ORGANISATION IN FRANCE OF THE CONTROL OF RADIOACTIVE MATERIAL TRANSPORT SAFETY

André-Claude Lacoste
Directeur de la Sûreté des Installations Nucléaires
Ministère de l'économie, des finances et de l'industrie
Ministère de l'aménagement du territoire et de l'environnement

Since June 12, 1997, the ministries in charge of industry and the environment are empowered to "draft and implement the nuclear safety policy, including the transport of radioactive and fissile materials designed for civil use" This change in the organisation within the public authorities is an answer to the concern for the rationalisation of organisation of the State where nuclear safety control is involved.

The nuclear facility safety directorate (DSIN), placed under the joint authority of ministre de l'Economie, des Finances et de l'Industrie et du ministre de l'Aménagement du Territoire et de l'Environnement, has thus, in a little less than a year, been made responsible for regulating the safety of the transport of these radioactive materials and for controlling the application of these regulations.

Already for the past 25 years the DSIN has controlled the safety of the most important nuclear facilities such as reactors, fabrication fuel or reprocessing plants, or radioactive waste storage. It was therefore consistent that it should extend its activities to the transport of radioactive material between these installations and by extension to all transport of radioactive materials.

The radioactive material transport flows in France, although they only correspond to a small portion of the transport of dangerous materials, around two percent, are considerable: 300,000 packages of this type thus travelling each year by road, rail, sea or air. The immense majority of them are designed for a radio-pharmaceutical use; however, the most highly radioactive amongst them (a few thousand) originate from the electronuclear cycle. For instance, this involves fresh uranium- or MOX-based fuels, spent fuel or waste, etc. As opposed to the facilities, the radioactive products confined in the packages can circulate anywhere and very close to the public. Thus, strict regulations should be applied to limit the consequences of transport accidents, which are always possible, as demonstrated by the derailment of a train carrying spent fuel in Apach in February 1997, on the French-German frontier, or the shipwreck of the container carrier "Carla" off the Portuguese coast in November 1997, with French-made medical-purpose irradiators on board.

Radioactive material transport regulations in France consist of two clearly distinct objectives: security and safety.
Security, or "physical protection", consists of preventing losses, disappearances, thefts and misappropriations of nuclear materials (that can be used for weapons). Le Haut Fonctionnaire de Défense auprès du ministre chargé de l'Industrie is responsible for this.

As for safety, this consists of obtaining full control over the risks of irradiation, contamination and criticality presented by the transport of radioactive materials so that human beings and the

environment do not suffer pollution. The DSIN is responsible for controlling safety.

To apply this control, the DSIN operates in different areas:

- Drafting of regulations
- Licensing of package models
- Inspections
- Emergency response in case of accident
- Information to public

Drafting of Regulations

The regulations applicable in France for class 7, i.e. radioactive materials in the classification produced by the UNO for hazardous materials, originates from the technical rules drafted by the IAEA. In fact, since transport, especially insofar as concerns the transport of radioactive materials, is quite often international, the need for international regulations covering the transport of hazardous materials was acknowledged quite early on; therefore, since the last century, for example, rail transport was subject to international rules. The progression whereby the IAEA rules lead to domestic regulations is long and complex. It often follows the process of modal regulations, i.e. regulations adapted to the various modes of transport (road, rail, air, or sea). Therefore, in France, it forms part of the ADR conventions for road transport, the RID conventions for rail transport, the Chicago convention for air transport, and the SOLAS convention for sea transport.

This being so, the striking element in the development of the regulation front on this subject is the increasing significance, today preponderant, of the European Union. It was a 1994 directive (respectively a 1996 directive) which made compulsory the application of the ADR (respectively RID) convention to domestic and international transport of hazardous materials in all the countries making up the European Union as of January 1, 1997.

In France, the modal structure of the regulations requires concerting between the various ministerial departments in charge of the transport of hazardous materials. La direction générale de l'aviation civile, la mission du transport des matières dangereuses, la direction des gens de mer et des affaires maritimes and now the DSIN.

In the past, France was closely involved in the development of the IAEA rules. This was especially the case for the latest revision of their rules issued in 1996, notably those relating to the increase in the standards governing the transport of uranium hexafluoride and the transport by air of large radioactive material quantities. The DSIN wishes to continue this effort, notably with the aid of the IPSN, which provides technical expertise on the subject. For example, it might be considered that the criteria governing the resistance of the packages to immersion might be the subject of a reflection by committees of specialists convened by the Agency within the context of the new revision cycle started in 1996. With the feedback from experience, it would certainly be possible to identify other lines of progress in future years.

Of course, the DSIN will also pay special attention to the application of the new rules, which will come into effect as of January 1, 2001, whether the application of new exemption limits,

the radioprotection programmes, or the qualification of type C packages, or again the setting up of thermal protective systems which will most probably be needed for the numerous 48Y containers carrying uranium hexafluoride.

Licensing of Package Models

Some package models, in order to be authorised for transport in France, should be approved by the authorities, this notably involving:

* Radioactive materials under special form
* Type B packages and all packages of fissile materials
* Consignments under special arrangement

By delegated powers from the ministers and after technical examination of the files by the IPSN, the DSIN issues approval for package models scheduled by the regulations, and validates the approval issued by foreign authorities covering transport in France.

These approvals are issued for a maximum period of three years. Today, industrialists are applying for 200 approvals by the authority each year (new package, extension of a license that has just expired, validation of a license issued by a foreign authority, special arrangement, extension of a license to a content different from the one initially in the safety files). If the approval applies to a package model and not the package itself, it nevertheless specifies the conditions of manufacture, operation and maintenance. In France, the license is issued independent of the transport operation itself, which does not require any prior permission from the DSIN.

The DSIN wishes to make an assessment of the conditions whereby approvals are obtained and of their validity period. Making the protagonists responsible and optimising the means could, on the basis of this assessment, lead to increased quality and quality assurance control by the authorities. Relatively, this stiffer follow-through could mean that the validity periods of the license could be increased, for example from 3 to 5 years.

Inspection

In its nuclear facility safety control activities, the DSIN already relies on some hundred agents locally, notably to make inspections. These inspections will naturally be extended to activities involved with the transport of radioactive materials, especially relating to packages: design, manufacture, use, and maintenance. These inspections should in particular apply to the organisation set up by industrialists to guarantee the safety of radioactive material transport, in particular guaranteeing compliance with the regulations. Therefore, aspects such as the interfaces between the very numerous protagonists (consignor, owner of the packaging, commissioner, carrier, etc.), the management of discrepancies and anomalies, and quality assurance will be paid special attention.

The DSIN moreover intends to inspect various package models. In fact, although type A or "industrial" packages are potentially less hazardous than type B packages, they are firstly less

well protected and secondly very numerous.

Lastly, the on-site transport, although not on the public highway, should be carried out with the same rigour as on the public highway, and will be the subject of a specific follow-through.

Emergency Response in Case of Accident

Where the safety of radioactive material transport is involved, the first line of defence is the packaging and the conditions of use, then come the means of transport and its reliability and lastly the means of action in case of accident. Good overall control of the management of accident situations is especially important with the transport of radioactive materials, which, I remind you, can take place anywhere and very close to the public. In France, one severe accident, i.e. requiring action by the public force, concerning the transport of radioactive materials, takes place every year. Therefore, in the most recent years, and without seeking to be exhaustive, we can indicate:

- The accident in Le Havre in March 1996 where a container of UF6 dropped several meters onto other containers of UF6 during handling operations in the port.

- The accident in Apach in February 1997, when a train carrying spent fuel from Germany to Great Britain via Dunkirk was derailed on the frontier between Luxembourg, Germany and France.

The operational organisation of emergency response in France relies on the government's local representative, the préfet. The latter in particular has on-site intervention teams at his disposal: fireman, emergency doctors, police, gendarmes and also the power to decide. Nevertheless, where complex technical subjects are concerned, he relies on central government authorities to advise him as to his decisions relating to the radiological risks. This is in particular the role of my department and of its technical support, the IPSN, these two organisations having interlinked emergency management centers, and also interlinked with the agencies concerned, the prefecture and the industrialists being in the front rank. This operational organisation covering the facilities must be tested for transport through exercises, as transport compared with fixed installations, notably reactors, offers a certain number of specific features already referred to in my introduction, such as the proximity of the public, the fact that it can take place anywhere, and with, most likely, rapid kinetics.

Information to the Public

The DSIN has begun to apply a policy of information to the public covering the control of radioactive material transport safety. This policy is very largely inspired from the practices already in use for nuclear facilities. Thus, the various regulations concerning transport (approval, special arrangements, etc.) are presented in the DSIN's bimonthly magazine, "Contrôle". At this stage, it should be observed that for the requirements of nuclear material safety, certain transport operations can be covered by confidentiality requirements. Moreover - and this is the most important and most complex action to be set up from the point of view of information - the DSIN wishes, before the end of the year, to extend the international scale

of nuclear events, INES, already applied to facilities, to transport incidents and accidents involving radioactive materials.

Technical discussions are still in progress with the consignors in order to specify the procedures for declaring incidents and accidents. Nevertheless, it is possible to define a number of major objectives:

- Simplicity of use

- Consistency with the general principles of the INES scale and registering of information and examples relating to transport contained in its application handbook

- Case studies elabored from recent incidents and accidents and a posteriori check on their classification

Conclusion

Up until now, the DSIN provides control over the safety of the most important French nuclear facilities. Its new responsibilities in the field of transport enable it to measure the resemblances and differences between these two areas.

I should like to conclude by stressing two aspects which seem to me as essential today after several months of exercising responsibility for control of the safety of radioactive material transport:

- The multiplicity of the protagonists: in activities with major risks, the responsibility for them and their definition are fundamental stakes, whether within the context of the procedures of prevention developed by the regulations, or in the management of an emergency or its aftermath. I therefore pay very special attention to the organisations, and especially the definition of the responsibilities and interfaces.

- The significance of the international aspect of these activities: today, radioactive material transports are international. This conference is proof of this. Regulations are more or less international, nevertheless, the technical consequences that can be deduced from the regulations can differ from one country to another. Obviously, this is not a desirable situation. Moreover, I do not consider that it is necessary to go further in the standardisation of the regulations, which would risk transforming an objective regulation into a regulation of means. Thus, it is today indispensable to multiply opportunities for meetings, notably between the Safety Authorities, so as to address and confront the various technical implications of the regulations, because safety notably progresses through an open technical debate.