REGIONAL OVERVIEW OF NUCLEAR SAFETY AND RADIATION PROTECTION

CHAPTER 8

REGIONAL ORGANISATION

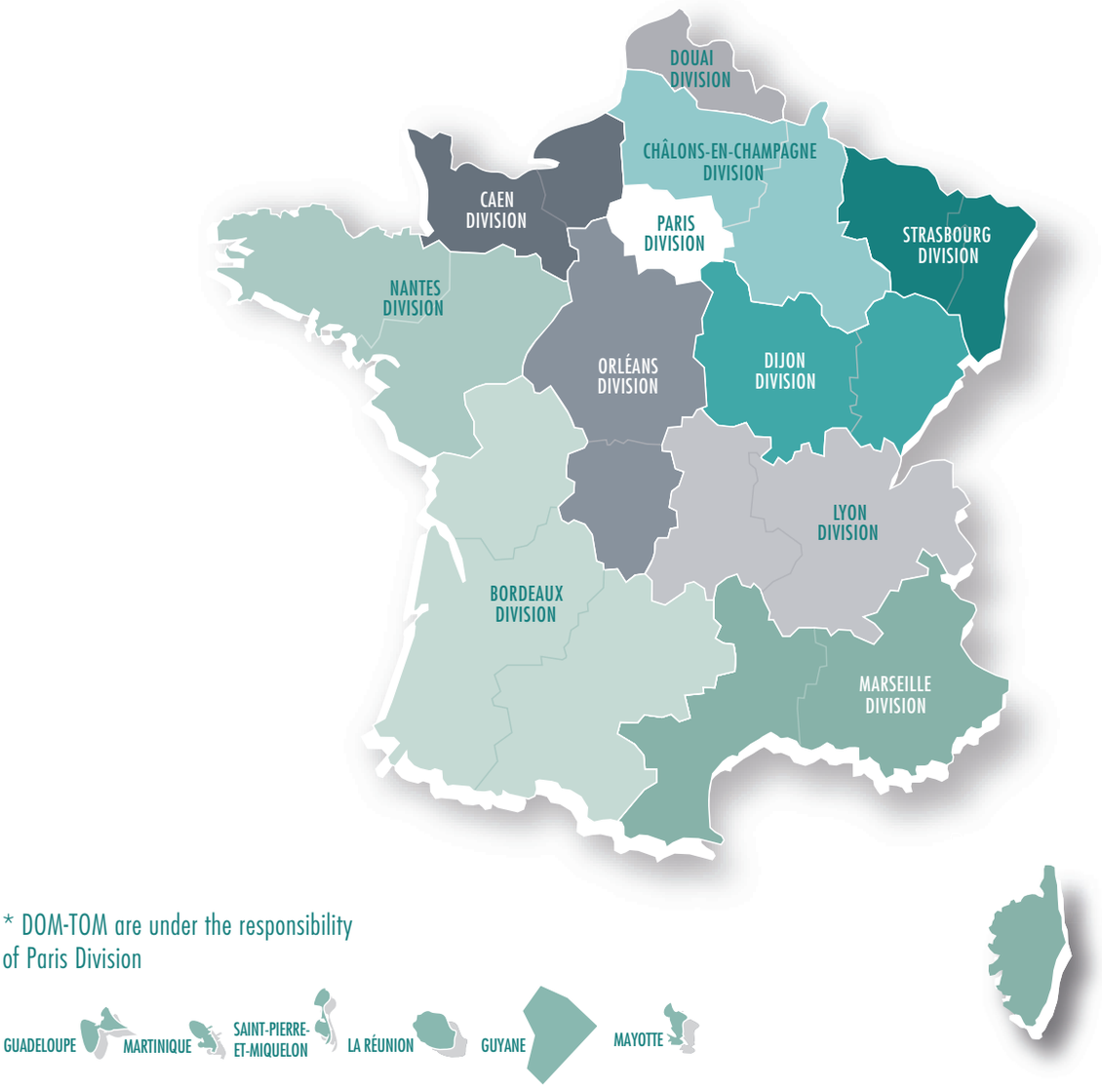
ASN has 11 regional divisions through which it carries out its regulatory responsibilities nationwide and in the Overseas France and Territorial Communities.

The activities of the ASN regional divisions are carried out under the authority of the regional ASN representatives (see chapter 2 – point 2 | 3 | 2).

The ASN divisions carry out direct inspections on the basic nuclear installations (BNIs), on radioactive material transport and on small-scale nuclear activities and investigate most of the licensing applications submitted to ASN by the nuclear activity licensees within their regions.

In emergency situations, the divisions assist the *préfet*[1] of the *département*, who is responsible for protection of the population, and carry out on-site monitoring of the operations to safely operate the installation. To ensure preparedness for these situations, they take part in preparing the emergency plans drafted by the *préfets* and in periodic exercises.

The ASN divisions contribute to the public information duty. They for example take part in the meetings of the local information committees (CLIs) and maintain regular relations with the local media, elected officials, associations, licensees and local administrations.



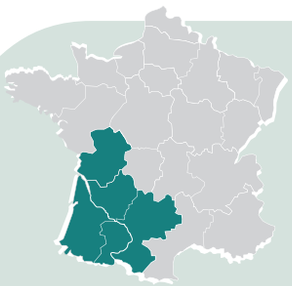
1. In a *département*, representative of the State appointed by the President.

ASN ASSESSMENT OF NUCLEAR SAFETY AND RADIATION PROTECTION AT LOCAL LEVEL

This chapter sets out the nuclear safety and radiation protection situation observed locally by ASN's regional divisions. The BNIs and small-scale nuclear activities (medical, industrial and research) are presented in summary sheets. The following pages expand upon the local actions that are particularly representative of ASN's regional action.

This presentation stems from the same initiative as proposed in ASN's various information media – *www.asn.fr*, and the quarterly magazine *Contrôle* – its aim is to provide easier access to local information.

BORDEAUX



1 THE STATE OF NUCLEAR SAFETY AND RADIATION PROTECTION IN THE AQUITAINE, POITOU-CHARENTES AND MIDI-PYRÉNÉES REGIONS REGULATED BY THE **BORDEAUX** DIVISION

The Bordeaux division is responsible for regulating nuclear safety and radiation protection in the 17 *départements*[1] of the Aquitaine, Poitou-Charentes and Midi-Pyrénées regions.
As at 31 December 2010, the workforce of the ASN Bordeaux division stood at 20 officers: 1 regional head, 2 deputies, 13 inspectors and 4 administrative officers, under the authority of an ASN regional representative.

The activities and installations to regulate in Aquitaine, Poitou-Charentes and Midi-Pyrénées comprise:
– the Le Blayais NPP (4 reactors of 900 MWe);
– the Civaux NPP (2 reactors of 1,450 MWe);
– the Golfech NPP (2 reactors of 1,300 MWe);
– 22 external radiotherapy departments;
– 8 brachytherapy departments;
– 24 nuclear medicine departments;
– 150 departments carrying out interventional radiology procedures;
– 150 tomography devices;
– about 6,900 medical and dental radiodiagnostic devices;
– about 1,500 veterinary radiodiagnostic devices;
– 32 industrial radiology companies;
– 600 industrial and research equipment items.

"Environmental" inspection by ASN at the Golfech NPP – April 2010

In 2010, ASN carried out 53 inspections in the field of nuclear safety and occupational health and safety in the Le Blayais, Civaux and Golfech NPPs, 7 radioactive material transport inspections and 157 small-scale nuclear facility inspections in the Aquitaine, Poitou-Charentes and Midi-Pyrénées regions.

Eleven significant events classified as level 1 on the INES scale were notified by nuclear installation licensees of the Aquitaine, Poitou-Charentes and Midi-Pyrénées regions in 2010. In the small-scale nuclear facilities in these regions, 15 significant events of level 1 on the ASN-SFRO scale and 6 significant events of level 1 on the INES scale were notified to ASN.

1 Assessment by domain

1|1 Assessment of BNI nuclear safety

Le Blayais NPP

ASN considers that the plant maintenance preparation and management problems of 2009 were virtually resolved in 2010.

Likewise, reactor operation has returned to normal. The site must nevertheless improve its system alignments and pre-intervention risk analyses.

ASN considers that worker radiation protection was not always up to standard in 2010. The site must step up its on-the-ground coaching and surveillance to match the good results of 2009.

The plant's response organisation for the management of emergency situations is still satisfactory..

Civaux NPP

ASN considers that the Civaux NPP stands out in the area of worker radiation protection and that it has progressed in the control of maintenance operations and the performance of periodic tests of equipment contributing to reactor safety.

Nevertheless, ASN thinks that the plant should be more rigorous in work preparation and in the monitoring and maintenance of equipment that contributes to environmental protection and monitoring.

Golfech NPP

ASN considers that operation of the Golfech NPP is satisfactory on the whole, and that worker radiation protection on the site is of a high standard.

ASN considers that the quality of maintenance operations in 2010 was lower than in 2009. More specifically, the plant must make its combustion turbine more reliable and be attentive to the integrity of the nuclear fuel cladding.

Moreover, ASN observed that less rigour was exercised in certain operating operations in 2010.

1. Administrative region headed by a *préfet*.

ASN notes the site's dynamic approach to controlling its chemical discharges into the environment. It must nevertheless be more rigorous in its follow-up and maintenance of equipment contributing to environmental protection and monitoring.

1|2 Assessment of radiation protection in the medical field

The inspection of radiotherapy departments in 2010 revealed varying degrees of progress in the organisation and traceability of interventions and the initiation of operating experience feedback. This proactive move to improve treatment safety will need to be consolidated in 2011, including with regard to the formalisation of procedures, the organisation of the medical physics teams and the notification to ASN of undesirable events.

ASN continued its inspections in the field of interventional radiology and the use of X-rays in the operating theatre. Numerous shortcomings in worker and patient radiation protection were observed during the course of the 38 inspections carried out in operating theatres, including the failure to wear dosimeters by the health professionals and a lack of optimisation of the equipment delivering the ionising radiation. In 2010, several cases were observed where regulatory exposure limits were exceeded by interventional radiology practitioners. ASN's inspections show that efforts must be made to optimise the doses received by these workers.

1|3 Assessment of radiation protection in the industrial and research sector

ASN is continuing to regularly check industrial radiology techniques, which are activities with high radiation protection stakes. The 17 inspections carried out in this area in 2010 confirmed that the companies generally comply with the regulations concerning ionising radiation, and particularly with regard to personnel monitoring. ASN moreover sees progress in the precise delimiting of radiation protection zoning and site preparation. Improvements must however be made in the internal technical inspections and checking that the equipment used on the sites is in good working order.

ASN noted that several companies and research laboratories used radioactive sources without holding the regulatory license required by the Public Health Code.

ASN also considers that certain research centres need to apply more rigour in their management of radioactive sources and nuclear waste. The way the various entities and organisations handling ionising radiation sources are coordinated needs to be more clearly defined, and possibly even governed by a contract.

1|4 Assessment of nuclear safety and radiation protection in the transport of radioactive materials

ASN carried out seven inspections concerning the transport of radioactive material in 2010. On the whole, it finds the organisation and procedures to be satisfactory. However, more rigour is required in pre-departure verifications of packages and the radiological risk analyses need to be updated to allow actions to reduce the doses received by the personnel.

2 Additional information

2|1 International action by the Bordeaux division

Within the framework of ASN's regular relations with CSN, the Spanish nuclear safety authority, two inspectors from the Bordeaux division took part in a cross-inspection of an industrial radiology company and a nuclear medicine service in the Madrid region. In return, three CNS inspectors came to France and took part in inspections at the Civaux and Golftech NPPs. These inspections provided the opportunity to discuss inspection and regulating practices in the two Authorities, and the means used to evaluate the standard of the inspected sites and the equipment used.

2|2 Other significant events in the Aquitaine region, Poitou-Charentes and Midi-Pyrénées

In Autumn 2009, ASN coordinated a radon detection campaign in houses built in areas where the land could have been filled with tailings from the old uranium mines worked by AREVA. Measurements were taken in private homes by an organisation approved for measuring radon in public buildings.

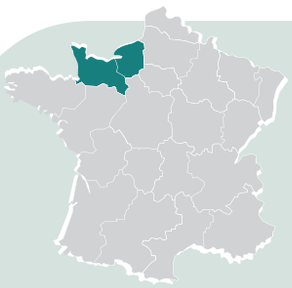
After circulating the individual results in April 2010, an information meeting and personalised assistance were organised for the campaign participants, in relation with the Regional Health Agencies (ARS) and the CETE (Amenities Technical Studies Centre) of Nantes.

2|3 Public information actions in 2010

ASN supported the work of three local information committees (CLIs) in south-west France by attending all their annual general meetings and several technical committee meetings.

ASN held two press conferences, one in Toulouse on 27 May 2010 and the other in Bordeaux on 3 June 2010.

asn CAEN



2 THE STATE OF NUCLEAR SAFETY AND RADIATION PROTECTION IN THE BASSE- AND HAUTE-NORMANDIE REGIONS REGULATED BY THE **CAEN** DIVISION

The Caen division regulates nuclear safety and radiation protection in the five *départements* of the Basse - and Haute-Normandie regions. The Caen division also covers the Monts d'Arrée site (Brennilis NPP currently undergoing decommissioning) in the Bretagne region.
As at 31 December 2010, the workforce of the Caen division stood at twenty-seven officers: one regional head, four deputies, eighteen inspectors and four administrative officers, under the authority of an ASN regional representative.

The activities and facilities to regulate in Normandie and Bretagne comprise:
– the EDF NPPs at Flamanville (2 reactors of 1,300 MWe), Paluel (4 reactors of 1, 300 MWe) and Penly (2 reactors of 1, 300 MWe);
– the construction site for the future EPR Flamanville 3 reactor;
– the AREVA NC spent nuclear fuel reprocessing plant at La Hague;
– the ANDRA Manche repository
– GANIL national large heavy ion accelerator (Caen)
– the Brennilis NPP (Finistère *département*) undergoing decommissioning;
– 8 radiotherapy centres (21 machines);
– 3 brachytherapy departments;
– 11 nuclear medicine departments;
– 60 users of scanners;
– 35 interventional radiology departments;
– 750 medical radiodiagnostic devices;
– 1,400 dental radiodiagnostic devices;
– 18 industrial radiography companies;
– 250 industrial and research equipment items.
– 6 head offices and 19 agencies of organisations approved for radiation protection inspections.

In 2010, ASN carried out 178 inspections of nuclear installations in Normandie and Bretagne: 76 inspections in the NPPs of Flamanville, Paluel and Penly; 37 inspections on the construction site of the future EPR reactor Flamanville 3; 65 inspections on fuel cycle or research installations or installations undergoing decommissioning, including 58 inspections on the AREVA NC plant in La Hague; 88 inspections were carried out on small-scale nuclear facilities in Normandie in 2010.

During 2010, one event classified as level 2 on the INES scale and 20 events classified as level 1 were notified by the nuclear installation licensees in Normandie and Bretagne. In addition, 7 events classified as level 1 on the ASN-SFRO scale were notified by the heads of radiotherapy departments in Normandie.

1 Assessment by domain

1|1 Assessment of BNI nuclear safety

AREVA NC plant at La Hague

ASN considers that the situation of the AREVA NC plants in La Hague is satisfactory, particularly with regard to personnel exposure and discharges. One internal contamination incident did nevertheless arise in November 2009 during a clean-out operation in a shut-down workshop of the first UP2 400 reprocessing plant of the AREVA NC La Hague plant. This incident was classified as level 2 on the INES scale in March 2010 after medical monitoring of the worker concerned.

ASN considers that AREVA must step up its efforts to improve the safety standards of its plants which to date do not meet the ASN requirements. AREVA must more specifically define the elements that are important for the safety of its installations, in accordance with the order of 10 August 1984[3]. In 2010, AREVA submitted a methodology for identifying these elements to ASN, but it must be revised to meet ASN's requirements. AREVA must then precisely identify the elements that are important for safety and the associated requirements in the general operating rules and general surveillance and maintenance rules for installations undergoing decommissioning, which at present are not specific enough. These aspects will be examined under the safety review of plant UP3-A which is currently under progress.

ASN considers that, on the whole, the significant events notification process of the AREVA NC plant at La Hague is still unsatisfactory. On several occasions in 2010, ASN took steps with this plant to have internal deviations notified as significant events or to change classification levels proposed by AREVA. ASN has therefore asked AREVA to once again review its internal procedure for the notification of significant events.

With regard to the decommissioning and legacy waste recovery operations, ASN is going to impose a schedule on AREVA to set the principal milestones for the waste recovery and disposal operations, to prevent them falling further behind schedule. ASN already gave instructions to this end in 2010 for silo 130 and will oversee the programme more closely in 2011.

Flamanville NPP

For several years, ASN considered that the nuclear safety performance of the Flamanville site was below average in its general assessment of EDF performance, and could be improved.

3. Order of 10 August 1984 relative to the quality of design, construction and operation of BNIs.

These difficulties were linked more particularly to organisational problems, insufficient coordination of safety improvement actions, a large maintenance backlog, and shortcomings in its safety culture.

In 2010, the Flamanville site began a programme to improve its safety performance, refocusing on clear and targeted objectives that correspond to the weaknesses identified by ASN. ASN noted that this initiative had been slowed down by contingencies during the shutdown of reactor 2, but estimates that positive changes have been observed since mid-2010 in several areas. These improvements are not yet cast in stone, and will have to be continued and consolidated, taking advantage of the period of a few months without scheduled reactor shutdowns.

Paluel NPP

ASN considers that the Paluel NPP has kept up its progress in the quality of maintenance operations and equipment requalification. However, installation management rigour is down, in spite of the progress observed in 2009. The site management must undertake new actions to lastingly improve the site's safety results.

ASN has observed that the major investments made in the installations are continuing to have a positive impact on environmental protection, radiation protection and safety.

Penly NPP

ASN considers that the performance of the Penly site regarding environmental protection and radiation protection of the workers is globally satisfactory. Regarding nuclear safety, ASN considers that the site's performance stands out positively with respect to its assessment of EDF as a whole.

The oversight of the Penly NPP in 2010 did not reveal any particular difficulties, even though ASN was particularly attentive to the monitoring of pressure equipment.

Construction of the EPR Flamanville 3 reactor

After delivering the creation authorisation decree (DAC) and the building permit, the construction work on the Flamanville 3 reactor began in September 2007. The first concrete for the nuclear island buildings was poured in December 2007. Since then the civil engineering works have continued. Installation of the first components (tanks, pipes, cables and electrical cabinets, etc.) began in 2010.

On completion of the inspections carried out in 2010 on the Flamanville EPR reactor construction site, and the review of the deviations reported by EDF, ASN considers that EDF's organisational setup for the civil engineering operations is on the whole satisfactory. ASN observed an improvement in the technical and documentary rigour in comparison with the previous years.

With regard to the activities that were greatly intensified in 2010, such as mechanical and electrical assembly work, ASN notes that as a general rule, EDF has not sufficiently anticipated the difficulties contracting companies have in adapting to the requirements of the nuclear industry: these difficulties chiefly concern application of the provisions of the order of 10 August 1984 and notably the prior identification of activities concerned by quality, and compliance with all the associated requirements.

Night-time inspection on the EPR Flamanville 3 worksite – July 2010

ASN has evolved its monitoring work to take account of the new activities being carried out on the site. ASN keeps a particularly close watch over the way EDF manages interacting activities that could lead to organisational or technical difficulties. At the technical level, for example, incorrect positioning of attaching devices anchored in the civil engineering can affect the positioning of mechanical components.

ANDRA's Manche repository

In February 2010, ASN took a stance on the safety of the centre after examining the final report on the safety of the installation as a whole, and a dossier on the benefits of installing a new cover to ensure the long-term passive safety of the repository.

ASN considers that the behaviour of the repository is globally consistent with ANDRA's forecasts and currently shows no signs of an abnormal change in its containment capacity. ASN has nevertheless asked ANDRA to tighten the monitoring and go further in modelling the repository's behaviour, to produce further evidence justifying the progressive installation of the new cover and to consolidate the work on the long-term memory of information concerning the repository.

During 2010, ANDRA continued the cover repair works by reducing the gradient of the embankments in its eastern section. ASN considers that this work has increased the stability of the embankments and is part of a more general process to ensure the long-term integrity of the repository cover.

GANIL (national large heavy ion accelerator)

ASN has remained particularly attentive to the licensee's safety review of the existing GANIL. As the licensee has fallen behind schedule, the review file is now expected to be submitted in 2011.

More generally, ASN considers that the licensee must be very careful to take into account all the nuclear safety and radiation protection issues relating to the GANIL.

The Brennilis NPP undergoing decommissioning

In a decision of 8 October 2007, ASN set the regulatory framework applicable to the plant, as well as the operations that could be carried out pending the issue of a new decree authorising its decommissioning. This decision required the licensee to repackage and evacuate from the site the legacy waste for which a disposal route existed or was about to exist, within two years following publication of the decision, that is to say before 8 October 2009. During an inspection carried out on 13 October 2009, ASN observed that despite the many actions taken, a limited quantity of this waste was still stored on the site pending receipt of a waiver obtained by the waste producer. In its decision of 22 December 2009, ASN ordered that this waste be evacuated by 30 June 2010. An ASN inspection carried out on 13 July 2010 confirmed that this deadline had been met. ASN considers that these repackaging and disposal operations have enabled a significant percentage of the legacy waste to be dealt with.

A new complete decommissioning authorisation application was submitted by EDF on 25 July 2008. On 15 March 2010 the commission set up for the public enquiry delivered an unfavourable opinion for the project, on the grounds that no urgent need to decommission the reactor block had been demonstrated and that decommissioning was premature as long as ICEDA - the activated waste packaging and interim storage installation - was not operational. It did nevertheless consider that EDF should be immediately authorized to complete the inventory of the initial radiological and chemical status of the site, complete the effluent processing station decommissioning operations, clean-out and fill in the effluent discharge channel in the River Ellez, clean out areas of diffuse pollution, and lastly, start the decommissioning of the heat exchangers following their radiological characterization. In the opinion ASN submitted to the Government, it recommended authorising EDF to perform the operations to complete Phase II of decommissioning - remaining consistent with the opinion of the investigation commission - and that EDF should initiate a new application for complete decommissioning.

1|2 Assessment of radiation protection in the medical field

In 2010, ASN inspected nearly all the radiotherapy departments in Normandie. These inspections revealed continuing progress in the rigour, organisation and traceability of interventions and the progressive implementation of management systems to ensure the quality and safety of treatments. However, despite the personnel increases in some centres, most radiotherapy centres in Normandie are under-staffed, including in medical radiological physics. These difficulties are often an obstacle to progress.

The Caen division intensified its checks in the interventional radiology sector and the use of X-rays in operating theatres. This field entails risks for both patients and workers that have to be managed. The inspections carried out revealed many areas for improvement, including with regard to the training and qualification of the staff using the equipment, equipment quality controls, the quality of staff individual protective equipment, medical monitoring of non-salaried workers, and optimisation of practices in this sector.

In 2010, ASN completed its inspection of all the nuclear medicine services in Normandie, which extended over three years. The inspections revealed a situation that is relatively satisfactory, although improvements can be made in protecting workers' extremities (hands) against exposure and in the management of effluents and wastes.

1|3 Assessment of radiation protection in the industrial and research sectors

Inspection of industrial radiology is a priority for ASN, with its unannounced night-time inspections on work sites being repeated in 2010. These inspections have brought to light a widely contrasting picture of the way different companies handle the risk of worker exposure to ionising radiation: work conditions are improving on the whole, but some companies are not making progress. At the same time, ASN is working with the Haute-Normandie Regional Directorate of Enterprises, Competition, Consumption, Labour and Employment (DIRECCTE) and the Health and Retirement Insurance Fund (CARSAT) of Normandie, on promoting and disseminating good practices in this area by encouraging the ordering companies and the radiology contractors to become party to a regional charter drawn up in December 2007 at the behest of ASN and the conventional safety inspectorate. To date, about forty companies have signed up.

1|4 Assessment of nuclear safety and radiation protection in the transport of radioactive materials

ASN carried out ten inspections in the transport of radioactive materials, focusing on different priority subjects, firstly in the BNIs - in particular the packages that are not subject to an ASN approval, and secondly in the small-scale nuclear sector.

ASN considers that the organisational measures in the BNIs Normandie are on the whole satisfactory, with a good level of involvement of the transport safety advisors. In small-scale nuclear activities, ASN considers that the situation can be improved, even if the deviations detected during the inspections do not call into question the safety of the transport operation. The deviations concerned more particularly the radiation protection of the carrier, the radiological inspections and quality assurance.

ASN also monitored the transportation from France to Germany of containers of vitrified radioactive waste originating from the reprocessing of German spent fuel on the AREVA NC site in La Hague. ASN verified that the packages were correctly approved and that the dose rate around the convoy did not exceed regulatory limits.

2 Additional information

2|1 International action by the Caen division

Given that EPR reactors are being built at Olkiluoto in Finland and Flamanville in France, the ASN Caen division is participating in the close cooperation between ASN and the Finnish nuclear regulator.

A cross-inspection of the Olkiluoto 3 site took place in 2010, attended by two inspectors from the ASN Caen division; 6 inspectors from the Finnish nuclear safety authority took part in a cross-inspection of the Flamanville 3 site and in a day of technical discussions in early January 2011.

As part of the bilateral relations with ASN's American counterpart, the U.S. Nuclear Regulatory Commission (NRC), two NRC specialists in the inspection of nuclear installation construction participated in an inspection on the Flamanville 3 site. These inspections were complemented by technical discussions in which experience feedback specific to each site could be shared. In addition, two commissioners from NRC visited the construction site of the EPR reactor Flamanville 3 and the AREVA NC plant in La Hague.

With regard to the nuclear plants in operation, an inspector from the Caen division took part in a cross-inspection of the Golftech NPP (France) with CSN, the Spanish nuclear safety authority.

These cross-inspections enabled the participants to have in-depth discussions on the inspection methods specific to each country.

2|2 Public information actions in 2010

ASN and IRSN jointly presented the exhibition "Nuclear energy and society: from knowledge to regulation" in the festival hall of (Manche *département*[4]). This educational exhibition gives visitors of all ages the opportunity to further their knowledge of radioactivity and find out about the means of overseeing, appraising and regulating nuclear safety and radiation protection in France.

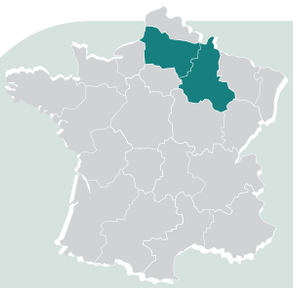
The Caen and Nantes divisions held three joint press conferences in Caen, Rouen and Rennes, on the nuclear safety and radiation protection situation in 2010.

ASN took part in various meetings of the CLI of Normandie and Bretagne. At these meetings, ASN presented its assessment of the safety status of the nuclear installations concerned, the setting up of the French National Network of Environmental Radioactivity Monitoring (RNMRE), the revising of the regulatory system governing nuclear installations, and the publication of the Tritium White Paper.

Visit of the EPR worksite at Olkiluoto by ASN and STUK, the Finnish nuclear safety and radiation protection authority – 2010

4. Administrative region headed by a *préfet*.

CHÂLONS-EN-CHAMPAGNE



3 THE STATE OF NUCLEAR SAFETY AND RADIATION PROTECTION IN THE PICARDIE AND CHAMPAGNE-ARDENNE REGIONS REGULATED BY THE CHÂLONS-EN-CHAMPAGNE DIVISION

The Châlons-en-Champagne division is responsible for regulating nuclear safety and radiation protection in the seven *départements* of the Champagne-Ardenne and Picardie regions.
As at 31 December 2010, the workforce of the Châlons-en-Champagne division stands at thirteen officers: one regional head, two deputies to the regional head, eight inspectors and two administrative officers, under the authority of an ASN regional representative.

The activities and facilities to regulate in Champagne-Ardenne and Picardie comprise:
– the Chooz A NPP (currently being decommissioned);
– the Chooz B NPP (two reactors of 1,450 MWe);
– the Nogent-sur-Seine NPP (two reactors of 1,300 MWe);
– the low and intermediate level short-lived radioactive waste repository located at Soulaines-Dhuys in the Aube *département*;
– ANDRA's underground research laboratory in Bure, in preparation for the creation of a geological repository for high-and medium-level long-lived radioactive waste;
– about 80 licensed medical institutions, including 12 radiotherapy departments, 3 brachytherapy departments, 13 nuclear medicine departments and some fifty scanners;
– about 400 licensed industrial activities, with more than one-third of the licenses being for possession of devices to detect lead in paint;
– about twelve research laboratories, mainly situated in the universities of Champagne-Ardenne and Picardie.

"Environment" inspection in the Nogent-sur-Seine NPP by ASN – June 2010

In 2010, the ASN Châlons-en-Champagne division carried out 45 inspections on nuclear installations (EDF NPPs, radioactive waste processing facilities) and 64 inspections in small-scale nuclear activities.

Five significant events classified as level 1 on the INES scale were notified by nuclear installation licensees in 2010.

1 Assessment by domain

1|1 Assessment of BNI safety

Nogent-sur-Seine NPP

ASN considers that the results from the Nogent-sur-Seine NPP are on the whole satisfactory with respect to safety, pressure equipment, the environment and radioactive material transport.

ASN noted a reduction in environmental performance, associated more particularly with discharges of cooling fluids and a lack of rigour in effluent management.

When reactor 2 was shut down for its ten-year inspection, the inspections that are decisive for safety - the primary cooling system hydrostatic test and the reactor containment test in particular - gave satisfactory results. The inspectors noted the professionalism of the maintenance teams and a slight improvement in fire risk control through more efficient evacuation of inflammable waste.

Tracking corrective actions following the ASN inspections and further to the significant events occurring on the site has been improved with the setting up of a more robust organisation, but the plant must continue its efforts to catch up on prior deviations.

ASN nevertheless wants to see improvements in operating rigour. Several significant events have been notified as a result of excursions from the normal operating range of the reactor or lockout errors during plant unit shutdowns.

Chooz NPP

In ASN's opinion, the Chooz NPP has made considerable improvements in its nuclear safety and radiation protection performance. Significant progress was observed when performing the ten-year inspection of reactor 1, and at the ASN's review inspection in July. Deficiencies have nevertheless again been observed in the decision-making process. The Chooz B plant licensee must therefore improve its control over maintenance operation preparation and the management of transient sensitive situations.

Radiation protection and radiological cleanness at the Chooz NPP has been returned to a satisfactory level, by paying particular attention to the risk-prone work sites, among other things.

From the environmental aspect, ASN considers that the licensee has not fully integrated the new decisions of 2009 regulating its waste. The site must make improvements in this area in 2011.

As for the control of the risks associated with pressure equipment, recognition of the EDF inspection service was renewed in 2010.

With regard to the Chooz A decommissioning site, the licensee is now demonstrating better control over its safety and radiation protection requirements. It must absolutely maintain its vigilance over the safety and security of the work sites now that the intensity of decommissioning work is going to increase.

The waste repository at Soulaines-Dhuys and the Bure laboratory

Operation of the low-and intermediate-level, short-lived, waste repository at Soulaines-Dhuys, and the work done by ANDRA in its Bure underground laboratory continued in 2010 with a good level of quality that is comparable with the performance of previous years.

A diagnostic health study was carried out around the Aube waste repository in 2010 by the French health monitoring institute InVS, at the request of the group of associations "*Les citoyens du coin*" relayed by local elected officials. The results of this study were communicated to the Soulaines CLI end of October 2010. In the light of the results, which reveal no link between the waste repository and any effects on health, it was decided not to further the study. This being said and given the concerns of the population, the trend in the development of cases of cancer - lung cancer in particular - will continue to be monitored.

1|2 Assessment of radiation protection in the medical field

For the fourth year in succession, all twelve external radiotherapy centres were inspected in 2010. Very real progress was observed, particularly in the deployment of the quality management systems. Likewise, four of the six centres considered to be borderline in terms of sizing (technical platform, staff numbers), were able to carry out appropriate actions in 2010 to remedy this situation.

In April 2010, ASN organised a regional seminar on radiotherapy attended by about fifty people representative of all the personnel categories and all the radiotherapy centres established in Champagne-Ardenne and Picardie. This seminar provided an opportunity to draw the attention of the profession to the new provisions in terms of radiation protection and quality assurance. The participants were so satisfied with the ensuing discussions that they asked that this type of event be repeated periodically.

Interventional radiology was also subject to considerable inspection efforts, particularly in the operating theatres. Significant progress in work and patient radiation protection is expected. Personnel training and the conditions of use and inspection of equipment constitute the main lines of work. Considering this context, the level of inspections applied in 2010 will be maintained in 2011, that is to say about ten inspections.

1|3 Assessment of radiation protection in the industrial sector

Given the potential implications in terms of radiation protection, ASN performed a large number of inspections on worksites using gamma radiography. The lines for progress in this domain include personnel training, development of the safety culture and preparation for incident situations.

A sampling inspection campaign targeting holders devices for detecting lead in paint evidenced numerous deviations with respect to the regulations: regulatory inspections omitted, expired licenses, transfer of devices to unlicensed users, etc.

Along with decentralized Government services and ANDRA, ASN contributed to the study of the treatment of legacy radioactive pollution resulting from the operation of the former ORFLAM-PLAST plant based in Pargny-sur-Saulx (*département* 51). The first clean-out operations, which began in 2010, should normally end in 2011.

1|4 Assessment of nuclear safety and radiation protection in the transport of radioactive materials

ASN carried out ten inspections into the conditions of radioactive material transport, at each of the BNIs and seven other facilities, focusing more specifically on the transport of radiopharmaceutical products.

It emerges from these inspections that the regulations pertaining to radioactive material transport are generally applied satisfactorily, particularly by the NPPs. In the transport of radiopharmaceutical products, compliance with the regulations depends largely on the shipper and the transport agent. All the transporters inspected need to show greater rigour in the monitoring and accessibility of certain safety equipment items (handheld torches, fire extinguisher) or the securing of packages.

2 Additional information

2|1 International action by the Châlons-en-Champagne division

The Châlons-en-Champagne division continued to maintain regular relations with AFCN, the Belgian nuclear regulator. It developed cross-inspections in small-scale nuclear activities and hosted a trainee Belgian inspector for three weeks. It took part in the meetings of the Franco-Belgian steering committee meetings and the work of the Franco-Belgian "safety" working group. It also took part in the Franco-Luxembourg committee meeting.

Lastly, it helped host several foreign delegations that came to visit sites such as the Bure Laboratory, the Soulaines-Dhuys repository, and the Nogent-sur-Seine NPP, and it accompanied a delegation of the Bure CLIS (local committee for information and follow-up), which travelled to Sweden to visit facilities associated with radioactive waste treatment there.

2|2 The other significant events in the Champagne-Ardenne and Picardie regions

As part of the major risks prevention actions, the ASN division took part in the emergency exercise organised on the Chooz site, and contributed to the reflections on the updating of the off-site emergency plans (PPI) of the Chooz and Nogent-sur-Seine NPPs.

2|3 Public information actions in 2010

The Châlons-en-Champagne division held two press conferences on the status of nuclear safety and radiation protection in spring 2010, one in Châlons-en-Champagne, the other in Amiens.

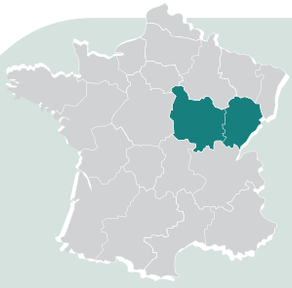
ASN took part in various meetings of the Chooz, Nogent-sur-Seine and Soulaines CLIs. At these meetings, ASN presented, for example, its assessment of the safety status of the nuclear installations concerned, the results of the iodine table distribution campaign, the setting up of the French National Environmental Radioactivity Monitoring Network (RNMRE), the French National Radioactive Material and Waste Management Plan (PNGMDR), the revising of the regulatory system governing nuclear installations, the system for controlling urban development around BNIs, and the creation of the ARS.

ASN also attended annual general meetings, meetings of the board of governors and meetings of the commissions of the Bure CLIS, contributing in particular to the informing of the local populations.

Lastly, at the end of the year, it organised, in partnership with the Chooz CLI and EDF, a discussion forum on the decommissioning of the Chooz A NPP, that was open to the press and the public. Some fifty people from the neighbouring population - including a good number of Belgians - attended this event and asked many questions, focusing chiefly on the modes of communication with the public.

First seminar on external radiotherapy in Rheims – April 2010

DIJON



4 THE STATE OF NUCLEAR SAFETY AND RADIATION PROTECTION IN THE BOURGOGNE AND FRANCHE-COMTÉ REGIONS REGULATED BY THE **DIJON** DIVISION

The Dijon division of ASN monitors nuclear safety and radiation protection in the eight *départements* in the Bourgogne and Franche-Comté regions.
As at 31 December 2010, the workforce of the Dijon division stood at 6 officers: 1 regional head, 4 inspectors and 1 administrative officer, under the authority of an ASN regional representative.

The activities and installations to regulate in Bourgogne and Franche-Comté comprise:
– 8 external radiotherapy departments (17 accelerators, 1 contact radiotherapy device);
– 3 brachytherapy departments;
– 13 nuclear medicine units;
– 51 surgical units using interventional radiology;
– 41 diagnostic tomography devices;
– about 700 medical radiodiagnostic devices;
– about 1,100 dental radiodiagnostic devices;
– 310 industrial and research facilities.

ASN carried out 33 inspections in 2010, of which 5 addressed radioactive material transport and 28 were in small-scale nuclear facilities.

Five radiation protection incidents affecting patients and classified as level 1 on the ASN-SFRO scale were notified to the Dijon division in 2010.

1 Assessment by domain

1|1 Assessment of radiation protection in the medical field

External radiotherapy

In 2010, ASN inspected five of the eight external radiotherapy centres of Bourgogne and Franche-Comté.

The problem of personnel shortages in medical radiation physics observed in the preceding years is much less acute, but the situation remains tenuous given the numerous job opportunities for radiation physicists, so ASN will maintain its vigilance in this respect.

All the centres have started putting in place a quality assurance system pursuant to the ASN decision of 1 July 2008. The process is however very often in the very early stages and the implementation schedules are not always met. The formalising of the establishments' medical physics organisation plans has been started, but many are still at the draft stage. The systematic validation of the different stages of a treatment by all the persons concerned has not yet become standard practice, despite the clear desire of health care establishment directors to move forward on this subject.

The centres have set up an organisation to ensure the internal and external quality checks required by the decision of AFSSAPS, the French Health Product Safety Agency. This being said, the organisation is not always formalised in writing, and the internal checks are not carried out in full. Definite progress is required in this area.

ASN observes a clear improvement in the extent to which the health professionals are aware of the need to detect, analyse and notify events liable to affect the health of patients or workers. Seven of the eight external radiotherapy centres have notified ASN of events since 2008.

Interventional radiology

The lessons drawn from the inspections conducted in 2010 show an improvement in the dosimetric monitoring of workers, particularly through the implementing of operational dosimetry in many establishments. Likewise, the training of practitioners and the other personnel involved in X-ray treatments in patient radiation protection has resulted in an awareness of the doses delivered and optimising of practices and device settings. There are however still large differences between establishments: there are large disparities in the performance of the devices used and in the performing of the quality checks of these devices as required by AFSSAPS.

ASN has observed unsatisfactory application of the new provisions setting the conditions of exercising the functions of an external person competent in radiation protection (PCR). This is because the PCRs of companies providing radiation protection services are not always present on the days the activity is carried out.

ASN was consulted several times for the creation of new operating theatres. This provided the opportunity to point out the regulatory requirements for the design of the premises and the good practices to apply when choosing equipment in order to limit exposure of patients and workers.

1|2 Assessment in the industrial sector

The inspections conducted by ASN in industrial radiography in 2009 and 2010 reveal an improvement in the awareness of the risk of exposure of workers.

Progress has been observed in particular in the use of gamma radiography appliances on external worksites. However, the conditions of work and performance of regular radiographic

Inspection if the irradiator at the INRA in Bretenière – 2010

inspections (virtually permanent external worksites) by subcontactors can still be improved.

ASN is pleased to see that increasing use is being made of electrical X-ray generators on worksites, in place of traditional high activity sources. This alternative solution seems to be preferred by non-destructive testing equipment manufacturers, rather than using lower energy radionuclides (selenium).

1|3 Assessment of nuclear safety and radiation protection in the transport of radioactive materials

ASN notes an improvement in the conditions of transport of radiopharmaceutical products, and greater rigour in regulatory documentation management and verification of safety equipment, even if there is margin for improvement in the securing of loads.

The same goes for the holders of radioactive sources who transport their equipment themselves. This being said, the documentation relative to the transport operations is not always subject to quality assurance management.

2 Additional information

2|1 The other significant events in the Bourgogne and Franche-Comté regions

The former uranium mining sites

After inspecting virtually all the mining sites of Saône-et-Loire in 2009 in December 2010, ASN assisted the Bourgogne DREAL (Regional Directorate for the Environment, Planning and Housing) in an unannounced inspection of two treatment residue storage sites where surface water and sediment samples were taken from the surrounding environment. They are currently being analysed.

Examination of the operating results of all the mining sites revealed the need to perform additional investigations on the Issy l'Évêque storage site and tighten the environmental monitoring of other sites.

As regards the Gueugnon site, the clean-out operations were carried out in 2009 and 2010. A final radiological inspection of these zones revealed that a small number of them required further clean-out. The population and local associations were informed regularly of the progress of the works and involved in the surveillance actions.

Polluted sites in Franche-Comté

With regard to the management of polluted sites and soils, ASN is involved in informing the population and reviewing the proposed rehabilitation levels, to ensure the radiation protection of the public and the future users of the cleaned-out sites.

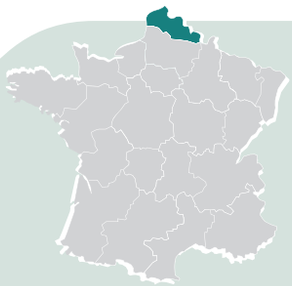
Franche-Comté is the birthplace of French clockmaking. This industry used radionuclide-based coatings with photoluminescent properties in the manufacture of clock hands and watch dials.

The clean-out operations of a former clockmaking site in Charquemont (Doubs *département*) initiated in 2009 were partly carried out under the joint surveillance of ASN and the Franche-Comté DREAL. The radiometric results obtained after completion of these operations led to a portion of the premises being reused. Other operations to rehabilitate older buildings remain to be carried out.

2|2 Public information actions in 2010

At the end of June 2010 the Dijon division held a press conference on the status of nuclear safety and radiation protection in the Bourgogne and Franche-Comté regions.

DOUAI



5 THE STATE OF NUCLEAR SAFETY AND RADIATION PROTECTION IN THE NORD-PAS-DE-CALAIS REGION REGULATED BY THE **DOUAI** DIVISION

The Douai division is responsible for regulating nuclear safety and radiation protection in the 2 *départements* of the Nord Pas-de-Calais region.
As at 31 December 2010, the workforce of the Douai division stood at 16 officers: 1 regional head, 2 deputies, 5 nuclear safety inspectors and 6 radiation protection inspectors as well as 2 administrative officers, under the authority of an ASN regional representative.

The activities and installation to be monitored by ASN comprise:
– the EDF Gravelines NPP (6 reactors of 900 MWe);
– the SOMANU (nuclear maintenance company - AREVA) site in Maubeuge (Nord *département*);
Installations and activities using ionising radiation in the medical, industrial and research sectors:
– 13 external radiotherapy departments;
– 2 brachytherapy departments;
– 14 nuclear medicine departments;
– 75 tomography devices;
– 3,000 medical and dental radiodiagnostic devices;
– 1,500 industrial devices;
– 30 research laboratories.

ASN inspection of the Gravelines NPP – September 2010

In 2010, ASN carried out 139 inspections: 36 nuclear safety inspections in the Gravelines NPP and the Société de Maintenance Nucléaire (SOMANU) in Maubeuge, 97 small-scale nuclear activity inspections in the medical, industrial and research sectors and 6 radioactive material transport inspections.

The Gravelines NPP notified 4 significant safety events classified as level 1 on the INES scale.

The radiotherapy centres notified 8 events classified as level 1 or less on the ASN-SFRO scale. ASN nevertheless observes a large drop in the number of event notifications.

1 Assessment by domain

1|1 Assessment of BNI nuclear safety

Gravelines NPP

ASN considers that the nuclear safety, radiation protection and environmental protection performance of the Gravelines site on the whole match ASN's general assessment of EDF performance.

ASN does nevertheless feel that the site must seek improvements in the rigour and reliability of certain operations. Moreover, several events that could have had an impact on nuclear safety or security were not addressed appropriately by the site. ASN more specifically demanded the temporary shutdown of reactor 2 to correct a setting error observed on a steam evacuation line whose seismic resistance was no longer guaranteed.

As in 2009, ASN considers that the site must step up its resources for treating environmental protection problems, given its size and location in a dense industrial environment.

The Société de Maintenance Nucléaire (nuclear maintenance company) in Maubeuge

ASN considers that operation of its installations is satisfactory. Improvements are noted in the treatment and evacuation of radioactive waste. Avenues for improvement have been identified in the signalling of regulated access areas and the preparation of activities in these areas.

1|2 Assessment of radiation protection in the medical field

Radiotherapy

ASN observes the continuation of real improvement in rigour, organisation and traceability in the radiotherapy departments. The implementation of a quality assurance system within the establishments is continuing in a satisfactory manner.

In 2010, ASN's inspections focused primarily on the radiotherapy centres with structural problems (shortages of personnel and more specifically physicists) and/or organisational problems (delays in applying quality assurance to the patient care process). The overall situation regarding physicist staff numbers

improved during the year. Over the last few years, the region has widely benefited from the arrival of physicists qualified in Belgium. The region's centres are nevertheless still more affected than the national average by the shortage of radiation physicists. Regarding the application of quality assurance to the patient care process, the progress observed with respect to the applicable regulatory provisions is satisfactory. Encouraging progress is being made in the area of treatment safety and reliability.

The areas for improvement concern the finalising of the radiotherapy process risk studies, more particularly with the identification of the main failure scenarios and the implementation of the "Defence in Depth" concept. Likewise, the individual responsibilities of each person involved in the care of the patient must be more clearly defined. As far as document management is concerned, the use of specific computerized tools has enabled the fluidity and reliability of the applicable documentation to be greatly improved. Since 2008, all the centres have put in place procedures for recording and analysing undesirable events.

Lastly, ASN organised a discussion and experience-sharing forum with the professionals of the sector, where testimonials and of national and regional summaries of the ASN inspection campaigns were presented.

Nuclear medicine

ASN continued its inspections in the nuclear medicine sector. These inspections revealed that these structures are actively involved in making progress in radiation protection. ASN nevertheless notes that certain departments fail to make their license renewal applications on time.

Interventional radiology

ASN has intensified its inspections in interventional radiology, and in operating theatres in particular. Margins for progress have been identified, particularly in personnel dosimetry and training in radiation protection.

1|3 Assessment of radiation protection in the industrial and research sectors

Industrial radiology

Thirty companies practise industrial radiography in the region. The inspections carried out in 2010 showed continuing improvement in the organisation of radiation protection in the companies and satisfactory worker monitoring. The unannounced night-time inspections on worksites nevertheless revealed cases of inadequate compliance with radiation protection rules by subcontracting companies.

Veterinary clinics: targeted inspections campaign

Working in partnership with DIRECCTE in the field of conventional safety, ASN carried out a one-off series of inspections in 32 veterinary clinics in the Nord-Pas-de Calais region on 14 and 15 June 2010. This revealed inadequate application of radiation protection measures by the profession and provided the opportunity to underline the main regulatory provisions applicable.

Research

Thirty research laboratories in the region use ionising radiation. The inspection measures have led to improvement initiatives, notably in the management of ionising radiation sources and radioactive waste. The division considers that these laboratories are moving in the right direction with regard to radiation protection.

1|4 Assessment of nuclear safety and radiation protection in the transport of radioactive materials

In 2010, ASN continued its regulation activities in the radioactive materials transport sector. An inquiry conducted with the licensees identified the need for training in regulatory aspects. On 7 June, ASN organised an information meeting for the regional transporters of the industrial sector.

2 Additional information

2|1 International action by the Douai division

In 2010, the division developed its international exchanges, including with the Belgian nuclear safety authority, for mutual sharing of experience in the field of nuclear safety and radiation protection. These exchanges involve joint inspections in nuclear installations and in the industrial and medical environment. In addition, the division hosted four foreign inspectors for training purposes: two at the request of the Belgian safety authority, and two (from Gabon, Algeria) at the request of the IAEA. Lastly, the Polish nuclear safety authority took part in the setting up of the CLI of SOMANU - a nuclear maintenance company - in Maubeuge.

2|2 The other significant events in the Nord-Pas-de-Calais region

At the request of ASN, the Robin des Bois Association carried out a survey of the radioactive ash and phosphogypsum spoil heaps in 2009. On this basis, ASN has continued its action aiming at setting up radiological surveillance of the sites, in collaboration with the DREAL.

Working in partnership with DIRECCTE, ASN has instituted a charter of good practices in industrial radiography. This charter, the objective of which is to optimise the use of ionising radiation in this activity sector, has been signed by 18 gamma radiography companies as well as ordering companies in the region. A monitoring committee has been set up. Exchange and work protocols between ASN and DIRECCTE on the one hand, and the ARS (Regional Health Agency) on the other, set the framework of joint actions to improve integration of radiation protection measures in the industrial, research and medical sectors.

2|3 Public information actions in 2010

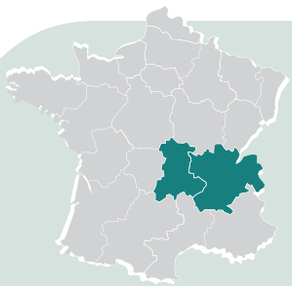
The status of the CLIs of the Gravelines NPP and the SOMANU in Maubeuge were brought into line with the requirements of the TSN Act.

The CLI of the Gravelines NPP was preparing for the 3rd ten-year inspections which started in 2011, and the national exercise scheduled for 18 January 2011. In addition, several members of the CLI attended an ASN inspection.

In 2010 ASN held two press conferences on the status of nuclear safety and radiation protection, one in Lille, the other in Dunkerque.

Press conference in Dunkerque – May 2010

LYON



6 THE STATE OF NUCLEAR SAFETY AND RADIATION PROTECTION IN THE RHONE-ALPES AND AUVERGNE REGIONS REGULATED BY THE **LYON** DIVISION

The Lyon division regulates nuclear safety and radiation protection in the 12 *départements* of the Rhône-Alpes and Auvergne regions.
As at 31 December 2010, the workforce of the Lyon division stood at 37 officers: 1 regional head, 3 deputies, 17 nuclear safety inspectors, 9 radiation protection inspectors and 7 administrative officers, under the authority of an ASN regional representative.

The activities and installations to regulate in the Rhône-Alpes and Auvergne regions comprise:
- the NPPs at Bugey (4 reactors of 900 MWe), Saint-Alban (2 reactors of 1, 1,300 MWe), Cruas-Meysse (4 reactors of 900 MWe) and Tricastin (4 reactors of 900 MWe);
- the FBFC nuclear fuel fabrication plants in Romans-sur-Isère;
- the nuclear fuel cycle plants on the Tricastin industrial platform;
- the high flux reactor in the Laue-Langevin Institute (ILL) in Grenoble;
- Bugey NPP reactor 1 undergoing decommissioning
- the SUPERPHÉNIX reactor undergoing decommissioning at Creys-Malville, as well as its auxiliary installations;
- the IONISOS irradiation facility in Dagneux;
- the SICN nuclear fuel fabrication plant pelletising unit in Veurey-Voroize, undergoing decommissioning;
- the CEA (French Alternative Energies and Atomic Energy Commission) Grenoble reactors and plants, undergoing decommissioning;
- the small-scale nuclear activities, comprising about 4,500 dentists, 500 radiologists, 700 veterinary surgeons, 100 tomography devices, 22 radiotherapy departments (including 6 which also conduct brachytherapy), 23 nuclear medicine departments, 20 gamma radiography devices, 190 electrical generators of X-rays, 30 users of unsealed sources, 200 users of lead detectors and 20 users of gammadensimeters.

ASN conducted 270 inspections in Rhône-Alpes and Auvergne in 2010. Of these inspections, 89 were carried out in the four NPPS, and 24 of these were conventional safety inspections. 101 inspections were carried out in the small-scale nuclear activities sector, 70 inspections concerned the other nuclear facilities monitored by the division, and 10 inspections concerned the transport of radioactive materials.

twenty six significant safety events classified as level 1 on the INES scale were notified by licensees of nuclear installations in the Rhône-Alpes region in 2010.

In the small-scale nuclear sector in the Rhône-Alpes and Auvergne regions, 23 significant events of level 1 on the ASN-SFRO scale were notified in the medical sector and 2 events in the industrial sector, one of level 2 and other of level 1 on the INES scale. The level 2 event occurred on the Feursmétal site (*département* 42).

1 Assessment by domain

1|1 Assessment of BNI nuclear safety

Nuclear power generating reactors

Bugey NPP

In terms of nuclear safety, the Bugey NPP stands out with respect to ASN's general assessment of EDF plants, mainly due to the quality of the independent safety route. Nevertheless, operational shortcomings were observed in 2010 in the quality of alignments and lockouts, and compliance with the operational technical specifications.

ASN observed that the conditions of work safety deteriorated during replacement of the steam generators of reactors 2 and 3 in 2010.

After thirty years of service, reactor 2 underwent its third ten-year inspection from February to November 2010. The boiler requalification test was performed in August 2010. On 25 October 2010, ASN gave its authorisation to restart reactor 2 for a cycle, and will state its position on the continuation of reactor operation in 2011.

Some deviations in radiation protection were recorded, but ASN observes a slight improvement on the whole.

Lastly, ASN notes the growing involvement of site management and of the teams on the ground in matters of environmental protection.

Bugey NPP reactor 1 undergoing decommissioning

2010 saw the completion of the preparation and fitting-out operations for the projected dismantling of reactor 1, such as the creation of the waste transit areas and hot and cold storage areas, and upgrading of the activity measurement chains at the discharge stack. ASN approved the framework authorising starting of the cutting operations on contaminating systems in October 2010, thereby enabling EDF to start the first phase of decommissioning, outside the reactor vessel.

The activated waste packaging and interim storage installation (ICEDA) at Bugey

The ICEDA was licensed by the decree of 23 April 2010. ASN carried out two inspections on the civil engineering site to

verify the quality of the first structures, and in particular the drilling and concreting of the 292 rigid inclusions reinforcing the ground. ASN considers that EDF shows rigour in its management of the construction site, be it from the documentary organisation aspect or contingency management.

Saint-Alban NPP

The Saint-Alban NPP remains below average with respect to ASN's overall assessment of the EDF plants. The structural weaknesses diagnosed in 2009 were observed once again in 2010, particularly during the reactor 2 refuelling shutdown.

Since mid-2009, the site has deployed a plan to improve operating rigour. ASN notes a slight positive trend in the way in which the safety requirements are taken into account, notably by the independent safety route.

The site's results in terms of radiation and environmental protection remain tenuous, as these subjects are not addressed with sufficient rigour.

ASN notes that there is substantial room for progress in pressure equipment monitoring.

More generally speaking, ASN wants to see improvements in the Saint-Alban site's responsiveness and communication with ASN in 2011.

The site underwent an international audit coordinated by the IAEA in 2010. The conclusions of the audit confirm the opinion ASN has held on this site since 2009.

Cruas-Meysse NPP

In terms of nuclear safety, the Cruas-Meysse NPP reaches the average with respect to ASN's general assessment of EDF plants. The efforts it has been making since 2008 to improve the rigour of control operations must be continued.

With regard to radiation protection, the site displayed contrasting results in 2010. The results of inspections in gamma radiography were satisfactory, whereas the control of access to limited-stay radiological areas must be improved.

Lastly, ASN observed weaknesses in catering for the environmental implications for new installations.

Tricastin NPP

Following the third ten-year inspection of reactor 1, which lasted from May to August 2009, and after analysing the final report of the safety review presented by EDF, ASN deemed on 4 November 2010 that this reactor was fit to be operated for a further period of ten years.

With regard to radiation protection, ASN observes a significant improvement in radiological cleanness, particularly during reactor shutdowns.

ASN nevertheless considers that work safety dropped markedly in 2010, with three serious accidents occurring on the site, without the personnel or management taking any truly positive action to remedy the situation.

Nuclear research facilities or facilities undergoing decommissioning, nuclear plants and units

The FBFC nuclear fuel fabrication plants in Romans-sur-Isère;

ASN considers that the FBFC installations display a satisfactory standard of safety. The plant's industrial equipment renewal programme is nearing completion and the renovated production lines function correctly. Some shortcomings were nevertheless detected in the site's management of inspections and periodic tests. Lastly, the clean-out and upgrading work on the effluent networks is progressing satisfactorily and should be completed in 2011.

The high flux reactor in the Laue-Langevin Institute (ILL) in Grenoble

ASN considers that the safety of the ILL is satisfactorily ensured. 2010 saw the completion of the work to reinforce the handling crane in the reactor building to guarantee that it can withstand an earthquake of the "safe shutdown earthquake" type. The ILL also installed a buffer device on the gaseous discharge system in 2010. Lastly, in the context of denuclearisation of the CEA centre in Grenoble, responsibility for waste management and environmental monitoring of this site has been transferred from CEA to the ILL.

The Superphénix reactor at Creys-Malville

ASN considers that the safety of Superphénix is satisfactorily ensured. 2010 was marked by the start-up of the sodium treatment facility and storage on the site of the first concrete blocks produced by this process (about 5,000 blocks produced in 2010). In parallel with this, EDF updated the off-site emergency plan to cater for the risks associated with this new facility. EDF also removed the tank of large primary system components (pump, intermediate heat exchangers). These components were treated, cut up then disposed of as nuclear waste.

The Ionisos irradiation facility in Dagneux

Although ASN considers that safety is ensured satisfactorily, it does observe than it was notified in 2010 of an incident relating to

Inspection of the control room during the ten-year inspection of the Tricastin NPP – May 2009

compliance with the conditions of transport of legacy sources held in the installation. The incident was classified as level 1 on the INES scale. ASN also reiterated the obligation to set up a CLI for this installation.

The SICN nuclear fuel fabrication plant in Veurey-Voroize

ASN considers that the licensee did not satisfactorily monitor the end of the SICN plant decommissioning operations in 2010. ASN detected many anomalies during its inspections. ASN moreover refused the delicensing of certain buildings in 2010, due to incorrect application of the clean-out procedures. This situation had already arisen in 2009.

The CEA centre reactors and plants in Grenoble

Decommissioning of the CEA's nuclear installations in Grenoble progressed in 2010. The delicensing application for the Mélusine reactor was submitted and the Siloe clean-out operations are coming to an end. ASN considers that CEA is a rigorous licensee but must nevertheless remain vigilant in the control of installation safety and security, as it makes extensive use of subcontractors.

The nuclear fuel cycle plants on the Tricastin industrial platform

Areva NC – W and TU5 plants in Pierrelatte

The level of safety in the Areva NC installations is considered satisfactory. The means devoted to safety have been stepped up, notably with the creation of a safety and environment hub within the industrial chemistry department. The site has made progress in the preparation and management of maintenance operations. A few events did occur that led to the dispersal of small quantities of uranium in the installations, but without reaching the environment.

Comurhex's – Company for the conversion of uranium into metal and hexafluoride - Pierrelatte

As in 2009, ASN considers that Comurhex's safety results are unsatisfactory. Numerous events were notified, most of which were caused by organisational deficiencies (inappropriate procedures, poor work preparation) and human deficiencies (failure to comply with instructions). Furthermore, the inspections of the installation showed that the reality on the ground did not always comply with the installation's safety standards. Lastly, COMURHEX has shown failings in meeting its commitments.

Eurodif - European gaseous diffusion enrichment plant in Pierrelatte

The level of safety of the Eurodif installations is considered satisfactory. Nevertheless, two recurrent incidents of overfilling of a tank with uranium hexafluoride (UF_6), classified as level 1 on the INES scale, prompted a reactive inspection by ASN. The licensee finally changed the way it manages the filling of its UF_6 tanks. Concerning radiation protection, the exposure levels reached in 2010 remain low.

ASN inspection of a convoy of enriched uranium hexafluoride, ready to leave the Eurodif plant on the Tricastin site – March 2010

SET Georges Besse II – Uranium enrichment plant in Pierrelatte

Construction of the Georges Besse II plant for uranium enrichment by centrifugation continued satisfactorily in 2010. The safety tests prior to the introduction of uranium into the supply stations for the South unit centrifuges began in late 2010.

Socatri – Company operating a clean-up and recovery installation – Bollène plant

The improvements in safety and pollution prevention in the Socatri facilities continued in 2010. Several facilities were modernised. A modification of the stormwater collection systems engaged jointly with EURODIF and designed prevent to the overflow of an accidental pollution spill into the River Mayre-Girarde, was presented to ASN.

1|2 Assessment of radiation protection in the medical field

On the whole, ASN considers that radiation protection in the medical sector in the Rhône-Alpes and Auvergne regions is satisfactory.

Radiotherapy

In 2010, ASN inspected half of the radiotherapy centres in the Rhône-Alpes and Auvergne regions. This enabled the setting up of the quality assurance system to be inspected. This system addresses aspects such as the responsibility of the workers, management of resources, delivery of treatments and the management of undesirable situations and malfunctions. This inspection campaign also provided an opportunity to monitor physician, radiological physicist and technician staffing trends.

The results of these inspections show that the large majority of the centres have taken organisational steps to implement a quality assurance approach to improve the delivery of treatments to patients. The initiative - which began in 2009 - must be completed in 2011, therefore the efforts must be maintained.

Regarding the numbers of radiological physicist staff, ASN considers that the situation is improving. The summer vacation period did not lead to interruptions in the activity of radiotherapy departments due to personnel shortages. This being said,

radiological physicists are still limited in number and tenuous situations persist.

Interventional radiology

The establishments concerned on the whole comply with the worker radiation protection regulations, often calling on the services of an external person competent in radiation protection (PCR).

ASN is more reserved regarding the radiation protection of patients however. Although the paramedical teams are usually properly trained, considerable differences between the medical teams were observed. Good practices are on the whole well understood and applied, but only a few establishments optimise the doses delivered.

1|3 Assessment of radiation protection in the industrial radiology sector

ASN considers that on the whole the radiation protection situation in the industrial radiology sector is satisfactory. The inspections carried out in 2010 brought to light no significant regulatory non-conformities, even if there is still room for improvement in radiation protection of workers.

ASN also took part in the drafting of a charter of good practices in industrial radiology, signed by the sector stakeholders on 10 February 2010.

1|4 Assessment of nuclear safety and radiation protection in the transport of radioactive materials

In 2009, ASN conducted a survey involving more than 1,000 entities concerned by the transport of radioactive materials. The conclusions of this survey led it to hold an information day on 4 February 2010, covering the safety requirements applicable to the transport of radioactive materials. Attended by some 150 professionals, this event addressed the regulatory requirements and means of complying with them.

The inspections and monitoring actions carried out in the Rhône-Alpes and Auvergne regions in this sector in 2010 revealed no worrying situations.

2 Additional information

2|1 International action by the Lyon division

The Lyon division continued the bilateral exchanges of views with the Swiss nuclear safety authority (ENSI) concerning the inspection practices applied for NPPs and industrial radiology. An international convention on protection against ionising radiation and safety was moreover signed between the CERN, France and Switzerland.

Division inspectors also participated in discussions with the Japanese and Chinese safety authorities on the inspection practices during reactor shutdowns, and with the UK safety authority on the inspection of plants carrying out enrichment by centrifugation.

These discussions allowed the sharing of good practices in the inspection of nuclear installations.

2|2 The other significant events in the Rhône-Alpes and Auvergne regions

Monitoring of the former uranium mines

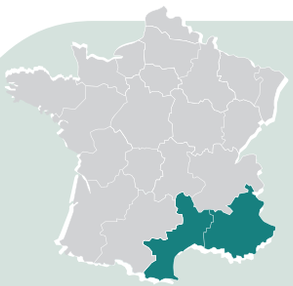
ASN considers that the work carried out by Areva on the sites of Saint-Pierre du Cantal (Cantal *département*) and Saint Priest-la-Prugne (Loire *département*) ensures good control over the risk of the neighbouring populations being exposed to ionising radiation. Nonetheless, public protection restrictions should be put in place, particularly at Saint-Pierre-du-Cantal. Such restrictions would enable the future occupation of the sites in question to be controlled and the industrial history of these sites to be kept on record.

2|3 Public information actions in 2010

In 2009, a CLI was created for the SICN plant operated by Areva at Veurey-Voroize (Isère). The activity of the CLIs in the Rhône-Alpes region developed significantly during 2010.

In 2010, ASN held a press conference on the state of nuclear safety and radiation protection.

MARSEILLE



7 THE STATE OF NUCLEAR SAFETY AND RADIATION PROTECTION IN THE PROVENCE-ALPES-CÔTE-D'AZUR, LANGUEDOC-ROUSSILLON AND CORSE REGIONS REGULATED BY THE **MARSEILLE** DIVISION

The Marseille division regulates nuclear safety and radiation protection in the 13 *départements* of the Provence-Alpes-Côte-d'Azur, Languedoc-Roussillon and Corse regions. It exercises this activity in the BNIs, in small-scale nuclear activities and in the transport of radioactive materials.
As at 31 December 2010, the workforce of the Marseille division stood at 19 officers: 1 regional head, 2 deputies, 12 inspectors and 4 administrative officers, under the authority of an ASN regional representative.

The activities and installations to regulate comprise:
26 BNIs;
– the CEA centre in Cadarache (Bouches du Rhône *département*) which counts 20 BNIs under construction, in operation, or undergoing decommissioning;
– the international project for the construction of the ITER facility dedicated to nuclear fusion research, adjacent to the Cadarache CEA centre;
– the CEA centre in Marcoule (Gard *département*) which counts two BNIs: Atalante and Phénix (final shutdown of the Phénix reactor prior to decommissioning took place in March 2010);
– the Mélox "mox" fuel production facility (Areva NC), on the Marcoule platform;
– the Centraco waste treatment facility (Socodei, EDF group), also on the Marcoule platform;
– certain ponds of the Comurhex uranium ores conversion facility in Malvési (Aude *département*);
– the Gammaster industrial irradiator in Marseille;.

Small-scale nuclear facilities, sources and equipment
– 22 external radiotherapy departments (52 accelerators, 1 cyberKnife®, 2 gammaknifes, 1 tomotherapy accelerator);
– 8 brachytherapy departments;
– 26 nuclear medicine departments;
– 140 departments practising interventional radiology;
– 112 computed tomography departments (126 diagnostic scanners);
– 2,424 medical radiodiagnostic devices (including 429 mammography units);
– 4,412 dental radiodiagnostic devices;
– 5 blood product irradiators
– 899 equipment licenses or industrial and research sources (including 446 lead detectors).

In 2010, ASN carried out 90 inspections in BNIs, 98 inspections in small-scale nuclear activities (including 52 in the medical sector, 27 in the industrial sector, and 4 in the polluted sites or enhanced natural radioactivity sector) and 15 audits or inspections of approved organisations in the three regions of Languedoc-Roussillon, PACA and Corsica.

During 2010, the division was notified of 5 nuclear safety incidents and 2 radiation protection incidents, all of level 1 on the INES scale, and 24 patient radiation protection incidents of level 1 on the ASN-SFRO scale.

1 Assessment by domain

1|1 Assessment of BNI safety

CEA's centre in Cadarache

ASN considers that the level of safety of the CEA centre in Cadarache has improved in 2010, with the safety cell being more closely involved in the verification operations. Progress has been observed in event notification times, public information and transparency. Although ASN observes an improvement in the way subcontractors are instructed on safety requirements, it nevertheless remains vigilant regarding the way CEA oversees these subcontractors.

ASN has observed an improvement in the way CEA organises the control of the civil engineering operations for the construction of the new nuclear facilities AGATE and the Jules Horowitz Reactor (RJH) and for the renovation of old facilities (LEFCA, CABRI).

In other areas, ASN finds that CEA lacks foresightedness, particularly in waste management. The review of the AGATE installation commissioning dossier, for example, clearly revealed the lack of a disposal solution for the concentrates produced by the installation. Even if several possibilities are being studied by CEA, it must still present a robust solution to ASN.

ASN asked CEA for a global assessment of how the seismic risk is catered for on the Cadarache nuclear site. The provisions for managing a seismic event in the centre require particular efforts on the part of the licensee. On account of this, a nuclear emergency exercise with a seismic component is planned for the end of 2011.

More generally, ASN considers that the licensee must remain very attentive to the progress of the decommissioning and clean-out work on the shutdown facilities (ATUe, ATPu and LPC, Rapsodie, experimental circuits of Phébus).

ASN had suspended the decommissioning operations further to the level 2 incident that occurred on the ATPu facility in 2009.

ASN continued the investigation of that incident in 2010 with a view to fully resuming the decommissioning activity by the beginning of 2011.

The ITER project

Together with its technical support IRSN, ASN began to review the creation authorisation application for the ITER facility, first submitted on 31 January 2008. At that time, ASN had informed the ITER Organization that several technical points in the dossier would need to be supplemented before the public inquiry procedure could start. The new dossier submitted to ASN in April 2010 was judged admissible. The public inquiry should be able to be held in the first half of 2011.

CEA's centre in Marcoule

ASN considers that the safety organisation and management of the CEA's centre in Marcoule are progressing, having been subject to improvement actions by CEA in 2010. CEA gave ASN commitments to carry out major works to improve the safety of its facilities. ASN nevertheless remains vigilant as to the meeting of these commitments, and makes sure that budget choices within CEA are not made at the expense of safety, given the schedule deviations observed in the last tracking assessments. The organisation of radiation protection on the PHÉNIX facility was judged satisfactory, as was the safety of performance of the end-of-life tests.

The Mélox facility

Several malfunctions relating to criticality risk prevention, and inconsistencies between the applicable procedures and actual practices were observed by ASN on the Mélox facility. Furthermore, about ten significant events relating to the criticality risk and organisational aspects have been reported since 2008. Given this situation, ASN summoned the facility director on 20 January 2010 to reiterate the regulatory requirements and prepare a plan of action. ASN also organised a three-day in-depth inspection on this subject within the facility in June 2010. An improvement in management of the criticality risk was observed due to better integration of organisational and human factors. ASN nevertheless observes that the means deployed today still fall short of site management's stated goal in this domain.

The Centraco facility

Faced with the safety culture failings in the Centraco facility, the ASN Director-General asked the licensee to define and implement measures to improve operating safety. The checks carried out by ASN in 2010 show that the remedial measures taken by the licensee are beginning to have an effect in the field. Although the new measures implemented show that the licensee is truly committed to remedying the difficulties encountered, ASN will nevertheless keep a watchful eye to ensure that the strategy enables this progress to be maintained over the long term.

The Comurhex Malvési facility

At the end of 2009 ASN had considered that some of the treatment and storage ponds of the Comurhex Malvési facility constituted a BNI pursuant to the regulations in effect, and came under ASN control. In a decision dated 22 December 2009, the ASN Commission therefore asked COMURHEX to submit a BNI authorisation decree application file before 31 December 2010. During 2010, ASN also carried out two inspections relative to environmental monitoring and the transport of radioactive materials.

1|2 Assessment of nuclear safety in the transport of radioactive materials

Included for the first time among the eight inspections ASN carried out in the area of radioactive material transport in 2010 was the Grand Port maritime of Marseille. ASN identified avenues for progress concerning the work of the handling teams and the need to clarify the conditions of radioactive material transport on ships. ASN also met land transport inspectors of the PACA region (from the DREAL service), who have extensive experience in the transport of hazardous materials, complementary to that of ASN. This meeting brought to light several areas for collaboration in 2011.

1|3 Assessment of radiation protection in the medical field

Radiotherapy

ASN's inspections in radiotherapy centres in 2009 had confirmed the national shortage of medical radiation physicists. The radiotherapy centres inspected by ASN in 2010 showed a slight improvement in the situation. Some centres have managed to recruit, but other are still in a tenuous situation.

The inspectors observed real progress in quality assurance in all three regions in 2010 - the centres mobilised their efforts on this issue, some advancing more than others.

Since 2008, ASN has targeted radiotherapy departments with special actions to raise awareness on the importance of incident notification. In 2010, the inspectors noted that all the radiotherapy centres had an internal incident reporting system, but progress must still be made in the actual notification of events to ASN.

Professional radiotherapy groups were created in the Languedoc-Roussillon region in 2010, and a project for a tomotherapy activity group is emerging in the PACA region. These "associations" of radiotherapy centres take the form of "health cooperative groups" (GCS) or "economic interest groups" (GIE). The inspectors have observed that the creation of such structures poses many problems. The setting up of a GCS or GIE implies bringing together two or perhaps three radiotherapy centres. Consequently, the activities often have to be grouped on a single site, which implies major changes in terms of medical activity and internal organisation for the centres concerned. The problems result essentially from a lack of foresight on the part of the professionals in the group and inadequate communication between the players. The inspectors also noted a lack of formal structure and problems in the implementation of a common quality assurance approach. ASN will remain attentive to compliance with requirements - particularly organisational - aiming at guaranteeing the safety of patient care.

Interventional radiology

ASN wishes to further its knowledge of the interventional radiology facilities. It therefore sent out a questionnaire to nearly

600 establishments potentially concerned in the three regions, to find out firstly the medical procedures practised in them and secondly to identify the ionising radiation sources used in these procedures. When this survey is completed, ASN will organise professional information sessions by activity sector.

1|4 Assessment of radiation protection in the industrial and research sectors

Research laboratories

ASN has observed noteworthy progress in radioactive source management in the Universities of Montpellier and Perpignan. In the latter university, the identified wastes have been recovered by ANDRA and the room that contained them has been verified as contamination-free. A few products remain, identified and characterised by IRSN at the end of the year, that will be able to be evacuated in 2011. Once this has been done, the University of Perpignan will be in conformity with the regulations.

A similar lack of rigour in the University of Aix-Marseille II had resulted in legacy waste being stored in an unauthorised room that did not meet the necessary safety requirements. ASN had asked that this situation be remedied as of 2006, and checked corrective action progress in 2010. This interim storage situation should satisfactory by mid-2011.

Besides this, ASN is continuing its action concerning the University of Toulon, where orphan sources[5] were discovered by the faculty personnel. ASN carried out an on-site inspection and will closely monitor implementation of the corrective actions demanded.

The industrial sector

Industrial radiology remains a high priority for ASN, with unannounced night-time inspections on the work sites being continued in 2010. ASN has moreover continued its prevention actions in a framework complementary to that of inspection, by publishing and updating a charter of good practices in the domain, in collaboration with the professionals and other government administrations.

1|5 Assessment of radiation protection in the sector of polluted sites, former uranium mines, and enhanced natural radioactivity

ASN is continuing its monitoring and awareness-raising actions in companies that use processes which could concentrate natural ionising radiation. ASN was thus led to carry out an inspection within a thermal establishment (spa). ASN ensures that any preventive measures necessary for the workers are taken. ASN and the PACA DREAL also worked together in this domain, by jointly inspecting bauxite residue deposits.

Jules Horowitz Reactor (RJH) worksite in Cadarache – October 2010

ASN is continuing to ensure that sites polluted by radioactive materials, such as Bandol (Var *département*), Ganagobie (Alpes-de-Haute-Provence *département*) and Marseilles, have been identified and are secure. A new clean-out operation on the Gangobie site took place in spring 2010. Before starting these new clean-out operations, a public meeting was held in the town hall, during which the various entities involved went over the state of the site, the phasing of the clean-out steps and the rehabilitation objectives. The Bandol site for its part is subject to regular monitoring.

ASN continued its collaboration with the DREALs of the PACA and Languedoc-Roussillon regions regarding the "post-uranium mines" issue. Joint inspections were also carried out in these two regions.

2 Additional information

2|1 International action by the Marseille division

In 2010, one person from the division took part in an IAEA seminar on the safety culture, another participated in an IAEA advisory assignment in Mauritania and in an international working group to draft a guide on the management of this type of assignment.

5. An orphan source is a source that is no longer under proper regulatory control, either because it has never been subject to control, or because it has been abandoned, lost, mislaid, stolen or transferred without due authorisation.

Two people from the Marseille division attended an international seminar in Japan on how the seismic risk is taken into account in nuclear installations.

The division also hosted two Algerian trainees for one month as part of IAEA's programme concerning inspection and the examination of dossiers.

2|2 Public information actions in 2010

In 2010, ASN held three press conferences in Marseilles, Montpellier and Nice on the state of nuclear safety and radiation protection, which raised subsequent intense media interest.

Further to the commemoration of the Provence earthquake, ASN organised two public information sessions on how the seismic risk is taken into account in the design and operation of nuclear installations in southern France, held on 4 February 2010 in Marseille and 7 December 2010 in Avignon. This initiative was a great success in terms of attendance and media coverage.

ASN also organised a professional forum on radioactive waste and effluent management and the transport of radioactive materials in the medical and research sectors. 110 people attended this forum.

A second forum on the quality and safety of radiotherapy treatments in the PACA region was held on 19 November 2010 with the professionals of the sector, following on from a similar forum held on 6 February 2009.

ASN organised several information meetings with the elected officials of the region.

It also continued to support the CLIs by actively participating in the majority of the meetings and annual general meetings of the Cadarache, ITER and Gard-Marcoule CLIs. ASN more particularly contributed to the public meetings of the Cadarache CLI in April 2010 presenting ASN's annual results, and in September 2010 presenting the licensee's annual reports.

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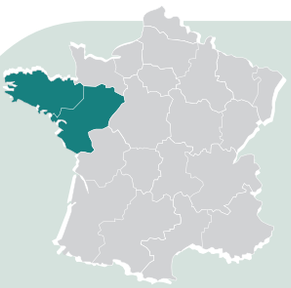
Regional day of discussions on "nuclear installations and the seismic risk" in Marseilles – February 2010

NANTES



8 THE STATE OF NUCLEAR SAFETY AND RADIATION PROTECTION IN THE PAYS DE LOIRE AND BRETAGNE REGIONS REGULATED BY THE **NANTES** DIVISION

The Nantes division is responsible for regulating nuclear safety and radiation protection in the 9 *départements* of the Pays de Loire and Bretagne regions.
As at 31 December 2010, the workforce of the Nantes division stood at 11 officers: 1 regional head, 8 inspectors and 2 administrative officers, under the authority of an ASN regional representative.

The activities and facilities to regulate in Pays de la Loire and in Bretagne comprise:
– three BNIs in the Pays de Loire region: the Monts d'Arrée site NPP*, the IONISOS irradiation facility at Sablé sur Sarthe and the IONISOS irradiation facility at Pouzauges;
** The Monts d'Arrée site (Brennilis plant currently being decommissioned) is regulated by the ASN Caen division.*
– medical departments in the Pays de Loire and Bretagne regions: 15 radiotherapy centres (17 locations), 9 brachytherapy departments, 18 nuclear medicine departments, 70 interventional radiology departments, 92 tomography devices, about 5,000 medical and dental radiology devices;
– industrial and research uses in the Pays de Loire and Bretagne regions: 29 industrial radiology companies, including 8 gamma radiography contractors, about 750 licences for industrial and research equipment, including more than 300 users of devices to detect lead in paint and containing a radioactive source;
– 11 head offices of organisations approved for radiation protection technical checks (2) and for radon checks (7), and two head offices of laboratories approved for taking environmental radioactivity measurements.

In 2010, ASN carried out 123 inspections, including 4 inspections in BNIs and 4 in the transport sector.

IONISOS notified 1 event classified as level 1 on the INES scale for its Sablé-sur-Sarthe site in 2010. In small-scale nuclear activities, the radiotherapy departments of Bretagne and the Pays de la Loire notified 1 significant event of level 2 and 37 significant events of level 1 on the ASN-SFRO scale. In addition, 1 event of level 1 on the INES scale was notified in nuclear medicine, and 2 events of level 1 on the INES scale in the industrial sector.

1 Assessment by domain

1|1 Assessment of BNI nuclear safety

The IONISOS nuclear facilities in Sablé-sur-Sarthe and Pouzauges

The company IONISOS operates two industrial irradiation facilities used chiefly for two applications: product sterilisation (essentially medical equipment, and to a lesser extent foodstuffs) and the treatment of plastic materials to improve their mechanical characteristics.

Following the significant incident of June 2009 relative to the untimely opening of bunker access door on the Pouzauge site, the licensee has implemented the transient technical measures demanded by ASN to reinforce security of access to the irradiation cell. IONISOS submitted its safety study on the overall management of cell access at the end of 2010.

ASN's monitoring actions in 2011 will focus on the disposal of numerous radioactive sources having reached their service life limit.

1|2 Assessment of radiation protection in the medical field

Of the small-scale nuclear facility inspections, 48 were in the medical field, including 12 carried out during inspection campaigns on dentists and radiologists. These inspection campaigns evidenced continuing progress in raising the awareness of the professionals in the radiation protection of both personnel and patients, and increasing use of Persons with Competence for Radiation protection (PCRs). On the other hand, they also revealed shortcomings in compliance with administrative procedures, periodic external radiation protection checks, and in the justification of radiology procedures.

Radiotherapy

Thirteen of the fifteen external radiotherapy centres were inspected in 2010. ASN observes continuing progress in treatment safety (progress in the quality initiative, handling of undesirable events in radiation protection, etc.). ASN guides nos. 4 and 5 relative to radiotherapy facilitate the engaging of quality assurance actions by the centres. ASN will continue its inspection actions with the centres; the Nantes division will submit to ASN a report on the assessment of risks in brachytherapy, produced in partnership with the regional health professionals.

Interventional radiology

Nine establishments were inspected in 2010, with the inspections focusing primarily on coronarography (coronary angiography), angiography/angioplasty and cardiology. ASN observes that continuing progress is necessary in the quantification of doses received by health professionals in their extremities (hands), and in the information on delivered doses in medical procedure reports, owing notably to the existence of old machines that do not provide useful dosimetric information.

1|3 Assessment of radiation protection in the industrial and research sectors

Forty six inspections were carried out in the small-scale nuclear activities sector, 13 of which were part of the inspection campaigns on possession of devices for detecting lead in paint. This inspection campaign revealed progress in professional awareness of worker radiation protection. However, there were still shortcomings in compliance with administrative procedures and assimilation of the observations made during the external radiation protection inspection.

Industrial radiography

Seventeen inspections were carried out in 2010, which meant that all the gamma radiography professionals had been covered over a three-year period. ASN notes the satisfactory design of the fixed radiography installations, the improved organisational measures (procedures), and the periodic performance of technical radiation protection checks. Two incidents classified as level 1 and implicating electric remote controls connected to gamma radiography appliances revealed a generic problem with this type of equipment (see chapter 10). Moreover, improvements are required in the notification to ASN of worksites using radiography devices, in the optimising of dosimetric exposures on worksites using gamma radiography, and the conditions of radiologists' access to bunkers. A regional charter for industrial radiography, produced in collaboration with the DIRECCTEs of Pays de la Loire and Bretagne and the professionals of the sector, will be finalised in early 2011.

Research

Five inspections have been carried out in this field during the past 5 years, covering 70% of the public research sector. ASN observes a remedying of irregular administrative situations and strong involvement of PCRs, allowing in particular the adoption of techniques that involve lower doses for the personnel, or even non-radioactive techniques. The periodic external radiation protection inspections and the annual waste inventory communicated to ANDRA are carried out satisfactorily.

2 Additional information

2|1 International action by the Nantes division

On the international front, the Nantes division participated firstly in a two-week assignment with the Irish Nuclear Safety Authority, and secondly, in a course organised by the IAEA on the regulation of radiation sources dispensed to some thirty African decision-makers in Algeria in October 2010.

2|2 The other significant events in Pays de Loire and Bretagne regions

The former uranium mines

ASN carried out six inspections on the former uranium mining sites in the Bretagne and Pays de la Loire regions. It also carried out an unannounced sampling campaign around the sites of L'Écarpière (Loire-Atlantique *département*) and La Commanderie (Vendée *département*) in collaboration with the Pays de la Loire DREAL. The results (available on *www.mesure-radioactivite.fr*) confirm the self-monitoring measurements taken by the licensee.

ASN also took an active part in the information and discussion meetings organised by the offices of the *préfets* of the Loire-Atlantique and Vendée départements on the subject of the former uranium mines.

2|3 Public information actions in 2010

In 2010, ASN held two press conferences in Nantes and Rennes on the state of nuclear safety and radiation protection.

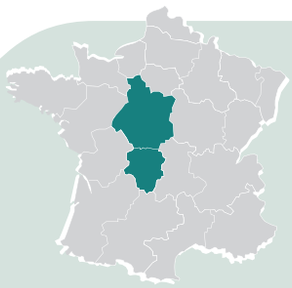
It also participated in training courses on patient radiation protection for electrocardiology technicians and on personnel radiation protection awareness for conventional safety inspectors in the framework of the radiation protection inspection campaign organised by the DGT and ASN in 2010.

ASN participated in the three CLI meetings in 2010, held on 18 June in Sablé-sur-Sarthe, on 10 February and 8 September in Pouzauges.

Lastly, it organised a regional seminar on radiotherapy that was attended by more than sixty professionals from the two regions.

Forum in Nantes on "sharing experience in the safety of treatments" – December 2010

ORLÉANS



9 THE STATE OF NUCLEAR SAFETY AND RADIATION PROTECTION IN THE CENTRE, LIMOUSIN AND ILE-DE-FRANCE REGIONS REGULATED BY THE ORLÉANS DIVISION

The ASN Orleans division is responsible for regulating nuclear safety and radiation protection in the 9 *départements* of the Centre and Limousin regions. The Orleans division is also at the disposal of the ASN Paris regional representative, under whose authority it regulates the safety of the BNIs of the Ile-de-France region[6].
As at 31 December 2010, the workforce of the ASN Orleans division stood at 28 officers: 1 regional head, 4 deputies, 18 inspectors and 5 administrative officers, under the authority of an ASN regional representative.

The activities and installations to be regulated in the Centre, Ile-de-France and Limousin regions comprise:
– 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 (2 reactors of 900 MWe) in operation, as well as the 2 French gas-cooled reactors (GCR) undergoing decommissioning and the irradiated graphite sleeve storage silos;
– the Chinon site: the NPP (4 reactors of 900 MWe) in operation, the 3 French gas-cooled reactors undergoing decommissioning, the irradiated material facility (AMI) and the inter-regional fuel warehouse (MIR);
– the 8 BNIs in the CEA Saclay centre, including the Osiris, Isis and Orphée experimental reactors;
– the CIS bio international plant in Saclay;
– the 2 BNIs undergoing decommissioning in CEA's Fontenay-aux-Roses centre;
– the electromagnetic radiation laboratory in Orsay, undergoing decommissioning (LURE);
– the medical departments in the Centre and Limousin regions using ionising radiation: 11 radiotherapy centres, 5 brachytherapy departments, 12 nuclear medicine departments, 33 interventional radiology departments, 60 tomography devices, 1,600 medical radiology devices and 2,100 dental radiology devices;
– the industrial and research utilisations of ionising radiation in the Centre and Limousin regions: 20 industrial radiology companies, including 6 gamma radiography contractors, some 400 industrial, veterinary and research devices subject to the licensing system, and some 100 industrial, veterinary and research devices subject to the notification system.

In 2010, ASN carried out 183 nuclear safety and radiation protection inspections: 90 inspections of the nuclear installations on EDF's Belleville, Chinon, Dampierre and St-Laurent NPPs, 37 inspections on the nuclear sites in the Ile-de-France region (CEA Saclay and Fontenay centres, CIS bio on the Saclay centre, French National Centre for Scientific Research – CNRS centre at Orsay), 56 inspections on small-scale nuclear facilities in the Centre and Limousin regions.

In 2010, 11 significant events of level 1 were declared by the licensees of EDF nuclear installations in the Centre region, and 4 significant events of level 1 were notified by the licensees of the Ile-de-France nuclear sites. In small-scale nuclear facilities, 1 significant event of level 2 on the ASN-SFRO scale, and 12 significant events of level 1 on the ASN-SFRO scale, and 2 significant events of level 1 on the INES scale were notified in the Centre and Limousin regions.

An incident classified as level 2 on the INES scale occurred at the Chinon NPP, in which a worker received a dosimetric exposure of the extremities that exceeded the regulatory limit.

A brachytherapy incident classified as level 2 on the ASN-SFRO scale occurred at the University Hospital (CHU) of Tours due to the movement of a uterine probe during application of the brachytherapy treatment that potentially led to unintentional vaginal and vulvar irradiation.

1 Assessment by domain

1|1 Assessment of BNI nuclear safety

Belleville-sur-Loire NPP

ASN considers that the safety performance of the Belleville-sur-Loire NPP improved in 2010 and now matches the average level of the EDF nuclear fleet. Progress was noted in the control of the installations and the rigour of interventions, but the latter nevertheless needs to be reinforced. ASN effectively noted during the ten-year inspection of reactor 1 that there are still deviations in maintenance operations. Although these deviations are detected and managed at the proper hierarchical level, they require closer tracking. With regard to radiation protection, ASN also noted shortcomings in radiological cleanness during the reactor shutdowns in 2010, resulting in late detection of external contaminations.

Lastly, ASN considers that the Belleville-sur-Loire NPP must make further progress in the area of environmental protection. Consequently, the fundamental actions initiated in 2010 to ensure the conformity of the installations that could have an impact on the environment and to prevent incidents must be continued in 2011.

6. Radiation protection in Ile-de-France is ensured by the Paris division.

Chinon site

ASN considers that the nuclear safety and radiation protection performance of the reactors in operation at the Chinon NPP is below the average assessment level for EDF. Safety in 2010 was characterized by insufficient operating rigour. The number of significant events relating to the management of the installations remains very high, chiefly due to failure to strictly apply the procedures and general operating rules. ASN moreover observed that the licensee inadequately masters the planning, performance and tracking of the periodic tests.

Furthermore, the Chinon site's performance in radiation protection has deteriorated significantly. 2010 was marked by the notification of two significant events concerning the inappropriate handling of highly irradiating bodies. ASN also recorded serious shortcomings in the preparation of interventions, particularly with respect to prior radiological mapping and establishing accesses to limited-stay areas.

ASN considers that the improvements in fire protection in the irradiated materials shop (AMI), which were finalised in 2010, represent a significant development in the safety of the installation. However, in a context marked by fragile organisational functioning and transfer of the expert appraisal activities to a new installation in 2012, ASN considers that the licensee must more particularly tighten compliance with the requirements of the safety standards and its control over service providers.

Lastly, ASN considers that the level of safety of the Chinon A reactors undergoing decommissioning is on the whole satisfactory. Management of the worksites has improved, but further progress is required in the application of the safety standards.

Dampierre-en-Burly NPP

ASN considers that the Dampierre-en-Burly NPP's performance is on the whole in line with ASN's average assessment level for EDF. ASN nevertheless estimates that the NPP's safety results, in the continuity of those for 2009, are down compared with those obtained in the previous years. For example, worker compliance with the instruction texts, which previously was exemplary, is now less rigorous. Furthermore, deficiencies in the licensee's monitoring of maintenance service providers were again noted in 2010.

In the area of worker safety and radiation protection, the inspected worksites still display recurrent deviations from the regulations, which must incite the site to step up its actions, and notably the presence of managerial staff on the worksites. As regards the environmental impact of the installations, ASN underlines the good control over radioactive discharges and the noteworthy commitment of the site to the process of reviewing its discharge and sampling authorisations.

Saint-Laurent-des-Eaux site

ASN considers that the Saint-Laurent-des-Eaux site's performance is on the whole in line with ASN's general assessment of EDF. In terms of safety, progress has been observed in the management of the transient reactor shutdown and restarting phases in 2010. ASN does however consider that efforts must be maintained in the preparation of work interventions, for which the number of deviations remains high.

ASN inspection during the ten-year inspection of reactor B4 of the Chinon NPP – August 2010

The situation in radiation protection, which is characterized by a reduction in the number of significant events and maintaining of the radiological cleanness indicators at a satisfactory level, is generally improving. ASN nevertheless thinks that progress must still be made in the assimilation of the radiation protection implications by the workers. On the environmental front, the optimising of radioactive discharges remains one of the site's positive points. The licensee must nevertheless endeavour to comply with the new ASN instructions concerning its water take-offs and its discharges.

ASN considers that the level of safety of the Saint-Laurent A reactors undergoing decommissioning is satisfactory on the whole. Improvements have been noted in the monitoring of service providers. On the other hand, the site must make further progress in the tracking and maintenance of certain equipment items. Lastly, the installation of geotechnical containment around the silos for interim storage of irradiated graphite sleeves enhances the protection of this facility from the risk of flooding by the River Loire.

Nuclear research facilities or facilities undergoing decommissioning, nuclear plants and units

CEA's Saclay centre

ASN considers that the level of safety in the CEA nuclear facilities in the Saclay centre is on the whole satisfactory. At the end of the review inspection carried out from 31 May to 4 June 2010, it gave a positive judgement on the efficiency of the centre's safety management. The centre has different levels of management and contractualisation aids that are subject to regular monitoring, allowing the various priorities associated with BNI safety to be managed. Improvements must nevertheless be made in the quality of the internal diagnosis and the actions of

the safety unit that could result from it. Management of the commitments taken with ASN also deserves to be clarified and harmonised for all the BNIs, more particularly in defining the priority levels and informing of deadline extensions.

Control of service providers remains an important issue in a context of increasing subcontracting (decommissioning of the high activity Laboratory, entry into service of the new STELLA workshop, etc.). ASN considers that the procedure implemented by CEA for this purpose is effective, given the results obtained, but it would nevertheless merit being consolidated.

Furthermore, following entry into effect in early 2010 of ASN decisions regulating the discharges and water take-offs of the centre's BNIs, CEA has set up a monitoring committee to take the required actions. Despite delays in carrying out some actions, the organisation established that on the whole the monitoring of discharges and of the centre's environment meet ASNs requirements in this respect. Lastly, after noting several deviations, ASN has asked CEA to conduct actions on the site to remedy the malfunctions of the alarm transmission channels.

The CIS bio international plant in Saclay

Although the renovation work in progress should help improve the safety of the plant, the weaknesses observed in plant operation and the delays in production of the safety analysis files and the shortcomings in their content, particularly the safety review file, required sustained monitoring by ASN in 2010. Moreover, this situation prevented the Advisory Committee of Experts, in its meeting of 7 July 2010, from reaching a conclusion on whether the provisions adopted in the safety review file are sufficient to ensure lasting operation of the BNI. The file must therefore be supplemented following a schedule set by ASN decision, and resubmitted for review in 2011. However, it has already turned out to be necessary to reduce the plant's radioactive iodine inventory in order to mitigate the potential consequences of a serious accident.

Given the persistence of the identified weaknesses, ASN's monitoring has highlighted the need for the licensee to step up safety management, with a view to achieving a true continuous improvement process. Consequently, a more structured and prioritised approach using appropriate means is required in this area.

The CEA's Centerin Fontenay-aux-Roses

ASN considers that top management's involvement in nuclear safety constitutes one of the centre's strong points. However, the commitments made to ASN must be monitored more closely. ASN also considers that the organisation and means deployed for radiation protection are satisfactory. Beside this, 2010 was marked by several deviations relative to the confinement of radioactive materials despite having conducted improvement actions on this theme. Lastly, the fire-fighting teams were found to lack manpower and have shortcomings in their training resulting in reduced operational effectiveness of the centre's fire-fighting organisation.

1|2 Assessment of radiation protection in the medical field

In 2010, ASN considers that the radiotherapy centres in the Centre and Limousin regions on the whole progressed since the inspection campaign carried out in 2009. Most of the centres have initiated programmes to achieve progress in treatment safety, including through more formalised practices, implementation of a quality management system, recording of incidents and malfunctions and regulation and inspection of equipment. Moreover, nearly half of the radiotherapy centres in the Centre and Limousin regions (five centres out of eleven) will benefit from the support of the INCa (French National Cancer Institute) which is financing assistance from a consulting firm to improve the safety and quality of treatments. Department staff numbers have increased overall in comparison with 2009, which was necessary to meet the regulatory obligation of having medical radiation physicists (or a medical physics team) present when the ionising radiation dose is delivered to the patient.

In the nuclear medicine field, ASN considers that the facilities are on average well maintained, even though few departments manage to maintain their ventilation systems in strict compliance with the conditions set out in the regulations. Furthermore, ASN considers that the progress in determining a precise zoning of the installations is still insufficient. ASN also judges that there is room for improvement in the management of contaminated waste and effluents. Lastly, it notes an increase in

Inspection in an interventional radiology department in Fleury-les-Aubrais – December 2010

the number of significant event notifications in the domain of radiation protection of patients subject to exposure for diagnostic purposes.

The inspections carried out by ASN in medical departments practicing interventional radiology confirmed the gradual implementation of internal and external quality checks. They also confirmed the improvement in personnel training, which was visible in their practices. ASN nevertheless considers that optimising radiation protection in the operating theatre is a major avenue for progress that must be taken further: better knowledge of the devices, presence of dosimetric information on the medical procedure reports, integration of this technique in the medical physics organisation plan, etc.

1|3 Assessment of radiation protection in the industrial and research sectors

There is a contrasting picture of gamma radiography and X-ray radiography carried out in the Centre and Limousin regions on behalf of large customers in the armaments industry and in NPPs. ASN considers that the intervention conditions on the worksites of non-destructive testing contractors are constantly improving, as is the integration of radiation protection in the practical utilisation of their equipment.

However, ASN feels that preparation of the work needs to be improved, as it is often constrained by the tight deadlines between the order and the performance of the work, in terms of both radiation protection (dose forecasting, definition of operating areas) and overall risk prevention (prevention plan). The shortcomings observed could prejudice rigorous optimisation of the exposure to ionising radiation of the workers concerned.

1|4 Assessment of nuclear safety and radiation protection in the transport of radioactive materials

ASN carried out ten inspections of radioactive material shippers in 2010 – with highly diverse movements, materials and types of package shipped – and one new road transport carrier. The inspections, which focused mainly on the operational measures applied and the organisational structures in place, show overall compliance with the regulatory requirements. Significant events, whose origins were essentially human or organisational, had no significant impacts and were limited in number except in airport zones, where handling conditions must be improved.

2 Additional information

2|1 International action by the Orleans division

Since 2002, the Orleans division and the department responsible for regulating safety at the Ministry for the Environment in the German State of Lower Saxony have been discussing their respective practices and carrying out cross-inspections and visits. In this framework, in 2010 the Orléans division hosted two German inspectors and one expert from the TÜV, who participated in an inspection of the worksites for the shutdown of the Chinon NPP reactor 4.

2|2 The other significant events in the Centre, Limousin and Ile-de-France regions

Monitoring of former uranium mines in the Limousin region

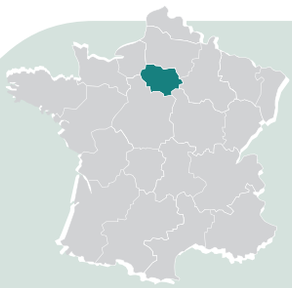
ASN considers that the move to improve knowledge of the environmental and health impacts of the former Limousin mining sites must be continued. From November 2009 to April 2010, AREVA conducted a helicopter flyover campaign in the Limousin region to detect cases of use of mining tailings outside the perimeter of the extraction sites. The identified geographic zones will need to be analysed to verify the compatibility of the land uses in the immediate environment of these beneficiation zones.

The pluralistic expert group (GEP) on the Limousin uranium mines handed over its final report on 15 September 2010. ASN will make judicious use of this reports' recommendations to orient its future site monitoring action.

2|3 Public information actions in 2010

The process to bring the CLIs for the nuclear sites of the Centre and Ile-de-France regions into compliance with the provisions of the TSN Act was completed in 2010, with among other things the creation and first meeting of the Fontenay-aux-Roses CLI. Pursuant to the new regulatory provisions, the Saint-Laurent-des-Eaux and Dampierre CLIs were consulted on ASN's draft decisions defining the requirements applicable to the NPP's water take-offs and discharges.

In 2010, ASN held two press conferences in Orléans and Evry on the state of nuclear safety and radiation protection.



10 THE STATE OF NUCLEAR SAFETY AND RADIATION PROTECTION IN THE ILE-DE-FRANCE REGION AND OVERSEAS FRANCE *DÉPARTEMENTS* AND TERRITORIAL COMMUNITIES REGULATED BY THE **PARIS** DIVISION

The Paris division regulates the small-scale nuclear activities in the eight *départements* of the Ile-de-France region and the four overseas (Outre-Mer) *départements*. It also fulfils duties as expert to the competent authorities of French Polynésie and Nouvelle-Calédonie.
As at 31 December 2010, the workforce of the Paris division stood at 22 officers: 1 regional head, 2 deputies, 17 radiation protection inspectors and 2 administrative officers, under the authority of an ASN regional representative.

The small-scale nuclear facilities to be regulated in the Ile-de-France region and in the *départements* of Overseas France represent 22% of the French total. The two particularities are the diversity and the number of facilities to be regulated. It effectively comprises:
– 34 external radiotherapy departments (nearly 90 accelerators);
– 18 brachytherapy departments;
– 65 nuclear medicine departments;
– more than 250 tomography devices;
– about 4,000 medical radiodiagnostic devices;
– about 8,000 dental radiodiagnostic devices;
– 15 industrial radiology companies;
– more than 500 industrial research devices or sources.
The BNIs of Ile-de-France are regulated by the ASN Orléans division.

The Paris division carried out 220 inspections in small-scale nuclear activities in 2010. These inspections covered a variety of areas: radiotherapy, nuclear medicine, interventional radiology, industrial radiology, radioactive material transport, monitoring of organisations approved by ASN, etc.

During 2010, 10 events classified as level 1 on the INES scale were notified: 3 concerned the transport of radioactive materials, 4 concerned nuclear medicine departments and 3 concerned industrial activities. In the small-scale nuclear activities sector, 31 significant events classified as level 1, and 2 significant events classified as level 2 on the ASN-SFRO scale were notified to ASN by the radiotherapy departments.

1 Assessment by domain

1|1 Assessment of radiation protection in the medical field

External radiotherapy

ASN carried out 60 inspections of radiotherapy departments in the Île-de-France region and the overseas *départements* in 2010.

The 34 radiotherapy departments were all inspected for the fourth year in succession.

Significant progress was observed in the actions contributing to treatment safety (analysis of deviations, *in vivo* dosimetry, etc.). Contrasting situations were observed in the development of the quality assurance procedures and compliance with the regulatory requirements demanded by ASN in this area.

During summer 2010, ASN organised a campaign of inspections of 18 radiotherapy departments in Ile-de-France to check the medical radiation physics organisations and verify compliance with the regulatory requirements. ASN found that for the time being, although no centre is in a critical situation, none has an organisation that fully complies with the regulations in force. The structures must increase their robustness by recruiting personnel and/or teaming up with other centres.

Two incidents classified as level 2 on the ASN/SFRO scale were notified to the ASN in 2010 out of a total of 39 events. The first incident was due to an error in patient positioning for treatment, as a result of confusion in anatomical location. The second incident notified to ASN resulted from the simultaneous application of two treatment phases that should have been applied consecutively. 26 incidents were classified as level 1 and 11 at level 0 on the ASN-SFRO scale.

Nuclear medicine

ASN carried out 24 inspections in 2010. It was notified of three events concerning radioactive effluent leaks that led to reactive inspections. These three events had no consequences on either worker radiation protection, the public or the environment.

Interventional radiology

ASN carried out 25 inspections in 2010. In collaboration with the Ile-de-France ARS, it identified all the structures in which interventional radiography was performed, and the associated issues, according to the known practices declared to the health authorities. The inspections during the year confirmed the strong radiation protection implications for patients and workers during interventions carried out using ionising radiation. ASN noted that in this sector the way the radiation protection requirements have been integrated varied according to departments and specialities. Progress must be made in the harmonisation of professional practices to optimise the doses delivered to patients.

1|2 Assessment of radiation protection in the industrial and research sectors

During an inspection of a company located in Seine-Saint-Denis, ASN discovered the storage of approximately two hundred radioactive lightning arrester heads containing americium 241 and radium 226. ASN drew up a report recording serious deviations from the regulations. The deviations concerned the fact that the activity was not licensed and the failure to apply the majority of the regulatory requirements stipulated in the Public Health Code and the Labour Code. Given the significant levels of radiation measured, the *préfet* of Seine-Saint-Denis, on the advice of ASN, signed a prefectural order requiring the evacuation of all the radioactive products and the implementation of measures to protect the public and workers pending evacuation. ASN and the services of the Seine-Saint-Denis *préfet* are checking that this prefectural order is duly applied. As a general rule, ASN remains vigilant and monitors the recovery of legacy radioactive objects such as the lightning arresters.

During an inspection of the CNRS in the Val-de-Marne, ASN found numerous radioactive sources in disused premises. ASN drew up a report recording serious deviations from the regulations. These deviations included the fact that the activity was not licensed. ASN and the services of the Seine-Saint-Denis *préfet* are monitoring the CNRS to ensure that all the radioactive products are evacuated and that the site undergoes a radiological diagnosis.

In November 2010, ASN was informed of a tritium contamination situation on the premises of a contractor working for CEA (French Alternative Energies and Atomic Energy Commission), situated in Saint-Maur-des-Fossés in the Val-de-Marne *département* (94). The incident that caused this situation was notified to the authorities and classified as level 2 on the INES scale. ASN, in collaboration with the services of the Val-de-Marne *préfet*, oversaw and checked all the site clean-out operations conducted by CEA. ASN also participated in public meetings to inform neighbouring populations.

1|3 Assessment of radiation protection of the public and the environment: management of waste contaminated by radionuclides and management of polluted sites and soils

In the framework of its duties to inform the public and monitor radiation protection with regard to the management of polluted sites and land, ASN oversaw and inspected the clean-out worksites of the Charvet site on Ile-Saint-Denis (*département* 93), the Curie Institute site in Arcueil (*département* 94) and the former Marie Curie school site in Nogent-sur-Marne (*département* 94).

The Radium Diagnostic operation has been launched in Ile-de-France since 21 September 2010. The government decided to perform the diagnostics free of charge in order to detect, and where applicable treat, any legacy radium pollution. This operation, which is placed under the responsibility of the *préfet* of the Ile-de-France region, the *préfet* of Paris, and is coordinated by

Inspection of the nuclear medicine department of the North Saint-Denis Cardiology Centre – December 2010

ASN, concerns 84 sites in Ile-de-France. ASN has thus organised, in collaboration with offices of the *préfet* and the mayors of the first seven sites concerned, contacts with the occupants and owners to propose a free diagnosis to detect any signs of pollution resulting from past small-scale and medical activities. Forty two diagnostics were carried out. They found thirty-three premises free of pollution and detected traces of radium on nine premises. For the occupants and owners of the nine polluted premises, personalised assistance is being provided to apply the necessary precautionary measures and start the rehabilitation works - paid for by the State - as quickly as possible. The measured levels of activity are low and the exposure does not present a health risk for the occupants. Ultimately, a certificate guaranteeing the measurement results is given to each person concerned.

2 Additional information

2|1 ASN's action in the overseas *départements* and territories

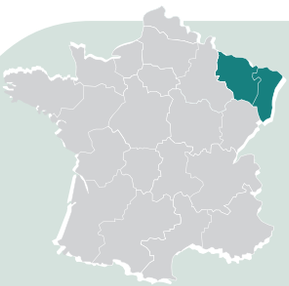
ASN carried out two inspection campaigns representing 21 inspections in the overseas *départements*, as it does each year. ASN considers that assimilation of the radiation protection requirements overseas is on average the same as in the metropolitan facilities.

ASN continued its cooperative work with French Polynesia during 2010. This consisted primarily in giving its support to the Polynesian authorities in order to develop the regulatory framework governing nuclear activities in Polynesia.

2|2 Public information actions in 2010

ASN held a press conference in the Essonne *département* to give a run-down of its regional activity. It also organised a press breakfast briefing on the progress of the Radium Diagnostic operation in the Ile-de-France region.

STRASBOURG



11 THE STATE OF NUCLEAR SAFETY AND RADIATION PROTECTION IN THE ALSACE AND LORRAINE REGIONS REGULATED BY THE **STRASBOURG** DIVISION

The Strasbourg division regulates nuclear safety and radiation protection in the 6 *départements* of the Alsace and Lorraine regions.
As at 31 December 2010, the workforce of the Strasbourg division stood at 17 officers: 1 regional head, 2 deputies, 11 inspectors and 3 administrative officers, under the authority of an ASN regional representative.

The installations to regulate in the Alsace and Lorraine regions comprise:
– the NPPs at Fessenheim (2 reactors of 900 MWe) and Cattenom (4 reactors of 1,300 MWe);
– The Strasbourg university reactor
– 10 external radiotherapy departments;
– 3 brachytherapy departments;
– 13 nuclear medicine units;
– about fifty interventional radiology departments;
– about sixty scanners;
– 4,000 medical and dental radiodiagnostic devices;
– 200 industrial research establishments;
– 2 cyclotrons producing fluorine 18.

ASN carried out more than 140 inspections in 2010: 50 inspections on the nuclear sites of Fessenheim and Cattenom; 3 inspections concerning the transport of radioactive materials; 90 inspections in small-scale nuclear activities.

Nine events classified as level 1 on the INES scale were notified by nuclear installation licensees of the Alsace and Lorraine regions in 2010. In the small-scale nuclear sector in these regions, 1 significant event of level 2 on the ASN-SFRO scale and 1 significant event of level 1 on the ASN-SFRO scale were notified by the radiotherapy departments, along with 2 events of level 1 on the INES scale relating to industrial activities.

Hydrostatic test during the ten-year inspection of the Fessenheim NPP – December 2010

1 Assessment by domain

1|1 Assessment of BNI nuclear safety

Fessenheim NPP

ASN considers that the Fessenheim plant's performance in nuclear safety, environmental protection and radiation protection is satisfactory. The ten-year inspection of reactor 1, which lasted from October 2009 to March 2010, showed that the condition of the installations - and the containment barriers in particular - was satisfactory. ASN is currently reviewing the results of all the inspections performed on this occasion and will communicate its opinion on the continuation of operation of reactor1 to the Government in 2011. The ten-year inspection of reactor 2 will also be carried out in 2011. The steam generators will be replaced during this inspection, further improving the state of the installations. ASN nevertheless considers that the site must remain vigilant on the question of worker radiation protection and take appropriate action.

Cattenom NPP

ASN considers on the whole that Cattenom NPP's performance in nuclear safety, environmental protection and radiation protection is satisfactory. More specifically, it considers that the actions taken by the site in 2010 have improved the radiation protection of workers and must be continued. As regards the fight against

Legionella, ASN notes that the makeup water treatment experimentation did not lead to an industrial solution and will see to it that the site continues its efforts in this area, by integrating all the safety, environmental protection and public health issues. ASN considers that the Cattenom site must be more rigorous in the management of radioactive materials transport. Several deviations occurred in 2010, including the shipping of a radioactive waste in an unsuitable package, which was classified as level 1 on the INES scale.

The Strasbourg university reactor

This research reactor has been entirely decommissioned, and in 2010 ASN began taking steps to delete it from the list of BNIs. In accordance with the regulations in effect, ASN consulted the *Préfet* of the Bas-Rhin, the recently constituted CLI, and the 21 *communes*[7] situated less than 5 km from the reactor. ASN will analyse their opinions and take its decision in 2011.

1|2 Assessment of radiation protection in the medical field

Radiotherapy

In 2010, ASN inspected five of the ten radiotherapy centres in Alsace and Lorraine. These inspections confirmed that the radiotherapy departments in Alsace and Lorraine are continuing their action to improve treatment safety. ASN observed that progress has been made in the formalising of procedures and the verification of the quality of the devices. It did nonetheless observe a reduction in the number of events notified to it by the radiotherapy centres of Alsace and Lorraine in 2010. Although these events have no expected consequences on the health of patients, they are analysed to draw conclusions and prevent them from occurring again. ASN therefore encourages the Alsace and Lorraine centres to continue notifying and dealing with their significant events. The inspections conducted by ASN in the Metz-Thionville regional hospital (CHR) revealed a tenuous situation regarding medical personnel numbers in the radiotherapy department of Thionville. This finding led the CHR management to temporarily suspend the radiotherapy activity on this site in July 2010. ASN will assist with the reopening of this centre ensuring that the regulatory safety criteria are satisfied. Lastly, ASN was notified in August 2010 of an incident involving an error in patient positioning that occurred in the Metz radiotherapy department of the Metz-Thionville CHR. This incident was classified as level 2 on the ASN-SFRO scale.

Interventional radiology

ASN rendered public the result of its investigations and the corrective actions carried out further to the event notified by interventional neuroradiology department of the Strasbourg university hospital (CHU) in March 2009. This extensive and innovativel action plan enabled the CHU to substantially reduce the doses delivered to patients in interventional radiology (by 50 to 70%) and to position itself among the most advanced hospitals in patient radiation protection management in France.

Computed tomography (CT)

CT examinations represent one of the leading causes of radiation exposure of the French population. Faced with this fact, and without calling into question the undeniable medical benefits of this activity, ASN - through its contacts with the medical institutions - has undertaken actions with a view to better knowing the conditions of use of CT scanners and identifying ways of reducing the doses delivered during the examinations.

1|3 Assessment of radiation protection in the industrial sector

In 2010, ASN noted a deterioration in radiation protection on the worksites where two companies in Alsace and Lorraine perform gamma radiography services. During its inspections on the worksites where these two contractors were working, ASN noted numerous deviations: warning sign deficiencies, poor maintenance of devices, deviations in worker training, unsatisfactory tracking of the doses received by the workers, etc. Moreover, ASN discovered that in 2008, an employee performing radiographic inspections of metal pipes had been exposed to a dose of 20.8 mSv, whereas the annual regulatory limit is 20 mSv. This event was classified as level 1 on the INES scale. ASN asked the two companies concerned to take immediate corrective action to remedy these deviations.

1|4 Assessment of radiation protection in small-scale nuclear activities

On 15 and 16 June 2010, ASN carried out a large number of unannounced inspections in the Meuse *département* (vets, dentists, radiologists, lead-detection companies, etc.). The twenty-nine inspections revealed a few cases of non-compliance with regulations, but which did call into question the safety of the workers or the public.

ASN continued its inspections of polluted sites and land in 2010. Apart from the treatment and monitoring of three legacy pollution sites in the Haut-Rhin, ASN was notified in 2010 of the disposal by the University of Strasbourg of a collection of radioactive uranium ore samples. ASN is currently monitoring the decontamination of the laboratory that stored the samples.

1|5 Assessment of nuclear safety and radiation protection in the transport of radioactive materials

In 2010, ASN carried out three inspections concerning the transport of radioactive materials and monitored the safety of transport from France to Germany of 308 containers of vitrified radioactive waste originating from the reprocessing of spent German fuel on the La Hague site. ASN checked that the packages were correctly approved and that the dose rate around the convoy did not exceed the regulatory limits.

7. Smallest administrative subdivision administered by a mayor and a municipal council

2 Additional information

2|1 International action by the Strasbourg division

Under the bilateral exchanges with its German, Luxembourg and Swiss counterparts, the ASN Strasbourg division took part in 7 cross-inspections in NPPs and in medical and industrial establishments.

In addition, a joint comparative study of the operating rigour in the French Fessenheim NPP and the German Neckarwestheim NPP was carried out with Germany. This study showed that there are great similarities in the way these two NPPs are operated and that the level of safety of the two installations meets international standards.

Furthermore, the French and German nuclear safety authorities made a comparison of the regulations governing radiotherapy. This study revealed that although the regulatory conditions relating to worker radiation protection are virtually identical in the two countries, the obligations regarding the presence of radiation physicists are greater in Germany, whereas quality assurance obligations are greater in France.

2|2 Public information actions in 2010

ASN held two press conferences on the status of nuclear safety and radiation protection, one in Strasbourg, the other in Metz, and took part in the "Industrial environment and risks in Lorraine" press conference organised by the Lorraine DREAL in Metz.