-yearly outages. At the beginning of 2026, EDF also started the first fourth ten-yearly outage of its 1,300 MWe reactors.

ASNR notes that the fourth periodic safety reviews of the 900 MWe and 1,300 MWe reactors are proceeding smoothly, and considers that EDF must continue its efforts to prepare for and implement the planned modifications to the installations in good conditions.

ENVIRONMENTAL PROTECTION

ASNR considers that the management of effluent discharges into the environment by the sites was under control in 2025. It noted a reduction in the number of deviations in 2024 involving non-compliance with arrangements for checks on and monitoring of effluents or the environment. It also noted improvements in the arrangements for dealing with liquid spillage involving dangerous substances. However, events that occurred in 2025 as well as situational exercises organised by ASNR revealed shortcomings in the containment of fire-fighting water.

The improvement observed in waste management since 2022 is continuing. However, there is still room for improvement in management of waste inventories and interim storage durations, in a context in which ASNR again noted that dedicated interim storage spaces are saturated.

WORKER RADIATION PROTECTION AND OCCUPATIONAL SAFETY

In 2025, as in 2024, EDF continued its proactive approach to reducing point sources of radiation. However, ASNR remains critical of risk management with regard to radiological contamination dispersion and the implementation of containment measures at worksites. In particular, it considers that EDF must reduce the number of cases of worker contamination and contamination spots on site roads.

Progress was observed in the management of industrial radiography worksites and in the training of personnel responsible for controlling access to reactor buildings. Conversely, difficulties persist regarding the supervision of outside contractors and the attitude of some workers towards their own radiation protection, particularly with regard to the use of dosimeters.

In addition, the findings made regarding occupational health and safety in 2024 are still relevant in 2025. For example, worksite preparation needs to be improved to limit the risks of exposure to asbestos and lead. ASNR inspections also highlighted problems with collective protection against falls from height, protection of personnel in the event of fire, and periodic verifications of electrical installations and ventilation systems.

SUPERVISION OF SUBCONTRACTED ACTIVITIES AND SUPPLIERS

ASNR noted a positive dynamic within NPPs with regard to the improvement of contractor skills. EDF is implementing tangible measures, such as increased provision of spaces for preparation of activities on mock-ups.

EDF's supervision of subcontracted activities is improving overall. However, the difficulties encountered by certain outside contractors mean that EDF must continue to step up its actions.

ASNR also monitors the supply chain for equipment that is important for the safety of NPPs, in view of the importance of this equipment. ASNR notes that the industry has tackled the issue of manufacturing quality, and that visible progress has been made. Inspections carried out by ASNR have revealed an improvement in the way the industry takes regulatory requirements into account, providing evidence of a better safety culture among suppliers.

Nevertheless, the inspectors once again noted weaknesses within EDF's subcontracting chain, linked to the fact that certain quality standards and technical requirements specific to the nuclear sector were not well assimilated. One of the key reasons for this is a lack of clarity about the issues and implications associated with the technical requirements concerned. Inspectors also found that EDF does not sufficiently incorporate this dimension into its supplier qualification process.

The EPR 2 reactor programme

In 2023, EDF submitted the creation authorisation application for two EPR 2 reactors on the Penly site (Seine-Maritime *département*). ASNR completed the expert assessment phase of this application at the beginning of 2026. It underlines the quality of the technical discussions and the important work carried out by EDF to provide answers to the questions raised. The design of the EPR 2 reactor is more advanced than the Flamanville EPR reactor at the same stage, which is a positive point.

With regard to the manufacture of equipment for the nuclear steam supply system, ASNR notes that Framatome and EDF have continued their efforts to implement design and manufacturing approaches that take into account operational experience feedback from the construction of the Flamanville EPR reactor. In particular, a large number of technical qualification operations has been carried out in 2025 to ensure that the manufacturing processes for forged parts are under control.

Individual nuclear power plant assessments

ASNR's assessments of each NPP are detailed in the Regional Overview section of this report.

With regard to safety, the Civaux NPP and, to a lesser extent, the Saint-Alban NPP, stood out positively in 2025. The Gravelines and Dampierre-en-Burly NPPs, however, under-performed by comparison with the other NPPs operated by EDF.

With regard to radiation protection, the Civaux, Chooz and Saint-Alban NPPs stood out positively. Conversely, ASNR considers that the Cruas-Meysse, Cattenom and Gravelines NPPs had under-performed.

With regard to environmental protection, the Dampierre-en-Burly and Tricastin NPPs stood out positively, while the Paluel and Flamanville plants under-performed.

Nuclear power plants being decommissioned and waste management facilities

In 2025, EDF continued to decommission or prepare for the decommissioning of its facilities. ASNR notes that good progress has been made on some projects (Fessenheim, Superphénix), but highlights delays on others. ASNR considers that EDF must remain vigilant to ensure that projects progress smoothly, while maintaining satisfactory safety and radiation protection conditions.

ASNR considers that EDF's facilities undergoing decommissioning or being prepared for decommissioning are generally well maintained. However, efforts must be made by EDF at the Chooz A worksite to improve overall control of worksites and of radiation protection for the workers involved. ASNR is particularly vigilant on this issue, especially as 2026 will see an increase in the number of decommissioning projects across the various sites operated by EDF/DP2D (Decommissioning and Waste Projects Division).

INSTALLATIONS SHUT DOWN OR UNDERGOING DECOMMISSIONING

The reactors operated by EDF finally shut down or undergoing decommissioning (Brennilis, Chooz A, Fessenheim, Superphénix, Gas-Cooled Reactors – GCRs) no longer contain any spent fuel. The main safety issues therefore concern the containment of radioactive substances and radiation protection. Some installations also present an additional risk linked to the presence of asbestos, sometimes combined with the presence of radiological contaminations, which makes the intervention conditions more complex.

ASNR notes positively that almost all the preparatory work for decommissioning the Fessenheim facility was completed in 2025. Work is proceeding according to plan, so that the installation achieves the initial state planned for entry into force of the future decommissioning decree, scheduled for 2026.

At the Chooz A decommissioning worksite, a major milestone was reached by EDF in March 2025 with the lifting of the reactor vessel in preparation for cutting up. While decommissioning work in the caverns is being stepped up, a deterioration in operational performance and worker radiation protection has been observed. ASNR considers that EDF must improve the performance of this site, which will be the subject of tightened surveillance by ASNR in 2026.

ASNR will also remain vigilant with regard to the satisfactory performance of the various steps in the decommissioning at the Irradiated Materials Facility (AMI) at Chinon (BNI 94), where the main operations are experiencing significant delays.

With regard to the GCRs, in 2025 EDF continued the "out of vessel" decommissioning work on the reactors at Saint-Laurent A, Bugey 1 and Chinon A3 in satisfactory safety conditions. However, there were delays on some activities, mainly due to contractual difficulties.

Examination of the decommissioning files for the six GCRs continued in 2025, with a technical expert assessment underway. ASNR additionally checked EDF's organisational arrangements for managing these projects. ASNR notes that the project management arrangements developed by EDF appear to be robust, with appropriate management of planning. Certain points requiring particular attention were highlighted, in particular with regard to the preservation of knowledge and the up-to-date monitoring of "project risks" (***see chapter 10 of the full ASNR Report***).

THE SPENT FUEL AND RADIOACTIVE WASTE MANAGEMENT FACILITIES

With regard to its facilities in operation, EDF is carrying out numerous equipment upgrades in the Superphénix spent fuel storage unit (Apec), which is satisfactory. ASNR considers that EDF must continue to consolidate the radioactive waste retrieval projects, notably the soda blocks stored in the Apec and the graphite sleeves contained in the Saint-Laurent silos. For this latter project, ASNR notes with concern the postponement of the deadlines for waste retrieval. It emphasises the importance of achieving a sufficient level of project maturity and adequate safety provisions for the future storage of the graphite sleeves, particularly in the scenario where a storage route is not yet available when they are removed from the reactors being decommissioned.

ORANO

ASNR considers that the safety level of the Basic Nuclear Installations (BNIs) operated by Orano is satisfactory and that the overall operation of the "fuel cycle" installations has now stabilised. However, ASNR calls on Orano to maintain a high level of vigilance regarding the risk of saturation of storage capacity for spent fuel and plutonium-bearing materials in the short and medium term.

The studies and work undertaken by Orano for the renewal of the "fuel cycle" plants over a timeframe extending roughly from 2040 to 2060, and with regard to the long-term future of existing facilities (until their replacement), are continuing with a positive dynamic. The "Future Back-End" and "Continuity - Resilience" projects have thus become key focal points for the organisation and mobilisation of Orano's teams. ASNR notes, however, that the timetable for commissioning new spent fuel storage capacities – which is an essential first step, independently of the rest of the programme – leaves no margin with respect to the timeline for the projected saturation of current capacity.

Orano must also continue to ensure that the resources committed to projects linked to facilities yet to be constructed are not in competition with projects aimed at maintaining and improving the level of safety at existing facilities. ASNR stresses that support functions and the processing of legacy radioactive substances stored on site at both La Hague and Tricastin remain top priorities.

Installations in operation

As part of the implementation of measures to mitigate the saturation of the spent fuel storage pools at the La Hague site, Orano began in 2025 to replace baskets containing spent fuel with baskets featuring a smaller cross-section, known as "densified" baskets, in order to gradually increase the spent fuel storage capacity in the pools. ASNR commends Orano's efforts to deploy these baskets, which are intended to be used in the event of a risk of a blockage in storage capacity due to a major unforeseen event at a "fuel cycle" facility.

ASNR views positively the implementation of projects to secure the management of radioactive materials and waste at the La Hague site, in particular the commissioning of a third extension for plutonium-bearing material storage, authorised by ASNR in March 2025, which will increase the storage capacity for containerised MOX scrap (RBM).

ASNR notes Orano's ability to carry out, on schedule, the construction work for the extension of the Georges Besse II plant (BNI 168), which started in September 2024, following a public inquiry in spring 2024.

Lastly, ASNR emphasises that the action plan to overcome production difficulties at the Melox plant at Marcoule has enabled MOX fuel production to meet expectations without excessive production of "MOX scrap".

Long-term development at "fuel cycle" plants

The project to build new "underwater" storage capacity for spent fuel, now led by Orano and part of the ambitious industrial programme to renew facilities at La Hague, known as the "Future Back-End" project, is under way, with the aim of commissioning the first pool by 2040.

ASNR calls on Orano to ensure that the related studies and work make good progress, in particular so that a robust and appropriate design baseline is assured for the new spent fuel storage facilities, and that the commissioning schedule is respected.

Legacy waste retrieval/conditioning and decommissioning

Large quantities of legacy waste, mainly at the La Hague site, are not stored in accordance with current safety standards and present major risks. The retrieval and conditioning of this legacy waste (RCD) is a key step in the progress of decommissioning of definitively shut down plants.

ASNR periodically monitors the progress of these complex projects and takes a positive view of the good assimilation of the project maturity assessment by Orano, as well as the deployment of management tools.

ASNR notes the efforts maintained by Orano in 2025 with respect to waste recovery and conditioning projects at the La Hague site. Nevertheless, some priority projects are encountering technical or contractual difficulties that are delaying source term reduction operations and ultimately the decommissioning of facilities. ASNR remains vigilant as to the robustness of the waste recovery and processing scenarios, and the reliability of the processes implemented for this purpose.

With regard to decommissioning operations at the La Hague site, ASNR considers that Orano must improve the maturity level of the proposed solutions and ensure optimum forward planning for technical and regulatory constraints, as well as interactions between facilities in operation and those undergoing decommissioning.

As a result, ASNR gave Orano formal notice to carry out the rerouting of first-generation transfer ducts, the use of which was due to cease in 2024.

ASNR also calls on Orano to lean from the experience of the fire that occurred in 2025 inside the controlled area during decommissioning operations in the Medium Activity Plutonium (MAPu) facility.

The decommissioning of the George Besse I facility at the Tricastin site progressed satisfactorily in 2025, in particular with the dismantling of the old cooling towers. ASNR remains vigilant regarding the progress of the studies for decommissioning of the diffusion cascades.

With regard to the second facility being decommissioned at Tricastin, Comurhex 1, ASNR highlights the progress made in removing materials and waste from storage in area 61 following the formal notice issued to the licensee, which should be completed in 2026. ASNR views positively the new approach of establishing interim assessment points to allow close monitoring of decommissioning operations.

Individual facility assessments

The ASNR assessments of each nuclear facility are detailed in the Regional Overview in this report.

CEA

Most French nuclear research facilities have been historically operated by the Alternative Energies and Atomic Energy Commission (CEA). Although some are still contributing to CEA's scientific and technical research programmes, a good number of them have been shut down and CEA is faced with major challenges in order to decommission them and manage the legacy waste satisfactorily. ASNR considers that the safety of the facilities operated by CEA is still under control but that the results of the projects to maintain the facilities in operation, as well as projects for decommissioning of shutdown facilities and legacy waste retrieval and conditioning, still differ widely and remain exposed to potential major contingencies. Despite the gradual reinforcement of the project management practices, performance remains limited by the resources available and by the operational capacity of the contractors in the sector. In addition, the operational reality of the worksites is nearly always more complex than anticipated, to the extent that an entire project is sometimes called into question, or at the very least the deadlines are significantly pushed back, a situation that ASNR considers unsatisfactory. In this respect, ASNR considers that schedule compliance remains a point of concern.

CEA's decommissioning and materials and waste management strategy

In 2025, in order to keep track of the progress of projects with the highest priority for safety, ASNR and CEA continued the system of regular, high-level reporting of the deadlines with the most significant safety implications. ASNR notes positively the constant commitment of CEA managers to the oversight and monitoring of these milestones, as well as the quality of technical discussions with ASNR, which have been constructive and regular overall.

Most of the commitments for submitting files to ASNR were achieved in 2025. ASNR notes, however, that these still mainly concern the submission of files with a limited operational scope. While recourse to this type of commitment may be justified in certain contexts, particularly at the preparation and design stage, ASNR points out that the credibility of the management of decommissioning and legacy waste retrieval and conditioning projects can only be assessed on the basis of the actual execution of these operations.

In 2025, CEA continued a number of actions to help reduce the residual risks of certain facilities that have been permanently shut down or are being decommissioned, in particular by continuing work begun in previous years. These actions demonstrate the ability of CEA's teams to carry out certain complex operations. In particular, ASNR highlights the first transfers of araldited fuel from the Pégase facility to the Cascad facility (within the scope of the DECAP project), the removal of isotope generators stored at BNI 72, and the construction of the equipment needed to treat the soda present in the Phénix facility (BNI 71).

ASNR notes, however, that despite this progress, CEA still encountered considerable difficulties in 2025, in simultaneously carrying out all the decommissioning and legacy waste retrieval and conditioning operations, and in meeting the deadlines initially set. The delays observed are notably caused by technical difficulties or contractual constraints with certain contractors. These difficulties are reflected in repeated delays in deadlines, as in the case of the EPOC (BNI 72) and EMC (BNI 166) projects for disposal of highly irradiating legacy waste.

ASNR also notes that its alerts regarding certain weaknesses in CEA's waste and effluent management strategy remain unchanged. CEA is proposing no large-scale measures to safeguard this management, which is to a large extent based on unique facilities, for which there is no operational alternative, and which therefore each determine the satisfactory performance of the numerous projects using them. In this respect, ASNR is particularly attentive to the measures to be put in place by CEA following the civil engineering defects found in 2024 on the waste treatment station (BNI 37-A) located at the Cadarache centre, and to the monitoring of the schedule for commissioning of the new storage capacity required for storage of waste from all CEA centres, in particular the Diadem facility.

ASNR also notes that CEA's annual budget to finance provisions for nuclear costs is limited. In addition, certain key decommissioning and waste retrieval and conditioning operations were subject to a degree of uncertainty in 2025 regarding the availability of the financial resources needed for their execution. ASNR reiterates that CEA must have the necessary means to fulfil all the commitments it has undertaken, where these relate to priority safety issues.

Research facilities in operation

There are safety issues around the research facilities in operation linked to the development of their R&D activities (support for the current and future nuclear fleet), their activities to support other CEA facilities, and their being maintained in safe and operational conditions in compliance with the prescriptions stipulated further to their periodic safety reviews (renovation and seismic reinforcement works, removal of radioactive substances and waste from storage, etc.). As with the decommissioning and waste management projects, ASNR observes that CEA is encountering major difficulties with meeting the deadlines initially set for the refurbishment of old facilities or the removal of legacy substances and waste present in these facilities. However, ASNR notes positively the implementation in 2025 of high-level joint monitoring by CEA and ASNR of the deadlines for the operations and works that present the main safety challenges for these facilities. In particular, ASN had, in 2024, ordered the implementation by 2027 of a system for detecting and automatically cutting off the Atalante facility's water and electricity supplies in the event of an earthquake. This monitoring has enabled ASNR to check the progress of the work, and in particular the achievement of a first milestone in July 2025, in accordance with CEA's commitment. This monitoring system will have to be consolidated in 2026 to include intermediate milestones on the critical path of the projects concerned.

The main new research facility project sponsored by CEA, the Jules Horowitz Reactor (JHR), is being carried out satisfactorily and transparently.

BNI operations

RISK CONTROL AND EMERGENCY MANAGEMENT

ASNR considers that the safety of the facilities is satisfactory. During the course of the inspections carried out in 2025, it nonetheless identified certain topics which require improvements. This mainly concerns the performance of periodic checks and tests, waste reconditioning operations, the safety of shielded cell handling operations and the traceability of outside contractor monitoring, and analysis of the results. For the year 2025, the number of significant safety-related events notified by CEA remains of the same order of magnitude as in 2024. A large number of these notifications once again concerns non-compliance with the frequencies mentioned in the BNI general operating rules. ASNR considers that CEA must pay particular attention to this point.

With regard to emergency management, ASNR considers that the situation is not satisfactory, both at the Cadarache site, where CEA is significantly behind schedule in the construction of the new emergency management buildings, and at the Saclay site, where inspectors noted operational shortcomings following the commissioning of the new emergency situations management premises (the shortcomings concerned atmospheric sampling and measurement equipment, and mobilisation and intervention times for mobile sampling and measurement means that exceeded the specified values).

Finally, during a dedicated inspection in 2025, ASNR found that the measures implemented by CEA to comply with the requirements for the supply of equipment or parts for Protection Important Components (PICs) for its facilities, and for the oversight of suppliers of such equipment for the purpose of monitoring the supply chain, were satisfactory.

PERSONNEL RADIATION PROTECTION

Following an increase in the number of Significant Radiation Protection Events (ESRs) notified by CEA in 2024, the number in 2025 returned to a level equivalent to 2023 and 2022. However, it should be noted that two significant events at level 1 on the INES scale occurred at the CEA Fontenay-aux-Roses site. One of the events involved the authorised activity level being exceeded during handling of waste in a room, resulting in contamination of workers' clothing. The other involved a fire outbreak as a result of an exothermic reaction during suction of a small quantity of powder that had not been clearly identified during the risk analysis carried out prior to the operations. ASNR is monitoring the progress of the additional investigations and the implementation of the corrective actions taken by the licensee, and will remain vigilant with regard to the management of waste in the building concerned, in particular the storage and handling conditions.

ENVIRONMENTAL PROTECTION

Control of detrimental effects and the impact on the environment by CEA's facilities, for the year 2025, is satisfactory. The number of significant environmental events notified in 2025 is down on previous years, with no notable events.

ASNR considers, however, that CEA must continue its efforts to take measures in several areas associated with environmental protection, notably with regard to soil pollution. ASNR finds it regrettable that CEA has still not developed, or implemented operationally at the sites, a national strategy for the management of contaminated sites and soils. However, ASNR noted an improvement in the maintenance and refurbishment of existing piezometric structures needed to characterise groundwater, and in the network verification programme for preventing groundwater pollution.

Safety reassessment of facilities

ASNR considers that the organisation put into place by CEA to evaluate the conformity of its facilities and reassess their safety during the periodic safety reviews, is appropriate. The inspections carried out by ASNR on the topic of the periodic safety reviews identified some points for improvement which must be addressed by CEA, notably concerning monitoring of the action plan as a result of the periodic safety review. CEA will also have to continue its efforts in the coming years in order to comply with the schedule for implementation of the compliance and safety improvement work defined by these periodic safety reviews, so that in all cases a new review can be started once the deployment of the action plan from the previous review has been completed.

Individual facility assessments

The ASNR assessments of each centre and each nuclear facility are detailed in the Regional Overview in this report.

ANDRA

ASNR notes the continuing positive dynamic within the team at the National Radioactive Waste Management Agency (Andra) responsible for the examination of the creation authorisation application file for the Cigéo deep geological repository, submitted on 16 January 2023. The technical examination of the application was completed in 2025.

The Cigéo project

The technical examination of the Cigéo creation authorisation application continued in 2025, notably with the third and final meeting of the Advisory Committee of Experts for Waste (GPD), during which the long-term safety of Cigéo was examined. This technical examination phase ended with the publication of ASNR's opinion on the Cigéo creation authorisation application[1]. The regulatory consultation phase, which began at the end of 2025 with local authorities, will continue in 2026 with the holding of the public inquiry. ASNR commends Andra's responsiveness in answering the questions raised during examination of this dossier, which has enabled the expert assessment and the technical examination to proceed in accordance with the planned work schedule.

In its opinion, ASNR considers that Andra has acquired a sufficient knowledge base concerning the baseline data used for the relative safety assessment and that the safety case for the operating and post-closure phases, established on the basis of this knowledge, is satisfactory at the creation authorisation application stage. This safety case must be supplemented with a view to commissioning (limited to the pilot industrial phase).

In 2025, ASNR also continued to monitor Andra's management of the Cigéo project.

Operation of Andra's existing facilities

ASNR considers that operating conditions in Andra's facilities remained satisfactory in the areas of nuclear safety, radiation protection and environmental protection in 2025. It also underlines the good quality of the safety assessments produced by Andra, and the fact that the periodic safety reviews of the disposal facilities are carried out rigorously. The evaluation of the long-term impacts on flora and fauna of the radiological and chemical substances in the disposal facilities remains a subject for which management needs to be consolidated by Andra. It will be examined, in particular, as part of the examination of the conclusions of the third periodic safety review of the Aube repository (CSA), due to be submitted in 2026.

1. *https://www.asnr.fr/actualites/lasnr-publie-son-avis-sur-la-demande-dautorisation-de-creation-de-cigeo*

ASNR assessments by area of activity

THE MEDICAL SECTOR

The medical sector encompasses a wide range of activities and issues in terms of the doses delivered or administered to patients, workers' occupational exposure, the layout of premises, the nature of ionising radiation sources and the production of waste and effluent contaminated by radionuclides. On the basis of the inspections carried out in 2025 and an analysis over the period enabling the entire base of facilities with safety implications to be covered, ASNR considers that the state of radiation protection in the medical sector is being maintained at a satisfactory level, relatively comparable from one year to the next.

However, this finding needs to be qualified in view of the recurring weaknesses observed in all areas, the degraded situations that led ASNR to issue two formal notices to healthcare facilities carrying out fluoroscopy-guided interventional practices, and the occurrence of ESRs reflecting a lack of radiation protection culture. This includes the persistence of errors (wrong-side or target errors in radiotherapy, particularly in the context of re-irradiations, incorrect calibration of activity meters in nuclear medicine, etc.), exceedances of dose limit values for interventional practitioners as well as several events, detected retrospectively, involving cohorts of patients, including paediatric cohorts, who received doses significantly higher than those expected in conventional and interventional radiology.

In addition, these findings are part of a context of persistent signals which led to the identification of a deterioration in radiation protection culture, and which were also identified in 2025 as a contributing factor in the occurrence of ESRs, and were noted during inspections:
• a finding that resources are on the whole shrinking, with pressure on radiographer (MERM), medical practitioner and medical physicist staffing levels;
• in imaging, the use of insufficiently well-understood services to carry out the roles of Radiation Protection Expert-Officers (RPE-Os) and medical physicists, leading to shortcomings in the optimisation of patient radiation protection, or liable to lead to a loss of radiation protection expertise and a lack of flexibility in implementing regulation radiation protection requirements (training, verifications, etc.);
• increasingly complex organisations, with sharing of resources across different structures and the risk of dilution of responsibilities, against a backdrop of healthcare authorisation reforms and restructuring of services.

As far as services are concerned, the growing reliance on external organisations (Radiation Protection Organisations – RPOs) to perform the duties of radiation protection advisors or medical physicists, already observed in 2024, in all types of healthcare centres, even in those considered to be at the cutting edge of medical techniques, is weakening radiation protection culture *via* dilution of responsibilities, loss of in-house skills and a lack of understanding of radiation protection issues. This situation is a source of concern, as it involves an organisational shift that is difficult for healthcare centres to reverse. The RPO profession must urgently consolidate its skills and practices against a backdrop of rapid market growth and fierce competition, as well as pressure on staffing levels, which is conducive to a decline in service quality. This competitive market has also led some organisations to offer the services of radiation protection advisors without possessing any certification as a competent radiation protection organisation. ASNR has informed more than a hundred employers and nuclear activity managers of these practices. In addition, during an inspection, ASNR detected falsified certificates of conformity issued for non-genuine reasons. This case resulted in the individual involved being given a suspended prison sentence.

In radiotherapy, the inspections carried out by ASNR in 2025 confirm that the main fundamentals of safety in radiotherapy are in place (organisation of medical physics, equipment checks, training) and that risk profile management approaches are mature. However, difficulties persist in maintaining the Operating Experience Feedback (OEF) process, with fewer meetings of dedicated committees, less detailed analyses of ESRs, and shortcomings in assessing the effectiveness of corrective actions. Furthermore, it is still the case that preliminary risk assessments are often not sufficiently updated, either prior to organisational or technical changes, or following OEF from events. The persistence of target errors (particularly wrong-side, delineation or positioning errors), and the multiplication of simultaneous treatments of several locations or treatments in the context of re-irradiations, underline the need for centres to regularly assess the barriers in place, making greater use of national OEF.

In brachytherapy, the inspections confirm that the radiation protection rules are well taken into account, and that progress is being made in the deployment of quality management systems. However, on the basis of feedback from ESRs notified to ASNR, departments must pay particular attention to the management and traceability procedures for brachytherapy applicators, which are not sufficiently well managed. Application of the requirements concerning the protection of high-level sources against malicious acts is gradually improving, with the implementation of a source protection policy, the definition of measures to prevent unauthorised access to these sources, and the identification and control of sensitive information. However, some centres are still facing difficulties in cases in which major works are required to be carried out to ensure compliance.

In nuclear medicine, the inspections carried out in 2025 show a satisfactory, albeit mixed, picture. Worker radiation protection is generally well managed, but there are still weaknesses in equipment verifications and management of interventions by external personnel. Dosimetry monitoring also remains satisfactory, but requires particular attention in light of emerging new practices, as does the training of professionals. The inspections confirmed the need to reinforce compliance with effluent and waste management rules, particularly with the emergence of new radiopharmaceutical drugs and the observation of an increase in triggering of radiation portal monitors at waste treatment facilities. While dose optimisation and analysis of DRLs have improved, the implementation of quality management systems remains inconsistent. In addition, ESRs show persistent shortcomings in the preparation and administration of medicines, often linked to identity monitoring or incorrect use of activity meters, as well as the need to reinforce prevention of the risk of extravasation, particularly for Internal Targeted Radiotherapy (ITR) treatments involving the delivery of very significant radiological activity. They also highlight the importance of preventive management of effluent discharge incident situations by those responsible for nuclear activities and the regulatory obligation to have a discharge agreement in place between nuclear medicine departments and wastewater network operators.

The increase in clinical trials using new radionuclides raises specific issues of radiation protection, not only for patients and their families, but also for professionals, the public and the environment. This underlines the need to involve all stakeholders to ensure that access to this innovation takes place in a safe environment, and to support these developments. At the end of 2025, ASNR set up a specific organisation to examine these projects and adapted its licensing process to facilitate the inclusion of centres in clinical trials.

In the field of Fluoroscopy-Guided Interventional Practices (FGIPs), the inspections carried out show that the situation is improving in terms of radiation protection, although there is still a disparity between interventional imaging departments and operating theatres, which continue to perform less well. Progress on bringing premises into compliance is slow. Technical verifications, the appointment of Radiation Protection Advisors (RPAs) and quality control checks of medical devices are considered satisfactory. However, training in radiation protection and the coordination of preventive measures in shared-use situations are still inadequate, particularly for self-employed practitioners, who are often less aware of the regulatory requirements that apply to them as employers. Although progress is being made in formalising Medical Physics Organisation Plans (POPMs), there are still shortcomings in dose optimisation, especially in operating theatres, with protocols that are sometimes absent or unsuitable and inadequate dose analyses. The culture of reporting adverse events is improving thanks to the introduction of event recording systems. OEF from ESRs highlights the need to analyse dosimetry indicators on a regular basis and to set up a system for post-exposure monitoring of patients based on the dose levels observed. As far as healthcare professionals are concerned, the fact that dose limits were exceeded – in one case on the hands, and in the other case at the crystalline lens – once again underlines the challenges of radiation protection in this area and the need to regularly update individual dosimetry assessments and optimise practices.

In the field of radiology, the notified ESRs involving cohorts of patients highlight shortcomings in the application of the optimisation principle, with the need to optimise equipment and associated protocols from the moment they are installed and throughout their use, and to train and qualify the professionals required to use them. Analysis of quality controls, regular collection of data on doses delivered to patients, implementation of regular dosimetry assessments, analysis of the results of these assessments and comparison of the latter with national Diagnostic Reference Levels (DRLs), where they exist, are all barriers enabling teams to be rapidly alerted to malfunctions or inappropriate use. These ESRs highlight the importance of connecting radiology equipment to a Dose Archiving and Communication System (DACS) to facilitate the exploitation of dose data, and the need to reinforce regulatory obligations for activities where such systems are not currently required.

In CT scanning, inspections show good compliance by those responsible for nuclear activities with radiation protection requirements for both workers and patients, supported by strong and dynamic involvement of teams and key stakeholders. The discrepancies observed mainly concern the specific work tasks qualification process and the management of periodic verifications. Teleradiology is an important issue in this field, and led ASNR to publish the findings of a study on the subject in 2025[2]. It highlights a number of organisational, technical and human weaknesses that are likely to have consequences for radiation protection and to increase the risk of errors when this method is deployed without sufficient preparation. Seven areas for improvement were identified, including better project management upstream of teleradiology deployment, with an assessment of the impact as part of a risk management approach.

The inspection campaign of dental practices equipped with Cone-Beam Computed Tomography (CBCT), coupled with the results of the analysis of the self-assessment grids, highlighted shortcomings in the traceability of actions (writing of reports with dosimetry information, formalisation of procedures by type of action), dose optimisation (knowledge of optimisation parameters, analysis and transmission of dosimetry records), as well as the performance of initial verifications on equipment before first use.

THE INDUSTRIAL, VETERINARY AND RESEARCH SECTOR

Licensees in the industrial, veterinary and research sector are characterised by their diversity: they are numerous and carry out their activities in structures of widely varying size and status; they also use ionising radiation sources for a wide variety of applications. With regard to radiation protection, ASNR's assessment of these licensees remains more or less unchanged and reflects a widely contrasting picture as in previous years.

Among the nuclear activities in the industrial sector, **industrial radiography** and more particularly gamma radiography are priority sectors for ASNR oversight owing to their radiation protection implications. ASNR observes that the vast majority of companies maintained the necessary degree of rigorousness to meet the regulatory obligations concerning the organisation of radiation protection, training and dosimetric monitoring of the workers, the use of operators holding the required certificate of proficiency in handling industrial radiology devices (CAMARI) and maintaining gamma radiography devices. However, significant efforts are still required on the part of many companies to correctly define the programme of verifications required by the Labour Code, implement it (this issue being the subject of deviations identified in one in three inspections in 2025), correct any non-conformities identified on that occasion, and ensure the traceability of the corrections made.

In 2025, unlike previous years, abnormal exposures of industrial radiography operators were reported to ASNR: these exposures resulted from operators entering the operating zone when the radioactive source of the gamma radiography projector was not in the safe position or when the electrical device emitting X-rays was not switched off. These events are a reminder of the importance of carrying out the required checks correctly and systematically before entering the operating area (observation of indicator lights or equipment status lights, checking of the radiological environment using a radiation meter). Although the risk of incidents and the doses received by workers are on the whole well managed by licensees when this activity is carried out in a bunker in accordance with the applicable regulations, ASNR is still concerned by the observed shortcomings in the signalling of the operations area during on-site work, even though a slight improvement has been observed every year since 2022. However, the overexposure accident involving a worker at the *Centre de Recherche et de Restauration des Musées de France* (National Centre for Research and Restoration in French Museums – C2RMF), which occurred at the Louvre in July 2025, provides a reminder that safety devices that normally prevent access to the bunker (trapped-key systems, for example) can sometimes be ineffective, for instance due to the failure of a component in the safety chain, or a design that does not account for certain operating rare or unforeseen configurations. This event highlights the importance of

2. Radiation protection outlook and challenges: *https://www.asnr.fr/sites/asnr/files/2025-10/Etude-sur-la-pratique-de-la-téléradiologie-Perspectives-et-enjeux-de-radioprotection.pdf*

carrying out initial verifications and periodic checks on the relevant equipment and workplaces, and of detecting and correcting equipment failures. It also means that operators entering the bunker or irradiation zone must pay attention to the signs in place and, when technically feasible, carry out cross-checks (typically using a radiation meter).

With regard to suppliers, ASNR considers that advance preparations for the expiry of the sources administrative recovery period (which by default is ten years), information for the purchasers regarding future source recovery procedures, in particular the financial conditions, and the checks prior to delivery of a source to a customer, are areas in which practices have made little progress compared with 2024 and still need to improve further. ASNR also notes that the increased need for radiopharmaceutical products, linked to growth in nuclear medicine activities, is leading to numerous projects to create new production facilities (cyclotrons and manufacturing plants for radiopharmaceutical drugs, for example based on lead-212 for alpha therapy) or to modify existing facilities to increase production.

As for the distributors of accelerators or X-ray emitting devices, the monitoring tools that they put into place to identify the devices distributed and the parties who acquired them often need to be reinforced, to avoid compromising any recall or OEF processes. In addition, the inspections carried out in 2025 show that the conditions under which they carry out maintenance work on their customers' premises are a cause for concern, both from a technical point of view, because certain actions can be carried out when safety devices have been deactivated, and from an administrative point of view, with regard to the authorisation granted by ASNR.

The actions carried out by the licensees in recent years are continuing to improve radiation protection within the **research laboratories**, even if these efforts appear to be flagging somewhat. Correctly taking account of radiation protection is to a large extent based on the involvement of the RPAs and depends on the resources placed at their disposal. It should be recalled that the radiation protection issues in many research laboratories tend to be minor or are decreasing owing to the use of techniques other than those using ionising radiation. The conditions for the storage and elimination of waste and effluent remain the primary difficulties encountered by the research units or universities, including with regard to the performance and traceability of checks prior to elimination, the recovery of "legacy" unused sealed radioactive sources or the regular elimination of stored radioactive waste. On these latter points, the lack of forward planning for the funding needed to manage "legacy" sources or waste and their prior characterisation, if necessary, is often observed. Finally, the facilities are still experiencing difficulties in taking on board and correctly implementing checks on equipment, workplaces and instrumentation: nearly one in two facilities inspected in 2025 was found to be non-compliant.

With regard to the **veterinary uses of ionising radiation**, ASNR can see the results of the efforts made by veterinary bodies over the past few years to comply with the regulations, notably in conventional radiology activities on pets. For practices concerning large animals such as horses, or performed outside veterinary facilities, ASNR considers that the implementation of radiological zoning and the radiation protection of persons from outside the veterinary facility who take part in the radiographic procedure, are points requiring particular attention. There are, however, rare cases of veterinary facilities with highly unsatisfactory radiation protection arrangements, which may lead ASNR to take enforcement measures. More generally, ASNR urges veterinarians to take greater care to ensure that initial and periodic verifications of equipment and work premises are carried out properly, that actions taken to meet radiation protection requirements are traceable, and that ASNR is kept updated with information regarding their administrative status (new equipment implemented, change in radiation protection advisor or in representative of the legal entity). In addition, the growing outsourcing of the RPE-O function, with large-scale use of RPOs from outside the facilities, must not lead to veterinarians abdicating their prime responsibility for the level of radiation protection in their facilities.

PROTECTION OF RADIATION SOURCES AGAINST MALICIOUS ACTS

The inspections conducted by ASNR show that the licensees are gradually implementing the measures needed to comply with the requirements set out in the Order of 29 November 2019, when high-level radioactive sources or batches of equivalent sources are used.

The 56 facilities inspected (two-thirds of which were industrial) in 2025 revealed the following points:
- source categorisation, an essential step in identifying the applicable requirements and implementing an approach proportionate to the risks, was carried out for the vast majority of facilities;
- the source protection policy, supported by the facility's general management and promoting the concrete measures to be taken, leads to no comments on the part of ASNR in almost three-quarters of the industrial facilities and less than half the medical facilities, which constitutes a relatively stable situation compared with 2024;
- even if all the facilities inspected have taken steps to protect the sources, only half of them have formally identified the physical barriers guaranteeing this protection, or demonstrated that they offered adequate intrusion resistance;
- in one third of facilities, no preventive maintenance programme is defined for the equipment designed to detect intrusions. In addition, when there is a programme, it is correctly implemented in only half of industrial facilities and two-thirds of medical facilities, although this is an improvement;
- the issue of nominative permits for access to sources has barely progressed and still needs to be implemented in nearly half the facilities;
- only two-thirds of industrial facilities take steps to identify and protect sensitive information concerning source security, although this is an improvement. This finding is more severe for medical facilities, less than half of which take such steps – a deterioration in results compared with 2024.

Compliance with the requirements set for source protection against malicious acts usually implies modifications to the facilities and organisational and human changes, which may prove costly. The year 2025 saw the completion of the initial cycle of inspections of all facilities holding high-level radioactive sources or batches of equivalent sources; this was the first cycle of inspections (from mid-2022 to the end of 2025) during which all the regulatory requirements relating to the protection of sources were applicable. The findings in 2025 show a situation fairly similar to that observed in previous years, even if, depending on the subject, some slight improvements and a few regressions can be observed.

Overall, whether in the industrial, medical or transport sector, ASNR considers that considerable progress is still needed. In 2026, ASNR will continue its actions to raise licensee awareness on these subjects.

The protection of sources against malicious acts concerns situations where sources are stored or used within a facility, but also the stages during which these sources are transported. The Order of 29 November 2019 therefore sets requirements for road transport, which is the predominant mode of transport. The year 2025 was marked by the publication of ASNR resolution 2025-DC-011 of 28 March 2025, which introduces a licensing system for the transport of the most highly radioactive sources, in addition to the current notification system, in view of the security issues associated with protection against malicious acts. This regulatory framework is stricter than

that previously in force and brings the administrative regime into line with that already in force for own-account transport companies. The new licensing requirement has been in force since 1 January 2026; ASNR issued the first licenses at the end of 2025 and will carry out the first inspections in 2026.

TRANSPORT OF RADIOACTIVE SUBSTANCES

The Radioactive Substance Transport (RST) involves numerous players, the carriers of course, but also the consignors, the package designers and manufacturers, etc. The vast majority of shipments is linked to the needs of the non-nuclear industry, the medical sector or research.

ASNR considers that in 2025, the safety of RST is on the whole satisfactory, as in previous years. Although a few transport operations – mainly by road – did suffer incidents, these must be put into perspective against the 770,000 transport operations carried out each year.

The number of significant RST events on the public highway fell slightly compared with 2024, with a limited number of events rated level 1 on the INES scale. In 2025:
• nearly one quarter of the significant events notified to ASNR concerned road transport of radiopharmaceutical products, even if this proportion has continued to fall in recent years;
• an upturn was noted in the number of events related to the transport of natural uranium compounds destined to front-end nuclear "fuel cycle" facilities.
• a sharp fall in the number of events concerning the transport of gamma ray projectors was observed.

Overall, the events consisted mainly of:
• material non-conformities affecting a package (notably damaged packaging) or its stowage on the conveyance, thereby weakening the strength of the package (whether or not an accident occurs). These cases do not concern transports of spent fuels or highly radioactive waste and primarily concern transports for small-scale nuclear activities;
• exceeding of the limits set by the regulations, usually by a small amount, for the dose rates or contamination of a package;
• errors or omissions in package labelling, mainly for transports concerning small-scale nuclear activities;
• delivery errors concerning radiopharmaceutical products. As these products are often similar from one hospital unit to another, most of them could be used for patient treatment without any impact.

The inspections carried out by ASNR also frequently identify such deviations. The consignors and carriers must therefore demonstrate greater rigorousness in day-to-day operations.

With regard to **transports for Basic Nuclear Installations** (BNIs), ASNR finds that the licensees carry out numerous checks and are therefore better able to detect any deviations. The tightening of screws on packages transporting new fuel remains a point requiring particular vigilance. For BNIs performing research programmes, ASNR considers that the consignors must further improve how they demonstrate that the contents actually loaded into the packaging comply with the specifications of the package model approval certificates and the corresponding safety files, notably when this demonstration is carried out by a third-party company.

With respect to **transports concerning small-scale nuclear activities**, the ASNR inspections confirm significant disparities from one carrier to another. The deviations most frequently identified concern the content and actual implementation of the worker radiation protection programme, the QMS, or actual compliance with the procedures put into place. The checks to be carried out prior to shipment of a package must therefore be improved. For example, the inspections concerning the transport of gamma ray projectors regularly reveal inappropriate stowage or tie-down, or an incomplete vehicle kit (fire extinguisher, accident warning devices, etc.).

At a time when the uses of radionuclides in the medical sector are generating a high volume of transport traffic, progress is still needed regarding familiarity with the regulations applicable to these transport operations and the arrangements made by certain hospitals or nuclear medicine centres for the shipment and reception of packages. The quality management systems have not yet been formally set out and deployed, more specifically with regard to the responsibilities of each of the personnel involved. ASNR considers that the radiation protection of carriers of radiopharmaceutical products, who are significantly more exposed than the average worker, remains a point warranting particular attention. In addition to compliance with the requirements laid down by transport and radiation protection regulations, this also relates to the radiation protection culture of those involved in transport, which can vary greatly from company to company and from individual to individual. Where necessary, ASNR may adapt its enforcement measures: the directors of the firm Warning Euromatic, for example, were summoned because of a number of deviations, some of them particularly serious, in recent years.

For transport operations involving packages that do not require ASNR approval, progress continues to be observed by comparison with previous years, along with better application of the recommendations given in ASN Guide No. 7 (Volume 3). The improvements still to be made generally concern the description of the authorised contents per type of packaging, the demonstration that there is no loss or dispersion of the radioactive content under normal transport conditions, and that it is impossible to exceed the applicable dose rate limits with the maximum authorised content.

Finally, ASNR points out that RST may be a limiting factor for certain projects, concerning both BNIs and small-scale nuclear activities (for example, the transport of irradiated targets needed for the production of radionuclides for medical use, the transport of waste from decommissioning worksites, or effluents that have to be treated at a facility other than the one where they were produced). In terms of forward planning, ASNR therefore asks the licensees to exercise vigilance regarding packaging availability, if necessary, ensuring that they are available in sufficient numbers, as well as the existence of other package models which could replace those normally used in the event of any problem affecting them.

REGULATORY NEWS

The year 2025 was marked by the entry into force of several important texts, including the Decree on the use of water unfit for human consumption for domestic purposes within Installations Classified for Protection of the Environment and Basic Nuclear Installations, and the ASNR resolution on licensing and notification systems for radioactive substance transport operations within the national territory.

Work on reorganising the governance of nuclear safety and radiation protection also continued in 2025, with the entry into force of various regulatory texts adopted for the application of Act 2024-450 of 21 May 2024 relative to the organisation of nuclear safety and radiation protection governance, in order to address the challenges of the nuclear industry's renewal.

This year also saw continued work on revising the Order of 7 February 2012 setting the general rules relating to Basic Nuclear Installations (known as the "BNI Order").

National news

Decrees and Orders

Decree 2025-5 of 3 January 2025 transferring the responsibilities of the Directorate for Nuclear Defence and Security Expertise to the Minister for Defence and amending various provisions relating to the powers of the nuclear safety and radiation protection delegate for defence-related facilities and activities

The Decree is issued for the application of Article 11 of Act 2024-450 of 21 May 2024 relative to the organisation of nuclear safety and radiation protection governance, in order to address the challenges of the nuclear industry's renewal, specifying the conditions for transferring the activities of the Directorate for Nuclear Defence and Security Expertise. This Decree also specifies the information and technical support provided to the relevant State authorities and to the Authority for Nuclear Safety and Radiation Protection by the Directorate for Nuclear Defence and Security Expertise.

Decree 2025-22 of 8 January 2025 on the responsibilities of the Minister attached to the Minister of the Economy, Finance and Industrial and Digital Sovereignty, with responsibility for industry and energy

The Minister attached to the Minister of the Economy, Finance and Industrial and Digital Sovereignty, with responsibility for industry and energy, is responsible in particular for nuclear safety and security policy, including the transport of radioactive and fissile materials for civil use, the management of radioactive materials and waste and, jointly with the Minister for Labour, Health, Solidarity and Families, radiation protection[1].

Decree 2025-239 of 14 March 2025 on the use of water unfit for human consumption for domestic purposes within Installations Classified for Protection of the Environment and Basic Nuclear Installations and amending the provisions on the use of treated wastewater and rainwater for non-domestic purposes

This Decree allows the use of water unfit for human consumption for certain domestic purposes, as a substitute for drinking water, provided that its quality has no direct or indirect impact on users' health. For Installations Classified for Protection of the Environment and Basic Nuclear Installations, it specifies that an Order will define the quality criteria and technical conditions to be met when such water is used for domestic purposes.

The Decree also amends the provisions of the Environment Code relating to the use of rainwater and treated wastewater for non-domestic purposes, in order to clarify its scope.

Decree 2025-319 of 5 April 2025 on the allocation of revenue from remuneration for services rendered by the Authority for Nuclear Safety and Radiation Protection

The Decree allocates to the budget of the Ministry in charge of risk prevention the revenue resulting from remuneration for services rendered by the Authority for Nuclear Safety and Radiation Protection, as provided for in the Environment Code, as amended by the Act of 21 May 2024 and the Decree of 30 December 2024, which came into force on 1 January 2025.

Decree 2025-669 of 17 July 2025 designating the competent State administrative authority mentioned in Article 8 of Act 2023-491 of 22 June 2023 relating to the acceleration of procedures linked to the construction of new nuclear installations in close proximity to existing nuclear sites and the operation of existing installations

The purpose of this Decree is to specify that the competent State administrative authority responsible for initiating and carrying out the procedure for bringing urban planning documents into compliance, as required for the construction of a nuclear power reactor designated as a project of public interest pursuant to the provisions of Article 8 of Act 2023-491 of 22 June 2023, and relating to the acceleration of procedures linked to the construction of new nuclear installations in close proximity to existing nuclear sites and the operation of existing installations, is the Prefect of the *département*[2]. It also specifies that where the planned reactor spans several *départements*, the Prefect of the *département* hosting the largest part of the project shall coordinate the procedure.

Decree 2025-1271 of 22 December 2025 on special requirements applicable to electrical installations in power plants comprising Basic Nuclear Installations

This Decree, which relates to Labour Law, lays down specific rules for the electrical installations of nuclear power plants in order to ensure nuclear safety, radiation protection and continuity of power supply.

It adjusts inspection intervals, specifies rules on emergency shutdown systems, and clarifies the framework for high-voltage connections.

Decree 2025-1381 of 26 December 2025 on social dialogue bodies and collective bargaining within the Authority for Nuclear Safety and Radiation Protection

The purpose of the Decree is to specify the powers and composition of ASNR's Social Administration Committee (CSA), which must be set up by 31 March 2026 at the latest, and to define the arrangements for appointing staff representatives as well as the committee's operating arrangements, means and resources. The Decree is issued for the application of Articles L. 592-12 to L. 592-12-3 and L. 592-45 of the Environment Code, resulting from Articles 10 and 18 of Act 2024-450 of 21 May 2024 relative to the organisation of nuclear safety and radiation protection governance, in order to address the challenges of the nuclear industry's renewal, defining the long-term organisational arrangements for the social dialogue bodies of the Authority for Nuclear Safety and Radiation Protection.

Order of 31 December 2024 determining the circumstances in which on-call duty may be required at the Authority for Nuclear Safety and Radiation Protection

This Order, which came into force in 2025, stipulates that an on-call duty system may be set up at the Authority for Nuclear Safety and Radiation Protection to respond to radiological emergency situations or to intervention requirements in the event of an alert, crisis or accident in the Authority's areas of competence, as well as to respond to any intervention requirements in the areas of IT and security. A resolution by the President of the Authority for Nuclear Safety and Radiation Protection shall specify the provisions of this Article.

1. It should be noted that at the date that this report was finalised, the situation had changed following the publication of the Decree of 26 February 2026 relating to the composition of the Government providing for the appointment of a Secretary of State with responsibility for energy, reporting to the Minister of the Economy, Finance and Industrial, Energy and Digital Sovereignty.
2. Administrative region headed by a Prefect.

Order of 27 February 2025 laying down various provisions pursuant to Act 2024-450 of 21 May 2024 relative to the organisation of nuclear safety and radiation protection governance, in order to address the challenges of the nuclear industry's renewal

Pursuant to Act 2024-450 of 21 May 2024 relative to the organisation of nuclear safety and radiation protection governance in order to address the challenges of the nuclear industry's renewal and the merger of the Institute for Radiation Protection and Nuclear Safety (IRSN) with the Nuclear Safety Authority (ASN), this Order updates a number of Orders.

The Directorate for Nuclear Defence and Security Expertise (DEND) of the Ministry of the Armed Forces replaces IRSN and the Delegate for Nuclear Defence and Security Expertise of the Directorate for Nuclear Defence and Security Expertise replaces the Deputy Director General responsible for defence-related missions within IRSN. The references to IRSN and the Deputy Director General responsible for defence-related missions within IRSN have accordingly been revised.

Order of 28 February 2025 establishing a revenue collection office and an imprest account office for the Authority for Nuclear Safety and Radiation Protection

A revenue collection office and an imprest account office are set up for the Authority for Nuclear Safety and Radiation Protection.

Order of 23 April 2025 amending the Order of 31 December 2024 relative to the transfer of assets, rights and obligations of the Institute for Radiation Protection and Nuclear Safety

This Decree amends the Order of 31 December 2024 relative to the transfer of the assets, rights and obligations of the Institute for Radiation Protection and Nuclear Safety (IRSN) to the State and the Alternative Energies and Atomic Energy Commission (CEA), in order to take into account certain operations (closure of contracts or signing of new contracts) carried out since then.

Order of 19 June 2025 approving resolution 2025-DC-011 of the Authority for Nuclear Safety and Radiation Protection of 28 March 2025 on licensing and notification systems for radioactive substance transport operations within the national territory

This Order approves resolution 2025-DC-011 of the Authority for Nuclear Safety and Radiation Protection of 28 March 2025 on licensing and notification systems for radioactive substance transport operations within the national territory. It renders this resolution binding by making it enforceable against the parties concerned.

Under the terms of this resolution, from 1 January 2026, road transport within France of high-activity sealed radioactive sources or batches of sources in categories A to C, whether carried out on an own-account basis or on behalf of third parties, shall be subject to licensing in order to protect them against malicious acts.

The Order of 29 November 2019, as amended, relating to the protection of sources of ionising radiation and batches of radioactive sources in categories A, B, C and D against malicious acts, sets out the technical and organisational measures to be implemented during their transport. Other transports of radioactive substances not covered by the licensing system are subject to the notification system. Notifications are submitted *via* ASNR's online services portal *(teleservices.asnr.fr)*.

Order of 5 August 2025 designating the authorised body to carry out individual dosimetry monitoring of civil aircraft crews

This Order designates ASNR as the authorised body to carry out individual dosimetry monitoring of external exposure to cosmic radiation for civil aircraft crews. It specifies that the ASNR shall use the SievertPN system as its numerical modelling tool.

It also amends the Order of 23 June 2023 on the arrangements for registration and access to the "SISERI" ionising radiation exposure monitoring information system, for the purpose of replacing "IRSN" with "ASNR".

The publication of this Order will enable airlines to comply with their regulatory obligations regarding dosimetry monitoring of their flight crew.

Order of 1 December 2025 designating the coordinating Prefect for the planned deep geological disposal repository for high-level long-lived waste and intermediate-level long-lived waste (Cigéo)

This Order designates the Prefect of the Meuse *département* as the coordinating Prefect for the actions of the Prefects of the Meuse and Haute-Marne *départements* in relation to the planned deep geological disposal repository (Cigéo) for high-level long-lived waste and intermediate-level long-lived waste until 31 December 2030.

Order of 16 December 2025 granting the Alternative Energies and Atomic Energy Commission (CEA) a State guarantee with respect to civil liability in the field of nuclear energy

This Order grants CEA a guarantee that the State will cover its civil liability in nuclear matters between 2026 and 2030. This guarantee is capped at 700 million euros per facility or accident, with specific amounts for the transport of nuclear substances.

Order of 22 December 2025 laying down the specific requirements for de-energising and inspecting certain electrical installations in power plants comprising Basic Nuclear Installations

This Labour Law text lays down specific rules for inspecting certain electrical installations in nuclear power plants and organising their de-energisation in the event of an accident (electric shock, fire or explosion), in order to comply with nuclear safety and radiation protection requirements and ensure continuity of power supply to the electricity network.

ASNR resolution

Resolution 2025-DC-005 of 21 January 2025 adopting the internal rules of procedure of the Authority for Nuclear Safety and Radiation Protection

The internal rules of procedure appended to this resolution are hereby adopted. These internal rules of procedure are issued in application of the Act of 21 May 2024, relative to nuclear safety and radiation protection governance, in order to address the challenges of the nuclear industry's renewal.

The internal rules of procedure include two appendices in the form of charters, relating to the ethics of commissioners and staff (Appendix 1) and to external expert assessments carried out at the request of the Authority for Nuclear Safety and Radiation Protection (Appendix 2).

REGIONAL OVERVIEW

of nuclear safety and radiation protection

The French Authority for Nuclear Safety and Radiation Protection (ASNR) has **11 regional divisions** through which it carries out its regulatory duties throughout metropolitan France and in the French overseas *départements* and regions.

Several ASNR regional divisions may have to coordinate their work in a given administrative region.

As of 31 December 2025, the ASNR regional divisions comprise 223 employees of whom 169 are inspectors.

Under the authority of the regional representatives (*see chapter 2 of the full ASNR Report*), **the ASNR regional divisions carry out on-the-ground inspections of the Basic Nuclear Installations (BNIs), of Radioactive Substance Transport (RST) operations and of small-scale nuclear activities;** they examine the majority of the license applications submitted to ASNR by those Responsible for Nuclear Activities (RNAs) within their regions. For these activities and in these facilities, they check application of the regulations relative to nuclear safety, radiation protection, Pressure Equipment (PE) and Installations Classified for Protection of the Environment (ICPEs). They ensure the labour inspection in the Nuclear Power Plants (NPPs).

In radiological emergency situations, the ASNR regional divisions check the on-site measures taken by the licensee to place the facility in a safe condition, and they assist the Prefect of the *département*, who is responsible for protecting the public. To ensure preparedness for such situations, they participate in the development of the emergency plans drawn up by the Prefects and in the periodic exercises.

The ASNR regional divisions contribute to the mission of informing the public. They take part, for example, in the meetings of the BNI Local Information Committees (CLIs) and maintain regular relations with the local media, elected officials, associations, licensees and local administrations.

This section of the report presents ASNR's oversight action in each region and its assessment of nuclear safety and radiation protection, as well as the measures taken to prevent radon risk.

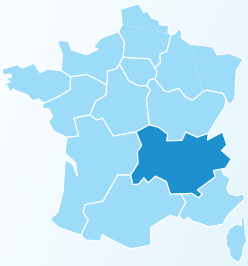
IMPORTANT

Oversight of small-scale nuclear activities (medical, research and industry, transport) is presented in chapters 5, 6 and 7 of the full ASNR Report.

Medical sector
Chapter 05

Research and industry sector
Chapter 06

Transport sector
Chapter 07



Auvergne-Rhône-Alpes

The Lyon division regulates nuclear safety, radiation protection and the transport of radioactive substances in the 12 *départements* of the Auvergne-Rhône-Alpes region.

369
inspections

27
significant events on a level greater than or equal to 1 on the INES scale

3
significant events of level 2 or higher on the ASN-SFRO scale

ASNR conducted 369 inspections in the Auvergne-Rhône-Alpes region in 2025, of which 131 were in the Bugey, Saint-Alban, Cruas-Meysse and Tricastin Nuclear Power Plants (NPPs), 98 in plants, research facilities and sites being decommissioned, 107 in small-scale nuclear activities, 18 in the Radioactive Substance Transport (RST) sector, and 15 in organisations and laboratories approved by ASNR.

ASNR also carried out 27 days of labour inspections in the four NPPs and in the Creys-Malville site.

In 2025, 27 significant events rated level 1 on the International Nuclear and Radiological Events Scale (INES scale) were reported to ASNR, of which 24 occurred in Basic Nuclear Installations (BNIs), two in small-scale nuclear activities and one in the area of RST.

In addition, 3 events relating to anomalies during the treatment of patients by radiotherapy were classified as level 2 on the ASN-SFRO scale (specific scale for radiation protection events affecting patients as part of a radiotherapy procedure).

Bugey site

The Bugey industrial site comprises various facilities, including the Bugey NPP operated by EDF on the municipality of Saint-Vulbas in the Ain *département*, 35 km east of Lyon. It comprises four Pressurised Water Reactors (PWRs), each with a power of 900 Megawatts electric (MWe), commissioned in 1978 and 1979. Reactors 2 and 3 constitute BNI 78 and reactors 4 and 5 constitute BNI 89.

The site also accommodates Bugey 1, a graphite-moderated Gas-Cooled Reactor (GCR) commissioned in 1972, shut down in 1994 and currently undergoing decommissioning, the Activated waste conditioning and interim storage facility (Iceda) and the Inter-Regional Warehouse (MIR) for fuel storage.

Lastly, the site accommodates one of the regional bases of the Nuclear Rapid Intervention Force (FARN), the special emergency response force created by EDF in 2011 following the Fukushima Daiichi NPP accident in Japan. Its role is to intervene in pre-accident or accident situations, on any NPP in France, by providing additional human resources and emergency equipment.

Bugey nuclear power plant

Reactors 2, 3, 4 and 5 in operation

ASNR considers that the performance of the Bugey NPP with regard to nuclear safety, radiation protection and environmental protection is in line with ASNR's general assessment of the EDF plants.

In terms of nuclear safety, ASNR notes that the facilities have been operated and maintained in a fairly satisfactory manner. However, the layout of circuits and the performance of facilities remain areas where weak points exist and where improvements are expected. Periodic tests and requalification tests have been the subject of EDF improvement plans since 2023, which have shown some initial results but which must be continued. In addition, ASNR notes that progress has been made in fire risk management, particularly with regard to the situational exercises carried out and the management of events that took place during 2025. With regard to equipment maintenance, control of activities carried out during reactor outages is considered to be improving.

In terms of radiation protection, ASNR considers that the NPP's performance has improved. Although occupational exposure is under control, ASNR still notes events linked to failure to wear personal dosimeters in controlled radiological areas.

With regard to environmental protection, ASNR considers that the plant's performance is also improving. The recurring problems of leaky retaining tanks, which in 2023 and 2024 led to uncontrolled discharges that did not harm the environment, have led to corrective measures that are still being implemented. These actions were the subject of specific inspections by ASNR, which verified their progress.

In terms of occupational health and safety, ASNR considers that the site's results are satisfactory in a context of reduced industrial activity. Appropriate measures were put in place reactively to take account of the accident levels during the year. However, ASNR is concerned about the risks associated with system tagouts.

Reactor 1 undergoing decommissioning

Bugey 1 is a GCR. This first-generation reactor used natural uranium as the fuel, graphite as the moderator and was cooled by gas.

The facility decommissioning operations were authorised by Decree in 2008, but in 2022 EDF requested its amendment to take into account a radical change in decommissioning strategy for the GCRs. This request is currently being reviewed by ASNR.

In 2025, work to prepare for the decommissioning of Bugey 1 continued, in particular with the decommissioning of old ventilation networks in the nuclear premises and the finalisation of the construction of a new effluent treatment station as well as a waste sorting facility in the old machine room. However, several dismantling projects (machine room, electrical rooms and containerisation cell) are currently on hold. Discussions are underway between EDF and its contractors with a view to resuming these activities in 2026.

By resolution CODEP-LYO-2025-020543 of 27 March 2025, ASNR authorised EDF to create a "transport packaging maintenance base" (BAMET) on the BNI perimeter of the Bugey 1 reactor. This facility, which comes under ICPE legislation, will eventually be used to maintain the transport packaging used in the operation of the Iceda waste packaging and interim storage facility.

ASNR considers that the Bugey 1 reactor decommissioning operations are proceeding under satisfactory conditions of safety and radiation protection. In terms of radiation protection, the site still experiences cases of internal exposure to alpha emitting radionuclides, although all the cases identified in 2025 resulted in low dose assessments (< 0.5 mSv).

Activated waste packaging and storage facility

The Activated waste conditioning and interim storage facility (Iceda), which constitutes BNI 173, is intended for the conditioning and storage of various categories of radioactive waste on the Bugey site (in the Ain *département*). It is designed for the reception, conditioning and storage of:

- low-level long-lived (LLW-LL) graphite waste from the dismantling of the Bugey 1 reactor, intended – after interim storage – for near-surface disposal in a facility which is still at the concept study stage;
- intermediate-level long-lived (ILW-LL) activated metallic waste from operation of the in-service NPPs, for example parts installed near the reactor core such as the control rod clusters, intended for deep geological disposal after interim storage;
- certain types of low-level or intermediate-level short-lived waste (LL/ILW-SLL), baptised "deferred dispatch" waste, intended for above-ground disposal but necessitating a period of radioactive decay ranging from a few years to a few tens of years before being accepted at the Aube repository (CSA – BNI 149), operated by the French National Radioactive Waste Management Agency (Andra).

In 2025, the Iceda Creation Authorisation Decree (DAC) was amended (Decree 2025-192 of 26 February 2025) to authorise the management of waste from the decommissioning of the Fessenheim site, which was not planned when the facility was created.

After a long period without production in 2024, activity resumed in March 2025 with the delivery of waste from the Fessenheim site. At the end of 2025, 44 type C1PG^{sp} packages were stored in the Iceda halls, for a capacity of 2,180 packages.

Based on the inspections conducted in 2025, ASNR considers that safety and radiation protection are duly taken into account in the operation of Iceda.

THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **nuclear power plants operated by EDF:**
  - Bugey (4 reactors of 900 MWe),
  - Cruas-Meysse (4 reactors of 900 MWe),
  - Saint-Alban (2 reactors of 1,300 MWe),
  - Tricastin (4 reactors of 900 MWe);
- **the nuclear fuel fabrication plants operated by Framatome in Romans-sur-Isère;**
- **the "nuclear fuel cycle" plants operated by Orano on the Tricastin industrial platform;**
- **EDF's Tricastin Operational Hot Unit (BCOT), undergoing decommissioning;**
- **the High Flux Reactor (RHF) operated by the Laue-Langevin Institute in Grenoble;**
- **the Activated waste conditioning and storage facility (Iceda) on the Bugey nuclear site and the Bugey Inter-Regional Warehouse (MIR) for fuel storage operated by EDF;**
- **reactor 1 undergoing decommissioning at the Bugey NPP operated by EDF;**
- **the EDF Superphénix reactor undergoing decommissioning and its auxiliary installations;**
- **the Ionisos irradiator in Dagneux;**
- **the international research centre of the European Organisation for Nuclear Research (CERN), situated on the French-Swiss border;**
- **small-scale nuclear activities in the medical sector:**
  - 23 external-beam radiotherapy departments,
  - 6 brachytherapy departments,
  - 24 nuclear medicine departments,
  - 123 centres performing fluoroscopy-guided interventional procedures,
  - 183 computed tomography scanners in 125 facilities,
  - some 4,000 medical and dental radiology devices;

Chap.5

- **small-scale nuclear activities in the industrial, veterinary and research sectors:**
  - 1 synchrotron,
  - about 500 veterinary practices (surgeries or clinics),
  - 35 industrial radiography agencies,
  - around 1,200 users of industrial equipment, devices for detecting lead in paint, and baggage screening devices,
  - about 75 public or private research units;

Chap 6

- **activities associated with the transport of radioactive substances;**

Chap.7

- **ASNR-approved laboratories and organisations:**
  - 1 organisation and 3 agencies approved for radiation protection verifications under the Public Health Code,
  - 11 laboratories approved for environmental radioactivity measurements,
  - 13 organisations approved for taking radon activity concentration measurements under the Public Health Code.

Inter-regional warehouse

The inter-regional warehouse (MIR – BNI 102) operated by EDF at Bugey is a storage facility for fresh nuclear fuel intended for the NPP fleet in operation.

ASNR carried out an inspection in 2025 to check the organisation in place for the delivery of containers containing new fuel assemblies. The conclusions of this inspection are positive and ASNR is satisfied that the commitments made at the previous inspection have been fulfilled.

Saint-Alban nuclear power plant

The Saint-Alban NPP, operated by EDF in the Isère *département* in the municipalities of Saint-Alban-du-Rhône and Saint-Maurice-l'Exil, 40 km south of Lyon, comprises two 1,300 MWe PWRs commissioned in 1986 and 1987. Reactor 1 constitutes BNI 119 and reactor 2 BNI 120.

ASNR considers that the performance of Saint-Alban NPP with regard to radiation safety and radiation protection stands out positively with respect to ASNR's general assessment of EDF nuclear plant performance. The environmental protection performance of the NPP is in line with ASNR's general assessment of the EDF plants in this area.

In terms of nuclear safety, ASNR notes that the site's facilities are being operated and maintained satisfactorily, in the context of preparations for the fourth ten-yearly outage programmes due to start in 2027. ASNR considers that the refuelling and maintenance outage for reactor 2 was carried out under satisfactory safety conditions. Critical activities, such as the renovation of the reactor instrumentation system, were carried out in accordance with safety requirements.

In terms of radiation protection, ASNR considers that operational results are satisfactory and that occupational exposure is under control. Nevertheless, ASNR noted a number of shortcomings in terms of radiation protection culture and sufficiently rigorous site marking.

Regarding protection of the environment, ASNR considers that the management and handling of unforeseen technical issues affecting the environmental protection devices is improving. The equipment for containing liquid pollution, and in particular the retention systems, are in a satisfactory technical state.

In terms of occupational health and safety, ASNR notes that the site is continuing to roll out national measures, particularly in the areas of lifting, ventilation of premises at risk of specific pollution and asbestos risk management. Specific actions relating to the risk of lead contamination are being followed up satisfactorily. With the shutdown of reactor 2 in 2025, the accident rate has been brought under control, thanks in particular to the introduction of a risk-prevention approach that is more clearly expressed on the site.

Cruas-Meysse nuclear power plant

Commissioned between 1984 and 1985 and operated by EDF, the Cruas-Meysse NPP is situated in the Ardèche *département* on the municipalities of Cruas and Meysse and comprises four PWRs of 900 MWe each. Reactors 1 and 2 constitute BNI 111 and reactors 3 and 4 constitute BNI 112.

ASNR considers that the performance of the Cruas-Meysse NPP with regard to nuclear safety and environmental protection is in line with ASNR's general assessment of the EDF plant performance. On the other hand, its performance in terms of radiation protection falls short of ASNR's general assessment in this area.

In terms of nuclear safety, ASNR has identified shortcomings in the preparation of activities, the quality of intervention procedures and compliance with them. The action plan to improve operating rigour, in place since 2023, appears to be running out of steam. ASNR notes the improvement in control room monitoring and compliance with the Operating Technical Specifications. In the area of maintenance, ASNR notes the satisfactory preparation for reactor outages and the satisfactory progress made during the fourth ten-yearly outage of reactor 1. Nevertheless, the detection of a few deviations in the performance of maintenance activities calls for increased vigilance in this area.

In terms of radiation protection, ASNR has noted, through its inspections and the events that have occurred, recurring deviations in terms of radiation protection culture, dosimeter management, the posting of access conditions and the management of contamination measurement equipment. ASNR expects improvements in this area.

With regard to environmental protection, ASNR notes that the situation has remained stable compared with 2024. It expects to see improvements in the management of liquid pollution containment measures, and in particular in the containment measures for preventing environmental damage in the event of effluent spills on the site.

In terms of occupational health and safety, ASNR considers that the site's results are lagging behind. Although the accident rate has improved compared with 2024, the risks of falling from a height and tripping are still predominant. A severe accident involving a fall from a height occurred on the site in 2025. On the other hand, the process for reporting dangerous situations appears to be efficient, enabling risk situations to be dealt with appropriately.

Tricastin site

The Tricastin nuclear site, situated in the Drôme and Vaucluse *départements*, is a vast industrial site accommodating the largest concentration of nuclear and chemical facilities in France. It is situated on the right bank of the Donzère-Mondragon Canal (a diversion channel of the river Rhône) between Valence and Avignon. It occupies a surface area of 800 hectares covering three municipalities, namely Saint-Paul-Trois-Châteaux and Pierrelatte in the Drôme *département*, and Bollène in the Vaucluse *département*. The site harbours a large number of installations, with a nuclear power plant comprising four 900 MWe reactors, "nuclear fuel cycle" facilities, and a facility which fulfilled maintenance and storage functions and is now undergoing decommissioning.

Tricastin nuclear power plant

The Tricastin NPP comprises four 900 MWe PWRs: reactors 1 and 2, commissioned in 1980, constitute BNI 87, while reactors 3 and 4, commissioned in 1981, constitute BNI 88.

ASNR considers that the nuclear safety performance of the Tricastin NPP is in line with ASNR's general assessment of EDF plant performance. Its environmental performance stands out favourably. Lastly, ASNR considers that performance in the field of radiation protection has improved thanks to the implementation of an action plan in this area, and is now in line with ASNR's general assessment of the performance of EDF's NPPs in this area.

In terms of nuclear safety, ASNR considers that the nuclear power plant's performance remains fairly satisfactory, although no progress has been made since 2024. In terms of reactor operation and management, ASNR considers that particular attention must be paid to ensure high standards for the preparation of activities and associated documents, particularly when part of routine operating activities (periodic tests, configuration of circuits, etc.). A dedicated action plan has been deployed by EDF since 2025 and ASNR considers that it should be continued in 2026. As far as the maintenance of the facilities is concerned, the performance of the Tricastin NPP is considered satisfactory. ASNR considers that EDF satisfactorily carried out the planned activities for the four reactor outages of 2025 and complied with the corresponding safety requirements.

In the field of radiation protection, the site's performance, which was lagging behind in 2024, has improved in 2025. In particular, the site has put in place a plan to improve radiation protection, which is showing initial results. Nevertheless, the situation remains delicate and EDF must maintain its efforts in 2026, with a focus on strengthening the radiation protection culture of its employees and outside contractors.

In terms of environmental protection, ASNR believes that the plant's performance stands out favourably compared to the general assessment of EDF's NPPs. The organisation of the site to meet the regulatory requirements in the area of environmental protection has improved. Progress has been made, particularly in the areas of effluent containment and retention systems, to prevent events affecting the surrounding environment.

In terms of occupational health and safety, ASNR considers that the site's results are lagging behind. Although there were no severe accidents in 2025, the accident rate was higher than in 2024. In particular, ASNR has identified a need for a strong focus on preventing risks associated with tripping, movements and postures.

"NUCLEAR FUEL CYCLE" FACILITIES

The Tricastin "fuel cycle" facilities mainly cover the upstream activities of the "fuel cycle" and are operated by Orano Chimie-Enrichissement, called "Orano" hereinafter.

The site comprises::
- **the TU5 facilit**y (BNI 155) for converting uranyl nitrate ($UO_2(NO_3)_2$) resulting from the reprocessing of spent fuels into triuranium octoxide (U_3O_8);
- **the W plant** (ICPE within the perimeter of BNI 155) for converting depleted uranium hexafluoride (UF_6) into U_3O_8;
- **the former Comurhex facility (BNI 105) and the Philippe Coste plant** (ICPE within the perimeter of BNI 105) for converting uranium tetrafluoride (UF_4) into UF_6;
- **the former Georges Besse I plant** (BNI 93) for the enrichment of UF_6 by gaseous diffusion;
- **the Georges Besse II plant** (BNI 168) for centrifuge enrichment of UF_6;
- **the uranium storage areas at Tricastin** (BNI 178-U) for storing uranium in the form of oxides or UF_6;
- **the maintenance, liquid effluent treatment and waste conditioning facilities** (IARU - BNI 138);
- **the Atlas process samples analysis and environmental monitoring laboratory** (BNI 176);
- **a Defence Basic Nuclear Installation** (DBNI), which more specifically accommodates former facilities undergoing decommissioning, radioactive substance storage areas and a liquid effluent treatment unit.

Following the inspections it conducted in 2025, ASNR considers that the level of safety of the Orano facilities on the Tricastin site is satisfactory. In 2025, ASNR noted that external hazards, in particular flooding, had been well accounted for as these had been monitored during seven inspections at the site.

In 2025, ASNR conducted a campaign of simultaneous unannounced inspections of the 178-U, 138, 155 and 168 BNI nuclear facilities and the entire platform, focusing on emergency organisation. One of the objectives was to test Orano's organisation through exercises. In this context, the inspectors carried out a number of situational exercises and checked the training of crisis team members, as well as the periodic inspections and tests carried out on emergency equipment. These inspections showed that the licensee's organisation appears to be appropriate.

To ensure progress in dealing with the reprocessing of diverse radioactive substances stored on the site, ASNR has asked Orano to present an annual progress report on its action plan for the reprocessing of these substances. In April 2025, ASNR gave Orano formal notice to complete the removal of unburnt fluoride from Area 61, located on the perimeter of BNI 105, by 30 September 2026. In 2026, ASNR will continue to closely monitor the implementation of the action plan provided by Orano for these various liabilities.

The Tricastin site has two main liquid effluent management facilities: the Chemical Effluent Treatment Station (STEC – DNBI) and the Uranium-containing Effluents Treatment Station (STEU – BNI 138). Orano is planning for substantial changes in the treatment of the effluents from the Tricastin platform and ASNR has examined the Safety Options Dossiers (DOS) for these projects. These projects will eventually result in more efficient facilities with improved safety standards, but ASNR notes that the first modification dossier, announced for the end of 2025, has been delayed.

In 2023, Orano started work on the AMC2 project which consists in adding a new facility for washing and rinsing containers dedicated to the transport of UF_6. This facility was authorised by Decree 2023-1220 of 19 December 2023 and is due to come into service in early 2026.

In addition, to increase its enrichment capacities, Orano started construction work in 2024 to extend the Georges Besse II (GB II) North enrichment plant, which underwent a prior consultation in 2023. In June 2023, Orano submitted the application for a substantial modification to the facility's creation authorisation decree in order to build this extension. The public inquiry was held in April 2024. ASNR is continuing to examine this extension and has carried out site inspections in 2025, which proved satisfactory.

Lastly, in 2025 Orano started building the two other buildings of the reprocessed uranium storage facility called "FLEUR", whose commissioning was authorised by ASN in January 2023.

Orano's uranium chemistry plants TU5 and W

The "TU5" plant (BNI 155) can handle up to 2,000 tonnes of uranium per year, enabling it to reprocess all the uranyl nitrate ($UO_2(NO_3)_2$) produced by the fuel reprocessing operations of the Orano plant at La Hague, converting it into U_3O_8, a stable solid compound guaranteeing safer uranium storage conditions than in liquid or gaseous form. Once converted, the reprocessed uranium is placed in storage on the Tricastin site. The W plant situated within the perimeter of BNI 155 can process the depleted UF_6 from the GB II enrichment plant, to stabilise it as U_3O_8.

ASNR considers that the facilities situated within the perimeter of BNI 155 are operated with a satisfactory level of safety. ASNR has begun examining the periodic safety review file and carried out a related initial inspection in 2025, which proved satisfactory.

ASN had noted a delay in the submission of the files associated with the consequences of the project to increase the capacity of the GB II North plant. Since the submission of the modification dossier to ASNR, a check has been carried out on the progress of work at plant W. ASNR has noted a delay in progress to date and will therefore continue to monitor these projects closely, as well as the arrangements for managing depleted uranium on the site, should there continue to be a gap in production capacity between Plant W and the GB II enrichment plant.

Orano uranium fluorination plants

The Philippe-Coste plant is an ICPE commissioned in 2018 to convert UF_4 from the Orano Malvési plant into UF_6, to supply the GB II enrichment plant or other similar facilities abroad. It is located within the perimeter of BNI 105 (Comurhex), which performed similar functions until the end of 2017 and which is currently being decommissioned.

The decommissioning of BNI 105 is authorised by Decree 2019-1368 of 16 December 2019 and should be completed by 31 December 2034. The main issues associated with decommissioning concern the risks of dissemination of radioactive substances, as well as exposure of the workers to ionising radiation and the criticality risk, on account of the residual uranium-bearing substances present in some items of equipment.

In 2025, in view of the delay removing radioactive materials and waste from storage, ASNR has given Orano formal notice to dispose of the uranium-bearing materials stored in Area 61 at Comurhex, in accordance with ASNR resolution CODEP-CLG-2020-038011 of 23 July 2020.

The licensee has put in place sufficient resources to speed up operations and has evacuated almost all of this material in the course of 2025, which is satisfactory.

However, a great deal of work remains to be done to manage the liability of materials and waste still stored at the facility, particularly in Area 79.

At the same time, the licensee resumed decommissioning operations on the facility's old equipment and installed two new waste packaging locks, under generally satisfactory safety and radiation protection conditions. In 2026, ASNR will ensure that the licensee continues the work in order to comply with the technical requirements set out in the decommissioning resolution and in line with the completion of decommissioning by 31 December 2034.

ASNR considers that the level of safety for the Philippe Coste uranium fluorination plant is satisfactory. On 31 July 2025, ASNR updated the resolution governing the operation of this plant in order to specify various regulatory expectations and take into account operational experience feedback from the first years of operation. The licensee has also launched work on the new surface reprocessing and fluorite packaging facilities. It still has to build modern units to reprocess non-uranium-bearing effluent.

Georges Besse I enrichment plant

The Georges Besse I (Eurodif) uranium enrichment facility constituting BNI 93 consisted essentially of a plant for separating uranium isotopes using the gaseous diffusion process.

After this plant stopped production in May 2012, the licensee implemented the "intensive rinsing followed by air venting" operations (Prisme operation) from 2013 to 2016. These operations allowed the extraction of virtually all the residual uranium deposited in the diffusion barriers.

The Decree ordering Orano to proceed with the decommissioning of the Georges Besse I plant was published on 5 February 2020. The decommissioning issues particularly concern the large volume of very low level waste (VLLW) produced, including 160,000 tonnes of metal waste which is undergoing specific studies to determine its disposal route.

In 2025, the storage facilities in operation that were historically present on the perimeter of BNI 93 were attached to the new BNI 178-U (Atrium) by Decree 2025-689 of 24 July 2025. These storage yards accounted for most of the radiological activity still present at the plant and the associated risks.

In the facilities, decommissioning preparation operations continued in 2025 with the dismantling of old equipment and the fitting out of premises for future work, in particular at the site of the future unit where the facility's 1,400 diffusers will be cut up and packaged.

In 2025, the licensee also committed to demolishing the plant's two cooling towers, a project due for completion in early 2026. The project went ahead without any significant problems.

ASNR considers that the decommissioning operations at BNI 93 were carried out in 2025 under satisfactory safety and radiation protection conditions, with particular attention paid to the concomitant management of conventional and nuclear waste produced during the decommissioning operations. In 2026, ASNR

will also remain vigilant to ensure that the developments and studies required for constructing the future unit for decommissioning the diffusers continue.

Georges Besse II enrichment plant

The Georges Besse II (GB II) plant, which constitutes BNI 168, has been the site's enrichment facility since the Georges Besse I plant was shut down. It separates uranium isotopes using the centrifugation process.

The standard of safety of the plant's facilities in 2025 was satisfactory. However, ASNR noted that the cylinder handling radiation portal monitors at the South plant were subject to the same type of difficulties as at the North plant. The technologies used in the facility enable high standards of safety, radiation protection and environmental protection to be achieved. The loss of refrigerants into the atmosphere remains a subject of attention, and ASNR carried out a dedicated inspection in 2025, which showed that the provisions of the European regulation amended on 7 February 2024 had yet to be applied definitively.

In 2022, Orano began the project to extend the GB II North enrichment plant in order to increase its production capacities by adding centrifuge modules. The GB II North plant extension project underwent a prior consultation from 1 February to 9 April 2023, organised by the National Commission for Public Debate (CNDP). In June 2023, Orano submitted the substantial modification application file in order to build this extension. This extension project underwent a public inquiry in April 2024 and construction work began in September 2024. ASNR is examining various modification dossiers in connection with this project and in 2025 carried out two on-site inspections, which proved satisfactory.

Maintenance, effluent reprocessing and waste packaging facilities

The effluent treatment and uranium recovery facility (IARU), which constitutes BNI 138, ensures the treatment of liquid effluents and waste, as well as maintenance operations for various BNIs.

The level of safety in the BNI's various units in 2025 was satisfactory. Fire risk prevention continues to progress in line with the action plan drawn up following the periodic safety review.

Orano is planning major changes to the reprocessing of effluent flows at the Tricastin platform, and has provided ASNR with DOS for these projects, which will ultimately result in more efficient facilities with improved safety standards. The periodic safety review of BNI 138 obliged Orano to consider creating new units for certain effluent reprocessing steps given the technical/economic impossibility of reinforcing or improving the existing facilities. ASNR has examined the DOS and will continue to monitor the progress of these projects, especially as the first modification dossier, initially expected at the end of 2025, has been delayed by several months.

Atrium (Tricastin uranium-bearing materials storage facility)

Following the delicensing of part of the Pierrelatte DBNI by decision of the Prime Minister, the Tricastin uranium-bearing materials storage yards (BNI 178) were created. This installation groups the uranium storage yards and the platform's new emergency management premises.

Following on from this delicensing process, facility "P35" (BNI 179) was created. It comprises ten uranium storage buildings. An additional storage area called "FLEUR" was authorised by a Decree of 18 March 2022. Commissioning of this new BNI (BNI 180) was authorised by ASN resolution 2023-DC-0750 of 3 January 2023.

Four Decrees of 24 July 2025 modified the perimeters of BNIs 93, 138 and 155 and combined BNIs 178, 179 and 180, BNI 155's P18 storage yard and BNI 93's permanent storage yards into a single BNI called "Atrium" (BNI 178-U).

ASNR considers that the level of safety of the storage areas in 2025 was satisfactory. In 2025, there were a number of regulatory changes in these areas. Decree 2025-689 of 24 July 2025 authorised the creation of BNI 178-U, known as "Atrium", bringing together facilities that were previously spread across several BNIs.

In mid-2023, Orano started work on the AMC2 project which consists in adding a new facility for washing and rinsing containers dedicated to the transport of UF_6. This facility will replace the existing AMC which is situated in the DBNI. The creation of AMC2 was authorised by Decree 2023-1220 of 19 December 2023, and ASNR monitored the completion of the project and authorised commissioning under ASNR resolution 2025-DC-026 of 27 November 2025. In addition, effluent discharges from BNI 178-U are governed by ASNR resolutions 2025-DC-022 and 2025-DC-023 of 21 October 2025 (discharge terms and limits).

In January 2023, Orano was authorised by ASN to commission the first two buildings of the reprocessed uranium storage facility, known as "FLEUR". In December 2024, the construction of the other two buildings was authorised by ASN. An inspection of the site in 2025 revealed satisfactory practices.

Romans-sur-Isère site

Framatome nuclear fuel fabrication plants

On its Romans-sur-Isère site in the Drôme *département*, Framatome operates BNI 63-U, baptised "Nuclear fuel fabrication plant" resulting from the merging of two old BNIs, namely the unit fabricating fuel elements for research reactors (formerly BNI 63) and the unit fabricating nuclear fuel for the PWRs (formerly BNI 98).

The fabrication of fuel for NPP reactors involves transforming UF_6 into uranium oxide powder. The pellets fabricated from this powder in Framatome's Romans-sur-Isère plant are placed in zirconium metal clads to constitute the fuel rods, then brought together to form the fuel assemblies to be used in the NPP reactors. In the case of experimental reactors, the fuels are more diverse, with some of them using, for example, highly-enriched uranium in metal form. These fuels are also fabricated in the Romans-sur-Isère plant called "Cerca".

At the Cerca plant, ASNR noted that the licensee is following proper procedure during their gradual transfer of production activities from the "uranium area" to the "new uranium area", known as the NZU. The latter shows improved performance in terms of containment of the premises and the process, and risk prevention in the event of an extreme earthquake. In August 2025, the licensee declared a significant event concerning qualification of seismic anchors for equipment in the TRIGA unit, which remained in the old part of the Cerca plant; a specific action plan for remediation has been put in place to correct the deviations.

In 2025, Framatome conducted further fuel production campaigns with Enriched Reprocessed Uranium (ERU). The request for substantial modification of the nuclear fuel manufacturing unit for PWRs, with the aim of increasing the production of ERU-based fuels, which was the subject of a public inquiry in February 2024, was authorised by Decree 2025-1186 of 8 December 2025.

Based on the inspections it conducted in 2025, ASNR considers that the level of safety of the Framatome facilities is mixed. The start-up of the NZU is very positive, and the inspections carried out in 2025 by ASNR generally showed a good command of the processes monitored. Among the areas considered to be lagging behind, during the inspection ASNR noted significant deviations in the procedures for preparing fresh fuel transport packages. ASNR also noted shortcomings in the ageing management at the hydrofluoric acid condensation station, which led to closer monitoring by ASNR and a formal notice issued to Framatome on 8 July 2025. In early 2025, Framatome submitted an action plan to ASNR to reduce the amount of waste stored on the site. However, ASNR notes that by the end of 2025, the overall waste reduction process has not yet been initiated. In 2026, ASNR will therefore be closely monitoring completion of the proposed refurbishment of the hydrofluoric acid condensation station as well as the actual implementation of the proposed waste management measures.

THE INDUSTRIAL AND RESEARCH FACILITIES

High Flux Reactor of the Laue-Langevin Institute

The Laue-Langevin Institute (ILL), an international research organisation, accommodates a 58 Megawatt thermal (MWth) heavy-water High-Flux Neutron Reactor (RHF) which produces high-intensity thermal neutron beams for fundamental research, particularly in the areas of solid-state physics, neutron physics and molecular biology.

The RHF constitutes BNI 67 and occupies a surface area of 12 hectares between the rivers Isère and Drac, upstream of their confluence, near the CEA Grenoble centre.

From July 2024 to April 2025, the RHF was shut down to incorporate improvements following the latest safety review of the facility, including in particular the installation of a sprinkler fire extinguishing system in the reactor building's experimental hall and seismic reinforcement of the polar crane in accordance with ASN resolution 2022-DC-0738 of 28 July 2022.

After two irradiation cycles, a new shutdown began in October 2025 and is scheduled to continue until March 2026. This will make it possible to incorporate the latest safety improvements resulting from the last review.

The reprocessing of the residual tritium inventory from the old detritiation facility, initially scheduled for 30 June 2025, has finally been delayed. An inspection carried out in December 2025 verified that the technically complex reprocessing facility was nearing completion and that the initial operating tests were conclusive. The licensee plans to start reprocessing in the first quarter of 2026.

Lastly, the permits governing the RHF's intakes and discharges were updated in 2025 by ASNR resolution 2025-DC-014 and 2025-DC-015 of 26 June 2025.

In view of the oversight actions it conducted in 2025, ASNR considers that the RHF is operated safely and radiation protection is satisfactory. In particular, ASNR emphasises the optimal way in which ILL has carried out the major programme of modifications to the facility following the last review, which has improved the RHF's safety level.

Ionisos irradiator

The company Ionisos operates an industrial irradiator in Dagneux, situated in the Ain *département*. This irradiator, which constitutes BNI 68, uses the radiation from cobalt-60 sources for purposes such as sterilising medical equipment (syringes, dressings, prosthesis).

In October 2021 the licensee filed an application for authorisation to build a new irradiator. This application is currently being examined by ASNR. The construction of this new facility also requires the licensee to finalise the Post-Operational Clean-Out (POCO) and dismantling of the site's old irradiators D1 and D2.

For several years now, in response to requests from ASNR, the licensee has been strengthening its teams and taking steps to better ensure that the facility complies with the BNI regulations.

In 2025, although there is still room for improvement, ASNR considers that the licensee is in the process of making progress, which has resulted in particular in the definition and exhaustive implementation of periodic inspections and tests on protection important components. This improvement approach must be continued.

CERN accelerators and research centre

Following the signing of an international agreement between France, Switzerland and the European Organisation for Nuclear Research (CERN) on 15 November 2010, ASNR and the Swiss Federal Office of Public Health (OFSP) – the Swiss radiation protection oversight body – are contributing to the verification of the safety and radiation protection requirements applied by CERN, including with regard to nuclear waste management and RST.

CERN is not directly subject to Swiss or French regulations, but it must implement the best practices with regard to international regulations, standards and recommendations.

Two joint visits by the Swiss and French authorities took place in 2025, focusing on access systems to areas where there is a risk of radiological exposure and on emergency management, including an emergency response exercise. These inspections found the practices to be satisfactory.

SITES UNDERGOING DECOMMISSIONING

Superphénix reactor and fuel storage facility

The Superphénix fast neutron reactor (BNI 91), a 1,200 MWe sodium-cooled industrial prototype, is situated at Creys-Mépieu in the Isère *département*. It was definitively shut down in 1997. The reactor has been unloaded and the majority of the sodium has been neutralised and conditioned in concrete blocks. Superphénix is associated with another BNI, the Apec fuel storage facility (BNI 141). The Apec essentially comprises a pool containing the fuel unloaded from the reactor pressure vessel and the area for storing the soda concrete packages resulting from neutralisation of the sodium from Superphénix.

In 2018, ASN authorised commencement of the second Superphénix decommissioning phase, which consists in opening the reactor pressure vessel to dismantle its internal components. In 2025, the licensee decommissioned the "small rotating plug" in the reactor vessel and in February transferred its "base-frame", a massive activated part that is particularly irradiating, in a remote-controlled cutting workshop. However, due to technical difficulties, the licensee was unable to dispose of the parts cut from the base-frame to the Iceda facility. Following the removal of the base-frame, the reactor vessel has been completely drained and the licensee is preparing to decommission the safety vessel that surrounds the reactor vessel.

In parallel with these operations on the reactor vessel and its internal equipment, the licensee also continued to decommission the equipment for the four steam generators, and at the end of the year carried out work to reprocess a hydrocarbon spill near the old engine room.

In December 2025, EDF sent ASNR the Apec periodic safety review concluding report, and the report on the Superphénix reactor is due in March 2026.

With regard to Apec, ASNR is attentive to the consistency between Apec's operating deadline, set for 2035 by the Decree of 24 July 1985, and EDF's strategy for managing stored fuel, some of whose deadlines exceed this timeframe. EDF will need to specify the prospects it envisages in this area.

In December 2025, EDF also submitted a file to ASNR to update the site's discharge permits.

In view of the inspections conducted in 2025, ASNR considers that the safety and radiation protection of the Superphénix reactor decommissioning operations and of operation of the fuel storage facility is ensured satisfactorily.

Tricastin Operational Hot Unit

The Tricastin Operational Hot unit (BCOT) constitutes BNI 157. Operated by EDF, it was intended for the maintenance and storage of equipment and tooling, fuel elements excluded, originating from contaminated systems and equipment of the nuclear power reactors. The BCOT is situated at Orano's Tricastin site.

In a letter dated 22 June 2017, EDF declared final shutdown of the BCOT in June 2020 and its decommissioning was authorised by Decree 2023-1049 of 16 November 2023. On completion of decommissioning, planned for 31 December 2033 at the latest, the cleaned-out buildings shall be returned to Orano.

In 2025, EDF completed the decommissioning of the last rod control cluster guide tube containers and began electromechanical decommissioning of the equipment still present in the facilities, in particular the two glove boxes and the bunker 18 pool.

In parallel with this decommissioning work, the licensee carried out a complete renovation of the site's fire detection system in 2025, and plans to install a new ventilation system at the beginning of 2026 in order to adapt the installation to the work to come.

ASNR considers that the BCOT decommissioning operations are being carried out under satisfactory safety and radiation protection conditions.

ASNR actions to prevent radon risk

Oversight actions

In 2025, ASNR carried out three inspections of regional authorities responsible for educational establishments and day-care centres for children under the age of six (the municipalities of Givors and Montluçon, and the Auvergne-Rhône-Alpes Regional Council).

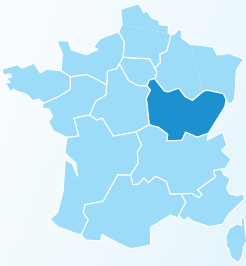
ASNR also conducted four dedicated inspections of establishments with designated radon-risk workplaces (three thermal establishments and a hydroelectric dam).

The results of these inspections show that the radon risk is being taken into account to varying degrees. While some establishments have implemented a satisfactory radon risk prevention approach, others have only partially taken into account the regulatory provisions relating to radon risk management..

Awareness-raising actions

ASNR's Lyon division also carries out awareness-raising initiatives about the risk of exposure to radon gas. In 2025, this included contributing to the awareness campaigns conducted by occupational health and prevention services in the Auvergne-Rhône-Alpes region as part of its participation in the working group on radon risk prevention under the Regional Occupational Health Plan (PRST).

Areas with radon potential in mainland France, and particularly in the Auvergne-Rhône-Alpes region, are shown on page 99.



Bourgogne-Franche-Comté

The Dijon division regulates nuclear safety, radiation protection and the transport of radioactive substances in the 8 *départements* of the Bourgogne-Franche-Comté region.

59
inspections

0
significant event on a level greater than or equal to 1 on the INES scale

0
significant event of level 2 or higher on the ASN-SFRO scale

ASNR conducted 59 inspections in the Bourgogne-Franche-Franche-Comté region in 2025, comprising 23 inspections in the medical sector, 15 in the industrial, research and veterinary sectors, 4 concerning radon exposure, 5 to monitor approved organisations and laboratories, and 2 specific to radioactive substance transport.

ASNR also devoted particular attention to the Framatome nuclear pressure equipment manufacturing plants situated in the Bourgogne-Franche-Comté region. The actions conducted by ASNR in this context are described in chapter 8 of the full ASNR Report. ASNR carried out 10 inspections in these plants in 2025, of which 3 were in the Creusot plant and 7 in the Chalon Saint-Marcel plant.

No significant radiation protection event classified as level 1 or higher on the INES scale, or level 2 or higher on the ASN-SFRO scale, was reported to ASNR in 2025.

In 2024, the company Jimmy Energy submitted to the Ministry responsible for nuclear safety a creation authorisation application for a plant to assemble fuel elements for its high-temperature Small Modular Reactor (SMR) project (***see chapter 11 of the full ASNR Report***) at Le Creusot, in the Saône-et-Loire *département* (71).

THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **small-scale nuclear activities in the medical sector:** Chap.5
  - 8 external-beam radiotherapy departments,
  - 4 brachytherapy departments,
  - 16 nuclear medicine departments, of which 3 practise internal targeted radiotherapy,
  - 38 centres practising fluoroscopy-guided interventional procedures,
  - 68 computed tomography scanners for diagnostic purposes in 50 centres,
  - about 800 medical radiology devices;
- **small-scale nuclear activities in the industrial, veterinary and research sectors:** Chap 6
  - about 250 veterinary practices, of which 8 have a computed tomography scanner and 16 practice equine radiology,
  - about 400 industrial and research centres, including 27 companies with an industrial radiography activity,
  - 1 industrial irradiator using radioactive sources,
  - 1 computed tomography scanner dedicated to research,
  - 2 accelerators, one for the production of drugs for medical imaging and one for industrial irradiation;
- **activities associated with the transport of radioactive substances;** Chap.7
- **ASNR-approved laboratories and organisations:**
  - 1 organisation approved for radiation protection controls,
  - 5 organisations approved for measuring radon,
  - 1 laboratory approved for taking environmental radioactivity measurements.

ASNR actions to prevent radon risk

86 Rn radon

Oversight actions

In 2025, ASNR carried out four inspections in Bourgogne-Franche-Comté to assess radon risk management, both in Public Access Buildings (PABs) and in the workplace.

Three of these inspections concerned municipal federations located in areas with significant radon potential (area 3). These inspections revealed that those in charge of local authority buildings in the *départements* of Territoire-de-Belfort (90) and Saône-et-Loire (71) were well aware of the requirements of the regulations, but not those in the *département* of Jura (39). All the local authorities were unfamiliar with the regulations applying to workplaces, and commitments were made to draw up an inventory of workplaces exposed to radon, followed by a risk assessment.

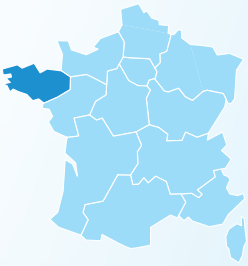
An inspection was also carried out at a designated radon-risk workplace at a dam administered by a government body in the Nièvre *département* (58). The inspection revealed that the radon risk had not yet been taken into account in the occupational risk assessment..

Awareness-raising actions

Moreover, the inspectors of the Dijon division usually take advantage of these nuclear activity inspections to inform the employers of the applicable regulatory provisions concerning radon. In particular, they underline the particular nature of the Bourgogne-Franche-Comté region, which has karstic subsoils that increase radon potential. This phenomenon, which is undergoing scientific studies, has not yet been incorporated into the municipal radon potential mapping established by the Order of 27 June 2018, which calls for a cautious approach to accounting for the likelihood of radon in municipalities in areas 1 and 2. The inspectors also stressed the importance of vigilance in terms of regulatory monitoring of radon risk management, particularly following changes to the Labour Code in 2025.

ASNR also participates in the regional “Eclaireurs” network, which provides information and raises awareness, promotes available training courses, connects stakeholders, and facilitates the joint development of initiatives in Bourgogne-Franche-Comté. In 2025, the regional “Eclaireurs” network continued its awareness-raising efforts targeting a range of audiences, including a regional meeting held on 11 September in Dijon, a webinar on 23 September on radon management in PABs, a stand at the regional “health-promoting urban planning” event on 7 October in Dijon, presentations during the “environmental health, the first 1,000 days and early childhood” training session on 25 November at Hospital Nord-Franche-Comté, videos broadcast in health centres, responses to enquiries, and other initiatives. After three years in existence, it is now also sharing its experience with players in other regions to encourage new initiatives.

Areas with radon potential in mainland France, and particularly in the Bourgogne-Franche-Comté region, are shown on page 99.



Bretagne

The Nantes division regulates radiation protection and the transport of radioactive substances in the 4 *départements* of the Bretagne region. The Caen division regulates the nuclear safety of the Brennilis Nuclear Power Plant (NPP), currently undergoing decommissioning.

42
inspections

1
significant event on a level greater than or equal to 1 on the INES scale

1
significant event of level 2 or higher on the ASN-SFRO scale

In 2025, ASNR carried out 42 inspections, 4 at the Monts d'Arrée NPP currently being decommissioned, 33 in small-scale nuclear activities (19 in the medical sector, 14 in the industrial, veterinary and research sectors) and 3 concerning approved organisations and 2 on natural radioactivity (radon).

Three level 1 or 2 Significant Radiation Protection Events (ESRs) were reported in 2025 (***see chapter 5 of the full ASNR Report***):

- exposure of a worker (trainee MERM – Medical Electroradiology Radiographer in Nuclear Medicine) published in June 2025 following a declaration in January 2025 by the University Hospital of Rennes (level 1 on the INES scale);
- contouring error at the SGCM ONCO in Saint-Grégoire (35) published in March 2025 following a notification in December 2024 (level 1 on the ASN-SFRO scale);
- localisation error in the context of re-irradiation at the SGCM ONCO in Saint-Grégoire (35) published in November 2025 following a notification in June 2025 (level 2 on the ASN-SFRO scale).

An incident notification (outside the ASN-SFRO scale) was also published on 4 September 2025 concerning the ESR declared on 20 December 2024 by the Saint-Brieuc hospital centre, in conventional radiology, following a malfunction on a radiology table from 2012 to 2024, involving a very large cohort of patients, including children (667 patients, including 451 children under the age of 18).

Brennilis nuclear power plant

The Brennilis NPP is situated in the Finistère *département*, on the Monts d'Arrée site 55 km north of Quimper. Baptised "EL4-D", this installation (BNI 162) is an industrial electricity production prototype (70 Megawatts electric – MWe), moderated with heavy water and cooled with carbon dioxide, and it was definitively shut down in 1985.

Decree 2011-886 of 27 July 2011 authorised the NPP decommissioning operations, with the exception of the reactor block. In July 2018, EDF submitted an application file for the complete decommissioning of its facilities, and this file was subject to a technical review followed by a public inquiry from 15 November 2021 to 3 January 2022. Decree 2023-0898 of 26 September 2023, published on 28 September 2023, requires EDF to completely decommission BNI 162 and amends Decree 96-978 of 31 October 1996 authorising the creation of this facility.

In June 2024, ASN issued the authorisations to implement the general operating rules and the on-site emergency plan for complete decommissioning, as well as the revision of the two resolutions governing the limits for discharges of liquid and gaseous effluents from the facility into the environment and the methods for monitoring these discharges and the environment. In November 2025, ASNR issued a supplementary resolution on the decommissioning of the facility, setting out the deadlines and methodology for cleaning up the civil engineering structures, soil management measures, demolishing the buildings and redeveloping the site.

During the same year, EDF continued its preparatory work for complete decommissioning, with in particular the upgrading of the reactor containment ventilation, the treatment of seepage into the installations and the civil engineering work in preparation for the decommissioning of the peripheral circuits and the start of the first cutting work on the reactor block shell.

Nevertheless, as regards the state of the installations, EDF must finalise the upgrading of the installations with regard to the risk of fire. EDF must also continue its efforts to define its clean-up and land management policy for the site in connection with the cessation of groundwater drawdown beneath the former Effluent Treatment Station (STE).

ASNR notes that the discovery of asbestos is delaying the upgrading of the handling cranes necessary for removing the reactor vessel fuel channels, without yet impacting the start date of these operations, planned for 2027.

Overall, ASNR considers that the organisation defined and implemented for the decommissioning project is generally satisfactory in terms of safety and environmental supervision. However, in view of the various events that have occurred in 2025, ASNR notes that the licensee must improve the radiation protection culture of its teams with a view to future decommissioning operations. ASNR will be keeping a close eye on this in 2026.

ASNR actions to prevent radon risk

86 Rn radon

Oversight actions

ASNR carried out an inspection of the town of Lanester in Morbihan (56) with regard to radon risk management in certain Public Access Buildings (PABs). This local authority's radon risk management is very satisfactory. However, there is still room for improvement in terms of informing the public of the results of radon measurements, by displaying them at the entrances to the premises concerned. Radon risk is now an integral part of the specifications for all works projects involving ventilation and/or airtightness issues.

ASNR also carried out an inspection at an establishment with a designated radon-risk workplace: the Guerlédan dam in Côtes-d'Armor (22), operated by *EDF Petite Hydro*. Initiated in 2019, the process of assessing the risk of radon exposure for workers and contractors is now in place, and has been supplemented by measurements of radon concentrations carried out during three campaigns in the dam's two underground drifts. Measurements were also taken on premises in the basement, on the ground floor and on the upper floors.

Awareness-raising actions

ASNR supports, as part of the 4th regional health and environment plan (PRSE 4) for the Bretagne region, an initiative to help private individuals from several communities in carrying out voluntary radon measurement campaigns in housing. This initiative is run by the *Approche Eco Habitat* association.
- Co-financed by ARS Bretagne;
- Operational experience feedback on a communication support tool for organisations supporting the implementation of radon awareness and measurement campaigns in housing, disseminated in 2024. This material was also distributed to the regional branch of the *Gendarmerie nationale* based in Rennes.

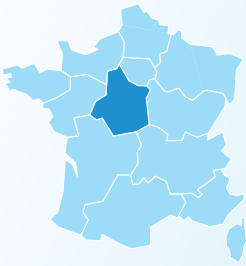
ASNR also responds to numerous requests from private individuals and employers to **manage the risk of radon exposure in homes and workplaces.**

Lastly, **ASNR co-hosted an information webinar for public building owners and employers** on 7 November 2025, as part of European Radon Day, in conjunction with the Regional Health Agency (ARS) and the Regional Directorate for the Economy, Employment, Labour and Solidarity (Dreets) in Bretagne.

Areas with radon potential in mainland France, and particularly in Bretagne, are shown on page 99.

THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **one basic nuclear installation:**
  - the Monts d'Arrée (Brennilis) NPP, undergoing decommissioning;
- **small-scale nuclear activities in the medical sector:** Chap.5
  - 9 external-beam radiotherapy departments,
  - 5 brachytherapy departments,
  - 11 nuclear medicine departments,
  - 36 centres practising fluoroscopy-guided interventional procedures,
  - 63 computed tomography scanners for diagnostic purposes,
  - some 2,500 medical and dental radiology devices;
- **small-scale nuclear activities in the industrial, veterinary and research sectors:** Chap 6
  - 1 cyclotron,
  - 15 industrial radiography companies, including three performing gamma radiography,
  - 23 research units,
  - about 400 users of industrial, veterinary and research devices;
- **activities associated with the transport of radioactive substances;** Chap.7
- **ASNR-approved laboratories and organisations:**
  - 8 organisations approved for measuring radon,
  - 3 head-offices of a laboratory approved for environmental radioactivity measurements.



Centre-Val de Loire

The Orléans division regulates nuclear safety, radiation protection and the transport of radioactive substances in the 6 *départements* of the Centre-Val de Loire region.

160
inspections

12
significant events on a level greater than or equal to 1 on the INES scale

1
significant event of level 2 or higher on the ASN-SFRO scale

In 2025, ASNR carried out 160 inspections in the Centre-Val de Loire region, including 108 of nuclear installations at EDF sites in Belleville-sur-Loire, Chinon, Dampierre-en-Burly and Saint-Laurent-des-Eaux, 39 in small-scale nuclear activities, 7 on the subject of radioactive substance transport and 6 concerning approved bodies or laboratories.

ASNR also carried out 26 days of labour inspections in the four Nuclear Power Plants (NPPs) of the region.

In 2025, ASNR was notified of 11 significant events rated level 1 and one event rated level 2 on the International Nuclear and Radiological Events Scale (INES scale).

Belleville-sur-Loire nuclear power plant

The Belleville-sur-Loire NPP is situated in the north-east of the Cher *département*, on the left bank of the river Loire, at the crossroads of four *départements* (Cher, Loiret, Nièvre and Yonne) and two administrative regions (Bourgogne-Franche-Comté and Centre-Val de Loire). The NPP has two 1,300 Megawatts electric (MWe) reactors commissioned in 1987 and 1988, which constitute Basic Nuclear Installations (BNIs) 127 and 128 respectively.

ASNR considers that the performance of the Belleville-sur-Loire NPP is in line with the general assessment of EDF nuclear plant performance in the areas of nuclear safety, radiation protection and protection of the environment.

From the nuclear safety aspect, ASNR considers that with regard to management of the facilities, operational rigour in the control room was maintained at a satisfactory level. Progress has also been made in the management of circuit configurations. However, the management of unplanned reactor shutdowns needs to be improved.

In terms of facility maintenance, the NPP's performance has deteriorated compared with previous years. A number of shortcomings were noted in the preparation of activities, and defects in the performance of maintenance activities were detected on equipment important to safety. A maintenance fault led to the automatic shutdown of a reactor and major damage to the condenser. ASNR expects the site to take full account of the operational experience feedback from these events and implement appropriate actions to improve control of maintenance activities in 2026.

ASNR considers that the radiation protection performance of the Belleville-sur-Loire NPP remains stable. The controls carried out, particularly during reactor shutdowns, showed that the action plan to reinforce the fundamentals of radiation protection was being properly implemented. In addition, EDF successfully managed an event with a serious radiological risk, which resulted in a spill of radioactive resins in a room following a circuit configuration error.

With regard to environmental protection, effluent management and the monitoring of discharges are deemed satisfactory. ASNR positively highlights that the national strategy for managing the containment of liquid effluents is being applied correctly, and that the first work to renovate the demineralised water production plant has been completed, and will continue until 2026. On the other hand, improvements are expected in the operation of the new facility designed to treat legionella and amoebae. Its commissioning did not prevent the regulatory thresholds for the presence of legionella from being exceeded in 2025.

With regard to occupational safety, based on the inspections it carried out concerning the management of mandatory inspections of electrical installations and lifting equipment and accessories, ASNR considers that the action plans implemented by the site must continue in order to correct the identified non-conformities.

Dampierre-en-Burly nuclear power plant

The Dampierre-en-Burly NPP is situated on the right bank of the Loire river, in the Loiret *département*, about 10 km downstream of the town of Gien and 45 km upstream of Orléans. It comprises four 900 MWe nuclear reactors which were commissioned in 1980 and 1981. Reactors 1 and 2 constitute BNI 84, and reactors 3 and 4 BNI 85. The site accommodates one of the regional bases of the Nuclear Rapid Intervention Force (FARN), the special emergency response force created by EDF in 2011 following the Fukushima Daiichi NPP accident (Japan). Its role is to intervene in pre-accident or accident situations, on any NPP in France, by providing additional human resources and emergency equipment.

ASNR considers that the nuclear safety performance of the Dampierre-en-Burly NPP is below ASNR's general assessment of EDF plant performance. On the other hand, performance in the area of environmental protection compares favourably with this assessment, while performance in the area of radiation protection matches it.

In terms of nuclear safety, the results of the Dampierre-en-Burly NPP deteriorated in 2025, particularly in the area of normal reactor operation, after a slight recovery in 2024. However, progress has been made in managing circuit configuration changes and controlling reactivity. On the other hand, improvements are expected in the supervision of control room installations, the management of periodic tests and the management of documentation, which have been the cause of a large number of significant safety events. The actions of the rigorous recovery plan, implemented over the course of 2023 and 2024 and supported by the management team, must now be assimilated and implemented on the ground by all those involved. ASNR also highlights the significant improvements made by the site in fire risk management.

Regarding the maintenance of the facilities, ASNR considers that the performance of the Dampierre-en-Burly NPP is in line with the national average, in a busy industrial context. However, the site must pay particular attention to the management of the emergency generator sets, for which a high number of significant safety events were declared in 2025, as well as to the quality of the first-level analyses, which are intended to determine whether maintenance operations have been carried out in accordance with requirements.

In the area of radiation protection, the results of the Dampierre-en-Burly NPP are in line with the national average and have improved with respect to 2024. Although the site has one of the lowest rates of contamination of workers among EDF's NPPs, progress still needs to be made in carrying out radiological checks on equipment leaving the controlled area – contamination points having been detected in recent years on the site's roads – and in the management of the marking of limited stay areas.

The environmental protection performance of the Dampierre-en-Burly NPP remained at a good level in 2025, in particular as regards management of the microbiological risk, management of copper and zinc discharges in the liquid effluents and waste management. The site must nevertheless continue its work for improving management of hazardous substance containment and increasing the number of effluent storage tanks to take into account low water levels and the problems posed by current tanks ageing.

In terms of occupational safety, in the light of the inspections it has carried out on the management of explosive atmospheres, ventilation and sanitation facilities in workplaces, prevention of the risk of exposure to lead, and the use of lifting equipment, ASNR considers that the action plans put in place by the site should be continued in order to correct the deviations noted. In addition, a severe accident was reviewed by ASNR in 2025.

THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **basic nuclear installations:**
  - the Belleville-sur-Loire NPP (2 reactors of 1,300 MWe),
  - the Dampierre-en-Burly NPP (4 reactors of 900 MWe),
  - the Saint-Laurent-des-Eaux site: the NPP in operation (2 reactors of 900 MWe), and the 2 Gas-Cooled Reactors (GCRs) undergoing decommissioning and the irradiated graphite sleeve storage silos,
  - the Chinon site: the NPP in operation (4 reactors of 900 MWe), the 3 GCRs undergoing decommissioning, the Irradiated Material Facility (AMI) and the Inter-Regional Fuel Warehouse (MIR);
- **small-scale nuclear activities in the medical sector:**
  - 9 external-beam radiotherapy departments,
  - 3 brachytherapy departments,
  - 11 nuclear medicine departments,
  - 43 centres using interventional procedures,
  - 54 computed tomography scanners for diagnostic purposes in 37 centres,
  - some 2,700 medical and dental radiology devices;

Chap.5

- **small-scale nuclear activities in the industrial, veterinary and research sectors:**
  - 15 companies with an industrial radiography activity,
  - around 400 users of industrial equipment, 60 of which are subject to licensing and registration systems,
  - 1 cyclotron,
  - 25 public and private research units,
  - around 190 veterinary facilities providing diagnostic radiology services, including 6 with a scanner and 17 for equine radiology;

Chap 6

- **activities associated with the transport of radioactive substances;**

Chap.7

- **ASNR-approved laboratories and organisations:**
  - 1 organisation approved for radiation protection controls,
  - 5 laboratories approved for taking environmental radioactivity measurements,
  - 1 organisation approved for measuring radon.

Chinon site

Situated in the municipality of Avoine in the Indre-et-Loire *département*, on the left bank of the river Loire, the Chinon site accommodates various nuclear installations, some in operation, others undergoing decommissioning. On the south side of the site, the Chinon B nuclear power plant comprises four in-service reactors of 900 MWe; the first two commissioned in 1982 and 1983 constitute BNI 107, while the second two commissioned in 1986 and 1987 constitute BNI 132. To the north, the three old graphite-moderated GCRs designated Chinon A1, A2 and A3, are currently being decommissioned. The site also accommodates the MIR and the irradiated materials facility AMI which is currently being decommissioned and whose former expert assessment activities have been transferred to a new laboratory at Chinon called "Lidec".

Chinon nuclear power plant

Reactors B1, B2, B3 and B4 in operation

ASNR considers that the performance of the Chinon NPP with regard to nuclear safety, radiation protection and environmental protection is in line with the general assessment of EDF plant performance.

In the area of nuclear safety, ASNR considers that the results for 2025 are broadly stable compared with those for 2024. Performance in the areas of reactor operation and periodic test management remained at a satisfactory level. In particular, the site demonstrated good control over the operation of the facilities during the major influx of green algae in the Loire at the end of summer 2025. ASNR will nevertheless remain vigilant to ensure that the operational experience feedback from this event is taken into account by EDF. While progress has been made in fire risk management, the assimilation and preparation of activities by those involved need to be improved.

Regarding maintenance activities, the equipment inspected appeared to be in good condition, but ASNR noted a lack of rigour in the application of the relevant rules, as well as in activity monitoring and oversight operations.

ASNR considers that the radiation protection performance of the Chinon NPP has declined slightly. Personnel contamination rates remain among the lowest of EDF NPPs and radiological zoning appears to be under control. However, improvements are expected in the management of the containment of radioactive materials and the performance of industrial radiography work, both of which were the cause of significant events reported in 2025.

The environmental performance of the Chinon NPP is generally satisfactory. The site controls its discharges and the containment of liquid hazardous substances, although the management of associated records needs to be improved. Waste management is also lagging behind, particularly in terms of compliance with storage conditions, traceability of operations, and consistency between internal procedures and practices in the field. In 2026, the site must therefore continue to take steps to treat and eliminate the waste from reactor maintenance that has accumulated over several years. Lastly, corrective action is expected in the short and medium term to ensure that the samples taken at the downstream multi-parameter station at the Chinon NPP are always representative of the site's discharges.

With regard to occupational safety, based on inspections concerning the management of workplace ventilation and air treatment systems, electrical equipment, lifting equipment, and prevention of lead exposure risks, ASNR considers that the action plans implemented by the site must continue in order to correct the deviations identified.

Reactors A1, A2 and A3 undergoing decommissioning

The graphite-moderated GCR series comprises six reactors, including Chinon A1, A2 and A3. These first-generation reactors used natural uranium as the fuel, graphite as the moderator and were cooled by CO_2 gas. This plant series includes "integrated" reactors, whose heat exchangers are situated under the reactor core inside the vessel, and "non-integrated" reactors, whose heat exchangers are situated on either side of the reactor vessel. The Chinon A1, A2 and A3 reactors are "non-integrated" GCRs. They were shut down in 1973, 1985 and 1990 respectively.

Reactors A1 and A2 have been partly decommissioned and transformed into facilities for the storage of their own equipment (Chinon A1 D and Chinon A2 D). These operations were authorised by the Decrees of 11 October 1982 and 7 February 1991 respectively. Chinon A1 D is partially decommissioned at present and has been set up as a museum – the Museum of the Atom – since 1986. Chinon A2 D is also partially decommissioned and, until the end of 2022, housed GIE Intra (robots and machines for interventions on accident-stricken nuclear installations). Complete decommissioning of the Chinon A3 reactor was authorised by the Decree of 18 May 2010, with a decommissioning "under water" scenario.

In March 2016, EDF announced a complete change of decommissioning strategy for its definitively shut down reactors. In this new strategy, the planned decommissioning scenario for all the reactor pressure vessels involves decommissioning "in air"[1] and the Chinon A2 reactor pressure vessel would be decommissioned first (***see chapter 12 of the full ASNR Report***). In this context, ASN has analysed the periodic safety review concluding reports submitted by EDF concerning the six GCRs, supplemented further to the request from ASN. On completion of its analysis, ASN indicated in December 2021 that it ha no objection to the continued operation of BNIs 133 (Chinon A1 reactor), 153 (Chinon A2 reactor) and 161 (Chinon A3 reactor). ASNR will verify during the assessment of the decommissioning files for these reactors, submitted by EDF at the end of 2022 and still being assessed, that the decommissioning operations will be carried out under suitable conditions of safety and radiation protection, within controlled time frames.

1. Among the possible scenarios for decommissioning the highly activated or contaminated structures, we find decommissioning "in air" and decommissioning "under water". In the case of the GCRs, the "under water" approach consists in filling the reactor core (reactor pressure vessel) with water in order to benefit from the protective effect of a layer of water with respect to the radiation-related risks, but it is more complicated to implement than the "in air" approach. In view of the major technical difficulties (sealing of the reactor pressure vessel and treatment of the contaminated water), but also the technological advances bringing other solutions, such as remote operation, EDF has finally adopted the decommissioning "in air" scenario, which overcomes the problems linked to the use of water.

In 2025, EDF continued with the decommissioning preparation operations outside the Chinon A2 reactor concrete containment structure, and the shell from the four heat-exchanger rooms were transferred to the selected disposal facility. Several decommissioning projects were also carried out at the Chinon A3 reactor, including the cleaning of old pools. In addition, EDF continued to roll out its action plan initiated following water ingress in 2023 and 2024 in several premises at Chinon A1, Chinon A2 and the AMI. While progress on these actions was considered satisfactory, ASNR nevertheless assesses that EDF must continue its efforts to improve monitoring of the facilities' civil engineering structures.

ASNR considers that the safety level of the nuclear facilities being decommissioned at Chinon A (Chinon A1, A2 and A3) is satisfactory overall, but is deteriorating compared with 2024. During the inspections, waste management, radioactive substance transport and the management of the risk of external flooding appeared to be generally under control. Nevertheless, improvements are expected in the supervision of outside contractors, the management and monitoring of worksites, and the performance and monitoring of periodic inspections and tests. In particular, an inspection revealed shortcomings in the supervision of a civil engineering worksite, leading EDF to change the monitoring and follow-up procedures in response to requests from ASNR.

"NUCLEAR FUEL CYCLE" FACILITIES

Inter-regional fresh fuel warehouse

Commissioned in 1978, the Chinon Inter-Regional Fuel Warehouse (MIR) is a facility for storing fresh fuel assemblies pending their utilisation in various EDF reactors. It constitutes BNI 99. Along with the Bugey MIR, it contributes to the management of flows of fuel assembly supplies for the reactors.

The facility was equipped with a new handling crane in 2019 and operations have resumed since 2020, with the reception and storage of fresh fuel assemblies. In 2025, ASNR noted, through its inspection activities, an improvement in the oversight of periodic inspections carried out at the facility. However, actions aimed at reinforcing the monitoring of handling equipment must be continued. In addition, operational experience feedback from significant events relating to the transport of radioactive substances in France is considered to have been satisfactorily taken into account.

RESEARCH FACILITIES UNDERGOING DECOMMISSIONING

Irradiated materials facility

The Irradiated Material Facility (AMI), which was declared and commissioned in 1964, is situated on the Chinon nuclear site and operated by EDF. This facility (BNI 94) is being decommissioned. It was intended essentially for performing examinations and expert assessments on activated or contaminated materials from pressurised water reactors.

The expert assessment activities were entirely transferred in 2015 to a new facility on the site, the Lidec.

Decree 2020-499 for AMI decommissioning was published on 30 April 2020 and the new General Operating Rules (RGEs) were approved by ASN in April 2021, thereby enabling the Decree to enter into application. ASN also subjected the starting of several future decommissioning operations to its approval.

Further to the updating of the resolution regulating the installation's discharge limits in July 2022, a new discharge monitoring system has been put into service and decommissioning operations have started that include equipment cutting-up and interventions in several facilities.

The legacy magnesium waste from the expert assessments of certain parts requires inerting operations[2] in order to meet the disposal criteria of the French National Radioactive Waste Management Agency (Andra). The inerting work was completed in 2024 and the corresponding removals completed in 2025. The remaining magnesium waste, which does not meet Andra's criteria, will be transferred to another building on the site for further processing.

Authorised by ASN in 2023, decommissioning of the highly active liquid effluent circuits began in 2024. This project was shut down in 2025 due to technical difficulties encountered during cutting operations. In addition, the reprocessing of the legacy chemical products present in controlled areas continued and the transfer of this nuclear waste, which began in 2022, is still in progress. In 2025, EDF also transferred to a treatment site the water from the 2023 and 2024 seepages, which had been stored on site in two dedicated tanks.

The management plan for non-radiological hydrocarbon and naphthalene pollution in the "Thermip" area was approved by ASNR in March 2025. An unannounced inspection revealed that the pilot system had been installed, which will be used to design the final pollution reprocessing system. Final processing will be subject to authorisation by ASNR.

ASNR considers that the safety level of the AMI is satisfactory overall, but is deteriorating compared with 2024. Improvements are expected in the supervision of outside contractors, the management and monitoring of worksites, and the performance and monitoring of periodic inspections and tests. ASNR will also be keeping a close eye on the consequences of the work stoppage on the facility's decommissioning schedule.

2. Inerting in this instance is a process enabling the radiological activity of the magnesium waste to be contained in an enclosure of specific materials to allow risk-free transportation and storage.

Small modular reactor project in Savigny-en-Véron

Newcleo is planning to build a small modular lead-cooled reactor at Savigny-en-Véron (37) (***see chapter 9 of the full ASNR Report***) and a MOX (Mixed OXides) fuel fabrication plant at Pont-sur-Seine and Marnay-sur-Seine (10) (***see chapter 11 of the full ASNR Report***). In this context, on 13 December 2024 and 19 December 2025, it submitted two requests for advice to ASNR on safety options concerning the fuel fabrication plant project and the small modular reactor project respectively.

In 2026, a public debate will be held jointly for these two projects, under the aegis of the French National Commission for Public Debate (CNDP).

Saint-Laurent-des-Eaux site

The Saint-Laurent-des-Eaux site, situated on the banks of the river Loire in the municipality of Saint-Laurent-Nouan in the Loir-et-Cher *département*, comprises various nuclear installations, some of them in operation and others undergoing decommissioning. The Saint-Laurent-des-Eaux NPP has two 900 MWe reactors in operation, B1 and B2, which were commissioned in 1980 and 1981 and constitute BNI 100. The site also features two old GCRs, A1 and A2, currently in the decommissioning phase, and two silos for storing the graphite sleeves from the operation of reactors A1 and A2.

Saint-Laurent-des-Eaux nuclear power plant

Reactors B1 and B2 in operation

ASNR considers that the performance of the Saint-Laurent-des-Eaux NPP with regard to nuclear safety, radiation protection and environmental protection is in line with the general assessment of EDF plant performance.

In terms of nuclear safety, ASNR notes an overall improvement in the performance of the Saint-Laurent-des-Eaux NPP in 2025. Progress has been noted in the rigour of control room supervision, and fire risk management is satisfactory. However, ASNR is keeping a close eye on the rigorousness and maintenance of skills in the field of normal reactor operation.

In terms of maintenance, the site's performance has improved in a busy industrial context, marked by the completion of the fourth ten-yearly outage of reactor 1 in 2025. ASNR also notes significant progress in the characterisation and handling of anomalies compared with previous years. On the other hand, the number of malfunctions in support, reactivity control and cooling systems is still higher than at EDF's other NPPs.

In the field of radiation protection, ASNR considers that, despite a drop in the number of significant events reported, the overall results of the Saint-Laurent-des-Eaux NPP remain fragile. Major improvements are still required in terms of site preparation and monitoring the radiological cleanliness of premises.

In terms of environmental protection, the radiation protection performance of the Saint-Laurent-des-Eaux NPP deteriorated in 2025. While liquid and gaseous emissions remain under control overall, the management of fluorinated gases and of the site's waste disposal site needs to be improved. Greater account must also be taken of non-radiological risks. Inspections carried out by ASNR revealed that the requirements of the hazard study had not been fully transposed into the site's procedures.

In terms of labour inspections, an accident that occurred in 2025 led to major investigations by ASNR, highlighting the need for improvement in site management, particularly in the choice of work equipment. In addition, in the light of the inspections carried out, improvements are still needed in the management of the risk of an explosive atmosphere and of ventilation and clean-up facilities.

Reactors A1 and A2 undergoing decommissioning

The former Saint-Laurent-des-Eaux NPP constitutes a BNI comprising two "integrated" GCRs, A1 and A2. These first-generation reactors used natural uranium as the fuel, graphite as the moderator and were cooled by gas. Their final shutdown was declared in 1990 and 1992 respectively. Complete decommissioning of the installation was authorised by the Decree of 18 May 2010.

On completion of the analysis of the periodic safety review concluding reports for all the GCRs, ASN indicated in December 2021 that it has no objection to the continued operation of BNI 46 (Saint-Laurent reactors A1 and A2). ASNR will verify during the examination of the new decommissioning files for these reactors, which were submitted by EDF in late 2022 to set out the new "in air" decommissioning strategy, that the decommissioning operations will be carried out under suitable conditions of safety and radiation protection, within controlled time frames.

In 2025, EDF continued to carry out decommissioning work outside the reactor concrete containment structure of the Saint-Laurent A1 and Saint-Laurent A2 reactors. In addition, the clean-up of hydrocarbon-polluted soil in the area of the former transformers of the Saint-Laurent A2 reactor, authorised by a resolution of ASN in 2023, was completed in 2025.

ASNR considers that the level of safety of the Saint-Laurent-des-Eaux A reactors is satisfactory. During its inspections, ASNR noted that the premises and worksites were generally well maintained and that the risks associated with flooding were being managed satisfactorily overall. However, if the management of periodic inspections and tests is deemed satisfactory, efforts are needed to ensure that certain internal procedures are kept up to date.

Saint-Laurent-des-Eaux silos

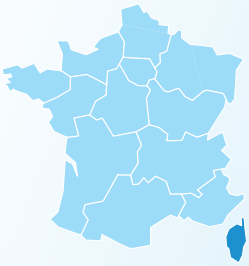
The installation, which was authorised by the Decree of 14 June 1971, comprises two silos which are used to store irradiated graphite sleeves from operation of the GCRs of Saint-Laurent A. The static containment of this waste is ensured by the concrete structures of the silo bunkers which are sealed by a steel liner. In 2010, EDF installed a geotechnical containment around the silos, reinforcing the control of the risk of dissemination of radioactive substances, which is the main risk presented by the installation.

Operation of this installation is limited to surveillance and upkeep measures: radiological monitoring inspections and measurements in the silos, checking there is no water ingress, checking the relative humidity, the dose rates around the silos, the activity of the water table, and monitoring the condition of civil engineering structures.

In the context of the change of decommissioning strategy for the GCRs, EDF announced in 2016 its decision to start removing the graphite sleeves from the silos without waiting for a definitive graphite waste disposal route to become available. To this end, EDF envisages creating a new graphite sleeve storage facility on the Saint-Laurent-des-Eaux site.

The final shutdown notification for the facility was sent by EDF in March 2022. At the end of 2022, EDF submitted the silo decommissioning file, integrating the silo emptying operations for the recovery and repackaging of the graphite waste and creation of the future graphite waste package storage facility. Based on the current assumptions made in the file currently being assessed, silo emptying should begin in the early 2030s. ASNR notes, however, that the safety measures planned for decommissioning and presented in the decommissioning dossier submitted in 2022 need to be completed. In addition, in 2026, EDF must decide on a modification to the desilting project, which could delay the planned decommissioning schedule. ASNR will continue to monitor the progress of the studies and ensure that a reasonable decommissioning schedule is maintained.

In 2025, ASNR found during its inspection that the risks associated with flooding were being managed satisfactorily.



Corse

The Marseille division regulates radiation protection and the transport of radioactive substances in the Corse collectivity.

ASNR conducted 3 inspections in the Corse collectivity in 2025, 2 in the medical sector and 1 in an organisation approved for measuring radon.

No significant radiation protection event in the small-scale nuclear activities classified as level 1 or higher on the International Nuclear and Radiological Events Scale (INES scale), or level 2 or higher on the ASN-SFRO scale, was reported to ASNR in 2025.

3
inspections

0
significant event on a level greater than or equal to 1 on the INES scale

0
significant event of level 2 or higher on the ASN-SFRO scale

ASNR actions to prevent radon risk

86 Rn radon

Awareness-raising actions

Information and discussions were held with Corse's ARS regarding changes to the regulations in the Labour Code relating to radon risk.

Areas with radon potential in mainland France, including Corse collectivity, are shown on page 99.

THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **small-scale nuclear activities in the medical sector:**
  - 2 external beam radiotherapy departments,
  - 2 nuclear medicine departments,
  - 8 centres practising fluoroscopy-guided interventional procedures,
  - 8 computed tomography scanners,
  - some 330 medical and dental radiology devices;

Chap.5

- **small-scale nuclear activities in the industrial, veterinary and research sectors:**
  - some 40 veterinary surgeons using diagnostic radiology devices,
  - about 40 industrial and research centres, including 2 companies with an industrial radiography activity;

Chap 6

- **activities associated with the transport of radioactive substances;**

Chap.7

- **ASNR-approved laboratories and organisations:**
  - 2 organisations approved for measuring radon.

Overseas *départements* and regions

20
inspections

0
significant event on a level greater than or equal to 1 on the INES[1] scale

0
significant event of level 2 or higher on the ASN-SFRO scale

The regulation of radiation protection and the transport of radioactive substances in the 5 overseas *départements* and regions (Guadeloupe, Martinique, Guyane, La Réunion and Mayotte) and in certain overseas collectivities is ensured by the Paris division. It also acts as an expert to the competent authorities of Nouvelle-Calédonie and French Polynesia.

ASNR is also involved in radiological monitoring of these areas.

In 2025, 20 inspections were carried out in the small-scale nuclear activities sector in the French-Overseas *départements*, regions and collectivities. Five on-site inspection campaigns were carried out by ASNR.

No significant radiation protection event in the small-scale nuclear activities classified as level 1 or higher on the International Nuclear and Radiological Events Scale (INES scale)[1], or level 2 or higher on the ASN-SFRO scale, was reported to ASNR in 2025.

In 2023 and 2024, ASNR continued the radiological supervision of the environment of the seven representative islands of French Polynesia (five high islands and two atolls) that it has been monitoring regularly since 1998, supplemented by an additional high island, Bora-Bora (Society archipelago) and an atoll, Takapoto (Tuamotu archipelago).

The 302 samples taken came from a variety of environments (atmospheric, terrestrial and marine) with which people may come into contact, including foodstuffs from the open sea, lagoons and terrestrial environments.

The ASNR report, published in October 2025, presents these new measurement campaigns, which confirm the stability of the levels of artificial residual radioactivity detectable in the Polynesian environment, continuing the trend of recent years. These measurements are at very low levels and are mainly attributable to caesium-137 (^{137}Cs).

The total annual effective dose for an adult living in Tahiti resulting from all sources of radiation, natural and artificial, is estimated at around 1.7 mSv, excluding medical exposure. It is almost entirely attributable to cosmic radiation and natural radioactive elements, with less than 0.1% of this dose due to radioactivity of artificial origin resulting from French and international nuclear tests. This annual effective dose due to natural radioactivity for a Polynesian adult is lower than the average annual effective dose worldwide, estimated at 3 mSv, where exposure to radon predominates, as it is less abundant in the air in French Polynesia.

THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **small-scale nuclear activities in the medical sector:**
  - 5 external beam radiotherapy departments,
  - 1 brachytherapy department,
  - 5 nuclear medicine departments,
  - 25 centres practising fluoroscopy-guided interventional procedures;

Chap.5

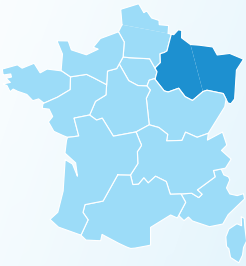
- **small-scale nuclear activities in the industrial, veterinary and research sectors:**
  - 1 industrial radiology company using gamma radiography devices;

Chap 6

- **activities associated with the transport of radioactive substances.**

Chap.7

1. An ESR that occurred in 2025 is currently being investigated, but had not been definitively classified at the time this report was published. It could be classified as level 1.



Grand Est

The Châlons-en-Champagne and Strasbourg divisions jointly regulate nuclear safety, radiation protection and the transport of radioactive substances in the 10 *départements* of the Grand Est region.

177
inspections

14
ésignificant events on a level greater than or equal to 1 on the INES scale

1
significant event of level 2 or higher on the ASN-SFRO scale

In 2025, ASNR conducted 177 inspections in the Grand Est region, of which 76 were in the Nuclear Power Plants (NPPs) in service, 17 in radioactive waste disposal facilities and on the sites of the Fessenheim and Chooz A NPPs currently being decommissioned, 76 in small-scale nuclear activities, 4 in the transport of radioactive substances and 4 concerning approved organisations or approved laboratories.

ASNR also carried out 24 days of labour inspections in the NPPs.

During the year 2025, 11 significant events declared by the licensees of nuclear installations in the Grand Est region were classified at level 1 on the International Nuclear and Radiological Events Scale (INES scale) and 1 significant event was classified at level 2 on the INES scale.

In the field of small-scale nuclear activities, 2 significant events were classified at level 1 on the INES scale (in the medical field) and 1 significant event concerning patients was classified at level 2 on the ASN-SFRO scale.

Cattenom nuclear power plant

The Cattenom NPP is situated on the left bank of the river Moselle, 5 km from the town of Thionville and 10 km from Luxembourg and Germany.

It comprises four 1,300 Megawatts electric (MWe) Pressurised Water Reactors (PWRs) commissioned between 1986 and 1991. Reactors 1, 2, 3 and 4 constitute Basic Nuclear Installations (BNIs) 124, 125, 126 and 137 respectively.

ASNR considers that the performance of the Cattenom NPP with regard to nuclear safety and environmental protection is in line with ASNR's general assessment of the EDF plants. In terms of radiation protection, the Cattenom NPP is considered to be lagging behind.

In terms of reactor operation and management, ASNR considers that performance, while at a good level compared with EDF's other nuclear power plants, is slightly down in relation to previous years. In particular, ASNR has noted a resurgence of significant events when reactors are restarted after an outage for maintenance, some of which are linked to the ability of the operating teams to detect faults during operating manoeuvres.

In terms of maintenance, the year 2025 was marked by two reactor shutdowns for maintenance outages, some of which took place at the same time. Maintenance performance was satisfactory overall, with major projects successfully completed (replacement of RCC guide tubes and control rod drive mechanisms). However, the fact that the two shutdowns occurred at the same time undermined the robustness of the site's maintenance organisation.

In terms of environmental protection, ASNR considers that the results are satisfactory overall. However, incidents have highlighted the licensee's weakness in controlling certain non-nuclear facilities, in particular antiscalant treatment facilities. The year 2025 also saw the completion of ASNR's review of the application to amend the decisions governing the site's water discharges and withdrawals, with the regulatory consultations of the licensee, the public and the CLI carried out in the last quarter.

In the area of radiation protection, ASNR considers that the site needs to make progress, particularly in controlling the spread of contamination. As in 2023, 2025 was marked by a significant level 2 radiation protection event involving skin contamination of a worker in excess of the annual regulatory limit (***see highlight 10 in chapter 9 of the full ASNR Report***). The site is aware of the difficulties and has launched a number of initiatives to remedy the situation, the relevance of which will be assessed in the light of results over the coming years.

Finally, in terms of occupational safety, ASNR considers that the working environment is generally suitable, and that the site is taking proper account of the points raised for improvement in this area.

Chooz nuclear power plant

The Chooz NPP operated by EDF is situated in the municipality of Chooz, 60 km north of Charleville-Mézières, in the Ardennes *département*. The site accommodates the Ardennes NPP, called Chooz A, comprising reactor A (BNI 163), operated from 1967 to 1991, for which the final shutdown and decommissioning operations were authorised by Decree 2007-1395 of 27 September 2007, and the Chooz B NPP, comprising two 1,450 MWe reactors (BNIs 139 and 144), commissioned in 2001.

Reactors B1 and B2 in operation

ASNR considers that the performance of the Chooz B NPP in terms of nuclear safety and environmental protection is consistent with ASNR's general assessment of EDF's NPPs. It stands out favourably in terms of worker radiation protection.

In terms of facility operation, ASNR notes a trend towards improvement, particularly in terms of compliance with requirements for facility supervision, alarm management and documentation management, which should be confirmed in 2026. However, better coordination between the professions handling reactor operation and those handling maintenance, as well as stricter compliance with procedures, are expected, as these two areas have been implicated in several significant events.

In terms of maintenance, the year was marked by an outage for maintenance and refuelling of Reactor 1, which involved a high volume of activities. This was generally under control, despite some malfunctions encountered during restart operations. However, a number of shortcomings in the performance of maintenance activities were noted, some of which led to significant safety events.

In terms of radiation protection, ASNR considers that the progress noted in 2024, particularly on issues relating to the radiological cleanliness of facilities, has been confirmed in 2025. However, occasional shortcomings in the radiation protection culture and in controlling the risk of contamination spreading to worksites were noted in 2025. The licensee is expected to make a special effort in these two areas in 2026.

Regarding environmental protection, ASNR considers that the organisation of the site remains satisfactory. A number of areas for improvement have been identified, relating to the liquid containment of effluents and the performance of water sampling and liquid effluent discharge equipment.

Finally, in terms of occupational health and safety, the maintenance outage of reactor 1 was marked by several accidents or "near misses" linked to the risk of falling loads. They highlight the need for better risk analysis upstream of operations and better coordination between the licensee and its outside contractors.

Reactor A undergoing decommissioning

In 2025, operations linked to the extraction of the reactor vessel were the main activities carried out in the reactor cavern (HR). Once the vessel had been lifted and placed on a transit stand, the insulation covering its lower section could be removed and cut away. The reactor pit has been sealed off with a device that restores the watertightness of the pool floor and also serves to support the reactor for the next stages of cutting, scheduled for 2026. In the auxiliary cavern (HK), operations to decommission the remaining equipment continued.

THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **basic nuclear installations:**
  - the Cattenom NPP (4 reactors of 1,300 MWe),
  - the Chooz A NPP (1 reactor of 305 MWe undergoing decommissioning),
  - the Chooz B NPP (2 reactors of 1,450 MWe),
  - the Fessenheim NPP (2 reactors of 900 MWe in final shutdown status, decommissioning scheduled to begin in 2026),
  - the Nogent-sur-Seine NPP (2 reactors of 1,300 MWe),
  - the CSA storage centre for short-lived low- and intermediate-level radioactive waste (LL/ILW-SL) located in Soulaines-Dhuys in the Aube *département*;
- **the Cigéo geological disposal project for long-lived high- and intermediate-level radioactive waste;**
- **small-scale nuclear activities in the medical sector:** Chap.5
  - 14 external beam radiotherapy departments,
  - 5 brachytherapy departments,
  - 19 nuclear medicine departments,
  - about 100 computed tomography departments,
  - 70 centres performing fluoroscopy-guided interventional procedures,
  - some 2,300 medical and dental radiology centres;
- **small-scale nuclear activities in the industrial, veterinary and research sectors:** Chap 6
  - about 200 industrial and veterinary activities subject to licensing and registration systems,
  - 34 companies exercising an industrial radiography activity,
  - about 37 public or private research units;
- **activities associated with the transport of radioactive substances;** Chap.7
- **ASNR-approved laboratories and organisations:**
  - 6 laboratories approved for taking environmental radioactivity measurements,
  - 2 organisations approved for measuring radon.

With regard to nuclear safety and worker radiation protection, 2025 saw an increase in the number of significant events and internal contamination, despite the action taken by the licensee in this area over several years. Analysis of these different situations, as well as inspections carried out throughout the year, including reactive inspections following events, led ASNR to ask that preventive measures be strengthened, particularly with regard to worker radiation protection. On 26 December 2025, it also decided to place the site under tightened surveillance for all decommissioning activities until the results once again meet expectations in terms of nuclear safety and worker radiation protection.

In terms of the environment, ASNR's the performance considered generally satisfactory by ANSR in recent years has been maintained in 2025.

Fessenheim nuclear power plant

The Fessenheim NPP is situated 1.5 km from the German border and about 30 km from Switzerland. Its two reactors, which were commissioned in 1977 and definitively shut down in 2020, are currently undergoing preparation for decommissioning.

ASN considers that the site is continuing decommissioning preparation conscientiously. In 2026, the site will be begin decommissioning, with the finalisation of the decommissioning dossier review and the publication of the decree governing decommissioning.

As in previous years, preparatory activities for decommissioning were carried out satisfactorily and broadly according to schedule, with in particular the removal of three lower parts of the old steam generators for decontamination and recovery by a melting process at Cyclife's facilities in Sweden. Major modifications to the site's ventilation/heating and power supply systems are currently underway.

ASNR also considers that the organisational changes and successive staff reductions since 2020 have been well managed and have not led to any noticeable negative effects on the operation of the site. However, the decline in staff numbers means that they need to be vigilant about maintaining certain skills over the medium term.

The site's performance in radiation protection is considered broadly satisfactory.

Finally, in the context of the decommissioning of the site, ASNR decisions governing water discharges and intakes from the Fessenheim nuclear power plant will be amended to adapt them to the specific needs of decommissioning.

Nogent-sur-Seine nuclear power plant

Operated by EDF and situated in the municipality of Nogent-sur-Seine in the Aube *département*, 70 km north-west of Troyes, the Nogent-sur-Seine NPP comprises two PWRs each of 1,300 MWe, commissioned in 1987 and 1988. Reactor 1 constitutes BNI 129 and reactor 2 BNI 130.

ASNR considers that the performance of the Nogent-sur-Seine site in the areas of nuclear safety, environmental protection and radiation protection is consistent with ASNR's general assessment of EDF's NPPs.

With regard to nuclear safety, ASNR considers that the results are satisfactory overall, with one point requiring particular attention concerning the relatively short shift lengths of the staff making up the reactor operating teams. The issues of maintaining skills and training staff will therefore need to be closely monitored. ASNR also considers that the improvements noted in 2024 in the management of system configuration have been confirmed in 2025.

With regard to maintenance, a notable event in 2025 was the maintenance and refuelling outage of reactor 1. Operations proceeded satisfactorily during this outage, apart from the unwanted activation of a backup system during a periodic equipment test.

As far as occupational radiation protection is concerned, ASNR observes that the management of worksite radiological cleanliness remains satisfactory. However, there is still room for improvement in the management of airlocks to maintenance sites, particularly with regard to dynamic containment.

With regard to environmental protection, ASNR is pleased to note that efforts to contain liquid pollution are continuing. However, it considers that there is still room for improvement in the way the site is organised, particularly with regard to waste management.

Lastly, the labour inspections did not find any particular weak point, other than the abovementioned aspects in occupational radiation protection. The points to be improved identified during the inspections are moreover addressed conscientiously by the employer.

Aube waste disposal facility

Authorised by a Decree of 4 September 1989 and commissioned in January 1992, the Aube repository (CSA) took over from the Manche repository (CSM) which ceased its activities in July 1994, while benefiting from the operating experience feedback gained from the latter. This facility, located in Soulaines-Dhuys, has a disposal capacity of one million cubic metres (m^3) of low- and intermediate-level, short-lived waste (LL/ILW-SL). It constitutes BNI 149. The operations authorised in the facility include the conditioning of waste, either by injecting mortar into metal containers of 5 or 10 m^3 volume, or by compacting 200-litre drums.

At the end of 2025, the volume of waste in the facility had reached about 396,000 m^3, or 40% of the authorised capacity. According to the estimates made in 2016 by Andra (the French National Agency for Radioactive Waste Management) in the concluding report on the periodic safety review of the CSA, the repository could be completely filled by 2062 rather than 2042 as initially forecast. This can be explained by having better knowledge of the future wastes and their delivery time frames, as well as by an optimisation of waste management through the compacting of certain packages.

ASNR considers that the CSA is operated under satisfactory conditions in the areas of nuclear safety, radiation protection and the environment. The inspections carried out in 2025 revealed satisfactory management of the waste generated by the CSA, good control of the risk of external flooding, and satisfactory consideration of the risk of fraud. However, one area for improvement has been highlighted concerning the organisation implemented for the management and in-service inspection of pressure equipment.

Deep geological disposal project

ASNR considers that the scientific experiments and work conducted by Andra in the underground laboratory at Bure continued in 2025 with a good standard of quality, comparable with that of the preceding years.

On 25 November 2025, ASNR also issued an opinion on the creation authorisation application for the Cigéo project, which Andra submitted on 16 January 2023 to the Ministry responsible for nuclear safety (***see chapter 13 of the full ASNR Report and the "Cigéo" notable event***).

Small modular reactor project in Bazancourt

On 3 May 2024, Jimmy Energy submitted to the Ministry in charge of nuclear safety a creation authorisation application for a Small Modular Reactor (SMR) in Bazancourt (51). The intended purpose of this reactor would be to provide industrial heat to a factory of the Cristal Union group.

On 13 February 2025, the Ministry responsible for nuclear safety asked Jimmy Energy to complete its file so that the examination could continue. Since then, the company has re-evaluated its project and announced a substantial modification to its design. Examination of the file will resume on receipt of the additional information required, particularly in relation to this change by Jimmy Energy (***see chapter 9 of the full ASNR Report***).

Project for a MOX fuel fabrication plant at Pont-sur-Seine and Marnay-sur-Seine

Newcleo is planning to build a small modular lead-cooled reactor at Savigny-en-Véron – 37 (***see chapter 9 of the full ASNR Report***) and a MOX fuel fabrication plant at Pont-sur-Seine and Marnay-sur-Seine – 10 (***see chapter 11 of the full ASNR Report***). In this context, on 13 December 2024 and 19 December 2025, it submitted two requests for advice to ASNR on safety options concerning the fuel fabrication plant project and the SMR project respectively.

In 2026, a public debate will be held jointly for these two projects, under the aegis of the French National Commission for Public Debate (CNDP).

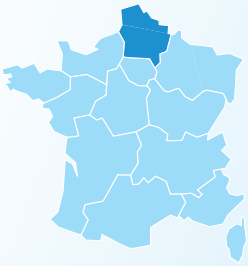
ASNR actions to prevent radon risk

Oversight actions

ASNR carried out five inspections in 2025 to prevent the risk associated with this radioactive gas:
• three inspections of establishments subject to mandatory radon monitoring under the Public Health Code: these revealed that the risk of exposure to radon has been clearly identified, although there are still shortcomings in terms of initial screening requirements and the frequency of measurements, as well as the display of results in some cases;
• two inspections of thermal establishments: the radon risk is known and well documented, but the implementation of certain regulatory requirements needs to be continued.

During these inspections, ASNR also reiterated the importance of maintaining long-term oversight of this risk and encouraged the sharing of experience and good practice, particularly between municipalities and municipal federations.

Areas with radon potential in mainland France, and particularly in the Grand Est region, are shown on page 99.



Hauts-de-France

The Lille division regulates nuclear safety, radiation protection and the transport of radioactive substances in the 5 *départements* of the Hauts-de-France region.

118
inspections

16
significant events on a level greater than or equal to 1 on the INES scale

0
significant event of level 2 or higher on the ASN-SFRO scale

In 2025, ASNR carried out 118 inspections in the Hauts-de-France region, including 37 at the Gravelines Nuclear Power Plant (NPP), 76 in small-scale nuclear activities, 3 in the field of transport of radioactive substances and 2 concerning organisations and laboratories approved by ASNR.

ASNR also carried out 14 days of labour inspection in the Gravelines NPP.

During 2025, the Gravelines NPP notified ASNR of 11 significant events rated level 1 and 1 significant event rated as level 2 on the International Nuclear and Radiological Events Scale (INES scale).

In small-scale nuclear activities, 4 events were rated level 1 on the INES scale.

Gravelines nuclear power plant

The Gravelines NPP operated by EDF is located in the Nord *département* on the shores of the North Sea, between Calais and Dunkerque. This NPP comprises six 900 Megawatts electric (MWe) Pressurised Water Reactors (PWRs) giving a total power of 5,400 MWe. Reactors 1 and 2 constitute Basic Nuclear Installation (BNI) 96, reactors 3 and 4 BNI 97 and reactors 5 and 6 BNI 122.

ASNR considers that the performance of the Gravelines NPP is below ASNR's general assessment of EDF's NPPs in terms of nuclear safety and radiation protection. In terms of environmental protection, the performance is in line with ASNR's general assessment of EDF's NPPs.

Nuclear safety performance deteriorated in 2025, particularly in the areas of maintenance and normal operation, which featured strongly in the analysis of notified events. The site has managed to stabilise its performance in terms of managing significant events and emergency situations. The plan of rigour implemented by the licensee is continuing, focusing on the areas experiencing difficulty: while the actions taken have borne fruit in terms of controlling reactivity, ASNR expects efforts to continue, particularly in the area of maintenance, by bringing together all those involved. Once again, ASNR noted a number of inappropriate practices or behaviours, non-compliance with procedures and poorly prepared or carried out maintenance activities. Finally, the conformity deviation management process, which is essential for maintaining the compliance and safety levels of facilities, needs to be made more robust.

The year 2025 was again marked by significant extensions of reactor outage times, largely due to technical contingencies. Two or three reactors were shut down simultaneously for 28 weeks, making it difficult to prepare activities and allocate resources. The industrial programme was busy in 2025 with the continued deployment of modifications linked to the fourth periodic safety review and the construction of the new local emergency response centre and ultimate water sources implemented as part of the operational experience feedback from the accident at the Fukushima Daiichi NPP in Japan.

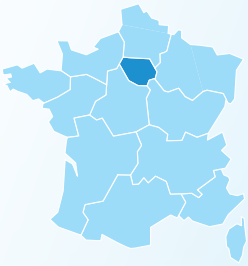
THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **one basic nuclear installation:**
  - the Gravelines NPP (6 reactors of 900 MWe) operated by EDF;
- **small-scale nuclear activities in the medical sector:** Chap.5
  - 19 external beam radiotherapy departments,
  - 2 brachytherapy departments,
  - 30 nuclear medicine departments, of which 8 practise internal targeted radiotherapy,
  - 90 centres practising fluoroscopy-guided interventional procedures,
  - 153 computed tomography scanners,
  - some 4,600 medical and dental radiology devices;
- **small-scale nuclear activities in the industrial, veterinary and research sectors:** Chap 6
  - about 600 industrial and research centres, including 23 companies with an industrial radiography activity, 6 particle accelerators, including one designed for inspecting freight trains and 2 cyclotrons, 20 laboratories, situated mainly in the region's universities and 7 companies using gamma ray densitometers,
  - 340 veterinary surgeries or clinics practising diagnostic radiology;
- **activities associated with the transport of radioactive substances;** Chap.7
- **ASNR-approved laboratories and organisations:**
  - 1 organisation approved for radiation protection controls.

ASNR considers that the organisation of environmental protection at Gravelines NPP and its performance remain satisfactory. However, discrepancies concerning the condition of certain installations collecting or transporting liquid effluent, as well as the management of liquid and gaseous effluent discharges, need to be corrected. Efforts in recent years have improved the management of equipment using SF_6 (a powerful greenhouse gas), but there are still deviations when it comes to emissions of other greenhouse refrigerants.

In 2025, ASNR noted a slight deterioration in worker radiation protection and a return to the difficulties encountered in previous years. The site reported an event classified at level 2 on the INES scale relating to external contamination of a worker resulting in a skin dose in excess of the annual statutory dose limit (***see highlight 10 in chapter 8 of the full ASNR Report***). This event contributes to a mixed picture, with persistent shortcomings in worksite preparation and management. ASNR is calling for greater vigilance in applying the optimisation approach and coordinating radiation protection measures with outside contractors, in order to anticipate risks and reduce exposure. ASNR also observes an increase in deviations linked to deficiencies in the radiation protection culture or rigour of the workers, particularly regarding the conditions of access to regulated work areas and taking changes in regulatory zoning into account.

Accidents at work on the site remained at high numbers but stable compared with the previous year against a backdrop of rising national figures. The occurrence of severe accidents in 2025 led to a formal notice from the Labour Inspectorate concerning the lack of collective protection in certain work areas against the risk of falling from a height. Improvements are expected in terms of compliance with the provisions of the Labour Code relating to traffic on the site regarding the risk of collision between machinery and pedestrians, ventilation of premises with specific pollution and the lifting of loads, for which deviations have been noted from time to time.



Île-de-France

The Paris division regulates radiation protection and the transport of radioactive substances in the 8 *départements* of the Île-de-France region. The Orléans division regulates nuclear safety in the Basic Nuclear Installations (BNIs) of this region.

279
inspections

16
significant events on a level greater than or equal to 1 on the INES scale

0
significant event of level 2 or higher on the ASN-SFRO scale

In 2025, ASNR carried out 279 inspections in the Île-de-France region, including 110 in the field of nuclear safety, 144 in the field of small-scale nuclear activities (including 4 in the field of polluted sites and soils), 19 on the theme of the Radioactive Substance Transport (RST) and 6 concerning approved bodies or laboratories.

Eleven significant events were rated level 1 on the International Nuclear and Radiological Events Scale (INES scale) in the small-scale nuclear activities sector, 2 at level 1 on the INES scale in the BNIs sector and 2 at level 1 on the INES scale in the area of RST.

An event concerning the Centre for Research and Restoration of Museums of France (C2RMF) was classified at level 3 of the INES scale following the irradiation of a worker's arm by a particle accelerator which resulted in skin lesions characteristic of deterministic effects.

In addition, 2 penalty notices were issued against a nuclear activity manager and 3 contradictory reports prior to formal notice were sent. Finally, a formal notice was published concerning *Hôpital Privé Paul d'Égine*.

CEA Saclay site

Since 2017, the Alternative Energies and Atomic Energy Commission (CEA) Paris-Saclay centre accommodates activities previously conducted on several geographically distinct sites close to Paris, and the sites of Saclay and Fontenay-aux-Roses in particular.

The CEA Paris-Saclay centre, of which the main site covers an area of 125 hectares, is situated about 20 km south-west of Paris, in the Essonne *département*. About 6,000 people work there. Since 2005, this centre has been primarily devoted to physical sciences, fundamental research and applied research. The applications concern physics, metallurgy, electronics, biology, climatology, simulation, chemistry and the environment. The main aim of applied nuclear research is to optimise the operation and enhance the safety of the French NPPs. Seven BNIs are located on this site.

Nearby are also located an office of the French National Institute of Nuclear Science and Technology (INSTN) – a training institute – and two industrial firms: Technicatome, which designs nuclear reactors for naval propulsion, and CIS bio international, which produces radiopharmaceuticals for nuclear medicine.

THE INDUSTRIAL AND RESEARCH FACILITIES

Osiris and Isis reactors

The Osiris pool-type reactor, which has an authorised power of 70 Megawatts thermal (MWth), was primarily intended for technological irradiation of structural materials and fuels for various nuclear power reactor technologies. Another of its functions was to produce radionuclides for medical purposes.

Its critical mock-up, the Isis reactor with a power of 700 kilowatts thermal (kWth), was essentially used for training purposes. These two reactors were authorised by a Decree of 8 June 1965 and constitute BNI 40.

Given the old design of this facility by comparison with the best available techniques for protection against external hazards and for the containment of materials in the event of an accident, the Osiris reactor was shut down at the end of 2015. The Isis reactor was definitively shut down in March 2019. Following submission of the decommissioning file for the entire facility in October 2018, ASN requested and received additional information giving more details on the operations planned at each stage of decommissioning and substantiating more precisely the initial state envisaged at the start of decommissioning and the results of the impact assessment.

In late 2021, the CEA announced a radical change in the decommissioning strategy of BNI 40 with the postponement of commissioning of the equipment for reprocessing and packaging irradiating waste. For the purpose of the assessment, further information on the new decommissioning scenario, particularly regarding the management of irradiating waste, had to be provided. The decommissioning file, submitted by the CEA at the end of 2023, is currently being assessed.

Since the shutdown of the Osiris and Isis reactors and pending decommissioning of the facility, the removal of radioactive and hazardous materials and the decommissioning preparation operations are underway, with an organisation adapted to the new state of the facility. More specifically, the last of the irradiated core fuel stored in the facility was removed in 2021.

In order to adapt to the increase in waste flows linked to decommissioning preparation operations, CEA has been authorised by ASNR in 2025 to change the waste storage areas within the facility. In addition, the licensee has taken steps to reduce water consumption during the summer period.

ASNR considers that the level of safety of BNI 40 is satisfactory. The organisation put in place to keep track of the Decommissioning Preparation Operations is appropriate for the current status of the facility, despite the postponement of operations due to a lack of means. Work schedules are closely monitored. In 2026, ASNR will keep a close eye on the licensee's control of preparation operations for decommissioning, particularly those on the critical path to achieving the initial state described in the decommissioning file. In addition, the work undertaken by the licensee to ensure management of the skills required for the future operation and decommissioning of the facility must be continued.

THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **basic nuclear installations regulated by the Orléans division:**
  - the Saclay and Fontenay-aux-Roses sites of the CEA Paris-Saclay centre,
  - the Artificial Radionuclide Production Facility (UPRA) operated by CIS bio international in Saclay;
- **small-scale nuclear activities in the medical field regulated by the Paris division:** Chap.5
  - 28 external beam radiotherapy departments,
  - 12 brachytherapy departments,
  - 44 *in vivo* nuclear medicine departments and 12 *in vitro* (medical biology) nuclear medicine departments,
  - 150 centres practising fluoroscopy-guided interventional procedures;
- **small-scale nuclear activities in the industrial, veterinary and research sectors under the oversight of the Paris division:** Chap 6
  - 5 industrial radiography companies using gamma radiography devices,
  - about 90 authorisations and 56 registrations relative to research activities;
- **activities associated with the transport of radioactive substances;** Chap.7
- **ASNR-approved laboratories and organisations:**
  - 3 organisations approved for radiation protection controls.

Orphée reactor

The Orphée reactor (BNI 101), a neutron source reactor, was a pool-type research reactor with a licensed power of 14 MWth. The highly compact core is located in a tank of heavy water acting as moderator. Creation of the reactor was authorised by the Decree of 8 March 1978 and its first divergence took place in 1980. It was used for conducting experiments in areas such as physics, biology and physical chemistry. The reactor allowed the introduction of samples to be irradiated for the production of radionuclides or special materials, and the performance of non-destructive tests on certain components.

The Orphée reactor, which was definitively shut down at the end of 2019, is now in the Decommissioning Preparation Operations (DECPROs) phase. The licensee submitted its decommissioning file in March 2020. The last irradiated fuel from the Orphée reactor was removed in 2020, greatly reducing the risks the facility represents. The continuation of the DECPROs and the facility decommissioning scenario were discussed following the CEA's re-prioritising of the DECPROs, resulting in the updating of the decommissioning strategy for BNI 101. A new decommissioning file was submitted at the end of 2023 and it is currently being assessed.

After examining the report on the conclusion of the periodic review submitted in 2019, ASNR considered that in 2025 it had no objections to continuing operations to prepare for the decommissioning of BNI 101 and will monitor the progress of the licensee's action plan.

Since the shutdown of the reactor, the DECPRO phase has started, but is subject to recurrent schedule push-backs. In 2025, the DECPROs resumed following a period of pause. However, the management of modifications linked to these operations needs to be improved.

ASNR considers that the safety level of the Orphée reactor is generally satisfactory. However, work on updating the facility's set of reference documents, to take account of the reactor outage, must be continued within the announced timeframe. ASNR will also be closely scrutinising the adaptation of the organisation and the personnel's competence to manage new activities relating to decommissioning while maintaining the level of safety of the facility and controlling the schedules of the associated activities.

Spent fuel testing laboratory

The Spent Fuel Testing Laboratory (LECI) was built and commissioned in November 1959. It was declared a BNI on 8 January 1968 by the CEA. An extension was authorised in 2000. The LECI (BNI 50) constitutes an expert assessment aid for the nuclear licensees. Its role is to study the properties of materials used in the nuclear sector, whether irradiated or not.

From the safety aspect, this facility must meet the same requirements as the nuclear installations of the "fuel cycle", but the safety approach is proportional to the risks and drawbacks it presents.

Further to the last periodic safety review, ASN issued the resolution of 30 November 2016 (amended on 26 June 2017) regulating the continued operation of the facility through technical prescriptions relating in particular to the improvement plan that CEA had undertaken to implement. Some of CEA's commitments have not been fulfilled within the deadlines. In 2023, the examination of the provisions relating to fire led ASN to issue a compliance resolution to regulate performance of the works initially expected for the end of 2019, with a deadline of 31 December 2026.

Review of the file for the facility's second periodic safety review, which CEA submitted in December 2023, continued in 2025.

In 2025, CEA launched an overall review of the future of the facility, including the transfer of certain research and development activities to the most recent building. If implemented, this project will lead to major changes in the facility's safety issues, particularly with regard to the risk of fire. In this new context, ASNR expects CEA to justify prioritising the work needed to bring the facility back into compliance.

In addition, the project to reprocess, repackage and dispose of irradiated waste from the LECI is currently being redefined and resized to take account of changes at the facility.

Lastly, the inspections carried out during 2025 were deemed satisfactory, although improvements are expected in the performance of periodic inspections and tests and the monitoring of maintenance operations.

Poséidon irradiator

Authorised in 1972, the Poséidon facility (BNI 77) is an irradiator comprising a storage pool for cobalt-60 sources, partially surmounted by an irradiation bunker. The BNI moreover includes another bunkered irradiator baptised Pagure, and the Vulcain accelerator.

This facility is used for studies and qualification services for the equipment installed in the nuclear reactors, notably thanks to an immersible chamber, as well as for the radiosterilisation of medical products. The main risk in the facility is of personnel exposure to ionising radiation due to the presence of very high-activity sealed radioactive sources.

ASN has regulated the continued operation of the facility following its first periodic safety review *via* its resolution of 22 November 2019. The major areas for improvement are in particular the resistance of the building to seismic and climatic hazards (snow and wind in particular), and the monitoring of ageing of the Poséidon storage pool.

In 2024, further to its examination of the periodic safety review concluding report submitted by CEA at the end of 2021, ASN considered that it had no objection to the continued operation of BNI 77. Attention must nevertheless be paid to monitoring the ageing of the pool. In 2025, ASNR authorised the extension of the period of use of sealed cobalt-60 sources in the Poséidon irradiator.

ASNR considers that the facility's level of nuclear safety is satisfactory. The inspections showed that the Poséidon pool is being properly monitored and maintained. However, source management remains a point requiring particular attention, following two cases of tritium contamination of the facility's pool in 2021 and 2024 during the supply of new cobalt-60 sources. In 2025, ASNR examined the operational experience feedback received by CEA and the measures put in place to manage potentially contaminated water from tests on transport packaging, which appeared to be satisfactory.

Finally, at the end of 2024, CEA submitted a request to modify the perimeter of BNI 77, in order to include the new emergency management premises, operational since 1 January 2025. In December 2025, ASNR issued a favourable opinion on this modification, which does not involve any change in the operation of BNI 77.

SOLID WASTE AND LIQUID EFFLUENT TREATMENT FACILITIES

CEA operates various types of facilities: laboratories associated with "fuel cycle" research as well as research reactors. CEA also carries out numerous decommissioning operations. Consequently, it produces diverse types of waste. CEA has specific reprocessing, packaging and storage facilities for the management of this waste.

Solid radioactive waste management zone

The Solid Radioactive Waste Management Zone (ZGDS – BNI 72) was authorised by the Decree of 14 June 1971. Operated by CEA, this facility reprocesses, packages and stores the high-, intermediate- and low-level waste from the Saclay centre facilities. It also stores legacy materials and waste (spent fuels, sealed radioactive sources, scintillating liquids, ion exchange resins, technological waste, etc.) pending removal.

In view of the "dispersible inventory[1]" currently present in the facility, BNI 72 is one of the priorities of CEA's decommissioning strategy which has been examined by ASN, who stated its position on these priorities in May 2019 (***see chapter 12 of the full ASNR Report***).

BNI 72 has been definitively shut down since 31 December 2022. Nevertheless, certain types of waste can be accepted by the facility until 2025. After analysing the review report for BNI 72 submitted at the end of 2017 and assessed jointly with the decommissioning file, in 2022 ASN regulated the conditions of continued operation of the facility. In addition, Decree 2022-1107 of 2 August 2022 requiring CEA to proceed with the decommissioning of BNI 72 came into force on 26 July 2023, the date on which ASN approved the revision of the general operating rules.

ASNR notes positively the removal of the last isotope generator and the completion of the repackaging of the ion exchange resins in 2025. CEA plans to resume work in 2026 on the dismantling of fuel rods stored in a container known as the "RCC", which has been shut down since 2024 following the loss of integrity of fuel pellets during handling, with an adaptation of the procedures for carrying out certain operations.

ASNR is also keeping a close eye on the progress of the "Removal of fuel bins" project (EPOC[2]), given the difficulties encountered in recent years by CEA in its management. In 2025, the licensee continued investigations aimed at improving knowledge of the condition of the drums and wells concerned. ASNR will also ensure that CEA takes into account the operational experience feedback from the malfunction encountered in 2025 on Chateau A, used to transport containers. The EPOC project plans to use similar equipment.

ASNR considers that the overall level of safety of the installation is satisfactory. However, despite the measures taken to strengthen the supervision of outside contractors, vigilance is still required with regard to routine operations. In addition, CEA must ensure that waste storage deadlines are met at the facility.

1. Part of the inventory of the radionuclides of a nuclear facility that groups the radionuclides that could be dispersed in the facility in the event of an incident or accident, or even, for a fraction of them, be released into the environment.
2. This project involves a process intended to retrieve and package drums containing a mix of waste and fuel fragments which are currently stored in pits in the facility. The retrieval of these drums requires specific equipment, given the uncertainties concerning their integrity.

Liquid Effluents Management Zone

The Liquid Effluents Management Zone (ZGEL) constitutes BNI 35. Declared by CEA by letter of 27 May 1964, this facility is dedicated to the treatment of radioactive liquid effluents. CEA was authorised by a Decree of 8 January 2004 to create "Stella", an extension in the BNI for the purpose of treating and packaging low-level aqueous effluents from the Saclay centre. These effluents are concentrated by evaporation then immobilised in a cementitious matrix in order to produce packages that are acceptable for the above-ground waste repositories of the French National Radioactive Waste Management Agency (Andra).

At present, the facility is no longer able to receive effluent from Saclay producers. Alongside this, CEA has suspended reception of effluents from other BNIs since 2016, due to the conducting of complementary investigations into the stability of the structure of the room for storing low-level liquid effluents (room 97). The majority of the low- and intermediate-level radioactive effluents produced by the Saclay site production sources are now directed to the Marcoule Liquid Effluent Treatment Station (STEL).

The evaporation facility used to treat the radioactive effluents has been out of service since 2019 due to technical anomalies on an equipment item. Following the authorisation issued by the ASN in 2023 for a modification to the separator shell, CEA has undertaken the necessary work to allow a limited resumption of evaporation campaigns.

The process of encapsulation in cement, used to treat the concentrates in the facility, was stopped temporarily by CEA in June 2021, following the production of two 12H active packages that did not comply with the packaging approval issued by Andra. After obtaining a new approval from Andra, CEA restarted the encapsulation in cement of concentrates in 2025 and plans to resume the removal of 12H packages in the near future.

In view of CEA's commitments and the action plan established at the end of the periodic safety review and further to its examination of the concluding report of the said review, ASNR considered in 2025 that it had no objection to the continued operation of BNI 35. CEA has made a number of commitments to improve the safety of the facility, including emptying certain tanks and controlling the risk of fire. ASNR will be vigilant in monitoring the commitments and progress of the action plan, and in ensuring that the facility takes on board the results of the reports and studies carried out in this context.

In 2025, waste management appears to be satisfactory, but attention needs to be paid to storage areas and the monitoring of associated deadlines. In addition, improvements are expected in the reclassification of protection important components.

While ASNR has noted CEA's investment in 2025 with a view to resuming evaporation and cementation, the resumption and packaging of historical effluents, in particular from the MA500 tanks and the tanks in pit 99, remain areas of concern. A priority pit 99 tank was emptied in 2024. However, non-pumpable residues remain in the bottom of this tank.

Finally, CEA will decide in 2026 on the future of the facility. In the event of continued operation, an ambitious action plan is expected to achieve a level of safety consistent with the planned future of the facility.

FACILITIES UNDERGOING DECOMMISSIONING

The decommissioning operations on the Saclay site concern two BNIs, the High Activity Laboratory (LHA) and the solid radioactive waste management zone (BNI 72). DECPROs are being carried out in two definitively shut down BNIs, namely the Osiris and Isis reactors (BNI 40) and the Orphée reactor (BNI 101). Operations are also being carried out on parts of the in-service ZGEL (BNI 35) which have ceased their activity. Two Installations Classified for Protection of the Environment (ICPEs – EL2 and EL3) previously classified as BNIs but which have not been completely decommissioned due to the lack of a disposal route for the low-level long-lived waste, are also concerned by decommissioning. Their downgrading from BNI to ICPE status in the 1980s, in compliance with the regulations of that time, could not be done today.

Broadly speaking, CEA's decommissioning and waste management strategy has been examined by ASN, which stated its position in May 2019 on the priorities defined by CEA (***see chapters 12 and 13 of the full ASNR Report***). An update of this strategy, taking into account operating experience feedback, is expected by ASNR.

High-activity laboratory

The High-Activity Laboratory (LHA) comprises several laboratories intended for research work or the production of various radionuclides. It constitutes BNI 49. On completion of the decommissioning and clean-up work authorised by the Decree of 18 September 2008, only two laboratories currently in operation should ultimately remain under the ICPE System. These two laboratories are the laboratory for the chemical and radiological characterisation of effluents and waste, and the packaging and storage facility for the retrieval of disused sources.

Despite the progress of the clean-up and decommissioning operations, the accumulated delays prevented CEA from meeting the deadline of 21 September 2018 set by the Decree authorising LHA decommissioning. The discovery of pollution in certain "intercell yards" in 2017 also led to changes being made in the operations to be carried out. Investigations into the radiological status of the soils were conducted between 2019 and 2021. The licensee submitted a Decommissioning Decree modification file in December 2021. The justification for the time necessary to complete the decommissioning operations authorised by the Decree of 18 September 2008 shall be reviewed in the ongoing assessment of this file.

In 2024, after examining the periodic safety review concluding report submitted by CEA in 2017, ASN considered that it had no objection to the continued operation of BNI 49 pending the amendment of its Decommissioning Decree. In the context of this periodic safety review, compliance actions, in particular regarding control of fire-related risks, were identified. ASN also asked CEA to take measures to guarantee the integrity of certain items of equipment whose decommissioning has been delayed.

Investigations and studies enabling the management of unidentified waste discovered at the end of 2022 in all the concrete containment structures constituting the TOTEM shielded process line continued in 2025, and the evacuation of this waste is underway.

ASNR considers that the overall level of safety at BNI 49 is satisfactory and, despite the delays, highlights positively the overall progress of the decommissioning operations and the measures taken by the licensee to improve coordination of the work and project management. Management of the two laboratories in operation also appeared satisfactory. However, improvements are expected in the management of plant equipment tagout, as well as periodic inspections and tests of pressure gauges.

ASNR remains vigilant with regard to the management of the very low level waste zones of BNI 49, particularly on account of the future decommissioning work which will produce additional waste. Consequently, the adequacy of the existing waste storage areas for the future needs is of major importance for the conduct of the decommissioning operations in accordance with the planned schedule.

Assessment of the CEA Saclay site

ASNR considers that the CEA Saclay site BNIs are operated under suitably safe conditions on the whole, and observes that the operations to reduce the radiological inventory stored in the BNIs – which have been in progress for several years now – continued in 2025.

The decommissioning preparation operations and the decommissioning work are continuing for the facilities concerned. Managing their progress and controlling the associated schedules remain major challenges for CEA Saclay and are the subject of regular inspections and discussions with ASNR.

On another note, further to the Fukushima Daiichi NPP accident (Japan), ASN had ordered the creation on the Saclay site of new emergency management facilities capable of withstanding extreme conditions. The project has suffered significant delays due to civil engineering faults, resulting in failure to meet the initial commissioning deadline of the end of 2021. Given the reduction in nuclear risk at the Saclay site following the shutdown of the Orphée (BNI 101) and Osiris (BNI 40) reactors, a requirement to complete the construction of new emergency management facilities set a new deadline of the end of 2024. Their commissioning was observed by ASNR in 2025, during an unannounced inspection that included an emergency response exercise. However, further information is still required on the identification of items important for the protection of interests, and on the premises organisation protocol. In addition, CEA's on-site emergency plan has been updated, in particular to incorporate the new premises. In 2026, ASNR will keep a close eye to the emergency organisation and resources in place.

As part of the operational experience feedback from significant events involving temperature sensors used for fire detection, ASNR carried out an inspection to examine the inspection and maintenance procedures for this equipment in the BNIs at CEA Saclay site. Clarifications are still needed on the specified requirements, as well as on the methods for maintaining and qualifying the sensors.

Finally, in 2025, ASNR carried out a tightened inspection on the supervision of outside contractors, involving the technical departments of CEA Saclay site and six of the seven BNIs, in order to verify the implementation of the commitments made following the in-depth inspection carried out by the ASN in 2024. An overall improvement in CEA's practices was noted, although the momentum needs to be maintained in terms of the BNIs. However, there are still shortcomings in the management of regulatory requirements, particularly in terms of formalisation and traceability of supervision, as well as in the technical control of protection important activities. CEA is expected to pay particular attention to these issues and to invest heavily in them.

Artificial Radionuclide Production Plant of CIS bio international

The Artificial Radionuclides Production Facility (UPRA) constitutes BNI 29. It was commissioned in 1964 on the Saclay site by CEA, which in 1990 created the CIS bio international subsidiary, the current licensee. In the early 2000s, this subsidiary was bought up by several companies specialising in nuclear medicine. In 2017, the parent company of CIS bio international acquired Mallinckrodt Nuclear Medicine LCC, now forming the Curium group, which owns three production sites (in the United States, France, and the Netherlands).

The Curium group is an important player on the French and international market for the production and development of radiopharmaceutical products. The products are mainly used for the purposes of medical diagnoses, but also for therapeutic uses. They are manufactured using a cyclotron installed on the site or using radionuclides produced by outside suppliers or other facilities of the Curium group. Until 2019, the role of BNI 29 was also to recover disused sealed radioactive sources which were used for radiotherapy and industrial irradiation. Removal of these sources, which were stored in the facility, was completed in 2024.

In 2025, in view of the conclusions of the periodic safety review of BNI 29, ASNR regulated its continued operation through a resolution in 25 September 2025 setting technical requirements. These requirements focus in particular on reducing the radiological inventory, as well as controlling the risks associated with fire, exposure to ionising radiation and the spread of radioactive materials.

CIS bio international moreover decided to stop its iodine-131-based productions on the Saclay site at the end of 2019, which has significantly reduced the potential consequences of accident situations on the site. In 2025, the shutdown of the technetium generator production and packaging line has also led to a reduction in the radiological inventory present in certain buildings on the site. ASNR has finalised the review for updating the study of the radiological consequences for the population in an accident situation. This study takes into account changes in the site's activities, as well as waste disposal planned by the licensee for the end of 2026. In this context, the work undertaken at the request of CIS bio international to obtain reduced-risk facility status will continue in 2026.

In 2024 and 2025, as part of CIS bio international's strategy to develop the production of new radiopharmaceuticals at the Saclay site, ASNR has authorised the manufacture of new products labelled copper-64 and lutetium-177.

Since the deterioration in the overall level of safety at the facility observed in 2023, ASNR notes that CIS bio international has been working hard in 2025 on a number of issues considered to be priorities by ASNR. The time taken to send responses to follow-up letters from ASNR and reports of significant events has improved, while maintaining the quality of the information provided. In addition, the operator provided several safety-related files that had been awaited for several years, such as the analysis of human and organisational factors, the update of the safety report and general operating rules following the periodic safety review, the update of the On-site Emergency Plan (PUI), and requests for waste storage extensions.

Nevertheless, as in previous years, ASNR notes from the inspections carried out in 2025 that CIS bio international is experiencing difficulties in meeting its commitments, with a significant number of postponements of deadlines associated with actions decided following inspections or significant events.

With regard to waste, CIS bio international has complied with the formal notice issued by ASN in 2024 concerning the disposal of certain nuclear waste stored beyond the deadlines set out in the facility's repository before the end of January 2025. ASNR also noted improvements in staff training in radiation protection, the receipt of packages of radioactive substances and the management of active effluents. However, improvements are expected in the supervision of outside contractors, the supervision of gaseous iodine emissions, the intervention procedures of the radiation protection centre of expertise and the management of emergency situations.

The number of significant events reported to ASNR was stable compared with 2024. Nevertheless, human and organisational factors continue to predominate in the causes identified, and ASNR notes recurring problems relating to radiation protection of personnel, management of the last filtration levels and the identification and in-service monitoring of pressure equipment. Particular attention must be paid to these points. In addition, although the preventive and corrective maintenance actions undertaken in 2025 have led to an improvement in the leakage rate of certain enclosures and glove boxes, there are still significant gaps in a number of items of equipment. CIS bio international also continued to investigate the technical causes of the regularly observed

deviations in the latest filtration levels in the facility's ventilation system, and to implement corrective actions.

Thus, the facility's results in the areas of safety and radiation protection are mixed. Despite the substantial work undertaken by the facility's staff at all levels of the organisation and the improvements observed in safety management, CIS bio international must continue its efforts to achieve a significant improvement. Operating rigour, maintaining the safety culture and the oversight of industrial projects or aiming to improve safety or radiation protection remain the areas in which CIS bio international must focus its efforts. The numerous projects, studies and works undertaken by CIS bio international still require particular attention as well as better scheduling so that the files to be addressed to ASNR can be prepared and submitted sufficiently early. In order to improve performance in terms of safety, radiation protection and the environment, the licensee must maintain increased vigilance over the organisation and technical resources implemented.

Fontenay-aux-Roses CEA site

Created in 1946 as CEA's first research centre, the Fontenay-aux-Roses site is continuing its transition from nuclear activities towards research activities in living sciences.

The CEA Fontenay-aux-Roses site, part of the CEA Paris-Saclay centre since 2017, comprises two BNIs, namely Procédé (BNI 165) and Support (BNI 166). BNI 165 accommodated the research and development activities on nuclear fuel reprocessing, transuranium elements, radioactive waste and the examination of irradiated fuels. These activities ceased in the 1980s-1990s. BNI 166 is a facility for the characterisation, treatment, reconditioning and storage of legacy radioactive waste from the decommissioning of BNI 165.

Broadly speaking, CEA's decommissioning and waste management strategy has been examined by ASN, which stated its position in May 2019 on the priorities defined by CEA (*see chapters 12 and 13 of the full ASNR Report*). An update of this strategy, taking into account operating experience feedback, is expected by ASNR.

Decommissioning of the Fontenay-aux-Roses site includes priority operations because it presents particular risks, linked firstly to the quantity of radioactive waste present in the facilities, and secondly to the radiological contamination of the soils under part of one of the BNI 165 buildings. In addition to this, the Fontenay-aux-Roses centre, which is situated in a densely-populated urban area, is engaged in an overall delicensing process.

Procédé and Support facilities

Decommissioning of the two facilities Procédé and Support, which constitute BNI 165 and BNI 166 respectively, was authorised by two Decrees of 30 June 2006. The initial planned duration of the decommissioning operations was about ten years. The CEA informed ASN that, due to strong presumptions of radioactive contamination beneath one of the buildings, as well as unforeseen difficulties and a change in the overall decommissioning strategy of the CEA's civil centres, the decommissioning operations had to be extended and that the decommissioning plan would be modified. In June 2015, CEA submitted an application to modify the prescribed deadlines for these decommissioning operations.

ASN deemed that the first versions of these Decommissioning Decree modification application files were not admissible. In accordance with the commitments made in 2017, CEA submitted the revised versions of these files in 2018. These files were supplemented over the 2019-2022 period, particularly with respect to the planned decommissioning operations and their schedule. The CEA forecasts end of decommissioning of the BNIs beyond 2060. These two projects are currently being assessed. The new decrees will set the decommissioning characteristics to come, notably their completion time frame.

Assessment of the Fontenay-aux-Roses CEA site

ASNR considers that the level of safety at CEA in Fontenay-aux-Roses is acceptable. CEA must nevertheless maintain its efforts to ensure the operational safety of its facilities. After delays identified in the preceding years in the performance of the studies, in project programming and in the decommissioning schedule of the nuclear installations of Fontenay-aux-Roses, two of CEA's major decommissioning-related worksites were stopped for contractual and technical reasons in 2023. This situation led to technical changes in the choice of equipment design and pushing back of the decommissioning time frames. CEA must be particularly vigilant regarding the coordination of the files and the work planned on the site in order to reduce the dispersible radiological inventory within the facilities. The licensee must also continue to implement strong measures to control and render reliable the project time frames, particularly the deadlines for submission of the decommissioning worksite preparatory studies.

In 2023, in view of the conclusions of the periodic safety review of BNI 165, ASN regulated its continued operation through a resolution setting technical requirements. With regard to BNI 166, in view of CEA's commitments and the action plan established at the end of the periodic safety review and further to its examination of the concluding report of the said review, ASN considered in 2024 that it had no objection to the continued operation of BNI 166. In 2025, ASNR monitored the progress of the action plans resulting from these two reviews.

ASNR positively highlights CEA's involvement in updating all the general operating rules, which have been obsolete for several years, and urges it to continue this work in 2026. However, improvements are still needed in terms of emergency response resources. The updated On-site Emergency Plan (PUI), submitted by CEA at the end of 2025, is currently being examined.

Furthermore, ASNR considers that the actions undertaken by CEA to control the risk of fire must be continued in order to achieve the expected level of safety. In this respect, in order to provide a framework for the qualification of the new fire extinguishing system for the shielded process lines at BNI 165, ASNR issued a resolution on 30 September 2025 requiring certain activities to be carried out, and will be monitoring compliance with the associated deadlines.

Finally, the management of historical waste is a major point of vigilance for ASNR, with two significant events reported in connection with this issue in 2025. Waste with radiological activity well above the maximum limit set in the storage room, which had since been transferred to a suitable storage site, was discovered. In addition, a fire broke out while waste was being handled, triggering the PUI at the CEA Fontenay-aux-Roses site and activating ASNR emergency response centre. Although this event did not have any impact on the public or the environment, ASNR expects CEA to learn all it can from it and adapt the way it carries out its work accordingly.

The polluted sites and soils in Île-de-France

In Île-de-France, the Paris division oversees the depollution activities for contaminated radiological sites, which usually concerns legacy contamination resulting from past industrial or research activities which used radium. The actors can be industrial players, but also private individuals.

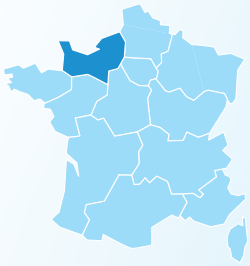
The Paris division can, at the request of the Prefect of the *département*, give technical opinions on the planned pollution management measures and on the effective performance of remediation work (*see chapter 13, point 4 of the full ASNR Report*).

On account of its expertise in the risks presented by contaminated sites and soils, the Paris division of ASNR issued in 2025:
• four opinions concerning the management of contamination from the sites of Fort d'Aubervilliers (93), Vaujours (93 and 77), a Parisian apartment (75) and Charvet-VLM (93);
• four notices addressed to the Environmental Authority or to regional authorities, concerning Saclay (91), Coudray-Montceaux (91), Grand Paris Sud Seine-Essonne-Sénart (91) and the ZAC du Moulon (91).

In addition, the Paris division carried out six inspections in 2025 to monitor remediation or development operations, respectively on the site of the former fort of Vaujours (93 and 77), on the site of a former Marie Curie laboratory in Arcueil (94), on the Charvet – VLM site on Île Saint-Denis (93), on the site of the Fort d'Aubervilliers (93), on a Mazeau Recyclage site in Gennevilliers (92) and at the Paul Brousse Hospital (94).

Furthermore, as part of the monitoring of these long-term clean-out operations which have been in progress for several years, in 2025, the Paris division also took part in the monitoring commissions of the Marie Curie laboratory in Arcueil (94).

ASNR also carried out the following actions in 2025:
• seven precautionary investigations and safety measures taken following the discovery of radioactive objects in private homes;
• various technical meetings with the Prefectoral body and the Regional and Interdepartmental Directorate for the Environment, Development and Transport (DRIEAT) concerning decontamination of the Charvet – VLM site and Galeries Lafayette (93);
• drafting of an "information sector" on soils concerning the residual radiological contamination of a plot of land in Gif-sur-Yvette after clean-up.



Normandie

The Caen Division regulates nuclear safety, radiation protection and the transport of radioactive substances in the 5 *départements* of the Normandie region.

232
inspections

16
significant events on a level greater than or equal to 1 on the INES scale

0
significant event of level 2 or higher on the ASN-SFRO scale

In 2025, ASNR carried out 232 inspections in Normandie, including 72 in the Flamanville, Paluel and Penly Nuclear Power Plants (NPPs) and 19 on the Flamanville EPR reactor, 69 on "fuel cycle", research or decommissioning facilities, 49 in small-scale nuclear activities, 11 in the field of radioactive substance transport and 12 concerning organisations and laboratories approved by ASNR.

In addition to this, 26 days of labour inspection were carried out on the NPP sites and the Flamanville 3 EPR construction site.

In 2025, 16 significant events classified at level 1 of the International Nuclear and Radiological Events Scale (INES scale) were reported to ASNR, including 15 on BNIs and 1 in small-scale nuclear activities.

Lastly, in the context of their oversight duties, ASNR inspectors issued one violation report.

Flamanville nuclear power plant

Operated by EDF and situated in the Manche *département* in the municipality of Flamanville, 25 km south-west of Cherbourg, the Flamanville NPP comprises two 1,300 MWe Pressurised Water Reactors (PWRs), commissioned in 1985 and 1986. Reactor 1 constitutes BNI 108 and reactor 2 BNI 109.

ASNR considers that the performance of the Flamanville NPP in terms of nuclear safety and radiation protection is in line with the general assessment of EDF's NPPs. On the other hand, its environmental performance is considered to be lagging behind the general assessment of EDF's NPPs.

In the area of nuclear safety, ASNR observed a stable situation, with margins for progress identified by the licensee. ASNR considers that several significant events relating to inappropriate actions during operational operations reveal inadequacies in activity preparation and monitoring or failings in the operational nature of operating documents. On these points, ASNR requests that the operator continue improving the organisation and strengthen rigour within the department responsible for reactor operations. The restart of reactor 1, following a shutdown involving a large number of maintenance operations, went smoothly overall.

As regards maintenance operations, ASNR considers that they were carried out in a controlled manner by the licensee during the shutdown of reactor 1, which ended in 2025. ASNR considers that the licensee carried out the satisfactory and effective management of the leak which occurred during restart on a small diameter pipe connected to the primary circuit. The licensee successfully implemented a temporary sealing device to allow the fuel to be unloaded under satisfactory safety conditions in order to carry out the final repair. For 2026, the site must pay particular attention to coordinating and supervision activities during the shutdown of reactor 2, which began at the end of 2025 and is due to last until mid-2026, during which the replacement of the four steam generators is scheduled. Finally, considering the marine environment, ASNR will remain vigilant to ensure that the internal action plan to manage equipment corrosion on certain equipment that is particularly sensitivent is continued.

The site's performance in terms of radiation protection remained stable in 2025 with a process of detection and analysis of significant radiation protection events. There has been an improvement in the number of dosimetry anomalies. However, shortcomings were observed in the signalling of hot spots, in the management of staff access to orange-controlled areas, and a lack of rigour in the implementation of countermeasures to limit the exposure of workers. ASNR expects improvements on these points, and in general on the radiation protection culture.

In terms of environmental protection, ASNR has observed a deterioration in the site's performance, with recurrent exceedances of hydrocarbon discharges from rainwater outfalls and failures to maintain oil separators in good working order. Substantial improvements are expected in both these areas in 2026.

In terms of labour inspections, 2025 was marked by a number of accidents that led to investigations by ASNR. These inspections revealed shortcomings in site preparation and rigorous execution, resulting in exposure to hazards and accidents, particularly during lifting activities.

Paluel nuclear power plant

The Paluel NPP operated by EDF in the municipality of Paluel in the Seine-Maritime *département*, 30 km south-west of Dieppe, comprises four 1,300 MWe PWRs commissioned between 1984 and 1986. Reactors 1, 2, 3 and 4 constitute BNIs 103, 104, 114 and 115 respectively.

The site accommodates one of the regional bases of the Nuclear Rapid Intervention Force (FARN) created by EDF in 2011 further to the Fukushima Daiichi NPP accident in Japan. Its role is to intervene in pre-accident or accident situations, on any NPP in France, by providing additional human resources and emergency equipment.

ASNR considers that the performance of the Paluel NPP in terms of nuclear safety and radiation protection is in line with the general assessment of EDF's NPPs. On the other hand, its environmental performance is considered to be lagging behind the general assessment of EDF's NPPs.

With regard to nuclear safety, ASNR considers the performance of the NPP to be stable and generally satisfactory. However, ASNR considers that the teams responsible for operating the reactors need to be more rigorous during the preparation and performance of activities, including periodic tests. Similarly, vigilance must be maintained with regard to failures of instrumentation and control equipment, which can lead to equipment unavailability and reactor shutdowns.

In the area of maintenance, ASNR considers that the Paluel NPP has demonstrated good control over the work carried out during reactor outages and that the management of any contingencies encountered has been satisfactory. Nevertheless, improvements are expected in the preparation of unscheduled activities and in the procedures for characterising any discrepancies encountered. With a view to the fourth ten-yearly outage programmes for reactors 1 and 2 starting in 2026, ASNR considers that the licensee should pay particular attention to the operational nature of the maintenance documentation and the quality of the work carried out. More generally, ASNR considers that the licensee should take into account the findings of ASNR inspections prior to the ten-yearly outage at reactor 1 for the site's other ten-yearly outages.

In terms of radiation protection, ASNR considers that operational results are improving and satisfactory overall. However, ASNR expects the licensee to continue its efforts to strengthen the radiation protection culture, particularly in view of the heavy industrial load expected in 2026.

In terms of environmental protection, ASNR notes a decline in the performance of the Paluel NPP. The management of a leak in a drainage channel at the demineralisation plant, resulting in the uncontrolled release of sulphuric acid and soda into the environment, should give rise to in-depth feedback at facility level. More generally, improvements are expected in the control of equipment used to contain environmentally hazardous substances.

With regard to labour inspection, ASNR observes that the workers generally know and comply with the safety requirements. The inspections focused in particular on compliance with working hours, taking account of vital risks and accidents at work. These actions did not reveal any significant breaches of the regulations. However, a number of issues required corrective action, which will be closely monitored by ASNR.

Penly nuclear power plant

The Penly NPP operated by EDF in the Seine-Maritime *département* in the municipality of Penly, 15 km north-east of Dieppe, comprises two 1,300 MWe PWRs commissioned between 1990 and 1992. Reactor 1 constitutes BNI 136 and reactor 2 BNI 140.

ASNR considers that the performance of the Penly NPP in terms of nuclear safety, radiation protection and environmental protection is broadly in line with the general assessment of performance for EDF NPPs.

With regard to nuclear safety, ASNR considers that the NPP's performance, particularly in operating rigour, is slightly below standard, despite the efforts that have been made. There have been a number of significant safety events. In particular, they are linked to shortcomings in the management of the facility's configuration (lines or locks), communication failures within the control team and a lack of rigour in the supervision of the facility. ASNR considers that the measures taken to improve the quality of activity preparation and of the documents associated with routine operational activities (periodic tests, alignments, etc.) should be strengthened, taking human and organisational factors into account. With regard to emergency management, ASNR considers that the operator should take steps to improve its organisation and ensure effective deployment of local emergency resources.

With regard to maintenance, ASNR considers that the organisation implemented by the site is robust and capable of guaranteeing the conformity and good overall condition of the equipment. However, ASNR noted occasional shortcomings in the performance of maintenance activities, whether in the preparation or execution phases, or in the traceability of deviations. Efforts must be continued in order to limit this maintenance non-quality resulting from deficiencies in document presentation or completeness. ASNR will be keeping a close eye on these issues during the outages of the two reactors scheduled for 2026.

In the area of radiation protection, ASNR considers that the organisation implemented to monitor dosimetry and prevent radiation protection risks for workers is satisfactory. The inspections found a good standard of monitoring of collective prevention equipment. However, progress is expected on processes involving radiation protection risks (industrial radiography work, management of access to limited stay areas) where weaknesses have been identified. Finally, ASNR considers that the site must continue its ongoing efforts to prevent the risk of contamination, particularly in relation to the management of contaminated waste and linen.

With regard to environmental protection, ASNR considers that performance is satisfactory overall. Nevertheless, progress is expected on the maintenance of oil separators and liquid containment systems. ASNR also considers that there is room for improvement in waste management, particularly in the collection and sorting areas.

With regard to labour inspection, ASNR observes that the workers generally know and comply with the safety requirements. However, the inspections occasionally revealed shortcomings in the prevention of vital risks, in particular those associated with lifting activities, but also with regard to risks linked to the ventilation of work premises and fire prevention. ASNR will therefore be particularly attentive to the steps taken to reinforce the measures to prevent these risks.

EPR reactor – Flamanville 3

The Flamanville EPR reactor was commissioned on 8 May 2024. The first nuclear chain reaction took place on 3 September 2024 and the reactor was coupled to the French electricity grid for the first time on 21 December 2024. Start-up operations have continued into 2025, with two stages subject to authorisation by ASNR: the increase in power to over 25% in April 2025 and the increase in power to over 80% in December 2025. The reactor then reached full power on 14 December 2025.

The notable events of 2025 for the Flamanville EPR are detailed in *section 4 of chapter 8* of the full ASNR Report.

In 2025, ASNR's oversight is focused on the continuation of start-up tests, the operation of the reactor up to full power and on taking account of operating experience feedback. ASNR considers that the start-up tests were well conducted by the licensee. Although operating activities have been brought under control, an improvement of the robustness of the organisations is expected in certain areas, in particular with a view to the first reactor outage for maintenance and refuelling (***see highlight 14 in chapter 8 of the full ASNR Report***).

With regard to start-up tests, ASNR has carried out an investigation of the results of tests on the reactor core at different power levels, as well as the results of tests on certain major reactor transients, such as reactor shutdown at power, turbine tripping, islanding[1] of the reactor and loss of all external power supplies. For this last test, ASNR carried out a dedicated inspection to verify the appropriate behaviour of the installation during this transient. ASNR considers that these tests were carried out satisfactorily and that the results do not call into question the safety of the installation. To this end, in 2025, it has successively authorised the switch to a power level higher than 25% and 80% of the reactor.

With regard to the operation of the reactor, ASNR has continued the inspections initiated in 2024 through a programme of thematic inspections, as it does for the other reactors in the fleet in operation. These inspections covered a wide range of topics, including a design-critical inspection covering both incident and accident management and crisis organisation (***see highlight 8 in chapter 8 of the full ASNR Report***). These inspections revealed a satisfactory situation in most of the areas inspected. Nevertheless, significant improvements are expected, particularly in the implementation of emergency management premises, the handling of deviations, the management of incidents and the prevention of contamination. In these areas, the inspections revealed organisational shortcomings, both in the formalisation of organisations, in the licensee's baseline requirements and in the actual implementation of the expected organisation. ASNR considers it essential for EDF to make progress on these issues in the run-up to the first reactor outage for maintenance and refuelling, scheduled for 2026. In addition, ASNR carried out reactive inspections in connection with the licensee's handling of hazards (unplanned clogging of heat exchangers and leaks found on primary circuit valves), which showed that activities were well under control.

ASNR also monitored the way in which Operational Experience Feedback (OEF) from the first few months of reactor operation was taken into account, in particular through inspections in the areas of operation, implementation of parameters in the instrumentation and control system and taking into account OEF from EPR reactors installed abroad. ASNR considers that EDF is making adequate use of OEF from the first months of reactor operation and is maintaining an important link with its counterparts abroad to benefit from international feedback.

In 2025, the site reported a decrease in the number of significant safety events compared to 2024, but still a significant number (a large proportion of which were classified as level 1 on the INES scale), compared with the plant in operation. These events are mainly linked to non-compliance with operating specifications by the teams in charge of running the reactor, in particular due to a lack of control over the installation's configuration. In addition, a number of events were linked to problems with the operational implementation of the periodic test rules used to test equipment, and to incomplete risk analyses when work was carried out on the instrumentation and control system. Finally, it should be noted that few events were caused by material failures, with the exception of the leaks found on the primary circuit valves, which were rectified, and an unplanned clogging of the heat exchangers, for which the storage conditions were not suitable.

THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **basic nuclear installations:**
  - the NPPs of Flamanville (2 reactors of 1,300 MWe), Paluel (4 reactors of 1,300 MWe), Penly (2 reactors of 1,300 MWe) and Flamanville 3 (1 reactor of 1,600 MWe) operated by EDF,
  - the construction site of two EPR 2-type reactors at Penly,
  - the Orano spent nuclear fuel reprocessing plant at La Hague,
  - the Manche repository (CSM) of the French National Radioactive Waste Management Agency (Andra),
  - the National Large Heavy Ion Accelerator (Ganil) in Caen;
- **small-scale nuclear activities in the medical sector:** Chap.5
  - 8 external beam radiotherapy departments (28 devices),
  - 1 proton therapy department,
  - 1 brachytherapy department,
  - 13 nuclear medicine departments,
  - 50 centres practising fluoroscopy-guided interventional procedures,
  - 70 computed tomography scanners,
  - some 2,100 medical and dental radiology devices;
- **small-scale nuclear activities in the industrial, veterinary and research sectors:** Chap 6
  - about 450 industrial and research centres, including 27 companies with an industrial radiography activity,
  - 5 particle accelerators, including 2 cyclotrons, plus a third cyclotron for hadron therapy currently being installed,
  - 21 laboratories situated mainly in the universities of the region,
  - 5 companies using gamma ray densitometers,
  - about 260 veterinary surgeries or clinics practising diagnostic radiology, 1 equine research centre and 1 equine hospital centre;
- **activities associated with the transport of radioactive substances;** Chap.7
- **ASNR-approved laboratories and organisations:**
  - 9 head offices of laboratories approved for taking environmental radioactivity measurements,
  - 2 organisations approved for radiation protection checks,
  - 4 organisations approved to measure radon in public buildings.

1. Islanding is an operation that takes place when the electricity network fails. It consists of isolating the reactor from the external electricity grid, while maintaining power. The reactor then produces, via its alternator, only the electrical energy it needs to operate in a safe state.

ASNR also ensures the labour inspection duties on the Flamanville EPR reactor. In 2025, ASNR mainly monitored companies' compliance with labour law provisions relating to safety on the sites. This year also provided an opportunity to examine the conditions under which workers could intervene inside the chamber while the reactor core was loaded ("two-rooms" system). ASNR considers that the risk prevention organisation is broadly appropriate, and the results are in line with those for the fleet in operation.

Manche waste repository

The Manche waste repository (CSM), which was commissioned in 1969, was the first radioactive waste repository operated in France. 527,225 m³ of waste packages are emplaced in it. The last waste packages to enter this facility were accepted in July 1994. From the regulatory aspect, the CSM is in the decommissioning phase (operations prior to its closure) until the installation of the long-term cover is completed. An ASNR resolution shall specify the date of closure of the repository (entry into monitoring and surveillance phase) and the minimum duration of the monitoring and surveillance phase.

On 29 April 2024, after completing its assessment of the periodic safety review report submitted by Andra in 2019, ASN authorised the continued operation of the repository. It has nevertheless issued requirements aiming to continue the studies on the behaviour of the existing cover and the long-term cover, and on the preservation of the site memory. One requirement also concerns the continuation of the studies into the retrieval of packages containing long-lived radionuclides.

Furthermore, for the year 2025, ASNR considers that the organisation defined and implemented for the operation of the CSM facilities is generally satisfactory in terms of safety, radiation protection and environmental monitoring. However, the licensee will have to finalise the consistency of the baseline safety requirements as part of the periodic safety review of the installation, and more specifically re-examine the organisation implemented to ensure compliance with the fire risk control provisions.

National Large Heavy Ion Accelerator

The National Large Heavy Ion Accelerator (Ganil) economic interest group was authorised in 1980 to create an ion accelerator in Caen (BNI 113). This research facility produces, accelerates and distributes ion beams in testing rooms with various energy levels to study the structure of the atom. The high-energy beams produce strong fields of ionising radiation, activating the materials in contact, which then emit radiation even after the beams have stopped. Irradiation thus constitutes the main risk created by Ganil.

Following its authorisation by the Decree of 7 March 2025, the "DESIR" project, which stands for "Disintegration, Excitation and Storage of Radioactive Ions", is currently being carried out on the site. Its primary function will be to create new experimental areas using radioactive ion beams from existing facilities. Its commissioning is subject to authorisation from ASNR.

Examination of the second periodic safety review of the facility is also in progress in 2025. Following the submission of the report concluding the second periodic safety review on 18 May 2021 and the additions made by Ganil, the review inspection on 20 December 2023 and the responses provided, the conclusions of this review were issued on 12 June 2025. ASNR has authorised continued operation of the facilities. However, ASNR has asked Ganil to strengthen its policy for taking account of human and organisational factors.

ASNR considers that Ganil's management of nuclear safety and radiation protection is generally satisfactory. The inspections carried out by ASNR in 2025 focused on the management of maintenance and pressure equipment. Although maintenance management is satisfactory and Ganil has an effective organisation for monitoring pressure equipment in service, the application of certain aspects of the regulations concerning this equipment needs to be improved.

In 2024, the licensee presented a modification to its organisation, which was authorised by ASNR in 2025 and should be effective at the beginning of 2026. ASNR will be attentive to ensuring that the nuclear safety and radiation protection risks are duly taken into account when it is implemented.

La Hague site

The Orano site at La Hague is located on the north-west tip of the Cotentin peninsula, in the Manche *département*, 20 km west of Cherbourg and 6 km from Cap de La Hague. The site is situated about 15 kilometres from the Channel Islands.

THE ORANO RECYCLAGE REPROCESSING PLANTS IN OPERATION AT LA HAGUE

The La Hague plants for reprocessing fuel assemblies irradiated in nuclear reactors are operated by Orano Recyclage La Hague.

Commissioning of the various units of the fuel reprocessing and waste packaging plants UP3-A (BNI 116) and UP2-800 (BNI 117) and the Effluent Treatment Station STE3 (BNI 118) spanned from 1986 (delivery and storage of spent fuel assemblies) until 2002 (R4 plutonium reprocessing unit), with the majority of the process units being commissioned in 1989-1990.

The Decrees of 10 January 2003 set the individual reprocessing capacity of each of the two plants at 1,000 tonnes per year (t/year), in terms of the quantities of uranium and plutonium contained in the fuel assemblies before burn-up (in the reactor), and limit the total capacity of the two plants to 1,700 t/year. The limits and conditions for discharges and water intake by the site are defined by two ASN resolutions 2022-DC-0724 and 2022-DC-0725 of 16 June 2022.

The installations at La Hague

Shut down installations undergoing decommissioning

BNI 80 – Oxide High Activity facility (HAO)

HAO/North: Facility for "under water" unloading and storage of spent fuel elements

HAO/South: Facility for shearing and dissolving spent fuel elements

BNI 33 • UP2-400 plant, first reprocessing unit

HA/DE: Facility for separating uranium and plutonium from fission products

HAPF/SPF (1 to 3): Facility for fission product concentration and storage

MAU: Facility for separating uranium and plutonium, uranium purification and storage as uranyl nitrate

MAPu: Facility for purification, conversion to oxide and initial packaging of plutonium oxide

LCC: Central product quality control laboratory

ACR: Resins conditioning facility

BNI 38 • STE2 facility: effluent collection and treatment and storage of precipitation sludge, and AT1 facility, prototype facility currently being decommissioned

BNI 47 • ELAN IIB facility, research installation currently being decommissioned

Installations in operation

BNI 116 • UP3-A plant

T0: Facility for dry unloading of spent fuel elements

Pools D and E: Storage pools for spent fuel elements

T1: Facility for shearing fuel elements, dissolving and clarification of the resulting solutions

T2: Facility for separating uranium, plutonium and fission products and concentrating/storing fission product solutions

T3/T5: Facilities for purification and storage of uranyl nitrate

T4: Facility for purification, conversion to oxide and packaging of plutonium

T7: Fission products vitrification facility

BSI: Plutonium oxide storage facility

BC: Plant control room, reagent distribution facility and process control laboratories

ACC: Hull and end-piece compaction facility

AD2: Technological waste packaging facility

ADT: Waste transit area

EDS: Solid waste storage area

E/D EDS: Solid waste storage/removal from storage facility

ECC: Facilities for storage and retrieval of technological waste and packaged structures

E/EV South-East: Vitrified residues storage facility

E/EV/LH and E/EV/LH 2: Vitrified residues storage facility extensions

BNI 117 • UP-800 plant

NPH: Facility for "under water" unloading and storage of spent fuel elements in pool

Pool C: Spent fuel element storage pool

R1: Facility for shearing and dissolving fuel elements and clarification of the resulting solutions (including the URP: plutonium redissolution facility)

R2: Facility for separating uranium, plutonium and fission products and concentrating/storing fission product solutions (including the UCD: centralised alpha waste conditioning unit)

SPF (4, 5, 6): Fission product storage facilities

R4: Facility for purification, conversion to oxide and initial packaging of plutonium oxide

BST1: Facility for secondary packaging and storage of plutonium oxide

R7: Fission products vitrification facility

AML • AMEC: Package reception and servicing facility

BNI 118 • STE3 facility: Effluent collection and treatment and storage of bituminised waste packages

E/D EB: Alpha waste storage/removal from storage

MDS/B: Mineralisation of solvent waste

Operations carried out in the plants

The reprocessing plants comprise several industrial units, each intended for a particular operation. Consequently, there are facilities for the reception and storage of spent fuel assemblies, for their shearing and dissolution, for the chemical separation of fission products, uranium and plutonium, for the purification of uranium and plutonium, for treating the effluents and for packaging the waste.

When the spent fuel assemblies arrive at the plants in their transport casks, they are unloaded either "under water" in the spent fuel pool, or "dry" in a leak-tight shielded cell. The fuel assemblies are then stored in pools to cool them down.

They are then sheared and dissolved in nitric acid to separate the pieces of metal cladding from the spent nuclear fuel. The pieces of cladding, which are insoluble in nitric acid, are removed from the dissolver, rinsed in acid and then water, and transferred to a compacting and packaging unit.

The nitric acid solution comprising the dissolved radioactive substances is then processed in order to extract the uranium and plutonium and leave the fission products and other transuranic elements.

After purification, the uranium is concentrated and stored in the form of uranyl nitrate ($UO_2(NO_3)_2$). It will then be converted into a stable solid compound (U_3O_8) in the TU5 facility on the Tricastin site. The uranium resulting from this process is called "reprocessed uranium".

After purification and concentration, the plutonium is precipitated by oxalic acid, dried, calcined into plutonium oxide, packaged in sealed containers and stored. The plutonium is then used for the fabrication of MOX (Mixed OXide) fuels in the Orano plant in Marcoule (Melox).

The effluents and waste produced by the operation of the plants

The fission products and other transuranic elements resulting from reprocessing are concentrated, vitrified and packaged in standard vitrified waste packages (CSD-V). The pieces of metal cladding are compacted and packaged in standard compacted waste packages (CSD-C).

Furthermore, the reprocessing operations described in the previous paragraph involve chemical and mechanical processes which produce gaseous and liquid effluents and solid waste.

The solid waste is packaged on site by either compaction or encapsulation in cement. The solid radioactive waste resulting from the reprocessing of the spent fuel assemblies from French reactors is, depending on its composition, either sent to the Aube repository (CSA) or stored on the Orano Recyclage La Hague site until a definitive disposal solution is found (particularly the CSD-V and CSD-C packages).

In accordance with Article L. 542-2 of the Environment Code, radioactive waste from the reprocessing of spent fuels of foreign origin is shipped back to its owners. It is, however, impossible to physically separate the waste according to the fuel from which it originates. In order to guarantee an equitable distribution of the waste resulting from the reprocessing of the fuels of its various customers, the licensee has proposed an accounting system that tracks the entries into and exits from the La Hague plant. This system, called "EXPER", was approved by the Order of 2 October 2008 of the Minister responsible for energy.

The gaseous effluents are released mainly when the fuel assemblies are sheared and during the dissolution process. These gaseous effluents are treated by washing in a gas treatment unit. The residual radioactive gases, particularly krypton and tritium, are checked before being discharged into the atmosphere.

The liquid effluents are treated and usually recycled. Some radionuclides, such as iodine and tritium, are directed, after monitoring, to the sea discharge outfall. This outfall, like the other outfalls on the site, is subject to discharge limits. The other effluents are routed to the site's packaging units (solid glass or bitumen matrix).

FINAL SHUTDOWN AND DECOMMISSIONING OPERATIONS ON CERTAIN FACILITIES

The former spent fuel reprocessing plant UP2-400 (BNI 33) was commissioned in 1966 and has been definitively shut down since 1 January 2004.

Final shutdown also concerns three BNIs associated with the UP2-400 plant: BNI 38 (which comprises the Effluents and solid waste treatment station No. 2 – STE2, and the Oxide nuclear fuel reprocessing facility No. 1 – AT1), BNI 47 (Radioactive source fabrication unit – ELAN IIB) and BNI 80 (HAO facility).

Orano submitted two partial decommissioning authorisation applications for BNIs 33 and 38 in April 2018. The schedule push-backs requested by the licensee lead to decommissioning completion deadlines in 2046 and 2043 instead of 2035, the previous deadline prescribed for the two BNIs. Further to Orano's additions to the file concerning firstly the elimination of the interactions between the MAPu facility and the plutonium BST1 facility in the event of an earthquake, and secondly the memorandum in response to the opinion of the Environmental Authority, a public inquiry was held from 20 October to 20 November 2020. At the end of the inquiry, the inquiry commission issued a favourable opinion. ASN issued an opinion on the draft decrees in July 2022. Decrees 2022-1480 and 2022-1481 dated 28 November 2022 were published in the *Official Journal* of 29 November 2022.

ASNR notes that the schedule push-backs requested are significant and largely due to the delays in legacy Waste Retrieval and Packaging (WRP). Consequently, ASNR will continue to monitor the management of these projects in 2026.

LEGACY WASTE RETRIEVAL AND PACKAGING OPERATIONS

Unlike the direct on-line packaging of the waste generated by the new UP2-800 and UP3-A plants at La Hague, most of the waste generated by the first UP2-400 plant was stored in bulk without permanent packaging. The operations to retrieve this waste are complex and necessitate the deployment of substantial means. They present major safety and radiation exposure risks, which ASNR monitors with particular attention.

The retrieval of the waste contained in the old storage facilities of the La Hague site is also a prerequisite for the decommissioning and clean-up of these facilities.

Retrieval and packaging of the STE2 sludges

The STE2 station served to collect the effluents from the UP2-400 plant, to treat them and to store the precipitation sludges resulting from the treatment. The STE2 sludges are precipitates that fix the radiological activity contained in the effluents and they are stored in seven silos. A portion of the sludges has been encapsulated in bitumen and packaged in stainless steel drums in the STE3 facility. Following ASN's banning of bituminisation in 2008, Orano studied other packaging methods for the non-packaged or stored sludges.

The scenario for the retrieval and packaging of the STE2 sludges presented in 2010 was broken down into three steps:
- retrieval of the sludges stored in silos in STE2 (BNI 38);
- transfer and treatment, initially envisaged by drying and compaction, in STE3 (BNI 118);
- packaging of the resulting pellets into "C5" packages for deep geological disposal.

ASN authorised the first phase of the work to retrieve the sludges from STE2 in 2015. The Creation Authorisation Decree for STE3 was modified by the Decree of 29 January 2016 to allow the installation of the STE2 sludges treatment process.

At the end of 2017 however, Orano informed ASN that the process chosen for treating the sludges in STE3 could lead to difficulties in equipment operation and maintenance. Orano proposed an alternative scenario using centrifugation and in August 2019 it submitted a Safety Options Dossier (DOS), which is however based on as yet insufficiently substantiated hypotheses. An inspection conducted at the end of 2019 confirmed that the project was not sufficiently mature for ASN to be able to give an opinion on this DOS.

In 2022, during the technical discussions held between Orano, ASN and IRSN, Orano committed itself to a new roadmap for this project. Orano has thus abandoned the centrifugation scenario and undertaken to conduct new studies in parallel aiming firstly to look into the sludge treatment and packaging solutions in more detail, and secondly to put in place an intermediate storage facility (new silos) under suitably safe conditions, enabling the retrieval and safe storage of these sludges to be separated from their final packaging. Orano sent ASN the DOS associated with this project to create new sludge storage silos (project called "NABUCO") in December 2023. After expert appraisal and assessment, ASNR stated its position on these safety options in January 2025.

Silo 130

Silo 130 is a reinforced concrete underground storage facility, with a carbon steel liner, used for dry storage of solid waste from the reprocessing of Gas-Cooled Reactor (GCR) fuels, and the storage of technological waste and contaminated soils and rubble. The silo received waste of this type as from 1973, until the 1981 fire which forced the licensee to flood the waste. The leak-tightness of the water-filled silo is only ensured at present by a single containment barrier consisting of a steel "skin". Furthermore, the civil engineering structure of silo 130 is weakened by ageing and by the fire that occurred in 1981. The water is therefore in direct contact with the waste and can contribute to corrosion of the carbon steel liner.

One of the major risks for this facility concerns the dispersion of radioactive substances into the environment by infiltration of contaminated water into the water table. The leak-tightness of silo 130 is monitored by a network of piezometers situated nearby. Another factor that can compromise the safety of silo 130 is linked to the nature of the substances present in the waste, such as magnesium, which is pyrophoric. Hydrogen, a highly inflammable gas, can also be produced by phenomena of radiolysis or corrosion (presence of water). These elements contribute to the fire and explosion risks.

The WRP scenario comprises four steps:
- retrieval and packaging of the solid GCR waste;
- retrieval of the liquid effluents;
- retrieval and packaging of the residual GCR waste and the sludges from the bottom of the silo;
- retrieval and packaging of the soils and rubble.

Continuity and Resilience Project

Orano La Hague's spent fuel reprocessing plants are unique facilities in France. They were mainly commissioned between 1980 and 2000.

With the aim of keeping these plants in operation until 2040, Orano has implemented a programme to monitor the ageing of the facilities, known as the **"Ageing Compliance Review"**. This programme was examined by ASNR as part of the periodic safety review and inspection process.

At the Nuclear Policy Council in February 2024, it was announced that the reprocessing of spent nuclear fuel would continue beyond 2040. To this end, the continued operation of the La Hague plants is now envisaged as continuing beyond 2040 and up to 2050-2060, corresponding to the periods envisaged for the commissioning of the new reprocessing plants under the **"Future Back-End"** programme.

In 2024, Orano therefore launched a programme called **"Continuity/Resilience"**, the scope and objectives of which go beyond the "Ageing Compliance Review" programme. This programme involves considering a much larger volume of technical items and a much longer timescale than the ten-yearly periodic safety reviews of the installations concerned.

The aim of the **Continuity section** is to ensure the reliability and continued safe operation of the facilities. It begins with a diagnostic phase for identifying the technical items whose failure or shutdown would jeopardise the facilities' ability to carry out the expected production programme. This identification phase covers not only sheet metal equipment, but also civil engineering, cables, piping, etc. Around a million technical objects need to be examined. Once the equipment concerned has been identified, it will be analysed in terms of how it ages and its remaining service life. Specific action plans will then be implemented to repair, reinforce or replace them if necessary, so that they can continue to operate until the set deadline.

The **Resilience component** is designed to secure and guarantee a safe level of fuel reprocessing. It is based on an analysis of the risks of plant failure, followed by the identification of solutions to deal with them. In this context, Orano is studying several projects designed to provide redundant equipment for the operation of the plants or to enable stronger interconnections between the two existing plants.

Since April 2024, Orano has been periodically presenting to ASNR the principles and progress of the work it has undertaken as part of this programme. In November 2025, ASNR carried out an initial inspection of the continuity aspect and, more specifically, of the identification phase of the technical objects to be examined. This highlighted the important work already carried out by Orano's teams, but ASNR noted the need to formalise the methodology used and the traceability of the work carried out.

In 2026, ASNR will step up technical exchanges with Orano, and several inspections will be carried out on this programme to assess its completeness and the robustness of the actions implemented.

Assessment of the Orano site

In 2025, ASNR considered that the performance of the Orano Recyclage La Hague facility is satisfactory with regard to nuclear safety, environmental protection and radiation protection.

With regard to nuclear safety, ASNR found the proficiency of operational management to be satisfactory. In the context of organisational changes linked to the "Convergence" project, ASNR notes positively the work carried out to take account of operational experience feedback from the first phase of this project and the measures taken to improve working conditions within the shared control rooms. However, it is expected that actions will be taken to ensure that operating documents are physically present at predefined locations on the facilities and that they are maintained. ASNR also considers that action needs to be taken to improve the management of alarm inhibitions and equipment unavailability.

With regard to periodic inspections, ASNR considers that monitoring needs to be stepped up to correct any discrepancies that may have been observed in 2025 in connection with the inhibition actions required to carry out the inspections, the definition of the technical inspection, the validation period, the documentary integration of material modifications, and the monitoring of non-compliant inspections.

ASNR is pleased to note that an organisation is being set up to improve the preparation and monitoring of outages. However, with regard to technological obsolescence, ASNR considers that more should be done to identify replacement parts for safety-critical equipment.

On a broader level, with continued operation of the La Hague plants now envisaged beyond 2040, Orano has launched a programme called "Continuity-Resilience", the scope and objectives of which go beyond the maintenance programme and the monitoring of ageing during re-examinations. In 2025, Orano continued the ramp-up of this programme that began in 2024. ASNR notes that considerable work has been done to identify equipment at risk, but that this work is still in its early stages and needs to be consolidated and accompanied by a strengthening of the baseline requirements, databases and traceability.

ASNR considers that the organisation in place for monitoring outside contractors is operational, but that there is room for improvement in terms of the level of detail of the monitoring and surveillance plans and their application at workshop level, the thoroughness with which the monitoring reports are completed and the monitoring of subcontractors of Orano's outside contractors.

In terms of fire risk management, ASNR notes positively the good participation of staff in the exercises carried out by the inspectors. However, improvements are expected in order to correct the discrepancies observed in the management of fire loads and sectorisation breaks during construction work, without any formalised analysis. Similarly, the actions undertaken to identify, justify or correct deviations from standards in terms of the maintenance and periodic inspections of equipment used to control the risk of fire should be continued. In 2025, a fire occurred in a controlled area during decommissioning operations in the MAPu workshop. Lessons must be learnt from this experience in terms of fire risk analysis and response.

With regard to radiation protection and significant events reported in this area, ASNR notes that human factors are predominant, without calling into question the organisation currently defined. With regard to the management of sealed sources, ASNR considers that the operator should consolidate the monitoring of radioactive sources in service and ensure that it takes steps to comply with the action plan for the disposal of sealed sources that are no longer in service and/or have expired. In addition, the ongoing modernisation and widespread digitalisation of the tools used for radiation protection represent a major development, and ASNR will therefore remain vigilant regarding the human and material consequences that these numerous changes may entail.

With regard to environmental protection in 2025, ASNR has noted several events that led to limit values for discharges from the plant into the natural environment being exceeded. The technical and organisational measures to ensure compliance with the requirements need to be strengthened, particularly within the effluent treatment process at BNI 118.

ASNR also notes that actions aimed at strengthening the definition and ownership of non-radiological risk control measures at the facility must be continued, in line with the various observations made during the review of the updated hazard study. In addition, all the actions initiated as part of the analysis of the event involving a nitric acid leak from a reagent tank farm in 2024 should be implemented at facility level, and their effectiveness assessed.

ASNR continued to examine the progress of the actions undertaken with a view to returning the Moulinets dam hydraulic structure to nominal operation. In 2024, ASN gave Orano Recyclage formal notice to comply with the regulatory provisions for restoring the state of the dam's facilities. Following this review, ASNR considers that the actions implemented by Orano meet the requirements of the formal notice, but that a detailed assessment of operational experience feedback should be produced in the medium term.

ASNR notes that the organisation of external and internal transport of radioactive substances remains satisfactory. In terms of events, ASNR notes that the situation is broadly similar to 2024 for transport on public roads, but that there has been a significant increase in events for internal transport. In particular, ASNR notes the recurrence of events linked to the faulty closure of containers in certain types of package and to deficiencies in package traceability or location tracking. These discrepancies have already been noted in the past and require action on the part of Orano.

In addition, the licensee has finalised the implementation of improvements to the internal transport systems based on the EMEM model. However, the licensee complained of operating difficulties arising from the longer transit times in the facilities. To overcome this, Orano implemented a new internal transport system called "EMICA" for less radioactive content. Operational experience feedback on the implementation of this new process is expected in 2026.

****

During 2025, Orano continued decommissioning operations, including the waste recovery and Waste Retrieval and Packaging (WRP) for the UP2-400 industrial complex at the La Hague site. However, two significant events during the year - a fire at the bitumen recovery site in the MAPu facility and ground contamination in the SAT/SAR pool hall in the STE2 facility - led to site stoppages and delays in decommissioning projects.

Generally speaking, the decommissioning project for the HAPF facility and the Silo 130 RCD project, which concern facilities that make a major contribution to the dispersible inventory that can be mobilised in the event of an incident at the UP2-400 industrial complex being decommissioned, were further delayed in 2025:

• The rinsing of equipment in the HAPF facility, which is a prerequisite for its decommissioning, could not again be carried out this year because of Orano's delay in sending the technical information required to extend operation of the facility's evaporators beyond the regulatory deadline of the end of 2024. This authorisation was signed by ASNR on 25 November 2025.

• The target number of solid waste drums taken from silo 130 will not be achieved for 2025 due to further equipment failures, despite the technical and organisational measures implemented as part of the reliability project. ASNR considers that Orano must continue its efforts to improve the preventive maintenance of the installations in order to guarantee a nominal production rate enabling completion of solid waste retrieval by the end of 2027, an operational deadline with no margin. Difficulties have also been seemingly encountered with the subsequent stages of the project, in particular the forthcoming effluent recovery phase, which is also contributing to delays in reducing the source term in the facility. The schedule is currently being consolidated.

With regard to the HAO silo, where the target for the start of recovery operations is now set at 2032 at the latest, new equipment was integrated into the recovery cell in 2025. The mechanical equipment delivery indicator improved, but is still below target. ASNR also notes that the search for a new supplier for the bottom-of-silo waste retrieval system introduces uncertainty to the deadline for resuming testing. More generally, a consolidation of the schedule is underway for prioritisation purposes.

ASNR is also pleased to note the progress made in operations in the north-west zone of the La Hague site, with regard to the completion of the decommissioning of the ECH pits, the projects for pit 2 and the investigation site for trench C', with a transition to detailed design studies ahead of development work scheduled for 2026. As regards the *Parc aux ajoncs* in particular, Orano will have to take all the necessary steps to avoid delaying the clean-up operations.

As part of a safety review, Orano has undertaken to deconstruct the upper floors of the MAPu facility to eliminate interactions between this facility and the BST1 facility in the event of an earthquake. On this project, ASNR noted favourably the completion of asbestos removal, masonry work and civil engineering treatment, as well as delicensing checks for transfer to the teams in charge of dismantling at the end of 2025. Also in connection with a safety review, ASN issued resolution 2019-CD-0673 of 25 June 2019, a requirement to cease using the so-called "active" first-generation channels at the UP2-400 plant for plant operation after the end of 2024. As Orano failed to meet this commitment, ASNR issued a formal notice on 1 July 2025 setting out the deadlines for compliance.

Although interface management has been strengthened as part of the overall decommissioning of the UP2-400 complex, the licensee will have to pay particular attention to the interfaces between decommissioning and one-off modifications to the installations.

With regard to through-life support of facilities being decommissioned, ASNR considers that Orano should eliminate infiltrations into the HAO South facility and continue the approach initiated in 2024 to analyse the performance of periodic inspections and tests for equipment within the decommissioning perimeter.

Orano has built a retrieval unit above the pit containing the waste and a new building dedicated to the sorting and packaging operations.

The licensee validated industrial commissioning of the waste recovery process in 2022, further to the tests carried out in 2020 and 2021. About 50 drums of waste were retrieved in 2023, and the retrieval work in 2024 brought this figure to 200 drums of waste. This means that around one third of the total quantity of waste from phase 1 has been retrieved since operations began in 2020. The increase in the retrieval rate in 2024 is mainly due to the setting up of a maintenance team dedicated to silo 130 and the change, as of November 2023, to teams working three 8-hour shifts a day instead of the initial two 8-hour shifts. However, in 2025, Orano once again encountered breakdowns and reliability problems with the retrieval facilities, leading to a lower-than-expected retrieval rate. By the end of 2025, between 40% and 45% of the total quantity of waste from phase 1 will have been retrieved since the operations began in 2020.

ASNR considers that these measures are positive, but the various technical problems observed on the equipment in 2024 confirm the need for Orano to improve the reliability of the waste retrieval facilities.

HAO silo and Organised Storage of Hulls (SOC)

The Oxide High Activity facility (HAO – BNI 80) carried out the first steps of the spent nuclear fuel reprocessing process: reception, storage then shearing and dissolution. The dissolution solutions produced in BNI 80 were then transferred to the UP2-400 industrial plant in which the subsequent reprocessing operations took place.

BNI 80 comprises:
- HAO North, spent fuel unloading and storage site;
- HAO South, where the shearing and dissolution operations were carried out;
- the "filtration" building, which accommodates the filtration system for the HAO South pool;
- the HAO silo, in which are stored the hulls and end-pieces (fragments of cladding and fuel end-pieces) in bulk, fines coming primarily from shearing, and resins and technological waste from the operation of the HAO facility between 1976 and 1997;
- the SOC, comprising three pools in which the drums containing the hulls and end-pieces are stored.

In 2025, the licensee continued the operations prior to retrieval of the waste from the HAO silo and the implementation of the physical modifications defined on completion of the analysis of hard spots identified during the functional tests of the waste retrieval system. Through ASN resolution 2024-DC-0784 of 3 September 2024, the licensee was authorised to commission the unit for retrieving and packaging the waste from the HAO silo and the SOC pools in inerted hull and end-piece waste drums "under water" (ECE). However, the licensee encountered several technical difficulties during the tests and suffered delays in delivery of some of the retrieval equipment, leading it to announce that the project schedule was pushed back by two years. In this context, Orano determined the technical, organisational and human causes, then defined and implemented measures to mitigate the consequences. To this end, ASNR notes the reinforced monitoring and surveillance plan of the supplier concerned in order to better control supply times. At the end of 2025, ASNR also notes that there is still a risk of further delays in the provision of equipment and in the progress of the project.

ASNR actions to prevent radon risk

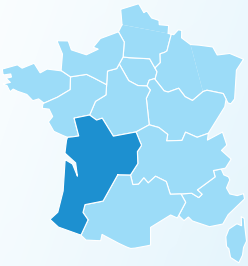
86 Rn radon

Oversight actions

In the area of radon risk, the Caen division mainly carried out inspection activities in 2025:
- Inspection of an establishment with underground workplaces, in this case the Monts d'Arrée site in Bretagne, whose decommissioning is being monitored by the Caen division.
- Inspection of three municipalities concerning the management of public access buildings, particularly schools. These were the towns of Vire-Normandie (14), Ville nouvelle d'Avranches (50) and La Hague (50).

The results of these inspections show that, overall, radon risk is being satisfactorily addressed. Only one municipality is behind schedule in carrying out remedial measures in several schools following measurements showing that the reference level has been exceeded.

Areas with radon potential in mainland France, and particularly in the Normandie region, are shown on page 99.



Nouvelle-Aquitaine

The Bordeaux division regulates nuclear safety, radiation protection and the transport of radioactive substances in the 12 *départements* of the Nouvelle-Aquitaine region.

143
inspections

5
significant events on a level greater than or equal to 1 on the INES scaleS

0
significant event of level 2 or higher on the ASN-SFRO scale

In 2025, ASNR carried out 143 inspections in the Nouvelle-Aquitaine region, comprising 60 in the Blayais and Civaux Nuclear Power Plants (NPPs), 69 in small-scale nuclear activities, 10 concerning ASNR-approved organisations and laboratories and 4 in the area of radioactive substance transport.

ASNR also carried out 16 days of labour inspections at the Blayais NPP and 10 days at the Civaux NPP.

During 2025, 5 significant events rated level 1 on the International Nuclear and Radiological Events Scale (INES scale) were reported by the NPP licensees in the Nouvelle-Aquitaine region.

Blayais nuclear power plant

The Blayais NPP situated in the Gironde *département*, 50 km north of Bordeaux, is operated by EDF and comprises four Pressurised Water Reactors (PWRs) with a power of 900 Megawatts electric (MWe), commissioned in 1981 and 1982. Reactors 1 and 2 constitute Basic Nuclear Installation (BNI) 86 and reactors 3 and 4 BNI 110.

ASNR considers that the performance of the Blayais NPP with regard to nuclear safety, radiation protection and environmental protection is in line with ASNR's general assessment of the EDF plants.

Nuclear safety performance has improved significantly in 2025, following a deterioration in performance between 2022 and 2024. This marked improvement was noted in particular during the in-depth inspection carried out by ASNR in June 2025. The licensee's performance in the area of reactor operation is currently being improved. In addition, ASNR notes a decrease in the number and significance of significant events reported by the licensee. In the area of fire risk management, the continued deployment of the plan of rigour and increased supervision on the ground have led to an improvement in the situation. Finally, in the area of maintenance, where a strong response from the licensee was expected, ASNR noted clear progress in the preparation of activities and in the supervision of operations. The condition of the facilities has improved and performance during reactor outages, particularly during the fourth ten-yearly outage of reactor 4, has been satisfactory. However, efforts still need to be made to bring maintenance up to the best standards across EDF's NPP fleet.

In terms of radiation protection for workers, ASNR considers that the licensee succeeded in restoring performance, which had deteriorated slightly in 2024. It emphasises the licensee's continuing commitment in this area, but still notes that the fundamentals of radiation protection are not being complied with by too many outside contractors.

ASNR considers the environmental protection to be stable. Despite the efforts made by the licensee, there is still room for improvement, particularly in terms of waste management and the reprocessing of historical contamination on the site.

THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **basic nuclear installations:**
  - the Blayais NPP (4 reactors of 900 MWe),
  - the Civaux NPP (2 reactors of 1,450 MWe);
- **small-scale nuclear activities in the medical sector:** Chap.5
  - 19 external beam radiotherapy departments,
  - 6 brachytherapy departments,
  - 21 nuclear medicine departments,
  - 92 centres practising fluoroscopy-guided interventional procedures,
  - 135 computed tomography scanners,
  - some 6,000 medical and dental radiology devices;
- **small-scale nuclear activities in the industrial, veterinary and research sectors:** Chap 6
  - about 1,000 industrial and research centres, including 60 companies with an industrial radiography activity,
  - 1 cyclotron particle accelerator,
  - 46 laboratories situated mainly in the universities of the region,
  - some 450 veterinary surgeries or clinics practising diagnostic radiology;
- **activities associated with the transport of radioactive substances;** Chap.7
- **ASNR-approved laboratories and organisations:**
  - 1 organisation approved for radiation protection controls,
  - 12 organisations approved for measuring radon,
  - 9 laboratories approved for taking environmental radioactivity measurements.

The licensee is still experiencing difficulties in controlling its refrigerant discharges and is occasionally faced with malfunctions in its liquid or gaseous discharges. ASNR is retaining some of the points requiring particular attention from the previous year concerning the liquid contamination containment capacities, particularly soda.

Performance in terms of worker safety is stable. ASNR has asked the licensee to rapidly remedy the risk situations encountered with regard to falls from height, which are still predominant in 2025. Weaknesses in risk analysis, work organisation, lockout/tagout procedures and the quality of activity preparation are recurring causes of safety events and must be improved. Despite the efforts made, there are still too many cases of accidental exposure to asbestos. Lastly, ASNR will be vigilant in ensuring that installations maintain compliance with the Labour Code requirements.

Civaux nuclear power plant

The Civaux NPP operated by EDF in the Vienne *département*, 30 km south of Poitiers in the Nouvelle-Aquitaine region comprises two 1,450 MWe PWRs commissioned in 1997 and 1999. Reactors 1 and 2 constitute BNIs 158 and 159 respectively. The site accommodates one of the regional bases of the Nuclear Rapid Intervention Force (FARN) created by EDF in 2011 further to the accident at the Fukushima Daiichi NPP in Japan. Its role is to intervene in pre-accident or accident situations, on any NPP in France, by providing additional human resources and emergency equipment.

ASNR considers that the performance of the Civaux NPP stands out favourably in the areas of nuclear safety and radiation protection and is in line with the general assessment of EDF's NPPs in environmental matters.

In the field of nuclear safety, ASNR considers that performance improved slightly in 2025, in a dense industrial context. The operation of the facilities remains satisfactory. The recurrence of similar significant events shows that there is still room for improvement in terms of assimilating experience feedback. Progress has been made in controlling the risk of fire: during the inspection, ASNR noted that an exercise to mobilise the operational fire brigade's stationed guard had been successfully carried out in 2025. However, as in the previous year, there is still room for improvement in terms of controlling the risk of explosion. The condition of safety important component is satisfactory. However, ASNR expects better implementation of national procedures.

Worker radiation protection is satisfactory and improving. However, there is still room for improvement. In particular, there is room for improvement in the radiation protection culture of outside contractors. Any occasional problems observed by the inspectors were quickly rectified by the licensee.

ASNR considers environmental protection to be satisfactory in 2025. ASNR gives a positive assessment of liquid containment and the condition of the facilities. The site has also reduced the volumes of water treated without further use in the industrial process, limiting the use of chemicals.

In terms of labour inspections in 2025, ASNR positively emphasises the site's organisational robustness in dealing with dangerous situations, the quality of the analyses carried out following «near misses» and the sustained managerial presence in the field. However, ASNR considers that the licensee must improve compliance with the commitments made to the Labour Inspectorate. In terms of worker safety, ASNR considers that the licensee must step up its efforts to ensure that risk analyses are exhaustive, that traffic routes comply with regulations and that work premises are ventilated.

Controlling the risks of legionella dispersal from the Civaux NPP: how are observations taken into account by stakeholders in ASNR resolution?

The two reactors at the Civaux NPP, located on the banks of the Vienne river, are each equipped with a large cooling tower. These large towers are likely to disperse legionella into the environment.

As with its other nuclear power plants subject to this risk, EDF plans to introduce a biocidal treatment involving the injection of monochloramine into the cooling circuits. This will make it possible to comply with the ASN resolution of 6 December 2016. This resolution sets two thresholds for legionella colonisation in the circuits, of 10,000 and 100,000 colony-forming units per litre (CFU/L) respectively, above which remedial and corrective action must be taken to reduce the levels of colonisation observed.

As this biocidal treatment leads to chemical discharges into the Vienne river, ASNR consulted the public and local stakeholders, who expressed several unfavourable opinions. These opinions contest the need for biocidal treatment in view of the limited legionella colonisation observed at the Civaux NPP. They emphasise the impact of discharges from such treatment on the quality of the water in the Vienne, in a context where this water is already affected by industrial effluents upstream of the plant and is used downstream to produce drinking water.

These opinions consider that the balance resulting from the provisions of the ASN resolution of 6 December 2016 between the need to control the risk of legionellosis and the environmental impacts of a biocidal treatment is not appropriate for the Civaux NPP given the specific characteristics of the Vienne and its upstream and downstream uses.

ASNR therefore deemed it necessary to review the framework applicable to the control of Legionella colonisation, specifically for the Civaux NPP and in the light of local issues, by requiring that biocidal treatment only be applied above 100,000 CFU/L.

This concession makes it possible to limit the occurrence of biocidal treatments and therefore chemical discharges into the water of the Vienne. At the same time, this concession does not call into question the prevention of the risk of legionellosis, by obliging EDF to treat its circuits as soon as 100,000 CFU/L are reached and, if this treatment is not effective, to shut down its reactors.

ASNR actions to prevent radon risk

86 Rn radon

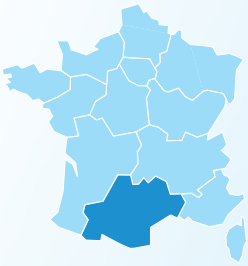
Oversight actions

ASNR inspected the departmental councils of Pyrénées-Atlantiques (64) and Charente (16). These inspections, carried out in *départements* that were not priorities under the pre-2018 radon regulations, revealed discrepancies with the new regulations, which require radon testing in certain types of public access buildings, such as secondary schools. To remedy this situation, radon measurement campaigns are planned for the 2025-2026 season.

Awareness-raising actions

ASNR took part in a campaign to raise public awareness of radon-related risks in the Pyrénées-Atlantiques *département* (64), accompanied by a campaign to distribute radon detectors. This project was made possible thanks to collaboration between the Regional Health Agency (ARS), ASNR and the *Centre permanent d'initiatives pour l'environnement* (CPIE – an approved environmental association) Pays basque.

Areas with radon potential in mainland France and the Nouvelle-Aquitaine region are shown on page 99.



Occitanie

The Bordeaux and Marseille divisions jointly regulate nuclear safety, radiation protection and the transport of radioactive substances in the 13 *départements* of the Occitanie region.

120
inspections

4
significant events on a level greater than or equal to 1 on the INES scale

0
significant event of level 2 or higher on the ASN-SFRO scale

In 2025, ASNR carried out 120 inspections in the Occitanie region, comprising 62 in Basic Nuclear Installations (BNIs), 49 in small-scale nuclear activities, 4 in the field of Radioactive Substance Transport (RST) and 5 concerning ASNR-approved organisations and laboratories.

ASNR also carried out 16 days of labour inspection at the Golfech Nuclear Power Plant (NPP).

During 2025, 3 significant events rated level 1 on the International Nuclear and Radiological Events Scale (INES scale) were reported by the NPP licensees of the nuclear installations in the Occitanie region. In the area of small-scale nuclear activities, 1 significant event classified at level 1 on the INES scale was reported to ASNR in the medical field.

Golfech nuclear power plant

The Golfech NPP, operated by EDF is located in the Tarn-et-Garonne *département*, 40 km west of Montauban. It comprises two Pressurised Water Reactors (PWRs), each of 1,300 Megawatts electric (MWe), commissioned in 1990 and 1993. Reactors 1 and 2 constitute BNIs 135 and 142 respectively.

ASNR considers that the performance of the Golfech NPP with regard to nuclear safety, environmental protection and radiation protection is in line with ASNR's general assessment of the EDF plants.

In the field of nuclear safety, ASNR considers that performance remains stable at a fairly satisfactory level, in the context of very sustained industrial activity, with two reactor outages, including the ten-yearly outage of reactor 2. There is still room for improvement in the operation of the facilities, particularly in terms of control room supervision. ASNR has given the site's independent safety organisation a favourable assessment. The handling of deviations is also satisfactory; however, there are still weaknesses in the integration of operational experience feedback and in the question-and-answer approach to problem solving. In terms of maintenance, the successful completion of the reactor containment test on reactor 2 and the replacement of the pressuriser surge line demonstrate rigorous management, despite a few shortcomings during the work, particularly in terms of preventing the Foreign material exclusion risk, where the licensee needs to make sustained improvements. In addition, fire risk management, including the control of fire loads, needs to be improved. Finally, ASNR notes an improvement in preparedness for emergency situations.

Radiation protection is judged to be fairly satisfactory, but has deteriorated slightly. On the one hand, ASNR notes the robustness of the radiation protection organisation and the good control of the risk of contamination spreading. In addition, worker radiation protection culture is inadequate, as shown by certain significant events, the exceeding of dosimetric targets and significant failings during radiographic controls. ASNR therefore expects particular vigilance in order to limit occasional deviations and reinforce compliance with radiation protection rules by everyone.

Environmental protection is judged to be satisfactory, and is progressing compared with the previous year, with continued action on the containment of liquid pollution and the demineralisation plant. However, ASNR expects the licensee to take better account of the risks associated with chemical substances. Despite satisfactory management, waste management is not up to scratch.

With regard to labour inspection, the results concerning occupational safety are stable compared with 2024. The risk of falling from a height is still a major concern, and there is still room for improvement. The relevance of risk analyses, the preparation of activities and their organisation need to be improved. In particular, two events took place involving the cutting of high-voltage electrical cables. Lastly, more needs to be done to ensure that facilities comply with the requirements of the Labour Code.

Marcoule platform

The Marcoule nuclear platform is situated to the west of Orange in the Gard *département*. Its six civil installations are dedicated to research activities relating to the back-end of the "fuel cycle" and the irradiation of materials, and to industrial activities concerning in particular the fabrication of MOX (Mixed OXides) fuel, the processing of radioactive waste and the irradiation of materials. The majority of the site moreover consists of the Defence Basic Nuclear Installation (DBNI) under the oversight of the Ministry of Defence.

CEA MARCOULE CENTRE

Created in 1955, the CEA centre at Marcoule accommodates three civilian facilities: the Atalante laboratories (BNI 148), the Phénix NPP (BNI 71) and the Diadem storage facility (BNI 177).

Atalante facility – *CEA centre*

The main purpose of the Alpha facilities and laboratories for transuranium elements analysis and reprocessing studies (Atalante – BNI 148), created in the 1980s, is to conduct research and development in the recycling of nuclear fuels, the examination of ultimate waste, and the exploration of new concepts for fourth-generation nuclear systems. In order to extend these research activities, activities and equipment from the Laboratory for research and fabrication of advanced nuclear fuels (Lefca – BNI 123) were transferred here from the CEA Cadarache centre in 2017.

ASN published resolution 2022-DC-0720 of 19 April 2022 imposing on the Alternative Energies and Atomic Energy Commission (CEA) the requirements applicable to Atalante and designed to regulate the continued operation of the BNI. In 2025, CEA announced that it would be unable to meet the deadline of 31 December 2035 for reprocessing the Radioactive Organic Liquids (ROLs) stored at the facility, due to changes in the strategy for reprocessing waste with no immediate disposal route, with the end date for treating some of the ROLs now set at around 2069 and the start of new R&D activities for reprocessing the rest of the waste. This change of strategy also calls into question the authorised activities set out in the Creation Authorisation Decree for the facility. CEA plans to present justification for this strategy in the report concluding the review of Atalante, due before 31 December 2026. Pending the disposal of these ROLs, CEA must demonstrate that their long-term storage in the Atalante facility is safe, in particular by taking steps to ensure that the ROL storage drums do not corrode and by demonstrating that it has the sampling capacity to monitor their physico-chemical quality. ASNR must state their position on possible changes to the technical requirements from the last periodic safety review in light of CEA's change of strategy.

A significant event classified at level 1 on the INES scale, linked to deficiencies in periodic safety inspections and fire risk monitoring tests, was reported by CEA in 2025. The large number of premises affected and the length of time during which these checks were not carried out are generic in nature within the Atalante perimeter.

In the area of criticality, the action plan implemented following the level 1 significant event declared in 2024 is currently being rolled out, particularly for aspects relating to human factors. In 2025, CEA declared a new event linked to the accounting of reflector materials in the Atalante laboratories. Through the inspections carried out in 2025, ASNR noted that the initial actions implemented following the significant events linked to the criticality risk are being properly followed up. ASNR is now awaiting the implementation of actions linked to the conclusions of the analysis of human and organisational factors and the measures that will be implemented in terms of means and resources to prevent the recurrence of these events.

ASNR considers that the level of nuclear safety at Atalante is fairly satisfactory, particularly in terms of fire and criticality risk prevention. Improvements are expected in fire sectorisation and the efficiency of Atalante's automatic gas extinguishing system.

The arrangements for monitoring radioactivity in the environment, examined during inspections carried out in 2025, are satisfactory. Supervision of outside contractors is carried out correctly and enables regulatory feedback to be provided.

THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **basic nuclear installations:**
  - the Golfech NPP (2 reactors of 1,300 MWe),
  - the CEA Marcoule research centre, which includes the civil BNIs Atalante and Phénix, and the Diadem waste storage facility construction site,
  - the Melox "MOX" nuclear fuel production plant,
  - the Centraco facility for reprocessing low-level radioactive waste,
  - the Gammatec industrial irradiator,
  - the Écrin waste storage facility on the Malvési site;
- **small-scale nuclear activities in the medical sector:** Chap.5
  - small-scale nuclear activities in the medical sector:
  - 14 external beam radiotherapy departments,
  - 6 brachytherapy departments,
  - 19 nuclear medicine departments,
  - 95 centres practising fluoroscopy-guided interventional procedures,
  - 125 computed tomography scanners,
  - some 5,000 medical and dental radiology devices;
- **small-scale nuclear activities in the industrial, veterinary and research sectors:** Chap 6
  - about 800 industrial and research centres, including 4 cyclotron particle accelerators and 27 companies with an industrial radiography activity, and 59 laboratories, mainly located in the region's universities,
  - some 600 veterinary surgeries or clinics practising diagnostic radiology;
- **activities associated with the transport of radioactive substances;** Chap.7
- **ASNR-approved laboratories and organisations:**
  - 6 laboratories approved for taking environmental radioactivity measurements,
  - 6 organisations approved for measuring radon,
  - 2 organisations approved for radiation protection controls.

Phénix reactor – *CEA centre*

The Phénix NPP (BNI 71) is a demonstration fast breeder reactor cooled with liquid sodium. This reactor, with an electrical power rating of 250 MWe, was definitively shut down in 2009 and is currently being decommissioned.

The major decommissioning phases are regulated by Decree 2016-739 of 2 June 2016. ASN resolution 2016-DC-0564 of 7 July 2016 sets the CEA various milestones and decommissioning operations.

The removal of irradiated fuel and the removal of equipment continued in 2025, although behind schedule in relation to the objective for the year. This action is a major safety commitment by CEA, with the aim of removing 75% of the source term of irradiated standard assemblies before 2029.

In December 2024, CEA submitted a request to modify the BNI 71 Decommissioning Decree, mainly with a view to changing the phasing of the decommissioning operations to favour treatment of the sodium. This application to modify the authorisation is linked to the decommissioning strategy for all CEA facilities.

Construction of the NOAH facility, for which the application for commissioning was submitted in 2022, and which will provide part of the sodium processing for Phénix and other CEA facilities, progressed in 2025 with the continuation of operational tests, prior

to commissioning. Treatment of the facility's primary sodium will take place at a later stage, with the planned commissioning of the INES facility.

The facility continues to report deviations concerning compliance with certain physical-chemical parameters of the aqueous discharges. Permanent measures to ensure compliance with certain physico-chemical limits for aqueous discharges in 2025 have nevertheless reduced the number of exceedances of these limits. In addition, the discharge permits for the facility are currently being reviewed by ASNR as part of the commissioning of the NOAH facility.

A sodium leak from a primary circuit pipe on the invert, and an employee entering a controlled area without his operational dosimetry, were classified as level 1 on the INES scale. These events had no impact on employee exposure or the environment.

The report concluding the periodic safety review, which was submitted in 2022, is currently being examined by ASNR.

ASNR considers that the level of nuclear safety and radiation protection at the Phénix plant is satisfactory, particularly in terms of crisis organisation and resources, worker radiation protection, safety management and fire safety.

Diadem facility – *CEA centre*

The Diadem facility, currently under construction, shall be dedicated to the storage of containers of radioactive waste emitting beta and gamma radiation, or waste rich in alpha emitters, pending construction of facilities for the disposal of long-lived waste (LLW), or low- and intermediate-level short-lived waste (LL/ILW-SL) whose characteristics – especially the dose rate – mean they cannot be accepted as-is by the existing disposal facilities.

Two inspections were carried out in 2025, verifying the organisation implemented to ensure document management, monitoring and control of equipment manufacture and assembly, the handling of deviations and the definition and implementation of specified requirements for Protection Important Components (PICs).

The request to modify the Creation Authorisation Decree, concerning the change of package closing technology and the increase in the facility commissioning time frame, is currently being examined, as is the facility commissioning authorisation application.

ASNR notes that this project is being conducted rigorously, despite significant difficulties with one construction package, whose impact on the commissioning deadline is not yet fully known. The changes in project management must guarantee the maintenance of the current level of requirements for this facility, which is set to play a central role in CEA's overall strategy for decommissioning and waste management, as it is the only one planned for the storage of "intermediate-level long-lived" (ILW-LL) waste packages and LL/ILW-SL waste.

ASNR will remain attentive to the level of commitment and control of this project, to achieve the expected commissioning of this key facility.

Assessment of the CEA Marcoule centre

In 2025, ASNR inspected the safety management system in place at the CEA Marcoule centre, which was judged to be satisfactory. Further details are needed on how CEA's national directives are to be implemented locally, in particular to check the resources required, identify priority actions and actions specific to the Marcoule centre.

The organisation and measures implemented by the licensee to guarantee control of the risks associated with external hazards are satisfactory. However, the classification of equipment resistant to extreme hazards as Protection Important Components (PICs) will have to be taken into account in the site's baseline safety requirements. The measures put in place to prevent the risk of flooding and to limit the consequences of lightning strikes on the centre's BNIs should also be specified.

ASNR considers that monitoring of the activities of outside contractors is satisfactory. However, the procedures for notifying outside contractors of CEA's interest protection policy will have to be specified, as will the means of verifying that outside contractors have adopted this policy.

In 2020, CEA submitted its study on the health and environmental assessment of liquid and gaseous chemical discharges from the Marcoule platform, and in 2025 its third-party assessment, pursuant to ASN resolution CODEP-MRS-2023-013061 of 9 March 2023 on CEA's methodology for assessing the impact on health and the environment of liquid and gaseous discharges from all nuclear activities at the Marcoule site. ASNR has issued requests to CEA concerning the methodology for carrying out impact assessments, particularly with regard to the assessment of the source term, the state of the environment and the characterisation of transfer pathways and exposure routes.

Implementation of the latest version of the On-site Emergency Plan (PUI) for the CEA Marcoule centre, which covers the BNIs and the individual installations of the Defence Basic Nuclear Installation (DBNI), is now fully effective, following the authorisations issued in 2024 by ASN and in 2025 by the Defence Nuclear Safety Authority (ASND).

With regard to the conformity of the emergency management building – Centralised Surveillance of Marcoule (SCM) – the review focuses on the substantiating elements provided by CEA to demonstrate compliance with the safety requirements defined for equipment resistant to extreme hazards in ASN resolution 2015-DC-0481 of 8 January 2015. ASNR shall be expecting to receive additional information.

As regards the definition of the so-called "specific" site effects relating to the definition of seismic hazards and other hazards likely to affect the Marcoule site, these will need to be reassessed at least every ten years as part of the periodic safety review of the nuclear facilities. CEA will have to continue its geological investigations to refine its knowledge and complete the definition of the hazard.

ASNR considers that the level of nuclear safety and radiation protection at the CEA Marcoule centre is generally satisfactory.

Melox plant

Created in 1990 and operated by Orano Recyclage, the Melox plant (BNI 151) produces MOX fuel which consists of a mix of uranium and plutonium oxides.

ASNR considers that the level of nuclear safety is satisfactory in the areas of chain reaction control, waste, safety management and the transport of radioactive substances. An in-depth inspection, involving several teams of inspectors, was carried out in 2025 on the subject of modernising facilities. ASNR considers that the organisation put in place by the licensee to implement the plant modernisation plan is satisfactory. An inspection on the subject of fire was considered to be fairly satisfactory, particularly in view of the significant presence of fire loads in premises containing PICs. Any discrepancies identified have been dealt with by the licensee. ASNR considers that the level of radiation protection is satisfactory in light of the inspection carried out on this subject.

The effectiveness of the containment barriers is maintained at a satisfactory level.

Furthermore, for several years now the licensee has had difficulties in producing the planned quantities of fuel conforming to the safety specifications of the nuclear reactors. This situation has led to the production of a large quantity of manufacturing rejects, which are sent to La Hague for interim storage, resulting in a risk in the short term of reaching the maximum capacity of the plant's plutonium-bearing material storage areas, which could destabilise the entire "fuel cycle".

To alleviate production difficulties, and in particular the rate of scrap, the licensee qualified a new uranium oxide powder in 2022, which has reduced the quantity of scrap generated since 2023, thereby removing the prospect of short-term saturation of the plutonium-bearing storage facilities at La Hague. The Melox plant's production targets for 2025 have thus been met. For 2026, Orano plans to undertake a qualification phase at Melox for uranium powder from its new"New Wet Process" (NVH) facility at its Malvési plant (***see chapter 10 "Fuel cycle facilities" of the full ASNR Report***), which will help to secure the supply of uranium oxide over the long term.

In addition, recovering from several years of degraded operation at the Melox facility has led to significant maintenance requirements for restoring the availability of production tools.

With regard to radiation protection, in order to limit the observed increase in collective dose due to the plant's situation in relation to its production targets, maintenance operations involving an increasing number of outside contractors and the state of radiological cleanliness of equipment, the licensee notably carrying out in-depth cleaning of glove boxes to improve ambient dose levels.

Lastly, to modernise the plant and expand production capacity, work began in 2025 on a new glove box to accommodate a second secondary dosing station. This work is part of the GoMOX project, which involves doubling the capacity of certain critical production units in order to make the plant more reliable. Other projects are underway in this area.

Centraco plant

The "Centraco" plant (BNI 160), was created in 1996 and is operated by Cyclife France, a 100% subsidiary of EDF. The Centraco plant sorts, decontaminates, reuses, treats and packages – particularly by reducing their volume – waste and effluents with low and very low levels of radioactivity. The waste resulting from its process is then routed to the Aube repository (CSA) of the French National Radioactive Waste Management Agency (Andra). The facility comprises:
• a melting unit, melting a maximum of 3,500 tonnes (t) of metallic waste per year;
• an incineration unit, in which the incinerable waste is burned, with a maximum of 3,000 t of solid waste and 2,000 t of liquid waste per year;
• and storage areas.

In 2025, ASNR considered that the level of safety of the installation is quite satisfactory. However, a situational exercise leading to the activation of the emergency response centre highlighted shortcomings in the facility staff's command of crisis organisation measures. An action plan was put in place in 2025 to remedy these shortcomings.

The management of non-radiological risks was also considered to be in need of improvement following an inspection carried out in this area. The deviations detected during the inspection have since been corrected by the licensee.

A reactive inspection was also carried out following the declaration of a significant event concerning the failure to carry out some of the regulatory monitoring analyses. Shortcomings were noted in the organisation in place for environmental monitoring. A new organisation was put in place at the end of 2025 to improve the reliability of this monitoring.

Inspections carried out on the subjects of fire, safety management and external hazards were generally considered satisfactory by ASNR.

The report concluding the periodic safety review was submitted in 2021 and is currently being examined.

ASNR revised the facility's discharge authorisation in 2025 to take into account, where appropriate, the IED regulations on industrial emissions from incineration facilities, in order to achieve a high level of environmental protection through integrated pollution prevention and control.

Gammatec irradiator

The Gammatec irradiator (BNI 170) is an industrial irradiator operated by the company Stéris since 2013. Gammatec treats products by ionisation (emission of gamma radiation) with the aim of sterilising them or improving the performance of the materials. The facility consists of an industrial bunker and an experimental bunker. Both bunkers contain sealed sources of high-activity cobalt-60 which provide the radiation necessary for the facility's activity.

The operator submitted the report concluding the periodic safety review of its facility at the end of December 2023. ASNR's examination led to requests for further information. This was finalised during an inspection at the end of 2025. In particular, it consisted of checking the organisation implemented by the licensee to carry out its review, as well as the quality of its conclusions and the follow-up to its action plan. The licensee's action plan from its conclusion report is generally satisfactory.

As a result, the level of safety and radiation protection remains satisfactory in 2025, particularly for the subject inspected.

In 2026, ASNR will provide the Minister responsible for nuclear safety with its analysis of the report concluding the review and may, if necessary, decide to continue operating the facility.

Écrin facility

The Écrin facility, BNI 175, is situated in the municipality of Narbonne in the Aude *département*, within the Malvési site operated by Orano, which represents the first step of the "fuel cycle" (excluding extraction of the ores). The transformation process produces liquid effluents containing nitrated sludge loaded with natural uranium. The Écrin BNI consist of two storage basins (B1 and B2) containing the legacy sludge from the plant. These two basins have BNI classification due to the presence of artificial radioisotopes. The entire plant is subject to the system governing Seveso high-threshold Installations Classified for Protection of the Environment (ICPEs).

The Écrin facility, commissioned by resolution 2018-DC-0645 of 12 October 2018, has had a bituminous cover since 2023 to ensure containment of the BNI's waste storage.

An inspection was carried out in 2025, during which it was possible to check, on a spot-check basis, that periodic inspections and tests of Protection Important Components (PICs) had been carried out, the organisation implemented and its application for dealing with deviations. In the interests of transparency, two observers from the site's CLI took part in the inspection.

A new report, describing the progress of studies and investigations carried out to assess the feasibility of storage options for waste currently stored at Écrin, and in application of Article 7 of the Decree of 20 July 2015, will be submitted in early 2026.

As part of its responsibility to monitor the radiological impact on the environment, ASNR also conducted a Radiological Site Investigation (RSI) designed to characterise very precisely the impact of the entire site, including the ICPE and BNI, on its environment (***see box opposite***).

ASNR notes the improvements in formalisation, traceability and, more generally, in taking account of the regulatory requirements specific to nuclear installations. The level of nuclear safety and environmental protection of the facility remains satisfactory in view of the risks the facility presents.

ASNR will continue to monitor the commitments and improvements made by the licensee.

Radiological site survey of BNI 175 Écrin

As part of its responsibility to monitor the radiological impact on the environment, ASNR has chosen the Orano industrial site at Malvési (Narbonne) to conduct a "Radiological Site Investigation" (RSI) designed, in addition to the monitoring programmes, to characterise in detail the impact of this site on its environment and to assess, by means of specific measurements, the resulting exposure of the neighbouring population.

This industrial site, which includes a uranium conversion plant classified for environmental protection and a radiological waste storage facility, BNI Écrin, has undergone major changes in recent years. New industrial projects have recently come to fruition (PERLE cell at BNI Écrin, CERS project) and other projects are in progress, such as a new UO_2 production workshop and the TDN project to reprocess nitrates contained in industrial storage areas.

The RSI programme for Malvési 2021-2024 is organised around three main areas:
• field studies, with sampling and measurement of radioactivity (using the best available techniques) in the air, water and land near and far from the site, as well as terrestrial and airborne measurements of the dose rate;
• local surveys to find out about the lifestyles of local residents in order to estimate, as realistically as possible, their exposure to radioactivity from discharges from the site;
• involvement of local stakeholders, in order to respond to their concerns, help them better understand the radiological risk and offer them the opportunity to participate in and facilitate the implementation of the study programme.

This programme of studies has shown that radionuclide activities measured in the environment at the Malvési site have decreased since the previous studies carried out in 2008-2010, in line with the reduction in discharges from the site. The low-level measurements carried out specifically as part of the RSI confirmed the activities measured as part of Orano's and ASNR's annual monitoring programmes. The exposure of people living near the Malvési site through ingestion and inhalation of radionuclides released into the environment is low, at around one microsievert per year.

The RSI also made it possible to measure precisely the gamma radiation emitted by the mine concentrate storage area to the north of the site. To the north of the Malvési site, external exposure to radiation varies according to the exposure scenario and can reach a few tens of microsieverts per year. In all cases, the exposure of the population in the vicinity of the Orano site at Malvési is below the exposure threshold of 1 mSv/year set out in the regulations (Article R. 1333-11 of the Public Health Code).

The conclusions of this RSI were presented to the CLI of the Écrin facility on 3 July 2025, and the results and publications of the study are available on ASNR's website*.

** https://recherche-expertise.asnr.fr/savoir-comprendre/environnement/lers-site-orano-malvesi-resultats-publications-letude*

ASNR actions to prevent radon risk

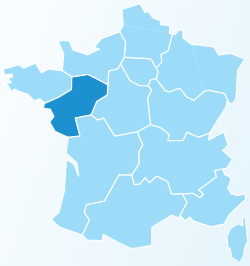
86 Rn radon

Oversight actions

In 2025, ASNR, in conjunction with the Regional Health Agency (ARS) and the Regional Directorate of the Economy, Employment, Labour and Solidarity (Dreets) of Occitanie, carried out awareness-raising and discussion campaigns on regulatory changes in the Labour Code relating to radon risk.

ASNR carried out four radon risk monitoring inspections in the Occitanie region: two in spa establishments and two in public access buildings (the Occitanie Regional Council and the Aude Departmental Council). These inspections revealed that these establishments were managing the radon risk satisfactorily. Finally, ASNR supported ARS Occitanie in managing the results of non-compliant drinking water analyses in the municipality of Saint-Alban-sur-Limagnole.

Areas with radon potential in mainland France, particularly in the Occitanie region, are shown on page 99.



Pays de la Loire

The Nantes division regulates nuclear safety, radiation protection and the transport of radioactive substances in the 5 *départements* of the Pays de la Loire region.

46
inspections

1
significant event on a level greater than or equal to 1 on the INES scale

0
significant event of level 2 or higher on the ASN-SFRO scale

In 2025, ASNR carried out 46 inspections, comprising 4 at the facilities of the company Ionisos in Pouzauges and Sablé-sur-Sarthe (2 on the theme of nuclear safety, 1 on radioactive substance transport and one on a transporter on the site) and 42 in small-scale nuclear activities (21 in the medical sector, 19 in the industrial, research or veterinary sectors, 1 in the transport sector and 1 in the area of natural radioactivity – radon).

An event was classified at level 1 on the INES scale for the exposure of a MERM worker (Medical Electroradiology Radiographer) published in April 2025 following a notification in March 2025 by a radiology practice in Saint-Nazaire.

Ionisos irradiators

The company Ionisos operates two industrial ionisation installations on the sites of Pouzauges (Vendée *département*) and Sablé-sur-Sarthe (Sarthe *département*) respectively, which use high-activity cobalt-60 sealed radioactive sources. These installations constitute BNIs 146 and 154 respectively.

The gamma radiation emitted is used for sterilisation purposes or to reinforce (by cross-linking) the technical properties of certain polymers, by exposing the products to be ionised (single-use medical equipment, packaging, raw materials and finished products for the pharmaceutical and cosmetic industries, packing films) for a pre-determined length of time.

Each installation comprises a pool for underwater storage of the radioactive sources, surmounted by a bunker in which the ionisation operations are performed, premises for storing the products before and after treatment, and offices and technical rooms.

ASNR considers that the level of nuclear safety of operation of the Pouzauges and Sablé-sur-Sarthe irradiators has improved in 2025 compared with 2024, although further efforts are still required. Thus, at the beginning of 2025, following on from 2024, ASNR still noted difficulties with operational rigour, and in the management and fulfilment of the nuclear safety commitments made by the licensee to ASNR during inspections, and in the review of files from previous years. During an inspection of the Pouzauges site, it became apparent that the safety organisation needed to be strengthened. During an inspection at the Sablé-sur-Sarthe site, it was noted that actions that had already begun had not been finalised, even though they were eagerly awaited by ASNR.

THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **basic nuclear installations:**
  - the Ionisos irradiator in Pouzauges,
  - the Ionisos irradiator in Sablé-sur-Sarthe;
- **small-scale nuclear activities in the medical sector:**
  - 7 radiotherapy departments,
  - 2 brachytherapy units,
  - 12 nuclear medicine departments,
  - 37 centres practising fluoroscopy-guided interventional procedures,
  - 56 computed tomography scanners,
  - some 2,500 medical and dental radiology devices;

Chap.5

- **small-scale nuclear activities in the industrial, veterinary and research sectors:**
  - 1 cyclotron,
  - 25 industrial radiography companies, including 7 performing gamma radiography,
  - 16 research units,
  - about 400 users of industrial, veterinary and research devices;

Chap 6

- **activities associated with the transport of radioactive substances;**

Chap.7

- **ASNR-approved laboratories and organisations:**
  - 6 organisations approved for measuring radon,
  - 1 head office of a laboratory approved for environmental radioactivity measurements.

However, it was in September that the positive effects of a new organisation of the teams in charge of safety introduced in 2024 became apparent. An inspection of the Pouzauges site during this period recorded a clear improvement in the rigorous management of commitments made to ASNR, and particularly in their achievement. ASNR will ensure that the licensee maintains this level of requirement in 2026 in order to continue and improve on what has been deployed since September 2025.

Following the periodic safety review of the Pouzauges site, ASNR approved the continued operation of the facility without issuing any specific requirements.

Finally, the applications for noteworthy modifications submitted in 2024 were all granted during 2025.

ASNR actions to prevent radon risk

86 Rn radon

Oversight actions

Inspection of the *Les Petits Chaperons Rouges* group and the *Une Souris Verte* association, which manages and owns nurseries in Nantes. Requests were made following this inspection, as radon risk management has not yet been put in place by these two structures to monitor the exposure of children and workers to radon.

Awareness-raising actions

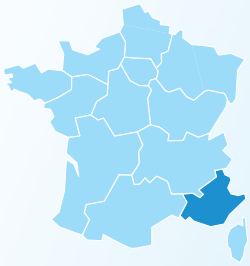
• Support, as part of the 4th Regional Health and Environment Plan (PRSE 4) for the Pays de la Loire region, for five new initiatives to assist private individuals in carrying out voluntary radon measurement campaigns in their homes.

- Co-financing of these initiatives with the Dreal and ARS Pays de la Loire.
- Operating Experience Feedback on a communication support tool disseminated in 2024, designed for organisations supporting the implementation of radon awareness and measurement campaigns in housing.
- Participation in a public meeting to launch the radon measurement campaign in the city of Nantes, with the Health Regional Agency (ARS), attended by over 100 people.

• Responses to the many requests from individuals and employers to ASNR to manage the risk of radon exposure in homes and workplaces.

• Contribution to updating the Departmental Major Risks File (DDRM – *Dossier départemental des risques majeurs*) for the Sarthe *département*.

Areas with radon potential in mainland France, and particularly in the Pays de la Loire region, are shown on page 99.



Provence-Alpes-Côte d'Azur

158
inspections

5
significant events on a level greater than or equal to 1 on the INES scale

0
significant event of level 2 or higher on the ASN-SFRO scale

The Marseille division regulates nuclear safety, radiation protection and the transport of radioactive substances in the 6 *départements* of the Provence-Alpes-Côte d'Azur region.

In 2025, ASNR carried out 158 inspections in the Provence-Alpes-Côte d'Azur region, comprising 73 in Basic Nuclear Installations (BNIs), 75 in small-scale nuclear activities, 7 in the area of radioactive substance transport and 3 concerning ASNR-approved organisations and laboratories.

During the year 2025, no significant event classified on the International Nuclear and Radiological Events Scale (INES scale) were reported by the licensees of nuclear facilities.

In the field of small-scale nuclear activities, 4 significant events classified at level 1 of the INES scale were reported to ASNR, including 3 in the industrial field and 1 in the medical field. One significant event classified at level 1 of the INES scale was also reported to ASNR in the field of radioactive substance transport. Lastly, 3 significant radiation protection events classified as level 1 on the ASN-SFRO scale were reported to ASNR.

Cadarache site

CEA CADARACHE CENTRE

Created in 1959, the CEA Cadarache centre is situated in the municipality of Saint-Paul-lez-Durance in the Bouches-du-Rhône *département* and covers a surface area of 1,600 hectares. This site focuses its activity primarily on nuclear energy and, as concerns its civil installations in operation, on research and development to support and optimise the existing reactors and the design of new-generation systems. A large part of the centre's facilities are moreover involved in conducting the strategy for decommissioning and management of radioactive materials and waste of the Alternative Energies and Atomic Energy Commission (CEA).

The following BNIs are located on the site:

- the Pégase-Cascad installation (BNI 22);
- the Cabri research reactor (BNI 24);
- the Rapsodie research reactor (BNI 25);
- the Plutonium Technology Facility (ATPu – BNI 32);
- the Solid Waste Treatment Station (STD – BNI 37-A);
- the Active Effluent Treatment Station (STE – BNI 37-B);
- the Masurca research reactor (BNI 39);
- the Éole/Minerve research reactor (BNI 42-U);
- the Enriched Uranium Processing Facilities (ATUe – BNI 52);
- the Central Fissile Material Warehouse (MCMF – BNI 53);
- the Chemical Purification Laboratory (LPC – BNI 54);
- the High-Activity Laboratory LECA-STAR (BNI 55);
- the solid radioactive waste storage area (BNI 56);
- the Phébus research reactor (BNI 92);
- the Laboratory for research and experimental fabrication of advanced nuclear fuels (Lefca – BNI 123);
- the Chicade laboratory (BNI 156);
- the Cedra storage facility (BNI 164);
- the Magenta storage warehouse (BNI 169);
- the Effluent advanced management and processing facility (Agate – BNI 171);
- the Jules Horowitz Reactor (JHR – BNI 172), under construction.

THE INSTALLATIONS AND ACTIVITIES TO REGULATE COMPRISE:

- **basic nuclear installations:**
  - the CEA Cadarache research centre which counts 20 civil BNIs, including the Jules Horowitz Reactor (JHR) currently under construction,
  - the ITER installation construction site, adjacent to the CEA Cadarache centre,
  - the Gammaster industrial irradiator;
- **small-scale nuclear activities in the medical sector:** Chap.5
  - 13 external beam radiotherapy departments,
  - 3 brachytherapy departments,
  - 16 nuclear medicine departments,
  - 86 centres practising fluoroscopy-guided interventional procedures,
  - 96 computed tomography scanners,
  - some 8,200 medical and dental radiology devices;
- **small-scale nuclear activities in the industrial, veterinary and research sectors:** Chap 6
  - about 400 industrial and research centres, including 3 cyclotron particle accelerators and 11 companies with an industrial radiography activity,
  - some 600 veterinary surgeries or clinics practising diagnostic radiology;
- **activities associated with the transport of radioactive substances;** Chap.7
- **ASNR-approved laboratories and organisations:**
  - 3 laboratories approved for taking environmental radioactivity measurements,
  - 3 organisations approved for measuring radon,
  - 2 organisations approved for radiation protection controls.

The CEA Cadarache centre operates numerous installations which vary in their nature and their safety implications. At the Cadarache centre, ten installations are in final shutdown status, nine are in operation and one is under construction.

ASNR has started or is continuing the examination of the periodic Safety Review Guidance Files (DOR) or the concluding reports for 16 of the 20 installations: Pégase and Cascad, Cabri, Rapsodie, STE, Masurca, ATUe, MCMF, LECA, STAR, the storage park, Phoebus, Lefca, Chicade, Cedra, Magenta and Agate, and issued its conclusions on the review of Cabri. When reviewing these reports, ASNR is particularly attentive to the robustness of the proposed and deployed action plans. It ensures that the installations are in conformity with the applicable regulations and that the risks and adverse effects are effectively controlled.

In addition, in December 2025, the licensee Stellaria submitted a request to the Minister for the creation of a BNI called "ALPHA", which is currently being reviewed by ASNR (***see chapters 9 and 11 of the full ASNR Report***).

Pégase-Cascad facility – *CEA centre*

BNI 22 comprises two separate facilities, Pégase and Cascad:
• the Pégase reactor entered service on the Cadarache site in 1964 and was operated for about ten years. CEA was authorised by a Decree of 17 April 1980 to reuse the Pégase facility for the storage of radioactive substances, in particular spent fuel elements stored in a pool. The Decree of 4 September 1989 obliges CEA to apply to ASNR every ten years for authorisation to prolong the dry storage of irradiated fuel in Cascad;
• the Cascad facility, authorised by a Decree of 4 September 1989 modifying the Pégase facility and operated since 1990, remains in service, dedicated to the dry storage of irradiated fuel in wells.

In December 2024, CEA sent ASN the safety review guidance files for the Pégase and Cascad facilities. ASNR issued its opinions on these two dossiers in 2025. The reports on the conclusions of the periodic safety reviews must be submitted by 30 October 2027 at the latest. The public consultation on the decommissioning file for the Pégase facility, submitted to the Minister for Nuclear Safety in 2020, was also held in 2025.

As part of the DECAP project for the removal of araldite-encapsulated fuel from storage, ASNR noted that CEA had complied with the technical requirement set out in resolution CODEP-CLG-2017-006524 by completing the first transport of a fuel container from Pégase to Cascad in March 2025.

The inspections carried out by ASNR focused on the monitoring of outside contractors, static and dynamic containment, and external hazards. ASNR considers that the level of nuclear safety and radiation protection of BNI 22 is satisfactory in these areas. However, there is still room for improvement: the traceability of technical inspections of activities that are important for protection is still inadequate, particularly for periodic inspections and tests; the analysis of operational experience feedback from the monitoring and surveillance plans of outside contractors needs to be improved; and the criteria to be verified during periodic inspections need to be better formalised.

In 2026, ASNR will remain vigilant about the continuation of DECAP operations, as well as the completion of internal transport to Cascad.

Cabri research reactor – *CEA centre*

The Cabri reactor (BNI 24), created on 27 May 1964, is intended for conducting experimental programmes aiming to achieve a better understanding of the behaviour of nuclear fuel in the event of a reactivity accident. The reactor has been equipped with a pressurised water loop since 2006 in order to study the behaviour of the fuel at high combustion rates in accident situations of increasing reactivity in a Pressurised Water Reactor (PWR). Since January 2018, a test programme called "CIP" (Cabri International Program) is in progress in the facility; this programme began in the early 2000s and necessitated substantial modification and safety upgrading work on the facility.

The CIP test programme and the electronic component irradiation tests continued in 2025 with the completion of the programme's final CIP test on 13 October 2025.

In 2025, ASNR's review of the 2017 safety review was finalised. ASNR's conclusions (resolution and follow-up letter) were sent to the licensee on 12 June 2025. The requirements are essentially linked to control of the seismic and fire risks, but also to the ageing of the facility.

ASNR considers that the level of safety and radiation protection is satisfactory for the inspected areas of operation, external hazards, material modifications and internal transport.

The licensee will have to consolidate strategy for the retrieval of the sodium waste and contaminated sodium still present at the BNI, which must be disposed of according to a schedule yet to be produced.

Finally, once the CIP test campaign, which ended in October 2025, has been completed, CEA will have to undertake the work and maintenance required to ensure that the reactor continues to operate in the long term. The file on the repair of the hodoscope, following a change of technical solution, is due to be submitted to ASNR at the beginning of 2026. At the same time, ASNR is examining reduced operating conditions for the reactor, proposed by CEA, to allow operator training activities to continue in the meantime.

Rapsodie research reactor – *CEA centre*

The Rapsodie reactor (BNI 25) is the first sodium-cooled Fast-Neutron Reactor (FNR) built in France. It operated from 1967 to 1978. A sealing defect in the reactor pressure vessel led to its final shutdown in 1983. Decommissioning operations were subsequently undertaken, but have been partially stopped further to a fatal accident in 1994 during the washing of a sodium tank. The Decommissioning Decree was signed on 9 April 2021. This Decree sets the perimeter of the facility and regulates, until 2030, the operations for treating the sodium from the reactor through to introducing air into the vessel containing it.

The fuel has been unloaded from the core and evacuated from the facility. Furthermore, a large part of the radioactive fluids and components have been removed, and the reactor vessel is contained. The reactor pool has been emptied, partially cleaned out and decommissioned and the waste containing sodium has been removed.

The decommissioning work involving the characterising, repackaging and removal of waste packages continued in 2025. The polar crane was renovated as part of the preparations for the secondary sodium reprocessing operations at the Rapsodie reactor, known as "Recure Na". The application to carry out this project was sent to ASNR under Article R. 593-70 of the Environment Code. CEA has also announced a new schedule that will see these operations completed in 2052 instead of 2030, the deadline laid down in the decommissioning decree. As CEA is unable to meet the deadline laid down in the decree, the licensee will have to submit a request for the decree to be amended.

Operation "Pétole", which consists in placing in final shutdown status and removing the equipment involved in the dynamic containment of the cleaned-out hot cells, ended in 2025.

The licensee submitted its periodic safety review guidance file at the end of December 2022. Further to the examination of this file, ASNR asked the licensee to take certain additional points into account in the periodic safety review report, submitted to ASNR on 21 May 2025.

ASNR considers that the level of nuclear safety and radiation protection at this facility will be satisfactory in 2025, particularly with regard to waste management, safety management and the management of chemical products, which will be inspected in 2025.

Solid Waste Treatment Station

CEA centre

BNI 37 of CEA Cadarache historically comprised the Active Effluents Treatment Station (STE) and the Solid Waste Treatment Station (STD), grouped into a single installation. As the CEA wishes to ensure continued operation of the STD and proceed with the final shutdown of the STE, BNI 37 was divided into two BNIs: 37-A (STD) and 37-B (STE) by ASN resolutions CODEP-DRC-2015-027232 and CODEP-DRC-2015-027225 of 9 July 2015. These records were made further to the Orders of 9 June 2015 defining the perimeters of these two BNIs.

At present, the STD is CEA's only civil BNI licensed for the packaging of intermediate-level, long-lived (ILW-LL) radioactive waste before it is stored in the Cedra facility (BNI 164) pending transfer to a deep geological repository. This situation makes the STD an indispensable part of the CEA's decommissioning and waste management strategy.

The main work on the renovation project for the facility, known as "Pagode", and its operation were interrupted following the discovery of civil engineering faults in May 2024, an event classified as level 1 on the INES scale. Following the results of the investigations carried out throughout 2025, the Pagode project, which is due to be completed by 30 June 2028, is no longer up-to-date. In particular, the BNI cannot achieve the expected level of safety with regard to seismic risk. As a result, CEA has reviewed its waste management strategy to ensure the treatment of MA-VL waste while a permanent treatment solution is defined for the next 10 to 15 years. It provides for a resumption of activity, despite the structural defects, which require limitations on the operating range of the facility. These provisions must be set out in an authorisation application, which will be examined by ASNR.

With operation of the facility suspended, ASNR considers that the overall safety level of the facility remains under control. However, the conditions for taking over the operation have yet to be established. In addition, safety management, operation and maintenance, which will be inspected in 2025, are managed satisfactorily. The monitoring of commitments, also inspected in 2025, could be improved. In particular, overall ventilation management and the arrangements for closing out commitments relating to the action plan resulting from the third periodic safety review still need to be improved.

Active Effluents Treatment Station

CEA centre

The Active Effluents Treatment Station (STE – BNI 37-B) has been shut down since 1 January 2014. CEA submitted the decommissioning file for this facility in December 2021.

Review of the facility decommissioning file continued in 2025. CEA plans to update its file to include the new elements relating to the recovery of vessel bottom head residues by the dry method. Consultation with the Environmental Authority and then the public inquiry are scheduled for 2026.

As part of the operations prior to decommissioning, the licensee is continuing to remove waste and in 2025 began taking samples of residues from the vessel bottom heads of the concrete tanks in building 322 in order to improve knowledge of their content and determine the treatment scenario. Televisual inspections of the tanks in buildings 320 and 321 continued with a view to characterising them. A campaign to take surface soil samples from the embankment of building 322 has been initiated to determine their contamination and refine the remediation strategy. The licensee has also continued work on renovating the retaining wall of building 322, which is showing cracks in the concrete.

As part of the follow-up to the 2017 review, CEA has carried out refurbishment work on the fire control panel in 2025 and installed a leaktight coating on the floors of building 322 to prevent water infiltration. The licensee also submitted the soil management plan for the Grande Bastide field, with the aim of treating the historical radiological contamination found in the *Grande Bastide* field and preventing it from spreading during rainy episodes.

In addition, the facility has experienced several incidents of rainwater contamination, leading to the presence of artificial radionuclides outside the identified contaminated areas, which were the subject of significant event notifications to ASN between 2021 and 2023, despite the implementation of an action plan for rainwater management. As the evaluation of the effectiveness of the rainwater management plan showed the need to implement additional actions, rainwater monitoring continued in 2025, along with improvement actions such as relocating the main discharge point to rule out the possibility of water contamination by the soil of the *Grande Bastide* field.

The management strategy proposed by CEA is currently being reviewed by ASNR. In the same context, ASNR is awaiting the sending of CEA's overall strategy for contaminated soils, which is currently being defined.

ASNR considers that the level of nuclear safety and radiation protection at BNI 37-B for the inspected areas of decommissioning work, radiation protection and periodic inspections and tests in 2025 is satisfactory. The management of historical contamination in the environment around the facility remains a subject of vigilance for ASNR.

Plutonium Technology Facility and Chemical Purification Laboratory

CEA centre

The Plutonium Technology Facility (ATPu – BNI 32) produced plutonium-based fuel elements intended for fast neutron or experimental reactors as from 1967, then, from 1987 until 1997, for PWRs using MOX (Mixed OXides) fuel. The activities of the Chemical Purification Laboratory (LPC – BNI 54) were associated with those of the ATPu: physical-chemical verifications and metallurgical examinations, treatment of effluents and contaminated waste. The two facilities were shut down in 2003 and have been undergoing decommissioning since the publication of Decrees 2009-262 and 2009-263 on 6 March 2009.

In 2025, supervision, maintenance and operating (SENEX) operations as well as waste management will have continued to reduce the source term at both facilities. Progress has also been made on decommissioning the cryotreatment process.

Safety management is fairly satisfactory. The Safety Objectives Agreement (COS) is regularly monitored, but improvements are expected in the prioritisation of document updates and the prior checking of documents before noteworthy modifications are made.

With regard to fire risk management inspected in 2025, discrepancies were identified in the Waste Treatment Facility (ATD) concerning the inadequacy of extinguishing equipment and inconsistencies between displays. ASNR has requested that fire-fighting systems be strengthened and signage updated.

The organisation for dealing with external hazards is fairly satisfactory, and the licensee has been asked to provide operational experience feedback on water ingress and lightning strikes.

ASNR considers that the level of nuclear safety and radiation protection at the facilities is satisfactory overall, and is keeping a close watch on the completion of the vacuity checks initiated following the discovery of a fissile material rod not inventoried in 2024 in the ATPu, which was the subject of a significant event at level 1 on the INES scale.

ASNR's review of requests to amend the decommissioning decrees concerning the decommissioning plans and the perimeter of the two facilities continued in 2025.

Masurca research reactor – *CEA centre*

The Masurca reactor (BNI 39), whose construction was authorised by a Decree of 14 December 1966, was intended for neutron studies, chiefly on the cores of fast neutron reactors, and the development of neutron measurement techniques. The reactor has been shut down since 2007.

At the end of 2025, ASNR completed the first part of the review of the facility's decommissioning dossier, which was submitted to the Minister responsible for nuclear safety in December 2020. The decommissioning of the facility is planned in four stages: completion of decommissioning preparation operations and removal of process equipment, decommissioning and remediation of general utilities and auxiliary technical installations, structural remediation and soil remediation. CEA plans to decommission the plant in nine years, while maintaining the existing buildings in a condition compatible with future use.

Once the Ministry has drawn up an initial draft decree, scheduled for 2026, ASNR will issue an opinion on the text and prepare requirements governing the decommissioning. The decommissioning issues are limited in view of the significant reduction in the source term in the facility.

The licensee is continuing the decommissioning preparation work. The dismantling of equipment in the nuclear buildings and the removal of experimental dosimeters were completed in 2025. The authorisation application file to modify the disposal of sodium-containing items is due to be submitted to ASNR at the end of 2025, and the disposal of source surplus to requirements began in 2025. These two operations are the last decommissioning preparation operations (OPDEM).

The report concluding the review was submitted in April 2025 and ASNR has begun its review.

ASNR considers that the level of nuclear safety and radiation protection, particularly with regard to the fight against external hazards and the management of deviations, maintenance and periodic inspections and tests inspected in 2025, is satisfactory.

Éole and Minerve research reactors

CEA centre

The experimental reactors Éole and Minerve are very-low-power (less than one kilowatt) critical mock-ups that were used for neutron studies, in particular to evaluate the absorption of gamma rays or neutrons by materials.

The Éole reactor (BNI 42), whose construction was authorised by a Decree of 23 June 1965, was intended primarily for neutron studies of moderated arrays, in particular those of PWRs and Boiling Water Reactors (BWRs). The Minerve reactor (BNI 95), whose transfer from the Fontenay-aux-Roses studies centre to the Cadarache studies centre was authorised by a Decree of 21 September 1977, is situated in the same hall as the Éole reactor. Teaching and research activities were carried out on these mock-ups until their final shutdown on 31 December 2017. Decree 2023-1176 of 12 December 2023 brought together the two BNIs 42 and 95 in a single BNI (BNI 42-U) called "Éole/Minerve", and prescribed the decommissioning operations for this facility.

During 2025, the licensee continued to characterise and dispose of the uranium-bearing materials present at the facility.

ASNR considers that the level of safety and radiation protection at BNI 42-U is satisfactory overall. The annual inspection focused on four main areas: application of the new baseline safety requirements following the transition to decommissioning (resolution CODEP-DRC-2024-049444 of 24 September 2024), criticality risk control, progress on the OPDEMs and the integrated management system. It confirmed that the characterisation and packaging operations are carried out in accordance with the authorisations for noteworthy modifications and are subject to appropriate traceability.

ASNR is keeping a close eye on the finalisation of the OPDEMs that could not be completed before the application of decree 2023-1176 of 12 December 2023 prescribing the decommissioning of the facilities. The inspection also identified two main challenges: firstly, to improve traceability of deviations during physical material characterisation operations, particularly in the event of variations with data from the nuclear materials management system; and secondly, to update the facility's procedures in accordance with the new decommissioning baseline requirements before the end of 2025.

The Enriched Uranium Processing Facilities – *CEA centre*

From 1963 to 1995, the Enriched Uranium Reprocessing Facilities (ATUe – BNI 52) converted uranium hexafluoride (UF_6) from the Cadarache enrichment plants into sinterable oxide, and ensured the chemical reprocessing of waste from the manufacture of fuel elements. Decommissioning of this facility was authorised by Decrees in February 2006 and 2021, accompanied by ASN requirements describing the conditions of performance of the future decommissioning operations dated 14 October 2021.

The activities in the facility in 2025 were essentially routine maintenance and periodic and regulatory inspection operations. These activities will continue until the decommissioning of the facility is complete. Decommissioning operations are currently scheduled to resume in 2028.

The actions arising from the 2017 periodic safety review have been completed. Waterproofing work on the roof was completed in 2025. ASNR's opinion on the orientation file for the next review, submitted in 2024, was sent to the licensee in May 2025. These factors will have to be taken into account when the report concluding the re-examination of the facility, due in 2027, is submitted.

In 2025, the safety level of BNI 52 (ATUe) is satisfactory.

Central Fissile Material Warehouse

CEA centre

Created in 1968, the Central Fissile Material Warehouse (MCMF – BNI 53) was a warehouse for storing enriched uranium and plutonium until its final shutdown and removal of all its nuclear materials on 31 December 2017. Its Decommissioning Decree was issued on 22 March 2024. It sets 31 December 2034 as the end-of-decommissioning deadline.

ASNR considers that decommissioning operations continued satisfactorily in 2025. Remediation of the facility by surface cleaning has been planned for 2025 and will begin in 2026.

The inspection relating to the report on the conclusion of the periodic safety review, submitted in 2024, which took place in 2025, revealed a robust organisation for implementing and monitoring the actions involved in this review.

High-Activity Laboratory LECA-STAR

CEA centre

BNI 55 combines the Active Fuel Examination Laboratory (LECA) and its extension, the Treatment, Clean-out and Reconditioning Station (STAR). These two units constitute CEA's expert assessment tools for analysing irradiated fuels. Commissioned in 1964, the LECA laboratory enables CEA to carry out destructive and non-destructive examinations of irradiated fuel from the nuclear power, research and naval propulsion sectors. As the facility is old, it was partially reinforced in the early 2010s to improve its earthquake resistance.

The currently ongoing review of the periodic safety review concluding report for the LECA, which was submitted in 2024, has resulted in ASNR asking CEA for further information. In 2025, the licensee has set out the major developments and modifications proposed over the next ten years, in particular projects to ensure the long-term future of the facility (safe shutdown earthquake upgrades), to update operating and process equipment, and to continue R&D programmes. LECA will be responsible for receiving spent fuel from CEA and transferring it to the STAR facility for reconditioning.

The removal from storage of fissile materials that are not associated with any research programme is continuing in accordance with the schedule set by ASNR and the commitments made by CEA further to the last periodic safety review.

Following a significant event in March 2024 concerning the non-compliance of certain LECA civil engineering seismic reinforcements, ASNR requested an analysis of the generic nature of the event. The deviations detected by CEA appear to be specific to the LECA reinforcement work. By 2027, CEA has undertaken to bring the affected civil engineering structures of the LECA back into compliance. In order to ensure that the activities of outside contractors are adequately supervised, CEA has undertaken to carry out an exhaustive inspection of the welds made during the remediation work.

Commissioned in 1999, the STAR facility is an extension of the LECA laboratory, designed for the stabilisation and reconditioning of irradiated fuel.

CEA has sent ASNR the orientation file for the third periodic safety review of STAR in February 2025, for which the report concluding the review is due to be sent in February 2028. Examination of this file led ASNR to request additional information to be taken into account in the review conclusion report. In particular, ASNR has asked CEA to detail the major developments and modifications envisaged over the next ten years and to update the decommissioning plan. At the end of the previous review, ASNR asked that a seismic cut-off device for the general power supply (DCS) be studied. In its response, CEA did not detail the feasibility of connecting STAR to the existing LECA system. ASNR has asked for a technical and economic feasibility study to be carried out on connecting STAR to the existing DCS system at LECA.

ASNR considers that in 2025 the level of nuclear safety and radiation protection of the LECA-STAR installation is satisfactory. A reassessment of the criticality risk control function was carried out in 2025 and the measures taken following the analysis of operational experience feedback from significant events and deviations in this area are awaited by ASNR. The inspectors noted that the management of certain deviations identified during the review could be improved, particularly as regards the analysis of the causes and the definition and implementation of corrective actions or their follow-up outside the defined organisation. In addition, a number of structuring actions are still in progress and could lead to the identification of new actions to be undertaken. ASNR remains vigilant with regard to the implementation of actions involving the most significant issues, some of which may have relatively distant deadlines. In the area of fire risk prevention, risk management tools appear to be under control. A number of actions arising from the update of the Fire Risk Management Study (EMRI) are to be implemented over the next few years.

Solid radioactive waste storage area

CEA centre

BNI 56, declared in January 1968 for the disposal of waste, is used for storing legacy solid radioactive waste from the Cadarache centre. It comprises three pools, six pits, five trenches and hangars, which contain in particular ILW-LL waste from the operation or decommissioning of CEA facilities. BNI 56 is one of the priorities identified by the CEA in its new decommissioning and waste management strategy.

In 2025, the facility placed the P2 pool in a safe state following resolution CODEP-MRS-2025-037042 of 27 June 2025. Work on the groundwater monitoring facilities has been completed, with the last facility due to be installed in 2025, in line with the commitments made in the periodic safety review. Waste disposal operations continued with the removal of Bayard soil, which will be completed in 2026, the retrieval of low-irradiation waste from storage, the transfer of waste from recent pits to the Cedra facility, and the removal of asbestos waste.

The assessment of the decommissioning file ended in 2025. The Environmental Authority has been consulted on the file and has issued an opinion. CEA has supplemented its file, in accordance with the regulations, with a response to this opinion. The consolidated file will be submitted for the public inquiry required by the regulations in January 2026.

The inspections carried out in 2025 focused on internal radioactive substance transport, support functions and power supplies, external hazards and decommissioning work. ASNR found that the transport operations were properly documented and complied with the authorised procedures. The inspection of the electrical power supplies revealed shortcomings in the analysis of a modification, leading ASNR to request cross-centre experience feedback on the management of modifications. With regard to external hazards, the arrangements in place to prevent flooding risks is fairly satisfactory, although improvements are expected in groundwater monitoring and in the management of fire extinguishing water in the event of a fire.

In the light of these factors, ASNR considers that the overall level of nuclear safety and radiation protection at the facility is satisfactory in the areas monitored in 2025.

Phébus research reactor – *CEA centre*

The Phébus reactor (BNI 92) is an experimental pool-type reactor with a power rating of 38 Megawatts thermal (MWth) which functioned from 1978 to 2007. Phébus was designed for the study of serious accidents affecting light water reactors and for defining operating procedures to prevent core melt-down or to mitigate its consequences. Decree 2024-256 requiring CEA to proceed with the Phébus decommissioning operations was published in March 2024.

CEA plans to start decommissioning operations after a surveillance phase. Following the publication of this Decree, the licensee has submitted the safety analysis report and the decommissioning General Operating Rules (RGEs) which were authorised by ASN in August 2024. The periodic safety review file submitted in 2017 is currently being assessed by ASNR.

The facility has been emptied of all radioactive material since December 2021, in accordance with the priority objectives of the DECPROs. The start-up neutron source is stored in the reactor building pool pending the identification of a disposal route.

In 2025, ASNR considered that the level of nuclear safety and radiation protection at the facility was satisfactory, particularly with regard to the "external hazards" issue raised during the inspection.

Laboratory for research and experimental fabrication of advanced nuclear fuels

CEA centre

Commissioned in 1983, the Laboratory for research and experimental fabrication of advanced nuclear fuels (Lefca – BNI 123) was a laboratory tasked with conducting studies on plutonium, uranium, actinides and their compounds with the aim of understanding the behaviour of these materials in the reactor and in the various stages of the "fuel cycle". In 2018, Lefca finalised the

transfer of part of its research and development equipment to the Atalante laboratories (BNI 148) at Marcoule.

Lefca's activities are currently limited to the characterisation and conditioning of liquid and solid wastes. An application to amend the Creation Authorisation Decree, in order to carry out nuclear material repackaging and storage activities and modify its perimeter, was submitted to the Minister at the end of 2024. ASNR's review of this file in 2025 led to a request for additional information, including changes to the safety report and the identification of protection important components in relation to the new operations proposed.

The licensee submitted its safety review concluding report in December 2023. It is currently being reviewed by ASNR and presents the prospect of continued operation of the facility.

In 2025, ASNR considers that the level of nuclear safety and radiation protection at the facility is satisfactory in terms of the "fire" and "pollution prevention and harmful effects control" issues raised during the inspection.

Chicade laboratory – *CEA centre*

Since 1993, the Chicade facility (BNI 156) has been conducting research and development work on low- and intermediate-level objects and waste, chiefly involving:
• the destructive and non-destructive characterisation of radioactive objects, waste sample packages and irradiating objects;
• the development and qualification of nuclear measurement systems;
• the development and implementation of chemical and radiochemical analysis methods;
• the expert assessment and inspection of waste packages packaged by the waste producers.

In 2025, work continued on the application to amend the Creation Authorisation Decree (DAC) for the facility, with the aim of changing the perimeter of the facility to include the gravity drainage well and external storage areas, and, with regard to environmental protection, to take account of gaseous emissions. ASNR has given the go-ahead for consultations and the public inquiry, subject to updates to the file on certain points.

ASNR considers that the level of safety and radiation protection is satisfactory for the inspected areas of chain reaction control and external hazards. In 2026, the licensee will have to carry out work to divert rainwater from the upstream catchment area in order to reinforce prevention measures against the risk of external flooding.

The licensee will also have to complete the protection work to limit the impact of the MA building on neighbouring buildings (FA and ventilation) under seismic stress, as well as the work to repair the waterproofing of the roofs of the FA and MA buildings, for which delays have been announced, resulting in non-compliance with the technical specifications issued following the last review.

Cedra storage facility – *CEA centre*

Since 2006, the Cedra facility (BNI 164) has been used to store intermediate-level long-lived (ILW-LL) waste pending the creation of appropriate disposal routes. CEA forecasts that this facility will be filled to capacity by 2030. The studies concerning a project to double the storage capacity began in 2020.

The Safety Options Dossier (DOS) relating to the first project to extend the facility (unit 3) in order to anticipate the saturation deadlines, received at the end of 2024, is currently being reviewed by ASNR.

The conclusions of the expert assessment of the report presenting the conclusions of the periodic safety review of the facility, which is due in 2022, are expected in 2026.

ASNR considers the level of safety and radiation protection at the facility to be satisfactory in the areas inspected, *i.e.* supervision of outside contractors, waste management and fire.

As regards the supervision of outside contractors, which improved in 2025, the licensee will have to increase the monitoring of maintenance operations carried out on a recurring basis at the facility.

Magenta storage warehouse

CEA centre

The Magenta facility (BNI 169), which replaces the MCMF currently being decommissioned, has been dedicated since 2011 to the storage of non-irradiated fissile material and the non-destructive characterisation of the nuclear materials received.

In 2025, CEA received authorisation to extend the operating range of the facility, and in particular the type of material received. In December 2025, ASNR issued a favourable opinion on the request to modify the Magenta perimeter to include the Emergency Response Centre at the Cadarache site, which is currently under construction.

ASNR has continued its examination of the review file submitted in 2021. The postponement of the commissioning of glove boxes within the facility, which had been planned since its creation, and the failure to carry out the associated operations concerning the replacement of seals on secondary containers containing plutonium-bearing material, remains a point requiring particular attention and was the subject of new discussions with CEA in 2025. ASNR will state its position on these elements in 2026, as part of the conclusion of the periodic safety review.

ASNR considers that the level of nuclear safety and radiation protection at the facility is satisfactory, particularly with regard to waste and safety management.

Advanced effluent management and treatment facility – *CEA centre*

The Advanced effluent management and treatment facility (Agate – BNI 171), commissioned in 2014 to replace BNI 37-B which is now shut down, uses an evaporation process to concentrate radioactive liquid effluents containing mainly beta- and gamma-emitting radionuclides.

The application to amend the facility's Creation Authorisation Decree in order to treat new types of radioactive effluent and extend the authorised outlets for the treatment of concentrates is currently being reviewed. This amendment to the Decree, authorising the treatment of new effluents, should enable CEA to increase the operating capacity of the Agate BNI.

The examination of the report presenting the conclusions of the first periodic safety review of the facility continued in 2025.

ASNR considers that the level of safety and radiation protection of the facility is satisfactory. However, the licensee will have to consolidate and improve the rigour of its operations, particularly when carrying out periodic inspections and tests.

ASNR underlines that this facility plays a central role in the management of CEA effluents and as such constitutes a sensitive facility in CEA's decommissioning and material and waste management strategy.

Jules Horowitz Reactor project

CEA centre

The Jules Horowitz Reactor (JHR – BNI 172), under construction since 2009, is a pressurised-water research reactor designed to study the behaviour of materials under irradiation and of power

reactor fuels. It will also allow the production of artificial radionuclides for nuclear medicine. Its power is limited to 100 MWth.

Construction and equipment manufacturing activities for the JHR continued in 2025, with a significant increase in activity on site.

ASNR conducted four inspections in 2025. The process of qualification or examination of documentary compliance, contract management and supervision of outside contractors were all covered, with checks on the licensee's general organisation and its application to specific technical subjects. The processing of deviations and the qualification of various protection important components, the preparation for the supply of fuel elements or experimental equipment, as well as the repair of heat exchangers between the reactor's primary and secondary circuits, were also monitored.

The revision of the facility's safety analysis report, to be submitted in 2021 and taking into account the changes and modifications made since construction began, is still undergoing reviews in certain areas to prepare for future commissioning. In 2025, ASNR concluded its review of the areas relating in particular to the overall safety analysis approach, the architecture of the backup cooling circuits and ultimate systems, and the approach to internal fire risk control. In 2025, ASNR also initiated expert assessments on issues such as fuel plate qualification and criticality risk management.

The request to amend DAC 2009-1219- of 12 October 2009, to extend the commissioning date to 14 October 2037 at the latest, taking into account margins for the project, was finalised in 2025, with a draft decree sent to the licensee at the end of the year.

ASNR considers that the project is well organised and monitored, allowing for an effective assessment. However, certain issues deserve greater attention, in particular document traceability for document approval processes or qualification monitoring, or the carrying out of certain repairs. The late detection of certain deviations should also raise questions about the adequacy and quality of supervision. Greater vigilance is therefore expected from the project teams, particularly in view of the increase in site activities and equipment supply.

Assessment of the CEA Cadarache Centre

In 2025, ASNR considered that the level of nuclear safety at the CEA Cadarache centre remained broadly satisfactory.

In terms of meeting commitments, ASNR notes the recurrent postponement of certain actions in the action plans arising from facility safety reviews, as well as certain decommissioning operations.

With regard to the monitoring of outsourced protection important activities, ASNR observes that progress has been made in integrating lessons learned from previous exercises, enabling a more targeted selection of oversight actions. However, given the large volume of protection important activities entrusted to outside contractors, CEA will have to maintain this momentum in 2026. ASNR also notes that some of the oversight activities carried out *in situ* are not systematically documented and recorded in the oversight programmes, which limits the use of operational experience feedback.

With regard to Periodic Inspections and Tests (CEP), ASNR notes favourably the progress made in revising maintenance procedures. However, recurrent inspection findings reveal that the operating procedures and maintenance ranges do not always exhaustively specify the decisive criteria to be checked, to ensure that inspections or tests comply with the safety analysis requirements. Deviations were also noted in terms of traceability, particularly with regard to the technical controls of these operations and the clear identification of all those involved in the CEP. ASNR also identified shortcomings in the management of obsolescence affecting certain Protection Important Components (PICs), which require refurbishment work to ensure the long-term sustainability of their functions.

With regard to the management of hardware modifications, ASNR noted in 2025 that several impact analyses relating to the implementation of modifications to installations were not sufficiently detailed. These analyses did not systematically highlight the need to reclassify PICs. In addition, they have not always identified the need to carry out post-modification checks to ensure that it has not degraded the operation of a PIC or of elements whose presence, operation or failure is likely to affect the operation or integrity of a PIC. This led to a number of significant events in 2025, including the unavailability of power supplies for PICs.

With regard to the management of nuclear safety-related deviations, ASNR notes traceability issues, particularly for discrepancies detected during the safety review process, which are not systematically archived in accordance with regulatory provisions and CEA's integrated management system. This situation can compromise the use of operational experience feedback. In addition, the failure to report certain deviations and the lack of experience sharing may also have led to significant events. ASNR also notes that there is still room for improvement in the sharing of operational experience feedback between the centre's facilities, particularly on common issues such as the reprocessing and packaging of liquid waste during decommissioning.

The decommissioning and waste management strategy deployed by CEA remains a subject on which ASNR is extremely vigilant. ASNR notes favourably the continued reduction in the dispersible inventory that can be mobilised in the event of an accident and the progress made on clean-up work at facilities being decommissioned. ASNR has also noted postponements in the monitoring and surveillance phase planned for certain facilities, which requires an assessment of their impact on overall decommissioning schedules.

The discovery of civil engineering faults at BNI 37-A in 2024 confirmed the fragility of CEA's MA-VL waste processing route organisation, which relies on single facilities. CEA will have to propose a long-term solution to guarantee the robustness of the waste management route.

As regards environmental protection, ASNR notes that the level remains fairly satisfactory, but that improvements are still expected. Managing rainwater and historically contaminated soils remains a major challenge. CEA has made progress in maintaining the piezometric structures needed to characterise groundwater, in remediating existing structures and in the network verification programme aimed at preventing groundwater contamination. ASNR expects CEA to implement a policy for managing contaminated sites and soils. The integration of all the impacts of the centre's facilities, and more broadly of the platform as a whole, taking into account all the licensees, in the impact assessments of the BNIs, remains a point of attention.

The review of the amendment to the centre's discharge permits, aimed at incorporating changes to the BNIs since 2016, continued in 2025.

With regard to new facilities, ASNR notes that work on the Jules Horowitz reactor is being carried out rigorously, despite the fact that implementation is taking longer than initially planned. ASNR also notes that CEA has finalised the new contractual agreement for the takeover of the CIRCE project for the construction of a emergency management building. It will pay particular attention to the progress of the works, so as to have an emergency response facility that can withstand extreme events as soon as possible. In the field of radiation protection, ASNR takes a positive view of CEA Cadarache's approach to the disposal of disused sealed radioactive sources. The Cadarache site has taken into account the latest regulatory developments applicable to the management of radioactive sources within the BNIs. However, ASNR is waiting for clarification of the overall strategy for disposing of disused sealed sources, with a detailed schedule, and for the administrative situation of certain sources to be regularised.

With regard to internal radioactive substance transport, the inspections carried out in 2025 confirmed compliance with the regulations in force.

ITER

The International Thermonuclear Experimental Reactor – ITER (BNI 174), under construction on the Cadarache site since 2010 and adjacent to the CEA facilities, will be a fusion experimental reactor used for the scientific and technical demonstration of the control of thermonuclear fusion energy obtained by magnetic containment of a deuterium-tritium plasma during long-duration experiments with a significant power level (500 MW developed for 400 seconds). This international project enjoys financial support from China, South Korea, the United States, India, Japan, Russia and the European Union, who make in-kind contributions by providing equipment for the project.

The large quantities of tritium that will be brought into play in this installation, the intense neutron flux and the resulting activation of materials have serious implications regarding radiation protection and will represent true challenges for the safe management of waste during the operation and decommissioning of the installation.

Following the presentation by the ITER Organization (IO) in 2024 of a new reference scenario for the project, discussions were initiated to define the regulatory changes resulting from this change of strategy.

As a reminder, this new reference scenario provides for operation in several phases, corresponding to the main sequences of the experimental programme, and includes changes to certain facility design choices. Given the difficulties the licensee has identified in providing a conclusive safety case covering the entire lifetime of the project, IO proposes the principle of producing a staged safety case, following the successive phases of commissioning and operation. This approach will be based on a strategy of progressive acquisition of knowledge, with the knowledge acquired in one phase being used in the safety case for the next phase.

Additional information to provide an overall view of the changes decided on and their impact on the various components of the project is expected, as part of the application to amend resolution 2013-DC-0379, which should be submitted in 2026. IO must identify and analyse the impact of the planned or ongoing modifications on nuclear safety and radiation protection issues, both on the safety case and on the environment and, more broadly, on the protected interests.

Work on the site and equipment manufacturing continued, notably including the continuation of repairs to the first sectors of the tokamak to correct the dimensional anomalies and to resolve the problem of stress corrosion affecting the heat shield cooling systems. By the end of 2025, three of the nine sectors of the vacuum vessel had been positioned in the pit of the Tokamak building.

With regard to the assembly of the vacuum vessel, which may only begin after authorisation from ASNR, in accordance with BNI requirement 174-07 of ASN resolution 2013-DC-0379 of 12 November 2013, as amended, IO plans to submit an application in 2026.

In 2025, ASNR continued the technical review of the new authorisation application for water intakes and discharges of non-radioactive effluents for the facility construction phase. As a result of this investigation, IO requested that the perimeter of the BNI be modified to include all the facilities and equipment affected by these discharges.

Five inspections were carried out at the site in 2025, covering a range of organisational and technical issues. Checks were carried out on the new organisation adopted by IO concerning safety and responsibility for supervising outside contractors within the project teams. They also covered changes to contracts, the handling of deviations and the implementation of specified requirements, as well as the traceability of monitoring, control and supervision documentation. The inspections also made it possible to check activities, including qualification, on vacuum vessel equipment, cooling and vacuum systems, as well as heating and fuel management systems.

On the basis of the inspections carried out, ASNR notes that the changes to the organisation of safety and supervision have not yet been finalised, and that efforts still need to be made to ensure the traceability of activities that are important for the protection of interests. This applies in particular to the quality of deviation handling and the volume of verification actions. More generally, the impact of the many technical developments and changes underway is not being adequately taken into account, and requires greater attention.

Gammaster Irradiator

Since 2008, the company Steris has been operating an industrial irradiator called "Gammaster", situated on the land of the municipality of Marseille. Gammaster treats products by ionisation (emission of gamma radiation) with the aim of sanitising, sterilising or improving the performance of materials. The facility is made up of an industrial bunker and houses high-activity cobalt-60 sealed sources which produce the radiation necessary for the facility's operations.

In 2025, the licensee renovated the bunker's ventilation system, which was oxidised by ozone. The old ducts have been replaced by stainless steel ducts.

The licensee submitted its Safety Review Guidance File (DOR) to ASNR in December 2025, and the report concluding the periodic safety review of the installation is expected in 2027.

ASNR considers that the level of safety and radiation protection is quite satisfactory in 2025.

ASNR carried out two inspections in 2025. The first dealt in particular with source management and fire-fighting arrangements, which were carried out in a fairly satisfactory manner. The methods for managing fire loads have yet to be established. The second inspection looked at the condition of the systems and equipment. Improvements are expected in particular with regard to periodic inspections and tests, following maintenance operations on an element important for protection and technical inspection of protection important activities. Progress is also expected in the management of baseline safety requirements and updates to these.

ASNR's nuclear activities in the territory

As explained in chapter 2 of the full ASNR Report, ASNR is authorised to carry out nuclear activities, excluding those subject to the BNI regime, in accordance with Article L. 592-14-1 of the Environment Code.

ASNR operates the following facilities on the Cadarache site for research and expert assessment purposes. In terms of radiation protection, their activities are governed by the provisions of the Public Health Code:
- **the MICADO-Lab platform** (chronic irradiation means for the acquisition of dose-effect relationships in the laboratory), dedicated to the study of the effects of chronic exposure to ionising radiation on ecosystems;
- **the STIRCA platform**, comprising the AMANDE-MIRCOM and CEZANE facilities, designed to produce neutrons for metrology and dosimetry, and in particular to provide national references for neutron fluence and derived dosimetric quantities in association with the National Metrology and Testing Laboratory (LNE);
- **the Lear and Epicur facilities**, contributing to research and development programmes in the field of major accidents, in particular on the behaviour of iodine, ruthenium and filter media, and on the ageing of reactor containment materials;
- **specific equipment at the CEA's Cabri BNI**, for experimental research into the behaviour of nuclear fuels in accident situations, in particular by characterising the degradation of fuel rods.

In 2025, ASNR conducted three internal inspections of radiation protection arrangements at the above-mentioned facilities, more specifically at the AMANDE-MIRCOM, CEZANE and MICADO-Lab platforms.

It appears that radiation protection issues are being addressed in an appropriate and controlled manner by the facilities. Particular attention continues to be paid to formalising the elements used to document operating conditions, notably through examining the implementation of additional protection measures at the facilities in application of certain standards, the justification of radiation protection zoning, the monitoring of releases and the management of sources and waste.

ASNR actions to prevent radon risk

86 Rn radon

Oversight actions

An inspection was carried out on 18 December 2025 at the Château de Saint Martin winery, which is located in a level 3 radon zone and has an underground cellar (specific location). The radon risk was unknown to the establishment before the inspection was announced.

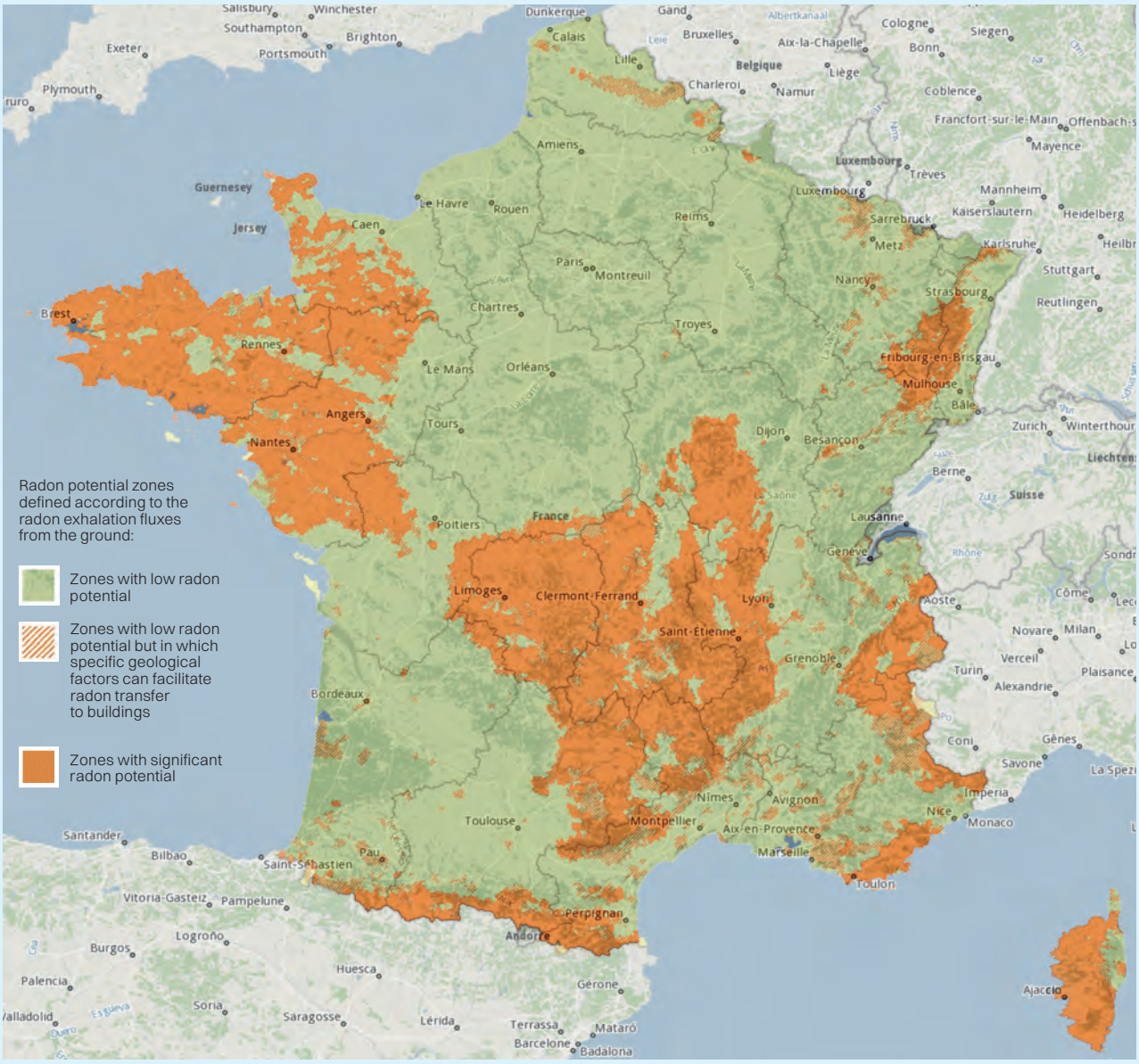
Awareness-raising actions

In 2025, ASNR held discussions with the Regional Health Agency and the Regional Department of Employment, Economy, Labour and Solidarity (Dreets) for the Provence-Alpes-Côte d'Azur region, on regulatory changes to the Labour Code relating to radon risk.

Areas with radon potential in mainland France, and particularly in the Provence-Alpes-Côte d'Azur region, are shown on page 99.

Radon potential zones in metropolitan France

defined by the Order of 27 June 2018



Source: ASNR.

Overview of basic nuclear installations

as at 31 December 2025

Each year the French Authority for Nuclear Safety and Radiation Protection (ASNR) establishes the list of Basic Nuclear Installations (BNIs).

A BNI is an installation which, by its nature or because of the quantity or activity of the radioactive substances it contains, is subject to a specific regulation and oversight system defined by the Environment Code (Title IX of Book V). These installations must be authorised by Decree further to a public inquiry and the opinion of ASNR. Their design, construction, operation and decommissioning are regulated.

As at 31 December 2025, the number of BNIs (in the sense of legal entities) stood at 118.

The following are BNIs:

1. **nuclear reactors;**
2. **large installations for the preparation, enrichment, fabrication, treatment or storage of nuclear fuels, or for the treatment, storage or disposal of radioactive waste;**
3. **large installations containing radioactive or fissile substances;**
4. **large particle accelerators;**
5. **deep geological repositories for radioactive waste.**

With the exception of nuclear reactors and any future deep geological repositories for radioactive waste, which are all BNIs, Section 1 titled "Classification of Basic Nuclear Installations" of Chapter III of Title IX of Book V of the regulatory section of the Environment Code sets the BNI System thresholds for entry into the BNI System for each category.

For technical or legal reasons, the BNI concept can cover different physical realities: thus, in a Nuclear Power Plant (NPP), each reactor may be considered to be a specific BNI, or a given BNI may be made up of two reactors. Similarly, a "fuel cycle" plant or a centre of the French Alternative Energies and Atomic Energy Commission (CEA) may be made up of several BNIs. These different configurations do not change the conditions of oversight in any way.

The following come under the BNI System:
- installations under construction, if they have formed the subject of a Creation Authorisation Decree (DAC);
- installations in operation;
- installations that are shut down or undergoing decommissioning, until they are delicensed by an ASNR resolution.

The missing BNI numbers correspond to installations delicensed (***see chapter 12 of the full ASNR Report***) or licensed as new BNIs (for example, further to the merging of of BNIs 178, 179 and 180 into a single BNI named "Atrium" – 178-U). These former BNIs, which no longer exist, are therefore removed from the following list, along with their numbers.

To ensure the oversight of all the civil nuclear activities and installations in France, ASNR has a regional organisation comprising eleven regional divisions based in Bordeaux, Caen, Châlons-en-Champagne, Dijon, Lille, Lyon, Marseille, Nantes, Orléans, Paris and Strasbourg. The Caen and Orléans divisions are responsible for the oversight of the BNIs in the Bretagne (Brittany) and Île-de-France regions respectively.

FACILITIES OVERSEEN BY THE ASNR REGIONAL DIVISIONS

List of basic nuclear installations as at 31 December 2025 on the following pages

The table of nuclear facilities definitely shut down or in the process of decommissionning can be found in chapter 12 of the full ASNR Report.

118 basic nuclear installations spread across **35** sites

BORDEAUX
1. Blayais
2. Golfech
3. Civaux

CAEN
4. Brennilis
5. La Hague
6. Caen
7. Paluel
8. Flamanville
9. Penly

CHÂLONS-EN-CHAMPAGNE
10. Nogent-sur-Seine
11. Soulaines-Dhuys
12. Chooz

LILLE
13. Gravelines

LYON
14. Grenoble
15. Bugey
16. Romans-sur-Isère
17. Dagneux
18. Tricastin
19. Cruas-Meysse
20. Saint-Alban
21. Creys-Malville

MARSEILLE
22. Cadarache
23. Marcoule
24. Marseille
25. Malvési

NANTES
26. Pouzauges
27. Sablé-sur-Sarthe

ORLÉANS
28. Saclay
29. Saint-Laurent-des-Eaux
30. Dampierre-en-Burly
31. Chinon
32. Belleville-sur-Loire
33. Fontenay-aux-Roses

PARIS

The Île-de-France BNIs are overseen by the Orléans division.

STRASBOURG
34. Fessenheim
35. Cattenom

Types of facilities
- Nuclear power plants
- Plants
- Research facilities
- Waste disposal repositories
- Others

Overview of basic nuclear installations as at 31 December 2025

SITE NAME	LOCATION OF THE BASIC NUCLEAR INSTALLATIONS	LICENSEE	TYPE OF INSTALLATION	No.
BORDEAUX DIVISION				
1 Blayais	Le Blayais nuclear power plant (reactors 1 and 2) 33820 Saint-Ciers-sur-Gironde (Gironde)	EDF	Reactors	86
	Le Blayais nuclear power plant (reactors 3 and 4) 33820 Saint-Ciers-sur-Gironde (Gironde)	EDF	Reactors	110
2 Golfech	Golfech nuclear power plant (reactor 1) 82400 Golfech (Tarn-et-Garonne)	EDF	Reactor	135
	Golfech nuclear power plant (reactor 2) 82400 Golfech (Tarn-et-Garonne)	EDF	Reactor	142
3 Civaux	Civaux nuclear power plant (reactor 1) 86320 Civaux (Vienne)	EDF	Reactor	158
	Civaux nuclear power plant (reactor 2) 86320 Civaux (Vienne)	EDF	Reactor	159
CAEN DIVISION				
4 Brennilis	Monts d'Arrée (EL4-D) 29530 Loqueffret (Finistère)	EDF	Reactor	162
5 La Hague	Spent fuel reprocessing plant (UP2-400) 50107 Cherbourg cedex (Manche)	Orano Recyclage	Transformation of radioactive substances	33
	Effluents and solid waste treatment plant (STE2) and Oxide nuclear fuel reprocessing facility (AT1) 50107 Cherbourg cedex (Manche)	Orano Recyclage	Transformation of radioactive substances	38
	ELAN IIB facility 50100 Cherbourg (Manche)	Orano Recyclage	Transformation of radioactive substances	47
	Manche repository (CSM) 50440 Digulleville (Manche)	Andra	Storage of radioactive substances	66
	Oxide high activity facility (HAO) 50107 Cherbourg cedex (Manche)	Orano Recyclage	Transformation of radioactive substances	80
	Plant for reprocessing spent fuel elements from light water reactors (UP3-A) 50107 Cherbourg cedex (Manche)	Orano Recyclage	Transformation of radioactive substances	116
	Plant for reprocessing spent fuel elements from light water reactors (UP2-800) 50107 Cherbourg cedex (Manche)	Orano Recyclage	Transformation of radioactive substances	117
	Liquid effluents and solid waste treatment station (STE3) 50107 Cherbourg cedex (Manche)	Orano Recyclage	Transformation of radioactive substances	118
6 Caen	Large national heavy ion accelerator (Ganil) 14021 Caen cedex (Calvados)	G.I.E. Ganil	Particle accelerator	113
7 Paluel	Paluel nuclear power plant (reactor 1) 76450 Paluel (Seine-Maritime)	EDF	Reactor	103
	Paluel nuclear power plant (reactor 2) 76450 Paluel (Seine-Maritime)	EDF	Reactor	104
	Paluel nuclear power plant (reactor 3) 76450 Paluel (Seine-Maritime)	EDF	Reactor	114
	Paluel nuclear power plant (reactor 4) 76450 Paluel (Seine-Maritime)	EDF	Reactor	115
8 Flamanville	Flamanville nuclear power plant (reactor 1) 50340 Flamanville (Manche)	EDF	Reactor	108
	Flamanville nuclear power plant (reactor 2) 50340 Flamanville (Manche)	EDF	Reactor	109
	Flamanville nuclear power plant (reactor 3 - EPR) 50340 Flamanville (Manche)	EDF	Reactor	167
9 Penly	Penly nuclear power plant (reactor 1) 76370 Neuville-lès-Dieppe (Seine-Maritime)	EDF	Reactor	136
	Penly nuclear power plant (reactor 2) 76370 Neuville-lès-Dieppe (Seine-Maritime)	EDF	Reactor	140
CHÂLONS-EN-CHAMPAGNE DIVISION				
10 Nogent-sur-Seine	Nogent-sur-Seine nuclear power plant (reactor 1) 10400 Nogent-sur-Seine (Aube)	EDF	Reactor	129
	Nogent-sur-Seine nuclear power plant (reactor 2) 10400 Nogent-sur-Seine (Aube)	EDF	Reactor	130
11 Soulaines-Dhuys	Aube repository (CSA) 10200 Bar-sur-Aube (Aube)	Andra	Above-ground disposal of radioactive substances	149
12 Chooz	Chooz B nuclear power plant (reactor 1) 08600 Givet (Ardennes)	EDF	Reactor	139
	Chooz B nuclear power plant (reactor 2) 08600 Givet (Ardennes)	EDF	Reactor	144
	Ardennes nuclear power plant (CNA-D - Chooz A) 08600 Givet (Ardennes)	EDF	Reactor	163

SITE NAME	LOCATION OF THE BASIC NUCLEAR INSTALLATIONS	LICENSEE	TYPE OF INSTALLATION	No.
LILLE DIVISION				
13 Gravelines	**Gravelines nuclear power plant (reactors 1 and 2)** 59820 Gravelines (Nord)	EDF	Reactors	96
	Gravelines nuclear power plant (reactors 3 and 4) 59820 Gravelines (Nord)	EDF	Reactors	97
	Gravelines nuclear power plant (reactors 5 and 6) 59820 Gravelines (Nord)	EDF	Reactors	122
LYON DIVISION				
14 Grenoble	**High-flux reactor (RHF)** 38041 Grenoble cedex (Isère)	Max von Laue-Paul Langevin Institute (ILL)	Reactor	67
15 Bugey	**Bugey nuclear power plant (reactor 1)** 01150 Saint-Vulbas (Ain)	EDF	Reactor	45
	Bugey nuclear power plant (reactors 2 and 3) 01150 Saint-Vulbas (Ain)	EDF	Reactors	78
	Bugey nuclear power plant (reactors 4 and 5) 01150 Saint-Vulbas (Ain)	EDF	Reactors	89
	Bugey inter-regional warehouse (MIR) 01150 Saint-Vulbas (Ain)	EDF	Fresh fuel storage	102
	Activated waste packaging and storage facility (Iceda) 01150 Saint-Vulbas (Ain)	EDF	Conditioning, packaging and storage of radioactive substances	173
16 Romans-sur-Isère	**Nuclear fuel fabrication plant** 26104 Romans-sur-Isère cedex (Drôme)	Framatome	Fabrication of nuclear fuels	63-U
17 Dagneux	**Dagneux ionisation facility** Z.I. Les Chartinières - 01120 Dagneux (Ain)	Ionisos	Utilisation of radioactive substances	68
18 Tricastin	**Tricastin nuclear power plant (reactors 1 and 2)** 26130 Saint-Paul-Trois-Châteaux (Drôme)	EDF	Reactors	87
	Tricastin nuclear power plant (reactors 3 and 4) 26130 Saint-Paul-Trois-Châteaux (Drôme)	EDF	Reactors	88
	Georges Besse plant for separating uranium isotopes by gaseous diffusion (Eurodif) 26702 Pierrelatte cedex (Drôme and Vaucluse)	Orano Chimie-Enrichissement	Transformation of radioactive substances	93
	Comurhex uranium hexafluoride preparation plant 26130 Saint-Paul-Trois-Châteaux (Drôme)	Orano Chimie-Enrichissement	Transformation of radioactive substances	105
	Clean-up and uranium recovery facility (IARU) 26130 Saint-Paul-Trois-Châteaux (Drôme and Vaucluse)	Orano Chimie-Enrichissement	Plant	138
	TU5 and W plants 26700 Pierrelatte (Drôme)	Orano Chimie-Enrichissement	Transformation of radioactive substances	155
	Tricastin operational hot unit (BCOT) 84500 Bollène (Vaucluse)	EDF	Nuclear maintenance	157
	Georges Besse II plant for separating uranium isotopes by centrifugation (GB II) 84500 Bollène, 26702 Pierrelatte cedex and 26130 Saint-Paul-Trois-Châteaux (Drôme and Vaucluse)	Orano Chimie-Enrichissement	Transformation of radioactive substances	168
	Areva Tricastin analysis laboratories (Atlas) 26700 Pierrelatte (Drôme)	Orano Chimie-Enrichissement	Laboratory for the utilisation of radioactive substances	176
	Atrium 26700 Pierrelatte (Drôme)	Orano Chimie-Enrichissement	Storage of radioactive substances	178-U
19 Cruas-Meysse	**Cruas nuclear power plant (reactors 1 and 2)** 07350 Cruas (Ardèche)	EDF	Reactors	111
	Cruas nuclear power plant (reactors 3 and 4) 07350 Cruas (Ardèche)	EDF	Reactors	112
20 Saint-Alban	**Saint-Alban nuclear power plant (reactor 1)** 38550 Le Péage-de-Roussillon (Isère)	EDF	Reactor	119
	Saint-Alban nuclear power plant (reactor 2) 38550 Le Péage-de-Roussillon (Isère)	EDF	Reactor	120
21 Creys-Malville	**Superphénix reactor** 38510 Morestel (Isère)	EDF	Reactor	91
	Fuel storage facility (Apec) 38510 Creys-Mépieu (Isère)	EDF	Storage of radioactive substances	141

Overview of basic nuclear installations as at 31 December 2025

SITE NAME	LOCATION OF THE BASIC NUCLEAR INSTALLATIONS	LICENSEE	TYPE OF INSTALLATION	No.
MARSEILLE DIVISION				
22 Cadarache	**Provisional storage facility and Facility for dry storage of spent nuclear fuel (Pégase-Cascad)** 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Storage of radioactive substances	22
	Cabri 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Reactor	24
	Rapsodie 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Reactor	25
	Plutonium technology facility (ATPu) 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Manufacture or transformation of radioactive substances	32
	Solid waste treatment station (STD) 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Transformation of radioactive substances	37-A
	Effluent treatment station (STE) 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Transformation of radioactive substances	37-B
	Masurca 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Reactor	39
	Éole / Minerve 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Reactor	42-U
	Enriched uranium processing facility (ATUe) 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Manufacture of radioactive substances	52
	Central fissile material warehouse (MCMF) 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Holding of radioactive substances	53
	Chemical purification laboratory (LPC) 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Transformation of radioactive substances	54
	Active fuel examination laboratory (LECA) and Spent fuel treatment, clean-out and reconditioning station (STAR) 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Utilisation of radioactive substances	55
	Solid radioactive waste storage area 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Storage of radioactive substancess	56
	Phébus 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Reactor	92
	Laboratory for research and experimental fabrication of advanced nuclear fuels (Lefca) 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Manufacture of radioactive substances	123
	Chicade 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Research and development laboratory	156
	Cedra 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Conditioning, packaging and storage of radioactive substances	164
	Magenta 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Reception and shipping of nuclear materials	169
	Advanced effluent management and treatment facility (Agate) 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Conditioning, packaging and storage of radioactive substances	171
	The Jules Horowitz reactor (JHR) 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	CEA	Reactor	172
	ITER 13115 Saint-Paul-lez-Durance cedex (Bouches-du-Rhône)	ITER International Organization	Experiments on nuclear fusion reactions in tritium and deuterium plasma	174
23 Marcoule	**Phénix** 30205 Bagnols-sur-Cèze cedex (Gard)	CEA	Reactor	71
	Atalante 30200 Chusclan (Gard)	CEA	Actinides research, development and production studies laboratory	148
	Nuclear fuel fabrication plant (Melox) 30200 Chusclan (Gard)	Orano Recyclage	Manufacture of radioactive substances	151
	Centraco 30200 Codolet (Gard)	Cyclife France	Treatment of radioactive waste and effluents	160
	Gammatec 30200 Chusclan (Gard)	Synergy Health Marseille	Ionisation treatment of materials, products and equipment for industrial purposes and research and development purposes	170
	Diadem 30200 Chusclan (Gard)	CEA	Storage of solid radioactive waste	177
24 Marseille	**Ionisation facility (Gammaster)** M.I.N. 712 – 13323 Marseille cedex 14 (Bouches-du-Rhône)	Synergy Health Marseille	Ionisation facility	147
25 Malvési	**Contained storage of conversion residues (Écrin)** 11100 Narbonne (Aude)	Orano Chimie-Enrichissement	Storage of radioactive substances	175

SITE NAME	LOCATION OF THE BASIC NUCLEAR INSTALLATIONS	LICENSEE	TYPE OF INSTALLATION	No.
NANTES DIVISION				
26 Pouzauges	**Pouzauges ionisation facility** Z.I. de Monlifant - 85700 Pouzauges (Vendée)	Ionisos	Ionisation facility	146
27 Sablé-sur-Sarthe	**Sablé-sur-Sarthe ionisation facility** Z.I. de L'Aubrée - 72300 Sablé-sur-Sarthe (Sarthe)	Ionisos	Ionisation facility	154
ORLÉANS DIVISION				
28 Saclay	**Artificial radionuclides production facility (UPRA)** 91191 Gif-sur-Yvette cedex (Essonne)	CIS bio international	Manufacture or transformation of radioactive substances	29
	Liquid effluents management zone (Stella) 91191 Gif-sur-Yvette cedex (Essonne)	CEA	Transformation of radioactive substances	35
	Osiris-Isis 91191 Gif-sur-Yvette cedex (Essonne)	CEA	Reactors	40
	High-activity laboratory (LHA) 91191 Gif-sur-Yvette cedex (Essonne)	CEA	Utilisation of radioactive substance	49
	Spent fuel testing laboratory (LECI) 91191 Gif-sur-Yvette cedex (Essonne)	CEA	Utilisation of radioactive substances	50
	Solid radioactive waste management zone (ZGDS) 91191 Gif-sur-Yvette cedex (Essonne)	CEA	Storage and packaging of radioactive substances	72
	Irradiation facilities (Poséidon) 91191 Gif-sur-Yvette cedex (Essonne)	CEA	Utilisation of radioactive substances	77
	Orphée 91191 Gif-sur-Yvette cedex (Essonne)	CEA	Reactor	101
29 Saint-Laurent-des-Eaux	**Saint-Laurent-des-Eaux nuclear power plant (reactors A1 and A2)** 41220 Saint-Laurent-Nouan (Loir-et-Cher)	EDF	Reactors	46
	Graphite sleeve storage silos 41220 Saint-Laurent-Nouan (Loir-et-Cher)	EDF	Storage of radioactive substances	74
	Saint-Laurent-des-Eaux nuclear power plant (reactors B1 and B2) 41220 Saint-Laurent-Nouan (Loir-et-Cher)	EDF	Reactors	100
30 Dampierre-en-Burly	**Dampierre-en-Burly nuclear power plant (reactors 1 and 2)** 45570 Ouzouer-sur-Loire (Loiret)	EDF	Reactors	84
	Dampierre-en-Burly nuclear power plant (reactors 3 and 4) 45570 Ouzouer-sur-Loire (Loiret)	EDF	Reactors	85
31 Chinon	**Irradiated materials facility (AMI)** 37420 Avoine (Indre-et-Loire)	EDF	Utilisation of radioactive substances	94
	Chinon inter-regional warehouse (MIR) 37420 Avoine (Indre-et-Loire)	EDF	Fresh fuel storage	99
	Chinon nuclear power plant (reactors B1 and B2) 37420 Avoine (Indre-et-Loire)	EDF	Reactors	107
	Chinon nuclear power plant (reactors B3 and B4) 37420 Avoine (Indre-et-Loire)	EDF	Reactors	132
	Chinon A1 D 37420 Avoine (Indre-et-Loire)	EDF	Reactor	133
	Chinon A2 D 37420 Avoine (Indre-et-Loire)	EDF	Reactor	153
	Chinon A3 D 37420 Avoine (Indre-et-Loire)	EDF	Reactor	161
32 Belleville-sur-Loire	**Belleville-sur-Loire nuclear power plant (reactor 1)** 18240 Léré (Cher)	EDF	Reactor	127
	Belleville-sur-Loire nuclear power plant (reactor 2) 18240 Léré (Cher)	EDF	Reactor	128
33 Fontenay-aux-Roses	**Procédé** 92265 Fontenay-aux-Roses cedex (Hauts-de-Seine)	CEA	Research facility	165
	Support 92265 Fontenay-aux-Roses cedex (Hauts-de-Seine)	CEA	Effluent treatment and waste storage facility	166
STRASBOURG DIVISION				
34 Fessenheim	**Fessenheim nuclear power plant (reactors 1 and 2)** 68740 Fessenheim (Haut-Rhin)	EDF	Reactors	75
35 Cattenom	**Cattenom nuclear power plant (reactor 1)** 57570 Cattenom (Moselle)	EDF	Reactor	124
	Cattenom nuclear power plant (reactor 2) 57570 Cattenom (Moselle)	EDF	Reactor	125
	Cattenom nuclear power plant (reactor 3) 57570 Cattenom (Moselle)	EDF	Reactor	126
	Cattenom nuclear power plant (reactor 4) 57570 Cattenom (Moselle)	EDF	Reactor	137

Photos and graphics credits

Editorial of the Commission: p. 2: ASNR/J. Grison.
Editorial of the Director General: p. 8: ASNR/J. Grison.
Notable events: p. 14: P. Dureuil/Médiathèque ASNR; p. 19: EDF/AeroFilm/M. Didier.

Abstracts of ASNR Report on the state of nuclear safety and radiation protection in France in 2025

French Authority for Nuclear Safety and Radiation Protection
15 rue Louis Lejeune – 92120 Montrouge – France
Tel.: 33 (0)1 46 16 40 00 – E-mail: info@asnr.fr

Publishing director: Pierre-Marie Abadie, Chairman
Editor: Marie Riet-Hucheloup
Sub-editor: Lucas Patriat
Iconographer: Olivier Javay

Conception and production: Caribara Communication

ISSN 1967 – 5127

June 2026

ASNR Autorité de sûreté nucléaire et de radioprotection

Headquarters:
15 rue Louis Lejeune
92120 Montrouge

Postal address:
BP 17 - 92262
Fontenay-aux-Roses Cedex
France

en.asnr.fr/contact-us
info@asnr.fr
Tel.: 33 (0)1 58 35 88 88

en.asnr.fr