

EXPERIENCES OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTE DISPOSAL IN SPAIN- LEGAL AND PLANNING ASPECTS

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ABSTRACT

The aim of this paper is to provide an overall view of Spanish nuclear legislation and the public organizations participating in the Spanish nuclear sector.

The analysis included allows a picture to be gained of the legislative framework within which a disposal facility for low and intermediate level wastes has been constructed and commissioned in Spain.

A more detailed analysis is made of the specific standards governing radioactive waste management in Spain, this being the objective of ENRESA, the company responsible for overall management of both low and high level wastes, including the dismantling of nuclear installations.

Special attention is paid to the specific system applied in Spain to the financing of radioactive waste management activities. In the case of radioactive wastes produced as a result of electricity generation, this financing is accomplished by way of a fee on electricity billing, currently set at 1.2%.

This is followed by a detailed analysis of the planning and control system set up for the management of radioactive wastes, including comments on the General Radioactive Waste Plan, a document submitted annually to the Government for approval and parliamentary notification.

INTRODUCTION AND GENERAL CONSIDERATIONS

The Empresa Nacional de Residuos Radiactivos, S.A. (ENRESA) has recently finished construction of a low and intermediate level radioactive waste disposal facility in Spain, and has been authorized to operate this facility.

The aim of this paper is to describe the legal and institutional framework within which the Spanish experience of constructing and starting-up a low and intermediate level waste disposal facility of this type has taken place.

Both the characteristics of the facility, known as "El Cabril" and located in the province of Córdoba, and the corresponding licensing process have been analyzed by my colleagues Carmen Rufz, Pablo Zuloaga and Jesús Alonso in another document presented at this conference.

For this reason, my paper will center on aspects of a more general nature, and will describe the characteristics of the legal and institutional framework that has made it possible to license a nuclear installation of this type during the 1990's. During the course of this analysis we shall also be looking at the limitations imposed by the legal framework currently in force in Spain as regards other objectives.

Radioactive waste management is governed by what the experts normally call "nuclear law".

Both in Spain and in other countries, nuclear legislation is normally made up of two types of standards:

- On the one hand, standards covering the organic and organizational regulation of the companies and organizations participating in the peaceful use of nuclear energy, and
- On the other, a series of regulations of varying content but having the common denominator of being oriented towards prevention of nuclear risk. It is frequently the case that the regulations referring not to nuclear risk but to indemnity or insurance against the damage caused when this risk becomes an actual event are more extensive and complex.

Although correct structuring of the public bodies intervening in the use of nuclear energy is highly important, to my way of thinking the essential characteristic of nuclear law, in fact its very reason for being, is prevention of risk.

Having made this first statement, and when referring to any specific country, the next step is inevitably to analyze the way in which the idea of preventing risk is contemplated in that country's constitution.

If the country in question is European, it will also be necessary to analyze the extent to which decision making is transferred by the State to the European Communities, in order to provide the legal framework with a spatial point of reference.

There are certain personal rights that must be guaranteed by the modern State, and it is quite clear that one of these is the basic right of any person to physical protection, and consequently to protection against whatever risks might arise as a result of the use of nuclear energy, and therefore of the undue handling of radioactive wastes.

This individual right is matched by the obligation of the State, i.e., the obligation of the executive, to take whatever measures and actions might be required to prevent such risks.

Articles 9.3), 15), 17.1) and 43.1) of the Spanish Constitution, which dates from 1978, establish the right of the individual to legal security, life and physical integrity, safety and protection of health.

A characteristic aspect of the Spanish legal system, and one which is complex to analyze, is the system by which competence is transferred to the different Autonomous Communities of the State.

It may be stated that there is no clear system governing the distribution of degrees of competence between the State and the Autonomous Communities in relation to nuclear energy, although article 149 of the Constitution does state that responsibility regarding the bases for mining and energy systems will be exclusively to the State, as will the authorization of electricity generating facilities when their operation affects more than one Community. It is generally accepted that

responsibility for energy related matters or nuclear installations corresponds exclusively to the State.

It is quite clear that no multi-national solution is foreseen as regards the final disposal of radioactive wastes in the European Community, an obvious example in this respect being European Directive 92/3, of 3rd February 1992.

Nevertheless, mention should be made of the positive consequences of European integration with regard to research, spreading of knowledge and control of the use of nuclear materials.

The new Community action plan, scheduled for the period 1992-2000, is limited to proposals for harmonizing management strategies and methods in this area throughout the Community.

With regard to the El Cabril facility, the requirements of the procedure established in article 37 of the EURATOM Treaty were met, these stipulating that each State submit to the Commission general data on disposal projects, regardless of their nature, in order to determine whether the performance of virtual projects might give rise to the radioactive contamination of water, soils or air space in other member States. The Commission would then consult with a group of experts, as established in article 31 of the Treaty, and issue its findings within six months, a requirement that has been successfully completed.

The previous general considerations allow two conclusions to be drawn:

- Prevention of the risk involved in handling and managing radioactive wastes is the responsibility of the executive.
- The framework within which this public responsibility exists is that of the State, i.e., neither that of supranational political organizations (European Communities) nor that of political sub-divisions such as the Spanish "Autonomous Communities".

LEGAL ASPECTS

Spanish nuclear legislation is based fundamentally on two standards having the formal status of law, these being analyzed below. One of these standards dates back to before the 1978 Constitution, while the other is subsequent to the Constitution and consequently more coherent with its contents. The Spanish Nuclear Energy Act, which was passed in 1964, may be considered as being obsolete. This Act related fundamentally to organizational aspects, and regulated the "Nuclear Energy Board", a body which has since disappeared as such; as will be seen below, all these aspects have been modified without any modification to the Law in question, as a result of which it is now in disuse. Aspects relating to research and the exploitation of radioactive ores have also been substantially modified by the legislation governing mining.

The only aspects of the Law currently surviving are those which refer to the safety and licensing of installations; consequently, the Regulations governing the licensing of nuclear and radioactive facilities and the protection of workers and the public against ionizing radiations, and the standards regulating insurance against and compensation for nuclear damage, continue in force. Although certain of these Regulations were modified during the 1980's, they continue to formally regulate the original stipulations of the 1964 Law.

The Law does, however, address in great detail the issue of liability and indemnity for nuclear damage.

The Law passed in 1980, subsequent to the Constitution, created the Nuclear Safety Council as a body under public law and independent from State administration. As established in article 1 of the aforementioned Law, the Nuclear Safety Council is the only competent authority for matters relating to nuclear safety and radiological protection.

As a result of this, the report issued by this body, which is binding when its findings are negative, is a mandatory step in the process of licensing of all nuclear and radioactive installations.

Another highly important consequence of this Law, contemplated under heading 4 of article 3 thereof, is that any authorizations or licenses relating to nuclear or radioactive installations and to be awarded by a public administration cannot be denied or conditioned on grounds of nuclear safety, since all determinations in this area correspond exclusively to the Nuclear Safety Council.

This Law reinforces the aforementioned general conclusions, since a single, administratively independent State organization, reporting directly to Parliament, assumes all the authority for nuclear safety and radiological protection, and is therefore assigned ample attributes and responsibilities and provided with the human and financial resources required for performance of its functions.

To date, this rather meagre legal framework has been sufficient to address solutions to the problem of low level radioactive wastes in Spain.

ORGANIZATIONAL AND REGULATORY ASPECTS

The Law of 1980, by which the Nuclear Safety Council was created, also contains provisions of an organizational nature and relating to the regulatory body.

Mention should also be made here of the Act regarding Promotion and Coordination of Scientific and Technical Research, Law 13/1986 of 14th April of that year, in relation to organizational aspects of what was the Nuclear Energy Board and is now known as CIEMAT (Technological, Energy and Environmental Research Center), whose areas of responsibility and legal configuration are modified by the said Law, revoking aspects contemplated in the Nuclear Energy Act of 1964.

Attention should also be given to those provisions which are not of legal standing, inasmuch as they have not been approved by Parliament, but rather of a regulatory nature, and which serve as a framework for the rest of the organizational structure of the Spanish public nuclear sector.

In order for our analysis to be complete, it would also be necessary to study the characteristics of the electricity generating sector, the major producer of radioactive wastes. In this respect, however, we shall simply point out that this sector is highly regulated and controlled, and that a unified system of electricity tariffs exists throughout Spain, regardless of the sources used for generation.

The official provisions of law that have governed the organizational structure of the nuclear sector have fundamentally been Royal Decree 2967/1979, of 7th December, which separated a series of functions previously corresponding to the Nuclear Energy Board and commissioned them to the Spanish national uranium company, Empresa Nacional del Uranio, S.A., and Royal Decree 1522/1984, of 4th July, which authorized constitution of the Spanish national radioactive waste company, ENRESA, this latter decree partially modifying the former.

Finally, it should be pointed out that the regulatory provisions specific to the nuclear sector, as regards the licensing of radioactive installations, are the following:

- The Regulations Governing Nuclear and Radioactive Installations (Decree 2869/1972, of 21st July).
- The Regulations governing Protection against Ionizing Radiations (Royal Decree 53/1992, of 24th January).
- The Royal Decree on Environmental Impact (Royal Decree Law 1302/1986, of 28th June).

With regard to standards coming into force since ENRESA was created, it would be interesting to mention the Ministerial Order passed on 30th December 1988, which established economic compensations for municipal areas housing disposal facilities, this possibly being a positive factor as regards social acceptance of potential sites.

With the exception of the above, no specific standards applicable to low and intermediate level radioactive waste disposal facilities have been developed; consequently, licensing of El Cabril has been carried out by the Nuclear Safety Council on the basis of legislation of a general nature.

In view of the above, and without counting the Ministries involved, which are the Ministry of Industry, Trade and Tourism and, for issues relating to environmental impact the Ministry of Public Works and Transport, the public companies or organizations making up the nuclear sector in Spain are currently the following:

- The Nuclear Safety Council, which is the regulatory body;
- The center for energy, environmental and technological research, CIEMAT, which is a public body reporting to the Ministry of Industry, Trade and Tourism.
- Two public companies: The Empresa Nacional del Uranio, S.A., responsible for the front end of the nuclear fuel cycle, and ENRESA, responsible for radioactive waste management, both of which rest entirely on public capital.

ENRESA

Royal Decree 1522/1984, of 4th July of that year, established ENRESA as a public company entirely responsible for radioactive waste management (the company's shareholders are two public organizations depending on the Ministry of Industry: CIEMAT, with 80% of the share capital and the National Institute for Industry, TENEO (Holding of INI), with the remaining 20%).

The political decision to create ENRESA arose from debates in Congress relating to the 1983 National Energy Plan, one of whose parliamentary resolutions established that the Government would create a company to take charge of nuclear and radioactive wastes.

ENRESA's missions, which are literally set out in the regulation governing creation of the company, are as follows:

- a. To treat and condition radioactive wastes in the cases and circumstances to be determined.
- b. To select sites and design, construct and operate centres for storage and final disposal of low, intermediate and high level radioactive wastes.
- c. To manage operations for the decommissioning of nuclear and radioactive installations.

- d. To establish systems for the collection, transfer and transport of radioactive wastes.
- e. To act, in the case of nuclear emergencies, in support of civil defence services, in whatever ways and under whatever circumstances might be required.
- f. To condition mining and concentrate manufacturing tailings whenever required, in a definitive and safe manner.
- g. To ensure long-term management of all waste storage installations.
- h. To carry out all necessary technical and economic-financial studies, taking into account the deferred costs of radioactive waste management, with a view to adopting suitable economic policies.
- i. All other activities required for fulfillment of the company's authorized activities.

This same regulation establishes a planning system, which will be described below, and an adequate financing system.

Three basic characteristics of the waste management activities carried out in Spain by ENRESA should be underlined. The first of these is the financing system, the second the planning system and the third the system used for control. I shall first briefly analyze the first and third of these characteristics, to later dwell on the second in greater detail.

Without prejudice to attempts to comply with the principle of "the polluter should pay", in keeping with which waste management costs should be borne by the producers, a system has been set up in Spain to rule out discussions as to the magnitude of these costs. Given that most of the wastes are produced by the electricity generating sector, the costs involved may be applied to the end user via the electricity tariffs.

The aim of the financing system is that the electricity consumer should pay the costs involved in treating and disposing of the wastes generated today, final management of which will take place many years into the future. This system rules out any excuses by those responsible on the grounds of incapacity to meet these responsibilities due to lack of financial resources.

More specifically, this system includes collection by ENRESA of a percentage of total electricity billing, regardless of the origin of the electricity in question, a percentage which currently stands at 1.2%. The accumulated funds, the difference between income and current costs, are administered by ENRESA and are supplemented by the corresponding financial yield. ENRESA is a non-profit making organization, since the dividends on the company's very small share capital (600 million pesetas) are purely symbolic.

With regard to ENRESA's control system, a distinction should be made between technical and economic controls. Of particular importance among the first are those technical controls applied by way of the company's shareholder CIEMAT and, of course, the permanent controls applied by the Nuclear Safety Council in relation to the licensing and operation of installations.

Financial activities are also widely controlled, both by the shareholders and by way of the control system established for public administrations. The State Administration's General Auditing Body audits ENRESA's financial statements and submits them to the control of the Exchequer of the Kingdom.

In any State in which the Constitution consecrates a market economy, it is always necessary to establish a compromise between those activities which may be undertaken

directly by the public sector and those others which may be performed by the private sector. In this respect, and as regards radioactive waste management, greater scope for activities by the private sector has been provided by establishing ENRESA as a management company with a small but highly specialized staff, which contracts on the market the many services it requires to carry out its functions.

PLANNING

Let us now center on the system used for planning of ENRESA's activities. In this context, consideration should be given to the contents of article 4 of Royal Decree 1522/1984, which reads as follows:

"Without prejudice to the Investment and Financing Program prescribed in the General Budgets Act, the Empresa Nacional de Residuos Radiactivos, S.A. shall draw up within the first six months of each year an Annual Report, which shall contain at least the following:

- Operations carried out during the previous financial year.
- The General Radioactive Waste Plan, which shall include a revision of all necessary actions required and technical solutions applicable over the timescale of activity of the radioactive wastes; the updated economic-financial study should include the cost of the aforementioned activities.

This Annual Report shall be submitted by the Ministry of Industry and Energy to the Government for approval, which shall be given where applicable, and shall then be presented to the Parliament."

As may be appreciated, the document known as the General Radioactive Waste Plan is the essential planning instrument in this area. Although to date ENRESA has presented a project for this Plan every year, in some cases the modifications with respect to the previous year have been so minor that the Ministry of Industry has not considered it necessary to undertake a complete modification of the Plan. To date there have been three General Radioactive Waste Plans: the first published in October 1987, the second in January 1989 and the third, which is currently in force, in July 1991.

This Plan is analyzed by the Government, along with ENRESA's activities in each financial year; following approval, a report is presented to the Parliament, normally via the Congress's Commission for Industry and Energy.

The basic content of the Plan consists of an analysis of the situation in those countries which have the most important nuclear programs, and continues with a definition of the radioactive wastes generated and stored in Spain and forecasts for future generation, as well as a description of the management strategies for each radioactive waste type existing in Spain.

As a result of development of the management strategy for low and intermediate level wastes, described in the first Plan published in 1987, the El Cabril facility, the key element for management in Spain of this type of waste, was constructed and licensed. Strategies have also been defined for the temporary storage of spent nuclear fuel and for final disposal of high level wastes.

An aspect peculiar to Spain is the fact that ENRESA is responsible also for the decommissioning of nuclear installations and for the rehabilitation of tailing dykes from mining activities.

The Plan continues by establishing basic economic hypotheses, including forecasts for waste management costs, this covering decommissioning of nuclear installations, and definition of the income to be received via the electricity tariffs to cover these costs.

The Plan finishes by dealing with the research and development activities required for implementation of the strategies defined, including a summary of the contents of the ENRESA Research and Development Plan contemplating the activities to be carried out in this area during the period 1990 to 1994.

The most outstanding characteristic of the ENRESA planning system is the mechanism used for annual correction, which includes the experience of both the company itself and of other countries, thus providing the system with the flexibility required to take the fullest possible advantage of whatever technological breakthroughs might be made.